

# International Patent Classification

Core Level (2009.01)

Volume 1

Section B

Performing Operations;  
Transporting



World Intellectual Property Organization

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## SECTION B –PERFORMING OPERATIONS; TRANSPORTING

### SEPARATING; MIXING

#### Note

The following notes are meant to assist in the use of this part of the classification scheme; they must not be read as modifying in any way the elaborations.

- (1) In this sub-section, the separation of different materials, e.g. of different matter, size, or state, is predominantly found in the following subclasses:  
B01D  
B03B, B03C, B03D  
B04B, B04C  
B07B, B07C.
- (2) The classifying characteristics of these subclasses are:
  - (i) the physical state of the matter to be separated;
  - (ii) the principle of the process used;
  - (iii) particular kinds of apparatus.

The first of these characteristics involves six different aspects, assembled in three groups:

  - (a) liquid/liquid or liquid/gas and gas/gas;
  - (b) solid/liquid or solid/gas;
  - (c) solid/solid.
- (3) These subclasses are to be used according to the following general rules:
  - B01D is the most general class as far as separation other than solids from solids is concerned.
  - Apparatus for separating solids from solids are covered by B03B when the process concerned is regarded as the equivalent of “washing” in the sense of the mining art, even if such apparatus is a pneumatic one, especially pneumatic tables or jigs. Screens per se are not covered by this subclass but are classified in B07B, even if they are being used in a wet process. All other apparatus for the separation of solids from solids according to dry methods are classified in B07B.
  - If the separation takes place as a result of the detection or measurement of some feature of the material or articles to be sorted it is classified in B07C.
  - It should also be noted that the separation of isotopes of the same chemical element is covered by B01D 59/00, whatever process or apparatus is employed.

#### Subsection Index

##### LIQUID/LIQUID, LIQUID/GAS OR GAS/GAS SEPARATION

###### Method

General operations..... B01D  
by centrifugal force, using  
centrifuges or free-vortex  
apparatus ..... B01D  
using magnetic or  
electrostatic effect ..... B03C

###### Apparatus

General operations..... B01D  
by centrifugal force, using  
centrifuges or free-vortex  
apparatus ..... B04B,  
B04C  
using magnetic or  
electrostatic effect ..... B03C

##### SOLID/LIQUID OR SOLID/GAS SEPARATION

###### Method

General operations..... B01D  
by centrifugal force..... B01D  
using centrifuges or  
free-vortex apparatus ..... B01D  
using magnetic or  
electrostatic effect ..... B03C

###### Apparatus

General operations ..... B01D  
by centrifugal force ..... B01D  
using centrifuges or  
free-vortex apparatus ..... B04B,  
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using magnetic or  
electrostatic effect..... B03C

##### SOLID/SOLID SEPARATION

###### Method

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Screening, sifting,  
pneumatic sorting ..... B07B  
using pneumatic  
tables or jigs ..... B03B  
by magnetic or  
electrostatic effect..... B03C  
by centrifugal force ..... B07B  
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Dry methods		Wet methods	
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Individual sorting .....	B07C	flotation, differential sedimentation .....	B03D
Screening, sifting, pneumatic sorting .....	B07B	screening .....	B07B
using pneumatic tables or jigs.....	B03B	Combinations Dry methods - wet methods.....	B03B

**B01 PHYSICAL OR CHEMICAL PROCESSES OR APPARATUS IN GENERAL** (furnaces, kilns, ovens, retorts, in general F27)

**B01B BOILING; BOILING APPARATUS**

**1/00 Boiling; Boiling apparatus for physical or chemical purposes** (preparation of starch C08B 30/00; sugar industry C13; steam generation F22; domestic boilers F24) [2]

**B01D SEPARATION** (separating solids from solids by wet methods B03B, B03D, by pneumatic jigs or tables B03B, by other dry methods B07; magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high-voltage electric fields B03C; centrifuges B04B; vortex apparatus B04C; presses per se for squeezing-out liquid from liquid-containing material B30B 9/02) [5]

**Notes**

- (1) This subclass covers:
  - evaporation, distillation, crystallisation, filtration, dust precipitation, gas cleaning, absorption, adsorption;
  - similar processes which are not concerned with, or limited to, separation (except in the case of absorption or adsorption).
- (2) In this subclass, the terms or expressions are used with the meaning indicated:
  - “filtration” and analogous terms include straining solids from fluids;
  - “filter medium” is a porous material or porous arrangement of material used to filter solids from fluids; [5]
  - “filtering element” is a section of filter medium in addition to parts to which the medium is demountably or permanently fixed, including other sections of medium, end caps, peripheral frames or edge strips, but excluding housings; [5]
  - “filter housing” is the fluid-constraining impervious vessel, whether open or closed, which contains, or is adapted to contain, one or more filtering elements or filter media; [5]
  - “filter chamber” is the space within a housing, where filtering elements or filter media are located. Partitions may divide a single housing into a plurality of chambers; [5]
  - “filtering apparatus” consists of filtering elements combined with housings, cleaning arrangements, motor or the like parts, which are characteristic of the particular type of apparatus. Ancillary devices such as pumps or valves are considered part of a filtering apparatus when inside the apparatus. Ancillary devices performing similar or different unit operation such as comminutors, mixers or non-filtering separators, whether or not inside the apparatus, are not considered part of a filtering apparatus. The term does not extend to apparatus, e.g. washing machines, of which the filter forms only a part. [5]
- (3) For apparatus used in drying or evaporation, class F26 takes precedence over this subclass.
- (4) Group B01D 59/00 takes precedence over the other groups of this subclass and over other subclasses in class B01.

**Subclass Index**

EVAPORATION; DISTILLATION;  
SUBLIMATION..... 1/00; 3/00;  
5/00; 7/00

COLD TRAPS, COLD BAFFLES ..... 8/00

CRYSTALLISATION ..... 9/00

SOLVENT EXTRACTION ..... 11/00

TREATING LIQUIDS: DISPLACEMENT,  
ADSORPTION, SEPARATION,  
DEGASIFICATION, CHROMATOGRAPHY ..... 12/00, 15/00,  
17/00, 19/00

TREATING GASES OR VAPOURS:  
SEPARATION, RECOVERING, CHEMICAL  
OR BIOLOGICAL PURIFICATION OF  
WASTE GASES ..... 53/00

SEPARATION OF SUSPENDED PARTICLES  
FROM LIQUIDS

By sedimentation .....	21/00
By filtration	
processes .....	37/00
gravity filters; filters formed from filtering elements, pressure or suction filters.....	24/00; 25/00, 29/00
cartridge filters.....	27/00
filters with mobile filtering elements .....	33/00
filtering devices .....	35/00
filter circuits or combinations.....	36/00
By other processes.....	43/00

SEPARATION OF DISPERSED PARTICLES  
FROM GASES OR VAPOURS

Pretreatment of the gas or vapour.....	51/00
By gravity, inertia, centrifugal force; by filtration; by a combination of devices .....	45/00; 46/00; 50/00
By other methods .....	47/00, 49/00
FILTERING MATERIALS .....	39/00, 41/00
SEPARATION OF ISOTOPES .....	59/00
ABSORPTION, ADSORPTION, CHROMATOGRAPHY; OTHER SEPARATING METHODS .....	15/00, 15/08, 53/02, 53/14; 57/00
SEPARATION USING SEMI-PERMEABLE MEMBRANES; DIALYSIS, OSMOSIS, ULTRAFILTRATION .....	61/00 to 71/00

<b>1/00</b>	<b>Evaporating</b> (drying solid materials or objects by evaporating liquids therefrom F26B)
1/16	. by spraying (B01D 1/22 takes precedence)
1/22	. by bringing a thin layer of the liquid into contact with a heated surface
1/26	. Multiple-effect evaporating
<b>3/00</b>	<b>Distillation or related exchange processes in which liquids are contacted with gaseous media, e.g. stripping [2]</b>
3/10	. Vacuum distillation (B01D 3/12 takes precedence) [2]
3/12	. Molecular distillation [2]
3/14	. Fractional distillation
3/34	. with one or more auxiliary substances
3/42	. Regulation; Control
<b>5/00</b>	<b>Condensation of vapours; Recovering volatile solvents by condensation</b> (B01D 8/00 takes precedence; condensers F28B) [3]
<b>7/00</b>	<b>Sublimation</b> (B01D 8/00 takes precedence; freeze-drying F26)
7/02	. Crystallisation directly from the vapour phase (into single crystals C30B 23/00) [2]
<b>8/00</b>	<b>Cold traps; Cold baffles [3]</b>
<b>9/00</b>	<b>Crystallisation</b> (crystallisation directly from the vapour phase B01D 7/02; making single crystals C30B)
<b>11/00</b>	<b>Solvent extraction</b>
11/02	. of solids
11/04	. of solutions which are liquid
<b>12/00</b>	<b>Displacing liquid, e.g. from wet solids or from dispersions of liquids or from solids in liquids, by means of another liquid</b>
<b>15/00</b>	<b>Separating processes involving the treatment of liquids with solid sorbents; Apparatus therefor [4]</b>
15/02	. with moving adsorbents
15/04	. with ion-exchange materials as adsorbents (B01D 15/26 takes precedence) [1,8]
15/08	. Selective adsorption, e.g. chromatography

Note

In order that group B01D 15/08 may provide a basis for a complete search with respect to chromatography in general, all subject matter of general interest is classified in this group even if it is classified primarily in the application-oriented groups, for example dairy products A23C 9/00, treatment of blood e.g. A61M 1/36, optically active organic compounds C07B 57/00 or peptides C07K 1/00. [8]

15/10	. . characterised by constructional or operational features [8]
15/26	. . characterised by the separation mechanism [8]
15/42	. . characterised by the development mode, e.g. by displacement or by elution [8]
<b>17/00</b>	<b>Separation of liquids, not provided for elsewhere, e.g. by thermal diffusion</b>
17/02	. Separation of non-miscible liquids
17/025	. . by gravity, in a settling tank [4]
17/04	. . Breaking emulsions
<b>19/00</b>	<b>Degasification of liquids</b>
19/02	. Foam dispersion or prevention
<b>21/00</b>	<b>Separation of suspended solid particles from liquids by sedimentation</b> (differential sedimentation B03D 3/00)
21/01	. using flocculating agents [2]
21/02	. Settling tanks [4]
21/24	. Feed or discharge mechanisms for settling tanks
21/26	. Separation of sediment aided by centrifugal force
21/30	. Control equipment [4]

Filtration: Filtering material, regeneration thereof [2]

<b>24/00</b>	<b>Filters comprising loose filtering material, i.e. filtering material without any binder between the individual particles or fibres thereof</b> (B01D 27/00 takes precedence) [5]
24/02	. with the filter bed stationary during the filtration [5]
<b>25/00</b>	<b>Filters formed by clamping together several filtering elements or parts of such elements</b> (disc filters B01D 29/39) [5]
25/12	. Filter presses, i.e. of the plate or plate and frame type

- 27/00 Cartridge filters of the throw-away type [5]**  
 27/08 . Construction of the casing
- 29/00 Other filters with filtering elements stationary during filtration, e.g. pressure or suction filters, or filtering elements therefor**  
 29/01 . with flat filtering elements (B01D 29/39 takes precedence) [5]  
 29/09 . with filtering bands, e.g. movable between filtering operations [5]  
 29/11 . with bag, cage, hose, tube, sleeve or like filtering elements [5]  
 29/13 . . Supported filter elements [5]  
 29/31 . . Self-supporting filtering elements [5]  
 29/39 . with hollow discs side by side on, or around, one or more tubes, e.g. of the leaf type [5]  
 29/44 . Edge filtering elements, i.e. using contiguous impervious surfaces [4]  
 29/50 . with multiple filtering elements, characterised by their mutual disposition (B01D 29/39 takes precedence) [5]  
 29/60 . integrally combined with devices for controlling the filtration [5]  
 29/62 . Regenerating the filter material in the filter (devices for taking out of action one or more units of multi-unit filters, e.g. for regeneration, B01D 35/00) [5]  
 29/66 . . by flushing, e.g. counter-current air-bumps [5]  
 29/88 . having feed or discharge devices [5]
- 33/00 Filters with filtering elements which move during the filtering operation** (filters comprising loose filtering material moving or fluidised during filtration B01D 24/00; centrifuges B04B) [5]  
 33/04 . with filtering bands or the like supported on cylinders which are impervious for filtering [5]  
 33/044 . with filtering bands or the like supported on cylinders which are pervious for filtering (presses *per se* for squeezing out liquid using an endless pressing band B30B 9/02) [5]  
 33/06 . with rotary cylindrical filtering surfaces, e.g. hollow drums (B01D 33/044 takes precedence)  
 33/15 . with rotary plane filtering surfaces [5]  
 33/44 . Regenerating the filter material in the filter (devices for taking out of action one or more units of multi-unit filters, e.g. for regeneration, B01D 35/00) [5]
- 35/00 Other filtering devices; Auxiliary devices for filtration; Filter housing constructions**  
 35/06 . Filters making use of electricity or magnetism (ultrafiltration, microfiltration B01D 61/14; electrodialysis, electro-osmosis B01D 61/42; devices comprising filters and magnetic separators B03C 1/02) [5]  
 35/14 . Safety devices specially adapted for filtration; Devices for indicating clogging (incorporated in a throw-away filter B01D 27/00)  
 35/16 . Cleaning-out devices  
 35/30 . Filter housing constructions [4]
- 36/00 Filter circuits or combinations of filters with other separating devices** (devices for the removal of gas, e.g. air purge systems, B01D 35/00) [4,5]
- 37/00 Processes of filtration** (processes specially adapted for filtering gases B01D 46/00)
- 39/00 Filtering material for liquid or gaseous fluids**  
 39/02 . Loose filtering material, e.g. loose fibres  
 39/08 . Filter cloth, i.e. woven, knitted or interlaced material (metallic B01D 39/10)  
 39/10 . Filter screens essentially made of metal  
 39/14 . Other self-supporting filtering material  
 39/16 . . of organic material, e.g. synthetic fibres  
 39/18 . . . the material being cellulose or derivatives thereof  
 39/20 . . of inorganic material, e.g. asbestos paper or metallic filtering material of non-woven wires
- 41/00 Regeneration of the filtering material or filter elements outside the filter for liquid or gaseous fluids**
- 
- 43/00 Separating particles from liquids, or liquids from solids, otherwise than by sedimentation or filtration** (flotation processes B03D 1/00; drying solid materials or objects F26B)
- Separating dispersed particles from gases or vapours**
- 45/00 Separating dispersed particles from gases or vapours by gravity, inertia, or centrifugal forces**  
 45/12 . by centrifugal forces (centrifuges B04B; cyclones B04C)
- 46/00 Filters or filtering processes specially modified for separating dispersed particles from gases or vapours** (filtering elements B01D 24/00 to B01D 35/00; filtering material B01D 39/00; their regeneration outside the filters B01D 41/00)  
 46/02 . Particle separators, e.g. dust precipitators, having hollow filters made of flexible material  
 46/04 . . Cleaning filters  
 46/10 . Particle separators, e.g. dust precipitators, using filter plates, sheets, or pads having plane surfaces  
 46/18 . Particle separators, e.g. dust precipitators, using filtering belts  
 46/24 . Particle separators, e.g. dust precipitators, using rigid hollow filter bodies  
 46/28 . Particle separators, e.g. dust precipitators, using filter brushes  
 46/30 . Particle separators, e.g. dust precipitators, using loose filtering material  
 46/40 . Particle separators, e.g. dust precipitators, using edge filters, i.e. using contiguous impervious surfaces  
 46/42 . Auxiliary equipment or operation thereof  
 46/44 . . controlling filtration  
 46/48 . . Removing dust other than cleaning filters  
 46/50 . . Means for discharging electrostatic potential  
 46/52 . Particle separators, e.g. dust precipitators, using filters embodying folded material  
 46/54 . Particle separators, e.g. dust precipitators, using ultra-fine filter sheets or diaphragms
- 47/00 Separating dispersed particles from gases, air or vapours by liquid as separating agent** (B01D 45/00 takes precedence; fractionating columns or parts thereof B01D 3/14)  
 47/02 . by passing the gas or air or vapour over or through a liquid bath  
 47/04 . by passing the gas or air or vapour through foam  
 47/06 . Spray cleaning
- 49/00 Separating dispersed particles from gases, air or vapours by other methods**
- 50/00 Combinations of devices for separating particles from gases or vapours**

## B01D

**51/00** Auxiliary pretreatment of gases or vapours to be cleaned from dispersed particles [6]

**53/00** Separation of gases or vapours; Recovering vapours of volatile solvents from gases; Chemical or biological purification of waste gases, e.g. engine exhaust gases, smoke, fumes, flue gases or aerosols (recovery of volatile solvents by condensation B01D 5/00; sublimation B01D 7/00; cold traps, cold baffles B01D 8/00; separation of difficult-to-condense gases or air by liquefaction F25J 3/00) [3,5]

### Note

Processes using enzymes or micro-organisms in order to:  
(i) liberate, separate or purify a pre-existing compound or composition, or to  
(ii) treat textiles or clean solid surfaces of materials are further classified in subclass C12S. [6]

### Note

Group B01D 53/34 takes precedence over groups B01D 53/02 to B01D 53/32.

- 53/02 . by adsorption, e.g. preparative gas chromatography
- 53/04 . . with stationary adsorbents
- 53/047 . . . Pressure swing adsorption [6]
- 53/06 . . with moving adsorbents
- 53/14 . by absorption
- 53/18 . . Absorbing units; Liquid distributors therefor (B01D 3/14 takes precedence)
- 53/22 . by diffusion
- 53/24 . by centrifugal force (centrifuges B04B; cyclones B04C)
- 53/26 . Drying gases or vapours
- 53/28 . . Selection of materials for use as drying agents
- 53/30 . Controlling by gas-analysis apparatus
- 53/32 . by electrical effects other than those provided for in group B01D 61/00 [5]
- 53/34 . Chemical or biological purification of waste gases [3,6]
- 53/38 . . Removing components of undefined structure [6]
- 53/40 . . . Acidic components (B01D 53/44 takes precedence) [6]
- 53/42 . . . Basic components (B01D 53/44 takes precedence) [6]
- 53/44 . . . Organic components [6]
- 53/46 . . Removing components of defined structure [6]
- 53/48 . . . Sulfur compounds [6]
- 53/50 . . . . Sulfur oxides (B01D 53/60 takes precedence) [6]
- 53/54 . . . Nitrogen compounds [6]
- 53/56 . . . . Nitrogen oxides (B01D 53/60 takes precedence) [6]
- 53/60 . . . Simultaneously removing sulfur oxides and nitrogen oxides [6]
- 53/62 . . . Carbon oxides [6]
- 53/68 . . . Halogens or halogen compounds [6]
- 53/70 . . . . Organic halogen compounds [6]
- 53/73 . . After-treatment of removed components [6]
- 53/74 . . General processes for purification of waste gases; Apparatus or devices specially adapted therefor (B01D 53/92 takes precedence) [6]
- 53/77 . . . Liquid phase processes [6]
- 53/78 . . . . with gas-liquid contact [6]

- 53/79 . . . . Injecting reactants [6]
- 53/80 . . . Semi-solid phase processes, i.e. by using slurries [6]
- 53/81 . . . Solid phase processes [6]
- 53/82 . . . . with stationary reactants [6]
- 53/83 . . . . with moving reactants [6]
- 53/84 . . . Biological processes [6]
- 53/86 . . . Catalytic processes [6]
- 53/88 . . . . Handling or mounting catalysts [6]
- 53/90 . . . . Injecting reactants [6]
- 53/92 . . of engine exhaust gases (exhaust apparatus having means for purifying or otherwise treating exhaust gases F01N 3/00) [6]
- 53/94 . . . by catalytic processes [6]
- 53/96 . . Regeneration, reactivation or recycling of reactants [6]
- 57/00** Separation, other than separation of solids, not fully covered by a single other group or subclass, e.g. B03C
- 57/02 . by electrophoresis [3,5]
- 59/00** Separation of different isotopes of the same chemical element

**Processes of separation using semi-permeable membranes, e.g. dialysis, osmosis or ultrafiltration; Apparatus specially adapted therefor; Semi-permeable membranes or their production [5]**

### Note

In groups B01D 61/00 to B01D 71/00, in the absence of an indication to the contrary, classification is made in the last appropriate place. [5]

- 61/00** Processes of separation using semi-permeable membranes, e.g. dialysis, osmosis or ultrafiltration; Apparatus, accessories or auxiliary operations specially adapted therefor (separation of gases or vapours by diffusion B01D 53/22) [5]
- 61/02 . Reverse osmosis; Hyperfiltration [5]
- 61/14 . Ultrafiltration; Microfiltration [5]
- 61/16 . . Feed pretreatment [5]
- 61/18 . . Apparatus therefor [5]
- 61/20 . . Accessories; Auxiliary operations [5]
- 61/22 . . Controlling or regulating [5]
- 61/24 . Dialysis [5]
- 61/36 . Pervaporation; Membrane distillation; Liquid permeation [5]
- 61/38 . Liquid-membrane separation [5]
- 61/42 . Electrodialysis; Electro-osmosis [5]
- 61/58 . Multistep processes [5]
- 63/00** Apparatus in general for separation processes using semi-permeable membranes [5]
- 63/02 . Hollow fibre modules [5]
- 63/04 . . comprising multiple hollow fibre assemblies [5]
- 63/06 . Tubular membrane modules [5]
- 63/08 . Flat membrane modules [5]
- 63/10 . Spiral-wound membrane modules [5]
- 63/14 . Pleat-type membrane modules [5]
- 63/16 . Rotary, reciprocated or vibrated modules [5]
- 65/00** Accessories or auxiliary operations, in general, for separation processes or apparatus using semi-permeable membranes [5]

<b>67/00</b>	<b>Processes specially adapted for manufacturing semi-permeable membranes for separation processes or apparatus [5]</b>	(2)	Manufacturing processes, if considered of interest, are also classified in group B01D 67/00. [5]
<b>69/00</b>	<b>Semi-permeable membranes for separation processes or apparatus characterised by their form, structure or properties; Manufacturing processes specially adapted therefor [5]</b>	<b>71/00</b>	<b>Semi-permeable membranes for separation processes or apparatus characterised by the material; Manufacturing processes specially adapted therefor [5]</b>

**Notes**

- (1) In this group, the following term is used with the meaning indicated:
- “properties” covers those of a mechanical, physical or chemical nature. [5]

**Note**

Manufacturing processes, if considered of interest, are also classified in group B01D 67/00. [5]

**B01F MIXING, E.G. DISSOLVING, EMULSIFYING, DISPERSING (mixing paints B44D 3/06)****Note**

- In this subclass, the following term or expression is used with the meaning indicated:
- “mixing” covers stirring of a single material. [2]

**Subclass Index**

DISSOLVING .....	1/00	with rotary action.....	7/00, 9/00
MIXING, DISPERSING, EMULSIFYING		other mixers .....	11/00, 13/00
Processes .....	3/00	accessories .....	15/00
Apparatus		EMULSIFYING OR DISPERSING AGENTS .....	17/00
flow mixers .....	5/00		

<b>1/00</b>	<b>Dissolving</b> (separating by dissolving B01D; dissolving to effect cooling F25D 5/00) [2]	<b>11/00</b>	<b>Mixers with shaking, oscillating, or vibrating mechanisms</b> (B01F 13/00 takes precedence)
<b>3/00</b>	<b>Mixing, e.g. dispersing, emulsifying, according to the phases to be mixed</b>	<b>13/00</b>	<b>Other mixers; Mixing plant, including combinations of dissimilar mixers</b>
3/04	• gases or vapours with liquids (mixing non-alcoholic beverages with gases A23L 2/52)	<b>15/00</b>	<b>Accessories for mixers</b>
3/08	• liquids with liquids; Emulsifying	15/02	• Feed or discharge mechanisms
3/12	• liquids with solids (displacing one liquid by another in dispersions of solids in liquids B01D 12/00)	15/04	• Forming a predetermined ratio of the substances to be mixed (controlling ratio of two or more flows of fluid or fluent material G05D 11/00)

**Mixers**

<b>5/00</b>	<b>Flow mixers</b> (sprayers, atomisers B05B); <b>Mixers for falling materials, e.g. solid particles</b> (B01F 13/00 takes precedence; centrifugal mixers B04)	<b>17/00</b>	<b>Use of substances as emulsifying, wetting, dispersing, or foam-producing agents</b> (flotation agents B03D 1/001; used for particular applications, see the relevant classes, e.g. use of substances as detergents C11D) [3,5]
5/02	• Jet mixers	17/02	• Alkyl sulfonates or sulfuric acid ester salts derived from monohydric alcohols
5/04	• Injector mixers	17/06	• Esters of higher fatty acids with hydroxyalkylated sulfonic acids or salts thereof
5/06	• Mixers in which the components are pressed together through slits, orifices, or screens (turbo-mixers B01F 5/00; colloid-mills B02C; mixing valves F16K 11/00)	17/10	• Derivatives of low-molecular-weight sulfocarboxylic acids or sulfopolycarboxylic acids
<b>7/00</b>	<b>Mixers with rotary stirring devices in fixed receptacles; Kneaders</b> (B01F 13/00 takes precedence)	17/12	• Sulfonates of aromatic or alkylated aromatic compounds
7/02	• with stirrers rotating about a horizontal or inclined axis	17/14	• Derivatives of phosphoric acid
7/16	• with stirrers rotating about a vertical axis	17/16	• Amines or polyamines
7/18	• . . with paddles or arms	17/18	• Quaternary ammonium compounds
7/24	• . . with helices	17/22	• Amides or hydrazides
7/26	• . . with rotary discs	17/28	• Aminocarboxylic acids (protein hydrolysates B01F 17/30)
<b>9/00</b>	<b>Mixers with rotating receptacles</b> (B01F 13/00 takes precedence)	17/30	• Proteins; Protein hydrolysates
		17/34	• Higher-molecular-weight carboxylic acid esters (B01F 17/06 takes precedence)

- |       |                                                         |       |                                              |
|-------|---------------------------------------------------------|-------|----------------------------------------------|
| 17/38 | . Alcohols, e.g. oxidation products of paraffins        | 17/52 | . Natural or synthetic resins or their salts |
| 17/42 | . Ethers, e.g. polyglycol ethers of alcohols or phenols | 17/54 | . Silicon compounds                          |
|       |                                                         | 17/56 | . Glucosides; Mucilage; Saponines            |

**B01J** **CHEMICAL OR PHYSICAL PROCESSES, E.G. CATALYSIS, COLLOID CHEMISTRY; THEIR RELEVANT APPARATUS** (processes or apparatus for specific applications, see the relevant places for these processes or apparatus, e.g. F26B 3/02) [2]

### Notes

- (1) In this subclass, the following terms or expressions are used with the meanings indicated:
- “solid particles” includes such particles whether catalysts, reactants or inert in solid, semi-solid or pasty state; [2]
  - “fluidised particles” means finely divided solid particles lifted and agitated by a stream of fluid; [2]
  - “fluidised-bed technique” means fluid-solid contacting technique in which finely divided particles are lifted and agitated by a rising stream of fluid, said stream having such a speed as to form a lower dense phase (the “bed”) and an upper dilute fluidised phase of “fluidised particles”; [2]
  - “processes conducted in the presence of solid particles” does not include processes wherein the only solid particles present are formed during the reaction. [3]
- (2) In this subclass, tradenames that are often found in scientific and patent literature have been used in order to define precisely the scope of the groups. [6]

### Subclass Index

CHEMICAL, PHYSICAL, OR PHYSICO- CHEMICAL PROCESSES OR APPARATUS .....	3/00, 4/00, 6/00, 7/00, 8/00, 19/00	Raney type .....	25/00
CHEMICAL PROCESSES INVOLVING A GAS .....	8/00, 10/00, 12/00, 15/00	Molecular sieves .....	29/00
CHEMICAL PROCESSES INVOLVING A LIQUID .....	8/00, 10/00, 14/00, 16/00	containing hydrides, coordination complexes or organic compounds .....	31/00
CATALYSTS		Catalyst carriers in general .....	32/00
containing elements or inorganic compounds .....	21/00, 23/00, 27/00	Preparation .....	33/00 to 37/00
		Regeneration or reactivation of catalysts, in general .....	38/00
		SORBENT, FILTER AID COMPOSITIONS .....	20/00
		ION EXCHANGE PROCESSES .....	39/00 to 49/00
		COLLOID CHEMISTRY .....	13/00
		GRANULATION .....	2/00

- 2/00** **Processes or devices for granulating materials, in general** (granulating metals B22F 9/00, slag C04B 5/00, ores or scrap C22B 1/14; mechanical aspects of working of plastics or substances in a plastic state to make granules B29B 9/00; processes for granulating fertilisers characterised by their chemical constitution, see the relevant groups in C05B to C05G; chemical aspects of powdering or granulating of macromolecular substances C08J 3/12); **Rendering particulate materials free flowing in general, e.g. making them hydrophobic** [4]
- 2/02 . by dividing the liquid material into drops, e.g. by spraying, and solidifying the drops (evaporating by spraying B01D 1/16)
- 2/10 . in stationary drums or troughs, provided with kneading or mixing appliances
- 2/12 . in rotating drums
- 2/14 . in rotating dishes or pans
- 2/16 . by suspending the powder material in a gas, e.g. in fluidised beds or as a falling curtain
- 2/20 . by expressing the material, e.g. through sieves and fragmenting the extruded length
- 2/22 . by pressing in moulds or between rollers
- 2/28 . using special binding agents
- 2/30 . using agents to prevent the granules sticking together; Rendering particulate materials free flowing in general, e.g. making them hydrophobic [4]

- 3/00** **Processes of utilising sub-atmospheric or super-atmospheric pressure to effect chemical or physical change of matter; Apparatus therefor** (apparatus for compacting or sintering of metal powders B22F 3/00; pressure vessels in general F16J 12/00; pressure vessels for containing or storing compressed, liquefied or solidified gases F17C; pressure vessels for nuclear reactors G21C) [2]
- 3/02 . Feed or outlet devices therefor
- 3/03 . Pressure vessels, or vacuum vessels, having closure members or seals specially adapted therefor [3]
- 3/04 . Pressure vessels, e.g. autoclaves [2]
- 3/06 . Processes using ultra-high pressure, e.g. for the formation of diamonds; Apparatus therefor, e.g. moulds, dies (B01J 3/04 takes precedence; presses in general B30B) [2]
- 4/00** **Feed devices; Feed or outlet regulating devices** (feed or outlet devices for pressure vessels B01J 3/02)
- 4/02 . for feeding measured quantities of reagents
- 6/00** **Calcining; Fusing**
- 7/00** **Apparatus for generating gases** (production of inert gas mixtures B01J 19/14; for generating specific gases, see the relevant subclasses, e.g. C01B, C10J)

- 8/00 Chemical or physical processes in general, conducted in the presence of fluids and solid particles; Apparatus for such processes** (processes or devices for granulating material B01J 2/00; furnaces F27B) [2]
- 8/02 . with stationary particles, e.g. in fixed beds [2]
  - 8/04 . . the fluid passing successively through two or more beds [2]
  - 8/08 . with moving particles (with fluidised particles B01J 8/18) [2]
  - 8/16 . with particles being subjected to vibrations or pulsations (B01J 8/24 takes precedence) [2]
  - 8/18 . with fluidised particles [2]
  - 8/20 . . with liquid as a fluidising medium [2]
  - 8/24 . . according to "fluidised-bed" technique (B01J 8/20 takes precedence; combustion apparatus in which combustion takes place in a fluidised bed of fuel or other particles F23C 10/00) [2]
- 10/00 Chemical processes in general for reacting liquid with gaseous media other than in the presence of solid particles, or apparatus specially adapted therefor** (B01J 19/08 takes precedence; separation, e.g. distillation, also combined with chemical reactions B01D) [3]
- 12/00 Chemical processes in general for reacting gaseous media with gaseous media; Apparatus specially adapted therefor** (B01J 3/06, B01J 8/00, B01J 19/08 take precedence) [3]
- 13/00 Colloid chemistry, e.g. the production of colloidal materials or their solutions, not otherwise provided for; Making microcapsules or microballoons** (use of substances as emulsifying, wetting, dispersing or foam producing agents B01F 17/00)
- 13/02 . Making microcapsules or microballoons
  - 13/04 . . by physical processes, e.g. drying, spraying [5]
  - 13/06 . . by phase separation [5]
  - 13/20 . . After-treatment of capsule walls, e.g. hardening [5]
- 14/00 Chemical processes in general for reacting liquids with liquids; Apparatus specially adapted therefor** (B01J 8/00, B01J 19/08 take precedence) [3]
- 15/00 Chemical processes in general for reacting gaseous media with non-particulate solids, e.g. sheet material; Apparatus specially adapted therefor** (B01J 19/08 takes precedence) [3]
- 16/00 Chemical processes in general for reacting liquids with non-particulate solids, e.g. sheet material; Apparatus specially adapted therefor** (B01J 19/08 takes precedence) [3]
- 19/00 Chemical, physical, or physico-chemical processes in general** (physical treatment of fibres, threads, yarns, fabrics, feathers or fibrous goods made from such materials, see the relevant places for such treatment, e.g. D06M 10/00); **Their relevant apparatus** (packings, fillings or grids specially adapted for biological treatment of water, waste water or sewage C02F 3/10; splashing boards or grids specially adapted for trickle coolers F28F 25/00) [3]
- 19/02 . Apparatus characterised by being constructed of material selected for its chemically-resistant properties (refractory details of furnaces F27D) [3]
  - 19/06 . Solidifying liquids (making micro-capsules B01J 13/02) [3]
  - 19/08 . Processes employing the direct application of electric or wave energy, or particle radiation; Apparatus therefor (application of shock waves B01J 3/06; generating or handling plasma H05H 1/00) [3]
  - 19/10 . . employing sonic or ultrasonic vibrations (for auxiliary pretreatment of gases or vapours to be cleaned B01D 51/00; for cleaning B08B 3/12) [3]
  - 19/12 . . employing electromagnetic waves [3]
  - 19/14 . Production of inert gas mixtures; Use of inert gases in general (apparatus for generating gases B01J 7/00; separation of gases or vapours B01D 53/00) [3]
  - 19/16 . Preventing evaporation or oxidation of non-metallic liquids by applying a floating layer, e.g. of micro-balloons [3]
  - 19/18 . Stationary reactors having moving elements inside (B01J 19/08, B01J 19/26 take precedence) [3]
  - 19/24 . Stationary reactors without moving elements inside (B01J 19/08, B01J 19/26 take precedence; with stationary particles B01J 8/02) [3]
  - 19/26 . Nozzle-type reactors, i.e. the distribution of the initial reactants within the reactor is effected by their introduction or injection through nozzles [3]
  - 19/28 . Moving reactors, e.g. rotary drums (B01J 19/08 takes precedence; centrifuges B04B; rotary drum furnaces F27B 7/00) [3]
  - 19/30 . Loose or shaped packing elements, e.g. Raschig rings or Berl saddles, for pouring into the apparatus for mass or heat transfer [5]
  - 19/32 . Packing elements in the form of grids or built-up elements for forming a unit or module inside the apparatus for mass or heat transfer [5]
- Solid sorbent compositions; Filter aid compositions; Sorbents for chromatography; Catalysts** [3]
- Notes**
- (1) In groups B01J 20/00 to B01J 31/00, metal salts having an anion composed of metal and oxygen only, e.g. molybdates, are considered as chemically bound mixtures of the component metal oxides. [2,5]
  - (2) Attention is drawn to the definitions of groups of chemical elements following the title of section C. [2]
  - (3) In group B01J 20/00 and in each set of groups B01J 21/00 to B01J 31/00 and B01J 32/00 to B01J 38/00, in the absence of an indication to the contrary, classification is made in the last appropriate place. [2,5]
  - (4) Pure compounds or elements, or their recovery from solid sorbent compositions, filter aid compositions, or catalysts, are classified in the appropriate subclass for chemical compounds or elements. However, when it is explicitly stated that the pure compound or element, in a particular form, is especially useful as a solid sorbent, filter aid, or catalyst, it is further classified in group B01J 20/00 or B01J 35/00. [2]
- 20/00 Solid sorbent compositions or filter aid compositions; Sorbents for chromatography; Processes for preparing, regenerating or reactivating thereof** (use of solid sorbent compositions in liquid separation B01D 15/00; use of filter aid compositions B01D 37/00; use of sorbent compositions in gas separation B01D 53/02, B01D 53/14) [3,8]
- 20/02 . comprising inorganic material [3]
  - 20/04 . . comprising compounds of alkali metals, alkaline earth metals or magnesium [3]
  - 20/06 . . comprising oxides or hydroxides of metals not provided for in group B01J 20/04 [3]

## B01J

- 20/10 . . comprising silica or silicate [3]
- 20/20 . . comprising free carbon; comprising carbon obtained by carbonising processes (active carbon C01B 31/00) [3]
- 20/22 . comprising organic material [3]
- 20/28 . characterised by their form or physical properties [3]
- 20/281 . Sorbents specially adapted for preparative, analytical or investigative chromatography [8]
- 20/30 . Processes for preparing, regenerating or reactivating [3]

### Notes

- (1) In groups B01J 21/00 to B01J 38/00, the following term is used with the meaning indicated:
  - “catalyst” covers also a carrier forming part of the catalyst. [2,5]
- (2) Classification of the:
  - carriers;
  - forms or physical properties;
  - preparation or activation;
  - regeneration or reactivationof catalysts according to more than one of main groups B01J 21/00 to B01J 31/00 is made in the following general groups:
  - B01J 32/00 for such carriers;
  - B01J 35/00 for such forms or physical properties;
  - B01J 37/00 for such preparation or activation;
  - B01J 38/00 for such regeneration or reactivation. [4,5]

**21/00 Catalysts comprising the elements, oxides or hydroxides of magnesium, boron, aluminium, carbon, silicon, titanium, zirconium or hafnium [2]**

**23/00 Catalysts comprising metals or metal oxides or hydroxides, not provided for in group B01J 21/00 (B01J 21/00 takes precedence) [2]**

- 23/02 . of the alkali- or alkaline earth metals or beryllium [2]
- 23/04 . . Alkali metals [2]
- 23/06 . of zinc, cadmium or mercury [2]
- 23/08 . of gallium, indium or thallium [2]
- 23/10 . of rare earths [2]
- 23/12 . of actinides [2]
- 23/14 . of germanium, tin or lead [2]
- 23/16 . of arsenic, antimony, bismuth, vanadium, niobium, tantalum, polonium, chromium, molybdenum, tungsten, manganese, technetium or rhenium [2]
- 23/38 . of noble metals [2]
- 23/40 . . of the platinum group metals [2]
- 23/42 . . . Platinum [2]
- 23/44 . . . Palladium [2]
- 23/46 . . . Ruthenium, rhodium, osmium or iridium [2]
- 23/48 . . Silver or gold [2]
- 23/54 . . combined with metals, oxides or hydroxides provided for in groups B01J 23/02 to B01J 23/16 [2]
- 23/70 . of the iron group metals or copper [2]
- 23/72 . . Copper [2]
- 23/74 . . . Iron group metals [2]
- 23/745 . . . Iron [6]
- 23/75 . . . Cobalt [6]
- 23/755 . . . Nickel [6]
- 23/76 . . combined with metals, oxides or hydroxides provided for in groups B01J 23/02 to B01J 23/16 [2]

- 23/89 . . combined with noble metals [3]
- 23/90 . Regeneration or reactivation [2]

**25/00 Catalysts of the Raney type [2]**

**27/00 Catalysts comprising the elements or compounds of halogens, sulfur, selenium, tellurium, phosphorus or nitrogen; Catalysts comprising carbon compounds [4]**

### Note

Metal catalysts or metal oxide catalysts activated or conditioned by halogens, sulfur or phosphorus, or compounds thereof are classified in the appropriate groups for metal catalysts or metal oxide catalysts. [2,5]

- 27/02 . Sulfur, selenium or tellurium; Compounds thereof [4]
- 27/04 . . Sulfides [2]
- 27/053 . . Sulfates [4]
- 27/057 . . Selenium or tellurium; Compounds thereof [4]
- 27/06 . Halogens; Compounds thereof [4]
- 27/14 . Phosphorus; Compounds thereof [4]
- 27/20 . Carbon compounds [2]
- 27/24 . Nitrogen compounds [2]
- 27/28 . Regeneration or reactivation [2]

**29/00 Catalysts comprising molecular sieves [2]**

### Note

In this group, the following term is used with the meaning indicated: [6]

- “zeolites” means: [6]
  - (i) crystalline aluminosilicates with base-exchange and molecular sieve properties, having three dimensional, microporous lattice framework structure of tetrahedral oxide units; [6]
  - (ii) compounds isomorphous to those of the former category, wherein the aluminium or silicon atoms in the framework are partly or wholly replaced by atoms of other elements, e.g. by gallium, germanium, phosphorus or boron. [6]

**31/00 Catalysts comprising hydrides, coordination complexes or organic compounds (catalyst compositions used only in polymerisation reactions C08) [2]**

### Note

In this group, the presence of water is disregarded for classification purposes. [2]

- 31/02 . containing organic compounds or metal hydrides [2]
- 31/04 . . containing carboxylic acids or their salts [2]
- 31/06 . . containing polymers [2]
- 31/12 . . containing organo-metallic compounds or metal hydrides [2]
- 31/16 . containing coordination complexes [2]
- 31/26 . containing in addition, inorganic metal compounds not provided for in groups B01J 31/02 to B01J 31/16 [2]
- 31/40 . Regeneration or reactivation [2]



**Notes**

- (1) When classifying in groups B01J 32/00 to B01J 38/00, any part of a catalyst that is not identified by this classification, and which itself is determined to be novel and non-obvious, must also be classified in groups B01J 21/00 to B01J 31/00. Such a part of a catalyst can be either a single substance or a composition in itself. [6,8]
- (2) Any part of a catalyst which is not identified by the classification according to Note (1) above, and which is considered to represent information of interest for search, may also be classified. This can, for example, be the case when it is considered of interest to enable searching of catalysts using a combination of classification symbols. Such non-obligatory classification should be given as “additional information”. [8]

**32/00 Catalyst carriers in general [4]**

**33/00 Protection of catalysts, e.g. by coating [2]**

**35/00 Catalysts, in general, characterised by their form or physical properties [2]**

**37/00 Processes, in general, for preparing catalysts; Processes, in general, for activation of catalysts (protecting by coating B01J 33/00) [4]**

**38/00 Regeneration or reactivation of catalysts, in general [4]**

**Ion-exchange [3]****Notes**

- (1) In groups B01J 39/00 to B01J 49/00:
- ion-exchange covers all processes whereby ions are exchanged between the solid exchanger and the liquid to be treated and wherein the exchanger is not soluble in the liquid to be treated; [3]

- ion-exchange processes cover also ion-exchange in combination with complex or chelate forming reactions. [3]
- (2) In groups B01J 39/00 to B01J 49/00, in the absence of an indication to the contrary, classification is made in the last appropriate place. [3]
- 39/00 Cation exchange; Use of material as cation exchangers; Treatment of material for improving the cation exchange properties** (ion-exchange chromatography processes B01D 15/26) [3,8]
- 39/26 . Cation exchangers for chromatographic processes [8]
- 41/00 Anion exchange; Use of material as anion exchangers; Treatment of material for improving the anion exchange properties** (ion-exchange chromatography processes B01D 15/26) [3,8]
- 41/20 . Anion exchangers for chromatographic processes [8]
- 43/00 Amphoteric ion-exchange, i.e. using ion-exchangers having cationic and anionic groups; Use of material as amphoteric ion-exchangers; Treatment of material for improving their amphoteric ion-exchange properties** (ion-exchange chromatography processes B01D 15/26) [3,8]
- 45/00 Ion-exchange in which a complex or a chelate is formed; Use of material as complex or chelate forming ion-exchangers; Treatment of material for improving the complex or chelate forming ion-exchange properties** (ion-exchange chromatography processes B01D 15/26) [3,8]
- 47/00 Ion-exchange processes in general; Apparatus therefor** (ion-exchange chromatography processes or apparatus B01D 15/08) [3,8]
- 49/00 Regeneration or reactivation of ion-exchangers; Apparatus therefor** (ion-exchange chromatography processes or apparatus B01D 15/08) [3,8]

**B01L CHEMICAL OR PHYSICAL LABORATORY APPARATUS FOR GENERAL USE** (apparatus for medical or pharmaceutical purposes A61; apparatus for industrial purposes or laboratory apparatus whose construction and performance are comparable to that of similar industrial apparatus, see the relevant classes for industrial apparatus, particularly subclasses of B01 and C12; separating or distilling apparatus B01D; mixing or stirring devices B01F; atomisers B05B; sieves B07B; corks, bungs B65D; handling liquids in general B67; vacuum pumps F04; siphons F04F 10/00; taps, stop-cocks F16K; tubes, tube joints F16L; apparatus specially adapted for investigating or analysing materials G01, particularly G01N; electrical or optical apparatus, see the relevant classes in sections G and H)

**Note**

This subclass covers only laboratory apparatus which is either applicable solely to laboratory purposes or which, by reason of its simple construction and adaptability, is such as would not be suitable for industrial use.

- |                                                                                                                                                                                                                      |                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1/00 Enclosures; Chambers</b> (fume cupboards B08B; provided with manipulation devices, glove boxes B25J; cooling chambers F25D)</p>                                                                           | <p>3/08 . Flasks (specially adapted for distillation B01D)</p> <p>3/10 . Wash bottles</p> <p>3/12 . Gas jars or cylinders</p> <p>3/14 . Test tubes</p> <p>3/16 . Retorts</p> <p>3/18 . Spatulas</p> |
| <p><b>3/00 Containers or dishes for laboratory use, e.g. laboratory glassware</b> (bottles B65D; apparatus for enzymology or microbiology C12M 1/00); <b>Droppers</b> (receptacles for volumetric purposes G01F)</p> |                                                                                                                                                                                                     |
| <p>3/02 . Burettes; Pipettes</p>                                                                                                                                                                                     |                                                                                                                                                                                                     |
| <p>3/04 . Crucibles</p>                                                                                                                                                                                              |                                                                                                                                                                                                     |
| <p>3/06 . Crystallising dishes</p>                                                                                                                                                                                   |                                                                                                                                                                                                     |

## **B01L**

- 5/00 Gas handling apparatus** (gas jars or cylinders B01L 3/12; cold traps, cold baffles B01D 8/00; separation of gases or vapours B01D 53/00; gas generators B01J 7/00; steam traps F16T)
- 7/00 Heating or cooling apparatus** (evaporators B01D 1/00; drying gases or vapours, e.g. desiccators, B01D 53/26; autoclaves B01J 3/04; burners F23D; refrigeration or cooling, in general F25; drying ovens F26B; furnaces, ovens F27) **[3]**

**9/00 Supporting devices; Holding devices** (tweezers, tongs B25B)

**11/00 Apparatus not provided for in the preceding groups** (chemical indicators in general G01N)

## B02 CRUSHING, PULVERISING, OR DISINTEGRATING; PREPARATORY TREATMENT OF GRAIN FOR MILLING

**B02B PREPARING GRAIN FOR MILLING; REFINING GRANULAR FRUIT TO COMMERCIAL PRODUCTS BY WORKING THE SURFACE** (making dough from cereals directly A21C; preservation or sterilisation of cereals A23B; cleaning fruit A23N; preparation of malt C12C)

- |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1/00</b>    <b>Preparing grain for milling or like processes</b> (hulling, husking, decorticating, polishing, removing the awns, or degerming B02B 3/00)</p> <p><b>3/00</b>    <b>Hulling; Husking; Decorticating</b> (decorticating textile fibres D01B 1/00); <b>Polishing; Removing the awns</b> (in threshing machines A01F 12/00); <b>Degerming</b></p> | <p><b>5/00</b>    <b>Grain treatment not otherwise provided for</b></p> <p><b>7/00</b>    <b>Auxiliary devices</b></p> <p>7/02    . Feeding or discharging devices</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**B02C CRUSHING, PULVERISING, OR DISINTEGRATING IN GENERAL; MILLING GRAIN** (obtaining metallic powder by crushing, grinding or milling B22F 9/02)

### Subclass Index

#### DISINTEGRATING IN GENERAL

Using reciprocating or rotary  
crushers ..... 1/00, 2/00

Using rollers..... 4/00

Using discs ..... 7/00

Using rotary beaters..... 13/00

By tumbling ..... 17/00

Otherwise ..... 15/00, 18/00,  
19/00

Auxiliary methods, accessories..... 23/00

#### DISINTEGRATING PLANT; CONTROL

ARRANGEMENTS ..... 21/00; 25/00

#### MILLING METHODS OR MILLS

#### SPECIALY ADAPTED FOR GRAIN;

ACCESSORIES THEREFOR ..... 4/00, 7/00,  
9/00; 11/00

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1/00</b>    <b>Crushing or disintegrating by reciprocating members</b></p> <p><b>2/00</b>    <b>Crushing or disintegrating by gyratory or cone crushers</b></p> <p><b>4/00</b>    <b>Crushing or disintegrating by roller mills</b> (with milling members in the form of rollers or balls co-operating with rings or discs B02C 15/00; roller mills or roll refiners exclusively for chocolate A23G 1/04)</p> <p><b>7/00</b>    <b>Crushing or disintegrating by disc mills</b> (apparatus specially adapted for manufacture or treatment of cocoa or cocoa products exclusively A23G 1/04)</p> <p><b>9/00</b>    <b>Other milling methods or mills specially adapted for grain</b></p> <p><b>11/00</b>    <b>Other auxiliary devices or accessories specially adapted for grain mills</b></p> <p><b>13/00</b>    <b>Disintegrating by mills having rotary beater elements</b></p> <p><b>15/00</b>    <b>Disintegrating by milling members in the form of rollers or balls co-operating with rings or discs</b></p> <p><b>17/00</b>    <b>Disintegrating by tumbling mills, i.e. mills having a container charged with the material to be disintegrated with or without special disintegrating members such as pebbles or balls</b> (high-speed drum mills B02C 19/00)</p> <p>17/16    . Mills in which a fixed container houses stirring means tumbling the charge</p> | <p><b>18/00</b>    <b>Disintegrating by knives or other cutting or tearing members which chop material into fragments</b> (slicing B26D); <b>Mincing machines or similar apparatus using worms or the like</b> (machines for domestic use not covered otherwise A47J 43/04; multi-purpose machines for preparing food A47J 44/00)</p> <p>18/02    . with reciprocating knives</p> <p>18/06    . with rotating knives</p> <p>18/26    . with knives which both reciprocate and rotate</p> <p><b>19/00</b>    <b>Other disintegrating devices or methods</b> (for grain B02C 9/00)</p> <p>19/06    . Jet mills</p> <p><b>21/00</b>    <b>Disintegrating plant with or without drying of the material</b> (for grain B02C 9/00)</p> <p><b>23/00</b>    <b>Auxiliary methods or auxiliary devices or accessories specially adapted for crushing or disintegrating not provided for in groups B02C 1/00 to B02C 21/00 or not specially adapted to apparatus covered by one only of groups B02C 1/00 to B02C 21/00</b> (separating or sorting in general B03, B04, B07)</p> <p>23/18    . Adding fluid, other than for crushing or disintegrating by fluid energy (feeding devices B02C 23/00) [2]</p> <p><b>25/00</b>    <b>Control arrangements specially adapted for crushing or disintegrating</b></p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**B03 SEPARATION OF SOLID MATERIALS USING LIQUIDS OR USING PNEUMATIC TABLES OR JIGS; MAGNETIC OR ELECTROSTATIC SEPARATION OF SOLID MATERIALS FROM SOLID MATERIALS OR FLUIDS; SEPARATION BY HIGH-VOLTAGE ELECTRIC FIELDS** (separating isotopes B01D 59/00; crushing or disintegrating B02C; centrifuges or vortex apparatus for carrying out physical processes B04) [5]

**B03B SEPARATING SOLID MATERIALS USING LIQUIDS OR USING PNEUMATIC TABLES OR JIGS** (removing fluids from solids B01D; magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high voltage electric fields B03C; flotation, differential sedimentation B03D; separating by dry methods B07; screening or sifting B07B; by picking B07C; separating peculiar to particular materials and provided for in other single classes, see the relevant classes)

#### Subclass Index

PRETREATMENT .....	1/00	COMBINATIONS OF PROCESSES OR APPARATUS.....	7/00
WASHING, WET SEPARATING, SEPARATING BY PNEUMATIC JIGS; FEEDING AND DISCHARGING PRODUCTS TREATED THEREBY .....	4/00, 5/00; 11/00	ARRANGEMENTS OF PLANT.....	9/00
		CONTROL BY PHYSICAL EFFECTS .....	13/00

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<b>1/00</b>	<b>Conditioning for facilitating separation by altering physical properties of the matter to be treated</b> (pretreatment of ores in general C22B)	<b>7/00</b>	<b>Combinations of wet processes or apparatus with other processes or apparatus, e.g. for dressing ores or garbage</b>
<b>4/00</b>	<b>Separating by pneumatic tables or by pneumatic jigs</b> (sink-float separation using dry heavy media B03B 5/28) [2]	<b>9/00</b>	<b>General arrangement of separating plant, e.g. flow sheets</b>
<b>5/00</b>	<b>Washing granular, powdered or lumpy materials; Wet separating</b> (separating by pneumatic tables or by pneumatic jigs B03B 4/00) [2]	<b>11/00</b>	<b>Feed or discharge devices integral with washing or wet-separating equipment</b> (filling or emptying devices <u>per se</u> B65G 65/00)
5/28	. by sink-float separation [2]	<b>13/00</b>	<b>Control arrangements specially adapted for wet-separating apparatus or for dressing plant, using physical effects</b> (detecting, measuring, or analysing devices G01)

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**B03C MAGNETIC OR ELECTROSTATIC SEPARATION OF SOLID MATERIALS FROM SOLID MATERIALS OR FLUIDS; SEPARATION BY HIGH-VOLTAGE ELECTRIC FIELDS** (filters making use of electricity or magnetism B01D 35/06; separating isotopes B01D 59/00; combinations of magnetic or electrostatic separation with separation of solids by other means B03B, B07B; separating sheets from piles B65H 3/00; magnets or magnet coils per se H01F) [5]

<b>1/00</b>	<b>Magnetic separation</b>	3/40	. . . Electrode constructions
1/005	. Pretreatment specially adapted for magnetic separation [6]	3/45	. . . Collecting-electrodes
1/02	. acting directly on the substance being separated [5]	3/66	. . Applications of electricity supply techniques
<b>3/00</b>	<b>Separating dispersed particles from gases or vapour, e.g. air, by electrostatic effect</b> (exhaust or silencing apparatus for machines or engines having means for removing solid constituents of exhaust, using electric or electrostatic separators F01N 3/00)	<b>5/00</b>	<b>Separating dispersed particles from liquids by electrostatic effect</b> (combined with centrifuges B04B 5/00) [2]
3/02	. Plant or installations having external electricity supply (electrode constructions B03C 3/40)	<b>7/00</b>	<b>Separating solids from solids by electrostatic effect</b>
3/04	. . dry type	<b>9/00</b>	<b>Electrostatic separation not provided for in any single one of the other main groups of this subclass</b>
3/34	. Constructional details or accessories or operation thereof	<b>11/00</b>	<b>Separation by high-voltage electrical fields, not provided for in other groups of this subclass [8]</b>

**B03D FLOTATION; DIFFERENTIAL SEDIMENTATION** (sedimentation in general B01D 21/00; in combination with other separation of solids B03B; sink-float separation B03B 5/28; detergents, soaps C11D)

**1/00 Flotation** (froth dispersion B01D 19/02; conditioning for flotation, general arrangement of plant B03B)

1/001 . Flotation agents (conditioners B03B 1/00) [5]

**Note**

In this group in the absence of an indication to the contrary, classification is made in the last appropriate place. [5]

1/002 . . Inorganic compounds [5]

1/004 . . Organic compounds [5]

1/018 . . Mixtures of inorganic and organic compounds [5]

1/14 . Flotation machines (devices for feeding measured quantities of reagents B01J 4/02; flotation apparatus for enzymology or microbiology C12M 1/04)

**3/00 Differential sedimentation**

## B04 CENTRIFUGAL APPARATUS OR MACHINES FOR CARRYING-OUT PHYSICAL OR CHEMICAL PROCESSES

### Note

Attention is drawn to the Notes following the subsection title “SEPARATING; MIXING”. [4]

**B04B CENTRIFUGES** (high-speed drum mills B02C 19/00; domestic spin driers D06F; analysing, measuring or monitoring physical or chemical properties of samples during centrifuging, see the relevant subclasses for these procedures, e.g. G01N)

### Note

This subclass covers machines or apparatus for separating, mixing, drying, extracting, purifying, or like treating in which centrifugal effects are generated by rotary bowls or other rotors. Where such machines or apparatus involve pumping effects, such effects must be incidental or subsidiary to the treating.

#### Types of centrifuges: Centrifuges characterised by discharging means

- 1/00 Centrifuges with rotary bowls provided with solid jackets for separating predominantly liquid mixtures with or without solid particles
- 3/00 Centrifuges with rotary bowls in which solid particles or bodies become separated by centrifugal force and simultaneously sifting or filtering
- 5/00 Other centrifuges

- 9/00 Drives specially designed for centrifuges; Arrangement or disposition of transmission gearing; Suspending or balancing rotary bowls
- 11/00 Feeding, charging, or discharging bowls (B04B 1/00, B04B 3/00, B04B 7/00 take precedence)
- 13/00 Control arrangements specially designed for centrifuges; Programme control of centrifuges (control arrangements for feed, charge, or discharge B04B 11/00)
- 15/00 Other accessories for centrifuges

#### Elements: Accessories

- 7/00 Elements of centrifuges (drives B04B 9/00; feeding, charging, or discharging accessories or devices B04B 11/00)

**B04C APPARATUS USING FREE VORTEX FLOW, E.G. CYCLONES** (jet mills B02C 19/06; exhaust or silencing apparatus for machines or engines having means for removing solid constituents of exhaust, using inertial or centrifugal separators F01N 3/037; cyclonic type combustion apparatus F23)

### Note

This subclass covers apparatus for separating, mixing or like treating in which centrifugal effects are generated by free vortex flow, otherwise than by rotary bowls, rotors or curved passages.

- |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>1/00 Apparatus in which the main direction of flow follows a flat spiral</li> <li>3/00 Apparatus in which the axial direction of the vortex remains unchanged</li> <li>5/00 Apparatus in which the axial direction of the vortex is reversed</li> </ul> | <ul style="list-style-type: none"> <li>7/00 Apparatus not provided for in group B04C 1/00, B04C 3/00 or B04C 5/00; Multiple arrangements not provided for in one of the groups B04C 1/00, B04C 3/00, or B04C 5/00; Combinations of apparatus covered by two or more of the groups B04C 1/00, B04C 3/00, or B04C 5/00</li> <li>9/00 Combinations with other devices, e.g. fans (with filters B01D 50/00)</li> <li>11/00 Accessories, e.g. safety or control devices, not otherwise provided for (with electrostatic precipitating arrangements B03C 3/04)</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**B05 SPRAYING OR ATOMISING IN GENERAL; APPLYING LIQUIDS OR OTHER FLUENT MATERIALS TO SURFACES, IN GENERAL** (domestic cleaning A47L; cleaning in general by methods essentially involving the use or presence of liquid B08B 3/00; sand-blasting B24C; coating of articles during shaping of substances in a plastic state B29C 39/10, B29C 39/00, B29C 41/02, B29C 41/00, B29C 43/18, B29C 43/22, B29C 45/14, B29C 47/02; for further classification of forming layered products, see B32B; printing, copying B41; conveying articles or workpieces through baths of liquid B65G, e.g. B65G 49/00; handling webs or filaments in general B65H; surface treatment of glass by coating C03C 17/00, C03C 25/10; coating or impregnation of mortars, concrete, stone or ceramics C04B 41/45, C04B 41/60, C04B 41/81; paints, varnishes, lacquers C09D; enamelling of metals, applying a vitreous layer to metals, chemical cleaning or de-greasing of metallic objects C23; electroplating C25D; treating of textile materials by liquids, gases or vapours D06B; laundering D06F; treating roads E01C; apparatus or processes for the preparation or treatment of photosensitive materials G03; apparatus or processes, restricted to a purpose fully provided for in a single other class, see the relevant class covering the purpose) [2]

### Note

In this class, the following terms or expressions are used with the meanings indicated:

- “other fluent materials” includes semiliquids, pastes, melts, solutions, dispersions, suspensions, particulate materials, gases or vapours; [2]
- “particulate materials” includes powders, granules, short fibres or chips; [2]
- “coating” means the materials applied. The coating may be a liquid having become solid after drying, e.g. paint. [2]

**B05B SPRAYING APPARATUS; ATOMISING APPARATUS; NOZZLES** (spray-mixers with nozzles B01F 5/00; processes for applying liquids or other fluent materials to surfaces by spraying B05D; means for pumping fluids F04; valves, e.g. water-taps, F16K) [2]

### Notes

- (1) This subclass covers particularly apparatus for the release or projection of drops or droplets into the atmosphere or into a chamber to form a mist or the like. For this purpose, the materials to be projected may be suspended in a stream of gas or vapour. [2]
- (2) Attention is drawn to the Note following the title of class B05. [2]

### Subclass Index

APPARATUS CHARACTERISED BY THEIR  
STRUCTURE..... 3/00, 9/00,  
11/00

APPARATUS FOR DISCHARGE OF FLUIDS  
FROM TWO OR MORE SOURCES ..... 7/00

ELECTROSTATIC OR ELECTRIC  
APPARATUS ..... 5/00

APPARATUS CHARACTERISED BY  
MANIPULATION THEREOF ..... 11/00, 13/00

OTHER APPARATUS..... 17/00

OUTLETS OR OTHER DETAILS ..... 1/00, 15/00

DELIVERY CONTROL..... 12/00

- 1/00 Nozzles, spray heads or other outlets, with or without auxiliary devices such as valves, heating means** (B05B 3/00, B05B 5/00, B05B 7/00 take precedence; devices for applying liquids or other fluent materials to surfaces by contact B05C; nozzles for ink-jet printing mechanisms B41J 2/135; closures for containers B65D; nozzles for liquid-dispensing, e.g. in vehicle service stations, B67D 5/37)
- 1/02 . designed to produce a jet, spray, or other discharge of particular shape or nature, e.g. in single drops (B05B 1/26, B05B 1/28, B05B 1/34 take precedence)
- 1/14 . with multiple outlet openings (B05B 1/02, B05B 1/26 take precedence); with strainers in or outside the outlet opening
- 1/18 . . Roses; Shower heads
- 1/26 . with means for mechanically breaking-up or deflecting the jet after discharge, e.g. with fixed deflectors; Breaking-up the discharged liquid or other fluent material by impinging jets

- 1/28 . with integral means for shielding the discharged liquid or other fluent material, e.g. to limit area of spray; with integral means for catching drips or collecting surplus liquid or other fluent material (means for any of these purposes, per se, B05B 15/04)
- 1/30 . designed to control volume of flow, e.g. with adjustable passages (B05B 1/02 takes precedence)
- 1/34 . designed to influence the nature of flow of the liquid or other fluent material, e.g. to produce swirl (B05B 1/30 takes precedence)
- 3/00 Spraying or sprinkling apparatus with moving outlet elements or moving deflecting elements** (B05B 5/00 takes precedence)
- 3/02 . with rotating elements
- 5/00 Electrostatic spraying apparatus; Spraying apparatus with means for charging the spray electrically; Apparatus for spraying liquids or other fluent materials by other electric means**
- 5/025 . Discharge apparatus, e.g. electrostatic spray guns [5]

**B05B – B05C**

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| <p>5/04 . . characterised by having rotary outlet or deflecting elements</p> <p>5/06 . using electric arc</p> <p>5/08 . Plant for applying liquids or other fluent materials to objects</p> <p><b>7/00 Spraying apparatus for discharge of liquids or other fluent materials from two or more sources, e.g. of liquid and air, of powder and gas</b> (B05B 3/00, B05B 5/00 take precedence; outlets not specially modified for two media B05B 1/00)</p> <p>7/02 . Spray pistols; Apparatus for discharge (B05B 7/14, B05B 7/16, B05B 7/24 take precedence)</p> <p>7/04 . . with arrangements for mixing liquids or other fluent materials before discharge (mixing in general B01F, e.g. B01F 5/00; mixing valves F16K 11/00) [2]</p> <p>7/14 . designed for spraying particulate materials (B05B 7/16 takes precedence)</p> <p>7/16 . incorporating means for heating the material to be sprayed</p> <p>7/24 . with means, e.g. a container, for supplying liquid or other fluent material to a discharge device (B05B 7/14, B05B 7/16, B05B 11/00 take precedence)</p> <p><b>9/00 Spraying apparatus for discharge of liquid or other fluent material without essentially mixing with gas or vapour</b> (B05B 11/00 takes precedence) [3]</p> <p>9/03 . characterised by means for supplying liquid or other fluent material [3]</p> <p>9/04 . . with pressurised or compressible container (aerosol containers B65D 83/14); with pump [3]</p> <p>9/08 . . . Apparatus to be carried on or by a person, e.g. of knapsack type (details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00) [3,4]</p> <p><b>11/00 Single-unit, i.e. unitary, hand-held apparatus in which flow of liquid or other fluent material is produced by the operator at the moment of use</b> [2]</p> <p>11/02 . the flow being effected by a follower, e.g. membrane, floating piston, in container for liquid or other fluent material [2]</p> | <p>11/04 . the flow being effected by deformation of container for liquid or other fluent material [2]</p> <p>11/06 . the spray being effected by gas or vapour flow, e.g. from a compressible bulb [2,3]</p> <p><b>12/00 Arrangements or special adaptations of delivery controlling means in spraying systems</b> (controlling in general G05) [2]</p> <p>12/08 . responsive to condition of liquid or other fluent material discharged, of ambient medium or of target [2]</p> <p><b>13/00 Machines or plants for applying liquids or other fluent materials to surfaces of objects or other work by spraying, not covered by groups B05B 1/00 to B05B 11/00</b> (processes for applying liquids or other fluent materials to surfaces in general B05D; means for supplying or discharging liquid or other fluent material for this purpose, see the relevant one of groups B05B 1/00 to B05B 12/00) [3]</p> <p>13/02 . Means for supporting work; Arrangement or mounting of spray heads; Adaptation or arrangement of means for feeding work (B05B 13/06 takes precedence)</p> <p>13/06 . specially designed for treating the inside of hollow bodies (spray heads B05B 1/00 to B05B 7/00)</p> <p><b>15/00 Details of spraying plant or apparatus not otherwise provided for; Accessories</b> (accessories applicable to other methods of applying liquids or other fluent materials to surfaces B05C) [4]</p> <p>15/02 . Arrangements or devices for cleaning discharge openings</p> <p>15/04 . Control of spray area, e.g. masking, side shields; Means for collection or re-use of excess material (B05B 1/28 takes precedence)</p> <p>15/12 . Spray booths [4]</p> <p><b>17/00 Apparatus for spraying or atomising liquids or other fluent materials, not covered by any other group of this subclass</b> (dropping or releasing powdered, liquid or gaseous matter in flight B64D 1/00) [2]</p> <p>17/04 . operating with special methods</p> |
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**B05C APPARATUS FOR APPLYING LIQUIDS OR OTHER FLUENT MATERIALS TO SURFACES, IN GENERAL** (spraying apparatus, atomising apparatus, nozzles B05B; plant for applying liquids or other fluent materials to objects by electrostatic spraying B05B 5/08; processes for applying liquids or other fluent materials to surfaces B05D) [2]

**Notes**

- (1) This subclass covers apparatus or hand tools, in general, for applying liquids or other fluent materials to a surface or a part thereof, by any mechanical or physical method, in particular apparatus for obtaining a uniform distribution of liquids or other fluent materials on a surface. [2]
- (2) *Hand tools or apparatus using hand-held tools are classified in group B05C 17/00. [2009.01]*
- (3) Attention is drawn to the Note following the title of class B05. [2]

**Subclass Index**

APPARATUS CHARACTERISED BY THE MEANS USED .....	1/00, 3/00, 5/00, 9/00	HAND TOOLS.....	17/00
APPARATUS FOR SPECIAL WORK OR MATERIALS .....	7/00, 19/00	DETAILS OR ACCESSORIES .....	11/00, 13/00, 15/00, 17/00, 21/00



- 1/00 Apparatus in which liquid or other fluent material is applied to the surface of the work by contact with a member carrying the liquid or other fluent material, e.g. a porous member loaded with a liquid to be applied as a coating** (B05C 5/02, B05C 7/00, B05C 19/00 take precedence) [2]
- 1/02 . for applying liquid or other fluent material to separate articles
- 1/04 . for applying liquid or other fluent material to work of indefinite length
- 1/08 . . using a roller [2]
- 1/10 . . . the liquid or other fluent material being supplied from inside the roller
- 1/12 . . . the work being fed round the roller (B05C 1/10 takes precedence)
- 3/00 Apparatus in which the work is brought into contact with a bulk quantity of liquid or other fluent material** (B05C 19/00 takes precedence) [2]
- 3/02 . the work being immersed in the liquid or other fluent material
- 3/09 . . for treating separate articles
- 5/00 Apparatus in which liquid or other fluent material is projected, poured or allowed to flow on to the surface of the work** (B05C 7/00, B05C 19/00 take precedence; essentially involving spraying or electrostatic projection B05B)
- 5/02 . from an outlet device in contact, or almost in contact, with the work (B05C 5/04 takes precedence) [3]
- 5/04 . the liquid or other fluent material being supplied to the apparatus in a solid state and melted before application [3]
- 7/00 Apparatus specially designed for applying liquid or other fluent material to the inside of hollow work** (B05C 19/00 takes precedence)
- 9/00 Apparatus or plant for applying liquid or other fluent material to surfaces by means not covered by groups B05C 1/00 to B05C 7/00, or in which the means of applying the liquid or other fluent material is not important** (B05C 19/00 takes precedence)
- 9/08 . for applying liquid or other fluent material and performing an auxiliary operation [2]
- 9/14 . . the auxiliary operation involving heating
- 11/00 Component parts, details or accessories not specifically provided for in groups B05C 1/00 to B05C 9/00** (B05C 19/00 takes precedence; means for manipulating or holding work B05C 13/00; enclosures for apparatus, booths B05C 15/00; spray booths B05B 15/12) [2]
- 11/02 . Apparatus for spreading or distributing liquids or other fluent materials already applied to a surface (B05C 7/00 takes precedence; hand tools for such purposes B05C 17/00); Control of the thickness of a coating (controlling supply of liquid or other fluent material B05C 11/10) [2]
- 11/08 . . Spreading liquid or other fluent material by manipulating the work, e.g. tilting
- 11/10 . Storage, supply or control of liquid or other fluent material; Recovery of excess liquid or other fluent material
- 11/105 . . by capillary action, e.g. using wicks
- 13/00 Means for manipulating or holding work, e.g. for separate articles** [2]
- 13/02 . for particular articles [2]
- 15/00 Enclosures for apparatus; Booths** (spray booths B05B 15/12) [4]
- 17/00 Hand tools or apparatus using hand-held tools, for applying liquids or other fluent materials to, for spreading applied liquids or other fluent materials on, or for partially removing applied liquids or other fluent materials from, surfaces** (brushes A46B; absorbent pads, e.g. swabs, for applying media to the human body A61F 13/15; stencils used in connection with printing plates or foils B41N 1/24; implements or apparatus for removing dry paint from surfaces B44D 3/16) [2]
- 17/005 . for discharging material through an outlet orifice by pressure (B05C 17/02 takes precedence; containers or packages with special means for dispensing fluent material by means of a piston or the like B65D 83/76; grease guns F16N 3/00) [5]
- 17/02 . Rollers [2]
- 19/00 Apparatus specially adapted for applying particulate materials to surfaces** (involving spraying or electrostatic projection B05B) [2]
- 21/00 Accessories or implements for use in connection with applying liquids or other fluent materials to surfaces, not provided for in groups B05C 1/00 to B05C 19/00** (accessories or implements for use in connection with painting or artistic drawing and fully provided for in B44D 3/02 to B44D 3/38, see subgroups of group B44D 3/00) [2]

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**B05D PROCESSES FOR APPLYING LIQUIDS OR OTHER FLUENT MATERIALS TO SURFACES, IN GENERAL** (apparatus for applying liquids or other fluent materials to surfaces B05B, B05C) [2]

#### Notes

- (1) This subclass covers:
- processes for applying liquids or other fluent materials to a surface or part of a surface, in general, by any mechanical or physical method and particularly processes producing a uniform distribution of liquids or other fluent materials on a surface;
  - pretreatment of surfaces to which liquids or other fluent materials are to be applied;
  - after-treatment of applied coatings. [2]
- (2) Attention is drawn to the Note following the title of class B05. [2]

**Subclass Index**

## PROCESSES CHARACTERISED BY

means used ..... 1/00  
 special result obtained ..... 5/00

surfaces to be treated ..... 7/00

PRETREATMENT OF SURFACES; AFTER-  
 TREATMENT OF COATINGS ..... 3/00

- 1/00 Processes for applying liquids or other fluent materials** (B05D 5/00, B05D 7/00 take precedence) [2]
- 1/02 . performed by spraying [2]
  - 1/04 . . involving the use of an electrostatic field [2]
  - 1/08 . . Flame spraying [2]
  - 1/12 . . Applying particulate materials (B05D 1/04, B05D 1/08 take precedence) [2]
  - 1/18 . performed by dipping [2]
  - 1/20 . . substances to be applied floating on a fluid [2]
  - 1/22 . . using fluidised-bed technique (fluidised-bed technique in general B01J 8/24) [2]
  - 1/26 . performed by applying the liquid or other fluent material from an outlet device in contact with, or almost in contact with, the surface [2]
  - 1/28 . performed by transfer from the surfaces of elements carrying the liquid or other fluent material, e.g. brushes, pads, rollers [2]
  - 1/32 . using means for protecting parts of a surface not to be coated, e.g. using stencils, resists [2]
  - 1/36 . Successively applying liquids or other fluent materials, e.g. without intermediate treatment [2]
  - 1/38 . . with intermediate treatment (intermediate treatment *per se* B05D 3/00) [2]
  - 1/40 . Distributing applied liquids or other fluent materials by members moving relatively to surface [2]
- 3/00 Pretreatment of surfaces to which liquids or other fluent materials are to be applied; After-treatment of applied coatings, e.g. intermediate treating of an applied coating preparatory to subsequent applications of liquids or other fluent materials** (successively applying liquids or other fluent materials B05D 1/36; drying ovens F26B) [2]
- 3/02 . by baking [2]
  - 3/04 . by exposure to gases [2]
  - 3/06 . by exposure to radiation (B05D 3/02 takes precedence) [2]
  - 3/08 . by flames [2]
  - 3/10 . by other chemical means [2]
  - 3/12 . by mechanical means [2]
  - 3/14 . by electrical means [2]

- 5/00 Processes for applying liquids or other fluent materials to surfaces to obtain special surface effects, finishes or structures** [2]
- 5/02 . to obtain a matt or rough surface [2]
  - 5/04 . to obtain a surface receptive to ink or other liquid (B05D 5/02 takes precedence) [2]
  - 5/06 . to obtain multicolour or other optical effects (B05D 5/02 takes precedence) [2]
  - 5/08 . to obtain an anti-friction or anti-adhesive surface (rendering particulate materials free flowing in general, e.g. making them hydrophobic, B01J 2/30) [2]
  - 5/10 . to obtain an adhesive surface [2]
  - 5/12 . to obtain a coating with specific electrical properties [2]
- 7/00 Processes, other than flocking, specially adapted for applying liquids or other fluent materials to particular surfaces or for applying particular liquids or other fluent materials** [2]
- 7/02 . to macromolecular substances, e.g. rubber (treatment or coating of shaped articles made of macromolecular substances C08J 7/00) [2]
  - 7/04 . . to surfaces of films or sheets (producing layered products by applying coatings of pasty or pulverulent plastics B29C 41/00, B32B 37/00) [2]
  - 7/06 . to wood [2]
  - 7/12 . to leather (chemical treatment of leather C14C; dyeing leather D06P) [2]
  - 7/14 . to metal, e.g. car bodies (involving a chemical reaction between the metal and the coating C23) [2]
  - 7/16 . . using synthetic lacquers or varnishes [2]
  - 7/20 . to wires (for insulating electric cables H01B 13/06) [2]
  - 7/22 . to internal surfaces, e.g. of tubes [2]
  - 7/24 . for applying particular liquids or other fluent materials [2]
  - 7/26 . . synthetic lacquers or varnishes (B05D 7/06, B05D 7/16 take precedence) [2]

**B06 GENERATING OR TRANSMITTING MECHANICAL VIBRATIONS IN GENERAL**

**B06B GENERATING OR TRANSMITTING MECHANICAL VIBRATIONS IN GENERAL** (for particular physical or chemical processes, see the relevant subclasses, e.g. B07B 1/28, B22C 19/00, B23Q 17/12, B24B 31/00, E01C 19/22; measurement of mechanical vibrations, including the combination of generation and measurement, G01H; systems using reflection or reradiation of acoustic waves G01S 15/00; generating seismic energy for prospecting G01V 1/02; control of mechanical vibrations G05D 19/00; methods or devices for transmitting, conducting or directing sound, in general G10K 11/00; synthesis of acoustic waves G10K 15/02; piezo-electric, electrostrictive or magnetostrictive elements H01L 41/00; motors with vibrating magnet, armature or coil H02K 33/00; motors using piezo-electric effect, electrostriction or magnetostriction H02N 2/00; generation of electrical oscillations H03B; electromechanical resonators as resonant circuit elements H03H; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R) [2]

**Notes**

- (1) This subclass covers arrangements for generating mechanical vibrations in solids, e.g. for the purpose of performing mechanical work. [6]
- (2) This subclass does not cover arrangements for generating mechanical vibrations in fluids, which are covered by subclass G10K. [6]

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<b>1/00</b>	<b>Processes or apparatus for generating mechanical vibrations of infrasonic, sonic or ultrasonic frequency</b>	1/10	. making use of mechanical energy (B06B 1/18, B06B 1/20 take precedence)
1/02	. making use of electrical energy (B06B 1/18, B06B 1/20 take precedence)	1/18	. wherein the vibrator is actuated by pressure fluid (B06B 1/20 takes precedence)
1/06	. . operating with piezo-electric effect or with electrostriction (piezo-electric or electrostrictive elements in general H01L 41/00)	1/20	. making use of a vibrating fluid
		<b>3/00</b>	<b>Processes or apparatus specially adapted for transmitting mechanical vibrations of infrasonic, sonic or ultrasonic frequency</b>

**B07 SEPARATING SOLIDS FROM SOLIDS; SORTING** (separation in general B01D; wet separating processes, sorting by processes using fluent material in the same way as liquid B03; using liquids B03B, B03D; sorting by magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high voltage electric fields B03C; centrifuges or vortex apparatus for carrying out physical processes B04; sorting peculiar to particular materials or articles and provided for in other classes, see the relevant classes)

**B07B SEPARATING SOLIDS FROM SOLIDS BY SIEVING, SCREENING, OR SIFTING OR BY USING GAS CURRENTS; OTHER SEPARATING BY DRY METHODS APPLICABLE TO BULK MATERIAL, E.G. LOOSE ARTICLES FIT TO BE HANDLED LIKE BULK MATERIAL** (combinations of dry separating apparatus with wet separating apparatus B03B; hand sorting, postal sorting, sorting by switching or other devices actuated in response to detection or measurement of some feature of articles or samples of material B07C)

### Note

This subclass covers:

- any sorting or grading of bulk material or loose articles fit to be handled like bulk material which results automatically from the construction of the apparatus and properties of the material, e.g. by a trap opening under an object of a certain minimum weight, by an aperture of graduated size;
- sorting of articles in so far as the same conditions apply, e.g. sorting of timber by passing it over successively longer openings; the articles may or may not be orientated for the purpose of sorting.

### Subclass Index

SEPARATING SOLIDS FROM SOLIDS  
USING NETWORKS, GRATINGS, OR  
GRIDS ..... 1/00  
SEPARATING SOLIDS FROM SOLIDS  
USING GAS CURRENTS ..... 4/00, 7/00,  
9/00, 11/00  
OTHER SEPARATING; COMBINATIONS ..... 13/00; 15/00

#### **1/00 Sieving, screening, sifting, or sorting solid materials using networks, gratings, grids, or the like**

- 1/06 . Cone or disc shaped screens
- 1/08 . Screens rotating within their own plane
- 1/10 . Screens in the form of endless moving bands
- 1/12 . Apparatus having only parallel elements
- 1/18 . Drum screens
- 1/28 . Moving screens not otherwise provided for, e.g. swinging, reciprocating, rocking, tilting, or wobbling screens
- 1/42 . Drive mechanisms, regulating or controlling devices, or balancing devices, specially adapted for screens
- 1/46 . Constructional details of screens in general; Cleaning or heating of screens

#### **9/00 Combinations of apparatus for screening or sifting or for separating solids from solids using gas currents; General arrangement of plant, e.g. flow sheets**

#### **11/00 Arrangement of accessories in apparatus for separating solids from solids using gas currents**

#### **Other separating, e.g. grading, resulting automatically from the construction of the apparatus used and properties of the material concerned; Combinations**

#### **13/00 Grading or sorting solid materials by dry methods, not otherwise provided for; Sorting articles otherwise than by indirectly controlled devices (grading eggs A01K 43/00)**

- 13/10 . using momentum effects

#### **15/00 Combinations of apparatus for separating solids from solids by dry methods applicable to bulk material, e.g. loose articles fit to be handled like bulk material (using gas currents B07B 9/00; using wet methods B03B 7/00)**

#### **Separating solids from solids using gas currents**

- 4/00 Separating solids from solids by subjecting their mixture to gas currents (using tables or jigs B03B)**
- 7/00 Selective separation of solid materials carried by, or dispersed in, gas currents (sieves or filters for separating dispersed particles from gases or vapours B01D)**

**B07C POSTAL SORTING; SORTING INDIVIDUAL ARTICLES, OR BULK MATERIAL FIT TO BE SORTED PIECE-MEAL, E.G. BY PICKING** (specially adapted for a specific purpose covered by another class, see the relevant place, e.g. A43D 33/00, B23Q 7/12)

**Note**

This subclass covers sorting of materials or articles by hand or by devices actuated, manually or automatically, as a result of inspection or of detection or measurement of some feature of the material or articles.

**Subclass Index**

SORTING CHARACTERISED BY THE

METHOD ..... 5/00, 7/00,  
99/00

SORTING ACCORDING TO DESTINATION ..... 1/00, 3/00

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**Postal sorting; Similar sorting of documents, e.g. cheques**

- 1/00 Measures preceding sorting of mail or documents according to destination**
  - 3/00 Sorting of mail or documents according to destination**
  - 3/02 . Apparatus characterised by the means used for distribution
  - 3/10 . Apparatus characterised by the means used for detection of the destination (methods or arrangements for reading and recognising printed or written characters or geometric figures G06K 9/00)
- 

**5/00 Sorting according to a characteristic or feature of the articles or material being sorted, e.g. by control effected by devices which detect or measure such characteristic or feature; Sorting by manually actuated devices, e.g. switches** (sorting by hand only B07C 7/00; sorting eggs A01K 43/00; separating solids from solids by sieving, screening, or sifting or by using gas currents or other separating by dry methods applicable to bulk material B07B; sorting of coins G07D) [3]

- 5/04 . Sorting according to size
- 5/34 . Sorting according to other particular properties
- 5/342 . . according to optical properties, e.g. colour
- 5/36 . Sorting apparatus characterised by the means used for distribution

**7/00 Sorting by hand only**

**99/00 Subject matter not provided for in other groups of this subclass [2009.01]**

**B08 CLEANING**

**B08B CLEANING IN GENERAL; PREVENTION OF FOULING IN GENERAL** (brushes A46; devices for domestic or like cleaning A47L; separation of particles from liquids or gases B01D; separation of solids B03, B07; spraying or applying liquids or other fluent materials to surfaces in general B05; cleaning devices for conveyers B65G 45/00; concurrent cleaning, filling and closing of bottles B67C 7/00; inhibiting corrosion or incrustation in general C23; cleaning streets, permanent ways, beaches or land E01H; parts, details or accessories of swimming or splash baths or pools, specially adapted for cleaning E04H 4/00; preventing or removing electrostatic charges H05F)

**Notes**

- (1) This subclass covers only cleaning, which is usually classified according to one (or more) of the aspects mentioned below, if it is not fully classifiable in a subclass providing for any of the following aspects:
- the articles cleaned, e.g. bed-pans, urinal or other sanitary devices for bed-ridden persons A61G 9/00, filters, semi-permeable membranes B01D, castings and moulds B22D 29/00, vehicles B60S, coke ovens C10B 43/00, building forms E04G, boilers F22, combustion apparatus F23J, furnaces F27;
  - the general nature of the cleaning, e.g. preparing for sugar manufacture A23N, domestic cleaning A47L, treatment of textiles D06, laundry D06F, air-conditioning F24F;
  - the particular operation performed, e.g. filtering B01D, separating of solids B03, B07, sand-blasting B24C;
  - the particular apparatus or device, e.g. brushes A46B, mops A47L, centrifuges B04, hand tools B25;
  - the substance cleaned, e.g. metals B21C, C23, water C02, glass C03B, leather C14B, textile fibres D01;
  - the substance removed (or prevented from depositing or forming), e.g. implements or apparatus for removing dry paint from surfaces B44D 3/16, chemical paint-removers C09D 9/00, preventing rust C23F;
  - the substance used, e.g. macromolecular compounds or compositions C08, anti-icing materials C09K, detergents C11D;
  - the operation in connection with which cleaning is done, e.g. metal rolling B21B, metal boring B23B, soldering B23K, textile fabrication D01G, D01H, D03J, D04B;
  - the surroundings of a surface to be cleaned or kept clean, e.g. water in a boiler C02F, air in a room F24F.
- (2) Processes using enzymes or micro-organisms in order to:
- (i) liberate, separate or purify a pre-existing compound or composition, or to
  - (ii) treat textiles or clean solid surfaces of materials
- are further classified in subclass C12S. [5]

**Subclass Index**

CLEANING CHARACTERISED BY THE MEANS USED .....	1/00, 3/00, 5/00, 6/00, 7/00	ACCESSORIES OR DETAILS OF MACHINES .....	13/00
CLEANING HOLLOW, FLEXIBLE OR DELICATE ARTICLES .....	9/00, 11/00	PREVENTING FOULING OR ESCAPE OF DIRT OR FUMES .....	15/00, 17/00

<b>1/00</b>	<b>Cleaning by methods involving the use of tools, brushes, or analogous members</b> (B08B 3/12, B08B 6/00, B08B 9/00 take precedence) [2]	3/12	. . . by sonic or ultrasonic vibrations (washing or rinsing machines for crockery or tableware using sonic or ultrasonic waves A47L 15/00; of natural teeth, of prostheses using ultrasonic techniques similar to those used for natural teeth A61C 17/16; application of ultrasonic vibrations to chemical, physical, or physico-chemical processes in general B01J 19/10) [2,5]
1/02	. Cleaning travelling work, e.g. a web, articles on a conveyer		
1/04	. using rotary operative members (B08B 1/02 takes precedence)		
<b>3/00</b>	<b>Cleaning by methods involving the use or presence of liquid or steam</b> (B08B 9/00 takes precedence)	3/14	. . . Removing waste, e.g. labels, from cleaning liquid (treatment of water in general C02F) [5]
3/02	. Cleaning by the force of jets or sprays		
3/04	. Cleaning involving contact with liquid	<b>5/00</b>	<b>Cleaning by methods involving the use of air flow or gas flow</b> (B08B 6/00, B08B 9/00 take precedence) [2,7]
3/06	. . using perforated drums in which the article or material is placed	5/02	. Cleaning by the force of jets, e.g. blowing-out cavities
3/08	. . the liquid having chemical or dissolving effect (substances used, <u>see</u> the relevant classes)	<b>6/00</b>	<b>Cleaning by electrostatic means</b> (domestic cleaning implements functioning electrostatically A47L 13/10; cleaning of grooved record carriers G11B 3/00) [2]
3/10	. . with additional treatment of the liquid or of the object being cleaned, e.g. by heat, by electricity, by vibration	<b>7/00</b>	<b>Cleaning by methods not provided for in a single other subclass or a single group in this subclass</b>
		7/02	. by distortion, beating, or vibration of the surface to be cleaned
		7/04	. by a combination of operations

- 9/00    Cleaning hollow articles by methods or apparatus specially adapted thereto** (B08B 3/12, B08B 6/00 take precedence) [2]
- 9/02    .    Cleaning pipes or tubes or systems of pipes or tubes (apparatus for cleaning metal pipes by chemical methods C23G 3/00) [5]
- 9/08    .    Cleaning of containers, e.g. tanks
- 9/20    .    .    by using apparatus into or on to which containers, e.g. bottles, jars, cans, are brought [5]
- 11/00    Cleaning flexible or delicate articles by methods or apparatus specially adapted thereto** (B08B 3/12, B08B 6/00 take precedence) [2]
- 13/00    Accessories or details of general applicability for machines or apparatus for cleaning**
- 15/00    Preventing escape of dirt or fumes from the area where they are produced; Collecting or removing dirt or fumes from that area** (parts, details or accessories of cooking-vessels for withdrawing or condensing cooking vapours from such vessels A47J 36/00; refuse disposal B65F; devices for conducting smoke or fumes, e.g. flues, F23J 11/00; removing cooking fumes from domestic stoves or ranges F24C 15/20; air-conditioning, ventilation F24F) [5]
- 17/00    Methods preventing fouling**

**B09 DISPOSAL OF SOLID WASTE; RECLAMATION OF CONTAMINATED SOIL** (treatment of waste water, sewage or sludge C02F; treating radioactively contaminated solids G21F 9/28) [3,6]

**B09B DISPOSAL OF SOLID WASTE [3]**

**Notes**

- (1) This subclass covers only single or combined, e.g. multistage, operations not fully classifiable in a single other subclass. [3]
- (2) In this subclass, the following terms or expressions are used with the meanings indicated:
- “disposal” means the discarding, e.g. dumping, or destroying of waste or its transformation into something useful or harmless; [3]
  - “solid waste” includes waste which, although it has liquid content, is for practical purposes handled as solid. [3]
- (3) Attention is drawn to the following places:
- |      |        |                                                                                                                                                                                                                   |
|------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A23J | 1/00   | Obtaining proteins from waste water of starch-manufacturing plants or like wastes                                                                                                                                 |
| A23K | 1/06   | Animal feeding-stuffs from distillers' or brewers' waste                                                                                                                                                          |
| A23K | 1/08   | Animal feeding-stuffs from waste products of dairy plants                                                                                                                                                         |
| A23K | 1/10   | Animal feeding-stuffs from kitchen waste                                                                                                                                                                          |
| A43B | 1/00   | Footwear made of rubber waste                                                                                                                                                                                     |
| A61L | 11/00  | Disinfection or sterilisation methods specially adapted for refuse                                                                                                                                                |
| A62D | 3/00   | Processes for making harmful chemical substances harmless, or less harmful, by effecting a chemical change in the substances                                                                                      |
| B01D | 53/34  | Chemical or biological purification of waste gases                                                                                                                                                                |
| B02C | 18/00  | Disintegrating by knives or other cutting or tearing members which chop material into fragments                                                                                                                   |
| B03B | 7/00   | Combinations of wet processes or apparatus with other processes or apparatus, e.g. for dressing ores or garbage                                                                                                   |
| B03B | 9/00   | General arrangement of separating plant, e.g. flow sheets, specially adapted for refuse                                                                                                                           |
| B05B | 15/04  | Control of spray area of spraying plant, e.g. masking, side shields; Means for collection or re-use of excess material                                                                                            |
| B08B | 15/00  | Preventing escape of dirt or fumes from the area where they are produced; Collecting or removing dirt or fumes from that area                                                                                     |
| B22F | 8/00   | Manufacture of articles from scrap or waste metal particles                                                                                                                                                       |
| B23D | 25/00  | Machines or arrangements for shearing stock while the latter is travelling otherwise than in the direction of the cut without regard to the exact dimensions of the resulting material, e.g. for cutting up scrap |
| B24B | 55/00  | Devices for recovering materials resulting from grinding or polishing                                                                                                                                             |
| B27B | 33/00  | Edge trimming saw blades or tools combined with means to disintegrate waste                                                                                                                                       |
| B29B | 17/00  | Recovery of plastics or other constituents of waste material containing plastics                                                                                                                                  |
| B30B | 9/32   | Presses for consolidating scrap metal or for compacting used cars                                                                                                                                                 |
| B62D | 67/00  | Systematic disassembly of vehicles for recovery of salvageable components, e.g. for recycling                                                                                                                     |
| B63B | 17/00  | Refuse discharge from vessels, e.g. for ash                                                                                                                                                                       |
| B63J | 4/00   | Arrangements of installations for treating waste water or sewage on vessels                                                                                                                                       |
| B65F | 1/00   | Refuse receptacles                                                                                                                                                                                                |
| B65F | 3/00   | Vehicles particularly adapted for collecting refuse                                                                                                                                                               |
| B65F | 5/00   | Gathering or removal of refuse otherwise than by receptacles or vehicles                                                                                                                                          |
| B65F | 7/00   | Cleaning or disinfecting devices combined with refuse receptacles or refuse vehicles                                                                                                                              |
| C03C | 1/00   | Ingredients generally applicable to manufacture of glasses, glazes or vitreous enamels                                                                                                                            |
| C04B | 7/00   | Hydraulic cements from oil shales, residues or waste other than slag                                                                                                                                              |
| C04B | 11/00  | Calcium sulfate cements made from phosphogypsum or from waste, e.g. purification products of smoke                                                                                                                |
| C04B | 18/04  | Waste material or refuse used as fillers for mortars, concrete, artificial stone or the like                                                                                                                      |
| C04B | 33/02  | Waste materials or refuse used as compounding ingredients for clay-ware                                                                                                                                           |
| C05F |        | Fertilisers from waste or refuse                                                                                                                                                                                  |
| C08B | 16/00  | Regeneration of cellulose                                                                                                                                                                                         |
| C08J | 9/00   | Agglomerating foam fragments, e.g. waste foam                                                                                                                                                                     |
| C08J | 11/00  | Recovery of waste materials of macromolecular substances                                                                                                                                                          |
| C08L | 17/00  | Compositions of reclaimed rubber                                                                                                                                                                                  |
| C09K | 11/00  | Recovery of luminescent materials                                                                                                                                                                                 |
| C10B | 53/00  | Destructive distillation, specially adapted for particular solid raw materials or solid raw materials in special form                                                                                             |
| C10B | 57/00  | Other processes not covered before; Features of destructive distillation processes in general                                                                                                                     |
| C10G | 1/00   | Production of liquid hydrocarbon mixtures from rubber or rubber waste                                                                                                                                             |
| C10G | 73/00  | Recovery of used solvents                                                                                                                                                                                         |
| C10L | 5/40   | Solid fuels essentially based on sewage, house or town refuse                                                                                                                                                     |
| C10L | 5/40   | Solid fuels essentially based on industrial residues and waste materials                                                                                                                                          |
| C10M | 175/00 | Working-up used lubricants based on mineral oils                                                                                                                                                                  |
| C11B | 13/00  | Recovery of fats, fatty oils, or fatty acids from waste materials                                                                                                                                                 |
| C11D | 19/00  | Recovery of glycerol from a saponification liquor                                                                                                                                                                 |
| C12F | 3/00   | Recovery of by-products                                                                                                                                                                                           |
| C12F | 3/00   | Recovery of alcohol from press residues or other waste material                                                                                                                                                   |



C12P	7/02	Biochemical production of ethanol from waste
C22B	7/00	Working-up raw materials other than ores, e.g. scrap, to produce non-ferrous metals or compounds thereof
C22B	19/00	Obtaining zinc or zinc oxide from muffle furnace residues
C22B	19/00	Obtaining zinc or zinc oxide from metallic residues or scraps
C22B	25/00	Obtaining tin from scrap
C25D	13/22	Regeneration of process liquids used in electrophoretic coating
C25D	21/00	Regeneration of process solutions used in electrolytic coating
D01B		Mechanical treatment of natural fibrous or filamentary material to obtain fibres or filaments, e.g. for spinning
D01C	5/00	Carbonising rags to recover animal fibres
D01F	13/00	Recovery of starting material, waste material or solvents during the manufacture of artificial filaments or the like
D01G	11/00	Disintegrating fibre-containing articles to obtain fibres for re-use
D01H	11/00	Arrangements for confining or removing dust, fly, or the like
D06L	1/00	Regeneration of used chemical baths used for dry-cleaning or washing fibres, fabrics or the like
D21B	1/00	Dry treatment of waste paper or rags for making paper or for the production of cellulose
D21B	1/00	Defibrating waste paper
D21C	5/02	Processes for obtaining cellulose by working-up waste paper
D21C	11/12	Regeneration of pulp liquors by wet combustion
D21F	1/66	Re-use of pulp-water in wet end machines for making continuous webs of paper
D21H	17/00	Waste products added to the pulp or used in paper-impregnating material
E03F		Sewers, cesspools
E04F	17/00	Arrangements in buildings for the disposal of refuse
F23G		Consuming waste by combustion
F23J		Removal or treatment of combustion products or combustion residues
G03C	11/00	Removing emulsion from waste photographic material
G03G	21/10	Collecting or recycling waste developer used in electrography, electrophotography, magnetography
H01B	15/00	Apparatus or processes for salvaging material from electric cables
H01J	9/00	Recovery of material from discharge tubes or lamps
H01M	6/00	Reclaiming serviceable parts of waste cells or batteries
H01M	10/54	Reclaiming serviceable parts of waste accumulators.

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**1/00 Dumping solid waste [3]**

**3/00 Destroying solid waste or transforming solid waste into something useful or harmless [3]**

**5/00 Operations not covered by a single other subclass or by a single other group in this subclass [3]**

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**B09C RECLAMATION OF CONTAMINATED SOIL** (gatherers for removing stones or the like from the soil A01B 43/00; sterilising soil by steam A01G 11/00; separation in general B01D; cleaning beaches E01H 12/00; removing undesirable matter, e.g. rubbish, from the land E01H 15/00) [6]

#### Notes

- (1) In this subclass, the following term is used with the meaning indicated: [6]
    - “reclamation” means the partial or total elimination or the fixing of contaminants in soil. [6]
  - (2) Processes using enzymes or micro-organisms in order to: [6]
    - (i) liberate, separate or purify a pre-existing compound or composition, or to [6]
    - (ii) treat textiles or clean solid surfaces of materials [6]
 are further classified in subclass C12S. [6]
- 

**1/00 Reclamation of contaminated soil** (processes for making harmful chemical substances harmless or less harmful by affecting a chemical change in the substances A62D 3/00) [6]

1/10 . microbiologically or by using enzymes [6]

## SHAPING

**B21 MECHANICAL METAL-WORKING WITHOUT ESSENTIALLY REMOVING MATERIAL; PUNCHING METAL** (casting, powder metallurgy B22; shearing B23D; working of metal by the action of a high concentration of electric current B23H; soldering, welding, flame-cutting B23K; other working of metal B23P; punching sheet material in general B26F; processes for changing of physical properties of metals C21D, C22F; electroforming C25D 1/00)

Notes

- (1) This class does not cover:
- combinations of operations covered by different subclasses of class B21, which are covered by subclass B23P;
  - combinations of operations covered by any particular subclass of class B21 with operations covered by other classes, e.g. with operations involving removal of material, which are also covered by subclass B23P, except that if the operations covered by the other classes are subsidiary to the operations properly covered by a single subclass of B21 the combination is classified in that subclass.
- (2) Processes of a kind covered by this class but applied to non-metallic materials are classified in this class if they are applicable to metal and cannot be classified fully in another class.

**B21B ROLLING OF METAL** (auxiliary operations used in connection with metal-working operations covered in B21, see B21C; bending by rolling B21D; manufacture of particular objects, e.g. screws, wheels, rings, barrels, balls, by rolling B21H; pressure welding by means of a rolling mill B23K 20/04)

Note

In this subclass, the following terms or expressions are used with the meanings indicated:

- “rolling” means rolling operations in which plastic deformations occur;
- “continuous process” means a process employing a mill train designed to have the workpiece enter one pair of rolls before leaving the preceding pair. [2]

Subclass Index

METAL ROLLING IN GENERAL	AUXILIARY OPERATIONS PERFORMED
General methods or apparatus .....1/00, 11/00, 13/00, 15/00	IN CONNECTION WITH METAL ROLLING ..... 15/00, 45/00, 47/00
Control or handling ..... 35/00, 37/00, 38/00, 39/00, 41/00	ROLLING SPECIAL ALLOYS..... 3/00
Safety, cooling, maintenance..... 28/00, 33/00, 43/00	ROLLING TO PRODUCE PARTICULAR SHAPES
Details of rolling mills..... 27/00, 29/00, 31/00	Tubes
	rolling methods ..... 17/00 to 23/00
	mandrels, accessories ..... 25/00
	Extending closed shapes ..... 5/00
METAL ROLLING UNDER SPECIAL CONDITIONS .....9/00	SUBJECT MATTER NOT PROVIDED FOR IN OTHER GROUPS OF THIS SUBCLASS ..... 99/00

- 1/00 Metal rolling methods or mills for making semi-finished products of solid or profiled cross-section** (B21B 17/00 to B21B 23/00 take precedence; with respect to composition of material to be rolled B21B 3/00; extending closed shapes of metal bands by simultaneous rolling at two or more zones B21B 5/00; metal-rolling stands as units B21B 13/00; continuous casting into moulds having walls formed by moving rolls B22D 11/06); **Sequence of operations in milling trains; Layout of rolling-mill plant, e.g. grouping of stands; Succession of passes or of sectional pass alternations**
- 1/08 . for rolling work of special cross-section, e.g. angle steel (rolling metal of indefinite length in repetitive shapes specially designed for the manufacture of particular objects B21H 8/00) [1,8]
- 1/16 . for rolling wire or material of like small cross-section

- 1/22 . for rolling bands or sheets of indefinite length (B21B 1/42 takes precedence)
- 1/24 . . in a continuous process
- 1/26 . . . by hot-rolling
- 1/30 . . in a non-continuous process
- 1/42 . for step-by-step or planetary rolling (making tubes by pilgrim-step rolling B21B 21/00)
- 1/46 . for rolling metal immediately subsequent to continuous casting (metal-rolling stands B21B 13/00; continuous casting B22D 11/00, e.g. into moulds with rolls B22D 11/06) [3]

- 3/00 Rolling materials of special alloys so far as the composition of the alloy requires or permits special rolling methods or sequences** (altering special metallurgical properties of alloys, other than structure consolidation or mechanical properties resulting therefrom C21D, C22F)
- 3/02 . Rolling special iron alloys
- 5/00 Extending closed shapes of metal bands by rolling** (manufacture of circular shapes, e.g. wheel rims, B21H 1/00)
- 9/00 Measures for carrying out rolling operations under special conditions, e.g. in vacuum or inert atmosphere to prevent oxidation of work; Special measures for removing fumes from rolling mills**
- 11/00 Subsidising the rolling processes by subjecting rollers or work to vibrations**
- 13/00 Metal-rolling stands, i.e. an assembly composed of a stand frame, rolls, and accessories** (B21B 17/00 to B21B 23/00 take precedence; details, component parts, accessories, auxiliary means, procedures in connection with metal rolling, see the relevant groups)
- 13/14 . having counter-pressure devices acting on rolls to inhibit deflection of same under load (counter-pressure devices as such B21B 29/00)
- 15/00 Arrangements for performing additional metal-working operations specially combined with or arranged in, or specially adapted for use in connection with, metal-rolling mills**
- 15/02 . in which work is subjected to permanent internal twisting, e.g. for producing reinforcement bars for concrete
- Rolling methods or mills specially designed for making or processing tubes**
- 17/00 Tube-rolling by rollers of which the axes are arranged essentially perpendicular to the axis of the work, e.g. "axial" tube-rolling**
- 19/00 Tube-rolling by rollers arranged outside the work and having their axes not perpendicular to the axis of the work** (straightening by rollers B21D)
- 21/00 Pilgrim-step tube-rolling**
- 23/00 Tube-rolling not restricted to methods provided for in only one of groups B21B 17/00 to B21B 21/00, e.g. combined processes** (B21B 25/00 takes precedence)
- 25/00 Mandrels for metal tube rolling mills, e.g. mandrels of the types used in the methods covered by group B21B 17/00; Accessories or auxiliary means therefor**
- 
- 27/00 Rolls** (shape of working surfaces required by special processes B21B 1/00); **Lubricating, cooling or heating rolls while in use**
- 27/02 . Shape or construction of rolls (for rolling metal of indefinite length in repetitive shapes specially designed for the manufacture of particular objects B21H 8/00)
- 27/03 . . Sleeved rolls [5]
- 27/06 . Lubricating, cooling, or heating rolls
- 28/00 Maintaining rolls or rolling equipment in effective condition** (lubricating, cooling or heating rolls while in use B21B 27/06) [2]
- 29/00 Counter-pressure devices acting on rolls to inhibit deflection of same under load, e.g. backing rolls**
- 31/00 Rolling stand structures; Mounting, adjusting, or interchanging rolls, roll mountings, or stand frames**
- 31/16 . Adjusting rolls (control devices B21B 37/00)
- 33/00 Safety devices not otherwise provided for** (safety devices in general F16P); **Breaker blocks; Devices for freeing jammed rolls** [2]
- 35/00 Drives for metal-rolling mills**
- 37/00 Control devices or methods specially adapted for metal-rolling mills or the work produced thereby** (methods or devices for measuring specially adapted for metal-rolling mills B21B 38/00)
- 37/16 . Control of thickness, width, diameter or other transverse dimensions (B21B 37/58 takes precedence) [6]
- 37/28 . Control of flatness or profile during rolling of strip, sheets or plates [6]
- 37/46 . Roll speed or drive motor control (B21B 37/48, B21B 37/58 take precedence) [6]
- 37/48 . Tension control; Compression control [6]
- 37/56 . Elongation control [6]
- 37/58 . Roll-force control; Roll-gap control [6]
- 37/68 . Camber or steering control for strip, sheets or plates, e.g. preventing meandering [6]
- 37/70 . Length control (B21B 37/56 takes precedence) [6]
- 37/72 . Rear end control; Front end control [6]
- 37/74 . Temperature control, e.g. by cooling or heating the rolls or the product (B21B 37/28 takes precedence) [6]
- 37/78 . Control of tube rolling [6]
- 38/00 Methods or devices for measuring specially adapted for metal-rolling mills, e.g. position detection, inspection of the product** [6]
- 39/00 Arrangements for moving, supporting, or positioning work, or controlling its movement, combined with or arranged in, or specially adapted for use in connection with, metal-rolling mills** (guiding, conveying, or accumulating easily-flexible work in loops or curves B21B 41/00; specially associated with cooling-beds B21B 43/00; conveying or transporting in general B65G)
- 39/02 . Feeding or supporting work; Braking or tensioning arrangements
- 39/14 . Guiding, positioning or aligning work (B21B 43/00 takes precedence; guides in which work is subjected to permanent internal twisting B21B 15/02)
- 39/20 . Revolving, turning-over, or like manipulation of work (guides in which work is subjected to permanent internal twisting B21B 15/02)
- 39/34 . Arrangements or constructional combinations specifically designed to perform functions covered by more than one of groups B21B 39/02, B21B 39/14, B21B 39/20
- 41/00 Guiding, conveying, or accumulating easily-flexible work, e.g. wire, sheet metal bands, in loops or curves; Loop lifters**
- 43/00 Cooling beds, whether stationary or moving; Means specially associated with cooling beds, e.g. for braking work or for transferring it to or from the bed** (conveying means in general B65G)

45/00	<b>Devices for surface treatment of work, specially combined with or arranged in, or specially adapted for use in connection with, metal-rolling mills</b> (B21B 15/00 takes precedence; technical features of scaling-off devices B21C 43/00)	47/00	<b>Auxiliary arrangements, devices or methods in connection with rolling of multi-layer sheets of metal</b> (soaking pits C21D 9/70) [2]
45/02	. for lubricating, cooling, or cleaning	99/00	<b>Subject matter not provided for in other groups of this subclass</b> [8]
45/04	. for de-scaling		

**B21C MANUFACTURE OF METAL SHEETS, WIRE, RODS, TUBES, PROFILES OR LIKE SEMI-MANUFACTURED PRODUCTS OTHERWISE THAN BY ROLLING; AUXILIARY OPERATIONS USED IN CONNECTION WITH METAL-WORKING WITHOUT ESSENTIALLY REMOVING MATERIAL**

**Subclass Index**

METAL DRAWING	DETAILS COMMON TO DRAWING AND EXTRUDING OF METAL..... 43/00
General methods..... 1/00	MANUFACTURING NOT OTHERWISE PROVIDED FOR ..... 37/00
Auxiliary operations..... 5/00, 9/00	AUXILIARY OPERATIONS USED IN CONNECTION WITH METAL-WORKING WITHOUT ESSENTIALLY REMOVING MATERIAL
Equipment..... 3/00, 19/00	Reeling ..... 47/00
METAL EXTRUDING	Other auxiliary operations ..... 45/00, 51/00
General methods..... 23/00	Auxiliary equipment ..... 19/00, 49/00
Auxiliary operations..... 29/00, 33/00, 35/00	
Equipment..... 25/00, 26/00, 27/00	
Control..... 31/00	

**Metal drawing**

1/00	<b>Manufacture of metal sheets, wire, rods, tubes or like semi-manufactured products by drawing</b>	26/00	<b>Rams or plungers for metal extruding; Discs therefor</b> [2]
1/02	. Drawing metal wire or like flexible metallic material by drawing machines or apparatus in which the drawing action is effected by drums	27/00	<b>Containers for metal to be extruded</b> (B21C 29/00 takes precedence)
1/16	. Metal drawing by machines or apparatus in which the drawing action is effected by means other than drums, e.g. by a longitudinally-moved carriage pulling or pushing the work or stock for making metal sheets, rods or tubes (bending sheet metal into tubular form by drawing B21D 5/06)	29/00	<b>Cooling or heating extruded work or parts of the extrusion press</b>
3/00	<b>Profiling tools for metal drawing; Combinations of dies and mandrels for metal drawing</b>	31/00	<b>Control devices for metal extruding, e.g. for regulating the pressing speed or temperature of metal</b> (B21C 25/00 takes precedence); <b>Measuring devices, e.g. for temperature of metal, combined with or specially adapted for use in connection with extrusion presses</b> (measuring devices of more general interest within subclass B21C, see group B21C 51/00)
5/00	<b>Pointing or push-pointing drawn work or drawing material</b>	33/00	<b>Feeding extrusion presses with metal to be extruded</b>
9/00	<b>Cooling, heating or lubricating drawing material</b> (B21C 3/00 takes precedence)	35/00	<b>Removing work or waste from extruding presses; Drawing-off extruded work</b> (in connection with the extruding of bent tubes or rods B21C 23/02); <b>Cleaning dies, ducts, containers, or mandrels for metal extruding</b> [2]
19/00	<b>Devices for straightening wire or like work combined with or specially adapted for use in connection with drawing or winding machines or apparatus</b>	37/00	<b>Manufacture of metal sheets, rods, wire, tubes, profiles or like semi-manufactured products, not otherwise provided for</b> (by rolling B21B; by working or processing semi-finished sheet metal, profiles, tubes, or wire B21D, B21F; by casting B22; by material-removing machine tools B23; by welding, e.g. cladding or plating, B23K; by grinding or polishing B24; by electroforming C25D 1/00); <b>Manufacture of tubes of special shape</b> [2]

**Metal extruding**

23/00	<b>Extruding metal; Impact extrusion</b>	37/06	. of tubes or metal hoses; Combined procedures for making tubes, e.g. for making multi-wall tubes (bending sheets for making tubes B21D 5/00; seaming by folding B21D 39/02)
23/01	. starting from material of particular form or shape, e.g. mechanically pre-treated (B21C 23/22 takes precedence; heat treatment or combinations thereof with mechanical treatments, see appropriate classes)		
23/02	. Making uncoated products		
23/22	. Making metal-coated products; Making products from two or more metals		
25/00	<b>Profiling tools for metal extruding</b>		

- 37/08 . . Making tubes with welded or soldered seams (involving only a soldering or welding operation B23K)
- 37/083 . . . Supply, or operations combined with supply, of strip material
- 37/15 . . Making tubes of special shape; Making the fittings (making heat exchangers B21D 53/02)
- 43/00 Devices for cleaning metal products combined with or specially adapted for use with machines or apparatus provided for in this subclass**

**Auxiliary operations used in connection with metal working without essentially removing material**

- 45/00 Separating mandrels from work or vice versa**
- 47/00 Winding-up, coiling or winding-off metal wire, metal band or other flexible metal material characterised by features relevant to metal processing only** (coiling wire into particular forms B21F 3/00; hot coilers in connection with heat-treatment apparatus C21D 9/54)
- 47/02 . Winding-up or coiling

- 47/24 . Transferring coils to or from winding apparatus or to or from operative position therein; Preventing uncoiling during transfer
- 47/26 . Special arrangements with regard to simultaneous or subsequent treatment of the material
- 47/28 . Drums or other coil-holders (gripping means B21C 47/00)
- 47/34 . Feeding or guiding devices not specially adapted to a particular type of apparatus

**49/00 Devices for temporarily accumulating material**

**51/00 Measuring, gauging, indicating, counting, or marking devices specially adapted for use in the production or manipulation of material in accordance with subclasses B21B to B21F**

**99/00 Subject matter not provided for in other groups of this subclass [2009.01]**

**B21D WORKING OR PROCESSING OF SHEET METAL OR METAL TUBES, RODS OR PROFILES WITHOUT ESSENTIALLY REMOVING MATERIAL; PUNCHING** (operations of the kind involved in the manufacture of such products B21B, B21C; working or processing of wire B21F; cutting or severing devices or machines in general B26; presses in general B30B)

**Notes**

- (1) This subclass covers cutting or perforating of sheet metal or other stock material.
- (2) This subclass does not cover the working of metal foils in a manner analogous to the working of paper, which is covered by classes B26, B31.

**Subclass Index**

**TREATMENT CHARACTERISED BY FUNCTION**

Straightening .....	1/00, 3/00, 25/00
Bending .....	11/00
of sheets .....	5/00, 13/00
of rods .....	7/00, 13/00
of tubes .....	9/00, 15/00
Twisting .....	11/00
Corrugating or grooving or bending into waves .....	13/00, 15/00, 17/00
Punching, stamping, deep- drawing, spinning, high-energy forming .....	22/00 to 28/00

**EDGE TREATMENT; CONNECTION OF PARTS .....**

19/00, 41/00; 39/00

**OTHER METHODS .....** 25/00, 31/00, 41/00

**COMBINED PROCESSES .....** 21/00, 35/00

**HANDLING .....** 43/00, 45/00

**OTHER AUXILIARY OPERATIONS .....** 33/00

**TOOLS .....** 37/00

**SAFETY .....** 55/00

**SPECIAL TREATMENT FOR THE MANUFACTURE OF SPECIFIED ARTICLES .....**

47/00 to 53/00

**Straightening; Restoring form; Bending; Corrugating; Flanging**

- 1/00 Straightening, restoring form or removing local distortions of sheet metal or specific articles made therefrom** (B21D 3/00 takes precedence); **Stretching sheet metal combined with rolling** (working sheet metal of limited length by stretching B21D 25/00; by localised hammering B21D 31/00) [2]
- 3/00 Straightening or restoring form of metal rods, metal tubes, metal profiles, or specific articles made therefrom, whether or not in combination with sheet metal parts** (straightening of well casings in situ E21B)

**5/00 Bending sheet metal along straight lines, e.g. to form simple curves** (B21D 11/00 takes precedence; corrugating sheet metal B21D 13/00; as edge treatment B21D 19/00)

5/01 . between rams and anvils or abutments

5/02 . on press brakes without making use of clamping means

5/04 . on brakes making use of clamping means on one side of the work

5/06 . by drawing procedure making use of dies or forming-rollers, e.g. making profiles

## B21D

- 7/00 Bending rods, profiles, or tubes** (B21D 11/00 takes precedence; using mandrels or the like B21D 9/00)
- 7/02 . over a stationary forming member; by use of a swinging forming member or abutment [2]
- 9/00 Bending tubes using mandrels or the like** (B21D 11/00 takes precedence)
- 11/00 Bending not restricted forms of material mentioned in only one of groups B21D 5/00, B21D 7/00, B21D 9/00; Bending not provided for in groups B21D 5/00 to B21D 9/00** (corrugating or bending into wave form B21D 13/00, B21D 15/00; flanging B21D 19/00; making helically seamed tubing B21C 37/06); **Twisting** [2]
- 13/00 Corrugating sheet metal, rods or profiles; Bending sheet metal, rods or profiles into wave form** (tubes B21D 15/00)
- 15/00 Corrugating tubes** (wrinkle-bending using mandrels or the like B21D 9/00) [2]
- 17/00 Forming single grooves in sheet metal or tubular or hollow articles**
- 19/00 Flanging or other edge treatment, e.g. of tubes** (connecting by making use of folds B21D 39/00; flaring out tube ends B21D 41/00)
- 19/08 . by single or successive action of pressing tools, e.g. vice jaws
- 21/00 Combined processes according to methods covered by groups B21D 1/00 to B21D 19/00**
- Stamping; Spinning; Deep-drawing; Working sheet metal of limited length by stretching; Punching**
- 22/00 Shaping without cutting, by stamping, spinning, or deep-drawing** (otherwise than using rigid devices or tools or yieldable or resilient pads B21D 26/00)
- 22/20 . Deep-drawing (special deep-drawing arrangements in, or in connection with, presses B21D 24/00)
- 22/26 . . for making peculiarly, e.g. irregularly, shaped articles
- 22/28 . . of cylindrical articles using consecutive dies
- 24/00 Special deep-drawing arrangements in, or in connection with, presses**
- 25/00 Working sheet metal of limited length by stretching, e.g. for straightening** [2]
- 26/00 Shaping without cutting otherwise than using rigid devices or tools or yieldable or resilient pads, i.e. applying fluid pressure or magnetic forces** (stamping using resilient pads B21D 22/00)
- 28/00 Shaping by press-cutting; Perforating**
- 28/02 . Punching blanks or articles with or without obtaining scrap (cutting nails or pins from strips or sheet material B21G 3/00); Notching
- 28/04 . . Centering the work; Positioning the tools
- 28/10 . . Incompletely punching in such a manner that the parts are still coherent with the work
- 28/14 . . Dies (ejecting or stripping-off devices arranged in punching machines or tools B21D 45/00)
- 28/24 . Perforating, i.e. punching holes
- 28/34 . . Perforating tools; Die holders
- 28/36 . . using rotatable work or tool holders
- 31/00 Other methods for working sheet metal, metal tubes, metal profiles** (dimpling B21D 22/00; perforating by punching B21D 28/24; enlarging tube ends B21D 41/00; deforming one surface of tubes helically by rolling B21H 3/00; upsetting B21J 5/06; working metal by removing material therefrom B23; embossing B44B)
- 33/00 Special measures in connection with working metal foils, e.g. gold foils** (cutting or perforating of metal foil analogous to paper B26)
- 35/00 Combined processes according to methods covered by groups B21D 1/00 to B21D 31/00** (B21D 21/00 takes precedence)
- 37/00 Tools as parts of machines covered by this subclass** (forms or constructions of tools uniquely adapted for particular operations, see in the relevant groups for the operations)
- 37/01 . Selection of materials [2]
- 37/04 . Movable or exchangeable mountings for tools
- 37/14 . Particular arrangements for handling and holding in place complete dies
- 37/20 . Making tools by operations not covered a single other subclass
- 39/00 Application of procedures in order to connect objects or parts, e.g. coating with sheet metal otherwise than by plating** (riveting B21J; uniting components by forging or pressing to form integral members B21K 25/00; welding B23K; press-fitting, force-fitting, or shrinking in general B23P 11/00, B23P 19/00; by adhesives F16B 11/00); **Tube expanders**
- 39/02 . of sheet metal by folding, e.g. connecting edges of a sheet to form a cylinder
- 39/03 . of sheet metal otherwise than by folding [2]
- 39/04 . of tubes with tubes; of tubes with rods
- 39/08 . Tube expanders
- 41/00 Application of procedures in order to alter the diameter of tube ends** (B21D 39/00 takes precedence)
- 43/00 Feeding, positioning or storing devices combined with, or arranged in, or specially adapted for use in connection with, apparatus for working or processing sheet metal, metal tubes or metal profiles; Associations therewith of cutting devices** (cutting devices associated with the tool, see the relevant group for the tool)
- 43/02 . Advancing work in relation to the stroke of the die or tool
- 43/04 . . by means in mechanical engagement with the work
- 43/05 . . . specially adapted for multi-stage presses
- 43/18 . . by means in pneumatic or magnetic engagement with the work
- 43/20 . Storage arrangements; Piling or unpling (in general B65G)
- 43/26 . Stops
- 43/28 . Associations of cutting devices therewith
- 45/00 Ejecting or stripping-off devices arranged in machines or tools dealt with in this subclass**
- Processing sheet metal or metal tubes, or processing metal profiles according to any of groups B21D 1/00 to B21D 45/00, in the manufacture of finished or semi-finished articles**
- 47/00 Making rigid structural elements or units, e.g. honeycomb structures**

<b>49/00</b>	<b>Sheathing or stiffening objects</b> (by winding wire or tape thereon B65H 54/00, B65H 81/00; specially adapted for manufacturing conductors or cables H01B 13/22)	51/30	. . . Folding the circumferential seam
<b>51/00</b>	<b>Making hollow objects</b> (from thick-walled or non-uniform tubes B21K 21/00)	51/38	. . . Making inlet or outlet arrangements of cans, tins, baths, bottles or other vessels (folded of thin metal foils in the way of making paper caps B31D 5/00); Making can ends; Making closures
51/02	. characterised by the structure of the objects [1,2009.01]	<b>53/00</b>	<b>Making other particular articles</b> (making wire fabrics B21F; making chains or chain parts B21L)
<b>Note</b>		53/02	. heat exchangers, e.g. radiators, condensers (making finned or ribbed tubes by fixing strip material or the like to tubes B21C 37/15) [2]
<i>Making hollow objects characterised both by their structure and by their use is classified only in group B21D 51/16. [2009.01]</i>		53/10	. parts of bearings; sleeves; valve seats or the like
51/16	. characterised by the use of the objects (making heat exchangers B21D 53/02)	53/16	. rings, e.g. barrel hoops
51/26	. . cans or tins; Closing same in a permanent manner (making outlet arrangements B21D 51/38; welding or soldering B23K) [2]	53/26	. wheels or the like
		<b>55/00</b>	<b>Safety devices protecting the machine or the operator, specially adapted for apparatus or machines dealt with in this subclass</b> (for presses in general B30B; safety devices in general F16P)

**B21F WORKING OR PROCESSING OF WIRE** (rolling of metal B21B; by drawing, auxiliary operations used in connection with metal-working without essentially removing material B21C; bundling articles B65B 13/00)

#### Subclass Index

##### WIRE WORKING CHARACTERISED BY OPERATIONS PERFORMED

Bending, straightening; coiling; twisting.....	1/00; 3/00; 7/00
Upsetting, straining.....	5/00, 9/00
Cutting, splitting, connecting .....	11/00, 13/00, 15/00
Articles jacketed or reinforced with wire .....	17/00
Coating of wire .....	19/00

Other treatments .....	99/00
Feeding wire into apparatus .....	23/00

##### WIRE WORKING CHARACTERISED BY THE PARTICULAR ARTICLES PRODUCED

Barbed wire;network, fencing, wire fabrics .....	25/00; 27/00 to 33/00
Springs, rings.....	35/00, 37/00
other articles .....	39/00 to 45/00

#### Wire working characterised by operations performed

<b>1/00</b>	<b>Bending wire other than coiling; Straightening wire</b>
<b>3/00</b>	<b>Coiling wire into particular forms</b>
<b>5/00</b>	<b>Upsetting wire</b> (in the manufacture of nails or pins B21G 3/00)
<b>7/00</b>	<b>Twisting wire; Twisting wire together</b> (for connections of limited size B21F 15/00)
<b>9/00</b>	<b>Straining wire</b> (straining prestressing wires for concrete E04G 21/12; connections or attachments adapted for straining F16G 11/00)
<b>11/00</b>	<b>Cutting wire</b> (hand cutting tools B26B)
<b>13/00</b>	<b>Splitting wire</b>
<b>15/00</b>	<b>Connecting wire to wire or other metallic material or objects; Connecting parts by means of wire</b> (tools for both straining and connecting B21F 9/00; jacketing or reinforcing B21F 17/00; manufacture of wire network B21F 27/00; in making bands B21F 43/00)
<b>17/00</b>	<b>Jacketing or reinforcing articles with wire</b> (by winding B65H 54/00, B65H 81/00; by braiding D04C)

<b>19/00</b>	<b>Metallic coating of wire</b> (by extruding B21C 23/22; by soldering or welding, e.g. cladding or plating, B23K; by other non-mechanical means C23; electroplating C25D)
<b>23/00</b>	<b>Feeding wire in wire-working machines or apparatus</b> (applicable also to feeding rods or strips B21D 43/00)

#### Wire working characterised by the particular articles produced

<b>25/00</b>	<b>Making barbed wire</b>
<b>27/00</b>	<b>Making wire network, i.e. wire nets</b> (meshed-ring network B21F 31/00; in making bands B21F 43/00; using looms D03D)
<b>29/00</b>	<b>Making fencing or like material made partly of wire</b> (B21F 25/00, B21F 27/00 take precedence) [2]
<b>31/00</b>	<b>Making meshed-ring network from wire</b>
<b>33/00</b>	<b>Tools or devices specially designed for handling or processing wire fabrics or the like</b>
<b>35/00</b>	<b>Making springs from wire</b> (by coiling wire B21F 3/00; making resilient rings B21F 37/00)
<b>37/00</b>	<b>Manufacture of rings from wire</b> (in chain making B21L; producing bead-rings or bead-cores for tyres B29D 30/06)

**B21F – B21J**

<b>39/00</b>	<b>Making wheel spokes from wire</b>	<b>45/00</b>	<b>Wire-working in the manufacture of other particular articles</b> (of pins, needles, nails, hairpins B21G; of chains B21L)
<b>41/00</b>	<b>Making umbrella frames or members from wire</b>		
<b>43/00</b>	<b>Making bands, e.g. bracelets, or wire</b> (making chains B21L; using looms D03D)	<b>99/00</b>	<i>Subject matter not provided for in other groups of this subclass [2009.01]</i>

**B21G MAKING NEEDLES, PINS, OR NAILS**

<b>1/00</b>	<b>Making needles used for performing operations</b> (forming heads on pin-like needles B21G 3/00; making U-shaped hairpins B21G 7/00)	<b>3/00</b>	<b>Making pins, nails, or the like</b> (of pins with individual caps B21G 5/00; of U-like shape B21G 7/00; of split-pins B21G 7/00) [2]
		<b>5/00</b>	<b>Making pins or nails with attached caps or with coated heads</b>
		<b>7/00</b>	<b>Making pins of U-like shape or split-pins</b> (of paper fasteners or staples B21D 53/00, B21F 45/00)

**B21H MAKING PARTICULAR METAL OBJECTS BY ROLLING, E.G. SCREWS, WHEELS, RINGS, BARRELS, BALLS**  
(essentially from sheet metal B21D)**Note**

This subclass covers only rolling operations which are specially adapted for use in the manufacture of particular objects and which are not essentially combined with any different metal-working operation unless the latter is a subsidiary operation performed in the same machine.

<b>1/00</b>	<b>Making articles shaped as bodies of revolution</b> (rolling tubes B21B 17/00 to B21B 25/00)	<b>7/00</b>	<b>Making articles not provided for in groups B21H 1/00 to B21H 5/00, e.g. agricultural tools, dinner forks, knives, spoons</b> (nails, pins B21G 3/00)
<b>3/00</b>	<b>Making helical bodies or bodies having parts of helical shape</b> (helical gears B21H 5/00; bending strip or the like helically B21D 11/00; forming tubes or tube walls into helical shape B21D 15/00)	<b>8/00</b>	<b>Rolling metal of indefinite length in repetitive shapes specially designed for the manufacture of particular objects</b>
<b>5/00</b>	<b>Making gear wheels</b>	<b>9/00</b>	<b>Feeding arrangements for rolling machines or apparatus manufacturing articles dealt with in this subclass</b>

**B21J FORGING; HAMMERING; PRESSING; RIVETING; FORGE FURNACES** (rolling of metal B21B; making particular products by forging or pressing B21K; cladding or plating B23K; finishing surfaces by hammering B23P 9/00; compacting surfaces by blasting with particulate material B24C 1/10; general features of presses, presses for consolidating scrap B30B; furnaces in general F27)**Subclass Index**

PREPARING METAL STOCK .....	1/00	Lubrication .....	3/00
FORGING; HAMMERING; PRESSING		Furnaces .....	17/00
General methods, equipment therefor .....	5/00	RIVETING .....	15/00
Machines, presses, hammers .....	7/00 to 13/00	OTHER BLACKSMITHS' REQUISITES .....	19/00

<b>1/00</b>	<b>Preparing metal stock</b>	<b>5/00</b>	<b>Methods for forging, hammering, or pressing</b> (for working sheet metal or metal tubes, rods, or profiles B21D; for working wire B21F); <b>Special equipment or accessories therefor</b>
<b>3/00</b>	<b>Lubricating during forging or pressing</b> (lubricating in general F16N)	<b>5/06</b>	for performing particular operations (making screw-thread by forging, pressing, or hammering B21K)



<b>7/00</b>	<b>Hammers; Forging machines with hammers or die jaws acting by impact</b> (hand hammers B25D; electrical features section H)	<b>13/00</b>	<b>Details of machines for forging, pressing, or hammering</b>
<b>9/00</b>	<b>Forging presses</b>	<b>13/02</b>	<b>. Dies or mountings therefor [2]</b>
<b>11/00</b>	<b>Forging hammers combined with forging presses; Forging machines with provision for hammering and pressing</b>	<b>15/00</b>	<b>Riveting</b>
		<b>17/00</b>	<b>Forge furnaces</b> (furnaces for heat treatment C21D 9/00; furnaces in general F27)
		<b>19/00</b>	<b>Blacksmiths' requisites not otherwise provided for</b>

**B21K MAKING FORGED OR PRESSED PRODUCTS, E.G. HORSE-SHOES, RIVETS, BOLTS, WHEELS** (making particular articles by working sheet metal without essentially removing material B21D; processing wire B21F; making pins, needles or nails B21G; making particular articles by rolling B21H; forging machines, pressing machines, hammering machines, in general B21J; making chains B21L; plating B23K)

#### Note

This subclass covers only forging, pressing, or hammering operations which are specially adapted for use in the manufacture of particular objects and which are not essentially combined with any different metal-working operation unless the latter is a subsidiary operation performed in the same machine.

#### Subclass Index

MAKING MACHINE ELEMENTS OR TOOLS .....	1/00, 3/00, 5/00, 19/00	MAKING OTHER ARTICLES.....	7/00, 11/00, 17/00, 21/00, 23/00
MAKING RAILS .....	7/00, 9/00	UNITING OF COMPONENTS .....	25/00
MAKING LOCKSMITHS' OR BLACKSMITHS' GOODS.....	13/00, 15/00	ACCESSORIES, AUXILIARY DEVICES.....	27/00, 29/00, 31/00

#### Making particular articles by forging, pressing, or hammering; Equipment therefor

<b>1/00</b>	<b>Making machine elements</b>	<b>21/00</b>	<b>Making hollow articles not covered by any single one of groups B21K 1/00 to B21K 19/00</b> (essentially from sheet-metal or uniform thin-walled tubes B21D, e.g. B21D 41/00, B21D 51/00)
1/06	. axles or shafts	<b>23/00</b>	<b>Making other articles</b>
1/28	. wheels; discs	<b>25/00</b>	<b>Uniting components to form integral members, e.g. turbine wheels and shafts, caulks with inserts, with or without shaping of the components</b> (uniting by interference- or press-fitting B23P 11/02, B23P 19/02)
<b>3/00</b>	<b>Making engine or like machine parts not covered by B21K 1/00; Making propellers or the like</b>		
<b>5/00</b>	<b>Making tools or tool parts, e.g. pliers</b>		
<b>7/00</b>	<b>Making railway appurtenances; Making vehicle parts</b>		
<b>9/00</b>	<b>Reconditioning railroad accessories, e.g. rails</b>		
<b>11/00</b>	<b>Making cutlery wares; Making garden tools or the like</b>		
<b>13/00</b>	<b>Making locksmiths' goods, e.g. handles for cases</b>		
<b>15/00</b>	<b>Making blacksmiths' goods</b>		
<b>17/00</b>	<b>Making sport articles, e.g. skates</b>		
<b>19/00</b>	<b>Making articles for agricultural machinery</b>		

#### Accessories; Auxiliary devices

<b>27/00</b>	<b>Handling devices, e.g. for feeding, aligning, discharging; Cutting-off means; Arrangement thereof</b>
<b>29/00</b>	<b>Arrangements for heating or cooling during processing</b> (for preparing metal stock to be forged or pressed B21J 1/00; heating equipment in general, <u>see</u> the appropriate subclasses, e.g. H05B)
<b>31/00</b>	<b>Control devices specially adapted for positioning tool carriers</b>

**B21L MAKING CHAINS** (making chains or chain links by casting B22D 25/00; chains in general F16G)

#### Subclass Index

GENERAL METHODS OF WORKING	METHODS FOR MAKING SPECIAL CHAINS OR PARTS THEREOF.....	11/00, 13/00
Chains made from individual links .....	TOOLS FOR MANUFACTURE OR REPAIR.....	19/00, 21/00
Chains with integral links .....	FINISHING .....	15/00

- 
- |      |                                                                                                                                                                              |       |                                                                                                                    |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------|
| 1/00 | Making chains or chain links by bending workpieces of rod, wire, or strip to form links of oval or other simple shape (B21L 3/00, B21L 7/00 take precedence)                 | 11/00 | Making chains or chain links of special shape                                                                      |
| 3/00 | Making chains or chain links by bending the chain links or link parts and subsequently welding or soldering the abutting ends (B21L 7/00 takes precedence)                   | 13/00 | Making terminal or intermediate chain links of special shape; Making couplings for chains, e.g. swivels, shackles  |
| 5/00 | Making chains or chain links by working the starting material in such a way that integral, i.e. jointless, chain links are formed                                            | 15/00 | Finishing or dressing chains or chain links, e.g. removing burr material, calibrating (B21L 9/00 takes precedence) |
| 7/00 | Making chains or chain links by cutting single loops or loop-parts from coils, assembling the cut parts and subsequently subjecting same to twisting with or without welding | 19/00 | Appurtenances for chain-making not restricted to any particular process                                            |
| 9/00 | Making chains or chain links, the links being composed of two or more different parts, e.g. drive chains (B21L 1/00, B21L 7/00, B21L 11/00, B21L 13/00 take precedence)      | 21/00 | Tools or implements for repairing chains using metal-working operations, e.g. for detaching deformed chain links   |
|      |                                                                                                                                                                              | 99/00 | <i>Subject matter not provided for in other groups of this subclass [2009.01]</i>                                  |

**B22 CASTING; POWDER METALLURGY****B22C FOUNDRY MOULDING** (moulding refractory materials in general B28B)**Note**

This subclass covers:

- the making of moulds for casting metals or of other refractory moulds;
- selection or preparation of materials therefor;
- the necessary patterns, processes, machines, accessory devices or tools.

**Subclass Index**

PATTERNS, MANUFACTURE THEREOF.....	7/00, 3/00	MOULDING MACHINES, PROCESSES INVOLVING THESE MACHINES.....	11/00 to 19/00
MOULDS, CORES, GENERAL MOULDING PROCESSES; COMPOSITIONS FOR MOULDS AND CORES .....	9/00; 1/00, 3/00	MOULDING PLANTS .....	25/00
		TOOLS OR OTHER DEVICES .....	5/00, 21/00, 23/00

- 1/00 Compositions of refractory mould or core materials; Grain structures thereof** (refractory materials in general C04B 35/00); **Chemical or physical features in the formation or manufacture of moulds**
- 1/16 . characterised by the use of binding agents; Mixtures of binding agents
- 3/00 Selection of compositions for coating the surfaces of moulds, cores, or patterns**
- 5/00 Machines or devices specially designed for dressing or handling the mould material so far as specially adapted for that purpose** (of general applicability, see the relevant places, e.g. for material with water-setting properties B28C)
- 7/00 Patterns; Manufacture thereof so far as not provided for in other classes**
- 9/00 Moulds or cores** (uniquely adapted to particular casting processes B22D); **Moulding processes** (processes involving the use of particular moulding machines, see the relevant groups for these machines)
- 9/02 . Sand moulds or like moulds for shaped castings
- 9/04 . . Use of lost patterns
- 9/06 . Permanent moulds for shaped castings (moulds for ingots B22D 7/00)
- 9/10 . Cores; Manufacture or installation of cores
- 9/22 . Moulds for peculiarly-shaped castings

**Moulding machines for making moulds or cores**

- 11/00 Moulding machines for making moulds or cores, characterised by the relative arrangement of their parts**
- 13/00 Moulding machines for making moulds or cores of particular shapes**
- 15/00 Moulding machines for making moulds or cores, characterised by the compacting mechanism; Accessories therefor**
- 17/00 Moulding machines for making moulds or cores, characterised by the mechanism for separating the pattern from the mould or for turning over the flask or the pattern plate**
- 19/00 Components or accessories for moulding machines for making moulds or cores**
- 21/00 Flasks; Accessories therefor** (stripping plates B22C 17/00)
- 23/00 Tools; Devices not mentioned before for moulding**
- 25/00 Foundry moulding plants** (for preparing mould materials B22C 5/00; in combination with casting plants B22D 47/00)

**B22D CASTING OF METALS; CASTING OF OTHER SUBSTANCES BY THE SAME PROCESSES OR DEVICES** (shaping of plastics or substances in a plastic state B29C; metallurgical processing, selection of substances to be added to metal C21, C22)**Note**

In this subclass, any material to be cast is referred to as metal.

**Subclass Index**

PRELIMINARY TREATMENTS.....	1/00	Pressure die casting or injection die casting.....	17/00
INDICATING OR MEASURING .....	2/00	Pressure casting, vacuum casting.....	18/00
GENERAL CASTING PROCESSES; EQUIPMENT THEREFOR		Other processes .....	15/00, 23/00
Centrifugal casting.....	13/00		

## CASTING CHARACTERISED BY THE PRODUCTS

Pig casting .....	3/00, 5/00
Ingots casting .....	7/00, 9/00
Continuous casting .....	11/00
Casting in, on, or around objects.....	19/00
Casting for other specified purposes.....	25/00
CASTING PARTICULAR METALS.....	21/00
AFTER-TREATMENTS	
Of non-solidified metal .....	27/00

Removing from moulds .....	29/00
Cooling .....	30/00
Cutting-off surplus material.....	31/00
OTHER EQUIPMENT	
For handling, for supplying .....	29/00, 33/00, 35/00, 37/00, 39/00, 41/00
For cleaning .....	43/00
For other purposes .....	45/00
CONTROLLING OR SUPERVISING.....	46/00
CASTING PLANTS .....	47/00

- 1/00 Treatment of fused masses in the ladle or the supply runners before casting** (features relating to gas injection, provided on closures of the sliding-gate type B22D 41/22, provided on pouring-nozzles B22D 41/50)
- 2/00 Arrangement of indicating or measuring devices, e.g. for temperature or viscosity of the fused mass [3]**

**Casting of pigs, i.e. metal castings suitable for subsequent melting; Similar casting**

- 3/00 Pig or like casting** (equipment for conveying molten metal B22D 35/00)
- 5/00 Machines or plants for pig or like casting**

**Casting of ingots, i.e. metal castings suitable for subsequent rolling or forging**

- 7/00 Casting ingots** (equipment for conveying molten metal B22D 35/00)
- 9/00 Machines or plants for casting ingots**

**Particular casting processes; Machines or apparatus therefor**

- 11/00 Continuous casting of metals, i.e. casting in indefinite lengths** (metal drawing, metal extruding B21C)
- 11/01 . . without moulds, e.g. on molten surfaces [2]
- 11/04 . . into open-ended moulds (B22D 11/06, B22D 11/07 take precedence; plants for continuous casting, e.g. for upwardly drawing the strand, B22D 11/14) [3]
- 11/041 . . for vertical casting (B22D 11/043, B22D 11/049 to B22D 11/059 take precedence) [7]
- 11/043 . . Curved moulds (B22D 11/049 to B22D 11/059 take precedence) [7]
- 11/045 . . for horizontal casting (B22D 11/049 to B22D 11/059 take precedence) [7]
- 11/049 . . for direct chill casting, e.g. electromagnetic casting [7]
- 11/05 . . into moulds having adjustable walls [7]
- 11/051 . . into moulds having oscillating walls [7]
- 11/053 . . Means for oscillating the moulds [7]
- 11/055 . . Cooling the moulds [7]
- 11/057 . . Manufacturing or calibrating the moulds [7]
- 11/059 . . Mould materials or platings [7]
- 11/06 . . into moulds with travelling walls, e.g. with rolls, plates, belts, caterpillars (B22D 11/07 takes precedence) [3]
- 11/07 . . Lubricating the moulds [3]
- 11/08 . . Accessories for starting the casting procedure
- 11/10 . . Supplying or treating molten metal (B22D 41/00 takes precedence) [1,7]

- 11/103 . . Distributing the molten metal, e.g. using runners, floats, distributors [7]
- 11/106 . . Shielding the molten jet [7]
- 11/108 . . Feeding additives, powders, or the like [7]
- 11/11 . . Treating the molten metal [7]
- 11/12 . . Accessories for subsequent treating or working cast stock *in situ* (rolling immediately subsequent to continuous casting B21B 1/46, B21B 13/00) [3]
- 11/124 . . for cooling [2]
- 11/128 . . for removing [2]
- 11/14 . . Plants for continuous casting, e.g. for upwardly drawing the strand
- 11/16 . . Controlling or regulating processes or operations [2]
- 11/18 . . for pouring (B22D 11/20 takes precedence) [4]
- 11/20 . . for removing cast stock [4]
- 11/22 . . for cooling cast stock or mould [4]
- 13/00 Centrifugal casting; Casting by using centrifugal force**
- 15/00 Casting using a mould or core of which a part significant to the process of high thermal conductivity, e.g. chill casting; Moulds or accessories specially adapted therefor** (continuous casting of metals into open-ended moulds for direct chill casting B22D 11/049) [1,7]
- 17/00 Pressure die casting or injection die casting, i.e. casting in which the metal is forced into a mould under high pressure [3]**
- 17/02 . . Hot chamber machines, i.e. with heated press chamber in which metal is melted
- 17/08 . . Cold chamber machines, i.e. with unheated press chamber into which molten metal is ladled
- 17/20 . . Accessories; Details
- 17/22 . . Dies (manufacture, *see* the appropriate class, e.g. B23P 15/24); Die plates; Die supports; Cooling equipment for dies; Accessories for loosening and ejecting castings from dies
- 17/24 . . . Accessories for locating and holding cores or inserts
- 17/26 . . Mechanisms or devices for locking or opening dies
- 17/30 . . Accessories for supplying molten metal, e.g. in rations
- 17/32 . . Controlling equipment
- 18/00 Pressure casting; Vacuum casting** (B22D 17/00 takes precedence; treating the metal in the mould by using pressure or vacuum B22D 27/00) [3]
- 18/04 . . Low pressure casting, i.e. making use of pressures up to a few bars to fill the mould [3]
- 18/06 . . Vacuum casting, i.e. making use of vacuum to fill the mould [3]

- 19/00 Casting in, on, or around, objects which form part of the product** (B22D 23/00 takes precedence; alumino-thermic welding B23K 23/00; coating by casting molten material on the substrate C23C 6/00)
- 19/02 . for making reinforced articles (B22D 19/14 takes precedence) [3]
- 19/04 . for joining parts
- 19/06 . for manufacturing or repairing tools
- 19/08 . for building up linings or coverings, e.g. of anti-frictional metal
- 19/10 . Repairing defective or damaged objects by metal casting techniques (by other techniques B23P 6/00)
- 19/12 . for making objects, e.g. hinges, with parts which are movable relatively to one another
- 19/14 . the objects being filamentary or particulate in form (making alloys containing fibres or filaments by contacting the fibres or filaments with molten metal C22C 47/00) [3]
- 19/16 . for making compound objects cast of two or more different metals, e.g. for making rolls for rolling mills (casting compound ingots B22D 7/00) [3]
- 21/00 Casting non-ferrous metals or metallic compounds so far as their metallurgical properties are of importance for the casting procedure** (apparatus for vacuum casting B22D 18/00); **Selection of compositions therefor** (use of inert atmosphere in casting metals in general B22D 23/00)
- 23/00 Casting processes not provided for in groups B22D 1/00 to B22D 21/00** (making metallic powder by casting B22F 9/08; alumino-thermic welding B23K 23/00; remelting metals C22B 9/16)
- 25/00 Special casting characterised by the nature of the product** (B22D 15/00, B22D 17/00, B22D 19/00 take precedence; casting stereotype plates B41D 3/00) [2]
- 27/00 Treating the metal in the mould while it is molten or ductile** (B22D 7/00, B22D 11/10, B22D 18/00, B22D 43/00 take precedence) [3]
- 27/02 . Use of electric or magnetic effects
- 27/04 . Influencing the temperature of the metal, e.g. by heating or cooling the mould (cooling of open-ended moulds in continuous casting B22D 11/055) [1,7]

#### **Final measures after casting**

- 29/00 Removing castings from moulds, not restricted to casting processes covered by a single main group; Removing cores; Handling ingots** [2]

- 30/00 Cooling castings, not restricted to casting processes covered by a single main group** (accessories for cooling cast stock in continuous casting of metals B22D 11/124; controlling or regulating processes or operations for cooling cast stock or mould in continuous casting of metals B22D 11/22; chill casting B22D 15/00) [5]

- 31/00 Cutting-off surplus material after casting, e.g. gates** (cleaning of castings by sand-blasting B24C)

#### **Other equipment for casting** [3]

- 33/00 Equipment for handling moulds**
- 35/00 Equipment for conveying molten metal into beds or moulds** (B22D 37/00 to B22D 41/00 take precedence; specially adapted to particular processes or machines, see the relevant groups)
- 37/00 Controlling or regulating the pouring of molten metal from a casting melt-holding vessel** (B22D 39/00, B22D 41/00 take precedence; specially adapted to particular processes or machines, see the relevant groups of this subclass) [3,5]
- 39/00 Equipment for supplying molten metal in rations** (specially adapted to particular processes or machines, see the relevant groups of this subclass)
- 41/00 Casting melt-holding vessels, e.g. ladles, tundishes, cups or the like** (B22D 39/00, B22D 43/00 take precedence) [5]
- 41/005 . with heating or cooling means [5]
- 41/02 . Linings
- 41/14 . Closures [5]
- 41/22 . . sliding-gate type, i.e. having a fixed plate and a movable plate in sliding contact with each other for selective registry of their openings [5]
- 41/50 . Pouring-nozzles [5]
- 41/52 . . Manufacturing or repairing thereof [5]
- 43/00 Mechanical cleaning, e.g. skimming of molten metals**
- 45/00 Equipment for casting, not otherwise provided for**
- 
- 46/00 Controlling, supervising, not restricted to casting covered by a single main group, e.g. for safety reasons** [3]
- 47/00 Casting plants**

**B22F WORKING METALLIC POWDER; MANUFACTURE OF ARTICLES FROM METALLIC POWDER; MAKING METALLIC POWDER** (processes or devices for granulating materials in general B01J 2/00; making ceramics by compacting or sintering C04B, e.g. C04B 35/64; for the production of metals as such, see class C22; reduction or decomposition of metal compounds in general C22B; making alloys by powder metallurgy C22C; electrolytic production of metal powder C25C 5/00)

#### **Notes**

- (1) This subclass covers the making of metallic powder only insofar as powder with specific physical characteristics is made. [6]
- (2) In this subclass, the following terms or expressions are used with the meanings indicated:
- “metallic powder” covers powders containing a substantial proportion of non-metallic material;
  - “powder” includes somewhat larger particles which are worked, obtained or behave in a manner similar to powder, e.g. fibres.

- 1/00** Special treatment of metallic powder, e.g. to facilitate working, to improve properties; Metallic powders per se, e.g. mixtures of particles of different composition (C04, C08 take precedence)
- 1/02 . comprising coating of the powder [2]
- 3/00** Manufacture of workpieces or articles from metallic powder characterised by the manner of compacting or sintering; Apparatus specially adapted therefor
- 3/02 . Compacting only
- 3/03 . . Press-moulding apparatus therefor [6]
- 3/04 . . by applying fluid pressure
- 3/06 . . by centrifugal forces
- 3/08 . . by explosive forces
- 3/087 . . using high energy impulses, e.g. magnetic field impulses [6]
- 3/093 . . using vibration [6]
- 3/10 . Sintering only
- 3/105 . . by using electric current, laser radiation or plasma (B22F 3/11 takes precedence) [6]
- 3/11 . . Making porous workpieces or articles [6]
- 3/12 . Both compacting and sintering (by forging B22F 3/00) [6]
- 3/14 . . simultaneously
- 3/20 . by extruding
- 3/22 . for producing castings from a slip
- 3/24 . After-treatment of workpieces or articles
- 3/26 . . Impregnating

- 5/00** Manufacture of workpieces or articles from metallic powder characterised by the special shape of the product
- 5/02 . of piston rings
- 5/04 . of turbine blades
- 5/06 . of threaded articles, e.g. nuts
- 5/08 . of toothed articles, e.g. gear wheels; of cam discs
- 5/10 . of articles with cavities or holes, not otherwise provided for in the preceding subgroups [6]
- 5/12 . of tubes or wires [6]
- 7/00** Manufacture of composite layers, workpieces, or articles, comprising metallic powder, by sintering the powder, with or without compacting
- 7/02 . of composite layers
- 7/06 . of composite workpieces or articles from parts, e.g. to form tipped tools
- 8/00** Manufacture of articles from scrap or waste metal particles [6]
- 9/00** Making metallic powder or suspensions thereof
- 9/02 . using physical processes [3]
- 9/06 . . starting from liquid material [3]
- 9/08 . . . by casting, e.g. through sieves or in water, by atomising or spraying (using electric discharge B22F 9/02) [3]
- 9/16 . using chemical processes [3]

**B23 MACHINE TOOLS; METAL-WORKING NOT OTHERWISE PROVIDED FOR** (punching, perforating, making articles by processing sheet metal, tubes, or profiles B21D; wire-working B21F; making pins, needles, or nails B21G; making chains B21L; grinding B24)

### Notes

- (1) This class covers:
- operations not provided for in any other class;
  - combinations of operations covered by different subclasses of classes B21 to B24, which combinations are covered by subclass B23P, with the exception of subsidiary operations performed in conjunction with main operations covered by a single subclass;
  - features, specific to machine tools, which relate to a requirement or problem of a nature which is not peculiar to a particular kind of machine tool, e.g. feeding work, which are covered by subclass B23Q, although the realisation of these features may differ according to the kind of machine tool concerned. The said subclass covers such features, in general, even if the feature or a specific function, in any particular case, is to some extent peculiar to, or is claimed only for, machine tools designed for one particular operation; only in exceptional cases are such features classified in the subclass for the machine tool concerned. Certain features of this general nature are, however, referred to subclasses relating to particular metal-working operations, especially B23B, in which case the subclasses in question are not restricted, in respect of those features, to the kind of machine tool with which they are primarily concerned.
- (2) In this class, the following terms or expressions are used with the meanings indicated:
- “metal-working” covers the working of other materials unless the context requires otherwise;
  - “kind of operations” and similar expressions relate to such metal-working operations as boring, drilling, milling and grinding;
  - “kind of machine” means a machine designed for a particular kind of metal-working operation (e.g. a lathe);
  - “form of machine” means a machine of a particular kind adapted or arranged for a particular way of working or for particular work, e.g. face-plate lathe, tailstock lathe, turret lathe;
  - “different machines” covers different forms of machines for performing the same type of metal-working operation, e.g. vertical and horizontal boring machines.
- (3) If details, components, or accessories have no essential feature specific to machine tools, the more general class, e.g. F16, takes precedence.

**B23B TURNING; BORING** (using an electrode which takes the place of a tool B23H, e.g. making holes B23H 9/00; working by laser beam B23K 26/00; arrangements for copying or controlling B23Q)

### Subclass Index

TURNING	other parts .....	17/00, 21/00, 33/00
Methods .....	1/00	
Lathes	accessories .....	25/00
general-purpose lathes .....	3/00	
semi-automatic or automatic lathes .....	7/00, 9/00, 11/00	
for particular work .....	5/00	
handling, adjusting .....	13/00, 15/00	
component parts		
headstocks, tailstocks, chucks .....	19/00, 23/00, 31/00	
tools, or holders therefor .....	27/00, 29/00	
	BORING, DRILLING	
	Methods .....	35/00, 37/00
	Machines	
	general-purpose machines .....	39/00
	for particular work .....	41/00
	hand-held machines .....	45/00
	component parts .....	47/00, 49/00, 51/00
	DEVICES FOR ATTACHMENT TO ANY MACHINE TOOL .....	43/00

### Turning

1/00	Methods for turning or working essentially requiring the use of turning-machines; Use of auxiliary equipment in connection with such methods	7/00	Automatic or semi-automatic turning-machines with a single working-spindle, e.g. controlled by cams; Equipment therefor; Features common to automatic and semi-automatic turning-machines with one or more working-spindles
3/00	General-purpose turning-machines or devices, e.g. centre lathes with feed rod and lead screw; Sets of turning-machines	9/00	Automatic or semi-automatic turning-machines with a plurality of working-spindles, e.g. automatic multiple-spindle machines with spindles arranged in a drum carrier able to be moved into pre-determined positions; Equipment therefor (equipment applicable to single-spindle machines B23B 7/00)
5/00	Turning-machines or devices specially adapted for particular work; Accessories specially adapted therefor		
5/08	for turning axles, bars, rods, tubes, rolls, i.e. shaft-turning lathes, roll lathes; Centreless turning	11/00	Automatic or semi-automatic turning-machines incorporating equipment for performing other working procedures, e.g. slotting, milling, rolling

## B23B – B23C

- 13/00 Arrangements for automatically conveying, chucking or guiding stock for turning machines
- 15/00 Arrangements for conveying, loading, adjusting, reversing, chucking, or discharging workpieces specially designed for automatic or semi-automatic turning-machines

### Components or accessories particularly for turning machines

- 17/00 **Lathe beds** (foundation frames, carriage guides as such B23Q 1/00)
- 19/00 **Headstocks; Equivalent parts of any machine tools**
- 21/00 **Lathe carriages; Cross-slides; Tool posts** (tool holders B23B 29/00); **Similar parts of any machine tools**
- 23/00 **Tailstocks; Centres**
- 25/00 **Accessories or auxiliary equipment for turning-machines** (for machine tools in general B23Q; cooling or lubricating B23Q 11/12)
- 
- 27/00 **Tools for turning or boring machines** (for drilling machines B23B 51/00); **Tools of a similar kind in general; Accessories therefor**
- 27/14 . Cutting tools of which the bits or tips are of special material
- 27/16 . . with exchangeable cutting bits, e.g. able to be clamped
- 27/18 . . with cutting bits or tips rigidly mounted, e.g. by brazing
- 27/20 . . with diamond bits
- 29/00 **Holders for non-rotary cutting tools** (B23B 27/00 takes precedence); **Boring bars or boring heads; Accessories for tool holders**
- 29/24 . Tool holders for a plurality of cutting tools, e.g. turrets
- 31/00 **Chucks; Expansion mandrels; Adaptations thereof for remote control** (devices for securing work or tools to spindles in general B23Q 3/00; rotary devices holding by magnetic or electrical force acting directly on work B23Q 3/15)
- 31/02 . Chucks
- 31/10 . . characterised by the retaining or gripping devices or their immediate operating means
- 31/12 . . . Chucks with simultaneously-acting jaws, whether or not also individually adjustable
- 31/20 . . . . Longitudinally-split sleeves, e.g. collet chucks

- 33/00 **Drivers; Driving centres; Nose clutches, e.g. lathe dogs**

### Boring; Drilling [3]

- 35/00 **Methods for boring or drilling, or for working essentially requiring the use of boring or drilling machines; Use of auxiliary equipment in connection with such methods**
- 37/00 **Boring by making use of vibrations of ultrasonic frequency** (working materials by subjecting the grinding tools or the abrading medium to vibration, e.g. grinding with ultrasonic frequency, B24B 1/04)
- 39/00 **General-purpose boring or drilling machines or devices; Sets of boring or drilling machines**
- 41/00 **Boring or drilling machines or devices specially adapted for particular work; Accessories specially adapted therefor**
- 43/00 **Boring or drilling devices able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool** (if specially adapted for particular work B23B 41/00)
- 45/00 **Hand-held or like portable drilling machines, e.g. drill guns; Equipment therefor** (details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00) [4]

### Components or accessories for boring or drilling machines

- 47/00 **Constructional features of components specially designed for boring or drilling machines; Accessories therefor** (working-spindles, bearing sleeves therefor B23B 19/00; for machine tools in general B23Q)
- 49/00 **Measuring or gauging equipment on boring machines for positioning or guiding the drill; Devices for indicating failure of drills during boring; Centring devices for holes to be bored** (marking-out equipment B25H 7/00; measuring devices, gauges G01B)
- 51/00 **Tools for drilling machines**
- 51/02 . Twist drills
- 51/04 . for trepanning
- 51/06 . Drills with lubricating or cooling equipment
- 51/10 . Bits for countersinking

## **B23C MILLING** (broaching B23D; broach-milling in making gears B23F; arrangements for copying or controlling B23Q)

### Subclass Index

MILLING MACHINES IN GENERAL .....1/00

MILLING PARTICULAR WORK.....3/00

COMPONENT PARTS, ACCESSORIES ..... 5/00, 9/00

DEVICES FOR ATTACHMENT TO ANY MACHINE ..... 7/00

- 1/00 **Milling machines not designed for particular work or special operations**



3/00	<b>Milling particular work; Special milling operations; Machines therefor</b> (milling gear teeth B23F; milling of threads B23G 1/00) [2]	5/10	. . Shank-type cutters, i.e. with an integral shaft
3/12	. Trimming or finishing edges, e.g. deburring welded corners	5/16	. characterised by physical features other than shape
5/00	<b>Milling-cutters</b> (for cutting gear teeth B23F 21/00)	7/00	<b>Milling devices able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool</b>
5/02	. characterised by the shape of the cutter	9/00	<b>Details or accessories so far as specially adapted to milling machines or cutters</b> (drives, control devices, or accessories, in general B23Q)

**B23D PLANING; SLOTTING; SHEARING; BROACHING; SAWING; FILING; SCRAPING; LIKE OPERATIONS FOR WORKING METAL BY REMOVING MATERIAL, NOT OTHERWISE PROVIDED FOR** (making toothed gears or the like B23F; cutting metal by applying heat locally B23K; arrangements for copying or controlling B23Q)

### Note

This subclass covers machines for shearing sheet metal or other stock material except metal foils workable in a manner analogous to paper, which is covered by class B26. [2]

### Subclass Index

#### PLANING; SLOTTING

Working method of the machine .....	1/00, 3/00, 5/00
Machines characterised by constructional features of a part .....	7/00
Hand-operated devices; portable apparatus .....	9/00
Devices for attachment to any machine tool.....	11/00
Tools, tool holders .....	13/00

#### SHEARING

Working method of machines or apparatus .....	15/00, 17/00, 19/00, 27/00, 31/00
Hand-held devices .....	21/00, 27/00, 29/00
Tools, holders, chucks .....	35/00
Accessories .....	33/00
Machines for particular work .....	21/00, 23/00, 25/00
Control arrangements .....	36/00

#### BROACHING; REAMING

Working method of machines or apparatus .....	37/00
Machines or devices characterised by constructional features of a part .....	41/00
Tools.....	43/00, 77/00

Accessories.....	39/00
Machines or devices for reaming bored holes .....	75/00

#### SAWING

Working method of machines or apparatus .....	
using saw discs .....	45/00, 47/00
using straight saw blades.....	49/00, 51/00
using endless saw blades .....	53/00, 55/00
other working methods.....	57/00
Machines or devices characterised by constructional features of a part.....	47/00, 51/00, 55/00
Tools and attachment thereof; dressing thereof; making thereof .....	51/00, 61/00, 63/00, 65/00
Accessories.....	59/00
Control arrangements.....	36/00

#### FILING; RASPING

Working method of machines or apparatus.....	67/00
Machines or devices characterised by constructional features of a part.....	69/00
Tools; making thereof .....	71/00; 73/00

OTHER METHODS, MACHINES, OR DEVICES; COMBINATIONS .....79/00; 81/00

### Planing; Slotting

1/00	<b>Planing or slotting machines cutting by relative movement of the tool and workpiece in a horizontal straight line only</b>	7/00	<b>Planing or slotting machines characterised only by constructional features of particular parts</b> (constructional features of these parts <u>per se</u> B23Q)
3/00	<b>Planing or slotting machines cutting by relative movement of the tool and workpiece in a vertical or inclined straight line</b>	9/00	<b>Hand-operated planing devices; Portable planing apparatus</b> (details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00) [4]
5/00	<b>Planing or slotting machines cutting otherwise than by relative movement of the tool and workpiece in a straight line</b>	11/00	<b>Planing or slotting devices able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool</b>

## B23D

- 13/00** **Tools or tool holders specially designed for planing or slotting machines** (features applicable also to turning-machines B23B 27/00, B23B 29/00; for cutting gear teeth B23F 21/00)

### Shearing; Similar cutting

- 15/00** **Shearing machines or shearing devices cutting by blades which move parallel to each other**
- 17/00** **Shearing machines or shearing devices cutting by blades pivoted on a single axis** (on an axis parallel to the blade B23D 15/00; hand-held devices B23D 29/00)
- 19/00** **Shearing machines or shearing devices cutting by rotary discs** (by friction saw discs B23D 45/00)
- 21/00** **Machines or devices for shearing or cutting tubes** (as additional equipment for deep-drawing presses B21D 24/00; by sawing, see the relevant groups for sawing machines or sawing devices)
- 23/00** **Machines or devices for shearing or cutting profiled stock** (hand-held devices B23D 29/00)
- 25/00** **Machines or arrangements for shearing stock while the latter is travelling otherwise than in the direction of the cut** (control arrangements specially adapted for machines for shearing stock while the latter is travelling otherwise than in the direction of the cut B23D 36/00; controlling slack in travelling flexible stock B21C 47/02) [2]
- 27/00** **Machines or devices for cutting by a nibbling action**
- 29/00** **Hand-held metal-shearing or metal-cutting devices** (with nibbling action B23D 27/00; hand-operated devices for metal-cutting otherwise than by shearing B26B)
- 31/00** **Shearing machines or shearing devices covered by none or more than one of the groups B23D 15/00 to B23D 29/00; Combinations of shearing machines**
- 33/00** **Accessories for shearing machines or shearing devices** (feeding stock to machines or removing stock B21D 43/00)
- 35/00** **Tools for shearing machines or shearing devices; Holders or chucks for shearing tools**
- 
- 36/00** **Control arrangements specially adapted for machines for shearing or similar cutting, or for sawing, stock while the latter is travelling otherwise than in the direction of the cut** [2]

### Broaching

- 37/00** **Broaching machines or broaching devices**
- 39/00** **Accessories for broaching machines or broaching devices**
- 41/00** **Broaching machines or broaching devices characterised only by constructional features of particular parts** (constructional features of these parts per se B23Q)
- 43/00** **Broaching tools** (for cutting gear teeth B23F 21/00)

### Sawing

- 45/00** **Sawing machines or sawing devices with circular saw blades or with friction saw discs** (shearing machines with rotary discs B23D 19/00 to B23D 25/00)
- 47/00** **Sawing machines or sawing devices working with circular saw blades, characterised only by constructional features of particular parts** (constructional features of these parts per se B23Q; details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00) [4]
- 49/00** **Machines or devices for sawing with straight reciprocating saw blades, e.g. hacksaws**
- 51/00** **Sawing machines or sawing devices working with straight blades, characterised only by constructional features of particular parts** (constructional features of these parts per se B23Q; details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00); **Carrying or attaching means for tools, covered by this subclass, which are connected to a carrier at both ends** [4]
- 53/00** **Machines or devices for sawing with strap saw blades which are effectively endless in use, e.g. for contour cutting**
- 55/00** **Sawing machines or sawing devices working with strap saw blades, characterised only by constructional features of particular parts** (constructional features of these parts per se B23Q)
- 57/00** **Sawing machines or sawing devices not covered by one of groups B23D 45/00 to B23D 55/00**
- 59/00** **Accessories specially designed for sawing machines or sawing devices** (lubricating or cooling machine tools in general B23Q 11/12)
- 61/00** **Tools for sawing machines or sawing devices** (tools for trepanning B23B 51/04); **Clamping devices for these tools**
- 63/00** **Dressing the tools of sawing machines or sawing devices for use in cutting any kind of material, e.g. in the manufacture of sawing tools** (sharpening the cutting edges of mortise chain cutters B24B 3/00)
- 65/00** **Making tools for sawing machines or sawing devices for use in cutting any kind of material**

### Filing or rasping

- 67/00** **Filing or rasping machines or devices** (securing arrangements for files or rasps B23D 71/00)
- 69/00** **Filing or rasping machines or devices, characterised only by constructional features of particular parts, e.g. guiding arrangements, drives** (constructional features of these parts per se B23Q; details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00); **Accessories for filing or rasping** (attached to the tool B23D 71/00) [4]
- 71/00** **Filing or rasping tools; Securing arrangements therefor** (carrying or attaching means for tools which are connected to a carrier at both ends B23D 51/00; guiding arrangements B23D 69/00; tool holders for machine tools B23Q 3/00; handles for hand implements B25G)

**73/00 Making files or rasps** (special treatment by sand-blast B24C 1/00; sharpening files by etching C23F 1/06)

#### Reaming bored holes

**75/00 Reaming machines or reaming devices** (tool holders for machine tools B23Q 3/00; handles for hand implements B25G)

**77/00 Reaming tools**

**79/00 Methods, machines or devices not covered elsewhere, for working metal by removal of material** (by combined operations B23D 81/00; turning machines for bevelling, chamfering, or deburring the ends of bars or tubes B23B 5/00; scrubbing or peeling ingots by milling B23C 3/00; working of metal by the action of a high concentration of electric current B23H; cutting by electron-beam B23K 15/00, by laser beam B23K 26/00; other working of metal B23P; tool holders for machine tools B23Q 3/00; handles for hand implements B25G)

**81/00 Methods, machines, or devices for working metal, covered by more than one main group in this subclass** (in combination with other metal-working operations B23P 13/00, B23P 23/00)

**B23F MAKING GEARS OR TOOTHED RACKS** (by stamping B21D; by rolling B21H; by forging or pressing B21K; by casting B22; arrangements for copying or controlling B23Q; machines or devices for grinding or polishing, in general B24B)

#### Notes

- (1) This subclass covers:
  - the use of methods or apparatus specially designed to produce accurately the shapes of gear teeth which are essential for proper intermeshing of toothed gearing elements to ensure the required relative motions;
  - the use of similar methods or apparatus in the production of other articles of toothed or like form, e.g. dog clutches, splined shafts, milling cutters.
- (2) This subclass does not cover the production of such other articles of toothed or like form using methods or apparatus other than those mentioned under Note (1) above.
- (3) In this subclass, the following terms or expressions are used with the meanings indicated:
  - “gear teeth” covers the teeth or lobes of other accurately-intermeshing members having relative movement of a similar kind, such as rotors of rotary pumps and blowers;
  - “profile” may include the outline of both faces or only one face of a tooth, or the opposing faces of adjacent teeth;
  - “straight” means that a tooth as a whole (ignoring any curvature of the tooth-face alone, e.g. crowning) is straight in the direction of its length, for example as seen in the direction of a radius of a spur wheel. It accordingly includes the teeth of helical gears and of the normal type of bevel gear;
  - “broach-milling” means milling with a rotary cutter having a number of teeth of progressively increasing depth or width.

#### Subclass Index

##### MAKING GEAR TEETH

General methods ..... 1/00, 3/00, 17/00  
 Making teeth with special shape ..... 5/00, 7/00, 9/00, 15/00, 17/00  
 Finishing ..... 19/00  
 Tools; accessories ..... 21/00; 23/00

##### MAKING WORMS

Methods ..... 13/00  
 Worm wheels ..... 11/00  
 Accessories ..... 23/00

##### MAKING OTHER GEARING WHEELS OF

SPECIAL TYPE ..... 15/00

- 1/00 Making gear teeth by tools of which the profile matches the profile of the required surface** (special adaptations for making curved teeth B23F 9/00)
- 3/00 Making gear teeth involving copying operations controlled by templates having a profile which matches that of the required tooth face or part thereof or a copy thereof to a different scale** (copying systems or devices per se B23Q 35/00)
- 5/00 Making straight gear teeth involving moving a tool relatively to a workpiece with a rolling-off or an enveloping motion with respect to the gear teeth to be made**
- 7/00 Making herring-bone gear teeth**

- 9/00 Making gears having teeth curved in their longitudinal direction**
- 11/00 Making worm wheels, e.g. by hobbing**
- 13/00 Making worms by methods essentially requiring the use of machines of the gear-cutting type** (making screw-thread B23G)
- 15/00 Methods or machines for making gear wheels of special kinds, not covered by groups B23F 7/00 to B23F 13/00**
- 17/00 Special methods or machines for making gear teeth, not covered by groups B23F 1/00 to B23F 15/00**

**B23F – B23H**

- 19/00** Finishing gear teeth by other tools than those used for manufacturing gear teeth
- 21/00** Tools specially adapted for use in machines for manufacturing gear teeth

- 23/00** Accessories or equipment combined with or arranged in, or specially designed to form part of, gear-cutting machines (accessories or equipment not restricted to gear-cutting machines B23Q; tool-guiding mechanisms, see the relevant groups for making gear teeth)

**B23G** **THREAD CUTTING; WORKING OF SCREWS, BOLT HEADS, OR NUTS, IN CONJUNCTION THEREWITH** (thread-forming by corrugating tubes B21D 15/00, by rolling B21H 3/00, by forging, pressing, or hammering B21K 1/00; making helical grooves by turning B23B 5/00, by milling B23C 3/00, by grinding B24B 19/02; arrangements for copying or controlling B23Q)

**Note**

In this subclass, the following expression is used with the meaning indicated:

- “thread cutting” includes the use of tools similar both in form and in manner of use to thread-cutting tools, but without removing any material.

**Subclass Index**

THREAD-CUTTING METHODS, MACHINES OR DEVICES THEREFOR .....	1/00, 3/00, 7/00, 9/00	TOOLS .....	5/00, 7/00
FINISHING.....	9/00	ACCESSORIES .....	11/00

- |                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1/00</b> Thread cutting; Automatic machines specially designed therefor</p> <p><b>3/00</b> Arrangements or accessories for enabling machine tools not specially designed only for thread cutting to be used for this purpose, e.g. arrangements for reversing the working-spindle</p> <p><b>5/00</b> Thread-cutting tools; Die-heads</p> | <p><b>7/00</b> Forming thread by means of tools similar both in form and in manner of use to thread-cutting tools, but without removing any material (features of machines or devices not specially adapted to the particular mode of forming the thread B23G 1/00)</p> <p><b>9/00</b> Working screws, bolt heads or nuts in conjunction with thread cutting, e.g. slotting screw heads or shanks, removing burrs from screw heads or shanks; Finishing, e.g. polishing, any screw thread (making washers or nuts by processing metal sheets, tubes or profiles without essentially removing material B21D 53/16, B21D 53/00)</p> <p><b>11/00</b> Feeding or discharging mechanisms combined with, or arranged in, or specially adapted for use in connection with, thread-cutting machines (for machine tools in general B23Q)</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**B23H** **WORKING OF METAL BY THE ACTION OF A HIGH CONCENTRATION OF ELECTRIC CURRENT ON A WORKPIECE USING AN ELECTRODE WHICH TAKES THE PLACE OF A TOOL; SUCH WORKING COMBINED WITH OTHER FORMS OF WORKING OF METAL** (processes for the electrolytic or electrophoretic production of coatings, electroforming, or apparatus therefor C25D; processes for the electrolytic removal of material from objects C25F; manufacturing printed circuits using precipitation techniques to apply the conductive material to form the desired conductive pattern H05K 3/18) [4]

**Note**

This subclass covers the working of metal described as “electroerosion”. [4]

**Subclass Index**

ELECTRICAL DISCHARGE MACHINING .....	1/00	MACHINING PARTICULAR OBJECTS OR OBTAINING SPECIAL EFFECTS OR RESULTS .....	9/00
ELECTROCHEMICAL MACHINING .....	3/00	AUXILIARY APPARATUS OR DETAILS .....	11/00
COMBINED MACHINING.....	5/00		
COMMON PROCESSES OR APPARATUS.....	7/00		

1/00	<b>Electrical discharge machining, i.e. removing metal with a series of rapidly recurring electrical discharges between an electrode and a workpiece in the presence of a fluid dielectric [4]</b>	7/04	. . Apparatus for supplying current to working gap; Electric circuits specially adapted therefor [4]
1/02	. Electric circuits specially adapted therefor, e.g. power supply, control, preventing short circuits or other abnormal discharges [4]	7/06	. . Control of the travel curve of the relative movement between electrode and workpiece [4]
3/00	<b>Electrochemical machining, i.e. removing metal by passing current between an electrode and a workpiece in the presence of an electrolyte [4]</b>	7/08	. . Wire electrodes [4]
5/00	<b>Combined machining [4]</b>	7/26	. Apparatus for moving or positioning electrode relatively to workpiece; Mounting of electrode [4]
7/00	<b>Processes or apparatus applicable to both electrical discharge machining and electrochemical machining [4]</b>	9/00	<b>Machining specially adapted for treating particular metal objects or for obtaining special effects or results on metal objects (heat treatment by cathodic discharge C21D 1/34) [4]</b>
7/02	. Wire-cutting [4]	11/00	<b>Auxiliary apparatus or details, not otherwise provided for [4]</b>

**B23K SOLDERING OR UNSOLDERING; WELDING; CLADDING OR PLATING BY SOLDERING OR WELDING; CUTTING BY APPLYING HEAT LOCALLY, E.G. FLAME CUTTING; WORKING BY LASER BEAM** (making metal-coated products by extruding metal B21C 23/22; building up linings or coverings by casting B22D 19/08; casting by dipping B22D 23/00; manufacture of composite layers by sintering metal powder B22F 7/00; arrangements on machine tools for copying or controlling B23Q; covering metals or covering materials with metals, not otherwise provided for C23C; burners F23D)

#### Notes

- (1) This subclass covers also electric circuits specially adapted for the purposes covered by the title of the subclass.  
 (2) In this subclass, the following term is used with the meaning indicated:  
 – “soldering” means uniting metals using solder and applying heat without melting either of the parts to be united. [5]

#### Subclass Index

SOLDERING .....	1/00, 3/00	Characterised by the use of impact or pressure .....	20/00
WELDING		Characterised by other features, processes not restricted to one particular group of this subclass .....	28/00
Characterised by the means used to produce heat		CUTTING BY APPLYING HEAT LOCALLY; SEVERING.....	7/00, 9/00, 15/00, 26/00, 28/00; 11/00
by flame.....	5/00	SCARFING, DESURFACING .....	7/00
by electricity.....	9/00, 11/00, 13/00	MATERIALS; AUXILIARY DEVICES .....	35/00; 37/00
by means of plasma.....	10/00	SPECIAL PROCESSES .....	31/00, 33/00
by nuclear particles .....	15/00, 17/00		
by alumino-thermic means .....	23/00		
by laser beam .....	26/00		
otherwise .....	25/00, 28/00		

#### Soldering, e.g. brazing, or unsoldering

<b>1/00 Soldering, e.g. brazing, or unsoldering</b> (B23K 3/00 takes precedence; characterised only by the use of special materials or media B23K 35/00; dip or wave soldering in the manufacture of printed circuits H05K 3/34) [5]	1/19	. taking account of the properties of the materials to be soldered [3]
1/002 . Soldering by means of induction heating [5]	1/20	. Preliminary treatment of work or areas to be soldered, e.g. in respect of a galvanic coating (preparation of surfaces in particular ways, <u>see</u> the relevant classes for the treatments or the materials treated, e.g. C04B, C23C)
1/005 . Soldering by means of radiant energy [5]	<b>3/00 Tools, devices, or special appurtenances for soldering, e.g. brazing, or unsoldering, not specially adapted for particular methods</b> (materials used for soldering B23K 35/00) [5]	
1/008 . Soldering within a furnace (B23K 1/012 takes precedence) [5]	3/02	. Soldering irons; Bits
1/012 . Soldering with the use of hot gas [5]	3/04	. Heating appliances (soldering lamps or blow-pipes F23D; electric heating in general H05B)
1/018 . Unsoldering; Removal of melted solder or other residues [5]	3/06	. Solder feeding devices; Solder melting pans
1/06 . making use of vibrations, e.g. supersonic vibrations		
1/08 . Soldering by means of dipping in molten solder		
1/14 . specially adapted for soldering seams (making tubes involving operations other than soldering B21C) [5]		

**Flame welding or cutting****5/00 Gas flame welding****7/00 Cutting, scarfing, or desurfacing by applying flames****Electric welding or cutting**

- 9/00 Arc welding or cutting** (electro-slag welding B23K 25/00; welding transformers H01F; welding generators H02K)
- 9/007 . Spot arc welding [5]
  - 9/013 . Arc cutting, gouging, scarfing or desurfacing [5]
  - 9/02 . Seam welding; Backing means; Inserts
  - 9/025 . . for rectilinear seams [5]
  - 9/028 . . for curved planar seams [5]
  - 9/035 . . with backing means disposed under the seam [5]
  - 9/04 . Welding for other purposes than joining, e.g. built-up welding
  - 9/06 . Arrangements or circuits for starting the arc, e.g. by generating ignition voltage, or for stabilising the arc [5]
  - 9/08 . Arrangements or circuits for magnetic control of the arc
  - 9/09 . Arrangements or circuits for arc welding with pulsed current or voltage [3]
  - 9/095 . Monitoring or automatic control of welding parameters [5]
  - 9/10 . Other electric circuits therefor; Protective circuits; Remote controls
  - 9/12 . Automatic feeding or moving of electrodes or work for spot or seam welding or cutting
  - 9/127 . . Means for tracking lines during arc welding or cutting (copying in general B23Q 35/00) [5]
  - 9/133 . . Means for feeding electrodes, e.g. drums, rolls, motors [5]
  - 9/14 . making use of insulated electrodes
  - 9/16 . making use of shielding gas
  - 9/167 . . and of a non-consumable electrode [5]
  - 9/173 . . and of consumable electrode [5]
  - 9/18 . Submerged-arc welding
  - 9/20 . Stud welding
  - 9/22 . Percussion welding
  - 9/23 . taking account of the properties of the materials to be welded [3]
  - 9/235 . Preliminary treatment [3]
  - 9/24 . Features related to electrodes (form or composition of electrodes B23K 35/00)
  - 9/32 . Accessories (earthing connections H01R)

**10/00 Welding or cutting by means of a plasma [5]**

- 10/02 . Plasma welding [5]

**11/00 Resistance welding; Severing by resistance heating**

- 11/02 . Pressure butt welding
- 11/04 . Flash butt welding
- 11/06 . using roller electrodes
- 11/10 . Spot welding; Stitch welding
- 11/11 . . Spot welding [5]
- 11/14 . Projection welding
- 11/16 . taking account of the properties of the material to be welded
- 11/24 . Electric supply or control circuits therefor
- 11/25 . . Monitoring devices [5]
- 11/26 . . Storage discharge welding

- 11/30 . Features relating to electrodes (form or composition of electrodes B23K 35/00)
- 11/36 . Auxiliary equipment (B23K 11/30 takes precedence) [3,5]

**13/00 Welding by high-frequency current heating [5]****Other welding or cutting; Working by laser beam [3]**

- 15/00 Electron-beam welding or cutting** (electron- or ion-beam tubes H01J 37/00)
- 15/08 . Removing material, e.g. by cutting, by hole drilling [5]
- 17/00 Use of the energy of nuclear particles in welding or related techniques**
- 20/00 Non-electric welding by applying impact or other pressure, with or without the application of heat, e.g. cladding or plating [3]**
- 20/02 . by means of a press [3]
  - 20/04 . by means of a rolling mill [3]
  - 20/06 . by means of high energy impulses, e.g. magnetic energy [3]
  - 20/10 . making use of vibrations, e.g. ultrasonic welding [3]
  - 20/12 . the heat being generated by friction; Friction welding [3]
  - 20/14 . Preventing or minimising gas access, or using protective gases or vacuum during welding (formed by material interposed between workpieces B23K 20/18) [3]
  - 20/16 . with interposition of special material to facilitate connection of the parts, e.g. material for absorbing or producing gas [3]
  - 20/18 . Zonal welding by interposing weld-preventing substances between zones not to be welded [3]
  - 20/20 . Special methods allowing subsequent separation, e.g. of metals of high quality from scrap material [3]
  - 20/22 . taking account of the properties of the materials to be welded [3]
  - 20/24 . Preliminary treatment [3]
  - 20/26 . Auxiliary equipment [3]
- 23/00 Alumino-thermic welding**
- 25/00 Slag welding, i.e. using a heated layer or mass of powder, slag, or the like in contact with the material to be joined** (B23K 23/00 takes precedence; submerged-arc welding B23K 9/18)
- 26/00 Working by laser beam, e.g. welding, cutting, boring** (soldering by means of radiant energy B23K 1/005; joining of preformed plastics parts by heating using laser beam B29C 65/14; lasers H01S 3/00) [2,3]
- 26/02 . Positioning or observing the workpiece, e.g. with respect to the point of impact; Aligning, aiming or focusing the laser beam [3]
  - 26/04 . . Automatically aligning, aiming or focusing the laser beam, e.g. using the back-scattered light [3]
  - 26/06 . . Shaping the laser beam, e.g. by masks or multi-focusing (optical elements, systems, or apparatus, in general G02B) [3]
  - 26/08 . Devices involving relative movement between laser beam and workpiece [3]
  - 26/10 . . using a fixed support [3]
  - 26/12 . in a special atmosphere, e.g. in an enclosure [3]
  - 26/14 . using a flow, e.g. a jet of gas, in conjunction with the laser beam (B23K 26/12 takes precedence) [3]

26/16	. Removing of by-products, e.g. particles or vapours produced during treatment of a workpiece (by a flow of gas B23K 26/14) [3]	35/30	. . . with the principal constituent melting at less than 1550°C
26/18	. using absorbing layers on the material being worked, e.g. for marking or protecting purposes [3]	35/34	. . . comprising compounds which yield metals when heated
28/00	<b>Welding or cutting not covered by groups B23K 5/00 to B23K 26/00</b> (joining workpieces by electrolysis C25D 2/00; electrolytic removal of materials C25F) [2]	35/36	. . . Selection of non-metallic compositions, e.g. coatings, fluxes (B23K 35/34 takes precedence); Selection of soldering or welding materials, conjoint with selection of non-metallic compositions, both selections being of interest (selection of soldering or welding materials proper B23K 35/24) [2]
31/00	<b>Processes relevant to this subclass, specially adapted for particular articles or purposes, but not covered by any single one of main groups B23K 1/00 to B23K 28/00</b> (making tubes or profiled bars involving operations other than soldering or welding B21C 37/00, B21C 37/08)	35/362	. . . Selection of compositions of fluxes (B23K 35/365, B23K 35/368 take precedence) [2]
31/02	. relating to soldering or welding (dip or wave soldering in the manufacture of printed circuits H05K 3/34)	35/365	. . . Selection of non-metallic compositions of coating materials either alone or conjoint with selection of soldering or welding materials [2]
31/10	. relating to cutting or desurfacing	35/368	. . . Selection of non-metallic compositions of core materials either alone or conjoint with selection of soldering or welding materials [2]
31/12	. relating to investigating the properties, e.g. the weldability, of materials [5]	37/00	<b>Auxiliary devices or processes, not specially adapted to a procedure covered by only one of the other main groups of this subclass</b> (eye-shields for welders worn on the operator's body or carried in the hand A61F 9/00; applicable to metal-working machines other than soldering, welding, or flame-cutting machines B23Q; other protective shields F16P 1/00)
33/00	<b>Specially-profiled edge portions of workpieces for making soldering or welding connections; Filling the seams formed thereby</b>	37/02	. Carriages for supporting the welding or cutting element
35/00	<b>Rods, electrodes, materials, or media, for use in soldering, welding, or cutting</b>	37/04	. for holding or positioning work
35/02	. characterised by mechanical features, e.g. shape	37/047	. . moving work to adjust its position between soldering, welding or cutting steps (B23K 37/053 takes precedence) [5]
35/22	. characterised by the composition or nature of the material	37/053	. . aligning cylindrical work; Clamping devices therefor [5]
35/24	. . . Selection of soldering or welding materials proper (B23K 35/34 takes precedence)	37/06	. for positioning the molten material, e.g. confining it to a desired area
35/26	. . . with the principal constituent melting at less than 400°C	37/08	. for flash removal [5]
35/28	. . . with the principal constituent melting at less than 950°C		

**B23P OTHER WORKING OF METAL; COMBINED OPERATIONS; UNIVERSAL MACHINE TOOLS** (arrangements for copying or controlling B23Q)

#### Notes

- (1) This subclass does not cover non-mechanical operations on non-metallic materials unless such operations are specially mentioned in this subclass.
- (2) In this subclass, the following expressions are used with the meanings indicated:
  - “combined operations” excludes the assembling of parts if it is an essential feature of the next metal-working operation, since it is not regarded as an operation per se;
  - “working of metal” and equivalent expressions include non-mechanical treatment of metal so far as it is not provided for in any other class or subclass, for example, in C21D, C22C, C22F, C23. Thus, combinations of such non-mechanical treatment with other metal-working are classified in this subclass.
- (3) Attention is drawn to the Notes following the title of class B23.

#### Subclass Index

##### METAL-WORKING PROCESSES

Setting of diamonds .....	5/00
Reconditioning; finishing .....	6/00; 9/00
Connecting or disconnecting .....	11/00, 19/00, 21/00
Other processes .....	6/00, 13/00, 15/00, 17/00

Auxiliary treatments.....25/00

##### COMBINED PROCESSES; MULTI-PURPOSE MACHINES

Reconditioning; finishing.....	6/00; 9/00
Other combined operations .....	6/00, 23/00
Auxiliary treatments.....	25/00

5/00	<b>Setting gems or the like on metal parts, e.g. diamonds on tools</b>	15/28	• cutting tools (sawing tools B23D 63/00, B23D 65/00; files or rasps B23D 73/00)
6/00	<b>Restoring or reconditioning objects</b> (straightening or restoring form of sheet metal, metal rods, metal tubes, metal profiles, or specific articles made therefrom B21D 1/00, B21D 3/00; repairing defective or damaged objects by casting techniques B22D 19/10; procedures or apparatus covered by a single other subclass, <u>see</u> the relevant subclass) [3]	15/30	• • lathes or like tools
		15/32	• • twist-drills
		15/34	• • milling cutters
		15/40	• • shearing tools
		15/42	• • broaching tools
		15/46	• • reaming tools
		15/48	• • threading tools (milling cutters for thread-cutting B23P 15/34)
9/00	<b>Treating or finishing surfaces mechanically, with or without calibrating, primarily to resist wear or impact, e.g. smoothing or roughening turbine blades or bearings</b> (treatment covered by a single other subclass, <u>see</u> the relevant subclass, e.g. B24C, C21D 7/00, C22F 1/00); <b>Features of such surfaces not otherwise provided for, their treatment being unspecified</b>	17/00	<b>Metal-working operations, not covered by a single other subclass or another group in this subclass</b>
11/00	<b>Connecting or disconnecting metal parts or objects by metal-working techniques, not otherwise provided for</b> (connecting sheet metal or metal tubes, rods or profiles B21D 39/00; riveting B21J; soldering, unsoldering, welding B23K; hand tools for connecting wire or strip B25B 25/00; connecting metal parts by adhesives F16B 11/00) [1,7]	19/00	<b>Machines for simply fitting together or separating metal parts or objects, or metal and non-metal parts, whether or not involving some deformation; Tools or devices therefor so far as not provided for in other classes</b> (hand tools in general B25) [3]
11/02	• by first expanding and then shrinking or <u>vice versa</u> , e.g. by using pressure fluids; by making force fits	19/02	• for connecting objects by press fit or for detaching same (B23P 19/10 takes precedence) [1,7]
		19/04	• for assembling or disassembling parts (B23P 19/10 takes precedence) [1,7]
		19/06	• • Screw or nut setting or loosening machines
		19/08	• • Machines for placing washers, circlips, or the like on bolts or other members
		19/10	• Aligning parts to be fitted together [7]
13/00	<b>Making metal objects by operations essentially involving machining but not covered by a single other subclass</b> (making specific objects B23P 15/00)	21/00	<b>Machines for assembling a multiplicity of different parts to compose units, with or without preceding or subsequent working of such parts, e.g. with programme control</b>
15/00	<b>Making specific metal objects by operations not covered by a single other subclass or a group in this subclass</b>	23/00	<b>Machines or arrangements of machines for performing specified combinations of different metal-working operations not covered by a single other subclass</b> (combined horizontal boring and milling machines B23B 39/00; if the particular kinds of operation are not essential B23Q 37/00 to B23Q 41/00; features relating to operations covered by a single subclass, <u>see</u> the relevant subclass for the operation)
15/02	• turbine or like blades from one piece		
15/04	• turbine or like blades from several pieces		
15/06	• piston rings from one piece		
15/10	• pistons		
15/14	• gear parts, e.g. gear wheels		
15/16	• plates with holes of very small diameter e.g. for spinning or burner nozzles	25/00	<b>Auxiliary treatment of workpieces, before or during machining operations, to facilitate the action of the tool or the attainment of a desired final condition of the work, e.g. relief of internal stress</b>
15/24	• dies (B21C 3/00, B21C 25/00, B21D 37/20 take precedence)		
15/26	• heat exchangers		

**B23Q DETAILS, COMPONENTS, OR ACCESSORIES FOR MACHINE TOOLS, E.G. ARRANGEMENTS FOR COPYING OR CONTROLLING** (tools of the kind used in lathes or boring machines B23B 27/00); **MACHINE TOOLS IN GENERAL, CHARACTERISED BY THE CONSTRUCTION OF PARTICULAR DETAILS OR COMPONENTS; COMBINATIONS OR ASSOCIATIONS OF METAL-WORKING MACHINES, NOT DIRECTED TO A PARTICULAR RESULT**

#### Notes

- (1) In this subclass, groups designating parts of machine tools cover machine tools characterised by constructional features of such parts.
- (2) In this subclass, the following terms or expressions are used with the meanings indicated:
  - “controlling” means influencing a variable in any way, e.g. changing its direction or its value (including changing it to or from zero), maintaining it constant, limiting its range of variation; [3]
  - “regulation” means maintaining a variable automatically at a desired value or within a desired range of values. The desired value or range may be fixed, or manually varied, or may vary with time according to a predetermined “programme” or according to variation of another variable. Regulation is a form of control; [3]
  - “automatic control” is often used in the art as a synonym for regulation. [3]
- (3) Attention is drawn to the Notes following the title of class B23.



**Subclass Index**

BASIC COMPONENTS OF MACHINE TOOLS .....	1/00, 9/00
DEVICES FOR SUPPORTING, HANDLING, OR FEEDING WORK OR TOOLS .....	3/00, 5/00, 7/00
AUXILIARY EQUIPMENT, SAFETY DEVICES .....	11/00, 13/00, 27/00

MEASURING; INDICATING; CONTROLLING	
Controlling the movements of the tool or work .....	15/00, 16/00, 23/00
Indicating .....	17/00
COPYING .....	33/00, 35/00
MACHINES COMPRISING UNITS OR SUB-ASSEMBLIES, TRANSFER MACHINES, ASSOCIATIONS OF MACHINES OR UNITS .....	37/00, 39/00, 41/00

- 1/00 Members which are comprised in the general build-up of a form of machine, particularly relatively large fixed members** (B23Q 37/00 takes precedence)
- 1/25 . Movable or adjustable work or tool supports (indexing equipment B23Q 16/00) [6]
- 1/26 . . characterised by constructional features relating to the co-operation of relatively movable members; Means for preventing relative movement of such members [6]
- 3/00 Devices holding, supporting, or positioning, work or tools, of a kind normally removable from the machine** (work-tables or other parts, e.g. faceplates, normally not incorporating means for securing work B23Q 1/00; automatic position control B23Q 15/00; rotary tool heads for turning-machines B23B 3/00; non-driven tool holders B23B 29/00; general features of turrets B23B 29/24; expansion mandrels B23B 31/00; tools or bench devices for fastening, connecting, disengaging or holding B25B)
- 3/02 . for mounting on a work-table, tool-slide, or analogous part (B23Q 3/15 takes precedence)
- 3/06 . . Work-clamping means
- 3/08 . . . other than mechanically-actuated
- 3/15 . Devices for holding work using magnetic or electric force acting directly on the work
- 3/155 . Arrangements for automatic insertion or removal of tools
- 3/157 . . of rotary tools
- 3/18 . for positioning only
- 5/00 Driving or feeding mechanisms; Control arrangements therefor** (automatic control B23Q 15/00; copying B23Q 33/00, B23Q 35/00; specially adapted for boring or drilling machines B23B 39/00, B23B 47/00)
- 5/22 . Feeding members carrying tools or work
- 7/00 Arrangements for handling work specially combined with or arranged in, or specially adapted for use in connection with, machine tools, e.g. for conveying, loading, positioning, discharging, sorting** (incorporated in working-spindles B23B 13/00, B23B 19/00; for automatic or semi-automatic turning machines B23B 15/00) [2]
- 7/02 . by means of drums or rotating tables or discs
- 7/03 . by means of endless chain conveyers (B23Q 7/16 takes precedence) [2]
- 7/04 . by means of grippers
- 7/05 . by means of roller-ways (B23Q 7/16 takes precedence) [2]
- 7/06 . by means of pushers
- 7/08 . by means of slides or chutes
- 7/10 . by means of magazines

- 7/12 . Sorting arrangements
- 7/14 . co-ordinated in production lines
- 7/16 . Loading work on to conveyers; Arranging work on conveyers, e.g. varying spacing between individual workpieces [2]
- 9/00 Arrangements for supporting or guiding portable metal-working machines or apparatus** (for tapping pipes B23B 41/00; specially designed for drilling B23B 45/00)

**Accessories**

- 11/00 Accessories fitted to machine tools for keeping tools or parts of the machine in good working condition or for cooling work; Safety devices specially combined with or arranged in, or specially adapted for use in connection with, machine tools** (in respect of boring or drilling machines B23B 47/00 takes precedence; safety devices in general F16P)
- 11/02 . Devices for removing scrap from the cutting teeth of circular cutters
- 11/04 . Arrangements preventing overload of tools, e.g. restricting load
- 11/06 . Safety devices for circular cutters
- 11/08 . Protective coverings for parts of machine tools; Splash guards
- 11/10 . Arrangements for cooling or lubricating tools or work (incorporated in tools, see the relevant subclass for the tool) [1,8]
- 11/12 . Arrangements for cooling or lubricating parts of the machine (B23Q 11/14 takes precedence) [1,8]
- 11/14 . Methods or arrangements for maintaining a constant temperature in parts of machine tools [1,8]
- 13/00 Equipment for use with tools or cutters when not in operation, e.g. protectors for storage**

**Measuring; Indicating; Controlling [3]**

- 15/00 Automatic control or regulation of feed movement, cutting velocity or position of tool or work [3]**
- 15/007 . while the tool acts upon the workpiece [3]
- 15/20 . before or after the tool acts upon the workpiece [3]
- 16/00 Equipment for precise positioning of tool or work into particular locations not otherwise provided for** (automatic control or regulation of position of tool or work B23Q 15/20; arrangements for indicating or measuring existing or desired position of tool or work B23Q 17/22; specially adapted for gear-cutting machines B23F 23/00) [4]

## B23Q

- 17/00 Arrangements for indicating or measuring on machine tools** (for automatic control or regulation of feed movement, cutting velocity or position of tool or work B23Q 15/00) [3,4]
- 17/09 . for indicating or measuring cutting pressure or cutting-tool condition, e.g. cutting ability, load on tool (arrangements preventing overload of tools B23Q 11/04; devices for indicating failure of drills during boring B23B 49/00) [4]
- 17/10 . for indicating or measuring cutting speed or number of revolutions
- 17/12 . for indicating or measuring vibration
- 17/20 . for indicating or measuring workpiece characteristics, e.g. contour, dimension, hardness [4]
- 17/22 . for indicating or measuring existing or desired position of tool or work [4]
- 17/24 . using optics [4]
- 23/00 Arrangements for compensating for irregularities or wear, e.g. of ways, of setting mechanisms** (automatic control B23Q 15/00) [3]
- 27/00 Geometrical mechanisms for the production of work of particular shapes, not fully provided for in another subclass**

### Copying

#### Note

In groups B23Q 33/00 or B23Q 35/00, the following term is used with the meaning indicated:

- “copying” covers the derivation of a required shape from a pattern, of the same or a different shape or scale, by a mechanism or equivalent means controlled by a member following the pattern. The pattern may be a model or drawing, or an element such as a cam incorporated in the operating mechanism of a machine. This term does not cover the derivation of a required shape from simple geometrical shapes, e.g. generating a cycloid by a rolling circle, which in general is provided for in group B23Q 27/00.

- 33/00 Methods for copying**

- 35/00 Control systems or devices for copying directly from a pattern or a master model; Devices for use in copying manually**

### Metal-working machines comprising units or sub-assemblies; Associations of metal-working machines or units

- 37/00 Metal-working machines, or constructional combinations thereof, built-up from units designed so that at least some of the units can form parts of different machines or combinations; Units therefor in so far as the feature of interchangeability is important** (features relating to particular metal-working operations, see the relevant subclasses, e.g. B23P 23/00)
- 39/00 Metal-working machines incorporating a plurality of sub-assemblies, each capable of performing a metal-working operation** (B23Q 33/00, B23P 23/00 take precedence; if the operations are similar and the kind of operation is essential, see the relevant subclass for the operation)
- 41/00 Combinations or associations of metal-working machines not directed to a particular result according to classes B21, B23, or B24** (B23Q 37/00, B23Q 39/00 take precedence; features relating to operations performed, if the different metal-working operations are of the same kind, see the subclass for the kind of operation, e.g. punching B21D, welding B23K, grinding B24B; features relating to technically specified combinations of different metal-working operations B23P 23/00)
- 41/02 . Features relating to transfer of work between machines (arrangements for handling work for machine tools co-ordinated in production lines B23Q 7/14)
- 41/08 . Features relating to maintenance of efficient operation

**B24 GRINDING; POLISHING****Note**

In this class, the following term is used with the meaning indicated:

- “grinding” is used in its most general sense to mean machining and covers, in particular, “corrective” operations.

**B24B MACHINES, DEVICES, OR PROCESSES FOR GRINDING OR POLISHING** (grinding of gear teeth B23F, of screw threads B23G 1/00; by electro-erosion B23H; abrasive or related blasting B24C; tools for grinding, buffing or sharpening B24D; polishing compositions C09G 1/00; abrasives C09K 3/14; electrolytic etching or polishing C25F 3/00; grinding arrangements for use on assembled railway tracks E01B 31/00); **DRESSING OR CONDITIONING OF ABRADING SURFACES; FEEDING OF GRINDING, POLISHING, OR LAPPING AGENTS** [2]

**Notes**

- (1) In this subclass, the following term is used with the meaning indicated:
  - “polishing” means the smoothing of a surface, i.e. a surface improvement but no improvement of the dimensional accuracy as would occur in a “grinding” operation. [4]
- (2) Attention is drawn to Notes (1) and (2) following the title of subclass B23F. [4]

**Subclass Index**

GRINDING OR POLISHING PROCESSES NOT PARTICULAR TO SPECIFIC MACHINES, DEVICES OR WORK .....	1/00	Other machines.....	25/00, 27/00
GRINDING; GENERAL FEATURES OF GRINDING, POLISHING, OR FINISHING		Component parts .....	41/00 to 47/00
Grinding of surfaces with simple shapes .....	5/00, 7/00, 9/00, 11/00	Measuring, indicating, controlling; Safety .....	49/00, 51/00; 55/00
Grinding of surfaces of special shape .....	3/00, 13/00 to 19/00	Dressing or conditioning of grinding tools; Feeding or applying grinding, polishing or lapping agents .....	53/00; 57/00
Grinding or polishing using abrasive belts .....	21/00	<b>POLISHING OR FINISHING</b>	
Portable machines.....	23/00	Polishing, burnishing .....	29/00, 39/00
		by tumbling .....	31/00
		Honing, superfinishing.....	33/00, 35/00
		Lapping.....	37/00

**Note**

In groups B24B 1/00 to B24B 27/00, in connection with glass the terms “grinding” and “polishing” are treated as being equivalent. [4]

- 1/00 Processes of grinding or polishing; Use of auxiliary equipment in connection with such processes** (processes characterised by the use of special machines or devices, see the relevant places for those machines or devices) [4]
- 1/04
  - subjecting the grinding or polishing tools, the abrading or polishing medium or work to vibration, e.g. grinding with ultrasonic frequency (polishing or abrading surfaces on work by means of tumbling apparatus B24B 31/00, involving oscillating or vibrating containers B24B 31/00; superfinishing surfaces on work, e.g. by means of abrading blocks reciprocating with high frequency, B24B 35/00) [4]

- 3/00 Sharpening cutting edges, e.g. of tools; Accessories therefor, e.g. for holding the tools** (sharpening of drills by fluting the shank B24B 19/02; non-abrasive sharpening devices for scythes, sickles, or the like A01D 3/00; sharpening devices designed as components of machines with cutters, see the relevant places for the machines, e.g. A01D 75/00, B26D 7/08; sharpening of saw teeth B23D 63/00; sharpening of files or rasps B23D 73/00; grinding of die-stocks or chasers B23G 1/00; sharpening of razor blades or razors by an abrasive block without mechanisms B24D)

**Grinding surfaces of particular forms**

- 5/00 Machines or devices designed for grinding surfaces of revolution on work, including those which also grind adjacent plane surfaces; Accessories therefor** (B24B 11/00 to B24B 21/00 take precedence; honing machines or devices using abrading blocks performing axial and rotary movements superimposed on one another B24B 33/00; endless grinding of threads B23G 1/00) [2]

- 7/00** **Machines or devices designed for grinding plane surfaces on work, including polishing plane glass surfaces; Accessories therefor** (B24B 21/00 takes precedence; for combined grinding of surfaces of revolution and of adjacent plane surfaces on work B24B 5/00; honing of plane surfaces on work B24B 33/00) [4]
- 7/20 . characterised by a special design with respect to properties of the material of non-metallic articles to be ground
- 9/00** **Machines or devices designed for grinding edges or bevels on work or for removing burrs; Accessories therefor** (B24B 21/00 takes precedence; for sharpening cutting edges on tools B24B 3/00; removing burrs by loose abrasive material B24B 31/00)
- 9/02 . characterised by a special design with respect to properties of materials specific to articles to be ground
- 9/06 . . of non-metallic inorganic material, e.g. stone, ceramics, porcelain (for grinding sharp pointed diamonds or sapphires B24B 19/00)
- 11/00** **Machines or devices designed for grinding spherical surfaces or parts of spherical surfaces on work; Accessories therefor** (specially designed for optical surfaces B24B 13/00, for seat surfaces B24B 15/00)
- 13/00** **Machines or devices designed for grinding or polishing optical surfaces on lenses or surfaces of similar shape on other work; Accessories therefor** (edging optical work, e.g. lenses, prisms, B24B 9/06) [2]
- 13/005 . Blocking means, chucks or the like; Alignment devices [4]
- 15/00** **Machines or devices designed for grinding seat surfaces; Accessories therefor** (for spherical surfaces in general B24B 11/00)
- 
- 17/00** **Special adaptations of machines or devices for grinding controlled by patterns, drawings, magnetic tapes or the like** (machines or devices so-controlled for grinding the edges of lenses B24B 9/06; for grinding or polishing optical lens surfaces B24B 13/00; for grinding non-circular cross-sections B24B 19/00; for grinding trochoidal surfaces B24B 19/00; for grinding cams B24B 19/00; for grinding turbine blades or the like B24B 19/00; such control means *per se* B23Q 33/00, B23Q 35/00, G05); **Accessories therefor** [4]
- 19/00** **Single purpose machines or devices for particular grinding operations not covered by any other main group** (tapering, chamfering or relief cutting of taps or reamers B24B 3/00; grinding bevels on diamonds or sapphires B24B 9/06; polishing of needles B24B 29/00; grinding screw threads B23G 1/00; devices for sharpening card-clothings built in, or attachable to, carding machines D01G)
- 19/02 . for grinding grooves, e.g. on shafts, in casings, in tubes, homokinetic joint elements [4]
- 21/00** **Machines or devices using grinding or polishing belts** (for sharpening cutting edges of tools B24B 3/00; portable belt-grinding machines B24B 23/00); **Accessories therefor** [4]
- 21/04 . for grinding plane surfaces
- 23/00** **Portable grinding machines, e.g. hand-guided; Accessories therefor** (B24B 7/00 takes precedence; for grinding seat surfaces B24B 15/00; having a flexible shaft B24B 27/00; grinders for cutting-off B24B 27/08; dust extraction equipment B24B 55/00; details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00) [4]
- 25/00** **Grinding machines of universal type**
- 27/00** **Other grinding machines or devices**
- 27/06 . Grinders for cutting-off
- 27/08 . . being portable [4]
- Polishing surfaces; Finishing surfaces**
- 29/00** **Machines or devices for polishing surfaces on work by means of tools made of soft or flexible material with or without the application of solid or liquid polishing agents** (machines or devices for grinding or polishing glass B24B 7/20, B24B 9/06, B24B 13/00; for grinding or polishing using belts B24B 21/00; polishing tools in general B24D 13/00) [4]
- 31/00** **Machines or devices designed for polishing or abrading surfaces on work by means of tumbling apparatus or other apparatus in which the work or the abrasive material is loose; Accessories therefor** (machines or devices for grinding or polishing glass B24B 7/20, B24B 9/06, B24B 13/00; abrasive blasting machines B24C 3/00)
- 33/00** **Honing machines or devices; Accessories therefor**
- 35/00** **Machines or devices designed for superfinishing surfaces on work, i.e. by means of abrading blocks reciprocating with high frequency** (B24B 3/00 takes precedence)
- 37/00** **Lapping machines or devices, i.e. requiring pulverulent abrading substances inserted between a lap of relatively soft but rigid material and the surface to be lapped; Accessories therefor** (B24B 3/00 takes precedence)
- 37/02 . designed for working surfaces of revolution
- 37/04 . designed for working plane surfaces
- 39/00** **Burnishing machines or devices, i.e. requiring pressure members for compacting the surface zone** (modifying the physical properties or structure of metal by burnishing C21D 7/00, C22F 1/00); **Accessories therefor** (B24B 3/00 takes precedence)
- Component parts of general applicability for grinding machines or devices**
- 41/00** **Component parts of grinding machines or devices, such as frames, beds, carriages or headstocks**
- 41/06 . Work supports, e.g. adjustable steadies
- 45/00** **Means for securing grinding wheels on rotary arbors** (suppression of vibrations in systems F16F 15/00; testing static or dynamic balancing of machines G01M 1/00)
- 47/00** **Drives or gearings for grinding machines or devices; Equipment therefor**

**Measuring; Indicating; Controlling**

- 49/00** Measuring or gauging equipment for controlling the feed movement of the grinding tool or work; Arrangements of indicating or measuring equipment, e.g. for indicating the start of the grinding operation (B24B 33/00 takes precedence; if applicable to other machine tools, B23Q 15/00 to B23Q 17/00 take precedence; gauging instruments in general G01B)
- 49/02 . according to the instantaneous size and required size of the workpiece acted upon, the measuring or gauging being continuous or intermittent (B24B 49/12 takes precedence) [4]
- 49/08 . involving liquid or pneumatic means
- 49/10 . involving electrical means (B24B 49/02, B24B 49/08 take precedence)
- 49/12 . involving optical means
- 49/16 . taking regard of the load

- 51/00** Arrangements for automatic control of a series of individual steps in grinding a workpiece
- 
- 53/00** Devices or means for dressing or conditioning abrasive surfaces (compensation for grinding wheel abrasion resulting from dressing B24B 47/00) [4]
- 53/007 . Cleaning of grinding wheels [4]
- 53/04 . of cylindrical or conical surfaces on abrasive tools or wheels [4]
- 53/06 . of profiled abrasive wheels
- 53/12 . Dressing tools; Holders therefor [4]
- 55/00** Safety devices for grinding or polishing machines; Accessories fitted to grinding or polishing machines for keeping tools or parts of the machine in good working condition (of general applicability for machine tools B23Q 11/00; in general F16P)
- 57/00** Devices for feeding, applying, grading or recovering grinding, polishing or lapping agents (for abrasive blasting B24C 1/00, B24C 7/00) [4]

**B24C ABRASIVE OR RELATED BLASTING WITH PARTICULATE MATERIAL****Notes**

- (1) This subclass covers:
- the use of a blast of any particles or pellets dispersed in air, gas, or liquid for the treatment of surfaces or cutting of materials, the particles usually being of abrasive material;
  - the equivalent use of a jet of particles or pellets projected or energised by means other than a stream of air.
- (2) In this subclass, the following terms are used with the meanings indicated:
- “abrasive” covers any material used in the manner mentioned in Note (1) above;
  - “blast” covers any equivalent jet of material mentioned in Note (1) above.

- 1/00** Methods for use of abrasive blasting for producing particular effects; Use of auxiliary equipment in connection with such methods
- 1/10 . for compacting surfaces, e.g. shot-peening (for deforming sheet metal, tubes or profiles B21D 31/00; as a metallurgical treatment C21D 7/00, C22F 1/00)
- 3/00** Abrasive blasting machines or devices; Plants

- 7/00** Equipment for feeding abrasive material; Controlling the flowability, constitution, or other physical characteristics of abrasive blasts
- 9/00** Appurtenances of abrasive blasting machines or devices, e.g. working chambers, arrangements for handling used abrasive material
- 11/00** Selection of abrasive materials for abrasive blasts (polishing compositions C09G)

**Accessories or equipment for abrasive blasting machines or devices**

- 5/00** Devices or accessories for generating abrasive blasts

**B24D TOOLS FOR GRINDING, BUFFING, OR SHARPENING** (tools for grinding or polishing optical surfaces on lenses or surfaces of similar shape B24B 13/00; grinding heads B24B 41/00; manufacture of abrasive or friction articles or shaped materials containing macromolecular substances C08J 5/14; polishing compositions C09G 1/00; abrasives C09K 3/14)**Notes**

- (1) This subclass covers grinding tools for working on any material.
- (2) Tools for grinding, buffing or sharpening, specially designed for a particular purpose, which purpose is provided for in a single other place, are classified in that place, e.g. B23F 21/00. [4]

**Subclass Index**

PHYSICAL FEATURES OR CONSTITUENTS OF ABRASIVE BODIES OR SHEETS .....	3/00	FLEXIBLE ABRASIVE MATERIALS .....	11/00
ABRASIVE WHEELS .....	5/00, 7/00, 9/00, 13/00	HAND TOOLS .....	15/00
		OTHER TOOLS .....	17/00
		MANUFACTURE .....	18/00

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- 3/00**    **Physical features of abrasive bodies, or sheets, e.g. abrasive surfaces of special nature; Abrasive bodies or sheets characterised by their constituents** (composition of friction linings F16D 69/02)
- 3/02    .    the constituent being used as bonding agent
- 3/04    .    .    and being essentially inorganic
- 3/20    .    .    and being essentially organic
- 3/34    .    characterised by additives enhancing special physical properties, e.g. wear resistance, electric conductivity, self-cleaning properties

**Bonded abrasive wheels**

- 5/00**    **Bonded abrasive wheels, or wheels with inserted abrasive blocks, designed for acting only by their periphery; Bushings or mountings therefor**
- 7/00**    **Bonded abrasive wheels, or wheels with inserted abrasive blocks, designed for acting otherwise than only by their periphery, e.g. by the front face; Bushings or mountings therefor**
- 

- 9/00**    **Wheels or drums supporting in exchangeable arrangement a layer of flexible abrasive material, e.g. sandpaper** (wheels or drums as machine elements F16)
- 11/00**    **Constructional features of flexible abrasive materials; Special features in the manufacture of such materials**
- 11/02    .    Backings, e.g. foils, webs, mesh fabrics
- 13/00**    **Wheels having flexibly-acting working parts, e.g. buffing wheels; Mountings therefor**
- 15/00**    **Hand tools or other devices for non-rotary grinding, polishing, or stropping**
- 17/00**    **Abrasive or polishing tools not covered by groups B24D 3/00 to B24D 15/00**
- 18/00**    **Manufacture of grinding tools, e.g. wheels, not otherwise provided for [4]**

## B25 HAND TOOLS; PORTABLE POWER-DRIVEN TOOLS; HANDLES FOR HAND IMPLEMENTS; WORKSHOP EQUIPMENT; MANIPULATORS

### Note

In this class, the following term is used with the meaning indicated:

- “portable” includes suspension for easy manual handling, e.g. in connection with spring-suspended portable apparatus for use along assembly lines.

## B25B TOOLS OR BENCH DEVICES NOT OTHERWISE PROVIDED FOR, FOR FASTENING, CONNECTING, DISENGAGING, OR HOLDING

### Note

This subclass covers hand tools for fastening, connecting, disengaging, or holding, which are not covered by another subclass such as B25C (hand-held nailing or stapling tools) or by an application place such as B21F (working of wire) or B65B (packaging).

### Subclass Index

#### DEVICES FOR HOLDING BY PRESSING

Vices..... 1/00, 3/00  
Pliers, tweezers or tongs ..... 7/00, 9/00  
Other devices ..... 5/00 to 11/00

#### SPANNERS, WRENCHES, OR SCREWDRIVERS

Spanners or wrenches..... 13/00,  
17/00 to 21/00

Screwdrivers..... 15/00 to 21/00  
Details or accessories ..... 23/00

OTHER TOOLS FOR FASTENING,  
CONNECTING, FITTING TOGETHER,  
SEPARATING, OR TENSIONING..... 25/00 to 28/00, 31/00, 33/00  
ACCESSORIES..... 29/00

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| <p><b>1/00</b> <b>Vices</b> (specially adapted for tying flies for angling A01K 97/00; specially adapted for machine tools B23Q 3/00) [5]</p> <p><b>3/00</b> <b>Hand vices, i.e. vices intended to be held by hand; Pin vices</b></p> <p><b>5/00</b> <b>Clamps</b> (for holding or positioning work for welding, soldering, or cutting by applying heat locally B23K 37/04; work-clamping means for mounting on a work-table, tool-slide, or analogous parts B23Q 3/06)</p> <p><b>7/00</b> <b>Pliers; Other hand-held gripping tools with jaws on pivoted limbs; Details applicable generally to pivoted-limb hand tools</b> (implements for fastening, connecting, or tensioning wire or strip B25B 25/00; adapted for other fitting or separating purposes B25B 27/00; for marking animals A01K 11/00; dentists' forceps A61C 3/00; bending wire eyes B21F 1/00; hand-held metal-shearing or metal-cutting devices B23D 29/00; hand cutting tools B26B; for punching or perforating B26F 1/32; devices for securing ends of binding material in bundling machines B65B 13/18; specially designed for watch-making or comparable work G04D 1/00)</p> <p><b>9/00</b> <b>Hand-held gripping tools other than those covered by group B25B 7/00</b> (wrenches B25B 13/00; specially adapted for watchmakers' or like use G04D)</p> <p><b>11/00</b> <b>Work holders or positioners not covered by groups B25B 1/00 to B25B 9/00, e.g. magnetic work holders, vacuum work holders</b> (for holding or positioning work for welding, soldering, or cutting by applying heat locally B23K 37/04; specially adapted to machine tools B23Q 3/00)</p> | <p><b>13/00</b> <b>Spanners; Wrenches</b> (hand-driven gear-operated B25B 17/00; impact wrenches B25B 19/00; portable power-driven B25B 21/00; machines for fitting together or separating metal parts B23P 19/00)</p> <p><b>15/00</b> <b>Screwdrivers</b> (hand-driven gear-operated B25B 17/00; impact screwdrivers B25B 19/00; portable power-driven B25B 21/00)</p> <p><b>17/00</b> <b>Hand-driven gear-operated wrenches or screwdrivers</b> (ratchet operated B25B 13/00, B25B 15/00)</p> <p><b>19/00</b> <b>Impact wrenches or screwdrivers</b> (portable power-driven B25B 21/02)</p> <p><b>21/00</b> <b>Portable power-driven screw or nut setting or loosening tools</b> (details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00); <b>Attachments for drilling apparatus serving the same purpose</b> (machines B23P 19/06) [4]</p> <p>21/02 . with means for imparting impact to screwdriver blade or nut socket</p> <p><b>23/00</b> <b>Details of, or accessories for, spanners, wrenches, screwdrivers</b> (bolt tensioners B25B 29/00)</p> <p>23/02 . Arrangements for handling screws or nuts</p> <p>23/14 . Arrangement of torque limiters or torque indicators in wrenches or screwdrivers (couplings for transmitting rotation or clutches F16D; devices for measuring torque <u>per se</u> G01L)</p> <p><b>25/00</b> <b>Implements for fastening, connecting, or tensioning of wire or strip</b> (bundling articles B65B 13/00)</p> |
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**B25B – B25D**

<b>27/00</b>	<b>Hand tools or bench devices, specially adapted for fitting together or separating parts or objects whether or not involving some deformation, not otherwise provided for</b> (machines for simply fitting together or separating metal parts or objects B23P 19/00)	<b>28/00</b>	<b>Portable power-driven joining or separation tools</b> (B25B 21/00 takes precedence) [3]
27/02	· for connecting objects by press fit or detaching same	<b>29/00</b>	<b>Accessories</b> (specially for spanners, wrenches, screwdrivers B25B 23/00; tool boxes, tool positioning stands B25H)
27/14	· for assembling objects other than by press fit or detaching same	<b>31/00</b>	<b>Hand tools for applying fasteners</b> (nailing or stapling tools B25C) [3]
		<b>33/00</b>	<b>Hand tools not covered by any other group in this subclass</b> [3]

**B25C HAND-HELD NAILING OR STAPLING TOOLS; MANUALLY-OPERATED PORTABLE STAPLING TOOLS**  
(manufacturing footwear A43D)**Notes**

- (1) In this subclass, the following term is used with the meaning indicated:  
 – “nail” includes pin, bolt, stud, plug or the like.
- (2) Tools for driving both nails or staples are classified with the nailing tools. [3]

**Subclass Index**

<b>JOINING BY NAILS</b>		Tools for straightening or extracting nails .....	
Nailing punches .....	9/00	JOINING BY STAPLES .....	5/00, 7/00, 11/00
Nailing tools .....	1/00, 3/00, 7/00		

<b>1/00</b>	<b>Hand-held nailing tools</b> (hammers B25D; details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00; nailing machines B27F 7/00); <b>Nail feeding devices therefor</b> [4]	<b>7/00</b>	<b>Accessories for nailing or stapling tools, e.g. supports</b> (for tools operated by detonation of a cartridge B25C 1/00)
1/04	· operated by fluid pressure [3]	<b>9/00</b>	<b>Nail punches</b>
<b>3/00</b>	<b>Portable devices for holding and guiding nails; Nail dispensers</b>	<b>11/00</b>	<b>Nail, spike, or staple extractors</b> (incorporated in hammers B25D 1/00)
<b>5/00</b>	<b>Manually operated portable stapling tools; Hand-held power-operated stapling tools</b> (surgical staplers A61B 17/068, A61B 17/03; details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00; stapling machines B27F 7/00); <b>Staple feeding devices therefor</b> (surgical staples A61B 17/064; staples F16B 15/00) [3,4,5]	<b>13/00</b>	<b>Nail straightening devices</b>

**B25D PERCUSSIVE TOOLS** (percussive machines for forging B21J; hand-held drilling machines, in general B23B 45/00, for wood B27C 3/00; percussion drilling of earth or rock E21B) [2]**Subclass Index**

<b>TOOLS DISTINGUISHED BY OPERATIVE METHOD.....</b>		9/00 to 16/00
<b>HAMMERS, CHISELS, PUNCHES, OR PICKS .....</b>		1/00 to 7/00
<b>DETAILS OR ACCESSORIES .....</b>		17/00

<b>1/00</b>	<b>Hand hammers; Hammer heads of special shape or materials</b>	<b>5/00</b>	<b>Centre punches</b>
<b>3/00</b>	<b>Hand chisels</b> (mortise chisels B27G 17/00)	<b>7/00</b>	<b>Picks</b> (combined with other tools B25F)



<b>9/00</b>	<b>Portable percussive tools with fluid-pressure drive, e.g. having several percussive tool bits operated simultaneously</b> (centrifugal or rotary impact type B25D 15/00; portable non-percussive drilling tools driven by fluid pressure or pneumatic power B23B 45/00)	<b>15/00</b>	<b>Portable percussive tools using centrifugal or rotary impact elements</b>
<b>11/00</b>	<b>Portable percussive tools with electromotor drive</b> (centrifugal or rotary impact type B25D 15/00)	<b>16/00</b>	<b>Portable percussive machines with superimposed rotation</b> (portable drilling machines with superimposed percussive action B23B 45/00) [3]
<b>13/00</b>	<b>Portable percussive tools with electromagnetic drive</b> (B25D 15/00 takes precedence)	<b>17/00</b>	<b>Details of, or accessories for, portable power-driven percussive tools</b> (details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00) [4]

**B25F COMBINATION OR MULTI-PURPOSE TOOLS NOT OTHERWISE PROVIDED FOR; DETAILS OR COMPONENTS OF PORTABLE POWER-DRIVEN TOOLS NOT PARTICULARLY RELATED TO THE OPERATIONS PERFORMED AND NOT OTHERWISE PROVIDED FOR [4]**

**Note**

This subclass does not cover tools having a clear primary function as well as one or more secondary functions. Those tools are covered by the relevant subclass for tools having such primary function and are, thus, not classified in group B25F 1/00 or B25F 3/00 of this subclass.

- 1/00** **Combination or multi-purpose hand tools**  
(associations of tools for different working operations with one portable power-drive means B25F 3/00)
- 3/00** **Associations of tools for different working operations with one portable power-drive means; Adapters therefor**
- 5/00** **Details or components of portable power-driven tools not particularly related to the operations performed and not otherwise provided for [4]**

**B25G HANDLES FOR HAND IMPLEMENTS** (attaching the blades or the like to handles of hand tools for soil working A01B 1/00; handles of hand implements for harvesting A01D 1/00; handles integral with brushware A46B)

**Notes**

- (1) This subclass covers:
  - handles for hand implements, in general;
  - handles for hand implements for particular purposes, subject to Note (2) below.
- (2) This subclass does not cover handles provided for elsewhere, e.g. it does not cover those provided for in A45B 9/00, A45C 13/00, A47B 95/00, A47J 45/00, B23D 51/00, B25J 13/02, B26B, B60N 3/02, B62B 5/00, B62B 9/00, B62K 21/00, B62M 3/00, B65D 25/28, E05B, G05G.

- 1/00** **Handle constructions**
- 3/00** **Attaching handles to the implements**

**B25H WORKSHOP EQUIPMENT, E.G. FOR MARKING-OUT WORK; STORAGE MEANS FOR WORKSHOPS** (storing or packaging B65)

- 1/00** **Work benches; Portable stands or supports for positioning portable tools or work to be operated on thereby**

**3/00 Storage means or arrangements for workshops facilitating access to, or handling of, work, tools or instruments** (containers or packages with special means for dispensing contents B65D 83/00)

**5/00 Tool, instrument or work supports or storage means used in association with vehicles** (means for holding wheels or parts thereof B60B 30/00); **Workers' supports, e.g. mechanics' creepers**

**7/00 Marking-out or setting-out work** (measuring, gauging G01; optical apparatus G02B; by photographic means G03C)

**B25J MANIPULATORS; CHAMBERS PROVIDED WITH MANIPULATION DEVICES** (robotic devices for individually picking fruits, vegetables, hops or the like A01D 46/00; needle manipulators for surgery A61B 17/062; manipulators associated with rolling mills B21B 39/20; manipulators associated with forging machines B21J 13/00; means for holding wheels or parts thereof B60B 30/00; cranes B66C; arrangements for handling fuel or other materials which are used within nuclear reactors G21C 19/00; structural combination of manipulators with cells or rooms shielded against radiation G21F 7/00) [5]

### Note

In this subclass, the following term is used with the meaning indicated:

- “manipulator” covers handling tools, devices, or machines having a gripping or work head capable of bodily movement in space and of change of orientation, such bodily movement and change of orientation being controlled by means remote from the head, e.g. programme-controlled industrial robots.

### Subclass Index

KINDS OR TYPES OF MANIPULATORS ..... 1/00, 3/00  
 MANIPULATORS MOUNTED ON WHEELS  
 OR VEHICLES ..... 5/00  
 MICROMANIPULATORS ..... 7/00  
 PROGRAMME-CONTROLLED  
 MANIPULATORS ..... 9/00

OTHER MANIPULATORS, GLOVE-BOXES ..... 11/00, 21/00  
 CONTROL ..... 13/00  
 GRIPPING HEADS, JOINTS, ARMS ..... 15/00, 17/00,  
 18/00  
 ACCESSORIES; SAFETY ..... 19/00

**1/00 Manipulators positioned in space by hand** (of master-slave type B25J 3/00; micromanipulators B25J 7/00)

**3/00 Manipulators of master-slave type, i.e. both controlling unit and controlled unit perform corresponding spatial movements** (servo-actuated heads B25J 15/00)

**5/00 Manipulators mounted on wheels or on carriages** (B25J 1/00 takes precedence; programme-controlled manipulators B25J 9/00)

5/02 . travelling along a guideway

**7/00 Micromanipulators**

**9/00 Programme-controlled manipulators**

9/02 . characterised by movement of the arms, e.g. cartesian co-ordinate type (B25J 9/06 takes precedence) [4]

9/06 . characterised by multi-articulated arms [4]

9/10 . characterised by positioning means for manipulator elements [4]

9/12 . . electric [4]

9/14 . . fluid [4]

9/16 . Programme controls (total factory control, i.e. centrally controlling a plurality of machines, G05B 19/418) [4]

9/18 . . electric [4]

9/22 . . Recording or playback systems (in general G05B 19/42) [4]

**11/00 Manipulators not otherwise provided for**

**13/00 Controls for manipulators** (programme controls B25J 9/16) [4]

13/02 . Hand grip control means

13/04 . Foot-operated control means

13/06 . Control stands, e.g. consoles, switchboards

13/08 . by means of sensing devices, e.g. viewing or touching devices [4]

**15/00 Gripping heads**

15/02 . servo-actuated

15/04 . with provision for the remote detachment or exchange of the head or parts thereof

15/06 . with vacuum or magnetic holding means

15/08 . having finger members (B25J 15/02, B25J 15/04 take precedence) [4]

15/10 . . with three or more finger members [4]

15/12 . . with flexible finger members [4]

**17/00 Joints**

17/02 . Wrist joints

**18/00 Arms [4]**

**19/00 Accessories fitted to manipulators, e.g. for monitoring, for viewing; Safety devices combined with or specially adapted for use in connection with manipulators** (safety devices in general F16P; protection against radiation in general G21F)

19/02 . Sensing devices [4]

19/06 . Safety devices [4]

**21/00 Chambers provided with manipulation devices** (constructional features of the mounting of the manipulator in the wall B25J 1/00)

**B26 HAND CUTTING TOOLS; CUTTING; SEVERING**

**B26B HAND-HELD CUTTING TOOLS NOT OTHERWISE PROVIDED FOR** (for harvesting A01D; for horticulture, for forestry A01G; for butchering or meat treatment A22; for manufacturing or repairing footwear A43D; nail clippers or cutters A45D 29/00; kitchen equipment A47J; for surgical purposes A61B 17/00; for metal B23D; cutting by abrasive fluid jets B24C 5/00; plier-like tools with cutting edges B25B 7/00; pincers B25C 11/00; handles for hand implements, in general B25G; guillotine-type cutters B26D; for erasing B43L 19/00; for textile materials D06H)

**Subclass Index**

KNIVES	CLIPPERS OR RAZORS.....19/00, 21/00
Structural features..... 1/00 to 7/00	AXES OR HATCHETS.....23/00
Knife blades..... 9/00	OTHER CUTTING TOOLS .....25/00, 27/00
Combinations with other articles.....11/00	GUARDS, SHEATHS OR GUIDING
SHEARS, SCISSORS, NIPPERS, OR	ARRANGEMENTS .....29/00
PINCERS WITH CUTTING ACTION ..... 13/00, 15/00, 17/00	

**Hand knives**

- 1/00 Hand knives with adjustable blade; Pocket knives**  
(B26B 11/00 takes precedence)
- 3/00 Hand knives with fixed blades**
- 5/00 Hand knives with one or more detachable blades**  
(surgical scalpels or knives with detachable blades A61B 17/32)
- 7/00 Hand knives with reciprocating motor-driven blades**
- 9/00 Blades for hand knives**
- 11/00 Hand knives combined with other implements, e.g. with corkscrew, with scissors, with writing implement** (combined table-ware A47G 21/00)

**Hand shears; Scissors**

- 13/00 Hand shears; Scissors**
- 15/00 Hand-held shears with motor-driven blades**

- 17/00 Hand cutting tools with two jaws which come into abutting contact** (nail clippers or cutters A45D 29/00; joints therefor B25B 7/00)
- 19/00 Clippers or shavers operating with a plurality of cutting edges, e.g. hair clippers, dry shavers**
- 19/02 . . of the reciprocating-cutter type

- 19/04 . . Cutting heads therefor; Cutters therefor; Securing equipment thereof
- 19/12 . . of the oscillating-cutter type; Cutting heads therefor; Cutters therefor (B26B 19/04 takes precedence)
- 19/14 . . of the rotary-cutter type; Cutting heads therefor; Cutters therefor (B26B 19/04 takes precedence)
- 19/38 . Details of, or accessories for, hair clippers, or dry shavers, e.g. housings, casings, grips, guards (cutters, cutting heads B26B 19/04, B26B 19/12, B26B 19/14; cleaning or disinfecting devices A45D 27/00; drying devices A45D 27/00; casings for electric apparatus in general H05K)
- 21/00 Razors of the open or knife type; Safety razors or other shaving implements of the planing type; Hair-trimming devices involving a razor-blade; Equipment therefor**
- 21/08 . . involving changeable blades
- 23/00 Axes; Hatchets**
- 25/00 Hand cutting tools involving disc blades, e.g. motor-driven** (details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00) [4]
- 27/00 Hand cutting tools not provided for in groups B26B 1/00 to B26B 25/00, e.g. finger rings for cutting string, devices for cutting by means of wires**
- 29/00 Guards or sheaths for hand cutting tools; Arrangements for guiding hand cutting tools** (guards for hair clippers or dry shavers B26B 19/38) [5]

**B26D CUTTING; DETAILS COMMON TO MACHINES FOR SEVERING, E.G. BY CUTTING, PERFORATING, PUNCHING, STAMPING-OUT** (soil-working A01B; for growing crops or plants A01D, A01G; for fodder or straw A01F; for bulk butter A01J; for dough A21C; slaughtering A22B; for tobacco, cigars or cigarettes A24; marking-out, perforating or making buttonholes A41H 25/00; manufacturing footwear A43D; brushmaking A46D; surgery A61B; disintegrating, mincing or shredding in general B02C; cutting wire, making pins or nails B21F, B21G; of the kind used for metal B23; cutting by abrasive fluid jets B24C 5/00; hand-held cutting tools B26B; perforating, cutting-out, stamping-out or punching, or severing by means other than cutting B26F; for wood B27; for stone B28D; working of plastics or substances in a plastic state B29; making boxes, cartons, envelopes or bags, of paper or similarly worked materials, e.g. metal foil, B31B; article or web delivery apparatus incorporating cutting or line-perforating devices B65H 35/00; for leather or upholstery B68, C14B; for glass C03B; making matches C06F; for peat C10F; for sugar C13H; for textile materials D06H; civil engineering, building, mining, see section E; devices for withdrawing samples by cutting G01N 1/04; for light guides G02B 6/25; cutting processed photographic material G03D 15/04) [2,5]

### Notes

- (1) This subclass covers :
- cutting non-metallic sheet material or metal foil in general;
  - cutting other forms of non-metallic material not otherwise provided for;
  - features specific to machines for cutting, perforating, punching, cutting-out, stamping-out, or severing by means other than cutting, which relate to a requirement or problem of a nature which is not peculiar to a machine for these purposes, that is, details of or arrangements for operating or controlling such machines, although the realisation of such features may differ according to the kind of machine concerned. This subclass covers such features in general even if the feature, in any particular case, is to some extent peculiar to, or is claimed only for, a machine designed for perforating, punching, cutting-out, stamping-out, or for severing other than by cutting.
- (2) If the details or arrangements have no essential features specific to cutting, perforating, punching, cutting-out, stamping-out or severing machines, the more general classes, e.g. F16, take precedence.

### Subclass Index

CUTTING CHARACTERISED BY THE  
CUTTING MEMBER OR BY THE NATURE  
OF THE CUT PERFORMED..... 1/00, 3/00  
ARRANGEMENTS FOR OPERATING AND  
CONTROLLING; DETAILS OF APPARATUS  
FOR SEVERING ..... 5/00; 7/00  
COMBINED APPARATUS.....9/00, 11/00

<b>1/00</b>	<b>Cutting through work characterised by the nature or movement of the cutting member; Apparatus or machines therefor; Cutting members therefor</b> (flying saws for metal B23D 45/00) [3]	5/08	• Means for actuating the cutting member to effect the cut
		5/20	• with interrelated action between the cutting member and work feed
1/01	• involving a cutting member which does not travel with the work (severing using a heated wire B26F 3/06) [3]	5/38	• with means operable by the moving work to initiate the cutting action
<b>3/00</b>	<b>Cutting work characterised by the nature of the cut made; Apparatus therefor</b> [3]	<b>7/00</b>	<b>Details of apparatus for cutting, cutting-out, stamping-out, punching, perforating, or severing by means other than cutting</b> (cutters B26D 1/00; arrangements for guiding hand cutting tools B26B 29/00; punching tools or dies, cutting-out knives or dies B26F) [5]
3/08	• Making a superficial cut in the surface of the work without removal of material, e.g. scoring, incising	7/01	• Means for holding or positioning work [3]
3/16	• Cutting rods or tubes transversely	7/06	• Arrangements for feeding or delivering work of other than sheet, web, or filamentary form (feeding or discharging sheets, webs, or filaments B65H)
3/24	• to obtain segments other than slices, e.g. cutting pies	7/08	• Means for treating work or cutting member to facilitate cutting (tensioning band cutters B26D 1/01)
		7/18	• Means for removing cut-out material or waste
		7/26	• Means for mounting or adjusting the cutting member; Means for adjusting the stroke of the cutting member
<b>5/00</b>	<b>Arrangements for operating and controlling machines or devices for cutting, cutting-out, stamping-out, punching, perforating, or severing by means other than cutting</b>	<b>9/00</b>	<b>Cutting apparatus combined with punching or perforating apparatus or with dissimilar cutting apparatus</b>
5/02	• Means for moving the cutting member into its operative position for cutting	<b>11/00</b>	<b>Combinations of several similar cutting apparatus</b>

### Note

In groups B26D 5/00 and B26D 7/00, the following term is used with the meaning indicated:

- “cutting” includes cutting-out, stamping-out, punching, perforating or severing by means other than cutting.

**B26F PERFORATING; PUNCHING; CUTTING-OUT; STAMPING-OUT; SEVERING BY MEANS OTHER THAN CUTTING** (marking-out, perforating or making buttonholes A41H 25/00; manufacturing footwear A43D; surgery A61B; punching metal B21D; drilling metal B23B; cutting of metal by applying heat locally, e.g. flame cutting, B23K; cutting by abrasive fluid jets B24C 5/00; details common to machines for severing B26D; drilling wood B27C; drilling stone B28D; working of plastics or substances in a plastic state B29; making boxes, cartons, envelopes or bags, of paper or similarly worked materials, e.g. metal foil, B31B; of glass C03B; of leather C14B; of textile materials D06H; for light guides G02B 6/25; of tickets G07B) [2,5]

#### **Notes**

- (1) This subclass covers:
- perforating, punching, cutting-out, stamping-out;
  - severing, by means other than cutting, non-metallic sheet material or metal foil in general;
  - severing, by means other than cutting, other forms of non-metallic materials not otherwise provided for.
- (2) Attention is drawn to Notes (1) and (2) following the title of subclass B26D.

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<b>1/00</b>	<b>Perforating; Punching; Cutting-out; Stamping-out; Apparatus therefor</b> (perforating by laser beam B23K 26/00; subjecting the grinding tools or the abrading medium to vibration, e.g. grinding with ultrasonic frequency, B24B 1/04; perforating by sand-blasting B24C; punching cards or tapes for statistical and record purposes G06K 1/00)	1/32	. Hand-held perforating or punching apparatus, e.g. awls
		1/38	. Cutting-out; Stamping-out
		<b>3/00</b>	<b>Severing by means other than cutting; Apparatus therefor</b> (severing by grinding B24B 27/06)
		3/02	. Tearing
1/02	. Perforating by punching, e.g. with relatively-reciprocating punch and bed	3/04	. Severing by squeezing (B26F 3/06 takes precedence)
1/16	. Perforating by tool or tools of the drill type	3/06	. Severing by using heat (severing by laser beam B23K 26/00)

## B27 WORKING OR PRESERVING WOOD OR SIMILAR MATERIAL; NAILING OR STAPLING MACHINES IN GENERAL

**B27B SAWS; COMPONENTS OR ACCESSORIES THEREFOR** (saws specially adapted for pruning or debranching A01G 3/00; sawing apparatus specially adapted for felling trees A01G 23/00; features not restricted to a particular type of wood saw B23D, e.g. attaching saw blades B23D 51/00; machine tool frames, beds, pillars or like members, in general B23Q 1/00) [5]

### Subclass Index

#### SAWS CHARACTERISED BY THE ACTIVE ELEMENT

Reciprocating.....	3/00, 11/00, 19/00	Other kinds.....	23/00
Circular.....	5/00, 7/00, 9/00	PORTABLE OR HAND SAWS.....	9/00, 21/00
Band or strap.....	13/00, 15/00	ACTIVE ELEMENTS.....	23/00, 33/00
Chain.....	17/00	ACCESSORIES.....	25/00 to 31/00
		SAWING TRUNKS OR LOGS, SAWS SPECIALLY ADAPTED THEREFOR.....	1/00, 3/00, 7/00, 15/00

**1/00 Methods for subdividing trunks or logs essentially involving sawing** (features of machines used, see the relevant groups for the machines)

**3/00 Gang saw mills; Other sawing machines with reciprocating saw blades, specially designed for length sawing of trunks**

#### Circular saws

**5/00 Sawing machines working with circular saw blades** (for length sawing of trunks B27B 7/00); **Components or equipment therefor**

**7/00 Sawing machines working with circular saw blades, specially designed for length sawing of trunks**

**9/00 Portable power-driven circular saws for manual operation** (details or components, e.g. handles, casings, of portable power-driven tools not particularly related to the operation performed B25F 5/00) [4]

**11/00 Cross-cut reciprocating saws with power drive; Appurtenances therefor**

#### Band or strap sawing machines

**13/00 Band or strap sawing machines** (for length cutting of trunks B27B 15/00); **Components or equipment therefor**

**15/00 Band or strap sawing machines specially designed for length cutting of trunks**

**17/00 Chain saws; Equipment therefor**

**19/00 Other reciprocating saws with power drive; Fret-saws** (details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00) [4]

**21/00 Hand saws without power drive** (B27B 19/00 takes precedence); **Equipment for hand sawing, e.g. saw horses**

**23/00 Other cutting of wood by non-rotary toothed tools; Tools therefor** (cutting with hot wire B27M 1/00)

#### Components or accessories for saws

**25/00 Feeding devices for timber in saw mills or sawing machines; Feeding devices for trees** (B27B 31/00 takes precedence) [5]

**27/00 Guide fences or stops for timber in saw mills or sawing machines; Measuring equipment thereon** (safety guards or devices specially designed for wood saws B27G 19/00; constructional features of measuring devices G01B)

**29/00 Gripping, clamping, or holding devices for the trunk or log in saw mills or sawing machines** (safety guards or devices specially designed for wood saws B27G 19/00; for other timber, see the relevant groups for the machines); **Travelling trunk or log carriages**

**31/00 Arrangements for conveying, loading, turning, adjusting, or discharging the log or timber, specially designed for saw mills or sawing machines** (B27B 29/00 takes precedence)

**33/00 Sawing tools for saw mills, sawing machines, or sawing devices**

**B27C PLANING, DRILLING, MILLING, TURNING, OR UNIVERSAL MACHINES** (machine tools in general B23; working wood using abrasive, e.g. sanding, devices B24; tools for these purposes B27G)

**1/00 Machines for producing flat surfaces, e.g. by rotary cutters; Equipment therefor**

**3/00 Drilling machines or drilling devices; Equipment therefor** (B23B takes precedence)

<b>5/00</b>	<b>Machines designed for producing special profiles or shaped work, e.g. by rotary cutters; Equipment therefor</b> (turning B27C 7/00; features of copying devices B23Q 35/00; slotting, mortising, making tongues or grooves B27F)	<b>7/00</b>	<b>Wood-turning machines; Equipment therefor</b> (B23B, B23G, B23Q take precedence; features of copying devices B23Q 35/00)
		<b>9/00</b>	<b>Multi-purpose machines; Universal machines; Equipment therefor</b>

**B27D WORKING VENEER OR PLYWOOD** (applying liquids or other fluent materials to surfaces in general B05; grinding, sanding, or polishing of wood B24; applying adhesives or glue to surfaces of wood B27G 11/00; manufacture of veneer B27L 5/00)

#### Note

The layered products classified in this subclass are also classified in B32B. [3]

- 1/00** **Joining wood veneer with any material; Forming articles thereby** (manufacture by dry processes of articles made from particles or fibres consisting of wood or other lignocellulosic or like organic material B27N); **Preparatory processing of surfaces to be joined, e.g. scoring**
- 3/00** **Veneer presses; Press plates; Plywood presses** (presses in general B30B)
- 5/00** **Other working of veneer or plywood specially adapted to veneer or plywood** (working of strips in the same way as cane B27J)

**B27F DOVETAILED WORK; TENONS; SLOTTING MACHINES; NAILING OR STAPLING MACHINES** (hand-held nailing or stapling tools B25C; manufacture of cases, trunks or boxes from wood B27M 3/34; connections for building structures in general, e.g. dowels for use in building constructions E04B 1/38; jointing elements in general, e.g. dowels in general, F16B)

#### Notes

- (1) This subclass covers also the assembling of the elements to be jointed, e.g. using adhesives.
- (2) This subclass does not cover the application of adhesives or glue to surfaces of wood to be jointed, which is covered by group B27G 11/00.

- |             |                                                                                                                                                                                                                                                            |             |                                                                                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1/00</b> | <b>Dovetailed work; Tenons; Making tongues or grooves</b> (slotting B27F 5/00); <b>Groove-and-tongue jointed work; Finger-joints</b> (machines or devices for working mitred joints B27G 5/00; cutting tools for cutting grooves or tenons B27G 13/00) [2] | <b>4/00</b> | <b>Machines for inserting dowels, with or without drilling equipment</b> (manufacture of wooden dowels B27M 3/28)                                                                                                          |
|             |                                                                                                                                                                                                                                                            | <b>5/00</b> | <b>Slotted or mortised work</b> (hand mortising chisels B27G 17/00)                                                                                                                                                        |
|             |                                                                                                                                                                                                                                                            | <b>7/00</b> | <b>Nailing or stapling</b> (surgical staplers A61B 17/068; hand-held nailing tools B25C 1/00; manually operated portable stapling tools, hand-held power-operated stapling tools B25C 5/00); <b>Nailed or stapled work</b> |

**B27G ACCESSORY MACHINES OR APPARATUS; TOOLS** (sawing tools B27B 33/00; tools for slotting or mortising machines B27F 5/00; tools for the manufacture of wood shavings, chips, powder, or the like B27L 11/00); **SAFETY DEVICES, E.G. FOR SAWS** (clamping devices for mitre joints, presses for producing frames, press frames, or cages equipped with clamping devices B25B; woodworkers' benches B25H)

#### Subclass Index

DEVICES OR MACHINES FOR REMOVING KNOTS OR OTHER UNUSABLE PARTS..... 1/00, 3/00

DEVICES OR MACHINES FOR WORKING MITRE JOINTS OR FOR GLUING..... 5/00, 11/00

TOOLS.....13/00, 15/00, 17/00

DEVICES FOR SAFETY OR PROPER OPERATION.....19/00, 21/00, 23/00

**Accessory machines or apparatus**

- 1/00 Machines or devices for removing knots or other irregularities or for filling-up holes
- 3/00 Arrangements for removing bark-zones, chips, waste, or dust, specially designed for use in connection with wood-working machine or in wood-working plants
- 5/00 Machines or devices for working mitre joints with even abutting ends (with tenon or like connections B27F)
- 11/00 Applying adhesives or glue to surfaces of wood to be joined (applying liquids, e.g. liquid adhesives, to surfaces in general B05C, B05D; adhesive processes C09J 5/00; associated with particular wood-working, see the relevant subclasses) [2]

**Tools [2]**

- 13/00 Cutter blocks; Other rotary cutting tools (B27G 15/00, B27G 17/00 take precedence)
- 15/00 Boring or turning tools; Augers
- 17/00 Manually-operated tools

**Safety guards or devices**

- 19/00 Safety guards or devices specially designed for wood saws (in general F16P); Auxiliary devices facilitating proper operation of wood saws
- 21/00 Safety guards or devices specially designed for other wood-working machines
- 23/00 Gauging means specially designed for adjusting of tools or guides, e.g. adjusting cutting blades in cutter blocks (for guides of sawing machines B27B 27/00)

**B27H BENDING; COOPERAGE; WHEEL-MAKING**

- 1/00 Bending wood, e.g. wood stock [2]
- 3/00 Manufacture of constructional elements of tubs, coops or barrels (assembly, e.g. coopering, B27H 5/00)
- 5/00 Manufacture of tubs, coops or barrels (from veneer strips or sheets B27D 1/00)
- 7/00 Manufacture of wheels wholly or predominantly made from wood, e.g. cart wheels; Manufacture of wood-rimmed wheels, e.g. steering wheels [2]

**B27J MECHANICAL WORKING OF CANE, CORK, OR SIMILAR MATERIALS****Note**

In this subclass, the following expression is used with the meaning indicated:

- “working of cane” embraces the working of other materials, e.g. of strips of wood or plastics, in the same manner.

- 1/00 Mechanical working of cane or the like (weaving D03D)
- 3/00 Peeling osier rods (debarking trees or logs B27L 1/00)
- 5/00 Mechanical working of cork (manufacture by dry processes of articles made from particles or fibres of cork B27N)
- 7/00 Mechanical working of tree or plant materials not otherwise provided for

**B27K PROCESSES, APPARATUS OR SELECTION OF SUBSTANCES FOR IMPREGNATING, STAINING, DYEING, BLEACHING OF WOOD OR SIMILAR MATERIALS, OR TREATING OF WOOD OR SIMILAR MATERIALS WITH PERMEANT LIQUIDS, NOT OTHERWISE PROVIDED FOR** (applying liquids or other fluent materials to surfaces in general B05; coating wood or similar material B44D); **CHEMICAL OR PHYSICAL TREATMENT OF CORK, CANE, REED, STRAW OR SIMILAR MATERIALS [2]**

- 1/00 Damping wood
- 3/00 Impregnating wood (dyeing, staining B27K 5/00)
- 3/02 . Processes; Apparatus



**Note**

In groups B27K 3/16 to B27K 3/34, in the absence of an indication to the contrary, impregnating agents are classified in the last appropriate place.

- 3/16 . Inorganic impregnating agents
- 3/34 . Organic impregnating agents
- 3/52 . Impregnating agents containing mixtures of inorganic and organic compounds

- 5/00 Treating of wood not provided for in groups B27K 1/00, B27K 3/00** (bleaching wood pulp D21C 9/10)
- 5/06 . Softening or hardening wood
- 7/00 Chemical or physical treatment of cork** (mechanical working of cork B27J 5/00)
- 9/00 Chemical or physical treatment of reed, straw, or similar material** (mechanical working of cane or the like B27J 1/00)

**B27L REMOVING BARK OR VESTIGES OF BRANCHES** (forestry A01G); **SPLITTING WOOD; MANUFACTURE OF VENEER, WOODEN STICKS, WOOD SHAVINGS, WOOD FIBRES OR WOOD POWDER**

- 1/00 Debarking or removing vestiges of branches from trees or logs** (debarking by chemical treatment B27L 3/00); **Machines therefor [2]**

**Note**

Tree-feeding devices are covered by group B27B 25/00. [5]

- 3/00 Debarking by chemical treatment**
- 5/00 Manufacture of veneer** (working veneer or plywood B27D)

- 7/00 Arrangements for splitting wood [6]**
- 9/00 Manufacture of wooden sticks, e.g. toothpicks** (of walking sticks, of sticks for umbrellas B27M 3/38; combined with other operations in the manufacture of matches C06F)
- 11/00 Manufacture of wood shavings, chips, powder, or the like** (disintegrating in general B02C; edge trimming sawing blades or sawing tools combined with means to disintegrate waste B27B 33/00; obtaining fibres for spinning D01B 1/00; wet methods D21B 1/00); **Tools therefor [2]**

**B27M WORKING OF WOOD NOT PROVIDED FOR IN SUBCLASSES B27B TO B27L; MANUFACTURE OF SPECIFIC WOODEN ARTICLES**

- 1/00 Working of wood not provided for in subclasses B27B to B27L, e.g. by stretching [2]**
- 3/00 Manufacture or reconditioning of specific semi-finished or finished articles** (features of copying devices B23Q; manufacture of plywood or veneer, shaping plywood or veneer into articles B27D; of central layers for plywood B27D 1/00; nailing or stapling machines in general B27F 7/00; of elements for cooperage or wheel-making B27H)
  - 3/02 . of roofing elements, e.g. shingles
  - 3/04 . of flooring elements, e.g. parqueting blocks (assembling wooden elements on backings of other substances B32B, e.g. B32B 37/00)
  - 3/08 . of specially-shaped wood laths or strips
  - 3/10 . of airscrew blades
  - 3/12 . of railings, stairs, stair stringers, ladders, or parts thereof
  - 3/14 . of railroad sleepers
- 3/16 . of tool handles or tools, e.g. mallets
- 3/18 . of furniture
- 3/20 . of lasts; of shoes, e.g. sabots; of parts of shoes, e.g. heels
- 3/22 . of sport articles, e.g. bowling pins, frames of tennis rackets, skis, paddles
- 3/24 . of household utensils, e.g. spoons, clothes hangers, clothes pegs
- 3/26 . of smokers utensils, e.g. pipes
- 3/28 . of dowels or bolts
- 3/30 . of bobbins
- 3/32 . of tapered poles, e.g. mine props
- 3/34 . of cases, trunks, or boxes, of wood or equivalent material which cannot satisfactorily be bent without softening (nailing or stapling in general B25C, B27F; of cardboard, paper, or similarly workable material B31B)
- 3/38 . of walking sticks or of sticks for umbrellas

**B27N**    **MANUFACTURE BY DRY PROCESSES OF ARTICLES, WITH OR WITHOUT ORGANIC BINDING AGENTS, MADE FROM PARTICLES OR FIBRES CONSISTING OF WOOD OR OTHER LIGNOCELLULOSIC OR LIKE ORGANIC MATERIAL** (containing cementitious material B28B; shaping of substances in a plastic state B29C; fibreboards made from fibrous suspensions D21J; drying F26B 17/00) [4]

**Note**

This subclass does not cover treatment of compositions which are in a plastic state, or worked by the same type of process or apparatus as plastics, which is covered by subclass B29B or B29C. [4]

---

<b>1/00</b>	<b>Pretreatment of moulding material [4]</b>	<b>7/00</b>	<b>After-treatment, e.g. reducing swelling or shrinkage, surfacing; Protecting the edges of boards against access of humidity [4]</b>
<b>3/00</b>	<b>Manufacture of substantially flat articles, e.g. boards, from particles or fibres [4]</b>		
3/04	· from fibres [4]	<b>9/00</b>	<b>Arrangements for fireproofing (fireproofing materials C09K 21/00) [4]</b>
3/08	· Moulding or pressing (presses in general B30B) [4]		
<b>5/00</b>	<b>Manufacture of non-flat articles [4]</b>		

## B28 WORKING CEMENT, CLAY, OR STONE

**B28B SHAPING CLAY OR OTHER CERAMIC COMPOSITIONS, SLAG OR MIXTURES CONTAINING CEMENTITIOUS MATERIAL, E.G. PLASTER** (foundry moulding B22C; working stone or stone-like material B28D; shaping of substances in a plastic state, in general B29C; making layered products not composed wholly of these substances B32B; shaping in situ, see the relevant classes of section E)

### Note

In this subclass, the following term is used with the meaning indicated:

- “the material” means:
  - (a) clay or other ceramic compositions;
  - (b) slag;
  - (c) mixtures with water-setting properties given by clay, cementitious material, or slag.

### Subclass Index

PRODUCING ARTICLES		APPARATUS OR PROCESSES FOR	
	Shaping articles characterised by method of production, machines therefor .....		TREATING OR WORKING ARTICLES ..... 11/00
	1/00, 3/00, 5/00		MOULDS; AUXILIARY EQUIPMENT ..... 7/00; 13/00, 17/00
	Coating of surfaces .....		GENERAL LAYOUT OF PLANT ..... 15/00
	19/00		PRODUCTION OF TUBULAR OR REINFORCED ARTICLES ..... 21/00, 23/00
<hr/>			
<b>1/00</b>	<b>Producing shaped articles from the material</b> (using presses B28B 3/00; shaping on moving conveyers B28B 5/00; producing tubular articles B28B 21/00)	<b>5/00</b>	<b>Producing shaped articles from the material in moulds or on moulding surfaces, carried or formed by, in, or on conveyers irrespective of the manner of shaping</b> (shaping aspects, <u>see</u> the relevant groups)
1/08	. by vibrating or jolting		
1/14	. by simple casting, the material being neither forcibly fed nor positively compacted (for molten material B28B 1/00)	<b>7/00</b>	<b>Moulds; Cores; Mandrels</b> (specially adapted for the production of tubular articles B28B 21/00)
1/16	. . for producing layered articles (coating B28B 11/04)	7/02	. Moulds with adjustable parts
1/24	. by injection moulding	7/10	. Moulds with means incorporated therein, or carried thereby, for ejecting the moulded article (devices, not forming part of the mould, for ejecting the moulded article B28B 13/00)
1/26	. by slip-casting, i.e. by casting a suspension or dispersion of the material in a liquid-absorbent or porous mould, the liquid being allowed to soak into or pass through the walls of the mould; Moulds therefor (B28B 1/52 takes precedence)	7/16	. Moulds for making shaped articles with cavities or holes open to the surface
1/30	. by applying the material on to a core, or other moulding surface to form a layer thereon (to form a permanent layer B28B 19/00)	7/22	. Moulds for making units for prefabricated buildings; Moulds for making prefabricated stair units
1/50	. specially adapted for producing articles of expanded material, e.g. cellular concrete (chemical aspects C04B)	7/28	. Cores; Mandrels
1/52	. specially adapted for producing articles from mixtures containing fibres (by wrapping on to mandrels B28B 1/30)	7/34	. Moulds, cores, or mandrels of special material, e.g. destructible materials (for slip-casting B28B 1/26)
<b>3/00</b>	<b>Producing shaped articles from the material by using presses</b> (shaping on moving conveyers B28B 5/00); <b>Presses specially adapted therefor</b> (presses in general B30B)	7/36	. Linings or coatings (lubricating surfaces of moulds, cores, or mandrels B28B 7/38)
3/02	. wherein a ram exerts pressure on the material in a moulding space; Ram heads of special form	7/38	. Treating surfaces of moulds, cores, or mandrels to prevent sticking
3/04	. . with one ram per mould (B28B 3/10 takes precedence)	7/40	. characterised by means for modifying the properties of the moulding material [5]
3/08	. . with two or more rams per mould	<b>11/00</b>	<b>Apparatus or processes for treating or working the shaped articles</b> (specially adapted for tubular articles B28B 21/00; decoration or surface treatment in general B05, B44; processes for influencing or modifying the setting or hardening ability of mortars, concrete or artificial stone compositions, in general C04B 40/00; compacting concrete <u>in situ</u> in connection with building E04G 21/06; drying F26)
3/10	. . each charge of material being compressed against previously formed body	11/02	. for attaching appendages, e.g. handles, spouts
3/20	. wherein the material is extruded	11/04	. for coating (glazing, engobing C04B)
3/26	. . Extrusion dies	11/08	. for reshaping the surface, e.g. smoothing, roughening, corrugating, making screw-threads
		11/12	. for removing parts of the articles by cutting
		11/14	. for dividing shaped articles by cutting

**13/00** Feeding the unshaped material to moulds or apparatus for producing shaped articles; **Discharging shaped articles from such moulds or apparatus** (feeding or discharging devices incorporated in, or operatively associated with, a particular type of shaping apparatus, or specially designed to supply materials to a particular type of shaping apparatus, see the relevant groups for the apparatus)

**15/00** General arrangement or layout of plant

**17/00** Details of, or accessories for, apparatus for shaping the material; **Auxiliary measures taken in connection with such shaping** (moulds B28B 7/00; after-treatment B28B 11/00; feeding or discharging B28B 13/00; arrangements for embedding elements in the material B28B 23/00; details, accessories, or auxiliary measures special to any one type of shaping, machine or method of shaping, see the relevant groups for such machines or methods)

**19/00** Machines or methods for applying the material to surfaces to form a permanent layer thereon (making shaped articles on mandrels B28B 1/30; applying liquids or other fluent materials to surfaces in general B05C; glazing or engobing C04B; applying the material to walls or other fixed structures, see the relevant classes of section E)

**Methods, apparatus, or machines, specially adapted for the production of tubular or reinforced articles**

**21/00** Methods or machines specially adapted for the production of tubular articles

21/02 . by casting into moulds

**23/00** Arrangements specially adapted for the production of shaped articles with elements wholly or partly embedded in the moulding material (B28B 21/00 takes precedence; in units for prefabricated buildings B28B 7/22)

23/02 . wherein the elements are reinforcing members

**B28C PREPARING CLAY; PRODUCING MIXTURES CONTAINING CLAY OR CEMENTITIOUS MATERIAL, E.G. PLASTER** (preparing material for foundry moulds B22C 5/00)

**Note**

In this subclass, the following terms or expressions are used with the meanings indicated:

- “cement” or “mixtures of cement with other substances” includes plaster;
- “clay” includes like ceramic compositions.

**1/00** Apparatus or methods for obtaining or processing clay (filtration in general B01D; separation of solids from solids B03, B07; chemical part C04B; by mining or quarrying E21C 41/00, E21C 47/00)

**Mixing clay or cement with other material**

**Note**

In groups B28C 3/00 to B28C 7/00, the following term is used with the meaning indicated:

- “mixing” includes preliminary mixing, e.g. of some of the ingredients, final mixing, and agitating the mixture to prevent segregation thereof.

**3/00** Apparatus or methods for mixing clay with other substances (producing clay suspensions B28C 1/00; general arrangement or layout of plant B28C 9/00)

**5/00** Apparatus or methods for producing mixtures of cement with other substances, e.g. slurries, mortars, porous or fibrous compositions (controlling the mixing apparatus and supplying the ingredients B28C 7/00; general arrangement or layout of plant B28C 9/00)

**7/00** Controlling the operation of apparatus for producing mixtures of clay or cement with other substances; **Supplying or proportioning the ingredients for mixing clay or cement with other substances; Discharging the mixture**

**9/00** General arrangement or layout of plant [2]

**B28D WORKING STONE OR STONE-LIKE MATERIALS** (machinery for, or methods of, mining or quarrying E21C)

**1/00** Working stone or stone-like materials, e.g. brick, concrete, not provided for elsewhere; **Machines, devices, tools therefor** (fine working of gems, jewels, crystals B28D 5/00; working by grinding or polishing B24; devices or means for dressing or conditioning abrasive surfaces B24B 53/00)

1/02 . by sawing

1/14 . by boring or drilling (rotary drilling machines B23B; percussive tools B25D; earth or rock drilling E21B) [1,7]

1/18 . by milling, e.g. channelling by means of milling tools  
1/20 . by planing, e.g. channeling by means of planing tools  
1/22 . by cutting, e.g. incising  
1/26 . by impact tools, e.g. by chisels or other tools having a cutting edge (portable percussive machines B25D)

**3/00** Dressing mill discs or rollers (dressing the tools of sawing machines or sawing devices B23D 63/00; treating the cutting members of cutting machines to facilitate cutting B26D 7/08)

**5/00 Fine working of gems, jewels, crystals, e.g. of semiconductor material; Apparatus therefor**  
(working by grinding or polishing B24; for artistic purposes B44B; by non-mechanical methods C04B 41/00; non-mechanical after-treatment of single crystals C30B 33/00) [3]

5/04 . by tools other than of rotary type, e.g. reciprocating tools

**7/00 Accessories specially adapted for use with machines or devices of the other groups of this subclass**

**B29 WORKING OF PLASTICS; WORKING OF SUBSTANCES IN A PLASTIC STATE IN GENERAL** (processing doughs A21C; working chocolate A23G; casting of metals B22; working cement, clay B28; chemical aspects, *see* section C, particularly C08; working glass C03B; candle making C11C 5/00; making soap C11D 13/00; manufacture of artificial filaments, threads, fibres, bristles or ribbons D01D, D01F; manufacture of articles from cellulosic fibrous suspensions or from papier-mâche D21J)

#### Notes

- (1) This class does not cover the working of plastics sheet material in a manner analogous to the working of paper, which is covered by class B31. [4]
- (2) In this class, the following term is used with the meaning indicated:
  - “plastics” means macromolecular compounds or compositions based on such compounds.
- (3) In this class, the following rules apply:
  - (a) The working of plastics is, as far as possible, classified primarily according to the particular shaping technique used, e.g. in subclass B29C. [4]
  - (b) A product is not classified in this class unless it results from a technique which is covered by this class.
  - (c) Classification according to production of particular articles in subclass B29D is restricted to:
    - (i) aspects which are characteristic for the production of a particular article, and not classifiable in subclass B29B or B29C;
    - (ii) combined operations for making the particular article which are not fully classifiable in subclass B29C. [4]

**B29B PREPARATION OR PRETREATMENT OF THE MATERIAL TO BE SHAPED; MAKING GRANULES OR PREFORMS; RECOVERY OF PLASTICS OR OTHER CONSTITUENTS OF WASTE MATERIAL CONTAINING PLASTICS [4]**

#### Subclass Index

PRETREATMENT	Other pretreatment .....	15/00
Mixing; kneading .....	MAKING GRANULES OR PREFORMS .....	9/00, 11/00
Conditioning .....	RECOVERY OF PLASTICS .....	17/00

<b>7/00</b>	<b>Mixing; Kneading</b> (in general B01F; combined with calendering B29C 43/24, with injection B29C 45/46, with extrusion B29C 47/36) [4]	<b>13/00</b>	<b>Conditioning or physical treatment of the material to be shaped</b> (chemical aspects C08J 3/00) [4]
7/02	. non-continuous, with mechanical mixing or kneading devices, i.e. batch type [4]	13/10	. by grinding, e.g. by triturating; by sieving; by filtering [4]
7/30	. continuous, with mechanical mixing or kneading devices [4]	<b>15/00</b>	<b>Pretreatment of the material to be shaped, not covered by groups B29B 7/00 to B29B 13/00 [4]</b>
7/34	. . with movable mixing or kneading devices [4]	15/08	. of reinforcements or fillers (chemical aspects C08J, C08K) [4]
<b>9/00</b>	<b>Making granules</b> (in general B01J; chemical aspects C08J 3/12) [4]	15/10	. . Coating or impregnating (applying liquids in general B05) [4]
9/02	. by dividing preformed material [4]	<b>17/00</b>	<b>Recovery of plastics or other constituents of waste material containing plastics</b> (chemical recovery C08J 11/00) [4]
9/12	. characterised by structure or composition [4]	17/02	. Separating plastics from other materials [4]
<b>11/00</b>	<b>Making preforms</b> (B29C 61/06 takes precedence) [4]	17/04	. Disintegrating plastics (B29B 9/02, B29B 11/00, B29B 13/10 take precedence) [8]
11/14	. characterised by structure or composition [4]		
11/16	. . comprising fillers or reinforcements [4]		

**B29C SHAPING OR JOINING OF PLASTICS; SHAPING OF SUBSTANCES IN A PLASTIC STATE, IN GENERAL; AFTER-TREATMENT OF THE SHAPED PRODUCTS, E.G. REPAIRING** (working in the manner of metal B23; grinding, polishing B24; cutting B26D, B26F; making preforms B29B 11/00) [4]

#### Notes

- (1) Attention is drawn to Note (3) following the title of class B29. [4]
- (2) Layered products or laminating methods are further classified in subclass B32B. [4]
- (3) In this subclass:
  - repairing of articles made from plastics or substances in a plastic state, e.g. of articles shaped or produced by using techniques covered by this subclass or subclass B29D, is classified in group B29C 73/00;

- component parts, details, accessories or auxiliary operations which are applicable to more than one moulding technique are classified in groups B29C 31/00 to B29C 37/00;
- component parts, details, accessories or auxiliary operations which are only applicable or only of use for one specific shaping technique are classified only in the relevant subgroups of groups B29C 39/00 to B29C 71/00. [4,5]

### **Subclass Index**

#### **COMPONENT PARTS, DETAILS ACCESSORIES, AUXILIARY OPERATIONS**

- Moulds or cores ..... 33/00
- Heating, cooling, curing ..... 35/00
- Other features ..... 31/00, 37/00

#### **MOULDING**

- by casting, by coating a mould ..... 39/00, 41/00
- Compression moulding ..... 43/00
- by internal pressure ..... 44/00
- Injection moulding ..... 45/00
- Extrusion moulding ..... 47/00
- Blow-moulding ..... 49/00
- Thermoforming ..... 51/00

#### **OTHER SHAPING TECHNIQUES**

- Bending, folding, twisting,  
straightening, flattening ..... 53/00

- Stretching ..... 55/00
- Liberation of internal stresses ..... 61/00
- Other techniques ..... 67/00

#### **JOINING ..... 65/00**

#### **PARTICULAR APPLICATIONS**

- Shaping tube ends ..... 57/00
- Surface shaping ..... 59/00
- Lining or sheathing ..... 63/00
- Shaping composites ..... 70/00

#### **COMBINATIONS OF SHAPING**

#### **TECHNIQUES ..... 69/00**

#### **AFTER-TREATMENT ..... 71/00**

#### **REPAIRING ..... 73/00**

### **Component parts, details or accessories: Auxiliary operations [4]**

- 31/00 Handling, e.g. feeding of the material to be shaped (in general B65G) [4]**
- 31/04 . Feeding, e.g. into a mould cavity (to presses in general B30B 15/30) [4]
- 33/00 Moulds or cores; Details thereof or accessories therefor [4]**
- 33/02 . with incorporated heating or cooling means [4]
- 33/04 . . using liquids, gas or steam [4]
- 33/06 . . using radiation [4]
- 33/08 . . for dielectric heating [4]
- 33/10 . with incorporated venting means [4]
- 33/12 . with incorporated means for positioning inserts, e.g. labels [4]
- 33/14 . . against the mould wall [4]
- 33/20 . Opening, closing or clamping [4]
- 33/22 . . by rectilinear movement [4]
- 33/30 . Mounting, exchanging or centering [4]
- 33/38 . characterised by the material or the manufacturing process (B29C 33/44 takes precedence; manufacture of moulds or parts thereof from metal B22, B23) [4]
- 33/40 . . Plastics, e.g. foam, rubber [4]
- 33/42 . characterised by the shape of the moulding surface, e.g. ribs, grooves [4]
- 33/44 . with means for, or specially constructed to facilitate, the removal of articles, e.g. of undercut articles [4]
- 33/46 . . using fluid pressure [4]
- 33/48 . . with means for collapsing or disassembling [4]
- 33/52 . . soluble or fusible [4]
- 33/54 . . made of powdered or granular material [4]
- 33/56 . Coatings; Releasing, lubricating or separating agents [4]
- 33/70 . Maintenance [4]
- 33/76 . Cores (B29C 33/02 to B29C 33/70 take precedence) [4]

- 35/00 Heating, cooling or curing, e.g. crosslinking, vulcanising; Apparatus therefor** (moulds with incorporated heating or cooling means B29C 33/02; curing devices for plastics dental prostheses A61C 13/00; before moulding B29B 13/00; chemical aspects C08J 3/00) [4]
- 35/02 . Heating or curing, e.g. crosslinking, vulcanising (cold vulcanisation B29C 35/00) [4]
- 35/04 . . using liquids, gas or steam [4]
- 35/08 . . by wave energy or particle radiation [4]
- 35/10 . . . for articles of indefinite length [4]
- 35/12 . . Dielectric heating [4]
- 37/00 Component parts, details, accessories or auxiliary operations, not covered by group B29C 33/00 or B29C 35/00 [4]**

### **Particular shaping techniques, e.g. moulding, joining; Apparatus therefor [4]**

- 39/00 Shaping by casting, i.e. introducing the moulding material into a mould or between confining surfaces without significant moulding pressure; Apparatus therefor** (B29C 41/00 takes precedence) [4]
- 39/02 . for making articles of definite length, i.e. discrete articles [4]
- 39/04 . . using movable moulds (B29C 41/02 takes precedence) [4]
- 39/10 . . incorporating preformed parts or layers, e.g. casting around inserts or for coating articles [4]
- 39/12 . . Making multilayered or multicoloured articles [4]
- 39/22 . Component parts, details or accessories; Auxiliary operations [4]
- 39/24 . . Feeding the material into the mould [4]
- 39/26 . . Moulds or cores [4]
- 39/28 . . . with means to avoid flashes [4]
- 39/30 . . . with means for cutting the article [4]
- 39/32 . . . with joints or the like for making the mould impervious [4]
- 39/34 . . . for undercut articles [4]

- 39/38 . . Heating or cooling [4]
- 39/42 . . Casting under special conditions, e.g. vacuum [4]
- 41/00 Shaping by coating a mould, core or other substrate, i.e. by depositing material and stripping-off the shaped article; Apparatus therefor** (with compacting pressure B29C 43/00) [4]
- 41/02 . for making articles of definite length, i.e. discrete articles [4]
- 41/04 . . Rotational or centrifugal casting, i.e. coating the inside of a mould by rotating the mould [4]
- 41/08 . . Coating a former, core or other substrate by spraying or fluidisation, e.g. spraying powder [4]
- 41/12 . . Spreading-out the material on a substrate [4]
- 41/14 . . Dipping a core [4]
- 41/18 . . Slush casting, i.e. pouring moulding material into a hollow mould with excess material being poured off [4]
- 41/22 . . Making multilayered or multicoloured articles [4]
- 41/34 . Component parts, details or accessories; Auxiliary operations [4]
- 43/00 Compression moulding, i.e. applying external pressure to flow the moulding material; Apparatus therefor** (shaping or impregnating by compression composites comprising reinforcements other than fibres of short length B29C 70/04; presses in general B30B) [4,6]
- 43/02 . of articles of definite length, i.e. discrete articles [4]
- 43/04 . . using movable moulds [4]
- 43/10 . . Isostatic pressing, i.e. using non-rigid pressure-exerting members against rigid parts or dies [4]
- 43/14 . . in several steps [4]
- 43/16 . . Forging [4]
- 43/18 . . incorporating preformed parts or layers, e.g. compression moulding around inserts or for coating articles [4]
- 43/20 . . Making multilayered or multicoloured articles [4]
- 43/22 . of articles of indefinite length [4]
- 43/24 . . Calendering [4]
- 43/32 . Component parts, details or accessories; Auxiliary operations [4]
- 43/34 . . Feeding the material to the mould or the compression means [4]
- 43/36 . . Moulds for making articles of definite length, i.e. discrete articles [4]
- 43/44 . . Compression means for making articles of indefinite length [4]
- 43/52 . . Heating or cooling [4]
- 43/58 . . Measuring, controlling or regulating [4]
- 44/00 Shaping by internal pressure generated in the material, e.g. swelling, foaming [6]**
- 44/02 . for articles of definite length, i.e. discrete articles [6]
- 44/34 . Component parts, details or accessories; Auxiliary operations [6]
- 45/00 Injection moulding, i.e. forcing the required volume of moulding material through a nozzle into a closed mould; Apparatus therefor** (injection blow-moulding B29C 49/06) [4]
- 45/02 . Transfer moulding, i.e. transferring the required volume of moulding material by a plunger from a "shot" cavity into a mould cavity [4]
- 45/03 . Injection moulding apparatus (transfer moulding B29C 45/02) [4]
- 45/14 . incorporating preformed parts or layers, e.g. injection moulding around inserts or for coating articles [4]
- 45/16 . Making multilayered or multicoloured articles [4]
- 45/17 . Component parts, details or accessories; Auxiliary operations [4]
- 45/18 . . Feeding the material into the injection moulding apparatus [4]
- 45/20 . . Injection nozzles [4]
- 45/23 . . . Feed stopping equipment [4]
- 45/26 . . Moulds [4]
- 45/27 . . . Sprue channels [4]
- 45/32 . . . having several axially spaced mould cavities [4]
- 45/33 . . . having transversely, e.g. radially, movable mould parts [4]
- 45/34 . . . having venting means [4]
- 45/36 . . . having means for locating or centering cores [4]
- 45/37 . . . Mould cavity walls [4]
- 45/38 . . Cutting-off equipment for sprues or ingates [4]
- 45/40 . . Removing or ejecting moulded articles [4]
- 45/42 . . . using means movable from outside the mould between mould parts [4]
- 45/43 . . . using fluid under pressure [4]
- 45/44 . . . for undercut articles [4]
- 45/46 . . Means for plasticising or homogenising the moulding material or forcing it into the mould [4]
- 45/53 . . . using injection ram or piston [4]
- 45/56 . . . using mould parts movable during or after injection, e.g. injection-compression moulding [4]
- 45/57 . . . Exerting after-pressure on the moulding material [4]
- 45/58 . . . Details [4]
- 45/64 . . Mould opening, closing or clamping devices [4]
- 45/66 . . . mechanical [4]
- 45/67 . . . hydraulic [4]
- 45/70 . . Means for plasticising or homogenising the moulding material or forcing it into the mould, combined with mould opening, closing or clamping devices [4]
- 45/72 . . Heating or cooling [4]
- 45/73 . . . of the mould [4]
- 45/76 . . Measuring, controlling or regulating [4]
- 45/77 . . . of velocity or pressure of moulding material [4]
- 45/78 . . . of temperature [4]
- 45/80 . . . of relative position of mould parts [4]
- 45/82 . . . Hydraulic circuits [4]
- 45/83 . . Lubricating means [4]
- 45/84 . . Safety devices [4]
- 47/00 Extrusion moulding, i.e. expressing the moulding material through a die or nozzle which imparts the desired form; Apparatus therefor** (extrusion blow-moulding B29C 49/04; extrusion presses in general B30B 11/22) [4]
- 47/02 . incorporating preformed parts or layers, e.g. extrusion moulding around inserts or for coating articles [4]
- 47/04 . of multilayered or multicoloured articles [4]
- 47/06 . . Multilayered articles [4]
- 47/08 . Component parts, details or accessories; Auxiliary operations [4]
- 47/10 . . Feeding the material to the extruder [4]
- 47/12 . . Extrusion nozzles or dies [4]
- 47/14 . . . with broad opening, e.g. for sheets [4]
- 47/16 . . . . adjustable [4]



- 47/20 . . . with annular opening, e.g. for tubular articles [4]
- 47/22 . . . . adjustable [4]
- 47/26 . . . . Multiple annular extrusion nozzles [4]
- 47/30 . . . Multi-port extrusion nozzles [4]
- 47/36 . . Means for plasticising or homogenising the moulding material or forcing it through the nozzle or die [4]
- 47/38 . . . using screws [4]
- 47/58 . . . Details [4]
- 47/60 . . . . Screws [4]
- 47/76 . . . . Venting or degassing means [4]
- 47/78 . . Heating or cooling the material to be extruded or the stream of extruded material [4]
- 47/88 . . . Heating or cooling the stream of extruded material [4]
- 47/90 . . . . with calibration or sizing [4]
- 47/92 . . Measuring, controlling or regulating [4]
- 49/00 Blow-moulding, i.e. blowing a preform or parison to a desired shape within a mould; Apparatus therefor [4]**
- 49/02 . Combined blow-moulding and manufacture of the preform or the parison [4]
- 49/04 . . Extrusion blow-moulding [4]
- 49/06 . . Injection blow-moulding [4]
- 49/08 . Biaxial stretching during blow-moulding [4]
- 49/20 . of articles having inserts or reinforcements [4]
- 49/22 . using multilayered preforms or parisons [4]
- 49/24 . Lining or labelling [4]
- 49/28 . Blow-moulding apparatus [4]
- 49/42 . Component parts, details or accessories; Auxiliary operations [4]
- 49/48 . . Moulds [4]
- 49/50 . . . having cutting or deflashing means [4]
- 49/56 . . Opening, closing or clamping means [4]
- 49/58 . . Blowing means [4]
- 49/62 . . Venting means [4]
- 49/64 . . Heating or cooling preforms, parisons or blown articles [4]
- 49/78 . . Measuring, controlling or regulating [4]
- 51/00 Shaping by thermoforming, e.g. shaping sheets in matched moulds or by deep-drawing; Apparatus therefor [4]**
- 51/08 . Deep-drawing or matched-mould forming, i.e. using mechanical means only [4]
- 51/10 . Forming by pressure difference, e.g. vacuum [4]
- 51/14 . using multilayered preforms or sheets [4]
- 51/18 . Thermoforming apparatus [4]
- 51/26 . Component parts, details or accessories; Auxiliary operations [4]
- 51/30 . . Moulds [4]
- 53/00 Shaping by bending, folding, twisting, straightening or flattening; Apparatus therefor (B29C 61/06 takes precedence; rim rolling of tube ends B29C 57/00) [4]**
- 55/00 Shaping by stretching, e.g. drawing through a die; Apparatus therefor (B29C 61/06 takes precedence) [4]**
- 55/02 . of plates or sheets [4]
- 55/04 . . uniaxial, e.g. oblique [4]
- 55/10 . . multiaxial [4]
- 55/12 . . . biaxial [4]
- 55/14 . . . . successively [4]
- 55/16 . . . . simultaneously [4]
- 55/18 . . by squeezing between surfaces, e.g. rollers [4]
- 55/20 . . Edge clamps [4]
- 55/28 . of blown tubular films, e.g. by inflation [4]
- 57/00 Shaping of tube ends, e.g. flanging, bellling, closing; Apparatus therefor [4]**
- 59/00 Surface shaping, e.g. embossing; Apparatus therefor [4]**
- 59/02 . by mechanical means, e.g. pressing [4]
- 59/04 . . using rollers or endless belts [4]
- 61/00 Shaping by liberation of internal stresses; Making preforms having internal stresses; Apparatus therefor (for surface shaping B29C 59/00; for lining articles B29C 63/38; for joining preformed parts B29C 65/00) [4]**
- 61/06 . Making preforms having internal stresses, e.g. plastic memory [4]
- 63/00 Lining or sheathing, i.e. applying preformed layers or sheathings of plastics; Apparatus therefor (B29C 73/00 takes precedence; by blowing B29C 49/00; by thermoforming B29C 51/00) [4,5]**
- 63/02 . using sheet or web-like material (B29C 63/26 takes precedence) [4]
- 63/26 . Lining or sheathing of internal surfaces (B29C 63/38 takes precedence) [4]
- 63/34 . . using tubular layer or sheathings [4]
- 63/36 . . . being turned inside out [4]
- 63/38 . by liberation of internal stresses [4]
- 65/00 Joining of preformed parts; Apparatus therefor (for making boxes, cartons, envelopes or bags B31B; for sealing or securing package folds or closures B65B 51/00; joining constructional elements, in general F16B; splicing of light guides G02B 6/255) [4,5]**
- 65/02 . by heating, with or without pressure [4]
- 65/04 . . Dielectric heating, e.g. high-frequency welding [4]
- 65/06 . . using friction, e.g. spin welding [4]
- 65/08 . . using ultrasonic vibrations [4]
- 65/10 . . using hot gases [4]
- 65/14 . . using wave energy or particle radiation [4]
- 65/18 . . using heated tool [4]
- 65/34 . . using heated elements which remain in the joint, e.g. "verlorenes Schweisselement" [4]
- 65/38 . . Impulse heating [4]
- 65/40 . . Applying molten plastics, e.g. hot melt (using welding bar B29C 65/10; by moulding B29C 65/70) [4]
- 65/44 . . Joining a heated non-plastics element to a plastics element [4]
- 65/48 . using adhesives (heat-activated B29C 65/02; hot melts B29C 65/40; non-mechanical parts of adhesive processes, in general C09J 5/00) [4]
- 65/50 . . using adhesive tape [4]
- 65/52 . . Applying the adhesive [4]
- 65/56 . using mechanical means [4]
- 65/70 . by moulding (using a particular moulding technique, see the relevant place for that technique) [4]
- 65/72 . by combined operations, e.g. welding and stitching [4]
- 65/74 . by welding and severing [4]
- 65/78 . Means for handling the parts to be joined, e.g. for making containers or hollow articles [4]
- 67/00 Shaping techniques not covered by groups B29C 39/00 to B29C 65/00, B29C 70/00 or B29C 73/00 [4,6]**
- 67/02 . Moulding by agglomerating [4]

**B29C – B29D**

- 67/08 . Screen moulding, e.g. forcing the moulding material through a perforated screen on to a moulding surface [4]
- 67/20 . for porous or cellular articles, e.g. of foam plastics, coarse-pored [4]
- 67/24 . characterised by the choice of material [4]
- 69/00 Combinations of shaping techniques not provided for in a single one of main groups B29C 39/00 to B29C 67/00, e.g. associations of moulding and joining techniques; Apparatus therefor [4]**
- 69/02 . of moulding techniques only [4]
- 70/00 Shaping composites, i.e. plastics material comprising reinforcements, fillers or preformed parts, e.g. inserts (chemical aspects C08, e.g. C08J 5/00) [6]**
- 70/04 . comprising reinforcements only, e.g. self-reinforcing plastics [6]
- 70/06 . . Fibrous reinforcements only [6]
- 70/08 . . . comprising combinations of different forms of fibrous reinforcements incorporated in matrix material, forming one or more layers, with or without non-reinforced layers [6]
- 70/10 . . . characterised by the structure of fibrous reinforcements [6]

**Note**

In this group, the following terms or expressions are used with the meanings indicated: [6]

- “reinforcement” means a structure in the form of fibres, wires, rods, bars, sections, plates or blocks, which improves the strength of an article; [6]
- “filler” means a relatively inert substance in the form of particles, powder, beads, flakes or spheres, which improves the physical properties or increases the bulk or weight of an article; [6]

- 71/00 After-treatment of articles without altering their shape; Apparatus therefor (B29C 44/34, B29C 73/00 take precedence; surface shaping B29C 59/00; chemical aspects C08J 7/00) [4,5,6]**
- 71/02 . Thermal after-treatment [4]
- 73/00 Repairing of articles made from plastics or substances in a plastic state, e.g. of articles shaped or produced by using techniques covered by this subclass or subclass B29D (retreading tyres B29D 30/52; devices for covering leaks in pipes or hoses F16L 55/16) [5]**

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**B29D PRODUCING PARTICULAR ARTICLES FROM PLASTICS OR FROM SUBSTANCES IN A PLASTIC STATE (making granules B29B 9/00; making preforms B29B 11/00) [4]**
**Notes**

- (1) Attention is drawn to Note (3) following the title of class B29. [4]
- (2) Layered products or laminating methods are further classified in subclass B32B. [8]

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| <ul style="list-style-type: none"> <li><b>1/00 Producing articles provided with screw threads</b></li> <li><b>5/00 Producing elements of slide fasteners; Combined making and attaching of elements of slide fasteners [4]</b></li> <li><b>7/00 Producing flat articles, e.g. films or sheets (B29D 24/00 takes precedence) [4]</b></li> <li><b>11/00 Producing optical elements, e.g. lenses, prisms (grinding or polishing of optical elements B24B; constructional form of optical elements G02B) [4]</b></li> <li><b>12/00 Producing frames</b></li> <li><b>15/00 Producing gear wheels or similar articles with grooves or projections, e.g. control knobs</b></li> <li><b>16/00 Producing articles with corrugations (B29D 23/18 takes precedence) [4]</b></li> <li><b>17/00 Producing carriers of records containing fine grooves or impressions, e.g. disc records for needle playback, cylinder records (recording sound or other information using formed grooves or the equivalent G11B); Producing record discs from master stencils [4,6]</b></li> <li><b>19/00 Producing buttons or semi-finished parts of buttons</b></li> </ul> | <ul style="list-style-type: none"> <li><b>21/00 Producing hair combs or similar toothed or slotted articles</b></li> <li><b>22/00 Producing hollow articles (tubular articles B29D 23/00; pneumatic tyres B29D 30/00) [4]</b></li> <li><b>23/00 Producing tubular articles (B29D 24/00 takes precedence) [4]</b></li> <li>23/14 . Cigar or cigarette holders [4]</li> <li>23/18 . Pleated hoses [4]</li> <li>23/20 . Flexible squeeze tubes, e.g. for cosmetics [4]</li> <li>23/24 . Endless tubes, e.g. inner tubes for pneumatic tyres [6]</li> <li><b>24/00 Producing articles with hollow walls [4]</b></li> <li><b>25/00 Producing frameless domes</b></li> <li><b>28/00 Producing nets or the like (by knotting D04G) [4]</b></li> <li><b>29/00 Producing belts or bands [4]</b></li> <li><b>30/00 Producing pneumatic or solid tyres or parts thereof (producing inner tubes B29D 23/24; constructional form of tyres or parts thereof B60C; connection of valves to inflatable elastic bodies B60C 29/00; testing of tyres G01M 17/02) [4]</b></li> <li>30/06 . Pneumatic tyres or parts thereof [4]</li> <li>30/08 . . Building tyres [4]</li> </ul> |
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- 30/20 . . . by the flat-tyre method, i.e. building on cylindrical drums [4]
- 30/30 . . . . Applying the layers; Guiding or stretching the layers during application [4]
- 30/38 . . Textile inserts, e.g. cord or canvas layers, for tyres (making woven fabrics D03D); Treatment of inserts prior to building the tyre (pretreatment of inserts B29B 15/00; manufacture of layers comprising fibrous parallel reinforcements of substantial or continuous length B29C 70/10) [4]
- 30/52 . . Unvulcanised treads, e.g. on used tyres; Retreading (apparatus for forming and vulcanising treads B29C 35/02; apparatus characterised by the means for holding wheels or parts thereof B60B 30/00) [4,5]

- 31/00 Producing other particular articles** (artificial teeth A61C 13/08)
- 31/02 . Bushes for bearings
- 31/50 . Footwear [6]

#### Notes

- (1) Classification is made in this group if the moulding technique is of interest. [6]
- (2) The assembling of individual parts by mechanical joining is classified in subclass A43D, e.g. by gluing shoe parts A43D 25/00. [6]

## B30 PRESSES

**B30B PRESSES IN GENERAL; PRESSES NOT OTHERWISE PROVIDED FOR** (producing ultra-high pressure or ultra-high pressure and high temperature to effect modifications of a substance, e.g. for making artificial diamonds B01J 3/00) [2]

Subclass Index

PRESSES CHARACTERISED BY		OTHER PRESSES .....	12/00
OPERATION OF PRESSING MECHANISMS .....	1/00, 3/00, 5/00, 7/00	DETAILS, ACCESSORIES, CONTROL .....	15/00
PRESSES FOR SPECIAL PURPOSES .....	9/00, 11/00	OTHER PRESSING METHODS .....	13/00

<b>1/00</b>	<b>Presses, using a press ram, characterised by the features of the drive therefor, pressure being transmitted directly, or through simple thrust or tension members only, to the press ram or platen</b>	<b>11/00</b>	<b>Presses specially adapted for forming shaped articles from material in particulate or plastic state, e.g. briquetting presses, tableting presses</b> (apparatus for forming or shaping of dough A21C 3/00, A21C 11/00; apparatus for shaping clay or mixtures containing cement B28B; apparatus for shaping of plastic or substances in a plastic state B29, e.g. for compression moulding B29C 43/00, for extrusion moulding B29C 47/00)
1/26	. by cams, eccentrics, or cranks	11/02	. using a ram exerting pressure on the material in a moulding space
<b>3/00</b>	<b>Presses characterised by the use of rotary pressing members, e.g. rollers, rings, discs</b>	11/22	. Extrusion presses; Dies therefor (extruding by the use of roller-and-ring machines B30B 11/00)
<b>5/00</b>	<b>Presses characterised by the use of pressing means other than those mentioned in groups B30B 1/00 and B30B 3/00</b>	<b>12/00</b>	<b>Presses not provided for in groups B30B 1/00 to B30B 11/00 [2]</b>
<b>7/00</b>	<b>Presses characterised by a particular arrangement of the pressing members</b>	<b>13/00</b>	<b>Methods of pressing not special to the use of presses of any one of the preceding main groups B30B 1/00 to B30B 12/00 [2]</b>
<b>9/00</b>	<b>Presses specially adapted for particular purposes</b>	<b>15/00</b>	<b>Details of, or accessories for, presses; Auxiliary measures in connection with pressing</b> (safety devices F16P)
9/02	. for squeezing-out liquid from liquid-containing material, e.g. juice from fruits, oil from oil-containing material (kitchen equipment A47J; filtering, e.g. straining solids from liquids, using presses in combination with filtering elements B01D; expelling water from textile fabrics or laundry D06C, D06F; drying F26)	15/02	. Dies; Inserts therefor; Mountings thereof; Moulds (extrusion dies B30B 11/22)
9/12	. . using pressing worms or screws co-operating with a permeable casing	15/04	. Frames; Guides
9/32	. for consolidating scrap metal or for compacting used cars	15/06	. Platens or press rams
		15/14	. Control arrangements for mechanically-driven presses
		15/16	. Control arrangements for fluid-driven presses (pumps <u>per se</u> F04; hydraulic accumulators <u>per se</u> F15B; valves <u>per se</u> F16K)
		15/26	. Programme control arrangements
		15/28	. Arrangements for preventing distortion of, or damage to, presses or parts thereof
		15/30	. Feeding material to presses
		15/32	. Discharging presses
		15/34	. Heating or cooling presses or parts thereof

**B31 MAKING PAPER ARTICLES; WORKING PAPER** (making layered products not composed wholly of paper or cardboard B32B; handling thin material, e.g. sheets, webs, B65H)

**Notes**

- (1) This class covers subject matter restricted to adaptations or associations of handling sheets, webs, or blanks peculiar to paper-working, e.g. bag or box making, machinery.
- (2) This class does not cover:
  - making articles directly from paper pulp, which is covered by D21J;
  - handling sheets, webs, or blanks of wider applicability, irrespective of whether described or claimed only for paper-working machinery, which is regarded as being of a more comprehensive nature and is covered by B65H.
- (3) In this class, the following term is used with the meaning indicated:
  - “paper” covers material worked in a manner analogous to paper, e.g. plastics sheet materials, laminated materials or metal foils.

**B31B MAKING BOXES, CARTONS, ENVELOPES, OR BAGS** (incising, scoring, in general B26D 3/08; combined making and filling B65B)

**Notes**

- (1) In this subclass, envelopes or bags are regarded as being essentially flexible containers, the final shape of which is determined by their contents.
- (2) In this subclass, the following expression is used with the meaning indicated:
  - “boxes or cartons” includes bags formed similarly to cartons, trays with upstanding side-walls, barrels, tubes and cups, other than articles formed by winding.

**Subclass Index**

MAKING IN GENERAL .....	1/00, 47/00, 49/00	MAKING ENVELOPES OR BAGS	
MAKING BOXES OR CARTONS		Characterised by the method of making	
Characterised by the method of making		from sheets.....	21/00, 31/00 to 35/00
by folding a single piece .....	3/00, 5/00	from webs .....	23/00, 37/00
by assembling pieces .....	13/00, 17/00	by other shaping under pressure.....	43/00
by other shaping under pressure .....	43/00	Characterised by the kind of articles	
Characterised by the kind of articles		flat rectangular articles .....	19/00 to 23/00
lined or reinforced articles .....	7/00, 9/00, 15/00	articles with bases provided for thickness .....	29/00 to 37/00
other specified articles .....	11/00, 13/00, 45/00	other specified articles.....	25/00, 27/00, 39/00, 41/00, 45/00

<b>1/00</b>	<b>Box, carton, envelope or bag making machinery characterised by performing specific operations</b> (machinery for performing operations of general application, <u>see</u> the appropriate subclasses)	<b>9/00</b>	<b>Machinery characterised by making boxes or cartons having shouldered walls</b>
1/14	. Cutting, e.g. perforating, punching, slitting, trimming	<b>11/00</b>	<b>Machinery characterised by making boxes or cartons having partitions or like inserts not integral with walls</b> (making partitions, inserts, or reinforcements for boxes or cartons B31D)
1/60	. Uniting opposed surfaces or edges; Taping	<b>13/00</b>	<b>Machinery characterised by assembling drawer-and-shell boxes or cartons</b>
1/74	. Auxiliary operations	<b>15/00</b>	<b>Machinery characterised by making covered or externally-reinforced boxes or cartons</b>
<b>Machinery for making boxes or cartons</b>		<b>17/00</b>	<b>Machinery characterised by making other boxes or cartons by assembling several separate sheets, blanks, or webs</b>
<b>3/00</b>	<b>Machinery characterised by making boxes or cartons by folding single-piece sheets, blanks, or webs</b> (B31B 5/00 takes precedence)		
<b>5/00</b>	<b>Machinery characterised by making boxes or cartons by folding single-piece sheets which can be set-up from a collapsed condition, including setting-up and recollapsing to break creases</b>		
<b>7/00</b>	<b>Machinery characterised by making lined or internally-reinforced boxes or cartons</b> (B31B 11/00 takes precedence)		

**Machinery for making envelopes or bags****Note**

Machinery for making boxes or cartons as well as envelopes or bags is classified in groups B31B 3/00 to B31B 17/00.

- 19/00** Machinery characterised by making rectangular envelopes or bags of flat form, i.e. without structural provision at the base for thickness of contents (B31B 21/00, B31B 23/00 take precedence)
- 21/00** Machinery characterised by making rectangular envelopes or bags of flat form, i.e. without structural provision at the base for thickness of contents, from sheets or blanks, e.g. from flattened tubes
- 23/00** Machinery characterised by making rectangular envelopes or bags of flat form, i.e. without structural provision at the base for thickness of contents, from webs, e.g. from flattened tubular webs (machinery characterised by cutting sheets or blanks from webs and working them to form such envelopes or bags B31B 21/00)
- 25/00** Machinery characterised by making pointed or tapered envelopes or bags
- 27/00** Machinery characterised by making interconnected envelopes or bags
- 29/00** Machinery characterised by making envelopes or bags with structural provision at the base for thickness of contents (B31B 31/00 to B31B 37/00 take precedence)
- 31/00** Machinery characterised by making envelopes or bags with structural provision at the base for thickness of contents, from sheets or blanks, e.g. from flattened tubes (B31B 33/00, B31B 35/00 take precedence)

- 33/00** Machinery characterised by making envelopes or bags with structural provision at the base for thickness of contents, from sheets or blanks, e.g. from flattened tubes, the longitudinal axes of the envelopes or bags being parallel to the direction in which the sheets or blanks are fed
- 35/00** Machinery characterised by making envelopes or bags with structural provision at the base for thickness of contents, from sheets or blanks, e.g. from flattened tubes, the longitudinal axes of the envelopes or bags being perpendicular to the direction in which the sheets or blanks are fed
- 37/00** Machinery characterised by making envelopes or bags with structural provision at the base for thickness of contents, from webs, e.g. from tubular webs (machinery characterised by cutting sheets or blanks from webs and working them to form such envelopes or bags B31B 31/00)
- 39/00** Machinery characterised by making lined envelopes or bags
- 41/00** Machinery characterised by making envelopes or bags of other specific form or construction
- 
- 43/00** Machinery characterised by making containers by shaping, otherwise than by folding, sheet material under pressure
- 45/00** Machinery characterised by making containers having corrugated or pleated walls
- 47/00** Hand tools for making envelopes, bags, boxes or cartons
- 49/00** Machinery, accessories or processes not provided for in groups B31B 1/00 to B31B 47/00 (forms or constructions of boxes, cartons, envelopes or bags B65D) [2]

**Note**

Processes dependent on the use of specific machinery provided for in groups B31B 1/00 to B31B 45/00 are classified in those groups. [2]

**B31C MAKING WOUND ARTICLES, E.G. WOUND TUBES** (characteristics relating to the working of plastics B29; shaping of plastics or substances in a plastic state B29C)

**Note**

In this subclass, the following term is used with the meaning indicated:  
– “winding” means forming two or more complete convolutions.

**Subclass Index**

**MAKING WOUND ARTICLES  
CHARACTERISED BY THE METHOD  
USED**

Winding around mandrels ..... 1/00, 3/00  
Winding without mandrels ..... 5/00  
Winding separate webs ..... 9/00

**MAKING WOUND ARTICLES  
CHARACTERISED BY THE SHAPE OF  
THE ARTICLES PRODUCED**

Tubes ..... 1/00, 3/00, 5/00  
Cones ..... 7/00  
Other shapes ..... 9/00, 99/00

**AFTER-TREATMENTS, COMBINED**

**MACHINERY** ..... 11/00

1/00	Forming paper tubes or pipes by feeding at right angles to the winding mandrel centre line	9/00	Simultaneous forming of cylindrical and conical shapes by winding separate webs, e.g. forming bottles (winding blanks B31B)
3/00	Forming paper tubes or pipes by feeding obliquely to the winding mandrel centre line	11/00	Paper-winding machinery combined with other machinery
5/00	Forming paper tubes or pipes without mandrels	99/00	Subject matter not provided for in other groups of this subclass [2009.01]
7/00	Forming conical paper articles by winding (winding blanks B31B)		

**B31D MAKING OTHER PAPER ARTICLES** (manufacture by dry processes of articles made from particles or fibres consisting of wood or other lignocellulosic or like organic material B27N; making layered products not composed wholly of paper or cardboard B32B; making cardboard or paper D21F, D21H, making articles from wood pulp D21J)

**Note**

This subclass covers the making, otherwise than by winding, of articles other than boxes, cartons, envelopes, bags, and tubes from paper, other than from paper pulp.

1/00	Multiple-step processes for making flat articles	3/00	Making articles of cellular structure, e.g. insulating board
		5/00	Multiple-step processes for making three-dimensional articles (assembly of garlands A41G 1/00; making receptacles or containers B31B; making tubes B31B, B31C)
		99/00	Subject matter not provided for in other groups of this subclass [8]

**B31F MECHANICAL WORKING OR DEFORMATION OF PAPER OR CARDBOARD** (cutting, trimming, in general B26; incising, scoring, in general B26D 3/08; making layered products not composed wholly of paper or cardboard B32B; multi-ply material of paper or cardboard, its manufacture D21H)

1/00	Mechanical deformation of paper or cardboard without removing material including combined deformation and laminating (embossing combined with application of ink, type marking presses, selective embossing machines B41F, B41J, B41K, B41M; machines or apparatus for embossing decorations or marks B44B 5/00; artists hand tools for embossing B44B 11/00; producing decorative effects by processes for stamping ornamental designs on surfaces B44C 1/00; zig-zag folding B65H 45/12; mechanical deformation during paper or board making, kinds of paper or board D21) [2]	5/00	Attaching together paper or cardboard sheets, strips, or webs; Reinforcing edges of paper or cardboard (means for applying adhesive or glue B05C; stapling in box or like making B31B; attaching the replacement web to the expiring web during web-roll changing B65H 19/18; apparatus for splicing webs during handling B65H 21/00)
1/20	• Corrugating; Corrugating combined with laminating to other paper or cardboard layers (corrugating veneer B27D) [2]	7/00	Processes for working paper not otherwise provided for

## B32 LAYERED PRODUCTS

### B32B LAYERED PRODUCTS, I.E. PRODUCTS BUILT-UP OF STRATA OF FLAT OR NON-FLAT, E.G. CELLULAR OR HONEYCOMB, FORM

#### Notes

- (1) This subclass covers:
- layered products comprising different kinds of material or layered products not characterised by the particular kind of material used;
  - a product similar to a layered product but comprising only material in the form of a sheet or network embedded in a mass of plastics or of physically-similar substances which mass penetrates the said sheet or network and lies on both sides of the latter (e.g. so that the sheet or network reinforces the plastics substance) provided that the embedded sheet or network extends coherently or connectedly over substantially the whole area of the product; thus the embedded sheet or network may be a fabric or a series of rods connected by cross wires. The manner of making such a product is, however, classified in this subclass only if it is essentially a process of building-up an assembly of layers of which at least one outer layer is preformed. If the embedded material comprises only a series of unconnected rods, the product is not classified in this subclass.
- (2) This subclass does not cover:
- processes or apparatus used in, or in connection with, the production or treatment of any product, if the process or apparatus is solely applicable to and fully classifiable in a single other class or subclass for processes or apparatus, e.g. B05, B29, B44D, C08J, C09J, C23;
  - compositions or preparation or treatment thereof, unless they are essentially restricted to layered products and cannot be fully classified in another class without ignoring this restriction;
  - etched metallic pattern on the surface of a printed circuit board. [3]
- (3) In this subclass, a film formed on a layer by spreading a substance thereon is not considered to constitute a layer itself if it serves only as an adhesive or its purpose is merely to finish a surface of a product.
- (4) In this subclass, the following terms or expressions are used with the meanings indicated:
- “layer” is a sheet or strip or anything else having a small thickness relatively to its other dimensions which, together with at least one other layer, exists in a product, whether it pre-existed, e.g. as a separate sheet or strip, or was formed during the production of the layered product. It may or may not be homogeneous or cohesive; it may be an assembly of fibres or pieces of material. It may be discontinuous, e.g. in the form of a grating, honeycomb, or frame. It may or may not be in complete contact with the next layer, e.g. a corrugated layer against a flat layer;
  - “layered product” comprises at least two layers secured together. The term “secured” includes any method of uniting layers, e.g. needling, stitching, gluing, nailing, dovetailing or the interposition of an adhesive or adhesive impregnated support. It may also be an intermediate stage in the production of an article which is not layered in its final form, e.g. a panel with a protective layer which is stripped off when the panel is placed in its position of use. The layers are preformed layers or layers formed in situ on a preformed layer and may consist of coherent solid materials, including honeycombs and other cellular materials or of non-coherent solid materials composed of assemblies of strands, strips, fibres, tiles or the like;
  - “filamentary layer” means a layer of threads or filaments of any substance (e.g. wires) of more or less unlimited length placed in an orderly arrangement and secured together; it may be woven, knitted, braided, or netted, or formed of threads crossed or laid side and bonded together;
  - “fibrous layer” means a random assembly of fibres or filaments, usually of limited length, e.g. felt, fleece; the fibres may or may not be interengaged or connected, e.g. by adhesive.
- (5) In groups B32B 1/00 to B32B 33/00, at each level of indentation, in the absence of an indication to the contrary, classification is made in the first appropriate place.
- (6) Layered products are classified in groups B32B 37/00 or B32B 38/00 if not characterised by their structure or composition. [8]
- (7) The classification of layered products is provided for in many classes, most of which are confined to a particular kind of material. However, in order that this subclass may provide a basis for making a complete search with respect to layered products, all relevant subject matter is classified in this subclass even though it may also be classified in other classes.

#### Subclass Index

##### LAYERED PRODUCTS CHARACTERISED BY

Their structure	
general shape .....	1/00, 3/00
layer structure .....	3/00, 5/00
relation between layers .....	7/00
Substances used	
bituminous or tarry substances, water-setting substances .....	11/00, 13/00
metal, glass, ceramics, mineral fibres or particles .....	15/00, 17/00, 18/0019/00

wood, paper, cellulosic plastic substances .....	21/00, 29/00, 23/00
rubber, synthetic resin .....	25/00, 27/00
other substances .....	9/00
Their properties .....	33/00

##### MAKING LAYERED PRODUCTS

Methods or apparatus for laminating .....	37/00
Ancillary operations .....	38/00
Controlling or monitoring .....	41/00
Other operations, e.g. repairing .....	43/00



**1/00 Layered products essentially having a general shape other than plane**

**Note**

For classification of a product in this group, surface unevennesses or non-uniformities and the shape of individual layers are ignored.

**3/00 Layered products essentially comprising a layer with external or internal discontinuities or unevennesses, or a layer of non-planar form** (continuous layers of fibres or filaments B32B 5/02; foamed layers B32B 5/18); **Layered products essentially having particular features of form** (B32B 1/00 takes precedence)

**Note**

In this group, channels, voids, and cavities may be filled otherwise than with air, e.g. with gas, with liquid, with other material different from that of the layer in which they occur.

- 3/02 . characterised by features of form at particular places, e.g. in edge regions
- 3/04 . . characterised by a layer folded at the edge, e.g. over another layer
- 3/06 . . for securing layers together; for attaching the product to another member, e.g. to a support (use or provision of nails, stitches, or similar separate fastening elements for these purposes B32B 7/08)
- 3/08 . . characterised by added members at particular parts
- 3/10 . characterised by a discontinuous layer, i.e. apertured or formed of separate pieces of material

**Note**

In this group, a series of spaced separate elements forming in effect a broken surface should be regarded as a layer.

- 3/12 . . characterised by a layer of regularly-arranged cells whether integral or formed individually or by conjunction of separate strips, e.g. honeycomb structure
- 3/14 . . characterised by a face layer formed of separate pieces of material
- 3/18 . . characterised by an internal layer formed of separate pieces of material
- 3/24 . . characterised by an apertured layer, e.g. of expanded metal (layer of netting or fibres B32B 5/02)
- 3/26 . characterised by a particular shape of the outline of the cross-section of a continuous layer; characterised by a layer with cavities or internal voids (regular cells B32B 3/12)
- 3/28 . . characterised by a layer comprising a deformed thin sheet, e.g. corrugated, crumpled (B32B 29/00 takes precedence) [3]
- 3/30 . . characterised by a layer formed with recesses or projections, e.g. grooved, ribbed

**5/00 Layered products characterised by the non-homogeneity or physical structure of a layer** (B32B 9/00 to B32B 29/00 take precedence)

**Note**

In this group, fibres, filaments, granules, or powder forming or included in a layer may be impregnated, bonded together, or embedded in a substance such as synthetic resin. If the substance of the fibres, or the like, or the impregnating, bonding, or embedding substance, is important it is classified in the relevant group for the substance.

- 5/02 . characterised by structural features of a layer comprising fibres or filaments (formed of particles, e.g. chips, chopped fibres, powder, B32B 5/16)

**Note**

This group covers, in addition to filamentary and fibrous layers as defined in Note (4) following the title of this subclass, layers of substances having an intrinsic fibrous nature (e.g. paper, wood), if the fibrous nature is important and the particular substance is not important.

- 5/04 . . characterised by a layer being specifically extensible by reason of its structure or arrangement
- 5/06 . . characterised by a fibrous layer needled to another layer, e.g. of fibres, of paper
- 5/08 . . the fibres or filaments of a layer being specially arranged or being of different substances
- 5/10 . . characterised by a fibrous layer reinforced with filaments
- 5/12 . . characterised by the relative arrangement of fibres or filaments of adjacent layers
- 5/14 . characterised by a layer differing constitutionally or physically in different parts, e.g. denser near its faces
- 5/16 . characterised by features of a layer formed of particles, e.g. chips, chopped fibres, powder
- 5/18 . characterised by features of a layer containing foamed or specifically porous material
- 5/20 . . foamed in situ
- 5/22 . characterised by the presence of two or more layers which comprise fibres, filaments, granules, or powder, or are foamed or specifically porous

**7/00 Layered products characterised by the relation between layers, i.e. products essentially comprising layers having different physical properties or products characterised by the interconnection of layers** (in respect of orientation of features, see the relevant groups for the features concerned, e.g. B32B 5/02 for direction of fibres; in respect of substances B32B 9/00 to B32B 29/00)

- 7/02 . in respect of physical properties, e.g. hardness
- 7/04 . characterised by the connection of layers
- 7/06 . . permitting easy separation
- 7/08 . . by mechanical connection, e.g. stitching (by interengagement of layers B32B 3/00, e.g. B32B 3/04, B32B 3/06, B32B 3/30; by needling fibrous layers B32B 5/06)
- 7/10 . . one or both of the layers having adhesive or inter-reactive properties
- 7/12 . . using an adhesive
- 7/14 . . . applied in stripes or other spaced arrangement

**Layered products characterised by particular substances used****Note**

In groups B32B 9/00 to B32B 29/00, the following expressions are used with the meanings indicated:

- “specific substance” covers specified alternative substances if they are all covered by a single main group;
- “particulate layer” means a layer of particles, e.g. chips, chopped fibres, powder.

**9/00 Layered products essentially comprising a particular substance not covered by groups B32B 11/00 to B32B 29/00**

- 9/02 . comprising animal or vegetable substances
- 9/04 . comprising such substance as the main or only constituent of a layer, next to another layer of a specific substance

**11/00 Layered products essentially comprising bituminous or tarry substances****13/00 Layered products essentially comprising a water-setting substance, e.g. concrete, plaster, asbestos cement, or like builders' material****15/00 Layered products essentially comprising metal**

- 15/01 . all layers being exclusively metallic [3]
- 15/02 . in a form other than a sheet, e.g. wire, particles
- 15/04 . comprising metal as the main or only constituent of a layer, next to another layer of a specific substance
- 15/06 . . of rubber
- 15/08 . . of synthetic resin
- 15/10 . . of wood
- 15/12 . . of paper or cardboard
- 15/14 . next to a fibrous or filamentary layer
- 15/16 . next to a particulate layer
- 15/18 . comprising iron or steel
- 15/20 . comprising aluminium or copper

**17/00 Layered products essentially comprising sheet glass, or fibres of glass, slag or the like**

- 17/02 . in the form of fibres or filaments
- 17/04 . . bonded with or embedded in a plastic substance
- 17/06 . comprising glass as the main or only constituent of a layer, next to another layer of a specific substance
- 17/12 . next to a fibrous or filamentary layer

**18/00 Layered products essentially comprising ceramics, e.g. refractory products [4]****19/00 Layered products essentially comprising natural mineral fibres or particles, e.g. asbestos, mica****21/00 Layered products essentially comprising wood, e.g. wood board, veneer, wood particle board****23/00 Layered products essentially comprising cellulosic plastic substances****25/00 Layered products essentially comprising natural or synthetic rubber****27/00 Layered products essentially comprising synthetic resin**

- 27/02 . in the form of fibres or filaments
- 27/04 . as impregnant, bonding, or embedding substance
- 27/06 . as the main or only constituent of a layer next to another layer of a specific substance
- 27/08 . . of synthetic resin of a different kind

- 27/10 . . of paper or cardboard
- 27/12 . next to a fibrous or filamentary layer
- 27/14 . next to a particulate layer
- 27/16 . specially treated, e.g. irradiated
- 27/18 . characterised by the use of special additives
- 27/20 . . using fillers, pigments, thixotroping agents
- 27/22 . . using plasticisers
- 27/24 . . using solvents or swelling agents
- 27/26 . . using curing agents
- 27/28 . comprising copolymers of synthetic resins not wholly covered by any one of the following subgroups
- 27/30 . comprising vinyl resin; comprising acrylic resin
- 27/32 . comprising polyolefins
- 27/34 . comprising polyamides
- 27/36 . comprising polyesters
- 27/38 . comprising epoxy resins
- 27/40 . comprising polyurethanes
- 27/42 . comprising condensation resins of aldehydes, e.g. with phenols, ureas or melamines

**29/00 Layered products essentially comprising paper or cardboard****33/00 Layered products characterised by particular properties or particular surface features, e.g. particular surface coatings (surface unevennesses or non-uniformities B32B 3/00); Layered products designed for particular purposes not covered by another single class****Methods or apparatus for making layered products: Treatment of the layers or of the layered products [8]****Note**

In groups B32B 37/00 and B32B 39/00, the following expressions are used with the meanings indicated:

- “laminating” means the action of combining previously unconnected layers to become one product whose layers will remain together;
- “partial laminating” occurs when one layer does not fully cover a surface of another layer, whereby the layer with the greater surface area is laminated on only part of its surface;
- “adhesive” means a layer, or part of a layer, applied in any state or in any manner, which is incorporated for the purpose of bonding. [8]

**37/00 Methods or apparatus for laminating, e.g. by curing or by ultrasonic bonding [8]**

- 37/02 . characterised by a sequence of laminating steps, e.g. by adding new layers at consecutive laminating stations [8]
- 37/04 . characterised by the partial melting of at least one layer [8]
- 37/06 . characterised by the heating method [8]
- 37/08 . characterised by the cooling method [8]
- 37/10 . characterised by the pressing technique, e.g. using direct action of vacuum or fluid pressure [8]
- 37/12 . characterised by using adhesives [8]
- 37/14 . characterised by the properties of the layers [8]
- 37/28 . involving assembly of non-flat intermediate products which are flattened at a later step, e.g. tubes [8]
- 37/30 . Partial laminating [8]

**38/00 Ancillary operations in connection with laminating processes [8]**

- 38/04 . Punching, slitting or perforating [8]
- 38/06 . Embossing [8]
- 38/08 . Impregnating [8]
- 38/10 . Removing layers, or parts of layers, mechanically or chemically (punching, slitting or perforating B32B 38/04) [8]
- 38/12 . Deep-drawing [8]
- 38/14 . Printing or colouring [8]

38/16 . Drying; Softening; Cleaning [8]

38/18 . Handling of layers or the laminate [8]

**39/00 Layout of apparatus or plants, e.g. modular laminating systems [8]****41/00 Arrangements for controlling or monitoring lamination processes; Safety arrangements [8]**

41/02 . Safety arrangements [8]

**43/00 Operations specially adapted for layered products and not otherwise provided for, e.g. repairing; Apparatus therefor [8]**

## PRINTING

**B41 PRINTING; LINING MACHINES; TYPEWRITERS; STAMPS** (reproduction or duplication of pictures or patterns by scanning and converting into electrical signals H04N) [4]

**B41B MACHINES OR ACCESSORIES FOR MAKING, SETTING, OR DISTRIBUTING TYPE; TYPE; PHOTOGRAPHIC OR PHOTOELECTRONIC COMPOSING DEVICES** (photographic devices in general G03)

### Subclass Index

HAND COMPOSING .....	1/00	Machines without means for composing lines prior to photography .....	17/00
MECHANICAL COMPOSING		Electronic machines.....	19/00
Using prefabricated type; making type .....	3/00; 5/00	Equipment for special work.....	13/00
By casting the type .....	7/00, 9/00, 11/00	Details of machines; auxiliaries.....	21/00; 23/00
PHOTOGRAPHIC COMPOSING		PREPARATION OF RECORD CARRIERS.....	25/00
Machines composing lines prior to photography .....	15/00	CONTROL, INDICATING, SAFETY .....	27/00

**1/00 Elements or appliances for hand composition;  
Chases, quoins, or galleys**

### Machines or other mechanical apparatus for composing

- 3/00 Apparatus for mechanical composition using  
prefabricated type, i.e. without casting equipment**
- 5/00 Devices for making type or lines** (for mechanical  
composition B41B 7/00, B41B 9/00, B41B 11/00)
- 7/00 Kinds or types of apparatus for mechanical  
composition in which the type is cast or moulded  
from matrices**
- 9/00 Details of, or accessories for, machines for  
mechanical composition using fixed combinations of  
matrices from which type is cast or moulded**
- 11/00 Details of, or accessories for, machines for  
mechanical composition using matrices for  
individual characters which are selected and  
assembled for type casting or moulding** (melting pots  
for casting stereotype plates B41D 3/00)

### Photographic or photoelectronic composing devices

- 13/00 Equipment specially adapted for photographing  
mounted characters or the like, e.g. advertisements,  
lines**
- 15/00 Photographic composing machines with movable  
character carriers for composing lines of characters  
prior to photography**

**17/00 Photographic composing machines having fixed or  
movable character carriers and without means for  
composing lines prior to photography**

**19/00 Photoelectronic composing machines [3]**

**21/00 Common details of photographic composing  
machines of the kinds covered in groups B41B 17/00  
and B41B 19/00** (film-handling means in line-  
composing photographic devices B41B 15/00; means  
for moving the optical path B41B 17/00)

**23/00 Auxiliary devices for modifying, mixing, or  
correcting text or layout in connection with  
photographic or photoelectronic composing**

### Marking record carriers used for controlling composing machines; Control, indicating, or safety devices or systems for composing machines of various kinds or types

**25/00 Apparatus specially adapted for preparation of  
record carriers for controlling composing machines**  
(for casting individual characters or spaces, e.g. in  
“monotype” machines, B41B 7/00; methods for marking  
or reproducing record carriers having digital data  
thereon in general G06K 1/00)

**27/00 Control, indicating, or safety devices or systems for  
composing machines of various kinds or types** (in  
devices for supplying molten metal B41B 11/00; for  
light sources B41B 21/00; devices, non-fluid media or  
methods for cancelling or correcting errors in  
typewriters or selective printing mechanisms  
B41J 29/26; computers in general G06F)

**B41C PROCESSES FOR THE MANUFACTURE OR REPRODUCTION OF PRINTING SURFACES** (photomechanical processes for producing printing surfaces G03F; photoelectrical processes for producing printing surfaces G03G)

- 1/00 Forme preparation**  
 1/02 . Engraving; Heads therefor (recording on record carriers, heads therefor G11B) [5]

**Note**

Attention is drawn to the title of class B41 and to subclass H04N, in particular to the Notes following the title of that subclass and to group H04N 1/00. [5]

- 1/055 . Thermographic processes for producing formes (B41C 1/02 takes precedence) [5]

- 1/10 . for lithographic printing; Master sheets for transferring a lithographic image to the forme (B41C 1/055 takes precedence; neutralising or similar differentiation treatments of lithographic printing formes B41N 3/00) [5]  
 1/14 . for stencil printing or silk-screen printing (B41C 1/055 takes precedence) [5]

- 3/00 Reproduction or duplicating of printing formes**  
 (casting stereotype plates B41D 3/00)

**B41D APPARATUS FOR THE MECHANICAL REPRODUCTION OF PRINTING SURFACES FOR STEREOTYPE PRINTING; SHAPING ELASTIC OR DEFORMABLE MATERIAL TO FORM PRINTING SURFACES** (marking or engraving metal by the action of a high concentration of electric current B23H 9/00; type, machines, or accessories for making, setting, or distributing type B41B; processes for the manufacture or reproduction of printing surfaces B41C; machines or apparatus for engraving in general, or for embossing B44B 3/00, B44B 5/00; chemical etching of metal C23F 1/00; electrolytic etching C25F 3/00; photomechanical reproduction G03F)

- 1/00 Preparing or treating stereotype matrices**

- 7/00 Shaping elastic or deformable material, e.g. rubber, plastics material, to form printing surfaces** (making rubber printing blocks B41C 3/00)

**Producing printing surfaces**

- 3/00 Casting stereotype plates; Machines, moulds, or devices therefor**  
**5/00 Working, treating, or handling stereotype plates**

- 99/00 Subject matter not provided for in other groups of this subclass [8]**

**B41F PRINTING MACHINES OR PRESSES** (machines for manufacturing footwear incorporating printing or embossing apparatus A43D, e.g. A43D 8/00, A43D 95/00; presses in general B30B; making of printing surfaces B41C, B41D; manifold devices, office printing machines B41L; stencilling B41L; printing processes not dependent on the use of special machines B41M; duplicating or marking by sublimation or volatilisation of design B41M 5/035; thermography B41M 5/26; embossing decorations or marks B44B 5/00; handling thin or filamentary material B65H; electrography, electrophotography, magnetography G03G) [4]

**Note**

Attention is drawn to Notes (1) and (2) following the title of subclass B41L. [6]

**Subclass Index**

PLATEN PRESSES ..... 1/00  
 CYLINDER PRESSES ..... 3/00  
 ROTARY MACHINES  
     Letterpress, lithographic, intaglio machines ..... 5/00, 7/00, 9/00  
     Other machines; combined machines ..... 11/00, 17/00; 19/00  
     Details ..... 13/00  
     Screen printers ..... 15/00

Transfer printing machines ..... 16/00  
 DETAILS  
     Handling sheets or other surfaces to be printed; treating such surfaces.....21/00, 25/00; 22/00, 23/00  
     Attaching printing elements; make-ready arrangements, impression or offset surfaces; inking ..... 27/00; 30/00; 31/00  
     Auxiliary devices; cleaning.....33/00; 35/00

- 1/00 Platen presses, i.e. presses in which printing is effected by at least one essentially-flat pressure-applying member co-operating with a flat type-bed**  
**3/00 Cylinder presses, i.e. presses essentially comprising at least one cylinder co-operating with at least one flat type-bed**

**Rotary machines**

- 5/00 Rotary letterpress machines**  
**7/00 Rotary lithographic machines**  
**9/00 Rotary intaglio printing presses**

11/00	<b>Rotary presses or machines having forme cylinders carrying a plurality of printing surfaces, or for performing letterpress, lithographic, or intaglio processes selectively or in combination</b>	22/00	<b>Means preventing smudging of machine parts or printed articles</b> (B41F 23/00 takes precedence) [6]
13/00	<b>Common details of rotary presses or machines</b>	23/00	<b>Devices for treating the surfaces of sheets, webs, or other articles in connection with printing</b> (cleaning in general B08B; as a final step in the manufacture of such articles, <i>see</i> appropriate subclasses, e.g. B29C 71/00, D21H 23/00 or D21H 25/00; surface treatment in general, <i>see</i> the relevant places, e.g. applying liquids or other fluent materials B05, of metals C23G)
13/004	. Electric or hydraulic features of drives [6]	25/00	<b>Devices for pressing sheets or webs against cylinders, e.g. for smoothing purposes</b> (apparatus for taking-out curl from webs in general B65H 23/34)
13/008	. Mechanical features of drives, e.g. gears, clutches [6]	27/00	<b>Devices for attaching printing elements or formes to supports</b> (attaching by chemical means B41N 6/00) [5]
13/02	. Conveying or guiding webs through presses or machines (web handling in general B65H, e.g. step-by-step advancement B65H 20/00, turning or reversing B65H 23/04)	27/12	. for attaching flexible printing formes
13/08	. Cylinders	30/00	<b>Devices for attaching coverings or make-ready devices; Guiding devices for coverings</b> (make-ready devices B41N 6/00; blankets or like coverings B41N 10/00) [5]
13/24	. . Cylinder-tripping devices; Cylinder-impression adjustments	31/00	<b>Inking arrangements or devices</b> (inking units for platen presses B41F 1/00; inking units for cylinder presses B41F 3/00; inking-rollers serving also to apply ink repellent in rotary lithographic machines B41F 7/00; applying liquids or other fluent materials to surfaces, in general B05; for typewriters or selective printing mechanisms B41J)
13/54	. Auxiliary folding, cutting, collecting, or depositing of sheets or webs (in general B26D, B65H; gathering sheets or signatures in bookbinding B42C 1/00)	31/02	. Ducts, containers, supply or metering devices (level control in general G05D 9/00) [3]
15/00	<b>Screen printers</b> (for selective printing B41J 2/005)	31/04	. . with duct-blades or like metering devices
15/02	. Manually-operable devices	31/06	. . Troughs or like reservoirs with immersed, or partly immersed, rollers or cylinders
15/08	. Machines	31/08	. . with ink-ejecting means, e.g. pumps, nozzles
15/10	. . for multicolour printing	31/14	. . Applications of messenger or other moving transfer rollers
15/12	. . with auxiliary equipment, e.g. for drying printed articles	31/20	. Ink-removing or collecting devices
15/14	. Details	33/00	<b>Indicating, counting, warning, control, or safety devices</b> (arrangements of counting devices in platen presses B41F 1/00, in cylinder presses B41F 3/00, in typewriters or selective printing mechanisms B41J 29/20; ink supply or metering devices B41J 31/02; such devices in general, <i>see</i> the relevant subclasses, e.g. counting in general G06M) [3]
15/34	. . Screens; Frames; Holders therefor	33/04	. Tripping devices or stop-motions (cylinder-tripping devices of rotary presses or machines B41F 13/24; arrangements for tripping inking rollers B41F 31/00) [2]
15/40	. . Inking units	33/14	. . Automatic control of tripping devices by feelers, photoelectric devices, pneumatic devices, or other detectors
16/00	<b>Transfer printing apparatus</b> (apparatus or machines for applying decalcomanias B65C) [4]	35/00	<b>Cleaning arrangements or devices</b>
17/00	<b>Printing apparatus or machines of special types or for particular purposes, not otherwise provided for</b> (hand stamps, plier-like tools for printing or punching tickets or the like B41K; addressing machines or other office printing equipment B41L; coding or marking of packaging material or of completed packages in packaging machines B65B 61/00; ticket-printing and issuing apparatus G07B) [1,2009.01]	35/06	. for offset cylinders
17/08	. for printing on filamentary or elongated articles or material, or on articles with cylindrical surfaces		
19/00	<b>Apparatus or machines for carrying out printing operations combined with other operations</b> (auxiliary perforating apparatus associated with printing devices B41G 7/00; printing with a printer's forme combined with embossing B41M 1/00; coding or marking in association with packaging B65B 61/00; label dispensers having printing equipment B65C) [2]		
<b>Common details of printing machinery</b>			
21/00	<b>Devices for conveying sheets through printing apparatus or machines</b> (through platen presses B41F 1/00; feeding sheets to or from printing apparatus or machines B65H)		

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**B41G APPARATUS FOR BRONZE PRINTING, LINE PRINTING, OR FOR BORDERING OR EDGING SHEETS OR LIKE ARTICLES; AUXILIARY APPARATUS FOR PERFORATING IN CONJUNCTION WITH PRINTING** (perforating in general B26D; production of decorations B44C; perforating in conjunction with sheet or web delivery B65H 35/00; folding or unfolding thin material, e.g. sheets, webs, B65H 45/00, B65H 47/00)

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- |                                                                                                                                                               |                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1/00 Apparatus for bronze printing or for like operations</b><br/>(applying granular materials or metallic foils for decorative purposes B44C 1/00)</p> | <p><b>3/00 Apparatus for printing lines</b></p>                                                                                                                                                             |
|                                                                                                                                                               | <p><b>5/00 Apparatus for bordering or edging sheets or like articles, e.g. for producing black rims on mourning cards</b></p>                                                                               |
|                                                                                                                                                               | <p><b>7/00 Auxiliary perforating apparatus associated with printing devices</b> (apparatus or machines for carrying-out printing operations combined with operations other than perforating B41F 19/00)</p> |

**B41J TYPEWRITERS; SELECTIVE PRINTING MECHANISMS, I.E. MECHANISMS PRINTING OTHERWISE THAN FROM A FORME; CORRECTION OF TYPOGRAPHICAL ERRORS** (composing B41B; printing on special surfaces B41F; laundry marking B41K; erasers, rubbers or erasing devices B43L 19/00; fluid media for correction of typographical errors by coating C09D 10/00; recording the results of measuring G01; recognition or presentation of data, marking record carriers in digital fashion, e.g. by punching, G06K; franking or ticket-printing and issuing apparatus G07B; electric keyboard switches, in general H01H 13/70, H03K 17/94; coding in connection with keyboards or like devices, in general H03M 11/00; receivers or transmitters for transmission of digital information H04L; transmission or reproduction of documents, or the like, e.g. facsimile transmission, H04N 1/00; printing mechanisms specially adapted for apparatus, e.g. cash registers, weighing machines, producing records of their own performance, see the relevant subclasses)

#### Notes

- (1) This subclass covers:
  - manually controlled power-operated apparatus or apparatus of this type with additional control by input of recorded information, e.g. on punched cards or tapes;
  - the “print-out” features of apparatus controlled by record carriers or electric signals in so far as these are of general interest, e.g. impression, inking, line-spacing mechanisms, printing heads. [5]
- (2) This subclass does not cover:
  - electrical features of apparatus controlled by record carriers or electric signals and of interest apart from the “print-out” features of said apparatus;
  - apparatus controlled by record carriers or electric signals, as a whole. [5]
- (3) In this subclass, the following term is used with the meaning indicated:
  - “paper” covers also similar flexible copy material; [3]
  - “printing material” covers both paper and temporary record carriers from which records are transferred to a paper, but does not cover printing masters, e.g. formes. [5]

#### Subclass Index

##### KINDS OF APPARATUS

characterised by the mounting,  
arrangement, or disposition of the  
types or dies ..... 1/00

characterised by the printing or  
marking process for which they are  
designed ..... 2/00

characterised by the purpose ..... 3/00

##### COMMON DETAILS OR ACCESSORIES

Character selection ..... 5/00, 7/00

Hammer impression ..... 9/00

Supporting or handling copy or  
duplicating material ..... 11/00 to 15/00

##### Transfer material

of page-width ..... 17/00

in ribbon form; ink ribbon  
cartridges ..... 31/00, 33/00,  
35/00; 32/00

Inking ..... 27/00

Spacing ..... 19/00

Drives ..... 23/00

Particular operations ..... 21/00

Others ..... 25/00, 29/00,  
35/00

#### Kinds of typewriters or of selective printing mechanisms

- |                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1/00 Typewriters or selective printing mechanisms characterised by the mounting, arrangement, or disposition of the types or dies</b> (non-selective embossing B44B 5/00)</p> | <p><b>2/00 Typewriters or selective printing mechanisms characterised by the printing or marking process for which they are designed</b> (mounting, arrangement, or disposition of types or dies B41J 1/00; marking methods B41M 5/00; structure or manufacture of heads, e.g. inductive, for recording by magnetisation or demagnetisation of a record carrier G11B 5/127; heads for reproducing capacitive information G11B 9/00) [5]</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Notes**

- (1) This group covers devices reproducing only a discrete number of tones, whereas group H04N 1/00 covers devices used for the reproduction of documents or the like, which devices are capable of reproducing continuous tone value scales. [5]
- (2) In this group, the following expressions are used with the meanings indicated:
- “ink jet” involves the projection of ink on to the printing material, e.g. paper, through a nozzle as a stream of droplets or particles of colouring matter;
  - “continuous ink jet” means a jet of ink transformed into a continuous stream of droplets or particles of colouring matter after having left the nozzle;
  - “ink spray” means a spray of ink transported by a stream of charged particles or air on to the printing material. [5]
- 2/005 . characterised by bringing liquid or particles selectively into contact with a printing material (printing by selective application of impact or pressure on a printing or impression-transfer material B41J 2/22) [5]
- 2/01 . . Ink jet [5]
- 2/015 . . . characterised by the jet generation process (B41J 2/215 takes precedence) [5]
- 2/04 . . . . generating single droplets or particles on demand [5]
- 2/045 . . . . . by pressure, e.g. electromechanical transducers [5]
- 2/05 . . . . . produced by the application of heat [5]
- 2/055 . . . . . Devices for absorbing or preventing back-pressure [5]
- 2/07 . . . characterised by jet control (B41J 2/205 takes precedence) [5]
- 2/075 . . . . for many-valued deflection [5]
- 2/125 . . . . Sensors, e.g. deflection sensors [5]
- 2/13 . . . . for inclination of printed pattern [5]
- 2/135 . . . . Nozzles [5]
- 2/14 . . . . Structure thereof [5]
- 2/145 . . . . Arrangement thereof [5]
- 2/16 . . . . Production of nozzles [5]
- 2/165 . . . . Prevention of nozzle clogging, e.g. cleaning, capping or moistening for nozzles [5]
- 2/17 . . . characterised by ink handling [5]
- 2/175 . . . . Ink supply systems [5]
- 2/18 . . . . Ink recirculation systems [5]
- 2/185 . . . . . Ink-collectors; Ink-catchers [5]
- 2/205 . . . for printing a discrete number of tones (B41J 2/21 takes precedence) [5]
- 2/21 . . . for multi-colour printing [5]
- 2/215 . . . by passing a medium, e.g. consisting of an air or particle stream, through an ink mist [5]
- 2/22 . characterised by selective application of impact or pressure on a printing material or impression-transfer material [5]
- 2/23 . . using print wires [5]
- 2/235 . . . Print head assemblies [5]
- 2/25 . . . . Print wires [5]
- 2/27 . . . . Actuators for print wires [5]
- 2/28 . . . . of spring charge type, i.e. with mechanical power under electro-magnetic control [5]
- 2/315 . characterised by selective application of heat to a heat sensitive printing or impression-transfer material (B41J 2/385, B41J 2/435 take precedence) [5]
- 2/32 . . using thermal heads [5]
- 2/325 . . . by selective transfer of ink from ink carrier, e.g. from ink ribbon or sheet [5]
- 2/33 . . . . from ink roller [5]
- 2/335 . . . Structure of thermal heads [5]
- 2/34 . . . . comprising semiconductors [5]
- 2/345 . . . characterised by the arrangement of resistors or conductors [5]
- 2/35 . . . providing current or voltage to the thermal head [5]
- 2/355 . . . . Control circuits for heating-element selection [5]
- 2/36 . . . . . Print density control [5]
- 2/365 . . . . . by compensation for variation in temperature [5]
- 2/37 . . . . . by compensation for variation in current [5]
- 2/375 . . . Protection arrangements against overheating [5]
- 2/385 . characterised by selective supply of electric current or selective application of magnetism to a printing or impression-transfer material (B41J 2/005 takes precedence; electrography, magnetography G03G) [5]
- 2/39 . . using multi-stylus heads [5]
- 2/41 . . for electrostatic printing (B41J 2/39 takes precedence) [5]
- 2/42 . . for heating selectively [5]
- 2/425 . . for removing surface layer selectively from electro-sensitive material, e.g. matel coated paper [5]
- 2/43 . . for magnetic printing [5]
- 2/435 . characterised by selective application of radiation to a printing material or impression-transfer material (optical elements, systems, or apparatus G02B; modulation or deflection of light G02F; electrophotography G03G) [5]
- 2/44 . . using single radiation source, e.g. lighting beams or shutter arrangements (B41J 2/475 takes precedence) [5]
- 2/445 . . . using liquid crystals [5]
- 2/447 . . using arrays of radiation sources (B41J 2/475 takes precedence) [6]
- 2/45 . . . using light-emitting diode arrays [5]
- 2/455 . . . using laser arrays [5]
- 2/475 . . for heating selectively [5]
- 2/485 . characterised by the process of building-up characters applicable to two or more kinds of printing or marking processes [5]
- 2/49 . . by writing [5]
- 2/495 . . by selective printing from a rotating helical member [5]
- 2/50 . . by the selective combination of two or more non-identical printing elements [5]
- 2/505 . . from an assembly of identical printing elements [5]
- 2/51 . . . serial printer type [5]
- 2/52 . Arrangement for printing a discrete number of tones, not covered by group B41J 2/205, e.g. applicable to two or more kinds of printing or marking process (B41J 2/525 takes precedence; for photomechanical production G03F 5/00) [5]
- 2/525 . Arrangement for multi-colour printing, not covered by group B41J 2/21, e.g. applicable to two or more kinds of printing or marking process (for photomechanical production G03F 3/00) [5]



**3/00 Typewriters or selective printing or marking mechanisms characterised by the purpose for which they are constructed** (cryptographic typewriters G09C 3/00) [5]

- 3/28 . for printing downwardly on flat surfaces, e.g. of books, drawings, boxes
- 3/36 . for portability
- 3/407 . for marking on special material (printing on special surfaces B41F 17/00) [5]
- 3/42 . Two or more complete typewriters coupled for simultaneous operation
- 3/44 . Typewriters or selective printing mechanisms having dual functions or combined with, or coupled to, apparatus performing other functions (printing mechanisms coupled to typographical composing machines B41B 27/00)
- 3/54 . with two or more sets of type or printing elements (B41J 3/60 takes precedence) [5]
- 3/60 . for printing on both faces of the printing material [5]

**Common details or accessories**

**5/00 Devices or arrangements for controlling character selection** (methods or arrangements for sensing record carriers G06K 7/00)

- 5/30 . Character or syllable selection controlled by recorded information
- 5/31 . . characterised by form of recorded information
- 5/44 . . characterised by the kind of storage of recorded information
- 5/52 . . characterised by the provision of additional devices for producing a punched or like record, e.g. simultaneously

**7/00 Type-selecting or type-actuating mechanisms** (index setting B41J 5/00)

**9/00 Hammer-impression mechanisms**

**11/00 Devices or arrangements for supporting or handling copy material in sheet or web form** (specially adapted for supporting or handling copy material in short lengths B41J 13/00, in continuous form B41J 15/00; holders for text to be copied B41J 29/00)

- 11/02 . Platens
- 11/20 . Platen adjustments for varying the strength of impression, for a varying number of papers, for wear or for alignment
- 11/26 . Pin feeds
- 11/36 . Blanking or long feeds; Feeding to a particular line, e.g. by rotation of platen or feed roller
- 11/42 . . Controlling
- 11/44 . . . by devices, e.g. programme tape or contact wheel, moved in correspondence with movement of paper-feeding devices, e.g. platen rotation
- 11/46 . . . by marks or formations on the paper being fed
- 11/48 . Apparatus for condensed record, tally strip, or like work using two or more papers, or sets of papers
- 11/58 . Supply holders for sheets or fan-folded webs, e.g. shelves, tables, scrolls, pile holders
- 11/66 . Applications of cutting devices
- 11/70 . . cutting perpendicular to the direction of paper feed

**13/00 Devices or arrangements specially adapted for supporting or handling copy material in short lengths, e.g. sheets**

- 13/02 . Rollers (roller platens B41J 11/02)
- 13/03 . . driven, e.g. feed rollers separate from platen

- 13/036 . . co-operating with a roller platen [3]
- 13/076 . . Construction of rollers; Bearings therefor
- 13/08 . Bands or like feeding devices
- 13/10 . Sheet holders, retainers, or stationary guides
- 13/12 . . specially adapted for cards, envelopes, or the like
- 13/14 . . Aprons or guides
- 13/20 . . Bails
- 13/22 . . Clamps or grippers
- 13/24 . . Strips for supporting or holding papers
- 13/26 . Registering devices

**15/00 Devices or arrangements specially adapted for supporting or handling copy material in continuous form, e.g. webs**

- 15/02 . Web rolls or spindles; Attaching webs to cores or spindles
- 15/04 . Supporting, feeding, or guiding devices; Mountings for web rolls or spindles
- 15/06 . . characterised by being applied to printers having stationary carriages
- 15/08 . . characterised by being applied to printers having transversely-moving carriages
- 15/16 . Means for tensioning or winding the web
- 15/18 . Multiple-web feeding apparatus

**17/00 Mechanisms for manipulating page-width impression-transfer material, e.g. carbon paper** (in manifold devices B41L; sheet material for duplicating or marking B41M 5/00)

- 17/02 . Feeding mechanisms
- 17/22 . Supply arrangements for webs or impression-transfer material
- 17/28 . Arrangements of guides for the impression-transfer material
- 17/30 . Constructions of guides for the impression-transfer material
- 17/32 . Detachable carriers or holders for impression-transfer material mechanism
- 17/36 . Alarms, indicators, or feed-disabling devices responsive to material breakage or exhaustion

**19/00 Character- or line-spacing mechanisms** (key actions B41J 25/00)

- 19/18 . Character-spacing or back-spacing mechanisms; Carriage-return or release devices therefor
- 19/20 . . Positive-feed character-spacing mechanisms (controlled by escapements B41J 19/34)
- 19/34 . . Escapement-feed character-spacing mechanisms
- 19/60 . . Auxiliary feed or adjustment devices
- 19/66 . . Carriage-release mechanisms
- 19/68 . . Carriage-return mechanisms, e.g. manually actuated
- 19/74 . . with special means to maintain character-spacing or back-spacing elements in engagement during case-shift or like movement

**21/00 Column, tabular, or like printing arrangements; Means for centralising short lines** (carriage-release mechanisms B41J 19/66; key actions B41J 25/00)

- 21/02 . Stops or stop-racks
- 21/04 . Mechanisms for setting or restoring tabulation stops
- 21/06 . with means for preventing rebound from stops
- 21/08 . Mechanisms for initiating, effecting, skipping, or stopping tabulation movement; Means for centralising short lines
- 21/10 . with central, counter, or equivalent stop projected into path of tabulation stops
- 21/12 . characterised by arrangements of electrical contacts

## B41J – B41K

- 21/14 . characterised by denominational arrangements
- 21/16 . controlled by the sensing of marks or formations on the paper being typed, an undersheet, or the platen
- 21/17 . controlled by stored information [5]
- 21/18 . characterised by applications of scales or indicators

**23/00 Power drives for actions or mechanisms** (B41J 9/00 take precedence)

**25/00 Actions or mechanisms not otherwise provided for**

- 25/304 . Bodily-movable mechanisms for print heads or carriages movable towards or from paper surface (type carriers sliding for impression B41J 1/00; type carriers swinging for impression B41J 1/00) [5]
- 25/308 . . with print gap adjustment mechanisms [5]
- 25/312 . . with print pressure adjustment mechanisms, e.g. pressure-on-the-paper mechanisms [5]
- 25/316 . . with tilting motion mechanisms relative to paper surface [5]

**27/00 Inking apparatus**

**29/00 Details of, or accessories for, typewriters or selective printing mechanisms not otherwise provided for**

- 29/02 . Framework
- 29/04 . Means for attaching machines to baseboards
- 29/06 . Special supports, platforms, or trolleys for supporting machines on tables
- 29/08 . Sound-deadening or shock-absorbing stands, supports, cases, or pads separate from machines
- 29/10 . Sound-deadening devices embodied in machines (B41J 19/00 takes precedence)
- 29/12 . Guards, shields or dust excluders [5]
- 29/14 . Attachments operated by the leg, e.g. the foot or knee
- 29/15 . Script supports connected to the typewriter or printer (tables, desks, office furniture, in general A47B) [5]
- 29/16 . Auxiliary receptacles for articles, e.g. erasers, pencils
- 29/17 . Cleaning arrangements [5]
- 29/18 . Mechanisms for rendering the print visible to the operator (ink-ribbon shifts B41J 35/00) [5]
- 29/20 . Arrangements of counting devices
- 29/26 . Devices, non-fluid media or methods for cancelling, correcting errors, underscoring or ruling [4]
- 29/377 . Cooling or ventilating arrangements [5]
- 29/38 . Drives, motors, controls, or automatic cut-off devices for the entire printing mechanism
- 29/387 . . Automatic cut-off devices [5]
- 29/393 . . Devices for controlling or analysing the entire machine [5]
- 29/40 . Means for printing fixed, i.e. unchanging, matter in addition to selectable matter

- 29/42 . Scales and indicators, e.g. for determining side margins
- 29/44 . . for determining top and bottom margins or indicating exhaust of paper
- 29/46 . Applications of alarms, e.g. responsive to approach of end of line (responsive to transfer-material breakage or exhaustion B41J 17/36, B41J 35/36)
- 29/48 . . responsive to breakage or exhaustion of paper or approach of bottom of paper
- 29/50 . Side-stop mechanisms
- 29/52 . Top-and-bottom stop mechanisms
- 29/54 . Locking devices applied to printing mechanisms

### Ink ribbons; Ink-ribbon mechanisms

- 31/00 Ink ribbons** (sheet material for duplicating or marking B41M 5/00; storing webs or tapes, e.g. on reels, B65H 75/00); **Renovating or testing ink ribbons**
- 31/02 . Ink ribbons characterised by the material from which they are woven
- 31/05 . Ink ribbons having coatings other than impression-material coatings
- 31/09 . Ink ribbons characterised by areas carrying media for obliteration or removal of typing errors [4]
- 31/10 . Ink ribbons having arrangements to facilitate threading through a machine
- 31/12 . Ink ribbons having arrangements to prevent undesired contact between the impression-transfer material and machine parts or other articles
- 31/14 . Renovating or testing ink ribbons
- 32/00 Ink-ribbon cartridges** [3]
- 32/02 . for endless ribbons [3]
- 33/00 Apparatus or arrangements for feeding ink ribbons or like character-size impression-transfer material** (ink-ribbon cartridges B41J 32/00)
- 33/14 . Ribbon-feed devices or mechanisms
- 33/52 . . Braking devices therefor
- 35/00 Other apparatus or arrangements associated with, or incorporated in, ink-ribbon mechanisms**
- 35/04 . Ink-ribbon guides
- 35/16 . Multicolour arrangements (B41J 35/04 takes precedence)
- 35/22 . Mechanisms permitting the selective use of a plurality of ink ribbons
- 35/28 . Detachable carriers or holders for ink-ribbon mechanisms
- 35/36 . Alarms, indicators, or feed-disabling devices responsive to ink-ribbon breakage or exhaustion

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**B41K STAMPS; STAMPING OR NUMBERING APPARATUS OR DEVICES** (marking meat A22C 17/00; embossing combined with printing B41F 19/00; selective printing mechanisms B41J; embossing decorations or marks B44B 5/00; marking or coding completed packages B65B 61/00; ticket printing and issuing, fare registering, non-printing aspects of franking apparatus G07B)

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**1/00 Portable hand-operated devices without means for supporting or locating the articles to be stamped, i.e. hand stamps; Inking devices or other accessories therefor**

**3/00 Apparatus for stamping articles having integral means for supporting the articles to be stamped** (means for printing on articles of special shape or having a surface of particular configuration B41F 17/00)

**5/00 Plier-like tools for stamping, or stamping and delivering, tickets or the like**

**99/00 Subject matter not provided for in other groups of this subclass [8]**

**B41L APPARATUS OR DEVICES FOR MANIFOLDING, DUPLICATING, OR PRINTING FOR OFFICE OR OTHER COMMERCIAL PURPOSES; ADDRESSING MACHINES OR LIKE SERIES-PRINTING MACHINES** (printing presses or machines for industrial purposes B41F; stamps, stamping or numbering devices B41K)

#### Notes

- (1) This subclass does not cover constituent parts common to manifolding by means of pressure-sensitive layers or intermediaries, to apparatus or machines for duplicating or printing for office or other commercial purposes, or to addressing machines or like series-printing machines, which are covered by subclass B41F.
- (2) In this subclass, as indicated by the references, groups B41L 15/00 and B41L 17/00 are intended to cover letterpress and lithographic printing apparatus only in so far as it is specially adapted for office or other commercial purposes; the general constructions or features of apparatus of these types are classified in subclass B41F. Constructions or features determining classification in these groups are, for example: ease of operation by clerical staff, cleanliness of operation in non-industrial environments, the use of printing surfaces constructed for the production of a limited number of copies.
- (3) In this subclass, the following terms are used with the meanings indicated:
  - “manifolding” means the obtaining of several copies simultaneously by means of pressure-sensitive layers when making an original;
  - “duplicating” means the obtaining of successive copies from a master, e.g. a hectographic image;
  - “stencilling” involves the use of a printing surface which is perforated to form the image, the ink flowing through the perforations on the copy material.

#### Subclass Index

MANIFOLDING.....	1/00, 3/00, 5/00	Impression or offset surfaces; moistening thereof.....	38/00; 25/00
DUPLICATING		Inking.....	27/00
From hectographic masters.....	7/00, 9/00, 11/00	Handling printing elements or formes.....	29/00 to 33/00
By stencil .....	13/00	Cylinders; Attaching coverings or make-ready devices.....	35/00; 38/00
Otherwise .....	19/00	Auxiliary operations.....	39/00, 41/00, 43/00
PRINTING		SPECIAL MACHINES FOR SERIES- PRINTING.....	45/00, 47/00, 49/00
Letterpress apparatus .....	15/00		
Lithographic apparatus .....	17/00		
Other apparatus .....	19/00		
COMMON DETAILS OR ACCESSORIES			
Treatment of surfaces before printing; handling thereof .....	23/00; 21/00, 33/00		

#### Manifolding by means of pressure-sensitive layers or intermediaries

- 1/00 Devices for performing operations in connection with manifolding by means of pressure-sensitive layers or intermediaries, e.g. carbons; Accessories for manifolding purposes**
- 3/00 Platens or like sheet supports for manifolding using pressure-sensitive layers or intermediaries, e.g. for book-keeping purposes**
- 5/00 Autographic registers or like apparatus for manifolding by means of pressure-sensitive layers, using movable strips or webs** (movable-strip writing or reading apparatus B42D 19/00)

#### Apparatus or machines for duplicating or printing for office or other commercial purposes

- 7/00 Apparatus for directly duplicating from hectographic originals, i.e. for obtaining copies in mirror image**
- 9/00 Apparatus for indirectly duplicating from hectographic originals by means of hectographic intermediaries or transfer surfaces, i.e. “dry duplicators”**
- 11/00 Apparatus for directly duplicating from hectographic masters in mirror image, i.e. “wet duplicators” for producing positive copies**
- 13/00 Stencilling apparatus for office or other commercial use** (screen printing B41F 15/00; stencils, stencil materials, carriers therefor B41N 1/24)
- 13/04 . with curved or rotary stencil carriers**

- 15/00 Letterpress printing apparatus specially adapted for office or other commercial purposes** (in general B41F; printing plates or foils, materials therefor B41N 1/00)
- 17/00 Lithographic printing apparatus for office or other commercial purposes** (in general B41F; printing plates or foils, materials therefor B41N 1/00)
- 19/00 Duplicating or printing apparatus or machines for office or other commercial purposes, of special types or for particular purposes and not otherwise provided for** (addressing machines B41L 45/00)

**Common details of, or accessories for, apparatus or machines for manifolded, duplicating, or printing for office or other commercial purposes**

- 21/00 Devices for conveying sheets or webs of copy material through apparatus or machines for manifolded, duplicating, or printing** (mechanisms for conveying copy material through addressing machines or like series-printing machines B41L 47/00)
- 23/00 Devices for treating the surface of sheets, webs, or other articles in connection with printing** (cleaning in general B08B, of metals C23G; as a final step in the manufacture of such articles, see the relevant places, e.g. B29C 71/00, D21H 23/00 or D21H 25/00; after-treatment of prints B41M 7/00)
- 25/00 Devices for damping printing surfaces, e.g. moistening printing surfaces in connection with lithographic printing** (applying liquids or other fluent materials to surfaces, in general B05)
- 27/00 Inking arrangements or devices** (inking units for stencilling apparatus B41L 13/00; applying liquids or other fluent materials to surfaces, in general B05) [3]

- 29/00 Devices for attaching printing elements or formes to supports**
- 31/00 Devices for removing flexible printing formes from forme cylinders**
- 33/00 Pressing flexible printing formes or sheets or webs of copy material against cylinders, e.g. for smoothing purposes**
- 35/00 Cylinders for apparatus or machines for manifolded, duplicating, or printing for office or other commercial purposes**
- 38/00 Devices for attaching coverings or make-ready devices; Guiding devices for coverings** (make-ready devices B41N 6/00; blankets or like coverings B41N 10/00) [5]
- 39/00 Indicating, counting, warning, control or safety devices** (ink-level control devices B41L 27/00; such devices in general, see the relevant subclasses, e.g. counting in general G06M) [3]
- 41/00 Cleaning arrangements or devices**
- 43/00 Auxiliary folding, collecting, or depositing of sheets or webs**

**Addressing machines or like series-printing machines**

- 45/00 Kinds or types of addressing machines or of like series-printing machines**
- 47/00 Details of addressing machines or like series-printing machines** (common details of printing machines B41F 21/00 to B41F 35/00)
- 49/00 Accessories or attachments for addressing machines or like series-printing machines**

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**B41M PRINTING, DUPLICATING, MARKING, OR COPYING PROCESSES; COLOUR PRINTING** (correction of typographical errors B41J; processes for applying transfer pictures or the like B44C 1/16; fluid media for correction of typographical errors by coating C09D 10/00; printing textiles D06P)

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- 1/00 Inking and printing with a printer's forme**
- 1/10 . Intaglio printing
  - 1/12 . Stencil printing; Silk-screen printing
  - 1/14 . Multicolour printing
  - 1/26 . Printing on other surfaces than ordinary paper (B41M 1/40 takes precedence)
  - 1/40 . Printing on bodies of particular shapes
- 3/00 Printing processes to produce particular kinds of printed work, e.g. patterns** (typewriters or selective printing mechanisms for Braille printing B41J 3/00; special designs or pictures per se B44F; manufacturing printed circuits using printing techniques H05K 3/12) [5]
- 3/12 . Transfer pictures or the like, e.g. decalcomanias
  - 3/14 . Security printing
- 5/00 Duplicating or marking methods; Sheet materials for use therein** (by using light-sensitive materials G03; electrography, magnetography G03G)
- 5/025 . by transferring ink from the master sheet [4]
  - 5/035 . . by sublimation or volatilisation of design [4]
  - 5/10 . by using carbon paper or the like
- 5/124 . using pressure to make a masked colour visible, e.g. to make a coloured support visible, to create an opaque or transparent pattern, or to form colour by uniting colour-forming components [5]
  - 5/132 . . Chemical colour-forming components; Additives or binders therefor [5]
  - 5/155 . . . Colour-developing components, e.g. acidic compounds; Additives or binders therefor; Layers containing such colour-developing components, additives or binders [5]
  - 5/165 . . characterised by the use of microcapsules; Special solvents for incorporating the ingredients [5]
  - 5/20 . using electric current (B41M 5/24 takes precedence) [5]
  - 5/24 . Ablative recording, e.g. by burning marks; Spark recording [5]
  - 5/26 . Thermography (B41M 5/20, B41M 5/24 take precedence; photothermographic systems G03C 1/498) [5]

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| <p>5/28 . . . using thermo-chromic compounds or layers containing liquid crystals, microcapsules, bleachable dyes or heat decomposable compounds, e.g. gas liberating [5]</p> <p>5/30 . . . using chemical colour formers (B41M 5/34 takes precedence) [5]</p> <p>5/32 . . . one component thereof being a heavy metal compound [5]</p> <p>5/34 . . . Multicolour thermography [5]</p> <p>5/36 . . . using a polymeric layer, which may be particulate and which is deformed or structurally changed with modification of its properties, e.g. of its optical, hydrophobic-hydrophilic, solubility or permeability properties [5]</p> | <p>5/40 . . . characterised by the base, intermediate or covering layers; Heat, radiation filtering or absorbing means or layers; combined with layers or compositions suitable for other methods of image registration; Special originals for reproduction by thermography [5]</p> <p>5/50 . . . Recording sheets characterised by the coating used to improve ink, dye or pigment receptivity, e.g. for ink-jet or thermal dye transfer recording (printing on pretreated paper B41M 1/26) [8]</p> <p><b>7/00 After-treatment of printed works, e.g. heating, irradiating</b></p> <p><b>9/00 Processes wherein make-ready devices are used</b> (make-ready devices <u>per se</u> B41N 6/00) [5]</p> <p><b>99/00 Subject matter not provided for in other groups of this subclass [8]</b></p> |
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**B41N PRINTING PLATES OR FOILS** (photosensitive materials G03); **MATERIALS FOR SURFACES USED IN PRINTING MACHINES FOR PRINTING, INKING, DAMPING, OR THE LIKE; PREPARING SUCH SURFACES FOR USE OR CONSERVING THEM**

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| <p><b>1/00 Printing plates or foils; Materials therefor</b></p> <p>1/12 . . non-metallic other than stone</p> <p>1/24 . . Stencils; Stencil materials; Carriers therefor (stencilling apparatus for office or other commercial use B41L 13/00)</p> <p><b>3/00 Preparing for use or conserving printing surfaces</b></p> <p>3/03 . . Chemical or electrical pretreatment [5]</p> <p><b>6/00 Mounting boards; Make-ready devices, e.g. underlays, overlays; Attaching by chemical means, e.g. vulcanising [5]</b></p> | <p><b>7/00 Shells for rollers of printing machines</b></p> <p><b>10/00 Blankets or like coverings; Coverings for wipers for intaglio printing</b> (wipers for intaglio printing B41F 9/00) [5]</p> <p><b>11/00 Stereotype mats</b></p> <p><b>99/00 Subject matter not provided for in other groups of this subclass [8]</b></p> |
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**B42 BOOKBINDING; ALBUMS; FILES; SPECIAL PRINTED MATTER**

**B42B PERMANENTLY ATTACHING TOGETHER SHEETS, QUIRES, OR SIGNATURES, OR PERMANENTLY ATTACHING OBJECTS THERETO** (nailing or stapling in general B25C, B27F; machines for both collating or gathering and permanently attaching together sheets or signatures B42C 1/12; temporarily attaching sheets together B42F)

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| <p><b>2/00</b> Permanently attaching together sheets, quires, or signatures by stitching with filamentary material, e.g. textile threads (discontinuously B42B 4/00) [2]</p> <p><b>4/00</b> Permanently attaching together sheets, quires or signatures by discontinuous stitching with filamentary material, e.g. wire [2]</p> | <p><b>5/00</b> Permanently attaching together sheets, quires, or signatures otherwise than by stitching (by deformation thereof B31F; by adhesive peculiar to bookbinding B42C 9/00)</p> <p><b>7/00</b> Permanently attaching objects, e.g. map sections, to sheets</p> <p><b>9/00</b> Devices common to machines for carrying out the processes according to more than one of main groups <b>B42B 2/00 to B42B 7/00</b> (auxiliary equipment in making paper articles B31F; auxiliary equipment in printing machines B41; conveyers in general B65G)</p> |
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**B42C BOOKBINDING** (cutting or perforating machines, devices, or tools B26; folding sheets or webs B31F; ornamenting books B44)

**Subclass Index****OPERATION**

Collating or gathering; preparing edges or backs; manufacturing cases or covers.....

1/00; 5/00; 7/00

Permanently attaching; casing-in ..... 1/00, 9/00; 11/00

Jacketing ..... 15/00

Rebinding ..... 17/00

Other operations..... 3/00, 7/00

COMBINED OPERATIONS ..... 1/00, 19/00

EQUIPMENT ..... 13/00

SUBJECT MATTER NOT PROVIDED FOR IN OTHER GROUPS OF THIS SUBCLASS ..... 99/00

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| <p><b>1/00</b> Collating or gathering sheets combined with processes permanently attaching together sheets or signatures or for interposing inserts (collating or gathering sheets or signatures without permanently attaching them together B65H 39/00) [2]</p> <p><b>1/12</b> . Machines for both collating or gathering and permanently attaching together the sheets or signatures</p> <p><b>3/00</b> Making booklets, pads, or form sets from multiple webs</p> <p><b>5/00</b> Preparing the edges or backs of leaves or signatures for binding</p> <p><b>7/00</b> Manufacturing bookbinding cases or covers of loose-leaf binders (book covers B42D 3/00)</p> | <p><b>9/00</b> Applying glue or adhesive peculiar to bookbinding</p> <p><b>11/00</b> Casing-in</p> <p><b>13/00</b> Bookbinding presses (general features of presses B30B); Joint-creasing equipment for bookbinding; Drying or setting devices for books</p> <p><b>15/00</b> Jacketing books</p> <p><b>17/00</b> Rebinding books</p> <p><b>19/00</b> Multi-step processes for making books</p> <p><b>99/00</b> Subject matter not provided for in other groups of this subclass [8]</p> |
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**B42D BOOKS; BOOK COVERS; LOOSE LEAVES; PRINTED MATTER OF SPECIAL FORMAT OR STYLE NOT OTHERWISE PROVIDED FOR; DEVICES FOR USE THEREWITH; MOVABLE-STRIP WRITING OR READING APPARATUS** (book stands A47B; reading desks A47B 19/00; book rests A47B 23/00)

**Subclass Index**

BOOKS; PADS OR BLOCKS;

NEWSPAPERS ..... 1/00; 5/00; 7/00

BOOK-KEEPING BOOKS ..... 12/00

LOOSE LEAVES FOR BINDING, SPECIAL

PRINTED MATTER ..... 13/00, 15/00

BOOK COVERS ..... 3/00

MOVABLE-STRIP APPARATUS ..... 19/00

ACCESSORIES ..... 9/00, 11/00,

17/00

<b>1/00</b>	<b>Books or other bound products</b> (match books A24F 27/00; picture books with additional toy effects A63H 33/38; indexing features B42F 21/00; educational or demonstration appliances G09B, e.g. textbooks for teaching foreign languages G09B 19/06)	<b>15/00</b>	<b>Printed matter of special format or style not otherwise provided for</b> (sheets temporarily attached together or with objects so attached thereto B42F; maps, diagrams G09B 29/00; labels G09F 3/00)
<b>3/00</b>	<b>Book covers</b> (loose-leaf binders B42F)	<b>15/02</b>	• Postcards; Greeting, menu, business or like cards; Letter cards or letter-sheets (B42D 15/10 takes precedence; envelopes B65D 27/00)
<b>5/00</b>	<b>Sheets united without binding to form pads or blocks</b> (processes therefor B42B)	<b>15/04</b>	• • Foldable or multi-part cards or sheets
<b>7/00</b>	<b>Newspapers or the like</b>	<b>15/08</b>	• • • Letter-cards or letter-sheets, i.e. cards or sheets each of which is to be folded with the message inside and to serve as its own envelope for mailing [3]
<b>9/00</b>	<b>Bookmarkers; Spot indicators; Devices for holding books open</b> (combined with covers B42D 3/00; indexing tabs for sheets B42F 21/00); <b>Leaf turners</b> [2]	<b>15/10</b>	• Identity, credit, cheque or like information-bearing cards (recognition of data, cards used as record carriers G06K; record carriers in general G11) [5]
<b>11/00</b>	<b>Carrying forward or transferring entries from one page to another, e.g. for book-keeping</b>	<b>17/00</b>	<b>Hanging or securing devices for books, newspapers, or the like</b> (suspended filing appliances B42F 15/00) [2]
<b>12/00</b>	<b>Book-keeping books, forms, or arrangements</b> (B42D 11/00 takes precedence) [2]	<b>19/00</b>	<b>Movable-strip writing or reading apparatus</b> (manifolding apparatus B41L; adapted for, or incorporated in, cash registers G07G)
<b>13/00</b>	<b>Loose leaves modified for binding; Inserts</b> (loose leaves modified for temporary attachment B42F 3/00; indexing features B42F 21/00)		

**B42F SHEETS TEMPORARILY ATTACHED TOGETHER; FILING APPLIANCES; FILE CARDS; INDEXING** (reading desks A47B 19/00; book rests A47B 23/00)

**Note**

In this subclass, the following expression is used with the meaning indicated:

- “filing appliance” means holders for collections of papers, sheets, cards, or units thereof, each paper, sheet, card, or unit being individually insertable and extractable. This expression may thus include a calendar, an instruction manual, or a letter file.

**Subclass Index**

SHEETS ATTACHED TOGETHER:  
WITHOUT PERFORATING; USING  
PERFORATIONS; TO OBJECTS .....

1/00; 3/00;  
5/00

FILING APPLIANCES

Without fastening means ..... 7/00

With fastening means: with  
clamping action; with separate  
holding means; using perforations.....9/00; 11/00;  
13/00

Suspended..... 15/00

Special for cards; file cards.....17/00; 19/00

Other filing appliances ..... 23/00

INDEXING MEANS..... 21/00

**Sheets temporarily attached together; Means therefor; Albums**

- 1/00** Sheets temporarily attached together without perforating; Means therefor
- 3/00** Sheets temporarily attached together involving perforations; Means therefor; Sheet details therefor (staples, fasteners in general F16B)
- 5/00** Sheets and objects temporarily attached together; Means therefor; Albums (bookbinding aspects of albums B42D 1/00; advertising or display aspects G09)

**Filing appliances**

- 7/00** Filing appliances without fastening means (B42F 17/00 takes precedence; suspension files B42F 15/00; wallets, notecases, briefcases A45C, e.g. A45C 1/00; furniture features A47B, A47F; envelopes B65D, e.g. B65D 27/00)
- 9/00** Filing appliances with devices clamping file edges; Covers with clamping backs (B42F 13/00, B42F 17/00 take precedence)
- 11/00** Filing appliances with separate intermediate holding means (B42F 17/00 takes precedence; with adhesive strips for mounting papers or sheets B42D 1/00)

## **B42F**

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| <b>13/00</b> <b>Filing appliances with means for engaging perforations or slots</b> (B42F 17/00 takes precedence; indexing features B42F 21/00)                | <b>19/00</b> <b>File cards</b> (B42F 21/00 takes precedence; punched cards for information retrieval, e.g. for manual use, G06K 21/00) |
| <b>15/00</b> <b>Suspended filing appliances</b> (indexing features B42F 21/00; hanging of books, newspapers, or the like B42D 17/00)                           | <b>21/00</b> <b>Indexing means; Indexing tabs or protectors therefor</b>                                                               |
| <b>17/00</b> <b>Card-filing arrangements, e.g. card indexes or catalogues or filing cabinets</b> (indexing features B42F 21/00; furniture features A47B, A47F) | <hr/> <b>23/00</b> <b>Filing appliances not provided for in other groups of this subclass [8]</b>                                      |



**B43 WRITING OR DRAWING IMPLEMENTS; BUREAU ACCESSORIES**

**B43K IMPLEMENTS FOR WRITING OR DRAWING** (containers, casings or accessories for cosmetic substances, e.g. shaving soap, lipstick, make-up, A45D 34/00, A45D 40/00)

**Note**

In this subclass, the following expression is used with the meaning indicated: [6]

– “writing implements” covers pens, pencils, crayons, chalks or like markers for writing or drawing. [6]

**Subclass Index**

IMPLEMENTS WITH CORES	Nibs; filling devices; caps .....1/00, 17/00; 11/00; 23/00
Without mechanisms..... 19/00	Manufacture, maintenance .....13/00, 15/00
With mechanisms..... 21/00	SELECTING, PROJECTING, RETRACTING OR LOCKING WRITING UNITS ..... 24/00
Accessories ..... 23/00, 25/00	MULTIPLE-POINT WRITING IMPLEMENTS ..... 27/00
IMPLEMENTS USING INK	COMBINATIONS
Without reservoir ..... 3/00	Of writing implements with other articles .....29/00, 31/00
With reservoir ..... 5/00, 7/00, 8/00	

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| <p><b>1/00 Nibs</b> (continuously-adjustable nibs B43K 17/00);<br/><b>Writing- points</b> (for indicating or recording apparatus<br/>G01D 15/16) [2]</p> <p><b>3/00 Nib holders</b> (holders for continuously-adjustable nibs<br/>B43K 17/00)</p> <p><b>5/00 Pens with ink reservoirs in holders, e.g. fountain-<br/>pens</b> (nibs or writing-points with ink reservoirs<br/>B43K 1/00; ball-point pens B43K 7/00; pens with<br/>writing-points other than nibs or balls B43K 8/00;<br/>multiple-point writing implements B43K 27/00)</p> <p><b>7/00 Ball-point pens</b> (multiple-point writing implements<br/>B43K 27/00)</p> <p><b>8/00 Pens with writing-points other than nibs or balls</b><br/>(brushes with reservoir for supplying substances<br/>A46B 11/00)</p> <p><b>11/00 Filling devices</b> (ink receptacles B43L 25/00)</p> <p><b>13/00 Devices for removing nibs; Devices for cleaning nibs,<br/>e.g. by wiping</b> (ink receptacles with pen-wiping means<br/>B43L 25/00) [3]</p> <p><b>15/00 Assembling, finishing, or repairing pens</b></p> <p><b>17/00 Continuously-adjustable nibs, e.g. for drawing-pens;<br/>Holders therefor</b> (features common to fountain-pens<br/>B43K 5/00)</p> <p><b>19/00 Non-propelling pencils; Styles; Crayons; Chalks</b><br/>(batik pencils, cord line chalkers B44D 3/00; writing-<br/>core compositions for pencils, crayon compositions,<br/>chalk compositions C09D 13/00) [2]</p> | <p><b>21/00 Propelling pencils</b> (projecting mechanisms for writing<br/>units B43K 24/00; multiple-point writing implements<br/>B43K 27/00)</p> <p><b>23/00 Holders or connectors for writing implements;<br/>Means for protecting the writing-points</b><br/>23/004 . Holders specially adapted for assisting handicapped<br/>or disabled persons to write (B43L 15/00 takes<br/>precedence) [6]</p> <p><b>24/00 Mechanisms for selecting, projecting, retracting or<br/>locking writing units</b> [6]</p> <p><b>25/00 Attaching writing implements to wearing apparel or<br/>objects involving constructional changes of the of the<br/>implements</b> (protecting means, e.g. caps, B43K 23/00;<br/>garment-holding devices A44B 21/00; fastening articles<br/>to wearing apparel A45F 5/00)</p> <p><b>27/00 Multiple-point writing implements, e.g. multicolour;<br/>Combinations of writing implements</b> (B43K 29/00<br/>takes precedence; mechanisms for selecting, projecting,<br/>retracting or locking writing units B43K 24/00; multiple<br/>writing devices with pantographic linkages B43L 13/10)</p> <p><b>29/00 Combinations of writing implements with other<br/>articles</b> (writing implements functioning as, or<br/>combined with, writing implement receptacles<br/>B43K 31/00)<br/>29/007 . with advertising means [6]</p> <p><b>31/00 Writing implement receptacles functioning as, or<br/>combined with, writing implements</b> (other writing<br/>implement receptacles A45C 11/34, A45C 11/00)</p> |
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**B43L ARTICLES FOR WRITING OR DRAWING UPON; ACCESSORIES FOR WRITING OR DRAWING** (workshop equipment for marking-out work B25H 7/00; teaching hand-writing or drawing G09B 11/00)

**Note**

This subclass does not cover devices used for both teaching and facilitating writing or drawing, which are covered by group G09B 11/00. [3]

**Subclass Index**

ARTICLES FOR WRITING OR DRAWING UPON	Means to prevent slippage .....	12/00
Boards or tablets .....	Other figures .....	13/00
Underlays .....	ATTACHMENT TO HANDS OR ARMS .....	15/00
Drawing-boards .....	BLOTTERS .....	17/00
AIDS FOR DRAWING	ACCESSORIES FOR	
Straight lines .....	Rubbing or erasing .....	19/00
Circles .....	Cleaning blackboards or slates .....	21/00
Other curves .....	Sharpening pencils or leads .....	23/00
	INK RECEPTACLES; INK STANDS .....	25/00; 27/00

**Articles for writing or drawing upon**

- 1/00 Repeatedly-usable boards or tablets for writing or drawing** (drawing-boards B43L 5/00)
- 3/00 Writing or drawing-underlays, e.g. blotting pads** (blotters B43L 17/00)
- 5/00 Drawing-boards** (drawing-desks or tables A47B 27/00, A47B 85/00; stands for drawing-boards A47B 97/00)

**Writing or drawing aids**

- 7/00 Straightedges** (guides for rulers other than for T-squares B43L 13/02; curve rulers or templates B43L 13/20; straightedges characterised by the provision of indicia or the like for measuring, e.g. rulers or tapes with measuring scales or marks for direct reading, G01B)

**Note**

In this group, the following term is used with the meaning indicated:

- “straightedge” means an instrument or its edge serving the purpose of acting as a guide for the drawing of a straight line. [5]

- 9/00 Circular curve-drawing or like instruments** (compasses for drawing spirals B43L 11/00; curve rulers or templates B43L 13/20)
- 11/00 Non-circular-curve-drawing instruments** (curve rulers or templates B43L 13/20)
- 12/00 Means to prevent slippage** [5]

- 13/00 Drawing instruments, or writing or drawing appliances or accessories, not otherwise provided for** (stencils for surface decoration B44D)
- 13/02 . Drafting machines or drawing devices for keeping parallelism (T-squares B43L 7/00)
- 13/10 . Pantographic instruments for copying, enlarging, or diminishing (arrangements for copying in machine tools B23Q)
- 13/14 . Devices for drawing in perspective
- 13/20 . Curve rulers or templates
- 13/24 . Devices for generating stepwise movements of drawing equipment, e.g. for hatching
- 15/00 Supports for attachment to hands or arms for facilitating writing or drawing**
- 17/00 Blotters** (blotting pads B43L 3/00; combined with writing implements B43K 29/00; making blotting paper D21F 11/00) [2]
- 19/00 Erasers, rubbers, or erasing devices; Holders therefor** (rubbers or erasing knives combined with writing implements B43K 29/00)
- 21/00 Blackboard or slate-cleaning devices**
- 23/00 Sharpeners for pencils or leads** (grinding or cutting tools in general B24, B26; combined with writing implements B43K 29/00) [2]
- 25/00 Ink receptacles** (liquid receptacles in general B65D, e.g. B65D 1/00)
- 27/00 Ink stands**

**B43M BUREAU ACCESSORIES NOT OTHERWISE PROVIDED FOR** (stapling devices B25C, B27F; devices for temporarily attaching sheets together B42F; adhesive tape dispensers B65H 35/06)

**Subclass Index**

FIXING SEALS; INSERTING DOCUMENTS INTO, CLOSING, OR OPENING, ENVELOPES .....	1/00; 3/00, 5/00, 7/00
------------------------------------------------------------------------------	------------------------

PAPER-WEIGHTS; DEVICES FOR  
APPLYING LIQUIDS; STAMP

DISPENSERS; DRAWING-PINS OR  
THUMB-TACKS; OTHER ACCESSORIES .....9/00; 11/00;  
13/00; 15/00; 17/00

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1/00</b>    <b>Fixing seals on documents</b> (embossing dies B44B; seals <u>per se</u> G09F 3/00)</p> <p><b>3/00</b>    <b>Devices for inserting documents into envelopes</b><br/>(combined devices for inserting documents into, and closing, envelopes B43M 5/00)</p> <p><b>5/00</b>    <b>Devices for closing envelopes</b></p> <p><b>7/00</b>    <b>Devices for opening envelopes</b> (cutting tools in general B26)</p> <p><b>9/00</b>    <b>Paper-weights</b></p> | <p><b>11/00</b>    <b>Hand or desk devices of the office or personal type for applying liquid, other than ink, by contact to surfaces, e.g. for applying adhesive</b> (combined with envelope-closing devices B43M 5/00; reservoir brushes A46B 11/00; devices for applying liquids or other fluent materials to surfaces in general B05C; liquid receptacles B65D)</p> <p><b>13/00</b>    <b>Dispensers without mechanisms for single stamps modified for the application of stamps to articles</b> (manually-controlled or manually-operable label or stamp dispensers B65C 11/00)</p> <p><b>15/00</b>    <b>Drawing-pins; Thumb-tacks</b> (extractors B25C 11/00)</p> <p><b>17/00</b>    <b>Other bureau accessories</b></p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**B44 DECORATIVE ARTS****Note**

Any machine, apparatus, tool or process is classified in this class in so far as it produces an effect or mark meant to be judged by the eye and in so far as such machine, apparatus, tool or process is not provided for elsewhere. [4]

**B44B MACHINES, APPARATUS, OR TOOLS FOR ARTISTIC WORK, E.G. FOR SCULPTURING, GUILLOCHING, CARVING, BRANDING, INLAYING** (processes for producing decorative effects B44C; embossing leather C14B)

**Subclass Index**

THREE-DIMENSIONAL WORK;  
EMBOSSING..... 1/00; 5/00  
TWO-DIMENSIONAL WORK; BRANDING;  
INLAYING..... 3/00; 7/00;  
9/00  
HAND TOOLS ..... 11/00

- 
- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1/00 Artists' machines or apparatus equipped with tools or work holders moving, or able to be controlled, three-dimensionally for making single sculptures or models</b> (copying devices for machine-tool use B23Q 35/00)</p> <p><b>3/00 Artists' machines or apparatus equipped with tools or work holders moving or able to be controlled substantially two-dimensionally for carving, engraving, or guilloching shallow ornamenting or markings</b> (marking or engraving metal by the action of a high concentration of electric current B23H 9/00; forme engraving B41C, B41D; engraving by photomechanical reproduction G03F)</p> | <p><b>5/00 Machines or apparatus for embossing decorations or marks, e.g. embossing coins</b> (corrugating sheet metal or metal tubes, embossing combined with sheet-metal-working operations B21D; embossing plastics or substances in a plastic state, in general B29C 59/00; embossing of paper or cardboard in general B31F 1/00; forme embossing B41C 1/00; embossing combined with application of ink, type marking presses, selective embossing mechanisms B41F, B41J, B41K, B41M; embossing leather C14B)</p> <p><b>7/00 Machines, apparatus, or hand tools for branding</b> (burning or charring wood stock B27M 1/00)</p> <p><b>9/00 Machines or apparatus for inlaying with ornamental structures, e.g. tarsia or mosaic work</b> (uniting ornamental elements on a support B44C 1/00, to structures B44C 3/00; imitation of mosaic or tarsia-work patterns B44F 11/00)</p> <p><b>11/00 Artists' hand tools for sculpturing, kneading, carving, engraving, guilloching, or embossing; Accessories therefor</b></p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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**B44C PRODUCING DECORATIVE EFFECTS** (processes for applying liquids or other fluent materials to surfaces, in general B05D; shaping of plastics or substances in a plastic state B29C; printing processes to produce transfer pictures B41M 3/12; thermographic duplication or marking methods B41M 5/00); **MOSAICS; TARSIA WORK** (imitation of mosaic or tarsia-work patterns B44F 11/00); **PAPERHANGING** [2]

**Note**

In this subclass, the following expression is used with the meaning indicated:

- “decorative effects”, when used in connection with the expressions “transfer picture” or “decalcomanias”, covers also “information”. [4]

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- |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1/00 Processes, not specifically provided for elsewhere, for producing decorative surface effects</b> (decorating textiles D06Q)</p> <p>1/16 . for applying transfer pictures or the like [4]</p> <p>1/165 . . for decalcomanias; Sheet materials therefor (apparatus or machines for applying decalcomanias B65C) [4]</p> <p>1/17 . . . Dry transfer [4]</p> <p>1/22 . Removing surface-material, e.g. by engraving, by etching</p> | <p><b>3/00 Processes, not specifically provided for elsewhere, for producing ornamental structures</b></p> <p><b>5/00 Processes for producing special ornamental bodies</b> (imitations thereof B44F 1/00)</p> <p>5/06 . Natural ornaments; Imitations thereof (artificial flowers, fruit, leaves A41G 1/00; artificial feathers A41G 11/00)</p> <p><b>7/00 Paperhanging</b></p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**B44D PAINTING OR ARTISTIC DRAWING, NOT OTHERWISE PROVIDED FOR; PRESERVING PAINTINGS; SURFACE TREATMENT TO OBTAIN SPECIAL ARTISTIC SURFACE EFFECTS OR FINISHES** (surface treatment in general, see the relevant places, e.g. applying liquids or other fluent materials B05) [2]

- |      |                                                                                                                                                                                                                                                                                                                                                                                                              |      |                                                                                                                                                                                                                                                                                                                                       |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2/00 | <b>Special techniques in artistic painting or drawing, e.g. oil painting, water painting, pastel painting, relief painting [2]</b>                                                                                                                                                                                                                                                                           | 3/18 | <ul style="list-style-type: none"> <li>. Boards or sheets with surfaces prepared for painting or drawing pictures; Stretching frames for canvases [2]</li> </ul>                                                                                                                                                                      |
| 3/00 | <b>Accessories or implements for use in connection with painting or artistic drawing, not otherwise provided for</b> (hand tools for applying liquids, e.g. paints, to surfaces B05C 17/00; implements for finishing work on buildings, other than painting, E04F 21/00); <b>Methods or devices for colour determination, selection, or synthesis, e.g. use of colour tables</b> (colorimetry G01J 3/00) [2] | 3/22 | <ul style="list-style-type: none"> <li>. Implements or apparatus for special techniques, e.g. for painting lines, for pouring varnish; Batik pencils</li> </ul>                                                                                                                                                                       |
| 3/02 | <ul style="list-style-type: none"> <li>. Palettes</li> </ul>                                                                                                                                                                                                                                                                                                                                                 | 3/24 | <ul style="list-style-type: none"> <li>. Lamps for baking lacquers; Painters' belts; Apparatus for dissolving dried paints, for heating paints [2]</li> </ul>                                                                                                                                                                         |
| 3/04 | <ul style="list-style-type: none"> <li>. Paint boxes</li> </ul>                                                                                                                                                                                                                                                                                                                                              | 3/38 | <ul style="list-style-type: none"> <li>. Cord line chalkers</li> </ul>                                                                                                                                                                                                                                                                |
| 3/06 | <ul style="list-style-type: none"> <li>. Implements for stirring or mixing paints (mixing in general B01F)</li> </ul>                                                                                                                                                                                                                                                                                        | 5/00 | <b>Surface treatment to obtain special artistic surface effects or finishes</b> (pretreatment or after-treatment of surface coated by applying liquids B05D 3/00; obtaining special surface effects by applying liquids or other fluent materials to surfaces B05D 5/00; surface shaping of plastics, e.g. embossing, B29C 59/00) [2] |
| 3/12 | <ul style="list-style-type: none"> <li>. Paint cans; Brush holders; Containers for storing residual paint</li> </ul>                                                                                                                                                                                                                                                                                         | 7/00 | <b>Preserving paintings, e.g. by varnishing</b>                                                                                                                                                                                                                                                                                       |
| 3/16 | <ul style="list-style-type: none"> <li>. Implements or apparatus for removing dry paint from surfaces, e.g. by scraping, by burning (chemical paint-removers C09D 9/00) [2]</li> </ul>                                                                                                                                                                                                                       |      |                                                                                                                                                                                                                                                                                                                                       |

**B44F SPECIAL DESIGNS OR PICTURES**

- |      |                                                                                                                                            |       |                                                    |
|------|--------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------------------------------|
| 1/00 | <b>Designs or pictures characterised by special or unusual light effects</b>                                                               | 7/00  | <b>Designs imitating three-dimensional effects</b> |
| 3/00 | <b>Designs characterised by outlines</b>                                                                                                   | 9/00  | <b>Designs imitating natural patterns</b>          |
| 5/00 | <b>Designs characterised by irregular areas, e.g. mottled patterns</b> (imitating natural patterns or artistic work B44F 9/00, B44F 11/00) | 11/00 | <b>Designs imitating artistic work</b>             |

## TRANSPORTING

### B60 VEHICLES IN GENERAL

#### Note

In this class, the following term is used with the meaning indicated:

- “vehicle” means all vehicles except those restricted to one of the following types of vehicles: rail vehicles, waterborne vessels, aircraft, space vehicles, hand carts, cycles, animal-drawn vehicles, and sledges, which are covered by the relevant subclasses of B61 to B64.

Thus the term “vehicle” includes:

- vehicular characteristics which are common to more than one of the above-listed types;
- certain characteristics restricted to automobiles, road or cross-country trailers.
- The following exceptions to the above should be noted:
  - (a) subclass B60B or B60C embrace all vehicle wheels and tyres, except wheels for roller skates A63C 17/00, wheels for model railway vehicles A63H 19/00, and special adaptations of wheels or tyres for aircraft B64C 25/00;
  - (b) subclass B60C embraces the connection of valves to inflatable elastic bodies in general, and in this respect it is not limited to vehicles;
  - (c) subclass B60L embraces certain electric equipment of all electrically-propelled vehicles;
  - (d) subclass B60M embraces certain power supply equipment for, but external to, any kind of electrically-propelled vehicle;
  - (e) subclass B60R embraces safety belts or body harnesses used in all types of land vehicles; [4]
  - (f) subclass B60S relates to all kinds of vehicles, except the servicing of rail locomotives B61K 11/00, ground equipment for aircraft B64F, or cleaning apparatus peculiar to waterborne vessels B63B 57/00, B63B 59/00;
  - (g) subclass B60T includes brake control systems of general applicability, and in this respect it is not limited to vehicles. It also includes rail-vehicle power-brake systems and some other features of rail-vehicle brake systems;
  - (h) *subclass B60V embraces air-cushion vehicles per se and land vehicles, waterborne vessels or aircraft combined with features allowing them to alternatively operate as air-cushion vehicles or to be partially supported by an air cushion. [2009.01]*

### B60B VEHICLE WHEELS (making wheels or wheel parts by rolling B21H 1/00, by forging, hammering or pressing B21K 1/28); CASTORS; AXLES; INCREASING WHEEL ADHESION

#### Note

Attention is drawn to the Note following the title of class B60.

#### Subclass Index

WHEELS	hubs ..... 27/00
General structure ..... 1/00, 3/00	Other wheels ..... 19/00
Characterised by the material.....5/00	AXLES; WHEEL-AXLE COMBINATIONS .....35/00; 37/00
Ornamental characteristics .....7/00	INCREASING WHEEL ADHESION, OTHERWISE THAN BY WHEEL STRUCTURE..... 39/00
Particular structures: highly- resilient; multiple or multi-tyred; adhesion-increasing; rail-engaging ..... 9/00; 11/00; 15/00; 17/00	MOUNTING, HOLDING OR ASSEMBLING WHEELS .....29/00, 30/00, 31/00
Component parts	CASTORS IN GENERAL ..... 33/00
spokes; rims ..... 1/00; 21/00, 23/00, 25/00	

#### Wheels

1/00	Spoked wheels; Spokes thereof (non-metallic B60B 5/00) [2]	7/00	Wheel cover discs, rings, or the like, for ornamenting, protecting, or obscuring, wholly or in part, the wheel body, rim, hub, or tyre sidewall [2,5]
3/00	Disc wheels, i.e. wheels with load-supporting disc body (non-metallic B60B 5/00; wheel cover discs B60B 7/00)	9/00	Wheels of high resiliency
5/00	Wheels, spokes, disc bodies, rims, hubs, wholly or predominantly made of non-metallic material (wheel cover discs B60B 7/00; wheels of high resiliency B60B 9/00)	11/00	Units comprising multiple wheels arranged side by side; Wheels having more than one rim or capable of carrying more than one tyre
		15/00	Wheels or wheel attachments designed for increasing traction (vehicle tyres B60C; non-skid devices temporarily attachable to resilient tyres or resiliently-tyred wheels B60C 27/00)

- 17/00** **Wheels characterised by rail-engaging elements** (of model railways A63H 19/00) [2]
- 19/00** **Wheels not otherwise provided for or having characteristics specified in one of the subgroups of this group**
- 19/02 . convertible, e.g. from road wheel to rail wheel; Wheels specially designed for alternative use on road and rail
  - 19/04 . expansible
  - 19/06 . with compartments for fluid, packing, or loading material; Buoyant wheels
  - 19/08 . with lubricating passages, channels, or reservoirs
  - 19/10 . with cooling fins
  - 19/12 . Roller-type wheels (B60B 19/06 takes precedence)
  - 19/14 . Ball-type wheels (B60B 19/06 takes precedence)

**Rims; Hubs**

- 21/00** **Rims** (non-metallic B60B 5/00; of high resiliency B60B 9/00; capable of carrying more than one tyre B60B 11/00; multiple rims on single wheel body B60B 11/00; of multi-part type B60B 25/00; metal tyres B60C)
- 23/00** **Attaching rim to wheel body** (attaching spokes to rim B60B 1/00; attaching rims resiliently to wheel body B60B 9/00)
- 25/00** **Rims built-up of several main parts** (tools for assembling divided rims B60B 31/00)

- 27/00** **Hubs** (non-metallic B60B 5/00; of high resiliency B60B 9/00)

**Apparatus or tools for mounting, holding or assembling wheels**

- 29/00** **Apparatus or tools for mounting or dismounting wheels** (characterised by the means for holding the wheels B60B 30/00) [5]
- 30/00** **Means for holding wheels or parts thereof** (spare wheel stowing, holding or mounting arrangements on vehicles B62D 43/00) [5]
- 31/00** **Apparatus or tools for assembling or disassembling wheels**
- 
- 33/00** **Castors in general** (castors for large containers B65D 90/12)
- 33/04 . adjustable
- 35/00** **Axle units; Parts thereof** (resilient suspension of a rigid axle or axle housing B60G 9/00; steerable vehicle stub-axles B62D)
- 37/00** **Wheel-axle combinations, e.g. wheel sets** (units comprising multiple wheels arranged side by side B60B 11/00; rail-vehicle axle-boxes B61F)
- 39/00** **Increasing wheel adhesion** (wheels or wheel attachments designed for increasing traction B60B 15/00; vehicle tyres B60C; non-skid devices temporarily attachable to resilient tyres or resiliently-tyred wheels B60C 27/00; road surface conditioning to prevent slipperiness E01C)

**B60C** **VEHICLE TYRES** (manufacture, repairing B29); **TYRE INFLATION; TYRE CHANGING; CONNECTING VALVES TO INFLATABLE ELASTIC BODIES IN GENERAL; DEVICES OR ARRANGEMENTS RELATED TO TYRES** (testing of tyres G01M 17/02) [5]

**Notes**

- (1) In this subclass, the following term is used with the meaning indicated:
- “tyre” means a separate ground-engaging, continuous element outside the periphery of the wheel rim and includes the tyre casing, cover, or jacket and any insert, e.g. inner tube. In group B60C 29/00, relating to connection of valves, the term “tyre” also includes inflatable elastic bodies other than tyres or inner tubes.
- (2) Attention is drawn to the Note following the title of class B60.

**Subclass Index****TYRES**

Characterised by material ..... 1/00

Characterised by transverse section ..... 3/00

General structure..... 5/00, 7/00, 19/00

Parts; reinforcements; treads; walls; beads; other parts ..... 9/00; 11/00; 13/00; 15/00; 19/00

Particular devices ..... 17/00, 27/00

**MOUNTING, INFLATION**

Inflating devices, pressure or temperature control ..... 23/00, 29/00

Apparatus or tools ..... 25/00

**SUBJECT MATTER NOT PROVIDED FOR IN OTHER GROUPS OF THIS SUBCLASS** ..... 99/00

- 1/00** **Tyres characterised by the chemical composition or the physical arrangement or mixture of the composition** [4]

**Note**

Tyres characterised by the compositions only, i.e. having no significant tyre structure, are classified only with the compositions, e.g. in C08K, C08L. [4]

- 3/00** **Tyres characterised by transverse section** (characterised by rail-engaging elements B60B 17/00) [4]

## B60C – B60D

- 5/00 Inflatable pneumatic tyres or inner tubes** (B60C 1/00, B60C 9/00 to B60C 17/00 take precedence) [4]
- 7/00 Non-inflatable or solid tyres** (B60C 1/00 takes precedence; highly resilient wheels B60B 9/00; tyres or rims characterised by rail-engaging elements B60B 17/00) [2]
- 9/00 Reinforcements or ply arrangement of pneumatic tyres** (inserts having reinforcing means B60C 5/00; bead structure, e.g. turnout or overlap construction, B60C 15/00; tyre cords per se D02G 3/48; fabrics per se D03D, D04H; metal ropes or cables, per se D07B 1/00) [4]

### Note

When classifying in this group, classification is also made in subclass B32B insofar as any layered product is concerned. [4]

- 9/02 . Carcasses
- 9/04 . . the reinforcing cords of each carcass ply arranged in a substantially parallel relationship
- 9/18 . Structure or arrangement of belts or breakers, crown-reinforcing or cushioning layers
- 9/20 . . built-up from rubberised plies each having all cords arranged substantially parallel
- 9/22 . . . the plies being arranged with all cords disposed along the circumference of the tyre
- 9/24 . . built-up of arcuate parts
- 9/26 . . Folded plies [4]
- 9/28 . . characterised by the belt or breaker dimensions or curvature relative to carcass (B60C 9/30 takes precedence) [4]
- 9/30 . . asymmetric to the midcircumferential plane of the tyre [4]
- 11/00 Tyre tread bands; Tread patterns; Anti-skid inserts**
- 11/01 . Shape of the shoulders between tread and sidewall, e.g. rounded, stepped, cantilevered (arrangements of grooves or ribs on the sidewalls B60C 13/00) [4]
- 11/02 . Replaceable treads
- 11/03 . Tread patterns [4]
- 11/04 . . in which the raised area of the pattern consists only of continuous circumferential ribs, e.g. zig-zag (B60C 11/12, B60C 11/13 take precedence) [4,6]
- 11/11 . . in which the raised area of the pattern consists only of isolated elements, e.g. blocks (B60C 11/12, B60C 11/13 take precedence) [4]

- 11/12 . . characterised by the use of narrow slits or incisions, e.g. sipes [4]
- 11/13 . . characterised by the groove cross-section, e.g. for buttressing or preventing stone-trapping [6]
- 11/14 . Anti-skid inserts, e.g. vulcanised into the tread band
- 11/22 . Tread rings between dual tyres [4]
- 11/24 . Wear-indicating arrangements [4]
- 13/00 Tyre sidewalls; Protecting, decorating, marking, or the like, thereof** (B60C 17/00 takes precedence; tyre shoulders B60C 11/01; removable tyre sidewall trim rings B60B 7/00) [4,5]
- 15/00 Tyre beads, e.g. ply turn-up or overlap** (sealing means between beads and rims of tubeless tyres B60C 5/00)
- 15/04 . Bead cores (producing bead-rings or bead-cores for tyres B29D 30/06) [4]
- 15/06 . Flipper strips, fillers, or chafing strips
- 17/00 Tyres characterised by means enabling restricted operation in damaged or deflated condition; Accessories therefor** (having multiple separate inflatable chambers B60C 5/00)
- 19/00 Tyre parts or constructions not otherwise provided for**
- 23/00 Devices for measuring, signalling, controlling, or distributing tyre pressure or temperature, specially adapted for mounting on vehicles** (measuring in general G01, e.g. G01L 17/00; remote signalling in general G08); **Arrangement of tyre inflating devices on vehicles, e.g. of pumps, of tanks** (air pumps per se F04; tanks per se F17C); **Tyre cooling arrangements** [3]
- 23/02 . Signalling devices actuated by tyre pressure
- 23/06 . Signalling devices actuated by deformation of the tyre (wear-indicating arrangements B60C 11/24)
- 25/00 Apparatus or tools adapted for mounting, removing or inspecting tyres** (apparatus or tools characterised by the means for holding wheels or parts thereof B60B 30/00) [5]
- 27/00 Non-skid devices temporarily attachable to resilient tyres or resiliently-tyred wheels**
- 29/00 Arrangements of tyre-inflating valves to tyres or rims; Accessories for tyre-inflating valves, not otherwise provided for** (tools for mounting or demounting valves B60C 25/00; valves per se, valve dust caps F16K) [4,5]
- 99/00 Subject matter not provided for in other groups of this subclass** [8]

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## B60D VEHICLE CONNECTIONS (components of brake systems B60T 17/00)

### Note

Attention is drawn to the Note following the title of class B60.

- 1/00 Traction couplings; Hitches; Draw-gear; Towing devices** (devices specially adapted for connection between tractors and agricultural machines or implements A01B 59/00; fifth-wheel couplings B62D) [2]



**3/00** **Fittings to facilitate pushing** (B60D 1/00 takes precedence; vehicle bumpers B60R 19/02; steering arrangements for backing a normally-drawn trailer B62D 13/00)

**5/00** **Gangways for coupled vehicles, e.g. of concertina type**

**99/00** *Subject matter not provided for in other groups of this subclass [2009.01]*

**B60F VEHICLES FOR USE BOTH ON RAIL AND ON ROAD; AMPHIBIOUS OR LIKE VEHICLES; CONVERTIBLE VEHICLES** (air-cushion vehicles B60V)

**1/00** **Vehicles for use both on rail and on road; Conversions therefor**

**3/00** **Amphibious vehicles, i.e. vehicles capable of travelling both on land and on water; Land vehicles capable of travelling under water** (buoyant wheels B60B)

**5/00** **Other convertible vehicles, i.e. vehicles capable of travelling in or on different media** (vehicles having alternatively-usable runners and wheels B62B 13/00; cycles convertible into other types of land vehicles B62K 13/00; aircraft B64; flying-boats or seaplanes B64C)

**B60G VEHICLE SUSPENSION ARRANGEMENTS** (air-cushion vehicles B60V; connections between vehicle bodies and vehicle frames B62D 24/00) [5]

**Note**

Attention is drawn to the Note following the title of class B60.

**Subclass Index**

RIGID SUSPENSION ..... 1/00

RESILIENT SUSPENSION

General structures

for single wheels; single sets of

tandem wheels; pivoted

suspension arms and

accessories therefor ..... 3/00; 5/00;  
7/00

for rigid axle or axle housing

for two or more wheels ..... 9/00

Characterised by arrangement,

location, or kind of: springs;

vibration-dampers; or combined

springs and dampers ..... 11/00; 13/00;  
15/00

Characterised by adjustment ..... 17/00

SUSPENSIONS WITH MEANS FOR

SENSING GROUND UNEVENNESS ..... 23/00

INTERCONNECTED SYSTEMS FOR

RESILIENTLY-SUSPENDED WHEELS ..... 21/00

OTHER SUSPENSION ARRANGEMENTS ..... 25/00

**1/00** **Suspensions with rigid connection between axle and frame**

**3/00** **Resilient suspensions for a single wheel** (pivoted suspension arms *per se*, attachment thereof to sprung part of the vehicle, buffer means for limiting movement of arms B60G 7/00; characterised by arrangement, location, or type of springs B60G 11/00)

3/18 . with two or more pivoted arms, e.g. parallelogram

**5/00** **Resilient suspensions for a set of tandem wheels or axles having interrelated movements**

**7/00** **Pivoted suspension arms; Accessories thereof** (means for maintaining substantially-constant wheel camber during suspension movement B60G 3/18)

7/02 . Attaching arms to sprung part of vehicle

**9/00** **Resilient suspensions for a rigid axle or axle housing for two or more wheels**

**11/00** **Resilient suspensions characterised by arrangement, location, or kind of springs** (single-wheel suspension by pivoted arm resilient in itself B60G 3/00; adjusting spring characteristic B60G 17/00; springs *per se* F16F)

**Note**

In this group, the following terms or expressions are used with the meanings indicated:

- “torsion bar” includes torsion tube or the like;
- “rubber” includes synthetic substitutes of a similar nature.

11/02 . having leaf springs only

11/26 . having fluid springs only, e.g. hydropneumatic springs (B60G 15/00 takes precedence)

11/32 . having springs of different kinds

**B60G – B60J**

- |        |                                                                                                                                                                                                                                                                                                                   |       |                                                                                                                                                                                                                                                                                                                                 |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13/00  | <b>Resilient suspensions characterised by arrangement, location, or type of vibration-dampers</b> (adjusting damping effect B60G 17/06; vibration-dampers <u>per se</u> F16F)                                                                                                                                     | 17/02 | . Spring characteristics (B60G 17/005 to B60G 17/015 take precedence) [5]                                                                                                                                                                                                                                                       |
| 15/00  | <b>Resilient suspensions characterised by arrangement, location, or type of combined spring and vibration-damper, e.g. telescopic type</b> (combined spring and vibration-dampers <u>per se</u> F16F) [5]                                                                                                         | 17/04 | . . Fluid-spring characteristics                                                                                                                                                                                                                                                                                                |
| 17/00  | <b>Resilient suspensions having means for adjusting the spring or vibration-damper characteristics, for regulating the distance between a supporting surface and a sprung part of vehicle or for locking suspension during use to meet varying vehicular or surface conditions, e.g. due to speed or load</b> [5] | 17/06 | . Characteristics of dampers (B60G 17/015 takes precedence) [5]                                                                                                                                                                                                                                                                 |
| 17/005 | . Suspension locking arrangements [5]                                                                                                                                                                                                                                                                             | 21/00 | <b>Interconnection systems for two or more resiliently-suspended wheels, e.g. for stabilising a vehicle body with respect to acceleration, deceleration or centrifugal forces</b> (B60G 17/02 takes precedence; steering deflectable wheels combined with means for inwardly inclining the vehicle body on bends B62D 9/00) [5] |
| 17/015 | . the regulating means comprising electric or electronic elements (B60G 17/005 takes precedence) [5,8]                                                                                                                                                                                                            | 23/00 | <b>Wheel suspensions with automatic means for sensing unevenness ahead of wheels or for moving wheels up or down in accordance therewith</b>                                                                                                                                                                                    |
|        |                                                                                                                                                                                                                                                                                                                   | 25/00 | <b>Other suspension arrangements</b>                                                                                                                                                                                                                                                                                            |

**B60H ARRANGEMENTS OR ADAPTATIONS OF HEATING, COOLING, VENTILATING, OR OTHER AIR-TREATING DEVICES SPECIALLY FOR PASSENGER OR GOODS SPACES OF VEHICLES**
**Note**

Attention is drawn to the Note following the title of class B60.

- |      |                                                                                                                                                                                                                                                                                                                                                                                                |      |                                                                                                                       |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------|
| 1/00 | <b>Heating, cooling or ventilating devices</b> (heating, cooling or ventilating devices providing other air treatment, the other treatment being relevant, B60H 3/00; ventilating solely by opening windows, doors, roof parts, or the like B60J; heating or ventilating devices for vehicle seats B60N 2/56; vehicle window or windscreen cleaners using air, e.g. defrosters, B60S 1/02) [4] | 1/22 | . the heat being derived otherwise than from the propulsion plant                                                     |
| 1/02 | . the heat being derived from the propulsion plant                                                                                                                                                                                                                                                                                                                                             | 1/24 | . Devices purely for ventilating or where the heating or cooling is irrelevant (nozzles, air-diffusers B60H 1/34) [4] |
| 1/04 | . . from cooling liquid of the plant                                                                                                                                                                                                                                                                                                                                                           | 1/32 | . Cooling devices (vehicles adapted to transport refrigerated goods B60P 3/20) [4]                                    |
|      |                                                                                                                                                                                                                                                                                                                                                                                                | 1/34 | . Nozzles; Air-diffusers [4]                                                                                          |
|      |                                                                                                                                                                                                                                                                                                                                                                                                | 3/00 | <b>Other air-treating devices</b> [4]                                                                                 |
|      |                                                                                                                                                                                                                                                                                                                                                                                                | 3/06 | . Filtering                                                                                                           |

**B60J WINDOWS, WINDSCREENS, NON-FIXED ROOFS, DOORS, OR SIMILAR DEVICES FOR VEHICLES; REMOVABLE EXTERNAL PROTECTIVE COVERINGS SPECIALLY ADAPTED FOR VEHICLES** (fastening, suspending, closing, or opening of such devices E05)
**Notes**

- (1) Windows, windcreens, non-fixed roofs, doors, or similar devices which are of general applicability, irrespective of whether described or claimed only for vehicles, are also classified in subclass E06B.
- (2) Attention is drawn to the Note following the title of class B60.

- |      |                                                                                                                                 |      |                                                                                                                                                                                                                                                                                                                 |
|------|---------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1/00 | <b>Windows; Windcreens; Accessories therefor</b> (B60J 10/00 takes precedence; air curtains instead of windows B60J 9/00) [4,5] | 1/18 | . arranged at the vehicle rear                                                                                                                                                                                                                                                                                  |
| 1/02 | . arranged at the vehicle front                                                                                                 | 1/20 | . Accessories, e.g. wind deflectors, blinds (antiglare provisions B60J 3/00; wind deflectors associated with roof openings B60J 7/00; removable external protective coverings for windows or windcreens B60J 11/00; heating arrangements specially adapted for transparent or reflecting areas H05B 3/84) [1,8] |
| 1/08 | . arranged at vehicle sides                                                                                                     |      |                                                                                                                                                                                                                                                                                                                 |
| 1/12 | . . adjustable                                                                                                                  | 3/00 | <b>Antiglare equipment associated with windows or windcreens</b> (optical viewing arrangements for vehicles B60R 1/00); <b>Sun visors for vehicles</b> (sun visors having appliances for stowing or holding personal property B60R 7/04) [2,5]                                                                  |
| 1/16 | . . . slidable                                                                                                                  |      |                                                                                                                                                                                                                                                                                                                 |
| 1/17 | . . . . vertically [2]                                                                                                          | 3/02 | . adjustable in position                                                                                                                                                                                                                                                                                        |

- 5/00 Doors** (B60J 10/00 takes precedence; window aspects B60J 1/00) [5]
- 5/02 . arranged at the vehicle front
- 5/04 . arranged at the vehicle sides
- 5/06 . . slidable; foldable
- 5/10 . arranged at the vehicle rear (B60J 5/04 takes precedence)
- 7/00 Non-fixed roofs; Roofs with movable panels** (B60J 10/00 takes precedence; window aspects B60J 1/00; fixed roofs B62D 25/06; mechanisms for operating wings E05F 11/00, E05F 15/00) [4,5]
- 7/02 . of sliding type
- 7/04 . . with rigid plate-like element or elements
- 7/08 . of non-sliding type, i.e. movable or removable roofs or panels, e.g. let-down tops or roofs capable of being easily detached or of assuming a collapsed or inoperative position
- 9/00 Devices not provided for in one of main groups B60J 1/00 to B60J 7/00** (B60J 10/00 takes precedence) [3,5]
- 10/00 Sealing arrangements** (sealings in general F16J 15/00) [5]
- 10/02 . for windows or windscreens [5]
- 11/00 Removable external protective coverings specially adapted for vehicles or parts of vehicles, e.g. parking covers** (antiglare equipment B60J 3/00; hub caps or the like B60B 7/00; covers or guards for traction couplings, hitches, draw-gear or towing devices B60D 1/00; covering of load on vehicles B60P 7/00; guard strips for body finishing, identifying or decorating B60R 13/04; guards for wheels, radiators or bumpers B60R 19/00; tents for use as garages E04H 15/00) [1,8]

**B60K ARRANGEMENT OR MOUNTING OF PROPULSION UNITS OR OF TRANSMISSIONS IN VEHICLES; ARRANGEMENT OR MOUNTING OF PLURAL DIVERSE PRIME-MOVERS; AUXILIARY DRIVES; INSTRUMENTATION OR DASHBOARDS FOR VEHICLES; ARRANGEMENTS IN CONNECTION WITH COOLING, AIR INTAKE, GAS EXHAUST, OR FUEL SUPPLY, OF PROPULSION UNITS, IN VEHICLES [1,8]**

**Notes**

- (1) In this subclass, the following terms or expressions are used with the meanings indicated:
- “auxiliary drives” means drives of auxiliary or external machines or devices from the propulsion unit, transmission, or other parts of the vehicle, and includes the control of such drives;
  - “transmission” means all propulsion parts linking propulsion units, e.g. engines, to ultimate propulsive elements, e.g. wheels.
- (2) Attention is drawn to the Note following the title of class B60.

**Subclass Index**

**ARRANGEMENTS OF PROPULSION UNITS**

- Electric; steam or gas; internal-combustion or jet-propulsion; plural diverse prime-movers ..... 1/00; 3/00; 5/00; 6/00
- Motor incorporated in, or adjacent to, traction wheel ..... 7/00
- Other kinds ..... 8/00
- Arrangements of control devices ..... 26/00
- Safety devices ..... 28/00

**ARRANGEMENT OF TRANSMISSIONS OR OF THEIR CONTROL DEVICES ..... 17/00, 23/00**

- ARRANGEMENT OF CHANGE-SPEED GEARING CONTROL DEVICES ..... 20/00**
- ARRANGEMENT IN CONNECTION WITH COOLING, AIR INTAKE, GAS EXHAUST, OR FUEL SUPPLY, OF PROPULSION UNITS ..... 11/00, 13/00, 15/00**
- ARRANGEMENTS IN CONNECTION WITH POWER SUPPLY FROM FORCE OF NATURE ..... 16/00**
- AUXILIARY DRIVES ..... 25/00**
- KINDS OF CONTROL**
- Fittings for automatically controlling vehicle speed ..... 31/00
- INSTRUMENTATION, DASHBOARDS ..... 35/00, 37/00**

**Arrangement or mounting of propulsion units in vehicles [2]**

- 1/00 Arrangement or mounting of electrical propulsion units** (B60K 7/00 takes precedence; arrangement or mounting of plural diverse prime-movers for mutual or common propulsion B60K 6/00; electric transmission arrangements B60K 17/04; electric equipment or propulsion of electrically-propelled vehicles *per se* B60L; current-collectors for power supply lines of electrically-propelled vehicles B60L 5/00) [5]
- 1/04 . of the electric storage means for propulsion (for auxiliary purposes only B60R 16/04; supplying batteries to, or removing batteries from, vehicles B60S 5/00) [6]
- 3/00 Arrangement or mounting of steam or gaseous-pressure propulsion units** (B60K 7/00 takes precedence; arrangement or mounting of plural diverse prime-movers for mutual or common propulsion B60K 6/00; gaseous-pressure transmission arrangements B60K 17/10) [5]
- 5/00 Arrangement or mounting of internal-combustion or jet-propulsion units** (B60K 7/00 takes precedence; arrangement or mounting of plural diverse prime-movers for mutual or common propulsion B60K 6/00) [5]
- 5/12 . Arrangement of engine supports

- 6/00 Arrangement or mounting of plural diverse prime-movers for mutual or common propulsion, e.g. hybrid propulsion systems comprising electric motors and internal combustion engines [5]**

**Note**

*In this group, the following expression is used, with the meaning indicated:*

- “prime-mover” means a propulsion unit or source of motive power providing a mechanical output, e.g. via a rotating shaft. [2009.01]

- 7/00 Disposition of motor in, or adjacent to, traction wheel** (roller-skate driving mechanisms A63C 17/00)
- 8/00 Arrangement or mounting of propulsion units not provided for in one of main groups B60K 1/00 to B60K 7/00 [5]**

**Arrangements in connection with cooling, air intake, gas exhaust, fuel supply, or power supply of propulsion units in vehicles**

- 11/00 Arrangement in connection with cooling of propulsion units** (heating the interior space B60H; cooling internal combustion engines *per se* F01P)
- 11/02 . with liquid cooling
- 13/00 Arrangement in connection with combustion air intake or gas exhaust of propulsion units** (extensions for melting snow or ice on roads or like surfaces E01H 5/00, E01H 6/00; forming part of the engine F01N; supplying combustion engines with combustible mixtures or constituents F02M)
- 15/00 Arrangement in connection with fuel supply of combustion engines; Mounting or construction of fuel tanks** (tanks in general B65D, F17C; supplying combustion engines with combustible mixtures or constituents F02M) [5]
- 15/03 . Fuel tanks (chassis frame comprising fluid storage compartment B62D 21/00) [5]
- 15/04 . . Tank inlets (B60K 15/077 takes precedence) [5]
- 15/077 . . with means modifying or controlling distribution or motion of fuel, e.g. to prevent noise, surge, splash or fuel starvation [5]
- 16/00 Arrangements in connection with power supply from force of nature, e.g. sun, wind** (electric propulsion with power supply from force of nature, e.g. sun, wind, B60L 8/00; effecting propulsion by wind motors driving water-engaging propulsive elements B63H 13/00) [5]

**Arrangement or mounting of transmissions or their control in vehicles**

- 17/00 Arrangement or mounting of transmissions in vehicles** (torque-transmitting axles B60B 35/00; combined transmission and steering gear for steering non-deflectable wheels B62D 11/00; clutches *per se*, e.g. construction thereof, F16D; gearing *per se*, e.g. construction thereof, F16H) [2]
- 17/04 . characterised by arrangement, location, or kind of gearing (electric equipment or propulsion of electrically-propelled vehicles B60L)
- 17/06 . . of change-speed gearing (B60K 17/10 to B60K 17/16 take precedence) [2]
- 17/10 . . of fluid gearing (of fluid clutches B60K 17/00)
- 17/16 . . of differential gearing

- 17/22 . characterised by arrangement, location, or type of main drive shafting, e.g. cardan shaft
- 17/34 . for driving both front and rear wheels, e.g. four wheel drive vehicles (arrangement or mounting of control devices for changing number of driven wheels B60K 23/08)
- 17/344 . . having a transfer gear [4]
- 17/348 . . having differential means for driving one set of wheels, e.g. the front, at one speed and the other set, e.g. the rear, at a different speeds (B60K 17/344 takes precedence) [4]
- 17/35 . . . including arrangements for suppressing or influencing the power transfer, e.g. viscous clutches (differential gearing with locking devices F16H 48/00) [4,6]
- 20/00 Arrangement or mounting of change-speed gearing control devices in vehicles** (movable cabs having special adaptations of vehicle control devices B62D 33/06; such control devices *per se* F16H) [2,5]
- 20/02 . of initiating means (control mechanisms in general G05G) [2]
- 20/04 . . floor-mounted [2]
- 20/06 . . mounted on steering column or the like [2]
- 20/08 . . dashboard-mounted [2]
- 23/00 Arrangement or mounting of control devices for vehicle transmissions, or parts thereof, not otherwise provided for** (combined transmission and steering gear for steering non-deflectable wheels B62D 11/00; movable cabs having special adaptations of vehicle control devices B62D 33/06; such control devices *per se* F16D, F16H) [2,5]
- 23/04 . for differential gearing
- 23/08 . for changing number of driven wheels

- 25/00 Auxiliary drives** (B60K 16/00 takes precedence; arrangement of tyre-inflating pumps mounted on vehicles B60C 23/00; resilient suspensions having dampers accumulating utilisable energy, e.g. compressing air, B60G 13/00; driving engine auxiliaries F02B) [5]
- 26/00 Arrangement or mounting of propulsion-unit control devices in vehicles** (movable cabs having special adaptations of vehicle control devices B62D 33/06) [2,5]
- 28/00 Safety devices for propulsion-unit control, specially adapted for, or arranged in, vehicles, e.g. preventing fuel supply or ignition in the event of potentially dangerous conditions** (for electrically-propelled vehicles B60L 3/00; road vehicle drive control systems for purposes not related to the control of a particular sub-unit B60W 30/00) [2,8]
- 28/10 . responsive to conditions relating to the vehicle [4]
- 28/16 . . responsive to, or preventing, spinning or skidding of wheels (brake control systems for vehicle drive stability B60T 8/17; arrangements responsive to a speed condition for adjusting wheel braking force B60T 8/32; control of vehicle driving stability otherwise than by controlling the propulsion unit only B60W 30/02; preventing wheel slippage by reducing power in rail vehicles B61C 15/00) [4,8]

- 31/00 Vehicle fittings, acting on a single sub-unit only, for automatically controlling vehicle speed, i.e. preventing speed from exceeding an arbitrarily established velocity or maintaining speed at a particular velocity, as selected by the vehicle operator** (fittings acting on two or more sub-units B60W 30/14; propulsion-unit control in general, see the relevant classes or subclasses, e.g. F02D; speedometers G01P; systems or devices for controlling speed in general G05D 13/00) [2,8]

#### Note

In this group:

- the means ordinarily includes a device, e.g. a servomechanism, for operating a velocity-affecting element of the vehicle, e.g. the throttle;
- a means for preventing a vehicle from exceeding a particular speed is often referred to as a “governor”, whereas a means for maintaining the vehicle within a relatively narrow speed range is generally designated as “speed control”. Since these two functions are frequently interrelated, no attempt has been made to identify such means as being particularly adapted to perform only one, or the other of the functions. [4]

- 31/02 . including electrically actuated servomechanism [4]  
 31/06 . including fluid pressure actuated servomechanism [4]  
 31/12 . including a device responsive to centrifugal force [4]

#### Notes

- (1) This subgroup covers also, for example, the pendulum of a curve compensator, i.e. a refinement to the regulating means for automatically adjusting the “set” speed of the means to changes in the course of the roadway along which the vehicle is travelling. [4]  
 (2) In this subgroup, rotating weights driven at a speed proportional to that of the vehicle’s motor presently predominate. [4]

- 31/16 . having means to prevent or discourage unauthorised use or adjusting of the controlling means [4]  
 31/18 . including a device to audibly, visibly, or otherwise signal the existence of unusual or unintended speed [4]

#### Arrangement or adaptations of instruments specially for vehicles; Dashboards

- 35/00 Arrangement or adaptations of instruments** (arrangements on dashboard B60K 37/02)  
**37/00 Dashboards** (as road-vehicle superstructure sub-unit B62D)  
 37/02 . Arrangement of instruments (arrangement of lighting devices for dashboards B60Q 3/00)  
 37/04 . Arrangement of fittings on dashboard (of instruments B60K 37/02)

**B60L ELECTRIC EQUIPMENT OR PROPULSION OF ELECTRICALLY-PROPELLED VEHICLES; MAGNETIC SUSPENSION OR LEVITATION FOR VEHICLES; ELECTRODYNAMIC BRAKE SYSTEMS FOR VEHICLES, IN GENERAL** (electric coupling devices combined with mechanical couplings of vehicles B60D 1/00; electric heating for vehicles B60H; arrangements or mounting of electrical propulsion units in vehicles B60K 1/00; arrangements or mounting of electric gearing in vehicles B60K 17/04; auxiliary drives on vehicles B60K 25/00; arrangement of signalling or lighting devices, the mounting or supporting thereof or circuits therefor, for vehicles in general B60Q; vehicle brake control systems in general B60T; preventing wheel slip by reducing power in rail vehicles B61C; railway track circuits in general B61L; lighting in general F21, H05B; switches in general H01H; coupling devices for electric connections in general H01R; dynamo-electric machines H02K; electric converters H02M; starting, controlling, braking of electric machines or converters in general H02P; electric heating in general H05B) [4]

#### Note

This subclass covers, subject to the references following the title of the subclass:

- feeding of power to auxiliary circuits;
- current-collectors, arrangements thereof on rail or road vehicles or on vehicles in general;
- electrodynamic brake systems;
- electric propulsion of vehicles; control and regulation therefor.

#### Subclass Index

##### ELECTRIC PROPULSION

With external or internal supply ..... 8/00 to 11/00  
 For monorail vehicles, suspension  
 vehicles or rack railways; Magnetic  
 suspension or levitation for vehicles ..... 13/00  
 Control ..... 15/00

CURRENT-COLLECTORS ..... 5/00  
 ELECTRIC SUPPLY TO AUXILIARY  
 EQUIPMENT ..... 1/00  
 SAFETY ARRANGEMENTS ..... 3/00  
 ELECTRODYNAMIC BRAKING ..... 7/00

**1/00 Supplying electric power to auxiliary equipment of vehicles** (circuit arrangements for charging batteries H02J 7/00) [6]

**3/00 Electric devices on electrically-propelled vehicles for safety purposes; Monitoring operating variables, e.g. speed, deceleration, power consumption** (measuring in general G01)  
 3/02 . Dead-man’s devices

3/04	• Cutting-off the power supply under fault conditions (protective devices or circuit arrangements in general H01H, H02H)	11/00	<b>Electric propulsion with power supplied within the vehicle</b> (B60L 8/00, B60L 13/00 take precedence; arrangements or mounting of prime-movers consisting of electric motors and internal combustion engines for mutual or common propulsion B60K 6/00; control systems specially adapted for hybrid vehicles B60W 20/00) [5,6,8]
3/06	• Limiting the traction current under mechanical-overload conditions	11/02	• using engine-driven generators
3/08	• Means for preventing excessive speed of the vehicle	11/14	• . . with provision for direct mechanical propulsion
3/10	• Indicating wheel slip	11/18	• using power supplied from primary cells, secondary cells, or fuel cells
3/12	• Recording operating variables		
5/00	<b>Current-collectors for power supply lines of electrically-propelled vehicles</b> (current-collectors in general H01R 41/00)	13/00	<b>Electric propulsion for monorail vehicles, suspension vehicles or rack railways; Magnetic suspension or levitation for vehicles</b> (electromagnetics <u>per se</u> H01F 7/06; linear motors <u>per se</u> H02K 41/00) [4,6]
5/18	• using bow-type collectors in contact with trolley wire	13/04	• Magnetic suspension or levitation for vehicles [4]
7/00	<b>Electrodynamic brake systems for vehicles in general</b> [4]	15/00	<b>Methods, circuits, or devices for controlling the traction-motor speed of electrically-propelled vehicles</b>
8/00	<b>Electric propulsion with power supply from force of nature, e.g. sun, wind</b> [5]	15/20	• for control of the vehicle or its driving motor to achieve a desired performance, e.g. speed, torque, programmed variation of speed
9/00	<b>Electric propulsion with power supply external to vehicle</b> (B60L 8/00, B60L 13/00 take precedence) [5,6]		

**B60M POWER SUPPLY LINES, OR DEVICES ALONG RAILS, FOR ELECTRICALLY-PROPELLED VEHICLES** (control of points or safety arrangements along railway lines B61L; construction of rails or points in general E01B)

#### Note

This subclass covers:

- overhead, overground, or underground power-supply lines; their crossings and points, erection and supervision;
- devices along rails and rail joints, for current-conduction and for insulation;
- safety devices along the route against earth currents and inductive interference with nearby communication lines.

1/00	<b>Power supply lines for contact with collector on vehicle</b> (collectors therefor B60L 5/00)	3/00	<b>Feeding power to the supply lines in contact with collector on vehicles; Arrangements for consuming regenerative power</b> (controlling rail vehicles by varying voltage of power fed to vehicle B60L; power distribution in general H02J)
		5/00	<b>Arrangements along running rails or at joints thereof for current-conduction or insulation, e.g. safety devices for reducing earth currents</b> (insulating rail joints E01B 11/00; conductive connections between rails in general H01R 4/00, e.g. H01R 4/64)
		7/00	<b>Power lines or rails specially adapted for electrically-propelled vehicles of special types, e.g. suspension tramway, ropeway, underground railway</b>

**B60N VEHICLE PASSENGER ACCOMMODATION NOT OTHERWISE PROVIDED FOR** (furniture construction A47)**Note**

Attention is drawn to the Note following the title of class B60.

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- |       |                                                                                                                                                                                                                                                                                      |              |                                                                                                                                                                         |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2/00  | <b>Seats specially adapted for vehicles; Arrangement or mounting of seats in vehicles</b> (for facilitating access of patients or disabled persons to, or exit from, vehicles A61G 3/00; railway seats B61D 33/00; cycle seats B62J 1/00; aircraft seats B64D 11/00, B64D 25/00) [5] | 2/44         | . Details or parts not otherwise provided for [5]                                                                                                                       |
| 2/005 | . Arrangement or mounting of seats in vehicles (B60N 2/02 takes precedence) [7]                                                                                                                                                                                                      | 2/46         | . . Arm-rests [5]                                                                                                                                                       |
| 2/02  | . the seat or part thereof being movable, e.g. adjustable (adjustable arm-rests B60N 2/46; adjustable head-rest B60N 2/48) [5]                                                                                                                                                       | 2/48         | . . Head-rests [5]                                                                                                                                                      |
| 2/04  | . . the whole seat being movable [5]                                                                                                                                                                                                                                                 | 2/50         | . . Seat suspension devices [5]                                                                                                                                         |
| 2/06  | . . . slidable (B60N 2/12 takes precedence) [5]                                                                                                                                                                                                                                      | 2/56         | . . Heating or ventilating devices [7]                                                                                                                                  |
| 2/08  | . . . characterised by the locking device [5]                                                                                                                                                                                                                                        | 2/58         | . . Seat coverings [7]                                                                                                                                                  |
| 2/10  | . . . tiltable (B60N 2/12 takes precedence) [5]                                                                                                                                                                                                                                      | 2/62         | . . Thigh-rests [7]                                                                                                                                                     |
| 2/12  | . . . slidable and tiltable [5]                                                                                                                                                                                                                                                      | 2/64         | . . Back-rests [7]                                                                                                                                                      |
| 2/16  | . . . height-adjustable [5]                                                                                                                                                                                                                                                          | 2/68         | . . Seat frames, e.g. for the back-rest [7]                                                                                                                             |
| 2/22  | . . the back-rest being adjustable [5]                                                                                                                                                                                                                                               | 2/70         | . . Upholstery springs [7]                                                                                                                                              |
| 2/225 | . . . by cycloidal or planetary mechanisms [7]                                                                                                                                                                                                                                       | <b>3/00</b>  | <b>Arrangements or adaptations of other passenger fittings, not otherwise provided for</b> (of radio sets, television sets, telephones, safety belts, or the like B60R) |
| 2/23  | . . . by linear screw mechanisms [7]                                                                                                                                                                                                                                                 | 3/02         | . of hand grips or straps                                                                                                                                               |
| 2/235 | . . . by gear-pawl type mechanisms [7]                                                                                                                                                                                                                                               | 3/04         | . of floor mats                                                                                                                                                         |
| 2/24  | . for particular purposes or particular vehicles [5]                                                                                                                                                                                                                                 | 3/08         | . of receptacles for refuse, e.g. ash-trays (ash-trays <u>per se</u> A24F)                                                                                              |
| 2/26  | . . for children (B60N 2/30 takes precedence) [5]                                                                                                                                                                                                                                    | 3/10         | . of receptacles for food or beverages, e.g. refrigerated (picnic sets A45F)                                                                                            |
| 2/30  | . . Non-dismountable seats storable in a non-use position, e.g. foldable spare seats (convertible for other use B60N 2/32) [5]                                                                                                                                                       | <b>5/00</b>  | <b>Arrangements or devices on vehicles for entrance or exit control of passengers, e.g. turnstiles</b> (turnstiles in general E06B 11/00) [2]                           |
| 2/32  | . . convertible for other use [5]                                                                                                                                                                                                                                                    | <b>99/00</b> | <b>Subject matter not provided for in other groups of this subclass</b> [8]                                                                                             |
| 2/42  | . . the seat constructed to protect the occupant from the effect of abnormal g-forces, e.g. crash or safety seats (B60N 2/26, B60N 2/46, B60N 2/48 take precedence) [5]                                                                                                              |              |                                                                                                                                                                         |
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**B60P VEHICLES ADAPTED FOR LOAD TRANSPORTATION OR TO TRANSPORT, TO CARRY, OR TO COMPRISE SPECIAL LOADS OR OBJECTS** (vehicles with special provisions for transporting patients or disabled persons, or their personal conveyances A61G 3/00)**Note**

Attention is drawn to the Note following the title of class B60.

- 
- |      |                                                                                                                                                                                                                                                                                                                                                   |      |                                                                                                                                                                                                                                 |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1/00 | <b>Vehicles predominantly for transporting loads and modified to facilitate loading, consolidating the load, or unloading</b> (vehicles for carrying harvested crops with means for self-loading or self-unloading A01D 90/00; peculiar to refuse-collecting-vehicles B65F; loading or unloading vehicles by means not incorporated therein B65G) | 1/44 | . having a loading platform thereon raising the load to the level of the load supporting or containing element                                                                                                                  |
| 1/02 | . with parallel up-and-down movement of load supporting or containing element (in combination with tipping B60P 1/04; devices for lifting or lowering bulky or heavy goods for loading or unloading purposes, movable on wheels or the like, e.g. fork-lift trucks, B66F 9/06)                                                                    | 1/54 | . using cranes for self-loading or self-unloading (vehicles for transporting cranes B60P 3/28; mobile or travelling cranes B66C)                                                                                                |
| 1/04 | . with a tipping movement of load supporting or containing element (dredges or soil-shifting machines E02F 3/00)                                                                                                                                                                                                                                  | 1/64 | . the load supporting or containing element being readily removable (caravans, camping, or the like vehicles characterised by living accommodation in the form of a removable body supported by the vehicle unit B60P 3/32) [5] |
| 1/36 | . using endless chains or belts thereon                                                                                                                                                                                                                                                                                                           |      |                                                                                                                                                                                                                                 |

- 3/00 Vehicles adapted to transport, to carry or to comprise special loads or objects** (ambulances or other vehicles with special provisions for transporting patients or disabled persons, or their personal conveyances A61G 3/00; hearses A61G 21/00; fire-fighting land vehicles A62C 27/00; refuse-collecting vehicles B65F 3/00, B65F 7/00; snow-removing vehicles E01H; armoured or armed vehicles F41H 7/00; self-propelled mine-clearing vehicles F41H 11/00)
- 3/022 . for transporting prefabricated buildings or modules thereof, e.g. prefabricated garages or the like (conveying or assembling building elements E04G 21/14) [5]
- 3/025 . the object being a shop, cafeteria or display (the object being a workshop B60P 3/14) [3]
- 3/06 . for carrying vehicles (B60P 3/12 takes precedence; caravans, camping, or like vehicles with vehicle-carrying means B60P 3/32) [3,5]
- 3/12 . for salvaging damaged vehicles
- 3/14 . the object being a workshop for servicing, for maintenance, or for carrying workmen during work (lifting devices for movable platforms or cabins for workmen B66F 11/04)
- 3/16 . for carrying mixed concrete, e.g. having rotatable drums
- 3/20 . for transporting refrigerated goods (air treatment of goods space B60H)
- 3/22 . Tank vehicles (tank aspects B65D 88/00, B65D 90/00, F17C)
- 3/28 . for transporting cranes (vehicles using cranes for self-loading or self-unloading B60P 1/54; mobile or travelling cranes B66C)
- 3/30 . Spraying-vehicles (sprinkling-wagons for fertilising liquid A01C 23/00; for destruction of noxious animals, vermin, or unwanted vegetation A01M; for spraying asphalt, bitumen, tar, or the like E01C; for cleaning streets E01H)
- 3/32 . comprising living accommodation for people, e.g. caravans, camping, or like vehicles (tents or canopies, in general E04H 15/00)
- 3/40 . for carrying long loads, e.g. with separate wheeled load-supporting elements (B60P 3/022 takes precedence; signal devices to be attached to overhanging load B60Q 7/00) [5]
- 3/42 . convertible from one use to a different one (vehicles capable of travelling in or on different media, rail-and-road vehicles B60F)
- 5/00 Arrangements of weighing machines on vehicles** (adapting weighing machines to use on transport vehicles G01G 19/08)
- 7/00 Securing or covering of load on vehicles**
- 7/06 . Securing of load (vehicle retainers B60P 3/06) [5]
- 9/00 Other vehicles predominantly for carrying loads**

**B60Q ARRANGEMENT OF SIGNALLING OR LIGHTING DEVICES, THE MOUNTING OR SUPPORTING THEREOF OR CIRCUITS THEREFOR, FOR VEHICLES IN GENERAL** (arrangement of signalling or lighting devices, the mounting or supporting thereof, for rail vehicles B61D, for cycles B62J, for ships B63B, for aircraft B64D; lighting in general, lighting devices *per se* F21, H05B; signalling in general G08; electric switches *per se* H01H) [4]

#### Notes

- (1) This subclass covers also arrangement or adaptation of lighting switches or signal-initiating means for vehicles. [1,7]
- (2) Attention is drawn to the Note following the title of class B60.

#### Subclass Index

LIGHTING	Acoustic .....	5/00
Interior .....	Portable emergency devices .....	7/00
Other .....	Other .....	9/00, 11/00
SIGNALLING		
Visual .....		1/00

- 1/00 Arrangement of optical signalling or lighting devices, the mounting or supporting thereof or circuits therefor** (for lighting vehicle interior B60Q 3/00) [4]
- 1/02 . the devices being primarily intended to illuminate the way ahead or to illuminate other areas of way or environments
- 1/04 . . the devices being headlights
- 1/14 . . . having dimming means
- 1/26 . the devices being primarily intended to indicate the vehicle, or parts thereof, or to give signals, to other traffic
- 1/30 . . for indicating rear of vehicle, e.g. by means of reflecting surfaces
- 1/32 . . for indicating vehicle sides
- 1/34 . . for indicating change of drive direction (B60Q 1/02 takes precedence)
- 1/44 . . for indicating braking action
- 1/50 . . for indicating other intentions or conditions, e.g. request for waiting or overtaking
- 3/00 Arrangement of lighting devices for vehicle interior, the mounting or supporting thereof or circuits therefor** [4]
- 5/00 Arrangement or adaptation of acoustic signal devices**



**7/00 Arrangement or adaptation of portable emergency signal devices on vehicles** (arrangements for enforcing caution on roads, e.g. marker posts, E01F 9/00; signs G09F, e.g. reflecting warning triangles G09F 13/16)

**9/00 Arrangement or adaptation of signal devices not provided for in one of main groups B60Q 1/00 to B60Q 7/00**

**11/00 Arrangement of monitoring devices for devices provided for in groups B60Q 1/00 to B60Q 9/00 [2]**

**B60R VEHICLES, VEHICLE FITTINGS, OR VEHICLE PARTS, NOT OTHERWISE PROVIDED FOR** (fire prevention, containment or extinguishing specially adapted for vehicles A62C 3/07)

### Note

Attention is drawn to the Note following the title of class B60.

### Subclass Index

VEHICLES OR VEHICLE PARTS OR ACCESSORIES NOT OTHERWISE PROVIDED FOR ..... 16/00, 99/00

ARRANGEMENTS

    Of optical viewing means ..... 1/00

    Of steps or ladders ..... 3/00

ARRANGEMENTS OR ADAPTATIONS

    Of electric installations not otherwise provided for; of sanitation devices ..... 16/00; 15/00

    For advertising ..... 13/00

    Of lubricating systems or devices ..... 17/00

ARRANGEMENTS OF FITTINGS FOR HOLDING OR CARRYING LUGGAGE OR OTHER ARTICLES ..... 5/00 to 11/00

PROTECTION OR SECURITY

    Arrangements concerning the vehicle or passengers; safety belts or body harnesses; anti-theft arrangements ..... 19/00, 21/00; 22/00; 25/00

BODY-FINISHING ELEMENTS ..... 13/00

OTHER VEHICLE FITTINGS ..... 99/00

**1/00 Optical viewing arrangements** (antiglare equipment, e.g. polarising, for windscreens or windows B60J 3/00; devices *per se* G02B; heating arrangements specially adapted for transparent or reflecting areas H05B 3/84) [2]

1/02 . Rear-view mirror arrangements (periscope arrangements B60R 1/00)

1/06 . . mounted on vehicle exterior (B60R 1/08 takes precedence) [1,7]

1/062 . . . with remote control for adjusting position [7]

1/076 . . . yieldable to excessive external force and provided with an indexed use position (B60R 1/062 takes precedence) [7]

1/078 . . . easily removable; mounted for bodily outward movement, e.g. when towing [7]

1/08 . . involving special optical features, e.g. avoiding blind spots

1/12 . Mirror assemblies combined with other articles, e.g. clocks

**3/00 Arrangements of steps, e.g. running-boards** (constructed as superstructure sub-units of road vehicles B62D; ladders E06C)

**5/00 Compartments within vehicle body primarily intended or sufficiently spacious for trunks, suit-cases, or the like** (primarily intended for stowing loads in load-transporting vehicles B60P; arrangements for stowing spare wheels B62D 43/00)

**7/00 Stowing or holding appliances inside of vehicle primarily intended for personal property smaller than suit-cases, e.g. travelling articles, or maps** (for radio sets, television sets, telephones, or the like, mounting of cameras operative during drive, tools, or spare parts B60R 11/00; for receptacles for refuse, food, beverages, cigarettes B60N)

7/04 . in driver or passenger space

7/06 . . mounted on or below dashboards

**9/00 Supplementary fittings on vehicle exterior for carrying loads, e.g. luggage, sports gear or the like [5]**

**11/00 Arrangements for holding or mounting articles, not otherwise provided for**

11/02 . for radio sets, television sets, telephones, or the like; Arrangement of controls thereof (of aerials H01Q)

**13/00 Elements for body-finishing, identifying, or decorating; Arrangements or adaptations for advertising purposes**

13/01 . Liners for load platforms or load compartments [5]

13/02 . Trim mouldings; Ledges; Wall liners; Roof liners (B60R 13/01 takes precedence) [5]

13/04 . Ornamental or guard strips; Ornamental inscriptive devices

13/06 . Sealing strips (sealing arrangements for vehicle windows, windscreens, non-fixed roofs, doors, or similar devices B60J 10/00)

13/08 . Insulating elements, e.g. for sound insulation [4]

**15/00 Arrangements or adaptations of sanitation devices**

- 16/00 Electric or fluid circuits specially adapted for vehicles and not otherwise provided for; Arrangement of elements of electric or fluid circuits specially adapted for vehicles and not otherwise provided for [3]**
- 16/02 . electric [3]
  - 16/023 . . for transmission of signals between vehicle parts or subsystems [8]
  - 16/03 . . for supply of electrical power to vehicle subsystems (for propulsion purposes B60K 1/04; supplying batteries to, or removing batteries from, vehicles B60S 5/00; testing of charge state G01R 31/36) [8]
  - 16/037 . . for occupant comfort [8]
  - 16/04 . . Arrangement of batteries [3,6,8]
  - 16/06 . . for carrying-off electrostatic charges [3]
- 17/00 Arrangements or adaptations of lubricating systems or devices (lubricating in general F16N)**
- 19/00 Wheel guards; Radiator guards; Obstruction removers; Fittings damping bouncing force in collisions (mudguards B62D)**
- 19/02 . Bumpers, i.e. impact receiving or absorbing members for protecting vehicles or fending off blows from other vehicles or objects (initiating brake action by contact of bumper with an external object B60T 7/22; for rail vehicles B61F 19/00; safety equipment for cycles B62J 27/00; integral with waterborne vessels or specially adapted therefor B63B 59/00) [4]
  - 19/03 . . characterised by material, e.g. composite (B60R 19/18 takes precedence) [4]
  - 19/18 . . Means within the bumper to absorb impact [4]
  - 19/24 . . Arrangements for mounting bumpers on vehicles [4]
- 21/00 Arrangements or fittings on vehicles for protecting or preventing injuries to occupants or pedestrians in case of accidents or other traffic risks (safety belts or body harnesses in vehicles B60R 22/00; devices, apparatus or methods for life-saving in general A62B; safety devices for propulsion unit control specially adapted for, or arranged in, vehicles B60K 28/00; seats constructed to protect the occupant from the effect of abnormal g-forces, e.g. crash or safety seats, B60N 2/42; energy-absorbing arrangements for hand wheels for steering vehicles B62D 1/11; energy-absorbing arrangements for vehicle steering columns B62D 1/19; harnessing in aircraft B64D 25/00) [4,5]**
- 21/01 . Electrical circuits for triggering safety arrangements in case of vehicle accidents or impending vehicle accidents [7]
  - 21/013 . . including means for detecting collisions, impending collisions or roll-over [8]
  - 21/0132 . . . responsive to vehicle motion parameters [8]
  - 21/0134 . . . responsive to imminent contact with an obstacle [8]
  - 21/0136 . . . responsive to actual contact with an obstacle [8]
  - 21/015 . . including means for detecting the presence or position of passengers, passenger seats or child seats, e.g. for disabling triggering [8]
  - 21/017 . . including arrangements for providing electric power to the safety arrangements [8]
  - 21/02 . Occupant safety arrangements or fittings [4]
  - 21/04 . . Padded linings for the vehicle interior [4]
  - 21/13 . . Roll-over protection (electrical circuits for triggering safety arrangements B60R 21/01) [4,7]
  - 21/16 . . Inflatable occupant restraints or confinements designed to inflate upon impact or impending impact, e.g. air bags (connection of valves to inflatable elastic bodies B60C 29/00) [4]
  - 21/20 . . . Arrangements for storing inflatable members in their non-use or deflated condition; Arrangement or mounting of air bag modules or components [4,8]
  - 21/23 . . . Inflatable members [8]
  - 21/26 . . . characterised by the inflation fluid source or means to control inflation fluid flow [4]
  - 21/30 . . . . with means to draw ambient air into the flow line and mix such air with the inflation fluid [4]
  - 21/33 . . . Arrangements for non-electric triggering of inflation (electrical circuits for triggering safety arrangements B60R 21/01) [8]
  - 21/34 . Protecting non-occupants of a vehicle, e.g. pedestrians [4]
- 22/00 Safety belts or body harnesses in vehicles (safety belts or body harnesses in general A62B 35/00) [4]**
- 22/02 . Semi-passive restraint systems, e.g. systems applied or removed automatically but not both [4]
  - 22/04 . Passive restraint systems, i.e. systems both applied and removed automatically, e.g. by movement of the vehicle door [4]
  - 22/12 . Construction of belts or harnesses (B60R 21/16 takes precedence) [4]
  - 22/18 . Anchoring devices [4]
  - 22/26 . . secured to the seat [4]
  - 22/28 . incorporating energy-absorbing devices [4]
  - 22/30 . Coupling devices other than buckles, including length-adjusting fittings (buckles A44B 11/00; releasable fastenings in general F16B) [4]
  - 22/32 . Devices for releasing in an emergency, e.g. after an accident [4]
  - 22/34 . Belt retractors, e.g. reels (anchoring devices with means to tension the belt in an emergency B60R 22/18) [4,7]
  - 22/46 . . with means to tension the belt in an emergency (electrical circuits for triggering safety arrangements B60R 21/01) [4,7]
- 25/00 Vehicle fittings for preventing or indicating unauthorised use or theft of vehicles (anti-theft devices for wheel cover discs, rings or the like B60B 7/00; locks or bolts per se E05) [5]**
- 25/02 . operating on steering mechanism
  - 25/04 . preventing use of engine (engines, fittings for normal use, see the relevant classes for such engines or fittings)
  - 25/06 . operating on transmission
  - 25/08 . operating on brake
  - 25/10 . actuating a signalling device
- 99/00 Subject matter not provided for in other groups of this subclass [2009.01]**

**B60S SERVICING, CLEANING, REPAIRING, SUPPORTING, LIFTING, OR MANOEUVRING OF VEHICLES, NOT OTHERWISE PROVIDED FOR****Note**

Attention is drawn to the Note following the title of class B60.

**Subclass Index**

CLEANING.....	1/00, 3/00	LIFTING OR MANOEUVRING	
SERVICING, MAINTENANCE, REPAIR.....	5/00	Devices integral with, or separate from, vehicle.....	9/00, 13/00
		Vehicle modifications to receive separate devices.....	11/00

<b>1/00</b>	<b>Cleaning of vehicles</b> (by apparatus not integral with vehicle B60S 3/00; cleaning in general B08B; de-icing of aircraft B64D; heating arrangements specially adapted for transparent or reflecting areas H05B 3/84)	<b>5/00</b>	<b>Servicing, maintaining, repairing, or refitting of vehicles</b> (vehicles adapted to carry a workshop for servicing or maintenance B60P 3/14; servicing rail locomotives B61K)
1/02	. Cleaning windscreens, windows, or optical devices	<b>9/00</b>	<b>Ground-engaging vehicle fittings for supporting, lifting, or manoeuvring the vehicle, wholly or in part, e.g. built-in jacks</b> (auxiliary drives from a ground wheel B60K 25/00; track vehicles with additional or alternative ground wheels B62D 55/00; vehicles with ground-engaging propulsion means, e.g. walking members, B62D 57/00; lifting devices in general B66F; supports in general F16M)
1/04	. . Wipers or the like, e.g. scrapers		
1/06	. . . characterised by the drive (producing other than swinging movement B60S 1/44)	<b>11/00</b>	<b>Vehicle modifications for receiving separate lifting, supporting, or manoeuvring devices</b>
1/08	. . . . electrically driven	<b>13/00</b>	<b>Vehicle-manoeuving devices separate from the vehicle</b> (vehicle-lifting or pushing devices B66F)
1/32	. . . characterised by constructional features of wiper blades or arms		
1/38	. . . . Wiper blades		
1/44	. . . the wiper blades having other than swinging movement, e.g. rotary		
1/46	. . using liquid; Windscreen washers		
1/56	. . specially adapted for cleaning other parts or devices than front windows or windscreens		
<b>3/00</b>	<b>Vehicle cleaning apparatus not integral with vehicles</b> (cleaning in general B08B; cleaning peculiar to waterborne vessels B63B 57/00, B63B 59/00; ground equipment for cleaning aircraft B64F 5/00)		
3/04	. for exteriors of land vehicles		
3/06	. . with rotary bodies contacting the vehicles		

**B60T VEHICLE BRAKE CONTROL SYSTEMS OR PARTS THEREOF; BRAKE CONTROL SYSTEMS OR PARTS THEREOF, IN GENERAL** (control of electrodynamic brake systems B60L 7/00; conjoint control of brakes and other drive units of vehicles B60W); **ARRANGEMENT OF BRAKING ELEMENTS ON VEHICLES IN GENERAL; PORTABLE DEVICES FOR PREVENTING UNWANTED MOVEMENT OF VEHICLES; VEHICLE MODIFICATIONS TO FACILITATE COOLING OF BRAKES** [1,8]**Note**

In this subclass, the following expression is used with the meaning indicated:

- “brake control systems” includes brake control systems for vehicles or of general applicability.

**Subclass Index**

IMMOBILISATION		Kinds of brake control	
Portable devices.....	3/00	initiating means; varying	
BRAKING		braking force or its distribution	
Kind of braking and corresponding		according to road or load	
arrangements.....	1/00	conditions .....	7/00; 8/00
Vehicle modifications for cooling		continuous braking .....	10/00
brakes .....	5/00	transmission of control	
		between initiating means and	
		brakes.....	11/00, 13/00

Parts or accessories for fluid-pressure brake control:

valve structure, disposition, and operation..... 15/00  
other parts or accessories ..... 17/00

**1/00 Arrangements of braking elements, i.e. of those parts where braking effect occurs**

**3/00 Portable devices for preventing unwanted movement of vehicles, e.g. chocks**

**5/00 Vehicle modifications to facilitate cooling of brakes**

#### **Brake control systems or parts thereof**

**7/00 Brake-action initiating means**

7/02 . for personal initiation

7/04 . . foot-actuated

7/12 . for automatic initiation; for initiation not subject to will of driver or passenger

7/14 . . operated upon collapse of driver

7/16 . . operated by remote control, i.e. initiating means not mounted on vehicle

7/20 . . specially adapted for trailers, e.g. in case of uncoupling of trailer (inertia-actuated overrun brakes B60T 13/00)

7/22 . . initiated by contact of vehicle, e.g. bumper, with an external object, e.g. another vehicle [4]

**8/00 Arrangements for adjusting wheel-braking force to meet varying vehicular or ground-surface conditions, e.g. limiting or varying distribution of braking force (by changing number of effective brake cylinders in power brake systems B60T 17/00)**

8/17 . Using electrical or electronic regulation means to control braking (safety devices for propulsion unit control responsive to, or preventing, skidding of wheels B60K 28/16) [8]

#### **Note**

When classifying in group B60T 8/17, classification is also made in appropriate places in groups B60T 8/18, B60T 8/24, B60T 8/26 or B60T 8/32 if other aspects than electronic control are of interest. [8]

8/18 . responsive to vehicle weight or load, e.g. load distribution (B60T 8/26 takes precedence; responsive to weight and speed condition B60T 8/58) [4]

8/24 . responsive to vehicle inclination or change of direction, e.g. negotiating bends

8/26 . characterised by producing differential braking between front and rear wheels

8/32 . responsive to a speed condition, e.g. acceleration or deceleration (B60T 8/26 takes precedence) [4]

8/34 . . having a fluid pressure regulator responsive to a speed condition [4]

8/36 . . . including a pilot valve responding to an electromagnetic force [4]

8/40 . . . comprising an additional fluid circuit including fluid pressurising means for modifying the pressure of the braking fluid, e.g. including wheel driven pumps for detecting a speed condition, or pumps which are controlled by means independent of the braking system [4]

8/42 . . . having expanding chambers for controlling pressure [4]

8/44 . . . co-operating with a power-assist booster means associated with a master cylinder for controlling the release and reapplication of brake pressure through an interaction with the power assist device [4]

8/48 . . . connecting the brake actuator to an alternative or additional source of fluid pressure [4]

8/52 . . Torque sensing, i.e. wherein the braking action is controlled by forces producing or tending to produce a twisting or rotating motion on a braked rotating member [4]

8/54 . . by mechanical means [4]

8/56 . . having means for changing the coefficient of friction [4]

8/58 . . responsive to speed and another condition or to plural speed conditions [4]

#### **Note**

In this group, a single condition which is itself responsive to, or representative of, another single condition is not regarded as plural conditions. [4]

8/60 . . . using electrical circuitry for controlling the braking action, the circuitry deriving a control function relating to the dynamic of the braked vehicle or wheel [4]

8/72 . . responsive to a difference between a speed condition, e.g. deceleration, and a fixed reference (B60T 8/60 takes precedence) [4]

8/86 . . wherein the brakes are automatically applied in accordance with a speed condition and having means for overriding the automatic braking device when a skid condition occurs [4]

8/88 . . with failure responsive means, i.e. means for detecting and indicating faulty operation of the speed responsive control means [4]

**10/00 Control or regulation for continuous braking making use of fluid or powdered medium, e.g. for use when descending a long slope [4]**

**11/00 Transmitting braking action from initiating means to ultimate brake actuator without power assistance or drive or where such assistance or drive is irrelevant [5]**

11/10 . transmitting by fluid means, e.g. hydraulic [5]

11/16 . . Master control, e.g. master cylinders [5]

**13/00 Transmitting braking action from initiating means to ultimate brake actuator with power assistance or drive; Brake systems incorporating such transmitting means, e.g. air-pressure brake systems**

13/10 . with fluid assistance, drive, or release

13/24 . . the fluid being gaseous

13/46 . . . Vacuum systems

13/52 . . . . indirect, i.e. vacuum booster units

13/56 . . . . with two-chamber booster units

13/57 . . . . characterised by constructional features of control valves [5]

13/66 . . Electrical control in fluid-pressure brake systems

13/68 . . . by electrically-controlled valves

- |       |                                                                                                                                                                                                           |       |                                                                                                                                                                      |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15/00 | Construction, arrangement, or operation of valves incorporated in power brake systems and not covered by groups B60T 11/00 or B60T 13/00 (valve structures responsive to a speed condition B60T 8/34) [4] | 17/00 | Component parts, details, or accessories of brake systems not covered by groups B60T 8/00, B60T 13/00 or B60T 15/00, or presenting other characteristic features [4] |
|       |                                                                                                                                                                                                           | 17/18 | . Safety devices; Monitoring                                                                                                                                         |

**B60V**     **AIR-CUSHION VEHICLES** (devices for short-distance movement of heavy loads by providing a high-pressure fluid cushion, supplied from an independent source, between load and ground B65G 7/00)

**Note**

In this subclass, the following expression is used with the meaning indicated:

- “air-cushion vehicles” includes all vehicles which are wholly or partly supported on land or water by air or other gaseous cushions.

**1/00**     **Air-cushion vehicles** (land vehicles, waterborne vessels, or aircraft adapted or modified to travel on air cushions B60V 3/00)

**3/00**     **Land vehicles, waterborne vessels, or aircraft, adapted or modified to travel on air cushions**

**B60W**     **CONJOINT CONTROL OF VEHICLE SUB-UNITS OF DIFFERENT TYPE OR DIFFERENT FUNCTION; CONTROL SYSTEMS SPECIALLY ADAPTED FOR HYBRID VEHICLES; ROAD VEHICLE DRIVE CONTROL SYSTEMS FOR PURPOSES NOT RELATED TO THE CONTROL OF A PARTICULAR SUB-UNIT** [8]

**Notes**

- (1) This subclass does not cover the control of a single sub-unit; such control is classified in the relevant place for the sub-unit, e.g. F02D, F16H. Where a single sub-unit is controlled by means of signals or commands from other sub-units, the control of this single sub-unit is classified in the relevant place for this sub-unit. For example, the control of variable-ratio gearing by means of signals from the engine or the accelerator is classified in the subclass for gearing, F16H. [8]
- (2) Conjoint control of driveline units, e.g. engines, and variable-ratio gearing occurring only transiently during ratio shift and being also characterised by the control of the gearing is also classified in the subclass for gearing, F16H. [8]
- (3) In groups B60W 20/00 to B60W 50/00, the first place priority rule is applied, i.e. at each hierarchical level, classification is made in the first appropriate place. [8]
- (4) When classifying in group B60W 10/00, classification must also be made in groups B60W 20/00 to B60W 50/00 in order to identify the purpose or use of the control. [8]
- (5) In this subclass, the following terms are used with the meanings indicated: [8]
  - “conjoint control” means that a programmed or condition-responsive automatic controller on board the vehicle, embodying control logic for vehicle sub-units of different type or different function, sends control signals to actuators of two or more vehicle sub-units, so that the sub-units act together to solve a particular problem or in response to a particular driving condition; [8]
  - “drive control system” means an electronic system in a road vehicle for automatically controlling the movement of that vehicle in order to take certain actions; [8]
  - “road vehicle” means a vehicle normally under the control of a human driver for transportation on roads, e.g. an automobile, truck or bus; [8]
  - “sub-unit” means one of the following vehicle systems: propulsion system, clutch system, change-speed gearing system, system for distributing drive torque between front and rear axles, axle differential system, brake system, steering system, suspension system, energy storage means, fuel cells or auxiliary equipment. [8]

**10/00**     **Conjoint control of vehicle sub-units of different type or different function** (for propulsion of purely electrically-propelled vehicles with power supplied within the vehicle B60L 11/00) [8]

**Note**

When classifying in this group, each controlled sub-unit must be separately identified by a classification in a relevant place in this group. [8]

- |       |                                                 |
|-------|-------------------------------------------------|
| 10/02 | . including control of driveline clutches [8]   |
| 10/04 | . including control of propulsion units [8]     |
| 10/06 | . . including control of combustion engines [8] |

- 10/08 . . including control of electric propulsion units, e.g. motors or generators [8]
- 10/10 . including control of change-speed gears [8]
- 10/12 . including control of differentials [8]
- 10/18 . including control of braking systems [8]
- 10/20 . including control of steering systems [8]
- 10/22 . including control of suspension systems [8]
- 10/24 . including control of energy storage means [8]
- 10/26 . . for electrical energy, e.g. batteries or capacitors [8]
- 10/28 . including control of fuel cells [8]
- 10/30 . including control of auxiliary equipment, e.g. air-conditioning compressors or oil pumps [8]
- 20/00 Control systems specially adapted for hybrid vehicles, i.e. vehicles having two or more prime movers of more than one type, e.g. electrical and internal combustion motors, all used for propulsion of the vehicle [8]**
- 30/00 Purposes of road vehicle drive control systems not related to the control of a particular sub-unit, e.g. of systems using conjoint control of vehicle sub-units [8]**
  - 30/02 . Control of vehicle driving stability [8]
  - 30/04 . . related to roll-over prevention [8]
  - 30/06 . Automatic manoeuvring for parking [8]
  - 30/08 . Predicting or avoiding probable or impending collision [8]
  - 30/10 . Path keeping [8]
  - 30/12 . . Lane keeping [8]
- 30/14 . Cruise control [8]
- 30/16 . . Control of distance between vehicles, e.g. keeping a distance to preceding vehicle [8]
- 30/18 . Propelling the vehicle [8]
- 30/20 . . Reducing vibrations in the driveline [8]
- 40/00 Estimation or calculation of driving parameters for road vehicle drive control systems not related to the control of a particular sub-unit [8]**
  - 40/02 . related to ambient conditions [8]
  - 40/04 . . Traffic conditions [8]
  - 40/06 . . Road conditions [8]
  - 40/08 . related to drivers or passengers [8]
  - 40/10 . related to vehicle motion [8]
  - 40/12 . related to parameters of the vehicle itself [8]
- 50/00 Details of control systems for road vehicle drive control not related to the control of a particular sub-unit [8]**
  - 50/02 . Ensuring safety in case of control system failures, e.g. by diagnosing, circumventing or fixing failures [8]
  - 50/04 . Monitoring the functioning of the control system [8]
  - 50/06 . Improving the dynamic response of the control system, e.g. improving the speed of regulation or avoiding hunting or overshoot [8]
  - 50/08 . Interaction between the driver and the control system [8]

**B61 RAILWAYS****Note**

In this class, the following expression is used with the meaning indicated:

- “railway systems” covers:
  - (a) systems in which trains or individual passenger vehicles or load carriers run on, or are guided by, ground or elevated tracks defined by rails, ropes, cables, or other guiding elements for wheels, rollers, or sliding anti-friction devices (permanently attached to a continuous traction element B65G 17/00);
  - (b) systems in which carriers or impellers for persons or loads are attached to, e.g. suspended from, a guided traction rope or cable which determines their path of movement (chain conveyers, scraper conveyers B65G 17/00, B65G 19/00);
  - (c) power and free systems of either of the above types in which vehicles, load-carriers, or loads may be selectively coupled to, or uncoupled from, continuous traction members, e.g. cables, chains.

**B61B RAILWAY SYSTEMS; EQUIPMENT THEREFOR NOT OTHERWISE PROVIDED FOR** (lifts or hoists, elevators, escalators, moving walkways B66B) [4]

**Note**

In this subclass, the following terms are used with the meanings indicated:

- “rope railways” covers railways using cables or chains as traction or suspension means;
- “ropes”, “cables”, or “chains” are equivalent unless specifically mentioned. [2]

**Subclass Index**

CONVENTIONAL SYSTEMS .....	1/00	Trackless.....	11/00
ELEVATED SYSTEMS.....	3/00, 5/00	Power-and-free systems .....	10/00
CABLE SYSTEMS		Component parts .....	12/00
Flexible suspended track; rigid track.....	7/00; 9/00	OTHER SYSTEMS; COMBINATIONS .....	13/00; 15/00

**1/00 General arrangement of stations, platforms, or sidings; Railway networks; Rail-vehicle marshalling systems** (shunting humps or shunting devices B61J; construction of platforms E01F 1/00; time-tables G09D)

**11/00 Ski-lift, sleigh-lift or like trackless systems with guided towing cables only**

**12/00 Component parts, details, or accessories for rope railways or power-and-free systems not provided for in groups B61B 7/00 to B61B 11/00** (railway brakes B61H; turntables B61J 1/00) [2]

**Elevated railways**

**3/00 Elevated railway systems with suspended vehicles** (with suspended flexible tracks B61B 7/00; saddle or like balanced type with monorail B61B 13/04; with propelling cables and for transporting materials B65G; tracks therefor E01B 25/00)

**5/00 Elevated railway systems without suspended vehicles** (with monorail B61B 13/04; tracks therefor E01B 25/00)

**Other railway systems; Combinations of systems**

**13/00 Other railway systems**

- 13/02 . Rack railways
- 13/04 . Monorail systems
- 13/08 . Sliding or levitation systems (magnetic suspension or levitation for vehicles, *per se* B60L 13/04; vehicles with air cushions between rails and vehicles B60V 3/00) [4]
- 13/10 . Tunnel systems (pneumatic tube conveyers B65G)
- 13/12 . Systems with propulsion devices between or alongside the rails, e.g. pneumatic systems (cable traction B61B 9/00; car-shunting devices B61J)

**15/00 Combinations of railway systems**

**Rope railways; Power-and-free systems** [2]

**7/00 Rope railway systems with suspended flexible tracks**

**9/00 Tramway or funicular systems with rigid track and cable traction** (haulage clips B61B 12/00; shunting devices with cable traction B61J) [2]

**10/00 Power-and-free systems** (ski-lift, sleigh-lift or like trackless systems with guided towing cables only B61B 11/00) [2]

**B61C LOCOMOTIVES; MOTOR RAILCARS** (vehicles in general B60; frames or bogies B61F; special railroad equipment for locomotives B61J, B61K)

**Note**

This subclass covers:

- general design features or items of locomotives and motor railcars not otherwise provided for;
- non-electric features of electric locomotives.

**Subclass Index**

**LOCOMOTIVES AND RAILCARS IN GENERAL**

Characterised by motive power:	
steam; electric; IC or gas	
turbine .....	1/00; 3/00; 5/00
other .....	7/00
Characterised by transmission system .....	9/00
Characterised by type of means applying tractive effort .....	11/00

**LOCOMOTIVES AND RAILCARS FOR**

**PARTICULAR USES** ..... 13/00

**DETAILS AND ACCESSORIES**

For particular transmission systems .....	9/00
For particular propulsion means .....	11/00
General and not otherwise provided for .....	15/00, 17/00

**FILLING STATIONS FOR AIR OR STEAM**

**ACCUMULATORS** ..... 8/00

**Locomotives or motor railcars in general or characterised by the type of motive power plant used**

<b>1/00</b>	<b>Steam locomotives or railcars</b> (characterised by power transmissions B61C 9/00; engines F01; boilers F22B)
<b>3/00</b>	<b>Electric locomotives or railcars</b> (characterised by power transmission B61C 9/00; electrical features B60L, H02)
<b>5/00</b>	<b>Locomotives or motor railcars with IC engines or gas turbines</b> (characterised by power transmission B61C 9/00; engines F02)
<b>7/00</b>	<b>Other locomotives or motor railcars characterised by the type of motive power plant used; Locomotives or motor railcars with two or more different kinds or types of motive power</b>

<b>8/00</b>	<b>Filling stations for steam- or pneumatic-accumulator locomotives or motor railcars</b>
<b>9/00</b>	<b>Locomotives or motor railcars characterised by the type of transmission system used; Transmission systems specially adapted for locomotives or motor railcars</b> (machine elements F16)

**Locomotives or motor railcars characterised by the type of means applying the tractive effort, or by their application to special railway systems or purposes**

<b>11/00</b>	<b>Locomotives or motor railcars characterised by the type of means applying the tractive effort; Arrangement or disposition of running gear other than normal driving wheels</b> (construction of wheels B60B)
<b>13/00</b>	<b>Locomotives or motor railcars characterised by their application to special systems or purposes</b> (B61C 11/00 takes precedence; self-propelled scaffold cars, break-down cranes, inspection trolleys B61D 15/00; general design of track recording vehicles B61K 9/00)

**Details or accessories not otherwise provided for**

<b>15/00</b>	<b>Maintaining or augmenting the starting or braking power by auxiliary devices and measures; Preventing wheel slippage; Controlling distribution of tractive effort between driving wheels</b> (propelling locomotives or motor railcars by special means B61C 11/00; driving wheels with non-slipping devices B60B; adjusting wheel-braking force to prevent wheel slippage B60T 8/00; brakes B61H; wetting or lubricating rails B61K)
<b>17/00</b>	<b>Arrangement or disposition of parts; Details or accessories not otherwise provided for; Use of control gear and control systems [2]</b>

**B61D BODY DETAILS OR KINDS OF RAILWAY VEHICLES** (vehicles in general B60; adaptation of vehicles to special systems B61B; underframes B61F)

**Subclass Index**

**KINDS OF VEHICLES**

Passenger; goods; tank; mine .....	1/00; 3/00; 5/00; 11/00
Hopper; tipping .....	7/00; 9/00

Tramway .....	13/00
Other .....	15/00



## BODY DETAILS AND ACCESSORIES

## Details

bodywork: general; doors;  
steps; windows; movable  
roofs; leading means ..... 17/00; 19/00;  
23/00; 25/00; 39/00; 47/00

interior fittings: sleeping;  
seating; sanitation; air-  
conditioning; lighting; other ..... 31/00; 33/00;  
35/00; 27/00; 29/00; 37/00

devices using movement of

vehicle ..... 43/00

other ..... 49/00

## Accessories

signs, ticket-holders ..... 41/00

covers; securing load ..... 39/00; 45/00

other ..... 49/00

**Kinds of railway or tramway vehicles**

- 1/00 Carriages for ordinary railway passenger traffic** (mine cars B61D 11/00; tramcars B61D 13/00)
- 3/00 Wagons or vans** (tank wagons B61D 5/00; hopper wagons B61D 7/00; tipping wagons B61D 9/00; mine cars B61D 11/00; vehicles adapted for animal transportation B60P 3/00)
- 5/00 Tank wagons for carrying fluent materials** (tank aspects B65D 88/00, B65D 90/00, F17C)
- 7/00 Hopper cars** (flat-bottomed cars convertible into hoppers B61D 3/00) [2]
- 9/00 Tipping wagons**
- 11/00 Mine cars** (B61D 5/00 to B61D 9/00 take precedence)
- 13/00 Tramway vehicles**
- 15/00 Other railway vehicles, e.g. scaffold cars; Adaptations of vehicles for use on railways** (conveyer frames mounted for movement on rail tracks B65G 41/00; wheeled machines used in permanent-way construction or maintenance E01B)

**25/00 Window arrangements peculiar to rail vehicles**

(vehicle window arrangements in general B60J; cleaning vehicle windows B60S; heating arrangements specially adapted for transparent or reflecting areas H05B 3/84)

**Heating, cooling, ventilating, lighting, or air-conditioning, peculiar to rail vehicles****27/00 Heating, cooling, ventilating, or air-conditioning****29/00 Arrangement of lighting devices for rail vehicles****Furniture or furnishings peculiar to rail vehicles****31/00 Sleeping accommodation****33/00 Seats****35/00 Sanitation****37/00 Other furniture or furnishings****Other details peculiar to rail vehicles****39/00 Wagon or like covers; Tarpaulins; Movable or foldable roofs****41/00 Indicators for reserved seats; Warning or like signs; Devices or arrangements in connection with tickets, e.g. ticket holders; Holders for cargo tickets or the like****43/00 Devices for using the energy of the movements of the vehicles****45/00 Means or devices for securing or supporting the cargo, including protection against shocks****47/00 Loading or unloading devices combined with vehicles, e.g. loading platforms** (combined with vehicles in general B60P)**49/00 Other details****Body details of railway or tramway vehicles**

- 17/00 Construction details of vehicle bodies** (for tank wagons B61D 5/00; for hopper cars B61D 7/00; body details specially adapted for tipping wagons B61D 9/00; for mine cars B61D 11/00)
- 17/04 . with bodies of metal; with composite, e.g. metal and wood, body structures
- 19/00 Door arrangements peculiar to rail vehicles** (vehicle door arrangements in general B60J; vehicle locks E05B 65/12; door-operating mechanisms E05F)
- 23/00 Construction of steps for railway vehicles** (ladders in general E06C)

**B61F RAIL VEHICLE SUSPENSIONS, E.G. UNDERFRAMES, BOGIES, ARRANGEMENTS OF WHEEL AXLES; RAIL VEHICLES FOR USE ON TRACKS OF DIFFERENT WIDTH; PREVENTING DERAILING; WHEELS GUARDS; OBSTRUCTION REMOVERS OR THE LIKE** (for vehicles in general B60; axles, wheels B60B; vehicle tyres B60C)

**Subclass Index**

## FRAMES, RUNNING GEAR

Underframes, bogies, connections  
therebetween ..... 1/00, 3/00,  
5/00

For different gauges ..... 7/00

For preventing derailment ..... 9/00

Track-engaging means other than

wheels ..... 11/00

WHEEL ARRANGEMENTS ..... 13/00

AXLE-BOXES; FORM, MOUNTING;

LUBRICATION THEREOF ..... 15/00; 5/00;  
17/00

**B61F – B61H**

WHEEL GUARDS, BUMPERS,  
OBSTRUCTION REMOVERS ..... 19/00

SUBJECT MATTER NOT PROVIDED FOR  
IN OTHER GROUPS OF THIS SUBCLASS ..... 99/00

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| <p><b>1/00</b> Underframes (making railway vehicle underframes by forging or pressing B21K 7/00)</p> <p><b>3/00</b> Types of bogies (B61F 5/00 takes precedence)</p> <p><b>5/00</b> Constructional details of bogies; Connections between bogies and vehicle underframes; Arrangements or devices for adjusting or allowing self-adjustment of wheel axles or bogies when rounding curves</p> <p>5/02 . Arrangements permitting limited transverse relative movements between vehicle underframe or bolster and bogie; Connections between underframes and bogies</p> <p><b>7/00</b> Rail vehicles equipped for use on tracks of different width</p> <p><b>9/00</b> Rail vehicles characterised by means for preventing derailing, e.g. by use of guide wheels</p> | <p><b>11/00</b> Rail vehicles characterised by rail-engaging elements other than wheels, e.g. balls</p> <p><b>13/00</b> Rail vehicles characterised by wheel arrangements, not otherwise provided for</p> <p><b>15/00</b> Axle-boxes (mounting or securing axle-boxes B61F 5/00; lubrication B61F 17/00; bearings in general F16C)</p> <p><b>17/00</b> Lubrication specially adapted for axle-boxes of rail vehicles (lubrication in general F16N)</p> <p><b>19/00</b> Wheel guards; Bumpers; Obstruction removers or the like (for vehicles in general B60R 19/00; mailbag catchers B61K 1/00)</p> <p><b>99/00</b> Subject matter not provided for in other groups of this subclass [8]</p> |
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**B61G COUPLINGS SPECIALLY ADAPTED FOR RAILWAY VEHICLES; DRAUGHT OR BUFFING APPLIANCES SPECIALLY ADAPTED FOR RAILWAY VEHICLES**

**Couplings peculiar to railway vehicles**

- 1/00** Couplings comprising interengaging parts of different shape or form and having links, bars, pins, shackles, or hooks as coupling means
- 3/00** Couplings comprising mating parts of similar shape or form which can be coupled without the use of any additional element or elements
- 5/00** Couplings not otherwise provided for

**7/00** Details or accessories

**Draught or buffing appliances peculiar to railway or tramway vehicles**

- 9/00** Draw-gear
- 11/00** Buffers (springs F16F)

**B61H BRAKES OR OTHER RETARDING APPARATUS PECULIAR TO RAIL VEHICLES; ARRANGEMENTS OR DISPOSITIONS OF BRAKES OR OTHER RETARDING APPARATUS IN RAIL VEHICLES** (electrodynamic braking of vehicles B60L, in general H02K; arrangements in rail vehicles for adjusting wheel-braking force to meet varying vehicular or permanent-way conditions B60T 8/00; transmitting braking action from initiating means to ultimate brake actuator with power assistance or drive, brake systems incorporating such transmitting means, e.g. air-pressure brake systems, B60T 13/00; construction, arrangement, or operation of valves incorporated in power brake systems B60T 15/00; component parts, details, or accessories of brake systems B60T 17/00; brakes in general F16D)

**Subclass Index**

BRAKES ACTING ON TRACK; BRAKES  
FOR SPECIAL PURPOSES..... 7/00; 9/00

ARRANGEMENTS OF BRAKES

Acting on wheels ..... 1/00, 3/00,  
5/00

Other arrangements, combinations..... 11/00

ACTUATION ..... 13/00

COMPENSATING FOR WEAR ..... 15/00

- |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1/00</b> Applications or arrangements of brakes with a braking member or members co-operating with the periphery of the wheel rim, a drum, or the like (self-applying brakes B61H 11/00; combinations of different types of brakes B61H 11/00; wheels B60B)</p> | <p><b>3/00</b> Applications or arrangements of brakes with an outwardly-movable braking member or members co-operating with the inner surface of a drum or the like (self-applying brakes B61H 11/00; combinations of different types of brakes B61H 11/00)</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>5/00</b> Applications or arrangements of brakes with substantially-radial braking surfaces pressed together in axial direction, e.g. disc brakes (self-applying brakes B61H 11/00; combinations of different types of brakes B61H 11/00)</p> <p><b>7/00</b> Brakes with braking members co-operating with the track (positive railway stops or track brakes secured to permanent way B61K 7/00)</p> <p><b>9/00</b> Brakes characterised by, or modified for, their application to special railway systems or purposes</p> | <p><b>11/00</b> Applications or arrangements of braking or retarding apparatus not otherwise provided for; Combinations of apparatus of different kinds or types</p> <p><b>13/00</b> Actuating rail-vehicle brakes (self-applying brakes B61H 11/00; wear-compensating mechanisms B61H 15/00; arrangements for adjusting wheel-braking force in response to vehicle weight or load B60T 8/18)</p> <p><b>15/00</b> Wear-compensating mechanisms, e.g. slack adjusters</p> |
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**B61J SHIFTING OR SHUNTING OF RAIL VEHICLES** (shifting vehicles in general B60S; marshalling systems B61B)

- 1/00** Turntables; Traversers; Transporting rail vehicles on other rail vehicles or dollies (shunting B61J 3/00)
- 3/00** Shunting or short-distance haulage devices; Similar devices for hauling trains on steep gradients or as starting aids; Car-propelling devices therefor (overhead travelling cranes combined with auxiliary means for shunting railway vehicles B66C 17/00; capstans B66D)
- 99/00** Subject matter not provided for in other groups of this subclass [8]

**B61K OTHER AUXILIARY EQUIPMENT FOR RAILWAYS** (energy-storing brakes B61H; protection of permanent way against weather influences E01B; rail cleaning, snow ploughs E01H)

**Subclass Index**

**EQUIPMENT RELATED TO TRACK**

Wetting or lubricating; testing;  
stops, retarding; other ..... 3/00; 9/00;  
7/00; 13/00

Wetting or lubrication of wheels;  
testing ..... 3/00; 9/00  
Servicing locomotives ..... 11/00  
Other ..... 13/00

**EQUIPMENT RELATED TO VEHICLES**

Transferring load, coupling, or  
slipping, during movement; profile  
gauges; derailling, re-railing ..... 1/00; 9/00;  
5/00

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1/00</b> Transferring passengers, articles, or freight to and from moving trains; Slipping or coupling vehicles from or to moving trains</p> <p><b>3/00</b> Wetting or lubricating rails or wheel flanges</p> <p><b>5/00</b> Apparatus for placing vehicles on the track; Derailers; Lifting or lowering rail vehicle axles or wheels (hoisting apparatus B66)</p> <p><b>7/00</b> Railway stops fixed to permanent way; Track brakes or retarding apparatus fixed to permanent way; Sand tracks or the like (skids, wedges, vehicle-mounted scotch blocks B61H; operating mechanisms for track-mounted scotch-blocks B61L)</p> | <p><b>9/00</b> Railway vehicle profile gauges; Detecting or indicating overheating of components; Apparatus on locomotives or cars to indicate bad track sections; General design of track recording vehicles</p> <p><b>11/00</b> Serving peculiar to locomotives, e.g. filling with, or emptying of, water, sand, or the like at the depots (lifting or lowering axles or wheels B61K 5/00; filling stations for steam or pneumatic accumulator locomotives B61C 8/00; water or fuel supply fittings on locomotives B61C 17/00; refuelling locomotives with solid fuels B65G 67/02; washing or cleaning boilers F28G)</p> <p><b>13/00</b> Other auxiliaries or accessories for railways (safety belts or body harnesses A62B 35/00)</p> |
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**B61L** **GUIDING RAILWAY TRAFFIC; ENSURING THE SAFETY OF RAILWAY TRAFFIC** (power supply lines for electrically propelled vehicles B60M; arrangement of signalling devices, the mounting or supporting thereof or circuits therefor, for vehicles in general B60Q; brakes or auxiliary equipment B61H, B61K; point or crossing construction E01B; insulated rail joints E01B 11/00; optical devices in general G02; controlling in general G05; electric communication technique H04)

### Note

This subclass covers:

- devices along the route interacting with trains;
- signals;
- operation of points and signals;
- interlocking;
- block systems;
- level crossings.

## Subclass Index

DEVICES ALONG THE ROUTE ACTUATED BY, OR ACTING ON, THE TRAIN AT ITS PASSAGE .....	1/00; 3/00	points and signals interlocking by a single device.....	19/00
RAILWAY SIGNALLING, SWITCHING, BLOCKING, AND INTERLOCKING		Scotch-blocks: local operation mechanisms; remote control.....	5/00; 7/00
Signals		Station blocking .....	21/00
<u>per se</u> , local operation mechanisms; remote control; control by passage of vehicles.....	5/00; 7/00; 13/00	TRAFFIC	
Points		Central control systems; recording and indicating traffic data; self- signalling.....	27/00; 25/00; 15/00
local operation mechanisms; remote control; control by passage of vehicles .....	5/00; 7/00; 11/00	Safety: means concerning railway traffic; protection of road crossings.....	23/00; 29/00
switching systems of classification yards .....	17/00	ILLUMINATION OF POINTS, FORM SIGNALS, AND GATES .....	9/00
		SUBJECT MATTER NOT PROVIDED FOR IN OTHER GROUPS OF THIS SUBCLASS .....	99/00

<b>1/00</b>	<b>Devices along the route controlled by interaction with the vehicle or vehicle train</b> (detonators B60L 5/00; operation of points or signals by passage of the vehicle B60L 11/00, B61L 13/00; automatically-operated track circuits specially adapted for section blocking for controlling traffic B61L 23/00; central traffic control systems controlled by train B61L 27/00; operation of gates, or gates and signals, by approaching vehicle B61L 29/00; rail joints E01B 11/00)	<b>13/00</b>	<b>Operation of signals from the vehicle or by the passage of the vehicle</b>
<b>3/00</b>	<b>Devices along the route for controlling devices on the vehicle or vehicle train, e.g. to release brake, to operate a warning signal</b>	<b>15/00</b>	<b>Indicators provided on the vehicle or vehicle train for signalling purposes</b>
<b>5/00</b>	<b>Local operating mechanisms for points or track-mounted scotch-blocks</b> (track-mounted scotch-blocks <i>per se</i> B61K); <b>Visible or audible signals; Local operating mechanisms for visible or audible signals</b> (B61L 11/00 takes precedence)	<b>17/00</b>	<b>Switching systems for classification yards</b> (rail brakes B61K)
<b>7/00</b>	<b>Remote control of local operating means for points, signals, or track-mounted scotch-blocks</b> (B61L 11/00 takes precedence; interlocking arrangements B61L 19/00)	<b>19/00</b>	<b>Arrangements for interlocking between points and signals by means of a single interlocking device</b> (station block arrangements B61L 21/00)
<b>9/00</b>	<b>Illumination specially adapted for points, form signals, or gates</b> (lighting in general F21)	<b>21/00</b>	<b>Station blocking between signal boxes in one yard</b> (interlocking between points and signals by means of a single interlocking device B61L 19/00)
<b>11/00</b>	<b>Operation of points from the vehicle or by the passage of the vehicle</b>	<b>23/00</b>	<b>Control, warning or like safety means along the route or between vehicles or vehicle trains [4]</b>
		<b>25/00</b>	<b>Recording or indicating positions or identities of vehicles or vehicle trains or setting of track apparatus</b>
		<b>27/00</b>	<b>Central traffic control systems</b>
		<b>29/00</b>	<b>Safety means for rail/road crossing traffic</b> (cattle guards connected to the permanent way E01B 17/00)
		<b>99/00</b>	<b>Subject matter not provided for in other groups of this subclass [8]</b>

**B62 LAND VEHICLES FOR TRAVELLING OTHERWISE THAN ON RAILS**

**B62B HAND-PROPELLED VEHICLES, E.G. HAND CARTS OR PERAMBULATORS; SLEDGES** (characterised by animal propulsion B62C; propulsion of sledges by driver or engine B62M)

**Note**

In this subclass, the following terms or expressions are used with the meanings indicated:

- “hand carts” also embraces hand-propelled wheeled devices in so far as the features thereof are generic to hand carts and also embraces pedestrian controlled power-driven vehicles in so far as the features thereof are generic to hand carts;
- “rollers” is equivalent to wheels.

**Subclass Index**

HAND CARTS	CARRIAGES FOR CHILDREN, PERAMBULATORS .....	7/00, 9/00
With one axle; with more than one axle .....	SLEDGES	
Details and accessories; runners for travel on ice or snow .....	With runners; other types .....	13/00; 15/00
	Details and accessories .....	17/00
	OTHER HAND-PROPELLED VEHICLES .....	11/00

**Hand carts**

- 1/00 Hand carts having only one axis carrying one or more transport wheels; Equipment therefor**
- 3/00 Hand carts having more than one axis carrying transport wheels; Steering devices therefor; Equipment therefor**
- 3/02 . involving parts being adjustable, collapsible, attachable, detachable, or convertible (B62B 3/14 takes precedence) [6]
- 3/04 . involving means for grappling or securing in place objects to be carried; Load handling equipment
- 3/10 . characterised by supports specially adapted to objects of definite shape
- 3/14 . characterised by provisions for nesting or stacking, e.g. shopping trolleys [6]
- 5/00 Accessories or details specially adapted for hand carts** (B62B 9/00 takes precedence; wheels, axles, or axle bearings for vehicles B60B; castors for vehicles, castors in general B60B 33/00)
- 5/02 . providing for travelling up or down a flight of stairs (chairs or personal conveyances specially adapted for patients or disabled persons A61G 5/00)

**Carriages for children; Perambulators**

- 7/00 Carriages for children; Perambulators, e.g. dolls' perambulators** (children's chairs convertible to push chairs A47D 1/00)
- 9/00 Accessories or details specially adapted for children's carriages or perambulators** (providing for travelling on snow B62B 19/00; devices for use in guiding or supporting children, e.g. safety harness, A47D 13/00)
- 11/00 Hand-propelled vehicles not otherwise provided for** (rider propulsion of vehicles B62M 1/00)

**Sledges**

- 13/00 Sledges with runners** (ice boats or sailing sledges B62B 15/00)
- 15/00 Other sledges; Ice boats or sailing sledges**
- 17/00 Accessories or details of sledges**
- 19/00 Runners for carrying wheeled vehicles to facilitate travel on ice or snow**

**B62C VEHICLES DRAWN BY ANIMALS****Notes**

- (1) This subclass covers only vehicles or parts thereof in so far as the relevant features are essential for animal-drawn vehicles.
- (2) This subclass does not cover animal-drawn vehicles which have not the features mentioned in Note (1) above. They are regarded as trailers which are covered by class B60 or subclass B62D, or as sledges which are covered by subclass B62B.

- |                                                                                                                                                                          |                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>1/00 Types of vehicles</b>                                                                                                                                            | <b>7/00 Braking mechanisms and brake control devices specially adapted for animal-drawn vehicles</b> |
| <b>3/00 Undercarriages or running gear of vehicles; Axle supports</b> (undercarriages for supporting agricultural tools or apparatus A01B 35/00, A01B 39/00, A01B 51/00) |                                                                                                      |
| <b>5/00 Draught assemblies</b> (traction harness B68B 3/00)                                                                                                              |                                                                                                      |

9/00 Carriers or holders for whips; Holders for reins forming part of, or attached to, vehicles (reins or whips per se B68B)

11/00 Safeguarding appliances not otherwise provided for, e.g. for readily-releasing unmanageable draught animals

99/00 Subject matter not provided for in other groups of this subclass [2009.01]

**B62D MOTOR VEHICLES; TRAILERS** (steering, or guiding on a desired track, of agricultural machines or implements A01B 69/00; wheels, castors, axles, increasing wheel adhesion B60B; vehicle tyres, tyre inflation or tyre changing B60C; connections between vehicles of a train or the like B60D; vehicles for use on rail and road, amphibious or convertible vehicles B60F; suspension arrangements B60G; heating, cooling, ventilating or other air treating devices B60H; windows, windscreens, non-fixed roofs, doors or similar devices, protective coverings for vehicles not in use B60J; propulsion plant arrangements, auxiliary drives, transmissions, controls, instrumentation or dashboards B60K; electric equipment or propulsion of electrically-propelled vehicles B60L; power supply for electrically-propelled vehicles B60M; passenger accommodation not otherwise provided for B60N; adaptations for load transportation or to carry special loads or objects B60P; arrangement of signalling or lighting devices, the mounting or supporting thereof or circuits therefor, for vehicles in general B60Q; vehicles, vehicle fittings or vehicle parts, not otherwise provided for B60R; servicing, cleaning, repairing, supporting, lifting, or manoeuvring, not otherwise provided for B60S; brake arrangements, brake control systems or parts thereof B60T; air-cushion vehicles B60V; motorcycles, accessories therefor B62J, B62K; testing of vehicles G01M)

#### Note

In this subclass, the following terms are used with the meanings indicated:

- “vehicles” includes motor vehicles and trailers;
- “trailers” includes forecars or sidecars.

#### Subclass Index

##### FUNCTIONAL OR STRUCTURAL CHARACTERISTICS; PARTS OR ACCESSORIES THEREOF NOT OTHERWISE PROVIDED FOR

Predominantly for passengers; load carrying ..... 31/00, 47/00; 33/00

Tractors; tractor-trailer combinations or road trains; vehicles with no seat for the driver ..... 49/00; 53/00; 51/00

Endless-track vehicles and their tracks; vehicles with ground engagement other than by tracks or wheels ..... 55/00; 57/00

Trailers with driven ground wheels; Motor vehicles or trailers, characterised by the arrangement or number of wheels ..... 59/00; 61/00

Other types of vehicles; designing, manufacturing, assembling, disassembling of vehicles ..... 63/00; 65/00; 67/00

##### CHASSIS FRAME, SUPERSTRUCTURE, AND BODY

Chassis frame; monocoque construction; connections between body and frame ..... 21/00; 23/00; 24/00

##### Superstructure and body characterised

by material ..... 29/00

the function of the vehicle ..... 31/00, 33/00

streamlining; stabilising ..... 35/00; 37/00, 17/00

##### superstructure sub-units and

connections thereof;

arrangements for spare wheel ..... 25/00, 27/00; 43/00

radius rods ..... 19/00

other vehicle bodies ..... 39/00

##### STEERING

Initiating means; gears; response to driving conditions; linkage;

adjusting ..... 1/00; 3/00; 6/00; 7/00; 17/00

Power-assisted; automatically

influencing; for endless-track

vehicles; for trailers ..... 5/00; 6/00; 11/00; 13/00

Tandem vehicles or pivotally

connected frames ..... 12/00

Other ..... 9/00, 11/00, 15/00

##### ACCESSORIES FOR COLLISION

MARKING ..... 41/00

#### Steering of motor vehicles or trailers [3]

1/00 Steering controls, i.e. means for initiating a change of direction of the vehicle [4,5]

1/02 . vehicle-mounted

1/04 . . Hand wheels

1/06 . . . Rims, e.g. with heating means; Rim covers (B62D 1/11 takes precedence) [5]

1/08 . . . Spokes, e.g. resilient (B62D 1/11 takes precedence) [5]

1/10 . . . Hubs; Connecting hubs to steering columns, e.g. adjustable (B62D 1/11 takes precedence) [5]

- 1/11 . . . incorporating energy-absorbing arrangements, e.g. by being yieldable or collapsible (padded linings associated with the steering wheel B60R 21/04; shock absorbers using plastic deformation of members in general F16F 7/12) [5]
- 1/16 . . Steering columns
- 1/18 . . . yieldable or adjustable, e.g. tiltable (padded linings associated with the steering column B60R 21/04)
- 1/19 . . . . incorporating energy-absorbing arrangements, e.g. by being yieldable or collapsible (shock-absorbers using plastic deformation of members in general F16F 7/12) [5]
- 3/00 Steering gears** (power assisted or power driven B62D 5/00; steering linkages B62D 7/00; for non-deflectable wheels B62D 11/00; gearing in general F16H)
- 5/00 Power-assisted or power-driven steering** (for non-deflectable wheels B62D 11/00; fluid-pressure servomotors in general F15B)
- 5/04 . electrical, e.g. using an electric servo-motor connected to, or forming part of, the steering gear
- 5/06 . fluid, i.e. using a pressurised fluid for most or all the force required for steering a vehicle [4]
- 5/07 . . Supply of pressurised fluid for steering also supplying other consumers [4]
- 5/08 . . characterised by type of valve used (valves in general F16K) [4]
- 5/09 . . characterised by means for actuating valves [4]
- 5/10 . . characterised by type of power unit [4]
- 5/20 . . specially adapted for particular type of steering gear or particular application (steering gears per se B62D 3/00; steering linkages not characterised by being power-assisted or power-driven B62D 7/00) [4]
- 6/00 Arrangements for automatically controlling steering depending on driving conditions sensed and responded to, e.g. control circuits** (means for initiating a change in direction B62D 1/00; steering valves B62D 5/06; combined with means for inclining the vehicle body or wheels on bends B62D 9/00) [4,6]
- Note**
- When classifying in this group, classification is also made in the appropriate one of groups B62D 1/00 to B62D 5/00 or B62D 7/00 to B62D 19/00 if other aspects of the steering system are of interest. [5]
- 6/02 . responsive only to vehicle speed [4]
- 6/04 . responsive only to forces disturbing the intended course of the vehicle, e.g. forces acting transversely to the direction of vehicle travel [4]
- 6/06 . responsive only to vehicle vibration dampening arrangements (steering dampers for cycles B62K 21/00) [4]
- 6/08 . responsive only to input torque [6]
- 7/00 Steering linkage; Stub axles or their mountings** (B62D 13/00 takes precedence; power-assisted or power-driven steering B62D 5/00) [5]
- 7/06 . for individually-pivoted wheels, e.g. on king-pins
- 7/14 . . the pivotal axes being situated in more than one plane transverse to the longitudinal centre line of the vehicle, e.g. all-wheel steering
- 7/15 . . . characterised by means varying the ratio between the steering angles of the steered wheels (varying the ratio automatically depending on driving conditions B62D 6/00) [5]
- 9/00 Steering deflectable wheels not otherwise provided for** (steering-position indicators B62D 15/00)
- 11/00 Steering non-deflectable wheels; Steering endless tracks or the like**
- 11/02 . by differentially driving ground-engaging elements on opposite vehicle sides
- 11/06 . . by means of a single main power source
- 12/00 Steering specially adapted for vehicles operating in tandem or having pivotally connected frames** (steering endless tracks or the like B62D 11/00; steering specially adapted for trailers B62D 13/00) [4]
- 13/00 Steering specially adapted for trailers** (combined traction and steering hitches B60D)
- 15/00 Steering not otherwise provided for**
- 
- 17/00 Means on vehicle for adjusting camber, castor, or toe-in**
- 19/00 Radius rods, i.e. distance members**
- Understructures; Superstructures; Vehicle bodies**
- 21/00 Understructures, i.e. chassis frame on which a vehicle body may be mounted** (combined frame and vehicle body B62D 23/00)
- 21/02 . comprising longitudinally or transversely arranged frame members [4]
- 21/06 . of X-shaped or fork-shaped construction, i.e. having members which form an X or fork as the frame is seen in plan view
- 21/07 . wide-hipped frame type, i.e. a wide box-shaped mid portion with narrower sections extending from said mid portion in both fore and aft directions [4]
- 21/08 . built-up with interlaced cross members ("Fachwerkrahmen")
- 21/10 . in which the main member is plate-like
- 21/11 . with resilient means for suspension [4]
- Note**
- This group does not cover subject matter primarily relating to the suspension, with only a nominal recitation of frame structure, which is covered by subclass B60G [4]
- 21/12 . assembled from readily-detachable parts
- 21/14 . of adjustable length or width
- 21/15 . having impact absorbing means, e.g. a frame designed to permanently or temporarily change shape or dimension upon impact with another body (bumpers B60R 19/02; shock absorbers in general F16F) [4]
- 21/17 . forming fluid or electrical conduit means or having other means to accommodate the transmission of a force or signal [4]
- 21/18 . characterised by the vehicle type and not provided for in groups B62D 21/02 to B62D 21/17 [4]

<b>23/00</b>	<b>Combined superstructure and frame, i.e. monocoque constructions</b> (superstructure sub-units B62D 25/00)	<b>Motor vehicles or trailers classified according to type; Parts or accessories thereof not otherwise provided for</b>
<b>24/00</b>	<b>Connections between vehicle body and vehicle frame</b> (B62D 23/00, B62D 33/00 take precedence) [5]	<b>47/00</b> <b>Motor vehicles or trailers predominantly for carrying passengers</b> (superstructures B62D 31/00) [3]
<b>25/00</b>	<b>Superstructure sub-units; Parts or details thereof not otherwise provided for</b>	<b>49/00</b> <b>Tractors</b> (of walk type B62D 51/00; endless-track features B62D 55/00; safety devices for propulsion-unit control, specially adapted for, or arranged in, vehicles B60K 28/00)
25/04	. Door pillars	<b>51/00</b> <b>Motor vehicles characterised by the driver not being seated</b>
25/06	. Fixed roofs (non-fixed roofs or roofs with movable panels B60J 7/00; roof liners B60R 13/02; insulating elements B60R 13/08)	<b>53/00</b> <b>Tractor-trailer combinations; Road trains</b> (traction couplings other than fifth-wheel couplings B60D)
25/08	. Front or rear portions	<b>55/00</b> <b>Endless-track vehicles</b> (steering aspects B62D 11/00)
25/10	. . Bonnets or lids	55/08 . Endless-track units; Parts thereof
25/14	. . Dashboards as superstructure sub-unit (other dashboard aspects B60K)	55/104 . . Suspension devices for wheels, rollers, bogies or frames (vehicle suspension in general B60G) [4]
25/16	. . Mud-guards or wings; Wheel cover panels (equipped with means for freeing wheels or tyres from foreign matter B60S)	55/14 . . Arrangement, location, or adaptation of rollers
25/20	. Floors or bottom sub-units	55/18 . . Tracks (self-cleaning track links B62D 55/08) [4]
<b>27/00</b>	<b>Connections between superstructure sub-units</b>	55/20 . . . of articulated type, e.g. chains
<b>29/00</b>	<b>Superstructures characterised by material thereof</b>	55/24 . . . of continuously-flexible type, e.g. rubber belts
<b>31/00</b>	<b>Superstructures for passenger vehicles</b> (passenger vehicles specially adapted to co-operate with aircraft or terminal buildings B64F 1/00)	<b>57/00</b> <b>Vehicles characterised by having other propulsion or other ground-engaging means than wheels or endless track, alone or in addition to wheels or endless track</b> (hand-carts with provision for travelling up or down stairs B62B 5/02; endless-track vehicles for ascending or descending stairs B62D 55/00; ground-engaging vehicle fittings for supporting, lifting or manoeuvring the vehicle, wholly or in part B60S 9/00; sledges B62B; motor sledges B62M) [5]
<b>33/00</b>	<b>Superstructures for load-carrying vehicles</b> (in which a load-carrying element is movable B60P; liners B60R 13/00)	<b>59/00</b> <b>Trailers with driven ground wheels or the like</b>
33/02	. Platforms; Open load compartments	<b>61/00</b> <b>Motor vehicles or trailers, characterised by the arrangement or number of wheels, not otherwise provided for, e.g. four wheels in diamond pattern</b> (for manoeuvring purposes only B60S)
33/06	. Drivers' cabs	<b>63/00</b> <b>Motor vehicles or trailers not otherwise provided for</b>
<b>35/00</b>	<b>Vehicle bodies characterised by streamlining</b>	<b>65/00</b> <b>Designing, manufacturing, e.g. assembling, facilitating disassembly, or structurally modifying motor vehicles or trailers, not otherwise provided for</b>
<b>37/00</b>	<b>Stabilising vehicle bodies without controlling suspension arrangements</b>	<b>67/00</b> <b>Systematic disassembly of vehicles for recovery of salvageable components, e.g. for recycling</b> (for disposal of vehicles by destroying or transformation B09B 3/00, B09B 5/00) [7]
<b>39/00</b>	<b>Vehicle bodies not otherwise provided for</b>	
<b>41/00</b>	<b>Fittings for identifying vehicles in case of collision; Fittings for marking or recording collision areas</b>	
<b>43/00</b>	<b>Spare wheel stowing, holding, or mounting arrangements</b>	

## B62H CYCLE STANDS; SUPPORTS OR HOLDERS FOR PARKING OR STORING CYCLES; APPLIANCES PREVENTING OR INDICATING UNAUTHORISED USE OR THEFT OF CYCLES; LOCKS INTEGRAL WITH CYCLES; DEVICES FOR LEARNING TO RIDE CYCLES

### Note

In this subclass, the following term is used with the meaning indicated:

- “cycles” includes scooters.

**1/00** **Supports or stands forming part of, or attached to, cycles**



**3/00** Separate supports or holders for parking or storing cycles (cycle supports used during maintenance B25H; building aspects E04H)

**5/00** Appliances preventing or indicating unauthorised use or theft of cycles; Locks integral with cycles (fittings for preventing or indicating use or theft of vehicles in general B60R; general features of locks E05B)

**7/00** Devices for learning to ride cycles, not otherwise provided for, e.g. assisting balance

**B62J** CYCLE SADDLES OR SEATS; ACCESSORIES PECULIAR TO CYCLES AND NOT OTHERWISE PROVIDED FOR, E.G. ARTICLE CARRIERS OR CYCLE PROTECTORS (registration plates B60R 13/00; cyclometers, i.e. wheel-revolution counters, G01C 22/00)

### Note

In this subclass, the following term is used with the meaning indicated:

– “cycles” includes scooters.

### Subclass Index

SADDLES, SEATS; FOOT-RESTS, KNEE  
GRIPS ..... 1/00; 25/00  
LIGHTING OR SIGNALLING DEVICES;  
MIRROR ARRANGEMENTS ..... 3/00, 6/00;  
29/00  
ARTICLE CARRIERS, ACCESSORIES ..... 7/00, 9/00,  
11/00  
PROTECTING ARRANGEMENTS OR  
ACCESSORIES  
Chain-guards; mud-guards; parking  
covers ..... 13/00; 15/00;  
19/00

For rider only; weather guards,  
fairing; dress protectors; warming ..... 17/00; 21/00;  
33/00  
Other protectors ..... 23/00  
SAFETY EQUIPMENT ..... 27/00  
INSTALLATIONS OF LUBRICATING  
DEVICES; OF FUEL TANKS; OF SUPPLY  
LINES ..... 31/00; 35/00;  
37/00  
OTHER ACCESSORIES ..... 99/00

**1/00** Saddles or other seats for cycles; Arrangement thereof; Component parts (arrangements or adaptations of vehicle seats in general B60N)

**17/00** Weather guards for riders; Fairings or streamlining parts not otherwise provided for (protective clothing or garments A41D 13/00; crash helmets A42B 3/00; fairings forming part of frames B62K 19/00; fairings for sidecars B62K 27/00; hoods for sidecars B62K 27/00)

### Signal or lighting devices specially adapted for cycles

**3/00** Acoustic signal or alarm devices (acoustic signal or alarm devices in general G08); Arrangement of such devices on cycles  
**6/00** Arrangement of optical signalling or lighting devices on cycles, the mounting or supporting thereof or circuits therefor (pedals incorporating reflectors B62M 3/00; optical signalling or lighting devices per se F21, G08, H05) [4]

**19/00** Parking covers for cycles (convertible into protective garments for the rider A41D 15/00; convertible into camping articles A45F 4/00; for vehicles in general B60J 11/00)

**21/00** Dress protectors, e.g. clips attached to the cycle (loose clips for trousers or skirts A41F 17/00)

**23/00** Other protectors specially adapted for cycles

**25/00** Foot-rests; Rigidly-mounted knee grips, e.g. on petrol tank

### Article carriers

**7/00** Luggage carriers  
**9/00** Panniers, saddle bags, or other containers specially adapted to be attached to cycles  
**11/00** Supporting devices for attaching articles of definite shape to cycles, e.g. for maps, umbrellas, bottles

**27/00** Safety equipment, e.g. crash bars (safety belts in general A62B 35/00)

**29/00** Adaptations or arrangements of mirrors for use on cycles (for vehicles in general B60R)

**31/00** Installations of lubricating devices

**33/00** Installations peculiar to cycles for warming riders (for vehicles in general B60H)

### Protectors; Fairings or streamlining parts not otherwise provided for

**13/00** Guards for chain, chain drive, or equivalent drive, e.g. belt drive (chain guards forming part of cycle frames B62K 19/00)

**15/00** Mud-guards for wheels

**B62J – B62L**

**35/00** Fuel tanks specially adapted for motorcycles or engine-assisted cycles; Arrangements thereof (fuel tanks forming part of cycle frames B62K 11/00; tanks in general B65D)

**37/00** Arrangements of fuel supply lines, taps, or the like, on motorcycles or engine-assisted cycles

**99/00** Subject matter not provided for in other groups of this subclass [2009.01]

**B62K CYCLES; CYCLE FRAMES; CYCLE STEERING DEVICES; RIDER-OPERATED TERMINAL CONTROLS SPECIALLY ADAPTED FOR CYCLES; CYCLE AXLE SUSPENSIONS; CYCLE SIDECARS, FORECARS, OR THE LIKE**

**Subclass Index****KINDS OF CYCLES**

Characterised by construction:

number of wheels: unicycle;  
bicycle; with more than two  
wheels ..... 1/00; 3/00;  
5/00  
with motor ..... 11/00  
sidecar, forecar ..... 27/00

convertible; foldable ..... 13/00; 15/00

Characterised by purpose: for

transport; for children ..... 7/00; 9/00

Other kinds ..... 17/00

**PARTS OF CYCLES**

Frame; axle suspension ..... 19/00; 25/00

Steering; terminal controls ..... 21/00; 23/00

**Note**

Groups B62K 7/00 to B62K 15/00 take precedence over groups B62K 1/00 to B62K 5/00, e.g. a child's bicycle is classified in group B62K 9/00 and not in group B62K 3/00.

**1/00** Unicycles

**3/00** Bicycles

**5/00** Cycles with more than two main road wheels (specially adapted for disabled persons A61G 5/00; cycle supports or stands equipped with additional wheels for ride stabilisation B62H 1/00)

**7/00** Freight- or passenger-carrying cycles

**9/00** Children's cycles (toy vehicles A63H 17/00)

**11/00** Motorcycles; Engine-assisted cycles; Motor-scooters (fairings or streamlining parts, not forming part of frame B62J; transmission of drive from engine to wheels B62M)

**13/00** Cycles convertible to, or transformable into, other types of cycles or land vehicles (convertible vehicles in general B60F 5/00; cycle supports or stands equipped with additional wheels for ride stabilisation B62H 1/00)

**15/00** Collapsible or foldable cycles

**17/00** Cycles not otherwise provided for

**19/00** Cycle frames (cycle frames specially adapted for one particular kind of cycle specified in groups B62K 1/00 to B62K 17/00, see the relevant group)

**21/00** Steering devices (steering devices specially adapted for one particular kind of cycle specified in groups B62K 1/00 to B62K 17/00, see the relevant group)

**23/00** Rider-operated controls specially adapted for cycles, i.e. means for initiating control operations, e.g. levers, grips (specially adapted to cycle brake mechanisms B62L 3/00)

**25/00** Axle suspensions (for vehicles in general B60G)

25/04 . for mounting axles resiliently on cycle frame or fork (for sidecars, forecars, or the like B62K 27/00)

25/06 . . with telescopic fork, e.g. including auxiliary rocking arms

**27/00** Sidecars; Forecars or the like (trailers B60P, B62D; characterised by carrying propulsion engine B62M)

**B62L BRAKES SPECIALLY ADAPTED FOR CYCLES****Notes**

(1) This subclass covers only adaptations of brakes or actuating mechanisms peculiar to their use on cycles.

(2) This subclass does not cover brakes or actuating mechanisms of wider applicability, which are regarded as of general type, irrespective of whether described or claimed only for cycles, which are covered by subclass B60T or the relevant subclasses of class F16.

- 1/00 Brakes; Arrangements thereof** (back-peddalling brakes B62L 5/00)
- 3/00 Brake-actuating mechanisms** (actuating mechanisms for back-peddalling brakes B62L 5/00; Bowden mechanisms F16C 1/10); **Arrangements thereof**
- 5/00 Brakes, or actuating mechanisms therefor, controlled by back-peddalling** (free-wheel devices specially adapted for cycles F16D 41/00)

**B62M RIDER PROPULSION OF WHEELED VEHICLES OR SLEDGES; POWERED PROPULSION OF SLEDGES OR CYCLES; TRANSMISSIONS SPECIALLY ADAPTED FOR SUCH VEHICLES** (arrangements or mounting of transmissions in vehicles in general B60K; transmission elements *per se* F16)

### Note

In this subclass, the following term is used with the meaning indicated:

- “transmission” means all parts between the prime mover or the part to which a rider immediately applies propulsive effort, e.g. pedal cranks, and a driven ground wheel.

### Subclass Index

#### PROPULSION

Of wheeled vehicles by hand or foot: kinds of mechanisms; construction of propulsion cranks or levers..... 1/00; 3/00, 5/00

Of single-track vehicles by motor, characterised by position of engine..... 7/00

Of sledges or the like ..... 27/00

Of wheeled vehicles or sledges, by ground-engaging means not otherwise provided for..... 29/00

#### TRANSMISSIONS

Characterised by rigid mechanical parts thereof

chain or belt; toothed or friction wheel; friction roller.....9/00; 11/00; 13/00

crankshaft or coupling- rods; rotary shaft.....15/00; 17/00

Characterised by non-mechanical or non-rigid parts thereof.....19/00, 21/00, 23/00

Gearing speed-change actuators ..... 25/00

#### Rider propulsion of wheeled vehicles

- 1/00 Rider propulsion of wheeled vehicles** (propulsion by ground-engaging rods B62M 29/00)
- 3/00 Construction of cranks operated by hand or foot**
- 5/00 Foot-driven levers as pedal cranks which can be immobilised as foot-rests** (immobilising against theft B62H 5/00)

- 7/00 Motorcycles or cycles with auxiliary engines characterised by position of engine** (frames characterised by position of engine B62K 11/00; internal-combustion engines *per se* F02B; kick-starter mechanisms or the like F02N)

#### Transmissions

- 9/00 Transmissions characterised by use of an endless chain, belt, or the like** (cycle chain guards B62J 13/00)
- 11/00 Transmissions characterised by use of interengaging toothed wheels or frictionally-engaging wheels** (with roller engaging the periphery of ground wheel B62M 13/00)
- 13/00 Transmissions characterised by use of friction roller engaging the periphery of the ground wheel**

- 15/00 Transmission characterised by use of crankshafts and coupling-rods**
- 17/00 Transmissions characterised by use of rotary shaft, e.g. cardan shaft**
- 19/00 Transmissions characterised by use of non-mechanical gearing, e.g. fluid gearing**
- 21/00 Transmissions characterised by use of resilient elements therein**
- 23/00 Transmissions characterised by use of other elements; Other transmissions**
- 23/02 . characterised by the use of two or more dissimilar sources of power, e.g. engine and pedal
- 25/00 Actuators for gearing speed-change mechanisms specially adapted for cycles** (rider-operated controls for cycles in general B62K 23/00; gearing speed-change mechanisms F16H)

- 27/00 Propulsion devices for sledges or the like** (pushed or pulled by persons or animals B62B, B62C; wind propulsion B62B 15/00)
- 29/00 Ground-engaging propulsion devices for cycles, sledges, or rider-propelled wheeled vehicles, not otherwise provided for**

## B63 SHIPS OR OTHER WATERBORNE VESSELS; RELATED EQUIPMENT

**B63B SHIPS OR OTHER WATERBORNE VESSELS; EQUIPMENT FOR SHIPPING** (air-cushion vehicles B60V; arrangements of vessel ventilation, heating, cooling, or air-conditioning B63J 2/00) [2]

### Subclass Index

#### HULLS

Study; general characteristics..... 9/00; 1/00  
 General; adjustable keels;  
 protection ..... 3/00; 41/00;  
 59/00  
 Particular types ..... 5/00; 7/00  
 Subdivision; cleaning of tanks ..... 11/00; 57/00

SUPERSTRUCTURES; HULL OR  
 SUPERSTRUCTURE OPENINGS..... 15/00; 19/00

EMPTYING, BALLASTING; STABILITY;  
 SAFETY..... 13/00; 29/00;  
 39/00; 43/00

MOORING, SHIFTING; HANDLING

LIFEBOATS..... 21/00; 23/00

#### ACCOMMODATION FOR CARGO OR

PERSONS..... 25/00; 27/00;  
 29/00

ARRANGEMENTS OR ADAPTATIONS OF  
 SIGNALLING OR LIGHTING DEVICES OR  
 OF NAUTICAL INSTRUMENTS ..... 45/00; 49/00  
 DETAILS AND ACCESSORIES FOR SHIPS ..... 17/00

CONSTRUCTION, MAINTENANCE,  
 CONVERSION, NOT OTHERWISE  
 PROVIDED FOR ..... 9/00

PARTICULAR KINDS OF SHIPS OR  
 FLOATING STRUCTURES NOT  
 OTHERWISE PROVIDED FOR..... 35/00; 38/00

BUOYS; MARKING NAVIGATION  
 ROUTES..... 22/00; 51/00

**1/00 Hydrodynamic or hydrostatic features of hulls or of hydrofoils** (hulls peculiar to submarines B63B 3/00; keels B63B 3/00; determining hydrodynamic or hydrostatic features B63B 9/00; decreasing pitch, roll, or like unwanted vessel movements by using foils acting on ambient water B63B 39/00)

1/16 . deriving additional lift from hydrodynamic forces (controlling submarine attitude or depth by hydroplanes B63G 8/00)

**3/00 Constructions of hulls** (non-metallic hulls B63B 5/00; designing, building, maintaining, or repairing methods B63B 9/00; movable keels B63B 41/00; arrangements of watertight doors B63B 43/00)

**5/00 Hulls characterised by their construction of non-metallic material**

**7/00 Collapsible, foldable, inflatable, or like vessels** (foldable pontoons B63B 35/34)

**9/00 Methods of designing, building, maintaining, converting, refitting, repairing, or determining properties of, vessels, not otherwise provided for** (shuttering for building concrete vessels E04G) [2]

**11/00 Interior subdivision of hulls** (bulkhead space construction B63B 3/00)

**13/00 Conduits for emptying or ballasting; Self-bailing equipment; Scuppers** (draining means for hatches B63B 19/00; centrifugal bilge-water separators B04; pipes in general F16L)

**15/00 Superstructures; Arrangements or adaptations of masts** (loading or unloading equipment B63B 27/00; sails, running rigging B63H; masts or staying in general E04H)

**17/00 Vessels parts, details, or accessories, not otherwise provided for**

**19/00 Arrangements or adaptations of ports, doors, windows, port-holes, or other openings or covers** (scuppers B63B 13/00; arrangements of watertight doors in bulkheads B63B 43/00)

**21/00 Tying-up; Shifting, towing, or pushing equipment; Anchoring** (dynamic anchoring B63H 25/00; equipment for shipping on coasts, in harbours or on other fixed marine structures, e.g. for landing purposes, E02B) [4]

21/24 . Anchors

21/56 . Towing or pushing equipment (tugs B63B 35/00; salvaging underwater vessels or objects B63C 7/00; towed underwater vessels B63G 8/00)

**22/00 Buoys** (means for indicating the location of underwater objects B63C 7/00; life-buoys, e.g. rings, B63C 9/00) [4]

**23/00 Equipment for handling lifeboats or the like**

**25/00 Load-accommodating arrangements, e.g. stowing, trimming; Vessels characterised thereby** (constructive aspects of cargo-spaces B63B 11/00; hatches, hatchways B63B 19/00; trimming otherwise than by cargo division. e.g. by use of ballast, B63B 43/00)

**27/00 Arrangement of ship-based loading or unloading equipment for cargo or passengers** (self-discharging barges or lighters B63B 35/00; shore-based equipment B65G 67/00; elevators, escalators or moving walkways *per se* B66B; floating cranes B66C 23/00; loading or unloading devices *per se*, *see* the relevant subclasses, e.g. B65G, B66C, B67D) [3]

**29/00 Accommodation for crew or passengers not otherwise provided for**

**35/00 Vessels or like floating structures adapted for special purposes** (vessels characterised by load-accommodating arrangements B63B 25/00; fire-fighting vessels A62C 29/00; submarines, mine-layers, or mine-sweepers B63G; large containers for use in or under water B65D 88/00) [5]

35/14 . Fishing vessels (fishing A01K 69/00 to A01K 97/00) [5]

35/32 . for collecting pollution from open water [5]

**Note**

If the apparatus for collecting pollution from open water is of interest apart from ship construction aspects, it is also classified in group E02B 15/00. [5]

- 35/34 . Pontoons (floating bridges E01D 15/00) [5]
- 35/44 . Floating buildings, stores, drilling platforms, or workshops, e.g. carrying water-oil separating devices [5]
- 35/58 . Rafts, i.e. free floating waterborne vessels, of shallow draft, with little or no freeboard, and having a platform or floor for supporting a user (lifeboats, life-rafts or the like B63C 9/00) [4,5]
- 35/71 . Canoes, kayaks or the like (collapsible, foldable, inflatable or like vessels B63B 7/00) [4,5]
- 35/73 . Other vessels or like floating structures for pleasure or sport [5]
- 38/00 Vessels or like floating structures not otherwise provided for** (vessels characterised by load-accommodating arrangements B63B 25/00; fire-extinguishing vessels A62C 29/00; submarines, mine-layers or mine-sweepers B63G; large containers for use in or under water B65D 88/00) [5]
- 39/00 Equipment to decrease pitch, roll, or like unwanted vessel movements; Apparatus for indicating vessel attitude**

- 41/00 Drop keels, e.g. centre boards, side boards** (keels integral with hull B63B 3/00; stabilising foils B63B 39/00)
- 43/00 Improving safety of vessels, e.g. damage control, not otherwise provided for** (fire-fighting in ships A62C 3/07)
- 45/00 Arrangement or adaptation of signalling or lighting devices** (arrangement of signalling or lighting devices, the mounting or supporting thereof or circuits therefor, for vehicles in general B60Q; life-buoys, -belts, -jackets, -suits or the like, characterised by signalling means B63C 9/00; lighting devices or systems therefor F21L, F21S) [4]
- 49/00 Arrangements of nautical instruments or navigational aids** (nautical measuring instruments G01C; radio navigation, analogous arrangements using other waves G01S)
- 51/00 Marking of navigational route other than with buoys** (buoys specially adapted for marking a navigational route B63B 22/00) [4]
- 57/00 Tank cleaning specially adapted for vessels** (tank cleaning in general B08B 9/08)
- 59/00 Hull protection peculiar to vessels; Cleaning devices peculiar to vessels** (cleaning in general B08B; cleaning of vehicles in general, e.g. windscreen wipers, B60S; inhibiting corrosion of metals by anodic or cathodic protection C23F 13/00)

**B63C LAUNCHING, HAULING-OUT, OR DRY-DOCKING OF VESSELS; LIFE-SAVING IN WATER; EQUIPMENT FOR DWELLING OR WORKING UNDER WATER; MEANS FOR SALVAGING OR SEARCHING FOR UNDERWATER OBJECTS** (floating nets, floating slipways, or the like for recovering aircraft from the water B63B 35/00)

**Subclass Index****LANDING, LAUNCHING**

Dry-docking; storing on land;  
launching or hauling-out..... 1/00; 15/00;  
3/00  
Transporting overland..... 13/00

Slipway and dry-dock equipment ..... 5/00  
SALVAGE, SEARCHING UNDER WATER;  
LIFE-SAVING ..... 7/00, 11/00;  
9/00  
WORKING UNDER WATER..... 11/00

- 1/00 Dry-docking of vessels or flying-boats** (storing of vessels on land otherwise than by dry-docking B63C 15/00; mooring of vessels B63B 21/00; ship transporters with adjustable draught B63B 35/00; hydraulic-engineering aspects E02B)
- 3/00 Launching or hauling-out, e.g. by landborne slipways; Slipways** (ship-borne guides for handling lifeboats or the like B63B 23/00; cranes, winches, or the like B66; ship-lifting for adapting to different water levels E02C)
- 5/00 Equipment usable both on slipways and in dry docks**
- 7/00 Salvaging of disabled, stranded, or sunken vessels; Salvaging of vessel parts or furnishings, e.g. of safes; Salvaging of other underwater objects** (means for searching for underwater objects B63C 11/00)

- 9/00 Life-saving in water** (life-saving in general A62B; adaptations of aerial cableways to shipboard use B63B 27/00; arrangement or adaptation of signalling or lighting devices for ships, other waterborne vessels or for equipment for shipping B63B 45/00; rescue equipment specially adapted for submarine personnel B63G 8/00; line-carrying missiles F42B 12/02)
- 11/00 Equipment for dwelling or working under water; Means for searching for underwater objects** (composition of chemical substances for use in breathing apparatus A62D 9/00; swimming aids or equipment A63B 31/00 to A63B 35/00; submarines B63G 8/00)
- 11/02 . Divers' equipment

**B63C – B63H**

- 11/46 . Divers' sleds or like craft, i.e. craft on which man in diving-suit rides
- 11/52 . Tools specially adapted for working underwater, not otherwise provided for [3]

**13/00 Equipment forming part of, or attachable to, vessels, facilitating transport over land** (harnesses attachable to vessels for personal carrying A45F; amphibious craft, land vehicles convertible for use on water B60F; land vehicles for carrying boats B60P)

**15/00 Storing of vessels on land otherwise than by dry-docking**

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**B63G OFFENSIVE OR DEFENSIVE ARRANGEMENTS ON VESSELS; MINE-LAYING; MINE-SWEEPING; SUBMARINES; AIRCRAFT CARRIERS** (means of attack or defence in general, e.g. turrets, F41H)

**Subclass Index**

OFFENSIVE OR DEFENSIVE  
INSTALLATIONS OR ARRANGEMENTS

Guns, missile launchers.....1/00

Launching torpedoes; defence  
against torpedoes ..... 5/00; 9/00

Defence or attack against sub-  
marines, by depth charges or  
otherwise..... 6/00, 9/00

Mines: laying; sweeping; other

defence .....6/00; 7/00;  
9/00

Other defensive or offensive

arrangements ..... 13/00

Ammunition handling or storing ..... 3/00

SUBMARINES; AIRCRAFT CARRIERS..... 8/00; 11/00

- 1/00 Arrangements of guns or missile launchers; Vessels characterised thereby** (submarines B63G 8/00; guns, missile launchers F41)
- 3/00 Arrangements of ammunition stores or handlers** (specially for submarines B63G 8/00; feeding ammunition missiles or projectiles to guns in general F41A 9/00); **Vessels characterised thereby** (general cargo aspects B63B)
- 5/00 Vessels characterised by adaptation to torpedo-launching** (submarines B63G 8/00; torpedo-launching per se F41F 3/00)
- 6/00 Laying of mines or depth charges; Vessels characterised thereby** (arrangements on submarines for mine-laying B63G 8/00) [2]
- 7/00 Mine-sweeping; Vessels characterised thereby**

**8/00 Underwater vessels, e.g. submarines** (submarine hulls B63B 3/00; diving chambers with mechanical link, e.g. cable, to a base B63C 11/00; divers' sleds B63C 11/46; nuclear propulsion B63H 21/00; submerged exhausting apparatus F01N 7/00; torpedoes F42B 19/00)

**9/00 Other offensive or defensive arrangements on vessels against submarines, torpedoes, or mines** (armoured hulls B63B 3/00)

**11/00 Aircraft carriers, i.e. warships equipped with a flight deck on which airplanes can be launched and landed and with a hangar deck for servicing airplanes** (other vessels or floating structures for aircraft B63B 35/00; aircraft-carrier-deck installations B64F 1/00)

**13/00 Other offensive or defensive arrangements on vessels; Vessels characterised thereby** (camouflage for submarines B63G 8/00)

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**B63H MARINE PROPULSION OR STEERING** (propulsion of air-cushion vehicles B60V 1/00; peculiar to submarines, other than nuclear propulsion, B63G; peculiar to torpedoes F42B 19/00)

**Subclass Index**

PROPULSIVE ELEMENTS;  
ARRANGEMENTS THEREOF

Acting directly on water: elements;  
arrangements..... 1/00, 3/00;  
5/00

Arrangements of means acting  
directly on air.....7/00

Acted on by wind propulsive  
devices .....9/00

PARTICULAR MEANS

by reaction; by muscle power; by

anchored cable; wind motors

driving water-engaging devices ..... 11/00; 16/00;  
15/00; 13/00

Other..... 19/00

OUTBOARD PROPULSION UNITS ..... 20/00

PROPULSION POWER PLANT ..... 21/00

TRANSMISSION FROM POWER PLANT

TO PROPULSIVE ELEMENTS ..... 23/00

STEERING, DYNAMIC ANCHORING..... 25/00

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| <p><b>1/00 Propulsive elements directly acting on water</b> (jet propulsion B63H 11/00; anti-vibration mounting of propulsion plant B63H 21/00; attachment of propellers on shafts B63H 23/00)</p> <p><b>3/00 Propeller-blade pitch changing</b></p> <p><b>5/00 Arrangements on vessels of propulsive elements directly acting on water</b> (of propellers forming part of outboard propulsion units B63H 20/00)</p> <p><b>7/00 Arrangements of propulsive devices directly acting on air</b> (jet propulsion B63H 11/00)</p> <p><b>9/00 Propulsive devices directly acted on by wind; Arrangements thereof</b> (air-driven propellers driving underwater propulsive elements B63H 13/00)</p> <p><b>11/00 Effecting propulsion by jets, i.e. reaction principle</b> (steering by jet action B63H 25/00; power plant <u>per se</u>, see the relevant classes)</p> <p><b>13/00 Effecting propulsion by wind motors driving water-engaging propulsive elements</b></p> <p><b>15/00 Effecting propulsion by use of vessel-mounted driving mechanisms co-operating with anchored chains or the like</b></p> <p><b>16/00 Effecting propulsion by muscle power</b> (swimming frameworks with swimmer-operated driving mechanisms A63B 35/00; land-based training equipment for rowing or sculling A63B 69/06)</p> <p><b>19/00 Effecting propulsion of vessels, not otherwise provided for</b></p> <p><b>20/00 Outboard propulsion units, i.e. propulsion units having a substantially vertical power leg mounted outboard of a hull and terminating in a propulsion element, e.g. "outboard motors", Z-drives</b> (power plants <u>per se</u>, see the relevant classes); <b>Arrangements thereof on vessels</b> [6]</p> | <p><b>21/00 Use of propulsion power plant or units on vessels</b> (use of outboard propulsion units B63H 20/00; hull reinforcements for carrying propulsion power plant or units B63B 3/00; propulsion power plant or units <u>per se</u>, see the relevant classes) [6]</p> <p><b>Note</b></p> <p>This group covers:</p> <ul style="list-style-type: none"> <li>– arrangements of propulsion power plant or units on vessels;</li> <li>– to some extent, adaptations of such plant or units to facilitate such arrangements.</li> </ul> <p><b>21/32</b> . Arrangements of propulsion power-unit exhaust uptakes; Funnels peculiar to vessels (engine exhausts in general F01N; flue devices for furnaces in general F23J)</p> <p><b>23/00 Transmitting power from propulsion power plant to propulsive elements</b> (changing pitch of propellers B63H 3/00; adaptation of transmission to allow adjustment in direction of propellers B63H 5/00; propeller-shaft tunnels B63H 11/00; transmission between wind motors and propulsive elements B63H 13/00, in outboard propulsion units B63H 20/00; adaptation of transmission to allow adjustment of location of propellers B63H 20/00; for vehicles in general B60K; driving auxiliary machinery B63J; transmission elements <u>per se</u> F16)</p> <p><b>25/00 Steering; Slowing-down otherwise than by use of propulsive elements</b> (using adjustably-mounted propeller ducts or rings for steering B63H 5/00; using movably-installed outboard propulsion units B63H 20/00); <b>Dynamic anchoring, i.e. positioning vessels by means of main or auxiliary propulsive elements</b> (anchoring, other than dynamic, B63B 21/00; equipment to decrease pitch, roll, or like unwanted vessel movements by auxiliary jets or propellers B63B 39/00)</p> <p><b>25/06</b> . Steering by rudders (by rudders carrying propellers B63H 25/00)</p> |
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## B63J AUXILIARIES ON VESSELS

### Note

In this subclass, the following term is used with the meaning indicated:

- “auxiliaries” means only apparatus specially arranged for rendering vessels, in general, habitable or operative, in so far as such apparatus is not specifically provided for in another subclass of class B63.

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                               |
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| <p><b>1/00 Arrangements of installations for producing fresh water, e.g. by evaporation and condensation of sea water</b></p> <p><b>2/00 Arrangements of ventilation, heating, cooling, or air-conditioning</b> (for vehicles in general B60H; air-scoops for port-holes B63B 19/00; arrangements for stowing frozen goods in vessels B63B 25/00; ventilating for cleaning tanks B63B 57/00; for underwater vessels, e.g. submarines, B63G 8/00)</p> | <p><b>3/00 Driving of auxiliaries</b> (transmission elements <u>per se</u> F16)</p> <p><b>4/00 Arrangements of installations for treating waste-water or sewage</b> (soil-water discharges B63B 29/00) [3]</p> <p><b>99/00 Subject matter not provided for in other groups of this subclass</b> [2009.01]</p> |
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**B64 AIRCRAFT; AVIATION; COSMONAUTICS****B64B LIGHTER-THAN-AIR AIRCRAFT** (ground installations for aircraft in general B64F)1/00 **Lighter-than-air aircraft****B64C AEROPLANES; HELICOPTERS** (air-cushion vehicles B60V)**Note**

As far as possible, classification is made according to constructional features; classification according to particular kinds of aircraft is normally regarded as being of secondary importance, except in cases where this is considered to be the characteristic feature. [3]

**Subclass Index****STRUCTURES, FAIRINGS**

Features common to different elements ..... 1/00

Fuselages; wings; stabilising surfaces ..... 1/00; 3/00; 5/00

Other structural elements ..... 7/00

**PROPELLERS, FLIGHT CONTROL**

Propellers ..... 11/00

Adjustable control surfaces or members; control systems ..... 9/00; 13/00

Control by jet reaction ..... 15/00

Stabilisation and controls not otherwise provided for ..... 17/00, 19/00

**MODIFYING LIFT BY ACTION ON AIR-**

FLOW ..... 13/00, 21/00, 23/00

ALIGHTING GEAR ..... 25/00

**AIRCRAFT KINDS AND THEIR COMPONENTS NOT OTHERWISE PROVIDED FOR**

Supersonic ..... 30/00

Seaplanes ..... 35/00

Aircraft intended to be sustained without power plant; powered hand-glider-type aircraft; microlight aircraft ..... 31/00

Convertible aircraft ..... 37/00

Vertical-take-off or landing aircraft ..... 29/00

Rotorcraft; ornithopters ..... 27/00; 33/00

Others ..... 39/00

**Aircraft structures or fairings**

**1/00 Fuselages; Constructional features common to fuselages, wings, stabilising surfaces, or the like** (aerodynamical features common to fuselages, wings, stabilising surfaces, or the like B64C 23/00; fairings movable in conjunction with undercarriage elements B64C 25/00; flight-deck installations B64D; bomb doors B64D 1/00)

**3/00 Wings** (attaching wing unit to fuselage B64C 1/00; stabilising surfaces B64C 5/00; ornithopter wings B64C 33/00)

**5/00 Stabilising surfaces** (attaching stabilising surfaces to fuselage B64C 1/00)

**7/00 Structures or fairings not otherwise provided for**

**9/00 Adjustable control surfaces or members, e.g. rudders** (varying camber of wings B64C 3/00; trimming stabilising surfaces B64C 5/00; systems for actuating flying-control surfaces B64C 13/00; boundary-layer control B64C 21/00)

**11/00 Propellers, e.g. of ducted type; Features common to propellers and rotors for rotorcraft** (rotors specially adapted for rotorcraft B64C 27/32)

**13/00 Control systems or transmitting systems for actuating flying-control surfaces, lift-increasing flaps, air brakes, or spoilers**

**15/00 Attitude, flight direction, or altitude control by jet reaction** (jet flaps B64C 9/00; details of jet-engine plants, e.g. of nozzles or jet pipes, F02K) [3]

**17/00 Aircraft stabilisation not otherwise provided for**

**19/00 Aircraft control not otherwise provided for**

**Influencing air-flow over aircraft surfaces, not otherwise provided for**

**21/00 Influencing air-flow over aircraft surfaces by affecting boundary-layer flow** (boundary-layer control in general F15D)

**23/00 Influencing air-flow over aircraft surfaces, not otherwise provided for**

**25/00 Alighting gear** (air-cushion alighting gear B60V 3/00)

**Aircraft kinds or components not otherwise provided for**

**27/00 Rotorcraft; Rotors peculiar thereto** (alighting gear B64C 25/00)

**27/32** . Rotors (features common to rotors and propellers B64C 11/00)



- 29/00 Aircraft capable of landing or taking-off vertically** (attitude, flight direction, or altitude control by jet reaction B64C 15/00; rotorcraft B64C 27/00; air-cushion vehicles B60V; details of jet-engine plants, e.g. of nozzles or jet pipes, F02K)
- 30/00 Supersonic type aircraft [3]**
- 31/00 Aircraft intended to be sustained without power plant; Powered hang-glider-type aircraft; Microlight-type aircraft**

- 33/00 Ornithopters**
- 35/00 Flying-boats; Seaplanes** (alighting gear B64C 25/00)
- 37/00 Convertible aircraft** (vehicles capable of travelling in or on different media B60F)
- 39/00 Aircraft not otherwise provided for**

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## **B64D EQUIPMENT FOR FITTING IN OR TO AIRCRAFT; FLYING SUITS; PARACHUTES; ARRANGEMENTS OR MOUNTING OF POWER PLANTS OR PROPULSION TRANSMISSIONS**

### **Subclass Index**

#### **FLIGHT ARRANGEMENTS ON AIRCRAFT**

- Of power plant and auxiliaries ..... 27/00, 29/00, 33/00, 41/00
- Of power-plant controls and transmissions..... 31/00, 35/00
- For fuel supply ..... 37/00, 39/00
- Of flying instruments..... 43/00

#### **USE OF AIRCRAFT**

- For military purposes..... 1/00, 7/00
- For persons or freight ..... 9/00 to 13/00

#### **SAFETY OR EMERGENCY ARRANGEMENTS OR EQUIPMENTS**

- For the aircraft
- against icing; against lightning ..... 15/00; 45/00
- for landing ..... 17/00, 45/00

- For jettisoning or other means concerning fuel..... 37/00
- For persons or material
- by holding or ejecting means ..... 25/00
- by parachutes; parachuting..... 17/00 to 21/00; 23/00
- Other safety, emergency, or protection means ..... 10/00, 25/00, 45/00

#### **EQUIPMENT FOR OPERATIONS PERFORMED DURING FLIGHT**

- Releasing or receiving articles, fluent materials, or another aircraft..... 1/00, 5/00
- Towing, fuel replenishing ..... 3/00, 39/00

#### **OTHER ARRANGEMENTS OR EQUIPMENT ..... 47/00**

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- 1/00 Dropping, ejecting, releasing, or receiving articles, liquids, or the like, in flight** (with respect to weapon sights, F41G takes precedence; parachutes B64D 17/00; ejectable seats B64D 25/00; ejectable capsules B64D 25/00; jettisonable fuel reservoirs B64D 37/00; refuelling during flight B64D 39/00; launching apparatus for projecting projectiles or missiles F41F 1/00, F41F 7/00; rocket or torpedo launchers F41F 3/00)
- 3/00 Aircraft adaptations to facilitate towing or being towed** (B64D 39/00 takes precedence; ground installations for launching or towing aircraft B64F; towing ropes *per se* D07B)
- 5/00 Aircraft transported by aircraft, e.g. for release or reberthing during flight** (flying units formed by separate aircraft B64C 37/00)
- 7/00 Arrangement of military equipment, e.g. armaments, armament accessories, or military shielding, in aircraft; Adaptations of armament mountings for aircraft** (dropping bombs or the like B64D 1/00; armaments or mountings therefor *per se* F41)
- 9/00 Equipment for handling freight; Equipment for facilitating passenger embarkation or the like** (emergency equipment B64D 17/00, B64D 19/00, B64D 25/00; structures integral with fuselage to facilitate loading, fuselage floors specially adapted for freight, steps mounted on, and retractable within, aircraft B64C; ground installations B64F)

- 10/00 Flying suits** (helmets in general A42B 3/00; breathing helmets A62B 18/00) [3]
- 11/00 Passenger or crew accommodation; Flight-deck installations not otherwise provided for** (seat constructions for emergency purposes B64D 25/00)
- 13/00 Arrangements or adaptations of air-treatment apparatus for aircraft crew or passengers, or freight space** (treatment rooms with artificial climate for medical purposes A61G 10/00; respiratory apparatus in general A62B; for vehicles in general B60H)
- 15/00 De-icing or preventing icing on exterior surfaces of aircraft** (motor vehicles specially adapted for carrying de-icing equipment B60P)
- 17/00 Parachutes** (non-canopied parachutes B64D 19/00)
- 19/00 Non-canopied parachutes**
- 21/00 Testing of parachutes**
- 23/00 Training of parachutists**
- 25/00 Emergency apparatus or devices, not otherwise provided for** (parachutes B64D 17/00, B64D 19/00; jettisoning of fuel tanks or fuel B64D 37/00; safety belts or body harnesses in general A62B 35/00; safety belts or body harnesses for land vehicles B60R 22/00; severable or jettisonable parts of fuselage facilitating emergency escape B64C) [4]

**B64D – B64G**

<b>27/00</b>	<b>Arrangement or mounting of power plant in aircraft; Aircraft characterised thereby</b> (attitude, flight-direction, or altitude control of aircraft by jet reaction B64C)	<b>37/00</b>	<b>Arrangements in connection with fuel supply for power plant</b> (refuelling during flight B64D 39/00; tanks constructed integrally with aircraft wings or transferring fuels to adjust aircraft trim B64C; ground installations for fuelling aircraft B64F; tanks in general B65D)
<b>29/00</b>	<b>Power-plant nacelles, fairings, or cowlings</b> (nacelles not otherwise provided for B64C)	<b>39/00</b>	<b>Refuelling during flight</b> (filling or emptying fuel tanks B64D 37/00)
<b>31/00</b>	<b>Power plant control; Arrangement thereof</b> (flying controls, conjoint control of power plant and propeller B64C)	<b>41/00</b>	<b>Power installations for auxiliary purposes</b>
<b>33/00</b>	<b>Arrangement in aircraft of power plant parts or auxiliaries not otherwise provided for</b>	<b>43/00</b>	<b>Arrangements or adaptations of instruments</b> (arrangements of cameras B64D 47/00; aeronautical measuring instruments <u>per se</u> G01C)
<b>35/00</b>	<b>Transmitting power from power plant to propellers or rotors; Arrangements of transmissions</b> (propellers or rotors <u>per se</u> , helicopter transmissions B64C)	<b>45/00</b>	<b>Aircraft indicators or protectors not otherwise provided for</b> (camouflage F41H 3/00; lightning arrestors H01C 7/00, H01C 8/00, H01G 9/18, H01T)
		<b>47/00</b>	<b>Equipment not otherwise provided for</b>

**B64F GROUND OR AIRCRAFT-CARRIER-DECK INSTALLATIONS****Note**

In this subclass, the following terms or expressions are used with the meanings indicated:

- “installations” embraces equipment, including mobile equipment, peculiar to use in connection with aircraft and not fitted thereto;
- “ground installations” embraces waterborne installations. [3]

- 1/00** **Ground or aircraft-carrier-deck installations**  
(specially adapted for captive aircraft B64F 3/00; aircraft-carriers B63; fog-dispersal installations E01H; wind tunnels G01M; grounded flight trainers G09B)
- 3/00** **Ground installations specially adapted for captive aircraft** (railway aspects B61)
- 5/00** **Designing, manufacturing, assembling, cleaning, maintaining, or repairing aircraft, not otherwise provided for**

**B64G COSMONAUTICS; VEHICLES OR EQUIPMENT THEREFOR** (apparatus for, or methods of, winning materials from extraterrestrial sources E21C 51/00)**Notes**

- (1) This subclass covers only vehicles, equipment or the like, which are specially adapted for cosmonautics.
- (2) This subclass does not cover vehicles and equipment applicable to both cosmonautics and aeronautics, which are covered by the appropriate aeronautical subclasses of class B64.
- (3) In this subclass, the following term is used with the meaning indicated:
- “cosmonautics” includes all transport outside the earth’s atmosphere, and thus includes artificial earth satellites, and interplanetary and interstellar travel.

- |             |                                                                                                                                                                                                                     |      |                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>1/00</b> | <b>Cosmonautic vehicles</b> [3]                                                                                                                                                                                     | 1/42 | . . Arrangements or adaptations of power supply systems (power supply systems <u>per se</u> , <u>see</u> the relevant subclasses) [3] |
| 1/22        | . Parts of, or equipment specially adapted for fitting in or to, cosmonautic vehicles [3]                                                                                                                           | 1/46 | . . Arrangements or adaptations of devices for control of environment or living conditions (space suits B64G 6/00) [3]                |
| 1/24        | . . Guiding or controlling apparatus, e.g. for attitude control (jet-propulsion plants F02K; navigation or navigational instruments, <u>see</u> the relevant subclasses, e.g. G01C; automatic pilots G05D 1/00) [3] |      |                                                                                                                                       |
| 1/36        | . . . using sensors, e.g. sun-sensors, horizon sensors [3]                                                                                                                                                          |      |                                                                                                                                       |

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1/64 . . Systems for coupling or separating cosmonautic vehicles or parts thereof, e.g. docking arrangements [3]</p> <p>1/66 . . Arrangements or adaptations of apparatus or instruments, not otherwise provided for (instruments <u>per se</u>, <u>see</u> the relevant classes, e.g. aerals for use in satellites H01Q 1/27) [3]</p> <p><b>3/00 Observing or tracking cosmonautic vehicles</b> (radio or other waves systems for navigation or tracking G01S)</p> <p><b>4/00 Tools specially adapted for use in space [3]</b></p> | <p><b>5/00 Ground equipment for vehicles, e.g. starting towers, fuelling arrangements</b> (B64G 3/00 takes precedence)</p> <p><b>6/00 Space suits [3]</b></p> <p><b>7/00 Simulating cosmonautic conditions, e.g. for conditioning crews</b> (simulators for teaching or training purposes G09B 9/00)</p> <p><b>99/00 <i>Subject matter not provided for in other groups of this subclass [2009.01]</i></b></p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**B65 CONVEYING; PACKING; STORING; HANDLING THIN OR FILAMENTARY MATERIAL**

**B65B MACHINES, APPARATUS OR DEVICES FOR, OR METHODS OF, PACKAGING ARTICLES OR MATERIALS; UNPACKING** (bundling and pressing devices for cigars A24C 1/00; paper-bag holders as shop or office accessories A47F 13/00; apparatus for coating, e.g. by dipping, B05C; devices for tensioning and securing binders adapted to be supported by the article or articles to be bound B25B; nailing or stapling devices B25C, B27F; inserting documents in envelopes and closing the latter B43M 3/00, B43M 5/00; labelling B65C; wrappers, containers or other packaging elements, e.g. binders, closures, protective caps, B65D; transport or storage devices B65G; devices for handling sheets or webs of interest apart from their application in packaging machines B65H; applying closure members to bottles, jars or similar containers B67B; hand- or power-operated devices not attached to, or not incorporated in, containers or container closures for opening closed containers B67B 7/00; packaging of matches C06F; wrapping sugar during manufacture C13H; packaging of ammunition or explosive charges F42B 39/00; making containers or receptacles, see the appropriate subclasses)

**Notes**

- (1) This subclass does not cover:
- operations of the types mentioned in Note (2) (a) to (f), employed in the manufacture of articles other than packages, which are covered by other appropriate subclasses, e.g. making confectionery products by casting in moulds formed by wrappers A23G, filling ammunition, e.g. cartridges, F42B 33/00;
  - methods of packaging, which are wholly characterised by the form of the package produced, or the form of the container or packaging-element used, which are covered by B65D.
- (2) In this subclass, the following terms are used with the meanings indicated:
- “packaging” includes mainly the following operations:
    - (a) filling portable containers or receptacles with materials or small articles to form packages;
    - (b) inserting articles or groups of articles into containers or receptacles;
    - (c) closing filled containers or receptacles otherwise than by metal-, glass-, or wood-working operations;
    - (d) enclosing, or partially enclosing, articles or quantities of material, in sheets, strips, blanks, webs, or tubes of thin flexible material, e.g. wrapping;
    - (e) bundling articles, e.g. holding articles together in groups by applying string or wire;
    - (f) attaching articles to cards, sheets, or webs.
  - “package” means the end product of a packaging operation, e.g. a filled and closed container, an article enclosed in a wrapper, a group of articles held together by string or wire, a crate of bottles.
  - “materials” includes matter, or masses of articles, which are to be packaged, as distinct from separate or individual articles.

**Subclass Index****METHODS AND APPARATUS FOR PACKAGING**

## Of general application

in individual receptacles: for materials; for objects; closing after filling ..... 1/00, 3/00; 5/00; 7/00

enclosing successively in webs; wrapping; by attachment to carriers ..... 9/00; 11/00; 15/00

for objects: bundling; joining ..... 13/00; 17/00

other processes and apparatus ..... 17/00

## For particular objects or materials;

## under particular conditions

for fragile rod-shaped or tubular objects; for bottles; for other articles presenting special problems ..... 19/00; 21/00; 23/00; 25/00

bundling particular articles ..... 27/00

using removable coatings ..... 33/00

## for particular materials:

fibrous; other ..... 27/00; 29/00

## under particular atmospheric or

gaseous conditions ..... 31/00

**DETAILS OF APPARATUS AND AUXILIARY DEVICES OR OPERATIONS, NOT OTHERWISE PROVIDED FOR**

## Relating to contents

supply arrangements; introducing into containers or wrappers; preservation, purification ..... 35/00; 37/00; 39/00; 55/00

other devices or methods ..... 63/00

## Relating to containers

supplying container-forming material; forming containers; forming pockets; holding wrappers during wrapping ..... 41/00; 43/00; 47/00; 45/00

bundling wrappers round contents; shrinking; closing; preserving, purifying ..... 49/00; 53/00; 51/00; 55/00

other devices or methods ..... 61/00

## Relating to apparatus: control,

## safety; adaptation to different

requirements; other details ..... 57/00; 59/00; 65/00

PACKAGING BY HAND ..... 67/00

## UNPACKING NOT OTHERWISE

PROVIDED FOR ..... 69/00

**Machines, apparatus, or methods of general application for packaging articles or materials**

- 1/00 Packaging fluent solid material, e.g. powders, granular or loose fibrous material, loose masses of small articles, in individual containers or receptacles, e.g. bags, sacks, boxes, cartons, cans, jars** (under special atmospheric or gaseous conditions B65B 31/00)
- 1/04 . Methods of, or means for, filling the material into the containers or receptacles
- 1/06 . . by gravity flow
- 1/10 . . by rotary feeders
- 1/16 . . by pneumatic means, e.g. by suction
- 1/30 . Devices or methods for controlling or determining the quantity or quality of the material fed or filled
- 3/00 Packaging plastic material, semiliquids, liquids, or mixed solids and liquids, in individual containers or receptacles, e.g. bags, sacks, boxes, cartons, cans, jars** (packaging under special atmospheric or gaseous conditions, adding propellants to aerosol containers B65B 31/00; filling bottles or other containers with liquids or semi-liquids by bottling machines B67C; filling of gas bottles at high pressure for storing gases F17C)
- 3/04 . Methods of, or means for, filling the material into the containers or receptacles
- 3/10 . . by application of pressure to material (by screw-type feeders B65B 3/04)
- 5/00 Packaging individual articles in containers or receptacles, e.g. bags, sacks, boxes, cartons, cans, jars**
- 5/06 . Packaging groups of articles, the groups being treated as single articles
- 5/10 . Filling containers or receptacles progressively or in stages by introducing successive articles, or layers of articles
- 7/00 Closing containers or receptacles after filling** (combinations of container-closing apparatus with apparatus for filling containers B65B 1/00, B65B 3/00, B65B 5/00; under special atmospheric or gaseous conditions B65B 31/00; devices for, or methods of, sealing or securing package folds or closures, e.g. twisted bag necks, B65B 51/00; shrinking wrappers, containers, container covers or container cover securing members during or after packaging B65B 53/00)
- 7/16 . Closing semi-rigid or rigid containers or receptacles not deformed by, or not taking-up shape of, contents, e.g. boxes, cartons (closing cans by metal-working operations B21D 51/26)
- 7/28 . . by applying separate preformed closures, e.g. lids, covers
- 9/00 Enclosing successive articles, or quantities of material, e.g. liquids or semiliquids, in flat, folded, or tubular webs of flexible sheet material; Subdividing filled flexible tubes to form packages**
- 9/06 . Enclosing articles, or quantities of material, in a longitudinally-folded web, or in a web folded into a tube about the articles or quantities of material placed upon it
- 9/10 . Enclosing articles, or quantities of material, in preformed tubular webs, or in webs formed into tubes around filling nozzles, e.g. extruded tubular webs (sausage making A22C 11/00)

- 11/00 Wrapping, e.g. partially or wholly enclosing, articles, or quantities of material, in strips, sheets, or blanks, of flexible material** (bundling articles by applying narrow strips or bands of flexible material B65B 13/00; devices for folding or bending wrappers around contents B65B 49/00; devices for gathering or twisting wrappers B65B 51/00)
- 11/02 . Wrapping articles, or quantities of material, without changing their position during the wrapping operation, e.g. in moulds with hinged folders (by doubling a wrapper and securing its opposed free margins to enclose contents B65B 11/48; by disposing contents between two sheets and securing their opposed free margins B65B 11/50; covering or wrapping cores by winding webs, tapes, or filamentary material B65H 81/00)
- 11/06 . Wrapping articles, or quantities of material, by conveying wrapper and contents in defined paths
- 11/48 . Enclosing articles, or quantities of material, by folding a wrapper, e.g. a pocketed wrapper, and securing its opposed free margins to enclose contents
- 11/50 . Enclosing articles, or quantities of material, by disposing contents between two sheets, e.g. pocketed sheets, and securing their opposed free margins (apparatus or devices for forming pockets in or from sheets, blanks or webs B65B 47/00)
- 13/00 Bundling articles** (specially adapted for harvesting A01D 37/00, A01D 39/00, A01D 59/00, A01F 1/00; tying devices in baling presses A01F 15/00, B30B 9/00; bundling particular articles presenting special problems using string, wire, or narrow tape or band B65B 27/00)
- 13/18 . Details of, or auxiliary devices used in, bundling machines
- 15/00 Attaching articles to cards, sheets, strings, webs, or other carriers**
- 17/00 Other machines, apparatus, or methods for packaging articles or materials**

**Machines, apparatus, or methods adapted for packaging articles or materials presenting special problems, or for special packaging operations; Unpacking bottles or eggs**

- 19/00 Packaging rod-shaped or tubular articles susceptible to damage by abrasion or pressure, e.g. cigarettes, cigars, macaroni, spaghetti, drinking straws, welding electrodes** (final treatment of cigars or cigarettes after manufacture A24C 1/00, A24C 5/00)
- 21/00 Packaging or unpacking of bottles** (bundling bottles B65B 27/00)
- 23/00 Packaging fragile or shock-sensitive articles other than bottles; Unpacking eggs** (embedding articles in shock-absorbing media B65B 55/00)
- 25/00 Packaging other articles presenting special problems** (bundling B65B 27/00)
- 25/02 . Packaging agricultural or horticultural products
- 25/14 . Packaging paper or like sheets, envelopes, or newspapers, in flat, folded, or rolled form
- 27/00 Bundling particular articles presenting special problems using string, wire, or narrow tape or band; Baling fibrous material, e.g. peat, not otherwise provided for** (bundling articles in general B65B 13/00)
- 27/08 . Bundling paper sheets, envelopes, bags or other thin flat articles; Bundling newspapers
- 29/00 Packaging of materials presenting special problems**

- 31/00 Packaging articles or materials under special atmospheric or gaseous conditions; Adding propellants to aerosol containers** (auxiliary treatments during loading or unloading in a fluid medium other than air B65G 69/00)
- 31/02 . Filling, closing, or filling and closing, containers in chambers maintained under vacuum or superatmospheric pressure or containing a special atmosphere, e.g. of inert gas
- 31/04 . Evacuating, pressurising, or gasifying filled containers or wrappers by means of nozzles through which air or other gas, e.g. an inert gas, is withdrawn or supplied (nozzles for introducing articles or materials into containers B65B 39/00)
- 33/00 Packaging articles by applying removable, e.g. strippable, coatings** (B65B 11/50 takes precedence; applying liquids or other fluent materials to surfaces in general B05; wrapping cores by winding B65H 81/00) [3]

**Details of, auxiliary devices applied to, or auxiliary measures taken in, machines, apparatus, or methods, not otherwise provided for**

- 35/00 Supplying, feeding, arranging, or orientating articles to be packaged** (cigarettes B65B 19/00; bottles B65B 21/00; eggs B65B 23/00; biscuits B65B 23/00; if not restricted to packaging machines B07C, B65G, B65H)
- 35/30 . Arranging and feeding articles in groups (orientating B65B 35/00)
- 35/44 . . by endless belts or chains
- 35/50 . . Stacking one article, or group of articles, upon another before packaging
- 37/00 Supplying or feeding fluent-solid, plastic, or liquid material, or loose masses of small articles, to be packaged** (methods of, or means for, filling individual containers with such materials or articles B65B 1/04, B65B 3/04)
- 39/00 Nozzles, funnels, or guides for introducing articles or materials into containers or wrappers** (nozzles in general B05B; funnels in general B67C 11/00)
- 41/00 Supplying or feeding container-forming sheets or wrapping material** (in general B65H)
- 43/00 Forming, feeding, opening, or setting-up containers or receptacles in association with packaging** (forming pockets in sheets, blanks, or webs, by pressing the material into forming dies or moving it through folding dies B65B 47/00)
- 43/24 . Breaking creases to facilitate setting-up cartons
- 43/26 . Opening or distending bags; Opening, erecting, or setting-up boxes, cartons, or carton blanks
- 43/38 . Opening hinged lids
- 43/40 . Removing separate lids
- 43/41 . Opening drawer-and-shell cartons
- 43/42 . Feeding or positioning bags, boxes, or cartons in the distended, opened, or set-up state; Feeding preformed rigid containers, e.g. tins, capsules, glass tubes, glasses, to the packaging position; Locating containers or receptacles at the filling position (by means of filling nozzles B65B 39/00); Supporting containers or receptacles during the filling operation (by filling nozzles B65B 39/00)

- 45/00 Apparatus or devices for supporting or holding wrappers during wrapping operation** (filling nozzles, funnels, guides B65B 39/00)
- 47/00 Apparatus or devices for forming pockets or receptacles in or from sheets, blanks, or webs, comprising essentially a die into which the material is pressed or a folding die through which the material is moved**
- 49/00 Devices for folding or bending wrappers around contents**
- 51/00 Devices for, or methods of, sealing or securing package folds or closures, e.g. twisted bag necks**
- 51/09 . by deformation of the closure [6]
- 51/10 . Applying or generating heat or pressure or combinations thereof (B65B 51/09 takes precedence) [6]
- 51/14 . . by reciprocating or oscillating members
- 51/20 . . by fluid pressure acting directly on folds or on opposed surfaces, e.g. using hot-air jets (shrinking wrappers by heating B65B 53/00)
- 51/22 . . by friction or ultrasonic or high-frequency electrical means
- 51/26 . . Devices specially adapted for producing transverse or longitudinal seams in webs or tubes
- 53/00 Shrinking wrappers, containers, container covers or container cover securing members during or after packaging**
- 55/00 Preserving, protecting, or purifying packages or package contents in association with packaging** (by packaging under special atmospheric or gaseous conditions B65B 31/00; devices for placing protecting sheets, plugs, or wads over contents B65B 61/20; if not restricted to packaging A23L, A61L)
- 55/02 . Sterilising, e.g. of complete packages
- 55/04 . . Sterilising wrappers or receptacles prior to, or during, packaging
- 57/00 Automatic control, checking, warning, or safety devices** (registering wrapping or container-forming material fed from rolls B65B 41/00; accident-prevention measures applicable for general use F16P; photoelectric cells H01J, H01L; such devices in general, see the relevant classes)
- 57/02 . responsive to absence, presence, abnormal feed, or misplacement of binding or wrapping material, containers, or packages
- 59/00 Arrangements to enable machines to handle articles of different sizes, to produce packages of different sizes, to vary the contents of packages, or to give access for cleaning or maintenance purposes**
- 61/00 Auxiliary devices, not otherwise provided for, for operating on sheets, blanks, webs, binding material, containers or packages**
- 61/04 . for severing webs, or for separating joined packages
- 61/18 . for applying or incorporating package-opening or unpacking elements, e.g. tear-strips
- 61/20 . for adding cards, coupons, or other inserts to package contents (adding unpacking elements B65B 61/18; labelling B65C)
- 63/00 Auxiliary devices, not otherwise provided for, for operating on articles or materials to be packaged**

- 65/00 Details peculiar to packaging machines and not otherwise provided for; Arrangements of such details
- 67/00 Apparatus or devices facilitating manual packaging operations; Sack holders

- 69/00 Unpacking of articles or materials, not otherwise provided for

**B65C LABELLING OR TAGGING MACHINES, APPARATUS, OR PROCESSES** (nailing or stapling in general B25C, B27F; processes for applying decalcomanias B44C 1/16; applying labels for packaging purposes B65B; labels, name-plates G09F)

**Note**

In this subclass, the following term is used with the meaning indicated:

- “labels” covers also decalcomanias, stamps or the like.

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1/00 <b>Labelling flat essentially-rigid surfaces</b> (labelling of fabrics B65C 5/00)</p> <p>3/00 <b>Labelling other than flat surfaces</b> (of fabrics B65C 5/00)</p> <p>5/00 <b>Labelling fabrics or comparable materials or articles with deformable surface, e.g. paper, fabric rolls, stockings, shoes</b> (affixing labels to non-rigid containers B65C 3/00; by sewing D05B)</p> <p>7/00 <b>Affixing tags</b> (in combination with filling of tea bags B65B 29/00)</p> <p>9/00 <b>Details of labelling machines or apparatus</b></p> <p>9/08 . Label feeding</p> | <p>9/26 . Devices for applying labels</p> <p>9/46 . Applying date marks, code marks, or the like, to the label during labelling (manually-controlled or operable apparatus having printing equipment B65C 11/00; ticket printing and issuing G07B 1/00)</p> <p>11/00 <b>Manually-controlled or manually-operable label dispensers, e.g. modified for the application of labels to articles</b> (special furniture, fittings, or accessories for shops, storehouses, bars, or the like A47F; for paper napkins, for toilet paper A47K; for playing cards A63F; movable-strip writing or reading apparatus B42D 19/00; adhesive tape dispensers B65H 35/06; dispensers for tickets G07B; coin-operated dispensers for stamps G07F)</p> |
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**B65D CONTAINERS FOR STORAGE OR TRANSPORT OF ARTICLES OR MATERIALS, E.G. BAGS, BARRELS, BOTTLES, BOXES, CANS, CARTONS, CRATES, DRUMS, JARS, TANKS, HOPPERS, FORWARDING CONTAINERS; ACCESSORIES, CLOSURES, OR FITTINGS THEREFOR; PACKAGING ELEMENTS; PACKAGES** (containers specially adapted for storing agricultural or horticultural products A01F 25/14; containers specially adapted for use in dairies A01J; purses, luggage, hand carried bags A45C; travelling or camp equipment, sacks or packs carried on the body A45F; household or table equipment A47G; mail or newspapers receptacles A47G 29/00; kitchen equipment A47J; packages or wrapping arrangements for used absorbent pads A61F 13/15; associated with vehicles, see the appropriate subclass of B60 to B64; machines, apparatus, or devices for, or methods of, packaging articles or materials B65B; sack holders B65B 67/00; refuse receptacles B65F 1/00; handling sheets, webs or filamentary material B65H; load-engaging elements or devices attached to lifting or lowering gear of cranes or adapted for connection therewith for transmitting lifting forces B66C; liquid handling B67; storing gases F17; making containers, see subclasses dealing with the working of the material concerned)

**Notes**

- (1) This subclass covers: [6]
  - containers, packaging elements or packages with auxiliary means or provision for displaying articles or materials; [6]
  - methods of packaging which are wholly characterised by the form of the package produced or the form of the container or packaging element used, as distinct from the operations performed or the apparatus employed, which are covered by subclass B65B. [6]
- (2) This subclass, which is intended to be as comprehensive as possible, only excludes containers or packages of a nature clearly confined to a single other subclass, which are classified in that subclass.
- (3) In this subclass, groups B65D 5/00, B65D 27/00, B65D 30/00 or B65D 65/00 include constructional features of foldable or erectable container or wrapper blanks as well as the containers or wrappers formed by folding or erecting such blanks.
- (4) Containers, packaging elements or packages classified in group B65D 85/00, are also classified according to the constructional or functional features, if such features are of interest. [6]
- (5) *Large containers, as defined in Note (6) below, are classified in groups B65D 88/00 or B65D 90/00. Features that are of interest for containers in general may also be classified in other groups of subclass B65D when they are considered to represent information of interest for search. [2009.01]*
- (6) In this subclass, the following terms or expressions are used with the meanings indicated:
  - “rigid or semi-rigid containers” includes:
    - (a) containers not deformed by, or not taking-up the shape of, their contents;
    - (b) containers adapted to be temporarily deformed to expel their contents;
    - (c) pallets;

- (d) trays;
  - “flexible containers” includes:
    - (a) containers deformed by, or taking-up the shape of, their contents;
    - (b) containers adapted to be permanently deformed to expel their contents;
  - “packaging elements” includes:
    - (a) elements, other than containers, for covering, protecting, stiffening, or holding together articles or materials to be stored or transported;
    - (b) packaging materials of special type or form not provided for in other subclasses;
  - “packages” includes:
    - (a) combinations of containers or packaging elements with articles or materials to be stored or transported;
    - (b) articles joined together for convenience of storage or transport;
  - “paper” includes materials, e.g. cardboard, plastic sheet materials, laminated materials, or metal foils, worked in a manner analogous to paper;
  - “large containers”, in groups B65D 88/00 or B65D 90/00, means containers having about the size of containers used in container traffic, sometimes referred to as freight, forwarding or “ISO” (International Standardization Organization) containers, or larger containers. [3]
- (7) Tamper-indicating means for containers or closures are classified in the group appropriate to the type of container or closure, e.g. B65D 5/42, B65D 5/54, B65D 17/00, B65D 27/12, B65D 27/00, B65D 33/34, B65D 41/32, B65D 47/00, B65D 49/00, B65D 51/18, B65D 55/02. [6]

### Subclass Index

#### GENERAL CONTAINERS

Rigid or semi-rigid characterised by

- their structure or material ..... 1/00 to 13/00
- their kind ..... 19/00, 21/00
- opening by cutting or tearing ..... 17/00
- their particular use ..... 81/00 to 85/00
- details not otherwise provided for ..... 23/00, 25/00

Flexible characterised by

- their kind ..... 27/00 to 37/00
- their particular use ..... 81/00 to 85/00

LARGE CONTAINERS ..... 88/00, 90/00

#### MOVABLE OR HINGED CLOSURES

Kinds of closure ..... 39/00, 41/00, 43/00, 50/00, 51/00

Clamping or using closures ..... 45/00, 47/00, 49/00

Accessories ..... 53/00, 55/00

#### PACKAGING ELEMENTS

Material ..... 65/00, 67/00

For particular use ..... 81/00, 85/00

Accessories

- internal ..... 57/00, 59/00
- external ..... 61/00, 63/00
- not otherwise provided for ..... 67/00

#### KINDS OF PACKAGES

Bales; articles on carriers; with enclosing tube, sheet, or web; using preformed containers ..... 71/00; 73/00; 75/00; 77/00

Assemblies of objects ..... 69/00, 71/00

For particular use ..... 81/00, 83/00, 85/00

Kinds or details not otherwise provided for ..... 79/00

### General kinds of rigid or semi-rigid containers [3]

- 1/00 Rigid or semi-rigid containers having bodies formed in one piece, e.g. by casting metallic material, by moulding plastics, by blowing vitreous material, by throwing ceramic material, by moulding pulped fibrous material or by deep-drawing operations performed on sheet material** (by winding, bending, or folding paper B65D 3/00, B65D 5/00; specially constructed to be opened by cutting, piercing, or tearing of wall portions B65D 17/00; pallets B65D 19/00; details of bottles or of jars B65D 23/00; bundles of articles held together by packaging elements for convenience of storage or transport, e.g. portable segregating carriers for plural receptacles such as beer cans or pop bottles, B65D 71/00) [5]
- 1/02 . . . . . Bottles or similar containers with necks or like restricted apertures, designed for pouring contents (thermally insulated containers B65D 81/38, A47J 41/00)
- 1/04 . . . . . Multi-cavity bottles
- 1/06 . . . . . with closable apertures at bottom
- 1/08 . . . . . adapted to discharge drops (droppers B65D 47/06)
- 1/09 . . . . . Ampoules (specially adapted for medical or pharmaceutical purposes A61J 1/06) [5]

- 1/22 . . . . . Boxes or like containers with side walls of substantial depth for enclosing contents
- 1/34 . . . . . Trays or like shallow containers
- 1/40 . . . . . Details of walls (other container details B65D 23/00, B65D 25/00)
- 3/00 Rigid or semi-rigid containers having bodies or peripheral walls of curved or partially-curved cross-section made by winding or bending paper without folding along defined lines** (with end walls of different materials B65D 6/00, B65D 8/00)
- 5/00 Rigid or semi-rigid containers of polygonal cross-section, e.g. boxes, cartons, trays, formed by folding or erecting one or more blanks made of paper** (pallets B65D 19/00; bundles of articles held together by packaging elements for convenience of storage or transport, e.g. portable segregating carriers for plural receptacles such as beer cans, pop bottles, B65D 71/00; forming foldable or erectable blanks B31B) [5]
- 5/02 . . . . . by folding or erecting a single blank to form a tubular body with or without subsequent folding operations, or the addition of separate elements, to close the ends of the body (B65D 5/36 takes precedence)



- 5/20 . by folding-up portions connected to a central panel from all sides to form a container body, e.g. of tray-like form (B65D 5/36 takes precedence)
  - 5/36 . specially constructed to allow collapsing and re-erecting without disengagement of side or bottom connections
  - 5/42 . Details of containers or of foldable or erectable container blanks
  - 5/44 . . Integral, inserted or attached portions forming internal or external fittings [6]
  - 5/46 . . . Handles
  - 5/48 . . . Partitions
  - 5/50 . . . Internal supporting or protecting elements for contents (elements formed by inward- folding of a wall extending from, and continuously around, an end of a tubular body B65D 5/02; partitions B65D 5/48)
  - 5/54 . . Lines of weakness to facilitate opening of container or dividing it into separate parts by cutting or tearing (break-in flaps, or members adapted to be torn-off, to provide pouring openings B65D 5/70)
  - 5/56 . . Linings or internal coatings
  - 5/64 . . Lids
  - 5/70 . . Break-in flaps, or members adapted to be torn-off, to provide pouring openings (B65D 5/74 takes precedence)
  - 5/72 . . Contents-dispensing means
  - 5/74 . . . Spouts
  - 6/00 Containers having bodies formed by interconnecting or uniting two or more rigid, or substantially rigid, components made wholly or mainly of metal, plastics, wood or substitutes therefor** (containers having a curved cross-section B65D 8/00; specially constructed to be opened by cutting, piercing, or tearing of wall portions B65D 17/00; pallets B65D 19/00) [3]
  - 6/16 . collapsible [3]
  - 6/18 . . with hinged components [3]
  - 8/00 Containers having a curved cross-section formed by interconnecting or uniting two or more rigid, or substantially rigid, components made wholly or mainly of metal, plastics, wood or substitutes therefor** (specially constructed to be opened by cutting, piercing, or tearing of wall portions B65D 17/00; pallets B65D 19/00) [3]
  - 8/04 . characterised by wall construction or by connection between walls [3]
  - 13/00 Containers having bodies formed by interconnecting two or more rigid, or substantially rigid, components made wholly or mainly of the same material, other than metal, plastics, wood, or substitutes therefor** (pallets B65D 19/00) [4]
  - 17/00 Rigid or semi-rigid containers specially constructed to be opened by cutting or piercing, or by tearing of frangible member or portion** (opening arrangements or devices for containers made by winding, bending or folding paper B65D 3/00, B65D 5/00; frangible inner closure members associated with caps, lids or covers B65D 51/18; opening devices added or incorporated during filling or closing of containers B65D 77/22; separate devices for opening closed containers B67B 7/00)
  - 17/28 . about line or point of weakness [3]
  - 19/00 Pallets or like platforms, with or without side walls, for supporting loads to be lifted or lowered** (in devices for lifting or lowering bulky or heavy goods for loading or unloading purposes B66F 9/12)
  - 19/02 . Rigid pallets with side walls, e.g. box pallets
  - 19/22 . Rigid pallets without side walls
  - 19/38 . Details or accessories
  - 21/00 Nestable, stackable or joinable containers; Containers of variable capacity** (containers of polygonal cross-section adapted to be of variable capacity formed by folding or erecting blanks made of paper B65D 5/00)
  - 21/02 . Containers specially shaped, or provided with fittings or attachments, to facilitate nesting, stacking, or joining together [5]
  - 21/024 . . for stacking containers lying on their sides, or for joining containers side-by-side, by means which are lateral with respect to the normal orientation of the containers [6]
  - 21/032 . . for stacking containers one upon another in the upright or upside down position, e.g. with vertically projecting elements or recesses [6]
  - 21/04 . . Open-ended containers shaped to be nested when empty and to be superposed when full
  - 21/06 . . with movable parts adapted to be placed in alternative positions for nesting the containers when empty and for stacking them when full
- Details of rigid or semi-rigid containers not otherwise provided for [3]**
- 23/00 Details of bottles or jars not otherwise provided for** (closure-securing elements B65D 45/00; feeding bottles with thermometers A61J 9/00)
  - 23/10 . Handles
  - 25/00 Details of other kinds or types of rigid or semi-rigid containers**
  - 25/02 . Internal fittings (of containers made by folding or erecting blanks made of paper B65D 5/44)
  - 25/04 . . Partitions
  - 25/10 . . Devices to locate articles in containers
  - 25/14 . Linings or internal coatings (of containers made by folding or erecting blanks made of paper B65D 5/56)
  - 25/20 . External fittings (of containers made by folding or erecting blanks made of paper B65D 5/44)
  - 25/22 . . for facilitating lifting or suspending of containers
  - 25/28 . Handles (of containers made by folding or erecting blanks made of paper B65D 5/46; of bottles or jars B65D 23/10)
  - 25/38 . Devices for discharging contents (incorporated in removable or non-permanently-secured closure members B65D 47/00; for discharging thin flat articles B65D 83/08)
- General kinds of flexible containers [3]**
- 27/00 Envelopes or like essentially-rectangular flexible containers for postal or other purposes having no structural provision for thickness of contents** (with shock-absorbing properties B65D 81/03; letter-cards B42D 15/00; opening devices incorporated during closing of envelope B43M 5/00; separate devices for opening envelopes B43M 7/00)
  - 27/06 . with provisions for repeated re-use
  - 27/12 . Closures (separate fasteners B42F 1/00)

- 30/00 Sacks, bags or like containers [3]**
- 30/02 . characterised by the material used [3]
- 30/08 . . with laminated or multiple walls in spaced face-to-face relationship, e.g. double walls (B65D 30/10, B65D 30/24 take precedence; with shock-absorbing properties B65D 81/03) [3]
- 30/10 . characterised by shape or construction [3]
- 30/16 . . with rigid end walls, e.g. free standing bags [3]
- 30/22 . . with two or more compartments [3]
- 30/24 . . Bags having valves [3]
- 33/00 Details of, or accessories for, sacks or bags**
- 33/01 . Ventilation or draining of bags (connection of valves to inflatable elastic bodies B60C 29/00) [3]
- 33/02 . Local reinforcements or stiffening inserts, e.g. wires, strings, strips, frames
- 33/06 . Handles
- 33/14 . Suspension means (handles B65D 33/06)
- 33/16 . End- or aperture-closing arrangements or devices (valves of valve bags B65D 30/24; removable stoppers or caps B65D 39/00, B65D 41/00; closures of filled bags B65D 77/10; closing filled bags in association with packaging B65B 7/00, B65B 51/00)
- 33/18 . . using adhesive applied to integral parts, e.g. to flaps (of envelopes B65D 27/12)
- 33/25 . . Riveting; Dovetailing; Screwing; using press buttons or slide fasteners [4]
- 33/34 . . with special means for indicating unauthorised opening
- 33/36 . Means for discharging contents
- 35/00 Pliable tubular containers adapted to be permanently deformed to expel contents, e.g. collapsible tubes for toothpaste or other plastic or semi-liquid material; Holders therefor**
- 35/02 . Body construction
- 35/24 . with auxiliary devices (linings or inserts B65D 35/00)
- 37/00 Portable flexible containers not otherwise provided for**
- Movable or hinged closure members for rigid or semi-rigid containers or for flexible containers presenting similar closing problems; Parts of containers co-operating with closure members or characterised by the form of closure member [3]**
- 39/00 Closures arranged within necks or pouring openings or in discharge apertures, e.g. stoppers** (lids or covers B65D 43/00; with additional securing elements B65D 45/00)
- 41/00 Caps, e.g. crown caps, crown seals, i.e. members having parts arranged for engagement with the external periphery of a neck or wall defining a pouring opening or discharge aperture; Protective cap-like covers for closure members, e.g. decorative covers of metal foil or paper** (B65D 45/00 takes precedence; combinations of caps and protective cap-like covers B65D 51/18; making closures by working metal sheet B21D 51/38; affixing labels B65C 3/00)
- 41/02 . Caps or cap-like covers without lines of weakness, tearing strips, tags, or like opening or removal devices
- 41/04 . . Threaded or like caps or cap-like covers secured by rotation
- 41/32 . Caps or cap-like covers with lines of weakness, tearing-strips, tags, or like opening or removal devices, e.g. to facilitate formation of pouring openings
- 41/34 . . Threaded or like caps or cap-like covers
- 43/00 Lids or covers for rigid or semi-rigid containers** (for cooking vessels A47J 36/00; covers for pressure vessels in general F16J 13/00)
- 43/02 . Removable lids or covers (with means for piercing, cutting, or tearing a frangible inner closure B65D 51/18)
- 43/08 . . having a peripheral flange fitting over the rim of the container
- 43/14 . Non-removable lids or covers
- 43/16 . . hinged for upward or downward movement (hinges of door or similar type E05D)
- 45/00 Clamping or other pressure-applying devices for securing or retaining closure members** (screw-threaded or bayonet connections between stoppers or caps and containers B65D 39/00, B65D 41/04, B65D 41/34; expansible stoppers B65D 39/00; for pressure vessels in general F16J 13/00)
- 47/00 Closures with filling and discharging, or with discharging, devices** (pliable tubular containers with valves opening when closure is pressed against surface B65D 35/00; caps with pierceable membranes B65D 41/02, B65D 41/32; brushes combined or associated with containers A46B 11/00; dispensers for liquid soap A47K 5/00; swabs for applying media to the human body from an integral supply A61F 13/40; desk equipment for applying liquid by contact with surfaces B43M 11/00; fluid delivery valves in general F16K 21/00)
- 47/04 . Closures with discharging devices other than pumps
- 47/06 . . with pouring spouts or tubes; with discharge nozzles or passages (with slidable spouts B65D 47/04)
- 47/08 . . . having articulated or hinged closures
- 47/12 . . . having removable closures
- 47/34 . Closures with discharge by pumping
- 49/00 Arrangements or devices for preventing refilling of containers** (integral, or permanently secured, closures for containers specially adapted to be opened by cutting, piercing, or tearing of wall portions B65D 17/00; for initial filling and for preventing subsequent refilling B65D 47/00)
- 50/00 Closures with means for discouraging unauthorised opening or removal thereof, with or without indicating means, e.g. child-proof closures** (caps or covers secured by rotation with bayonet cams B65D 41/04, B65D 41/34; tamper-indicating closures without means for discouraging, see the relevant groups, e.g. B65D 41/32, B65D 51/18; means per se for discouraging or indicating unauthorised opening or removal of closure B65D 55/02) [5]
- 51/00 Closures not otherwise provided for** (loosely-engaging lids or covers for cooking-vessels A47J 36/00; covers or similar closures as engineering elements for pressure vessels in general F16J 13/00)
- 51/16 . with means for venting air or gas

- 51/18 . Arrangements of closures with protective outer cap-like covers or of two or more co-operating closures (secondary protective cap-like outer covers for caps B65D 41/00)
- 51/24 . combined with auxiliary devices for non-closing purposes
- 53/00 Sealing or packing elements** (sealings in general F16J 15/00); **Sealings formed by liquid or plastic material**
- 55/00 Accessories for container closures not otherwise provided for**
- 55/02 . Locking devices; Means for discouraging or indicating unauthorised opening or removal of closure (containers specially constructed to be opened by tear-strips, strings or the like B65D 17/00; protective covers for bottles B65D 23/00; protective cap-like outer covers for bottle or jar closures B65D 41/02; caps or cap-like closures with tear-strips B65D 41/32; pressure-applying means B65D 45/00; closures with means for discouraging unauthorised opening or removal of closures B65D 50/00; applying labels to bottles B65C 3/00, B65C 9/00) [5]

#### **Kinds or types of packaging elements**

- 57/00 Internal frames or supports for flexible articles, e.g. stiffeners; Separators for articles packaged in stacks or groups, e.g. for preventing adhesion of sticky articles**
- 59/00 Plugs, sleeves, caps, or like rigid or semi-rigid elements for protecting parts of articles or for bundling articles, e.g. protectors for screw-threads, corner protectors, end caps for tubes or for bundling rod-shaped articles**
- 61/00 External frames or supports adapted to be assembled around, or applied to, articles** (collapsible containers B65D 5/00, B65D 6/16, B65D 8/04)
- 63/00 Flexible elongated elements, e.g. straps, for bundling or supporting articles** (for supporting pipes, cables or protective tubing F16L 3/12)
- 63/10 . Non-metallic straps, tapes, or bands; Filamentary elements, e.g. strings, threads, wires; Joints between ends thereof
- 65/00 Wrappers or flexible covers; Packaging materials of special type or form** (wrappers or envelopes with shock-absorbing properties B65D 81/03; layered products per se B32B; materials per se, see the relevant classes)

#### **Note**

Attention is drawn to the definition of “packaging elements” in Note (5) following the title of this subclass.

- 65/02 . Wrappers or flexible covers
- 65/22 . . Details
- 65/38 . Packaging materials of special type or form
- 65/40 . . Applications of laminates for particular packaging purposes
- 65/46 . . Applications of disintegrable, dissolvable or edible materials [3]
- 67/00 Kinds or types of packaging elements not otherwise provided for**

#### **Kinds or types of packages**

- 69/00 Articles joined together for convenience of storage or transport without the use of packaging elements** (joining articles for convenience of packaging B65B 17/00)
- 71/00 Bundles of articles held together by packaging elements for convenience of storage or transport, e.g. portable segregating carrier for plural receptacles such as beer cans, pop bottles; Bales of material** (binding of hay or straw A01D, A01F 1/00; bundling or baling B65B, e.g. B65B 13/00, B65B 27/00)
- 71/02 . Arrangements of flexible binders
- 71/06 . comprising a plurality of articles completely or mainly held together by packaging elements, e.g. under tension [3]
- 71/40 . comprising a plurality of articles held together only partially by packaging elements formed by folding a blank [5]
- 71/50 . comprising a plurality of articles held together only partially by packaging elements formed otherwise than by folding a blank [5]
- 73/00 Packages comprising articles attached to cards, sheets, or webs** (cards for buttons, collar-studs, or sleeve-links A44B 7/00; attaching articles to cards, sheets, or webs B65B 15/00)
- 73/02 . Articles, e.g. small electrical components, attached to webs
- 75/00 Packages comprising articles or materials partially or wholly enclosed in strips, sheets, blanks, tubes, or webs of flexible sheet material, e.g. in folded wrappers** (B65D 71/00 takes precedence; wrapping B65B 11/00) [5]
- 75/04 . Articles or materials wholly enclosed in single sheets or wrapper blanks
- 75/26 . Articles or materials wholly enclosed in laminated sheets or wrapper blanks
- 75/28 . Articles or materials wholly enclosed in composite wrappers, i.e. wrappers formed by associating or interconnecting two or more sheets or blanks
- 75/38 . Articles or materials enclosed in two or more wrappers disposed one inside the other
- 75/52 . Details
- 77/00 Packages formed by enclosing articles or materials in preformed containers, e.g. boxes, cartons, sacks, bags**
- 77/04 . Articles or materials enclosed in two or more containers disposed one within another
- 77/06 . . Liquids or semiliquids enclosed in flexible containers disposed within rigid containers
- 77/10 . Container closures formed after filling (closing filled containers in association with packaging B65B 7/00, B65B 51/00)
- 77/22 . Details
- 77/24 . . Inserts or accessories added or incorporated during filling of containers (opening devices B65D 77/22)
- 79/00 Kinds or details of packages, not otherwise provided for**

**Containers, packaging elements, or packages, of special types or forms or specially adapted for organisms, articles, or materials presenting particular transport, storage, or dispensing problems**

- 81/00 Containers, packaging elements, or packages, for contents presenting particular transport or storage problems, or adapted to be used for non-packaging purposes after removal of contents**
- 81/02 . specially adapted to protect contents from mechanical damage [6]
- 81/03 . . Wrappers or envelopes with shock-absorbing properties, e.g. bubble films [6]
- 81/05 . . maintaining contents at spaced relation from package walls, or from other contents (B65D 81/03 takes precedence) [6]
- 81/107 . . . using blocks of shock-absorbing material [6]
- 81/18 . providing specific environment for contents, e.g. temperature above or below ambient (with thermal insulation B65D 81/38; ice-boxes with cooling means F25D) [6]
- 81/20 . . under vacuum or superatmospheric pressure, or in a special atmosphere, e.g. of inert gas
- 81/24 . Adaptations for preventing deterioration or decay of contents; Applications to the container or packaging material of food preservatives, fungicides, pesticides or animal repellants (with thermal insulation B65D 81/38) [6]
- 81/26 . . with provision for draining away, or absorbing, fluids, e.g. exuded by contents; Applications of corrosion inhibitors or desiccators
- 81/28 . . Applications of food preservatives, fungicides, pesticides, or animal repellents
- 81/30 . . by excluding light or other outside radiation (wrappers B65D 65/02)
- 81/32 . for packaging two or more different materials which must be maintained separate prior to use in admixture (containers with removable or destructible partitions B65D 25/04)
- 81/34 . for packaging foodstuffs intended to be cooked or heated within the package [6]
- 81/38 . with thermal insulation (vacuum bottles or the like A47J 41/00)
- 83/00 Containers or packages with special means for dispensing contents** (dispensing means incorporated in removable or non-permanently secured container closures B65D 47/00; for shops, stores, offices, bars, or the like A47F 1/00; showcases or show cabinets with dispensing arrangements A47F 3/00; magazines for screws or nuts in combination with spanners, wrenches or screwdrivers B25B 23/02; nail dispensers B25C 3/00; for use in connection with the handling of sheets, webs, or filamentary material B65H; coin deliverers G07D 1/00)
- 83/02 . for dispensing rod-shaped articles, e.g. needles (cigar or cigarette receptacles or boxes A24F 15/00)
- 83/04 . for dispensing annular, disc-shaped, or spherical or like small articles, e.g. tablets, pills
- 83/06 . for dispensing powdered or granular material (spraying or atomising apparatus in general B05B)
- 83/08 . for dispensing thin flat articles in succession (dispensers for surgical scalpel blades A61B 17/32)
- 83/14 . for delivery of liquid or semi-liquid contents by internal gaseous pressure, i.e. aerosol containers (spraying or atomising apparatus in general B05B; siphons, pumping of fluid by direct contact of another fluid F04F; vessels for containing or storing compressed, liquefied, or solidified gases F17C)

- 83/16 . . characterised by the actuating means [5]
- 83/28 . . Nozzles, nozzle fittings or accessories specially adapted therefor [5]
- 83/34 . . Cleaning or preventing clogging of the discharge passage [5]
- 83/36 . . allowing operation in any orientation [5]
- 83/38 . . Details of container body (pressure relief devices B65D 83/14) [5]
- 83/40 . . Closure caps (actuator caps B65D 83/16) [5]
- 83/42 . . Filling or charging means [5]
- 83/44 . . Valves specially adapted therefor; Regulating devices (filling or discharging means B65D 83/42; pressure relief devices B65D 83/14) [5]
- 83/58 . . Separate inlets for gas and material in duct to valve (B65D 83/60 takes precedence) [5]
- 83/60 . . Product and propellant separated [5]
- 83/76 . for dispensing fluent material by means of a piston or the like (hand tools for discharging fluent material through an outlet orifice by pressure B05C 17/005) [5]

- 85/00 Containers, packaging elements or packages, specially adapted for particular articles or materials** (B65D 71/00, B65D 83/00 take precedence; hand implements, travelling equipment A45C; cosmetic or toilet equipment A45D; packages for surgical knives, scalpels or blades therefor A61B 17/32; containers specially adapted for medical or pharmaceutical purposes A61J 1/00; paint cans B44D 3/12; oil cans F16N 3/00; containers for carrying smallarms F41C 33/00; packaging of ammunition or explosive charges F42B 39/00; containers for record carriers, specially adapted for cooperation with the recording or reproducing apparatus G11B 23/00) [5,6]

**Note**

Containers, packaging elements or packages classified in this group, are also classified according to the constructional or functional features, if such features are of interest. [6]

- 85/02 . for annular articles (for web or tape-like material wound in flat spiral form B65D 85/67)
- 85/08 . for compressible or flexible rod-shaped or tubular articles
- 85/16 . for compressible or flexible articles of other shapes (for wearing apparel B65D 85/18)
- 85/18 . for wearing apparel, i.e. clothes, headgear, shoes
- 85/20 . for incompressible or rigid rod-shaped or tubular articles (pencil boxes A45C 11/34)
- 85/30 . for articles particularly sensitive to damage by shock or pressure
- 85/34 . . for fruit, e.g. apples, oranges, tomatoes
- 85/38 . . for optical or other delicate measuring, calculating, or control apparatus
- 85/40 . . . for watches or clocks or components thereof
- 85/42 . . for ampoules; for lamp bulbs; for electronic valves or tubes
- 85/48 . . for glass sheets
- 85/50 . for living organisms, articles, or materials sensitive to changes of environment or atmospheric conditions, e.g. land animals, birds, fish, water plants, non-aquatic plants, flower bulbs, cut flowers, foliage (devices for transporting live fish A01K 63/02)
- 85/52 . . for living plants; for growing bulbs
- 85/57 . for recording discs [3]
- 85/575 . for recording-tape cassettes [5]

- 85/58 . for ball bearings, washers, buttons, or like spherical or disc-shaped articles (cards for buttons, collar-studs, sleeve-links A44B 7/00) [3]
- 85/60 . for sweets or like confectionery products [3]
- 85/62 . for stacks of articles; for special arrangements of groups of articles [3]
- 85/64 . for bulky articles [3]
- 85/66 . for jumbo rolls; for rolls of floor covering [3]
- 85/67 . for other web or tape-like material (for recording-tape cassettes B65D 85/575) [3,5]
- 85/68 . for machines, engines, or vehicles in assembled or dismantled form [3]
- 85/72 . for edible or potable liquids, semiliquids, or plastic or pasty materials [3]
- 85/804 . Disposable containers or packages with contents which are infused or dissolved in situ [7]
- 85/82 . for poisons [3]
- 85/84 . for corrosive chemicals [3]
- 85/86 . for electrical components (small electrical components attached to cards, sheets or webs B65D 73/02; for articles particularly sensitive to damage by shock or pressure B65D 85/30; for ampoules, lamp bulbs, electronic valves or tubes B65D 85/42) [6]

- 85/88 . . Batteries [6]
- 85/90 . . Integrated circuits [6]

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- 88/00 Large containers** (component parts, details or accessories B65D 90/00; filling or emptying bunkers, hoppers, or like containers B65G 65/00; construction or assembling of bulk storage containers employing civil engineering techniques in situ or off the site E04H 7/00; gas holders of variable capacity F17B; vessels for containing or storing compressed, liquefied or solidified gases F17C) [3]
  - 90/00 Component parts, details or accessories for large containers** (B65D 88/00 takes precedence) [3]
    - 90/02 . Wall construction [3]
    - 90/04 . . Linings [3]
    - 90/12 . Supports [3]
    - 90/22 . Safety features (floating covers B65D 88/00; arrangements of indicating or measuring devices B65D 90/00; fire-fighting A62C; vehicle fuel tanks characterised by venting means B60K 15/03) [3]

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**B65F GATHERING OR REMOVAL OF DOMESTIC OR LIKE REFUSE** (disinfecting refuse A61L; refuse disintegrators B02C; sorting refuse B03B, B07B; handcarts for transporting refuse receptacles B62B; sack holders B65B 67/00; converting refuse into fertilisers C05F; converting refuse into solid fuels C10L; sewers, cesspools E03F; arrangements in buildings for the disposal of refuse E04F 17/00; refuse-consuming furnaces F23G)

- 1/00 Refuse receptacles** (containers not specially adapted for refuse, features of refuse receptacles of general interest B65D)
  - 1/02 . without removable inserts
  - 1/04 . with removable inserts
  - 1/10 . with refuse filling means, e.g. air-locks
  - 1/12 . with devices facilitating emptying
  - 1/14 . Other constructional features (holders or carriers for hand articles A45F 5/00; fastening devices for wings E05C; hinges E05D)
  - 1/16 . . Lids or covers (pedal or hand-lever operated B65D)

- 3/00 Vehicles particularly adapted for collecting refuse** (vehicles in general B60; driving vehicle equipment or auxiliaries B60K; discharging contents by tilting entire vehicles B65G; wheeled apparatus for emptying sewers or cesspools E03F 7/00)
  - 3/02 . with means for discharging refuse receptacles thereinto (conveyer construction B65G; loaders separate from vehicles B66F; fluid power control systems in general F15B)
- 5/00 Gathering or removal of refuse otherwise than by receptacles or vehicles** (storage silos, charging or discharging thereof B65G)
- 7/00 Cleaning or disinfecting devices combined with refuse receptacles or refuse vehicles** (such devices per se A61L, B08B)
- 9/00 Transferring of refuse between vehicles or containers with intermediate storage or pressing** (presses for baling per se B30B 9/00) [4]

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**B65G TRANSPORT OR STORAGE DEVICES, E.G. CONVEYERS FOR LOADING OR TIPPING; SHOP CONVEYER SYSTEMS; PNEUMATIC TUBE CONVEYERS** (transport or storage devices used in a particular handling or treatment of articles or materials, see the relevant subclass, e.g. in metal-working B21D 43/00, B23Q 7/00, B23Q 41/02; vehicle, railway, sea or aircraft aspects B60 to B64; transportation, conveyor or haulage systems specially adapted for motor vehicle or trailer assembly lines B62D 65/00; in packaging B65B; handling thin or filamentary materials B65H; hoisting, lifting, hauling, e.g. truck loaders B66; handling liquids B67; specially adapted to underground conditions E21F 13/00; storing or distributing gases or liquids F17; in handling radioactive materials G21C 19/00)

#### Subclass Index

HANDLING AND STORAGE		Transfer, trans-shipment.....	63/00
Loading and unloading .....	65/00, 67/00, 69/00	Storage .....	1/00, 3/00, 5/00

Piling, unpling		combinations or systems of	
of articles .....	57/00 to 61/00	general use.....	37/00, 49/00
of loose material .....	65/00	chutes; roller-ways; projectors.....	11/00; 13/00; 31/00
Assisting manual handling .....	7/00, 9/00		
CONVEYERS, CHUTES		Parts or auxiliary devices applicable	
Mechanical		to different kinds	
with endless element.....	15/00 to 23/00	rollers; frames; auxiliary	
with particular movement.....	25/00, 27/00, 29/00, 33/00	handling .....	39/00; 41/00; 47/00
other kinds .....	35/00	control, safety; maintenance .....	43/00; 45/00
		Non-mechanical .....	51/00, 53/00, 54/00

**Storing; Storage devices**

- 1/00 Storing articles, individually or in orderly arrangement, in warehouses or magazines** (conveyer combinations in warehouses, magazines, or workshops B65G 37/00; stacking of articles B65G 57/00; removing articles from stacks B65G 59/00; loading machines B65G 65/00; arrangements of articles for drying or baking in kilns or ovens F26, F27)
- 1/02 . Storage devices (furniture, shop fittings, table equipment A47B, A47F, A47G; mechanical garages E04H; for data record cards in association with machines for marking or sensing data G06K; coin changers or sorters G07D; coin-freed apparatus G07F)
- 1/04 . . mechanical
- 1/06 . . . with means for presenting articles for removal at predetermined position or level (B65G 1/12 takes precedence) [3]
- 1/10 . . . with relatively-movable racks to facilitate insertion or removal of articles
- 1/12 . . . with article supports or holders movable in a closed circuit to facilitate insertion or removal of articles
- 1/137 . . . with arrangements or automatic control means for selecting which articles are to be removed (devices for feeding articles to conveyers from several groups of articles B65G 47/04) [4]
- 1/14 . . Stack holders or separators
- 1/16 . Special arrangements of articles in storage spaces
- 3/00 Storing bulk material or loose, i.e. disorderly, articles** (filling or emptying storage spaces or containers, spreading-out or piling-up bulk material or loose articles B65G 65/00, B65G 69/00; storing agricultural or horticultural produce A01F 25/00)
- 5/00 Storing fluids in natural or artificial cavities or chambers in the earth** (modification of mine passages or chambers for storage purposes, especially for fluids E21F 17/00)

**Devices assisting manual conveyance of articles over short distances, e.g. in storage depots, warehouses or factories**

- 7/00 Devices for assisting manual moving or tilting heavy loads** (chutes B65G 11/00; roller-ways B65G 13/00; for tilting and emptying barrels or casks B65G 65/00)
- 9/00 Apparatus for assisting manual handling having suspended load-carriers movable by hand or gravity** (manually-operated endless-rope or chain conveyers B65G 17/00; railway systems B61B)

**Chutes; Kinds or types of conveyers; Constructional features, details, or auxiliary devices peculiar to conveyers of particular types [4]**

- 11/00 Chutes** (used as storage devices B65G 1/02, B65D 88/00; feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers B65G 47/00; for sports, games, or amusements A63G 21/00; for refuse disposal in buildings E04F 17/00)
- 13/00 Roller-ways** (storage devices comprising roller-ways B65G 1/02; endless-chain conveyers comprising load-supporting rollers B65G 17/00; rollers, or arrangements thereof B65G 39/00; feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers B65G 47/00; in metal-rolling equipment B21B 39/00, B21B 41/00)
- 13/02 . having driven rollers
- 15/00 Conveyers having endless load-conveying surfaces, i.e. belts and like continuous members, to which tractive effort is transmitted by means other than endless driving elements of similar configuration** (having load-conveying surfaces formed by interconnected longitudinal links B65G 17/06; feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers B65G 47/00)
- 15/08 . the load-carrying surface being formed by a concave or tubular belt, e.g. a belt forming a trough
- 15/10 . comprising two or more co-operating endless surfaces with parallel longitudinal axes, or a multiplicity of parallel elements, e.g. ropes defining an endless surface
- 15/30 . Belts or like endless load-carriers (co-operating with rails or the like B65G 21/20; with rollers B65G 39/10; belts in general F16G)
- 15/32 . . made of rubber or plastics
- 15/60 . Arrangements for supporting or guiding belts, e.g. by fluid jets (construction of rollers or supports therefor B65G 39/00, F16G)

- 17/00** **Conveyers having an endless traction element, e.g. a chain, transmitting movement to a continuous or substantially-continuous load-carrying surface or to a series of individual load-carriers; Endless-chain conveyers in which the chains form the load-carrying surface** (feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers B65G 47/00; railway systems, detachable load-carriers on rails B61B; escalators or paternosters neither combined nor associated with loading or unloading apparatus B66B 9/00)
- 17/06 . having a load-carrying surface formed by a series of interconnected, e.g. longitudinal, links, plates, or platforms
- 17/12 . comprising a series of individual load-carriers fixed, or normally fixed, relative to traction element
- 17/16 . comprising individual load-carriers which are pivotally mounted, e.g. for free-swinging movement (guides inverting or tilting load-carriers for emptying B65G 47/34)
- 17/20 . comprising load-carriers suspended from overhead traction chains
- 17/30 . Details; Auxiliary devices (belts B65G 15/30; framework B65G 21/00)
- 17/32 . . Individual load-carriers (control B65G 17/30)
- 19/00** **Conveyers comprising an impeller or a series of impellers carried by an endless traction element and arranged to move articles or materials over a supporting surface or underlying material, e.g. endless scraper conveyers** (feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers B65G 47/00)
- 21/00** **Supporting or protective framework or housings for endless load-carriers or traction elements of belt or chain conveyers** (supporting framework or bases for conveyers as a whole B65G 41/00)
- 21/20 . Means incorporated in, or attached to, framework or housings for guiding load-carriers, traction elements, or loads supported on moving surfaces (arrangements for supporting belts B65G 15/60; rollers or roller arrangements B65G 39/00, F16G)
- 23/00** **Driving gear for endless conveyers** (control devices for conveyers in general B65G 43/00); **Belt- or chain-tensioning arrangements**
- 25/00** **Conveyers comprising a cyclically-moving, e.g. reciprocating, carrier or impeller which is disengaged from the load during the return part of its movement** (jigging B65G 27/00; feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers B65G 47/00; pumps F04)
- 25/04 . the carrier or impeller having identical forward and return paths of movement, e.g. reciprocating conveyers
- 27/00** **Jigging conveyers** (feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers B65G 47/00; jigs for wet separation B03B; generating or transmitting mechanical vibrations B06; jiggers for screening, sifting, or sorting B07B 1/28)
- 27/10 . Applications of devices for generating or transmitting jigging movements
- 29/00** **Rotary conveyers, e.g. rotating discs, arms, star-wheels or cones** (mechanical projectors B65G 31/00; screw or rotary spiral conveyers B65G 33/00; feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers B65G 47/00)
- 31/00** **Mechanical throwing machines for articles or solid materials** (feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers B65G 47/00; distributors for fertilisers A01C; moulding machines B22C; sandblasting devices B24C; implements for applying plaster E04F 21/02)
- 33/00** **Screw or rotary spiral conveyers** (feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers B65G 47/00; screws for extruding, compressing, kneading, mixing, pumping, or other special operations, see the relevant classes)
- 33/08 . for fluent solid materials
- 35/00** **Mechanical conveyers not otherwise provided for** (reciprocating belt conveyers B65G 25/04; feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers B65G 47/00)
- 37/00** **Combinations of mechanical conveyers of the same kind, or of different kinds, of interest apart from their application in particular machines or use in particular manufacturing processes** (mechanical storage devices B65G 1/04; series of co-operating belt conveyer units B65G 15/00; series of co-operating chain conveyer units B65G 17/00; sequence control of combined conveyers B65G 43/10; feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers B65G 47/00; specially adapted for handling radioactive materials G21)
- Common features or details of, or auxiliary devices applicable to, conveyers of different kinds or types; Feeding or discharging devices incorporated in, or operatively associated with, conveyers**
- 39/00** **Rollers, e.g. drive rollers, or arrangements thereof incorporated in roller-ways or other types of mechanical conveyers** (driving gear for rollers of roller-ways B65G 13/02; drive rollers of endless conveyers B65G 23/00; arrangement of rollers in metal-rolling equipment B21B 39/02; friction members F16H 55/32)
- 39/10 . Arrangements of rollers (on a single axle B65G 39/00)
- 41/00** **Supporting frames or bases for conveyers as a whole, e.g. transportable conveyer frames**
- 43/00** **Control, e.g. safety, warning, fault-correcting, devices** (for elevators, escalators or moving walkways B66B; in general F16P, G08B)
- 43/02 . detecting dangerous physical condition of load-carriers, e.g. for interrupting the drive in the event of overheating
- 43/04 . detecting slip between driving element and load-carrier, e.g. for interrupting the drive
- 43/06 . interrupting the drive in case of driving-element breakage; Braking or stopping loose load-carriers
- 43/08 . Control devices operated by article or material being fed, conveyed, or discharged
- 43/10 . Sequence control of conveyers operating in combination

- 45/00 Lubricating, cleaning, or clearing devices** (adaptations of roller sleeves for cleaning belts B65G 39/00)
- 47/00 Article or material-handling devices associated with conveyers; Methods employing such devices** (for sorting, e.g. postal, B07C)
- 47/02 . Devices for feeding articles or materials to conveyers
  - 47/04 . . for feeding articles
  - 47/12 . . . from disorderly-arranged article piles or from loose assemblages of articles
  - 47/14 . . . . arranging or orientating the articles by mechanical or pneumatic means during feeding (during transit by conveyer B65G 47/24, B65G 47/26)
  - 47/22 . Devices influencing the relative position or the attitude of articles during transit by conveyers (during feeding B65G 47/14)
  - 47/24 . . orientating the articles
  - 47/26 . . arranging the articles, e.g. varying spacing between individual articles (stacking or de-stacking B65G 57/00, B65G 59/00, B65G 61/00)
  - 47/28 . . . during transit by a single conveyer
  - 47/30 . . . during transit by a series of conveyers
  - 47/31 . . . . by varying the relative speeds of the conveyers forming the series
  - 47/34 . Devices for discharging articles or materials from conveyers (B65G 47/24 takes precedence; sorting in general B07)
  - 47/46 . . with distribution, e.g. automatically, to desired points (in tube mail systems B65G 51/00; postal or like sorting B07C)
  - 47/48 . . . according to bodily destination marks on either articles or load-carriers (marking data records G06K)
  - 47/50 . . . according to destination signals stored in separate systems (control by programme G05B 19/00)
  - 47/51 . . . according to unprogrammed signals, e.g. influenced by supply situation at destination (volume, flow, or liquid level meters G01F; scales or weighing machines G01G; remote controls G05G)
  - 47/52 . Devices for transferring articles or materials between conveyers, i.e. discharging or feeding devices (loading or unloading by means not incorporated in, or not operatively associated with, conveyers B65G 65/00; transfer of workpieces during metal rolling B21B 41/00)
  - 47/53 . . between conveyers which cross one another [3]
  - 47/56 . . to or from inclined or vertical conveyer sections
  - 47/60 . . to or from conveyers of the suspended, e.g. trolley, type
  - 47/64 . . Switching conveyers
  - 47/66 . . Fixed platforms or combs, e.g. bridges between conveyers
  - 47/68 . . adapted to receive articles arriving in one layer from one conveyer and to transfer them in individual layers to more than one conveyer, or vice versa, e.g. combining the flows of articles conveyed by more than one conveyer
  - 47/70 . . . with precedence controls among incoming article flows
  - 47/72 . . transferring materials in bulk from one conveyer to several conveyers, or vice versa
  - 47/74 . Feeding, transfer, or discharging devices of particular kinds or types
  - 47/78 . . Troughs having discharge openings and closures

- 47/80 . . Turntables carrying articles or materials to be transferred, e.g. combined with ploughs or scrapers
- 47/82 . . Rotary or reciprocating members for direct action on articles or materials, e.g. pushers, rakes, shovels
- 47/84 . . Star-shaped wheels or devices having endless travelling belts or chains, the wheels or devices being equipped with article-engaging elements
- 47/86 . . . the article-engaging elements being grippers
- 47/88 . . Separating or stopping elements, e.g. fingers (attached to star-shaped wheels B65G 47/84)
- 47/90 . . Devices for picking-up and depositing articles or materials
- 47/91 . . . incorporating pneumatic, e.g. suction, grippers
- 47/92 . . . incorporating electrostatic or magnetic grippers

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**49/00 Conveying systems characterised by their application for specified purposes not otherwise provided for** (for conveying sheet material B65H)

- 49/05 . for fragile or damageable materials or articles [4]
- 49/07 . . for semiconductor wafers (specially adapted for conveying of semiconductor wafers during manufacture or treatment of semiconductor or electric solid state devices or components H01L 21/67) [5,8]

**Non-mechanical conveying through pipes or tubes: Floating in troughs**

**51/00 Conveying articles through pipes or tubes by fluid flow or pressure** (water roundabouts A63G 3/00; pneumatic railways B61B); **Conveying articles over a flat surface, e.g. the base of a trough, by jets located in the surface** (pumps F04; fluid dynamics F15D; valves, taps, cocks F16K; pipes, pipe joints, or associated devices F16L)

**53/00 Conveying materials in bulk through troughs, pipes, or tubes by floating the materials, or by flow of gas, liquid, or foam** (fluidising in connection with loading or unloading B65G 69/00; loaders for hay or like field crops A01D 87/00; fluidising devices facilitating filling or emptying of large containers B65D 88/00; dredging E02F; winning materials out of alluvial deposits E21C 45/00; hydraulic or pneumatic mine-filling-up machines E21F 15/00; fluid dynamics F15D; pipe-line systems F17D)

- 53/04 . Conveying materials in bulk pneumatically through pipes or tubes; Air slides
- 53/34 . Details
- 53/40 . . Feeding or discharging devices

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**54/00 Non-mechanical conveyers not otherwise provided for [3]**



**Stacking or de-stacking; Loading or unloading****Note**

In groups B65G 57/00 to B65G 61/00, the following term is used with the meaning indicated:  
 – “stacking” means disposing articles individually or in layers one above each other.

- 57/00 Stacking of articles** (B65G 60/00 takes precedence; stacking of jumbo rolls B41F; stackable containers B65D; feeding, piling, or stacking sheets B65H; stacked delivery of machined products, see the relevant classes for the machines)
- 57/02 . by adding to the top of the stack
- 59/00 De-stacking of articles** (B65G 60/00 takes precedence)
- 59/02 . De-stacking from the top of the stack
- 59/06 . De-stacking from the bottom of the stack
- 60/00 Simultaneously or alternatively stacking and de-stacking of articles**
- 61/00 Use of pick-up or transfer devices or of manipulators for stacking or de-stacking articles not otherwise provided for** (manipulators B25J)

- 63/00 Transferring or trans-shipping at storage areas, railway yards or harbours; Marshalling yard installations** (transferring of refuse between vehicles or containers B65F 9/00; dredging, soil shifting E02F; conveyers used in co-operation with coal or like winning apparatus E21C 47/00)
- 65/00 Loading or unloading** (by means incorporated in, or operatively associated with, conveyers B65G 47/00; of vehicles B65G 67/00)
- 67/00 Loading or unloading vehicles** (by means incorporated in, or operatively associated with, conveyers B65G 47/00; horizontal loading or unloading platforms or loading ramps B65G 69/00; by means incorporated in the vehicles B60 to B64; arrangement of ship-based loading or unloading equipment for cargo or passengers B63B 27/00; ground or aircraft-carrier-deck installations B64F; transferring of refuse between vehicles or containers B65F 9/00)
- 67/02 . Loading or unloading land vehicles (platform-lifts with tiltable platforms B66F 7/00)
- 69/00 Auxiliary measures taken, or devices used, in connection with loading or unloading** (by means incorporated in, or operatively associated with, conveyers B65G 47/00; preventing, minimising, or fighting fire A62C; in vehicles, see the relevant subclasses)

**B65H HANDLING THIN OR FILAMENTARY MATERIAL, E.G. SHEETS, WEBS, CABLES****Notes**

- (1) This subclass does not cover methods or devices intimately associated with other operations on thin or filamentary material, e.g. sheets, webs, cables or means for performing such operations, which are classified in the relevant subclasses for these operations, e.g.:

- |      |          |                                                                                                                                                                                                                |
|------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B07C |          | Postal sorting, similar sorting of documents, e.g. cheques                                                                                                                                                     |
| B08B | 1/02     | Cleaning travelling work, e.g. webs, by methods involving the use of tools, brushes or like members                                                                                                            |
| B21B | 41/00    | Metal rolling involving guiding, conveying or accumulating easily-flexible work, e.g. wire, sheet metal bands, in loops or curves                                                                              |
| B21C | 47/00,   | Winding-up, coiling, winding-off or temporarily accumulating metal wire, metal band or other                                                                                                                   |
| B21C | 49/00    | flexible metal material, characterised by features relevant to metal processing only, other than by rolling                                                                                                    |
| B21D | 43/00    | Feeding, positioning or storing devices, combined with, or arranged in, or specially adapted for use in connection with, apparatus for working or processing sheet metal without essentially removing material |
| B23K | 9/12     | Means for automatic feeding of electrodes for spot or seam welding or cutting                                                                                                                                  |
| B29C | 31/00    | Handling for shaping or joining of plastics, for shaping of substances in a plastic state in general or for after-treatment of shaped products, e.g. feeding the material to be shaped                         |
| B41B | 15/00,   | Film-handling mechanisms in photographic composing machines                                                                                                                                                    |
| B41B | 21/00    |                                                                                                                                                                                                                |
| B41F | 13/02    | Conveying or guiding webs through rotary-printing presses or machines                                                                                                                                          |
| B41J | 11/00 to | Handling of copy- or impression-transfer material in typewriters or selective printing mechanisms                                                                                                              |
| B41J | 17/00    |                                                                                                                                                                                                                |
| B41K | 3/00     | Means for handling copy matter in stamping or numbering apparatus or devices                                                                                                                                   |
| B41L |          | Handling sheets or webs in apparatus or devices for manifolding, duplicating or printing for office or other commercial purposes, or on addressing machines or like series-printing machines                   |
| B42B |          | Handling relating to permanently attaching together sheets, quires, or signatures                                                                                                                              |
| B42C |          | Handling sheets in book-binding                                                                                                                                                                                |
| B65B |          | Handling of sheets or webs in apparatus for, or methods of, packaging articles, not of interest apart from their application in packaging machines                                                             |
| B65C |          | Handling of labels in labelling or tagging apparatus                                                                                                                                                           |
| C14B | 1/00     | Winding or stacking hides or leather in machines or devices for manufacturing leather                                                                                                                          |
| D01  | to       | Spinning, weaving, braiding, lace-making, knitting, sewing, making ropes or cables                                                                                                                             |
| D07  |          |                                                                                                                                                                                                                |
| D21F | 2/00     | Transferring webs from wet ends to press sections in paper-making                                                                                                                                              |
| F26B | 13/00    | Handling fabrics, fibres, yarns or other material in long lengths in drying apparatus                                                                                                                          |

G03B		Film-strip handling or handling of pictures in apparatus for taking photographs or for projecting or viewing them
G06K	13/00	Conveying record carriers from one station to another
G06M	7/00	Counting of flat articles, e.g. sheets, carried by a conveyer
G11B	15/00	to Information storage based on relative movement between record carrier and transducer, involving
G11B	19/00,	handling record carriers for recording or reproducing
G11B	23/00,	
G11B	25/00	
H01F	41/06	Manufacturing coils for magnets, inductances, transformers, by winding
H01G	13/02	Machines for winding capacitors
H04N	1/00	Sheet handling not of interest apart from its use in systems for transmission or reproduction of pictures or patterns not varying in time, e.g. facsimile transmission.

## (2) In this subclass:

- the groups relating to thin material, as defined under (i) of Note (3) below, are primarily intended to cover the handling of articles made of paper or cardboard, but also include the handling of articles made of other materials which have similar characteristics or present similar handling problems, e.g. articles made of sheet-plastics or leather;
- the groups relating to filamentary material (groups B65H 49/00 onwards), as defined in Note (3) below, cover only methods or devices of general application or interest.

## (3) In this subclass, the following terms or expressions are used with the meanings indicated:

- “handling” includes feeding, folding (other than in the manufacture of products), guiding, orientating, storing, unwinding, and winding;
- “thin material” includes:
  - (i) sheets, signatures, envelopes, blanks, and thin piles thereof (hereinafter referred to as “articles”), and
  - (ii) webs, tapes, and films, e.g. of paper, fabric, metal foil, or plastics;
- “filamentary material” includes thread, wires, ropes, cables, and hoses;
- “package” means a mass of filamentary material, formed by coiling, depositing, or winding, with or without a supporting core or former or an enclosing container or receptacle.

**Subclass Index**

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## Feeding; piles

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63/00; 79/00

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SUBJECT MATTER NOT PROVIDED FOR  
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**Feeding articles to machines; Separating articles from piles; Pile supports**

- 1/00 Supports or magazines for piles from which articles are to be separated** (carriers used for associating, collating, or gathering articles B65H 39/00; combinations of piling and depiling operations, of interest apart from the single operation of piling or depiling B65H 83/00)
- 1/02 . adapted to support articles on edge
  - 1/04 . adapted to support articles substantially horizontally, e.g. for separation from top of pile
  - 1/06 . . for separation from bottom of pile
  - 1/08 . with means for advancing the pile to present the articles to a separating device (pressing on piles from which articles are separated from the bottom B65H 1/06)
  - 1/12 . . comprising springs
  - 1/14 . . comprising positively-acting mechanical devices
  - 1/16 . . comprising pneumatic or hydraulic means
  - 1/26 . with auxiliary supports to facilitate introduction or renewal of the pile
  - 1/28 . compartmented to receive piles side by side
  - 1/30 . with means for replenishing the pile during continuous separation of articles therefrom
- 3/00 Separating articles from piles** (associating, collating, or gathering articles B65H 39/00; machines for separating superposed webs B65H 41/00; unpling thin material combined with folding B65H 45/12; combinations of piling and depiling operations, of interest apart from the single operation of piling or depiling B65H 83/00)
- 3/02 . using friction forces between articles and separator
  - 3/06 . . Rollers or like rotary separators
  - 3/08 . using pneumatic force
  - 3/10 . . Suction rollers
  - 3/12 . . Suction bands, belts, or tables moving relatively to the pile
  - 3/14 . . Air blasts producing partial vacuum
  - 3/22 . by needles or the like engaging the articles
  - 3/24 . by pushers engaging the edges of the articles
  - 3/30 . by escapement devices (screw or like separators B65H 3/00); from staggered piles; from piles of articles having staggered formations, e.g. cuts or perforations
  - 3/32 . by elements, e.g. fingers, plates, rollers, inserted or traversed between articles to be separated and remainder of the pile (such elements acting only as supplementary devices to assist separation or prevent double feed B65H 3/46)
  - 3/44 . Simultaneously, alternately, or selectively separating articles from two or more piles
  - 3/46 . Supplementary devices or measures to assist separation or prevent double feed (control means comprising detectors responsive to double feed B65H 7/12)
  - 3/48 . . Air blast acting on edges of, or under, articles
  - 3/52 . . Friction retainers acting on under or rear side of article being separated
  - 3/54 . . Pressing or holding devices
  - 3/56 . . Elements, e.g. scrapers, fingers, needles, brushes, acting on separated article or on edge of the pile
  - 3/60 . . Loosening articles in piles
  - 3/66 . Article guides or smoothers, e.g. movable in operation

- 5/00 Feeding articles separated from piles; Feeding articles to machines** (identical mechanisms or parts for delivering or advancing articles from machines B65H 29/00; recirculating articles B65H 85/00)
- 5/02 . by belts or chains
  - 5/04 . by movable tables or carriages (rotary tables B65H 5/18)
  - 5/06 . by rollers
  - 5/08 . by grippers, e.g. suction grippers
  - 5/16 . by pusher, needles, friction, or like devices adapted to feed single articles along a surface or table
  - 5/18 . by rotary dials or tables
  - 5/20 . by dropping-roller or like device
  - 5/22 . by air-blast or suction device (suction grippers B65H 5/08)
  - 5/24 . Feeding streams of overlapping articles
  - 5/26 . Duplicate, alternate, selective, or coacting feeds
  - 5/28 . Feeding articles stored in rolled or folded bands
  - 5/30 . Opening devices for folded sheets or signatures
  - 5/32 . Saddle-like members over which partially-unfolded sheets or signatures are fed to signature-gathering, stitching, or like machines
  - 5/34 . Varying the phase of feed relative to the receiving machine
  - 5/36 . Article guides or smoothers, e.g. movable in operation
  - 5/38 . . immovable in operation
- 7/00 Controlling article feeding, separating, pile-advancing, or associated apparatus, to take account of incorrect feeding, absence of articles, or presence of faulty articles**
- 7/02 . by feelers or detectors
  - 7/04 . . responsive to absence of articles, e.g. exhaustion of pile (B65H 7/14 takes precedence)
  - 7/06 . . responsive to presence of faulty articles or incorrect separation or feed (B65H 7/14 takes precedence)
  - 7/08 . . . responsive to incorrect front register
  - 7/10 . . . responsive to incorrect side register (controlling transverse register of webs B65H 23/032)
  - 7/12 . . . responsive to double feed or separation
  - 7/14 . . by photoelectric feelers or detectors
- 9/00 Registering, e.g. orientating, articles; Devices therefor**
- 9/02 . Gauge pins
  - 9/04 . Fixed or adjustable stops or gauges (gauge pins B65H 9/02)
  - 9/06 . Movable stops or gauges, e.g. rising and falling front stops
  - 9/08 . Holding devices, e.g. finger, needle, suction, for retaining articles in registered position
  - 9/10 . Pusher or like movable registers; Pusher or gripper devices which move articles into registered position
  - 9/14 . Retarding or controlling the forward movement of articles as they approach stops
  - 9/16 . Inclined tape, roller, or like article-forwarding side registers
- 11/00 Feed tables**
- 
- 13/00 Lifting the ends of piles to facilitate the formation of overlapped piles**
- 15/00 Overturning articles [4]**

**Feeding webs to or from machines: Winding or unwinding webs; Splicing webs**

- 16/00** Unwinding, paying-out webs [4]
- 18/00** Winding webs [4]
- 18/08 . Web-winding mechanisms [4]
- 18/10 . . Mechanisms in which power is applied to web-roll spindle [4]
- 18/14 . . Mechanisms in which power is applied to web roll, e.g. to effect continuous advancement of web [4]
- 19/00** Changing the web roll [4]
- 19/10 . in unwinding mechanisms or in connection with unwinding operations [4]
- 19/12 . . Lifting, transporting, or inserting the web roll; Removing empty core [4]
- 19/18 . . Attaching, e.g. pasting, the replacement web to the expiring web [4]
- 19/22 . in winding mechanisms or in connection with winding operations [4]
- 19/28 . . Attaching the leading end of the web to the replacement web-roll core or spindle (cores, formers, supports or holders, e.g. reels, with arrangements for securing ends of material B65H 75/28) [4]
- 19/30 . . Lifting, transporting, or removing the web roll; Inserting core [4]
- 20/00** Advancing webs (web-delivering apparatus incorporating devices for performing auxiliary operations B65H 35/00, B65H 37/00) [4]
- 20/02 . by friction roller [4]
- 20/10 . by a feed band against which web is held by fluid pressure, e.g. suction or air blast [4]
- 20/14 . by direct action on web of moving fluid [4]
- 20/20 . by web-penetrating means, e.g. pins [4]
- 20/30 . Arrangements for accumulating surplus web (while changing the web roll B65H 19/10, B65H 19/22) [4]
- 21/00** Apparatus for splicing webs (during web-roll changing B65H 19/00; associating two or more webs B65H 39/00)
- 23/00** Registering, tensioning, smoothing, or guiding webs (registering articles B65H 9/00; in connection with splicing B65H 21/00; tensioning devices of general interest in connection with the handling of webs, tapes, or filamentary materials B65H 77/00)
- 23/02 . transversely (by tentering, gripper, or like apparatus operating on fabric webs D06C)
- 23/032 . . Controlling transverse register of web [4]
- 23/04 . longitudinally
- 23/06 . . by retarding devices, e.g. acting on web-roll spindle
- 23/18 . . by controlling or regulating the web-advancing mechanism, e.g. mechanism acting on the running web
- 23/188 . . . in connection with running-web [4]
- 23/195 . . . in winding mechanisms or in connection with winding operations [4]
- 23/34 . . Apparatus for taking-out curl from webs
- 26/00** Warning or safety devices, e.g. automatic fault detectors, stop-motions, for web-advancing mechanisms (safety devices in general F16P; investigating chemical or physical properties of materials in general G01N; indicating devices in general G08B) [4]

**27/00** Special constructions, e.g. surface features, of feed or guide rollers for webs (rollers in general F16C 13/00)**Delivering articles from machines: Piling articles: Article or web delivery apparatus incorporating devices for performing specified auxiliary operations: Associating or gathering articles or webs; Machines for separating superposed webs**

- 29/00** Delivering or advancing articles from machines; Advancing articles to or into piles (associating, collating or gathering articles B65H 39/00; combinations of piling and depiling operations, of interest apart from the single operation of piling or depiling B65H 83/00; recirculating articles B65H 85/00; for articles other than those defined by Note (3) (i) of this subclass, *see* B65G)
- 29/02 . by mechanical grippers engaging the leading edge only of the articles
- 29/16 . by contact of one face only with moving tapes, bands, or chains
- 29/20 . by contact with rotating friction members, e.g. rollers, brushes, or cylinders
- 29/22 . . and introducing into a pile
- 29/24 . by air-blast or suction apparatus (dropping articles from suction carriers B65H 29/26)
- 29/26 . by dropping
- 29/38 . by movable piling or advancing arms, frames, plates, or like members with which the articles are maintained in face contact
- 29/52 . Stationary guides or smoothers
- 29/54 . Article strippers, e.g. for stripping from advancing elements
- 29/58 . Article switches or diverters
- 29/60 . . diverting the stream into alternative paths (B65H 29/62 takes precedence)
- 29/62 . . diverting faulty articles from the main stream (control devices detecting faulty articles B65H 43/04)
- 29/66 . Advancing in streams of overlapping articles
- 29/70 . Article-bending or stiffening arrangements
- 31/00** Pile receivers (carriers used for associating, collating, or gathering articles B65H 39/00; combinations of piling and depiling operations, of interest apart from the single operation of piling or depiling B65H 83/00)
- 31/02 . with stationary end support against which pile accumulates
- 31/04 . with movable end support arranged to recede as pile accumulates
- 31/20 . adjustable for different article sizes
- 31/24 . multiple or compartmented, e.g. for alternate, programmed, or selective filling
- 31/26 . Auxiliary devices for retaining articles in the pile
- 31/30 . Arrangements for removing completed piles (bands, chains, or like moving receivers B65H 31/00)
- 31/32 . Auxiliary devices for receiving articles during removal of a completed pile
- 31/34 . Apparatus for squaring-up piled articles
- 33/00** Forming counted batches in delivery pile or stream of articles

**35/00 Delivering articles from cutting or line-perforating machines; Article or web delivery apparatus incorporating cutting or line-perforating devices, e.g. adhesive tape dispensers** (cutting or perforating machines or devices in general B26D, B26F)

35/04 . from or with transverse cutters or perforators

35/06 . . from or with blade, e.g. shear-blade, cutters or perforators (from or with revolving blade B65H 35/04)

**37/00 Article or web delivery apparatus incorporating devices for performing specified auxiliary operations** (incorporating cutting or line-perforating devices B65H 35/00)

37/04 . for securing together articles or webs, e.g. by adhesive, stitching, or stapling (adhering replacement to expiring web during change of web roll B65H 19/18) [2]

**39/00 Associating, collating, or gathering articles or webs** (combinations of piling and depiling operations, of interest apart from the single operation of piling or depiling B65H 83/00; machines for both collating or gathering and permanently attaching together sheets or signatures B42C 1/00)

39/10 . Associating articles from a single source, e.g. to form a writing pad

39/11 . . in superposed carriers [3]

**41/00 Machines for separating superposed webs**

**43/00 Use of control, checking, or safety devices, e.g. automatic devices comprising an element for sensing a variable**

43/04 . detecting, or responding to, presence of faulty articles (B65H 43/08 takes precedence; diverting faulty articles from main streams B65H 29/62)

43/06 . detecting, or responding to, completion of pile (B65H 43/08 takes precedence)

43/08 . Photoelectric devices

#### **Folding or unfolding thin material**

**45/00 Folding thin material** (specially adapted for the manufacture or treatment of particular products, see the relevant places, e.g. D06F 89/00) [4]

45/12 . Folding articles or webs with application of pressure to define or form crease lines (B65H 20/00 takes precedence; folding or adhesive- application in article or web delivering B65H 37/00; pleating, kilting, or goffering textile fabrics D06J)

45/16 . . Rotary folders

45/28 . . Folding in combination with cutting (cutting machines B26D)

**47/00 Unfolding thin limp material** (B65H 20/00 takes precedence; opening devices for sheets or signatures B65H 5/30)

#### **Unwinding, paying-out, forwarding, winding, coiling, or depositing filamentary material**

**49/00 Unwinding or paying-out filamentary material; Supporting, storing, or transporting packages from which filamentary material is to be withdrawn or paid-out** (winding B65H 54/00; flyers or other guides assisting paying-out B65H 57/00; bobbins, tubes, or other cores for packages B65H 75/00)

**51/00 Forwarding filamentary material** (driven rotary devices for controlling tension B65H 59/10; stretch-spinning methods D01D 5/12; drawing or drafting rovings or the like D01H 5/00)

51/005 . Separating a bundle of forwarding filamentary materials into a plurality of groups [4]

51/20 . Devices for temporarily storing filamentary material during forwarding, e.g. for buffer storage

**54/00 Winding, coiling, or depositing filamentary material** (cores, formers, holders, cans, or receptacles B65H 75/02; devices specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material B65H 75/34)

54/02 . Winding and traversing material on to reels, bobbins, tubes, or like package cores or formers

54/10 . . for making packages of specified shapes or on specified types of bobbins, tubes, cores, or formers

54/28 . . Traversing devices; Package-shaping arrangements (arrangements for preventing ribbon winding B65H 54/02; grooved, slotted, or split drums for driving of packages B65H 54/40)

54/40 . . Arrangements for rotating packages

54/56 . Winding of hanks or skeins

54/64 . Winding of balls; Forming hollow objects by winding on to fusible or soluble cores, e.g. forming pressure vessels

54/68 . Winding on to cards or other flat cores, e.g. of star form

**55/00 Wound packages of filamentary material**

**57/00 Guides for filamentary materials; Supports therefor**

**59/00 Adjusting or controlling tension in filamentary material, e.g. for preventing snarling; Applications of tension indicators** (tensioning devices of general interest in connection with the handling of webs, tapes, or filamentary material B65H 77/00)

59/10 . by devices acting on running material and not associated with supply or take-up devices (by controlling speed of driving mechanism of material-forwarding devices B65H 59/00)

**61/00 Applications of devices for metering predetermined lengths of running material** (of general application G01B)

**63/00 Warning or safety devices for use when unwinding, paying-out, forwarding, winding, coiling, or depositing filamentary material, e.g. automatic fault detectors or stop-motions** (safety devices in general F16P; indicating devices in general G08B)

**65/00 Securing material to cores or formers** (arrangements for securing ends of material to cores, formers, supports or holders, e.g. reels, B65H 75/28) [3]

**67/00 Replacing or removing cores, receptacles, or completed packages at paying-out, winding, or depositing stations**

67/04 . Arrangements for removing completed take-up packages and replacing by cores, formers, or empty receptacles at winding or depositing stations; Transferring material between adjacent full and empty take-up elements

67/06 . Supplying cores, receptacles, or packages to, or transporting from, winding or depositing stations

**69/00 Methods of, or devices for, interconnecting successive lengths of material; Knot-tying devices**

- 71/00** **Moistening, sizing, oiling, waxing, colouring, or drying filamentary material as additional measures during package formation** (applying liquids or other fluent materials to surfaces in general B05)
- 73/00** **Stripping waste material from cores or formers, e.g. to permit their re-use**

**Methods, apparatus or devices of general interest or not otherwise provided for in connection with the handling of webs, tapes or filamentary materials**

- 75/00** **Storing webs, tapes, or filamentary material, e.g. on reels** (fishing reels A01K 89/00; storing means for record carriers, specially adapted for co-operation with the recording or reproducing apparatus G11B 23/02)
- 75/02** . Cores, formers, supports, or holders for coiled, wound, or folded material, e.g. reels, spindles, bobbins, cop tubes, cans (packaging aspects B65D 85/67)
- 75/04** . . Kinds or types (B65H 75/18 takes precedence)
- 75/18** . . Constructional details
- 75/28** . . . Arrangements for securing ends of material [3]
- 75/34** . . specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material provided for particular purposes, e.g. anchored hoses, power cables (retractors for storing flexible hoses as accessories of dental work stands A61G 15/00; vehicle safety belt retractors B60R 22/34; hose-storing devices in apparatus or devices for transferring liquids from bulk storage containers or reservoirs into vehicles or portable containers B67D 5/36; clothes-line supports D06F 53/00; spring drums for liftable blinds with horizontal lamellae E06B 9/28; spring drums or tape drums for roll-type closures or roller blinds E06B 9/56; hauling- or hoisting-chains with arrangements for holding electric cables, hoses or the like F16G 13/00; devices for guiding pipes, cables or protective tubing, between relatively movable points, e.g. movable channels, F16L 3/01; flexible rulers or tapes with scales G01B 3/02; electrical features of stored material, see the relevant subclasses, e.g. H02G) [2,5]

- 75/38** . . . involving the use of a core or former internal to, and supporting, a stored package of material [2]
- 75/50** . Methods of making reels, bobbins, cop tubes, or the like by working an unspecified material, or several materials

**77/00** **Adjusting or controlling tension in material**

**79/00** **Driving gear for devices for forwarding, winding, unwinding, or depositing material, not otherwise provided for**

**81/00** **Methods, apparatus, or devices for covering or wrapping cores by winding webs, tapes, or filamentary material, not otherwise provided for** (forming hollow objects by winding filamentary material on to fusible or soluble cores B65H 54/64; wrapping for the purpose of packaging B65B 11/00; making wound articles of paper B31C)

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**83/00** **Combinations of piling and depiling operations, e.g. performed simultaneously, of interest apart from the single operation of piling or depiling** (B65H 85/00 takes precedence) [5]

**85/00** **Recirculating articles, i.e. feeding each article to, and delivering it from, the same machine work-station more than once** [5]

**99/00** **Subject matter not provided for in other groups of this subclass** [8]

**B66 HOISTING; LIFTING; HAULING**

**B66B ELEVATORS; ESCALATORS OR MOVING WALKWAYS** (funicular railbound systems with rigid ground-supported tracks and cable traction, e.g. cliff railways, B61B 9/00; arrangements of ammunition handlers in vessels B63G 3/00; hoists, lifts, or conveyers for loading or unloading in general B65G; braking or detent devices controlling normal movements of winding drums or barrels B66D; ship-lifting devices E02C; garages for many vehicles with mechanical means for lifting vehicles E04H 6/12; hoists for feeding ammunition or projectiles to launching apparatus or to loading mechanisms F41A 9/00) [4]

**Note**

In this subclass, the following term is used with the meaning indicated: [6]

– “elevator” covers the term “lift”, and the two terms are interchangeable. [6]

**Subclass Index****COMMON FEATURES OF ELEVATORS**

Control; signalling; checking,  
safety; other..... 1/00; 3/00;  
5/00; 7/00

**LIFTS FOR BUILDINGS**

Kinds; component parts; gates ..... 9/00; 11/00;  
13/00

**LIFTS FOR MINES**

Kinds, hoistway equipment;  
component parts..... 17/00, 19/00;  
15/00

OTHER ELEVATORS..... 20/00

**ESCALATORS, MOVING WALKWAYS**

Kinds; component parts;  
accessories..... 21/00; 23/00;  
31/00

Control; indicating operating  
conditions; safety devices ..... 25/00; 27/00;  
29/00

**Common features of elevators**

**1/00 Control systems of elevators in general** (safety devices B66B 5/00; controlling door or gate operation B66B 13/00; systems of general application G05)

1/02 . Control systems without regulation, i.e. without retroactive action

1/06 . . electric

1/14 . . . with devices, e.g. push-buttons, for indirect control of movements

1/18 . . . . with means for storing pulses controlling the movements of several cars or cages

1/24 . Control systems with regulation, i.e. with retroactive action, for influencing travelling speed, acceleration, or deceleration

1/28 . . electrical (detecting excessive speed B66B 5/04)

1/34 . Details

1/46 . . Adaptations of switches or switchgear (adaptations of mechanically-operated limit switches for cranes B66C 13/18; adaptations of mechanically-operated limit switches for winding mechanisms B66D 1/00; switches or switchgear in general, applications of switches or switchgear for floor-levelling purpose H01H; panels for boards or switching arrangements H02B 1/015)

**3/00 Applications of devices for indicating or signalling operating conditions of elevators**

3/02 . Position or depth indicators

**5/00 Applications of checking, fault-correcting or safety devices in elevators**

5/02 . responsive to abnormal operating conditions

5/04 . . for detecting excessive speed

5/08 . . for preventing overwinding

5/12 . . in case of rope or cable slack

5/14 . . in case of excessive loads

5/16 . . Braking or catch devices operating between cars, cages, or skips and fixed guide elements or surfaces in hoistway or well

5/28 . Buffer-stops for cars, cages, or skips

**7/00 Other common features of elevators**

7/02 . Guideways; Guides (arrangements in mine shafts E21D 7/00)

7/06 . Arrangements of ropes or cables

7/12 . Checking, lubricating, or cleaning means for ropes, cables, or guides

**Lifts in, or associated with, buildings**

**9/00 Kinds or types of lift in, or associated with, buildings or other structures** (characterised by control systems B66B 1/00; apparatus for raising or lowering persons on stages of theatres A63J 5/00)

9/02 . actuated mechanically otherwise than by rope or cable

9/04 . actuated pneumatically or hydraulically (platforms for lifting or lowering through short distances B66F 7/00)

9/06 . inclined, e.g. serving blast furnaces

9/16 . Mobile or transportable lifts specially adapted to be shifted from one part of a building or other structure to another part or to another building or structure (devices for lifting or lowering bulky or heavy goods for loading or unloading purposes B66F 9/00, e.g. fork-lift trucks B66F 9/06)

**11/00 Main component parts of lifts in, or associated with, buildings or other structures**

11/02 . Cages (doors, gates, or other apparatus controlling access to, or exit from, cages B66B 13/00)

11/04 . Driving gear

- 13/00 Doors, gates, or other apparatus controlling access to, or exit from, cages or lift-well landings** (door fittings, locks E05)
- 13/02 . Door or gate operation (of general application E05F)
- 13/14 . . Control systems or devices
- 13/22 . Operation of door or gate contacts
- 13/24 . Safety devices in passenger lifts, not otherwise provided for, for preventing trapping of passengers
- 13/30 . Constructional features of doors or gates (of interest apart from this application E06B)

**Lifts in hoistways of mines**

**15/00 Main component parts of mining-hoist winding devices**

**17/00 Hoistway equipment**

**19/00 Mining-hoist operation**

**20/00 Elevators not provided for in groups B66B 1/00 to B66B 19/00 [8]**

**Escalators or moving walkways [4]**

**21/00 Kinds or types of escalators or moving walkways [4]**

**23/00 Component parts of escalators or moving walkways [4]**

23/08 . Carrying surfaces [4]

23/22 . Balustrades (preventing jamming of handrails by foreign objects B66B 29/00; accessories for handrails B66B 31/00) [4]

**25/00 Control of escalators or moving walkways** (walkways of variable speed type B66B 21/00; handrails of variable speed type B66B 23/22; of general application G05) [4]

**27/00 Indicating operating conditions of escalators or moving walkways** (of general application G08) [4]

**29/00 Safety devices of escalators or moving walkways** (walkways of variable speed type B66B 21/00; handrails of variable speed type B66B 23/22) [4]

**31/00 Accessories for escalators, or moving walkways, e.g. for sterilising or cleaning** (for safety B66B 29/00) [4]

**B66C CRANES; LOAD-ENGAGING ELEMENTS OR DEVICES FOR CRANES, CAPSTANS, WINCHES, OR TACKLES** (rope, cable, or chain winding mechanisms, braking or detent devices therefor B66D; specially adapted for nuclear reactors G21)

**Subclass Index****KINDS OF CRANES**

Trolley cranes ..... 19/00

Bridge; cable-way; jib ..... 17/00; 21/00; 23/00

Other cranes ..... 25/00

**COMMON FEATURES OR DETAILS**

Load-engaging devices ..... 1/00, 3/00

Supporting structures; runways ..... 5/00, 6/00; 7/00

Travelling gear; trolleys ..... 9/00; 11/00

Safety gear ..... 15/00

Other ..... 13/00

**Load-engaging elements or devices attached to lifting, lowering, or hauling gear of cranes or adapted for connection therewith****Note**

In groups B66C 1/00 or B66C 3/00, the following term is used with the meaning indicated:

– “cranes” also covers capstans, winches, or tackles.

**1/00 Load-engaging elements or devices attached to lifting, lowering, or hauling gear of cranes, or adapted for connection therewith for transmitting forces to articles or groups of articles** (fastening to cables or ropes F16G 11/00)

1/10 . by mechanical means

1/12 . . Slings comprising chains, wires, ropes, or bands; Nets (article side grippers suspended by ropes or chains from crane hooks B66C 1/42)

1/22 . . Rigid members, e.g. L-shaped members, with parts engaging the under surface of the loads; Crane hooks

1/42 . . Gripping members engaging only the external or internal surface of the articles (for handling or stripping castings or ingots during manufacture B22D 29/00)

1/62 . . comprising article-engaging members of a shape complementary to that of the articles to be handled

**3/00 Load-engaging elements or devices attached to lifting or lowering gear of cranes or adapted for connection therewith and intended primarily for transmitting lifting forces to loose materials; Grabs** (buckets or other containers B65D, e.g. pallets B65D 19/00; dredges equipped with grabs E02F)

**Other common features; Details**

**5/00 Base-supporting structures with legs**

**6/00 Girders, or track-supporting structures, specially adapted for cranes** (base-supporting structures with legs B66C 5/00; girders in general E04C 3/02)

**7/00 Runways, tracks, or trackways for trolleys or cranes**

**9/00 Travelling gear incorporated in, or fitted to, trolleys or cranes** (for dredgers E02F)

**11/00 Trolleys or crabs, e.g. operating above runways** (runways, tracks, or trackways therefor B66C 7/00; winch mechanisms B66D)

**13/00 Other constructional features or details** (in crane hooks B66C 1/22; equipment for handling lifeboats or the like B63B 23/00; loading or unloading floating cargo using ship-based equipment B63B 27/00)

13/04 . Auxiliary devices for controlling movements of suspended loads, or for preventing cable slack



- 13/18 . Control systems or devices (exclusively for rope, cable, or chain winding mechanisms B66D 1/28)
- 13/22 . . for electric drives (transmitting control pulses B66C 13/18; systems or devices of general application H02P)
- 15/00 **Safety gear** (for rope, cable, or chain winding mechanisms B66D 1/54)

**Kinds or types of cranes [2]**

- 17/00 **Overhead travelling cranes comprising one or more substantially-horizontal girders the ends of which are directly supported by wheels or rollers running on tracks carried by spaced supports** (adaptations of girders or of track-supporting structures B66C 6/00)
- 19/00 **Cranes comprising trolleys or crabs running on fixed or movable bridges or gantries** (B66C 17/00 takes precedence; base-supporting structures with legs B66C 5/00; adaptations of girders or of track-supporting structures B66C 6/00; jib cranes B66C 23/00)

**21/00 Cable cranes, i.e. comprising hoisting devices running on aerial cable-ways** (adaptations of girders or of track-supporting structures B66C 6/00; rope or cable drives for trolleys, combinations of such drives with hoisting gear B66C 11/00; railway systems B61B; rope or cable winding mechanisms B66D 1/00)

**23/00 Cranes comprising essentially a beam, boom or triangular structure acting as a cantilever and mounted for translatory or swinging movements in vertical or horizontal planes or a combination of such movements, e.g. jib cranes, derricks or tower cranes** (base-supporting structures with legs B66C 5/00; adaptations of girders or of track-supporting structures B66C 6/00)

**25/00 Cranes not provided for in groups B66C 17/00 to B66C 23/00 [8]**

**B66D CAPSTANS; WINCHES; TACKLES, E.G. PULLEY BLOCKS; HOISTS** (winding or unwinding ropes or cables for feeding or storage purposes B65H; rope or cable-winding or unwinding mechanisms for lifts B66B; hoisting devices specially adapted for suspended scaffolds E04G 3/28)

**Note**

This subclass covers:

- rope, cable, or chain winding or unwinding mechanisms for moving all loads except lift cages, e.g. winches for dredges;
- braking or detent devices characterised by their application for retarding, or preventing, rotary movement of a winding drum or barrel.

**1/00 Rope, cable, or chain winding mechanisms; Capstans** (portable or mobile lifting or hauling appliances B66D 3/00)

1/02 . Driving gear

1/26 . having several drums or barrels

1/28 . Other constructional details

1/54 . Safety gear

**3/00 Portable or mobile lifting or hauling appliances**

**5/00 Braking or detent devices characterised by their application to lifting or hoisting gear, e.g. for controlling the lowering of loads** (for pulley blocks B66D 3/00)

**B66F HOISTING, LIFTING, HAULING, OR PUSHING, NOT OTHERWISE PROVIDED FOR, E.G. DEVICES WHICH APPLY A LIFTING OR PUSHING FORCE DIRECTLY TO THE SURFACE OF A LOAD** (mounting artificial islands on piles or like supports E02B 17/00; scaffolds combined with lifting devices E04G 1/18, E04G 3/28; lifting devices for sliding forms E04G 11/00; lifting of buildings E04G 23/00; shores or struts E04G 25/00; lifts or other hoisting devices on ladders E06C 7/00; props for mining E21D 15/00)

**Subclass Index**

JACKS OR THE LIKE ..... 1/00, 3/00, 5/00

LIFTING FRAMES ..... 7/00

DEVICES FOR PARTICULAR USES ..... 5/00, 9/00, 11/00

MASTED LIFTING-PLATFORM OR FORK-LIFT TRUCKS ..... 9/06

COMMON FEATURES OR ACCESSORIES ..... 13/00

CROWBARS OR LEVERS ..... 15/00

SAFETY DEVICES ..... 17/00

OTHER HOISTING, LIFTING, HAULING, OR PUSHING ..... 19/00

**1/00 Devices, e.g. jacks, for lifting loads in predetermined steps**

- 3/00 Devices, e.g. jacks, adapted for uninterrupted lifting of loads** (mobile jacks of the garage type B66F 5/00)
- 3/24 . fluid-pressure operated (water-pressure machines F03B; fluid-pressure servomotors F15B, e.g. pyrotechnical actuators F15B 15/00; hydraulic gearings F16H; cylinders, pistons F16J)
- 5/00 Mobile jacks of the garage type mounted on wheels or rollers**
- 7/00 Lifting frames, e.g. for lifting vehicles; Platform lifts** (for lift-truck platforms B66F 9/06; tilting vehicles for unloading B65G 67/02)
- 7/06 . with platforms supported by levers for vertical movement
- 7/10 . with platforms supported directly by jacks
- 9/00 Devices for lifting or lowering bulky or heavy goods for loading or unloading purposes** (mobile or transportable lifts in, or associated with, buildings and specially adapted to be shifted from one part of a building or other structure to another part or to another building or structure B66B 9/16; cranes B66C)
- 9/06 . movable, with their loads, on wheels or the like, e.g. fork-lift trucks (vehicle aspects B60 to B62; vehicles predominantly for transporting loads and modified to facilitate loading or unloading B60P 1/00; low-lift hand trucks for transporting goods B62B 3/04)
- 9/065 . . non-masted (mobile jacks of the garage type mounted on wheels or rollers B66F 5/00) [3]
- 9/07 . . Floor-to-roof stacking devices, e.g. stacker cranes, retrievers [3]
- 9/075 . . Constructional features or details [3]
- 9/08 . . . Masts; Guides; Chains [3]
- 9/12 . . . Platforms; Forks; Other load-supporting or load-gripping members [3]
- 9/18 . . . . Load gripping or retaining means [3]
- 9/20 . . . Means for actuating or controlling masts, platforms, or forks (power take-off from vehicle transmissions, combined with vehicle propulsion systems B60K) [3]
- 9/24 . . . . Electrical devices or systems [3]
- 11/00 Lifting devices specially adapted for particular uses not otherwise provided for** (ground-engaging vehicle fittings for supporting, lifting or manoeuvring the vehicle B60S 9/00)
- 11/04 . for movable platforms or cabins, e.g. on vehicles, permitting workmen to place themselves in any desired position for carrying out required operations (platforms for cleaning windows A47L 3/00; devices for rescuing persons from buildings A62B 1/00; vehicle aspects of service vehicles B60P 3/14; maintenance travellers for bridges E01D 19/00; scaffolds on an extensible substructure E04G 1/18; liftable or lowerable platforms for use on ladders E06C 7/00)
- 13/00 Common constructional features or accessories**
- 15/00 Crowbars or levers**
- 17/00 Safety devices, e.g. for limiting or indicating lifting force**
- 19/00 Hoisting, lifting, hauling, or pushing, not otherwise provided for**

**B67 OPENING OR CLOSING BOTTLES, JARS OR SIMILAR CONTAINERS; LIQUID HANDLING** (nozzles in general B05B; packaging liquids B65B, e.g. B65B 3/00; pumps in general F04; siphons F04F 10/00; valves F16K; handling liquefied gases F17C)

**B67B APPLYING CLOSURE MEMBERS TO BOTTLES, JARS, OR SIMILAR CONTAINERS; OPENING CLOSED CONTAINERS** (opening or closing devices attached to, or incorporated in, containers or container closures B65D)

- |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| <p><b>1/00</b> Closing bottles, jars, or similar containers by applying stoppers (stoppers <i>per se</i> B65D 39/00)</p> <p><b>3/00</b> Closing bottles, jars, or similar containers by applying caps (caps <i>per se</i> B65D 41/00)</p> | <p><b>5/00</b> Applying protective or decorative covers to closures; Devices for securing bottle closures with wire (infant-feeding teats with means for fastening to bottles A61J 11/00) [6]</p> <p><b>6/00</b> Closing bottles, jars or similar containers by applying closure members, not provided for in groups B67B 1/00 to B67B 5/00 [2009.01]</p> <p><b>7/00</b> Hand- or power-operated devices for opening closed containers (nail pullers or extractors B25C 11/00; combinations of opening devices with cutting tools B26, attached to, or incorporated in, containers or container closures B65D)</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**B67C FILLING WITH LIQUIDS OR SEMILIQUIDS, OR EMPTYING, OF BOTTLES, JARS, CANS, CASKS, BARRELS, OR SIMILAR CONTAINERS, NOT OTHERWISE PROVIDED FOR; FUNNELS**

**Subclass Index**

<p><b>BOTTLES</b></p> <p>Filling; emptying ..... 3/00; 9/00</p> <p>Combined operations ..... 7/00</p>	<p><b>JARS, CANS, CASKS</b></p> <p>Filling; emptying ..... 3/00; 9/00</p> <p><b>FUNNELS</b> ..... 11/00</p>
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| <p><b>3/00</b> Bottling liquids or semiliquids; Filling jars or cans with liquids or semiliquids using bottling or like apparatus; Filling casks or barrels with liquids or semiliquids (filling containers with liquids or semiliquids using apparatus other than bottling or like apparatus B65B 3/00)</p> <p><b>3/02</b> . Bottling liquids or semiliquids; Filling jars or cans with liquids or semiliquids using bottling or like apparatus</p> | <p><b>7/00</b> Concurrent cleaning, filling, and closing of bottles; Processes or devices for at least two of these operations</p> <p><b>9/00</b> Emptying bottles, jars, cans, casks, barrels, or similar containers, not otherwise provided for (devices for tilting and emptying containers B65G 65/00) [3]</p> <p><b>11/00</b> Funnels, e.g. for liquids (filter funnels B01D 29/00; volume-flow meters G01F)</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**B67D DISPENSING, DELIVERING, OR TRANSFERRING LIQUIDS, NOT OTHERWISE PROVIDED FOR** (cleaning pipes or tubes or systems of pipes or tubes B08B 9/02; emptying or filling of bottles, jars, cans, casks, barrels, or similar containers, not otherwise provided for B67C; water supply E03; pipe systems F17D; domestic hot-water supply systems F24D; measuring volume, volume flow, mass flow or liquid level, metering by volume G01F; coin-freed or like apparatus G07F) [5]

- |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| <p><b>1/00</b> Apparatus or devices for dispensing beverages on draught (B67D 3/00 takes precedence; apparatus for making beverages A47J 31/00) [3]</p> <p><b>3/00</b> Apparatus or devices for controlling flow of liquids under gravity from storage containers for dispensing purposes (separating and dispensing metered quantities of liquids G01F)</p> | <p><b>5/00</b> Apparatus or devices for transferring liquids, not covered by groups B67D 1/00 or B67D 3/00 (general disposition of plant in stations for supplying fuel to vehicles B60S 5/00; for filling or emptying locomotive water tanks, e.g. water columns, B61K 11/00; for refuelling aircraft during flight B64D 39/00; liquid-handling ground installations specially adapted for fuelling stationary aircraft B64F 1/00) [3]</p> <p><b>5/01</b> . from bulk storage containers or reservoirs into vehicles or into portable containers, e.g. for retail sale purposes (B67D 5/68 takes precedence) [3]</p> <p><b>5/06</b> . . Details or accessories [3]</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- 5/08 . . . Arrangements of devices for controlling, indicating, metering or registering quantity or price of liquid transferred (arrangement of flow- or pressure-control valves B67D 5/06; measuring volume or volume flow in general G01F; computing, calculating, counting G06; coin-freed apparatus for dispensing fluids G07F 13/00; prepayment devices for metering liquids G07F 15/00) [3]
- 5/22 . . . . Arrangements of indicators or registers (indicating or recording in fluid meters G01F 15/06) [3]
- 5/32 . . . Arrangements of safety or warning devices (alarm arrangements in general G08B); Means for preventing unauthorized delivery of liquid [3]
- 5/36 . . . Arrangements of hoses, e.g. operative connection with pump motor (hoses in general F16L 11/00) [3]
- 5/37 . . . Filling nozzles (nozzles in general B05B; fluid-delivering valves in general F16K 21/00) [3]
- 5/40 . . . Arrangements of pumps (pumps F04) [3]
- 5/56 . . . Devices for mixing two or more different liquids to be transferred (coin-freed apparatus G07F 13/06) [3]
- 5/58 . . . Arrangements of devices for purifying liquids to be transferred, e.g. of filters, of air or water separators (filtration, separation, in general B01D) [3]
- 5/60 . . . Arrangements of storage tanks, reservoirs or pipe-lines [3]
- 5/62 . . . Arrangements of heating or cooling devices for liquids to be transferred [3]
- 5/64 . . . Casings, cabinets or frameworks; Trolleys or like movable supports [3]
- 5/68 . Loading or unloading ships (ship-based equipment B63B 27/00) [3]

**B68 SADDLERY; UPHOLSTERY****B68B HARNESS; DEVICES USED IN CONNECTION THEREWITH; WHIPS OR THE LIKE**

- |                                                                                                                                                                                                                                                                               |                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <b>1/00</b> Devices in connection with harness, for hitching, reining, training, breaking, or quietening horses or other traction animals (devices of this kind combined with traction harness B68B 3/00; stable equipment A01K 1/00; devices forming part of a vehicle B62C) | <b>7/00</b> Horse protectors, e.g. resilient attachments (protective covers B68C 5/00) |
| <b>3/00</b> Traction harnesses; Traction harnesses combined with devices referred to in group B68B 1/00                                                                                                                                                                       | <b>9/00</b> Devices specially adapted for supporting harnesses when not in use         |
| <b>5/00</b> Details or accessories (haberdashery A44); Fastening devices for bridles, reins, harnesses, or the like (devices forming part of a vehicle B62C)                                                                                                                  | <b>11/00</b> Whips or the like                                                         |
|                                                                                                                                                                                                                                                                               | <b>99/00</b> Subject matter not provided for in other groups of this subclass [8]      |

**B68C SADDLES; STIRRUPS**

- 1/00** Saddling equipment for riding- or pack-animals
- 3/00** Stirrups
- 5/00** Covers for animals when working, e.g. for protection

**B68F MAKING ARTICLES FROM LEATHER, CANVAS, OR THE LIKE**

- 1/00** Making articles from leather, canvas, or the like (machines or equipment for saddle-making B68F 3/00; manufacturing footwear A43D; manufacture or treatment of leather in general, splitting leather, manufacture of driving or other belts C14)
- 3/00** Machines or equipment specially adapted for saddle-making (methods B68F 1/00)

**B68G METHODS, EQUIPMENT, OR MACHINES FOR USE IN UPHOLSTERING; UPHOLSTERY NOT OTHERWISE PROVIDED FOR****Subclass Index**

LOOSE FILLING MATERIALS;  
TREATMENT THEREOF; RESILIENT PADS ..... 1/00; 3/00;  
5/00

MAKING UPHOLSTERY; FITTING  
SPRINGS THEREIN ..... 7/00; 9/00

FINISHED UPHOLSTERY; UPHOLSTERY  
PANELS ..... 11/00; 13/00  
AUXILIARY DEVICES OR TOOLS ..... 15/00

- |                                                                                                                                                                         |                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>1/00</b> Loose filling materials for upholstery (manufacture of the materials, <u>see</u> the relevant classes)                                                      | <b>7/00</b> Making upholstery (manufacturing upholstered panels B68G 13/00; sewing-machines D05B) |
| <b>3/00</b> Treating materials to adapt them specially as upholstery filling                                                                                            | <b>7/05</b> . Covering or enveloping cores of pads                                                |
| <b>5/00</b> Resilient upholstery pads (finished upholstery B68G 11/00; waddings, fleeces, mats, or like products of fibrous structure, <u>see</u> the relevant classes) | <b>9/00</b> Placing upholstery springs in pockets; Fitting springs in upholstery                  |
|                                                                                                                                                                         | <b>11/00</b> Finished upholstery not provided for in other classes                                |
|                                                                                                                                                                         | <b>13/00</b> Upholstered panels (specially adapted for sound-absorption E04B, G10K)               |
|                                                                                                                                                                         | <b>15/00</b> Auxiliary devices or tools specially for upholstery                                  |

99/00    *Subject matter not provided for in other groups of this*                      *subclass [2009.01]*

# MICRO-STRUCTURAL TECHNOLOGY; NANO-TECHNOLOGY

## B81 MICRO-STRUCTURAL TECHNOLOGY [7]

### Notes

- (1) This class covers micro-structural devices or systems, including at least one essential element or formation characterised by its very small size, typically within the range of  $10^{-4}$  to  $10^{-7}$  meters, i.e. its significant features can not, in at least one dimension, be completely discerned without the use of an optical microscope. [7]
- (2) In this class, the following expressions are used with the meaning indicated: [7]
  - “micro-structural devices” covers: [7]
    - (i) micro-mechanical devices comprising movable, flexible or deformable elements; and [7]
    - (ii) three-dimensional structures without movable, flexible or deformable elements, comprising microformations designed to accomplish an essential structural function for interacting with their environment, as opposed to purely electronic or chemical functions, regardless of whether the structures are combined with micro-electronic devices or formed from specific materials; [7]
  - “micro-structural systems” covers: [7]
    - (i) systems of cooperating micro-structural devices; and [7]
    - (ii) micro-electro-mechanical or micro-opto-mechanical systems, which combine on a common substrate the specific features of micro-structural devices and electrical or optical components, e.g. for controlling, analysing or signalling the functioning of micro-structural devices. [7]

## B81B MICRO-STRUCTURAL DEVICES OR SYSTEMS, E.G. MICRO-MECHANICAL DEVICES (piezo-electric, electrostrictive or magnetostrictive elements per se H01L 41/00) [7]

### Notes

- (1) This subclass does not cover: [7]
  - purely electrical or electronic devices per se which are covered by section H, e.g. subclass H01L; [7]
  - purely optical devices per se which are covered by subclasses G02B or G02F; [7]
  - essentially two-dimensional structures, e.g. layered products which are covered by subclass B32B; [7]
  - chemical or biological structures per se which are covered by section C; [7]
  - structures in atomic scale produced by manipulation of single atoms or molecules, which are covered by group B82B 1/00. [7]
- (2) Devices or systems classified in this subclass are also classified in appropriate subclasses providing for their structural or functional features, if such features are of interest. [7]

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**1/00**    **Devices without movable or flexible elements, e.g. micro-capillary devices [7]**

**3/00**    **Devices comprising flexible or deformable elements, e.g. comprising elastic tongues or membranes (B81B 5/00 takes precedence) [7]**

**5/00**    **Devices comprising elements which are movable in relation to each other, e.g. comprising slidable or rotatable elements [7]**

**7/00**    **Micro-structural systems [7]**

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## B81C PROCESSES OR APPARATUS SPECIALLY ADAPTED FOR THE MANUFACTURE OR TREATMENT OF MICRO-STRUCTURAL DEVICES OR SYSTEMS (making microcapsules or microballoons B01J 13/02; processes or apparatus specially adapted for the manufacture or treatment of piezo-electric, electrostrictive or magnetostrictive elements per se H01L 41/22) [7]

### Note

- This subclass does not cover: [7]
- processes or apparatus for the manufacture or treatment of purely electrical or electronic devices, which are covered by section H, e.g. group H01L 21/00; [7]
  - processes or apparatus involving the manipulation of single atoms or molecules, which are covered by group B82B 3/00. [7]

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**1/00**    **Manufacture or treatment of devices or systems in or on a substrate (B81C 3/00 takes precedence) [7]**

**5/00**    **Processes or apparatus not provided for in groups B81C 1/00 or B81C 3/00 [7]**

**3/00**    **Assembling of devices or systems from individually processed components [7]**

**B82B**

**B82 NANO-TECHNOLOGY [7]**

**B82B NANO-STRUCTURES; MANUFACTURE OR TREATMENT THEREOF [7]**

**Notes**

- (1) This subclass does not cover chemical or biological structures per se, specifically provided for elsewhere, e.g. in classes C08 or C12. [7]
- (2) In this subclass, the following term is used with the meaning indicated: [7]  
“Nano-structure” means an atomically precise arrangement of matter having particularly shaped configuration including at least one essential integral element that: [7]
  - (i) is formed solely from an atom, a molecule or an extremely limited collection of atoms or molecules, which collection in its entirety is undetectable by an optical microscope; and [7]
  - (ii) has been formed by having its atoms or molecules individually manipulated as discrete units during its manufacture. [7]
- (3) Nano-structures having specialised features directly related to their size, defined in Note (2), are classified in this subclass regardless of method of manufacture. However, these structures are also classified in appropriate places provided for their structural or functional features, if such features are of interest. [7]

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**1/00 Nano-structures [7]**

**3/00 Manufacture or treatment of nano-structures [7]**



**B99**      **SUBJECT MATTER NOT OTHERWISE PROVIDED FOR IN THIS SECTION [8]**

**B99Z**      **SUBJECT MATTER NOT OTHERWISE PROVIDED FOR IN THIS SECTION [8]**

**Note**

This subclass covers subject matter that: [8]

(a) is not provided for, but is most closely related to, the subject matter covered by the subclasses of this section, and [8]

(b) is not explicitly covered by any subclass of another section. [8]

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**99/00**      **Subject matter not otherwise provided for in this  
section [8]**