SECTION B — PERFORMING OPERATIONS; TRANSPORTING

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(s)

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
Shaping articles characterised by method of production, machines therefor.....1/00, 3/00, 5/00
Coating of surfaces.....19/00
APPARATUS OR PROCESSES FOR TREATING OR WORKING ARTICLES.....11/00
MOULDS; AUXILIARY EQUIPMENT.....7/00, 13/00, 17/00
GENERAL LAYOUT OF PLANT.....15/00
PRODUCTION OF TUBULAR OR REINFORCED ARTICLES.....21/00, 23/00

1/00 **Producing shaped articles from the material** (using presses B28B 3/00; shaping on moving conveyors B28B 5/00; producing tubular articles B28B 21/00)

1/02 • by turning or jiggering

1/04 • by tamping or ramming (followed by pressing B28B 3/02)

1/08 • by vibrating or jolting

1/087 • • by means acting on the mould **[6]**

1/093 • • by means directly acting on the material, e.g. by cores wholly or partly immersed in the material (internal vibrators for compacting concrete in situ E04G 21/08) **[6]**

1/10 • • and applying pressure otherwise than by the use of presses

1/14 • by simple casting, the material being neither forcibly fed nor positively compacted (for molten material B28B 1/54)

1/16 • • for producing layered articles (coating B28B 11/04)

1/20 • by centrifugal or rotational casting (slip-casting involving rotation of the mould B28B 1/28; for molten material B28B 1/54)

1/24 • by injection moulding

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)

1/28 • • involving rotation of the mould

1/29 • by profiling or strickling the material in open moulds or on moulding surfaces

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)

1/32 • • by projecting, e.g. spraying (spraying in general B05B, B05D)

1/34 • • • by centrifugal force

1/38 • • by dipping (in general B05C, B05D)

1/40 • • by wrapping, e.g. winding

1/42 • • • using mixtures containing fibres, e.g. for making sheets by slitting the wound layer

1/44 • by forcing cores into filled moulds for forming hollow articles

1/48 • by removing material from solid section preforms for forming hollow articles, e.g. by punching or boring

1/50 • specially adapted for producing articles of expanded material, e.g. cellular concrete (chemical aspects C04B)

1/52 • specially adapted for producing articles from mixtures containing fibres (by wrapping on to mandrels B28B 1/42)

1/54 • specially adapted for producing articles from molten material, e.g. slag (chemical aspects C04B)

3/00 **Producing shaped articles from the material by using presses** (shaping on moving conveyors B28B 5/00)**; Presses specially adapted therefor** (presses in general B30B)

3/02 • wherein a ram exerts pressure on the material in a moulding space; Ram heads of special form

3/04 • • with one ram per mould (B28B 3/10 takes precedence)

3/06 • • • with two or more ram and mould sets
3/08 • • with two or more rams per mould
3/10 • • each charge of material being compressed against previously formed body
3/12 • wherein one or more rollers exert pressure on the material
3/14 • • with co-operating pocketed rollers
3/16 • • with co-operating profiled rollers
3/18 • • Roller-and-ring machines, i.e. with roller disposed within a ring and co-operating with the inner surface of the ring
3/20 • wherein the material is extruded
3/22 • • by screw or worm
3/24 • • by reciprocating plunger
3/26 • • Extrusion dies

5/00 Producing shaped articles from the material in moulds or on moulding surfaces, carried or formed by, in or on conveyors irrespective of the manner of shaping
5/02 • on conveyors of the endless-belt or chain type (in combination with pressing rollers B28B 3/12)
5/04 • in moulds moved in succession past one or more shaping stations (on turntables B28B 5/06)
5/06 • in moulds on a turntable
5/08 • • intermittently rotated
5/10 • in moulds carried on the circumference of a rotating drum
5/12 • • intermittently rotated

7/00 Moulds; Cores; Mandrels (specially adapted for the production of tubular articles B28B 21/00)
7/02 • Moulds with adjustable parts
7/04 • • one or more of the parts being pivotally mounted
7/06 • Moulds with flexible parts
7/08 • Moulds provided with means for tilting or inverting
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 13/06)
7/12 • • by fluid pressure
7/14 • Moulds with means incorporated therein, or carried thereby, for cutting the moulded article into parts (cutting means independent of the mould B28B 11/14)
7/16 • Moulds for making shaped articles with cavities or holes open to the surface
7/18 • • the holes passing completely through the article
7/20 • Moulds for making shaped articles with undercut recesses, e.g. dovetails
7/22 • Moulds for making units for prefabricated buildings; Moulds for making prefabricated stair units
7/24 • Unitary mould structures with a plurality of moulding spaces
7/26 • Assemblies of separate moulds
7/28 • Cores; Mandrels
7/30 • • adjustable, collapsible, or expanding
7/32 • • • inflatable (connection of valves to inflatable elastic bodies B60C 29/00)
7/34 • Moulds, cores, or mandrels of special material, e.g. destructible materials (for slip-casting B28B 1/26)
7/36 • Linings or coatings (lubricating surfaces of moulds, cores, or mandrels B28B 7/38)
7/38 • Treating surfaces of moulds, cores, or mandrels to prevent sticking
7/40 • characterised by means for modifying the properties of the moulding material **[5]**
7/42 • • for heating or cooling, e.g. steam jackets **[5]**
7/44 • • for treating with gases or degassing, e.g. for de-aerating **[5]**
7/46 • • for humidifying or dehumidifying **[5]**

11/00 Apparatus or processes for treating or working the shaped articles (specially adapted for tubular articles B28B 21/92; decoration or surface treatment in general B05, B44; compacting concrete in situ in connection with building E04G 21/06; drying F26)
11/02 • for attaching appendages, e.g. handles, spouts
11/04 • for coating (glazing, engobing C04B)
11/06 • • with powdered or granular material
11/08 • for reshaping the surface, e.g. smoothing, roughening, corrugating, making screw-threads
11/10 • • by using presses
11/12 • for removing parts of the articles by cutting
11/14 • for dividing shaped articles by cutting
11/16 • • for extrusion
11/18 • for removing burr
11/22 • for cleaning
11/24 • for curing, setting or hardening (processes for influencing or modifying the setting or hardening ability of mortars, concrete or artificial stone compositions, in general C04B 40/00) **[6]**

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)
13/02 • Feeding the unshaped material to moulds or apparatus for producing shaped articles
13/04 • Discharging the shaped articles (conveying systems for ceramic mouldings B65G 49/08)
13/06 • • Removing the shaped articles from moulds (by means incorporated in, or carried by, the moulds B28B 7/10)

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)
17/02 • Conditioning the material prior to shaping
17/04 • Exhausting or laying dust

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
21/04 • • by simple casting, the material being neither positively compacted nor forcibly fed
21/06 • • into moulds having sliding parts (B28B 21/26 takes precedence; forms, shutterings, or falsework for making rooms as a whole, whole stories, or whole buildings in situ E04G 11/02)
21/08 • • by slip-casting; Moulds therefor
21/10 • • using compacting means
21/12 • • • tamping or ramming the material or the mould elements
21/14 • • • vibrating, e.g. the surface of the material
21/16 • • • • one or more mould elements
21/18 • • • using expansible or retractable mould or core elements
21/20 • • • • using inflatable cores, e.g. having a frame inside the inflatable part of the core (connection of valves to inflatable elastic bodies B60C 29/00) **[2]**
21/22 • • • using rotatable mould or core parts
21/24 • • • • using compacting heads, rollers, or the like
21/26 • • • • • with a packer head serving as a sliding mould or provided with guiding means for feeding the material
21/28 • • • • • combined with vibration means
21/30 • • • • Centrifugal moulding
21/32 • • • • • Feeding the material into the moulds
21/34 • • • • • combined with vibrating or other additional compacting means
21/36 • • • applying fluid pressure or vacuum to the material (combined with slip-casting B28B 21/08)
21/38 • • • • introducing the material wholly or partly under pressure
21/40 • • • • by evacuating one or more of the mould parts
21/42 • by shaping on or against mandrels or like moulding surfaces
21/44 • • by projecting, e.g. spraying
21/46 • • by dipping
21/48 • • by wrapping, e.g. winding
21/50 • • Details of compression or compacting means
21/52 • by extruding
21/54 • • Mouthpieces for shaping sockets, bends, or like peculiarly-shaped tubular articles
21/56 • incorporating reinforcements
21/58 • • Steel tubes
21/60 • • prestressed reinforcements
21/62 • • • circumferential
21/64 • • • • Winding arrangements
21/66 • • • Reinforcing mats
21/68 • • and applying centrifugal forces
21/70 • by building-up from preformed elements
21/72 • • Producing multilayer tubes
21/74 • • Producing pipe bends, sockets, sleeves; Moulds therefor (combined with extrusion presses B28B 21/54)
21/76 • Moulds
21/78 • • with heating or cooling means, e.g. steam jackets
21/80 • • adapted to centrifugal or rotational moulding
21/82 • • built-up from several parts; Multiple moulds; Moulds with adjustable parts
21/84 • • • Moulds with one or more pivotable parts
21/86 • Cores (in general B28B 7/00)
21/88 • • adjustable, collapsible or expansible (using inflatable cores B28B 21/20)
21/90 • Methods or apparatus for discharging after shaping
21/92 • Methods or apparatus for treating or reshaping
21/94 • • for impregnating or coating by applying liquids or semi-liquids
21/96 • • for smoothing, roughening, corrugating or for removing burr
21/98 • • for reshaping, e.g. by means of reshape 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
23/04 • • the elements being stressed
23/06 • • • for the production of elongated articles
23/08 • • • • the articles being of tubular form
23/10 • • • the shaping being effected by centrifugal or rotational moulding **[2]**
23/12 • • • to form prestressed circumferential reinforcements **[2]**
23/14 • • • • by wrapping, e.g. winding apparatus **[2]**
23/16 • • • • Prestressed reinforcing nets **[2]**
23/18 • • for the production of elongated articles (B28B 23/06 takes precedence) **[2]**
23/20 • • the shaping being effected by centrifugal or rotational moulding (B28B 23/10 takes precedence) **[2]**
23/22 • • assembled from preformed parts **[2]**