

## SECTION B — PERFORMING OPERATIONS; TRANSPORTING

### B66 HOISTING; LIFTING; HAULING

**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(s)

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)

- 1/02 • by suction means
- 1/04 • by magnetic means
- 1/06 • • electromagnetic
- 1/08 • • • Circuits therefor (for electromagnets in general H01F 7/18)
- 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)
- 1/14 • • • Slings with hooks
- 1/16 • • • Slings with load-engaging platforms or frameworks
- 1/18 • • • Band-type slings
- 1/20 • • • specially adapted for handling vehicles
- 1/22 • • Rigid members, e.g. L-shaped members, with parts engaging the under surface of the loads; Crane hooks
- 1/24 • • • Single members engaging the loads from one side only
- 1/26 • • • • with means for releasing the loads
- 1/28 • • • Duplicate, e.g. pivoted, members engaging the loads from two sides

- 1/30 • • • • and also arranged to grip the sides of the loads
- 1/32 • • • • • of piled or stacked articles
- 1/34 • • • Crane hooks
- 1/36 • • • • with means, e.g. spring-biased detents, for preventing inadvertent disengagement of loads
- 1/38 • • • • adapted for automatic disengagement from loads on release of cable tensions (for parachutes B64D)
- 1/40 • • • • formed or fitted with load-measuring or indicating devices
- 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)
- 1/44 • • • and applying frictional forces
- 1/46 • • • • by inflatable elements
- 1/48 • • • • to vertical edge portions of sheets, tubes, or like thin or thin-walled articles (internally-expanding grippers B66C 1/54)
- 1/54 • • • • Internally-expanding grippers for handling hollow articles (B66C 1/46 takes precedence) [2]
- 1/56 • • • • • for handling tubes
- 1/58 • • • and deforming the articles, e.g. by using gripping members such as tongs or grapples
- 1/59 • • • • Tongs for sacks [3]
- 1/62 • • comprising article-engaging members of a shape complementary to that of the articles to be handled
- 1/64 • • • for T- or I-section beams or girders
- 1/66 • • • for engaging holes, recesses, or abutments on articles specially provided for facilitating handling thereof
- 1/68 • mounted on, or guided by, jibs (jibs B66C 23/64)

- 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)
- 3/02 • Bucket grabs
  - 3/04 • Tine grabs
  - 3/06 • Grabs actuated by a single rope or chain
  - 3/08 • • and having tipping rings
  - 3/10 • • and having buckets opening automatically upon the grab being lowered on to the dump of material
  - 3/12 • Grabs actuated by two or more ropes
  - 3/14 • Grabs opened or closed by driving motors thereon
  - 3/16 • • by fluid motors
  - 3/18 • • by electric motors
  - 3/20 • mounted on, or guided by, jibs (jibs B66C 23/64)

#### **Other common features; Details**

- 5/00 Base-supporting structures with legs**
- 5/02 • Fixed or travelling bridges or gantries, i.e. elongated structures of inverted-L- or of inverted-U-shape
  - 5/04 • • with runways or tracks supported for movements relative to bridge or gantry
  - 5/06 • • with runways or tracks supported for lateral swinging movements
  - 5/08 • • with vertically-inclinable runways or tracks
  - 5/10 • Portals, i.e. essentially circular or square platforms with three or more legs specially adapted for supporting slewing jib cranes
- 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**
- 7/02 • for underhung trolleys or cranes
  - 7/04 • • Trackway suspension
  - 7/06 • • • on supports constructed for easy erection, e.g. transportable
  - 7/08 • Constructional features of runway rails or rail mountings (of general application E01B)
  - 7/10 • Arrangements or devices for extending runways or tracks
  - 7/12 • Devices for changing direction of travel or for transferring from one runway to another; Crossings; Combinations of tracks of different gauges (transfer devices of general application E01B)
  - 7/14 • • Runway interlocking devices
  - 7/16 • Devices specially adapted for limiting trolley or crane travel; Arrangements of buffer-stops (buffer-stops of interest apart from this application B61K 7/18; limit-switch arrangements, limit circuits B66D 1/56)
- 9/00 Travelling gear incorporated in, or fitted to, trolleys or cranes** (for dredgers E02F)
- 9/02 • for underhung trolleys or cranes
  - 9/04 • to facilitate negotiation of curves
  - 9/06 • for more than one rail gauge
  - 9/08 • Runners; Runner bearings (wheels for railbound vehicles B60B)
  - 9/10 • Undercarriages or bogies, e.g. end carriages, end bogies
  - 9/12 • • with load-distributing means for equalising wheel pressure

- 9/14 • Trolley or crane travel drives (rope, cable, or chain drives for loads or trolleys B66C 11/16; control B66C 13/18)
  - 9/16 • with means for maintaining alignment between wheels and track
  - 9/18 • with means for locking trolleys or cranes to runways or tracks to prevent inadvertent movements
- 11/00 Trolleys or crabs, e.g. operating above runways** (runways, tracks, or trackways therefor B66C 7/00; winch mechanisms B66D)
- 11/02 • with operating gear or operator's cabin suspended, or laterally offset, from runway or track
  - 11/04 • • Underhung trolleys (power-operated hoists with driving motor and drum or barrel contained in a common housing B66D 3/20)
  - 11/06 • • • running on monorails (overhead railway systems B61B)
  - 11/08 • with turntables
  - 11/10 • • equipped with jibs (jib cranes B66C 23/00)
  - 11/12 • having hoisting gear adapted to special load-engaging elements and not otherwise provided for
  - 11/14 • adapted to operate on crane or bridge structure of particular configuration, e.g. on reinforced concrete girders of rectangular cross-section
  - 11/16 • Rope, cable, or chain drives for trolleys; Combinations of such drives with hoisting gear
  - 11/18 • • comprising endless ropes or cables
  - 11/20 • • Arrangements, e.g. comprising differential gears, enabling simultaneous or selective operation of travelling and hoisting gear; Arrangements using the same rope or cable for both travelling and hoisting, e.g. in Temperley cranes (power transmissions between driving motors and winch drums B66D 1/14)
  - 11/22 • • actuated pneumatically or hydraulically
  - 11/24 • • with means for locating or sustaining the loads or trolleys in predetermined positions; Hay hoists
  - 11/26 • • • Abutments; Stop blocks; End stops
- 13/00 Other constructional features or details**
- 13/02 • Devices for facilitating retrieval of floating objects, e.g. for recovering craft from water (equipment for handling lifeboats or the like B63B 23/00; loading or unloading floating cargo using ship-based equipment B63B 27/36; salvaging, or hauling-out on slipways, waterborne vessels B63C; winding mechanism controls B66D 1/52)
  - 13/04 • Auxiliary devices for controlling movements of suspended loads, or for preventing cable slack
  - 13/06 • • for minimising or preventing longitudinal or transverse swinging of loads
  - 13/08 • • for depositing loads in desired attitudes or positions
  - 13/10 • • for preventing cable slack (control devices for rope, cable, or chain winding mechanisms, e.g. for controlling tension, B66D 1/40)
  - 13/12 • Arrangements of means for transmitting pneumatic, hydraulic, or electric power to movable parts or devices (devices of general interest specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material B65H 75/34)
  - 13/14 • • to load-engaging elements or motors associated therewith
  - 13/16 • Applications of indicating, registering, or weighing devices (in crane hooks B66C 1/40; in safety gear B66C 15/00; weighing-apparatus G01G; remote indicating in general G08)

- 13/18 • Control systems or devices (exclusively for rope, cable, or chain winding mechanisms B66D 1/40)
- 13/20 • • for non-electric drives (transmitting control pulses B66C 13/40)
- 13/22 • • for electric drives (transmitting control pulses B66C 13/40; systems or devices of general application H02P)
- 13/23 • • • Circuits for controlling the lowering of the load
- 13/24 • • • • by dc motors
- 13/26 • • • • by ac motors
- 13/28 • • • • • utilising regenerative braking for controlling descent of heavy loads and having means for preventing rotation of motor in the hoisting direction when load is released
- 13/30 • • • Circuits for braking, traversing, or slewing motors
- 13/32 • • • for operating grab-bucket hoists by means of one or more electric motors used both for hoisting and lowering the loads and for opening and closing the bucket jaws (other aspects of rope, cable, or chain winding mechanisms specially adapted for actuating grab buckets B66D 1/62)
- 13/34 • • • • through differential or planetary gearing
- 13/36 • • • • Single-motor-drive control systems
- 13/38 • • • • Systems controlling independent motors
- 13/40 • • Applications of devices for transmitting control pulses; Applications of remote control devices (control in general G05)
- 13/42 • • • Hydraulic transmitters
- 13/44 • • • Electrical transmitters
- 13/46 • • Position indicators for suspended loads or for crane elements
- 13/48 • • Automatic control of crane drives for producing a single or repeated working cycle; Programme control
- 13/50 • • Applications of limit circuits or of limit-switch arrangements (for winding mechanisms B66D 1/56)
- 13/52 • Details of compartments for driving engines or motors or of operator's stands or cabins
- 13/54 • • Operator's stands or cabins
- 13/56 • • • Arrangements of handles or pedals
- 15/00 Safety gear** (for rope, cable, or chain winding mechanisms B66D 1/54)
- 15/02 • for retaining load-engaging elements in the event of rope or cable breakage
- 15/04 • for preventing collisions, e.g. between cranes or trolleys operating on the same track
- 15/06 • Arrangements or use of warning devices [2]

#### **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)
- 17/04 • with lifting beams, e.g. slewable beams, carrying load-engaging elements, e.g. magnets, hooks (constructions of load-engaging elements B66C 1/00, B66C 3/00)

- 17/06 • specially adapted for particular purposes, e.g. in foundries, forges; combined with auxiliary apparatus serving particular purposes (B66C 17/04 takes precedence)
- 17/08 • • for charging treatment chambers, e.g. furnaces, kilns, ovens (charging furnaces in general F27D 3/00)
- 17/10 • • for transporting ladles
- 17/12 • • for handling workpieces, e.g. ingots, which require to be supported temporarily within, or withdrawn from, a treatment chamber, e.g. tong cranes, soaking-pit cranes, stripper cranes (for manipulating ingots during forging B66C 17/18; grippers for handling or stripping castings or ingots during manufacture B22D 29/00)
- 17/14 • • • Tong cranes with means for moving article-pushers relative to the tongs
- 17/16 • • • Tong cranes with means for turning the tongs about a vertical axis
- 17/18 • • for manipulating workpieces during forging operations (workpiece manipulators in forging machines B21J 13/10)
- 17/20 • • for hoisting or lowering heavy load carriers, e.g. freight containers, railway wagons
- 17/22 • • for hoisting or lowering locomotives
- 17/24 • • for building ships on slipways
- 17/26 • • combined with auxiliary apparatus, e.g. log saws, pushers for unloading vehicles, means for shunting railway vehicles

**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)

19/02 • collapsible

**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 11/16; railway systems B61B; rope or cable winding mechanisms B66D 1/00)

- 21/02 • with cable-ways supported on framework swingably connected to ground-engaging elements
- 21/04 • with cable-ways supported at one end or both ends on bodily-movable framework, e.g. framework mounted on rail track
- 21/06 • • with one end supported on a framework movable in a curved, e.g. circular, path and the other end by a column rotatable around a vertical axis
- 21/08 • Sag carriers or rope trolleys, suspended or not, e.g. fixed but offering clearance for travelling gear
- 21/10 • • travelling

**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)

#### **Note(s)**

Group B66C 23/64 takes precedence over groups B66C 23/02-B66C 23/16.

- 23/02 • with non-adjustable and non-inclinable jibs mounted solely for slewing movements

## B66C

23/04	• with jibs the effective length of which is variable in operation, e.g. longitudinally displaceable, extensible	23/52	• • • Floating cranes (floating dredgers E02F)
23/06	• with jibs mounted for jibbing or luffing movements	23/53	• • • including counterweight or means to compensate for list, trim, or skew of the vessel or platform (counterweights or supports for balancing lifting couples B66C 23/72; equipment to decrease unwanted vessel movements B63B 39/00) [4]
23/08	• • and adapted to move the loads in predetermined paths		
23/10	• • • the paths being substantially horizontal; Level-luffing jib cranes	23/58	• arranged to carry-out a desired sequence of operations automatically, e.g. hoisting followed by luffing and slewing
23/12	• • • • with means for automatically varying the effective length of the hoisting rope or cable	23/60	• Derricks [3]
23/14	• • • • with means, e.g. pantograph arrangements, for varying jib configuration	23/61	• • with slewing force exerted at pivoted end [3]
23/16	• with jibs supported by columns, e.g. towers having their lower end mounted for slewing movements	23/62	• Constructional features or details (of dredgers E02F)
23/18	• specially adapted for use in particular locations or for particular purposes (B66C 23/02-B66C 23/16, B66C 23/58-B66C 23/88 take precedence) [5]	23/64	• • Jibs
23/20	• • with supporting couples provided by walls of buildings or like structures	23/66	• • • Outer or upper end constructions
23/22	• • • Window cranes, i.e. adapted to be supported in window openings	23/68	• • • foldable or otherwise adjustable in configuration (B66C 23/687, B66C 23/70 take precedence) [5]
23/24	• • • Mobile wall cranes	23/683	• • • • while in use [5]
23/26	• • for use on building sites; constructed, e.g. with separable parts, to facilitate rapid assembly or dismantling, for operation at successively higher levels, for transport by road or rail (with supporting couples provided by walls or buildings B66C 23/20; mounted on vehicles B66C 23/36) [5]	23/687	• • • telescopic [5]
23/28	• • • constructed to operate at successively higher levels	23/69	• • • • while in use [5]
23/30	• • • • with frameworks composed of telescopic elements	23/693	• • • • • extensible by fluid pressure [5]
23/32	• • • • Self-hoisting cranes	23/697	• • • • providing bearing means between sections [5]
23/34	• • • Self-erecting cranes, i.e. with hoisting gear adapted for crane erection purposes	23/70	• • • assembled from separate sections to form jibs of various discrete lengths
23/36	• • mounted on road or rail vehicles; Manually-movable jib cranes for use in workshops; Floating cranes (vehicle or ship aspects B60-B63)	23/72	• • Counterweights or supports for balancing lifting couples
23/38	• • • with separate prime movers for crane and vehicle	23/74	• • • separate from jib
23/40	• • • with a single prime mover for both crane and vehicle	23/76	• • • • and movable to take account of variations of load or of variations of length of jib
23/42	• • • with jibs of adjustable configuration, e.g. foldable	23/78	• • • Supports, e.g. outriggers, for mobile cranes
23/44	• • • Jib cranes adapted for attachment to standard vehicles, e.g. agricultural tractors	23/80	• • • • hydraulically actuated
23/46	• • • Mobile jib cranes with non-sleuable jibs	23/82	• • Luffing gear
23/48	• • • Manually-movable jib cranes for use in workshops	23/84	• • Slewing gear (anti-friction bearings F16C)
23/50	• • • mounted on railway vehicles, e.g. breakdown cranes	23/86	• • • hydraulically actuated
		23/88	• Safety gear (for cranes in general B66C 15/00; for rope, cable, or chain winding mechanisms B66D 1/54)
		23/90	• • Devices for indicating or limiting lifting movement
		23/92	• • Snubbers or dash-pots for preventing backwards-swinging of jibs, e.g. in the event of cable or tackle breakage
		23/94	• • for limiting slewing movements
		25/00	<b>Cranes not provided for in groups B66C 17/00-B66C 23/00 [2006.01]</b>