

**CPC****COOPERATIVE PATENT CLASSIFICATION****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.

**WARNING**

The following IPC group(s) are not used in the CPC scheme. Subject matter covered by these groups is classified in the following groups:

[B28B 23/08](#) covered by [B28B 21/60](#) ,  
[B28B 23/06](#)

**B28B 1/00**

**Producing shaped{prefabricated}articles from the material**( using presses [B28B 3/00](#) ; shaping on moving conveyers [B28B 5/00](#) ; producing tubular articles [B28B 21/00](#) ; { producing articles with embedded elements [B28B 23/00](#) })

## B28B 1/001

- {Rapid manufacturing of 3D objects by additive depositing, agglomerating or laminating of material( selective deposition modelling of metallic powder [B22F 3/008](#) ; rapid manufacturing of 3D objects in general and in particular of plastics [B29C 67/0051](#) )}

## B28B 1/002

- {assembled from preformed elements}

## B28B 1/004

- {Devices for shaping artificial aggregates from ceramic mixtures or from mixtures containing hydraulic binder( from slag [C04B 5/00](#) ; composition of artificial aggregates [C04B 18/02](#) )}

## B28B 1/005

- {Devices or processes for obtaining articles having a marble appearance( producing decorative effects [B44C](#) ; design of stone surfaces, e.g. marble, [B44F 9/04](#) )}

## B28B 1/007

- {by freezing the material}

## B28B 1/008

- {made from two or more materials having different characteristics or properties( casting for producing layered articles [B28B 1/16](#) ; feeding several successive layers, optionally of different materials [B28B 13/022](#) ; coating [B28B 11/04](#) ; applying material to surfaces to form a permanent layer thereon [B28B 19/00](#) )}

## B28B 1/02

- by turning or jiggering{in moulds or moulding surfaces on rotatable supports}

## B28B 1/025

- .. {Potters wheels}

## B28B 1/04

- by tamping or ramming( followed by pressing [B28B 3/02](#) )

## B28B 1/045

- .. {combined with vibrating or jolting}

## B28B 1/08

- by vibrating or jolting{( of moulding sand [B22C 15/10](#) ; of concrete in general [E04G 21/063](#) )}

- B28B 1/081 .. {Vibration-absorbing means}
- B28B 1/082 .. {combined with a vacuum, e.g. for moisture extraction( in general [E04G 21/061](#) )}
- B28B 1/084 .. {the vibrating moulds or cores being moved horizontally for making strands of moulded articles}
- B28B 1/085 ... {Introducing non-longitudinal reinforcing elements, e.g. spirally shaped}
- B28B 1/087 .. by means acting on the mould;{Fixation thereof to the mould}
- B28B 1/0873 ... {the mould being placed on vibrating or jolting supports, e.g. moulding tables}
- B28B 2001/0876 .... {Supports, e.g. tables, therefor}
- B28B 1/093 .. by means directly acting on the material, e.g. by cores wholly or partly immersed in the material{or elements acting on the upper surface of the material}{( [B28B 1/084](#) takes precedence; } internal vibrators for compacting concrete in situ [E04G 21/08](#) )}
- B28B 1/0935 ... {using only elements wholly or partly immersed in the material, e.g. cores}
- B28B 1/10 .. and applying pressure otherwise than by the use of presses
- B28B 1/105 ... {this load also being actively vibrated or jolted}
- B28B 1/14 . by simple casting, the material being neither forcibly fed nor positively compacted( for molten material [B28B 1/54](#) )
- B28B 1/16 .. for producing layered articles( coating [B28B 11/04](#) )
- B28B 1/20 . by centrifugal or rotational casting( slip-casting involving rotation of the mould [B28B 1/28](#) ; for molten material [B28B 1/54](#) )
- B28B 1/24 . by injection moulding{( injection moulding of ceramic slips [B28B 1/265](#) ; of tubular articles [B28B 21/38](#) )}
- B28B 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 ) ;{specially for manufacturing articles starting from a ceramic slip; Moulds therefor( of tubular articles [B28B 21/08](#) )}
- B28B 1/261 .. {Moulds therefor( absorbent moulds in general [B28B 7/344](#) )}
- B28B 1/262 ... {Mould materials; Manufacture of moulds or parts thereof}
- B28B 1/263 .... {Plastics}
- B28B 1/264 .... {Plaster}
- B28B 1/265 .. {pressure being applied on the slip in the filled mould or on the moulded article in the mould, e.g. pneumatically, by compressing slip in a closed mould}
- B28B 1/266 ... {Means for counteracting the pressure being applied on the slip or on the moulded article in the mould, e.g. means for clamping the moulds parts together in a frame-like structure}
- B28B 1/267 .. {in moulds or on moulding surfaces supported by, or formed in or by, conveyers}
- B28B 1/268 .. {by dipping moulding surfaces in the slip( in general [B28B 1/38](#) )}
- B28B 1/269 .. {by electrophoresis( electrophoresis in general [C25](#) )}
- B28B 1/28 .. involving rotation of the mould{about a centrifugal axis}
- B28B 1/29 . by profiling or strickling the material in open moulds or on moulding surfaces{( in rotary moulds [B28B 1/02](#) ; by means of profiled rollers [B28B 3/12](#) , [B28B 3/123](#) )}
- B28B 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](#) )
- B28B 1/32 .. by projecting, e.g. spraying( spraying in general [B05B](#) , D )

- B28B 1/34 . . . by centrifugal force({ centrifugally acting implements for applying plaster or the like to walls [E04F 21/10](#) )}
- B28B 1/38 . . by dipping(in general [B05C](#), D;{ shaping from synthetic resin [B29C 41/14](#) )}
- B28B 1/40 . . by wrapping, e.g. winding
- B28B 1/42 . . . using mixtures containing fibres, e.g. for making sheets by slitting the wound layer
- B28B 1/44 . by forcing cores into filled moulds for forming hollow articles
- B28B 1/445 . . {Hollow punches or cores}
- B28B 1/48 . by removing material from solid section preforms for forming hollow articles, e.g. by punching or boring
- B28B 1/50 . specially adapted for producing articles of expanded material, e.g. cellular concrete(chemical aspects(or making expanded aggregate) [C04B](#) )
- B28B 1/503 . . {Moulds therefor}
- B28B 1/506 . . . {with means for, or adapted for, cutting the moulded article into pieces( in general [B28B 7/14](#) )}
- B28B 1/52 . specially adapted for producing articles from mixtures containing fibres,{e.g. asbestos cement}( by wrapping on +o mandrels [B28B 1/42](#) )
- B28B 1/521 . . {from dry mixtures to which a setting agent is applied after forming( [B28B 1/526](#) , [B28B 1/527](#) take precedence )}
- B28B 1/522 . . {for producing multi-layered articles( [B28B 1/526](#) , [B28B 1/527](#) take precedence )}
- B28B 1/523 . . {containing metal fibres( [B28B 1/526](#) , [B28B 1/527](#) take precedence )}
- B28B 1/525 . . {containing organic fibres, e.g. wood fibres( [B28B 1/526](#) , [B28B 1/527](#) take precedence )}
- B28B 1/526 . . {by delivering the materials on a conveyer of the endless-belt type}
- B28B 1/527 . . {by delivering the materials on a rotating drum, e.g. a sieve drum, from which the materials are picked up by a felt}
- B28B 1/528 . . {for producing corrugated sheets( [B28B 1/526](#) , [B28B 1/527](#) take precedence )}
- B28B 1/54 . specially adapted for producing articles from molten material, e.g. slag{refractory ceramic materials}( chemical aspects [C04B](#) ; { from molten bituminous material [B29C](#) })
  
- B28B 3/00** **Producing shaped articles from the material by using presses( shaping on moving conveyers [B28B 5/00](#) ); Presses specially adapted therefor( presses in general [B30B](#) )**
- B28B 3/003 . {Pressing by means acting upon the material via flexible mould wall parts, e.g. by means of inflatable cores, isostatic presses( isostatic presses in general [B30B 5/02](#) )}
- B28B 3/006 . {Pressing by atmospheric pressure, as a result of vacuum generation or by gas or liquid pressure acting directly upon the material, e.g. jets of compressed air( moulds for treating with gases or degassing [B28B 7/44](#) ; compacting concrete by means of vacuum in general [E04G 21/061](#) )}
- B28B 3/02 . wherein a ram exerts pressure on the material in a moulding space; Ram heads of special form
- B28B 3/021 . . {Ram heads of special form}
- B28B 3/022 . . {combined with vibrating or jolting}
- B28B 3/024 . . {the pressure on the material being transmitted through flexible or resilient wall parts, e.g. flexible cushions on the ramming surface, resilient wall parts pressing as a result of deformation caused by ram pressure}

- B28B 3/025 .. {Hot pressing, e.g. of ceramic materials}
- B28B 3/027 .. {using a bottom press ram actuated upwardly towards mould covers}
- B28B 3/028 .. {Centering the press head, e.g. using guiding pins or chamfered mould edges}
- B28B 3/04 .. with one ram per mould( [B28B 3/10](#) takes precedence )
- B28B 3/06 ... with two or more ram and mould sets
- B28B 3/08 .. with two or more rams per mould
- B28B 3/083 ... {The juxtaposed rams working in the same direction}
- B28B 3/086 ... {The rams working in different directions}
- B28B 3/10 .. each charge of material being compressed against previously formed body
- B28B 3/12 . wherein one or more rollers exert pressure on the material
- B28B 3/123 .. {on material in moulds or on moulding surfaces moving continuously underneath or between the rollers, e.g. on an endless belt}
- B28B 3/126 .. {on material passing directly between the co-operating rollers}
- B28B 3/14 .. with co-operating pocketed rollers
- B28B 3/16 .. with co-operating profiled rollers
- B28B 3/18 .. Roller-and-ring machines, i.e. with roller disposed within a ring and co-operating with the inner surface of the ring
- B28B 3/20 . wherein the material is extruded{( [extrusion moulding of plastics B29C 47/00](#) )}
- B28B 3/201 .. {Means for heating or cooling the barrel}
- B28B 2003/203 .. {for multi-channelled structures, e.g. honeycomb structures}
- B28B 3/205 .. {using vibrations}
- B28B 3/206 .. {Forcing the material through screens or slots}
- B28B 3/208 .. {Exchangeable wear parts, e.g. liners}
- B28B 3/22 .. by screw or worm
- B28B 3/222 ... {Screw or worm constructions}
- B28B 3/224 ... {Twin screw extruders, e.g. double shaft extruders}
- B28B 3/226 ... {Means for heating or cooling the screw}
- B28B 3/228 ... {Slipform casting extruder, e.g. self-propelled extruder}
- B28B 3/24 .. by reciprocating plunger
- B28B 3/26 .. Extrusion dies
- B28B 3/2609 ... {Containing rotating elements perpendicular to the axis of extrusion}
- B28B 3/2618 ... {using lubricating means}
- B28B 3/2627 ... {using means for making hollow objects with transverse walls, e.g. hollow objects closed on all sides}
- B28B 3/2636 ... {using means for co-extruding different materials}
- B28B 3/2645 ... {using means for inserting reinforcing members}
- B28B 3/2654 ... {Means for heating or cooling the die}
- B28B 3/2663 ... {Exchangeable wear parts, e.g. liners}
- B28B 3/2672 ... {Means for adjusting the flow inside the die, e.g. using choke means}
- B28B 3/2681 ... {Adjustable dies, e.g. for altering the shape of the product}
- B28B 3/269 ... {For multi-channelled structures, e.g. honeycomb structures}

<b>B28B 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> ( <a href="#">shaping aspects see the relevant groups</a> )
B28B 5/02	. on conveyers of the endless-belt or chain type( <a href="#">in combination with pressing rollers B28B 3/12</a> )
B28B 5/021	.. {the shaped articles being of definite length}
B28B 5/022	... {the moulds or the moulding surfaces being individual independant units and being discontinuously fed( <a href="#">feeding B28B 13/0215</a> and sub-groups )}
B28B 5/023	.... {Moulds mounted on an endless chain conveyer for making pottery ware}
B28B 5/025	... {the moulds or the moulding surfaces being divided by separating walls and being continuously fed( <a href="#">feeding B28B 13/02</a> )}
B28B 5/026	.. {the shaped articles being of indefinite length}
B28B 5/027	... {the moulding surfaces being of the indefinite length type, e.g. belts, and being continuously fed( <a href="#">feeding B28B 13/02</a> )}
B28B 5/028	... {the moulding surfaces being of definite length, e.g. succession of moving pallets, and being continuously fed( <a href="#">feeding B28B 13/02</a> )}
B28B 5/04	. in moulds moved in succession past one or more shaping stations( <a href="#">on turn-tables B28B 5/06</a> )
B28B 2005/041	.. {with compacting of the material}
B28B 2005/042	... {only by vibrating or jolting}
B28B 2005/044	... {only by tamping or ramming}
B28B 2005/045	... {only by pressing}
B28B 2005/047	... {by tamping, ramming or pressing as well as by vibrating, jolting or by rolling}
B28B 2005/048	.. {in moulds carried on a conveyer of the endless-belt type}
B28B 5/06	. in moulds on a turn-table
B28B 5/08	.. intermittently rotated
B28B 5/10	. in moulds carried on the circumference of a rotating drum
B28B 5/12	.. intermittently rotated
B28B 2005/125	... {Revolving presses}
<b>B28B 7/00</b>	<b>Moulds; Cores; Mandrels</b> ( <a href="#">specially adapted for the production of the tubular articles B28B 21/00</a> ; { for casting metals <a href="#">B22C 9/00</a> ; moulds for plastic materials in general <a href="#">B29C 33/00</a> ; falsework, forms or shutterings for forming buildings or parts thereof in situ <a href="#">E04G 9/00</a> to <a href="#">E04G 15/00</a> })
B28B 7/0002	. {Auxiliary parts or elements of the mould}
B28B 7/0005	.. {Mould identification means, e.g. by radio frequency identification device [RFID]}
B28B 7/0008	.. {Venting channels, e.g. to avoid vacuum during demoulding or allowing air to escape during feeding, pressing or moulding}
B28B 7/0011	.. {Mould seals}
B28B 7/0014	.. {Fastening means for mould parts, e.g. for attaching mould walls on mould tables; Mould clamps( <a href="#">clamping means specially adapted for counteracting a pressure being applied on a slip or on the moulded article in the mould B28B 1/266</a> )}
B28B 7/0017	... {for attaching mould walls on mould tables}
B28B 7/002	... {using magnets}

B28B 7/0023	... {using vacuum}
B28B 7/0026	... {using adhesive}
B28B 7/0029	. { Moulds or moulding surfaces not covered by <a href="#">B28B 7/0058</a> to <a href="#">B28B 7/36</a> and <a href="#">B28B 7/40</a> to <a href="#">B28B 7/465</a> , e.g. moulds assembled from several parts }
B28B 7/0032	.. {Moulding tables or similar mainly horizontal moulding surfaces}
B28B 7/0035	.. {Moulds characterised by the way in which the sidewalls of the mould and the moulded article move with respect to each other during demoulding}
B28B 7/0038	... {the sidewalls of mould and moulded article moving only past each other, e.g. box-shaped moulds which are lifted off from the moulding}
B28B 7/0041	... {the sidewalls of the mould being moved only parallelly away from the sidewalls of the moulded article}
B28B 7/0044	... {the sidewalls of the mould being only tilted away from the sidewalls of the moulded article, e.g. moulds with hingedly mounted sidewalls}
B28B 2007/0047	.. {Mould seals}
B28B 2007/005	.. {Fastening means for mould parts, e.g. for attaching mould walls on mould tables; Mould clamps}
B28B 2007/0052	... {for attaching mould walls on mould tables}
B28B 7/0055	.. {Mould pallets; Mould panels}
B28B 7/0058	. {Moulds, cores or mandrels with provisions concerning the elimination of superfluous material; Moulds with burr-removing means provided therein or carried thereby}
B28B 7/0061	. {Moulds, cores or mandrels specially adapted for mechanically working moulding surfaces during moulding or demoulding, e.g. smoothing by means of mould walls driven during moulding or of parts acting during demoulding}
B28B 7/0064	. {Moulds characterised by special surfaces for producing a desired surface of a moulded article, e.g. profiled or polished moulding surfaces( <a href="#">B28B 7/36</a> takes precedence; producing decorative effects <a href="#">B44C</a> ; designs of stone surfaces <a href="#">B44F</a> )}
B28B 7/0067	.. {with polished or glossy moulding surfaces}
B28B 7/007	.. {with moulding surfaces simulating natural effects, e.g. wood or stone}
B28B 7/0073	.. {with moulding surfaces simulating assembled bricks or blocks with mortar joints( <a href="#">B28B 7/007</a> takes precedence )}
B28B 7/0076	.. {with surfaces for moulding letters or marks}
B28B 7/0079	.. {with surfaces for moulding interlocking means, e.g. grooves and ribs}
B28B 7/0082	.. {with surfaces for moulding parallel grooves or ribs( <a href="#">B28B 7/0073</a> , <a href="#">B28B 7/0079</a> takes precedence )}
B28B 7/0085	.. {with surfaces for moulding chamfers}
B28B 7/0088	. {Moulds in which at least one surface of the moulded article serves as mould surface, e.g. moulding articles on or against a previously shaped article, between previously shaped articles}
B28B 7/0091	. {Transformable moulds allowing the change of shape of an initial moulded preform by preform deformation or the change of its size by moulding on the preform}
B28B 7/0094	. {Moulds for concrete test samples}
B28B 7/0097	. {Press moulds; Press-mould and press-ram assemblies}
B28B 7/02	. Moulds with adjustable parts{specially for modifying at will the dimensions or form of the moulded article}



- B28B 7/025      ..      {the mould surface being made of or being supported by a plurality of small elements, e.g. to create double curvatures}
- B28B 7/04        ..      one or more of the parts being pivotally mounted
- B28B 7/06        .      Moulds with flexible parts
- B28B 7/065      ..      {Casting in sack or bag like moulds}
- B28B 7/08        .      Moulds provided with means for tilting or inverting
- B28B 7/082      ..      {Tiltable moulding tables or similar moulding surfaces( specially for casting and erecting walls or parts thereof during construction work [E04G 11/32](#) )}
- B28B 7/085      ..      {for making double wall panels}
- B28B 7/087      ..      {using rocker or rolling means}
- B28B 7/10        .      Moulds with means incorporated therein, or carried thereby, for ejecting{or detaching}the moulded article({ flexible moulds bent open for ejecting [B28B 7/06](#) ; ejecting by tilting or inverting the mould [B28B 7/08](#) ; } devices, not forming part of the mould, for ejecting the moulded article [B28B 13/06](#) )
- B28B 7/12        ..      by fluid pressure,{e.g. acting through flexible wall parts or linings of the moulds}
- B28B 7/14        .      Moulds with means incorporated therein, or carried thereby, for cutting the moulded article into parts({ for expanded material [B28B 1/506](#) ; } cutting means independent of the mould [B28B 11/14](#) )
- B28B 7/16        .      Moulds for making shaped articles with cavities or holes open to the surface,{e.g. with blind holes}
- B28B 7/162      ..      {for building blocks or similar block-shaped articles}
- B28B 7/164      ..      {for plates, panels, or similar sheet- or disc-shaped articles}
- B28B 7/166      ..      {for oblong articles, e.g. hollow masts}
- B28B 7/168      ..      {for holders or similar hollow articles, e.g. vaults, sewer pits}
- B28B 7/18        ..      the holes passing completely through the article
- B28B 7/183      ...      {for building blocks or similar block-shaped objects}
- B28B 7/186      ...      {for plates, panels or similar sheet- or disc-shaped objects, also flat oblong moulded articles with lateral openings, e.g. panels with openings for doors or windows, grated girders}
- B28B 7/20        .      Moulds for making shaped articles with undercut recesses, e.g. dovetails
- B28B 7/22        .      Moulds for making units for prefabricated buildings{i.e. units each comprising an important section of at least two limiting planes of a room or space, e.g. cells( for making rooms or entire buildings in situ [E04G 11/02](#) )}; Moulds for making prefabricated stair units
- B28B 7/225      ..      {for making stairs or stair units comprising more than one step( in situ [E04G 13/06](#) )}
- B28B 7/24        .      Unitary mould structures with a plurality of moulding spaces,{e.g. moulds divided into multiple moulding spaces by integratable partitions, mould part structures providing a number of moulding spaces in mutual co-operation( assemblies of individually complete moulds [B28B 7/26](#) )}
- B28B 7/241      ..      {Detachable assemblies of mould parts providing only in mutual co-operation a number of complete moulding spaces}
- B28B 7/243      ...      {for making plates, panels or similar sheet- or disc-shaped objects}
- B28B 7/245      ....      {using transportable mould batteries}
- B28B 7/246      ...      {for making oblong objects, e.g. girders}

- B28B 7/248 . . . {using angle-shaped mould parts, e.g. L-parts}
- B28B 7/26 . Assemblies of separate moulds{i.e. of moulds or moulding space units, each forming a complete mould or moulding space unit independently from each other}
- B28B 7/263 . . {for making plates, panels or similar sheet- or disc-shaped objects}
- B28B 7/266 . . {for making oblong objects, e.g. girders}
- B28B 7/28 . Cores; Mandrels{( [B28B 1/44](#) takes precedence; of special materials in general [B28B 7/34](#) ; cores for making blind holes in situ [E04G 15/04](#) ; for making recesses [E04G 15/06](#) )}
- B28B 7/285 . . {Core puller}
- B28B 7/30 . . adjustable, collapsible, or expanding{( for making tubular objects [B28B 21/88](#) )}
- B28B 7/303 . . . {specially for making undercut recesses or continuous cavities the inner section of which is superior to the section of either of the mouths}
- B28B 7/306 . . . {pliable or extensible}
- B28B 7/32 . . . inflatable{( connection of valves to inflatable elastic bodies [B60C 29/00](#) )}
- B28B 7/34 . Moulds, cores, or mandrels of special material, e.g. destructible materials( for slip casting [B28B 1/26](#) )
- B28B 7/342 . . {which are at least partially destroyed, e.g. broken, molten, before demoulding; Moulding surfaces or spaces shaped by, or in, the ground, or sand or soil, whether bound or not; Cores consisting at least mainly of sand or soil, whether bound or not}
- B28B 7/344 . . {from absorbent or liquid- or gas-permeable materials, e.g. plaster moulds in general}
- B28B 7/346 . . {Manufacture of moulds}
- B28B 7/348 . . {of plastic material or rubber}
- B28B 7/36 . Linings or coatings,{e.g. removable, absorbent linings, permanent anti-stick coatings; Linings becoming a non-permanent layer of the moulded article}( lubricating surfaces of moulds, cores or mandrels [B28B 7/38](#) )
- B28B 7/362 . . {specially for making moulded articles from concrete with exposed aggregate}
- B28B 7/364 . . {of plastic material or rubber}
- B28B 7/366 . . {Replaceable lining plates for press mould}
- B28B 7/368 . . {Absorbent linings}
- B28B 7/38 . Treating surfaces of moulds, cores, or mandrels to prevent sticking
- B28B 7/382 . . {Devices for treating, e.g. sanding}
- B28B 7/384 . . {Treating agents( for plastic moulding materials in general [B29C 33/60](#) ; lubricants in general [C10M](#) )}
- B28B 7/386 . . {Cleaning}
- B28B 7/388 . . {with liquid material, e.g. lubricating}
- B28B 7/40 . characterised by means for modifying the properties of the moulding material
- B28B 7/42 . . for heating or cooling, e.g. steam jackets,{by means of treating agents acting directly on the moulding material}
- B28B 7/44 . . for treating with gases or degassing, e.g. for de-aerating{( treating with hot gases or vapour [B28B 7/42](#) )}
- B28B 7/46 . . for humidifying or dehumidifying
- B28B 7/465 . . . {Applying setting liquid to dry mixtures}



<b>B28B 11/00</b>	<b>Apparatus or processes for treating or working the shaped{or preshaped}articles( specially adapted for tubular articles <a href="#">B28B 21/92</a> ; decoration or surface treatment in general <a href="#">B05</a> , <a href="#">B44</a> ; compacting concrete in situ in connection with building <a href="#">E04G 21/06</a> ; drying <a href="#">F26</a> )</b>
<a href="#">B28B 11/001</a>	. {Applying decorations on shaped articles, e.g. by painting}
<a href="#">B28B 11/002</a>	. {Apparatus for washing concrete for decorative purposes or similar surface treatments for exposing the texture}
<a href="#">B28B 11/003</a>	. {the shaping of preshaped articles, e.g. by bending( <a href="#">B28B 11/08</a> takes precedence )}
<a href="#">B28B 11/005</a>	.. {Using heat to allow reshaping, e.g. to soften ceramic articles}
<a href="#">B28B 11/006</a>	.. {Making hollow articles or partly closed articles}
<a href="#">B28B 11/007</a>	... {Using a mask for plugging}
<a href="#">B28B 11/008</a>	.. {Blow moulding, e.g. with or without the use of a membrane}
<a href="#">B28B 11/02</a>	. for attaching appendages, e.g. handles, spouts
<a href="#">B28B 11/04</a>	. for coating{or applying engobing layers}( glazing, engobing <a href="#">C04B</a> )
<a href="#">B28B 11/041</a>	.. {for moulded articles undergoing a thermal treatment at high temperatures, such as burning, after coating}
<a href="#">B28B 11/042</a>	.. {with insulating material}
<a href="#">B28B 11/043</a>	... {filling cavities or chambers of hollow blocks}
<a href="#">B28B 11/044</a>	.. {with glaze or engobe or enamel or varnish}
<a href="#">B28B 11/045</a>	.. {by dipping}
<a href="#">B28B 11/046</a>	.. {by rolling}
<a href="#">B28B 11/047</a>	.. {by pooring, e.g. curtain coating}
<a href="#">B28B 11/048</a>	.. {by spraying or projecting}
<a href="#">B28B 11/049</a>	.. {Recycling of the coating material}
<a href="#">B28B 11/06</a>	.. with powdered or granular material,{e.g. sanding of shaped articles}
<a href="#">B28B 11/08</a>	. for reshaping the surface, e.g. smoothing, roughening, corrugating, making screw-threads
<a href="#">B28B 11/0809</a>	.. {Hand tools therefore}
<a href="#">B28B 11/0818</a>	.. {for roughening, profiling, corrugating}
<a href="#">B28B 11/0827</a>	... {for corrugating, profiling or the like of plates such as asbestos cement sheets}
<a href="#">B28B 11/0836</a>	... {for pottery articles}
<a href="#">B28B 11/0845</a>	.. {for smoothing}
<a href="#">B28B 11/0854</a>	.. {for making screw-threads or the like in the surface of the shaped article}
<a href="#">B28B 11/0863</a>	.. {for profiling, e.g. making grooves}
<a href="#">B28B 11/0872</a>	.. {Non-mechanical reshaping of the surface, e.g. by burning, acids, radiation energy, air flow, etc.}
<a href="#">B28B 11/0881</a>	.. {Using vibrating mechanisms, e.g. vibrating plates for ageing stones}
<a href="#">B28B 11/089</a>	.. {Using impacting tools}
<a href="#">B28B 11/10</a>	.. by using presses
<a href="#">B28B 11/12</a>	. for removing parts of the articles by cutting
<a href="#">B28B 11/125</a>	.. {Cutting-off protruding ridges, also profiled cutting}

- B28B 11/14 . for dividing shaped articles by cutting
- B28B 11/145 .. {for dividing block-shaped bodies of expanded materials, e.g. cellular concrete}
- B28B 11/16 .. for extrusion{or for materials supplied in long webs}
- B28B 11/161 ... {in vertically operating extrusion presses}
- B28B 11/163 ... {in which the cutting device is moved longitudinally with the moving strand}
- B28B 11/165 .... {mounted on a carrier}
- B28B 11/166 ... {with devices for determining the correct cutting moment, e.g. measuring rollers or the like}
- B28B 11/168 ... {in which the material is cut-out from a strand or web by means of a frame-shaped knife}
- B28B 11/18 . for removing burr [( N: combined with the mould [B28B 7/0058](#) )]
- B28B 11/22 . for cleaning
- B28B 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](#) )
- B28B 11/241 .. {using microwave heating means}
- B28B 11/242 .. {by passing an electric current through wires, rods or reinforcing members incorporated in the article}
- B28B 11/243 .. {Setting, e.g. drying, dehydrating or firing ceramic articles( [B28B 11/242](#) takes precedence )}
- B28B 11/245 .. {Curing concrete articles( [B28B 11/242](#) takes precedence )}
- B28B 11/246 ... {Underwater curing}
- B28B 11/247 .. {Controlling the humidity during curing, setting or hardening}
- B28B 11/248 .. {Supports for drying}
- B28B 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)**
- B28B 13/02 . Feeding the unshaped material to moulds or apparatus for producing shaped articles
- B28B 13/0205 .. {supplied to the moulding device in form of a coherent mass of material, e.g. a lump or an already partially preshaped tablet, pastil or the like}
- B28B 13/021 .. {by fluid pressure acting directly on the material, e.g. using vacuum, air pressure}
- B28B 13/0215 .. {Feeding the moulding material in measured quantities from a container or silo}
- B28B 13/022 ... {Feeding several successive layers, optionally of different materials}
- B28B 13/0225 ... {Feeding specific quantities of material at specific locations in the mould}
- B28B 13/023 ... {by using a feed box transferring the moulding material from a hopper to the moulding cavities}
- B28B 13/0235 .... {the feed box being provided with agitating means, e.g. stirring vanes to avoid premature setting of the moulding material([agitation in general B01F](#))}
- B28B 2013/024 .... {the feed box being provided with means for transporting the moulded products, e.g. out of the machine}
- B28B 13/0245 .... {Rotatable feed frames, e.g. horizontally rotated over 90 degrees}

- B28B 13/025 . . . . {the feed box being vibrated, e.g. to promote discharging of the material}
- B28B 13/0255 . . . . {Disposal of residual material, e.g. by means of the return stroke of the feed drawer}
- B28B 13/026 . . . {by using a movable hopper transferring the moulding material to the moulding cavities}
- B28B 2013/0265 . . . {Feeding a slurry or a ceramic slip}
- B28B 13/027 . . . {by using a removable belt or conveyor transferring the moulding material to the moulding cavities}
- B28B 13/0275 . . . {Feeding a slurry or a ceramic slip}
- B28B 13/028 . . {Deflecting the flow of the unshaped material}
- B28B 13/0285 . . {the material being prearranged on a sheet, e.g. using a decal}
- B28B 13/029 . . {through a sieve or grid, e.g. to ensure evenly filling of cavities}
- B28B 13/0295 . . {Treating the surface of the fed layer, e.g. removing material or equalization of the surface}
- B28B 13/04 . Discharging the shaped articles({ [discharging tubular articles after shaping B28B 21/90](#) ; } [conveying systems for ceramic mouldings B65G 49/08](#) )
- B28B 13/06 . . Removing the shaped articles from moulds( [by means incorporated in, or carried by, the moulds B28B 7/10](#) )
- B28B 13/062 . . . {by elastically deforming the mould, e.g. bending flexible moulds}
- B28B 13/065 . . . {by applying electric current or other means of discharging, e.g. pneumatic or hydraulic discharging means}
- B28B 13/067 . . . {by applying blows or vibrations followed by, or during, the removal of a mould part}
  
- B28B 15/00** **General arrangement or lay-out of plant**{Industrial outlines, plant installations}
- B28B 15/002 . {Mobile plants, e.g. on vehicles or on boats}
- B28B 15/005 . {Machines using pallets co-operating with a bottomless mould; Feeding or discharging means for pallets( [Feeding pallets for making a continuous moulding surface B28B 5/025](#) , [B28B 5/028](#) )}
- B28B 15/007 . {Plant with two or more identical shaping or moulding devices}
  
- B28B 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](#) )
- B28B 17/0009 . {Shaping of preshaped articles( [shaping the surface of articles B28B 11/08](#) )}
- B28B 17/0018 . {Separating articles from each other}
- B28B 17/0027 . {Accessories for obtaining rubblestones}
- B28B 17/0036 . {Cutting means, e.g. water jets}
- B28B 17/0045 . {Tensioning devices for cutting means}
- B28B 17/0054 . {Cleaning devices for cutting means}
- B28B 17/0063 . {Control arrangements}
- B28B 17/0072 . . {Product control or inspection}

- B28B 17/0081 . . {Process control}
- B28B 17/009 . {Changing the forming elements, e.g. exchanging moulds, dies}
- B28B 17/02 . Conditioning the material prior to shaping{( for mixtures containing clay or cement [B28C](#) )}
- B28B 17/023 . . {Conditioning gypsum}
- B28B 17/026 . . {Conditioning ceramic materials}
- B28B 17/04 . Exhausting or laying dust

**B28B 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 )

- B28B 19/0007 . {for producing articles with exposed aggregate}
- B28B 19/0015 . {on multilayered articles}
- B28B 19/0023 . {Lining the inner wall of hollow objects, e.g. pipes}
- B28B 19/003 . {to insulating material}
- B28B 19/0038 . {lining the outer wall of hollow objects, e.g. pipes}
- B28B 19/0046 . {to plastics}
- B28B 19/0053 . {to tiles, bricks or the like}
- B28B 19/0061 . . {Means for arranging or fixing the tiles, bricks or the like in the mould}
- B28B 19/0069 . . . {the tiles, bricks or the like being sunk in resilient mould material}
- B28B 19/0076 . . . {the tiles, bricks or the like being sunk in heated mould material, e.g. thermoplastic material to temporarily fix them}
- B28B 19/0084 . . . {using pressurized elements for fixing the tiles, bricks or the like}
- B28B 19/0092 . {to webs, sheets or the like, e.g. of paper, cardboard}

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

- B28B 21/00** **Methods or machines specially adapted for the production of tubular articles**
- B28B 21/02 . by casting into moulds
  - B28B 21/04 . . by simple casting, the material being neither positively compacted nor forcibly fed
  - B28B 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](#) )
  - B28B 21/08 . . by slip-casting; Moulds therefor
  - B28B 21/10 . . using compacting means
  - B28B 21/12 . . . tamping or ramming the material or the mould elements
  - B28B 21/14 . . . vibrating, e.g. the surface of the material
  - B28B 21/16 . . . . one or more mould elements
  - B28B 21/18 . . . using expansible or retractable mould or core elements
  - B28B 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](#) )

B28B 21/205	.....	{having a rigid frame inside the inflatable part of the core}
B28B 21/22	...	using rotatable mould or core parts
B28B 21/24	....	using compacting heads, rollers, or the like
B28B 21/242	.....	{the working diameter of the compacting mechanism being adjustable, e.g. the compacting rollers on the head being displaceable}
B28B 21/245	.....	{using a horizontal compacting roller in a horizontally rotatable mould}
B28B 21/247	.....	{the rollers of the compaction head being driven, e.g. to overcome or modify the tangential force}
B28B 21/26	.....	with a packer head serving as a sliding mould or provided with guiding means for feeding the material
B28B 21/28	.....	combined with vibration means
B28B 21/30	....	Centrifugal moulding
B28B 21/305	.....	{Moulding machines with vertical rotation axis}
B28B 21/32	.....	Feeding the material into the moulds
B28B 21/34	.....	combined with vibrating or other additional compacting means
B28B 21/36	...	applying fluid pressure or vacuum to the material( combined with slip-casting <a href="#">B28B 21/08</a> )
B28B 21/38	....	introducing the material wholly or partly under pressure;{Injection-moulding machines}
B28B 21/40	....	by evacuating one or more of the mould parts;{Vacuum machines}
B28B 21/42	.	by shaping on or against mandrels or like moulding surfaces
B28B 21/44	..	by projecting, e.g. spraying
B28B 21/46	..	by dipping
B28B 21/48	..	by wrapping, e.g. winding
B28B 21/50	..	Details of compression or compacting means
B28B 21/52	.	by extruding
B28B 21/54	..	Mouthpieces for shaping sockets, bends, or like peculiarly-shaped tubular articles
B28B 21/56	.	incorporating reinforcements{or inserts}
B28B 21/563	..	{Gaskets}
B28B 21/566	..	{Climbing elements}
B28B 21/58	..	Steel tubes
B28B 21/60	..	prestressed reinforcements
B28B 21/62	...	circumferential{laterally tensioned}
B28B 21/64	....	Winding arrangements
B28B 21/66	...	Reinforcing mats
B28B 21/68	..	and applying centrifugal forces
B28B 21/70	.	by building-up from preformed elements
B28B 21/72	..	Producing multilayer tubes
B28B 21/74	..	Producing pipe bends, sockets, sleeves; Moulds therefor( combined with extrusion presses <a href="#">B28B 21/54</a> )
B28B 21/76	.	Moulds{( for slip-casting <a href="#">B28B 21/08</a> )}
B28B 21/765	..	{Top or bottom rings}

- B28B 21/78 . . . with heating or cooling means, e.g. steam jackets
  - B28B 21/80 . . . adapted to centrifugal or rotational moulding
  - B28B 21/82 . . . built-up from several parts; Multiple moulds; Moulds with adjustable parts
  - B28B 21/84 . . . . Moulds with one or more pivotable parts
  - B28B 21/86 . Cores( in general [B28B 7/00](#) )
  - B28B 21/88 . . . adjustable, collapsible or expansible( using inflatable cores [B28B 21/20](#) { for compacting [B28B 21/18](#) } )
  - B28B 21/90 . Methods or apparatus for{demoulding or}discharging after shaping
  - B28B 21/905 . . . {Removing from a mandrel}
  - B28B 21/92 . Methods or apparatus for treating or reshaping
  - B28B 21/925 . . . {for wrapping}
  - B28B 21/94 . . . for impregnating or coating by applying liquids or semi-liquids
  - B28B 21/96 . . . for smoothing, roughening, corrugating or for removing burr
  - B28B 21/965 . . . . {for grooving or corrugating}
  - B28B 21/98 . . . for reshaping, e.g. by means of reshape moulds
- B28B 23/00** **Arrangements specially adapted for the production of shaped articles with elements wholly or partly embedded in the moulding material;**{Production of reinforced objects}( [B28B 21/00](#) takes precedence; in units for prefabricated buildings [B28B 7/22](#) )
- B28B 23/0006 . . {the reinforcement consisting of aligned, non-metal reinforcing elements}
  - B28B 23/0012 . . {Producing brick netting}
  - B28B 23/0018 . . {Producing metal-clad stones, such as oven stones}
  - B28B 23/0025 . . {with installation or service material, e.g. tubes for electricity or water}
  - B28B 23/0031 . . {with product identification means, e.g. labels on test products or integrated circuit tags inside products RFID}
  - B28B 23/0037 . . {with elements being able to conduct light, e.g. light conducting fibers}
  - B28B 23/0043 . . {with gaskets or sealing elements, e.g. for tunnelings or man holes( [B28B 21/563](#) takes precedence )}
  - B28B 23/005 . . {with anchoring or fastening elements for the shaped articles}
  - B28B 23/0056 . . {Means for inserting the elements into the mould or supporting them in the mould( [B28B 23/022](#) takes precedence )}
  - B28B 23/0062 . . {forcing the elements into the cast material, e.g. hooks into cast concrete}
  - B28B 23/0068 . . {Embedding lost cores}
  - B28B 23/0075 . . {for decorative purposes}
  - B28B 23/0081 . . {Embedding aggregates to obtain particular properties}
  - B28B 23/0087 . . . {Lightweight aggregates for making lightweight articles}
  - B28B 23/0093 . . . {Heavy aggregates or scrap material for making heavy articles}
  - B28B 23/02 . . wherein the elements are reinforcing members(( [B28B 23/0006](#) takes precedence ))
  - B28B 23/022 . . . {Means for inserting reinforcing members into the mould or for supporting them in the mould( inserting during extrusion [B28B 3/2645](#) )}
  - B28B 23/024 . . . . {Supporting means}



B28B 23/026	....	{Mould partitionning elements acting as supporting means in moulds, e.g. for elongated articles}
B28B 23/028	..	{for double - wall articles}
B28B 23/04	..	the elements being stressed
B28B 23/043	...	{Wire anchoring or tensioning means for the reinforcements}
B28B 23/046	...	{Post treatment to obtain pre-stressed articles}
B28B 23/06	...	for the production of elongated articles
B28B 23/10	...	the shaping being effected by centrifugal or rotational moulding
B28B 23/12	...	to form prestressed circumferential reinforcements
B28B 23/14	....	by wrapping, e.g. winding, apparatus
B28B 23/16	....	Prestressed reinforcing nets
B28B 23/18	..	for the production of elongated articles( <a href="#">B28B 23/06 takes precedence</a> )
B28B 23/20	..	the shaping being effected by centrifugal or rotational moulding( <a href="#">B28B 23/10 takes precedence</a> )
B28B 23/22	..	assembled from preformed parts