CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING
(NOTES omitted)

SHAPING

B23 MACHINE TOOLS; METAL-WORKING NOT OTHERWISE PROVIDED FOR
(NOTES omitted)

B23B TURNING; BORING (arrangements for copying or controlling B23Q)

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

B23B 3/18	covered by	B23B 3/16
B23B 3/20	covered by	B23B 3/16
B23B 3/28	covered by	B23B 3/00
B23B 5/22	covered by	B23B 31/00
B23B 5/24	covered by	B23Q 27/00; B23B 35/00
B23B 5/30	covered by	B23Q 35/00
B23B 5/34	covered by	B23B 31/00; B23B 33/00
B23B 5/42	covered by	B23Q 35/00
B23B 5/44	covered by	B23Q 27/00
B23B 7/08	covered by	B23B 7/04
B23B 7/14	covered by	B23B 7/12
B23B 7/16	covered by	B23B 7/12
B23B 9/04	covered by	B23B 9/02
B23B 9/06	covered by	B23B 9/02
B23B 9/10	covered by	B23B 9/08
B23B 9/12	covered by	B23B 9/08
B23B 15/00	covered by	B23Q 7/00
B23B 17/00	covered by	B23Q 1/01; B23Q 1/03; B23Q 1/25
B23B 19/00	covered by	B23Q 1/70
B23B 19/02	covered by	B23Q 1/70
B23B 21/00	covered by	B23Q 1/00
B23B 29/30	covered by	B23B 29/28
B23B 31/163	covered by	B23B 31/16004
B23B 31/165	covered by	B23B 31/16045
B23B 31/167	covered by	B23B 31/16045
B23B 31/169	covered by	B23B 31/16083
B23B 31/171	covered by	B23B 31/1612
B23B 31/173	covered by	B23B 31/16158
B23B 31/175	covered by	B23B 31/16195
B23B 31/177	covered by	B23B 31/16233
B23B 41/08	covered by	F16L 41/04
B23B 45/14	covered by	B25H 1/0021
B23B 45/16	covered by	B25D 16/00
B23B 47/02	covered by	B23Q 5/00
B23B 47/04	covered by	B23Q 5/00
B23B 47/06	covered by	B23Q 5/00
B23B 47/08	covered by	B23Q 5/00
B23B 47/10	covered by	B23Q 5/00
B23B 47/12	covered by	B23Q 5/00
B23B 47/14	covered by	B23Q 5/00
B23B 47/16	covered by	B23Q 5/00
B23B 47/18	covered by	B23Q 5/00
B23B 47/20	covered by	B23Q 5/00
B23B 47/22	covered by	B23Q 5/00
B23B 47/24	covered by	B23Q 16/00

B23B (continued)

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Turning

1/00 **Methods for turning or working essentially requiring the use of turning-machines; Use of auxiliary equipment in connection with such methods**

3/00 **General-purpose turning-machines or devices, e.g. centre lathes with feed rod and lead screw; Sets of turning-machines**

3/02 . Small lathes, e.g. for toolmakers (specially designed for watchmakers G04D 3/00)

3/04 . Turning-machines in which the workpiece is rotated by means at a distance from the headstock

3/06 . Turning-machines or devices characterised only by the special arrangement of constructional units (B23Q 37/00 takes precedence; structural features of details, see the relevant groups; such features of general applicability B23Q)

3/065 . . {Arrangements for performing other machining operations, e.g. milling, drilling}

3/08 . Turning-machines characterised by the use of faceplates

3/10 . . with the faceplate horizontal, i.e. vertical boring and turning machines

3/12 . . with the faceplate vertical, i.e. face lathes

3/14 . . Mountings or drives of faceplates {(rotatable members, e.g. faceplates B23Q 1/50)}

3/16 . Turret lathes for turning individually-chucked workpieces {(turrets B23B 29/24)}

3/161 . . {lathe with one toolslide carrying one turret head}

3/162 . . . {Arrangements for performing other machining operations, e.g. milling, drilling}

3/164 . . {lathe with one toolslide carrying two or more turret heads}

3/165 . . . {Arrangements for performing other machining operations, e.g. milling, drilling}

3/167 . . {lathe with two or more toolslides carrying turrets}

3/168 . . . {Arrangements for performing other machining operations, e.g. milling, drilling}

3/22 . Turning-machines or devices with rotary tool heads {(B23B 5/08, B23B 5/14 and B23B 5/16 take precedence)}

3/24 . . the tools of which do not perform a radial movement; Rotary tool heads therefor

3/26 . . the tools of which perform a radial movement; Rotary tool heads thereof

3/265 . . . {Surfacing or grooving flanges}

3/30 . Turning-machines with two or more working-spindles, e.g. in fixed arrangement

3/32 . . for performing identical operations simultaneously on two or more workpieces

3/34 . Short turning-machines with one or multiple working-spindles attended from the end (B23B 3/12 takes precedence)

3/36 . Associations of only turning-machines directed to a particular metal-working result (if the metal-working result is not essential B23Q 39/00)

5/00 **Turning-machines or devices specially adapted for particular work; Accessories specially adapted therefor**

5/02 . for turning hubs or brake drums (B23B 5/04 takes precedence)

5/04 . for reconditioning hubs or brake drums or axle spindles without removing same from the vehicle

5/06 . for turning valves or valve bodies {(turning conical surfaces in general B23B 5/38; tools for working valve seats B23B 51/106)}

5/08 . for turning axles, bars, rods, tubes, rolls, i.e. shaft-turning lathes, roll lathes; Centreless turning

5/10 . . for turning pilgrim rolls

5/12 . . for peeling bars or tubes by making use of cutting bits arranged around the workpiece (otherwise than by turning B23D 79/12)

5/14 . Cutting-off lathes ({B23D 21/00 takes precedence} shearing B23D)

5/16 . for bevelling, chamfering, or deburring the ends of bars or tubes

5/161 . . {Devices attached to the workpiece}

5/162 . . . {with an internal clamping device}

5/163 . . . {with an external clamping device}

5/165 . . {Workpieces clamped on a bench, e.g. a vice}

5/166 . . {Devices for working electrodes}

5/167 . . {Tools for chamfering the ends of bars or tubes}

5/168 . . . {with guiding devices}

5/18 . for turning crankshafts, eccentrics, or cams, e.g. crankpin lathes

5/20 . . without removing same from the engine

5/26 . for simultaneously turning internal and external surfaces of a body

5/28 . for turning wheels or wheel sets or cranks thereon, i.e. wheel lathes

5/32 . . for reconditioning wheel sets without removing same from the vehicle; Underfloor wheel lathes for railway vehicles

5/36 . for turning specially-shaped surfaces by making use of relative movement of the tool and work produced by geometrical mechanisms, i.e. forming-lathes

5/365 . . {for toroidal surfaces}

5/38 . . for turning conical surfaces inside or outside, e.g. taper pins {(for turning valves or valve bodies B23B 5/06)}

5/40 . . for turning spherical surfaces inside or outside

5/46 . . for turning helical or spiral surfaces (thread cutting B23G)

5/48 . . . for cutting grooves, e.g. oil grooves of helicoidal shape

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 {**(arrangements or accessories for enabling machine tools not specially designed only for thread cutting to be used for this purpose B23G 3/00)**}**

7/02 . Automatic or semi-automatic machines for turning of stock

7/04 . . Turret machines
7/06 . . with sliding headstock
7/10 . . Accessories, e.g. guards {(guards B23Q 11/08 takes precedence)}
7/12 . Automatic or semi-automatic machines for turning of workpieces

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 predetermined positions; Equipment therefor (equipment applicable to single-spindle machines B23B 7/00)
9/005 . {Spindle carriers: constructional details, drives for the spindles, or the like}
9/02 . Automatic or semi-automatic machines for turning of stock
9/08 . Automatic or semi-automatic machines for turning of workpieces

11/00 Automatic or semi-automatic turning-machines incorporating equipment for performing other working procedures, e.g. slotting, milling, rolling {(B23B 3/065 and B23B 3/16 take precedence; machines incorporating a plurality of sub- assemblies, each capable of performing a metal-working operation, the sub-assemblies being arranged to operate simultaneously at different stations B23Q 39/04)**}**

13/00 Arrangements for automatically conveying or chucking or guiding stock
13/02 . for turning-machines with a single working-spindle
13/021 . . {Feeding device having intermittent movement}
13/022 . . . {being placed in the spindle}
13/024 . . . . {including two collets}
13/025 . . {with stock drum}
13/027 . . {Feeding by pistons under fluid-pressure}
13/028 . . {the material being fed from a reel}
13/04 . for turning-machines with a plurality of working-spindles
13/06 . Arrangements for switching-off the drive of turning-machines after the stock has been completely machined
13/08 . Arrangements for reducing vibrations in feeding-passages or for damping noise (damping noise in general G10K)
13/10 . with magazines for stock
13/12 . Accessories, e.g. stops, grippers
13/121 . . {Stops (stops for equipment for precise positioning of tool or work into particular locations not otherwise provided for B23Q 16/00)}
13/123 . . {Grippers, pushers or guiding tubes (arrangements for reducing vibrations in feeding-passages or for damping noise B23B 13/08)}
13/125 . . . {Feed collets (feeding device having intermittent movement being placed in the spindle including two collets B23B 13/024; collet chucks B23B 31/20)}
13/126 . . {Supports}
13/128 . . {Stock rest handling devices, e.g. ejectors}

Components or accessories particularly for turning machines

23/00 Tailstocks; Centres {(for grinding machines B24B 41/062)**}**
23/005 . {the centres being adjustable}
23/02 . Dead centres
23/025 . . {the centres being adjustable}
23/04 . Live centres
23/045 . . {the centres being adjustable}

25/00 Accessories or auxiliary equipment for turning-machines (for machine tools in general B23Q; cooling or lubricating B23Q 11/12)
25/02 . Arrangements for chip-breaking in turning-machines (on cutting tools B23B 27/22)
25/04 . Safety guards specially designed for turning machines ({B23Q 11/08 takes precedence;} in general F16P)
25/06 . Measuring, gauging, or adjusting equipment on turning-machines for setting-on, feeding, controlling, or monitoring the cutting tools or work (measuring devices or gauges G01B)
25/065 . . {Tool setting height gauges}

27/00 Tools for turning or boring machines (for drilling machines B23B 51/00)**; Tools of a similar kind in general; Accessories therefor**

NOTE

all subgroups except B23B 27/12 relate to tools with a shank

27/002 . {with vibration damping means}
27/005 . {Geometry of the chip-forming or the clearance planes, e.g. tool angles (B23B 27/141 and B23B 27/22 take precedence)}
27/007 . {for internal turning (boring bars B23B 29/02, boring heads B23B 29/03; milling cutters B23C 5/00; reamers B23D 77/00)}
27/02 . Cutting tools with straight main part and cutting edge at an angle (B23B 27/04 - B23B 27/08 take precedence)
27/04 . Cutting-off tools (B23B 27/08 takes precedence {; toolholders for cutting-off inserts B23B 29/043})
27/045 . . {with chip-breaking arrangements}
27/06 . Profile cutting tools, i.e. forming-tools
27/065 . . {Thread-turning tools}
27/08 . Cutting tools with blade- or disc-like main parts {(with disc-like main parts B23B 27/083)}
27/083 . . {Cutting tools with disc-like main parts}
27/086 . . {with yieldable support for the cutting insert}
27/10 . Cutting tools with special provision for cooling {(drills with lubricating or cooling equipment B23B 51/06; features relating to lubricating or cooling of milling cutters B23C 5/28; arrangements or devices for cooling or lubricating tools or work B23Q 11/10)}
27/12 . . with a continuously-rotated circular cutting edge; Holders therefor
27/14 . Cutting tools of which the bits or tips {or cutting inserts} are of special material

27/141 . . {Specially shaped plate-like cutting inserts, i.e. length greater or equal to width, width greater than or equal to thickness (with specially shaped plate-like exchangeable cutting inserts, e.g. chip-breaking groove, B23B 27/1603; with removable plate-like milling cutting inserts of special shape B23C 5/202)}
27/143 . . . {characterised by having chip-breakers}
27/145 . . . {characterised by having a special shape}
27/146 . . . . {Means to improve the adhesion between the substrate and the coating}
27/148 . . {Composition of the cutting inserts}
27/16 . . with exchangeable cutting bits {or cutting inserts}, e.g. able to be clamped
27/1603 . . . {with specially shaped plate-like exchangeable cutting inserts, e.g. chip-breaking groove (B23B 27/1614 - B23B 27/1655 take precedence)}
27/1607 . . . . {characterised by having chip-breakers}
27/1611 . . . . {characterised by having a special shape}
27/1614 . . . {with plate-like cutting inserts of special shape clamped against the walls of the recess in the shank by a clamping member acting upon the wall of a hole in the insert (B23B 27/1644 takes precedence)}
27/1618 . . . . {characterised by having chip-breakers}
27/1622 . . . . {characterised by having a special shape}
27/1625 . . . {with plate-like cutting inserts of special shape clamped by a clamping member acting almost perpendicularly on the chip-forming plane (B23B 27/1644 takes precedence)}
27/1629 . . . . {in which the clamping member breaks the chips}
27/1633 . . . . {in which the chip-breaking clamping member is adjustable}
27/1637 . . . . {characterised by having chip-breakers}
27/164 . . . . {characterised by having a special shape}
27/1644 . . . {with plate-like cutting inserts of special shape clamped by a clamping member acting almost perpendicularly on the chip-forming plane and at the same time upon the wall of a hole in the cutting insert}
27/1648 . . . . {characterised by having chip-breakers}
27/1651 . . . . {characterised by having a special shape}
27/1655 . . . {Adjustable position of the plate-like cutting inserts of special form}
27/1659 . . . {with plate-like exchangeable cutting inserts (B23B 27/1662 - B23B 27/1681 take precedence)}
27/1662 . . . {with plate-like cutting inserts clamped against the walls of the recess in the shank by a clamping member acting upon the wall of a hole in the cutting insert (B23B 27/1677 takes precedence)}
27/1666 . . . {with plate-like cutting inserts clamped by a clamping member acting almost perpendicularly on chip-forming plane (B23B 27/1677 takes precedence)}
27/167 . . . . {in which the clamping member breaks the chips}
27/1674 . . . . {in which the chip-breaking clamping member is adjustable}
27/1677 . . . {with plate-like cutting inserts clamped by a clamping member acting almost perpendicularly on the chip-forming plane and at the same time upon the wall of a hole in the insert}
27/1681 . . . {Adjustable position of the plate-like cutting inserts}
27/1685 . . . {Adjustable position of the cutting inserts (B23B 27/1655 and B23B 27/1681 take precedence)}
27/1688 . . . . {Height of the cutting tip adjustable}
27/1692 . . . . {Angular position of the cutting insert adjustable around an axis parallel to the chip-forming plane}
27/1696 . . . . {Angular position of the cutting insert adjustable around an axis generally perpendicularly to the chip-forming plane}
27/18 . . with cutting bits or tips {or cutting inserts} rigidly mounted, e.g. by brazing
27/20 . . . with diamond bits {or cutting inserts}
27/22 . Cutting tools with chip-breaking equipment {(B23B 27/045, B23B 27/143, B23B 27/16 take precedence; arrangements for chip-breaking B23B 25/02; for milling tools B23C 5/165)}
27/24 . Knurling tools

29/00 Holders for non-rotary cutting tools (B23B 27/12 takes precedence)**; Boring bars or boring heads; Accessories for tool holders**
29/02 . Boring bars
29/022 . . {with vibration reducing means}
29/025 . . {Boring toolholders fixed on the boring bar}
29/027 . . {Steadies for boring bars (auxiliary devices, e.g. steadies, rests B23Q 1/76)}
29/03 . Boring heads
29/034 . . with tools moving radially, e.g. for making chamfers or undercuttings
29/03403 . . . {radially adjustable before starting manufacturing}
29/03407 . . . . {by means of screws and nuts}
29/0341 . . . . . {Cartridges}
29/03414 . . . . . {adjustment of the tool placed in the hole being possible}
29/03417 . . . . {by means of inclined planes}
29/03421 . . . . {by pivoting the tool carriers or by elastic deformation}
29/03425 . . . . {by means of gears and racks}
29/03428 . . . . {by means of an eccentric}
29/03432 . . . {radially adjustable during manufacturing}
29/03435 . . . . {by means of screws and nuts}
29/03439 . . . . . {Boring and facing heads}
29/03442 . . . . . {Grooving tool}
29/03446 . . . . {by means of inclined planes}
29/0345 . . . . . {Boring and facing heads}
29/03453 . . . . . {Grooving tool}
29/03457 . . . . {by pivoting the tool carriers or by elastic deformation}
29/0346 . . . . . {Boring and facing heads}
29/03464 . . . . . {Grooving tool}
29/03467 . . . . {by means of gears and racks}
29/03471 . . . . . {Boring and facing heads}
29/03475 . . . . . {Grooving tool}
29/03478 . . . . {by means of an eccentric}
29/03482 . . . . . {Boring and facing heads}

29/03485 . . . . . {Grooving tool}
29/03489 . . . . {Adjustment means not specified or not covered by the groups B23B 29/03435 - B23B 29/03478}
29/03492 . . . . . {Boring and facing heads}
29/03496 . . . . . {Grooving tool}
29/04 . Tool holders for a single cutting tool
29/043 . . {with cutting-off, grooving or profile cutting tools, i.e. blade- or disc-like main cutting parts (B23B 29/14 takes precedence)}
29/046 . . {with an intermediary toolholder}
29/06 . . Tool holders equipped with longitudinally-arranged grooves for setting the cutting tool
29/08 . . Tool holders equipped with grooves arranged crosswise to the longitudinal direction for setting the cutting tool
29/10 . . . with adjustable counterbase for the cutting tool
29/12 . . Special arrangements on tool holders
29/125 . . . {Vibratory toolholders}
29/14 . . . affording a yielding support of the cutting tool, e.g. by spring clamping {(cutting tools with yieldable support for the cutting insert B23B 27/086)}
29/16 . . . for supporting the workpiece in a backrest
29/18 . . . for retracting the cutting tool
29/20 . . . for placing same by shanks in sleeves of a turret
29/205 . . . . {the tools being adjustable}
29/22 . . . for tool adjustment by means of shims or spacers
29/24 . Tool holders for a plurality of cutting tools, e.g. turrets {(indexing devices B23Q 16/00)}
29/242 . . {Turrets, without description of the angular positioning device (turret lathes for turning individually-chucked workpieces B23B 3/16; turrets with manually operated angular positioning devices B23B 29/282; turrets with power operated angular positioning devices B23B 29/323)}
29/244 . . {Toolposts, i.e. clamping quick-change toolholders, without description of the angular positioning device (toolposts with manually operated angular positioning devices B23B 29/285; toolposts with power operated angular positioning devices B23B 29/326)}
29/246 . . . {Quick-change tool holders}
29/248 . . {with individually adjustable toolholders}
29/26 . . Tool holders in fixed position
29/28 . . Turrets manually adjustable about a vertical {or horizontal} pivot {(indexing devices B23Q 16/00)}
29/282 . . . {Turrets with manually operated angular positioning devices}
29/285 . . . {Toolposts with manually operated angular positioning devices}
29/287 . . . {Turret toolholder with manually operated angular positioning devices}
29/32 . . Turrets adjustable by power drive, i.e. turret heads {(indexing devices B23Q 16/00)}
29/323 . . . {Turrets with power operated angular positioning devices}
29/326 . . . {Toolposts with power operated angular positioning devices}
29/34 . . Turrets equipped with triggers for releasing the cutting tools

31/00 Chucks {(allowing axial oscillation of percussion tool bits B25D 17/08)}; Expansion mandrels; Adaptations thereof for remote control (faceplates B23Q 1/50; rotary devices holding by magnetic and/or electrical force acting directly on work B23Q 3/152)
31/001 . {Protection against entering of chips or dust}
31/003 . {Work or tool ejection means}
31/005 . {Cylindrical shanks of tools}
31/006 . {Conical shanks of tools}
31/008 . {with arrangements for transmitting torque}
31/02 . Chucks
31/021 . . {Faceplates}
31/023 . . {for screw-threads}
31/025 . . {for gears}
31/026 . . {the radial or angular position of the tool being adjustable (boring heads with tools moving radially B23B 29/034; holding tools yieldably B23B 31/08; with means for adjusting the chuck with respect to the working spindle B23B 31/36)}
31/0261 . . . {for centering the tool}
31/028 . . {the axial positioning of the tool being adjustable (B23B 31/208 takes precedence; with means for adjusting the chuck with respect to the working spindle B23B 31/36)}
31/06 . . Features relating to the removal of tools; Accessories therefor
31/07 . . . Ejector wedges
31/08 . . holding tools yieldably
31/083 . . . {axially}
31/086 . . . . {having an overload clutch}
31/10 . . characterised by the retaining or gripping devices or their immediate operating means

NOTE

Group B23B 31/12 takes precedence over groups {B23B 31/101, B23B 31/102,}B23B 31/103 - B23B 31/117

31/101 . . . {Chucks with separately-acting jaws movable radially (B23B 31/1602, B23B 31/16062, B23B 31/161, B23B 31/16137, B23B 31/16175, B23B 31/16212, B23B 31/1625 and B23B 31/16283 take precedence; Chucks with simultaneously acting jaws moving radially B23B 31/16)}
31/102 . . . {Jaws, accessories or adjustment means (B23B 31/16008, B23B 31/1605, B23B 31/16087, B23B 31/16125, B23B 31/16162, B23B 31/162, B23B 31/16237, B23B 31/1627 take precedence)}
31/103 . . . Retention by pivotal elements, e.g. catches, pawls
31/107 . . . Retention by laterally-acting detents, e.g. pins, screws, wedges; Retention by loose elements, e.g. balls
31/1071 . . . . {Retention by balls (balls acting as jaws B23B 31/22)}
31/1072 . . . . {Retention by axially or circumferentially oriented cylindrical elements (cylindrical elements acting as jaws B23B 31/22)}

31/1073 . . . . {Retention by conical elements (conical elements acting as jaws B23B 31/22)}
31/10741 . . . . {Retention by substantially radially oriented pins}
31/1075 . . . . {Retention by screws}
31/1076 . . . . . {with conical ends}
31/1077 . . . . . {acting on a floating pin}
31/1078 . . . . {Retention by wedges}
31/1079 . . . . {Retention by spring or wire}
31/11 . . . Retention by threaded connection
31/1107 . . . . {for conical parts}
31/1115 . . . . . {using conical threads}
31/1122 . . . . . {using cylindrical threads}
31/113 . . . Retention by bayonet connection
31/117 . . . Retention by friction only, e.g. using springs, resilient sleeves, tapers
31/1171 . . . . {not used, see subgroups and B23B 31/117}
31/1172 . . . . . {using fluid-pressure means to actuate the gripping means}
31/1173 . . . . {using springs}
31/1174 . . . . . {using fluid-pressure means to actuate the gripping means}
31/1175 . . . . {using elastomer rings or sleeves}
31/1176 . . . . . {using fluid-pressure means to actuate the gripping means}
31/1177 . . . . {using resilient metallic rings or sleeves}
31/1178 . . . . . {using fluid-pressure means to actuate the gripping means}
31/1179 . . . . {using heating and cooling}
31/12 . . . Chucks with simultaneously-acting jaws, whether or not also individually adjustable
31/1207 . . . . {moving obliquely to the axis of the chuck in a plane containing this axis}
31/1215 . . . . . {Details of the jaws}
31/1223 . . . . . {using fluid-pressure means in the chuck to actuate the gripping means}
31/123 . . . . . {with locking arrangements (locking arrangements for chucks with simultaneously-acting jaws moving radially actuated by one or more spiral grooves B23B 31/16041)}
31/1238 . . . . . {Jaws movement actuated by a nut with conical screw-thread}
31/1246 . . . . . {Jaws movement actuated by a bolt with conical screw-thread}
31/1253 . . . . . {Jaws movement actuated by an axially movable member}
31/1261 . . . . {pivotally movable in a radial plane}
31/1269 . . . . . {Details of the jaws}
31/1276 . . . . . {using fluid-pressure means to actuate the gripping means}
31/1284 . . . . . {with a centre}
31/1292 . . . . . {using mechanical transmission through the spindle}
31/14 . . . . involving the use of centrifugal force
31/141 . . . . . {To counterbalance the jaws}
31/142 . . . . . {To grip a tool or workpiece}
31/16 . . . . moving radially
31/16004 . . . . . {Jaws movement actuated by one or more spiral grooves}
31/16008 . . . . . {Details of the jaws}
31/16012 . . . . . {Form of the jaws}
31/16016 . . . . . {Fixation on the master jaw}
31/1602 . . . . . {Individually adjustable jaws}
31/16025 . . . . . {using fluid-pressure means to actuate the gripping means}
31/16029 . . . . . {using mechanical transmission through the spindle}
31/16033 . . . . . {with a centre}
31/16037 . . . . . {using mechanical transmission through the spindle (B23B 31/16029 takes precedence)}
31/16041 . . . . . {with locking arrangements (locking arrangements for chucks with simultaneously-acting jaws moving obliquely to the axis of the chuck in a plane containing this axis B23B 31/123)}
31/16045 . . . . . {Jaws movement actuated by screws and nuts or oblique racks}
31/1605 . . . . . {Details of the jaws}
31/16054 . . . . . {Form of the jaws}
31/16058 . . . . . {Fixation on the master jaw}
31/16062 . . . . . {Individually adjustable jaws}
31/16066 . . . . . {using fluid-pressure means to actuate the gripping means}
31/1607 . . . . . {using mechanical transmission through the spindle}
31/16075 . . . . . {with a centre}
31/16079 . . . . . {using mechanical transmission through the spindle (B23B 31/1607 takes precedence)}
31/16083 . . . . . {Jaws movement actuated by gears and racks}
31/16087 . . . . . {Details of the jaws}
31/16091 . . . . . {Form of the jaws}
31/16095 . . . . . {Fixation on the master jaw}
31/161 . . . . . {Individually adjustable jaws}
31/16104 . . . . . {using fluid-pressure means to actuate the gripping means}
31/16108 . . . . . {using mechanical transmission through the spindle}
31/16112 . . . . . {with a centre}
31/16116 . . . . . {using mechanical transmission through the spindle (B23B 31/16108 takes precedence)}
31/1612 . . . . . {Jaws movement actuated by cam surface in a radial plane}
31/16125 . . . . . {Details of the jaws}
31/16129 . . . . . {Form of the jaws}
31/16133 . . . . . {Fixation on the master jaw}
31/16137 . . . . . {Individually adjustable jaws}
31/16141 . . . . . {using fluid-pressure means to actuate the gripping means}
31/16145 . . . . . {using mechanical transmission through the spindle}
31/1615 . . . . . {with a centre}
31/16154 . . . . . {using mechanical transmission through the spindle (B23B 31/16145 takes precedence)}
31/16158 . . . . . {Jaws movement actuated by coaxial conical surfaces}
31/16162 . . . . . {Details of the jaws}
31/16166 . . . . . {Form of the jaws}
31/1617 . . . . . {Fixation on the master jaw}
31/16175 . . . . . {Individually adjustable jaws}

31/16179 . . . . . {using fluid-pressure means to actuate the gripping means}
31/16183 . . . . . {using mechanical transmission through the spindle}
31/16187 . . . . . {with a centre}
31/16191 . . . . . {using mechanical transmission through the spindle (B23B 31/16183 takes precedence)}
31/16195 . . . . . {Jaws movement actuated by levers moved by a coaxial control rod}
31/162 . . . . . {Details of the jaws}
31/16204 . . . . . {Form of the jaws}
31/16208 . . . . . {Fixation on the master jaw}
31/16212 . . . . . {Individually adjustable jaws}
31/16216 . . . . . {using fluid-pressure means to actuate the gripping means}
31/1622 . . . . . {using mechanical transmission through the spindle}
31/16225 . . . . . {with a centre}
31/16229 . . . . . {using mechanical transmission through the spindle (B23B 31/1622 takes precedence)}
31/16233 . . . . . {Jaws movement actuated by oblique surfaces of a coaxial control rod}
31/16237 . . . . . {Details of the jaws}
31/16241 . . . . . {Form of the jaws}
31/16245 . . . . . {Fixation on the master jaw}
31/1625 . . . . . {Individually adjustable jaws}
31/16254 . . . . . {using fluid-pressure means to actuate the gripping means}
31/16258 . . . . . {using mechanical transmission through the spindle}
31/16262 . . . . . {with a centre}
31/16266 . . . . . {using mechanical transmission through the spindle (B23B 31/16258 takes precedence)}
31/1627 . . . . . {Details of the jaws}
31/16275 . . . . . {Form of the jaws}
31/16279 . . . . . {Fixation on the master jaw}
31/16283 . . . . . {Indivudually adjustable jaws}
31/16287 . . . . . {using fluid-pressure means to actuate the gripping means}
31/16291 . . . . . {with a centre}
31/16295 . . . . . {with means preventing the ejection of the jaws}
31/18 . . . . pivotally movable in planes containing the axis of the chuck
31/185 . . . . . {moving first parallel to the axis then pivotally in planes containing the axis of the chuck}
31/19 . . . . moving parallel to the axis of the chuck {(B23B 31/185 takes precedence)}
31/20 . . . . Longitudinally-split sleeves, e.g. collet chucks
31/201 . . . . . {Characterized by features relating primarily to remote control of the gripping means}
31/2012 . . . . . {Threaded cam actuator}
31/20125 . . . . . {Axially fixed cam, moving jaws}
31/202 . . . . . {Details of the jaws}
31/2025 . . . . . {Wherein the sleeve is split into two relatively movable parts}
31/204 . . . . . {using fluid-pressure means to actuate the gripping means (B23B 31/207 take precedence)}
31/206 . . . . . {Reciprocating cam actuator (B23B 31/207 takes precedence)}
31/207 . . . . . {using mechanical transmission through the spindle}
31/2072 . . . . . {Axially moving cam, fixed jaws}
31/2073 . . . . . {Axially fixed cam, moving jaws (B23B 31/20125 takes precedence)}
31/208 . . . . . {with a tool positioning stop (axial positioning of the tool being adjustable B23B 31/028)}
31/22 . . . . Jaws in the form of balls {(retention by balls B23B 31/1071)}
31/223 . . . . . {Jaws in the form of cylindrical elements (retention by cylindrical elements B23B 31/1072)}
31/226 . . . . . {Jaws in the form of conical elements (retention by conical elements B23B 31/1073)}
31/24 . . characterised by features relating primarily to remote control of the gripping means {(B23B 31/201 takes precedence)}
31/26 . . . using mechanical transmission through the working-spindle {(B23B 31/16 and B23B 31/40 take precedence)}
31/261 . . . . {clamping the end of the toolholder shank}
31/263 . . . . . {by means of balls}
31/265 . . . . . {by means of collets}
31/266 . . . . . {using a threaded spindle}
31/268 . . . . . {using a bayonet connection}
31/28 . . . using electric or magnetic means in the chuck
31/30 . . . using fluid-pressure means in the chuck {(B23B 31/10 and B23B 31/40 take precedence)}
31/302 . . . . {Hydraulic equipment, e.g. pistons, valves, rotary joints}
31/305 . . . . {the gripping means is a deformable sleeve}
31/307 . . . . {Vacuum chucks}
31/32 . . with jaws carried by diaphragm
31/34 . . with means enabling the workpiece to be reversed or tilted
31/36 . . with means for adjusting the chuck with respect to the working-spindle
31/38 . . with overload clutches {(B23B 31/086 takes precedence)}
31/39 . . Jaw changers
31/40 . Expansion mandrels
31/4006 . . {Gripping the work or tool by a split sleeve (collet chucks B23B 31/20)}
31/4013 . . . {Details of the jaws}
31/402 . . . {using fluid-pressure means to actuate the gripping means}
31/4026 . . . . {using mechanical transmission through the spindle}
31/4033 . . . {using mechanical transmission through the spindle (B23B 31/4026 takes precedence)}
31/404 . . {Gripping the work or tool by jaws moving radially controlled by conical surfaces (see also B23B 31/16158)}
31/4046 . . . {Details of the jaws}
31/4053 . . . {using fluid-pressure means to actuate the gripping means}

31/406 . . . . {using mechanical transmission through the spindle}
31/4066 . . . {using mechanical transmission through the spindle (B23B 31/406 takes precedence)}
31/4073 . . {Gripping the work or tool between planes almost perpendicular to the axis}
31/408 . . {Work or tool supported by two conical surfaces}
31/4086 . . {Work or tool gripped by a roller movable on an inclined plane}
31/4093 . . {Tube supporting means including a centerhole}
31/42 . . characterised by features relating primarily to remote control of the gripping means

33/00 Drivers; Driving centres, Nose clutches, e.g. lathe dogs
33/005 . {Drivers with driving pins or the like}

Boring; Drilling (for surgical purposes A61B 17/16; in metal using electric current B23H 9/14; by laser beam B23K 26/00; earth or rock drilling E21B)

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
35/005 . {Measures for preventing splittering}

37/00 Boring by making use of ultrasonic energy (essentially using abrasive material B24B, e.g. B24B 1/04)

39/00 General-purpose boring or drilling machines or devices; Sets of boring and/or drilling machines
39/003 . {Drilling machine situated underneath the workpiece}
39/006 . {Portal drilling machines}
39/02 . Boring machines; Combined horizontal boring and milling machines
39/04 . Co-ordinate boring or drilling machines; Machines for making holes without previous marking
39/06 . . Equipment for positioning work
39/08 . . Devices for programme control
39/10 . characterised by the drive, e.g. by fluid-pressure drive pneumatic power drive
39/12 . Radial drilling machines
39/14 . with special provision to enable the machine or the drilling or boring head to be moved into any desired position, e.g. with respect to immovable work
39/16 . Drilling machines with a plurality of working-spindles; Drilling automatons
39/161 . . {with parallel work spindles}
39/162 . . . {having gear transmissions}
39/163 . . . {having crank pin transmissions}
39/165 . . . {having universal joint transmissions}
39/166 . . . {having flexible shaft transmissions}
39/167 . . . {having belt and chain transmissions}
39/168 . . {with the work spindles being oblique to each other}
39/18 . . Setting work or tool carrier along a straight index line
39/20 . . Setting work or tool carrier along a circular index line; Turret head drilling machines
39/205 . . . {Turret head drilling machines}
39/22 . . with working-spindles in opposite headstocks
39/24 . . designed for programme control
39/26 . in which the working position of tool or work is controlled by copying discrete points of a pattern (features of copying devices B23Q 35/02)
39/28 . Associations of only boring or drilling machines directed to a particular metal-working result (if not producing a particular metal-working result B23Q 39/00)

41/00 Boring or drilling machines or devices specially adapted for particular work {(surgical drilling machines A61B 17/16)**}; Accessories specially adapted therefor**
41/003 . {for drilling elongated pieces, e.g. beams}
41/006 . . {the machining device being moved along a fixed workpiece}
41/02 . for boring deep holes; Trepanning, e.g. of gun or rifle barrels
41/04 . for boring polygonal or other non-circular holes
41/06 . for boring conical holes
41/10 . for boring holes in steam boilers
41/12 . for forming working surfaces of cylinders, of bearings, e.g. in heads of driving rods, or of other engine parts
41/14 . for very small holes
41/16 . for boring holes with high-quality surface

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)
43/02 . to the tailstock of a lathe

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)
45/001 . {Housing of the drill, e.g. handgrip}
45/003 . {Attachments}
45/005 . . {Flexible shafts}
45/006 . {Keys for operating the chucks}
45/008 . {Gear boxes, clutches, bearings, feeding mechanisms or like equipment}
45/02 . driven by electric power
45/04 . driven by fluid-pressure or pneumatic power
45/042 . . {Turbine motors}
45/044 . . {Rotary vane type motors}
45/046 . . {Piston engines}
45/048 . . . {Internal combustion piston engines}
45/06 . driven by man-power
45/08 . . for drilling rails or profiled stock
45/10 . . by using a fiddle bow or a belt
45/12 . . by using a ratchet brace

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 B23Q 1/70; for machine tools in general B23Q)
47/26 . Liftable or lowerable drill heads or headstocks; Balancing arrangements therefor {(weight and flexion compensation B23Q 11/001)}
47/28 . Drill jigs for workpieces (equipment for setting or guiding the drill B23B 49/00)

47/281 . . {Jigs for drilling cylindrical parts}
47/282 . . {Jigs for drilling spherical parts}
47/284 . . {Jigs for drilling rivets or bolts}
47/285 . . {Jigs for drilling ski bindings}
47/287 . . {Jigs for drilling plate-like workpieces (templates for marking the position of fittings on wings or frames E05D 11/0009)}
47/288 . . . {involving dowelling}
47/30 . Additional gear with one or more working-spindles attachable to the main working-spindle and mounting the additional gear {(multi-spindle drilling machines B23B 39/16)}
47/32 . Arrangements for preventing the running-out of drills or fracture of drills when getting through
47/34 . Arrangements for removing chips out of the holes made; Chip- breaking arrangements attached to the tool {(chip-breaking in turning machines B23B 25/02; in turning tools B23B 27/22)}

49/00 Measuring or gauging equipment on boring machines for positioning or guiding the drill; Devices for indicating failure of drills during boring; Centering devices for holes to be bored (marking-out equipment B25H 7/00; measuring devices, gauges G01B)

49/001 . {Devices for detecting or indicating failure of drills}
49/003 . {Stops attached to drilling tools, tool holders or drilling machines (B23B 51/104 takes precedence)}
49/005 . . {Attached to the drill}
49/006 . . {Attached to drilling machines}
49/008 . . . {Attached to the nose of the drilling machines}
49/02 . Boring templates or bushings
49/023 . . {Bushings and their connection to the template}
49/026 . . {Boring bushing carriers attached to the workpiece by glue, magnets, suction devices or the like}
49/04 . Devices for boring or drilling centre holes in workpieces
49/06 . Devices for drilling holes in brake bands or brake linings

51/00 Tools for drilling machines

WARNING

Group B23B 51/00 is impacted by reclassification into groups B23B 51/0002, B23B 51/0003, B23B 51/00035, B23B 51/0004, B23B 51/0005, B23B 51/0006, B23B 51/0007, B23B 51/0008, B23B 51/0011, B23B 51/0095, B23B 51/011 and B23B 2251/249.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0002 . {Drills with connected cutting heads, e.g. with non-exchangeable cutting heads; Drills with a single insert extending across the rotational axis and having at least two radially extending cutting edges in the working position}

WARNING

Group B23B 51/0002 is incomplete pending reclassification of documents from groups B23B 51/00, B23B 51/02, B23B 2251/50 and B23B 2251/505.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0003 . . {with exchangeable heads or inserts}

WARNING

Groups B23B 51/0003, B23B 51/0004 and B23B 51/0005 are incomplete pending reclassification of documents from groups B23B 51/00, B23B 51/02, B23B 2251/02, B23B 2251/50 and B23B 2251/505.

All groups listed in this Warning should be considered in order to perform a complete search.

51/00035 . . . {Spade drills}

WARNING

Group B23B 51/00035 is incomplete pending reclassification of documents from groups B23B 51/00, B23B 2251/50 and B23B 2251/505.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0004 . . . {with cutting heads or inserts attached by screw means}
51/0005 . . . {with cutting heads or inserts attached by wedge means}
51/0006 . {Drills with cutting inserts (B23B 51/0002 takes precedence)}

WARNING

Group B23B 51/0006 is incomplete pending reclassification of documents from groups B23B 51/00, B23B 51/02, B23B 2251/50 and B23B 2251/505.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0007 . . {with exchangeable cutting insert}

WARNING

Groups B23B 51/0007 and B23B 51/0008 are incomplete pending reclassification of documents from groups B23B 51/00, B23B 51/02, B23B 51/04, B23B 51/0426, B23B 51/044, B23B 51/0453, B23B 51/0466, B23B 51/0493, B23B 2251/50 and B23B 2251/505.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0008 . . . {with indexable or reversible cutting inserts}

51/0011 . . {with radially inner and outer cutting inserts}

WARNING

Group B23B 51/0011 is incomplete pending reclassification of documents from groups B23B 51/00, B23B 51/02, B23B 2251/50 and B23B 2251/505.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0018 . {Drills for enlarging a hole}

51/0027 . . {by tool swivelling}

51/0036 . . {by a tool-carrying eccentric}

51/0045 . . {by expanding or tilting the toolhead}

51/0054 . {Drill guiding devices}

51/0063 . {Centerdrills}

51/0072 . {Drills for making non-circular holes}

51/0081 . {Conical drills}

51/009 . {Stepped drills}

51/0095 . {Spade drills (B23B 51/00035 takes precedence)}

WARNING

Group B23B 51/0095 is incomplete pending reclassification of documents from group B23B 51/00.

Groups B23B 51/00 and B23B 51/0095 should be considered in order to perform a complete search.

51/011 . {Micro drills}

WARNING

Group B23B 51/011 is incomplete pending reclassification of documents from groups B23B 51/00 and B23B 51/02.

Groups B23B 51/00, B23B 51/02 and B23B 51/011 should be considered in order to perform a complete search.

51/02 . Twist drills

WARNING

Group B23B 51/02 is impacted by reclassification into groups B23B 51/0002, B23B 51/0003, B23B 51/0004, B23B 51/0005, B23B 51/0006, B23B 51/0007, B23B 51/0008, B23B 51/0011, B23B 51/011 and B23B 2251/249.

All groups listed in this Warning should be considered in order to perform a complete search.

51/04 . {Drills} for trepanning

WARNING

Group B23B 51/04 is incomplete pending reclassification of documents from group B23B 51/0466.

Group B23B 51/04 is also impacted by reclassification into groups B23B 51/0007, B23B 51/0008, B23B 51/0411, B23B 51/0417, B23B 51/0426, B23B 51/044, B23B 51/0461, B23B 51/0467, B23B 51/0468 and B23B 51/0469.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0411 . . {with stepped tubular cutting bodies}

WARNING

Group B23B 51/0411 is incomplete pending reclassification of documents from groups B23B 51/04 and B23B 51/0466.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0413 . . {with core-cutting-off devices}

51/0417 . . {including chamfer or spot bore cutter}

WARNING

Group B23B 51/0417 is incomplete pending reclassification of documents from groups B23B 51/04 and B23B 51/0466.

All groups listed in this Warning should be considered in order to perform a complete search.

51/042 . . {with lubricating or cooling equipment}

51/0426 . . {with centering devices}

WARNING

Group B23B 51/0426 is incomplete pending reclassification of documents from groups B23B 51/04 and B23B 51/0466.

Group B23B 51/0426 is also impacted by reclassification into groups B23B 51/0007, B23B 51/0008 and B23B 51/0466.

All groups listed in this Warning should be considered in order to perform a complete search.

51/044 . . {with core holding devices}

WARNING

Group B23B 51/044 is incomplete pending reclassification of documents from groups B23B 51/04 and B23B 51/0466.

Group B23B 51/044 is also impacted by reclassification into groups B23B 51/0007, B23B 51/0008 and B23B 51/0466.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0453 . . {with ejecting devices}

WARNING

Group B23B 51/0453 is impacted by reclassification into groups B23B 51/0007, B23B 51/0008 and B23B 51/0466.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0461 . . {with exchangeable cutting heads or crowns}

51/0466 . . {with exchangeable cutting inserts, e.g. able to be clamped}

WARNING

Group B23B 51/0466 is incomplete pending reclassification of documents from groups B23B 51/0426, B23B 51/044 and B23B 51/0453.

Group B23B 51/0466 is also impacted by reclassification into groups B23B 51/0007, B23B 51/0008, B23B 51/04, B23B 51/0411, B23B 51/0417, B23B 51/0426, B23B 51/044, B23B 51/0467, B23B 51/0468 and B23B 51/0469.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0467 . . {Details of the tubular body sidewall}

WARNING

Groups B23B 51/0467 - B23B 51/0469 are incomplete pending reclassification of documents from groups B23B 51/04 and B23B 51/0466.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0468 . . . {Internal grooves}

51/0469 . . . {Eccentric or non-circular}

51/0473 . . {Details about the connection between the driven shaft and the tubular cutting part; Arbors}

51/0486 . . *(Frozen)* {with lubricating or cooling equipment (B23B 51/042 takes precedence)}

WARNING

Group B23B 51/0486 is no longer used for the classification of documents as of January 1, 2022.

The content of this group is being reclassified into groups B23B 51/063 and B23B 51/066.

Groups B23B 51/0486, B23B 51/063 and B23B 51/066 should be considered in order to perform a complete search.

51/0493 . . . *(Frozen)* {with exchangeable cutting inserts, e.g. able to be clamped}

WARNING

Group B23B 51/0493 is no longer used for the classification of documents as of January 1, 2022.

The content of this group is being reclassified into groups B23B 51/0007, B23B 51/0008, B23B 51/06, B23B 51/063, B23B 51/066, B23B 51/068, B23B 51/0682, B23B 51/0684 and B23B 51/0686.

All groups listed in this Warning should be considered in order to perform a complete search.

51/05 . . for cutting discs from sheet

51/06 . Drills with lubricating or cooling equipment {(B23B 51/042 takes precedence)}

WARNING

Group B23B 51/06 is incomplete pending reclassification of documents from group B23B 51/0493.

Group B23B 51/06 is also impacted by reclassification into groups B23B 51/063, B23B 51/066, B23B 51/068, B23B 51/0682, B23B 51/0684 and B23B 51/0686.

All groups listed in this Warning should be considered in order to perform a complete search.

51/063 . . {Deep hole drills, e.g. ejector drills}

WARNING

Groups B23B 51/063 and B23B 51/066 are incomplete pending reclassification of documents from groups B23B 51/0486, B23B 51/0493 and B23B 51/06.

All groups listed in this Warning should be considered in order to perform a complete search.

51/066 . . . {Gun drills}

51/068 . . {Details of the lubricating or cooling channel}

WARNING

Groups B23B 51/068 - B23B 51/0686 are incomplete pending reclassification of documents from groups B23B 51/0493 and B23B 51/06.

All groups listed in this Warning should be considered in order to perform a complete search.

51/0682 . . . {Coolant moves along outside of tool periphery toward cutting edges}

51/0684 . . . {Deflector or nozzle on drill to point the coolant in a desired direction}

51/0686 . . . {Cross-sectional shape of coolant hole}

51/08 . Drills combined with tool parts or tools for performing additional working {(B23G 5/20 takes precedence)}

51/10 . Bits for countersinking

WARNING

Group B23B 51/10 is impacted by reclassification into group B23B 51/109.

Groups B23B 51/10 and B23B 51/109 should be considered in order to perform a complete search.

51/101 . . {Deburring tools (B23B 51/103 takes precedence)}

51/102 . . {Back spot-facing or chamfering}

51/103 . . {Deburring or chamfering tools for the ends of tubes or rods}

51/104 . . {with stops}

51/105 . . {Deburring or countersinking of radial holes}

51/106 . . {with a cutting edge adjustable along a direction oblique to the axis}

51/107 . . {having a pilot}

WARNING

Group B23B 51/107 is impacted by reclassification into group B23B 51/109.

Groups B23B 51/107 and B23B 51/109 should be considered in order to perform a complete search.

51/108 . . {having a centering drill}

WARNING

Group B23B 51/108 is impacted by reclassification into group B23B 51/1085.

Groups B23B 51/108 and B23B 51/1085 should be considered in order to perform a complete search.

51/1085 . . . {countersink in the form of an attachment to the drill}

WARNING

Group B23B 51/1085 is incomplete pending reclassification of documents from group B23B 51/108.

Groups B23B 51/108 and B23B 51/1085 should be considered in order to perform a complete search.

51/109 . . {Counterboring tools (B23B 51/102 takes precedence)}

WARNING

Group B23B 51/109 is incomplete pending reclassification of documents from groups B23B 51/10, B23B 51/107 and B23B 51/108.

All groups listed in this Warning should be considered in order to perform a complete search.

51/12 . Adapters for drills or chucks; Tapered sleeves

51/123 . . {Conical reduction sleeves}

51/126 . . {Tool elongating devices}

51/14 . . Adapters for broken drills

2200/00 Details of cutting inserts

2200/04 . Overall shape

2200/0404 . . Hexagonal

2200/0409 . . . irregular

2200/0414 . . . rounded

2200/0419 . . . trigonal

2200/0423 . . Irregular

2200/0428 . . Lozenge

2200/0433 . . . rounded

2200/0438 . . Octagonal

2200/0442 . . . rounded

2200/0447 . . Parallelogram

2200/0452 . . . rounded

2200/0457 . . Pentagonal

2200/0461 . . Round

2200/0466 . . Segment or sector of a circle

2200/0471 . . Square

2200/0476 . . . rounded

2200/048 . . Star form

2200/0485 . . Trapezium

2200/049 . . Triangular

2200/0495 . . . rounded

2200/08 . Rake or top surfaces

2200/081 . . with projections (chip breaking projections in general B23B 2200/321)

2200/082 . . with elevated clamping surface

2200/083 . . curved

2200/085 . . discontinuous

2200/086 . . with one or more grooves

2200/087 . . . for chip breaking (chip breaking depressions in general B23B 2200/323, multiple chip breaking grooves B23B 2200/325)

2200/088 . . . for clamping

2200/12 . Side or flank surfaces

2200/121 . . with projections

2200/123 . . curved

2200/125 . . discontinuous

2200/126 . . . stepped

2200/128 . . with one or more grooves

2200/16 . Supporting or bottom surfaces

2200/161 . . with projections

2200/162 . . curved

2200/163 . . discontinuous

2200/164 . . ground

2200/165 . . with one or more grooves

2200/166 . . polygonal
2200/167 . . with serrations
2200/168 . . star form
2200/20 . Top or side views of the cutting edge
2200/201 . . Details of the nose radius and immediately surrounding area
2200/202 . . with curved cutting edge
2200/204 . . with discontinuous cutting edge
2200/205 . . with cutting edge having a wave form
2200/207 . . for cutting a particular form corresponding to the form of the cutting edge
2200/208 . . with wiper, i.e. an auxiliary cutting edge to improve surface finish
2200/24 . Cross section of the cutting edge
2200/242 . . bevelled or chamfered
2200/245 . . rounded
2200/247 . . sharp
2200/28 . Angles
2200/283 . . Negative cutting angles
2200/286 . . Positive cutting angles
2200/32 . Chip breaking or chip evacuation
2200/321 . . by chip breaking projections (with projections on rake surface B23B 2200/081)
2200/323 . . by chip breaking depressions (with one or more grooves on top surface for chip breaking B23B 2200/087, with multiple chip breaking grooves B23B 2200/325)
2200/325 . . by multiple chip-breaking grooves (with one or more grooves on top surface for chip breaking B23B 2200/087, with chip breaking depression B23B 2200/323)
2200/326 . . by chip breaking-plates
2200/328 . . Details of chip evacuation
2200/36 . Other features of cutting inserts not covered by B23B 2200/04 - B23B 2200/32
2200/3609 . . Chamfers
2200/3618 . . Fixation holes
2200/3627 . . Indexing (with grooves on bottom surfaces B23C 2200/165, with polygonal bottom surfaces B23B 2200/166, with star form bottom surfaces B23C 2200/167)
2200/3636 . . . with cutting geometries differing according to the indexed position
2200/3645 . . Lands, i.e. the outer peripheral section of the rake face
2200/3654 . . . being variable (negative lands of variable width B23B 2200/3672)
2200/3663 . . . having negative cutting angles (with bevelled cutting edge B23C 2200/243)
2200/3672 . . . . being variable (lands with variable width B23B 2200/3654)
2200/3681 . . Split inserts, i.e. comprising two or more sections roughly equal in size and having similar or dissimilar cutting geometries
2200/369 . . Mounted tangentially, i.e. where the rake face is not the face with the largest area

2205/00 Fixation of cutting inserts in holders

2205/02 . Fixation using an elastically deformable clamping member
2205/04 . Fixation screws, bolts or pins of particular form
2205/045 . . orientated obliquely to the hole in the insert or to the seating surface
2205/08 . using an eccentric
2205/10 . using two or more fixation screws
2205/12 . Seats for cutting inserts
2205/125 . . One or more walls of the seat being elastically deformable
2205/16 . Shims
2205/18 . Systems for indexing the cutting insert automatically
2205/21 . Systems for changing the cutting insert automatically
2205/215 . . using a magazine

2210/00 Details of turning tools

2210/02 . Tool holders having multiple cutting inserts
2210/022 . . Grooving tools
2210/025 . . . Grooving inserts arranged on a turret
2210/027 . . . Means for adjusting the grooving inserts
2210/04 . Self-sharpening tools
2210/06 . Chip breakers
2210/08 . Tools comprising intermediary toolholders
2210/12 . Tools comprising weakened spot on the tool at a preferred breakage location (break points on shanks of tools B23B 2231/0212)

2215/00 Details of workpieces

2215/04 . Aircraft components
2215/08 . Automobile wheels
2215/10 . Ammunition cartridge cases
2215/12 . Bearing races
2215/16 . Camshafts
2215/20 . Crankshafts
2215/24 . Components of internal combustion engines (B23B 2215/16 and B23B 2215/20 take precedence)
2215/242 . . Cylinder liners
2215/245 . . Pistons
2215/247 . . Piston rings
2215/28 . Firearms, guns
2215/32 . Railway tracks
2215/36 . Railway wheels
2215/40 . Spectacles
2215/56 . Springs
2215/60 . Steel wool
2215/64 . Thin walled components
2215/68 . Threaded components
2215/72 . Tubes, pipes
2215/76 . Components for turbines
2215/81 . . Turbine blades

2220/00 Details of turning, boring or drilling processes

2220/04 . Chamferring (B23B 2220/28 takes precedence)
2220/08 . Deburring
2220/12 . Grooving
2220/123 . . Producing internal grooves
2220/126 . . Producing ring grooves
2220/24 . Finishing (roughing and finishing B23B 2220/445)
2220/28 . Parting off and chamferring simultaneously
2220/32 . Drilling holes from both sides
2220/36 . Turning, boring or drilling at high speeds
2220/40 . Peeling
2220/44 . Roughing
2220/445 . . and finishing
2220/52 . Whirling

2222/00 Materials of tools or workpieces composed of metals, alloys or metal matrices

2222/04 . Aluminium
2222/12 . Brass
2222/14 . Cast iron (iron B23B 2222/44)
2222/16 . Cermet
2222/21 . Copper
2222/24 . Gold
2222/28 . Details of hard metal, i.e. cemented carbide
2222/32 . Details of high speed steel (stainless steel B23B 2222/80, steel B23B 2222/84)
2222/36 . Nickel chrome alloys, e.g. Inconel®
2222/41 . Nickel steel alloys, e.g. invar®
2222/44 . Iron (cast iron B23B 2222/14)
2222/48 . Lead
2222/52 . Magnesium
2222/56 . Non-specified metals
2222/61 . Metal matrices with non-metallic particles or fibres
2222/64 . Nickel
2222/68 . Palladium
2222/72 . Platinum
2222/76 . Silver
2222/80 . Stainless steel (high speed steel B23B 2222/32, steel B23B 2222/84)
2222/84 . Steel (high speed steel B23B 2222/32, stainless steel B23B 2222/80)
2222/88 . Titanium
2222/92 . Tungsten
2222/98 . Zinc

2224/00 Materials of tools or workpieces composed of a compound including a metal

2224/04 . Aluminium oxide
2224/08 . Aluminium nitride
2224/12 . Chromium carbide
2224/16 . Molybdenum disulphide
2224/20 . Tantalum carbide
2224/24 . Titanium aluminium nitride
2224/28 . Titanium carbide
2224/32 . Titanium carbide nitride (TiCN)
2224/36 . Titanium nitride
2224/40 . Tungsten disulphide

2226/00 Materials of tools or workpieces not comprising a metal

2226/04 . Aromatic polyamides
2226/09 . Asbestos
2226/12 . Boron nitride
2226/125 . . cubic [CBN]
2226/15 . Cardboard
2226/18 . Ceramic
2226/27 . Composites
2226/275 . . Carbon fibre reinforced carbon composites
2226/31 . Diamond
2226/315 . . polycrystalline [PCD]
2226/33 . Elastomers, e.g. rubber
2226/36 . Epoxy
2226/39 . Foam
2226/42 . Gem, i.e. precious stone
2226/45 . Glass (turning glass B28D 1/16, drilling glass B28D 1/14)
2226/48 . Ice
2226/54 . Paper
2226/57 . Plasterboard, i.e. sheetrock
2226/61 . Plastics not otherwise provided for, e.g. nylon
2226/63 . Polyurethane
2226/66 . Polytetrafluoroethylene
2226/69 . Sapphire
2226/72 . Silicon carbide
2226/75 . Stone, rock or concrete (working of stone B28D)
2226/78 . Textile

2228/00 Properties of materials of tools or workpieces, materials of tools or workpieces applied in a specific manner

2228/04 . applied by chemical vapour deposition [CVD]
2228/08 . applied by physical vapour deposition [PVD]
2228/10 . Coatings
2228/105 . . with specified thickness
2228/12 . Abrasive
2228/16 . Shape memory alloys
2228/21 . Cast, i.e. In the form of a casting
2228/24 . Hard, i.e. after being hardened
2228/28 . Soft
2228/32 . Explosive
2228/36 . Multi-layered
2228/41 . Highly conductive
2228/44 . Materials having grain size less than 1 micrometre, e.g. nanocrystalline
2228/48 . Self-luminous, i.e. light-emitting, e.g. fluorescent
2228/52 . Solid lubricants
2228/56 . Two phase materials
2228/61 . Materials comprising whiskers

2229/00 Details of boring bars or boring heads

2229/04 . Guiding pads
2229/08 . Cutting edges of different lengths or at different axial positions
2229/12 . Cutting inserts located on different radii
2229/16 . Boring, facing or grooving heads with integral electric motor

2231/00 Details of chucks, toolholder shanks or tool shanks

2231/02 . Features of shanks of tools not relating to the operation performed by the tool
2231/0204 . . Connection of shanks to working elements of tools
2231/0208 . . Bores
2231/0212 . . Shanks of tools having a reduced cross section at a position where breakage of the tool is preferred (break points on tools not in shank area B23B 2210/12, shanks with reduced cross sections in general B23B 2231/0252)
2231/0216 . . Overall cross sectional shape of the shank
2231/022 . . . Triangular
2231/0224 . . . . Rounded triangular
2231/0228 . . . Square
2231/0232 . . . Hexagonal
2231/0236 . . . Octagonal
2231/024 . . . Star form
2231/0244 . . . Special forms not otherwise provided for
2231/0248 . . Codes for diameters
2231/0252 . . Shanks having a section of reduced diameter (to provide a preferred breaking point B23B 2231/0212)
2231/0256 . . Flats
2231/026 . . Grooves (keyways B23B 2231/0276)
2231/0264 . . . Axial grooves
2231/0268 . . . Radial grooves

2231/0272 . . . Grooves on conical clamping surfaces
2231/0276 . . Keyways (axial grooves B23B 2231/0264)
2231/028 . . Lugs
2231/0284 . . Notches
2231/0288 . . Conical shanks of tools in which the cone is not formed as one continuous surface
2231/0292 . . Flanges of conical shanks
2231/0296 . . Ends of conical shanks, e.g. pull studs, tangs
2231/04 . Adapters
2231/06 . Chucks for handtools having means for opening and closing the jaws using the driving motor of the handtool
2231/08 . Chucks for shanks of tools having means for reducing the bending of the retained shanks
2231/10 . Chucks having data storage chips
2231/12 . Chucks having means to amplify the force produced by the actuating means to increase the clamping force
2231/14 . Chucks with clamping force limitation means
2231/20 . Collet chucks
2231/2002 . . Collets having blade-like jaws
2231/2005 . . Keys preventing rotation
2231/2008 . . Bores holding the collet having a slightly conical profile
2231/201 . . Operating surfaces of collets, i.e. the surface of the collet acted on by the operating means
2231/2013 . . . Non-cylindrical (polygonal B23B 2231/2016)
2231/2016 . . . Polygonal
2231/2018 . . . with a saw-tooth profile
2231/2021 . . . comprising two different cones
2231/2024 . . Non-circular surfaces of collets for the transmission of torque
2231/2027 . . Gripping surfaces, i.e. the surface contacting the tool or workpiece
2231/2029 . . . Conical
2231/2032 . . . with non-cylindrical cross section
2231/2035 . . . Polygonal
2231/2037 . . . Roughened
2231/204 . . . with saw tooth profiles
2231/2043 . . . Discontinuous, interrupted or split
2231/2045 . . . comprising two or more diameters, e.g. stepped
2231/2048 . . Collets comprising inserts
2231/2051 . . . brazed in position
2231/2054 . . . glued in position
2231/2056 . . . where the insert forms part of the surface gripping the workpiece or tool
2231/2059 . . . Hard inserts
2231/2062 . . . Inserts mechanically clamped in the collet
2231/2064 . . . Inserts in the form of a roll
2231/2067 . . . Soft inserts
2231/207 . . . Inserts welded in position
2231/2072 . . Jaws of collets
2231/2075 . . . of special form
2231/2078 . . Jaw carriers, i.e. components retaining the collet itself
2231/2081 . . Keys, spanners or wrenches to operate the collet chuck
2231/2083 . . Collets comprising screw threads
2231/2086 . . Collets in which the jaws are formed as separate elements, i.e. not joined together
2231/2089 . . Slits of collets
2231/2091 . . . extending from both axial ends of the collet
2231/2094 . . . Helical
2231/2097 . . . having a special form not otherwise provided for
2231/22 . Compensating chucks, i.e. with means for the compensation of irregularities of form or position
2231/24 . Cooling or lubrication means
2231/26 . Detection of clamping (in general B23Q 17/006)
2231/28 . Dust covers (nose pieces in chucks B23B 2231/44, dust covers for turning, boring or drilling in general B23B 2260/058)
2231/30 . Chucks with four jaws
2231/32 . Guideways for jaws
2231/34 . Jaws
2231/341 . . Jaws with hard inserts
2231/342 . . Padded or cushioned jaws
2231/345 . . Different jaws
2231/36 . Sealed joints
2231/365 . . using O-rings
2231/38 . Keyless chucks for hand tools
2231/40 . Chucks having a pivotal retention element in the form of a laterally acting cam
2231/42 . Chucks operated by a motor which is movable to engage with, or disengage from, the chuck operating means
2231/44 . Nose pieces (dust covers in chucks B23B 2231/28, dust covers for turning, boring or drilling in general B23B 2260/058)
2231/46 . Pins
2231/48 . Polygonal cross sections
2231/50 . Devices to counteract clamping forces exerted within the spindle in order to release the tool or workpiece
2231/52 . Chucks with means to loosely retain the tool or workpiece in the unclamped position
2231/54 . Chucks for taps
2231/56 . Chucks with more than one set of gripping means
2231/565 . . Wherein only one means is usable at a time
2231/58 . Self-grasping, i.e., automatic grasping upon insertion of tool or workpiece

2233/00 Details of centres or drivers
2233/04 . Means to allow the facing of the axial end of the workpiece near the axis of rotation
2233/08 . Centres or drivers comprising a ball
2233/12 . Centres or drivers with a special arrangement of bearings or with special bearings
2233/16 . Centres or drivers comrprising chucks
2233/20 . Centres or drivers with convex surfaces
2233/24 . Centres or drivers with inserts
2233/28 . Centres or drivers supporting the workpiece at three points around the circumference
2233/32 . Yieldable centres

2235/00 Turning of brake discs, drums or hubs
2235/04 . Machining of brake discs
2235/045 . . Simultaneous machining of both sides of the brake disc
2235/12 . Machining of brake drums
2235/16 . Machining of hubs
2235/21 . Compensation of run out

2240/00 Details of connections of tools or workpieces
2240/04 . Bayonet connections
2240/08 . Brazed connections

2240/11 . Soldered connections
2240/16 . Welded connections
2240/21 . Glued connections
2240/24 . Connections using hollow screws, e.g. for the transmission of coolant
2240/28 . Shrink-fitted connections, i.e. using heating and cooling to produce interference fits (shrink fits chucks B23B 31/1179)
2240/32 . Press fits
2240/36 . Connections using a tongue and a hollow of corresponding prismatic form

2247/00 Details of drilling jigs

2247/02 . Jigs for drilling spectacles (machines for drilling spectacle lenses B28D 1/143)
2247/04 . Jigs using one or more holes as datums for drilling further holes
2247/06 . Jigs for drilling holes for lock sets for doors
2247/08 . Jigs for drilling overlapping or interfering holes
2247/10 . Jigs for drilling inclined holes
2247/12 . Drilling jigs with means to affix the jig to the workpiece
2247/14 . Jigs for drilling flanges
2247/16 . Jigs for drilling stairs and associated components, e.g. banisters or handrails
2247/18 . Jigs comprising V-blocks
2247/20 . Jigs for drilling holes for lock wires in bolts or nuts

2250/00 Compensating adverse effects during turning, boring or drilling

WARNING

Group B23B 2250/00 is impacted by reclassification into group B23B 2250/18.

Groups B23B 2250/00 and B23B 2250/18 should be considered in order to perform a complete search.

2250/04 . Balancing rotating components
2250/08 . Compensation of centrifugal force
2250/12 . Cooling and lubrication

WARNING

Group B23B 2250/12 is impacted by reclassification into groups B23B 2250/121, B23B 2250/122, B23B 2250/123 and B23B 2250/124.

All groups listed in this Warning should be considered in order to perform a complete search.

2250/121 . . Insert with coolant channels

WARNING

Group B23B 2250/121 is incomplete pending reclassification of documents from group B23B 2250/12.

Groups B23B 2250/12 and B23B 2250/121 should be considered in order to perform a complete search.

2250/122 . . Internal coolant reservoir

WARNING

Group B23B 2250/122 is incomplete pending reclassification of documents from group B23B 2250/12.

Groups B23B 2250/12 and B23B 2250/122 should be considered in order to perform a complete search.

2250/123 . . Meltable lubricant

WARNING

Group B23B 2250/123 is incomplete pending reclassification of documents from group B23B 2250/12.

Groups B23B 2250/12 and B23B 2250/123 should be considered in order to perform a complete search.

2250/124 . . Coolant trapping reservoir, e.g. recesses, pockets on external surface of tool

WARNING

Group B23B 2250/124 is incomplete pending reclassification of documents from group B23B 2250/12.

Groups B23B 2250/12 and B23B 2250/124 should be considered in order to perform a complete search.

2250/125 . . Improving heat transfer away from the working area of the tool by conduction
2250/16 . Damping of vibrations
2250/18 . Surface of tool modified by roughening, scratching, etc. to modify friction or other adverse effect

WARNING

Group B23B 2250/18 is incomplete pending reclassification of documents from group B23B 2250/00.

Groups B23B 2250/00 and B23B 2250/18 should be considered in order to perform a complete search.

2251/00 Details of tools for drilling machines

WARNING

Group B23B 2251/00 is impacted by reclassification into groups B23B 2251/16, B23B 2251/51 and B23B 2251/74.

All groups listed in this Warning should be considered in order to perform a complete search.

2251/02 . Connections between shanks and removable cutting heads *(Frozen)*

WARNING

Group B23B 2251/02 is no longer used for the classification of documents as of January 1, 2022.

The content of this group is being reclassified into groups B23B 51/0003, B23B 51/0004 and B23B 51/0005.

All groups listed in this Warning should be considered in order to perform a complete search.

2251/04 . Angles, e.g. cutting angles

WARNING

Group B23B 2251/04 is impacted by reclassification into groups B23B 2251/047 and B23B 2251/048.

Groups B23B 2251/04, B23B 2251/047 and B23B 2251/048 should be considered in order to perform a complete search.

2251/043 . . Helix angles

2251/046 . . . Variable

2251/047 . . Axial clearance angles

WARNING

Group B23B 2251/047 is incomplete pending reclassification of documents from groups B23B 2251/04 and B23B 2251/14.

Groups B23B 2251/04, B23B 2251/14 and B23B 2251/047 should be considered in order to perform a complete search.

2251/048 . . Radial clearance angles

WARNING

Group B23B 2251/048 is incomplete pending reclassification of documents from groups B23B 2251/04 and B23B 2251/14.

Groups B23B 2251/04, B23B 2251/14 and B23B 2251/048 should be considered in order to perform a complete search.

2251/08 . Side or plan views of cutting edges

2251/082 . . Curved cutting edges

WARNING

Group B23B 2251/082 is impacted by reclassification into group B23B 2251/0825.

Groups B23B 2251/082 and B23B 2251/0825 should be considered in order to perform a complete search.

2251/0825 . . . Curved in the axial direction

WARNING

Group B23B 2251/0825 is incomplete pending reclassification of documents from group B23B 2251/082.

Groups B23B 2251/082 and B23B 2251/0825 should be considered in order to perform a complete search.

2251/085 . . Discontinuous or interrupted cutting edges

2251/087 . . Cutting edges with a wave form

2251/12 . Cross sectional views of the cutting edges

2251/122 . . Bevelled cutting edges

2251/125 . . Rounded cutting edges

2251/127 . . Sharp cutting edges

2251/14 . Configuration of the cutting part, i.e. the main cutting edges

WARNING

Group B23B 2251/14 is impacted by reclassification into groups B23B 2251/047 and B23B 2251/048.

Groups B23B 2251/14, B23B 2251/047 and B23B 2251/048 should be considered in order to perform a complete search.

2251/16 . New cutting edge by fracture, wear, or recycling

WARNING

Group B23B 2251/16 is incomplete pending reclassification of documents from group B23B 2251/00.

Groups B23B 2251/00 and B23B 2251/16 should be considered in order to perform a complete search.

2251/18 . Configuration of the drill point

WARNING

Group B23B 2251/18 is impacted by reclassification into groups B23B 2251/182, B23B 2251/185 and B23B 2251/188.

All groups listed in this Warning should be considered in order to perform a complete search.

2251/182 . . Web thinning

WARNING

Group B23B 2251/182 is incomplete pending reclassification of documents from group B23B 2251/18.

Groups B23B 2251/18 and B23B 2251/182 should be considered in order to perform a complete search.

2251/185 . . Point angles less than 90 degrees

WARNING

Group B23B 2251/185 is incomplete pending reclassification of documents from group B23B 2251/18.

Groups B23B 2251/18 and B23B 2251/185 should be considered in order to perform a complete search.

2251/188 . . Variable point angles

WARNING

Group B23B 2251/188 is incomplete pending reclassification of documents from group B23B 2251/18.

Groups B23B 2251/18 and B23B 2251/188 should be considered in order to perform a complete search.

2251/20 . Number of cutting edges

2251/201 . . Single cutting edge
2251/202 . . Three cutting edges
2251/204 . . Four cutting edges
2251/205 . . Five cutting edges
2251/207 . . Six cutting edges
2251/208 . . Eight cutting edges
2251/24 . Overall form of drilling tools

WARNING

Group B23B 2251/24 is impacted by reclassification into group B23B 2251/249.

Groups B23B 2251/24 and B23B 2251/249 should be considered in order to perform a complete search.

2251/241 . . Cross sections of the diameter of the drill
2251/242 . . . increasing in a direction towards the shank from the tool tip
2251/244 . . . decreasing in a direction towards the shank from the tool tip
2251/245 . . . Variable cross sections
2251/247 . . Drilling tools having a working portion at both ends of the shank
2251/248 . . Drills in which the outer surface is of special form
2251/249 . . Drills in which the shank is flexible

WARNING

Group B23B 2251/249 is incomplete pending reclassification of documents from groups B23B 51/00, B23B 51/02 and B23B 2251/24.

All groups listed in this Warning should be considered in order to perform a complete search.

2251/28 . Arrangement of teeth
2251/282 . . Unequal spacing of cutting edges in the circumferential direction
2251/285 . . Cutting teeth arranged at different heights
2251/287 . . Cutting edges having different lengths
2251/40 . Flutes, i.e. chip conveying grooves

WARNING

Group B23B 2251/40 is impacted by reclassification into groups B23B 2251/4011 and B23B 2251/4012.

Groups B23B 2251/40, B23B 2251/4011 and B23B 2251/4012 should be considered in order to perform a complete search.

2251/4011 . . Two flutes merge into one flute

WARNING

Group B23B 2251/4011 is incomplete pending reclassification of documents from group B23B 2251/40.

Groups B23B 2251/40 and B23B 2251/4011 should be considered in order to perform a complete search.

2251/4012 . . Flutes with sleeves

WARNING

Group B23B 2251/4012 is incomplete pending reclassification of documents from group B23B 2251/40.

Groups B23B 2251/40 and B23B 2251/4012 should be considered in order to perform a complete search.

2251/402 . . with increasing depth in a direction towards the shank from the tool tip
2251/404 . . with decreasing depth in a direction towards the shank from the tool tip
2251/406 . . of special form not otherwise provided for

WARNING

Group B23B 2251/406 is impacted by reclassification into group B23B 2251/4062.

Groups B23B 2251/406 and B23B 2251/4062 should be considered in order to perform a complete search.

2251/4062 . . . Reverse flutes

WARNING

Group B23B 2251/4062 is incomplete pending reclassification of documents from group B23B 2251/406.

Groups B23B 2251/406 and B23B 2251/4062 should be considered in order to perform a complete search.

2251/408 . . Spiral grooves
2251/44 . Margins, i.e. the narrow portion of the land which is not cut away to provide clearance on the circumferential surface

WARNING

Group B23B 2251/44 is impacted by reclassification into group B23B 2251/448.

Groups B23B 2251/44 and B23B 2251/448 should be considered in order to perform a complete search.

2251/443 . . Double margin drills
2251/446 . . Drills with variable margins
2251/448 . . Drills with axial cutting edge extending along margin

WARNING

Group B23B 2251/448 is incomplete pending reclassification of documents from group B23B 2251/44.

Groups B23B 2251/44 and B23B 2251/448 should be considered in order to perform a complete search.

2251/46 . Drills having a centre free from cutting edges or with recessed cutting edges
2251/48 . Chip breakers

2251/50 . Drilling tools comprising cutting inserts
(Frozen)

WARNING

Group B23B 2251/50 is no longer used for the classification of documents as of January 1, 2022.

The content of this group is being reclassified into groups B23B 51/0002, B23B 51/0003, B23B 51/00035, B23B 51/0004, B23B 51/0005, B23B 51/0006, B23B 51/0007, B23B 51/0008 and B23B 51/0011.

All groups listed in this Warning should be considered in order to perform a complete search.

2251/505 . . set at different heights
(Frozen)

WARNING

Group B23B 2251/505 is no longer used for the classification of documents as of January 1, 2022.

The content of this group is being reclassified into groups B23B 51/0002, B23B 51/0003, B23B 51/00035, B23B 51/0004, B23B 51/0005, B23B 51/0006, B23B 51/0007, B23B 51/0008 and B23B 51/0011.

All groups listed in this Warning should be considered in order to perform a complete search.

2251/51 . Drills with means for feeding cable

WARNING

Group B23B 2251/51 is incomplete pending reclassification of documents from group B23B 2251/00.

Groups B23B 2251/00 and B23B 2251/51 should be considered in order to perform a complete search.

2251/52 . Depth indicators
2251/56 . Guiding pads
2251/58 . Guiding rolls
2251/60 . Drills with pilots
2251/603 . . Detachable pilots, e.g. in the form of a drill
2251/606 . . . being a twist drill
2251/62 . Drilling tools having means to reinforce the shank, e.g. drills having small shanks being gripped by devices having a larger shank
2251/64 . Drills operating in the reverse direction, i.e. in the unscrewing direction of a right-hand thread
2251/66 . Drills with provision to be used as a screwdriver
2251/68 . Drills with provision for suction
2251/70 . Drills with vibration suppressing means
2251/74 . Drills for drilling a flat bottomed hole

WARNING

Group B23B 2251/74 is incomplete pending reclassification of documents from group B23B 2251/00.

Groups B23B 2251/00 and B23B 2251/74 should be considered in order to perform a complete search.

2260/00 Details of constructional elements

2260/002 . Accumulators
2260/004 . Adjustable elements
2260/0045 . . Two elements adjustable relative to each other in three mutually perpendicular directions
2260/008 . Bearings
2260/0082 . . Sliding contact bearings
2260/0085 . . Needle roller bearings
2260/0087 . . Preloading of bearings
2260/016 . Bolts
2260/018 . Brushes
2260/02 . Cams
2260/022 . Balls
2260/024 . Batteries
2260/026 . Bushings, e.g. adapter sleeves
2260/028 . Chains
2260/03 . Clamps
2260/032 . Diaphragms
2260/034 . Drawbars
2260/036 . Cables
2260/038 . Cartridges
2260/04 . Centre drills of known configuration, e.g. the provision of a centre drill in centres or chucks
2260/042 . Collets of known configuration, i.e. devices using a collet
2260/044 . Clutches
2260/0445 . . Overload clutches
2260/048 . Devices to regulate the depth of cut
2260/0482 . . Depth controls, e.g. depth stops (stops B23B 2260/12)
2260/0485 . . Depth gauges
2260/0487 . . Depth indicators (indication scales B23B 2260/088)
2260/056 . Differential screw threads
2260/058 . Dust covers (dust covers in chucks B23B 2231/28, nose pieces in chucks B23B 2231/44)
2260/062 . Electric motors
2260/0625 . . Linear motors
2260/066 . Electrostrictive elements
2260/068 . Flexible members
2260/07 . Gears
2260/072 . Grooves
2260/0725 . . Spiral
2260/076 . Harmonic drive gearboxes, i.e. reduction gearing including wave generator, flex spline and a circular spline
2260/078 . Hand tools used to operate chucks or to assemble, adjust or disassemble tools or equipment used for turning, boring or drilling
2260/0785 . . for unclamping cutting inserts
2260/082 . Holes
2260/084 . Hirth couplings
2260/088 . Indication scales
2260/09 . Knurled surfaces
2260/092 . Lasers
2260/094 . Levels, e.g. spirit levels
2260/096 . Levers
2260/098 . Magazines
2260/10 . Magnets
2260/102 . Magnetostrictive elements
2260/104 . Markings, i.e. symbols or other indicating marks
2260/106 . Nuts
2260/108 . Piezoelectric elements
2260/11 . Planetary drives

2260/112 . Projections
2260/114 . Rings
2260/116 . Rollers or rolls
2260/118 . Suction pads or vacuum cups, e.g. for attachment of guides to workpieces
2260/12 . Stops (depth controls B23B 2260/0482)
2260/122 . Safety devices
2260/124 . Screws
2260/126 . Seals
2260/128 . Sensors
2260/1285 . . Vibration sensors
2260/132 . Serrations (cutting inserts with serrated bottom surfaces B23B 2200/167)
2260/134 . Spacers or shims (shims for supporting cutting inserts B23B 2205/16)
2260/136 . Springs
2260/138 . Screw threads
2260/1381 . . Conical
2260/1383 . . with round thread profile
2260/1385 . . with square thread profile
2260/1386 . . with trapezoidal thread profile
2260/1388 . . with special profile not otherwise provided for
2260/142 . Valves
2260/144 . Wear indicators
2260/146 . Wedges
2260/158 . Worms and worm wheels

2265/00 Details of general geometric configurations
2265/08 . Conical
2265/12 . Eccentric
2265/16 . Elliptical
2265/32 . Polygonal
2265/322 . . Square
2265/324 . . Pentagonal
2265/326 . . Hexagonal
2265/328 . . Octagonal
2265/34 . Round
2265/36 . Spherical

2270/00 Details of turning, boring or drilling machines, processes or tools not otherwise provided for
2270/02 . Use of a particular power source
2270/022 . . Electricity
2270/025 . . Hydraulics
2270/027 . . Pneumatics
2270/04 . Use of centrifugal force (compensating centrifugal force B23B 2250/08)
2270/06 . Use of elastic deformation
2270/08 . Clamping mechanisms; Provisions for clamping (B23B 2210/00 takes precedence)
2270/09 . Details relating to unclamping
2270/10 . Use of ultrasound
2270/12 . Centering of two components relative to one another
2270/14 . Constructions comprising exactly two similar components
2270/16 . Constructions comprising three or more similar components
2270/20 . Internally located features, machining or gripping of internal surfaces
2270/205 . . Machining or gripping both internal and external surfaces
2270/22 . Externally located features, machining or gripping of external surfaces (machining or gripping of both internal and external surfaces B23B 2270/205)
2270/24 . Tool, chuck or other device activated by the coolant or lubrication system of the machine tool
2270/26 . Burnishing
2270/28 . Cleaning
2270/30 . Chip guiding or removal (use of suction B23B 2270/62, drilling tools with provision for suction B23B 2251/68)
2270/32 . Use of electronics
2270/34 . Means for guiding
2270/36 . Identification of tooling or other equipment
2270/38 . Using magnetic fields (magnets B23B 2260/10)
2270/48 . Measuring or detecting
2270/483 . . Measurement of force
2270/486 . . Measurement of rotational speed
2270/54 . Methods of turning, boring or drilling not otherwise provided for
2270/56 . Turning, boring or drilling tools or machines with provision for milling
2270/58 . Oblique elements
2270/60 . Prevention of rotation
2270/62 . Use of suction (suction pads or vacuum cups B23B 2260/118, drilling tools with provision for suction B23B 2251/68, chip removal B23B 2270/30)