

# 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:

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

- 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; 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}	29/34	. . Turrets equipped with triggers for releasing the cutting tools
29/03489	. . . . . {Adjustment means not specified or not covered by the groups <a href="#">B23B 29/03435</a> - <a href="#">B23B 29/03478</a> }	<b>31/00</b>	<b>Chucks</b> {(allowing axial oscillation of percussion tool bits <a href="#">B25D 17/08</a> ); <b>Expansion mandrels; Adaptations thereof for remote control</b> (faceplates <a href="#">B23Q 1/50</a> ; rotary devices holding by magnetic and/or electrical force acting directly on work <a href="#">B23Q 3/152</a> )
29/03492	. . . . . {Boring and facing heads}	31/001	. {Protection against entering of chips or dust}
29/03496	. . . . . {Grooving tool}	31/003	. {Work or tool ejection means}
29/04	. Tool holders for a single cutting tool	31/005	. {Cylindrical shanks of tools}
29/043	. . {with cutting-off, grooving or profile cutting tools, i.e. blade- or disc-like main cutting parts ( <a href="#">B23B 29/14</a> takes precedence)}	31/006	. {Conical shanks of tools}
29/046	. . {with an intermediary toolholder}	31/008	. {with arrangements for transmitting torque}
29/06	. . Tool holders equipped with longitudinally-arranged grooves for setting the cutting tool	31/02	. Chucks
29/08	. . Tool holders equipped with grooves arranged crosswise to the longitudinal direction for setting the cutting tool	31/021	. . {Faceplates}
29/10	. . . with adjustable counterbase for the cutting tool	31/023	. . {for screw-threads}
29/12	. . Special arrangements on tool holders	31/025	. . {for gears}
29/125	. . . {Vibratory toolholders}	31/026	. . {the radial or angular position of the tool being adjustable (boring heads with tools moving radially <a href="#">B23B 29/034</a> ; holding tools yieldably <a href="#">B23B 31/08</a> ; with means for adjusting the chuck with respect to the working spindle <a href="#">B23B 31/36</a> )}
29/14	. . . affording a yielding support of the cutting tool, e.g. by spring clamping {(cutting tools with yieldable support for the cutting insert <a href="#">B23B 27/086</a> )}	31/0261	. . . {for centering the tool}
29/16	. . . for supporting the workpiece in a backrest	31/028	. . {the axial positioning of the tool being adjustable ( <a href="#">B23B 31/208</a> takes precedence; with means for adjusting the chuck with respect to the working spindle <a href="#">B23B 31/36</a> )}
29/18	. . . for retracting the cutting tool	31/06	. . Features relating to the removal of tools; Accessories therefor
29/20	. . . for placing same by shanks in sleeves of a turret	31/07	. . . Ejector wedges
29/205	. . . . . {the tools being adjustable}	31/08	. . holding tools yieldably
29/22	. . . for tool adjustment by means of shims or spacers	31/083	. . . {axially}
29/24	. Tool holders for a plurality of cutting tools, e.g. turrets {(indexing devices <a href="#">B23Q 16/00</a> )}	31/086	. . . . {having an overload clutch}
29/242	. . {Turrets, without description of the angular positioning device (turret lathes for turning individually-chucked workpieces <a href="#">B23B 3/16</a> ; turrets with manually operated angular positioning devices <a href="#">B23B 29/282</a> ; turrets with power operated angular positioning devices <a href="#">B23B 29/323</a> )}	31/10	. . characterised by the retaining or gripping devices or their immediate operating means
29/244	. . {Toolposts, i.e. clamping quick-change toolholders, without description of the angular positioning device (toolposts with manually operated angular positioning devices <a href="#">B23B 29/285</a> ; toolposts with power operated angular positioning devices <a href="#">B23B 29/326</a> )}	<b>NOTE</b>	
29/246	. . . {Quick-change tool holders}		Group <a href="#">B23B 31/12</a> takes precedence over groups { <a href="#">B23B 31/101</a> , <a href="#">B23B 31/102</a> , <a href="#">B23B 31/103</a> - <a href="#">B23B 31/117</a> }
29/248	. . {with individually adjustable toolholders}	31/101	. . . {Chucks with separately-acting jaws movable radially ( <a href="#">B23B 31/1602</a> , <a href="#">B23B 31/16062</a> , <a href="#">B23B 31/161</a> , <a href="#">B23B 31/16137</a> , <a href="#">B23B 31/16175</a> , <a href="#">B23B 31/16212</a> , <a href="#">B23B 31/1625</a> and <a href="#">B23B 31/16283</a> take precedence; Chucks with simultaneously acting jaws moving radially <a href="#">B23B 31/16</a> )}
29/26	. . Tool holders in fixed position	31/102	. . . {Jaws, accessories or adjustment means ( <a href="#">B23B 31/16008</a> , <a href="#">B23B 31/1605</a> , <a href="#">B23B 31/16087</a> , <a href="#">B23B 31/16125</a> , <a href="#">B23B 31/16162</a> , <a href="#">B23B 31/162</a> , <a href="#">B23B 31/16237</a> , <a href="#">B23B 31/1627</a> take precedence)}
29/28	. . Turrets manually adjustable about a vertical {or horizontal} pivot {(indexing devices <a href="#">B23Q 16/00</a> )}	31/103	. . . Retention by pivotal elements, e.g. catches, pawls
29/282	. . . {Turrets with manually operated angular positioning devices}	31/107	. . . Retention by laterally-acting detents, e.g. pins, screws, wedges; Retention by loose elements, e.g. balls
29/285	. . . {Toolposts with manually operated angular positioning devices}	31/1071	. . . . {Retention by balls (balls acting as jaws <a href="#">B23B 31/22</a> )}
29/287	. . . {Turret toolholder with manually operated angular positioning devices}	31/1072	. . . . {Retention by axially or circumferentially oriented cylindrical elements (cylindrical elements acting as jaws <a href="#">B23B 31/223</a> )}
29/32	. . Turrets adjustable by power drive, i.e. turret heads {(indexing devices <a href="#">B23Q 16/00</a> )}		
29/323	. . . {Turrets with power operated angular positioning devices}		
29/326	. . . {Toolposts with power operated angular positioning devices}		

31/1073	. . . . {Retention by conical elements (conical elements acting as jaws <a href="#">B23B 31/226</a> )}	31/1602	. . . . . {Individually adjustable jaws}
31/10741	. . . . {Retention by substantially radially oriented pins}	31/16025	. . . . . {using fluid-pressure means to actuate the gripping means}
31/1075	. . . . {Retention by screws}	31/16029	. . . . . {using mechanical transmission through the spindle}
31/1076	. . . . . {with conical ends}	31/16033	. . . . . {with a centre}
31/1077	. . . . . {acting on a floating pin}	31/16037	. . . . . {using mechanical transmission through the spindle ( <a href="#">B23B 31/16029</a> takes precedence)}
31/1078	. . . . {Retention by wedges}	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 <a href="#">B23B 31/123</a> )}
31/1079	. . . . {Retention by spring or wire}	31/16045	. . . . . {Jaws movement actuated by screws and nuts or oblique racks}
31/11	. . . Retention by threaded connection	31/1605	. . . . . {Details of the jaws}
31/1107	. . . . {for conical parts}	31/16054	. . . . . {Form of the jaws}
31/1115	. . . . . {using conical threads}	31/16058	. . . . . {Fixation on the master jaw}
31/1122	. . . . . {using cylindrical threads}	31/16062	. . . . . {Individually adjustable jaws}
31/113	. . . Retention by bayonet connection	31/16066	. . . . . {using fluid-pressure means to actuate the gripping means}
31/117	. . . Retention by friction only, e.g. using springs, resilient sleeves, tapers	31/1607	. . . . . {using mechanical transmission through the spindle}
31/1171	. . . . {not used, see subgroups and <a href="#">B23B 31/117</a> }	31/16075	. . . . . {with a centre}
31/1172	. . . . . {using fluid-pressure means to actuate the gripping means}	31/16079	. . . . . {using mechanical transmission through the spindle ( <a href="#">B23B 31/1607</a> takes precedence)}
31/1173	. . . . {using springs}	31/16083	. . . . . {Jaws movement actuated by gears and racks}
31/1174	. . . . . {using fluid-pressure means to actuate the gripping means}	31/16087	. . . . . {Details of the jaws}
31/1175	. . . . {using elastomer rings or sleeves}	31/16091	. . . . . {Form of the jaws}
31/1176	. . . . . {using fluid-pressure means to actuate the gripping means}	31/16095	. . . . . {Fixation on the master jaw}
31/1177	. . . . {using resilient metallic rings or sleeves}	31/161	. . . . . {Individually adjustable jaws}
31/1178	. . . . . {using fluid-pressure means to actuate the gripping means}	31/16104	. . . . . {using fluid-pressure means to actuate the gripping means}
31/1179	. . . . {using heating and cooling}	31/16108	. . . . . {using mechanical transmission through the spindle}
31/12	. . . Chucks with simultaneously-acting jaws, whether or not also individually adjustable	31/16112	. . . . . {with a centre}
31/1207	. . . . {moving obliquely to the axis of the chuck in a plane containing this axis}	31/16116	. . . . . {using mechanical transmission through the spindle ( <a href="#">B23B 31/16108</a> takes precedence)}
31/1215	. . . . . {Details of the jaws}	31/1612	. . . . . {Jaws movement actuated by cam surface in a radial plane}
31/1223	. . . . . {using fluid-pressure means in the chuck to actuate the gripping means}	31/16125	. . . . . {Details of the jaws}
31/123	. . . . . {with locking arrangements (locking arrangements for chucks with simultaneously-acting jaws moving radially actuated by one or more spiral grooves <a href="#">B23B 31/16041</a> )}	31/16129	. . . . . {Form of the jaws}
31/1238	. . . . . {Jaws movement actuated by a nut with conical screw-thread}	31/16133	. . . . . {Fixation on the master jaw}
31/1246	. . . . . {Jaws movement actuated by a bolt with conical screw-thread}	31/16137	. . . . . {Individually adjustable jaws}
31/1253	. . . . . {Jaws movement actuated by an axially movable member}	31/16141	. . . . . {using fluid-pressure means to actuate the gripping means}
31/1261	. . . . {pivotaly movable in a radial plane}	31/16145	. . . . . {using mechanical transmission through the spindle}
31/1269	. . . . . {Details of the jaws}	31/1615	. . . . . {with a centre}
31/1276	. . . . . {using fluid-pressure means to actuate the gripping means}	31/16154	. . . . . {using mechanical transmission through the spindle ( <a href="#">B23B 31/16145</a> takes precedence)}
31/1284	. . . . . {with a centre}	31/16158	. . . . . {Jaws movement actuated by coaxial conical surfaces}
31/1292	. . . . . {using mechanical transmission through the spindle}	31/16162	. . . . . {Details of the jaws}
31/14	. . . . involving the use of centrifugal force	31/16166	. . . . . {Form of the jaws}
31/141	. . . . . {To counterbalance the jaws}	31/1617	. . . . . {Fixation on the master jaw}
31/142	. . . . . {To grip a tool or workpiece}	31/16175	. . . . . {Individually adjustable jaws}
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}		

- 31/16179 . . . . . {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 . . . . . {Individually 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
- 31/223 . . . . . {Jaws in the form of cylindrical elements}
- 31/226 . . . . . {Jaws in the form of conical elements}
- 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}	39/28	. Associations of only boring or drilling machines directed to a particular metal-working result (if not producing a particular metal-working result <a href="#">B23Q 39/00</a> )
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}	<b>41/00</b>	<b>Boring or drilling machines or devices specially adapted for particular work</b> {(surgical drilling machines <a href="#">A61B 17/16</a> ); <b>Accessories specially adapted therefor</b>
31/42	. . characterised by features relating primarily to remote control of the gripping means	41/003	. {for drilling elongated pieces, e.g. beams}
<b>33/00</b>	<b>Drivers; Driving centres, Nose clutches, e.g. lathe dogs</b>	41/006	. . {the machining device being moved along a fixed workpiece}
33/005	. {Drivers with driving pins or the like}	41/02	. for boring deep holes; Trepanning, e.g. of gun or rifle barrels
<b>Boring; Drilling</b> (for surgical purposes <a href="#">A61B 17/16</a> ; in metal using electric current <a href="#">B23H 9/14</a> ; by laser beam <a href="#">B23K 26/00</a> ; earth or rock drilling <a href="#">E21B</a> )		41/04	. for boring polygonal or other non-circular holes
<b>35/00</b>	<b>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</b>	41/06	. for boring conical holes
35/005	. {Measures for preventing splintering}	41/10	. for boring holes in steam boilers
<b>37/00</b>	<b>Boring by making use of ultrasonic energy (essentially using abrasive material <a href="#">B24B</a>, e.g. <a href="#">B24B 1/04</a>)</b>	41/12	. for forming working surfaces of cylinders, of bearings, e.g. in heads of driving rods, or of other engine parts
<b>39/00</b>	<b>General-purpose boring or drilling machines or devices; Sets of boring and/or drilling machines</b>	41/14	. for very small holes
39/003	. {Drilling machine situated underneath the workpiece}	41/16	. for boring holes with high-quality surface
39/006	. {Portal drilling machines}	<b>43/00</b>	<b>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 <a href="#">B23B 41/00</a>)</b>
39/02	. Boring machines; Combined horizontal boring and milling machines	43/02	. to the tailstock of a lathe
39/04	. Co-ordinate boring or drilling machines; Machines for making holes without previous marking	<b>45/00</b>	<b>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 <a href="#">B25F 5/00</a>)</b>
39/06	. . Equipment for positioning work	45/001	. {Housing of the drill, e.g. handgrip}
39/08	. . Devices for programme control	45/003	. {Attachments}
39/10	. characterised by the drive, e.g. by fluid-pressure drive pneumatic power drive	45/005	. . {Flexible shafts}
39/12	. Radial drilling machines	45/006	. {Keys for operating the chucks}
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	45/008	. {Gear boxes, clutches, bearings, feeding mechanisms or like equipment}
39/16	. Drilling machines with a plurality of working-spindles; Drilling automatons	45/02	. driven by electric power
39/161	. . {with parallel work spindles}	45/04	. driven by fluid-pressure or pneumatic power
39/162	. . . {having gear transmissions}	45/042	. . {Turbine motors}
39/163	. . . {having crank pin transmissions}	45/044	. . {Rotary vane type motors}
39/165	. . . {having universal joint transmissions}	45/046	. . {Piston engines}
39/166	. . . {having flexible shaft transmissions}	45/048	. . . {Internal combustion piston engines}
39/167	. . . {having belt and chain transmissions}	45/06	. driven by man-power
39/168	. . {with the work spindles being oblique to each other}	45/08	. . for drilling rails or profiled stock
39/18	. . Setting work or tool carrier along a straight index line	45/10	. . by using a fiddle bow or a belt
39/20	. . Setting work or tool carrier along a circular index line; Turret head drilling machines	45/12	. . by using a ratchet brace
39/205	. . . {Turret head drilling machines}	<b>Components or accessories for boring or drilling machines</b>	
39/22	. . with working-spindles in opposite headstocks	<b>47/00</b>	<b>Constructional features of components specially designed for boring or drilling machines; Accessories therefor (working-spindles, bearing sleeves therefor <a href="#">B23Q 1/70</a>; for machine tools in general <a href="#">B23Q</a>)</b>
39/24	. . designed for programme control	47/26	. Lifiable or lowerable drill heads or headstocks; Balancing arrangements therefor {(weight and flexion compensation <a href="#">B23Q 11/001</a> )}
39/26	. in which the working position of tool or work is controlled by copying discrete points of a pattern (features of copying devices <a href="#">B23Q 35/02</a> )	47/28	. Drill jigs for workpieces (equipment for setting or guiding the drill <a href="#">B23B 49/00</a> )
		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 . . {with lubricating or cooling equipment (Frozen) [\(B23B 51/042 takes precedence\)](#)}

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

**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

2200/048 . . Star form

2200/0485 . . Trapezium

2200/049 . . Triangular

2200/0495 . . . rounded

2200/08 . . Rake or top surfaces

2200/081 . . with projections

2200/082 . . with elevated clamping surface

2200/083 . . curved

2200/085 . . discontinuous

2200/086 . . with one or more grooves

2200/087 . . . for chip breaking

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

2200/323 . . by chip breaking depressions

2200/325 . . by multiple chip-breaking grooves

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

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

2200/3663 . . . having negative cutting angles

2200/3672 . . . . being variable

**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

- 2200/3681 . . 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
- 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
- 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
- 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
- 2222/36 . Nickel chrome alloys, e.g. Inconel®
- 2222/41 . Nickel steel alloys, e.g. invar®
- 2222/44 . Iron
- 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
- 2222/84 . Steel
- 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
- 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
- 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
- 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
- 2231/0256 . . Flats
- 2231/026 . . Grooves
- 2231/0264 . . . Axial grooves
- 2231/0268 . . . Radial grooves
- 2231/0272 . . . Grooves on conical clamping surfaces
- 2231/0276 . . Keyways
- 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
- 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
- 2231/28 . Dust covers
- 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
- 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 comprising 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
- 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
- 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

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- 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
- 2260/0485 . . Depth gauges
- 2260/0487 . . Depth indicators
- 2260/056 . Differential screw threads
- 2260/058 . Dust covers
- 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
- 2260/122 . Safety devices
- 2260/124 . Screws
- 2260/126 . Seals
- 2260/128 . Sensors
- 2260/1285 . . Vibration sensors
- 2260/132 . Serrations
- 2260/134 . Spacers or shims
- 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
- 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
- 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
- 2270/32 . Use of electronics

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- 2270/34 . Means for guiding
- 2270/36 . Identification of tooling or other equipment
- 2270/38 . Using magnetic fields
- 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