## CPC - COOPERATIVE PATENT CLASSIFICATION

### B PERFORMING OPERATIONS; TRANSPORTING

**(NOTES omitted)**

### SHAPING

### B23 MACHINE TOOLS; METAL-WORKING NOT OTHERWISE PROVIDED FOR

**(NOTES omitted)**

### B23G THREAD CUTTING; WORKING OF SCREWS, BOLT HEADS, OR NUTS, IN CONJUNCTION THEREWITH

*(making helical grooves by turning B23B 5/48, by milling B23C 3/32, by forging, pressing, or hammering B21K 1/56, by grinding B24B 19/02; arrangements for copying or controlling B23Q; thread-forming by corrugating tubes B21D 15/04, by rolling B21H 3/02)*

**NOTE**

The term "thread cutting" is to be understood as including the use of tools similar both in form and in manner of use to thread-cutting tools, but without removing any material

**WARNING**

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.

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
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<tbody>
<tr>
<td>1/00</td>
<td>Thread cutting; Automatic machines specially designed therefor</td>
</tr>
<tr>
<td>1/02</td>
<td>. . . on an external or internal cylindrical or conical surface, e.g. on recesses <em>(B23G 1/16, B23G 1/22, B23G 1/32, B23G 1/36 take precedence)</em></td>
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<tr>
<td>1/04</td>
<td>. . . Machines with one working-spindle</td>
</tr>
<tr>
<td>1/06</td>
<td>. . . specially adapted for making conical screws, e.g. wood-screws</td>
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<tr>
<td>1/08</td>
<td>. . . Machines with a plurality of working spindles</td>
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<tr>
<td>1/10</td>
<td>. . . specially adapted for making conical screws, e.g. wood-screws</td>
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<tr>
<td>1/12</td>
<td>. . . Machines with a toothed cutter in the shape of a spur-gear or the like which is rotated to generate the thread profile as the work rotates</td>
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<tr>
<td>1/14</td>
<td>. . . specially adapted for making conical screws, e.g. wood-screws</td>
</tr>
<tr>
<td>1/16</td>
<td>. in holes of workpieces by taps <em>(B23G 1/26, B23G 1/32, B23G 1/36 take precedence)</em></td>
</tr>
<tr>
<td>1/18</td>
<td>. . . Machines with one working spindle</td>
</tr>
<tr>
<td>1/185</td>
<td>. . . {specially adapted for making nuts}</td>
</tr>
<tr>
<td>1/20</td>
<td>. . . Machines with a plurality of working spindles</td>
</tr>
<tr>
<td>1/205</td>
<td>. . . {specially adapted for making nuts}</td>
</tr>
<tr>
<td>1/22</td>
<td>. . . Machines specially designed for operating on pipes or tubes</td>
</tr>
<tr>
<td>1/225</td>
<td>. . . {automatically controlled}</td>
</tr>
<tr>
<td>1/24</td>
<td>. . . portable</td>
</tr>
<tr>
<td>1/26</td>
<td>. Manually-operated thread-cutting devices <em>(features of the threading tool per se B23G 5/00)</em></td>
</tr>
<tr>
<td>1/261</td>
<td>. . . {Die and tap wrenches (lubricating and cooling devices therefor B23G 5/005; B23G 1/265 takes precedence)}</td>
</tr>
<tr>
<td>1/262</td>
<td>. . . {Tap wrenches having a V slot <em>(B23G 1/264 takes precedence)</em>}</td>
</tr>
<tr>
<td>1/263</td>
<td>. . . {Die wrenches having a cylindrical opening and a clamping screw}</td>
</tr>
<tr>
<td>1/264</td>
<td>. . . {comprising tap wrench features with a V slot}</td>
</tr>
<tr>
<td>1/265</td>
<td>. . . {Die and tap wrenches with a guiding part (lubricating and cooling devices therefor B23G 5/005)}</td>
</tr>
<tr>
<td>1/266</td>
<td>. . . {Tap wrenches having a V slot <em>(B23G 1/268 takes precedence)</em>}</td>
</tr>
<tr>
<td>1/267</td>
<td>. . . {Die wrenches having a cylindrical opening and a clamping screw}</td>
</tr>
<tr>
<td>1/268</td>
<td>. . . {comprising tap wrench features with a V slot}</td>
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<tr>
<td>1/28</td>
<td>. . . with means for adjusting the threading tool</td>
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<tr>
<td>1/30</td>
<td>. . . without means for adjusting the threading tool, e.g. with die-stock <em>(tap wrenches B25B)</em></td>
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<tr>
<td>1/32</td>
<td>. . . by milling</td>
</tr>
<tr>
<td>1/34</td>
<td>. . . with a cutting bit moving in a closed path arranged eccentrically with respect to the axis of the rotating workpieces</td>
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<tr>
<td>1/36</td>
<td>. . . by grinding</td>
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<tr>
<td>1/38</td>
<td>. . . with grinding discs guided along the workpiece in accordance with the pitch of the required thread</td>
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<tr>
<td>1/40</td>
<td>. . . with grinding discs guided radially to the workpiece</td>
</tr>
<tr>
<td>1/42</td>
<td>. . . Centreless grinding</td>
</tr>
<tr>
<td>1/44</td>
<td>. . . Equipment or accessories specially designed for machines or devices for thread cutting</td>
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<tr>
<td>1/46</td>
<td>. . . for holding the threading tools <em>(B23B 31/083 takes precedence)</em></td>
</tr>
<tr>
<td>1/465</td>
<td>. . . {comprising arrangements for reversing the rotation of the tool}</td>
</tr>
<tr>
<td>1/48</td>
<td>. . . for guiding the threading tools</td>
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<tr>
<td>1/50</td>
<td>. . . for cutting thread by successive operations</td>
</tr>
<tr>
<td>1/52</td>
<td>. . . for operating on pipes or tubes</td>
</tr>
</tbody>
</table>
3/00 Arrangements or accessories for enabling machine tools not specially designed only for thread cutting to be used for this purpose, e.g. arrangements for reversing the working spindle

9/006 . . . (Slotting nuts)
9/007 . . . (Deburring nuts)
9/008 . . . (Finishing nuts (B23G 9/007 takes precedence))
9/009 . . . (Thread cleaning or repairing)

11/00 Feeding or discharging mechanisms combined with, or arranged in, or specially adapted for use in connection with, thread-cutting machines (for machines tools in general B23Q)

2200/00 Details of threading tools
2200/02 . Tools in which the shank and the cutting part are made from different materials or from separate components
2200/04 . Tools with negative cutting angles
2200/06 . Connections between parts of threading tools
2200/062 . . Brazed connections
2200/065 . . Glued connections
2200/067 . . Welded connections
2200/08 . . Threading tools with adjustable elements (manually operated thread cutting devices with means for adjusting the threading tool B23G 1/28)
2200/10 . Threading tools comprising cutting inserts
2200/12 . Threading tools comprising inserts for thread forming
2200/14 . . Multifunctional threading tools
2200/141 . . Tools comprising means for deburring
2200/142 . . Tools comprising means for forming threads by deformation
2200/143 . . Tools comprising means for drilling
2200/144 . . Tools comprising a die
2200/145 . . Tools comprising means for milling features other than the thread
2200/146 . . Tools comprising a tap
2200/147 . . Tools comprising means for reaming
2200/148 . . Tools having means for countersinking
2200/16 . . Tools with cutting edges spaced unequally around the circumference
2200/18 . . Tools rotatable in both directions
2200/20 . . Tools having a brush
2200/22 . . Tools having an end cap, e.g. for the distribution of cutting fluid
2200/24 . . Chip breakers
2200/26 . . Coatings of tools
2200/28 . . Threading tools having a conical form
2200/30 . . Cutting edges that are rounded in the cross-sectional view of the cutting edge
2200/32 . . Tools having a decreasing diameter in the direction of the shank from the tip
2200/34 . . Tools having an increasing diameter in the direction of the shank from the tip (B23G 2200/28 takes precedence)
2200/36 . . Tools having provision to produce threads of more than one type or size
2200/38 . . Tools with shanks having a working end at each end of the shank
2200/40 . . Tools with variable or different helix angles
2200/42 . . Hollow tools
2200/44 . . Taps with more than one threading section, the threading sections being axially spaced from one another
2200/46 . . Tools having a section of polygonal form, e.g. for the transmission of torque
2200/48 . . Spiral grooves, i.e. spiral flutes

7/00 Forming thread by means of tools similar both in form and in manner of use to thread-cutting tools, but without removing any material (features of machines or devices not specially adapted to the particular mode of forming the thread B23G 1/00)

7/02 . . Tools for this purpose

9/00 Working screws, bolt heads, or nuts in conjunction with thread cutting, e.g. slotting screw heads or shanks, removing burrs from screw heads or shanks; Finishing, e.g. polishing, any screw-thread

9/001 . . . (Working screws)
9/002 . . . (Slotting screw heads or shanks)
9/003 . . . (Deburring screws)
9/004 . . . (Finishing screws (B23G 9/003 takes precedence))
9/005 . . . (Working nuts)
Tools in which the pitch of the teeth is a multiple of the pitch of the thread being produced

Details of threads produced
- Internal threads
- External threads
- Threads having a large diameter
- Multiple start threads
- Threads in nuts
- Threads having a variable pitch
- Threads having a rounded profile
- Threads having a square profile
- Threads having a stepped profile
- Threads having a trapezoidal profile
- Threads having a special form or profile not otherwise provided for

Materials of threading tools, workpieces or other structural elements
- Cubic boron nitride
- Cermets
- Chromium
- Diamond
- Polycrystalline diamond
- Elastomers, e.g. rubber
- Hard metal, i.e. cemented carbides
- High speed steel
- Molybdenum disulphide
- Plastics not otherwise provided for
- Titanium
- Titanium aluminium nitride (TiAlN)
- Titanium carbide
- Titanium carbide nitride (TiCN)
- Titanium nitride

Details of equipment for threading other than threading tools, details of the threading process
- Compensation of centrifugal force
- Evacuation of chips or fines
- Means for cooling or lubrication
- Equipment for producing threaded component with a rotating disc to hold the components
- Guiding devices with a pin affixable in a drilling chuck and with free rotation of the threading tool holder with respect to the pin
- Guides for threading tools having a V-groove for location on cylindrical workpieces
- Indication scales
- Threading devices designed to be mounted in the tailstock of a lathe
- Methods of threading not otherwise provided for
- Threading equipment having an integrally incorporated driving motor
- Tap or die wrenches with multiple locations for holding threading tools, e.g. for holding threading tools of different sizes
- Protective sleeves for taps
- Sensors
- Producing or refurbishing threads for spark plugs or glow plugs
- Thread whirling, i.e. production of a thread by means of an annular tool rotating about an axis not coincident with the axis of the thread being produced