PERFORMING OPERATIONS; TRANSPORTING
(NOTES omitted)

SHAPING

GRINDING; POLISHING
(NOTE omitted)

MACHINES, DEVICES, OR PROCESSES FOR GRINDING OR POLISHING
(grindng of gear teeth B23F, of screw-threads B23G 1/36; by electro-erosion B23H;
abrasive or related blasting B24C; tools for grinding, buffing or sharpening B24D; polishing
compositions C09G 1/00; abrasives C09K 3/14; electrolytic etching or polishing C25F 3/00;
grinding arrangements for use on assembled railway tracks E01B 31/17; DRESSING
OR CONDITIONING OF ABRADING SURFACES; FEEDING OF GRINDING,
POLISHING, OR LAPPING AGENTS

NOTES
1. In this subclass, the following term is used with the meaning indicated:
   “polishing” means the smoothing of a surface, i.e. a surface improvement but no improvement of the dimensional accuracy
   as would occur in a “grinding” operation.
2. Attention is drawn to Notes (1) and (2) following the title of subclass B23F.
3. In groups B24B 1/00 - B24B 27/00, in connection with glass the terms “grinding ” and "polishing" are treated as being
   equivalent.

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.

1/00 Processes of grinding or polishing; Use of auxiliary
equipment in connection with such processes
(processes characterised by the use of special
machines or devices, see the relevant places for those
machines or devices)
1/002 . [using electric current (B24B 37/046 and
B23H 5/09 take precedence)]
1/005 . [using a magnetic polishing agent]
1/007 . [abrasive treatment to obtain an aged or worn-out
appearance]
1/04 . subjecting the grinding or polishing tools, the
abrating or polishing medium or work to vibration,
e.g. grinding with ultrasonic frequency (polishing
or abrating surfaces on work by means of tumbling
apparatus B24B 31/00; involving oscillating or
vibrating containers B24B 31/06; superfinishing
surfaces on work, e.g. by means of abrading blocks
reciprocating with high frequency, B24B 35/00)

3/00 Sharpening cutting edges, e.g. of tools; Accessories
therefor, e.g. for holding the tools (non-abrasive
sharpening devices for scythes, sickles, or the
like A01D 3/00; sharpening devices designed
as components of machines with cutters, see the
relevant places for the machines, e.g. A01D 75/08,
[B23E 23/1225, .] B26D 7/12; sharpening of saw
teeth B23D 63/12; sharpening of files or rasps
B23D 73/00; grading of die-stocks or chasers
B23G 1/36)
3/003 . [for skate blades]
Grinding surfaces of particular forms

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/00</td>
<td>Machines or devices designed for grinding surfaces of revolution on work, including those which also grind adjacent plane surfaces; Accessories therefor (B24B 11/00 - B24B 21/00 take precedence; honing machines or devices using abrading blocks performing axial and rotary movements superimposed on one another B24B 33/00)</td>
</tr>
<tr>
<td>5/01</td>
<td>for combined grinding of surfaces of revolution and of adjacent plane surfaces on work</td>
</tr>
<tr>
<td>5/02</td>
<td>involving centres or chucks for holding work</td>
</tr>
<tr>
<td>5/03</td>
<td>(involving indexable work supporting means carrying several work pieces to be operated on in succession)</td>
</tr>
<tr>
<td>5/04</td>
<td>for grinding cylindrical surfaces externally (grinding combined cylindrical and conical surfaces B24B 5/14)</td>
</tr>
<tr>
<td>5/05</td>
<td>(for grinding several workpieces at once using one grinding wheel)</td>
</tr>
<tr>
<td>5/06</td>
<td>(with the grinding wheel axis perpendicular to the workpiece axis)</td>
</tr>
<tr>
<td>5/07</td>
<td>(of workpieces turning about a vertical axis)</td>
</tr>
<tr>
<td>5/08</td>
<td>(for grinding cylindrical surfaces internally (B24B 5/40 takes precedence)</td>
</tr>
<tr>
<td>5/09</td>
<td>(for brake drums)</td>
</tr>
<tr>
<td>5/10</td>
<td>involving a vertical tool spindle</td>
</tr>
<tr>
<td>5/11</td>
<td>involving a horizontal tool spindle</td>
</tr>
<tr>
<td>5/12</td>
<td>for grinding cylindrical surfaces both externally and internally with several grinding wheels</td>
</tr>
<tr>
<td>5/13</td>
<td>for grinding conical surfaces, e.g. of centres</td>
</tr>
<tr>
<td>5/14</td>
<td>for grinding peculiarly surfaces, e.g. bulged</td>
</tr>
<tr>
<td>5/15</td>
<td>(controlled by a template (B24B 5/167 takes precedence)</td>
</tr>
<tr>
<td>5/16</td>
<td>(controlled by gearing (B24B 5/167 takes precedence)</td>
</tr>
<tr>
<td>5/17</td>
<td>(for rolls with large curvature radius, e.g. mill rolls)</td>
</tr>
<tr>
<td>5/18</td>
<td>involving centreless means for supporting, guiding, floating or rotating work (centreless turning B23B 5/08; centreless grinding of threads B23G 1/42)</td>
</tr>
<tr>
<td>5/19</td>
<td>(for internal surfaces)</td>
</tr>
<tr>
<td>5/20</td>
<td>involving grooved abrading blocks</td>
</tr>
<tr>
<td>5/21</td>
<td>for grinding cylindrical surfaces, e.g. on bolts</td>
</tr>
<tr>
<td>5/22</td>
<td>(for mass articles)</td>
</tr>
<tr>
<td>5/23</td>
<td>for grinding conical surfaces</td>
</tr>
<tr>
<td>5/24</td>
<td>(for mass articles)</td>
</tr>
<tr>
<td>5/25</td>
<td>for grinding peculiarly profiled surfaces, e.g. bulged</td>
</tr>
<tr>
<td>5/26</td>
<td>for grinding outer surfaces concentrically to bores, involving additional centering means</td>
</tr>
<tr>
<td>5/27</td>
<td>Regulating-wheels; Equipment therefor</td>
</tr>
<tr>
<td>5/28</td>
<td>Means for supporting work</td>
</tr>
<tr>
<td>5/29</td>
<td>involving work-supporting means carrying several workpieces to be operated on in succession</td>
</tr>
<tr>
<td>5/30</td>
<td>the work-supporting means being indexable</td>
</tr>
<tr>
<td>5/31</td>
<td>Accessories</td>
</tr>
<tr>
<td>5/32</td>
<td>(Feeding means)</td>
</tr>
<tr>
<td>5/33</td>
<td>Single-purpose machines or devices</td>
</tr>
<tr>
<td>5/34</td>
<td>for grinding surfaces of revolution in situ</td>
</tr>
<tr>
<td>5/35</td>
<td>(for grinding tyres)</td>
</tr>
<tr>
<td>5/36</td>
<td>for grinding rolls, e.g. barrel-shaped rolls</td>
</tr>
<tr>
<td>5/37</td>
<td>for externally grinding travelling elongated stock, e.g. wire</td>
</tr>
<tr>
<td>5/38</td>
<td>(having a grinding wheel turning around the workpiece)</td>
</tr>
<tr>
<td>5/39</td>
<td>(in situ)</td>
</tr>
<tr>
<td>5/40</td>
<td>(Portable devices therefor)</td>
</tr>
<tr>
<td>5/41</td>
<td>(Balancing means)</td>
</tr>
<tr>
<td>5/42</td>
<td>for grinding rims of vehicle wheels, e.g. for bicycles</td>
</tr>
</tbody>
</table>
Grinding surfaces of particular forms

7/00 Machines or devices designed for grinding plane surfaces on work, including polishing plane glass surfaces; Accessories therefor (B24B 21/00 takes precedence; honing of plane surfaces on work B24B 33/0/55)

7/005 . . . [Portal grinding machines]

7/02 . . . involving a reciprocatingly-moving work-table (involving a reciprocatingly-moving grinding wheel in combination with a stationary work-table B24B 7/07)

7/04 . . . involving a rotary work-table

7/06 . . . involving conveyor belts, a sequence of travelling work-tables or the like

7/07 . . . involving a stationary work-table

7/075 . . . [using a reciprocating grinding head mounted on a movable carriage]

7/08 . . . having an abrasive wheel built in

7/10 . . Single-purpose machines or devices (grinding tools or machines specially designed for use on assembled railway track E01B 31/17)

7/12 . . . for grinding travelling elongated stock, e.g. strip-shaped work

7/13 . . . grinding while stock moves from coil to coil

7/14 . . . for grinding slideways (portable grinding machines designed for fastening on workpieces B24B 23/08)

7/16 . . . for grinding end-faces, e.g. of gauges, rollers, nuts, piston rings (for combined grinding of surfaces of revolution and adjacent plane surfaces on work B24B 5/01; for grinding edges of bevels on work B24B 9/00)

7/162 . . . [for mass articles]

7/165 . . . [end faces of piston rings]

7/167 . . . [end faces coil springs]

7/17 . . . for simultaneously grinding opposite and parallel end faces, e.g. double disc grinders

7/18 . . . for grinding floorings, walls, ceilings or the like (machines or devices for cleaning floorings A47L 11/00, A47L 13/00)

7/182 . . . [for walls and ceilings]

7/184 . . . [pole Sanders]

7/186 . . . [with disc-type tools]

7/188 . . . [with cylinder- or belt-type tools]

7/19 . . . for grinding plane decorative patterns

7/20 . . . characterised by a special design with respect to properties of the material of non-metallic articles to be ground

7/22 . . . for grinding inorganic material, e.g. stone, ceramics, porcelain

7/222 . . . [for grinding vertical surfaces (B24B 7/265 takes precedence)]

7/224 . . . [Portal grinding machines; Machines having a tool movable in a plane]

7/226 . . . [in which the tool is supported by the workpiece]
Grinding surfaces of particular forms

11/00 Machines or devices designed for grinding spherical surfaces or parts of spherical surfaces on work; Accessories therefor (specially designed for optical surfaces B24B 13/00; for seat surfaces B24B 15/000)

11/02 .. for grinding balls
11/04 .. involving grinding wheels
11/06 .. acting by the front faces, e.g. of plane, grooved or bevelled shape
11/08 .. acting by the circumference
11/10 .. of cup type

13/00 Machines or devices designed for grinding or polishing optical surfaces on lenses or surfaces of similar shape on other work; Accessories therefor (edging optical work, e.g. lenses, prisms B24B 9/14)

13/0006 .. [for intraocular lenses]
13/0012 .. [for multifocal lenses]
13/0018 .. [for plane optical surfaces]
13/0025 .. [for contact lenses]
13/0031 .. [Machines having several working posts; Feeding and manipulating devices]
13/0037 .. [the lenses being worked by different tools, e.g. for rough-grinding, fine-grinding, polishing]
13/0043 .. [the workpieces being deformed during the grinding operation]
13/005 .. Blocking means, chucks or the like; Alignment devices
13/0052 .. [Lens block moulding devices]
13/0055 .. [Positioning of lenses; Marking of lenses]
13/0057 .. [Deblocking of lenses]
13/01 .. Specific tools, e.g. bowl-like; Production, dressing or fastening of these tools
13/012 .. [conformable in shape to the optical surface, e.g. by fluid pressure acting on an elastic membrane]
13/015 .. of television picture tube viewing panels, headlight reflectors or the like
13/02 .. by means of tools with abrading surfaces corresponding in shape with the lenses to be made
13/023 .. [for grinding several lenses simultaneously]
13/026 .. [the contact between tool and workpiece being a line]
13/04 .. grinding of lenses involving grinding wheels controlled by gearing (B24B 13/06 takes precedence)
13/043 .. [using cup-type grinding wheels]
13/046 .. [using a pointed tool or scraper-like tool (B24B 13/015 and B24B 13/065 take precedence)]
13/06 .. grinding of lenses, the tool or work being controlled by information-carrying means, e.g. patterns, punched tapes, magnetic tapes
13/065 .. [using a template]
Grinding surfaces of particular forms

19/06  . . for grinding races, e.g. roller races
19/08  . . for grinding non-circular cross-sections, e.g. shafts of elliptical or polygonal cross-section
19/09  . . for grinding trochoidal surfaces, e.g. in rotor housings of Wankel engines
19/095 . . . [using templates]
19/10  . . for grinding pistons
19/11  . . for grinding the circumferential surface of rings, e.g. piston rings (grinding end faces B24B 7/16, B24B 13/00)
19/12  . . for grinding cams or camshafts
19/125 . . . [electrically controlled, e.g. numerically controlled]
19/14  . . for grinding turbine blades, propeller blades or the like (using grinding belts B24B 21/16)
19/16  . . for grinding sharp-pointed workpieces, e.g. needles, pens, fish hooks, tweezers or record player styli (grinding bevels on diamonds or sapphires B24B 9/16; polishing of needles B24B 29/08)
19/165 . . . [Phonograph needles and the like]
19/18  . . for grinding carding equipment, e.g. card-clothings (devices for sharpening card-clothings built in or attachable to carding machines B01G)
19/20  . . for grinding dies (for grinding walls of very fine holes B24B 5/48)
19/22  . . characterised by a special design with respect to properties of the material of non-metallic articles to be ground
19/223 . . . [of paper or similar sheet material, e.g. perforating, cutting by means of a grinding wheel]
19/226 . . . [of the ends of optical fibres]
19/24  . . . of wood, e.g. furniture
19/26  . . for grinding workpieces with arcuate surfaces, e.g. parts of car bodies, bumpers or magnetic recording heads (grinding of spherical surfaces in general B24B 11/00; of optical surfaces on lenses or surfaces of similar shape on other work B24B 13/00)
19/265 . . . [for bumpers]
19/28  . . for grinding shoes or linings of drum brakes (of brake drum hubs B24B 5/06; of brake discs B24B 7/17)
21/00  Machines or devices using grinding or polishing belts (for sharpening cutting edges of tools B24B 3/00; portable belt-grinding machines B24B 23/06); Accessories therefor
21/002 . . [for grinding edges or bevels]
21/004 . . [using abrasive rolled strips]
21/006 . . [for special purposes, e.g. for television tubes, car bumpers]
21/008 . . [Machines comprising two or more tools or having several working posts (B24B 21/006 takes precedence)]
21/02  . . for grinding rotationally symmetrical surfaces
21/025 . . . [for travelling elongated stock, e.g. wire]
21/04  . . for grinding plane surfaces
21/06  . . involving members with limited contact area pressing the belt against the work, e.g. shoes sweeping across the whole area to be ground (B24B 21/12 takes precedence)
21/08  . . Pressure shoes; [Pressure members, e.g.] backing belts
21/10  . . involving a rigid member, e.g. pressure bar, table, pressing or supporting the belt over substantially its whole span
21/12  . . involving a contact wheel or roller pressing the belt against the work
21/14  . . . Contact wheels; Contact rollers; Belt supporting rolls
21/16  . . for grinding other surfaces of particular shape (single purpose machines for grinding cams or camshafts B24B 19/12)
21/165 . . . [for vanes or blades of turbines, propellers, impellers, compressors and the like]
21/18  . . Accessories
21/20  . . for controlling or adjusting the tracking or the tension of the grinding belt
21/22  . . for producing a reciprocation of the grinding belt normal to its direction of movement

23/00 Portable grinding machines, e.g. hand-guided; Accessories therefor (B24B 7/18 takes precedence; for grinding seat surfaces B24B 15/00; having a flexible shaft B24B 27/02; grinders for cutting-off B24B 27/08; dust extraction equipment B24B 55/10; details or components, e.g. casings, bodies of portable power-driven tools not particularly related to the operation performed B25F 5/00)
23/005 . . [Auxiliary devices used in connection with portable grinding machines, e.g. holders]
23/02  . . with rotating grinding tools; Accessories therefor
23/022 . . . [Spindle-locking devices, e.g. for mounting or removing the tool]
23/024 . . . [driven by hands or feet]
23/026 . . . [Fluid driven]
23/028 . . . [Angle tools]
23/03  . . the tool being driven in a combined movement
23/04  . . with oscillating grinding tools; Accessories therefor
23/043 . . . [reciprocatingly driven by a pneumatic or hydraulic piston]
23/046 . . . [Clamping or tensioning means for abrasive sheets]
23/06  . . with abrasive belts, e.g. with endless travelling belts; Accessories therefor
23/08  Portable grinding machines designed for fastening on workpieces or other parts of particular section, e.g. for grinding commutators

25/00 Grinding machines of universal type

27/00 Other grinding machines or devices
27/0007 . . . [Movable machines]
27/0015 . . . [Hanging grinding machines]
27/0023 . . . [grinding machines with a plurality of working posts]
27/003 . . . [using a tool turning around the work-piece]
27/0038 . . . [with the grinding tool mounted at the end of a set of bars]
27/0046 . . . [Column grinding machines]
27/0053 . . . [Radial grinding machines]
27/0061 . . . [having several tools on a revolving tools box]
27/0069 . . . [with means for feeding the work-pieces to the grinding tool, e.g. turntables, transfer means (see also B24B 27/0023, B24B 7/16)]
27/0076 . . . [grinding machines comprising two or more grinding tools]
Grinding surfaces of particular forms

B24B

27/0084 . . . [the grinding wheel support being angularly adjustable]
27/0092 . . . [Grinding attachments for lathes or the like]
27/02 . . . Bench grinders
27/027 . . . having a flexible shaft
27/033 . . . for grinding a surface for cleaning purposes, e.g. for
descaling or for grinding off flaws in the surface
27/04 . . . Grinding machines or devices in which the
grounding tool is supported on a swinging arm
27/06 . . . Grinders for cutting-off
27/0608 . . . [using a saw movable on slideways]
27/0616 . . . [using a tool turning around the workpiece]
27/0625 . . . [whereby the workpieces are radially fed by
means of a turning drum]
27/0633 . . . [using a cutting wire]
27/0641 . . . [for grinding holes]
27/065 . . . [the saw being mounted on a pivoting arm]
27/0658 . . . [for cutting workpieces while they are turning
about their longitudinal axis]
27/0666 . . . [the saw blade being arranged underneath a
work-table]
27/0675 . . . [methods therefor]
27/0683 . . . [Accessories therefor]
27/0691 . . . [for controlling the feeding or return movement
of the saw]
27/08 . . . being portable
27/085 . . . [Stands therefor]

Polishing surfaces (machines or devices for grinding or polishing
glass B24B 7/24, B24B 9/00, B24B 13/00; for grinding or polishing
using belts B24B 21/00); Finishing surfaces (B24B 3/00 takes
precedence)

29/00 Machines or devices for polishing surfaces on
work by means of tools made of soft or flexible
material with or without the application of solid
or liquid polishing agents (polishing tools in general
B24D 13/00)
29/005 . . . [using brushes]
29/002 . . . designed for particular workpieces
29/04 . . . for rotationally symmetrical workpieces, e.g.
ball-, cylinder- or cone-shaped workpieces
29/06 . . . for elongated workpieces having uniform cross-
section in one main direction
29/08 . . . the cross-section being circular, e.g. tubes,
wires, needles
29/10 . . . for table cutlery

31/00 Machines or devices designed for polishing or
abrating surfaces on work by means of tumbling
apparatus or other apparatus in which the work
and/or the abrasive material is loose; Accessories
therefor (abrasive blasting machines B24C 3/26)
31/003 . . . [whereby the workpieces are mounted on a holder
and are immersed in the abrasive material]
31/006 . . . [for grinding the interior surfaces of hollow
workpieces]
31/02 . . . involving rotary barrels
31/0206 . . . [for descaling wires travelling through the
rotating drum]
31/0212 . . . [the barrels being submitted to a composite rotary
movement]
31/0218 . . . [the barrels are moving around two parallel
axes, e.g. gyratory, planetary movement
(B24B 31/033 takes precedence)]
31/0224 . . . [the workpieces being fitted on a support]
31/023 . . . with tiltable axis
31/027 . . . with additional oscillating movement
31/03 . . . the workpieces being continuously-travelling
31/033 . . . having several rotating or tumbling drums with
parallel axes
31/037 . . . having several rotating or tumbling drums with
non-parallel axes (B24B 31/0212, B24B 31/0218
take precedence)
31/05 . . . involving a container formed as a conveyor belt
31/06 . . . involving oscillating or vibrating containers
31/062 . . . [the workpieces travelling through the containers
(B24B 31/067, B24B 31/072 take precedence)]
31/064 . . . [the workpieces being fitted on a support]
31/067 . . . [involving a bowl formed as a straight through
the barrels]
31/073 . . . [involving a bowl being ring- or spiral-shaped]
31/10 . . . [involving other means for tumbling of work]
31/102 . . . [using an alternating magnetic field]
31/104 . . . involving a rotating bowl, in which a ring zone of
abrasive powder is formed by centrifugal force
31/108 . . . involving a sectioned bowl, one part of which,
e.g. its wall, is stationary and the other part of
which is moved, e.g. rotated
31/112 . . . using magnetically consolidated grinding powder,
moved relatively to the workpiece under the
influence of pressure
31/116 . . . using plastically deformable grinding compound,
moved relatively to the workpiece under the
influence of pressure
31/12 . . . Accessories; Protective equipment or safety devices;
Installations for exhaustion of dust or for sound
absorption specially adapted for machines covered
by group B24B 31/00 {in general B24B 55/00}
31/14 . . . Abrading-bodies specially designed for tumbling
apparatus, e.g. abrading-balls
31/16 . . . Means for separating the workpiece from the
abrasive medium at the end of operation

33/00 Honing machines or devices; Accessories therefor
33/02 . . . designed for working internal surfaces of revolution,
e.g. of cylindrical or conical shapes
33/022 . . . [Horizontal honing machines]
33/025 . . . [Internal surface of conical shape]
33/027 . . . [using an unexpansible tool]
33/04 . . . designed for working external surfaces of revolution
33/05 . . . designed for working grooves, e.g. in gun barrels
33/055 . . . designed for working plane surfaces
33/06 . . . with controlling or gauging equipment (gauging in
general G01B; controlling in general G05)
33/08 . . . Honing tools [(for manufacturing gear teeth
B230 21/03)]
33/081 . . . [for external surfaces]
33/082 . . . [having only one honing stone]
33/083 . . . [with different sets of honing stones]
33/084 . . . [having honing stones at the end of bars]
33/085 . . . [in which the honing element consists of a
deformable body]
33/086 . . . [Abrading blocks for honing tools]
33/087 . . . [provided with measuring equipment]
33/088 . . . [for holes having a shape other than cylindrical]
33/089 . . . [with a rack-and-pinion mechanism for
expanding the honing segments]
33/10 . . . Accessories
Polishing surfaces; Finishing surfaces

33/105 . . (Honing spindles; Devices for expanding the honing elements (B24B 33/04 takes precedence))

35/00 Machines or devices designed for super-finishing of surfaces on work, i.e. by means of abrading blocks reciprocating with high frequency

35/005 . [for making three-dimensional objects (by electroerision B24H 5/04)]

37/00 Lapping machines or devices; Accessories (B24B 3/00 takes precedence)

37/005 . Control means for lapping machines or devices
37/0053 . . [detecting loss or breakage of a workpiece during lapping]
37/0056 . . (taking regard of the pH-value of lapping agents)
37/013 . . Devices or means for detecting lapping completion
37/015 . . Temperature control
37/02 . designed for working surfaces of revolution
37/022 . . (characterised by the movement of the work between two lapping plates)
37/025 . . designed for working spherical surfaces
37/04 . designed for working plane surfaces
37/042 . . (operating processes therefor)
37/044 . . . [characterised by the composition of the lapping agent]
37/046 . . . (using electric current)
37/048 . . . (of sliders and magnetic heads of hard disc drives or the like)
37/07 . . characterised by the movement of the work or lapping tool
37/08 . . . for double side lapping
37/10 . . . for single side lapping
37/102 . . . . [the workpieces or work carriers being able to rotate freely due to a frictional contact with the lapping tool]
37/105 . . . . . [the workpieces or work carriers being actively moved by a drive, e.g. in a combined rotary and translatory movement]
37/107 . . . . . . [in a rotary movement only, about an axis being stationary during lapping]
37/11 . Lapping tools
37/12 . . Lapping plates for working plane surfaces
37/14 . . . characterised by the composition or properties of the plate materials
37/16 . . . characterised by the shape of the lapping plate surface, e.g. grooved
37/20 . Lapping pads for working plane surfaces
37/205 . . . [provided with a window for inspecting the surface of the work being lapped]
37/22 . . . characterised by a multi-layered structure
37/24 . . . characterised by the composition or properties of the pad materials
37/245 . . . . [Pads with fixed abrasives]
37/26 . . . characterised by the shape of the lapping pad surface, e.g. grooved
37/27 . Work carriers
37/28 . . for double side lapping of plane surfaces
37/30 . . for single side lapping of plane surfaces
37/32 . . Retaining rings
37/34 . Accessories
37/345 . . {Feeding, loading or unloading work specially adapted to lapping}

39/00 Burnishing machines or devices, i.e. requiring pressure members for compacting the surface zone (modifying the physical properties or structure of metal by burning (C21D 7/08, C22F 1/00)

39/003 . . [the working tool being composed of a plurality of working rolls or balls (see also B24B 39/003, B24B 39/045)]
39/006 . . [Peening and tools therefor]
39/02 . designed for working internal surfaces of revolution
39/023 . . . [the working tool being composed of a plurality of working rolls or balls (see also B24B 39/003, B24B 39/045)]
39/026 . . . [Impact burnishing]
39/04 . designed for working external surfaces of revolution
39/045 . . . [the working tool being composed of a plurality of working rolls or balls (see also B24B 39/003, B24B 39/045)]
39/06 . . designed for working plane surfaces
39/065 . . . [Graining of metal plates, e.g. printing or lithographic plates]

Component parts of grinding machines or devices so far as specially adapted to grinding (if applicable to other machine tools, B23Q takes precedence; if peculiar to a particular type of machine or device, see the relevant group therefor)

41/00 Component parts such as frames, beds, carriages, headstocks
41/002 . . [Grinding heads]
41/005 . . [Feeding or manipulating devices specially adapted to grinding machines (feeding, loading or unloading work specially adapted to lapping machines B24B 37/345)]
41/007 . . . . [Weight compensation; Temperature compensation; Vibration damping]
41/02 . Frames; Beds; Carriages
41/04 . Headstocks; Working-spindles; Features relating thereto
41/042 . . . [Balancing mechanisms]
41/044 . . . . [Grinding spindles with magnetic or electromagnetic bearings; Features related thereto (electric motors with magnetic bearings H02K 7/09)]
41/047 . . . [Grinding heads for working on plane surfaces]
41/0475 . . . . [equipped with oscillating abrasive blocks, e.g. mounted on a rotating head]
41/053 . . . . for grinding or polishing glass (B24B 41/0475 takes precedence)
41/06 . Work supports, e.g. adjustable steadies (B24B 37/27 takes precedence)
41/061 . . . . [axially supporting turning workpieces, e.g. magnetically, pneumatically]
41/062 . . . . [between centres; Dogs]
41/063 . . . . . . . . [Lubrication of centres]
41/065 . . . . [Steady rests]
41/066 . . . . . [adapted for supporting work in the form of tools, e.g. drills]
41/067 . . . . [radially supporting workpieces]
41/068 . . . . . [Table-like supports for panels, sheets or the like]
Component parts of grinding machines or devices so far as specially adapted to grinding

**49/00** Meanings for securing grinding wheels on rotary arbors (suppression of vibrations in systems F16F 15/00; testing static or dynamic balancing of machines G01M 1/00)

49/003 . . . [Accessories therefor]
49/006 . . . [Quick mount and release means for disc-like wheels, e.g. on power tools]

**49/02** Drives or gearings; Equipment therefor

49/07 . . . for performing a reciprocating movement of carriages or work-tables
49/04 . . . by mechanical gearing only
49/06 . . . by liquid or gas pressure only
49/08 . . . by mechanical gearing combined with fluid systems
49/10 . . . for rotating or reciprocating working-spindles carrying grinding wheels or workpieces
49/12 . . . by mechanical gearing or electric power
49/14 . . . by liquid or gas pressure
49/16 . . . performing a reciprocating movement, e.g. during which the sense of rotation of the working-spindle is reversed
49/18 . . . for rotating the spindle at a speed adaptable to wear of the grinding wheel
49/20 . . . relating to feed movement
49/203 . . . [driven by hand]
49/206 . . . [for centreless grinding machines; for machines comprising work supports, e.g. steady rests]
49/22 . . . Equipment for exact control of the position of the grinding tool or work at the start of the grinding operation
49/225 . . . [for bevelling optical work, e.g. lenses]
49/25 . . . for compensating grinding wheel abrasion resulting from dressing
49/26 . . . Accessories, e.g. stops
49/28 . . . Equipment for preventing backlash

**49/08** Measuring; Indicating; Controlling

49/00 Measuring or gauging equipment for controlling the feed movement of the grinding tool or work; Arrangements of indicating or measuring equipment, e.g. for indicating the start of the grinding operation

49/003 . . . [involving acoustic means]
49/006 . . . [taking regard of the speed]
49/02 . . . according to the instantaneous size and required size of the workpiece acted upon, the measuring or gauging being continuous or intermittent
49/03 . . . according to the final size of the previously ground workpiece
49/04 . . . involving measurement of the workpiece at the place of grinding during grinding operation
49/045 . . . [Specially adapted gauging instruments]
49/05 . . . including the measurement of a first workpiece already machined and of another workpiece being machined and to be matched with the first one
49/06 . . . requiring comparison of the workpiece with standard gauging plugs, rings or the like
49/08 . . . involving liquid or pneumatic means
49/10 . . . involving electrical means
49/05 . . . [using eddy currents]
49/12 . . . involving optical means
49/14 . . . taking regard of the temperature during grinding
49/16 . . . taking regard of the load
49/165 . . . [for grinding tyres]
49/18 . . . taking regard of the presence of dressing tools
49/183 . . . [Wear compensation without the presence of dressing tools]
49/186 . . . [taking regard of the wear of the dressing tools]

**51/00** Arrangements for automatic control of a series of individual steps in grinding a workpiece (if applicable to other machine tools, G05B takes precedence)

51/00 Devices or means for dressing or conditioning abrasive surfaces (compensation for grinding wheel abrasion resulting from dressing)

51/001 . . . [involving the use of electric current]
51/003 . . . [using at least two conditioning tools]
51/005 . . . [Positioning devices for conditioning tools]
51/007 . . . Cleaning of grinding wheels
51/013 . . . Application of loose grinding agent as auxiliary tool during truing operation
51/017 . . . Devices or means for dressing, cleaning or otherwise conditioning lapping tools
51/02 . . . of plane surfaces on abrasive tools
51/04 . . . of cylindrical or conical surfaces on abrasive tools or wheels
51/047 . . . equipped with one or more diamonds
51/053 . . . using a rotary dressing tool
51/06 . . . of profiled abrasive wheels
51/062 . . . [using rotary dressing tools]
51/065 . . . having other than straight profiles, e.g. crowned
51/07 . . . by means of forming tools having a shape complementary to that to be produced, e.g. blocks, profile rolls
51/075 . . . for workpieces having a grooved profile, e.g. gears, splined shafts, threads, worms
51/08 . . . controlled by information means, e.g. patterns, templates, punched tapes or the like
51/081 . . . [by means of a template]
51/082 . . . [for tools having a screw-thread profile]
51/083 . . . [for tools having a screw-thread profile]
51/085 . . . for workpieces having a grooved profile, e.g. gears, splined shafts, threads, worms
51/09 . . . having transfer elements formed as pantograph mechanism
51/095 . . . Cooling or lubricating during dressing operation
51/10 . . . of travelling flexible backings coated with abrasives; Cleaning of abrasive belts
51/12 . . . Dressing tools; Holders therefor
53/14 . . Dressing tools equipped with rotary rollers or cutters; Holders therefor

55/00 Safety devices for grinding or polishing machines;
Accessories fitted to grinding or polishing machines for keeping tools or parts of the machine in good working condition (of general applicability for machine tools B23Q 11/00; in general F16P)
55/02 . . Equipment for cooling the grinding surfaces,
e.g. devices for feeding coolant (cooling or lubricating during dressing operation B24B 53/095; incorporated in grinding wheels B24D)
55/03 . . designed as a complete equipment for feeding or clarifying coolant
55/04 . . Protective covers for the grinding wheel
55/045 . . { with cooling means incorporated}
55/05 . . specially designed for portable grinding machines
55/052 . . . { with rotating tools }
55/055 . . . { with oscillating tools }
55/057 . . . { with belt-like tools }
55/06 . . Dust extraction equipment on grinding or polishing machines (B24B 31/12 takes precedence)
55/08 . . specially designed for belt grinding machines
55/10 . . specially designed for portable grinding machines, e.g. hand-guided
55/102 . . . { with rotating tools }
55/105 . . . { with oscillating tools }
55/107 . . . { with belt-like tools }
55/12 . . Devices for exhausting mist of oil or coolant;
Devices for collecting or recovering materials resulting from grinding or polishing, e.g. of precious metals, precious stones, diamonds or the like

57/00 Devices for feeding, applying, grading or recovering grinding, polishing or lapping agents
(for abrasive blasting B24C 1/00, B24C 7/00)
57/02 . . for feeding of fluid, sprayed, pulverised, or liquefied grinding, polishing or lapping agents
57/04 . . for feeding of solid grinding, polishing or lapping agents