B24B MACHINES, DEVICES, OR PROCESSES FOR GRINDING OR POLISHING
(grinding 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 5/08 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 abrading or polishing medium or work to vibration, e.g. grinding with ultrasonic frequency (polishing or abrading 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; B23F 23/1225.; B26D 7/12; sharpening of saw teeth B23D 63/12; sharpening of files or rasps B23D 73/00; grinding of die-stocks or chasers B23G 1/36)
3/003 . [for skate blades]
Grinding surfaces of particular forms

5/00 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 3/30/00)

5/01 . for combined grinding of surfaces of revolution and of adjacent plane surfaces on work

5/02 . involving centres or chucks for holding work

5/025 . (involving indexable work supporting means carrying several work pieces to be operated on in succession)

5/04 . for grinding cylindrical surfaces externally (grinding combined cylindrical and conical surfaces B24B 5/14)

5/042 . (for grinding several workpieces at once using one grinding wheel)

5/045 . (with the grinding wheel axis perpendicular to the workpiece axis)

5/047 . (of workpieces turning about a vertical axis)

5/06 . for grinding cylindrical surfaces internally (B24B 5/40 takes precedence)

5/065 . (for brake drums)

5/08 . involving a vertical tool spindle

5/10 . involving a horizontal tool spindle

5/12 . for grinding cylindrical surfaces both externally and internally with several grinding wheels

5/14 . for grinding conical surfaces, e.g. of centres

5/16 . for grinding peculiarly surfaces, e.g. bulged

5/162 . (controlled by a template (B24B 5/167 takes precedence))

5/165 . (controlled by gearing (B24B 5/167 takes precedence))

5/167 . (for rolls with large curvature radius, e.g. mill rolls)

5/18 . involving centreless means for supporting, guiding, floating or rotating work (centreless turning B23B 5/08; centreless grinding of threads B23G 1/42)

5/185 . (for internal surfaces)

5/20 . involving grooved abrading blocks

5/22 . for grinding cylindrical surfaces, e.g. on bolts

5/225 . (for mass articles)

5/24 . for grinding conical surfaces

5/245 . (for mass articles)

5/26 . for grinding peculiarly profiled surfaces, e.g. bulged

5/28 . for grinding outer surfaces concentrically to bores, involving additional centering means

5/30 . Regulating-wheels; Equipment therefor

5/307 . Means for supporting work

5/313 . involving work-supporting means carrying several workpieces to be operated on in succession

5/32 . the work-supporting means being indexable

5/35 . Accessories

5/355 . (Feeding means)

5/36 . Single-purpose machines or devices

5/363 . (for grinding surfaces of revolution in situ)

5/366 . (for grinding tyres)

5/37 . for grinding rolls, e.g. barrel-shaped rolls

5/38 . for externally grinding travelling elongated stock, e.g. wire

5/40 . for grinding tubes internally

5/42 . for grinding crankshafts or crankpins

5/421 . (Supports therefor)

5/423 . (having a grinding wheel turning around the workpiece)

5/425 . (in situ)

5/426 . (Portable devices therefor)

5/428 . (Balancing means)

5/44 . for grinding rims of vehicle wheels, e.g. for bicycles
Grinding surfaces of particular forms

5/46 . . . for grinding railway car wheels
5/48 . . . for grinding walls of very fine holes, e.g. in drawing-dies
5/485 . . . [using grinding wires or ropes]
5/50 . . . characterised by a special design with respect to properties of the material of non-metallic articles to be ground, e.g. strings (cutting profiles into the treads of tyres B29D 30/68)

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 33/055)

7/005 . . . [Portal grinding machines]
7/02 . . . involving a reciprocatingly moved work-table (including a reciprocatingly moved 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 3/17)
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]

7/228 . . . [for grinding thin, brittle parts, e.g. semiconductors, wafers (grinding edges of thin, brittle parts B24B 9/065)]
7/24 . . . for grinding or polishing glass
7/241 . . . . . . [Methods]
7/242 . . . . . . [for plate glass]
7/244 . . . . . . [continuous]
7/245 . . . . . . [discontinuous]
7/247 . . . . . . [using reciprocating grinding tools]
7/248 . . . . . . [high-frequency reciprocating tools, e.g. magnetically driven]
7/26 . . . for simultaneously grinding or polishing opposite faces of continuously travelling sheets or bands
7/265 . . . . . . [of vertical surfaces]
7/28 . . . for grinding wood
7/30 . . . for grinding plastics

9/00 Machines or devices designed for grinding edges or bevels on work or for removing burrs; Accessories therefor (B24B 21/00 takes precedence; for sharpening cutting edges on tools B24B 3/00; removing burrs by loose abrasive material B24B 31/00)

9/002 . . . . . . [for travelling workpieces]
9/005 . . . . . . [for mass articles]
9/007 . . . . . . [for end faces of tubes (cleaning pipe ends or pipe fittings, e.g. before soldering B08B 9/021)]
9/02 . . . . . . [characterised by a special design with respect to properties of materials specific to articles to be ground]
9/04 . . . . . . [of metal, e.g. skate blades (B24B 3/003 takes precedence)]
9/06 . . . . . . [of non-metallic inorganic material, e.g. stone, ceramics, porcelain]
9/065 . . . . . . [of thin, brittle parts, e.g. semiconductors, wafers]
9/08 . . . . . . [of glass]
9/085 . . . . . . [for watch glasses]
9/10 . . . . . . [of plate glass]
9/102 . . . . . . [for travelling sheets]
9/105 . . . . . . [using a template]
9/107 . . . . . . [for glass plates while they are turning]
9/12 . . . . . . [of hollow glassware, e.g. drinking glasses, preserve jars, television picture tube viewing panels]
9/14 . . . . . . [of optical work, e.g. lenses, prisms (control of the position of the tool for bevelling optical work B24B 47/225)]
9/142 . . . . . . [for contact lenses]
9/144 . . . . . . [the spectacles being used as a template]
9/146 . . . . . . [Accessories, e.g. lens mounting devices]
9/148 . . . . . . [electrically, e.g. numerically, controlled]
9/16 . . . . . . [of diamonds; of jewels or the like; Diamond grinders' dops; Dop holders or tongs (for grinding sharp pointed diamonds or sapphire B24B 19/16)]
9/161 . . . . . . [Dops, dop holders]
9/162 . . . . . . [by bruting, i.e. rubbing two precious stones against each other]
9/163 . . . . . . [of gem stones or convex surfaces, cabochons]
9/164 . . . . . . [of diamond tools]
9/165 . . . . . . [for grinding cavities in gem stones]
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 15/00)

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)

15/00 Machines or devices designed for grinding seat surfaces; Accessories therefor (for spherical surfaces in general B24B 11/00)

15/02 . . in valve housings
15/03 . . using portable or mobile machines
15/04 . . on valve members
15/06 . . on openings of bottles; on bottle stoppers or the like
15/08 . . for grinding co-operating seat surfaces by moving one over the other

17/00 Special adaptations of machines or devices for grinding controlled by patterns, drawings, magnetic tapes or the like (machines or devices so-controlled for the edges of lenses B24B 9/14; for grinding or polishing optical lens surfaces B24B 19/06; for grinding non-circular cross-sections B24B 19/08; for grinding trochoidal surfaces B24B 19/09; for grinding cams B24B 19/12; for grinding turbine blades or the like B24B 19/14; such control means per se B23Q 33/00, B23Q 35/00, G05); Accessories therefor

17/02 . . involving mechanical transmission means only
17/021 . . . (using a pantograph)
17/023 . . . (using two or more templates)
17/025 . . . (for grinding rotating workpieces (three dimensional))
17/026 . . . (for the periphery of plane workpieces, e.g. cams, lenses)
17/028 . . . (using an abrasive belt)
17/04 . . involving optical auxiliary means, e.g. optical projection form grinding machines
17/06 . . combined with electrical transmission means, e.g. controlled by photoelectric cells
17/08 . . involving fluid transmission means only
17/10 . . involving electrical transmission means only, e.g. controlled by magnetic tape

19/00 Single-purpose machines or devices for particular grinding operations not covered by any other main group (tapering, chamfering, or relief cutting of taps or reamers B24B 3/20, B24B 3/22, grinding screw threads B23G)

19/001 . . (for table cutlery)
19/002 . . . (for knife blades (sharpening table knife blades B24B 3/54))
19/003 . . . (for the underframes of locomotives)
19/004 . . . (for grinding rails, T, I, H or other similar profiles)
19/005 . . . (for grinding skins or similar sheets)
19/006 . . . (for grinding hollow glassware, bottles)
19/007 . . . (for grinding buttons, nail heads, screw heads, bottle capsules or the like)
19/008 . . . (for grinding ceramics, pottery, table ware)
19/009 . . . (for grinding profiled workpieces using a profiled grinding tool)
19/02 . . for grinding grooves, e.g. on shafts, in casings, in tubes, homokinetic joint elements
19/022 . . . (for helicoidal grooves (B24B 19/04 takes precedence))
19/024 . . . . (on electrical resistances)
19/026 . . . . (for checks for pilger rolls)
19/028 . . . . (for microgrooves or oil spots)
19/03 . . for grinding grooves in glass workpieces, e.g. decorative grooves
19/04 . . for fluting drill shanks
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 5/16)
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 D01G)
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 27/027; 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]
<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>27/0084</td>
<td>[the grinding wheel support being angularly adjustable]</td>
</tr>
<tr>
<td>27/0092</td>
<td>(Grinding attachments for lathes or the like)</td>
</tr>
<tr>
<td>27/02</td>
<td>Bench grinders</td>
</tr>
<tr>
<td>27/027</td>
<td>having a flexible shaft</td>
</tr>
<tr>
<td>27/033</td>
<td>for grinding a surface for cleaning purposes, e.g. for descaling or for grinding off flaws in the surface</td>
</tr>
<tr>
<td>27/04</td>
<td>Grinding machines or devices in which the grinding tool is supported on a swinging arm</td>
</tr>
<tr>
<td>27/06</td>
<td>Grinders for cutting-off</td>
</tr>
<tr>
<td>27/0608</td>
<td>(using a saw movable on slideways)</td>
</tr>
<tr>
<td>27/0616</td>
<td>(using a tool turning around the workpiece)</td>
</tr>
<tr>
<td>27/0625</td>
<td>(whereby the workpieces are radially fed by means of a turning drum)</td>
</tr>
<tr>
<td>27/0633</td>
<td>(using a cutting wire)</td>
</tr>
<tr>
<td>27/0641</td>
<td>(for grinding holes)</td>
</tr>
<tr>
<td>27/065</td>
<td>(the saw being mounted on a pivoting arm)</td>
</tr>
<tr>
<td>27/0658</td>
<td>(for cutting workpieces while they are turning about their longitudinal axis)</td>
</tr>
<tr>
<td>27/0666</td>
<td>(the saw blade being arranged underneath a work-table)</td>
</tr>
<tr>
<td>27/0675</td>
<td>(methods therefor)</td>
</tr>
<tr>
<td>27/0683</td>
<td>(Accessories therefor)</td>
</tr>
<tr>
<td>27/0691</td>
<td>(for controlling the feeding or return movement of the saw)</td>
</tr>
<tr>
<td>27/08</td>
<td>being portable</td>
</tr>
<tr>
<td>27/085</td>
<td>(Stands therefor)</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>29/00</td>
<td>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)</td>
</tr>
<tr>
<td>29/005</td>
<td>(using brushes)</td>
</tr>
<tr>
<td>29/02</td>
<td>designed for particular workpieces</td>
</tr>
<tr>
<td>29/04</td>
<td>for rotationally symmetrical workpieces, e.g. ball-, cylinder- or cone-shaped workpieces</td>
</tr>
<tr>
<td>29/06</td>
<td>for elongated workpieces having uniform cross-section in one main direction</td>
</tr>
<tr>
<td>29/08</td>
<td>the cross-section being circular, e.g. tubes, wires, needles</td>
</tr>
<tr>
<td>29/10</td>
<td>for table cutlery</td>
</tr>
</tbody>
</table>

**31/00** Machines or devices designed for polishing or abrading 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)

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31/003</td>
<td>(whereby the workpieces are mounted on a holder and are immersed in the abrasive material)</td>
</tr>
<tr>
<td>31/006</td>
<td>(for grinding the interior surfaces of hollow workpieces)</td>
</tr>
<tr>
<td>31/02</td>
<td>involving rotary barrels</td>
</tr>
<tr>
<td>31/0206</td>
<td>(for descaling wires travelling through the rotating drum)</td>
</tr>
<tr>
<td>31/0212</td>
<td>(the barrels being submitted to a composite rotary movement)</td>
</tr>
<tr>
<td>31/0218</td>
<td>(the barrels are moving around two parallel axes, e.g. gyrotary, planetary movement (B24B 31/033 takes precedence))</td>
</tr>
<tr>
<td>31/0224</td>
<td>(the workpieces being fitted on a support)</td>
</tr>
<tr>
<td>31/023</td>
<td>with tiltable axis</td>
</tr>
<tr>
<td>31/027</td>
<td>with additional oscillating movement</td>
</tr>
<tr>
<td>31/03</td>
<td>the workpieces being continuously-travelling</td>
</tr>
<tr>
<td>31/033</td>
<td>having several rotating or tumbling drums with parallel axes</td>
</tr>
<tr>
<td>31/037</td>
<td>having several rotating or tumbling drums with non-parallel axes (B24B 31/0212, B24B 31/0218 take precedence)</td>
</tr>
<tr>
<td>31/05</td>
<td>involving a container formed as a conveyor belt</td>
</tr>
<tr>
<td>31/06</td>
<td>involving oscillating or vibrating containers</td>
</tr>
<tr>
<td>31/062</td>
<td>(the workpieces travelling through the containers (B24B 31/067, B24B 31/072 take precedence))</td>
</tr>
<tr>
<td>31/064</td>
<td>(the workpieces being fitted on a support)</td>
</tr>
<tr>
<td>31/067</td>
<td>involving a bowl formed as a straight through</td>
</tr>
<tr>
<td>31/073</td>
<td>involving a bowl being ring- or spiral-shaped</td>
</tr>
<tr>
<td>31/10</td>
<td>involving other means for tumbling of work</td>
</tr>
<tr>
<td>31/102</td>
<td>(using an alternating magnetic field)</td>
</tr>
<tr>
<td>31/104</td>
<td>involving a rotating bowl, in which a ring zone of abrasive powder is formed by centrifugal force</td>
</tr>
<tr>
<td>31/108</td>
<td>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</td>
</tr>
<tr>
<td>31/112</td>
<td>using magnetically consolidated grinding powder, moved relatively to the workpiece under the influence of pressure</td>
</tr>
<tr>
<td>31/116</td>
<td>using plastically deformable grinding compound, moved relatively to the workpiece under the influence of pressure</td>
</tr>
<tr>
<td>31/12</td>
<td>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}</td>
</tr>
<tr>
<td>31/14</td>
<td>Abrading-bodies specially designed for tumbling apparatus, e.g. abrading-balls</td>
</tr>
<tr>
<td>31/16</td>
<td>Means for separating the workpiece from the abrasive medium at the end of operation</td>
</tr>
</tbody>
</table>

**33/00** Honing machines or devices; **Accessories therefor**

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>33/02</td>
<td>designed for working internal surfaces of revolution, e.g. of cylindrical or conical shapes</td>
</tr>
<tr>
<td>33/022</td>
<td>(Horizontal honing machines)</td>
</tr>
<tr>
<td>33/025</td>
<td>(Internal surface of conical shape)</td>
</tr>
<tr>
<td>33/027</td>
<td>(using an unexpandable tool)</td>
</tr>
<tr>
<td>33/04</td>
<td>designed for working external surfaces of revolution</td>
</tr>
<tr>
<td>33/05</td>
<td>designed for working grooves, e.g. in gun barrels</td>
</tr>
<tr>
<td>33/055</td>
<td>designed for working plane surfaces</td>
</tr>
<tr>
<td>33/06</td>
<td>with controlling or gauging equipment (gauging in general G01B; controlling in general G05)</td>
</tr>
<tr>
<td>33/08</td>
<td>Honing tools {{for manufacturing gear teeth B23F 21/03)}</td>
</tr>
<tr>
<td>33/081</td>
<td>(for external surfaces)</td>
</tr>
<tr>
<td>33/082</td>
<td>(having only one honing stone)</td>
</tr>
<tr>
<td>33/083</td>
<td>(with different sets of honing stones)</td>
</tr>
<tr>
<td>33/084</td>
<td>(having honing stones at the end of bars)</td>
</tr>
<tr>
<td>33/085</td>
<td>(in which the honing element consists of a deformable body)</td>
</tr>
<tr>
<td>33/086</td>
<td>(Abrading blocks for honing tools)</td>
</tr>
<tr>
<td>33/087</td>
<td>(provided with measuring equipment)</td>
</tr>
<tr>
<td>33/088</td>
<td>(for holes having a shape other than cylindrical)</td>
</tr>
<tr>
<td>33/089</td>
<td>(with a rack-and-pinion mechanism for expanding the honing segments)</td>
</tr>
<tr>
<td>33/10</td>
<td>Accessories</td>
</tr>
</tbody>
</table>
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 superfinishing surfaces on work, i.e. by means of abrading blocks reciprocating with high frequency

35/005. . . (for making three-dimensional objects (by electroerosion B23H 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 burnishing C21D 7/08, C22F 1/00);

Accessories therefor

39/003 . . . (the working tool being composed of a plurality of working rolls or balls (see also B24B 39/023, B24B 39/045))

39/006 . . . (Peeing 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

B24B

47/00 Drives or gearings; Equipment therefor

47/02 . . . for performing a reciprocating movement of carriages or work-tables

47/04 . . . by mechanical gearing only

47/08 . . . by mechanical gearing combined with fluid systems

47/10 . . . for rotating or reciprocating working-spindles carrying grinding wheels or workpieces

47/12 . . . by mechanical gearing or electric power (B24B 47/16 takes precedence)

47/14 . . . by liquid or gas pressure (B24B 47/16 takes precedence)

47/16 . . . performing a reciprocating movement, e.g. during which the sense of rotation of the working-spindle is reversed

47/17 . . . for rotating the spindle at a speed adaptable to wear of the grinding wheel

47/20 . . . relating to feed movement

47/203 . . . (driven by hand)

47/206 . . . for centreless grinding machines; for machines comprising work supports, e.g. steady rests

47/22 . . . Equipment for exact control of the position of the grinding tool or work at the start of the grinding operation

47/225 . . . for bevelling optical work, e.g. lenses

47/25 . . . for compensating grinding wheel abrasion resulting from dressing

47/26 . . . Accessories, e.g. stops

47/28 . . . Equipment for preventing backlash

Measuring; Indicating; Controlling

49/00 Means 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 Arrangements for automatic control of a series of individual steps in grinding a workpiece (if applicable to other machine tools, G05B takes precedence)

49/02 . . . involving liquid or pneumatic means

49/10 . . . involving electrical means (B24B 49/02, B24B 49/08 take precedence)

49/105 . . . [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]

49/08 . . . involving liquid or pneumatic means

49/10 . . . involving electrical means (B24B 49/02, B24B 49/08 take precedence)

49/105 . . . [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]
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