

# CPC COOPERATIVE PATENT CLASSIFICATION

## B60B VEHICLE WHEELS (making wheels or wheel parts by rolling [B21H 1/00](#), by forging, hammering or pressing [B21K 1/28](#)); CASTORS; AXLES FOR WHEELS OR CASTORS; INCREASING WHEEL ADHESION

### NOTE

Attention is drawn to the Explanatory Note following the class title ([B60](#))

**Wheels** (wheels for roller skates [A63C 17/22](#); making wheels or wheel parts [B21D 53/26](#); by rolling [B21H 1/00](#); by forging, hammering, or pressing [B21K 1/28](#))

- 1/00 Spoked wheels; Spokes thereof** (non-metallic [B60B 5/00](#) {; spoked wheels comprising rail-engaging elements [B60B 17/001](#); making wheel spokes [B21F 39/00](#)})
- 1/003 . {specially adapted for bicycles ([B60B 1/041](#) takes precedence)}
- 1/006 . {specially adapted for light-weight wheels, e.g. of strollers or wheel-chairs ([B60B 1/003](#) takes precedence)}
- 1/02 . Wheels with wire or other tension spokes
- 1/0207 . . {characterised by non-standard number of spokes, i.e. less than 12 or more than 32 spokes}
- 1/0215 . . {characterised by specific grouping of spokes}
- 1/0223 . . . {the dominant aspect being the spoke arrangement pattern}
- 1/023 . . . . {multiple exclusively parallel spokes arranged in a group}
- 1/0238 . . . {the dominant aspect being the number of spokes per group}
- 1/0246 . . {characterised by cross-section of the spoke, e.g. polygon or elliptic shape}
- 1/0253 . . {the spoke being hollow}
- 1/0261 . . {characterised by spoke form}
- 1/0269 . . . {the spoke being curved or deformed over substantial part of length}
- 1/0276 . . . {the spoke being crooked in the middle and having double length}
- 1/0284 . . . {the spoke being threaded at both ends}
- 1/0292 . . . {the spoke being bent at both ends}
- 1/04 . . Attaching spokes to rim or hub
- 1/041 . . . {of bicycle wheels (bicycle rims characterised by means for attaching spokes [B60B 21/062](#))}
- 1/042 . . . {Attaching spokes to hub}
- 1/043 . . . {Attaching spokes to rim}
- 1/044 . . . . {by the use of spoke nipples}
- 1/045 . . . . . {characterised by their specific shape}
- 1/046 . . . . . {characterised by adaptations of the nipple for tightening tools}
- 1/047 . . . . . {the nipple comprising sealing means}
- 1/048 . . . . {by the use of screws}
- 1/06 . Wheels with compression spokes (wheels of high resiliency [B60B 9/00](#))
- 1/08 . . formed by casting
- 1/10 . . fabricated by sheet metal ([B60B 1/12](#), [B60B 3/08](#) take precedence)
- 1/12 . . with tubular spokes ([B60B 1/08](#) takes precedence)

- 1/14 . . Attaching spokes to rim or hub
- 3/00 Disc wheels, i.e. wheels with load-supporting disc body** (non-metallic [B60B 5/00](#); wheel cover discs [B60B 7/00](#) {; disc wheels comprising rail-engaging elements [B60B 17/0006](#)})
- 3/001 . {Lightweight wheels, e.g. for strollers or toys}
- 3/002 . {characterised by the shape of the disc}
- 3/004 . . {in the hub section}
- 3/005 . . {in the section adjacent to rim}
- 3/007 . . {in the intermediate section}
- 3/008 . {by the form of wheel bolt mounting section}
- 3/02 . with a single disc body integral with rim
- 3/04 . with a single disc body not integral with rim, {i.e. disc body and rim being manufactured independently and then permanently attached to each other in a second step, e.g. by welding}
- 3/041 . . {characterised by the attachment of rim to wheel disc}
- 3/042 . . . {characterised by circumferential position of attachment means}
- 3/044 . . . {characterised by cross-sectional details of the attachment, e.g. the profile}
- 3/045 . . . {characterised by the attachment portions}
- 3/047 . . . . {comprising specific torque transmitting means}
- 3/048 . . {the rim being rotatably mounted to the wheel disc}
- 3/06 . formed by casting
- 3/08 . with disc body formed by two or more axially spaced discs ({comprising rail-engaging elements formed by two or more axially spaced discs [B60B 17/0013](#)})
- 3/082 . . {especially for light-weight wheels}
- 3/085 . . {Discs having no mutual contact}
- 3/087 . . {Discs having several mutual contact regions}
- 3/10 . apertured to simulate spoked wheels
- 3/12 . Means of reinforcing disc bodies
- 3/14 . Attaching disc body to hub (resiliently [B60B 9/00](#); attaching rim to wheel body [B60B 23/00](#)) {Wheel adapters}
- 3/142 . . {by central locking nut}
- 3/145 . . {using washers or distance bushes}
- 3/147 . . {using wheel adapters}
- 3/16 . . by bolts or the like
- 3/165 . . . {with locking devices for the fixing means, e.g. screw or nut covers}
- 3/18 . . by circlips or the like

<b>5/00</b>	<b>Wheels, spokes, disc bodies, rims, hubs, wholly or predominantly made of non-metallic material (wheel cover discs <a href="#">B60B 7/00</a>; wheels of high resiliency <a href="#">B60B 9/00</a> {; wheel bodies comprising rail-engaging elements characterised by use of non-metallic material <a href="#">B60B 17/0003</a>})</b>	7/20	<ul style="list-style-type: none"> <li>having an element mounted for rotation independently of wheel rotation</li> </ul>
5/02	<ul style="list-style-type: none"> <li>made of synthetic material</li> </ul>	<b>9/00</b>	<b>Wheels of high resiliency {, e.g. with conical interacting pressure-surfaces (resilient wheels comprising rail-engaging elements <a href="#">B60B 17/0027</a>)}</b>
5/04	<ul style="list-style-type: none"> <li>made of wood</li> </ul>	9/005	<ul style="list-style-type: none"> <li>{Comprising a resilient hub (hubs <a href="#">per se</a> <a href="#">B60B 27/00</a>)}</li> </ul>
<b>7/00</b>	<b>Wheel cover discs, rings, or the like, for ornamenting, protecting, {venting,} or obscuring, wholly or in part, the wheel body, rim, hub, or tyre sidewall {, e.g. wheel cover discs, wheel cover discs with cooling fins (wheels with cooling fins not provided on the wheel cover disc <a href="#">B60B 19/10</a>; apparatus or tools for removing or attaching cover discs hub caps or the like <a href="#">B60B 31/06</a>)}</b>	9/02	<ul style="list-style-type: none"> <li>using springs {resiliently mounted bicycle rims} (wheels comprising resilient spokes <a href="#">B60B 9/26</a>)</li> </ul>
7/0006	<ul style="list-style-type: none"> <li>{for cycle wheels or similar}</li> </ul>	9/04	<ul style="list-style-type: none"> <li>in leaf form</li> </ul>
7/0013	<ul style="list-style-type: none"> <li>{Hub caps}</li> </ul>	9/06	<ul style="list-style-type: none"> <li>in helical form</li> </ul>
7/002	<ul style="list-style-type: none"> <li>{being of the ventilated type}</li> </ul>	9/08	<ul style="list-style-type: none"> <li>in flat coiled form</li> </ul>
7/0026	<ul style="list-style-type: none"> <li>{characterised by the surface}</li> </ul>	9/10	<ul style="list-style-type: none"> <li>of rubber or the like</li> </ul>
7/0033	<ul style="list-style-type: none"> <li>{the dominant aspect being the surface appearance}</li> </ul>	9/12	<ul style="list-style-type: none"> <li>in the form of sleeves or rings concentric with the wheel axis</li> </ul>
7/004	<ul style="list-style-type: none"> <li>{the surface being painted}</li> </ul>	9/14	<ul style="list-style-type: none"> <li>with means limiting relative lateral movements between hub and remainder of wheel</li> </ul>
7/0046	<ul style="list-style-type: none"> <li>{the surface being plated or coated}</li> </ul>	9/16	<ul style="list-style-type: none"> <li>modified to ensure electric conductivity</li> </ul>
7/0053	<ul style="list-style-type: none"> <li>{the surface being decorated}</li> </ul>	9/18	<ul style="list-style-type: none"> <li>using fluid (within spokes <a href="#">B60B 9/26</a>)</li> </ul>
7/006	<ul style="list-style-type: none"> <li>{the surface being reflective or including lighting}</li> </ul>	9/20	<ul style="list-style-type: none"> <li>in rings concentric with wheel axis</li> </ul>
7/0066	<ul style="list-style-type: none"> <li>{the dominant aspect being the surface structure}</li> </ul>	9/22	<ul style="list-style-type: none"> <li>inflatable</li> </ul>
7/0073	<ul style="list-style-type: none"> <li>{being completely closed, i.e. having no cooling openings for the brakes}</li> </ul>	9/24	<ul style="list-style-type: none"> <li>with pistons and cylinders</li> </ul>
7/008	<ul style="list-style-type: none"> <li>{having decorative holes or openings, i.e. openings going beyond mere cooling openings}</li> </ul>	9/26	<ul style="list-style-type: none"> <li>comprising resilient spokes</li> </ul>
7/0086	<ul style="list-style-type: none"> <li>{having cooling fins}</li> </ul>	9/28	<ul style="list-style-type: none"> <li>with telescopic action</li> </ul>
7/0093	<ul style="list-style-type: none"> <li>{being reinforced against thermal deformation}</li> </ul>	<b>11/00</b>	<b>Units comprising multiple wheels arranged side by side; Wheels having more than one rim or capable of carrying more than one tyre</b>
7/01	<ul style="list-style-type: none"> <li>Rings specially adapted for covering only the wheel rim or the tyre sidewall, e.g. removable tyre sidewall trim rings</li> </ul>	11/02	<ul style="list-style-type: none"> <li>Units of separate wheels mounted for independent or coupled rotation</li> </ul>
7/02	<ul style="list-style-type: none"> <li>made essentially in one part ({<a href="#">B60B 7/0006</a>,} <a href="#">B60B 7/01</a> take precedence)</li> </ul>	11/04	<ul style="list-style-type: none"> <li>Wheels with a rim capable of carrying more than one tyre</li> </ul>
7/04	<ul style="list-style-type: none"> <li>built-up of several main parts (<a href="#">B60B 7/01</a>, <a href="#">B60B 7/20</a> take precedence)</li> </ul>	11/06	<ul style="list-style-type: none"> <li>Wheels with more than one rim mounted on a single wheel body</li> </ul>
7/06	<ul style="list-style-type: none"> <li>Fastening arrangements therefor (<a href="#">B60B 7/01</a>, <a href="#">B60B 7/20</a> take precedence)</li> </ul>	11/08	<ul style="list-style-type: none"> <li>Arrangements of balancing mechanisms enabling a uniform distribution of load to tyres</li> </ul>
7/061	<ul style="list-style-type: none"> <li>{characterised by the part of the wheels to which the discs, rings or the like are mounted}</li> </ul>	11/10	<ul style="list-style-type: none"> <li>Emergency wheels (collapsible tyres <a href="#">B60C 3/08</a>; tyres characterised by means enabling restricted operation in damaged or deflated condition <a href="#">B60C 17/00</a>)</li> </ul>
7/063	<ul style="list-style-type: none"> <li>{to the rim}</li> </ul>	<b>15/00</b>	<b>Wheels or wheel attachments designed for increasing traction (vehicle tires <a href="#">B60C</a>; non-skid devices temporarily attachable to resilient tires or resiliently-tired wheels <a href="#">B60C</a>)</b>
7/065	<ul style="list-style-type: none"> <li>{to the disc}</li> </ul>	15/02	<ul style="list-style-type: none"> <li>Wheels with spade lugs</li> </ul>
7/066	<ul style="list-style-type: none"> <li>{to the hub}</li> </ul>	15/021	<ul style="list-style-type: none"> <li>{made of resilient material}</li> </ul>
7/068	<ul style="list-style-type: none"> <li>{to the wheel bolts or wheel nuts}</li> </ul>	15/023	<ul style="list-style-type: none"> <li>{being of the broad form type}</li> </ul>
7/08	<ul style="list-style-type: none"> <li>having gripping elements consisting of formations integral with the cover</li> </ul>	15/025	<ul style="list-style-type: none"> <li>{with non-cylindrical shape}</li> </ul>
7/10	<ul style="list-style-type: none"> <li>comprising a plurality of spaced spring clips individually mounted on the cover, e.g. riveted, welded or readily releasable</li> </ul>	15/026	<ul style="list-style-type: none"> <li>{characterised by mud deposit prevention}</li> </ul>
7/105	<ul style="list-style-type: none"> <li>{the spring clip mounted on the rim}</li> </ul>	15/028	<ul style="list-style-type: none"> <li>{characterised by active rotation of the lugs}</li> </ul>
7/12	<ul style="list-style-type: none"> <li>comprising an annular spring or gripping element mounted on the cover (<a href="#">B60B 7/08</a> takes precedence)</li> </ul>	15/04	<ul style="list-style-type: none"> <li>with resiliently-mounted spade lugs</li> </ul>
7/14	<ul style="list-style-type: none"> <li>comprising screw-threaded means</li> </ul>	15/06	<ul style="list-style-type: none"> <li>with pivotally-mounted spade lugs</li> </ul>
7/16	<ul style="list-style-type: none"> <li>Anti-theft devices</li> </ul>	15/08	<ul style="list-style-type: none"> <li>with spade lugs axially displaced relatively to the tread surface of the tire</li> </ul>
7/18	<ul style="list-style-type: none"> <li>simulating spoked or wire wheel</li> </ul>	15/10	<ul style="list-style-type: none"> <li>with radially-adjustable spade lugs; Control mechanisms therefor</li> </ul>
		15/12	<ul style="list-style-type: none"> <li>involving cams or eccentric hoops</li> </ul>
		15/14	<ul style="list-style-type: none"> <li>involving an axially-displaceable cone</li> </ul>
		15/16	<ul style="list-style-type: none"> <li>involving gearing, e.g. gear pinions acting upon threaded shafts on the spade lugs</li> </ul>
		15/18	<ul style="list-style-type: none"> <li>Wheels with ground-engaging plate-like shoes</li> </ul>
		15/20	<ul style="list-style-type: none"> <li>with resiliently-mounted shoes, e.g. on a spider</li> </ul>
		15/22	<ul style="list-style-type: none"> <li>connected by links to the hub</li> </ul>

- 15/24 . Tread bands or rings for fairing lugs when travelling on the road
- 15/26 . Auxiliary wheels or rings with traction-increasing surface attachable to the main wheel body
- 15/263 . . {Traction increasing surface being located axially beside tire}
- 15/266 . . {Traction increasing surface being located radially outside tire circumferential surface}
- 15/28 . Wheel-ballasting weights; Their attachment

**17/00** **Wheels characterised by rail-engaging elements** ({wheel-axle combinations [B60B 37/00](#); } of model railways [A63H 19/22](#))

- 17/0003 . {Wheel bodies characterised by use of non-metallic material ([B60B 17/0034](#) takes precedence)}
- 17/0006 . {Construction of wheel bodies, e.g. disc wheels ([B60B 17/0003](#) takes precedence)}
- 17/001 . . {Spoked wheels; Spokes thereof}
- 17/0013 . . {formed by two or more axially spaced discs}
- 17/0017 . . . {with insonorisation means}
- 17/002 . . {with counter-balance}
- 17/0024 . . {with noise reducing means ([B60B 17/0017](#) takes precedence)}
- 17/0027 . {Resilient wheels, e.g. resilient hubs ([B60B 17/02](#) takes precedence)}
- 17/0031 . . {using springs}
- 17/0034 . . . {of rubber or other non-metallic material}
- 17/0037 . . . . {of circular or elliptical cross section}
- 17/0041 . . . . {of substantially rectangular cross section}
- 17/0044 . . . . {single element arranged in V-form}
- 17/0048 . . . . {pair of elements arranged in V-form}
- 17/0051 . . {using fluid}
- 17/0055 . {with non-elastic tyres (e.g. of particular profile or composition)}
- 17/0058 . . {characterised by their fixing to wheel bodies}
- 17/0062 . . {having teeth or protrusions on the circumference of the wheel}
- 17/0065 . {Flange details}
- 17/0068 . . {the flange being provided on a single side}
- 17/0072 . . {the flange being provided on both sides}
- 17/0075 . . {the flange being movable, for adaptation to variable rail or track widths}
- 17/0079 . {the flange having a guide wheel}
- 17/0082 . {Wheels designed to interact with a particular rail profile}
- 17/0086 . . {H-type rail profiles, i.e. the wheels are arranged between upper and lower rail extensions}
- 17/0089 . . {Circular rail profiles}
- 17/0093 . . {Rectangular rail profiles}
- 17/0096 . . {Triangular rail profiles}
- 17/02 . with elastic tyres

**19/00** **Wheels not otherwise provided for or having characteristics specified in one of the sub-groups of this group**

- 19/003 . {Multidirectional wheels}
- 19/006 . {Magnetic wheels}
- 19/02 . convertible, e.g. from road wheel to rail wheel; Wheels specially designed for alternative use on road and rail
- 19/04 . expansible
- 19/06 . with compartments for fluid, packing or loading material; Buoyant wheels
- 19/08 . with lubricating passages, channels, or reservoirs

- 19/10 . with cooling fins
- 19/12 . Roller-type wheels ([B60B 19/06](#) takes precedence)
- 19/125 . . {with helical projections on radial outer surface translating rotation of wheel into movement along the direction of the wheel axle}
- 19/14 . Ball-type wheels ([B60B 19/06](#) takes precedence)

**Rims; Hubs**

**21/00**

**Rims** (non-metallic [B60B 5/00](#); of high resiliency [B60B 9/00](#); capable of carrying more than one tyre [B60B 11/04](#); multiple rims on a single wheel body [B60B 11/06](#); of multi-part type [B60B 25/00](#); metal tyres [B60C](#))

- 21/02 . characterised by transverse section
- 21/021 . . {with inwardly directed flanges, i.e. the tyre-seat being reversed}
- 21/023 . . {the transverse section being non-symmetrical}
- 21/025 . . {the transverse section being hollow}
- 21/026 . . {the shape of rim well}
- 21/028 . . {the shape of hump}
- 21/04 . . with substantially radial flanges (with rail-engaging flanges [B60B 17/00](#)) {([B60B 21/021](#) takes precedence)}
- 21/06 . characterised by means for attaching spokes {, i.e. spoke seats}
- 21/062 . . {for bicycles}
- 21/064 . . {characterised by shape of spoke mounting holes, e.g. elliptical or triangular}
- 21/066 . . {the spoke mounting means being located on a flange oriented radially and formed on the radially inner side of the rim well}
- 21/068 . . {the spoke seat comprising sealing means, e.g. for tubeless racing bike tyres}
- 21/08 . characterised by having braking surfaces
- 21/10 . characterised by the form of tyre-seat or flange, e.g. corrugated ([B60B 21/02](#) takes precedence)
- 21/102 . . {the shape of bead seats}
- 21/104 . . {the shape of flanges}
- 21/106 . . . {the shape of flange end-sections}
- 21/108 . . {the surface of bead seats}
- 21/12 . Appurtenances, e.g. lining bands
- 21/125 . . {Bead clamping elements}

**23/00**

**Attaching rim to wheel body** (attaching spokes to rim [B60B 1/04](#), [B60B 1/14](#); attaching rims resiliently to wheel body [B60B 9/00](#); {devices for fastening or securing constructional elements or machine parts together [F16B](#)})

**NOTE**

Group [B60B 23/12](#) takes precedence over groups [B60B 23/02](#) - [B60B 23/10](#)

- 23/02 . by split or other expansible ring devices
- 23/04 . by bayonet joint, screw-thread, or like attachments
- 23/06 . by screws, bolts, pins, or clips
- 23/08 . . arranged radially
- 23/10 . . arranged axially
- 23/12 . by devices arranged to permit variation of axial position of rim relative to wheel body for track width adjustment

**25/00 Rims built up of several main parts {Locking means for the rim parts} (tools for assembling divided rims B60B 31/04)**

- 25/002 . {Rims split in circumferential direction}
- 25/004 . . {one rim part comprising the wheel disc}
- 25/006 . . {Rims split symmetrically}
- 25/008 . . {comprising spacer means}
- 25/02 . Segmented rims, e.g. with segments arranged in sections; Connecting equipment, e.g. hinges; Insertable flange rings therefor
- 25/04 . Rims with dismountable flange rings, seat rings, or lock rings
- 25/045 . . {on both sides}
- 25/06 . . Split flange rings, e.g. transversely split; Connecting equipment for overlapping the slot
- 25/08 . . Continuous flange rings; Arrangement of recesses enabling the flange rings to be slipped over the rim body
- 25/10 . . Seat rings for the tyre bead part, e.g. split
- 25/12 . . . with integral flange part
- 25/14 . . Locking means for flange rings or seat rings
- 25/16 . . . Arrangement of bayonet catches
- 25/18 . . . Arrangement of split rings
- 25/20 . . . Arrangement of screws, bolts, or shouldered pins
- 25/22 . Other apurtenances, e.g. for sealing the component parts enabling the use of tubeless tyres

**27/00 Hubs (non-metallic B60B 5/00; of high resiliency B60B 9/00)**

- 27/0005 . {with ball bearings}
- 27/001 . {with roller-bearings}
- 27/0015 . {for driven wheels}
- 27/0021 . . {characterised by torque transmission means from drive axle}
- 27/0026 . . . {of the radial type, e.g. splined key}
- 27/0031 . . . {of the axial type, e.g. front teeth}
- 27/0036 . . {comprising homokinetic joints}
- 27/0042 . . . {characterised by the fixation of the homokinetic joint to the hub}
- 27/0047 . {characterised by functional integration of other elements}
- 27/0052 . . {the element being a brake disc}
- 27/0057 . . {the element being a brake drum}
- 27/0063 . . {the element being a brake caliper mount}
- 27/0068 . . {the element being a sensor}
- 27/0073 . {characterised by sealing means}
- 27/0078 . {characterised by the fixation of bearings}
- 27/0084 . . {caulking to fix inner race}
- 27/0089 . . {caulking to fix outer race}
- 27/0094 . {one or more of the bearing races are formed by the hub}
- 27/02 . adapted to be rotatably arranged on axle
- 27/023 . . {specially adapted for bicycles}
- 27/026 . . . {comprising quick release devices}
- 27/04 . . housing driving means, e.g. sprockets
- 27/042 . . . {comprising a rotational dampers}
- 27/045 . . . {comprising a spoke protectors}
- 27/047 . . . {comprising a freewheel mechanisms}
- 27/06 . adapted to be fixed on axle
- 27/065 . . {characterised by the fixation of the hub to the axle}

**Apparatus or tools for mounting wheels or parts thereof (hand tools in general B25; tools for mounting tyres B60C 25/00)**

**29/00 Apparatus or tools for mounting or dismounting wheels {(mounting of wheels at assembly lines B62D 65/12)}**

- 29/001 . {comprising lifting or aligning means (B60B 29/002 takes precedence)}
- 29/002 . {provided with a dolly}
- 29/003 . {Wrenches, e.g. of the ratchet type (B60B 29/001 takes precedence; wrenches per se B25B 13/00)}
- 29/004 . . {for dual wheels}
- 29/005 . . {hand-driven operating with multiplied forces (B60B 29/004 takes precedence; hand-driven gear-operated wrenches per se B25B 17/00, with torque amplification B25B 17/02)}
- 29/006 . . {with electric or pneumatic drive (power-driven nut setting or loosening tool per se B25B 21/00)}
- 29/007 . . {Supports for wrenches (B60B 29/005, B60B 29/006 take precedence)}
- 29/008 . {Wheel pullers; tools for axial movement of wheels (adjustable axle units for varying track B60B 35/10)}

**30/00 Means for holding wheels or parts thereof (spare wheel stowing, holding or mounting arrangements on vehicles B62D 43/00)**

- 30/02 . engaging the tyre, e.g. the tyre being mounted on the wheel rim
- 30/04 . . the tyre not being mounted on a rim, i.e. holders or supports for tyres alone
- 30/06 . engaging the wheel body, e.g. the rim
- 30/08 . . the central part of the wheel body
- 30/10 . characterised by being provided on a dolly

**31/00 Apparatus or tools for assembling or disassembling wheels**

- 31/005 . {especially for spoked wheels}
- 31/02 . for tightening or straightening wire spokes in situ; for extracting spokes from wheels
- 31/04 . for assembling divided rims
- 31/06 . for removing or attaching cover discs, hub caps, or the like

**33/00 Castors in general; {Anti-clogging castors} (castors for large containers B65D 90/18)**

- 33/0002 . {assembling to the object, e.g. furniture}
- 33/0005 . . {characterised by mounting method}
- 33/0007 . . . {by screwing}
- 33/001 . . . {by snapping, clicking or latching in}
- 33/0013 . . . {by straps, bands or similar}
- 33/0015 . . {characterised by adaptations made to castor}
- 33/0018 . . . {in the form of a flat mounting plate}
- 33/0021 . . . {in the form of a mounting pin}
- 33/0023 . . . {in the form of specific adaptations to the form of the object}
- 33/0026 . . {characterised by adaptations made to the object}
- 33/0028 . {Construction of wheels; methods of assembling on axle}
- 33/0036 . {characterised by type of wheels}
- 33/0039 . . {Single wheels}
- 33/0042 . . {Double or twin wheels}
- 33/0044 . . {Roller type wheels, i.e. extra wide wheels}
- 33/0047 . {characterised by details of the rolling axle}
- 33/0049 . . {the rolling axle being horizontal}



- 33/0052 . . {the rolling axle being inclined}
- 33/0055 . . {the rolling axle intersects swivel axis}
- 33/0057 . . {the rolling axle being offset from swivel axis}
- 33/006 . {characterised by details of the swivel mechanism}
- 33/0063 . . {no swivelling action, i.e. no real caster}
- 33/0065 . . {characterised by details of the swivel axis}
- 33/0068 . . . {the swivel axis being vertical}
- 33/0071 . . . {the swivel axis being inclined}
- 33/0073 . . . {the swivel axis being symmetrical to wheel or wheels}
- 33/0076 . . . {the swivel axis being offset laterally from wheel center plane}
- 33/0078 . {characterised by details of the wheel braking mechanism}
- 33/0081 . . {acting on tire tread}
- 33/0084 . . {acting on axle end}
- 33/0086 . . {acting on rim or side portion of tyre}
- 33/0089 . . {acting on the floor}
- 33/0092 . . {actuated remotely, e.g. by cable or electrically}
- 33/0094 . . {actuated automatically}
- 33/0097 . . {acting permanently, e.g. for increased security on low friction surfaces}
- 33/02 . with disengageable swivel action, {i.e. comprising a swivel locking mechanism}
- 33/021 . . {combined with braking of castor wheel}
- 33/023 . . {by using friction}
- 33/025 . . {by using form-fit, e.g. front teeth}
- 33/026 . . {being actuated remotely, e.g. by cable or electrically}
- 33/028 . . {being actuated automatically}
- 33/04 . adjustable {, e.g. in height; linearly shifting castors}
- 33/045 . . {mounted resiliently, by means of dampers}
- 33/06 . . mounted retractably
- 33/063 . . . {by linear movement parallel to swivel axis}
- 33/066 . . . {by use of a hinge and lever mechanism to swing wheel upwards relative to wheel mount}
- 33/08 . Ball castors {(B60B 33/0028 takes precedence)}
- 35/00 Axle units; Parts thereof (steerable vehicle stub axles B62D) {Arrangements for lubrication of axles}**
- 35/001 . {Axles of the portal type, i.e. axles designed for higher ground clearance}
- 35/002 . {Axles of the low floor type, e.g. for low-floor city busses}
- 35/003 . {Steerable axles}
- 35/004 . {Mounting arrangements for axles}
- 35/005 . . {with adaptations at chassis structure}
- 35/006 . . {with mounting plates or consoles fitted to axles}
- 35/007 . . . {for mounting suspension elements to axles}
- 35/008 . . . {for mounting air suspension elements to axles}
- 35/009 . {adapted for tiltable wheels}
- 35/02 . Dead axles, i.e. not transmitting torque
- 35/025 . . {the wheels being removable}
- 35/04 . . straight
- 35/06 . . cranked
- 35/08 . . of closed hollow section
- 35/10 . . adjustable for varying track {(tools for axial movement of wheels on axles B60B 29/008)}
- 35/1009 . . . {operated manually}
- 35/1018 . . . . {comprising a locking pin}
- 35/1027 . . . . {comprising a clamping mechanism}
- 35/1036 . . . . {operated with power assistance}
- 35/1045 . . . . {electrically}
- 35/1054 . . . . {hydraulically}
- 35/1063 . . . . {automatically dependent on operational state of the vehicle}
- 35/1072 . . . {by transversally movable elements}
- 35/1081 . . . . {the element is a wheel}
- 35/109 . . . . {the element is an axle part}
- 35/12 . Torque-transmitting axles (independent suspension aspects B60G)
- 35/121 . . {Power-transmission from drive shaft to hub}
- 35/122 . . . {using gearings}
- 35/124 . . . . {of the helical or worm type}
- 35/125 . . . . {of the planetary type}
- 35/127 . . . {using universal joints}
- 35/128 . . . . {of the homokinetic or constant velocity type}
- 35/14 . . Composite or split, e.g. half- axles; Couplings between axle parts or sections
- 35/16 . . Axle housings
- 35/163 . . . {characterised by specific shape of the housing, e.g. adaptations to give space for other vehicle elements like chassis or exhaust system}
- 35/166 . . . {characterised by reinforcements, e.g. reinforcement ribs}
- 35/18 . . Arrangement of bearings
- 37/00 Wheel-axle combinations, e.g. wheel sets (units comprising multiple wheels arranged side-by-side B60B 11/00; rail vehicle axle-boxes B61F)**
- 37/02 . the wheels being integral with solid axles
- 37/04 . the wheels being rigidly attached to solid axles
- 37/06 . the wheels being integral with, or rigidly attached to, hollow axles
- 37/08 . . the hollow axles being rotatable around fixed axles
- 37/10 . the wheels being individually rotatable around the axles
- 37/12 . Axles with a fixed ground wheel and a loose wheel
- 39/00 Increasing wheel adhesion (wheels, wheel attachments or tyre attachments, designed for increasing traction B60B 15/00, B60C; tyre constructions B60C; road surface conditioning to prevent slipperiness E01C)**
- 39/003 . {Vehicle mounted non-skid chains actuated by centrifugal force (non-skid devices temporarily attachable to resilient tyres B60C 27/00)}
- 39/006 . . {characterised by a control system for the actuation of the rotating chain wheel}
- 39/02 . Vehicle fittings for scattering or dispensing material in front of its wheels
- 39/021 . . {Details of the dispensing device}
- 39/022 . . . {related to reservoirs}
- 39/023 . . . {related to metering valves}
- 39/024 . . . {related to preconditioning of the dispensing materials}
- 39/025 . . . {related to the control system}
- 39/026 . . {the material being in gas form}
- 39/027 . . . {the gas being heated on purpose}
- 39/028 . . . {the gas being exhaust gas}
- 39/04 . . the material being granular, e.g. sand (combined control of sanding apparatus and brakes of rail vehicles B61H)

39/06	. . . the dispensing being effected by mechanical means	2310/3028	. . . by magnetic pulse welding
39/08	. . . the dispensing being effected by fluid means	2310/303	. . by soldering
39/083	. . . . {dispensing being effected by liquid}	2310/305	. . by screwing
39/086	. . . . {dispensing being effected by gas}	2310/306	. . by clamping or wedging, e.g. by clamping inserts as joining means
39/10	. . . the dispensing being controlled electrically or electro-magnetically	2310/307	. . by removably mountable securing elements, e.g. circlips
39/12	. . the material being sheet-like or web-like	2310/311	. . by riveting
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<b>2200/00</b>	<b>Type of product being used or applied (kind of vehicle product being used or applied <a href="#">B60Y 2200/00</a>)</b>	2310/3112	. . . by punch-riveting
2200/20	. Furniture or medical appliances	2310/312	. . by hemming or seaming, e.g. by folding of the rim
2200/22	. . Chairs	2310/314	. . by deformation
2200/222	. . . Office chairs	2310/3142	. . by caulking
2200/224	. . . Arm chairs	2310/316	. . by press-fitting, shrink-fitting
2200/24	. . Beds	2310/318	. . by adhesive bonding, e.g. glueing
2200/242	. . . Hospital beds	2310/321	. . by overmolding
2200/26	. . Medical appliances	2310/323	. . by coextrusion
2200/40	. Articles of daily use	2310/329	. . by splicing, e.g. of ropes
2200/41	. . Waste bins	2310/50	. Thermal treatment
2200/43	. . Carts	2310/52	. . Curing
2200/432	. . . Shopping carts	2310/54	. . Hardening
2200/434	. . . Wheel barrows	2310/542	. . . Quenching
2200/45	. . Suitcases	2310/56	. . Co-curing; Vulcanisation
2200/47	. . Physical activity equipment, e.g. leisure or sports articles	2310/60	. Surface treatment; After treatment
2200/49	. . Domestic appliances, e.g. vacuum cleaners	2310/612	. . Polishing
<b>2310/00</b>	<b>Manufacturing methods</b>	2310/614	. . Painting
2310/20	. Shaping	2310/616	. . Coating with thin films
2310/202	. . by casting	2310/6162	. . . Conductive films
2310/204	. . by moulding, e.g. injection moulding, i.e. casting of plastics material	2310/618	. . Coating with foils
2310/206	. . by stamping	2310/621	. . Electro-chemical processes
2310/208	. . by forging	2310/622	. . Shot-peening
2310/2082	. . . by swaging	2310/64	. . Effect of treatments
2310/211	. . by folding or bending	2310/642	. . . Matted
2310/212	. . by drawing	2310/644	. . . Polished
2310/213	. . by punching	2310/646	. . . Engraved
2310/214	. . by extrusion	2310/648	. . . Structured
2310/218	. . by hydroforming	2310/651	. . . glossy
2310/221	. . by magnetic pulse forming	2310/652	. . . Reflecting
2310/222	. . by twisting	2310/654	. . . Anti-corrosive
2310/224	. . by rolling	2310/656	. . . Decorative
2310/226	. . by cutting	2310/658	. . . For advertising
2310/228	. . by machining	2310/661	. . . for protection, e.g. against scratches or stone chips
2310/231	. . by turning	2310/80	. Filament winding
2310/232	. . by milling	<b>2320/00</b>	<b>Manufacturing or maintenance operations</b>
2310/234	. . by grinding	2320/10	. Assembling; disassembling
2310/238	. . by thermal spraying of molten material	2320/12	. . Assembly devices for spoked wheels
2310/241	. . by weaving or knitting of fibers	2320/122	. . . for spoke tensioning
2310/242	. . by laminating, e.g. fabrication of sandwich sheets	2320/124	. . . for trueing of spoked wheels
2310/30	. joining	2320/126	. . . for restoring form or removing local distortions of wheel rims in unassembled state
2310/302	. . by welding	2320/14	. . Assembly devices for divided rims
2310/3021	. . . by autogen welding	2320/16	. . Devices for attaching or removing cover discs, hub caps or other ornamental rings or elements
2310/3022	. . . by spot welding, plug welding	2320/30	. Balancing
2310/3023	. . . by arc welding, e.g. inert gas arc welding	2320/50	. Securing
2310/3025	. . . by thermal welding, e.g. friction, induction or ultrasonic welding	2320/52	. . to prevent loss
2310/3026	. . . by laser welding	2320/522	. . . by locking washer
2310/3027	. . . by electron beam welding	2320/524	. . . by securing plate
		<b>2340/00</b>	<b>Wheel transporting, Mounting of wheels</b>
		2340/10	. Operation mode

2340/12	. . Operated manually
2340/14	. . Power driven
2340/16	. . Included in assembly line
2340/18	. . Automated process
2340/30	. Wheel transporting or handling devices
2340/32	. . for gripping the wheel
2340/34	. . for positioning the wheel to hub or boltholes
2340/36	. . the devices being provided on a dolly
2340/50	. Wheel mounting or removal devices
2340/52	. . Auxiliary tools, e.g. For alignment
2340/70	. Lifting jacks
<b>2360/00</b>	<b>Materials; Physical forms thereof</b>
2360/10	. Metallic materials
2360/102	. . Steel
2360/104	. . Aluminum
2360/106	. . Magnesia
2360/108	. . Titanium
2360/109	. . Bronze
2360/14	. Physical forms of metallic parts
2360/141	. . Sheet-metals
2360/143	. . Bars, i.e. being solid
2360/1432	. . . of circular cross section
2360/1434	. . . of polygonal cross section, e.g. triangular or rectangular
2360/1436	. . . of elliptical cross section
2360/144	. . Tubes, i.e. being hollow
2360/1442	. . . of circular cross section
2360/1444	. . . of rectangular cross section
2360/1446	. . . of elliptical cross section
2360/1448	. . . of irregular cross-section
2360/145	. . Profiles, i.e. being solid and having irregular cross-section
2360/1452	. . . L-profiles
2360/1454	. . . T or H-Profiles
2360/1456	. . . X or Y-Profiles
2360/1458	. . . U or V-Profiles
2360/147	. . Castings
2360/148	. . Sinterings
2360/149	. . Metal foams
2360/30	. Synthetic materials
2360/32	. . Plastic compositions
2360/322	. . . Comprising polypropylene
2360/324	. . . Comprising polyurethane
2360/33	. . Synthetic foams
2360/34	. . Reinforced plastics
2360/341	. . . with fibres
2360/3412	. . . . Glass fibres
2360/3414	. . . . Aramide fibres
2360/3416	. . . . Carbone fibres
2360/3418	. . . . Aramid fibres
2360/342	. . . With strands
2360/3422	. . . . consisting of fibres oriented substantially parallel
2360/3424	. . . . consisting of braided fibres
2360/344	. . . With woven material
2360/3442	. . . . characterised by material mixes
2360/3444	. . . . characterised by weaving patterns
2360/346	. . . Material impregnated with resin before being put into form, i.e. prepreps
2360/3462	. . . . comprising strands
2360/3464	. . . . comprising woven material

2360/348	. . . Resins
2360/36	. . Composite materials
2360/362	. . . Compounded sheets
2360/364	. . . comprising honeycomb structures
2360/366	. . . comprising foams, e.g. synthetic or metal foams
2360/368	. . . Coproduced material combinations, e.g. By over-molding, co-extrusion, co-curing or vulcanizing
2360/50	. Rubbers
2360/70	. Ceramics
2360/90	. Wood
2360/92	. Leather
2360/94	. Cardboard or papers
<b>2380/00</b>	<b>Bearings</b>
2380/10	. Type
2380/12	. . Ball bearings
2380/14	. . Roller bearings
2380/16	. . Needle bearings
2380/18	. . Plain or sleeve bearings
2380/20	. . Linear bearings
2380/22	. . Magnetic bearings
2380/30	. Cage
2380/32	. . Without cage
2380/40	. Modularity
2380/42	. . Single-piece
2380/44	. . Multi-piece
2380/50	. Load bearing capacity
2380/60	. Rolling elements
2380/62	. . Specific number
2380/64	. . Specific shape
2380/70	. Arrangements
2380/71	. . Single track
2380/73	. . Double track
2380/75	. . Twin or multiple bearings having identical diameters
2380/76	. . Twin or multiple bearings having different diameters
2380/77	. . Diameters of bearings at opposite ends of hub
2380/772	. . . Identical diameters of bearings at opposite ends of hub
2380/774	. . . Different diameters of bearings at opposite ends of hub
2380/80	. Shafts specially adapted to receive bearings
2380/82	. . Caulked to fix race
2380/90	. Casings or housings specially adapted to receive bearings
2380/92	. . Caulked to fix race
<b>2900/00</b>	<b>Purpose of invention</b>
2900/10	. Reduction of
2900/111	. . Weight
2900/112	. . Costs
2900/113	. . Production or maintenance time
2900/114	. . Size
2900/115	. . Complexity
2900/116	. . Product variety, e.g. by standardisation or use of adapters
2900/121	. . Resisting forces
2900/1212	. . . due to friction
2900/1214	. . . due to inertia
2900/1216	. . . due to air-drag

2900/131	. .	Vibrations
2900/133	. .	Noise
2900/141	. .	Corrosions
2900/20	. .	Avoidance of
2900/211	. .	Soiling
2900/212	. .	Damage
2900/30	. .	Increase in
2900/311	. .	Rigidity or stiffness
2900/313	. .	Resiliency
2900/321	. .	Lifetime
2900/323	. .	Timespan between services
2900/325	. .	Reliability
2900/331	. .	Safety or security
2900/3312	. . .	during regular use
2900/3313	. . .	during maintenance
2900/3314	. . .	during production or assembly
2900/3315	. . .	by avoiding misuse
2900/3316	. . .	by indicating wear, failure or loss
2900/3318	. . .	by theft prevention
2900/351	. .	versatility, e.g. usable for different purposes or different arrangements
2900/50	. .	Improvement of
2900/511	. .	Sealing
2900/5112	. . .	against dust or dirt
2900/5114	. . .	against humidity or water
2900/5116	. . .	against air-loss
2900/5118	. . .	against oil-loss
2900/513	. .	Cooling, e.g. of brakes
2900/521	. .	Tire mounting or removal ( <a href="#">devices therefor B60B 2340/50</a> )
2900/523	. .	Tire fixation on rim, e.g. fixing axially or circumferentially thereon
2900/531	. .	User-friendliness
2900/541	. .	Servicing
2900/551	. .	Handling of obstacles or difficult terrains
2900/561	. .	Lubrication
2900/571	. .	Visibility
2900/572	. .	Visual appearance
2900/70	. .	Adaptation for
2900/711	. .	High loads, e.g. by reinforcements
2900/721	. .	Use under adverse external conditions
2900/731	. .	Use in cases of damage, failure or emergency
2900/90	. .	Providing or changing
2900/911	. .	Eccentricity
2900/921	. .	Conductivity
2900/931	. .	Magnetic effects