

CPC**COOPERATIVE PATENT CLASSIFICATION****B60B****VEHICLE WHEELS; CASTORS; AXLES; INCREASING WHEEL ADHESION****NOTE**

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

Guidance heading: **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](#))

B60B 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](#) }

B60B 1/003

. { specially adapted for bicycles ([B60B 1/041](#) takes precedence) }

B60B 1/006

. { specially adapted for light-weight wheels, e.g. of strollers or wheel-chairs ([B60B 1/003](#) takes precedence) }

B60B 1/02

. Wheels with wire or other tension spokes

B60B 1/0207

.. { characterised by non-standard number of spokes, i.e. less than 12 or more than 32 spokes }

B60B 1/0215

.. { characterised by specific grouping of spokes }

B60B 1/0223

... { the dominant aspect being the spoke arrangement pattern }

B60B 1/023

.... { multiple exclusively parallel spokes arranged in a group }

B60B 1/0238

... { the dominant aspect being the number of spokes per group }

B60B 1/0246

.. { characterised by cross-section of the spoke, e.g. polygon or elliptic shape }

B60B 1/0253

.. { the spoke being hollow }

B60B 1/0261

.. { characterised by spoke form }

B60B 1/0269

... { the spoke being curved or deformed over substantial part of length }

B60B 1/0276

... { the spoke being crooked in the middle and having double length }

B60B 1/0284

... { the spoke being threaded at both ends }

B60B 1/0292

... { the spoke being bent at both ends }

B60B 1/04

.. Attaching spokes to rim or hub

B60B 1/041

... { of bicycle wheels (bicycle rims characterised by means for attaching spokes [B60B 21/062](#)) }

B60B 1/042

... { Attaching spokes to hub }

B60B 1/043

... { Attaching spokes to rim }

B60B 1/044

.... { by the use of spoke nipples }

B60B 1/045

..... { characterised by their specific shape }

B60B 1/046

..... { characterised by adaptations of the nipple for tightening tools }

B60B 1/047

..... { the nipple comprising sealing means }

B60B 1/048

.... { by the use of screws }

- B60B 1/06 . Wheels with compression spokes (wheels of high resiliency [B60B 9/00](#))
- B60B 1/08 . . formed by casting
- B60B 1/10 . . fabricated by sheet metal ([B60B 1/12](#), [B60B 3/08](#) take precedence)
- B60B 1/12 . . with tubular spokes ([B60B 1/08](#) takes precedence)
- B60B 1/14 . . Attaching spokes to rim or hub

- B60B 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](#) })

- B60B 3/001 . { Lightweight wheels, e.g. for strollers or toys }
- B60B 3/002 . { characterised by the shape of the disc }
- B60B 3/004 . . { in the hub section }
- B60B 3/005 . . { in the section adjacent to rim }
- B60B 3/007 . . { in the intermediate section }

- B60B 3/008 . { by the form of wheel bolt mounting section }

- B60B 3/02 . with a single disc body integral with rim

- B60B 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 }
- B60B 3/041 . . { characterised by the attachment of rim to wheel disc }
- B60B 3/042 . . . { characterised by circumferential position of attachment means }
- B60B 3/044 . . . { characterised by cross-sectional details of the attachment, e.g. the profile }
- B60B 3/045 . . . characterised by the attachment portions
- B60B 3/047 comprising specific torque transmitting means
- B60B 3/048 . . the rim being rotatably mounted to the wheel disc

- B60B 3/06 . formed by casting

- B60B 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](#)) }
- B60B 3/082 . . { especially for light-weight wheels }
- B60B 3/085 . . { Discs having no mutual contact }
- B60B 3/087 . . { Discs having several mutual contact regions }

- B60B 3/10 . apertured to simulate spoked wheels

- B60B 3/12 . Means of reinforcing disc bodies

- B60B 3/14 . Attaching disc body to hub (resiliently [B60B 9/00](#); attaching rim to wheel body [B60B 23/00](#)) { Wheel adapters }
- B60B 3/142 . . { by central locking nut }
- B60B 3/145 . . { using washers or distance bushes }

- B60B 3/147 . . { using wheel adapters }
- B60B 3/16 . . by bolts or the like
- B60B 3/165 . . . { with locking devices for the fixing means, e.g. screw or nut covers }
- B60B 3/18 . . by circlips or the like

- B60B 5/00** **Wheels, spokes, disc bodies, rims, hubs, wholly or predominantly made of non-metallic material (wheel cover discs [B60B 7/00](#); wheels of high resiliency [B60B 9/00](#) { ;wheel bodies comprising rail-engaging elements characterised by use of non-metallic material [B60B 17/0003](#) })**

- B60B 5/02 . made of synthetic material
- B60B 5/04 . made of wood

- B60B 7/00** **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 [B60B 19/10](#); apparatus or tools for removing or attaching cover discs hub caps or the like [B60B 31/06](#)) }**

- B60B 7/0006 . { for cycle wheels or similar }
- B60B 7/0013 . { Hub caps }
- B60B 7/002 . . { being of the ventilated type }

- B60B 7/0026 . { characterised by the surface }
- B60B 7/0033 . . { the dominant aspect being the surface appearance }
- B60B 7/004 . . . { the surface being painted }
- B60B 7/0046 . . . { the surface being plated or coated }
- B60B 7/0053 . . . { the surface being decorated }
- B60B 7/006 . . . { the surface being reflective or including lighting }
- B60B 7/0066 . . { the dominant aspect being the surface structure }
- B60B 7/0073 . . . { being completely closed, i.e. having no cooling openings for the brakes }
- B60B 7/008 . . . { having decorative holes or openings, i.e. openings going beyond mere cooling openings }
- B60B 7/0086 . . . { having cooling fins }

- B60B 7/0093 . { being reinforced against thermal deformation }

- B60B 7/01 . Rings specially adapted for covering only the wheel rim or the tyre sidewall, e.g. removable tyre sidewall trim rings

- B60B 7/02 . made essentially in one part ({ [B60B 7/0006](#), } [B60B 7/01](#) take precedence)

- B60B 7/04 . built-up of several main parts ([B60B 7/01](#), [B60B 7/20](#) take precedence)

- B60B 7/06 . Fastening arrangements therefor ([B60B 7/01](#), [B60B 7/20](#) take precedence)
- B60B 7/061 . . { characterised by the part of the wheels to which the discs, rings or the like are

- mounted }
- B60B 7/063 . . . { to the rim }
- B60B 7/065 . . . { to the disc }
- B60B 7/066 . . . { to the hub }
- B60B 7/068 . . . { to the wheel bolts or wheel nuts }
- B60B 7/08 . . having gripping elements consisting of formations integral with the cover
- B60B 7/10 . . comprising a plurality of spaced spring clips individually mounted on the cover, e.g. riveted, welded or readily releasable
- B60B 7/105 . . . { the spring clip mounted on the rim }
- B60B 7/12 . . comprising an annular spring or gripping element mounted on the cover
([B60B 7/08](#) takes precedence)
- B60B 7/14 . . comprising screw-threaded means
- B60B 7/16 . Anti-theft devices
- B60B 7/18 . simulating spoked or wire wheel
- B60B 7/20 . having an element mounted for rotation independently of wheel rotation
- B60B 9/00** **Wheels of high resiliency { , e.g. with conical interacting pressure-surfaces (resilient wheels comprising rail-engaging elements [B60B 17/0027](#)) }**
- B60B 9/005 . { **Comprising a resilient hub (hubs per se [B60B 27/00](#))** }
- B60B 9/02 . using springs { **resiliently mounted bicycle rims** } (**wheels comprising resilient spokes [B60B 9/26](#)**)
- B60B 9/04 . . in leaf form
- B60B 9/06 . . in helical form
- B60B 9/08 . . in flat coiled form
- B60B 9/10 . . of rubber or the like
- B60B 9/12 . . . in the form of sleeves or rings concentric with the wheel axis
- B60B 9/14 . . . with means limiting relative lateral movements between hub and remainder of wheel
- B60B 9/16 . . . modified to ensure electric conductivity
- B60B 9/18 . using fluid (**within spokes [B60B 9/26](#)**)
- B60B 9/20 . . in rings concentric with wheel axis
- B60B 9/22 . . . inflatable
- B60B 9/24 . . with pistons and cylinders
- B60B 9/26 . comprising resilient spokes
- B60B 9/28 . . with telescopic action
- B60B 11/00** **Units comprising multiple wheels arranged side by side; Wheels having more than one rim or capable of carrying more than one tyre**
- B60B 11/02 . Units of separate wheels mounted for independent or coupled rotation

- B60B 11/04 . Wheels with a rim capable of carrying more than one tyre
- B60B 11/06 . Wheels with more than one rim mounted on a single wheel body
- B60B 11/08 . Arrangements of balancing mechanisms enabling a uniform distribution of load to tyres
- B60B 11/10 . Emergency wheels (collapsible tyres [B60C 3/08](#); tyres characterised by means enabling restricted operation in damaged or deflated condition [B60C 17/00](#))

- B60B 15/00** **Wheels or wheel attachments designed for increasing traction** (vehicle tires [B60C](#); non-skid devices temporarily attachable to resilient tires or resiliently-tired wheels [B60C](#))

- B60B 15/02 . Wheels with spade lugs
- B60B 15/021 .. { made of resilient material }
- B60B 15/023 .. { being of the broad form type }
- B60B 15/025 ... { with non-cylindrical shape }
- B60B 15/026 .. { characterised by mud deposit prevention }
- B60B 15/028 .. { characterised by active rotation of the lugs }
- B60B 15/04 .. with resiliently-mounted spade lugs
- B60B 15/06 .. with pivotally-mounted spade lugs
- B60B 15/08 .. with spade lugs axially displaced relatively to the tread surface of the tire
- B60B 15/10 .. with radially-adjustable spade lugs; Control mechanisms therefor
- B60B 15/12 ... involving cams or eccentric hoops
- B60B 15/14 ... involving an axially-displaceable cone
- B60B 15/16 ... involving gearing, e.g. gear pinions acting upon threaded shafts on the spade lugs

- B60B 15/18 . Wheels with ground-engaging plate-like shoes
- B60B 15/20 .. with resiliently-mounted shoes, e.g. on a spider
- B60B 15/22 .. connected by links to the hub

- B60B 15/24 . Tread bands or rings for fairing lugs when travelling on the road

- B60B 15/26 . Auxiliary wheels or rings with traction-increasing surface attachable to the main wheel body
- B60B 15/263 .. { Traction increasing surface being located axially beside tire }
- B60B 15/266 .. { Traction increasing surface being located radially outside tire circumferential surface }

- B60B 15/28 . Wheel-ballasting weights; Their attachment

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

- B60B 17/0003 . { Wheel bodies characterised by use of non-metallic material ([B60B 17/0034](#) takes precedence) }

- B60B 17/0006 . { Construction of wheel bodies, e.g. disc wheels ([B60B 17/0003](#) takes precedence) }
- B60B 17/001 .. { Spoked wheels; Spokes thereof }
- B60B 17/0013 .. { formed by two or more axially spaced discs }
- B60B 17/0017 ... { with insonorisation means }
- B60B 17/002 .. { with counter-balance }
- B60B 17/0024 .. { with noise reducing means ([B60B 17/0017](#) takes precedence) }

- B60B 17/0027 . { Resilient wheels, e.g. resilient hubs ([B60B 17/02](#) takes precedence) }
- B60B 17/0031 .. { using springs }
- B60B 17/0034 ... { of rubber or other non-metallic material }
- B60B 17/0037 { of circular or elliptical cross section }
- B60B 17/0041 { of substantially rectangular cross section }
- B60B 17/0044 { single element arranged in V-form }
- B60B 17/0048 { pair of elements arranged in V-form }
- B60B 17/0051 .. { using fluid }

- B60B 17/0055 . { with non-elastic tyres (e.g. of particular profile or composition) }
- B60B 17/0058 .. { characterised by their fixing to wheel bodies }
- B60B 17/0062 .. { having teeth or protrusions on the circumference of the wheel }

- B60B 17/0065 . { Flange details }
- B60B 17/0068 .. { the flange being provided on a single side }
- B60B 17/0072 .. { the flange being provided on both sides }
- B60B 17/0075 .. { the flange being movable, for adaptation to variable rail or track widths }

- B60B 17/0079 . { the flange having a guide wheel }

- B60B 17/0082 . { Wheels designed to interact with a particular rail profile }
- B60B 17/0086 .. { H-type rail profiles, i.e. the wheels are arranged between upper and lower rail extensions }
- B60B 17/0089 .. { Circular rail profiles }
- B60B 17/0093 .. { Rectangular rail profiles }
- B60B 17/0096 .. { Triangular rail profiles }

- B60B 17/02 . with elastic tyres

- B60B 19/00** **Wheels not otherwise provided for or having characteristics specified in one of the sub-groups of this group**

- B60B 19/003 . { Multidirectional wheels }
- B60B 19/006 . { Magnetic wheels }

- B60B 19/02 . convertible, e.g. from road wheel to rail wheel; Wheels specially designed for alternative use on road and rail

- B60B 19/04 . expansible

- B60B 19/06 . with compartments for fluid, packing or loading material; Buoyant wheels
- B60B 19/08 . with lubricating passages, channels, or reservoirs
- B60B 19/10 . with cooling fins
- B60B 19/12 . Roller-type wheels ([B60B 19/06](#) takes precedence)
- B60B 19/125 .. { with helical projections on radial outer surface translating rotation of wheel into movement along the direction of the wheel axle }
- B60B 19/14 . Ball-type wheels ([B60B 19/06](#) takes precedence)

Guidance heading: Rims; Hubs

B60B 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](#))

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

B60B 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](#) to [B60B 23/10](#)

- [B60B 23/02](#) . by split or other expansible ring devices
- [B60B 23/04](#) . by bayonet joint, screw-thread, or like attachments
- [B60B 23/06](#) . by screws, bolts, pins, or clips
- [B60B 23/08](#) . . arranged radially
- [B60B 23/10](#) . . arranged axially
- [B60B 23/12](#) . by devices arranged to permit variation of axial position of rim relative to wheel body for track width adjustment
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- [B60B 25/00](#)** **Rims built up of several main parts { Locking means for the rim parts } (tools for assembling divided rims [B60B 31/04](#))**
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- [B60B 25/002](#) . { Rims split in circumferential direction }
- [B60B 25/004](#) . . { one rim part comprising the wheel disc }
- [B60B 25/006](#) . . { Rims split symmetrically }
- [B60B 25/008](#) . . { comprising spacer means }
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- [B60B 25/02](#) . Segmented rims, e.g. with segments arranged in sections; Connecting equipment, e.g. hinges; Insertable flange rings therefor
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- [B60B 25/04](#) . Rims with dismountable flange rings, seat rings, or lock rings
- [B60B 25/045](#) . . on both sides
- [B60B 25/06](#) . . Split flange rings, e.g. transversely split; Connecting equipment for overlapping the slot
- [B60B 25/08](#) . . Continuous flange rings; Arrangement of recesses enabling the flange rings to be slipped over the rim body
- [B60B 25/10](#) . . Seat rings for the tyre bead part, e.g. split
- [B60B 25/12](#) . . . with integral flange part
- [B60B 25/14](#) . . Locking means for flange rings or seat rings
- [B60B 25/16](#) . . . Arrangement of bayonet catches
- [B60B 25/18](#) . . . Arrangement of split rings
- [B60B 25/20](#) . . . Arrangement of screws, bolts, or shouldered pins
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- [B60B 25/22](#) . Other apurtenances, e.g. for sealing the component parts enabling the use of tubeless tyres
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- [B60B 27/00](#)** **Hubs (non-metallic [B60B 5/00](#); of high resiliency [B60B 9/00](#))**
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- [B60B 27/0005](#) . { with ball bearings }

- B60B 27/001 . { with roller-bearings }
- B60B 27/0015 . { for driven wheels }
- B60B 27/0021 . . { characterised by torque transmission means from drive axle }
- B60B 27/0026 . . . { of the radial type, e.g. splined key }
- B60B 27/0031 . . . { of the axial type, e.g. front teeth }
- B60B 27/0036 . . { comprising homokinetic joints }
- B60B 27/0042 . . . { characterised by the fixation of the homokinetic joint to the hub }
- B60B 27/0047 . { characterised by functional integration of other elements }
- B60B 27/0052 . . { the element being a brake disc }
- B60B 27/0057 . . { the element being a brake drum }
- B60B 27/0063 . . { the element being a brake caliper mount }
- B60B 27/0068 . . { the element being a sensor }
- B60B 27/0073 . { characterised by sealing means }
- B60B 27/0078 . { characterised by the fixation of bearings }
- B60B 27/0084 . . { caulking to fix inner race }
- B60B 27/0089 . . { caulking to fix outer race }
- B60B 27/0094 . { one or more of the bearing races are formed by the hub }
- B60B 27/02 . adapted to be rotatably arranged on axle
- B60B 27/023 . . { specially adapted for bicycles }
- B60B 27/026 . . . { comprising quick release devices }
- B60B 27/04 . . housing driving means, e.g. sprockets
- B60B 27/042 . . . { comprising a rotational dampers }
- B60B 27/045 . . . { comprising a spoke protectors }
- B60B 27/047 . . . { comprising a freewheel mechanisms }
- B60B 27/06 . adapted to be fixed on axle
- B60B 27/065 . . { characterised by the fixation of the hub to the axle }

Guidance heading: Apparatus or tools for mounting wheels or parts thereof (hand tools in general [B25](#); tools for mounting tyres [B60C 25/00](#))

B60B 29/00 Apparatus or tools for mounting or dismounting wheels {(mounting of wheels at assembly lines [B62D 65/12](#))}

- B60B 29/001 . { comprising lifting or aligning means ([B60B 29/002](#) takes precedence)}
- B60B 29/002 . { provided with a dolly }
- B60B 29/003 . { Wrenches, e.g. of the ratchet type ([B60B 29/001](#) takes precedence; wrenches per se [B25B 13/00](#))}

- B60B 29/004 . . { for dual wheels }
- B60B 29/005 . . { hand-driven operating with multiplicated forces ([B60B 29/004](#) takes precedence; hand-driven gear-operated wrenches per se [B25B 17/00](#), with torque amplification [B25B 17/02](#)) }
- B60B 29/006 . . { with electric or pneumatic drive (power-driven nut setting or loosening tool per se [B25B 21/00](#)) }
- B60B 29/007 . . { Supports for wrenches ([B60B 29/005](#), [B60B 29/006](#) take precedence) }
- B60B 29/008 . { Wheel pullers; tools for axial movement of wheels (adjustable axle units for varying track [B60B 35/10](#)) }

B60B 30/00 **Means for holding wheels or parts thereof** (spare wheel stowing, holding or mounting arrangements on vehicles [B62D 43/00](#))

- B60B 30/02 . engaging the tyre, e.g. the tyre being mounted on the wheel rim
- B60B 30/04 . . the tyre not being mounted on a rim, i.e. holders or supports for tyres alone
- B60B 30/06 . engaging the wheel body, e.g. the rim
- B60B 30/08 . . the central part of the wheel body
- B60B 30/10 . characterised by being provided on a dolly

B60B 31/00 **Apparatus or tools for assembling or disassembling wheels**

- B60B 31/005 . { especially for spoked wheels }
- B60B 31/02 . for tightening or straightening wire spokes in situ; for extracting spokes from wheels
- B60B 31/04 . for assembling divided rims
- B60B 31/06 . for removing or attaching cover discs, hub caps, or the like

B60B 33/00 **Castors in general; { Anti-clogging castors }** (castors for large containers [B65D 90/18](#))

- B60B 33/0002 . { assembling to the object, e.g. furniture }
- B60B 33/0005 . . { characterised by mounting method }
- B60B 33/0007 . . . { by screwing }
- B60B 33/001 . . . { by snapping, clicking or latching in }
- B60B 33/0013 . . . { by straps, bands or similar }
- B60B 33/0015 . . { characterised by adaptations made to castor }
- B60B 33/0018 . . . { in the form of a flat mounting plate }
- B60B 33/0021 . . . { in the form of a mounting pin }
- B60B 33/0023 . . . { in the form of specific adaptations to the form of the object }
- B60B 33/0026 . . { characterised by adaptations made to the object }
- B60B 33/0028 . { Construction of wheels; methods of assembling on axle }
- B60B 2033/0031 . . { the axle being inclined }

- B60B 2033/0034 . { having means for blocking by gripping on the ground }
- B60B 33/0036 . { characterised by type of wheels }
- B60B 33/0039 .. { Single wheels }
- B60B 33/0042 .. { Double or twin wheels }
- B60B 33/0044 .. { Roller type wheels, i.e. extra wide wheels }
- B60B 33/0047 . { characterised by details of the rolling axle }
- B60B 33/0049 .. { the rolling axle being horizontal }
- B60B 33/0052 .. { the rolling axle being inclined }
- B60B 33/0055 .. { the rolling axle intersects swivel axis }
- B60B 33/0057 .. { the rolling axle being offset from swivel axis }
- B60B 33/006 . { characterised by details of the swivel mechanism }
- B60B 33/0063 .. { no swivelling action, i.e. no real caster }
- B60B 33/0065 .. { characterised by details of the swivel axis }
- B60B 33/0068 ... { the swivel axis being vertical }
- B60B 33/0071 ... { the swivel axis being inclined }
- B60B 33/0073 ... { the swivel axis being symmetrical to wheel or wheels }
- B60B 33/0076 ... { the swivel axis being offset laterally from wheel center plane }
- B60B 33/0078 . { characterised by details of the wheel braking mechanism }
- B60B 33/0081 .. { acting on tire tread }
- B60B 33/0084 .. { acting on axle end }
- B60B 33/0086 .. { acting on rim or side portion of tyre }
- B60B 33/0089 .. { acting on the floor }
- B60B 33/0092 .. { actuated remotely, e.g. by cable or electrically }
- B60B 33/0094 .. { actuated automatically }
- B60B 33/0097 .. { acting permanently, e.g. for increased security on low friction surfaces }
- B60B 33/02 . with disengageable swivel action, { i.e. comprising a swivel locking mechanism }
- B60B 33/021 .. { combined with braking of castor wheel }
- B60B 33/023 .. { by using friction }
- B60B 33/025 .. { by using form-fit, e.g. front teeth }
- B60B 33/026 .. { being actuated remotely, e.g. by cable or electrically }
- B60B 33/028 .. { being actuated automatically }
- B60B 33/04 . adjustable { , e.g. in height; linearly shifting castors }
- B60B 33/045 .. { mounted resiliently, by means of dampers }
- B60B 33/06 .. mounted retractably
- B60B 33/063 ... { by linear movement parallel to swivel axis }
- B60B 33/066 ... { by use of a hinge and lever mechanism to swing wheel upwards relative to wheel mount }
- B60B 33/08 . Ball castors {([B60B 33/0028](#) takes precedence)}

B60B 35/00	Axle units; Parts thereof (steerable vehicle stub axles B62D) { Arrangements for lubrication of axles }
B60B 35/001	. { Axles of the portal type, i.e. axles designed for higher ground clearance }
B60B 35/002	. { Axles of the low floor type, e.g. for low-floor city busses }
B60B 35/003	. { Steerable axles }
B60B 35/004	. { Mounting arrangements for axles }
B60B 35/005	.. { with adaptations at chassis structure }
B60B 35/006	.. { with mounting plates or consoles fitted to axles }
B60B 35/007	... { for mounting suspension elements to axles }
B60B 35/008	... { for mounting air suspension elements to axles }
B60B 35/009	. { adapted for tiltable wheels }
B60B 35/02	. Dead axles, i.e. not transmitting torque
B60B 35/025	.. { the wheels being removable }
B60B 35/04	.. straight
B60B 35/06	.. cranked
B60B 35/08	.. of closed hollow section
B60B 35/10	.. adjustable for varying track ({ tools for axial movement of wheels on axles B60B 29/008 })
B60B 35/1009	... { operated manually }
B60B 35/1018	.... { comprising a locking pin }
B60B 35/1027	.... { comprising a clamping mechanism }
B60B 35/1036	... { operated with power assistance }
B60B 35/1045	.... { electrically }
B60B 35/1054	.... { hydraulically }
B60B 35/1063	.... { automatically dependent on operational state of the vehicle }
B60B 35/1072	... { by transversally movable elements }
B60B 35/1081	.... { the element is a wheel }
B60B 35/109	.... { the element is an axle part }
B60B 35/12	. Torque-transmitting axles (independent suspension aspects B60G)
B60B 35/121	.. { Power-transmission from drive shaft to hub }
B60B 35/122	... { using gearings }
B60B 35/124	.... { of the helical or worm type }
B60B 35/125	.... { of the planetary type }
B60B 35/127	... { using universal joints }
B60B 35/128	.... { of the homokinetic or constant velocity type }
B60B 35/14	.. Composite or split, e.g. half- axles; Couplings between axle parts or sections
B60B 35/16	.. Axle housings

B60B 35/163	...	{ characterised by specific shape of the housing, e.g. adaptations to give space for other vehicle elements like chassis or exhaust system }
B60B 35/166	...	{ characterised by reinforcements, e.g. reinforcement ribs }
B60B 35/18	..	Arrangement of bearings
B60B 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)	
B60B 37/02	.	the wheels being integral with solid axles
B60B 37/04	.	the wheels being rigidly attached to solid axles
B60B 37/06	.	the wheels being integral with, or rigidly attached to, hollow axles
B60B 37/08	..	the hollow axles being rotatable around fixed axles
B60B 37/10	.	the wheels being individually rotatable around the axles
B60B 37/12	.	Axles with a fixed ground wheel and a loose wheel
B60B 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)	
B60B 39/003	.	{ Vehicle mounted non-skid chains actuated by centrifugal force (non-skid devices temporarily attachable to resilient tyres B60C 27/00) }
B60B 39/006	..	{ characterised by a control system for the actuation of the rotating chain wheel }
B60B 39/02	.	Vehicle fittings for scattering or dispensing material in front of its wheels
B60B 39/021	..	{ Details of the dispensing device }
B60B 39/022	...	{ related to reservoirs }
B60B 39/023	...	{ related to metering valves }
B60B 39/024	...	{ related to preconditioning of the dispensing materials }
B60B 39/025	...	{ related to the control system }
B60B 39/026	..	{ the material being in gas form }
B60B 39/027	...	{ the gas being heated on purpose }
B60B 39/028	...	{ the gas being exhaust gas }
B60B 39/04	..	the material being granular, e.g. sand (combined control of sanding apparatus and brakes of rail vehicles B61H)
B60B 39/06	...	the dispensing being effected by mechanical means
B60B 39/08	...	the dispensing being effected by fluid means
B60B 39/083	....	{ dispensing being effected by liquid }
B60B 39/086	....	{ dispensing being effected by gas }
B60B 39/10	...	the dispensing being controlled electrically or electro-magnetically
B60B 39/12	..	the material being sheet-like or web-like
B60B 2200/00	Type of product being used or applied (kind of vehicle product being used or applied L60Y200)	

B60B 2200/20	. Furniture or medical appliances
B60B 2200/22	.. Chairs
B60B 2200/222	... Office chairs
B60B 2200/224	... Arm chairs
B60B 2200/24	.. Beds
B60B 2200/242	... Hospital beds
B60B 2200/26	.. Medical appliances
B60B 2200/40	. Articles of daily use
B60B 2200/41	.. Waste bins
B60B 2200/43	.. Carts
B60B 2200/432	... Shopping carts
B60B 2200/434	... Wheel barrows
B60B 2200/45	.. Suitcases
B60B 2200/47	.. Physical activity equipment, e.g. leisure or sports articles
B60B 2200/49	.. Domestic appliances, e.g. vacuum cleaners

B60B 2310/00 Manufacturing methods

B60B 2310/20	. Shaping
B60B 2310/202	.. by casting
B60B 2310/204	.. by moulding, e.g. injection moulding, i.e. casting of plastics material
B60B 2310/206	.. by stamping
B60B 2310/208	.. by forging
B60B 2310/2082	... by swaging
B60B 2310/211	.. by folding or bending
B60B 2310/212	.. by drawing
B60B 2310/213	.. by punching
B60B 2310/214	.. by extrusion
B60B 2310/218	.. by hydroforming
B60B 2310/221	.. by magnetic pulse forming
B60B 2310/222	.. by twisting
B60B 2310/224	.. by rolling
B60B 2310/226	.. by cutting
B60B 2310/228	.. by machining
B60B 2310/231	.. by turning
B60B 2310/232	.. by milling
B60B 2310/234	.. by grinding
B60B 2310/238	.. by thermal spraying of molten material
B60B 2310/241	.. by weaving or knitting of fibers
B60B 2310/242	.. by laminating, e.g. fabrication of sandwich sheets
B60B 2310/30	. joining

B60B 2310/302	..	by welding
B60B 2310/3021	...	by autogen welding
B60B 2310/3022	...	by spot welding, plug welding
B60B 2310/3023	...	by arc welding, e.g. inert gas arc welding
B60B 2310/3025	...	by thermal welding, e.g. friction, induction or ultrasonic welding
B60B 2310/3026	...	by laser welding
B60B 2310/3027	...	by electron beam welding
B60B 2310/3028	...	by magnetic pulse welding
B60B 2310/303	..	by soldering
B60B 2310/305	..	by screwing
B60B 2310/306	..	by clamping or wedging, e.g. by clamping inserts as joining means
B60B 2310/307	..	by removably mountable securing elements, e.g. circlips
B60B 2310/311	..	by riveting
B60B 2310/3112	...	by punch-riveting
B60B 2310/312	..	by hemming or seaming, e.g. by folding of the rim
B60B 2310/314	..	by deformation
B60B 2310/3142	..	by caulking
B60B 2310/316	..	by press-fitting, shrink-fitting
B60B 2310/318	..	by adhesive bonding, e.g. glueing
B60B 2310/321	..	by overmolding
B60B 2310/323	..	by coextrusion
B60B 2310/329	..	by splicing, e.g. of ropes
B60B 2310/50	.	Thermal treatment
B60B 2310/52	..	Curing
B60B 2310/54	..	Hardening
B60B 2310/542	...	Quenching
B60B 2310/56	..	Co-curing; Vulcanisation
B60B 2310/60	.	Surface treatment; After treatment
B60B 2310/612	..	Polishing
B60B 2310/614	..	Painting
B60B 2310/616	..	Coating with thin films
B60B 2310/6162	...	Conductive films
B60B 2310/618	..	Coating with foils
B60B 2310/621	..	Electro-chemical processes
B60B 2310/622	..	Shot-peening
B60B 2310/64	..	Effect of treatments
B60B 2310/642	...	Matted
B60B 2310/644	...	Polished
B60B 2310/646	...	Engraved
B60B 2310/648	...	Structured
B60B 2310/651	...	glossy

- B60B 2310/652 . . . Reflecting
- B60B 2310/654 . . . Anti-corrosive
- B60B 2310/656 . . . Decorative
- B60B 2310/658 . . . For advertising
- B60B 2310/661 . . . for protection, e.g. against scratches or stone chips
- B60B 2310/80 . Filament winding

B60B 2320/00 Manufacturing or maintenance operations

- B60B 2320/10 . Assembling; disassembling
- B60B 2320/12 . . Assembly devices for spoked wheels
- B60B 2320/122 . . . for spoke tensioning
- B60B 2320/124 . . . for trueing of spoked wheels
- B60B 2320/126 . . . for restoring form or removing local distortions of wheel rims in unassembled state
- B60B 2320/14 . . Assembly devices for divided rims
- B60B 2320/16 . . Devices for attaching or removing cover discs, hub caps or other ornamental rings or elements
- B60B 2320/30 . Balancing
- B60B 2320/50 . Securing
- B60B 2320/52 . . to prevent loss
- B60B 2320/522 . . . by locking washer
- B60B 2320/524 . . . by securing plate

B60B 2340/00 Wheel transporting, Mounting of wheels

- B60B 2340/10 . Operation mode
- B60B 2340/12 . . Operated manually
- B60B 2340/14 . . Power driven
- B60B 2340/16 . . Included in assembly line
- B60B 2340/18 . . Automated process
- B60B 2340/30 . Wheel transporting or handling devices
- B60B 2340/32 . . for gripping the wheel
- B60B 2340/34 . . for positioning the wheel to hub or boltholes
- B60B 2340/36 . . the devices being provided on a dolly
- B60B 2340/50 . Wheel mounting or removal devices
- B60B 2340/52 . . Auxiliary tools, e.g. For alignment
- B60B 2340/70 . Lifting jacks

B60B 2360/00 Materials; Physical forms thereof

B60B 2360/10	. Metallic materials
B60B 2360/102	.. Steel
B60B 2360/104	.. Aluminum
B60B 2360/106	.. Magnesia
B60B 2360/108	.. Titanium
B60B 2360/109	.. Bronze
B60B 2360/14	. Physical forms of metallic parts
B60B 2360/141	.. Sheet-metals
B60B 2360/143	.. Bars, i.e. being solid
B60B 2360/1432	... of circular cross section
B60B 2360/1434	... of polygonal cross section, e.g. triangular or rectangular
B60B 2360/1436	... of elliptical cross section
B60B 2360/144	.. Tubes, i.e. being hollow
B60B 2360/1442	... of circular cross section
B60B 2360/1444	... of rectangular cross section
B60B 2360/1446	... of elliptical cross section
B60B 2360/1448	... of irregular cross-section
B60B 2360/145	.. Profiles, i.e. being solid and having irregular cross-section
B60B 2360/1452	... L-profiles
B60B 2360/1454	... T or H-Profiles
B60B 2360/1456	... X or Y-Profiles
B60B 2360/1458	... U or V-Profiles
B60B 2360/147	.. Castings
B60B 2360/148	.. Sinterings
B60B 2360/149	.. Metal foams
B60B 2360/30	. Synthetic materials
B60B 2360/32	.. Plastic compositions
B60B 2360/322	... Comprising polypropylene
B60B 2360/324	... Comprising polyurethane
B60B 2360/33	.. Synthetic foams
B60B 2360/34	.. Reinforced plastics
B60B 2360/341	... with fibres
B60B 2360/3412	.... Glass fibres
B60B 2360/3414	.... Aramide fibres
B60B 2360/3416	.... Carbone fibres
B60B 2360/3418	.... Aramid fibres
B60B 2360/342	... With strands
B60B 2360/3422	.... consisting of fibres oriented substantially parallel
B60B 2360/3424	.... consisting of braided fibres
B60B 2360/344	... With woven material

B60B 2360/3442	....	characterised by material mixes
B60B 2360/3444	....	characterised by weaving patterns
B60B 2360/346	...	Material impregnated with resin before being put into form, i.e. prepregs
B60B 2360/3462	....	comprising strands
B60B 2360/3464	....	comprising woven material
B60B 2360/348	...	Resins
B60B 2360/36	..	Composite materials
B60B 2360/362	...	Compounded sheets
B60B 2360/364	...	comprising honeycomb structures
B60B 2360/366	...	comprising foams, e.g. synthetic or metal foams
B60B 2360/368	...	Coproduced material combinations, e.g. By over-molding, co-extrusion, co-curing or vulcanizing

B60B 2360/50	.	Rubbers
B60B 2360/70	.	Ceramics
B60B 2360/90	.	Wood
B60B 2360/92	.	Leather
B60B 2360/94	.	Cardboard or papers

B60B 2380/00 Bearings

B60B 2380/10	.	Type
B60B 2380/12	..	Ball bearings
B60B 2380/14	..	Roller bearings
B60B 2380/16	..	Needle bearings
B60B 2380/18	..	Plain or sleeve bearings
B60B 2380/20	..	Linear bearings
B60B 2380/22	..	Magnetic bearings
B60B 2380/30	.	Cage
B60B 2380/32	..	Without cage
B60B 2380/40	.	Modularity
B60B 2380/42	..	Single-piece
B60B 2380/44	..	Multi-piece
B60B 2380/50	.	Load bearing capacity
B60B 2380/60	.	Rolling elements
B60B 2380/62	..	Specific number
B60B 2380/64	..	Specific shape
B60B 2380/70	.	Arrangements

B60B 2380/71	..	Single track
B60B 2380/73	..	Double track
B60B 2380/75	..	Twin or multiple bearings having identical diameters
B60B 2380/76	..	Twin or multiple bearings having different diameters
B60B 2380/77	..	Diameters of bearings at opposite ends of hub
B60B 2380/772	...	Identical diameters of bearings at opposite ends of hub
B60B 2380/774	...	Different diameters of bearings at opposite ends of hub
B60B 2380/80	.	Shafts specially adapted to receive bearings
B60B 2380/82	..	Caulked to fix race
B60B 2380/90	.	Casings or housings specially adapted to receive bearings
B60B 2380/92	..	Caulked to fix race

B60B 2900/00 **Purpose of invention**

B60B 2900/10	.	Reduction of
B60B 2900/111	..	Weight
B60B 2900/112	..	Costs
B60B 2900/113	..	Production or maintenance time
B60B 2900/114	..	Size
B60B 2900/115	..	Complexity
B60B 2900/116	..	Product variety, e.g. by standardisation or use of adapters
B60B 2900/121	..	Resisting forces
B60B 2900/1212	...	due to friction
B60B 2900/1214	...	due to inertia
B60B 2900/1216	...	due to air-drag
B60B 2900/131	..	Vibrations
B60B 2900/133	..	Noise
B60B 2900/141	..	Corrosions
B60B 2900/20	.	Avoidance of
B60B 2900/211	..	Soiling
B60B 2900/212	..	Damage
B60B 2900/30	.	Increase in
B60B 2900/311	..	Rigidity or stiffness
B60B 2900/313	..	Resiliency
B60B 2900/321	..	Lifetime
B60B 2900/323	..	Timespan between services
B60B 2900/325	..	Reliability
B60B 2900/331	..	Safety or security
B60B 2900/3312	...	during regular use
B60B 2900/3313	...	during maintenance

B60B 2900/3314	...	during production or assembly
B60B 2900/3315	...	by avoiding misuse
B60B 2900/3316	...	by indicating wear, failure or loss
B60B 2900/3318	...	by theft prevention
B60B 2900/351	..	versatility, e.g. usable for different purposes or different arrangements
B60B 2900/50	.	Improvement of
B60B 2900/511	..	Sealing
B60B 2900/5112	...	against dust or dirt
B60B 2900/5114	...	against humidity or water
B60B 2900/5116	...	against air-loss
B60B 2900/5118	...	against oil-loss
B60B 2900/513	..	Cooling, e.g. of brakes
B60B 2900/521	..	Tire mounting or removal (devices therefor B60B 2340/50)
B60B 2900/523	..	Tire fixation on rim, e.g. fixing axially or circumferentially thereon
B60B 2900/531	..	User-friendliness
B60B 2900/541	..	Servicing
B60B 2900/551	..	Handling of obstacles or difficult terrains
B60B 2900/561	..	Lubrication
B60B 2900/571	..	Visibility
B60B 2900/572	..	Visual appearance
B60B 2900/70	.	Adaptation for
B60B 2900/711	..	High loads, e.g. by reinforcements
B60B 2900/721	..	Use under adverse external conditions
B60B 2900/731	..	Use in cases of damage, failure or emergency
B60B 2900/90	.	Providing or changing
B60B 2900/911	..	Eccentricity
B60B 2900/921	..	Conductivity
B60B 2900/931	..	Magnetic effects