

**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 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 2033/00** **Castors in general; {Anti-clogging castors }** (castors for large containers [B65D 90/18](#))
  
- B60B 2033/0028 . {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 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
<b>B60B 2900/00</b>	<b>Purpose of invention</b>
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 ( <a href="#">devices therefor B60B 2340/50</a> )
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