

**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)

**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)

#### 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

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

- 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}
- B60B 25/02 . Segmented rims, e.g. with segments arranged in sections; Connecting equipment, e.g. hinges; Insertable flange rings therefor
- 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
  
- B60B 25/22 . Other apurtenances, e.g. for sealing the component parts enabling the use of tubeless tyres
  
- B60B 27/00**      **Hubs** (non-metallic [B60B 5/00](#); of high resiliency [B60B 9/00](#))
  
- 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}

**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 multiplied forces ([B60B 29/004](#) takes precedence; hand-driven gear-operated wrenches per se [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 ([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