

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](#), 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

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