

CPC**COOPERATIVE PATENT CLASSIFICATION****B60B**

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

NOTE

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

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

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	<ul style="list-style-type: none"> made of synthetic material
B60B 5/04	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> {for cycle wheels or similar}
B60B 7/0013	<ul style="list-style-type: none"> {Hub caps}
B60B 7/002	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {being of the ventilated type}
B60B 7/0026	<ul style="list-style-type: none"> {characterised by the surface}
B60B 7/0033	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {the dominant aspect being the surface appearance}
B60B 7/004	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {the surface being painted}
B60B 7/0046	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {the surface being plated or coated}
B60B 7/0053	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {the surface being decorated}
B60B 7/006	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {the surface being reflective or including lighting}
B60B 7/0066	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {the dominant aspect being the surface structure}
B60B 7/0073	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {being completely closed, i.e. having no cooling openings for the brakes}
B60B 7/008	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {having decorative holes or openings, i.e. openings going beyond mere cooling openings}
B60B 7/0086	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {having cooling fins}
B60B 7/0093	<ul style="list-style-type: none"> {being reinforced against thermal deformation}
B60B 7/01	<ul style="list-style-type: none"> Rings specially adapted for covering only the wheel rim or the tyre sidewall, e.g. removable tyre sidewall trim rings
B60B 7/02	<ul style="list-style-type: none"> made essentially in one part ({B60B 7/0006,} B60B 7/01 take precedence)
B60B 7/04	<ul style="list-style-type: none"> built-up of several main parts (B60B 7/01, B60B 7/20 take precedence)
B60B 7/06	<ul style="list-style-type: none"> Fastening arrangements therefor (B60B 7/01, B60B 7/20 take precedence)
B60B 7/061	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {characterised by the part of the wheels to which the discs, rings or the like are mounted}
B60B 7/063	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {to the rim}
B60B 7/065	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {to the disc}
B60B 7/066	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {to the hub}
B60B 7/068	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {to the wheel bolts or wheel nuts}
B60B 7/08	<ul style="list-style-type: none"> <ul style="list-style-type: none"> having gripping elements consisting of formations integral with the cover
B60B 7/10	<ul style="list-style-type: none"> <ul style="list-style-type: none"> comprising a plurality of spaced spring clips individually mounted on the cover, e.g. riveted, welded or readily releasable
B60B 7/105	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {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](#) - [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 17/00](#), 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	<ul style="list-style-type: none"> . . . {characterised by reinforcements, e.g. reinforcement ribs}
B60B 35/18	<ul style="list-style-type: none"> . . 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	<ul style="list-style-type: none"> . the wheels being integral with solid axles
B60B 37/04	<ul style="list-style-type: none"> . the wheels being rigidly attached to solid axles
B60B 37/06	<ul style="list-style-type: none"> . the wheels being integral with, or rigidly attached to, hollow axles
B60B 37/08	<ul style="list-style-type: none"> . . the hollow axles being rotatable around fixed axles
B60B 37/10	<ul style="list-style-type: none"> . the wheels being individually rotatable around the axles
B60B 37/12	<ul style="list-style-type: none"> . 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	<ul style="list-style-type: none"> . {Vehicle mounted non-skid chains actuated by centrifugal force (non-skid devices temporarily attachable to resilient tyres B60C 27/00)}
B60B 39/006	<ul style="list-style-type: none"> . . {characterised by a control system for the actuation of the rotating chain wheel}
B60B 39/02	<ul style="list-style-type: none"> . Vehicle fittings for scattering or dispensing material in front of its wheels
B60B 39/021	<ul style="list-style-type: none"> . . {Details of the dispensing device}
B60B 39/022	<ul style="list-style-type: none"> . . . {related to reservoirs}
B60B 39/023	<ul style="list-style-type: none"> . . . {related to metering valves}
B60B 39/024	<ul style="list-style-type: none"> . . . {related to preconditioning of the dispensing materials}
B60B 39/025	<ul style="list-style-type: none"> . . . {related to the control system}
B60B 39/026	<ul style="list-style-type: none"> . . {the material being in gas form}
B60B 39/027	<ul style="list-style-type: none"> . . . {the gas being heated on purpose}
B60B 39/028	<ul style="list-style-type: none"> . . . {the gas being exhaust gas}
B60B 39/04	<ul style="list-style-type: none"> . . the material being granular, e.g. sand (combined control of sanding apparatus and brakes of rail vehicles B61H)
B60B 39/06	<ul style="list-style-type: none"> . . . the dispensing being effected by mechanical means
B60B 39/08	<ul style="list-style-type: none"> . . . the dispensing being effected by fluid means
B60B 39/083	<ul style="list-style-type: none"> {dispensing being effected by liquid}
B60B 39/086	<ul style="list-style-type: none"> {dispensing being effected by gas}
B60B 39/10	<ul style="list-style-type: none"> . . . the dispensing being controlled electrically or electro-magnetically
B60B 39/12	<ul style="list-style-type: none"> . . the material being sheet-like or web-like
B60B 2200/00	Type of product being used or applied (kind of vehicle product being used or applied B60Y 2200/00)
B60B 2200/20	<ul style="list-style-type: none"> . Furniture or medical appliances
B60B 2200/22	<ul style="list-style-type: none"> . . Chairs
B60B 2200/222	<ul style="list-style-type: none"> . . . Office chairs
B60B 2200/224	<ul style="list-style-type: none"> . . . 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