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)

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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)

1/00  Spoked wheels; Spokes thereof (non-metallic B60B 5/00; : spoked wheels comprising rail-engaging elements B60B 17/001; making wheel spokes B21F 39/001)
  1/003  .  .  .  [specially adapted for bicycles (B60B 1/041 takes precedence)]
  1/006  .  .  [specially adapted for light-weight wheels, e.g. of strollers or wheel-chairs (B60B 1/003 takes precedence)]
  1/02  .  Wheels with wire or other tension spokes
  1/0207  .  .  [characterised by non-standard number of spokes, i.e. less than 12 or more than 32 spokes]
  1/0215  .  .  [characterised by specific grouping of spokes]
  1/0223  .  .  .  [the dominant aspect being the spoke arrangement pattern]
  1/023  .  .  .  [multiple exclusively parallel spokes arranged in a group]
  1/0238  .  .  .  [the dominant aspect being the number of spokes per group]
  1/0246  .  .  [characterised by cross-section of the spoke, e.g. polygon or elliptic shape]
  1/0253  .  .  [the spoke being hollow]
  1/0261  .  .  [characterised by spoke form]
  1/0269  .  .  .  [the spoke being curved or deformed over substantial part of length]
  1/0276  .  .  .  [the spoke being crooked in the middle and having double length]
  1/0284  .  .  .  [the spoke being threaded at both ends]
  1/0292  .  .  [the spoke being bent at both ends]
  1/04  .  Attaching spokes to rim or hub
  1/041  .  .  .  [of bicycle wheels (bicycle rims characterised by means for attaching spokes B60B 21/062)]
  1/042  .  .  [Attaching spokes to hub]
  1/043  .  .  [Attaching spokes to rim]
  1/044  .  .  .  [by the use of spoke nipples]  1/045  .  .  .  [characterised by their specific shape]
  1/046  .  .  .  [characterised by adaptations of the nipple for tightening tools]
  1/047  .  .  .  [the nipple comprising sealing means]
  1/048  .  .  .  [by the use of screws]
  1/06  .  Wheels with compression spokes (wheels of high resiliency B60B 9/00)
  1/08  .  .  formed by casting
  1/10  .  .  fabricated by sheet metal (B60B 1/12, B60B 3/08 take precedence)
  1/12  .  .  with tubular spokes (B60B 1/08 takes precedence)
  1/14  .  .  Attaching spokes to rim or hub

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 17/0001)
  3/001  .  .  [Lightweight wheels, e.g. for strollers or toys]
  3/002  .  .  [characterised by the shape of the disc]
  3/004  .  .  [in the hub section]
  3/005  .  .  [in the section adjacent to rim]
  3/007  .  .  [in the intermediate section]
  3/008  .  .  [by the form of wheel bolt mounting section]
  3/02  .  .  with a single disc body integral with rim
  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]
  3/041  .  .  [characterised by the attachment of rim to wheel disc]
  3/042  .  .  [characterised by circumferential position of attachment means]
  3/044  .  .  [characterised by cross-sectional details of the attachment, e.g. the profile]
  3/045  .  .  [characterised by the attachment portions]
  3/047  .  .  .  [comprising specific torque transmitting means]
Wheels

3/048 . . . [the rim being rotatably mounted to the wheel disc]
3/06 . . . formed by casting
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])
3/082 . . . [especially for light-weight wheels]
3/085 . . . [Discs having no mutual contact]
3/087 . . . [Discs having several mutual contact regions]
3/10 . . . apertured to simulate spoke wheels
3/12 . . . Means of reinforcing disc bodies
3/14 . . . Attaching disc body to hub (resiliently B60B 9/00; attaching rim to wheel body B60B 23/00) [: Wheel adapters]
3/142 . . . [by central locking nut]
3/145 . . . [using washers or distance bushes]
3/147 . . . [using wheel adapters]
3/16 . . . by bolts or the like
3/165 . . . [with locking devices for the fixing means, e.g. screw or nut covers]
3/18 . . . by circlips or the like
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])
5/02 . . . made of synthetic material
5/04 . . . made of wood
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)]
7/0006 . . . [for cycle wheels or similar]
7/0013 . . . [Hub caps]
7/002 . . . [being of the ventilated type]
7/0026 . . . [characterised by the surface]
7/0033 . . . [the dominant aspect being the surface appearance]
7/004 . . . [the surface being painted]
7/0046 . . . [the surface being plated or coated]
7/0053 . . . [the surface being decorated]
7/006 . . . [the surface being reflective or including lighting]
7/0066 . . . [the dominant aspect being the surface structure]
7/0073 . . . [being completely closed, i.e. having no cooling openings for the brakes]
7/008 . . . [having decorative holes or openings, i.e. openings going beyond mere cooling openings]
7/0086 . . . [having cooling fins]
7/0093 . . . [being reinforced against thermal deformation]
7/01 . . . Rings especially adapted for covering only the wheel rim or the tyre sidewall, e.g. removable tyre sidewall trim rings
7/02 . . . made essentially in one part ([B60B 7/0006, B60B 7/01 take precedence])
7/04 . . . built-up of several main parts (B60B 7/01, B60B 7/20 take precedence)
7/06 . . . Fastening arrangements therefor (B60B 7/01, B60B 7/20 take precedence)
7/061 . . . [characterised by the part of the wheels to which the discs, rings or the like are mounted]
7/063 . . . [to the rim]
7/065 . . . [to the disc]
7/066 . . . [to the hub]
7/068 . . . [to the wheel bolts or wheel nuts]
7/08 . . . having gripping elements consisting of formations integral with the cover
7/10 . . . comprising a plurality of spaced spring clips individually mounted on the cover, e.g. riveted, welded or readily releasable
7/105 . . . [the spring clip mounted on the rim]
7/12 . . . comprising an annular spring or gripping element mounted on the cover (B60B 7/08 takes precedence)
7/14 . . . comprising screw-threaded means
7/16 . . . Anti-theft devices
7/18 . . . simulating spiked or wire wheel
7/20 . . . having an element mounted for rotation independently of wheel rotation
9/00 Wheels of high resiliency [, e.g. with conical interacting pressure-surfaces (resilient wheels comprising rail-engaging elements B60B 17/0027)]
9/005 . . . [Comprising a resilient hub (hubs per se B60B 27/00)]
9/02 . . . using springs [resiliently mounted bicycle rims (wheels comprising resilient spok es B60B 9/26)]
9/04 . . . in leaf form
9/06 . . . in helical form
9/08 . . . in flat coiled form
9/10 . . . of rubber or the like
9/12 . . . in the form of sleeves or rings concentric with the wheel axis
9/14 . . . with means limiting relative lateral movements between hub and remainder of wheel
9/16 . . . modified to ensure electric conductivity
9/18 . . . using fluid (within spokes B60B 9/26)
9/20 . . . in rings concentric with wheel axis
9/22 . . . inflatable
9/24 . . . with pistons and cylinders
9/26 . . . comprising resilient spokes
9/28 . . . with telescopic action
11/00 Units comprising multiple wheels arranged side by side; Wheels having more than one rim or capable of carrying more than one tyre
11/02 . . . Units of separate wheels mounted for independent or coupled rotation
11/04 . . . Wheels with a rim capable of carrying more than one tyre
11/06 . . . Wheels with more than one rim mounted on a single wheel body
11/08 . . . Arrangements of balancing mechanisms enabling a uniform distribution of load to tyres
11/10 . . . Emergency wheels (collapsible tyres B60C 3/08; tyres characterised by means enabling restricted operation in damaged or deflated condition B60C 17/00)
Wheels

Wheels or wheel attachments designed for increasing traction (vehicle tires B60C; non-skid devices temporarily attachable to resilient tires or resiliently-tired wheels B60C)

15/02 . Wheels with spade lugs
15/021 . [made of resilient material]
15/023 . [being of the broad form type]
15/025 . [with non-cylindrical shape]
15/026 . [characterised by mud deposit prevention]
15/028 . [characterised by active rotation of the lugs]
15/04 . with resiliently-mounted spade lugs
15/06 . with pivotally-mounted spade lugs
15/08 . with spade lugs axially displaced relatively to the tread surface of the tire
15/10 . with radially-adjustable spade lugs; Control mechanisms therefor
15/12 . involvingcams or eccentric hoops
15/14 . involving an axially-displaceable cone
15/16 . involving gearing, e.g. gear pinions acting upon threaded shafts on the spade lugs
15/18 . Wheels with ground-engaging plate-like shoes
15/20 . with resiliently-mounted shoes, e.g. on a spider
15/22 . connected by links to the hub
15/24 . Tread bands or rings for fairing lugs when travelling on the road
15/26 . Auxiliary wheels or rings with traction-increasing surface attachable to the main wheel body
15/263 . [Traction increasing surface being located axially beside tire]
15/266 . [Traction increasing surface being located radially outside tire circumferential surface]
15/28 . Wheel-ballasting weights; Their attachment

Wheels characterised by rail-engaging elements ([wheel-axle combinations B60B 37/00: of model railways A63H 19/22])

17/0003 . [Wheel bodies characterised by use of non-metallic material (B60B 17/0003 takes precedence)]
17/0006 . [Construction of wheel bodies, e.g. disc wheels (B60B 17/0003 takes precedence)]
17/0008 . [Spoked wheels; Spokes thereof (B60B 17/0008 takes precedence)]
17/0011 . [Wheel having braking surfaces]
17/0013 . [formed by two or more axially spaced discs]
17/0017 . [with insonorisation means]
17/002 . [with counter-balance]
17/0024 . [with noise reducing means (B60B 17/0017 takes precedence)]
17/0027 . [Resilient wheels, e.g. resilient hubs (B60B 17/02 takes precedence)]
17/0031 . [using springs]
17/0034 . [of rubber or other non-metallic material]
17/0037 . [of circular or elliptical cross section]
17/0041 . [of substantially rectangular cross section]
17/0044 . [single element arranged in V-form]
17/0048 . [pair of elements arranged in V-form]
17/0051 . [using fluid]
17/0055 . [with non-elastic tyres (e.g. of particular profile or composition)]
17/0058 . [characterised by their fixing to wheel bodies]
17/0062 . [having teeth or protrusions on the circumference of the wheel]
17/0065 . [Flange details]
17/0068 . [the flange being provided on a single side]
17/0072 . [the flange being provided on both sides]
17/0075 . [the flange being movable, for adaptation to variable rail or track widths]
17/0079 . [the flange having a guide wheel]
17/0082 . [Wheels designed to interact with a particular rail profile]
17/0086 . [H-type rail profiles, i.e. the wheels are arranged between upper and lower rail extensions]
17/0089 . [Circular rail profiles]
17/0093 . [Rectangular rail profiles]
17/0096 . [Triangular rail profiles]
17/02 . with elastic tyres
19/00 Wheels not otherwise provided for or having characteristics specified in one of the subgroups of this group
19/003 . [Multidirectional wheels]
19/006 . [Magnetic wheels]
19/02 . convertible, e.g. from road wheel to rail wheel; Wheels specially designed for alternative use on road and rail
19/04 . expansible
19/06 . with compartments for fluid, packing or loading material; Buoyant wheels
19/08 . with lubricating passages, channels, or reservoirs
19/10 . with cooling fins
19/12 . Roller-type wheels (B60B 19/06 takes precedence)
19/125 . [with helical projections on radial outer surface translating rotation of wheel into movement along the direction of the wheel axle]
19/14 . Ball-type wheels (B60B 19/06 takes precedence)

Rims; Hubs

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

21/08 [the surface of head seats]
21/12 Apparatures, e.g. lining bands
21/125 [Bead clamping elements]

23/00 Attaching rim to wheel body (attaching spokes to rim B60B 1/04, B60B 1/14; attaching rims resiliently to wheel body B60B 9/04) [devices for fastening or securing constructional elements or machine parts together F16B 1/04]

NOTE: Group B60B 23/12 takes precedence over groups B60B 23/02 - B60B 23/10

23/02 by split or other expandable ring devices
23/04 by bayonet joint, screw-thread, or like attachments
23/06 by screws, bolts, pins, or clips
23/08 . . arranged radially
23/10 . . arranged axially
23/12 . by devices arranged to permit variation of axial position of rim relative to wheel body for track width adjustment

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

25/002 . . [Rims split in circumferential direction]
25/004 . . [one rim part comprising the wheel disc]
25/006 . . [Rims split symmetrically]
25/008 . . [comprising spacer means]
25/02 . Segmented rims, e.g. with segments arranged in sections; Connecting equipment, e.g. hinges; Insertable flange rings thereto
25/04 . Rims with dismountable flange rings, seat rings, or lock rings
25/045 . . [on both sides]
25/06 . . Split flange rings, e.g. transversely split; Connecting equipment for overlapping the slot
25/08 . . Continuous flange rings; Arrangement of recesses enabling the flange rings to be slipped over the rim body
25/10 . . Seat rings for the tyre head part, e.g. split
25/12 . . . with integral flange part
25/14 . . . Locking means for flange rings or seat rings
25/16 . . . Arrangement of bayonet catches
25/18 . . . Arrangement of split rings
25/20 . . . Arrangement of screws, bolts, or shouldered pins
25/22 . Other appurtenances, e.g. for sealing the component parts enabling the use of tubeless tyres

27/00 Hubs (non-metallic B60B 5/00; of high resiliency B60B 9/00)

27/0005 . . [with ball bearings]
27/001 . . [with roller-bearings]
27/0015 . . [for driven wheels]
27/0021 . . . [characterised by torque transmission means from drive axle]
27/0026 . . . [of the radial type, e.g. splined key]
27/0031 . . . [of the axial type, e.g. front teeth]
27/0036 . . . [comprising homokinetic joints]
27/0042 . . . [characterised by the fixation of the homokinetic joint to the hub]
27/0047 . . [characterised by functional integration of other elements]

27/0052 . . [the element being a brake disc]
27/0057 . . [the element being a brake drum]
27/0063 . . [the element being a brake caliper mount]
27/0068 . . [the element being a sensor]
27/0073 . . [characterised by sealing means]
27/0078 . . [characterised by the fixation of bearings]
27/0084 . . [caulking to fix inner race]
27/0089 . . [caulking to fix outer race]
27/0094 . . [one or more of the bearing races are formed by the hub]
27/0095 [adapted to be rotatably arranged on axle]
27/0035 . . [specially adapted for bicycles]
27/0026 . . [comprising quick release devices]
27/0046 . . [housing driving means, e.g. sprockets]
27/0047 . . . [comprising a rotational dampers]
27/0048 . . . [comprising a spoke protectors]
27/0049 . . . [comprising a freewheel mechanisms]
27/006 . . adapted to be fixed on axle
27/0065 . . [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)

29/00 Apparatus or tools for mounting or dismounting wheels (mounting of wheels at assembly lines B62D 65/12)

29/001 . . [comprising lifting or aligning means (B60B 29/002 takes precedence)]
29/002 . . [provided with a dolly]
29/003 . . [Wrenches, e.g. of the ratchet type (B60B 29/001 takes precedence; wrenches per se B25B 13/00)]
29/004 . . . [for dual wheels]
29/005 . . . [hand-driven operating with multiplicated forces (B60B 29/004 takes precedence; hand-driven gear-operated wrenches per se B25B 17/00, with torque amplification B25B 17/02)]
29/006 . . . [with electric or pneumatic drive (power-driven nut setting or loosening tool per se B25B 21/00)]
29/007 . . . (Supports for wrenches (B60B 29/005, B60B 29/006 take precedence)]
29/008 . . . [Wheel pullers; tools for axial movement of wheels (adjustable axle units for varying track B60B 35/10)]

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

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

31/00 Apparatus or tools for assembling or disassembling wheels

31/005 . . [especially for spoked wheels]
31/02 . . for tightening or straightening wire spokes in situ; for extracting spokes from wheels
31/04 . . for assembling divided rims
31/06 . . for removing or attaching cover discs, hub caps, or the like
Apparatus or tools for mounting wheels or parts thereof

B60B

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

33/0002 . {assembling to the object, e.g. furniture}
33/0005 . {characterised by mounting method}
33/0007 . {by screwing}
33/001 . {by snapping, clicking or latching in}
33/0013 . {by straps, bands or similar}
33/0015 . {characterised by adaptations made to castor}
33/0018 . {in the form of a flat mounting plate}
33/0021 . {in the form of a mounting pin}
33/0023 . {in the form of specific adaptations to the form of the object}
33/0026 . {characterised by adaptations made to the object}
33/0028 . {Construction of wheels; methods of assembling on axle}
33/0036 . {characterised by type of wheels}
33/0039 . {Single wheels}
33/0042 . {Double or twin wheels}
33/0044 . {Roller type wheels, i.e. extra wide wheels}
33/0047 . {characterised by details of the rolling axle}
33/0049 . {the rolling axle being horizontal}
33/0052 . {the rolling axle being inclined}
33/0055 . {the rolling axle intersects swivel axis}
33/0057 . {the rolling axle being offset from swivel axis}
33/006 . {characterised by details of the swivel mechanism}
33/0063 . {no swivelling action, i.e. no real caster}
33/0065 . {characterised by details of the swivel axis}
33/0068 . {the swivel axis being vertical}
33/0071 . {the swivel axis being inclined}
33/0073 . {the swivel axis being symmetrical to wheel or wheels}
33/0076 . {the swivel axis being offset laterally from wheel center plane}
33/0078 . {characterised by details of the wheel braking mechanism}
33/0081 . {acting on tire tread}
33/0084 . {acting on axle end}
33/0086 . {acting on rim or side portion of tyre}
33/0089 . {acting on the floor}
33/0092 . {actuated remotely, e.g. by cable or electrically}
33/0094 . {actuated automatically}
33/0097 . {acting permanently, e.g. for increased security on low friction surfaces}
33/02 . with disengageable swivel action, {i.e. comprising a swivel locking mechanism}
33/021 . {combined with braking of castor wheel}
33/023 . {by using friction}
33/025 . {by using form-fit, e.g. front teeth}
33/026 . {being actuated remotely, e.g. by cable or electrically}
33/028 . {being actuated automatically}
33/04 . adjustable, {e.g. in height; linearly shifting castors}
33/045 . {mounted resiliently, by means of dampers}
33/06 . mounted retractably
33/063 . . . by linear movement parallel to swivel axis
33/066 . . . by use of a hinge and lever mechanism to swing wheel upwards relative to wheel mount
33/08 . Ball castors \( (B60B\ 33/0028\ \text{takes precedence}) \)

35/00 Axle units; Parts thereof (steerable vehicle stub axles B62D) \{ Arrangements for lubrication of axles \}

35/001 . {Axles of the portal type, i.e. axles designed for higher ground clearance}
35/002 . {Axles of the low floor type, e.g. for low-floor city busses}
35/003 . {Steerable axles}
35/004 . {Mounting arrangements for axles}
35/005 . . . {with adaptations at chassis structure}
35/006 . . . {with mounting plates or consoles fitted to axles}
35/007 . . . {for mounting suspension elements to axles}
35/008 . . . {for mounting air suspension elements to axles}
35/009 . . {adapted for tiltable wheels}
35/02 . {Dead axles, i.e. not transmitting torque}
35/025 . . . {the wheels being removable}
35/04 . . {straight}
35/06 . . . {cranked}
35/08 . . . {of closed hollow section}
35/10 . . . {adjustable for varying track \{tools for axial movement of wheels on axles B60B 29/008\}}
35/1009 . . . {operated manually}
35/1018 . . . . {comprising a locking pin}
35/1027 . . . . {comprising a clamping mechanism}
35/1036 . . . . {operated with power assistance}
35/1045 . . . . {electrically}
35/1054 . . . . {hydraulically}
35/1063 . . . . {automatically dependent on operational state of the vehicle}
35/1072 . . . . {by transversally movable elements}
35/1081 . . . . {the element is a wheel}
35/109 . . . . {the element is an axle part}
35/12 . . . Torque-transmitting axles (independent suspension aspects B60G)
35/121 . . {Power-transmission from drive shaft to hub}
35/122 . . . {using gearings}
35/124 . . . . {of the helical or worm type}
35/125 . . . . {of the planetary type}
35/127 . . . . {using universal joints}
35/128 . . . . {of the homokinetic or constant velocity type}
35/14 . . . composite or split, e.g. half-axles; Couplings between axle parts or sections
35/16 . . . Axle housings
35/163 . . . . {characterised by specific shape of the housing, e.g. adaptations to give space for other vehicle elements like chassis or exhaust system}
35/166 . . . . {characterised by reinforcements, e.g. reinforcement ribs}
35/18 . . . {Arrangement of bearings}

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)

37/02 . {the wheels being integral with solid axles}
37/04 . {the wheels being rigidly attached to solid axles}
37/06 . {the wheels being integral with, or rigidly attached to, hollow axles}
37/08 . {the hollow axles being rotatable around fixed axles}
37/10 . {the wheels being individually rotatable around the axles}
37/12 . {Axles with a fixed ground wheel and a loose wheel
Apparatus or tools for mounting wheels or parts thereof

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)

39/003 . (Vehicle mounted non-skid chains actuated by centrifugal force (non-skid devices temporarily attachable to resilient tyres B60C 27/00))

39/006 . [characterised by a control system for the actuation of the rotating chain wheel]

39/02 . Vehicle fittings for scattering or dispensing material in front of its wheels

39/021 . [Details of the dispensing device]

39/022 . [related to reservoirs]

39/023 . [related to metering valves]

39/024 . [related to preconditioning of the dispensing materials]

39/025 . [related to the control system]

39/026 . [the material being in gas form]

39/027 . [the gas being heated on purpose]

39/028 . [the gas being exhaust gas]

39/04 . the material being granular, e.g. sand (combined control of sanding apparatus and brakes of rail vehicles B61H)

39/06 . the dispensing being effected by mechanical means

39/08 . the dispensing being effected by fluid means

39/083 . [dispensing being effected by liquid]

39/086 . [dispensing being effected by gas]

39/10 . the dispensing being controlled electrically or electromagnetically

39/12 . the material being sheet-like or web-like

2200/00 Type of product being used or applied (kind of vehicle product being used or applied B60Y 2200/00)

2200/20 . Furniture or medical appliances

2200/22 . Chairs

2200/222 . Office chairs

2200/224 . Arm chairs

2200/24 . Beds

2200/242 . Hospital beds

2200/26 . Medical appliances

2200/40 . Articles of daily use

2200/41 . Waste bins

2200/43 . Carts

2200/432 . Shopping carts

2200/434 . Wheel barrows

2200/45 . Suitcases

2200/47 . Physical activity equipment, e.g. leisure or sports articles

2200/49 . Domestic appliances, e.g. vacuum cleaners

2310/00 Manufacturing methods

2310/20 . Shaping

2310/202 . by casting

2310/204 . by moulding, e.g. injection moulding, i.e. casting of plastics material

2310/206 . by stamping

2310/208 . by forging

2310/2082 . by swaging

2310/211 . by folding or bending

2310/212 . by drawing

2310/213 . by punching

2310/214 . by extrusion

2310/218 . by hydroforming

2310/221 . by magnetic pulse forming

2310/222 . by twisting

2310/224 . by rolling

2310/226 . by cutting

2310/228 . by machining

2310/231 . by turning

2310/232 . by milling

2310/234 . by grinding

2310/238 . by thermal spraying of molten material

2310/241 . by weaving or knitting of fibers

2310/242 . by laminating, e.g. fabrication of sandwich sheets

2310/30 . joining

2310/302 . by welding

2310/3021 . by autogen welding

2310/3022 . by spot welding, plug welding

2310/3023 . by arc welding, e.g. inert gas arc welding

2310/3025 . by thermal welding, e.g. friction, induction or ultrasonic welding

2310/3026 . by laser welding

2310/3027 . by electron beam welding

2310/3028 . by magnetic pulse welding

2310/303 . by soldering

2310/305 . by screwing

2310/306 . by clamping or wedging, e.g. by clamping inserts as joining means

2310/307 . by removably mountable securing elements, e.g. circlips

2310/311 . by riveting

2310/3112 . by punch-riveting

2310/312 . by hemming or seaming, e.g. by folding of the rim

2310/314 . by deformation

2310/3142 . by caulking

2310/316 . by press-fitting, shrink-fitting

2310/318 . by adhesive bonding, e.g. glueing

2310/321 . by overmolding

2310/323 . by coextrusion

2310/329 . by splicing, e.g. of ropes

2310/330 . Thermal treatment

2310/352 . Curing

2310/354 . Hardening

2310/3542 . Quenching

2310/356 . Co-curing; Vulcanisation

2310/360 . Surface treatment; After treatment

2310/612 . Polishing

2310/614 . Painting

2310/616 . Coating with thin films

2310/6162 . Conductive films

2310/618 . Coating with foils

2310/621 . Electro-chemical processes

2310/622 . Shot-peening

2310/64 . Effect of treatments

2310/642 . Matted

2310/644 . Polished

2310/646 . Engraved

2310/648 . Structured

2310/651 . Glossy

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

2320/00 Manufacturing or maintenance operations
2320/10 . . Assembling; disassembling
2320/12 . . Assembly devices for spoked wheels
2320/122 . . for spoke tensioning
2320/124 . . for trueing of spoked wheels
2320/126 . . for restoring form or removing local distortions of wheel rims in unassembled state
2320/14 . . Assembly devices for divided rims
2320/16 . . Devices for attaching or removing cover discs, hub caps or other ornamental rings or elements
2320/30 . . Balancing
2320/50 . . Securing
2320/52 . . to prevent loss
2320/522 . . by locking washer
2320/524 . . by securing plate

2340/00 Wheel transporting, Mounting of wheels
2340/10 . . Operation mode
2340/12 . . Operated manually
2340/14 . . Power driven
2340/16 . . Included in assembly line
2340/18 . . Automated process
2340/30 . . Wheel transporting or handling devices
2340/32 . . for gripping the wheel
2340/34 . . for positioning the wheel to hub or bolt holes
2340/36 . . the devices being provided on a dolly
2340/50 . . Wheel mounting or removal devices
2340/52 . . Auxiliary tools, e.g. For alignment
2340/70 . . Lifting jacks

2360/00 Materials; Physical forms thereof
2360/10 . . Metallic materials
2360/102 . . Steel
2360/104 . . Aluminum
2360/106 . . Magnesia
2360/108 . . Titanium
2360/109 . . Bronze
2360/14 . . Physical forms of metallic parts
2360/141 . . Sheet-metals
2360/143 . . Bars, i.e. being solid
2360/1432 . . of circular cross section
2360/1434 . . of polygonal cross section, e.g. triangular or rectangular
2360/1436 . . of elliptical cross section
2360/144 . . Tubes, i.e. being hollow
2360/1442 . . of circular cross section
2360/1444 . . of rectangular cross section
2360/1446 . . of elliptical cross section
2360/1448 . . of irregular cross-section
2360/145 . . Profiles, i.e. being solid and having irregular cross-section
2360/1452 . . L-profiles
2360/1454 . . T or H-profiles
2360/1456 . . X or Y-profiles
2360/1458 . . U or V-profiles
2360/147 . . Castings

2360/148 . . Sinterings
2360/149 . . Metal foams
2360/30 . . Synthetic materials
2360/32 . . Plastic compositions
2360/322 . . Comprising polypropylene
2360/324 . . Comprising polyurethane
2360/33 . . Synthetic foams
2360/34 . . Reinforced plastics
2360/341 . . with fibres
2360/3412 . . Glass fibres
2360/3414 . . Aramide fibres
2360/3416 . . Carbon fibres
2360/3418 . . Aramid fibres
2360/342 . . With strands
2360/3422 . . consisting of fibres oriented substantially parallel
2360/3424 . . consisting of braided fibres
2360/344 . . With woven material
2360/3442 . . characterised by material mixes
2360/3444 . . characterised by weaving patterns
2360/346 . . Material impregnated with resin before being put into form, i.e. prepregs
2360/3462 . . comprising strands
2360/3464 . . comprising woven material
2360/348 . . Resins
2360/36 . . Composite materials
2360/362 . . Compound sheets
2360/364 . . comprising honeycomb structures
2360/366 . . comprising foams, e.g. synthetic or metal foams
2360/368 . . Coproduced material combinations, e.g. By over-molding, co-extrusion, co-curing or vulcanizing
2360/50 . . Rubbers
2360/70 . . Ceramics
2360/90 . . Wood
2360/92 . . Leather
2360/94 . . Cardboard or papers

2380/00 Bearings
2380/10 . . Type
2380/12 . . Ball bearings
2380/14 . . Roller bearings
2380/16 . . Needle bearings
2380/18 . . Plain or sleeve bearings
2380/20 . . Linear bearings
2380/22 . . Magnetic bearings
2380/30 . . Cage
2380/32 . . Without cage
2380/40 . . Modularity
2380/42 . . Single-piece
2380/44 . . Multi-piece
2380/50 . . Load bearing capacity
2380/60 . . Rolling elements
2380/62 . . Specific number
2380/64 . . Specific shape
2380/70 . . Arrangements
2380/71 . . Single track
2380/73 . . Double track
2380/75 . . Twin or multiple bearings having identical diameters
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<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tr>
<td>2380/76</td>
<td>Twin or multiple bearings having different diameters</td>
</tr>
<tr>
<td>2380/77</td>
<td>Diameters of bearings at opposite ends of hub</td>
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<tr>
<td>2380/772</td>
<td>Identical diameters of bearings at opposite ends of hub</td>
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<tr>
<td>2380/774</td>
<td>Different diameters of bearings at opposite ends of hub</td>
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<tr>
<td>2380/80</td>
<td>Shafts specially adapted to receive bearings</td>
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<td>2380/82</td>
<td>Caulked to fix race</td>
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<tr>
<td>2380/90</td>
<td>Casings or housings specially adapted to receive bearings</td>
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<tr>
<td>2380/92</td>
<td>Caulked to fix race</td>
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<tr>
<td>2900/00</td>
<td><strong>Purpose of invention</strong></td>
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<td>Complexity</td>
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<td>Product variety, e.g. by standardisation or use of adapters</td>
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<tr>
<td>2900/121</td>
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<td>2900/1216</td>
<td>due to air-drag</td>
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<td>2900/131</td>
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<tr>
<td>2900/351</td>
<td>versatility, e.g. usable for different purposes or different arrangements</td>
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<td>2900/50</td>
<td>Improvement of</td>
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<td>2900/511</td>
<td>Sealing</td>
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<td>2900/513</td>
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<td>2900/521</td>
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<td>2900/561</td>
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