

CPC COOPERATIVE PATENT CLASSIFICATION

E FIXED CONSTRUCTIONS

BUILDING

E01 CONSTRUCTION OF ROADS, RAILWAYS, OR BRIDGES (of tunnels [E21D](#))

E01B PERMANENT WAY; PERMANENT-WAY TOOLS; MACHINES FOR MAKING RAILWAYS OF ALL KINDS (derailing or rerailing blocks on track, track brakes or retarders [B61K](#))

Structure of the permanent way for railways or tramways

- | | | |
|-------------|--|---|
| | 3/28 | . made from concrete or from natural or artificial stone (manufacture B28) |
| 1/00 | Ballastway; Other means for supporting the sleepers or the track; Drainage of the ballastway (draining by trenches, culverts, or conduits E01F 5/00) | 3/30 . . Hollow sleepers |
| | 3/32 | . . with armouring or reinforcement (hollow sleepers E01B 3/30) |
| 1/001 | . {Track with ballast} | 3/34 . . . with pre-tensioned armouring or reinforcement (pre-tensioned armouring or reinforcing elements E04C 5/00) |
| 1/002 | . {Ballastless track, e.g. concrete slab trackway, or with asphalt layers} | 3/36 . . Composite sleepers |
| 1/004 | . . {with prefabricated elements embedded in fresh concrete or asphalt} | 3/38 . . Longitudinal sleepers; Longitudinal sleepers integral or combined with tie-rods; Combined longitudinal and transverse sleepers; Layers of concrete supporting both rails |
| 1/005 | . . {with sleeper shoes} | |
| 1/007 | . . {with interlocking means to withstand horizontal forces} | 3/40 . . Slabs; Blocks; Pot sleepers; Fastening tie-rods to them |
| 1/008 | . {Drainage of track} | |
| 2/00 | General structure of permanent way (railway networks B61B 1/00; foundations for pavings E01C 3/00; foundations in general E02D) | 3/42 . . combined with inserts of wood or other material |
| | | 3/44 . made from other materials only if the material is essential |
| 2/003 | . {Arrangement of tracks on bridges or in tunnels} | 3/46 . made from different materials (E01B 3/26 , E01B 3/42 take precedence) |
| 2/006 | . {Deep foundation of tracks} | 3/48 . Distance keepers or tie-rods for sleepers |
| 3/00 | Transverse or longitudinal sleepers (for switches or crossings E01B 7/22); Other means resting directly on the ballastway for supporting rails | 5/00 |
| | | Rails; Guard rails (manufacture of rails B21B); Distance-keeping means for them |
| 3/02 | . made from wood (drying or impregnating B27K) | 5/02 . Rails |
| 3/04 | . . Means for preventing cleaving | 5/04 . . Grooved rails |
| 3/06 | . . . Anti-cracking dogs | 5/06 . . Reversible or invertible rails |
| 3/08 | . . . Straps or bands for hooping or encircling sleepers (apparatus for hooping wooden railway sleepers on the spot E01B 31/28) | 5/08 . . Composite rails; Compound rails with dismountable or non-dismountable parts |
| 3/10 | . . Composite sleepers | 5/10 . . . Composite grooved rails; Inserts for grooved rails |
| 3/12 | . . Longitudinal sleepers; Longitudinal sleepers integral or combined with tie-rods; Combined longitudinal and transverse sleepers | 5/12 . . Rails with a foot serving as a sleeper |
| | | 5/14 . . Rails for special parts of the track, e.g. for curves |
| 3/14 | . . Slabs; Blocks; Fastening tie-rods to them | 5/16 . Distance keepers |
| 3/16 | . made from steel | 5/18 . Guard rails; Connecting, fastening or adjusting means therefor |
| 3/18 | . . Composite sleepers | |
| 3/20 | . . Sleeper construction for special purposes, e.g. with openings for ballast working (sleepers for shiftable track for heavy loads E01B 23/12) | 7/00 |
| | | Switches; Crossings (operating mechanisms B61L) |
| 3/22 | . . Longitudinal sleepers; Longitudinal sleepers integral or combined with tie-rods; Combined longitudinal and transverse sleepers | 7/02 . Tongues; Associated constructions |
| | | 7/04 . . Constructions with tongues turning about a vertical pivot at the end |
| 3/24 | . . Slabs; Blocks; Pot sleepers; Fastening tie-rods to them | 7/06 . . Constructions with flexible tongues or flexible fishplates |
| | | 7/08 . . Other constructions of tongues, e.g. tilting about an axis parallel to the rail, movable tongue blocks or rails |
| 3/26 | . . combined with inserts of wood artificial stone or other material | 7/10 . Frogs |
| | | 7/12 . . Fixed frogs made of one part or composite |

- 7/14 . . with movable parts
- 7/16 . . Jump-over frogs
- 7/18 . Combinations of switches and crossings
- 7/20 . Safety means for switches, e.g. switch point protectors, auxiliary or guiding rail members
- 7/22 . Special sleepers for switches or crossings; Fastening means therefor
- 7/24 . Heating of switches
- 7/26 . Lubricating of switches ([lubricating of rails B61K 3/00](#))
- 7/28 . Crossings
- 7/30 . . Jump-over crossings
- 9/00 Fastening rails on sleepers, or the like (fastening rails to bridges [E01D 19/12](#))**
- 9/02 . Fastening rails, tie-plates, or chairs directly on sleepers or foundations; Means therefor
- 9/04 . . Fastening on wooden or concrete sleepers or on masonry without clamp members
- 9/06 . . . Railways spikes ([nails in general F16B](#))
- 9/08 Elastic spikes
- 9/10 . . . Screws or bolts for sleepers ([screws or bolts in general F16B](#))
- 9/12 . . . Retaining or locking devices for spikes or screws
- 9/14 . . . Plugs, sleeves, thread linings, or other inserts for holes in sleepers ([inserting plugs or sleeves E01B 31/26](#))
- 9/16 for wooden sleepers
- 9/18 for concrete sleepers
- 9/20 . . . by keys
- 9/22 . . Fastening on steel sleepers without clamp members
- 9/24 . . . by keys
- 9/26 . . . Welded fastenings
- 9/28 . . Fastening on wooden or concrete sleepers or on masonry with clamp members
- 9/30 . . . by resilient steel clips
- 9/303 {the clip being a shaped bar}
- 9/306 {the clip being a shaped plate}
- 9/32 . . Fastening on steel sleepers with clamp members
- 9/34 . . . by resilient steel clips
- 9/36 . . Metal sole-plates for rails which rails are directly fastened to sleepers
- 9/38 . Indirect fastening of rails by using tie-plates or chairs; Fastening of rails on the tie-plates or in the chairs
- 9/40 . . Tie-plates for flat-bottom rails ([manufacture B21](#))
- 9/42 . . . of two or more parts
- 9/44 . . Fastening the rail on the tie-plate
- 9/46 . . . by clamps
- 9/48 by resilient steel clips
- 9/483 {the clip being a shaped bar}
- 9/486 {the clip being a shaped plate}
- 9/50 . . . by keys
- 9/52 by resilient keys
- 9/54 . . Rail chairs
- 9/56 . . . for rails with two or more treads
- 9/58 . . Fastening the rail in the chair
- 9/60 . Rail fastenings making use of clamps or braces supporting the side of the rail
- 9/62 . Rail fastenings incorporating resilient supports
- 9/64 . Rail fastenings gripping or encircling the sleeper
- 9/66 . Rail fastenings allowing the adjustment of the position of the rails, so far as not included in the preceding groups
- 9/68 . Pads or the like, e.g. of wood, rubber, placed under the rail, tie-plate, or chair
- NOTE**
- If the subject to be classified has more than one characteristic, classification is made in group [E01B 9/68](#) and indexing codes for the different characteristics are given
- 9/681 . . {characterised by the material}
- 9/683 . . . {layered or composite}
- 9/685 . . {characterised by their shape}
- 9/686 . . . {with textured surface}
- 9/688 . . . {with internal cavities}
- 11/00 Rail joints (electrical connection of the rail [B60M 5/00](#))**
- 11/02 . Dismountable rail joints
- 11/04 . . Flat fishplates
- 11/06 . . . with keys or pins
- 11/08 . . Angle fishplates
- 11/10 . . Fishplates with parts supporting or surrounding the rail foot
- 11/12 . . Fishplates engaging only the rail foot
- 11/14 . . Rail foot flange clips in one piece
- 11/16 . . Fishplates for joining rails of different sections
- 11/18 . . Fishplates for temporarily repairing broken rails
- 11/20 . . with gap-bridging
- 11/22 . . . by parts of the rails
- 11/24 with oblique or overlapping rail ends
- 11/26 with interlocking rail ends
- 11/28 . . . by parts of the joining members
- 11/30 Fishplates with integral tread parts lying in the cross-section of the rail head
- 11/32 . . . by separate parts, Inserts bridging both rail heads
- 11/34 Auxiliary rail beside gap
- 11/36 . . Fastening means for fishplates
- 11/38 . . . Locking arrangements for fastening means ([locking means for nuts or bolts in general F16B](#))
- 11/40 . . Dismountable rail joints combined with welded parts
- 11/42 . Joint constructions for relatively movable rails, e.g. rails on turntables, traversers, or swing bridges
- 11/44 . Non-dismountable rail joints; Welded joints ([welding methods B23K](#))
- 11/46 . . General methods for making gapless tracks
- 11/48 . . Joints made by flame welding
- 11/50 . . Joints made by electric welding
- 11/52 . . Joints made by alumino-thermal welding
- 11/54 . Electrically-insulating rail joints
- 11/56 . Special arrangements for supporting rail ends ([foot supports E01B 11/08 - E01B 11/14](#))
- 11/58 . . Bridge plates
- 11/60 . . . with wedges
- 11/62 . . Bridge chairs ([chairs E01B 9/54 - E01B 9/58](#))
- 13/00 Arrangements preventing shifting of the track**
- 13/02 . Rail anchors

15/00	Guards for preventing a person's foot being trapped in grooved rails	25/305	. . {Rails or supporting constructions}
		25/32	. . Stators, guide rails or slide rails
17/00	Cattle guards connected to the permanent way (grids in general for preventing cattle from straying A01K 3/00)	25/34	. . Switches; Frogs; Crossings
19/00	Protection of permanent way against development of dust or against the effect of wind, sun, frost, or corrosion; Means to reduce development of noise (snow fences E01F 7/02 , snow-ploughs E01H 8/02 , watering E01H 11/00)	26/00	Tracks or track components not covered by any one of the preceding groups
19/003	. {Means for reducing the development or propagation of noise}	26/005	. {Means for fixing posts, barriers, fences or the like to rails}
19/006	. {Means for protecting the underground against spillage}		
21/00	Track superstructure adapted for tramways in paved streets (paving E01C 9/04 , E01C 9/06)		
21/02	. Special supporting means; Draining of rails	27/00	Placing, renewing, working, cleaning, or taking-up the ballast, with or without concurrent work on the track; Devices therefor; Packing sleepers
21/04	. Special fastenings, joint constructions, or tie-rods	27/02	. Placing the ballast; Making ballastway; Redistributing ballasting material; Machines or devices therefor; Levelling means
23/00	Easily dismantlable or movable tracks, e.g. temporary railways; Details specially adapted therefor	27/021	. . {by devices moving underneath the track, e.g. ballast sleighs}
23/02	. Tracks for light railways, e.g. for field, colliery, or mine use	27/022	. . {by devices moving on the track with or without spreading or levelling}
23/04	. . Fastening or joining means	27/023	. . {Spreading, levelling or redistributing ballast already placed}
23/06	. . Switches (turntables B60S , B61J); Portable switches; Turnouts	27/025	. . . {by means of non-driven tools}
23/08	. Temporary tracks for use while repairing tramways	27/026	. . . {by means of driven tools, e.g. rotating brooms or digging devices}
23/10	. Shiftable tracks for heavy loads, e.g. carrying excavators	27/027	. . {Loosening ballasting material}
23/12	. . Sleepers	27/028	. . {Compacting ballasting material; Performing ballast cores or seats for sleepers}
23/14	. . Fastening or joining means (fastening of rails by keys E01B 9/24)	27/04	. Removing the ballast; Machines therefor, whether or not additionally adapted for taking-up ballast (E01B 27/06 , E01B 27/12 takes precedence; redistributing ballasting material E01B 27/02)
23/16	. . Switches	27/06	. Renewing or cleaning the ballast <i>in situ</i> , with or without concurrent work on the track
25/00	Tracks for special kinds of railways (systems B61B ; wheel tracks on roads E01C 9/02)	27/08	. . the track having been taken-up (E01B 27/11 takes precedence)
25/02	. Tracks for rack railways	27/10	. . without taking-up track (E01B 27/11 takes precedence)
25/04	. . Rack rails; Supports or connections for rack rails	27/102	. . . {Removing unwanted material without removing the ballast}
25/06	. . Switches; Frogs; Crossings	27/105	. . . {the track having been lifted}
25/08	. Tracks for mono-rails with centre of gravity of vehicle above the load-bearing rail	27/107	. . . {along between the tracks only}
25/10	. . Mono-rails; Auxiliary balancing rails; Supports or connections for rails	27/11	. . combined with concurrent renewal of track components
25/12	. . Switches; Crossings	27/12	. Packing sleepers, with or without concurrent work on the track; Compacting track-carrying ballast
25/14	. Tracks for cable-drawn railway vehicles	27/13	. . Packing sleepers, with or without concurrent work on the track (performing ballast cores or seats for sleepers E01B 27/02)
25/15	. . Switches; Crossings	27/14	. . . Manual tools or hand-held power tools therefor
25/16	. Tracks for aerial rope railways with a stationary rope	27/16	. . . Sleeper-tamping machines
25/18	. . Ropes; Supports, fastening or straining means for ropes (ropes in general D07B ; masts E04H 12/00 ; ropes sockets F16G)	27/17 combined with means for lifting, levelling or slewing the track
25/20	. . Switches; Crossings	27/18 by introducing additional fresh material under the sleepers, e.g. by the measured-shovel method, by the blowing method
25/22	. Tracks for railways with the vehicle suspended from rigid supporting rails	27/20	. . Compacting the material of the track-carrying ballastway, e.g. by vibrating the track, by surface vibrators (of trackless ballastway E01B 27/02 ; for packing sleepers E01B 27/12)
25/24	. . Supporting rails; Auxiliary balancing rails; Supports or connections for rails		
25/26	. . Switches; Crossings		
25/28	. Rail tracks for guiding vehicles when running on road or similar surface (wheel tracks on roads E01C 9/02)		
25/30	. Tracks for magnetic suspension or levitation vehicles		

29/00	Laying, rebuilding, or taking-up tracks; Tools or machines therefor (E01B 27/00 , E01B 31/00 take precedence)	31/00	Working rails, sleepers, baseplates, or the like, in or on the line; Machines, tools, or auxiliary devices specially designed therefor (characterised by features independent of use on assembled track B21 , B23 - B25 , B27)
29/005	• { Making of concrete parts of the track in situ }		
29/02	• Transporting, laying, removing, or renewing lengths of assembled track, assembled switches, or assembled crossings (E01B 29/04 takes precedence)	31/02	• Working rail or other metal track components on the spot
29/04	• Lifting or levelling of tracks (lifting devices in general B66F)	31/04	• • Sectioning or slitting, e.g. by sawing, shearing, flame-cutting
29/05	• Transporting, laying, removing, or renewing both rails and sleepers (as assembled units E01B 29/02)	31/06	• • Making holes, e.g. by drilling, punching, flame-cutting
29/06	• Transporting, laying, removing or renewing sleepers (E01B 29/05 takes precedence; carrying devices B65G 7/12)	31/08	• • Bending, e.g. for straightening rails or rail joints (for aligning rail ends to be welded E01B 29/46)
29/09	• • under, or from under, installed rails	31/12	• • Removing metal from rails, rail joints, or baseplates, e.g. for deburring welds, reconditioning worn rails
29/10	• • • for inserting or removing sleepers	31/13	• • • by milling
29/11	• • • Removal involving destruction of the sleeper, e.g. the sectioning thereof	31/15	• • • by planing or filing
29/13	• • • for moving sleepers in a direction parallel to the rails, e.g. for spacing or aligning them (E01B 29/10 takes precedence)	31/17	• • • by grinding
29/14	• • • for lifting sleepers up to the rails (lifting devices in general B66F)	31/175	• • • • { using grinding belts }
29/16	• Transporting, laying, removing, or replacing rails; Moving rails placed on sleepers in the track (E01B 29/05 takes precedence; moving or tilting heavy loads in general B65G 7/00)	31/18	• • Reconditioning or repairing worn or damaged parts on the spot, e.g. applying inlays, building-up rails by welding (E01B 31/04 - E01B 31/12 take precedence); Heating or cooling of parts on the spot, e.g. for reducing joint gaps, for hardening rails
29/17	• • Lengths of rails assembled into strings, e.g. welded together	31/20	• Working or treating non-metal sleepers in or on the line, e.g. marking, creosoting (working metal sleepers E01B 31/02)
29/20	• • Moving rails placed on installed sleepers in the plane track	31/22	• • Cutting or grinding wooden sleepers, e.g. for forming rail seats (E01B 31/24 takes precedence)
29/22	• • Raising rails from sleepers, e.g. for inserting sole-plates (lifting devices in general B66F)	31/23	• • • Sectioning (combined with removal of segments from track E01B 29/11)
29/24	• Fixing or removing detachable fastening means or accessories thereof; Pre-assembling track components by detachable fastening means (E01B 29/02 , E01B 31/26 take precedence)	31/24	• • Forming, treating, reconditioning, or cleaning holes in sleepers; Drilling-templates (E01B 29/28 , E01B 31/26 take precedence)
29/26	• • the fastening means being spikes (E01B 29/16 takes precedence; hand-held tools for nail or staple driving or extracting B25C)	31/26	• • Inserting or removing inserts or fillings for holes in sleepers, e.g. plugs, sleeves
29/28	• • the fastening means being of screw-and-nut type (portable apparatus for fixing or removing screws or the like B25B); Apparatus therefor, adapted to additionally drilling holes	31/28	• • Applying or removing anti-splitting or like reinforcing means (E01B 31/26 takes precedence; straps or bands therefor E01B 3/08)
29/29	• • • for horizontally-arranged fastening elements, e.g. fish-bolts	33/00	Machines or devices for shifting tracks, with or without lifting, e.g. for aligning track, for shifting excavator track (combined with sleeper packing machines E01B 27/17)
29/32	• Installing or removing track components, not covered by the preceding groups, e.g. sole-plates, rail anchors (E01B 31/26 takes precedence)	33/02	• for slewing, i.e. transversely shifting, in steps
29/40	• Means or arrangements for temporarily supporting laid tracks, or rails or sleepers in the track (temporary fishplates E01B 11/18)	33/04	• • Manual tools; Devices not mounted on vehicles
29/42	• Undetachably joining or fastening track components in or on the track, e.g. by welding, by gluing; Pre-assembling track components by gluing; Sealing joints with filling components (E01B 31/26 takes precedence; independent heating means E01B 31/18 ; welding in general B23K ; gluing metal parts in general F16B 11/00)	33/06	• for slewing in a continuous operation, e.g. for tracks which carry excavators
29/44	• • Methods for effecting joining of rails in the track, e.g. taking account of ambient temperature	33/08	• • Boom track-slewing machines
29/46	• • Devices for holding, positioning, or urging together the rail ends (adjusting the joint by moving rails E01B 29/20)	33/10	• • Bridge track-slewing machines
		33/12	• • Combined boom and bridge track-slewing machines
		33/18	• • Details not peculiar to a particular type of machine
		33/21	• • • Arrangement or construction of rollers moving the rails
		35/00	Applications of measuring apparatus or devices for track-building purposes (apparatus on locomotives or cars to indicate or record bad track sections B61K 9/00 ; measuring angles, linear dimensions, or irregularities in general G01B , G01C)

- 35/02 . for spacing, for cross levelling; for laying-out curves
- 35/04 . . Wheeled apparatus
- 35/06 . for measuring irregularities in longitudinal direction
- 35/08 . . for levelling
- 35/10 . . for aligning
- 35/12 . for measuring movement of the track or of the components thereof under rolling loads, e.g. depression of sleepers, increase of gauge

37/00 Making, maintaining, renewing, or taking-up the ballastway or the track, not provided for in a single one of groups [E01B 27/00](#) - [E01B 35/00](#)

2201/00 Fastening or restraining methods

- 2201/02 . by wedging action
- 2201/04 . by bolting, nailing or the like
- 2201/06 . by eccentric or levering action
- 2201/08 . by plastic or elastic deformation of fastener
- 2201/10 . in alternative ways, e.g. glueing, welding, form-fits

Making, maintaining, renewing, or taking-up the ballastway or the track; Tools or machines specially designed therefor (derailing or rerailing of machines [B61K 5/00](#); removal of foreign matter from the permanent way, vegetation control applying liquids [E01H](#))

2202/00 Characteristics of moving parts of rail systems, e.g. switches, special frogs, tongues

- 2202/02 . Nature of the movement
- 2202/021 . . Turning or tilting or elastically bending
- 2202/022 . . . about horizontal axis
- 2202/024 . . . about vertical axis
- 2202/025 . . Pure translation
- 2202/027 . . Including a component perpendicular to the plane of the rails
- 2202/028 . . . Movement along an inclined surface
- 2202/04 . Nature of the support or bearing
- 2202/042 . . Sliding
- 2202/044 . . Rolling
- 2202/046 . . . with rolls on fixed part
- 2202/048 . . . with rolls on moving part
- 2202/06 . . Use of friction-reducing surfaces
- 2202/08 . Locking devices or mechanisms for inhibiting movement

2203/00 Devices for working the railway-superstructure

- 2203/01 . with track
- 2203/012 . . present, i.e. in its normal position
- 2203/015 . . present but lifted
- 2203/017 . . removed or not present yet
- 2203/02 . Removing or re-contouring ballast
- 2203/021 . . Blowing
- 2203/022 . . Horizontal chain
- 2203/024 . . Inclined chain
- 2203/025 . . Suction
- 2203/027 . . Sweeping
- 2203/028 . . Alternative ways
- 2203/03 . Displacing or storing ballast
- 2203/032 . . with special use or configuration of conveyor belts
- 2203/034 . . using storing containers
- 2203/036 . . . fixed to vehicle

- 2203/038 . . . detachable from the vehicle
- 2203/04 . Cleaning or reconditioning ballast or ground beneath
- 2203/042 . . in situ, e.g. vacuum-cleaners
- 2203/045 . . the ballast having been taken up
- 2203/047 . . Adding material, e.g. tar, glue, protective layers
- 2203/06 . Placing ballast
- 2203/062 . . New ballast
- 2203/065 . . Re-use of ballast
- 2203/067 . . Special methods for posing or quantifying ballast
- 2203/08 . Levelling ballast or ground beneath
- 2203/083 . . Ploughs
- 2203/086 . . Rotating brooms
- 2203/10 . Track-lifting or-lining devices or methods
- 2203/12 . Tamping devices
- 2203/122 . . for straight track
- 2203/125 . . adapted for switches or crossings
- 2203/127 . . vibrating the track surface
- 2203/14 . Way of locomotion or support
- 2203/141 . . on the track to be treated
- 2203/143 . . on a side-track
- 2203/145 . . on the ballast
- 2203/146 . . using other means than driven wheels as propulsion means
- 2203/148 . . having wheelsets that can be displaced horizontally or vertically
- 2203/15 . Reducing impact of devices on environment
- 2203/16 . Guiding or measuring means, e.g. for alignment, canting, stepwise propagation
- 2203/17 . continually advancing

2204/00 Characteristics of the track and its foundations

- 2204/01 . Elastic layers other than rail-pads, e.g. sleeper-shoes, bituconcrete
- 2204/02 . Ballast bags
- 2204/03 . Injecting, mixing or spraying additives into or onto ballast or underground
- 2204/04 . Direct mechanical or chemical fixing of sleepers onto underground
- 2204/05 . Use of geotextiles
- 2204/06 . Height or lateral adjustment means or positioning means for slabs, sleepers or rails
- 2204/07 . Drainage
- 2204/08 . Deep or vertical foundation
- 2204/09 . Ballastless systems
- 2204/10 . Making longitudinal or transverse sleepers or slabs in situ or embedding them
- 2204/11 . Embedded tracks, using prefab elements or injecting or pouring a curable material
- 2204/12 . Floating rails or sleepers
- 2204/13 . Dowels for slabs, sleepers or rail-fixings
- 2204/14 . Vegetation on or around railway-tracks
- 2204/15 . Layout or geometry of the track
- 2204/16 . Specific granulometry of the ballast

2205/00 Electrical insulation of railway track parts