

## SECTION E — FIXED CONSTRUCTIONS

### E01 CONSTRUCTION OF ROADS, RAILWAYS, OR BRIDGES

**E01B PERMANENT WAY; PERMANENT-WAY TOOLS; MACHINES FOR MAKING RAILWAYS OF ALL KINDS** (derailing or rerailing blocks on track, track brakes or retarders B61K; removal of foreign matter from the permanent way, vegetation control, applying liquids E01H)

#### Subclass index

#### STRUCTURE OF THE PERMANENT WAY

General structure.....	2/00
Ballastway, transverse or longitudinal sleepers.....	1/00, 3/00
Rails or switches for general application.....	5/00-13/00, 26/00
Rails or switches for particular application.....	21/00-26/00
Protective arrangements.....	15/00-19/00
MAKING, MAINTAINING, RENEWING, OR TAKING-UP THE BALLASTWAY OR THE TRACK.....	27/00-37/00

#### Structure of the permanent way for railways or tramways

<b>1/00 Ballastway; Other means for supporting the sleepers or the track; Drainage of the ballastway</b> (draining by trenches, culverts, or conduits E01F 5/00)	3/32	• • with armouring or reinforcement (hollow sleepers E01B 3/30)
<b>2/00 General structure of permanent way</b> (railway networks B61B 1/00; foundations for pavings E01C 3/00; foundations in general E02D)	3/34	• • • with pre-tensioned armouring or reinforcement (pre-tensioned armouring or reinforcing elements E04C 5/00)
<b>3/00 Transverse or longitudinal sleepers</b> (for switches or crossings E01B 7/22); <b>Other means resting directly on the ballastway for supporting rails</b>	3/36	• • Composite sleepers
3/02 • made from wood (drying or impregnating B27K)	3/38	• • Longitudinal sleepers; Longitudinal sleepers integral or combined with tie-rods; Combined longitudinal and transverse sleepers; Layers of concrete supporting both rails
3/04 • • Means for preventing cleaving	3/40	• • Slabs; Blocks; Pot sleepers; Fastening tie-rods to them
3/06 • • • Anti-cracking dogs	3/42	• • combined with inserts of wood or other material
3/08 • • • Straps or bands for hooping or encircling sleepers (apparatus for hooping wooden railway sleepers on the spot E01B 31/28)	3/44	• made from other materials only if the material is essential
3/10 • • Composite sleepers	3/46	• made from different materials (E01B 3/26, E01B 3/42 take precedence)
3/12 • • Longitudinal sleepers; Longitudinal sleepers integral or combined with tie-rods; Combined longitudinal and transverse sleepers	3/48	• Distance keepers or tie-rods for sleepers
3/14 • • Slabs; Blocks; Fastening tie-rods to them	<b>5/00 Rails; Guard rails</b> (manufacture of rails B21B); <b>Distance-keeping means for them</b>	
3/16 • made from steel	5/02	• Rails
3/18 • • Composite sleepers	5/04	• • Grooved rails
3/20 • • Sleeper construction for special purposes, e.g. with openings for ballast working (sleepers for shiftable track for heavy loads E01B 23/12)	5/06	• • Reversible or invertible rails
3/22 • • Longitudinal sleepers; Longitudinal sleepers integral or combined with tie-rods; Combined longitudinal and transverse sleepers	5/08	• • Composite rails; Compound rails with dismountable or non-dismountable parts
3/24 • • Slabs; Blocks; Pot sleepers; Fastening tie-rods to them	5/10	• • • Composite grooved rails; Inserts for grooved rails
3/26 • • combined with inserts of wood, artificial stone, or other material	5/12	• • Rails with a foot serving as a sleeper
3/28 • made from concrete or from natural or artificial stone (manufacture B28)	5/14	• • Rails for special parts of the track, e.g. for curves
3/30 • • Hollow sleepers	5/16	• Distance keepers
	5/18	• Guard rails; Connecting, fastening or adjusting means therefor
	<b>7/00 Switches; Crossings</b> (operating mechanisms B61L)	
	7/02	• Tongues; Associated constructions
	7/04	• • Constructions with tongues turning about a vertical pivot at the end

- 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
- 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
- 9/32 • • 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 thereof 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
- 9/50 • • • 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 or head 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 covered by the preceding groups
- 9/68 • Pads or the like, e.g. of wood, rubber, placed under the rail, tie-plate, or chair
- 11/00 Rail joints** (electrical connection of rails 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 the 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**
- 17/00 Cattle guards connected to the permanent way** (grids in general for preventing cattle from straying A01K 3/00)
- 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)

<b>21/00</b>	<b>Track superstructure specially adapted for tramways in paved streets</b> (paving E01C 9/04, E01C 9/06)
21/02	• Special supporting means; Draining of rails
21/04	• Special fastenings, joint constructions, or tie-rods
<b>23/00</b>	<b>Easily dismountable or movable tracks, e.g. temporary railways; Details specially adapted therefor</b>
23/02	• Tracks for light railways, e.g. for field, colliery, or mine use
23/04	• • Fastening or joining means
23/06	• • Switches (turntables B60S, B61J); Portable switches; Turnouts
23/08	• Temporary tracks for use while repairing tramways
23/10	• Shiftable tracks for heavy loads, e.g. carrying excavators
23/12	• • Sleepers
23/14	• • Fastening or joining means (fastening of rails by keys E01B 9/24)
23/16	• • Switches
<b>25/00</b>	<b>Tracks for special kinds of railways</b> (systems B61B; wheel tracks on roads E01C 9/02)
	<b>Note(s)</b>
	In this group, the following term is used with the meaning indicated:
	• "track" includes non-load-carrying guide rails.
25/02	• Tracks for rack railways
25/04	• • Rack rails; Supports or connections for rack rails
25/06	• • Switches; Frogs; Crossings
25/08	• Tracks for mono-rails with centre of gravity of vehicle above the load-bearing rail (E01B 25/30 takes precedence) [1, 7]
25/10	• • Mono-rails; Auxiliary balancing rails; Supports or connections for rails
25/12	• • Switches; Crossings
25/14	• Tracks for cable-drawn railway vehicles
25/15	• • Switches; Crossings
25/16	• Tracks for aerial rope railways with a stationary rope
25/18	• • Ropes; Supports, fastening or straining means for ropes (ropes in general D07B; masts E04H 12/00; rope sockets F16G)
25/20	• • Switches; Crossings
25/22	• Tracks for railways with the vehicle suspended from rigid supporting rails
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 [7]
25/32	• • Stators, guide rails or slide rails [7]
25/34	• • Switches; Frogs; Crossings [7]
<b>26/00</b>	<b>Tracks or track components not covered by any one of main groups E01B 1/00-E01B 25/00</b>

**Making, maintaining, renewing, or taking-up the ballastway or the track; Tools or machines specially designed therefor**

<b>27/00</b>	<b>Placing, renewing, working, cleaning, or taking-up the ballast, with or without concurrent work on the track; Devices therefor; Packing sleepers</b>
27/02	• Placing the ballast; Making the ballastway; Redistributing ballasting material; Machines or devices therefor; Levelling means
27/04	• Removing the ballast; Machines therefor, whether or not additionally adapted for taking-up ballast (E01B 27/06, E01B 27/12 take precedence; redistributing ballasting material E01B 27/02)
27/06	• Renewing or cleaning the ballast <u>in situ</u> , with or without concurrent work on the track
27/08	• • the track having been taken-up (E01B 27/11 takes precedence)
27/10	• • without taking-up the track (E01B 27/11 takes precedence)
27/11	• • combined with concurrent renewal of track components
27/12	• Packing sleepers, with or without concurrent work on the track; Compacting track-carrying ballast
27/13	• • Packing sleepers, with or without concurrent work on the track (performing ballast cores or seats for sleepers E01B 27/02)
27/14	• • • Manual tools or hand-held power tools therefor
27/16	• • • Machines therefor, e.g. so-called sleeper-tamping machines
27/17	• • • combined with means for lifting, levelling, or slewing the track
27/18	• • • by introducing additional fresh material under the sleepers, e.g. by the measured-shovel method, by the blowing method
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)
<b>29/00</b>	<b>Laying, rebuilding, or taking-up tracks; Tools or machines therefor</b> (E01B 27/00, E01B 31/00 take precedence)
29/02	• Transporting, laying, removing, or renewing lengths of assembled track, assembled switches, or assembled crossings (E01B 29/04 takes precedence)
29/04	• Lifting or levelling of tracks (lifting devices in general B66F)
29/05	• Transporting, laying, removing, or renewing both rails and sleepers (as assembled units E01B 29/02)
29/06	• Transporting, laying, removing, or renewing sleepers (E01B 29/05 takes precedence; carrying devices B65G 7/12)
29/09	• • under, or from under, installed rails
29/10	• • • for inserting or removing sleepers
29/11	• • • Removal involving destruction of the sleeper, e.g. the sectioning thereof
29/13	• • • for moving sleepers in a direction parallel to the rails, e.g. for spacing or aligning them (E01B 29/10 takes precedence)
29/14	• • • for lifting sleepers up to the rails (lifting devices in general B66F)
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)
29/17	• • Lengths of rails assembled into strings, e.g. welded together

## E01B

- 29/20 • • Moving rails placed on installed sleepers in the plane of the track
- 29/22 • • Raising rails from sleepers, e.g. for inserting sole-plates (lifting devices in general B66F)
- 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)
- 29/26 • • the fastening means being spikes (E01B 29/16 takes precedence; hand-held tools for nail or staple driving or extracting B25C)
- 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
- 29/29 • • • for horizontally-arranged fastening elements, e.g. fish-bolts
- 29/32 • Installing or removing track components, not covered by the preceding groups, e.g. sole-plates, rail anchors (E01B 31/26 takes precedence)
- 29/40 • Means or arrangements for temporarily supporting laid tracks, or rails or sleepers in the track (temporary fishplates E01B 11/18)
- 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)
- 29/44 • • Methods for effecting joining of rails in the track, e.g. taking account of ambient temperature
- 29/46 • • Devices for holding, positioning, or urging together the rail ends (adjusting the joint by moving rails E01B 29/20)
- 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)
- 31/02 • Working rail or other metal track components on the spot
- 31/04 • • Sectioning or slitting, e.g. by sawing, shearing, flame-cutting
- 31/06 • • Making holes, e.g. by drilling, punching, flame-cutting
- 31/08 • • Bending, e.g. for straightening rails or rail joints (for aligning rail ends to be welded E01B 29/46)
- 31/12 • • Removing metal from rails, rail joints, or baseplates, e.g. for deburring welds, reconditioning worn rails
- 31/13 • • • by milling
- 31/15 • • • by planing or filing
- 31/17 • • • by grinding
- 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
- 31/20 • Working or treating non-metal sleepers in or on the line, e.g. marking, creosoting (working metal sleepers E01B 31/02)
- 31/22 • • Cutting or grinding wooden sleepers, e.g. for forming rail seats (E01B 31/24 takes precedence)
- 31/23 • • • Sectioning (combined with removal of segments from track E01B 29/11)
- 31/24 • • Forming, treating, reconditioning, or cleaning holes in sleepers; Drilling-templates (E01B 29/28, E01B 31/26 take precedence)
- 31/26 • • Inserting or removing inserts or fillings for holes in sleepers, e.g. plugs, sleeves
- 31/28 • • Applying or removing anti-splitting or like reinforcing means (E01B 31/26 takes precedence; straps or bands therefor E01B 3/08)
- 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)
- 33/02 • for slewing, i.e. transversely shifting, in steps
- 33/04 • • Manual tools; Devices not mounted on vehicles
- 33/06 • for slewing in a continuous operation, e.g. for tracks which carry excavators
- 33/08 • • Boom track-slewing machines
- 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 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**