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EUROPEAN PATENT APPLICATION

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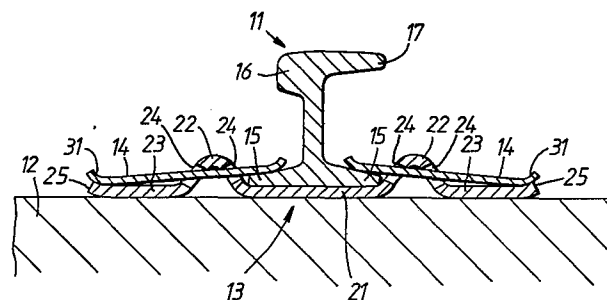
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⑧④ Designated Contracting States: **DE FR IT**

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⑤④ **System for securing a railway rail to a railway sleeper.**

⑤⑦ A system for securing a railway rail (11) to a railway sleeper (12) which comprises a base plate (13) and two spring clips (14). The rail (11) is received in a central portion (21) of the base plate. The spring clips (14) are generally chevron shaped and extend through a yoke defined on either side of the base plate (14) so that two toes of the chevron (31, 32) engage the rail flange (15) while the heel (33) of the chevron engages the base plate.



SYSTEM FOR SECURING A RAILWAY
RAIL TO A RAILWAY SLEEPER

5. The present application relates to the securing of a railway rail to a railway sleeper particularly by means of a spring clip and a baseplate.

10. In certain railway applications, e.g. in mines, conventional symmetrical section rails are being replaced by "asymmetrical trapped conventional" (ATC) rails which have an elongated outer rail-head section. This form of section enables rail vehicles to employ brake mechanisms which run alongside and beneath the elongated section and which "grip" this section when the brakes are applied.

15. However, conventional systems for securing the rails to the sleepers are frequently unsuitable since the clips extend upwards too far and so tend to foul the braking mechanism.

20. It is therefore an object of the present invention to provide a system for attaching a rail to a sleeper which does not foul a braking mechanism which acts directly on the rail.

25. It is a further object of the invention to provide such a system which may be easily assembled and dis-assembled.

30. According to the invention there is provided a system for securing a railway rail to a railway sleeper which comprises a baseplate and two spring clips, the baseplate including a central region arranged to receive the rail and on each side of the central region a lateral region, each lateral region having a yoke adjacent the central region and a generally planar portion extending away from the yoke,

each spring clip being so dimensioned to extend beneath the yoke and to engage the flange of the rail, the undersurface of the yoke and the planar portion of the lateral portion of the base plate.

5. Being totally above the sleeper, this fastening assembly can be very easily assembled or taken apart 'in situ'. It also offers the distinct advantage of being a very low assembly, thereby enabling other moving or fixed components to use or be attached to the rail
10. without obstruction. Thus, the under-rail height is very small and it has been found that the system can provide high toe loads and good creep properties. It is therefore particularly suitable in applications involving either ATC rail used in mines or rail trackwork
15. switches, crossings and turnouts.

- The sleeper may be of any type such as concrete, metal or timber, and the baseplate may be attached to it by any suitable means such as bolts screws or nails. Thus the baseplate may have holes or other facilities
20. enabling it to be screwed to timber ties or sleepers or otherwise suitably fixed to steel or other sleepers or trackway bases.

- Preferably, the baseplate is of mild steel and pressed to shape as a single component. Thus, preferably,
25. the yoke on each side is formed by an inverted-U raised section or an upward fold in the baseplate parallel with the intended position of the rail, and a slot on each side of the fold defining the yoke. The slot length is preferably only marginally longer than the width of
30. the spring clip so as to prevent any tendency for the

clip to twist horizontally. The underside of the top length of one or both slots may act as the reaction point to the upper surface of the assembled clip.

5. Preferably, each end of the baseplate has a turned-up portion. This turned-up portion may act as a 'positive lock' confirming when the clip is in the correctly assembled position.

10. Preferably, each spring clip is of spring steel and is preferably generally chevron-shaped so that one end terminates in a V while at the other end there is a corresponding V cut out to define two toes. Preferably, the V-end and the two toes are turned up to facilitate assembly through the baseplate slots and on to the rail foot. Although the spring clip may be rectangular, the chevron shape is preferred
15. since it can enable the spring clip to absorb higher stresses safely and can accommodate slight mis-alignments of the rail and clip.

20. Dependent upon the rail section and baseplate length, the clip may be suitably shaped to ensure that the correct toe load pressure is applied to the rail foot when components are fully assembled.

25. The invention may be carried into practice in various ways and one embodiment will now be described by way of example with reference to the accompanying drawings in which :-

Figure 1 is a vertical section through an assembled system in accordance with the invention,

30. , Figure 2 is a plan view of the right hand spring clip shown in Figure 1; and

Figure 3 is a plan view of a baseplate.

As shown in Figure 1, a rail 11 is secured to a sleeper 12 by means of a baseplate 13 and a pair of spring clips 14. The rail 11 is generally I-shaped in section but is asymmetrical. Thus it has two
5. similar flanges 15 constituting the rail foot but the head section comprises a short thick inner rail head 16 and a thinner elongated outer rail head 17.

The baseplate 13 shown in Figures 1 and 3 is of mild steel and generally rectangular in shape. It has a
10. central portion 21, whose width is the same or a little greater than that of the rail foot 15, 15; on each side, of the central portion 21, an inverted U-section fold 22, and beyond the folds 22 a generally planar extension 23. Each fold 22 has a pair of parallel slots
15. 24 one in each inclined face. The central part 25 at the end of each extension 23 is turned upwards and two holes 26 are formed in each extension 23 to receive bolts (not shown) to attach the baseplate 13 to the sleeper 12.

20. The spring clip 14 is a generally flat chevron-shaped plate of spring steel as shown in Figure 2. The clip comprises a pair of toes 31, 32 defined by a V-shaped cut-out and a heel 33 in the form of a correspondingly V-shaped protrusion. The ends 34
25. of the toes 31, 32 and heel 33 are upturned. The complementary nature of the V-shapes minimises material wastage in forming the plates.

To effect assembly, the baseplate 13 is suitably secured to the positioned sleeper 12 and the rail 11
30. is positioned correctly on the central portion 21 of the baseplate 13. One end of a clip 14 is then introduced through the baseplate slots 24 to rest on the rail flange 15. The rear end of the clip 14 is driven by a hammer

- or some other means up over the turned-up central part 25 of the baseplate end, and is thus prevented from returning by this central part 25. Tension is produced within the clip 14 between this point, the reaction point at the underside of the inverted U 22 between the two slots and the contact point of the clip 14 with the rail flange 15, this tension ensures the correct toe load is applied on the rail flange 15. This is then repeated with the other clip 14 on the other side of the baseplate 13.
- 5.
- 10.

- In order to remove the spring clip 14 from the assembled position shown in Figure 1, a suitably shaped lever is located on end of the clip 14 at the rail foot and against the rail head and pressure is applied to the clip end to drive the clip 14 out.
- 15.

CLAIMS.

1. A system for securing a railway rail (11)
to a railway sleeper (12) which comprises a base plate
5. (13) having a central region (21) arranged to receive
a rail (11) and two spring clips (14) arranged to engage
the rail flange (15) on either side of the rail (11),
characterised in that the baseplate (13) has a lateral
region on either side of the central region (21), each
10. lateral region having a yoke (22,24) adjacent the central
region (21) and a generally planar portion (23) extending
away from the yoke (22,24), each spring clip (14) being
so dimensioned to extend beneath the yoke (22,24) and
to engage the flange (15) at the rail, the undersurface
15. of the yoke (22,24) and the planar portion (23) of
the lateral portion of the base plate (13).

2. A system as claimed in Claim 1 characterised
in that the baseplate (13) is of mild steel and pressed
20. to shape as a single component.

3. A system as claimed in Claim 1 or Claim 2 charact-
erised in that the yoke on each side is formed by an
inverted U raised section or an upward fold 22 in the
25. baseplate extending parallel with the intended position
of the rail (11), and a slot (24) on each side of the
fold (22) defining the yoke.

4. A system as claimed in Claim 3 characterised
30. in that the slot length is only marginally longer than
the width of the spring clip 14.

5. A system as claimed in any preceding claim characterised in that each end of the baseplate (13) has an up turned portion (25).

5. 6. A system as claimed in any preceding claim characterised in that each spring clip (14) is of spring steel and is generally chevron shaped with one end terminating in a V (33) and the other end having a corresponding cut out to define two toes (31,32).

10.

7. A system as claimed in Claim 6 characterised in that the ends (34) of the V shape (33) and the toes (31,32) are up turned.

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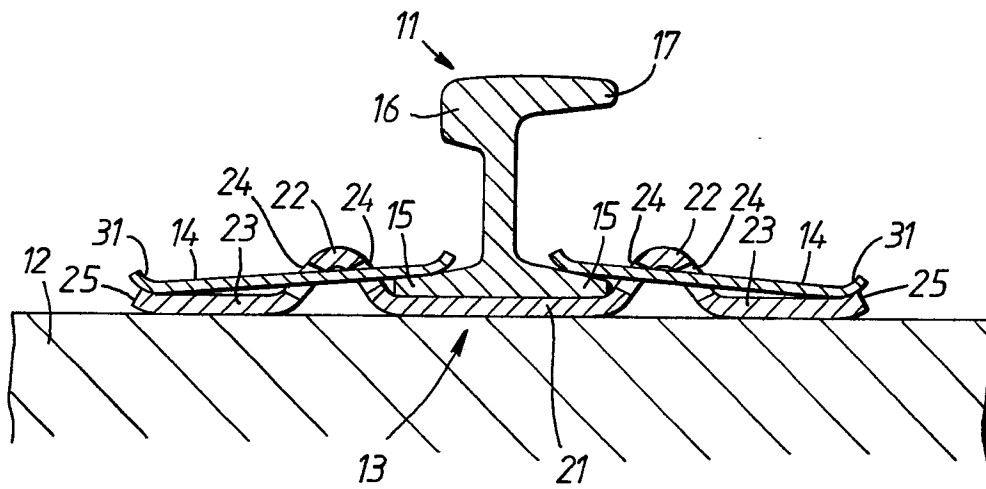


FIG. 1.

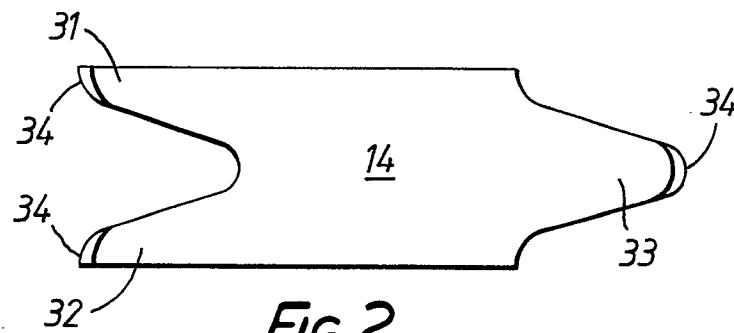


FIG. 2.

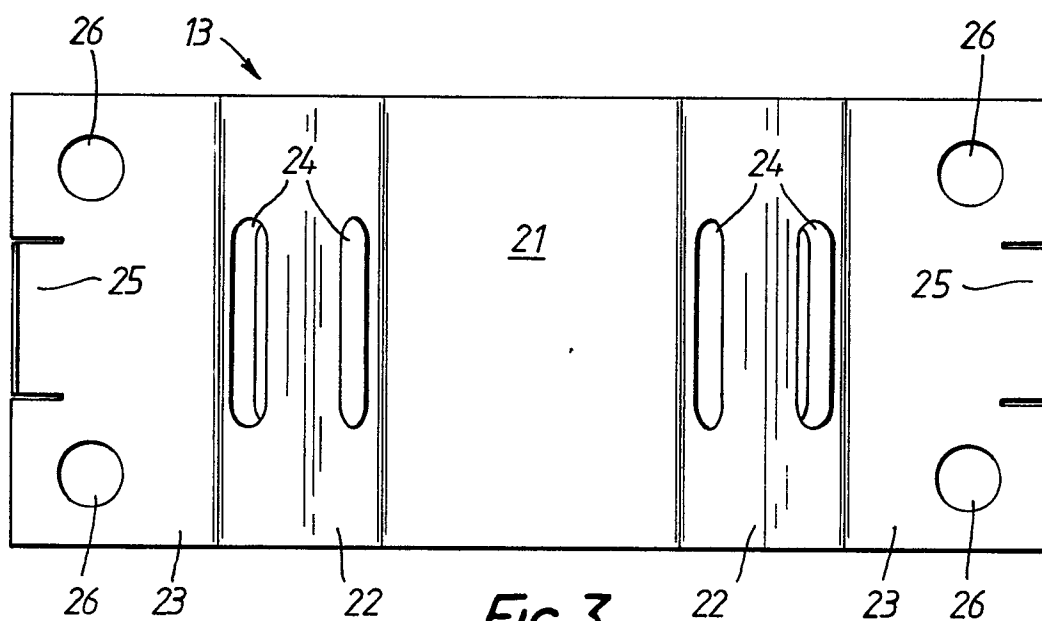


FIG. 3.



European Patent
Office

EUROPEAN SEARCH REPORT

0161786

Application number

EP 85 30 2459

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	US-A-1 925 717 (FARIES et al.) * Complete document *	1	E 01 B 9/48 E 01 B 23/04
X	--- US-A-2 118 100 (MYER et al.) * Complete document *	1	
X	--- US-A-2 547 839 (SCHULZE) * Column 1, line 47 - column 2, line 34; figures 1-3 *	1	
A		6,7	
A	--- DE-C-1 115 753 (HAMMER) * Complete document *	1,3,6	
A	--- DE-C-1 126 901 (LOCKSPIKE LTD.) * Column 2, lines 42-52; figures 1,2 *	2,3	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	--- DE-C-1 143 218 (EXECUTORS OF JAMES MILLS LTD.) * Figure 3 *	6	E 01 B 9/00 E 01 B 23/00
A	--- DE-A-2 921 720 (HIXSON) -----		
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 02-07-1985	Examiner PAETZEL H-J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			