

Aug. 12, 1969

L. S. SANSON

3,460,756

INSULATING FASTENER FOR A RAILWAY RAIL

Filed Nov. 15, 1967

2 Sheets-Sheet 1

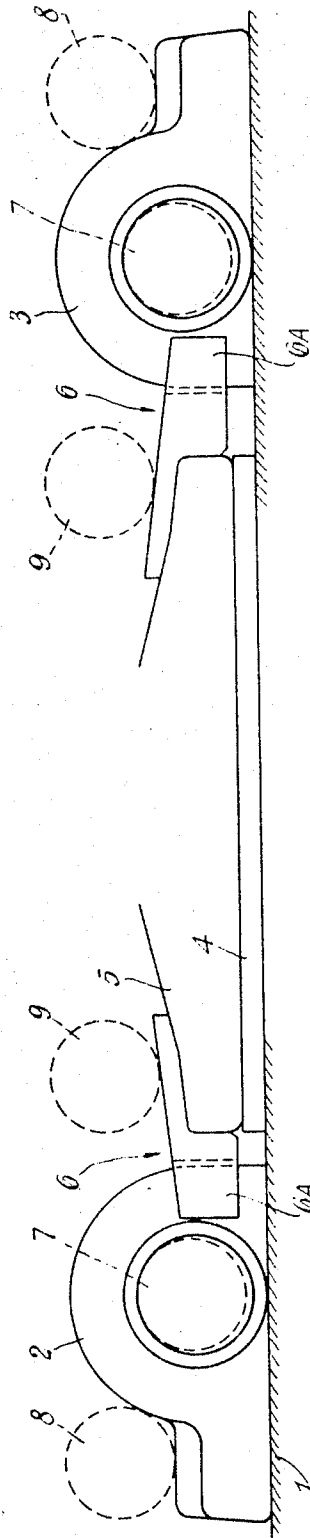


FIG. 1

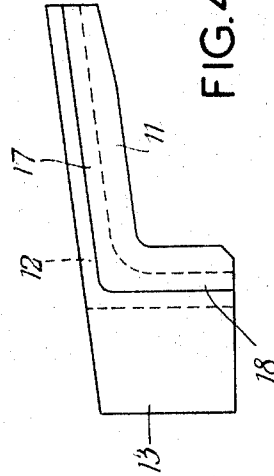


FIG. 4.

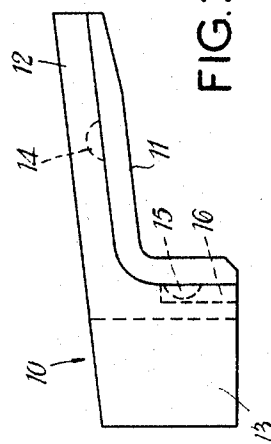


FIG. 2

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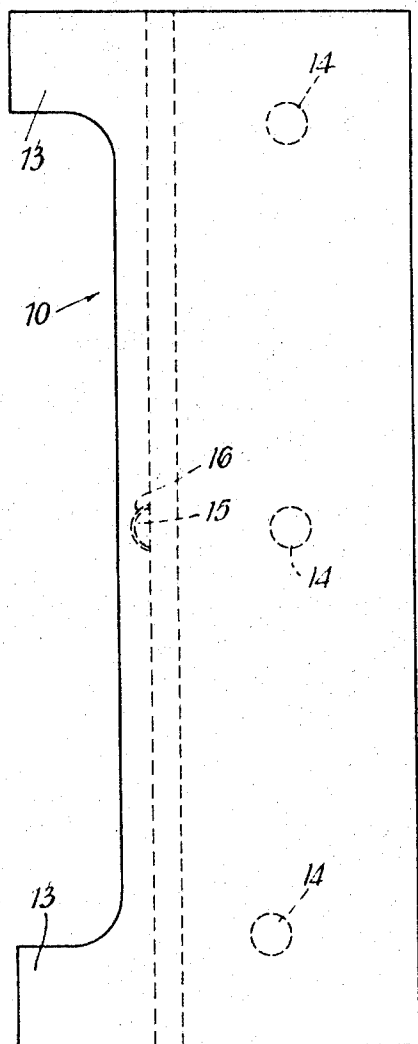


FIG. 3

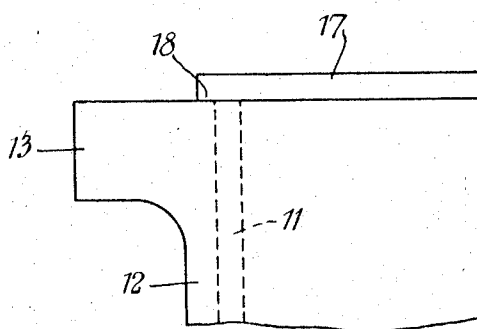


FIG. 5.

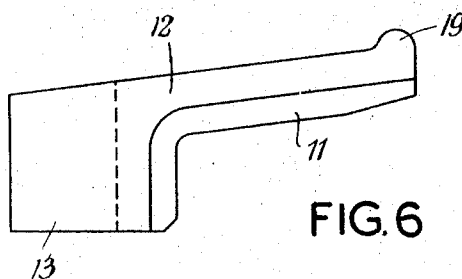


FIG. 6

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INSULATING FASTENER FOR A RAILWAY RAIL
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6 Claims

ABSTRACT OF THE DISCLOSURE

A device for electrically insulating a railway rail from parts for securing it consists of an elongate metal member of substantially L-shaped cross-section and an electrically insulating member extending across those faces of the limbs of the L which are on the inside of the angle of the L. Projections on one of the two members prevent the device from sliding along the rail. The device is placed on the edge of the rail flange with one limb of the L between a resilient rail-fastening member and the top of the flange and the other limb of the L between the edge of the rail flange and an anchoring member. The rail-fastening member engages said metal member and the insulating member insulates the flange from the rail-fastening member and from the anchoring member.

This invention relates to a device for electrically insulating a railway rail from parts for securing it and to a railway rail and fastening assembly including the device.

There has previously been proposed a device for electrically insulating a flange-footed railway rail from a resilient rail-fastening member, a first part of which bears downwardly upon the top of the rail flange, and from an anchoring member, which is beside the flange and in which a second part of the rail-fastening member is inserted, said device being elongate and of substantially L-shaped cross-section, each leg of the L comprising electrically insulating material, one leg of the L being for interposition between the top of the rail flange and said first part and the other leg of the L being for interposition between the edge of the rail flange and said anchoring member, said other leg having two projections extending from it so that when said device is in use these projections can lie close to and on opposite sides of the anchoring member and can by abutting the anchoring member resist any tendency for said device to move in a direction parallel to the length of the rail.

According to a first aspect of the present invention, there is provided a device as defined above which is characterised in that it consists of an elongate metal member of substantially L-shaped cross-section with said two projections integral with it and an elongate member of electrically insulating material which extends across those faces of the two limbs of the metal member which are on the inside of the angle of the L, the arrangement being such that in use of the device the said first part of the rail-fastening member directly engages said metal member and the rail is electrically insulated by the insulating member from the rail-fastening member and from said anchoring member.

There has also previously been proposed a rail-and-fastening combination comprising an electrically conduc-

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tive railway sleeper, a flange-footed rail resting crosswise on the sleeper, electrically insulating material between the sleeper and the foot of the rail, an anchoring member which is beside the rail flange and is fixed to the sleeper, a rail-fastening member having a first part directly above the rail flange and also having a second part inserted in said anchoring member, and a device for providing electrical insulation which is elongated and of substantially L-shaped cross-section, each leg of the L comprising electrically insulating material, one leg of the L being interposed between the top of the rail flange and said first part and the other leg of the L being interposed between the edge of the rail flange and said anchoring member, said other leg having two projections extending from it close to and on opposite sides of the anchoring member which can by abutting the anchoring member resist any tendency for said device to move in a direction parallel to the length of the rail.

According to a second aspect of the present invention, there is provided a rail-and-fastening combination as defined above which is characterised in that said device for providing electrical insulation is a device according to the first aspect of the present invention.

The device according to the first aspect of the invention is an improvement upon the insulating device according to the above-mentioned prior proposal, which is made wholly of electrically insulating material, for example nylon, because the first part of the rail-fastening member does not sink into the part of the device according to the invention which it engages, i.e. the upper surface of the metal member, as it does into the electrically insulating material of the device according to the prior proposal. Therefore, there is eliminated a fault of the device according to the prior proposal, namely that, due to the sinking in, the downward pressure exerted on the rail by the rail-fastening member slowly decreases. Also, by having the first part of the rail-fastening member bear on metal instead of an insulating material, wear due to abrasion is reduced. Furthermore, to cater for variations in the distance between the edge of the rail flange and the anchoring member, for example due to gauge width variations at curves in the track, there may be manufactured several different sizes of the metal member, having different thicknesses in said other leg, with only one size of the insulating member to fit on them all, this being cheaper than manufacturing several different sizes of insulating member, as would be necessary if the insulating members of the prior proposal were to be used alone. The insulating member may be fixed, for example by an adhesive, to the metal member so that the two parts can be fitted together in a factory and delivered to the site as a unit.

In the accompanying drawing:

FIGURE 1 shows a side view of part of a railway track assembly according to a prior proposal which does not include a device in accordance with the present invention, and

FIGURES 2 to 6 show devices which are in accordance with the invention and which are somewhat similar to a device in the assembly of FIGURE 1.

In FIGURES 2 to 6:

FIGURE 2 shows a side view, on a larger scale than that of FIGURE 1, of a first device according to the present invention,

FIGURE 3 shows a plan view of the same device,

FIGURE 4 shows a view, corresponding to FIGURE 2, of a second device according to the invention,

FIGURE 5 shows a plan view of part of what is shown in FIGURE 4, and

FIGURE 6 shows a view, corresponding to FIGURE 2, of a third device according to the present invention.

FIGURE 1 shows part of a railway track assembly comprising a metal or concrete railway sleeper 1, first and second anchoring members 2 and 3 of metal in one half of the length of the sleeper and a first flange-footed rail resting crosswise on the sleeper and spaced from it by a rubber pad 4, with the flange or base 5 of the rail disposed between the first and second anchoring members 2 and 3 and spaced from them. Although they are not shown, there are third and fourth anchoring members in the other half of the length of the sleeper and a second rail parallel to the first rail and resting crosswise on the sleeper with its base disposed between the third and fourth anchoring members and spaced from them and separated from the sleeper by another rubber pad, these parts being the same as those shown in FIGURE 1. Four rail-fastening members of resilient metal, as disclosed in United States patent specification No. 3,004,716, serve to secure the bases of the rails with respect to the sleeper, each rail-fastening member having a straight leg 7 which extends in a horizontal passage through a respective one of the anchoring members, substantially parallel to the rails, the rail-fastening members having portions 9 which project over the bases of the rails and portions 8 which bear upon the upper surfaces of the anchoring members. Between each edge of each rail base and the adjacent one of the anchoring members, there must, if the rails are to be used to carry signalling currents, be electrically insulating material and there must be some electrically insulating material above the bases of the rails, the rails being insulated by the insulating material from the anchoring members and from the rail-fastening members. This insulating material is in the form of four elongate mouldings 6 of nylon or other suitable insulating material of substantially L-shaped cross-section each having two projections 6A which extend from it and lie on opposite sides of one of the anchoring members. These projections can by abutting the anchoring member resist any tendency for the moulding 6 to move in a direction parallel to the length of the rail.

In an assembly according to FIGURE 1, there is a possibility that the portions 9 will sink into the mouldings 6 with the result that the mouldings are deformed and the forces exerted on the rail bases will change. This can be substantially prevented by using, instead of the mouldings 6, devices according to the present invention. In a first such device, illustrated in FIGURES 2 and 3, the device is elongate and of substantially L-shaped cross-section and it comprises an elongate moulding 11 of nylon, of substantially L-shaped cross-section, and a steel element 12, also of substantially L-shaped cross-section but having lateral projections 13 at opposite ends which perform the same function as the projections 6A of FIGURE 1. The moulding 11 extends across those faces of the two limbs of the metal member which are on the inside of the angle of the L of the steel element 12. Relative movement along the rail between each moulding and its associated steel element 12 may be prevented by the mouldings being bonded to the steel elements 12 by means of an adhesive and/or small projections 14 on the mouldings may engage in dimples in the steel elements (or small projections on the steel elements could engage in dimples in the mouldings) and/or projections 15 on the mouldings could engage in vertical channels 16 in the steel elements (or projections on the steel elements could engage in vertical channels in the mouldings).

In the arrangement shown in FIGURES 4 and 5, the parts 11 and 12 are similar to those shown in FIGURES 2 and 3 except that at each end of the moulding 11 there is a flange having an upwardly projecting part 17 which merges into a laterally projecting part 18, these flanges

being part of the moulding and serving to prevent the moulding from moving along the rail relative to the steel element 12, part of which lies between the flanges. The previously described means for avoiding this relative movement need not then be employed, although they could be employed additionally if desired.

FIGURE 6 shows an example in which an upwardly-projecting stiffening rib 19 extends along the steel element 12 at its extremity nearest the associated rail. The parts 11 and 12 may be secured together in any of the ways described above. The rib 19 may be provided in the other illustrated examples.

Instead of the elements 12 being of steel, they could be of cast malleable iron, wrought iron or aluminium. If the railway sleeper is of concrete, the anchoring members 2 and 3 may be parts of members which are cast in the concrete before setting of the concrete or fixed in holes in the concrete after the concrete has set. Alternatively, the railway sleeper may be a steel sleeper with parts punched upwardly to provide the anchoring members in the form of arches under which the legs 7 of the rail-fastening members engage. Another possibility is for the sleeper to be a steel sleeper with anchoring members welded to it or otherwise fixed to it.

I claim:

1. A device for electrically insulating a flange-footed railway rail from a resilient rail-fastening member, a first part of which bears downwardly upon the top of the rail flange, and from an anchoring member, which is beside the flange and in which a second part of the rail-fastening member is inserted, said device being elongate and of substantially L-shaped cross-section, each leg of the L comprising electrically insulating material, one leg of the L being for interposition between the top of the rail flange and said first part and the other leg of the L being for interposition between the edge of the rail flange and said anchoring member, said other leg having two projections extending from it so that when said device is in use these projections can lie close to and on opposite sides of the anchoring member and can by abutting the anchoring member resist any tendency for said device to move in a direction parallel to the length of the rail, characterised in that said device consists of an elongate metal member (12) of substantially L-shaped cross-section with said two projections (13) integral with it and an elongate member (11) of electrically insulating material which extends across those faces of the two limbs of the metal member which are on the inside of the angle of the L, the arrangement being such that in use of the device the said first part (9) of the rail-fastening member directly engages said metal member and the rail (5) is electrically insulated by the insulating member from the rail-fastening member and from said anchoring member (2).

2. A device according to claim 1, characterised in that the metal and the electrically insulating material are stuck together by an adhesive.

3. A device according to claim 1, characterised in that the two parts of said device, i.e. the metal and the electrically insulating part, are prevented from moving relatively to one another in the direction of the length of said device by at least one lateral projection (15, 17, 18) on one of these parts.

4. A device according to claim 3, characterised in that one lateral projection (15) on one of said two parts lies in a channel (16) in the other of said parts, which channel is vertical when the device is in use.

5. A device according to claim 3, characterised in that at opposite ends of the insulating material of said one leg there are projections (17, 18) which are integral with the insulating material and which project upwardly when said device is in use, but not above said metal member, said projections being at opposite ends of said metal member and serving to prevent the latter from moving relatively to the insulating material in the direction of the length of said device.

6. A railway rail-and-fastening combination compris-

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ing an electrically conductive railway sleeper, a flange-footed rail resting crosswise on the sleeper, electrically insulating material between the sleeper and the foot of the rail, an anchoring member which is beside the rail flange and is fixed to the sleeper, a rail-fastening member having a first part directly above the rail flange and also having a second part inserted in said anchoring member, and a device for providing electrical insulation which is elongate and of substantially L-shaped cross-section, each leg of the L comprising electrically insulating material, one leg of the L being interposed between the top of the rail flange and said first part and the other leg of the L being interposed between the edge of the rail flange and said anchoring member, said other leg having two projections extending from it close to and on opposite sides of the anchoring member which can by abutting the anchoring member resist any tendency for said device

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to move in a direction parallel to the length of the rail, characterised in that said device for providing electrical insulation is a device according to claim 1.

References Cited

UNITED STATES PATENTS

3,268,170	8/1966	Moses	238—283
3,297,253	1/1967	Astley et al.	238—349
3,358,927	12/1967	Hein et al.	238—338
3,387,781	6/1968	Moses et al.	238—283

ARTHUR L. LA POINT, Primary Examiner

U.S. Cl. X.R.

238—283, 349