No. 875,204. PATENTED DEC. 31, 1907.

A. MORRISON.

INSULATED RAIL JOINT.

APPLICATION FILED APR. 11, 1907.

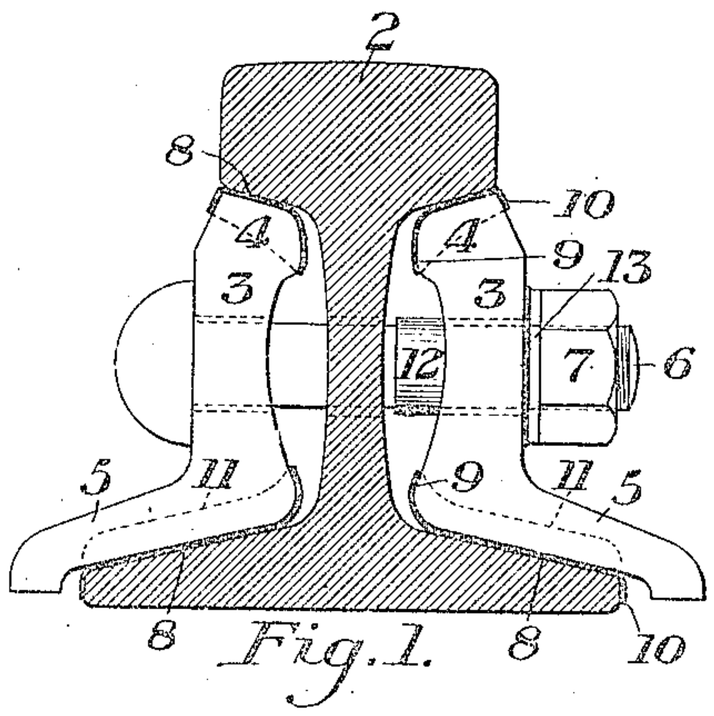

Fig. 1.

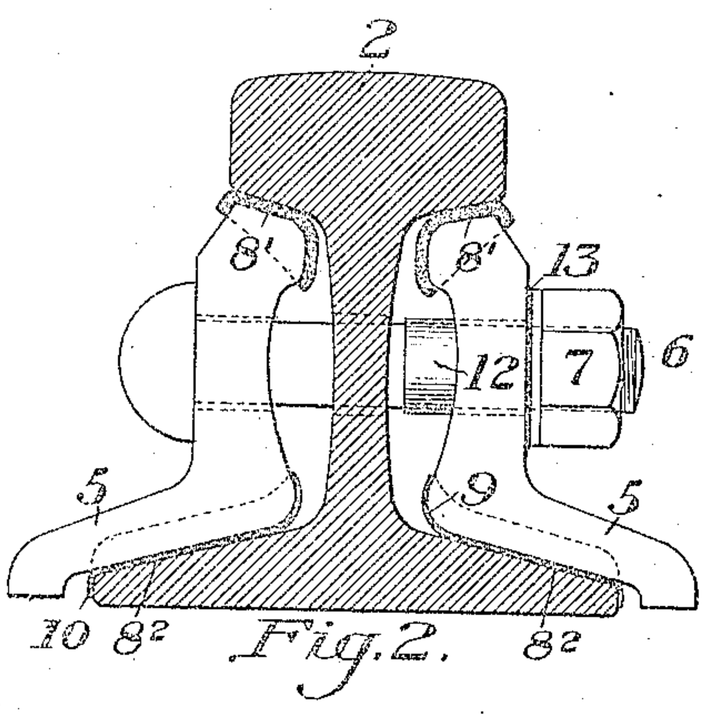

Fig. 2.

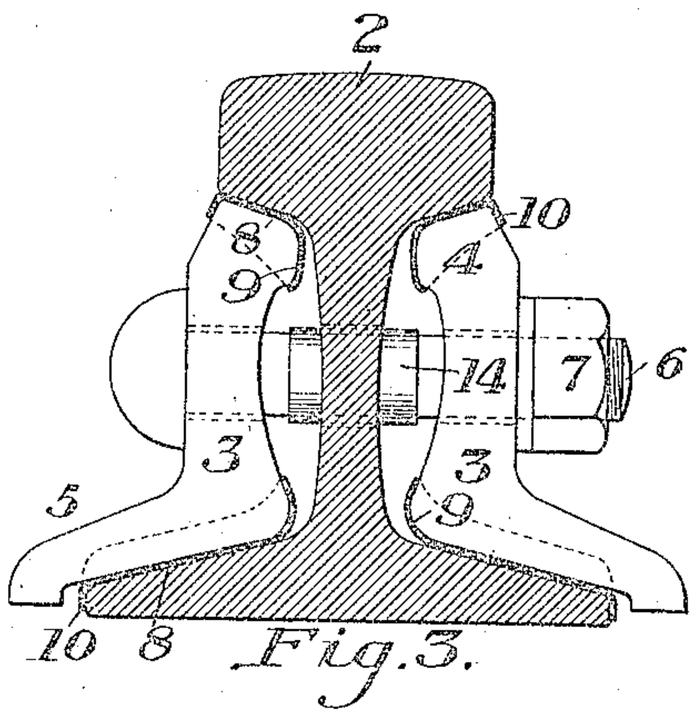

Fig. 3.

WITNESSES

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UNITED STATES PATENT OFFICE.

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INSULATED RAIL-JOINT

No. 875,204. Specification of Letters Patent. Patented Dec. 31, 1907.

Application filed April 11, 1907. Serial No. 367,684.

To all whom it may concern:

Be it known that I, ANDREW MORRISON, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Insulated Rail-Joint, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a cross-section showing a rail joint embodying my invention; and Figs. 2 and 3 are similar views showing modifications.

My invention has relation to insulated rail joints, and more particularly to the character and arrangement of the insulating material used.

Heretofore it has been customary to use a continuous piece or sheet of insulating material between each splice bar and the rails, this sheet having holes punched therethrough to receive the rail joint bolts. That portion of the insulating piece or sheet between the head and base flanges is practically useless where, as is commonly the case, the splice bar bears upon the rail only at its head and base.

In accordance with my invention, I divide the insulation at each side of the joint into two separate pieces, one piece fitting between the base portion of the splice bar and the base of the rail, and the other piece fitting between the head of the splice bar and the under side of the head of the rail. In this manner, I not only effect a very considerable saving in expensive material, but I avoid the necessity for punching holes in the insulating material. I also avoid the necessity for changing the shape of the insulating piece for each change in the spacing of the bolts, and thus enable standard shapes to be used.

Heretofore the material which has been commonly used for this insulation is made from compressed and chemically treated cotton fiber. This material has proved unsatisfactory and unserviceable in use, owing to its capacity for rapidly absorbing moisture and the fact that it compresses under a great load even when dry. The exposed edges of the fiber insulation rapidly convey moisture by capillary action into its body portion, which not only deteriorates the material but destroys, by its presence, the perfect insulation which is required.

A further object of my invention is to provide insulating material which is impervious to moisture and has great resistance to compression under load; also to provide a material which can be used in greatly thinner form than is possible with the fiber insulations above referred to. This is a feature of great practical importance, because of the fact that the use of insulating material in a rail joint reduces the vertical or girder thickness of the splice bars to the extent of its combined thicknesses, where it is interposed between the splice bar and the head and base flanges of the rail. Where it is used in the form of a sleeve or bushing around the joint bolts, it is desirable to have it as thin as possible, owing to the fact that the holes for the bolts have to be drilled or punched of larger diameter to receive it, thereby reducing the area of bearing surface around the holes to an extent which prevents a proper bearing for the fiber washers between the nuts and the splice bars.

Referring to the accompanying drawings, the numeral 2 designates the usual T-rail, and 3 the splice or angle bars having head portions 4 which bear against the under side of the head of the rail, and the inclined base portions 5 which bear against the upper surfaces of the base flanges of the rail.

6 designates the joint bolts, and 7 the nuts therefor.

8 designates the insulating material which is interposed between the bearing surfaces of the splice bars and the rails. As before described, I employ separate pieces of this material at the head and base. These pieces, which may be pressed or molded into form, are secured in place by having their inner edge portions 9 preferably bent around the adjacent angles of the splice bars or rails, while their outer edges 10 are preferably bent around the base of the rail and over the outer angle at the head of the splice bars respectively, or they may be cemented to the splice bars or rails. They may be prevented from endwise movement by bending their ends against the ends of the splice bar, as indicated at 11.

As shown in Fig. 2, the insulating piece 8′ at the underside of the head is preferably thicker than the piece 8^2 at the base, owing to the greater pounding and wear to which it is subject in proportion to the area involved.

12 designates the insulating sleeves or bushings, which are placed around the bolts

6, and 13 designates the washers of similar material, which are interposed between the nuts 7 and the outer faces of the splice bars.

As above stated, I provide insulating material of a character which is practically impervious to moisture, and which may be used in very thin sheets. For this purpose I prefer to employ mica, or "micanite" which latter is built up of sheets or plates of mica. I may, however, use a material composed of asbestos and various compounds. I prefer mica, owing to its durability, its resistance to compression, and its water-proof character. I have ascertained that insulation of mica may be used of a thickness of about $\frac{1}{32}$ of an inch as compared with the thickness of $\frac{1}{8}$ of an inch in the fibrous material heretofore employed. The use of material of this thinness increases to this extent the vertical or girder depth of the splice bars, and also correspondingly reduces the diameter of the bolt openings, thus giving a greater bearing around the openings for the washers 13, which are thus prevented from cutting out as quickly as has heretofore been the case. It further permits of a great reduction of the opening between the rail ends by using an end post of greatly reduced thickness.

In the modification shown in Fig. 3, the construction is the same as that shown in Fig. 1, with the exception that the sleeves or bushings 12 and the washers 13 are omitted, and sleeves 14 are placed around the bolts 6 where the latter pass through the webs of the rails. This sleeve is preferably made of such length that it will be prevented by the splice bars from working endwise out of position, or it may be held by end flanges therein.

The advantages of my invention result from the separation or insulation at each side of the joint into two separate pieces, thereby effecting a great saving of material, and also avoiding the labor and expense of punching bolt holes and enabling the use of standard shapes of insulation in joints of various bolt-hole spaces; also in the use of a practically water-proof material for the insulation, whereby a more perfect and durable insulation is secured and the other advantages heretofore enumerated are obtained. It will be understood that this latter feature of my invention is not restricted to insulations of the particular form as shown in the drawings, but that it may be used in any desired form or shape, as I believe it is broadly new to employ an insulating material of this character in rail joints. It will also be understood that my invention is applicable to joints having various other forms of splice bars.

What I claim is:—

1. In an insulated rail joint, a splice bar having a rail bearing at both head and base, insulating material interposed between the bearing surfaces of the bar and rails, the insulating material at the heads and bases of the rails being in separate and independent pieces, and the inner edge portions of the insulating material being bent to engage the inner portions of the splice bar; substantially as described.

2. In an insulated rail joint, a splice bar having a rail bearing at both head and base, insulating material interposed between the bearing surfaces of the bar and rails, the insulating material at the heads and bases of the rails being in separate and independent pieces, those portions between head of rail and top of bars being thicker than the portions between base of rail and base of bars, and the inner edge portions of the insulating material being bent to engage the inner portions of the splice bar; substantially as described.

3. In an insulated rail joint, a splice bar having a rail bearing at both head and base, and insulating material interposed between the bearing surfaces of the bar and rails, the insulating material at the heads and bases being separate and independent of each other and having edge portions bent into securing engagement with the splice bars; substantially as described.

4. In an insulated rail joint, a splice bar having a rail bearing at both head and base, and insulating material interposed between the bearing surfaces of the bar and rails, the insulating material at the heads and bases being separate and independent of each other and having edge portions bent into securing engagement with the splice bars and the rails; substantially as described.

5. In a rail joint, a splice bar having a bearing at its upper edge underneath the head of the rail, and having a piece of insulating material interposed between these bearing surfaces, said material being of uniform thickness throughout and terminating at its inner or lower edge at a point above the bolt holes of the joint; substantially as described.

6. In a rail joint, a splice bar having a bearing at its lower portion against the upper side of the base flange of the rail, insulating material interposed between these bearing surfaces and having its outer edge free, whereby inward movement of the splice bar to its seat against the rail will not cause a lateral compression or crushing of said piece, the inner edge of said piece terminating below the bolt holes of the joint; substantially as described.

In testimony whereof, I have hereunto set my hand.

ANDREW MORRISON.

Witnesses:

LAURENCE H. LEE,

H. M. CORWIN.