B. G. BRAINE.

INSULATED RAIL JOINT.

APPLICATION FILED SEPT. 19, 1910.

1,032,875.

Patented July 16, 1912.

3 SHEETS—SHEET 1.

Fig. 1.

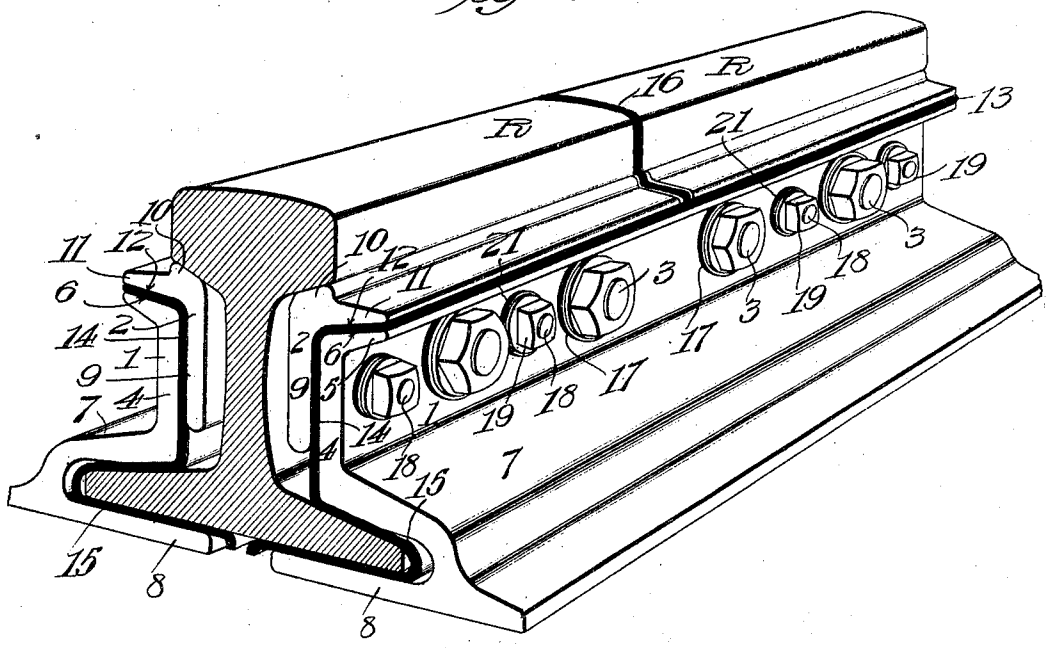
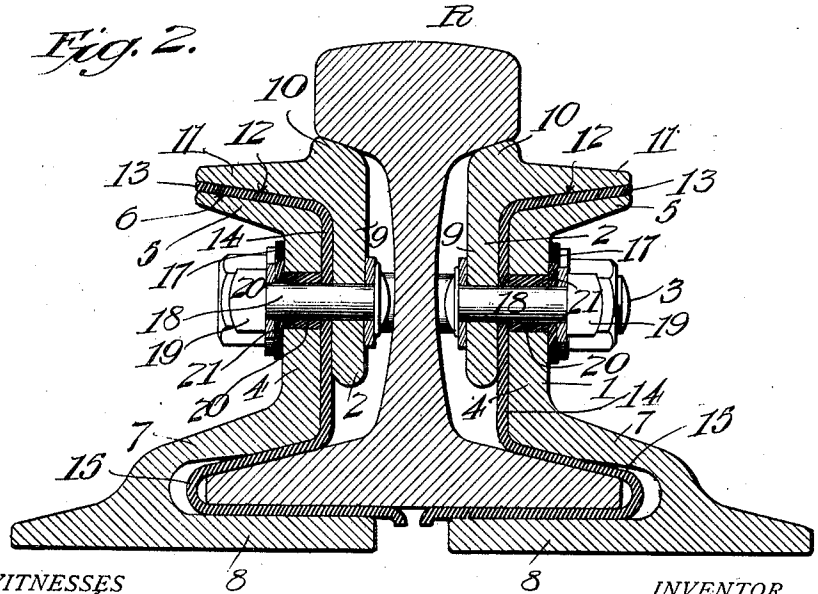


Fig. 2.



WITNESSES

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3 SHEETS—SHEET 2.

Fig. 3.

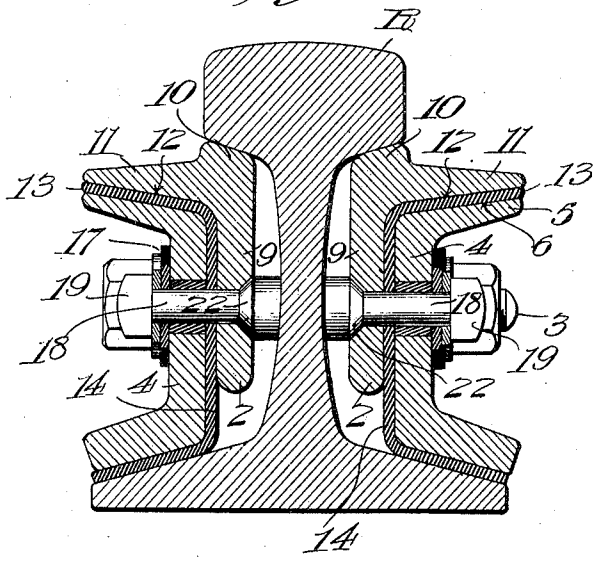
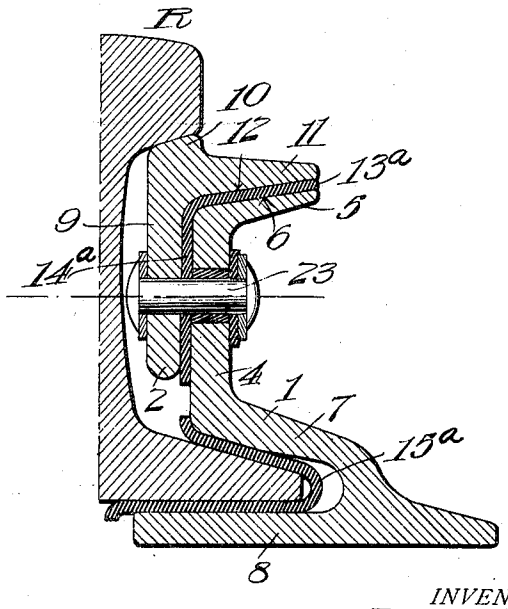


Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 5.

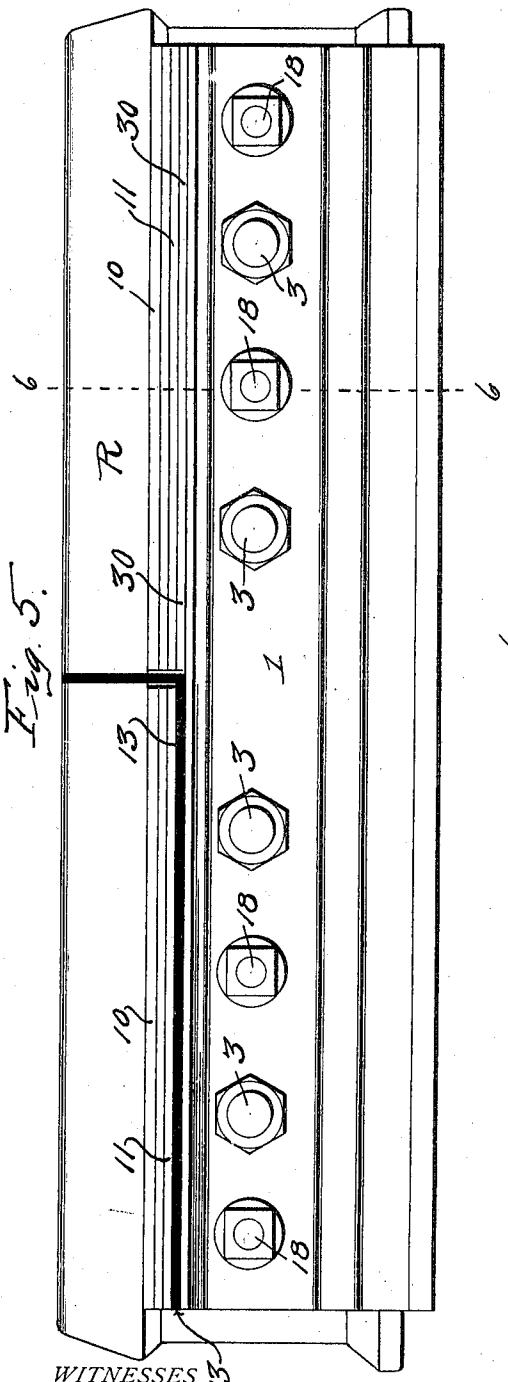
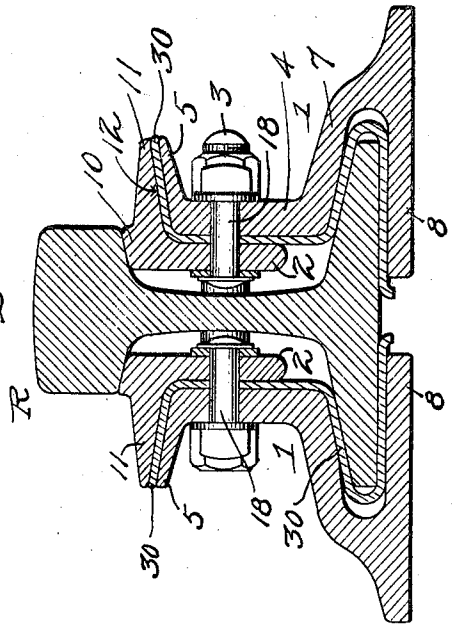


Fig. 6.



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UNITED STATES PATENT OFFICE.

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INSULATED RAIL-JOINT.

1,032,875. Specification of Letters Patent. Patented July 16, 1912.

Application filed September 19, 1910. Serial No. 582,754.

To all whom it may concern:

Be it known that I, BANCROFT G. BRAINE, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Insulated Rail-Joints, of which the following is a specification.

This invention relates to the subject of rail joints of the insulated type, and has particularly in view certain novel and practical improvements in joints of this character which are intended to maintain, in a thoroughly practical and reliable manner, a maximum bearing surface for the insulating material so as to better preserve the same against the destructive influences to which the same is ordinarily subjected.

To this end the invention primarily contemplates an improvement in that class of insulated rail joints employing metallic filler pieces which are interposed between the rails and the splice bars, and which coöperate with the latter to provide an increased bearing surface for that portion of the insulation which receives the pound from the rail-head, and in connection with a joint of this character provides means for positively locking or fastening the filler pieces in operative relation to the other joint parts, so that such filler pieces are reliably prevented from canting or other independent movement that would tend to decrease the bearing surface on the upper flange of the insulation.

With these and other objects in view, which will readily appear to those familiar with the art as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described and claimed.

The essential feature of the invention involved in the fastened connection between the filler pieces and the splice-bars, is necessarily susceptible to structural modification according to the character of the joint and according to the character of the joint bars, without departing from the scope of the invention, but certain preferred and practical embodiments thereof are shown in the accompanying drawings, in which—

Figure 1 is a sectional perspective view of an insulated rail joint constructed in accordance with the present invention. Fig. 2 is a vertical cross-sectional view thereof, the line of section including the fastenings for the filler pieces. Fig. 3 is a view similar to Fig. 2 showing a modification in the kind of fastenings employed for the filler pieces. Fig. 4 is a detail sectional view illustrating another kind of fastening that may be employed for locking the filler pieces to the splice-bars. Fig. 5 is a side elevation illustrating the invention applied to a one-end insulated rail joint, that is, to a rail joint wherein the insulation is confined to one rail end and the parts immediately associated therewith. Fig. 6 is a cross sectional view on the line 6—6 of Fig. 5 illustrating the use of the metal filler or liner on the receiving end of the joint to compensate for the insulating material on the other end of the joint.

Like references designate corresponding parts in the several figures of the drawings.

In carrying out the present invention it is not intended that the same be limited or restricted in its application to any one prescribed design of rail joint, inasmuch as the same is capable of embodiment in a variety of joints without departing from the invention. However, in order to exemplify the wide range of modification of which the invention is susceptible, I have shown several embodiments thereof in the drawings.

Referring first to the form of the invention illustrated in Figs. 1 and 2 of the drawings, the insulated rail joint therein shown includes in its organization the service rails R, R, splice-bars 1—1, discontinuous or half-length angle filler pieces 2, the joint bolts 3, and suitable insulation, all of which will be particularly pointed out and explained.

As stated, the essential features of the present invention are combinable with splice-bars or joint bars of different designs, and irrespective of whether such bars are formed with or without a base support for the rail, it only being necessary that an approved design of splice-bar be employed that includes in its construction an upright or fish-plate member 4 which is provided at its upper edge with an outturned inclined bearing flange 5 whose upper inclined bearing surface 6 presents a greater area than the area of the under side of the rail-head. However, there is shown in said Figs. 1 and 2 of the drawings the application of the in-

vention to a rail joint having splice-bars of the continuous type, in which type of bar, the upright member 4 not only has the upper bearing flange 5, but also has formed therewith an integral inclined foot flange 7 overlying the upper side of the rail flange, and a horizontal inwardly extending base-plate 8 formed integrally with the foot-flange 7 and underlying the base of the rail. While the splice-bar 1 at each side of the rails extends the full length of the joint, the angle filler pieces 2 consist of metallic bars extending one-half the length of the joint so that each rail has a pair of the filler pieces associated therewith, and located respectively upon opposite sides thereof within the fishing spaces. Each of these metallic angle filler pieces 2 essentially consists of an upright member or skirt 9, formed at its upper edge with a bearing head 10 underlying and directly engaging the under side of the rail-head, and in addition thereto the said upright member of the filler piece is provided at its upper edge portion with an outturned bearing flange 11 formed at its under side with an inclined bearing face 12 opposing and corresponding to the bearing face 6 at the upper edge of the splice-bar, said bearing face 12 of the filler piece being likewise more extensive in area than the area of the under side of the rail-head so as to provide a widened and increased bearing surface for the upper flange 13 of the side insulating sheet 14 which is interposed between the splice-bar and the filler member. The insulation, 13—14 consists of the usual fiber or equivalent insulating material, and in the application of the invention shown in Figs. 1 and 2 of the drawings the same has a cuff portion 15 which embraces the rail flange and hence lies between the rail flange and the elements 7 and 8 of the joint-bar. The general insulation of the joint is completed by the usual insulating end-post 16 interposed between the rail ends, and also between the ends of the fillers at opposite sides of the joints, and by the usual bolt insulation 17 for the joint bolts 3.

The improtant and distinguishing feature of the present invention is to provide a fastened connection between the individual filler-pieces and the splice-bar coöperating therewith, which fastened connection is independent of the joint bolts or other joint fastening devices which hold the various elements of the joint in assembled relation. This may be accomplished in various ways, such, for instance, as by means of any suitable number of fastening bolts 18, arranged in alined bolt-holes in the filler-piece and the adjoining splice-bar, the nuts 19 for said bolts being exposed upon the outer sides of the splice-bar for convenient manipulation. In connection with the bolt fastenings 18 there is associated with the same suitable insulation, such as the conventional bolt-insulation, consisting of an insulating sleeve or bushing 20 within the bolt-hole in the splice-bar, and an insulating washer 21 employed behind the metal washer in the usual way.

In the construction described, it will be observed that while the filler-pieces and splice-bars may be readily assembled, and also readily separated, as may be required, at the same time when the bolts 18 are well tightened the filler-pieces are rigidly locked or fastened to the splice-bars and do not interfere in the least with the regular adjustment of such bars from time to time. Also, this independent fastened connection for the filler pieces serves to hold them in the correct position and prevents the same from canting or other independent movement that might tend to decrease the bearing surface upon the upper flange 13 of the insulating material.

In Fig. 3 of the drawings is suggested a modification of the invention showing its application to splice-bars having no base support for the rails, and also illustrating the employment of fastening bolts 18 having the heads at their inner ends countersunk in the filler-members as shown at 22.

By way of illustrating the wide range of modification that may be resorted to in the kind of fastening employed for the filler-pieces, there is suggested in Fig. 4 of the drawings the use of insulated rivets 23, arranged in the alined holes in the filler-piece and splice-bar, and upset at their ends in the manner of the usual rivets, thereby providing a permanent riveted connection between the parts referred to, instead of the detachable bolted connection shown in the other forms. Also, it will be readily understood from the illustration of Fig. 4 and the other figures of the drawings, that the improved construction claimed herein may be utilized on one side of the joint only, permitting the use of any other form of insulated splice bar on the opposite side of the rail, as will be well understood by those familiar with the art. Furthermore, while the forms of the invention illustrated in Figs. 1, 2 and 3 of the drawings suggest the use of continuous or one piece insulating sheets 14, it is obvious that any improved insulating expedients may be utilized to effect a thorough insulation of opposite metallic surfaces, such for instance as shown in Fig. 4 of the drawings wherein is illustrated an insulation consisting of separate upper and lower sections, the upper section 14^a being interposed between the filler piece and the splice bar and provided with an upper flange portion 13^a, while the lower section of insulation 15^a may be in the form of a cuff embracing the rail flange and interposed between the latter and the elements 7 and 8 of the splice bar. Ob-

viously other modified forms on insulation may be resorted to in the invention without departing from its principle or scope.

In further exemplification of the invention, the same is shown in Figs. 5 and 6 of the drawings as applied to a one-end insulated joint, that is, to a rail joint wherein the insulation is confined to one rail end and the parts immediately associated therewith. This embodiment of the invention as shown in said Figs. 5 and 6 of the drawings may be in all respects the same as the design of joint shown in Figs. 1 and 2 of the drawings, with the exception that instead of employing the insulating plates or sheets on the receiving end of the joint, there are used metal fillers or liners 30 interposed between the filler pieces and splice bars and also embracing the rail flanges, as plainly shown in Fig. 6 of the drawings. These metal fillers or liners 30 are of the same form and dimensions as the insulating sheets 14 on the opposite end of the joint. Hence, in the embodiment of the invention shown in Figs. 5 and 6 of the drawings, at the receiving end of the joint, the same is of an all-metal construction wherein the parts of the joint have a direct metallic engagement, and it is also unnecessary at this end of the joint to insulate the bolts. While it is preferable in the one-end insulated joint to utilize the compensating metal fillers or liners 30 on the non-insulated end of the joint, it will be understood that the same mechanical results can be accomplished by the well known expedient of increasing the thickness of the metal filler bar, on the non-insulated end of the joint, to an extent corresponding to the combined thickness of the filler bar and insulation on the insulated end of the joint, or by increasing the thickness of the head of the splice bar in the same manner and for the same purpose. The fastening means for the filler pieces can be employed at as many different points throughout the length of the joint as desired.

I claim,—

1. In a rail joint, the rail, an adjustable splice bar, a metallic filler piece engaging the under side of the rail head, and fastening means, independent of the joint fastenings, for securing the filler piece to the splice bar and supporting it thereon.

2. In an insulated rail joint, the rail, a splice bar, a metallic filler piece engaging the under side of the rail head, insulation, and fastening means, independent of the joint fastenings, for securing and joining together the filler piece, the insulation, and the splice bar.

3. In an insulated rail joint, the rail, an adjustable splice bar, a metallic filler piece engaging the under side of the rail head, insulation, and fastening means, independent of the joint fastenings, for securing and joining together the filler piece, the insulation, and the splice bar.

4. In an insulated rail joint, the rail, a splice bar, a metallic filler piece engaging the under side of the rail head, insulation interposed between the splice bar and the filler piece, and fastenings, independent of the joint fastenings, for securing and joining together the splice bar, the insulation, and the filler piece.

5. In an insulated rail joint, the rail, an adjustable splice bar having a bearing flange, a metallic filler piece engaging the under side of the rail head and having a bearing flange overlying that of the splice bar and presenting a face of greater area than the area of the under side of the rail head, insulation, and fastenings, independent of the joint fastenings, for securing and joining together the splice bar, the insulation, and the filler piece.

6. In an insulated rail joint, the rail, a splice bar, a metallic filler piece engaging beneath the rail head, insulating material interposed between the filler piece and the splice bar, and fastening bolts, independent of the other joint bolts, for securing and joining together the splice bar, the insulation, and the filler piece.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

BANCROFT G. BRAINE.

Witnesses:
E. F. SCHERMERHORN,
W. R. HALLIDAY.