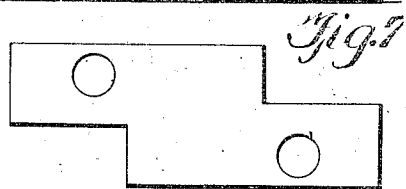
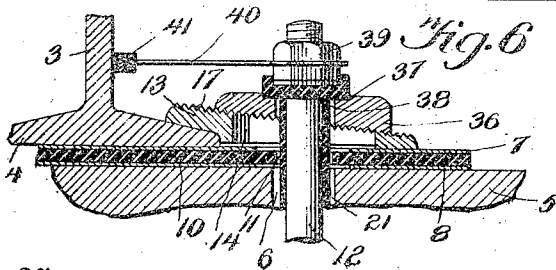
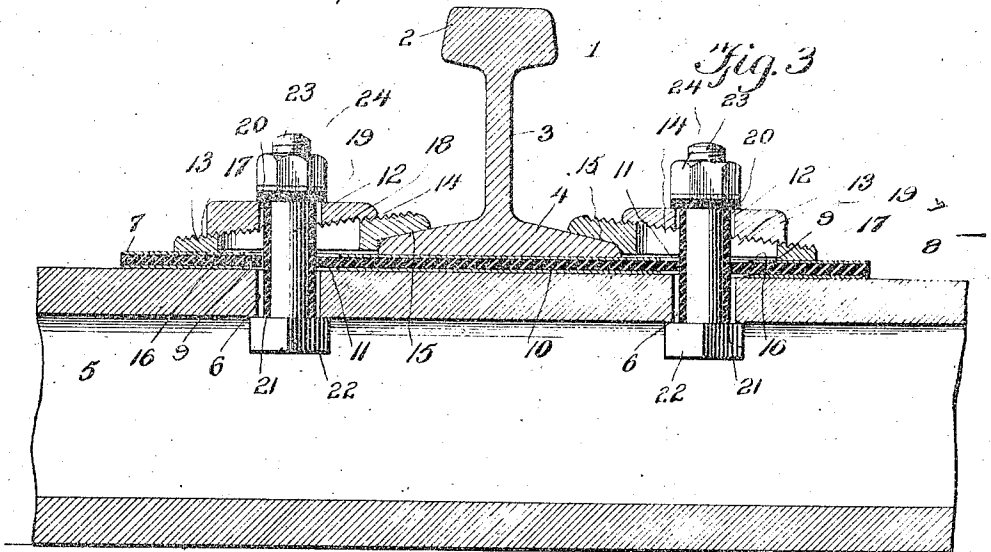
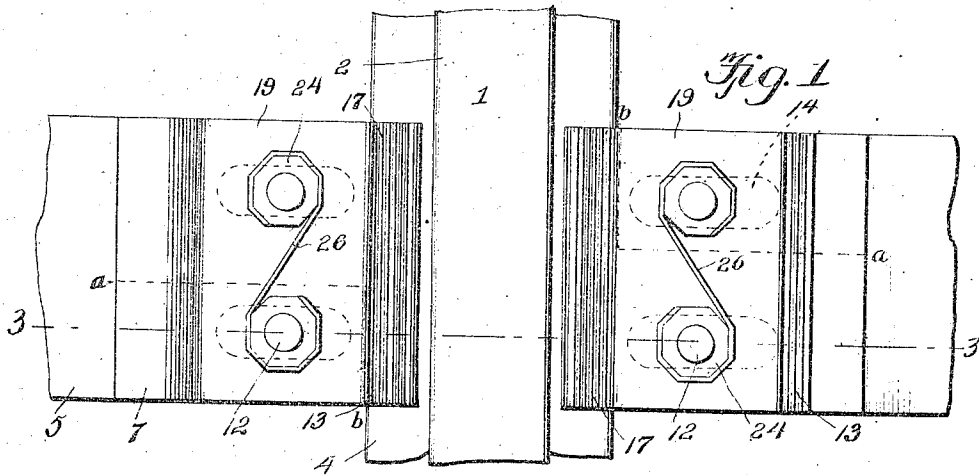


1,011,245.

J. M. RAFTER.
RAIL FASTENING DEVICE.
APPLICATION FILED JAN. 21, 1911.

Patented Dec. 12, 1911.

2 SHEETS-SHEET 1.



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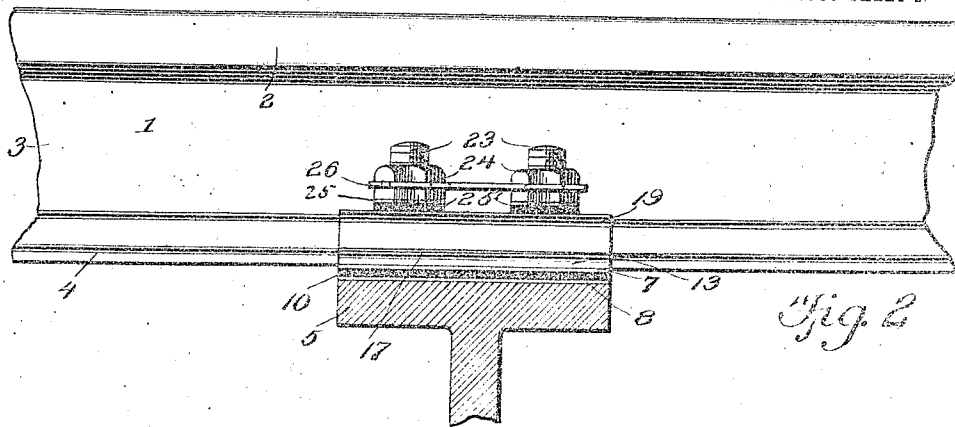


Fig. 2

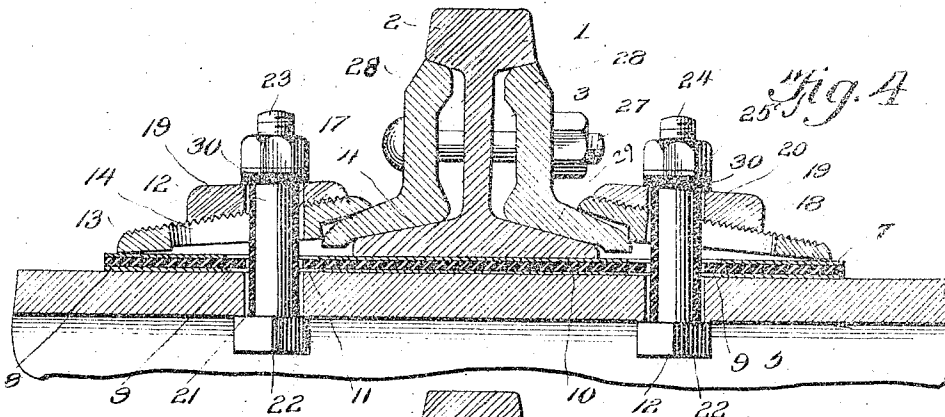


Fig. 4

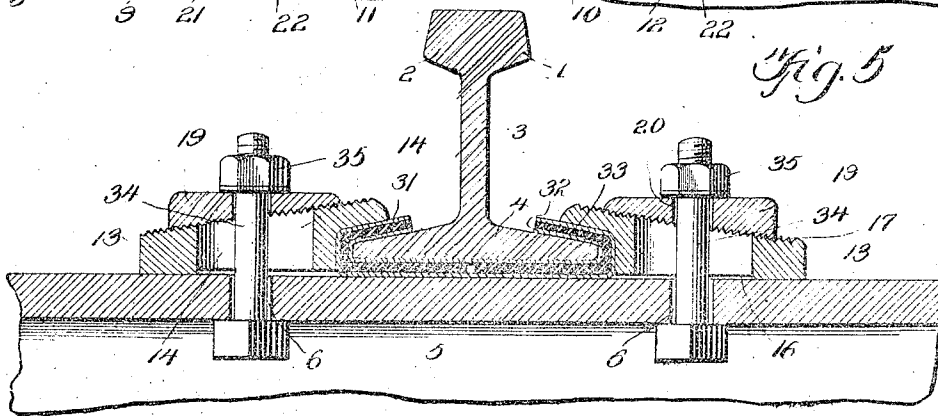


Fig. 5

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JAMES M. RAFTER, OF NEW YORK, N. Y.

RAIL-FASTENING DEVICE.

1,011,245.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed January 21, 1911. Serial No. 603,872.

To all whom it may concern:

Be it known that I, JAMES M. RAFTER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Rail-Fastening Devices, of which the following is a specification.

This invention relates to rail fastening devices and the object of the invention is the provision of novel means whereby the rail may be secured to a concrete, steel, wooden or any other type of tie, and may be properly insulated therefrom, whereby current carried by the rail cannot become grounded or have ground leaks.

A further object of the invention is the provision of a novel rail grip and lock which forms a substantially solid abutment against lateral or side thrust on the rail.

Further objects of the invention will appear as the following specific description is read in connection with the accompanying drawings, which form a part of this application, and in which:—

Figure 1 is a top plan view. Fig. 2 is a detail side elevation. Fig. 3 is a section on the line 3—3 of Fig. 1. Fig. 4 is a similar section showing the rail grip and lock placed over the splice bars. Fig. 5 is a transverse section of a modified form. Fig. 6 is a detail transverse section showing a further modification. Fig. 7 shows a modified form of wear plate.

Referring more particularly to the drawings, 1 represents the rail which, as is usual, is provided with a head 2, web 3 and base flanges 4, and 5 indicates a double T-shaped steel tie upon which the rail is adapted to rest. The web flanges of the tie are provided with standard drill holes 6 and mounted on the top of the web flanges are a pair of wear plates 7 and 8, each having holes 9 therein of considerably larger diameter than the holes 6 and having interposed between the plates a strip or plate of insulation 10. This insulation is provided with holes 11 which are coincident with but considerably smaller than the holes 9 in the wear plates, so that the insulation projects in said holes 9 and prevents contact of the securing bolts 12 with said wear plates.

Mounted upon the wear plates on opposite sides of the rail are wedge-shaped grips 13 having elongated slots 14 formed therein to permit the passage of the bolts 12 and provided at their inner edges with undercut

portions 15 adapted to engage over the base flanges 4 of the rail 1. The outer under-edge of these grips is provided with a longitudinal enlargement 16 which holds the body of the grip separated from the wear plate for purposes of adjustment when the undercut portion becomes worn. The under surface of the grips, in practice, lies substantially parallel with the water plates while the upper surface thereof is inclined, as shown, and provided with serrations or corrugations 17 which are adapted to intermesh with similar corrugations 18 upon the locking washer or plate 19 whose upper surface, in practice, lies parallel with the under surface of the grip and also with the wear plates. These locking washers or plates are apertured, as shown at 20, to permit the passage of the bolts 12. Each bolt 12 (and two are preferably used on either side of the rail) is provided with an insulating sleeve 21 extending from the head 22, which directly engages the web flanges of the tie, to the threaded portion 23 upon which a suitable nut 24 is threaded. An insulating washer 25 surrounds the bolt and is interposed between the washer or plate 19 and the nut 24 which bears upon an ordinary steel or iron washer 25. As shown in Fig. 1, the separate nuts are connected together by a wire clip 26 which acts as a lock nut and prevents the nuts from accidental turning upon the bolt.

As shown in Fig. 4, the rail 1 has secured upon the opposite sides thereof, by means of the through bolts 27, the splice bars or fish plates 28 which are provided with base flanges 29 adapted to overlie the base flanges 4 of the rail 1. In this type of construction the insulated wear plates are identical with that shown in Figs. 1 to 3 and the bolts are provided with the usual insulating sleeves. The same type of grip and locking washer is employed but a slightly wedge-shaped insulating washer 30 is shown interposed between the nuts on the bolts and the locking washers. This type of washer is provided to accommodate the slightly inclined arrangement of the upper face of the locking washers which is brought about by the fact that the inner edges of the gripping plates are raised somewhat from their normal position on account of being seated upon the base flanges of the fish plates instead of on the rails. It will be noted in this connection that the gripping plates are

also arranged farther away from the rails and that the slots 14 are of sufficient length to permit this adjustment.

In the modified form shown in Fig. 5, the wear plates 31 and 32 are separated, as is usual, by the insulation 33 which, in this instance, is formed in two parts so as to readily permit the outer edges of the wear plates to be bent up and over the base flanges 4 of the rail 1, as shown. The rail grips or gripping plates in this type of structure are made somewhat thicker and have a greater under cut so as to lie over and directly engage the wear plates. The bolts 34 are free of insulating sleeves or washers and extend directly through the web flanges of the ties and the nuts 35 thereon rest directly upon the locking washers, the serrations or corrugations of the locking washers or gripping plates being retained as before described, although in both structures it may be omitted.

In the structure shown in Fig. 6, a slightly modified type of gripping washer is shown at 36, and is provided with a countersink 37 in its upper face to receive a cup-shaped washer 38 of insulating material in which the nut 39 is adapted to rest. The insulation from the base of the rail and the bolt insulation is the same as that described in Figs. 1 to 3. In this figure there is also shown a type of nut lock which is used when only a single bolt is employed, as will hereinafter be described. This type of nut lock shows a single strip of material 40 bent around the nut 39 and having its end abutting against the web 3 of the rail and provided with an insulating cap 41.

In Fig. 1 dotted lines *a-b* are indicated which are placed upon this figure to indicate that the gripping plates and the locking washers may be cut away upon this line so that only one bolt upon either side of the rail need be employed. If this type of structure is used the wear plates shown in Fig. 7 are employed and the insulation will follow the outline in the wear plate.

Having thus described the invention, what I claim as new is:—

1. The combination with a tie, of wear plates mounted thereon and having apertures therein, insulation arranged between said plates and having coincident apertures of smaller diameter, a rail mounted upon the upper wear plate, fastening devices mounted on the wear plate, a bolt for securing said fastening devices to the tie, and a tube of insulation surrounding the bolt,

said bolt and tube of insulation passing through the apertures in the wear plates and insulation and having the tube lying adjacent the insulation.

2. In combination, a tie, insulated wear plates mounted thereon, a rail seated upon the upper wear plate, oppositely disposed coacting wedge shaped gripping devices mounted upon the wear plate and engaging opposite sides of the base flange of the rail, and an insulated bolt for securing the gripping devices in operative position.

3. In combination, a tie, wear plates mounted thereon, insulation arranged between the said plates, a rail seated upon the upper wear plate, wedge shaped gripping devices mounted upon the wear plate and engaging the base flange of the rail, and insulated bolts for securing the gripping devices in operative position and the wear plate on the tie.

4. In combination, a tie, wear plates mounted upon the tie, insulation arranged between said plates, a rail seated upon the upper wear plate, wedge shaped gripping devices mounted upon the wear plate, and engaging the base flanges of the rail, a wedge shaped locking member seated upon the gripping devices and having its upper side parallel with the lower side of the gripping device and an insulated bolt passing through the gripping and locking devices and through a portion of the tie to hold the rail and wear plates in position thereon.

5. In combination, a tie, wear plates mounted upon the tie, insulation arranged between said plates, a rail seated upon the upper plate, a wedge shaped grip having a slot therein mounted upon the top wear plate and engaging the base flange of the rail, a wedge shaped locking member mounted upon the grip and having its thick end in opposition to the thick end of the grip and with its upper side parallel with the lower side of the grip, a bolt passing through a portion of the tie through the insulated wear plates and through the grip and locking device, an insulating tube surrounding the said bolt, and an insulating washer arranged between the locking device and the bolt nut.

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

JAMES M. RAFTER.

Witnesses:

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JOSEPH J. DEEGAN.