Nov. 23, 1926. 1,608,414

G. W. MULLER

RAIL FASTENER

Filed May 25, 1926 3 Sheets-Sheet 1

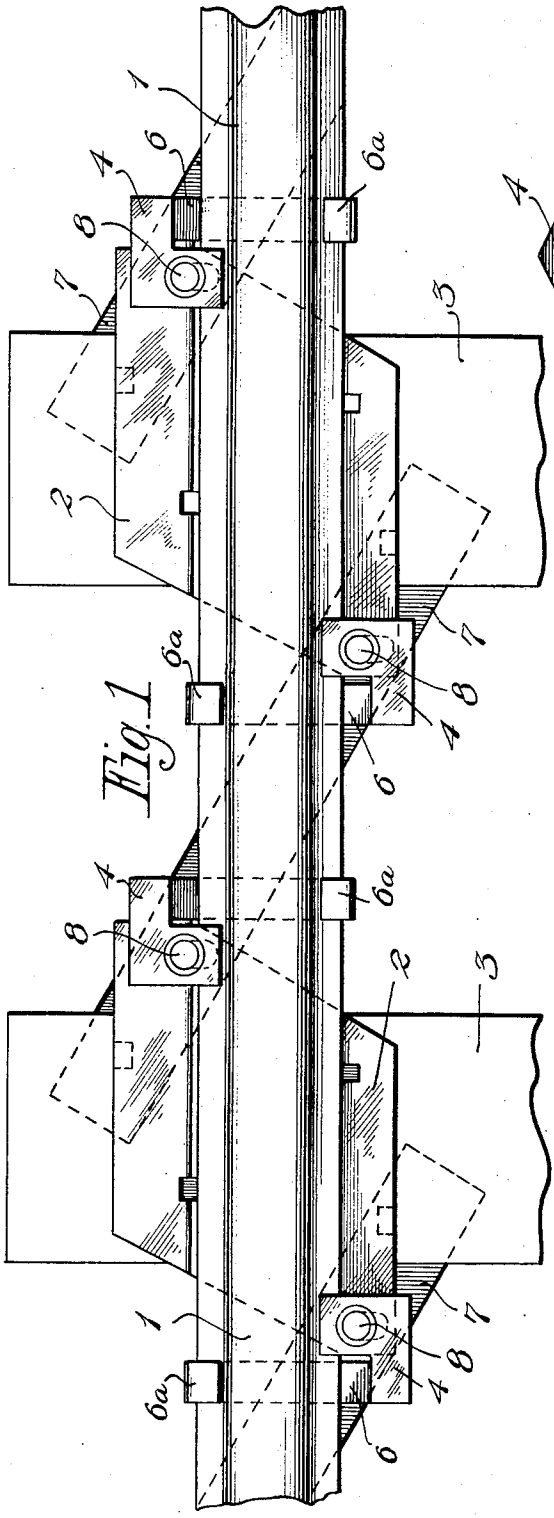


Fig. 1

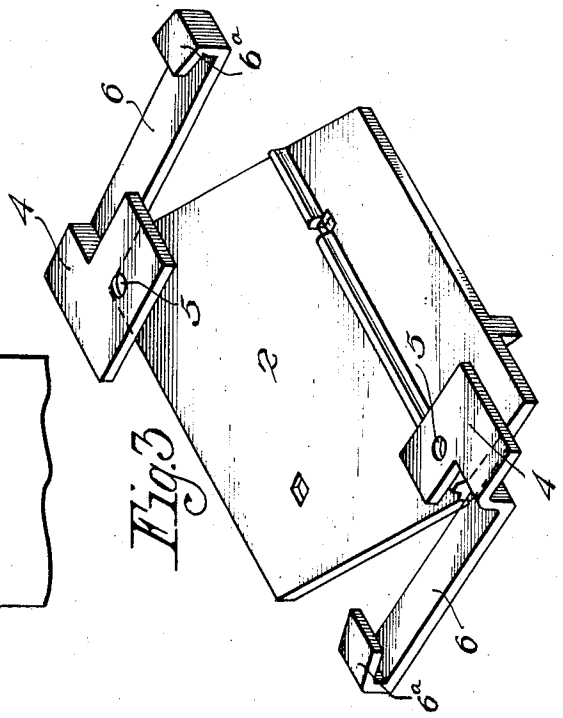


Fig. 3

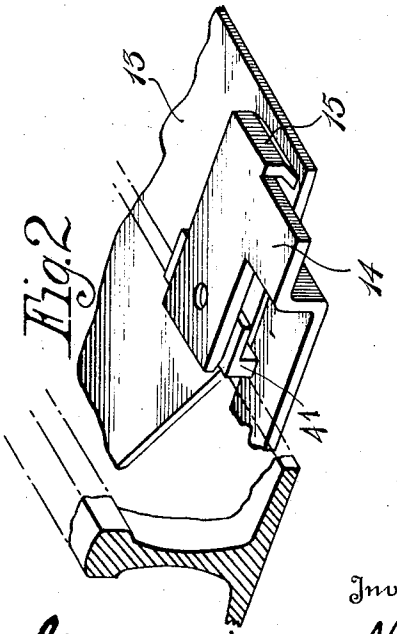


Fig. 2

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RAIL FASTENER

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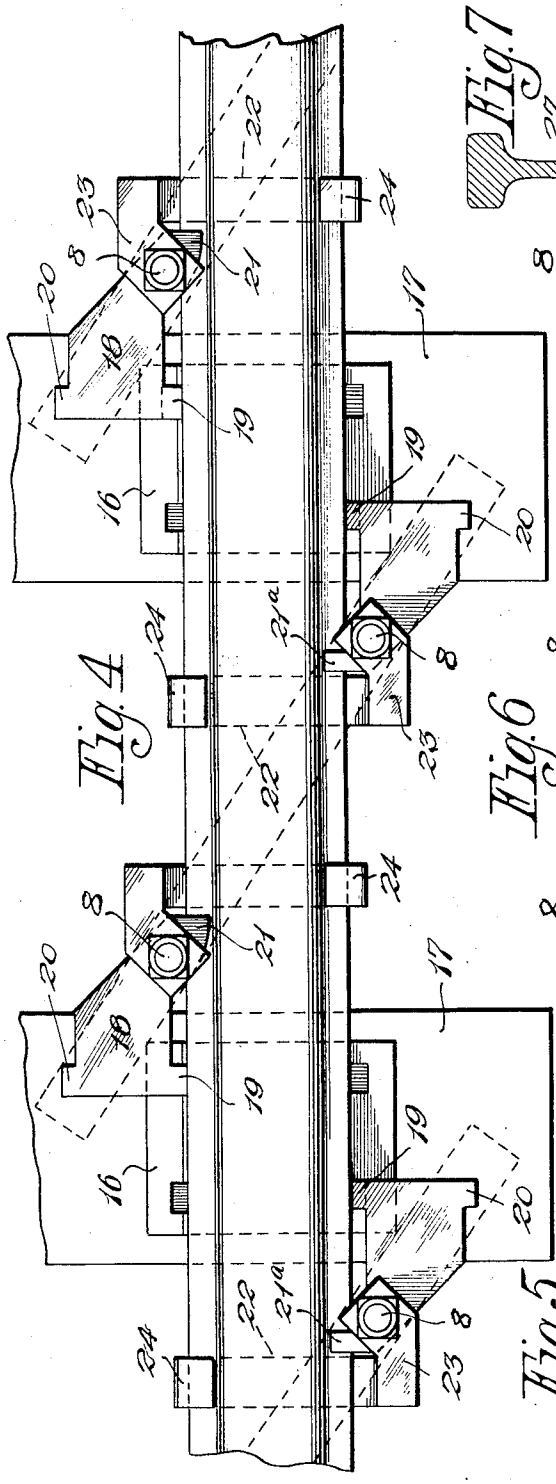


Fig. 4

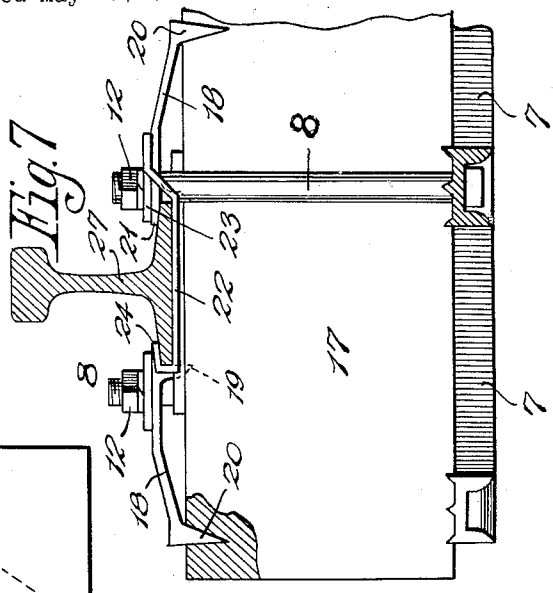


Fig. 7

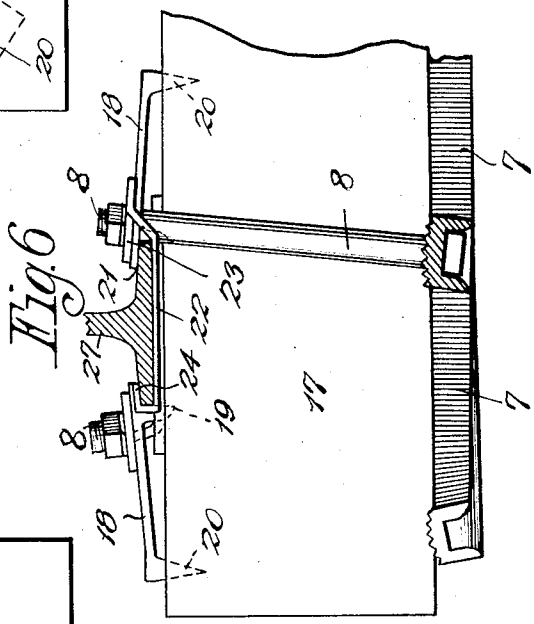


Fig. 6

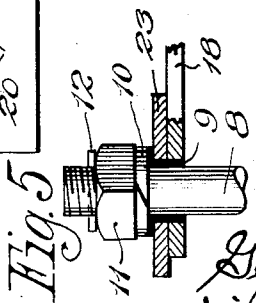


Fig. 5

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RAIL FASTENER

Filed May 25, 1926 3 Sheets-Sheet 3

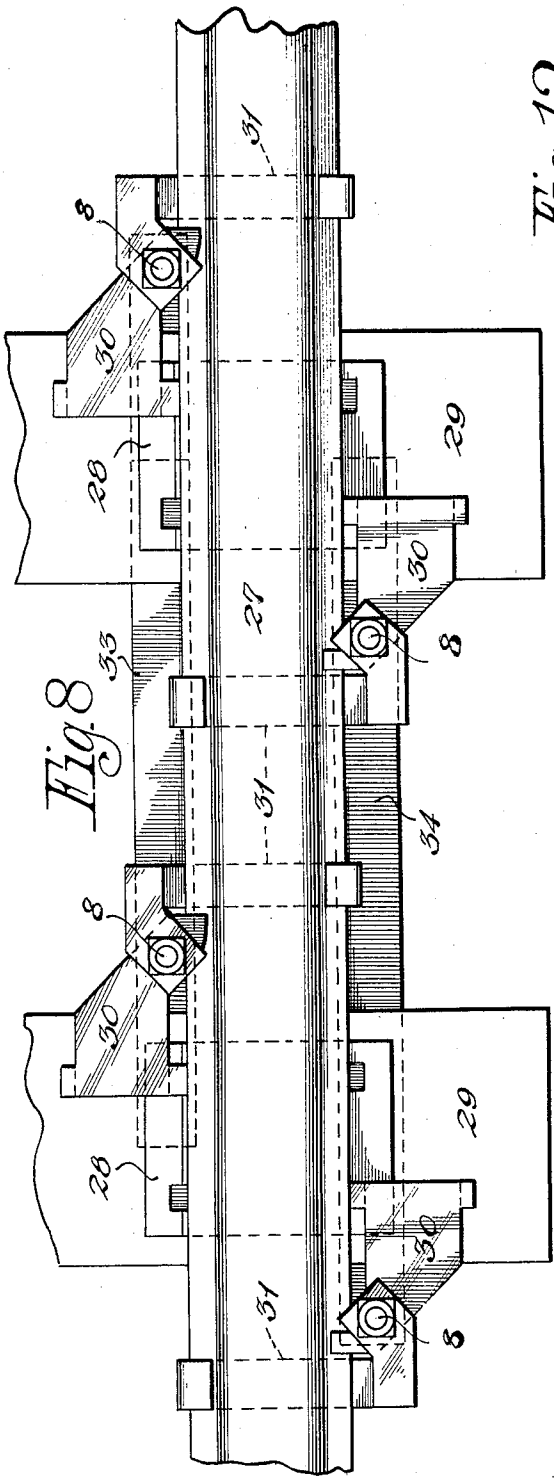


Fig. 8

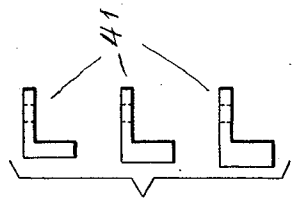


Fig. 12

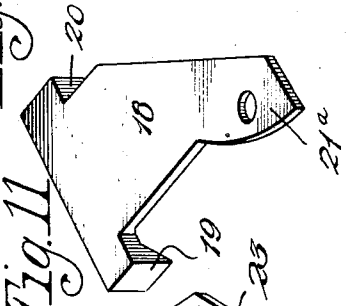


Fig. 11

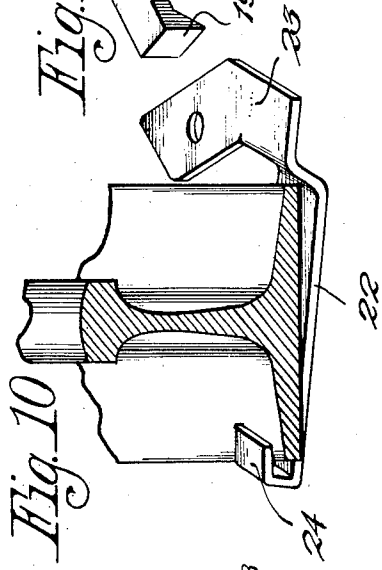


Fig. 10

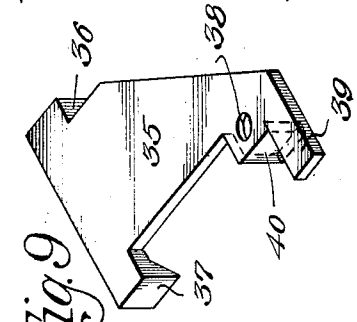


Fig. 9

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Patented Nov. 23, 1926. 1,608,414

UNITED STATES PATENT OFFICE.

GEORGE W. MULLER, OF WASHINGTON, DISTRICT OF COLUMBIA.

RAIL FASTENER.

Application filed May 25, 1926. Serial No. 111,521.

This invention relates to improved rail, tie and tie plate holding means for general railway uses in track construction.

One of the objects of this invention is to provide attachments simple in construction and easily and cheaply manufactured whereby the rails, tie plates and ties can be held together positively as one element. Another object of this invention is the production of means comprising parts of special construction and arrangement by which it is believed the ties are prevented from creeping and the rails also are prevented from creeping in the direction of the length of the rail by reason of the running of the trains over them. Still another object of this invention has for its result from the particular formation and disposition of the parts, the elimination of waves or the bending or breaking of the rails under the traffic. It is further thought this invention introduces what is practically a truss in the track, and braces the track in such manner as to keep it from slipping or sliding out of line, and at the same time making a stronger track safer for travel and of much longer life with consequent economy in the cost of hauling, fuel and maintenance to the operating railway corporation.

In the accompanying drawings the preferred construction and arrangement of the parts are illustrated, and Figure 1 represents a top plan view of a portion of a railway track having this invention applied thereto, and showing all parts assembled.

Figure 2 is a fragmentary perspective view of a portion of one of the tie plates and a modified form of the rail holder.

Figure 3 is a perspective view of the tie plate and rail holders detached.

Figure 4 is a top plan view of a portion of a railway track showing a modified form of this invention constructed for use with tie plates of the customary stock shape and arrangement.

Figure 5 is a fragmentary sectional view of the rail holding members, and showing the clamping bolt with bushing, washer and pin for securing the bolt.

Figure 6 is a side view of the end of a tie, showing the positions of the rail holding members and the bar under the tie, with the clamping bolt connecting the parts.

Figure 7 is a view similar to Figure 6, and showing the wedge point engagements of the rail holders and the tie.

Figure 8 is a top plan view of a portion of a railway track showing the modified form of this invention used with the regulation tie plates, and showing also an arrangement of the bars beneath the ties and parallel with the rail.

Figure 9 is a perspective view of the extension member used in connection with the regulation or stock tie plate.

Figure 10 is a perspective view showing the rail holder and rail engagement.

Figure 11 shows in perspective another form of the extension member used in connection with the tie plate of the common shape and arrangement.

Figure 12 shows several side views of filling pieces or angle blocks used to fill out any spaces occurring between a rail and holder applied to it.

Throughout the description and drawings the same number is used to refer to the same part.

Considering the drawings, in Figure 1 the rail 1 rests upon the tie plate 2 on the tie 3. The tie plate has the form of a parallelogram with two inclined sides designed to obviate a serious fault in present railway practice. The tie plates now used by railway corporations are too small, that is to say, they are too narrow. They cut down into the tie and form pockets, and water gets into such pockets and the constant beating of the tie plate down by passing wheels forces the water into the grain of the wood of the tie and causes them to rot at those places more quickly, even though the ties may be impregnated with creosote in the usual manner, Therefore, I have designed a tie plate of angle design, allowing opposite corners on each side of the rail to extend over the side of the tie. This construction enables the tie plates to be used on ties from seven to thirteen inches wide. Such ties are all within the standard sizes employed by the railroads, and my newly invented tie plate having more bearing surface on all the various widths of ties, enables it to hold up longer and to resist for a greater time the effect of the weight from above, and there is less cutting into the wood of the tie. The angle design for the tie plate is also set out in Figures 2 and 3. Suitable spike holes are provided in desired locations to secure the tie plate to the tie.

In Figure 3 will be best observed the structure of what are termed for the pur-

poses of this description, the rail holders or rail clips. Each holder has a plate like end 4 provided with a bolt hole 5, and a sunken body portion 6, which is the rail seat. The other end of the holder has the form of a hook and is constructed to engage the base of the rail 1 as illustrated. The hook end is marked 6a.

It will be noted in Figures 1, 4, 6, 7 and 8, that channel bars are arranged with ends beneath adjoining ties. In Figure 1 such bars are designated by number 7 and they are in positions inclined to the rail and ties. Like supporting channel bars extending under the ties are shown in Letters Patent of the United States issued to me March 16, 1926, and numbered 1,577,287, and the function of the bars is as therein described. As best illustrated in Figures 6 and 7 of this application, the channel bars, the holders and tie plates are all clamped together by vertical bolts such as the bolt 8. As shown in Fig. 5 there may be provided a bushing 9 for the bolt 8, and a spring washer 10 beneath the nut 11, and a diametric cotter pin 12 above the nut as securing devices, but this invention is not limited to the use of those elements. It will be noted in Fig. 1 that the end or plate portion 4 of the rail holder extends over and is clamped by the bolt upon the base of the rail.

The modification illustrated in Figure 2 includes the tie plate 13 of substantially the same construction as before, but the holder 14 has a depending lip 15 formed to engage the edge of the tie plate to further secure the holder against displacement with respect to the tie plate and other parts.

It is obviously expedient to adapt this invention for use with tie plates of standard form and structure. In Figure 4 such tie plates 16 are delineated. At diagonally opposite corners the tie plates 16 on the ties 17 are provided with extension members marked 18 and best shown in one form in Figure 11. One end of the member 18 is made with wedge points 19 and 20 one of which passes through a spike hole in the tie plate next to the base of the rail, and the other wedge point enters the wood of the tie as shown in Figure 7. In this modification it will be observed that the nose 21 of the extension member 18 bears upon the base of the rail. It is thought to be obvious that the end 21 of the member 18, which end has a curved side as shown in Figures 4 and 11, may have any other form such as the rectangular end 21a shown in Figure 4. The holder 22 is of the same construction as before described, and the plate like end 23 of the holder 22 rests upon the nose or end 21 of the extension member 18. The hook end 24 of the holder 22 engages the base of the rail as previously explained, and the inclined bars 7 are arranged with their ends beneath adjoining ties as in Figure 1. The bolt 8 for clamping the ties, tie plates, holders and rail together are the same in construction and arrangement as in Figure 7.

The modification shown in Figure 8 is simply in the arrangement of the parts. The rail 27 rests upon the tie plates 28 of standard make, and upon the ties 29. The extension members 30, rail holders 31 and clamping bolts 8 are as previously described, and the same is true of the channel bars 33 and 34, but in this instance the bars are disposed parallel with each other and parallel with the rail 27.

Attention is called to the fact in this invention that the bolts employed to secure all the parts together do not pass through the ties, but are located at the sides of the ties. To gain as long useful life from the ties as may be practicable, it is advantageous to avoid forming holes in them to any extent.

Considering the modification illustrated in Figure 9, it will be observed that the extension member 35 has at its wider end the wedge points 36 and 37, and at its lesser end the bolt hole 38. The end having the bolt hole is split, and one portion thereof marked 39 continues straight while the adjoining portion 40 is bent down at right angles to the plane of the member 35. The purpose of such construction may be thus explained. In tracks where rails become worn on the curves or elsewhere, and the essential gauge of the track must be maintained, the old method has been to pull out the spikes from the ties, plugging the holes with wooden plugs, pushing and setting the rail and tie plate inwardly, and driving the spikes into partly new wood and an old hole. To take up this wear of the rails I have provided in this invention the filler pieces or shims 41, which can be made of different thickness from thin steel one-sixteenth of an inch in thickness or more, and placed between the edge of the base flange of the rail and the shoulder formed by the bent portion 40 of the extension member 35 as shown in Figure 9. The application of the shims 41 illustrated in Figures 2 and 12 will be understood from an inspection of those figures in connection with Figures 6, 7 and 9. In Figures 6 and 7 it will be noted that the bolts 26 are in contact with the base of the rail 27. If upon occasion it is found necessary to move the rail so that the bolt hole is at a distance from the edge of the base of the rail, as illustrated in Figure 2, the shim 41 is placed beneath that portion of the holder member 14 which has the bolt hole. The bolt hole in the shim registers with bolt hole in the member 14. It will now be observed that the shim is arranged to be held by a bolt passed through the bolt holes and fills the space between the bolt and the edge of

the base of the rail which is thus firmly secured. To accomplish the same spacing of the bolt hole from the base of the rail, a shim may be placed upon the extension member 35 shown in Figure 9, so that the bolt hole of the shim registers with the bolt hole 38 of the member and the downwardly extended portion of the shim rests against the turned down portion 40 of the member 35. When the parts are bolted in place the filler pieces are secured as well. The use of this invention enables the trackmen to set the worn rail in quickly and readily without withdrawing the spikes or moving the tie plates or disturbing the roadbed, and without interrupting the traffic.

In this invention there is no intention of limiting the parts to any special material or size, thickness or weight. If the road is equipped for electric traction, the invention herein described may be provided with suitable insulation without departing from the plain intent hereof.

The operation of the preferred form and of the various modified forms is substantially the same in all essential respects. It will be noted that the rail holders are bolted on opposite sides of the rail and on opposite sides of the tie plates and ties. If the rail tends to creep under the force of the traffic, the effect is the turning of the holders on the bolts. Thus the greater the tendency to creep the greater will be the preventive gripping of the holders upon the base of the rail. The bolt engagement eliminates any displacement sidewise and the ties, tie plates, holders and under bars are made by the bolts into substantially one structure no part of which can move out of place unless the whole thing is disrupted. The bars beneath the ties support the whole in the manner of a truss, and insure the track against bending or breaking. A further and distinct advantage following from the use of this invention is that the rails are strengthened at the joints where they meet, and such rail joints whatever may be their particular construction are materially aided when the rails are held against displacement as herein set forth.

Having now described this invention and explained the mode of its operation, I claim:—

1. In devices of the character described, the combination with a tie, of a tie plate having a removable portion extending over the side of the tie, a rail, a rail holder engaging the base of the rail, and means bearing upon the base of the rail for connecting the said holder on one side of the rail with the extended portion of the tie plate.

2. In devices of the character described, the combination with a tie, of a tie plate having removable portions extending over the sides of the tie, a rail, rail holders engaging the base of the rail on opposite sides of the tie, and means bearing upon the base of the rail for connecting the said holders with the said extended portions of the tie plate.

3. In devices of the character described, the combination with a tie, of a tie plate having removable portions extending over the sides of the tie, the said extended portions being located at diagonally opposite corners of the tie plate, a rail, rail holders each having one end engaging the base of the rail, and means bearing upon the base of the rail for connecting the remaining end of each holder with the said extended portions of the tie plate.

4. In devices of the character described, the combination with a tie, of a tie plate, means for extending a portion of the tie plate over the side of the tie, a rail, and means for securing the said extending portion of the tie plate to the rail.

5. In a device of the character described, the combination with a tie, of a tie plate, means for extending diagonally opposite corner portions of the tie plate over the sides of the tie, and rail holders connected with the said extensions of the tie plate.

6. In devices of the character described, the combination with a tie, of a tie plate having means for extending diagonally opposite corner portions of the tie plate over the sides of the tie, a rail, rail holders each having one end engaging the base of the hail and the other end connected with an extended portion of the tie plate.

7. In devices of the character described, the combination with a tie, of a tie plate, a member engaging the tie plate and arranged to extend over one side of the tie, a rail and filler pieces constructed to engage the member and to fill the space between said member and the base of the rail.

8. In devices of the character described, the combination with a tie, of a tie plate, a rail, an extension member engaging the tie, tie plate and the base of the rail.

9. In a device of the character described, the combination with a tie plate, of a rail, an extension member engaging the said tie plate and the base of the rail, and a rail holder having one end engaging the base of the rail and the other end secured to the said portion of the said extension member in engagement with the base of the rail.

10. In devices of the character described, the combination with a tie plate, of a rail, extension members engaging the tie plate at diagonally opposite corners of the plate, the said extension members having portions bearing upon the base of the rail, and rail holders on opposite sides of the tie, each holder having one end engaging the base

of the rail and the other end secured to the said portion of the extension member bearing upon the base of the rail.

11. In devices of the character described, the combination with a tie, of a tie plate, a rail, and extension members having portions engaging the tie, tie plate and rail on opposite sides of the tie, tie plate and rail.

12. In devices of the character described, the combination with a tie, of a tie plate, a rail, a rail holder engaging the base of the rail, means bearing upon the base of the rail for connecting the said holder and tie plate, bars arranged with ends beneath adjacent ties, and bolts located at the sides of the ties for clamping the said bars and the said connecting means and holders together.

13. In devices of the character described, the combination with a tie, of a tie plate, a rail, a rail holder engaging the base of the rail, means bearing upon the base of the rail for connecting the said holders and tie plates, bars arranged in inclined positions with respect to the rails and ties and having ends placed beneath adjoining ties, and bolts located at the sides of the ties for clamping the said bars and the said connecting means and holders together.

14. In devices of the character described, the combination with a tie, of a tie plate, a rail, rail holders, means bearing upon the base of the rail for connecting the said holders and the tie plate, bars having ends arranged beneath adjacent ties, said rail holders passing under the base of the rail and having each one end engaging the said base, and bolts connecting the other ends of the said holders and the said bars and connecting means for clamping them together.

15. In devices of the character described, the combination with a tie, of a rail, a tie plate having extended portions located over the sides of the tie and bearing upon the base of the rail, bars having ends arranged beneath adjoining ties, rail holders having each one end engaging the base of the rail, and bolts passing through the said bars and the extended portions of the tie plate and through the other ends of the said holders for clamping the bars, tie plates, holders and ties together.

16. In devices of the character described, the combination with ties, of a rail, tie plates having portions at diagonally opposite corners extended over the sides of the ties and bearing upon the base of the rail, rail holders each having one end constructed to engage the base of the rail, bars arranged in inclined positions with respect to the ties and rail and having ends located beneath adjoining ties, and bolts located on opposite sides of the ties and rails for clamping the said tie plates, holders and bars together.

In testimony whereof I affix my signature.

GEORGE W. MULLER.