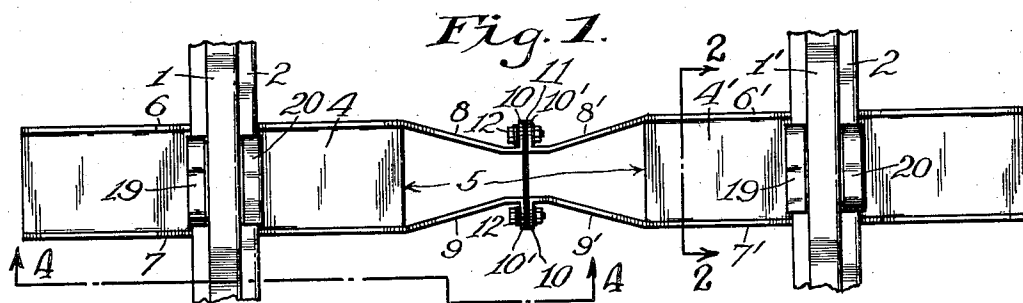
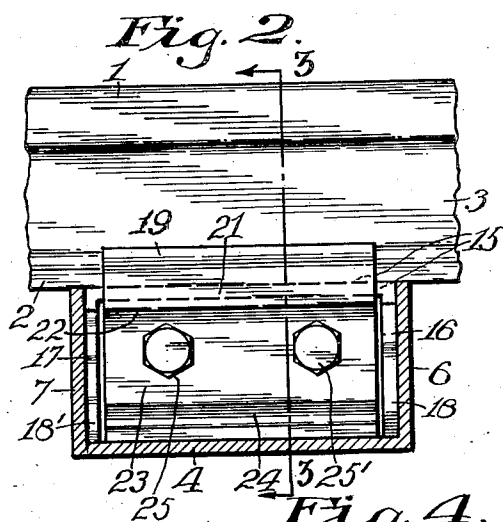
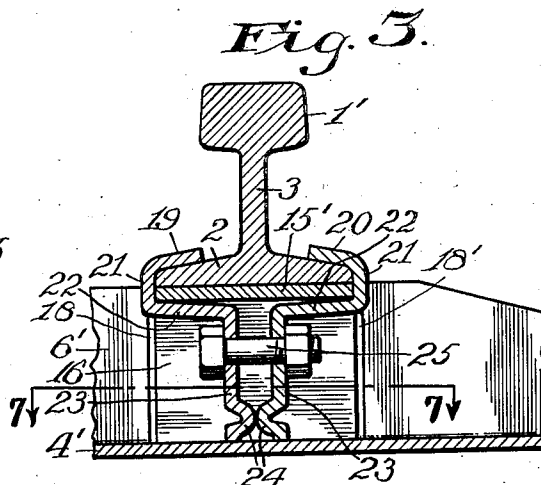
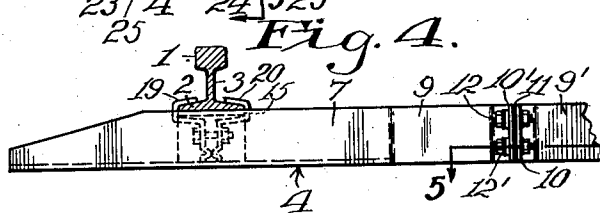
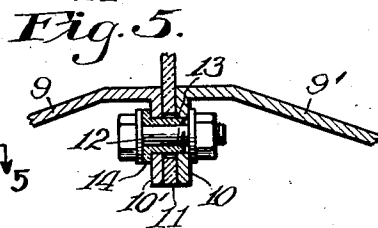
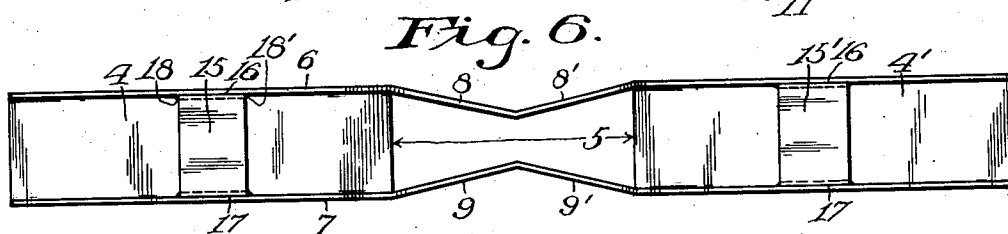
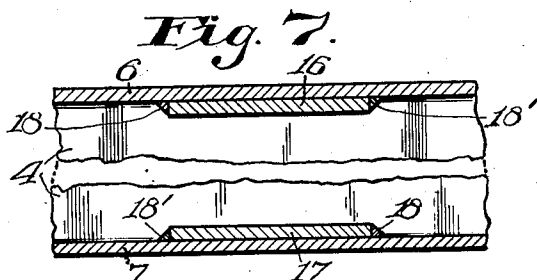


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METAL RAILWAY TIE AND FASTENER

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1,959,855

METAL RAILWAY TIE AND FASTENER

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6 Claims. (Cl. 238-64)

Our invention relates to a railway rail mounting, of metal.

It is the object of our invention to produce a railway rail mounting which is strong, durable, and capable without becoming loose of resisting the stresses imposed on the rails; and withal of simple and inexpensive construction.

The accompanying drawing illustrates our invention: Fig. 1 is a plan of a metal cross-tie and fastening devices embodying our invention, and fragments of two track rails mounted thereon; Fig. 2 is an enlarged vertical section on the line 2-2 of Fig. 1, with the welding fillets partially broken away to show the bridging member more clearly; Fig. 3 is a section on the line 3-3 of Fig. 2; Fig. 4 is a fragmentary section on the line 4-4 of Fig. 1, showing the cross-tie in fragmentary elevation; Fig. 5 is an enlarged sectional detail, taken on the line 5-5 of Fig. 4; Fig. 6 is a plan of a modified cross-tie, shown without rails mounted on it, which modified form is for use when it is not necessary that the two rails be electrically insulated from each other; and Fig. 7 is a section on the line 7-7 of Fig. 3, but with the rail and clamping device omitted.

Our railway rail mounting is all of metal, save for the insulating parts. It involves a cross-tie and clamping devices for supporting and rigidly holding the usual pair of T-rails thereon, each rail having the usual head 1 or 1', and the usual base flanges 2, with a vertical supporting web 3 connecting the head and base.

The cross-tie has two end portions 4 and 4', each of which underlies one of the two rails. Each end portion is in the form of an upwardly open channel below the rail resting thereon and for a considerable distance on each side of that rail; and has vertical side walls 6 and 7, and 6' and 7', which extend the entire length of the tie with or without certain intervening insulation which will be described later. Desirably the base of the channel of the cross-tie does not extend the full length thereof, but is broken away at the middle to provide a gap 5, at which the side walls have portions 8 and 9, and 8' and 9', which converge toward each other about midway of the gap 5. This construction of the gap 5 and convergent side walls co-operates with the ballast to prevent longitudinal shifting of the cross-tie.

The convergent portions 8 and 8', and 9 and 9', of the side walls of the cross-tie may be continuous and integral, as shown in Fig. 6; and that is the usual construction when it is not necessary that the two rails be insulated from each other. However, if it is desired that the two rails be in-

insulated from each other, the construction shown in Fig. 1 is used; in which the convergent portions 8 and 9 are not continuous with the convergent portions 8' and 9', but are provided with out-turned ears or flanges 10 and 10' between which a plate of insulation 11 lies, the mating flanges 10 and 10' being clamped against opposite sides of the insulating plate 11 by bolts 12 and 12' surrounded by insulating thimbles 13 having heads 14.

In each rail-supporting end portion of the cross-tie, a bridge member 15, or 15', is mounted in position to underlie the rail. This bridge member is in the form of a downwardly open channel which nests within the upwardly open channel of the cross-tie, and has vertical end plates or walls 16 and 17 which lie against the inner faces of the side walls 6 and 7, or 6' and 7', of the cross-tie. These end walls 16 and 17 are securely and immovably fastened to the side walls 6 and 7, or 6' and 7', of the cross-tie, by being welded thereto by welding fillets 18 and 18' at the edges of the walls 16 and 17, as is perhaps most clear from Figs. 6 and 7. Thus the walls 16 and 17 reinforce and are reinforced by the walls 6 and 7, or 6' and 7', against which they lie, to form a strong vertical support directly below the rail; and the bridge members are effectively held against lateral displacement.

The horizontal portion of the bridge member 15 or 15' connects the upper ends of the walls 16 and 17 of that bridge member, and is flush with the upper edges of the walls 6 and 7, or 6' and 7', so that they co-operate to support the superposed rail. The upper edges of the walls 6 and 7, or 6' and 7', of the cross-tie are unbroken at the bridge member; for this gives added strength, and also avoids the pounding which results from notches in said upper edges. The horizontal part of the bridge member 15 or 15' forms a bridge-plate, which is of substantially the width of the base of the superposed rail, as is clear from Fig. 3, so that the edges of such bridge-plate and of the rail-flanges 2 are vertically in line.

The base flanges 2 of the rails are clamped to the bridge-plates 15 and 15' by clamping devices of special construction. Each of these clamping devices comprises two clamping plates 19 and 20. Each clamping plate has three main portions. The first or uppermost portion slopes slightly to fit tight over the flange 2 of the rail, to draw it down tight on its seat on the bridge-member, as is clear from Fig. 3; and at its outer edge is connected by a vertical part 21 to the

second main portion 22. The second portion 22 closely underlies the bridge-plate for a considerable distance inward from the edges thereof, as is clear from Fig. 3, and joins the upper end of the third portion 23, which extends downward. The clamping plates 19 and 20, and especially the second portions 22 thereof which closely underlie the bridge-plate, are of sufficient length so that they extend substantially the full length of the bridge-plate, or substantially from the wall 16 to the wall 17; for this effectively holds the bridge-plate against distortion.

The third portions 23 of the two clamping plates lie fairly close together, well inward from the edges of the bridge-plate 15, or 15'; and one or both of them desirably rests on the bottom of the channel of the cross-tie, as is clear from Fig. 3, to form a supplementary support for the bridge-plate and rail. Near their lower edges, the two third portions 23 of the clamping plates engage each other, as along ribs 24 formed on their adjacent faces; and these ridges form a fulcrum well below the second portions 22 of the clamping plates.

Above the fulcrum ribs 24, and desirably as close to the second portions 22 of the clamping plates as possible while yet leaving room for the socket wrenches which are most conveniently used for tightening their nuts, we provide one or more clamping bolts 25 and 25', here shown as two in number, which extend through the two third portions 23 of the clamping plates and serve to draw such third portions together. Because the bolts 25 and 25' lie close up to the second portions 22, and because such second portions 22 extend well inward from the edges of the bridge-plate, the stresses imposed on the second portions 22 as the clamping bolts 25 and 25' are tightened are largely tension stresses, created as the upper edges of the third portions 23 are pulled together by the clamping bolts 25 and 25'.

By having the second portions 22 of the clamping plates substantially wholly in tension, with little or no flexing stresses thereon, transverse displacement of the rails on the bridge members is effectively opposed. Since the rails are thus firmly held against displacement on the bridge members, and since the bridge members are firmly held against movement in the cross-ties, the gauge of the track is effectively maintained.

We claim as our invention:

1. A railway rail mounting, comprising a metal cross-tie which below the rail is in the form of an upwardly open channel, a bridge plate in permanently fixed relation to the cross-tie and in position to underlie the rail, and a pair of mating clamping plates which clamp to said bridge plate in a single fixed position the base-flanges of a rail resting thereon; each of said clamping plates having three portions, the first of which

fits over the flange of the rail, the second of which closely underlies the bridge-plate for a considerable distance inward from the edge thereof, and the third of which extends downward from the second portion at a point well inward from the edge of the bridge-plate to a point which lies well below the second portion and at which it engages the third portion of the companion clamping plate, and one or more clamping bolts extending through the third portions of the two clamping plates above said engaging points.

2. A railway rail mounting as set forth in claim 1, with the addition that the third portion of at least one of said clamping plates extends substantially from the bridge-plate to the base of the cross-tie channel to provide a supplementary support for the bridge-plate and the rail resting on it.

3. A railway rail mounting as set forth in claim 1, with the addition that said clamping plates are of sufficient length so that they extend substantially the full length of said bridge member and thus reinforce it against distortion.

4. A railway rail mounting, comprising a metal cross-tie which below the rail is in the form of an upwardly open channel, a bridge plate in permanently fixed relation to said cross-tie and in position to underlie the rail, and a pair of mating clamping plates and one or more clamping bolts which clamp to said bridge plate in a single fixed position the base-flanges of a rail resting thereon, said clamping plates having portions which closely underlie the bridge-plate and in which the stress produced by the clamping bolts is mainly a tension stress.

5. A railway rail mounting, comprising a metal cross-tie having a bridge plate which is in position to underlie the rail and is of substantially the width of the rail, and a clamping device for clamping the base of the rail to said bridge-plate, said clamping device consisting of a pair of mating clamping plates and one or more clamping bolts which connect said clamping plates, each of said clamping plates including a part overlying the rail-base and a second part which closely underlies the bridge-plate and has a downturned portion by which it co-operates with the clamping bolt or bolts, said second parts extending sufficiently far under the bridge-plate so that the stress put upon them by the clamping bolt or bolts is mainly a tension stress.

6. A railway rail mounting as set forth in claim 5, with the addition that said clamping plates are of sufficient length so that they extend substantially the full length of said bridge member and thus reinforce it against distortion.

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