

April 26, 1932.

R. FARIES ET AL.

1,855,850

ANCHORAGE FOR RAIL TIE PLATES

Filed March 16, 1931

2 Sheets-Sheet 1

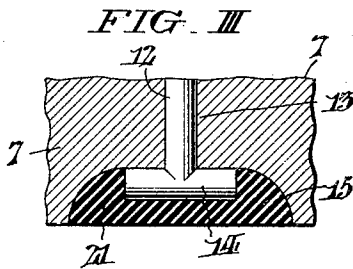
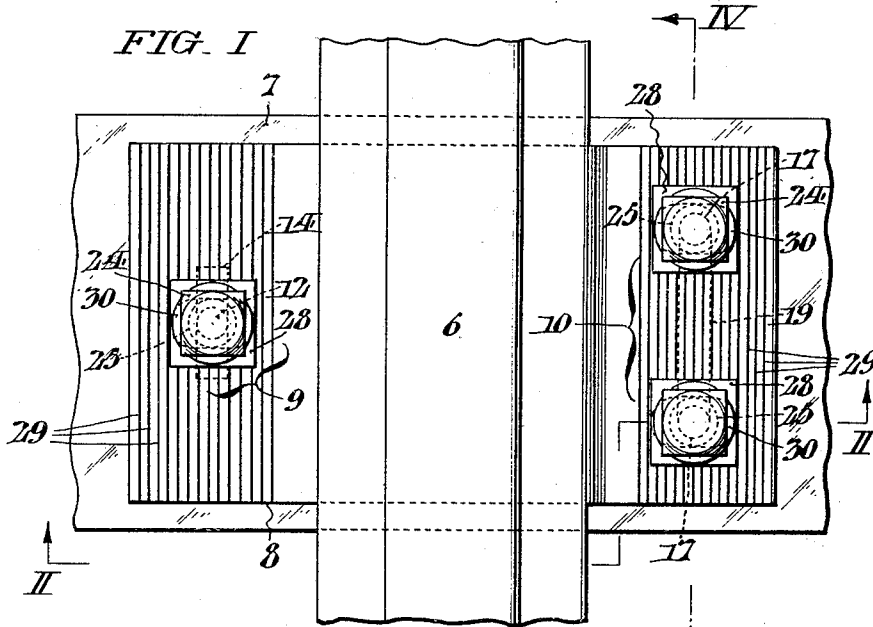
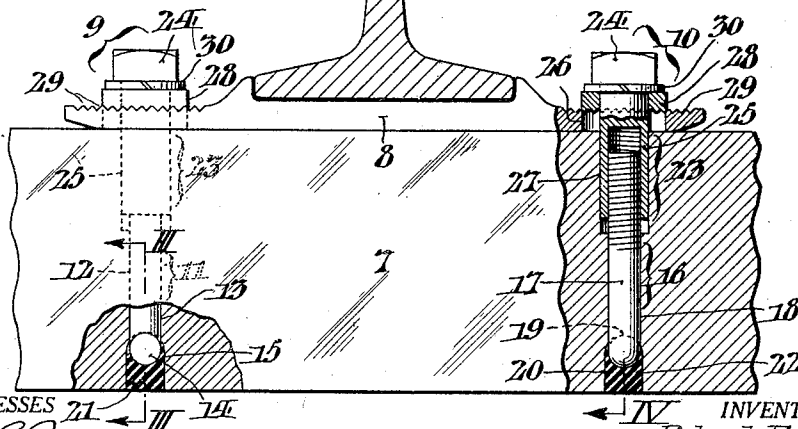


FIG. II



WITNESSES

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FIG. IV

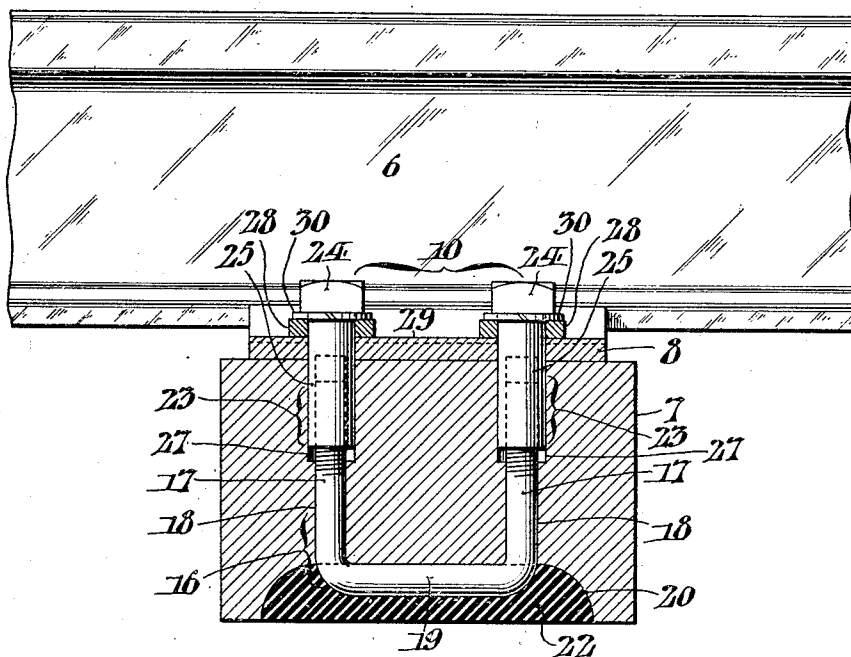
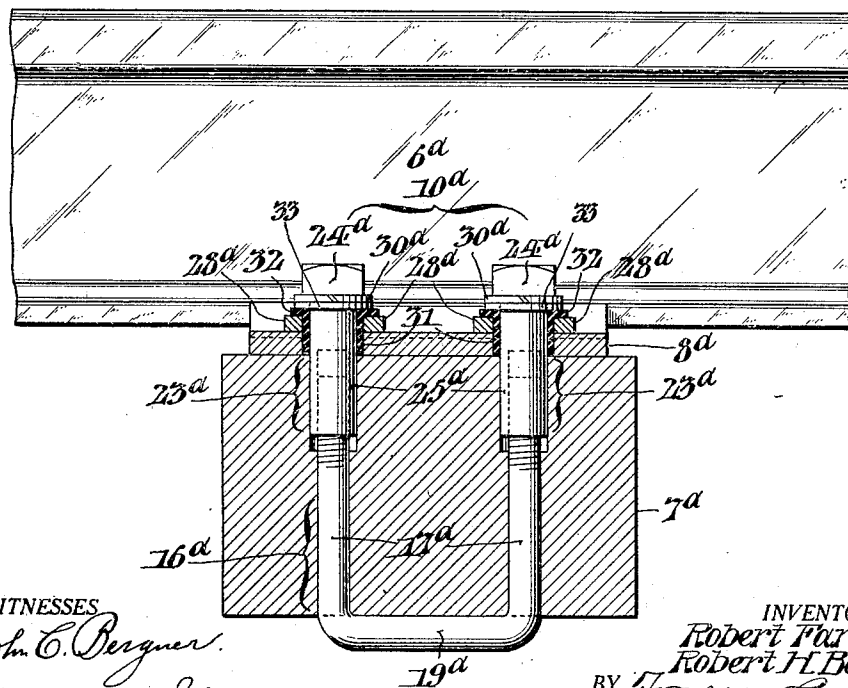


FIG. V



WITNESSES

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UNITED STATES PATENT OFFICE

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ANCHORAGE FOR RAIL TIE PLATES

Application filed March 16, 1931. Serial No. 522,842.

This invention relates to anchorage means useful in connection with railroads, to secure the metallic tie plates by which the rails are directly supported on the ties.

Ordinarily in railroad construction, the tie plates are secured by means of spikes driven down through corner apertures of the plates to opposite sides of the track rails. Subsequent repositioning of the tie plates from time to time to compensate for the spreading of the rails occasioned by the side thrust of trains passing over the rails, entails drawing the spikes, and plugging the holes in the ties before re-driving the spikes. Successive repetitions of this operation result in what are known as "spike-killed" ties which must eventually be replaced at a considerable outlay for material as well as for labor.

In the main, our invention is directed toward overcoming the above drawbacks through provision of a simple and dependable anchorage means which will positively prevent creeping of the tie plates under lateral rail thrust and whereby the initial application of the tie plates, as well as the making of subsequent positional adjustment as may be necessary in the replacement of rails, are rendered comparatively easy and possible of accomplishment in a minimum amount of time, without requiring the aid of special tools, or entailing any damage whatever to the ties.

A further object of our invention is to provide, in connection with a rail anchorage of the character referred to, against leakage or grounding of electric operating currents from the rails down through the tie to the road bed.

How the foregoing as well as other objects and advantages may be readily realized in practice will be manifest from the detailed description following in coordination with the attached drawings, wherein Fig. I is a fragmentary plan view of a railroad track and

showing one of its tie plates secured with our improved anchorage means.

Fig. II is a view partly in elevation and partly in section as indicated by the arrows II—II in Fig. I.

Fig. III is a fragmentary detail section taken as indicated by the arrows III—III in Fig. II.

Fig. IV is another sectional view of the organization taken as indicated by the arrows IV—IV in Figs. I and II; and

Fig. V is a view corresponding to Fig. IV showing the anchorage means of our invention in a slightly modified form.

With more specific reference first more particularly to Figs. I—IV of these illustrations, the numeral 6 designates one of the track rails; the numeral 7 one of the ties; and the numeral 8, one of the tie plates, which latter is placed, as usual, beneath the rail to directly support the same on the tie.

For service in lieu of the spikes ordinarily employed in securing tie plates, we have devised single and double anchorage devices such as shown at 9 and 10 for use at the inside and out-side of the rail. The anchorage device 9 comprises a bolt 11 with a shank 12 reaching up through a vertical hole 13 in the tie 7, and a T-head 14 lodged against rotation within a transverse recess 15 in the bottom face of the tie, see Figs. II and III. The depth of the recess 15, it will be particularly noted, is such as to predetermine the position of the bolt 11 vertically, that is, with its shank 12 terminating at a level somewhat below the top face of the tie 7.

The double anchorage device 10 for use at the out-side of the rail 6, on the other hand, comprises a U-bolt 16, see Fig. IV, having its two extremities or shanks 17 reaching up through a pair of vertical holes 18 spaced crosswise of the tie 7, and its cross bar 19 lodged in a recess 20 extending transversely of the bottom face of the tie between the said holes. Here again, the depth of the recess 20

is such as to predetermine the position of the U-bolt 16 with its extremities or shanks 17 terminating at the same level as the shank of the T-head bolt 11 of the single anchorage means 9, below the top face of the tie. The bolt holes 13 and 18 are preferably pre-allocated and drilled incident to dressing of the ties at the mill or factory, and the bolts 11, 16 sealed in place by a suitable insulating compound poured hot or compressed into the recesses 15, 20, as conventionally indicated at 21 and 22 in Figs. II, III and IV, which will prevent signal operating currents from passing down through the bolts to the road bed and grounding.

Associated with the bolts 12 and 16 are hold-down devices 23 having polygonal heads 24, and internally threaded nipple extensions 25 of a length to reach down through apertures 26 in the tie plate 8 and into counterbores 27 of the bolt holes in the tie, into engagement with the threaded tops of the shanks 12 and 17 of the said bolts. The apertures 26 of the tie plate are elongated and thus permit adjustment of the tie plate 8 longitudinally of the tie 7. Between the heads 24 of the hold-down members 23 and the tie plate 8 are square washers 28 with serrated bottom faces to engage with serrations 29 which extend transversely of the top surface of the tie plate over the regions of the apertures 26. Supplemental spring washers 30 placed immediately between the heads 24 and the square washers 28 prevent the hold-down members 23 from working loose after having once been tightened.

By virtue of the interlock between the square washers 28 and the serrations of the tie plate 8, it is evident that creeping of the said plate under the influence of side thrust occasioned by trains passing over the rail 6, will be effectively precluded.

If found desirable or expedient in practice, one or the other type of anchorage devices 9, 10 may obviously be used on both sides of the rail to secure the tie plate to the tie.

With reference to the modified form of our invention illustrated in Fig. V, the cross bar 19a of the U-bolt 16a rests directly against the bottom face of the tie 7a, which, in this instance, is not provided with the recess 20 described in connection with the first embodiment. To prevent leakage or grounding of electric current from the rail 6a down through the bolt in the modification, bushings 31 of insulation are placed around the cylindric nipples 25a of the hold-down members 23a within the confines of the tie plate 8a and the square washers 28a, the said insulating bushings having circumferential flanges 32 engaged between the said square washers and plain washers 33 underlying the spring washers 30a. The cross bars 19a of the U-bolts 16a constitute in effect transverse bottom projections of the tie and thereby assist in holding

the latter in place in the road bed, while the road bed will in turn prevent the bolt from dropping out of the tie when the tie plate is removed for replacement.

From the foregoing, it will be seen that our improved anchorage means is not only simple in construction and effective in rigidly holding down the tie plate, but capable of being disassembled and reassembled in a minimum of time incident to rail replacement without special tools other than a socket wrench or the like, and without entailing damage to the ties. Due to their termination below the top surface of ties, the permanently incorporated bolts of the anchorage means will not interfere with adzing operations either incident to initial construction of a railway, or afterwards.

Having thus described our invention, we claim:

1. A rail tie plate anchorage comprising a bolt reaching part way up through the tie; and a hold-down member for the tie plate reaching down through the latter and into the tie to engage the upper end of the bolt.

2. A rail tie plate anchorage comprising a bolt secured against rotation and reaching part way up through the tie; and a hold down member for the plate reaching down through the latter and into the tie to engage the upper end of the bolt.

3. A rail tie plate anchorage comprising a bolt with a shank reaching part way up through the tie and a head lodged against rotation within a recess in the bottom face of the tie; and a hold-down member for the plate reaching down through the latter and into the tie to engage the upper end of the bolt shank.

4. A rail tie plate anchorage comprising a bolt with a shank reaching part way up through the tie, and a head lodged against rotation within a recess in the bottom face of the tie and sealed in place by an insulating compound poured or compressed into the recess; and a hold-down member for the plate reaching down through the latter and into the tie to engage the upper end of the bolt shank.

5. A rail tie plate anchorage comprising a screw bolt reaching part way up through the tie; and a headed hold-down member with an internally threaded depending nipple reaching down through the tie plate and into a counterbore of the bolt hole in the tie to engage with screw threads on the upper end of the bolt.

6. A rail tie plate anchorage comprising a bolt secured against rotation in and reaching part way up through the tie; a headed hold-down member with a threaded nipple reaching down through an elongated aperture in the tie plate and a counterbore of the bolt hole in the tie to engage with the upper end of the bolt; and a washer interposed between

the head of the hold-down member and the tie plate, the said washer having a serrated bottom face to interlock with serrations on the top face of the tie plate.

- 5 7. A rail tie plate anchorage comprising a bolt reaching part way up through the tie; a hold-down member for the tie plate reaching down through the latter and into the tie to engage the upper end of the bolt; and
10 means for electrically insulating the bolt and the associated hold-down member from the tie plate.

8. A rail tie plate anchorage comprising a screw bolt reaching part way up through the
15 tie; a headed hold-down member with an internally threaded depending axial nipple reaching down through the tie plate into a counter bore of the bolt hole in the tie to engage with threads at the upper end of the
20 bolt; and a circumferentially flanged insulating bushing surrounding that portion of the nipple extension of the nut member within the confines of the tie plate, and having its flange engaged beneath the head of the hold-
25 down member.

9. A rail tie plate anchorage comprising a U-bolt with its extremities reaching part way up through the tie; and hold-down members for the tie plate reaching down through the
30 latter and into the tie to engage the upper ends of the U-bolt extremities.

10. A rail tie plate anchorage comprising a U-bolt with its extremities reaching part way up through the tie; and its cross bar
35 lodged in a recess in the bottom face of the tie; and hold-down members for the tie plate reaching down through the latter and into the tie to engage the upper ends of the U-bolt extremities.

11. A rail tie plate anchorage comprising a U-bolt with its extremities reaching part way up through the tie, and with its cross bar lodged in a recess in the bottom face of the tie and sealed in place by an insulating com-
45 pound poured or compressed into the recess; and hold down members for the tie plate reaching down through the latter and into the tie to engage the upper ends of the U-bolt extremities.

12. A rail plate anchorage comprising a U-bolt with its extremities reaching part way up through the tie, and its cross bar resting against the bottom face of the tie; headed
50 hold-down members for the tie plate reaching down through the latter and into the tie to engage the ends of the U-bolt, and means to electrically insulate the U-bolt and the associated hold-down members from the tie plate.

13. A rail plate anchorage comprising a U-bolt with its extremities reaching part way up through the tie, and its cross bar resting against the bottom face of the tie; headed
60 hold-down members for the tie plate reaching down through the latter and into the tie

to engage the ends of the U-bolt, and insulating bushings surrounding the portions of the hold-down members within the confines of the tie plate, the said bushings having circumferential flanges engaged beneath the heads of the hold-down members.

In testimony whereof, we have signed our names at Philadelphia, Pennsylvania, this 13th day of March, 1931.

ROBERT FARIES. 75
ROBERT H. BOYD.

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