Dec. 15, 1931. W. R. HEWITT 1,836,713

TIE PLATE

Filed March 26, 1930

Fig. 1.

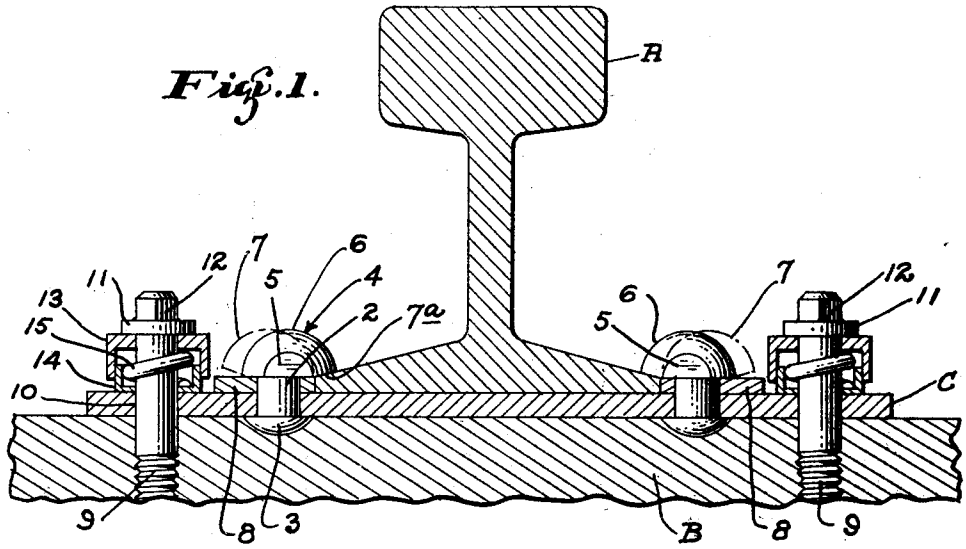


Fig. 2.

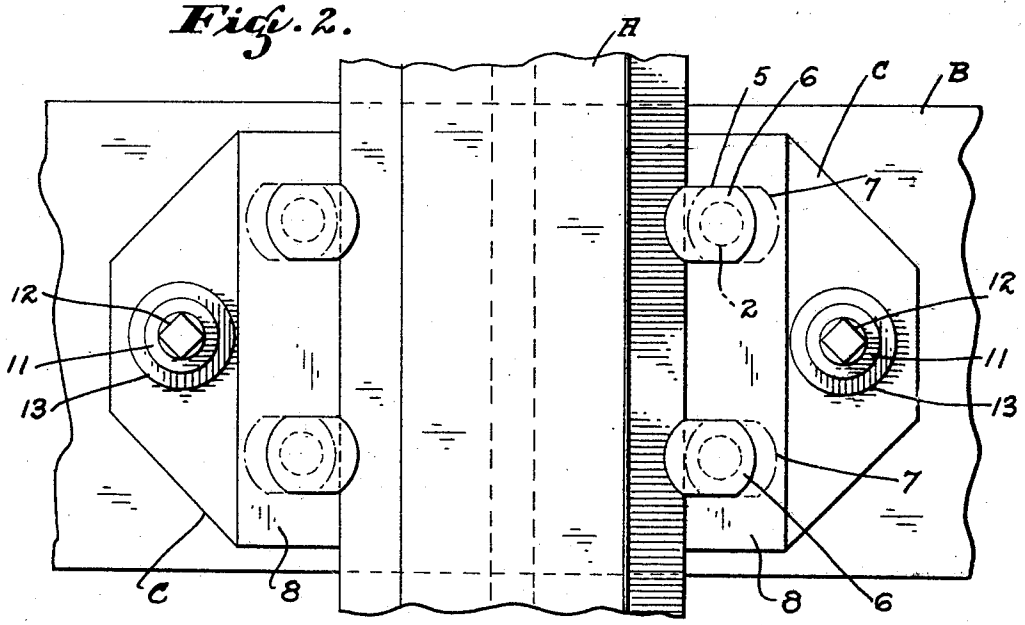
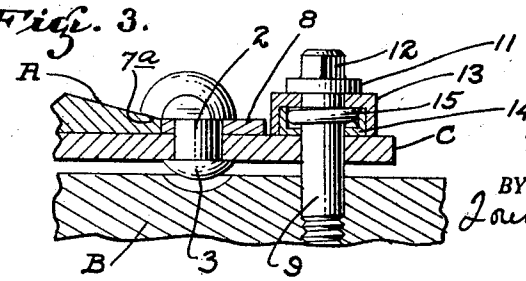


Fig. 3.



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UNITED STATES PATENT OFFICE

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TIE PLATE

Application filed March 26, 1930. Serial No. 439,044.

This invention relates to railway tie plates and especially to improvements on the structure shown in a prior patent issued to me entitled "Railway tie plate" No. 1,767,453 issued June 24, 1930.

The use of a metallic tie plate is quite common and generally recognized as necessary in railroad practice, its function being that of distributing the weight of the rail over the surface of the ties and to prolong the life of the wood ties. The ideal condition for prolonging the life of a wood tie would be obtained by providing such protection to the tie as would effect a minimum wear and tear. Deterioration of a wood tie is largely due to the use of spikes in fastening the rails through the tie plates to the tie. Primarily the use of spikes cuts and distorts the wood fiber in the ties and as traffic develops quite often a spike is loosened from the position of the original fastening with the result that its original effectiveness as a means of holding down the rail is destroyed. When the spike works upwardly through the wood both the rail and the tie plates become loose and a certain amount of vertical play or movement between the tie and the rail becomes apparent. Such play is very detrimental to the tie as the rolling stock in passing over the rails imparts a comparatively heavy blow, the impact of which increases as the play develops.

The object of the present invention is to generally improve and simplify the construction and operation of securing rails with relation to the underlying or supporting ties; to provide means whereby the tie plate is secured to the tie; to provide a tie plate having other means for securing the rails thereto, said means permitting removal or replacement of rails without disturbing the tie plate securing means; and further, to interpose resilient means between the tie plate and its securing means whereby the tie plate is held in close contact with the tie and whereby vertical movement of the tie plate is permitted during lifting or waving of a rail.

The invention is shown by way of illustration in the accompanying drawings, in which—

Fig. 1 is a longitudinal section of a portion of a wooden tie showing the manner of securing the rail to the tie plate and the tie plate to the tie.

Fig. 2 is a plan view of Fig. 1.

Fig. 3 is a section similar to Fig. 1 showing the manner in which the tie plate can be raised with relation to a tie during waving or upward movement of a rail without disturbing the tie plate securing means.

Referring to the drawings in detail and particularly Fig. 1, A indicates a standard form of rail, B a wooden tie by which it is supported and C a tie plate interposed between the rail and the tie. The tie plate is, in this instance, provided with means for securing the rail to the tie plate and with other means for securing the tie plate with relation to the tie. The first named means comprises a plurality of bolts such as shown at 2 which are turnably mounted in the tie plate. Each bolt is provided with heads 3 on their lower ends and the upper ends are also provided with heads as shown at 4 which are eccentrically positioned with relation to a center line drawn through the bolts 2. The heads 4 are provided with flattened sides such as shown at 5 so that they may be grasped by a wrench or like tool and rotated 180° or from the full line position shown at 6 to the dotted line position shown at 7 and the forward side of each head member 4 is provided with an inclined face 7^a which is adapted to overlie and engage the foot flange of the rail. The bolts 2 do not only extend through the tie plate C but they also extend through distance or aligning plates 8 which engage the sides of the foot flange of the rail, these plates absorbing all side thrust produced by the rails. The aligning plates together with the eccentric headed bolts function to secure the rail to the tie plate and they permit removal of the rails or replacement of the same without disturbing the tie plate C as a 180° turning movement imparted to the bolts by the proper tools leaves the rails entirely free to be lifted vertically away from the tie plates and the aligning plates or to be inserted between the same and when inserted the rails are secured by merely turning the bolts back to normal engaging position as

shown in Fig. 1 where they rigidly engage the foot flange of the rail.

The tie plates are, in this instance, secured by bolts or lag screws such as shown at 9, the lag screws being passed through perforations 10 formed at opposite ends of the tie plates. One or more lag screws may be provided at each end of the tie plate as conditions may demand. The lag screws are in this instance provided with a collar 11 at the upper end and a square nut or head 12 whereby they may be screwed into place. The lag screws are also provided with a pair of opposed telescoping cup-shaped washers such as shown at 13 and 14 and these form a housing or enclosure for helical expansion springs such as shown at 15. These springs are put under compression when the lag screws are driven into place and as such exert a constant downward pressure on the cup-shaped washers 14 and the underlying tie plates C, thus maintaining them in snug engagement with the surface of the ties. Such engagement is exceedingly desirable as any play between the tie plates and the ties causes rapid deterioration thereof when the rails are subjected to the pounding action of the rolling stock when passing over the same. Any play presented increases the impact of the blow and consequently permits deterioration. On the other hand by maintaining a snug engagement between the tie plates and the ties, impact action is reduced to a minimum and the life of the tie is accordingly prolonged. It is known that heavy traffic will cause depression of a rail between ties causing the rail to lift or raise away from adjacent ties. Such movement of the rails is permitted in the present instance without disturbing the fastening means of the tie plates, to-wit, the lag screws 9, as the tie plates may rise to a certain extent against the compression of the helical springs 15, hence permitting rising or waving action of the rail without injuring the ties or stressing the fastening means between the tie plates and the ties.

The results obtained by a rail fastening of the character here shown are: first, lessening of impact blow between the tie plates and ties; secondly, movement of the tie plates with relation to the tie is permitted without disturbing the tie plate securing means; third, snug engagement is normally maintained between the tie plates and the ties by means of the springs 15; and fourth, the rails may be removed or replaced at any time without disturbing the tie plate securing means, the several results all aiding to prolong the life and utility of the ties.

While certain features of the present invention are more or less specifically described, I wish it understood that various changes may be resorted to within the scope of the appended claims. Similarly, that the materials and finishes of the several parts employed may be such as the manufacturer may decide, or varying conditions or uses may demand.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. The combination with a rail and a tie forming a support therefor, of a tie plate interposed between the tie and the rail, and resilient means securing the tie plate to the tie for permitting movement of the rail and tie plate with relation to the tie.

2. The combination with a rail and a tie forming a support therefor, of a tie plate interposed between the tie and the rail, resilient means securing the tie plate to the tie, and other means rigidly securing the rail to the tie plate.

3. The combination with a rail and a tie forming a support therefor, of a tie plate interposed between the tie and the rail, means securing the tie plate to the tie, and resilient means carried by said securing means and normally maintaining the tie plate in engagement with the tie, said resilient means permitting upward movement of the tie plate and rail with relation to the tie.

4. The combination with a rail and a tie forming a support therefor, of a tie plate interposed between the tie and the rail, means rigidly securing the tie plate to the rail, means securing the tie plate to the tie and resilient means carried by said last named means and normally maintaining the tie plate in engagement with the tie, said resilient means permitting a limited vertical movement of the rail and tie plate with relation to the tie without disturbing the tie plate securing means.

5. The combination with a rail and a tie forming a support therefor, of a tie plate interposed between the tie and the rail, headed lag screws securing the tie plate to the tie, means rigidly securing the rail to the tie plate, and resilient means interposed between the heads of the lag screws and the tie plate and permitting limited vertical movement of the rail and tie plate with relation to the lag screws and the tie.

6. The combination with a rail and a tie forming a support therefor, of a tie plate interposed between the tie and the rail, headed lag screws extending through the tie plate and into the tie, cup-shaped telescoping washers interposed between the heads of the lag screws and the tie plate, and springs enclosed within said telescoping cup-shaped washers and normally maintaining the tie plate in engagement with the tie.

7. The combination with a rail and a tie forming a support therefor, of a tie plate interposed between the tie and the rail, headed lag screws extending through the tie plate and into the tie, cup-shaped telescoping washers interposed between the heads of the lag screws and the tie plate, springs enclosed

within said telescoping cup-shaped washers and normally maintaining the tie plate in engagement with the tie, and other means securing the rail with relation to the tie plate.

8. The combination with a rail and a tie forming a support therefor, of a tie plate interposed between the tie and the rail, headed bolts extending through the tie plate and secured in the tie, springs interposed between the heads of the bolts and the tie plate and normally maintaining engagement between the tie plate and the tie, and other means rigidly securing the rail to the tie plate.

9. The combination with a rail and a tie forming a support therefor, of a tie plate interposed between the tie and the rail, headed bolts extending through the tie plate and secured in the tie, a pair of telescoping cup-shaped washers carried by each bolt and interposed between the heads of the bolt and the tie plate, helical springs enclosed within each pair of cup-shaped washers and normally maintaining the tie plate in engagement with the tie, and other means securing the rail to the tie plate, said springs also permitting a limited vertical movement of the rail and the tie plate with relation to the bolts and the tie and not disturbing the fastening between the bolts and the tie.

10. The combination with a rail and a tie forming a support therefor, of a tie plate interposed between the tie and the rail, and resilient means spaced from the rail and positioned above the tie plate and urging the tie plate downwardly against the tie.

11. The combination with a rail and a tie forming a support therefor, of a tie plate interposed between the tie and the rail, and resilient means free from contact with the rail normally urging the tie plate into intimate contact with the tie.

12. In combination with a rail and tie forming a support therefor of a tie plate fixed to the rail and interposed between the tie and the rail and resilient means securing the tie plate to the tie.

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