No. 816,463. PATENTED MAR. 27, 1906.

W. I. F. HARDEN.

RAILWAY TIE.

APPLICATION FILED DEC. 15, 1905

2 SHEETS—SHEET 1.

Fig. 1.

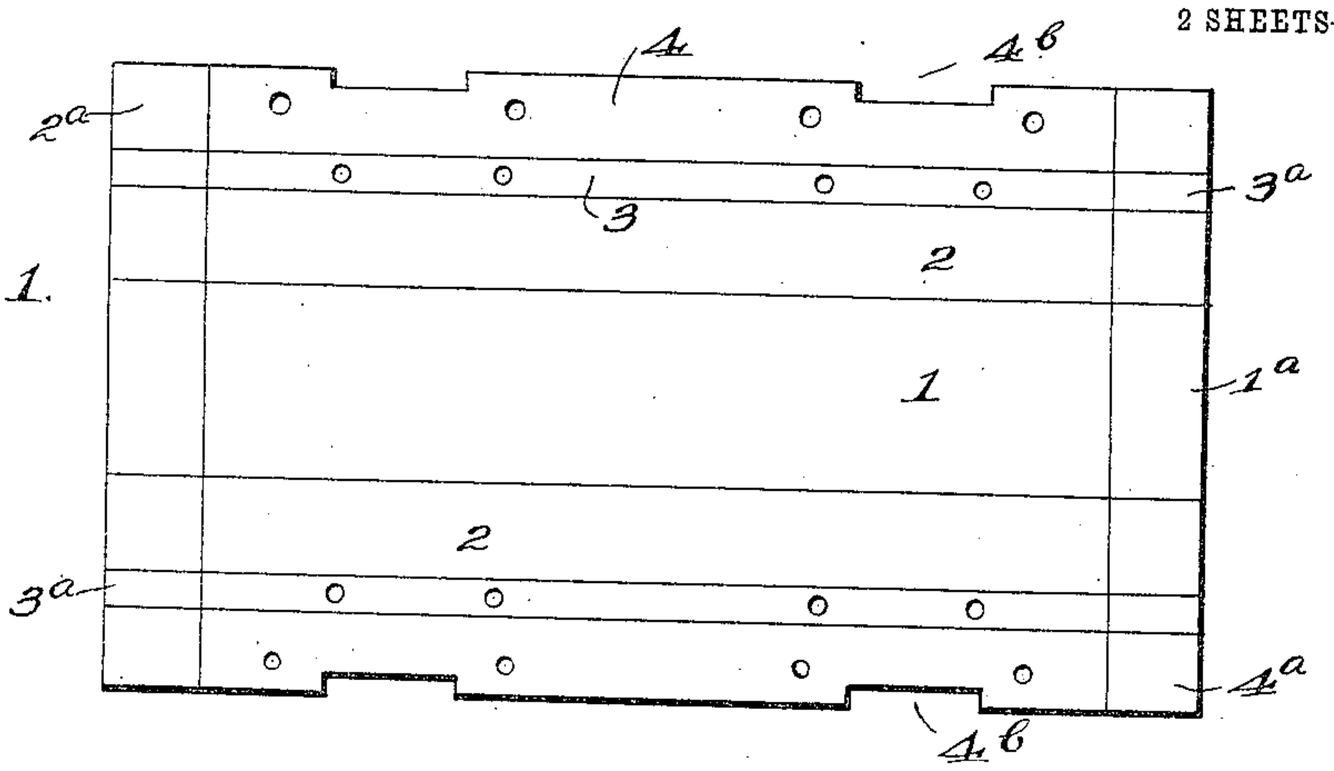


Fig. 2.

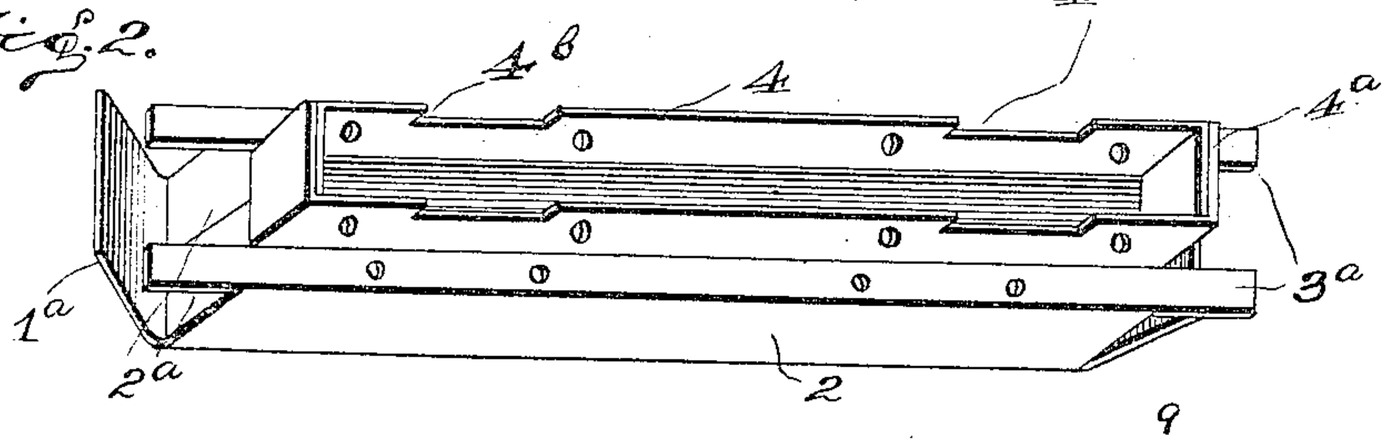


Fig. 3.

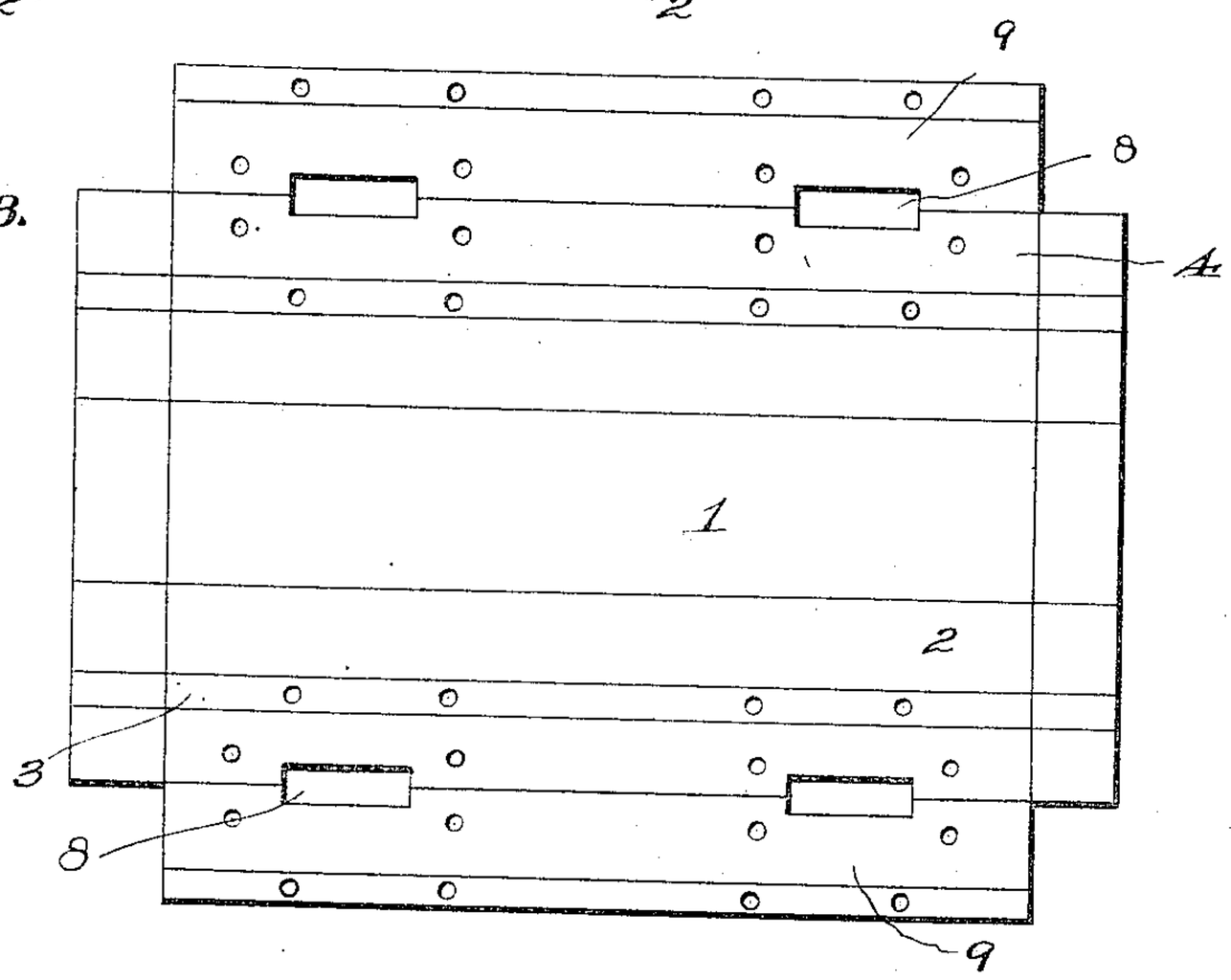
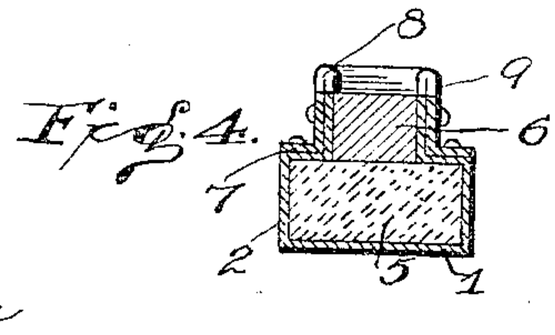


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

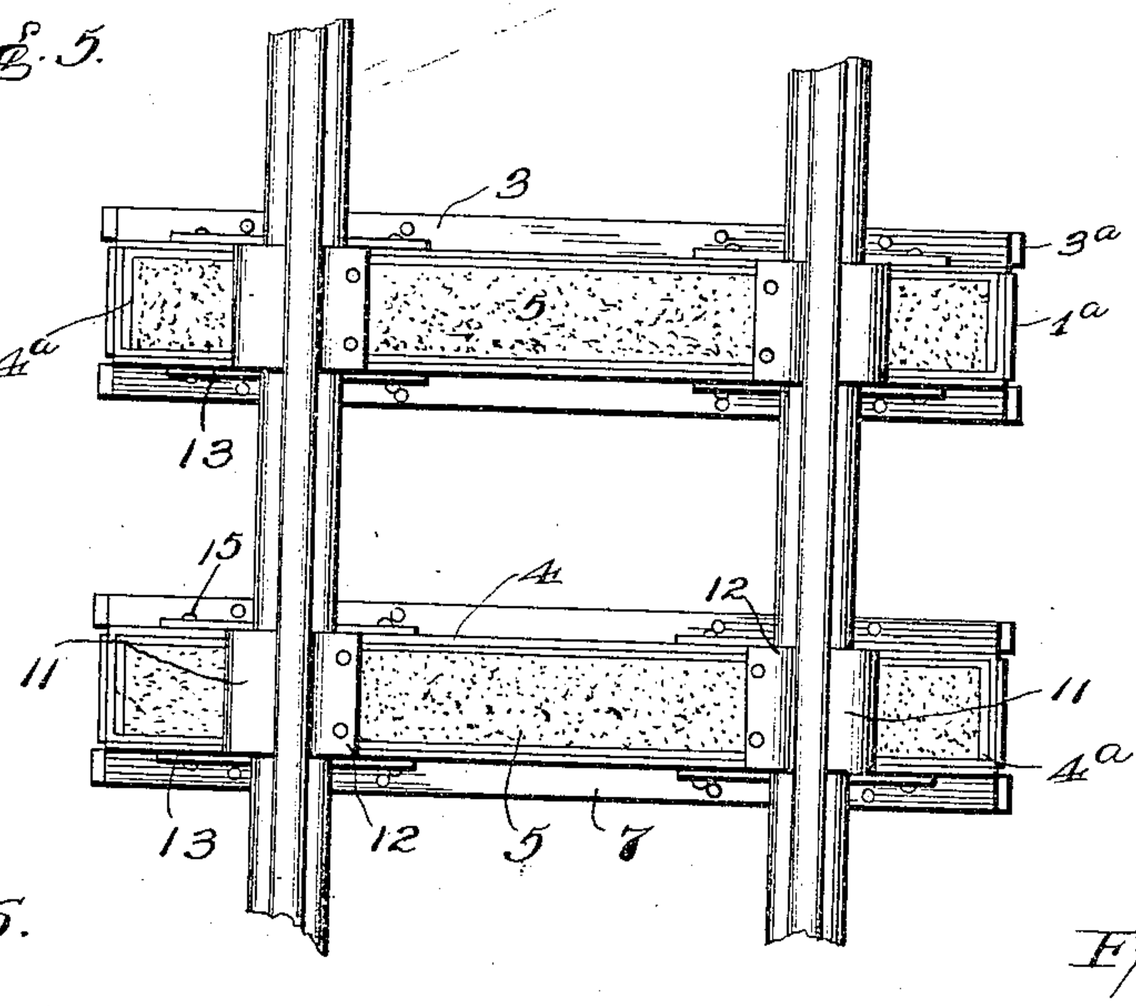


Fig. 6.

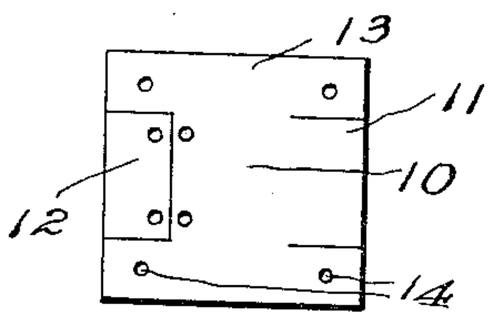


Fig. 7.

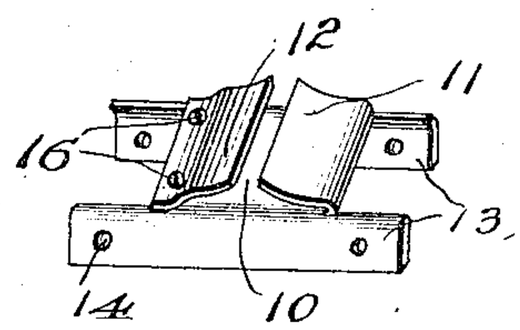
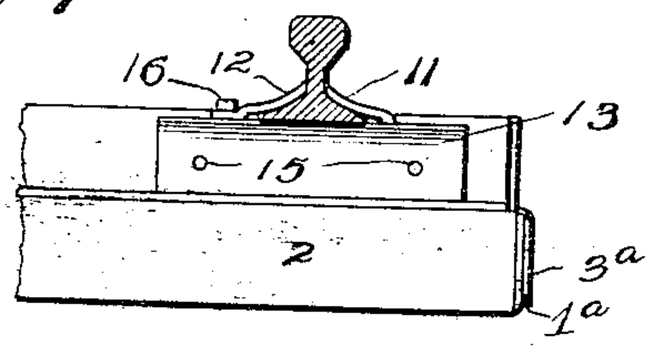


Fig. 8.



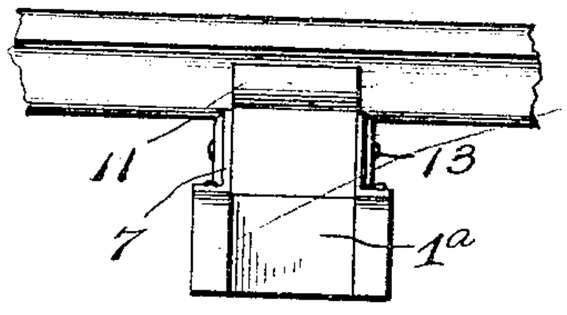
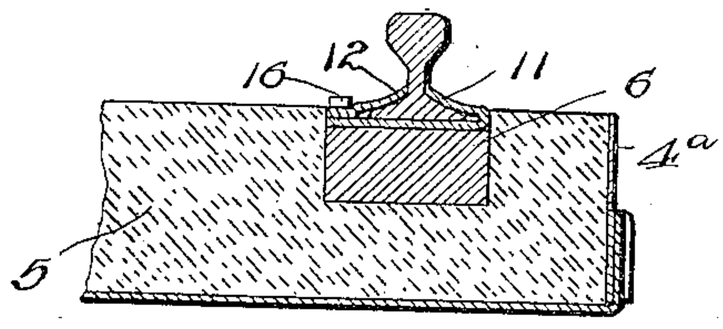


Fig. 9.



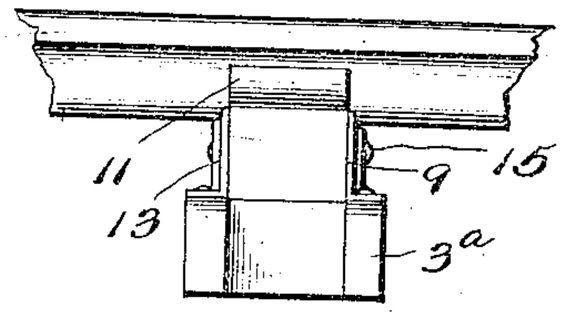


Fig. 10.

Fig. 11.

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UNITED STATES PATENT OFFICE.

WILLIAM I. F. HARDEN, OF HARTFORD, KANSAS.

RAILWAY-TIE.

No. 816,463. Specification of Letters Patent. Patented March 27, 1906.

Application filed December 15, 1905. Serial No. 291,937.

To all whom it may concern:

Be it known that I, WILLIAM I. F. HARDEN, a citizen of the United States, residing at Hartford, in the county of Lyon and State of Kansas, have invented certain new and useful Improvements in Railway-Ties; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in railway-ties and means of securing rails thereto.

It has for its object to provide a tie of simple but durable construction in which a much smaller amount of wood is used than for the ordinary wooden tie. It has for its further object to provide an improved device for locking the rails to the tie which will prevent said rails from spreading and which may be easily attached to and detached from the tie.

The invention comprises an improvement in the constructions of railway-ties shown and described in my Patent No. 802,450, dated October 24, 1905, and my pending application filed March 23, 1905, Serial No. 251,631.

The invention consists in the features of construction and combinations of parts hereinafter described, and more particularly pointed out in the claims concluding this specification.

In the accompanying drawings, illustrating the preferred embodiment of my invention, Figure 1 is a plan view of a sheet of metal marked out for the casing of a tie, showing the position of the rivet and bolt holes and the lock-plate engaging slots therein. Fig. 2 is a perspective view of said casing when bent into shape with the end flaps partly turned in. Fig. 3 is a plan view of a sheet of metal marked out for the casing of a modified form of tie. Fig. 4 is a cross-sectional view of the modified form of casing bent into shape and filled with concrete and wood. Fig. 5 is a plan view of a section of track, showing two complete ties equipped with rail-locking plates with sections of rails in place thereon. Fig. 6 is a plan view of a sheet of metal cut out for one of the rail-locking plates. Fig. 7 is a perspective view of said plate bent into shape with the detachable piece secured in place. Fig. 8 is a broken side view of one end of a tie with the rail-locking plate in place. Fig. 9 is a central vertical sectional view of one end of said tie. Fig. 10 is an end view of the tie in Fig. 9 except that angle-braces are used in the upper angles of the tie; and Fig. 11 is an end view of a tie with the modified form of casing shown in Fig. 4 and the rail-locking plate in place thereon.

While the preferred embodiments of my invention are illustrated in the accompanying drawings and the constructions thereof are described in this specification, the right is reserved to make such changes in the constructions shown and described herein as the scope of the claims hereto appended will permit.

In carrying out my invention I cut the casing for the tie preferably from a single sheet of metal, as shown in Fig. 1, although a plurality of smaller pieces riveted together may answer the purpose. The sheet is then bent into the form shown in Fig. 2, with a broad base and a narrower upper portion. Said casing is constructed practically as shown and described in my application Serial No. 251,631, filed March 23, 1905, but has pieces cut out of its edges opposite each other near each end to form slots for engaging rail-locking plates to prevent them from moving along the tie. The broad base of the casing and part of the narrower upper portion thereof are filled with concrete, the portions of the tie upon which the rail-engaging plates rest being provided with blocks of wood which are protected from the weather by said plates and form elastic cushions to receive the jar of trains passing over the tie. The rail-engaging plate is also cut from a single piece of metal, as shown in Fig. 6, and bent into shape, as shown in Fig. 7, with a central portion adapted to extend across the wooden blocks in the tie and fit within the slot in the casing and vertically-depending side flanges adapted to rest in the upper angles of the tie. The outer end of the central portion of each plate is bent over to engage the flange of the rail, while the inner end of said central portion is cut off and bolted in place to engage the inner flange of the rail, whereby the latter is secured in position. The flanges of each rail-locking plate extend beyond the central portion thereof and are provided with bolt-holes arranged well out from under the rail, whereby ready access may be had to the securing-bolts which pass horizontally through the upper portion of the tie from one flange to the other. Angular brace-bars may be

used in the angles of the tie, as described in my pending application previously referred to, and when they are used the flanges of the rail-engaging plates extend outside of said brace-bars, as shown in Fig. 10. When the modified form of casing shown in Figs. 3, 4, and 11 is used, the brace-bars are not required.

Referring more particularly to the drawings, 1 is the bottom of the casing. 2 indicates the sides or vertical portions of the broad base; 3, the upper horizontal portions or steps of said base, and 4 indicates the upstanding flanges. The bottom is provided with the end flaps 1^a, and the other portions 2, 3, and 4 are also each provided with flaps 2^a, 3^a, and 4^a, respectively, as in my former applications. The slots to receive the rail-locking plates are designated 4^b. In forming the tie the flaps are turned in, as described in my said application. The base of the tie and part of the upper portion is filled with concrete 5, as already described, blocks of wood 6 being arranged in said upper portion below the rail-engaging plates. As shown in Fig. 10, angle brace-bars 7 may be used with the form of tie-casing shown in Fig 2.

In the modified form of casing shown in Figs. 3 and 4 a wider piece of metal is used, and rectangular openings 8 are cut therein near each edge. After being folded the same as the casing shown in Fig. 2 the edges of the modified form of casing are bent down on a line extending through the middle of said openings, said bent-over portions 9 thereby constituting braces for the upper portion of the tie, taking the place of the angle-bars. When this modified form of casing is used, the angle-bars are not required.

The central portion 10 of the rail-locking plate has its outer end turned over, as at 11, and its inner end portion 12 cut off and adapted to be bolted to the plate, as shown in Fig. 7. The extremities of said central portion are adapted to fit against the ends of the slots in the tie-casing. The flanges 13 of said rail-engaging plate are provided with bolt-holes 14 in their extended end portions to receive the securing-bolts 15. The detachable locking-piece 12 is preferably secured in place by screw-bolts 16 after the rail is in place. The central portion of the rail-plate is wide enough to extend across the wooden block and the edges of the slots in the casing and braces. These plates form sunken chairs for the rails and cover the wooden pieces which serve as cushions to receive and resist the shocks of passing trains which would otherwise be transmitted directly to the hard metallic and concrete tie. As the securing-bolts for the rail-plates are placed well out from under the rails, ready access may be had thereto by removing a small quantity of the ballast.

It will be noted that the rail-plates are so arranged that they will take the wear off of the tie proper. Said plates when worn out may be removed and sold as scrap iron and new ones substituted without changing the ties themselves.

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

1. The combination, with a tie having a depression in its upper face, of a rail-locking plate comprising a central portion fitting said depression and flanges extending down at the sides of the tie, one end of the central portion of said plate being provided with an integral portion for engaging the outer flange of the rail and the other end with a detachable piece adapted to engage the inner flange of the rail, and means to secure said plate to the tie.

2. The combination, with a tie having a depression in its upper surface, of a rail-locking plate comprising a central portion fitting said depression and flanges extending down at the sides of the tie, one end of the central portion of said plate being provided with an integral portion for engaging the outer flange of the rail and the other end with a detachable piece adapted to engage the inner flange of the rail and securing-bolts extending horizontally through the tie from one flange to the other.

3. The combination, with a tie having a depression in its upper surface, of a rail-locking plate comprising a central portion fitting said depression and flanges extending down at the sides of the tie, one end of the central portion of said plate being provided with an integral portion for engaging the outer flange of the rail and the other end with a detachable piece adapted to engage the inner flange of the rail, the ends of the flanges of the rail-plate extending beyond the edges of the rail and provided with bolt-holes, and securing-bolts extending horizontally through the tie from one flange to the other.

4. The combination, with a tie comprising a metallic casing with a concrete and wood filling and having a depression in its surface, of a rail-locking plate comprising a central portion fitting said depression and flanges extending down at the sides of the tie, one end of the central portion of said plate being provided with an integral portion for engaging the outer flange of the rail and the other end with a detachable piece adapted to engage the inner flange of the rail, and means to secure said plate to the tie.

5. The combination, with a tie comprising a metallic casing filled with concrete with blocks of wood embedded therein at the points where the rails are to rest, said wooden blocks arranged below the level of the upper surface of the tie and the sides of the casing formed with slots to correspond, of rail-locking plates each comprising a central portion

fitting in the depressions formed by one of said wooden blocks and the slots in the casing of the tie, and flanges extending down at the sides of the tie, said plates having means to engage the rails and means to secure said plates to the tie.

6. The combination, with a tie comprising a metallic casing filled with concrete with blocks of wood embedded therein at the points where the rails are to rest, said wooden blocks arranged below the level of the upper surface of the tie and the sides of the casing formed with slots to correspond, of rail-locking plates each comprising a central portion fitting in the depression formed by one of said wooden blocks and the slots in the casing of the tie, and flanges extending down at the sides of the tie, one end of the central portion of each of said plates being provided with an integral portion for engaging the outer flange of the rail and the other end with a detachable piece adapted to engage the inner flange of the rail, and means to secure said plate to the tie.

7. The combination, with a tie comprising a metallic casing filled with concrete with blocks of wood embedded therein at the points where the rails are to rest, said wooden blocks arranged below the level of the upper surface of the tie and the sides of the casing formed with slots to correspond, of rail-locking plates each comprising a central portion fitting in the depression formed by one of said wooden blocks and the slots in the casing of the tie, and flanges extending down at the sides of the tie, one end of the central portion of each of said plates being provided with an integral portion for engaging the outer flange of a rail and the other end with a detachable piece adapted to engage the inner flange of the rail, the ends of the flanges of the rail-plate extending beyond the edges of the rail and provided with bolt-holes, and securing-bolts extending horizontally through the tie from one flange to the other.

8. The combination, with a tie comprising a casing formed with a broad lower portion or base and a narrower upper portion and a filling of concrete and wood, said tie formed with a depression in its upper surface, of a rail-locking plate comprising a central portion fitting said depression and flanges extending down at the sides of the upper portion of the tie, said plate having means to lock a rail and means to secure said plate to the tie.

9. The combination with a tie comprising a casing formed with a broad lower portion or base and a narrower upper portion and a filling of concrete with blocks of wood embedded therein at the points where the rails are to rest, said wooden blocks arranged below the level of the upper surface of the tie and the sides of the casing formed with slots to correspond, of rail-locking plates each comprising a central portion fitting in the depression formed by one of said wooden blocks and the slots in the casing of the tie and flanges extending down at the sides of the tie, said plates having means to engage the rails and means to secure said plates to the tie.

10. The combination with a tie comprising a casing formed with a broad lower portion or base and a narrower upper portion and a filling of concrete with blocks of wood embedded therein at the points where the rails are to rest, said wooden blocks arranged below the level of the upper surface of the tie and the sides of the casing formed with slots to correspond, of rail-locking plates, each comprising a central portion fitting in the depression formed by one of said wooden blocks and the slots in the casing of the tie, and flanges extending down at the sides of the tie, one end of the central portion of each of said plates being provided with an integral portion for engaging the outer flange of the rail and the other end with a detachable piece adapted to engage the inner flange of the rail, and means to secure said plate to the tie.

11. The combination, with a tie comprising a casing formed with a broad lower portion or base and a narrower upper portion and a filling of concrete and wood, said tie formed with a depression in its upper surface, of brace-bars arranged in the upper angles of the tie and provided with slots adapted to register with the slots in the casing, a rail-locking plate comprising a central portion fitting said depression and flanges extending down at the sides of the upper portion of the tie outside of said brace-bars, said plate having means to lock a rail and means to secure said plate to the tie.

12. The combination, with a tie comprising a casing formed with a broad lower portion or base, a narrower upper portion having its upper edges bent over forming braces, and a filling of concrete and wood, said tie formed with a depression in its upper surface, of a rail-locking plate comprising a central portion fitting said depression and flanges extending down at the sides of the upper portion of the tie, said plate having means to secure said plate to the tie.

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

WILLIAM I. F. HARDEN.

Witnesses:
FRANK VEIHMEYER,
W. CLARENCE DUVALL.