(No Model.) 2 Sheets—Sheet 1.

# V. A. TYLER.

## METALLIC RAILWAY TIE.

No. 441,784. Patented Dec. 2. 1890.

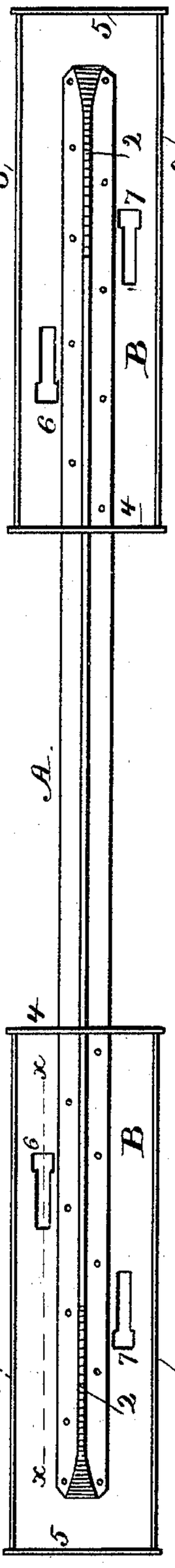


Fig. 1.

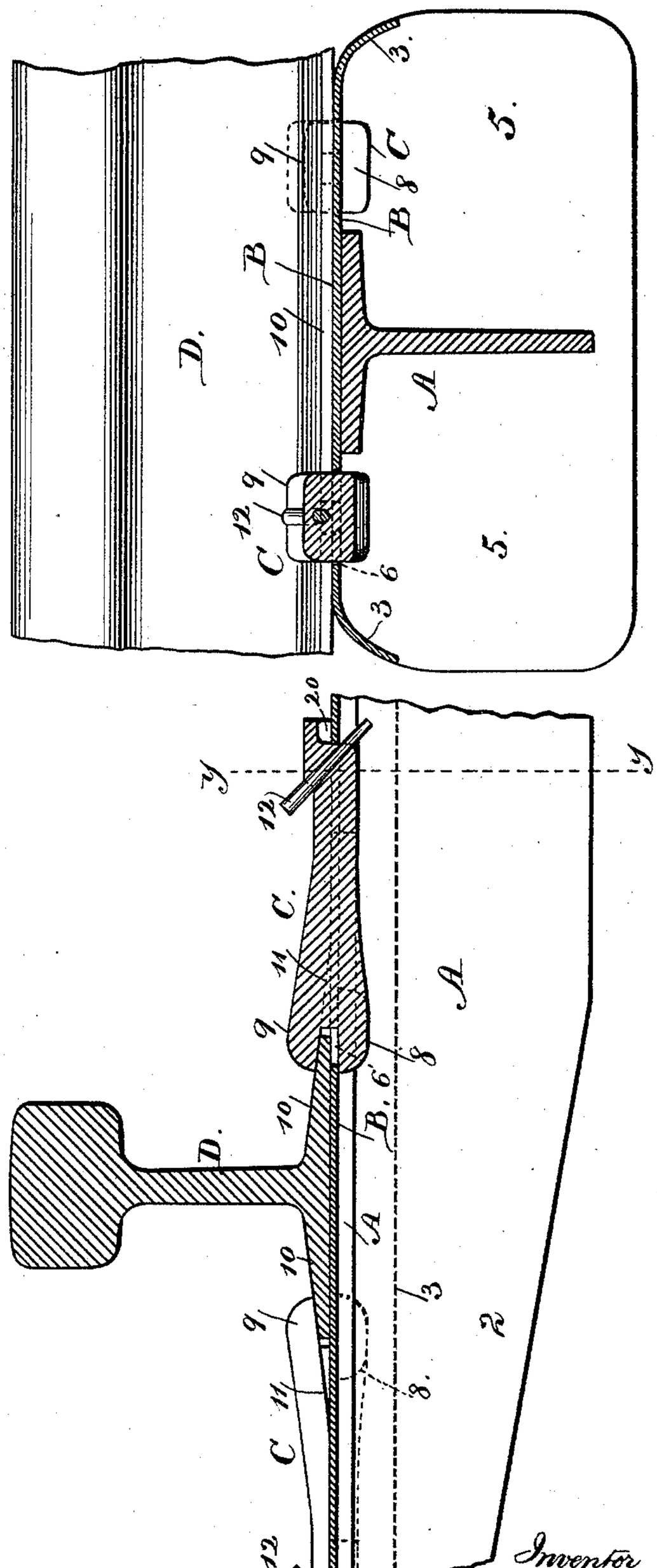


Fig. 3.

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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## METALLIC RAILWAY TIE.

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Fig. 5.

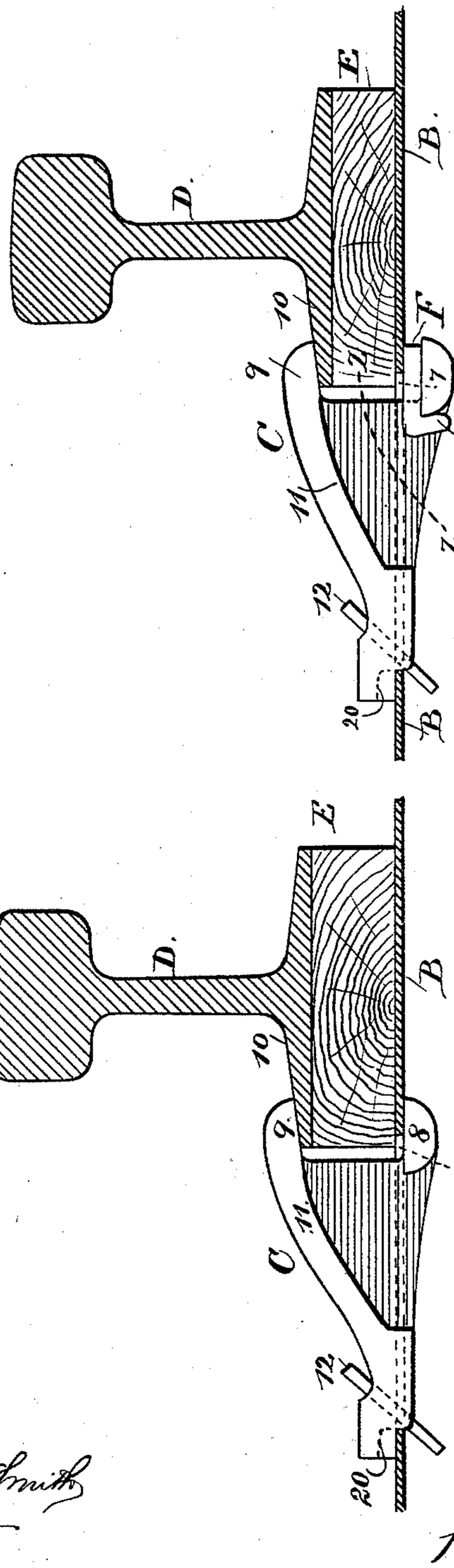


Fig. 6.

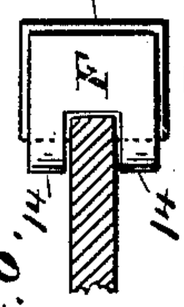


Fig. 8.

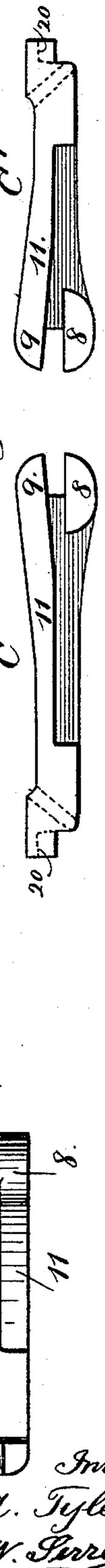


Fig. 4.




Fig. 7.




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# UNITED STATES PATENT OFFICE.

VERNON A. TYLER, OF MORRIS PARK, NEW YORK.

## METALLIC RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 441,784, dated December 2, 1890.

Application filed September 1, 1890. Serial No. 363,683. (No model.)

*To all whom it may concern:*

Be it known that I, VERNON A. TYLER, a citizen of the United States, residing in Morris Park, county of Queens, and State of New York, have invented an Improvement in Metallic Railway-Ties, of which the following is a specification.

Metallic railway-ties have heretofore been constructed with side and end flanges to lessen the risk of movement of the tie in the ballast of the road-bed; but it is often very difficult to cause the ballast to entirely fill the hollow under the side of the tie when tamping the ballast, and these metallic ties often sink down into the road-bed near their ends while supported in the middle. Hence the track yields to the passing train. Frequently in very cold weather the earth and ballast become so firmly frozen to the tie that the track cannot be raised to the proper level, and with wooden cross-ties it has heretofore been usual under such circumstances to loosen the spikes and introduce shimming-blocks beneath the rails. My present invention is for overcoming all these difficulties and for rendering the metallic tie lighter and stronger than those heretofore made use of; and the invention consists in the peculiarities of construction hereinafter set forth and claimed.

In the drawings, Figure 1 is an inverted plan view of the metallic tie. Fig. 2 is a longitudinal section at the line *x x* of Fig. 1 and in larger size. Fig. 3 is a section at the line *y y* of Fig. 2. Figs. 4 and 5 are sectional elevations showing rail-clips of a different shape to allow for the introduction of shimming-blocks. Fig. 6 is a section of the clip at the line *z z* of Fig. 5. Fig. 7 is an inverted plan of the clip, and Fig. 8 is an elevation of the clips used upon the curved portion of the track.

The principal member of the metallic tie is a T-bar of proper sectional shape for obtaining the necessary strength and of a length greater than the width of the track, so that the ends extend beyond the rails, and the vertical member of the T-bar A may be beveled near each end, as shown at 2, to lessen the weight of the tie.

The end bearing-plates B are of a suitable thickness to obtain the required strength, and the edges of each plate are turned down at 3 to form side flanges and at 4 5 to form end flanges, and the end flanges 4 are perforated, so that the T-bar can pass through such perforation, and the bearing-plates are riveted firmly to the horizontal flanges of the T-bar A. In consequence of having two separate bearing-plates B the middle portion of the railway-tie is composed only of the T-bar A, and hence the weight of the passing train will be taken principally upon the end bearing-plates B, and there will be no tendency for the metallic tie to rock in consequence of being supported principally in the middle. In the upper portion of the end bearing-plates there are slots 6 7 of proper length for receiving the rail-clips, and the outer ends of the slots are notched to obtain the proper width for the insertion of the flanges of the rail-clips. Each rail-clip C is formed with a parallel body corresponding in width to the slot in the bearing-plate, and there are flanges or lugs 8 on the under end of the clip, adapted to pass through the wider notched end of the slot, and there is a flange or hook 9 to pass above the base-flange 10 of the rail D, and the longitudinal flanges 11 upon the upper edges of the rail-clip extend backwardly from the hook 9 and rest upon the surface of the bearing-plate, and it is now to be understood that after the rail has been laid in place upon the bearing-plate the clips C are to be introduced, and as each clip is applied the flanges or lugs 8 are passed through the wider end of the slot and the clip slipped along until the hook 9 passes over the flange of the rail, and then the body of the clip will drop down into the slot, and the back end of the clip will rest against the bearing-plate at the end of the slot, and in order to prevent the back end of the clip rising out of the slot I introduce a locking-pin 12 through a diagonal hole in the clip, so that the lower end of the locking-pin passes in beneath the metal of the bearing-plate, and this holds the clip firmly in place, with the back end of the longitudinal flange 11 resting upon the surface of the bearing-plate. The slots for the clip-plates are preferably introduced in the positions indicated, so that the clips firmly connect the outer portions of the bearing-plates with the rails and prevent the tie working into a diagonal position to the track.

In portions of the track that are curved it is usual to increase the gage to prevent the truck-wheels binding in passing around the curve. I provide for this by using shorter clips C′ outside the rails and longer clips $C^2$, Fig. 8, inside the rails, and the lengths of these clips can vary according to the radius of the curve, so as to adapt the same metallic ties to curved tracks of different radius.

In cases where the metallic ties become firmly embedded in the ballast and the latter is frozen, so that the track cannot be ballasted, and it becomes necessary to raise the rail at places, the same can easily be accomplished by removing the clips and introducing clips such as shown in Fig. 4, which clip corresponds to the clip before mentioned, with the exception that there is a greater distance between the flanges 8 and the hook 9, so that the flanges 8 may be below the bearing-plates and the hooks 9 above the flanges of the rail, even though such rail be at a distance above the surface of the bearing-plate. In this instance shimming-blocks E, of hard wood or other suitable material, are introduced between the rail and the bearing-plates, and these shimming-blocks are to be of the proper thickness, and I find it preferable to make the clips that are to be used with shimming-blocks sufficiently deep to adapt them to the thicker shimming-blocks, and when thinner shimming-blocks are introduced, as in Fig. 5, I make use of hooked washers F of the proper thickness, according to the thickness of the shimming-blocks, and these hooked washers rest upon the flanges 8 and their hooked ends 14 pass down behind the outer edges of such flanges 8, and the washers themselves are notched so as to pass at each side of the body of the rail-clip at the end thereof. Hence these washers intervening between the flanges 8 of the rail-clips and the under surface of the bearing-plate cause the rail-clip to wedge tightly over the flange of the rail D as such rail-clip is driven up to place after the shimming-block has been introduced beneath the rail.

It will be observed that the side flanges 3 of the end bearing-plates are not as deep as the end flanges 4 and 5, and these end flanges are to be sufficiently large to prevent the tie shifting laterally, but the side flanges 3 stiffen and strengthen the bearing-blates, but do not interfere with the ballast being tamped, so as to pass up into and entirely fill the under portion of each bearing-plate.

It is preferable to provide in the outer end of each clip a recess 20, into which the end of a lever or pinch-bar may be inserted to pry up the clip after the pin 12 has been drawn out or driven through so as to be out of the way.

I claim as my invention—

1. The metallic railway-tie formed of the T-bar A, the end bearing-plates B, all riveted together, each end bearing-plate having end flanges 4 and 5, the former being perforated for the T-bar A to pass through the same, and the side flanges 3, of less depth than the end flanges 4 and 5, substantially as set forth.

2. The combination, with the metallic railway-ties having end bearing-plates that are slotted, of the rail-clips C, having flanges 8 below the bearing-plates, hooks 9 to pass over the base of the rail, longitudinal flanges 11 to rest upon the surface of the bearing-plates, and the diagonal locking-pin 12, passing through the rail-clip and beneath the bearing-plate at the other end of the rail-clip, substantially as set forth.

3. The combination, with the metallic railway-tie having slotted bearing-plates for the rail, of the rail-clips having flanges 8 beneath the bearing-plate, hooked ends to pass over the flange of the rail, and longitudinal flanges resting upon the bearing-plate, the diagonal locking-pins, and the hooked washers resting upon the flanges 8, substantially as set forth.

4. The rail-clip having flanges 8, adapted to pass beneath the bearing-plate at the slot, the hook 9 to pass above the flange of the rail, longitudinal flanges 11 to rest upon the bearing-plate, and a diagonal hole for receiving a locking-pin, substantially as set forth.

Signed by me this 28th day of August, 1890.

V. A. TYLER.

Witnesses:
GEO. T. PINCKNEY,
WILLIAM G. MOTT.