A. S. WARREN.

METALLIC RAILROAD TIE.

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961,052.

Patented June 7, 1910.

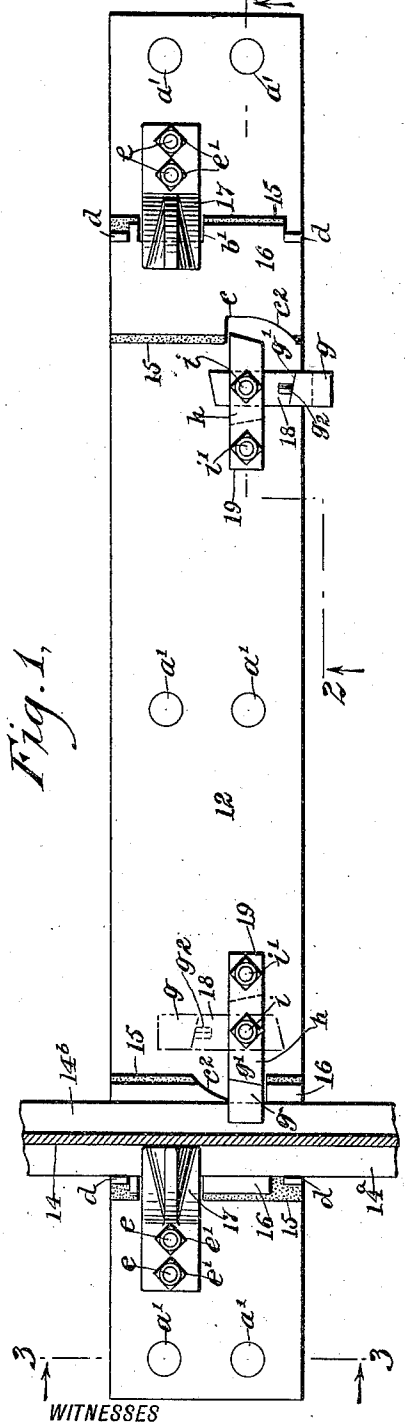

Fig. 1.

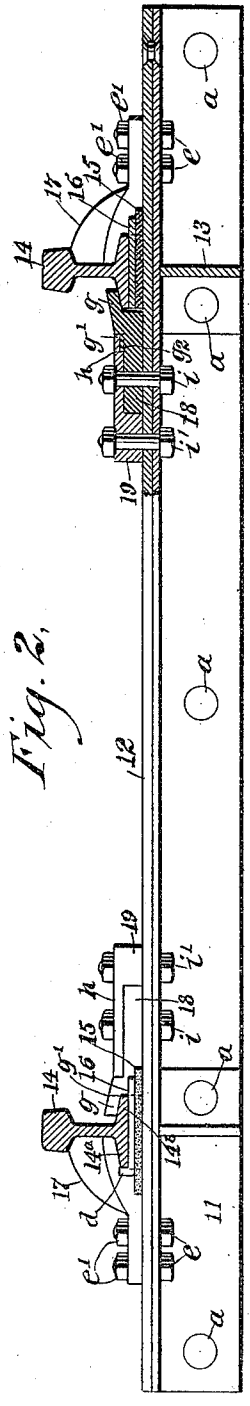

Fig. 2.

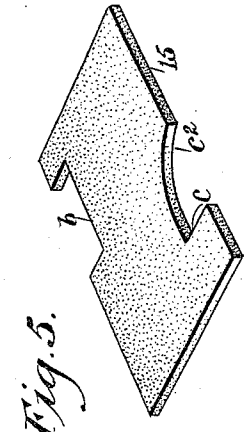

Fig. 5.

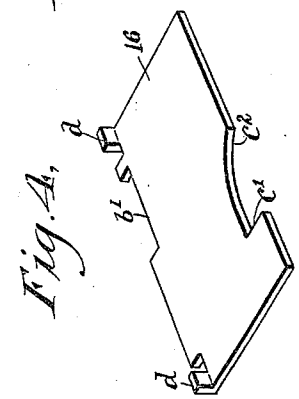

Fig. 4.

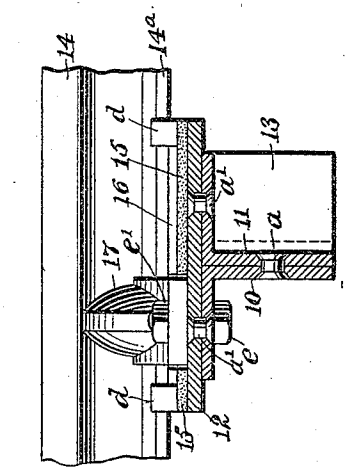

Fig. 3.

WITNESSES

Edward Thorpe.

Wm. P. Patton

INVENTOR

Alva S. Warren

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

ALVA S. WARREN, OF BATAVIA, NEW YORK.

METALLIC RAILROAD-TIE.

961,052. Specification of Letters Patent. Patented June 7, 1910.

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To all whom it may concern:

Be it known that I, ALVA S. WARREN, a citizen of the United States, and a resident of Batavia, in the county of Genesee and State of New York, have invented a new and Improved Metallic Railroad-Tie, of which the following is a full, clear, and exact description.

The purpose of this invention is to provide a metallic railroad tie having novel details of construction that render the tie light, strong and durable, and prevent the tie from creeping endwise, or sinking into the roadbed; a further object is to provide a novel, simple and very effective means for securing track-rails upon the improved cross ties, that may be readily released for track repairs and quickly re-secured, as occasion may require.

The invention consists in the novel construction and combination of parts, as is hereinafter described and defined in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improved tie and rail clamping means thereon; Fig. 2 is a partly sectional side view of details, substantially on the line 2—2 in Fig. 1; Fig. 3 is an enlarged transverse sectional view of the improved tie, and a side view of the improved rail clamp and rail thereon, the section being taken substantially on the line 3—3 in Fig. 1; Fig. 4 is a perspective view of a plate metal chair, that is a detail of the invention; and Fig. 5 is a perspective view of a novel cushion plate employed.

The body of the improved cross tie consists of two plates 10 and 11, that are right-angular considered endwise, these similar portions of the tie being secured together so as to give them T-shape in cross section, by lapping two members thereof and clamping them in that condition by a plurality of rivets *a*. The tie body further consists of a flat top plate 12 that is seated and secured by rivets *a'* on the horizontal members of the right angular portions 10 and 11, thus greatly reinforcing the tie body against strains in all directions.

At suitable points, preferably equally distant from the ends of the right angular portion 10 of the cross tie body, angular bent plate metal wings 13 are secured, that project outwardly, these wings serving to anchor the tie body in a roadbed, and prevent its longitudinal creeping movement when embedded therein for service.

Means are provided for securing two track rails 14 of usual T-shape upon a plurality of the improved cross ties that are spaced apart on a proper roadbed, the preferred construction of said means, that constitute important features of the improvement, consisting of the following details for each track rail and cross tie.

A liner or cushion plate 15, preferably formed of vegetable fiber board is provided, which is imposed upon the top plate 12 of the cross tie at a point which will locate it below a track rail 14 when said rail is properly positioned on the cross tie.

As clearly shown in Fig. 5, the cushion plate 15 is formed of a flat planchet of the material specified, having an oblong rectangular form, the side edges being respectively recessed as shown at *b* and *c*, the forms of which will be hereinafter fully described.

Upon the cushion plate 15, a plate metal chair 16 is seated, said mainly flat plate having nearly the same size as that of the cushion plate 15, and a rectangular form, having on one side edge thereof at respective corners, two similar upwardly projected flanges *d* formed thereon, as shown in the drawings. The flanges *d* have contact with the lateral edge of a base flange 14ª on a track rail 14, said base flange being outermost when the track rail is in position on the cross ties.

A clamping block 17 rests upon the top plate 12, adjacent to one flange *d* on the chair 16, and said block is fitted into a rectangular recess *b'* formed in the outer side edge of said chair, which is positioned directly over the similar recess *b* in the cushion plate 15, and it will be noted that the relative position of the clamping block serves to prevent longitudinal displacement of the plates 15 and 16. As shown, the clamping block 17 is shaped so as to fit against the outer side of the track rail 14, and bear upon the web and lower side of the ball or head of said rail, and is secured in place upon the top plate 12 by two bolts *e* and nuts *e'* thereon.

A clamping block 18 is positioned on the top plate 12 at a point that disposes it opposite the notch or recess *c* in the cushion plate 15, and likewise opposite a similar

notch or recess c' that is formed in the chair 16, and located directly above the recess c, when the chair is in proper position. The clamping block 18, that is disposed opposite the innermost base flange 14^b on the track rail 14, is shaped in its clamping member g so as to bear upon the flange 14^b, and thence said clamp extends of sufficient length, said extended portion engaging the top plate 12, as is clearly shown in Figs. 1 and 2. An offset is formed where the clamping member g is joined with the extension of the clamp, providing a shoulder g' thereat. A reinforcing clamp 19 coöperates with the clamping block 18 for retention of the track rail clamped upon the top plate 12, said clamp 19 comprising a flat member h that is seated upon the extension member of the clamping block 18, and at its free end engages the offset shoulder g' the heel portion of the reinforcing clamp seating upon the top plate 12.

Two bolts i, i' are provided for securing the clamping block 18 and reinforcing clamp 19 in engagement with the top plate 12, and base flange 14^b, the bolt i passing through the clamping member h, block 18, and top plate 12, while the bolt i' is inserted through the heel of the reinforcing clamp 19, and the top plate 12, said bolts all being provided with nuts for their clamping service.

It will be noted in Figs. 4 and 5, that the recesses c and c' in the normally inner side edges of the cushion plate 15 and chair 16 are each formed with a concave defining edge c^2.

To prevent the member h on each reinforcing clamp 19, from turning laterally in case the nut on the bolt i becomes slackened, a small rib g^2 is formed on the upper side of the clamping block 18, near the shoulder g' said rib seating in a correspondingly shaped depression formed in the under side of the member h, near its free end. It will be seen that when the member h is clamped upon the clamping block 18, by nuts on the bolts i, i', the clamping block and reinforcing block will be rigidly secured together, and neither one of them can turn laterally, until the bolts i, i' are loosened sufficiently to permit the reinforcing member h to ride over the rib g^2 with which it was engaged. It will be understood that each of the clamping blocks 18, and reinforcing clamps 19 are provided with the locking device that has been described.

When the clamping block 18 is arranged for service, it occupies the registering recesses c and c' in the plates 15 and 16, and said block along with the reinforcing clamp 19 will rigidly secure the track rail 14 on the top plate 12, when the nuts on the bolts i and i' are properly adjusted for such a purpose, due to the engagement of the rib g^2 in the recess in the reinforcing clamp 19.

As indicated in Fig. 1, the clamping block 18 is adapted for lateral rotatable adjustment if the clamping bolts i and i' are loosened by an unscrewed adjustment of the nuts thereon, the concave edges c^2 of the recesses c and c' permitting said clamping block to be rocked laterally on the bolt i as a pivot, when the member h of the reinforcing clamp is free to ride over the rib g^2.

It will be apparent that the means just described, for securing the track rails on the improved cross ties, enables their secure connection, and also permits a release of the track rails if this is desired. Furthermore the coöperating of the cushion plate 15, chair 16, rail 14, and improved cross tie is such, that while the track rail is held firmly against lateral displacement, a proper elasticity is afforded between the cross ties and track rails by rolling stock, which will reduce wear and render travel on the road more comfortable.

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

1. The combination with a metallic cross tie formed of two right angular bent plates secured together laterally, and a top plate secured on horizontal members of the right angular bent plates, of a track rail, a cushion plate, a chair seated on the cushion plate, the rail seating on the chair, and means for clamping the rail upon the chair, cushion plate and top plate of the cross tie, said means comprising a fixed block on one side and a pivoted block on the opposite side.

2. The combination with a metallic cross tie, comprising two angle plates laterally secured together, a top plate secured on the horizontal members of the angle plates, and wing plates on one of the angle plates, of a track rail, a cushion plate on the tie formed of resilient material, a flat chair seated on the cushion plate, an abutment block on the tie bearing upon one side of the track rail, a clamping block engaging a base flange on the track rail at its opposite side, a reinforcing clamp engaging said clamping block, and bolts and nuts thereon which secure the clamping blocks on the track rail and cross tie.

3. In a metallic railroad tie, the combination with a T-shaped plate metal tie, of a flat resilient cushion plate seated upon the tie, a flat plate metal chair having upturned flanges on one side edge thereof, a track rail seated on said chair, having the side of one base flange thereof in contact with the upturned flanges, an abutment block on the tie, bearing upon the web and ball of the track rail at one side thereof, a clamping block having a shoulder and seated on the

tie, said block bearing upon the opposite base flange, a reinforcing clamp seated upon the shouldered clamp and upon the tie, having contact at its end with said shoulder, and bolts and nuts for securing the clamping means bearing upon the track rail and cross tie.

4. In a device of the character described, the means for securing a track rail on the cross tie, comprising a clamping block seated on the tie and lapping upon a base flange of the track rail, said block having an offset shoulder on its upper side, and a rib thereon near the shoulder, a reinforcing clamp seated at one end on the cross tie and lapping at the other end on the clamping block, said end engaging the shoulder and having a depression in its lower side that receives the rib, and bolts and nuts adapted for securing the clamping block and reinforcing block respectively together and in enforced engagement with the base flange on the track rail.

5. In a railroad tie, the combination with a tie, of a cushion plate on the tie, a chair in the form of a plate, the cushion plate and chair plate having registering recesses in their sides, and clamping blocks secured to the tie, and adapted to enter the recesses of the cushion plate and chair plate with their ends overlapping the base flange of the track rail.

6. In a railroad tie, the combination with a tie, of a chair in the form of a plate provided with a recess on each side and upwardly projecting lugs on one side, and clamping blocks secured to the tie, said blocks being adapted to enter the recesses of the chair with their ends overlapping the flange rail of a track rail.

7. The combination with a tie, a chair on the tie upon which the track rail is to be seated, and means carried by the tie adapted to engage one flange of a track rail, of a pivoted clamping block adapted to engage the opposite flange of a track rail, and a reinforcing clamping block secured to the tie and overlapping the first clamping block.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALVA S. WARREN.

Witnesses:

WILLIAM D. HISCUTT,

ANDREW D. SMITH.