

No. 866,743.

PATENTED SEPT. 24, 1907.

M. STONER.

METAL AND CONCRETE RAILWAY TIE AND RAIL FASTENING.

APPLICATION FILED MAR. 20, 1907.

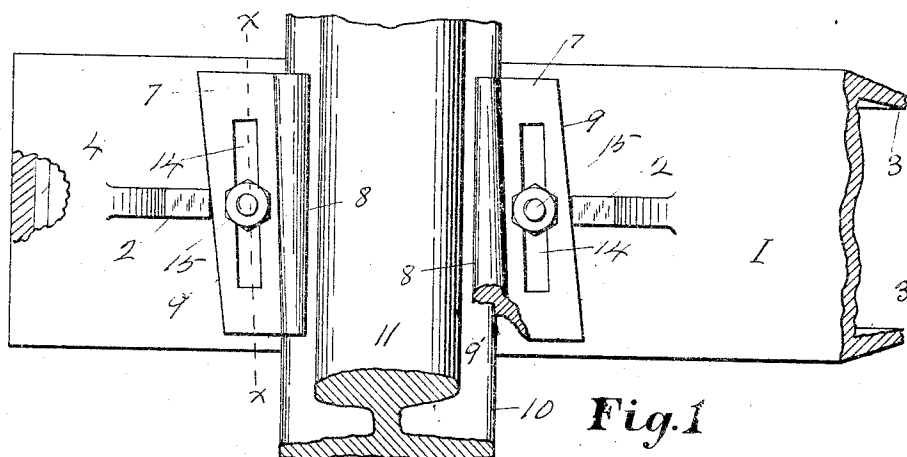


Fig. 1

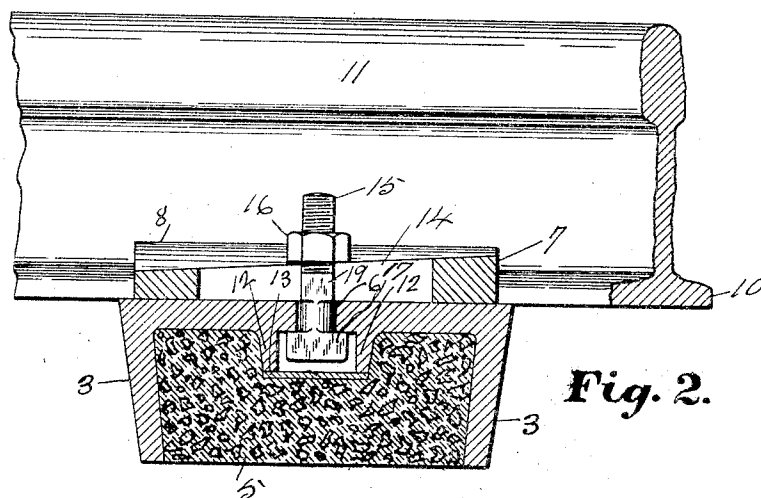


Fig. 2.

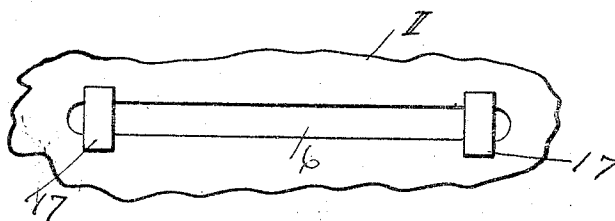


Fig. 3.

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METAL AND CONCRETE RAILWAY-TIE AND RAIL-FASTENING.

No. 866,748.

Specification of Letters Patent.

Patented Sept. 24, 1907.

Application filed March 20, 1907. Serial No. 363,352.

To all whom it may concern:

Be it known that I, MOSES STONER, a citizen of the United States, residing at Warsaw, in the county of Kosciusko, in the State of Indiana, have invented certain new and useful Improvements in Metal and Concrete Railway-Ties and Rail-Fastenings; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in metal and concrete railway ties and rail-fastening.

The object of my present invention is to provide an improved composite railway tie of comparatively simple and economical construction, having small liability of getting out of repair, reliable in service and having great durability in use.

My invention consists of a metallic casing or shell open upon its lower face, and having a closed plane upper face, provided near each end thereof with a pair of longitudinally spaced lugs and an interposed aligned vertical slot for the rail fastening bolts, and communicating with an aligned pendent chamber adapted to contain the heads for the said fastening bolts; the pendent sides and ends of the said casing being inwardly flaring to anchor the contained concrete body of the tie; wedge-shaped clamping plates arranged transversely of the said slot and adapted to firmly engage the base of the railway rail while impinging against the said lugs; and means for firmly securing the said plates in any desired adjustment.

The principal novel feature of my invention resides in the construction of the metal tie casing and the construction and coöperative relation of the rail-fastening means.

Similar reference numerals indicate like parts in the several views of the drawings in which

Figure 1 is a plan view of one end of the metallic casing of my invention partly broken away to show the flaring end flange, the rail fastening means being shown in its holding engagement with the rail, one of the clamping plates being broken away in part to show the rail engaging shoulder thereon. Fig. 2 is a cross-section of Fig. 1 taken on the line $x-x$ showing the wedge shape vertically of the clamping or rail engaging plates, the relative arrangement of bolt-head chamber, and the relative arrangement of the concrete body anchored within the flaring sides of the casing. Fig. 3 is a fragmentary view of the lower face of the metallic casing showing the slot in which the bolts are arranged, and showing the manner in which the bolt heads form their holding engagement.

The casing of my invention of suitable metal and proper dimensions, consists of a plain horizontal upper face 1 provided near each end thereof with a pair of

longitudinally aligned upright lugs 2 and has upon its opposite sides and ends pendent inwardly flaring flanges 3 and 4 respectively, whereby the plastic or concrete body 5 is firmly anchored therein and cannot be deranged by any concussion incident to ordinary usage. This metallic casing has near each end thereof, and preferably between and in approximate alinement with the said lugs 2 a longitudinal vertical slot 6 of proper width in the face 1 adapted to receive and secure the bolts hereafter described.

Upon the lower face of the plate 1, properly spaced upon each side of the slot 6 and connected at their ends are preferably arranged the identical pendent flanges 12 of proper width to form a proper chamber to loosely contain the heads of the bolts hereafter described, as shown in Fig. 2. This chamber in use is closed by means of the bottom plate 13 which is immovably secured in position by means of the concrete body 5 in use.

The clamping plates 7, identical in construction, are wedge shaped or tapering both in width and in thickness, as shown in Figs. 1 and 2, whereby they are secured against longitudinal derangement in one direction by the engagement of the tapering outer edge 9 with the respective lugs 2, and in the other direction by the engagement of their inclined upper face with the respective nuts 16. The plates 7 are provided upon their inner edge with a raised longitudinal flange 8 whose lower plane face forms a shoulder 9' adapted to holdingly engage the adjacent edge of the foot 10 of the rail. The plates 7 have a thickness slightly less than that of the outer edge of the rail foot 10, whereby when they are firmly secured in position by the bolts 15 they will exert a clamping action upon the rail. These plates are also provided with longitudinal vertical slots 14, Fig. 1. These clamping plates are arranged transversely of the slot 6 and in parallel relation with each other, Fig. 1, and are adapted to firmly clamp the opposite edges of the foot of the rail by means of the overhanging lateral flanges 8, and are firmly secured in any desired lateral or longitudinal adjustment by means of the bolts 15 which are vertically arranged in the slot 6 and near the opposite ends thereof respectively, and also pass upward through the slots 14 in the plates 7. These bolts have their upper end screw-threaded and have a nut 16 thereon. The lower end of these bolts has an angular head 17, Fig. 3, whose width is less than that of the slot 6, and whose length is sufficiently greater than the width thereof to form a holding engagement with the lower face of the plate upon opposite sides of this slot. These bolts have a cylindrical portion adjacent to the head thereof to permit a free turning thereof in the slot 6, and they have an angular portion 19 adjacent to the cylindrical portion of proper dimensions relative to the slot 14 in the said

plates 7 to prevent any rotation of the bolt when the said angular portion is arranged in the slot 14 or when the plates 7 are in their holding position as shown in Fig. 2.

5 The operation and manner of employing my invention thus described is obvious and briefly stated is as follows: The operator in the construction of my improved composite tie first places the loose plate 13 in position upon the inverted tie casing and then fills it
10 with concrete to form the concrete body 5, the outer face thereof being made level and flush with the lower edges of the flanges 3. If desired instead of constructing the casing with the pendent flanges 12, and plate 13, a loose casing or boxing of any proper
15 construction to form the chamber for the bolt heads can readily be placed in position over the slot 6 before filling in the concrete body in a well understood manner. The bolts 15 are then placed in position near the opposite ends of the slot 6 by passing the
20 heads 17 thereof through this slot and then giving them a one-fourth turn which places the head transversely of the slot, as shown in Figs. 2 and 3. He next places the respective plates 7 in position with the bolt projecting upward through the slot 14, and
25 then firmly secures them in position by tightening the nuts 16 thereon.

As the angular portion 19 of the bolts 15 rest within the snugly fitting slot 14, it is obvious that they can not turn or be turned in use when in position. If
30 desired an additional lock-nut may be placed in position upon the bolt.

It is obvious that when the plates 7 are in their holding position with their flanges 8 in a locked engagement with the foot of the rail, they can not be
35 deranged by any of the jars or concussions incident to passing trains or any other cause incident to ordinary usage, because of the peculiar wedge shape

thereof. It is also obvious that the concrete body is immovably anchored within the flaring sides of the metallic casing.

Having thus described my invention and the manner of employing the same what I desire to secure by Letters Patent is:

1. A composite railway tie consisting of a metallic shell or casing having inwardly flaring sides, and having near each end thereof upright longitudinally aligned lugs, and provided with an interposed vertical slot in approximate
45 alignment with the said lugs; a concrete body anchored within the said shell; a pair of longitudinally slotted rail-clamping plates wedged in cross-section both vertically and longitudinally; and means for maintaining the interlocked relationship of the said plates with the said rail.

2. In a composite railway tie, the combination of a metallic casing open upon its lower face and near each end thereof provided with upright lugs and an interposed longitudinal slot; a concrete body anchored within the said casing; means for permanently anchoring the composition in the shell; rail fastening means associated with the tie comprising a cooperating pair of clamping plates having their inner edges provided with a longitudinal flange or
60 shoulder adapted to engage the rail-base, the said plates being wedge shaped both vertically and longitudinally; and means for securing the said plates in their holding relation.

3. The combination of a railway tie formed of a metal shell closed at its top and sides, and having near its ends a pair of upright lugs and an interposed vertical slot, and a concrete body immovably anchored within the said shell; rail fastening means associated with the said tie, consisting of wedge-shaped clamping-plates longitudinally slotted and having their inner coacting edges provided with rail
70 engaging flanges, and bolts vertically and non-rotatably mounted in the said slot and adapted to firmly secure the said plates in their holding position.

Signed by me at Warsaw, Kosciusko county, State of Indiana, this 18th day of March, A. D. 1907.

MOSES STONER.

Witnesses:

ARTHUR F. BIGGS,
RAY E. GODDARD.