No. 712,943. Patented Nov. 4, 1902.

T. M. LEE & G. W. HARTSON.

RAILWAY TIE.

(Application filed Sept. 30, 1901.)

(No Model.)

Fig. 1.

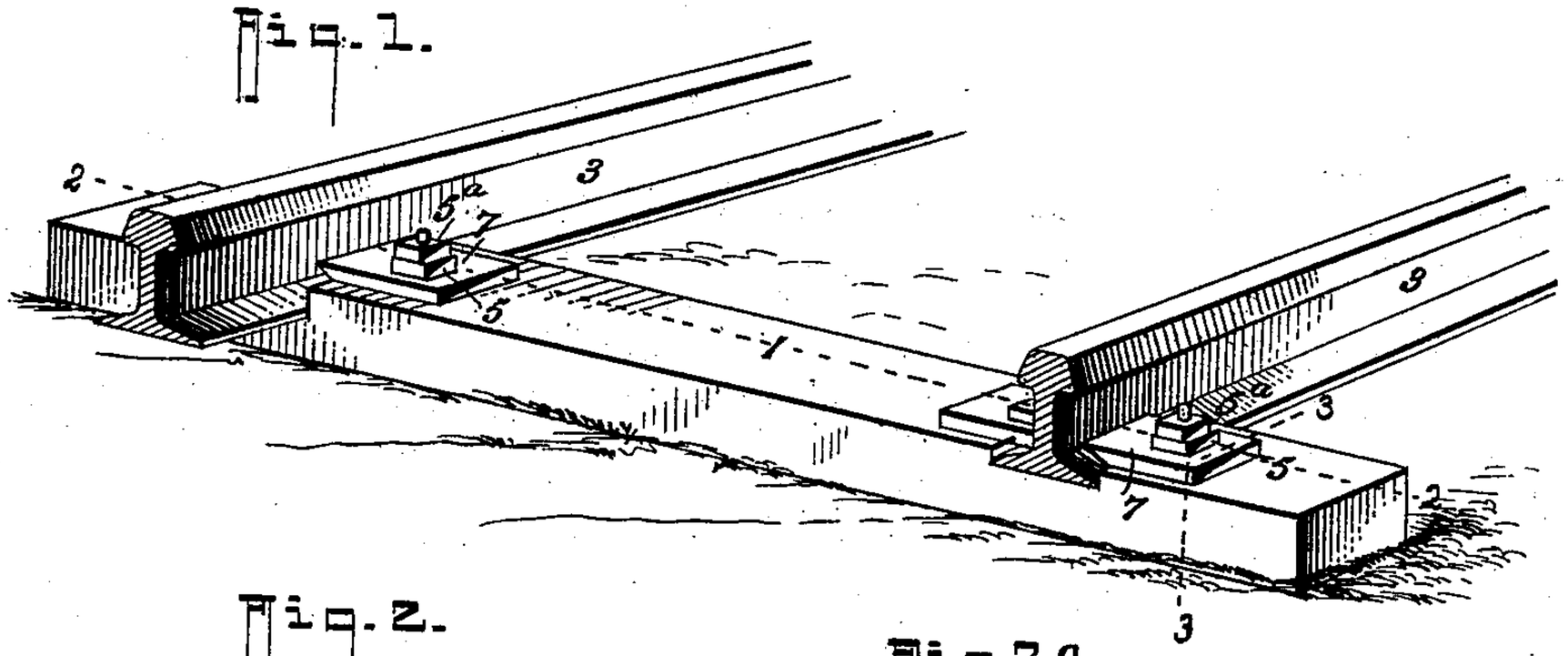


Fig. 2.

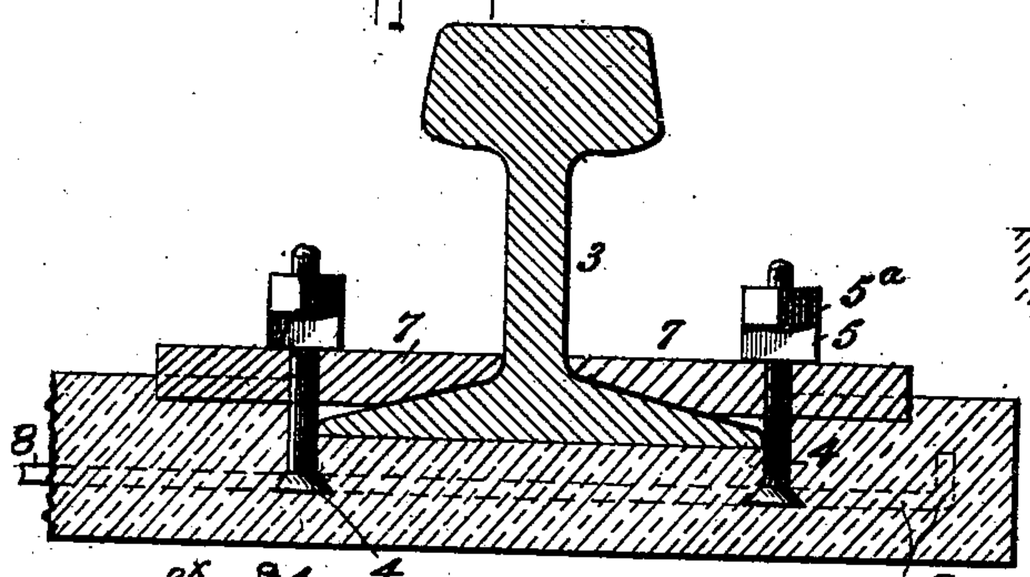


Fig. 2a

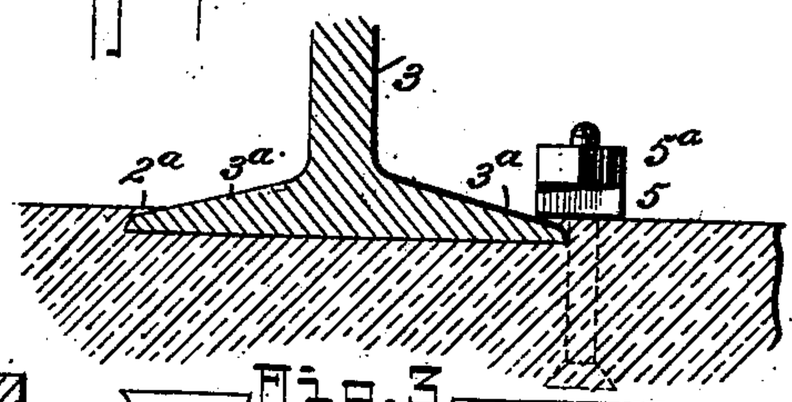


Fig. 3.

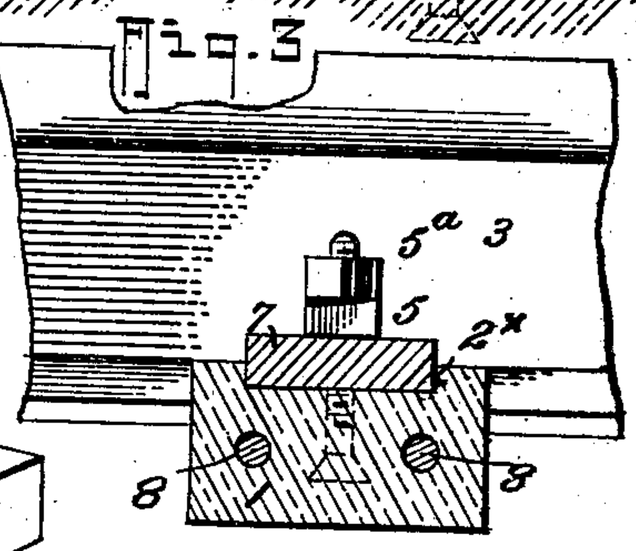


Fig. 4.

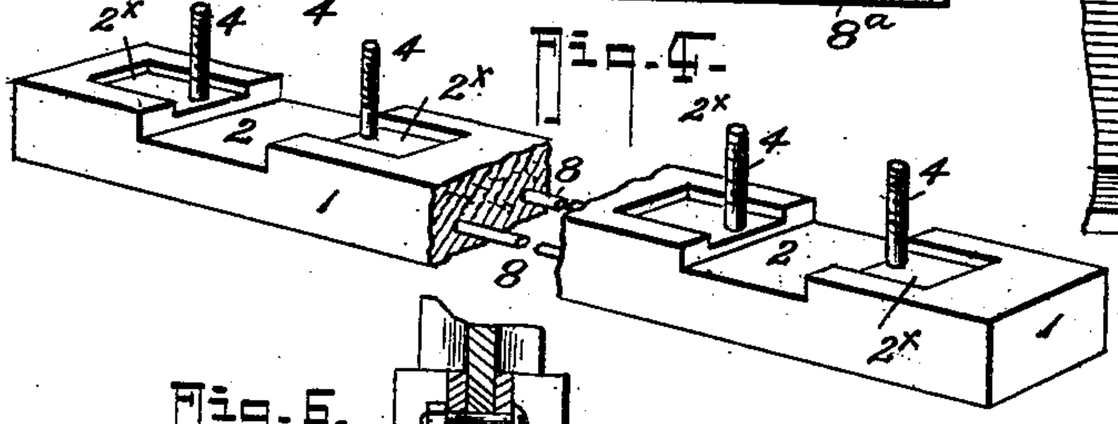


Fig. 5

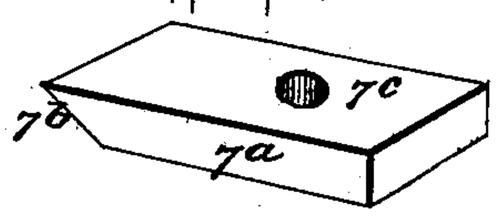


Fig. 6.

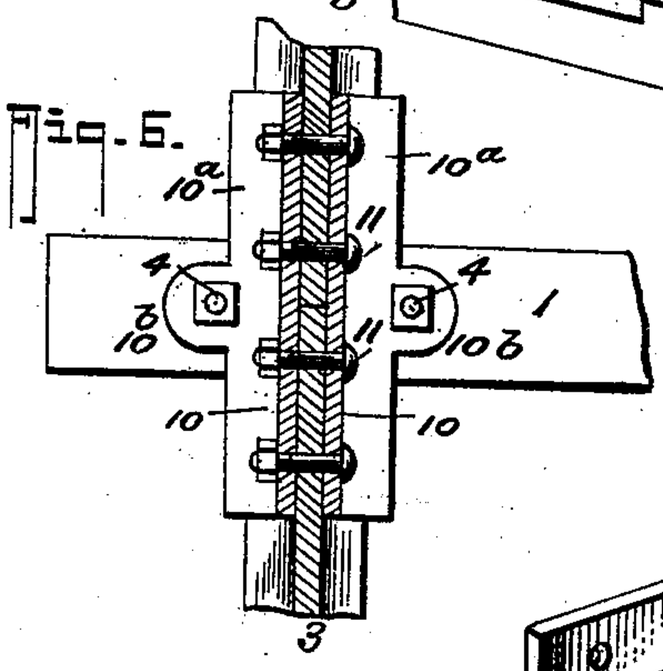
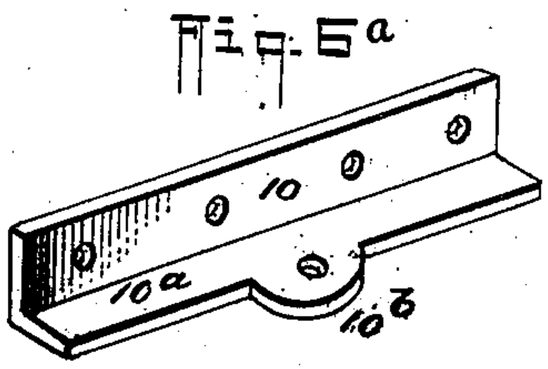


Fig. 6a



WITNESSES:

Guy O. Worthington

Louis Dieterich

INVENTORS

G. W. Hartson

BY T. M. Lee

Fred G. Dieterich & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

THOMAS M. LEE AND GEORGE W. HARTSON, OF WHITE PIGEON, MICHIGAN.

RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 712,943, dated November 4, 1902.

Application filed September 30, 1901. Serial No. 77,138. (No model.)

To all whom it may concern:

Be it known that we, THOMAS M. LEE and GEORGE W. HARTSON, residing at White Pigeon, in the county of St. Joseph and State of Michigan, have invented a new and Improved Railway-Tie, of which the following is a specification.

Our invention relates to improvements in that class of tie or rail supporting base members formed partly or wholly of cement; and it seeks to provide certain improvements in rail-ties of the character stated whereby to render their cost of construction more economical, their adjustment the more convenient and stable, and which in their practical use will effectively serve for their intended purposes.

In its generic nature our invention seeks to provide a cross-tie formed of a body of compressed cement, gravel, and sand and having specially-constructed seats or ways to receive and interlock with the base-flanges of the rails and having specially-disposed and rigidly-held stud-bolts adapted to engage with and serve to lock the clamp-plates upon the cement tie-body for holding the rails against lateral strain and within the cross-seats in the said cement tie.

In its more complete nature our invention embodies a novel construction of tie having specially-constructed seats to receive and interlock with the base-flanges of the rails, stud-bolts at each side of said ways held as a fixed part of the tie, metallic seat-plates, and a novel construction of joint or clamp plate for coöperating with the stud-bolts and adapted to be maintained in a locked or rigid condition with the stud-bolts that secure the tie seat-plates, other details of construction being also included in our invention, all of which will hereinafter be fully explained, and particularly pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of our invention. Fig. 2 is a cross-section of the same, taken substantially on the line 2 2 of Fig. 1. Fig. 2^a is a similar view taken through the joint portion of the rails. Fig. 3 is a longitudinal section thereof on the line 3 3 of Fig. 1. Fig. 4 is a perspective view of one of the cross-tie members. Fig. 5 is a similar view of one of the clamp-plates. Fig. 6 is a detail view of one of the rail-joint-clamping plates hereinafter referred to. Fig. 6^a is a perspective view of one of said plates.

Referring now to the accompanying drawings, in which like numerals indicate like parts in all the figures, 1 designates the cross-ties, which in our construction are made of cement, sand, and gravel compressed into a solid body having a length and width of desired size. The upper face of the tie is formed with two cross-seats or depressed ways 2, the edges of which are undercut or inclined inward to form locking edges 2^a, adapted to project over and interlock with the base-flanges 3^a of the rails 3, as shown, whereby to maintain the rails and the cross-ties in a proper alinement. While we prefer to make the edges 2^a inclined, as stated, said edges may be straight, as indicated in Fig. 1.

At each side of the seats 2 and centrally of the tie is embedded a bolt 4 4, the threaded end of which is projected up above the top face of the tie close up to the edge of cross-seats 2, as shown, and the upper ends of said bolts 4 are threaded to receive the clamp and jam-nuts 5 5^a, which when the edges of seats 2 are undercut, as shown in Fig. 2^a, can be turned over the edge of the outer rail-flanges and serve to hold the said rails in place, as indicated in Fig. 2^a; but on the score of safety and positiveness in holding the rails from spreading or buckling laterally we employ separate clamp-plates, the construction and application of which will be clearly understood by reference to Figs. 2 and 5, from which it will be seen two plates 7 are employed for each end of the tie to engage the rails 1 1, and said plates have a body portion 7^a flat to seat solid upon the upper face of the tie and have their inner end 7^b made square to fit solid against the web of the rail, the under side of the inner ends of the plates 7 being properly shaped to snugly fit over the flase-flange of the rail. The plates 7 each have a central aperture 7^c, whereby they can be readily fitted over the threaded ends of the bolts 4. In practice the apertures 7^c are so disposed that when fitted on the bolts the inner ends 7^b of the plates will rest tightly against the web of the rails, and as the two plates 7 7 at each end oppose each other it follows that when secured by the

nuts 5 5ª said plates will hold the rails from lateral displacement in the seats 2 or strain against the edges 2ª of said seats.

To further increase the stability of our rail-supporting means, each tie is reinforced by a pair of rods or bars 8 8, which extend lengthwise of the tie centrally thereof and have their ends terminate near the outer ends of the tie-body, as shown in Fig. 3, and said ends are turned up, as shown at 8ª, to form locking portions to prevent lengthwise movement of the bars or rods and their withdrawal in case of breaking and separation of the parts of the tie. The ends 8 serve as means for sustaining the tie in its proper shape and from disintegration in case it should crack transversely. To still further hold the plates 7 7 from lateral movement on the ties and in consequence maintain the rails in rigid, firm, and non-spreadable condition, the top of the tie 1 may also be formed with longitudinal seats 2×, which may merge with the cross-seats 2. These seats 2× are of the width of plates 7 7 and are intended to receive the body portion 7ª of said plates, which by reason of their engagement with the seats or depressions 2× are thereby practically held as a rigid or integral part of the tie, and by reason thereof should the nuts 5 5ª become loosened the plates 7 7 would still be held firmly from lateral movement and the rails likewise in their proper alinement and from lateral movement upon the ties. The construction is such that the ties, clamp-plates, and connecting-rods are joined together as a single body and neither of the parts can have free movement upon the others.

At the joints of the rail-section we dispense with the clamp-plates 7 and in lieu thereof employ the clamp or joint plates 10 10 shown in Figs. 6 and 6ª, by reference to which it will be noticed the plates 10 10 act as ordinary fish-plates, they being made fast by the tie-bolts 11 11, and said plates 10 10 have their base 10ª 10ª made to engage the rail-base flanges and provided with apertured ear-like extensions 10ᵇ 10ᵇ for coöperating with the stud-bolts, which extensions may also be depressed or formed with a flange to project below the plane of the upper surface of the tie, whereby to engage the longitudinal seats in the top of the tie, which will assist in holding the rail-joint-clamping devices firmly interlocked with the rail.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the advantages and complete operation of our invention will be readily understood.

Our invention does away with the necessity of skilled labor.

We are aware that cross-ties having seats to receive the rails and clamping devices secured to the tie for engaging the rail-flanges are old. Our invention differentiates from such general form of rail-holding devices in the peculiar and novel correlation and detailed construction of the ties, the plates, and the bars, as hereinbefore described.

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

1. A railway cross-tie and bed, comprising a cement tie, having cross-seats in its upper face to receive the base member of the rails, flanges on the sides of said seats, which overlap the edges of the rail-base, bolts embedded in the tie-body and projected up at one side of and above the cross-seats, apertured clamp-plates adapted to fit over the bolt ends, said plates having rail-web-abutting portions, and means for securing the plates fixedly on the tie, and the bolts, as set forth.

2. A rail-supporting means, comprising a tie, having cross-seats to receive the flanged base of the rail, the sides of the cross-seats terminating in flanges, which snugly overlap the edges of the base-flanges of the rail; bolts embedded in the tie-body and projected up at each side above the cross-seats, and nuts on the bolts serving to reinforce the overreaching edges of the rail-seats, as shown and for the purposes described.

3. In a rail tie or support of the character described, a cement tie having cross-seats to receive the flanged base portions of the rails, said cross-seats provided with flanged edges adapted to overreach the edges of the rail-base; bolts embedded in the tie and projected above the cross-seats, said bolts being so located with reference to the rail that its outer edges contact therewith, longitudinally-extending seats, plates having portions adapted to engage and fit within the longitudinal seats and having their ends arranged to abut, from opposite sides, that portion of the base of the rail not overlapped by the flanges of the rail-seat, and means for securing the plates in contact with the rails, as shown and for the purposes specified.

4. The combination with the cross-tie having transverse seats and stud-bolts, fixedly held on the tie, projected up at each side of the said seats, and joint-plates adapted to clamp the meeting ends of the rails and having apertured ears to engage the stud-bolts, all arranged as set forth and for the purposes described.

THOS. M. LEE.
GEORGE W. HARTSON.

Witnesses:
J. G. SCHURTZ,
J. W. BENJAMIN.