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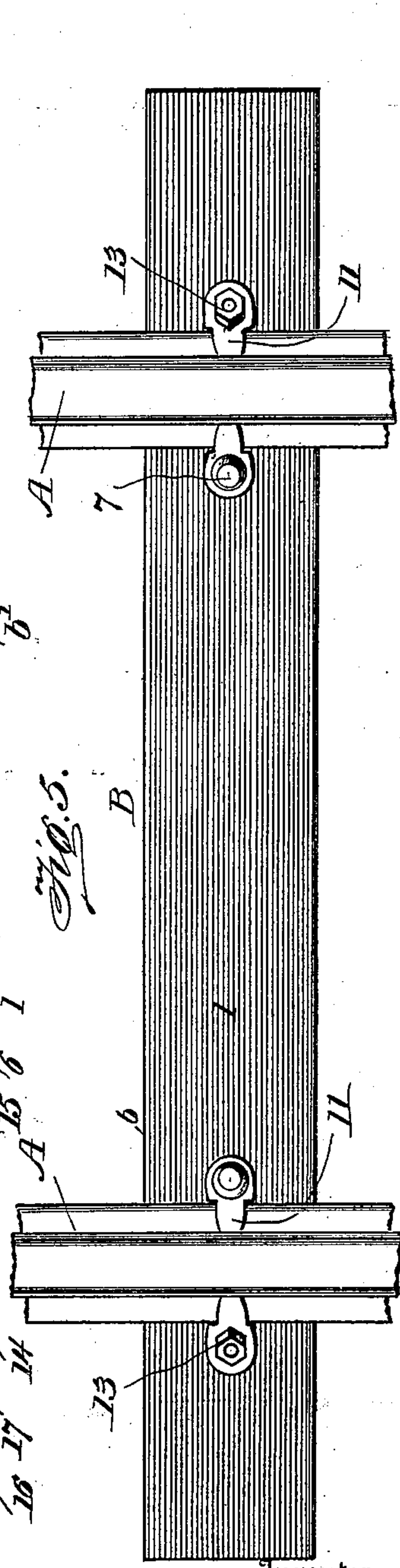
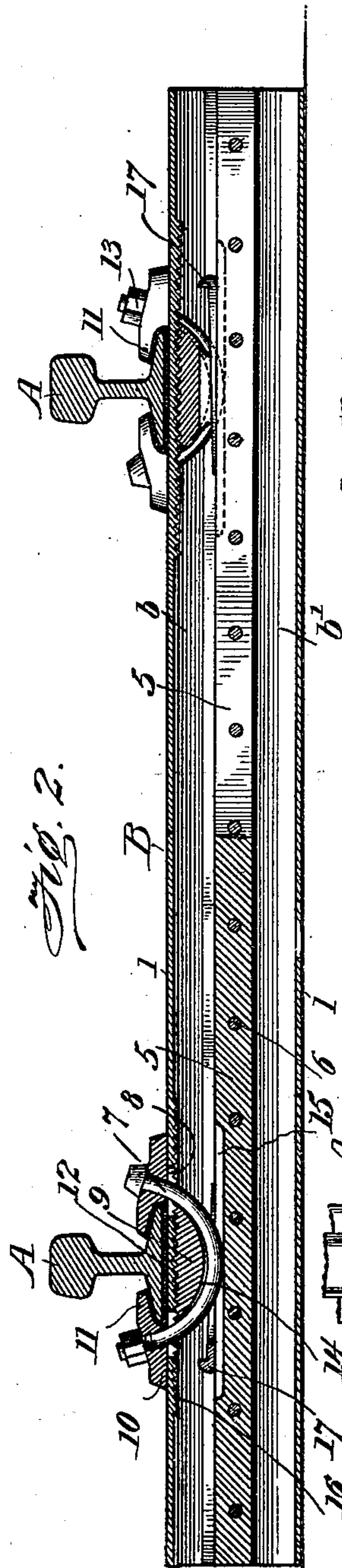
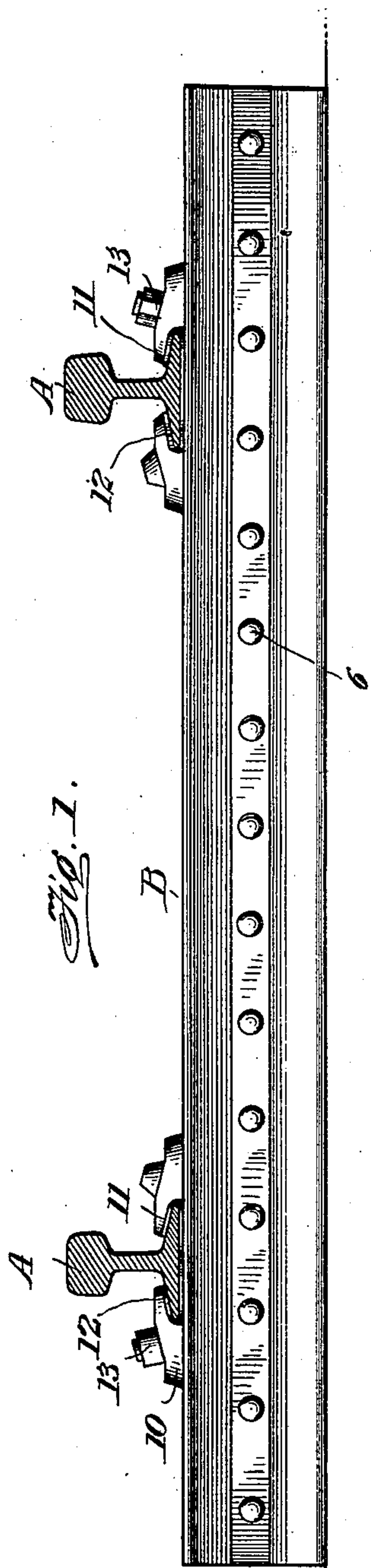
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METALLIC RAILWAY TIE AND MEANS FOR SECURING THE RAILS THERETO.

(Application filed May 1, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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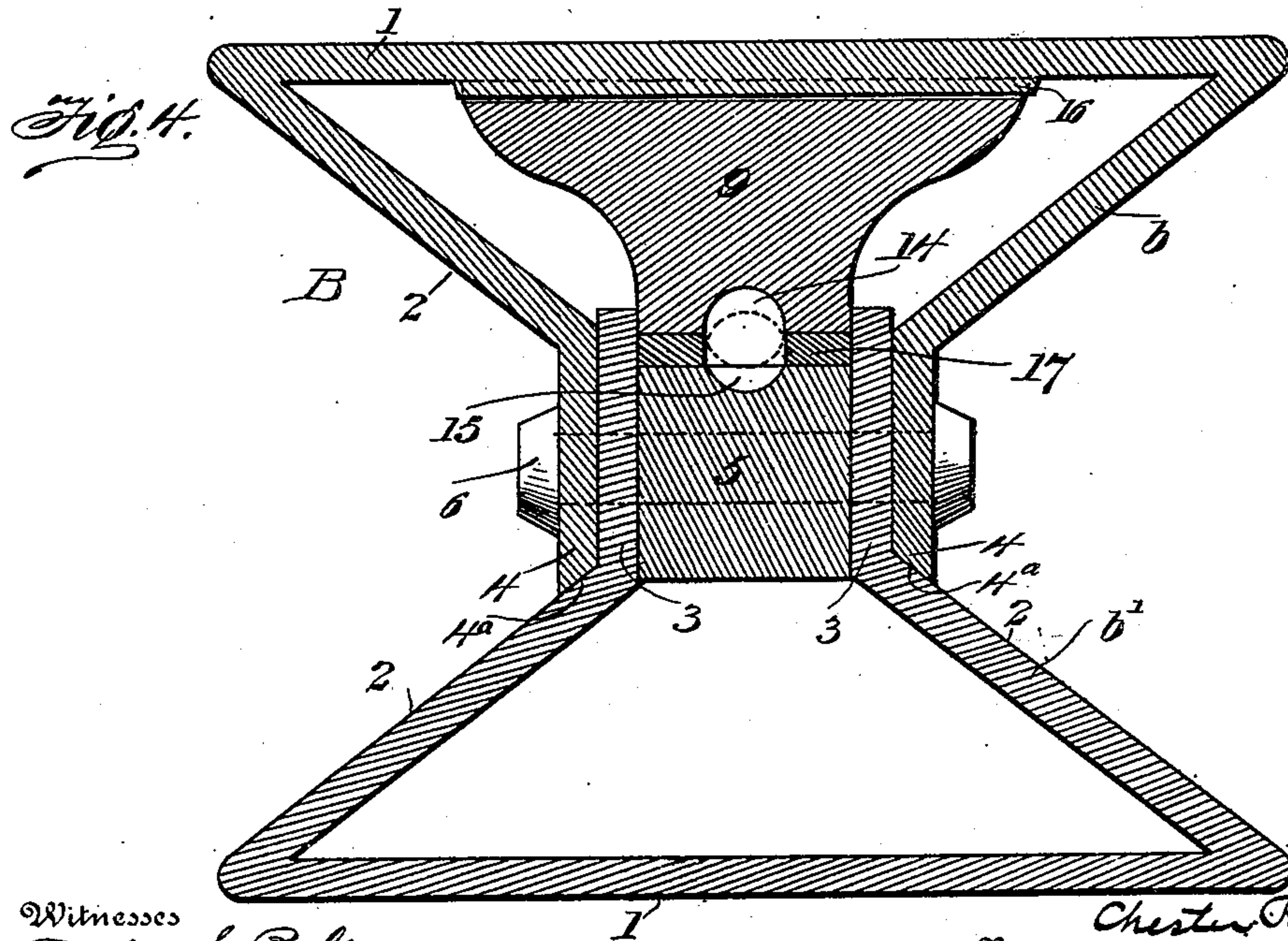
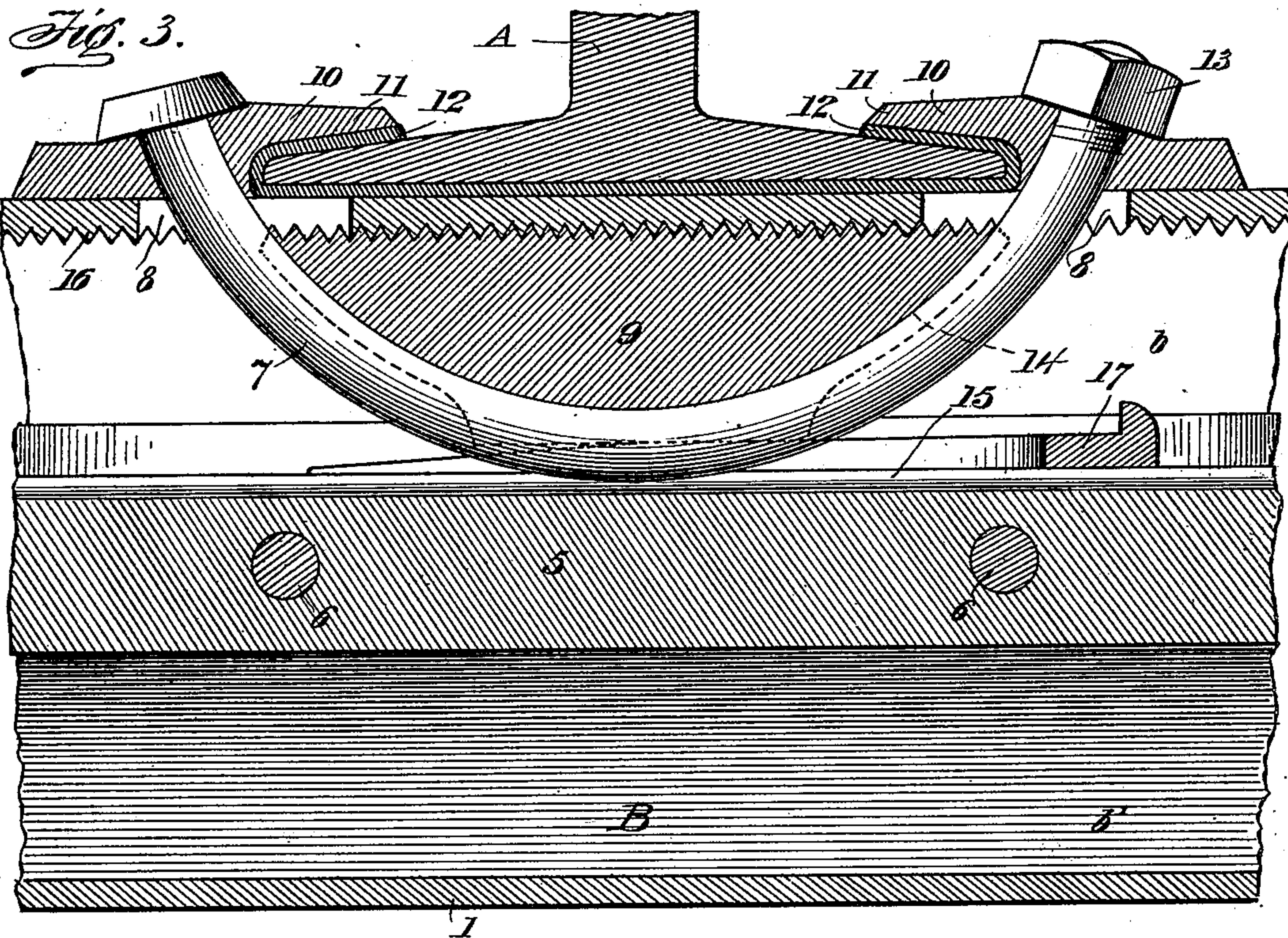
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(Application filed May 1, 1901.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

CHESTER RABERT, OF COALBURG, WEST VIRGINIA.

METALLIC RAILWAY-TIE AND MEANS FOR SECURING THE RAILS THERETO.

SPECIFICATION forming part of Letters Patent No. 692,902, dated February 11, 1902.

Application filed May 1, 1901. Serial No. 58,327. (No model.)

To all whom it may concern:

Be it known that I, CHESTER RABERT, a citizen of the United States, residing at Coalburg, in the county of Kanawha and State of West Virginia, have invented new and useful Improvements in Metallic Railway-Ties and Means for Securing the Rails Thereto, of which the following is a specification.

My invention relates to metallic cross-ties for railways and to means for uniting a rail to a metallic tie; and it consists in the improvements hereinafter described.

In the drawings, Figure 1 is a side elevation of my improved tie. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is an enlarged view of a portion of the structure shown in Fig. 2. Fig. 4 is a section on line 4 4 of Fig. 3. Fig. 5 is a top plan view of the tie.

In the drawings, A A represent the rails, and B the tie as a whole.

The tie B is composed of upper and lower sections *b* and *b'*, respectively, each formed of sheet metal bent into proper shape and having interfitting connection with each other. Each of said sections *b* and *b'* has a flat bearing-surface 1 and converging sides 2, which approach each other rapidly at equal angles to the base for a certain distance and are then sharply bent until they lie parallel at right angles to the plane of the base 1, the general outline of the structure in cross-section showing a wide flat base and top, sharply reëntrant sides, and corresponding vertical side portions. The parallel portions 3 3 of the lower section are arranged to fit closely within the corresponding parallel portions 4 4 of the upper section, which portions 4 4 are preferably beveled on their under surfaces, as at 4^a, to bear firmly upon the inclined sides 2 of the lower section. The side portions 3 3 preferably extend somewhat above the upper ends of the parallel portions of the upper section *b*, as shown in Fig. 4, for purposes to be hereinafter described. Interposed between the interior parallel portions 3 3 is a reinforcing-block 5, of metal, extending the entire length of the tie, the said vertical portions of the sides of the tie and the block 5 being firmly united by bolts or rivets 6, extending transversely therethrough.

The above-described structure combines

great strength with comparative lightness by reason of its hollow construction and peculiar form. Downward strains upon the top of section *b* are, by reason of the inclination of its sides, concentrated upon the solid block 5, which forms the apex of the lower section *b'*, and which latter section, by reason of its short vertical dimension and wide base, is able to withstand enormous pressure.

Each rail A is secured to the tie by a curved bolt 7, passing through openings 8 in the top face of the tie and seated in a saddle 9, arranged to bear upon the undersurface of the top of the tie. The ends of said bolt pass through washers 10, which overlap the base of the rail and secure the same in proper position.

The rail is preferably seated upon a piece of hard felt or other sound-deadening material 12, which is also lapped over the edges of the base, as shown in Fig. 4, that the washers 10 may bear thereon. These washers 10 are preferably of the shape shown in Figs. 4 and 5, having a circular body portion adapted to rest upon the upper face of the tie and an extended lug or projection 11, adapted to overlap the edge of the rail-base. The upper surface of each washer is preferably inclined, as shown, to afford a firm bearing for the bolt head or nut, and its under surface is cut away at a point immediately below the baseline of the extended lug to form a shoulder or abutment to bear against the edge of the rail-base.

The curved bolt 7, connecting the holding-washers, is of ordinary construction, having a head at one end and a screw-thread at the other arranged to receive a nut 13. The bolt is seated in a groove 14, formed in the under face of a saddle 9, which bears against the under side of the top of the tie, the groove and the bolt being each preferably formed on the arc of a circle, so that their curvature may be the same at all points. The depth of the saddle is preferably such that its lower face comes into close proximity to the top of the block or bar 5, while its shape in cross-section is such that its upper bearing-face is extended laterally, and its lower portion is narrow enough to fit snugly within the vertically-extended portions 3 of the bottom tie-section 6', as shown in Fig. 4. To accommo-

date the bolt, the upper face of the center block 5 is recessed, as at 15, preferably throughout its entire length.

The upper bearing-face of the saddle and the lower opposing face of the top 1 of the tie are provided with corresponding transverse serrations 16, adapted when the parts are assembled to interengage, as shown in Fig. 3, to prevent longitudinal movement of the saddle.

I also prefer to use in conjunction with the part above described a split wedge 17, adapted to straddle the bolt 7 and be wedged between the center blocks 5 and the saddle 9.

The advantages of the above-described construction will be apparent. By reason of the serrated connection of the saddle and tie the rails may be transversely adjusted to the proper gage while the parts are loose, while upon the tightening of the bolt the saddle and rail will be positively locked against movement in a direction transverse to the rail. When this is done, the wedge 17 is driven home, and the whole structure is thereby made a practical unit, the bolt being seated in the saddle and the saddle being secured against movement in any direction by reason of its engagement with the serrated face of the top 1 and with the vertical edges of the side portions 3 of the tie. As may be seen in Fig. 4, the structure is almost absolutely solid at the points where the rails cross the tie from the top face 1 to the base of the center block 5.

It will thus be seen that by my invention I provide a metallic tie which combines with the lightness of a tubular structure and unusual stiffness in the direction of strain the advantages of a practically solid unyielding bearing at the point of greatest stress, and by the same construction provide for the accurate adjustment of the track-gage by means which practically obviate all danger of spreading of the rails, yet readily admit of readjustment without necessitating removal of the rails.

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

1. A sectional metallic railway-tie composed of interfitting upper and lower sections centrally united, substantially as set forth.

2. A metallic railway-tie having a wide top and base, reentrant sides, and a reinforced center, substantially as set forth.

3. A metallic railway-tie having a wide base and top, reentrant sides having parallel vertical portions near the middle thereof, and a block interposed between said parallel portions, substantially as set forth.

4. A metallic railway-tie consisting of a lower section, having a wide base and sides converging toward the center and then bent to vertical position, a top section of similar construction, the vertical side portions of which interfit with the vertical portion of the

lower section, a block 5 reinforcing the structure at the place of connection, and bolts uniting the parts, substantially as set forth.

5. A metallic tie having a hollow top section and a solid center, and a solid structure interposed between the top plate and the solid center at the point of crossing of the rail, substantially as set forth.

6. A metallic tie comprising a sheet-metal base having converging sides and a solid apex, a hollow sheet-metal top section, and means interposed between the apex of the lower section and the top plate of the upper section to support the latter at the point of crossing of the rail, substantially as set forth.

7. In a railway structure, a rail, a metallic tie comprising a top plate having a serrated under surface, a saddle correspondingly serrated and bearing against said under surface, a bolt seated in said saddle and extending through openings in the top of the tie, and means connected with the bolt for engaging with the rail to secure the same, substantially as set forth.

8. In a railway construction, a rail, a metallic tie comprising a top plate having bolt-openings therein, a saddle bearing against the under surface of the top, a bolt seated in the saddle, the bolt and saddle being correspondingly curved to the arc of a circle, and means carried by the bolt for engaging the rail to secure the same upon the tie, substantially as set forth.

9. In railway construction, a rail, a hollow metallic tie, devices for securing the rail comprising a curved bolt passing through the top of the tie, a saddle in which said bolt is seated, means for securing the saddle against longitudinal movement, and means for securing the saddle against lateral movement, substantially as set forth.

10. In railway construction, the combination with the rail and a hollow tie, of devices for determining the lateral position of the rail passing through the top of the tie, means for securing said devices in adjusted position located within the tie, and means for operating said securing means located outside of the tie, substantially as set forth.

11. A metallic railway-tie comprising two hollow sections of substantially triangular form in cross-section joined together at their apexes, substantially as set forth.

12. A metallic railway-tie comprising two hollow sections of substantially triangular form in cross-section arranged with their apexes toward each other, cross-bolts uniting these sections at their apexes and means for reinforcing the tie where the two sections come together, substantially as set forth.

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