

H. K. J. MANGER.
METAL RAILWAY TIE.

(Application filed July 24, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

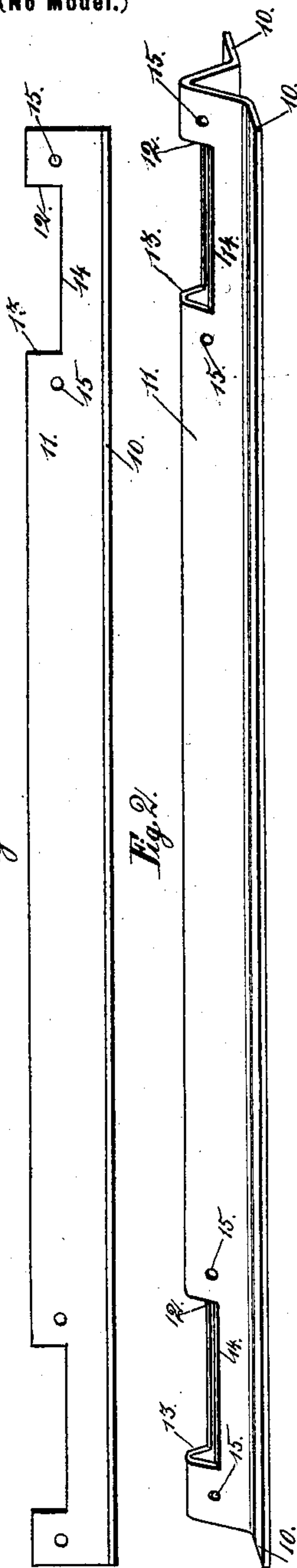


Fig. 2.

Fig. 3.

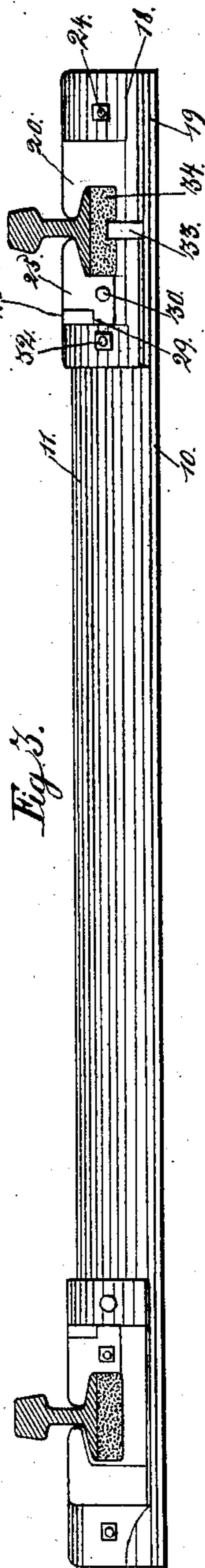


Fig. 4.

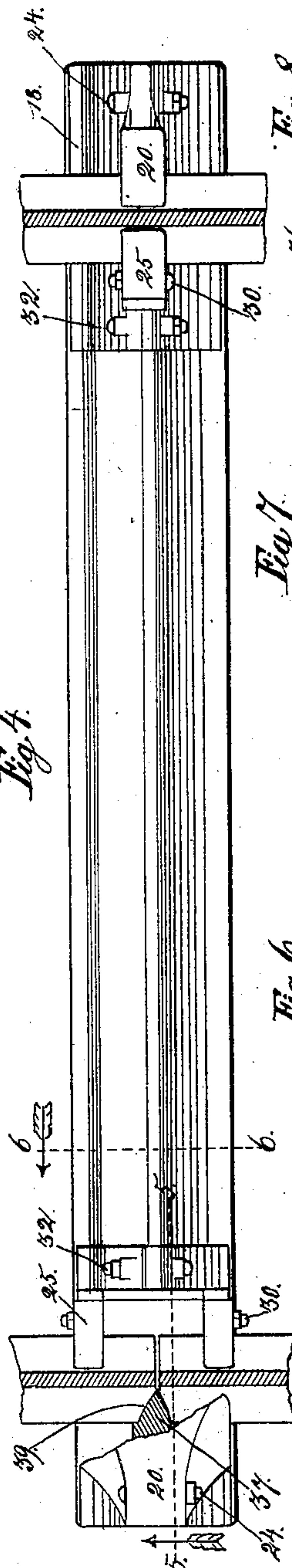


Fig. 7.

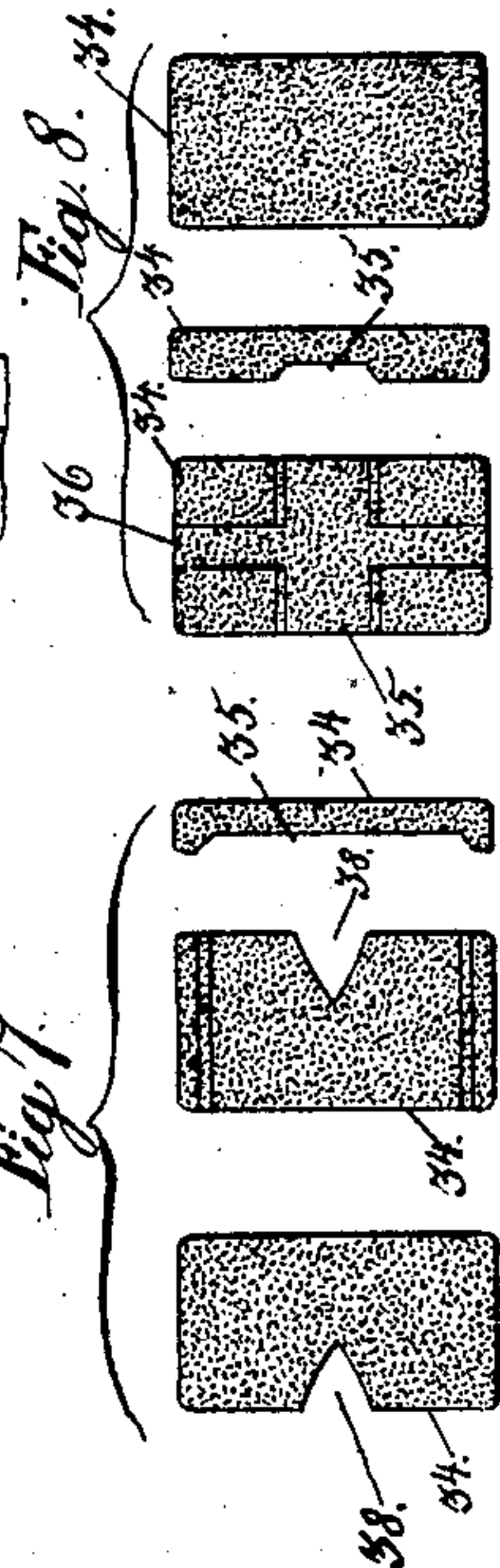


Fig. 6.

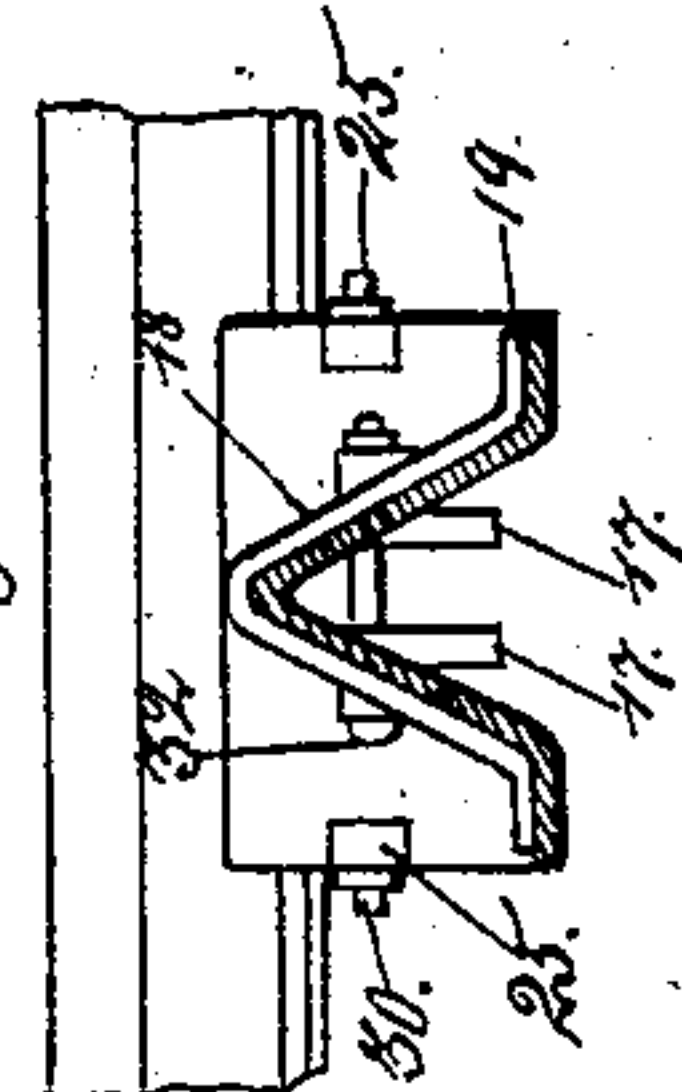
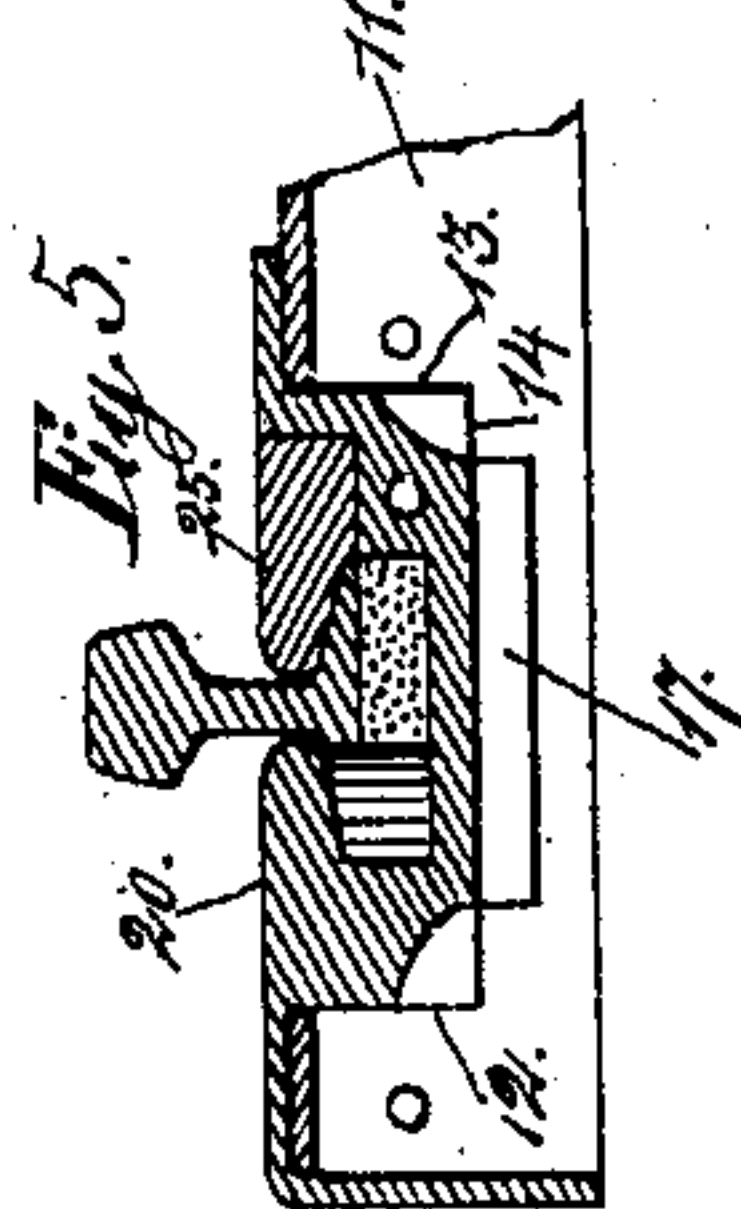


Fig. 5.



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by Orwig & Lane Attys

No. 697,640.

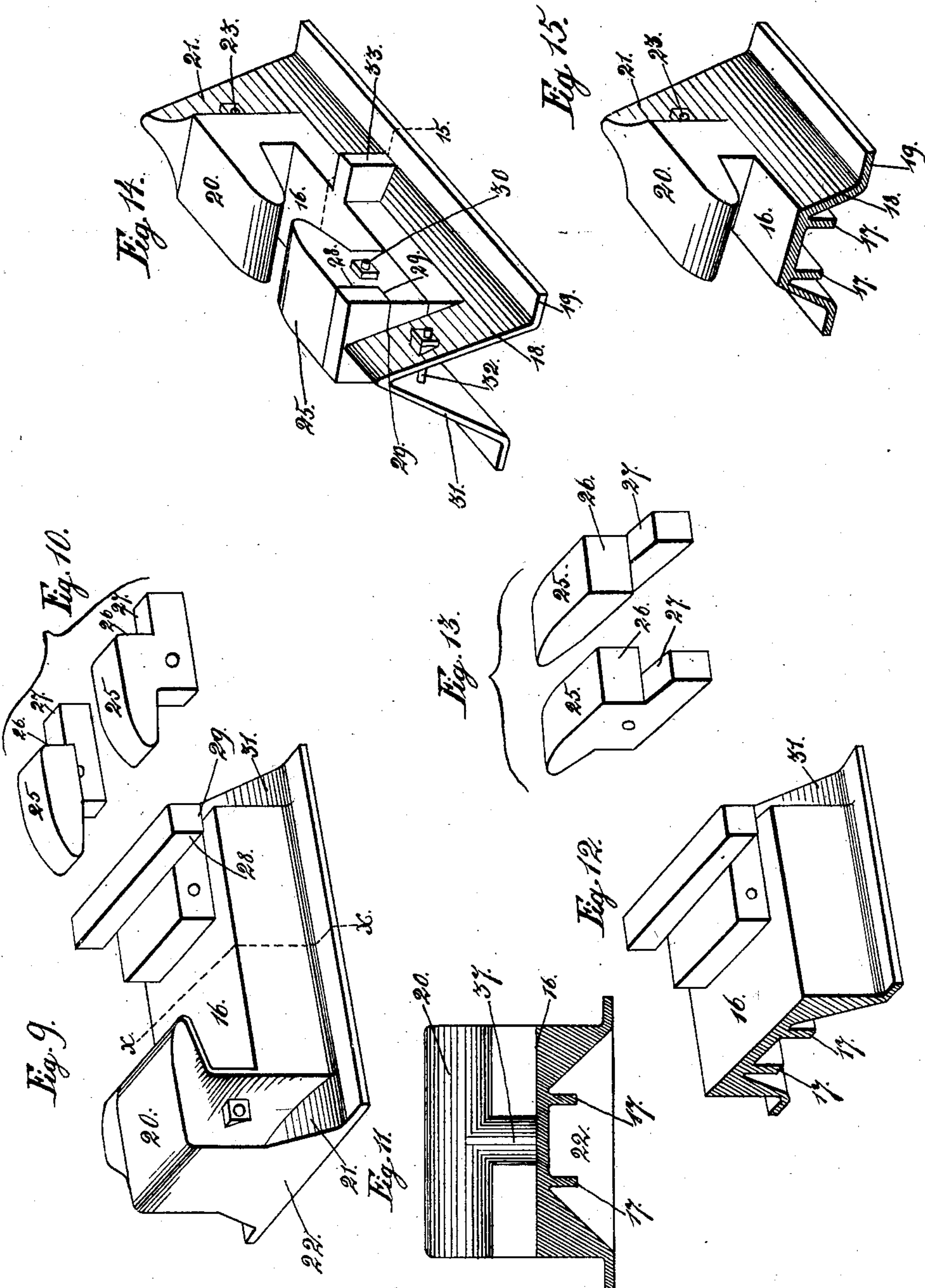
Patented Apr. 15, 1902.

H. K. J. MANGER.
METAL RAILWAY TIE.

(Application filed July 24, 1901.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

HENRY K. J. MANGER, OF DES MOINES, IOWA.

METAL RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 697,640, dated April 15, 1902.

Application filed July 24, 1901. Serial No. 69,602. (No model.)

To all whom it may concern:

Be it known that I, HENRY K. J. MANGER, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented certain new and useful Improvements in Metal Railway - Ties, of which the following is a specification.

The objects of my invention are to provide a metallic railway-tie of simple, durable, and inexpensive construction in which the body portion of the tie may be made by a rolling process and the rails may be connected therewith by means of rail supports and locks, that may be either cast or forged, and that may be detachably and interchangeably connected with the rolled body portion in such a manner that the rails are positively prevented from lateral movement upon the ties and in such a manner that the joining ends of the rails may be attached to the ties without the use of fish-plates.

A further object is to provide a rail support and lock designed for detachable connection with the rolled ties and so arranged as to be firmly and immovably connected with the ties.

Broadly speaking, it is my object to provide a tie in which the body portion may be rolled, and said body portion will be adapted for use in connection with various sizes and shapes of rails, so that in order to adapt the device for rails of various sizes and shapes it is only necessary to alter the construction of the supporting and locking device without in any way changing the body portion of the tie.

My invention consists in certain details in the construction of the body portion of the tie and also in certain details in the construction of the rail supporting and locking device whereby they are firmly supported on the body portion against movement in all directions and whereby they are made detachable and interchangeable relative to the body portion of the tie, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of the rolled body portion. Fig. 2 shows a perspective view of same. Fig. 3 shows a side elevation of a complete tie with the rail supporting and locking members connected therewith

and rails supported therein. Fig. 4 shows a top or plan view of one of my improved ties with rail supporting and locking devices connected therewith and portions of the rail supported therein, the rail supporting and locking device at one end being of a form designed for use at the rail ends and a portion of this latter rail supporting and locking member being broken away. Fig. 5 shows a vertical longitudinal sectional view on the indicated line 5 5 of Fig. 4. Fig. 6 shows a vertical transverse sectional view on the indicated line 6 6 of Fig. 4. Fig. 7 illustrates the non-metallic cushion for use on the rail supporting and locking member for the rail-joints, said view showing the top, bottom, and one side of the cushion. Fig. 8 illustrates the form of non-metallic cushion to be used in supporting the body portion of a rail, said view illustrating the bottom, side, and top of the cushion. Fig. 9 shows an enlarged detail perspective view of the rail supporting and locking member to be used at a juncture of two rails. Fig. 10 shows in perspective the two rail-locking members for detachable connection with the supporting and locking device shown in Fig. 9. Fig. 11 shows a vertical transverse sectional view through the indicated line *xx* of Fig. 9 looking toward the outer end of the device. Fig. 12 shows a vertical sectional perspective view of the same device on the indicated line *xx* of Fig. 9 looking in the direction opposite from that of Fig. 11. Fig. 13 shows in perspective the detachable rail-locking members shown in Fig. 10, said view being taken from the side opposite from that shown in Fig. 10. Fig. 14 shows in perspective a complete rail supporting and locking device for use in connection with the body portion of the rails, and Fig. 15 shows a vertical sectional perspective view taken on the indicated line 15 of Fig. 14.

Referring to the accompanying drawings, it will be noted that the body portion of the tie is formed complete in one piece and is approximately A shape in cross-section. The base portions of the tie are at the sides thereof and are indicated by the reference-numeral 10. The central portion inclines upwardly at 11. Obviously a tie of this shape may be made by a rolling process, and hence will be simple, cheap, and durable in construction.

After the tie is rolled the part 11 is cut away near each end, thus forming the outer shoulders 12 and the inner shoulders 13, and the horizontal edges 14 and the bolt-holes 15 are extended horizontally through the body portion 11 near the shoulders 12 and 13. It will be made clear throughout the following description that this form of tie is adapted for use in connection with rails of any ordinary size and shape and for all the various uses to which railway-ties are adapted.

The rail-support comprises a device which may be cast or forged and of which the essential elements are a flat platform 16, designed to receive a non-metallic rail-supporting cushion to be hereinafter described. Beneath the platform are two downwardly-projecting ribs 17, and the sides of the device incline from the platform 16 downwardly and outwardly at 18 and horizontally at 19 to accurately fit the body portion 11 and flange 10. The said ribs 17 are of a length corresponding to the length of the horizontal edges 14, and they are so arranged as to admit the edges 14 between the ribs 17 and the sides 18. Obviously this will prevent lateral movements of the rail-supporting device relative to the tie, and the ends of the ribs 17 will engage the shoulders 12 and 13, and thereby prevent longitudinal movement of the rail-supporting device relative to the tie. At the outer end of the platform 16 is an integral rail-locking member 20, projecting upwardly and then inwardly to overlap the outer flange of the rail. Beyond the integral rail-locking member 20 the device is inclined at 21 to overlap the body portion of the tie beyond the shoulder 12, and an integral end piece 22 projects over the end of the body portion of the tie. In the part 21 is a bolt-opening 23 to receive a bolt 24, passed through the rail-support and through the opening 15 in the body portion of the tie. The other end of the rail-supporting device is adapted to receive a detachable rail-locking member. This detachable rail-locking member comprises an extension 25, designed to overlap the under surface of the rail. This detachable rail-locking member is also provided with a vertical transverse shoulder 26 near its end farthest from the rail and also with a downwardly-projecting block 27 at one side, the said block 27 projecting beyond the shoulder 26. The rail-support is so shaped as to provide a vertical shoulder at 28 to be engaged by the shoulder 26 to prevent movement of the detachable rail-locking member away from the rail and is also provided with a shoulder 29 to prevent vertical movements of the block 27. By this means it is obvious that when the detachable rail-locking member is in position the rail will be firmly locked without the use of a bolt for holding the detachable rail-locking member to the rail-support. However, a bolt 30 is passed through the double rail-locking members and through the rail-support to prevent the detachable rail-locking member from becoming detached.

The inner end portion of the rail-support is shaped at 31 to overlap the central portion of the body of the tie, and a bolt 32 is passed through it to perform the double function of holding the rail-support to the tie and of preventing spreading of the parts on the sides. On the sides of the rail-supporting parts are the ribs 33, the tops of which are parallel with the platform 16.

The non-metallic cushions are indicated by the reference-numeral 34, and each one has on its under side a groove 35 to receive the platform 16 and grooves 36 to receive the ribs 33. Hence when once placed in position they are prevented from moving.

In adapting my improved rail-support for use at the juncture of two rails I modify the construction of the rail-support in several particulars. First, on the under surface of the integral rail-locking member 20 I have provided a vertical rib 37 to project inwardly toward the central portions of the platform 16. Furthermore, the platform 16 is made much wider, and two detachable rail-locking devices are provided for the opposite sides of the inner end portion of the rail-support, as clearly shown in Figs. 9, 10, and 11. In other particulars the rail-supports are the same. In connection with the rail-support for use at the juncture of two rails the non-metallic rail-supporting cushion is made, as shown in Fig. 7, with a notch 38 therein to receive the rib 37, and the flanges of the rails are notched at 39 to receive the rib 37.

In practical use the body portions of the ties are first firmly fixed in position upon the road-bed. Then the rail-supports are placed thereon, with the ribs 17 overlapping the edges 14 and engaging the ends 12 and 13 on the ties. Then the bolts 24 and 32 are provided for securely connecting the rail-supports to the ties; but it is obvious that even without these bolts the rail-supports could not move longitudinally or transversely upon the ties. Then the cushions 34 are placed in position. Then the rail is placed on the cushion, with its outer flange engaged by the integral rail-locking member 20, and the operation is completed by placing the detachable rail-locking member in position and securing it by means of the bolt 30 when the abutting ends of two rails are reached. One of the rail-supports adapted for this purpose is provided in place of the ordinary rail-support. The cushion is placed on the platform in the ordinary way, with its notch 18 surrounding the projection 39. Then the rails are placed on the cushions, with their outer flanges under the integral rail-locking member, and a portion of their flanges is cut away to fit against the rib 37. Then the two detachable rail-locking members are placed in position, one in engagement with the inner flange of each rail.

From the foregoing description it is obvious that the body portions of the ties may be used in connection with any ordinary form of

5 rail or at the rail-joints, and in adapting the device for rails of different sizes and shapes it is only necessary to alter the shape of the inner or detachable rail-locking member, the remainder of the device being adapted for rails of various sizes.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States therefor, is—

10 1. An improved metallic railway-tie comprising a body portion substantially A shape in cross-section and having portions cut away near each end to thereby form two parallel edges on the sides of the tie-body and two
15 vertical shoulders at the ends of the parallel edges, and a rail-support for each end of the tie, each of said supports having its end portion shaped to rest upon the parallel edges and against the underfaces thereof to prevent
20 movement transversely of the tie and also shaped to engage the vertical shoulder to prevent movement longitudinally of the tie, and means for securing rails to the rail-supports.

2. An improved metallic railway-tie comprising a rolled metal body portion of such
25 shape that in cross-section its central portion is arched upwardly, said body portion having its top portion cut away near each end to thereby form two parallel edges on the sides
30 of the body portion and two shoulders at the

ends of the parallel edges, and a rail-support for each end of the rail, each of said supports being of a size and shape to rest upon said parallel edges and against both of said vertical shoulders, and means for securing a rail
35 to the top of each support.

3. An improved metallic railway-tie comprising a body portion substantially A-shaped in cross-section and having portions cut away near each end to thereby form two parallel, 40 longitudinal edges and two vertical transverse shoulders, a rail-support for each end, said support having its under surface designed to rest on the straight edge, and having a downwardly-projecting projection to enter between 45 said straight edges, an integral base portion on the rail-support to overlap the sides of the body portion, a shoulder on the rail-supports to engage the said vertical, transverse shoulders, said supports having a platform to receive the non-metallic cushion and having an 50 integral rail-locking member to engage the outer portion of a rail, and also having a detachable rail-locking device to engage the under portion of the rail, substantially as and 55 for the purposes stated.

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