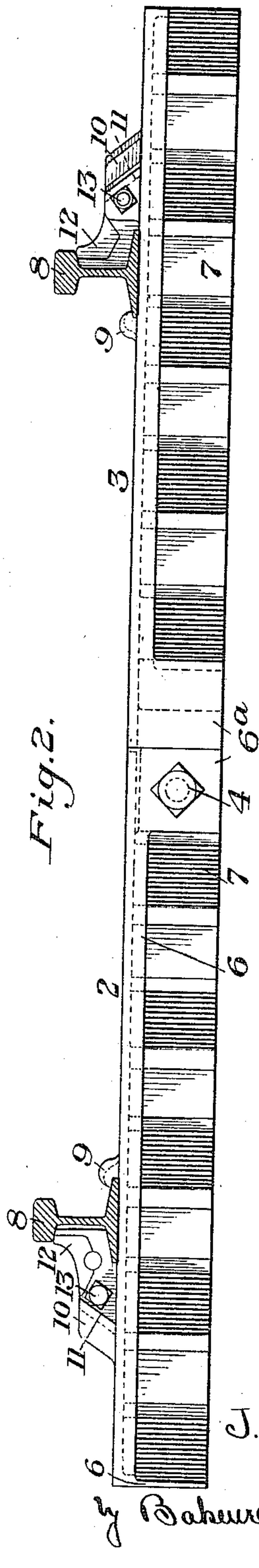
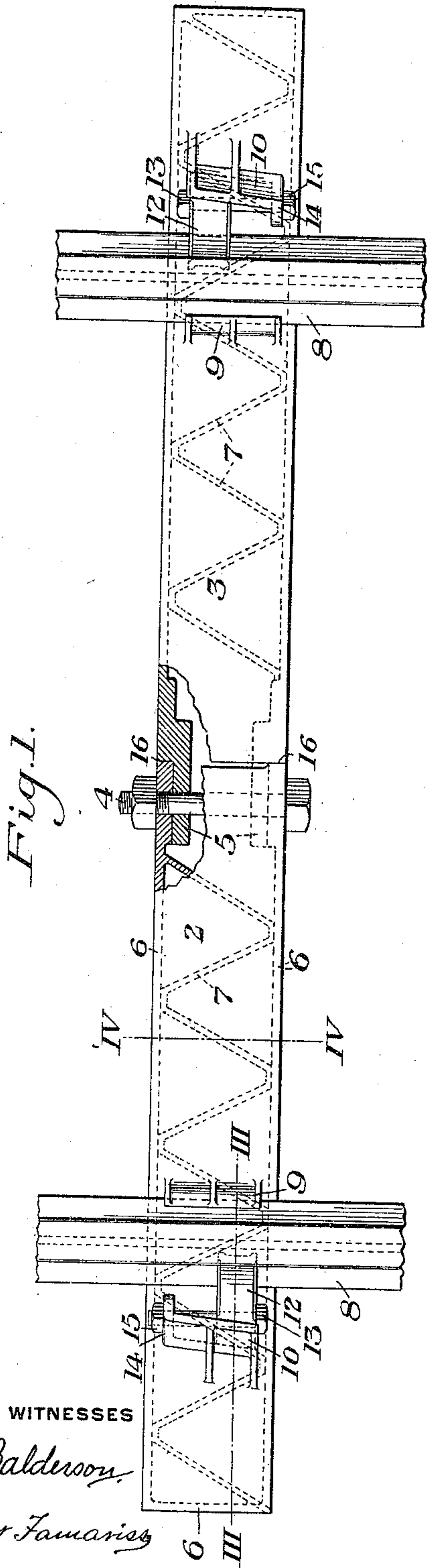


J. W. STEPHENSON.
METAL RAILWAY TIE.
APPLICATION FILED JUNE 7, 1910.

995,385.

Patented June 13, 1911.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 5

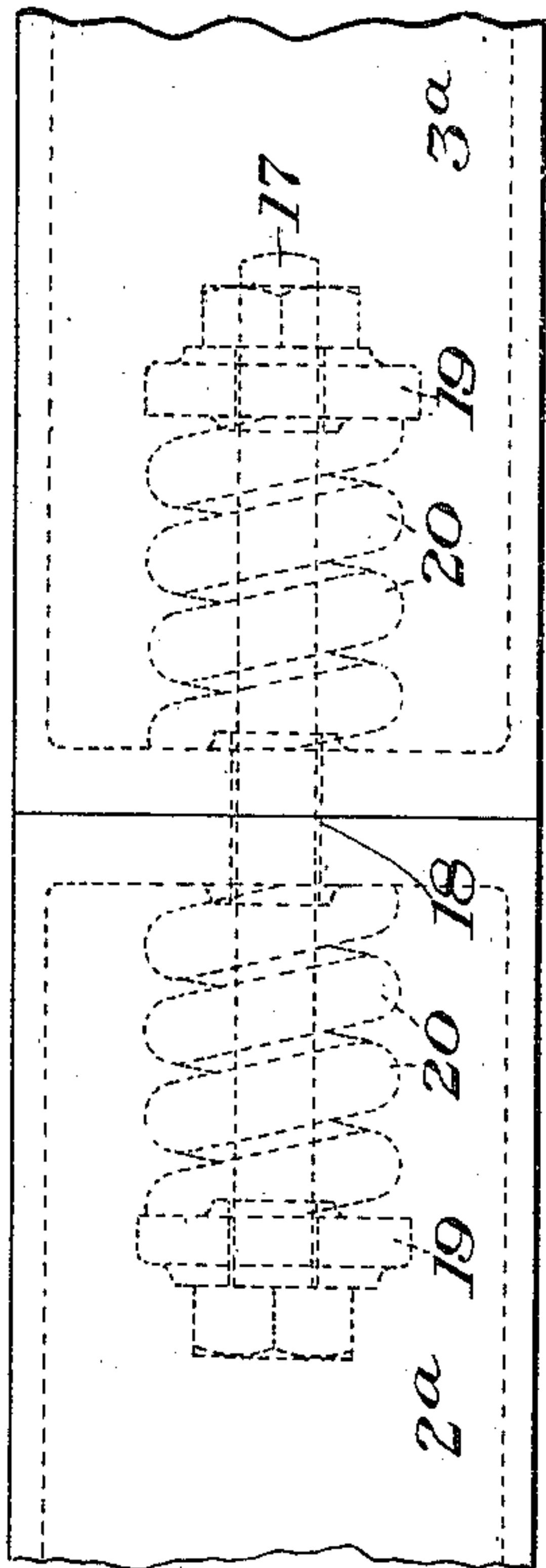
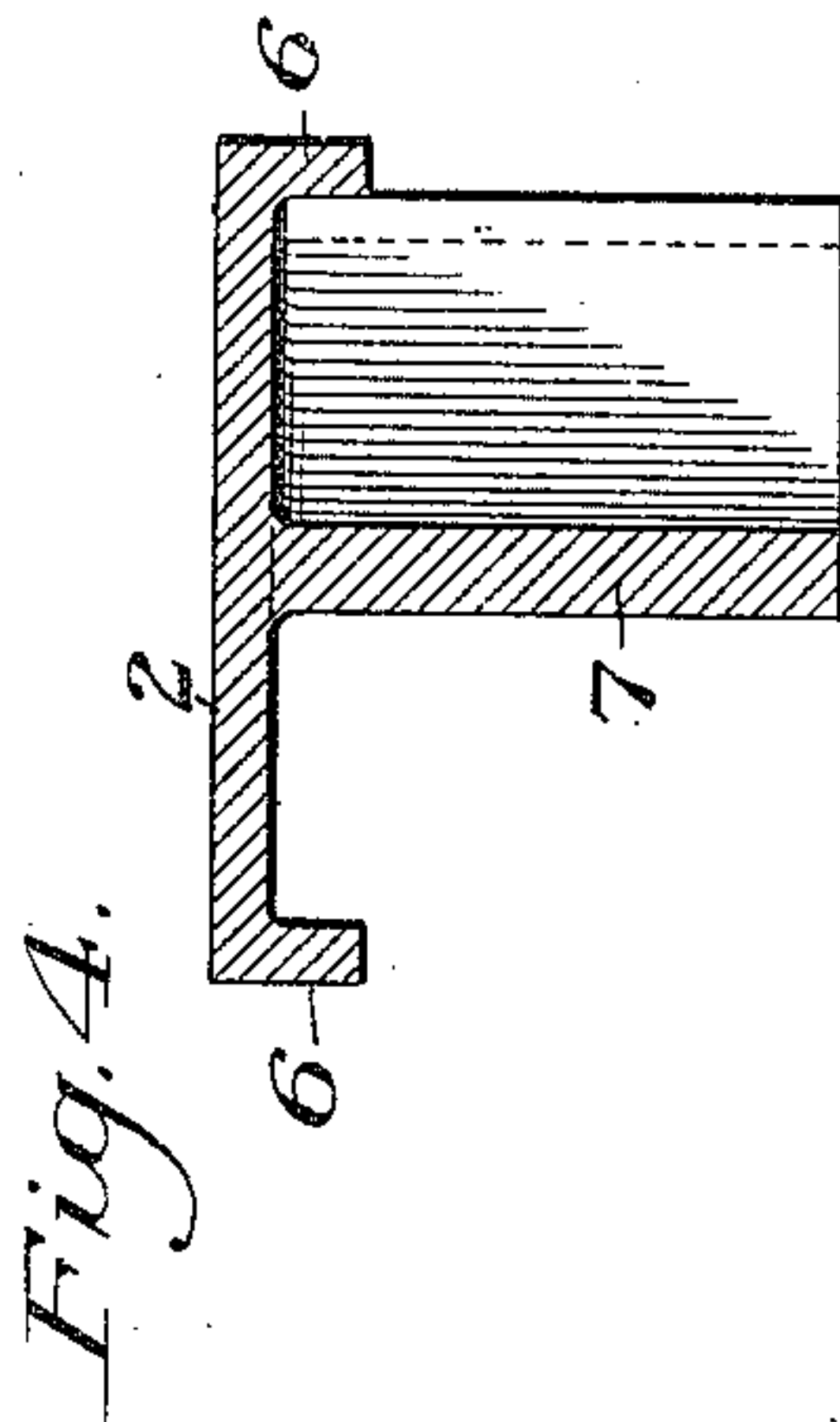
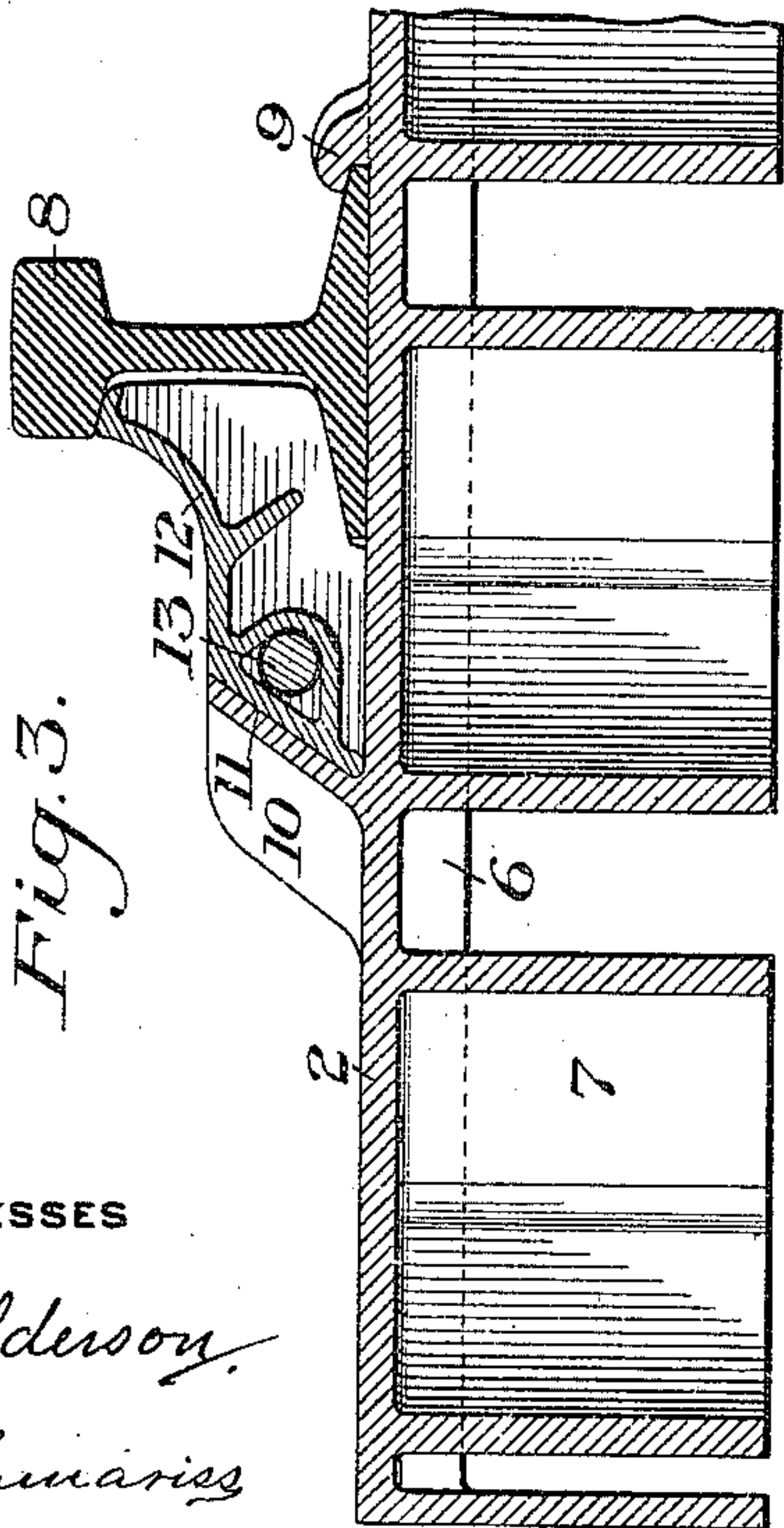
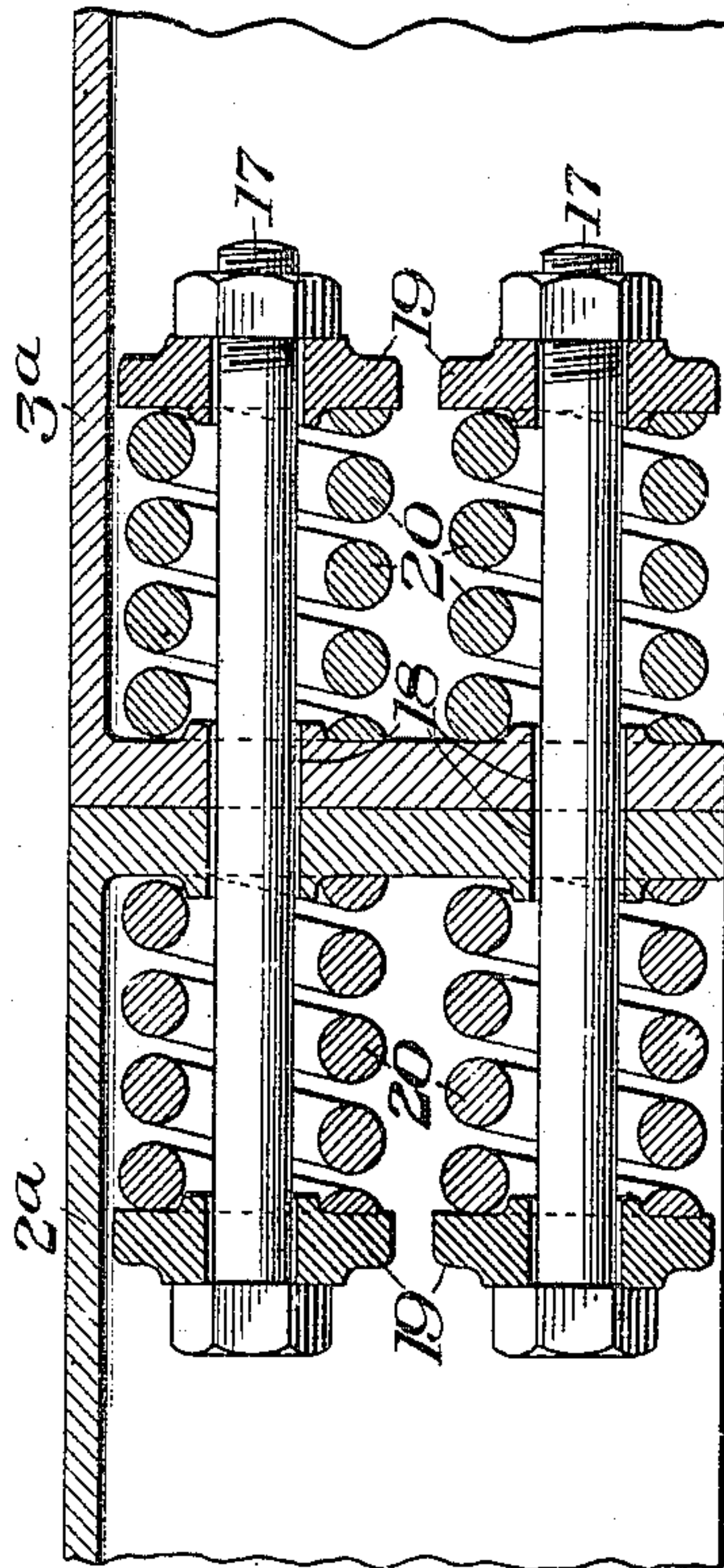


Fig. 6.



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his Attys.

UNITED STATES PATENT OFFICE.

JOHN W. STEPHENSON, OF TOLEDO, OHIO, ASSIGNOR TO THE NATIONAL MALLEABLE CASTINGS COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

METAL RAILWAY-TIE.

995,385.

Specification of Letters Patent. Patented June 13, 1911.

Application filed June 7, 1910. Serial No. 565,605.

To all whom it may concern:

Be it known that I, JOHN W. STEPHENSON, resident of Toledo, Lucas county, Ohio, have invented a new and useful Improvement in Metal Railway-Ties, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view, partly broken away, showing a metal railway tie embodying my invention, and also showing one manner of attaching rails thereto; Fig. 2 is a side view of the same; Fig. 3 is a section on the line III—III of Fig. 1; Fig. 4 is a section on the line IV—IV of Fig. 1; Fig. 5 is a plan view, and Fig. 6 a vertical section of a portion of a tie, and showing a modification.

My invention has relation to metal ties for railways; and is designed to provide a tie of novel character, formed in sections capable of vertical movement relative to each other under the movement of trains, thereby giving the tie an element of resiliency, which is very desirable and which has been lacking in metal ties heretofore.

My invention also provides a metal tie, whether formed in one or more sections, which can be readily seated and tamped in the road-bed or ballast in a manner to effectively prevent movement thereof in any direction.

It also provides means of novel character for securing the rails to the tie.

The nature of my invention will be best understood by reference to the accompanying drawings, which will now be described, it being premised, however, that various changes can be made in details of construction and arrangement of the parts without departing from the spirit and scope of my invention as defined in the appended claims.

Referring first to that form of my invention shown in Figs. 1 to 4, inclusive, the tie is shown as formed in two sections 2 and 3, said sections being arranged end to end and united by a through-bolt 4. In the form shown, each of the sections 2 and 3 consists of an integral casting, which may be of steel, or malleable iron, but the sections may be otherwise formed. The section 3 in the form shown, has at its inner end the extensions 5 which fit within the inner end portion of the section 2, and through which the

bolt 4 extends. Each section preferably consists of a top plate portion having a short depending flange 6 at each edge, and a relatively deep depending web 7, which is of zig-zag form, so as to present alternate openings to the ballast at opposite sides of the tie. The lateral flanges 6 are preferably carried downwardly to the lower edge of the web at the inner end portions of the sections, as illustrated at 6^a in Fig. 2. The rails 8 may be secured to the tie in various ways. In the drawings I have shown each of the tie sections as formed with an integral lip or shoulder 9 to engage the inner base flange of the rail; and have shown at the outer side of each rail a lug 10 having an undercut inner face 11 which is also arranged obliquely so as to form a transverse wedging face. 12 is a rail brace and fastening, which is arranged to fit the base flange and head of the rail and to seat upwardly underneath the head of the rail. The outer end of the brace is beveled to conform to the undercut face 11 of the lug 10, and is also oblique to correspond to the transverse wedging inclination of the face 11 of said lug. In securing the rails, they are first seated with their inner base flanges in engagement with the lugs 9; the braces 12 are then seated and are driven tightly between the inner faces of the lugs 10 and the rails, and are then secured by means of bolts 13. One of these bolts passes through an opening in each brace and extends through a bearing 14 at the end of the lug 10, where it is secured by a nut 15. These bolts and nuts provide means whereby the braces may be secured against working loose after they have once been seated, and also means for taking up any looseness which may subsequently occur. The nuts 15 may be provided with any suitable nut-locking devices.

Inasmuch as the distance between the two lugs 9 is a fixed distance, and in view of the fact that the rails must, of course, be set exactly to gage, before assembling the two sections of each tie, their engaging end faces 16 are cut or milled so as to give such faces an exact fit and to bring the rails to the proper gage. Preferably, these end faces do not contact with each other across the entire width of the top of the tie, but only at the side portions thereof, as shown in Fig. 1.

By forming the ties in two or more sec-

tions, connected by bolts, I provide for a slight pivotal vertical movement of each section of the tie on its connecting bolt, thus giving an element of resiliency to the tie, which has been found to be very desirable and which has not heretofore been present in metal ties without the provision of more or less elaborate and objectionable cushioning means.

In Figs. 5 and 6 I have illustrated a modification, which is intended to provide more positively for resiliency in the tie. In this form the tie sections 2^a and 3^a, instead of being connected by a transverse bolt, as in the form first described, abut at their ends, and are connected by one or more longitudinally extending bolts 17 which pass loosely through apertures 18 in the abutting end portions of the tie sections. Each bolt is provided at each end portion with a spring cap or washer 19, between which and the end portion of the tie section is seated a spiral spring 20. These springs, as will be readily seen, tend to maintain the connection between the tie sections, but permit of a yielding movement of the sections under passing trains.

The zig-zag web 7 of the ties provides means whereby the sections may be readily seated and securely tamped to the road-bed or ballast. This web presents alternate openings at opposite sides of the tie which can be readily tamped to the ballast, and which engage the ballast in a manner to prevent movement of the tie either endwise or in the direction of the rails.

Besides providing the feature of resiliency above described, by forming the ties in two or more sections, I am able to cast them more readily than if made in one continuous length. As above stated, however, I do not limit myself to ties of this character formed from castings, since they may be otherwise made. The feature of the zig-zag web is also of advantage in connection with ties which are formed in one continuous piece throughout their length.

Instead of forming the tie in two sections, it may be formed in three sections as described and claimed in my application Serial No. 565,609.

What I claim is:—

1. A metal railway tie having a single de-

pending zig-zag web open at the bottom; substantially as described. 55

2. A metal railway tie comprising a top plate, depending relatively shallow edge flanges, and a relatively deep zig-zag web; substantially as described.

3. A metal railway tie having a depending zig-zag web extending obliquely across the major portion of the width of the tie, said web being open at the bottom and presenting openings alternately at opposite sides of the tie; substantially as described. 65

4. A metal railway tie having a single, depending zig-zag web open at the bottom, said web extending obliquely in opposite directions across the major portion of the width of the tie; substantially as described. 70

5. A metal railway tie formed in sections placed end to end, and connected to permit independent vertical movement thereof, each of said sections having a single, depending web extending in a zig-zag course across the major portion of the width of the tie; substantially as described. 75

6. A metal railway tie formed in sections placed end to end, and means for connecting said sections to permit of independent vertical movement thereof, each of said sections having relatively shallow edge flanges, and a relatively deep zig-zag web; substantially as described. 80

7. A metal railway tie comprising sections placed end to end and having a connecting bolt, and spring means associated with said bolt and arranged to be compressed by pivotal movement of the sections; substantially as described. 90

8. A metal railway tie comprising sections placed end to end, and means for connecting said sections to permit of independent vertical movement thereof, said sections having a top portion, depending relatively shallow edge flanges of increased vertical depth adjacent to the inner ends of the sections, and a relatively deep zig-zag web; substantially as described. 95

In testimony whereof, I have hereunto set my hand. 100

JOHN W. STEPHENSON.

Witnesses:

JOHN J. WARRING,
MARK KUEHN.