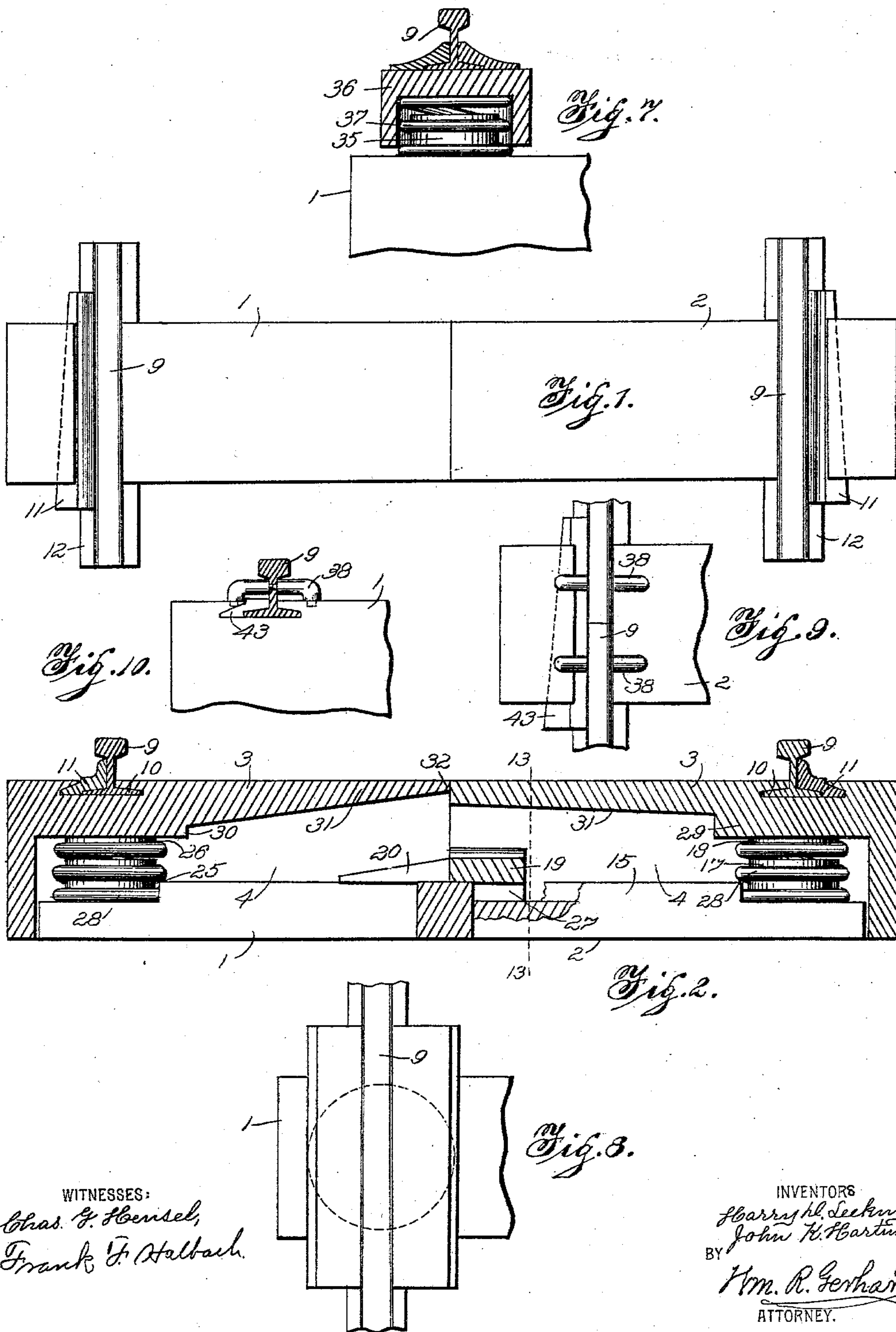


PATENTED MAR. 1, 1904.

# RAILWAY CROSS TIE.

NO MODEL.

3 SHEETS--SHEET 1.



No. 753,502.

PATENTED MAR. 1, 1904.

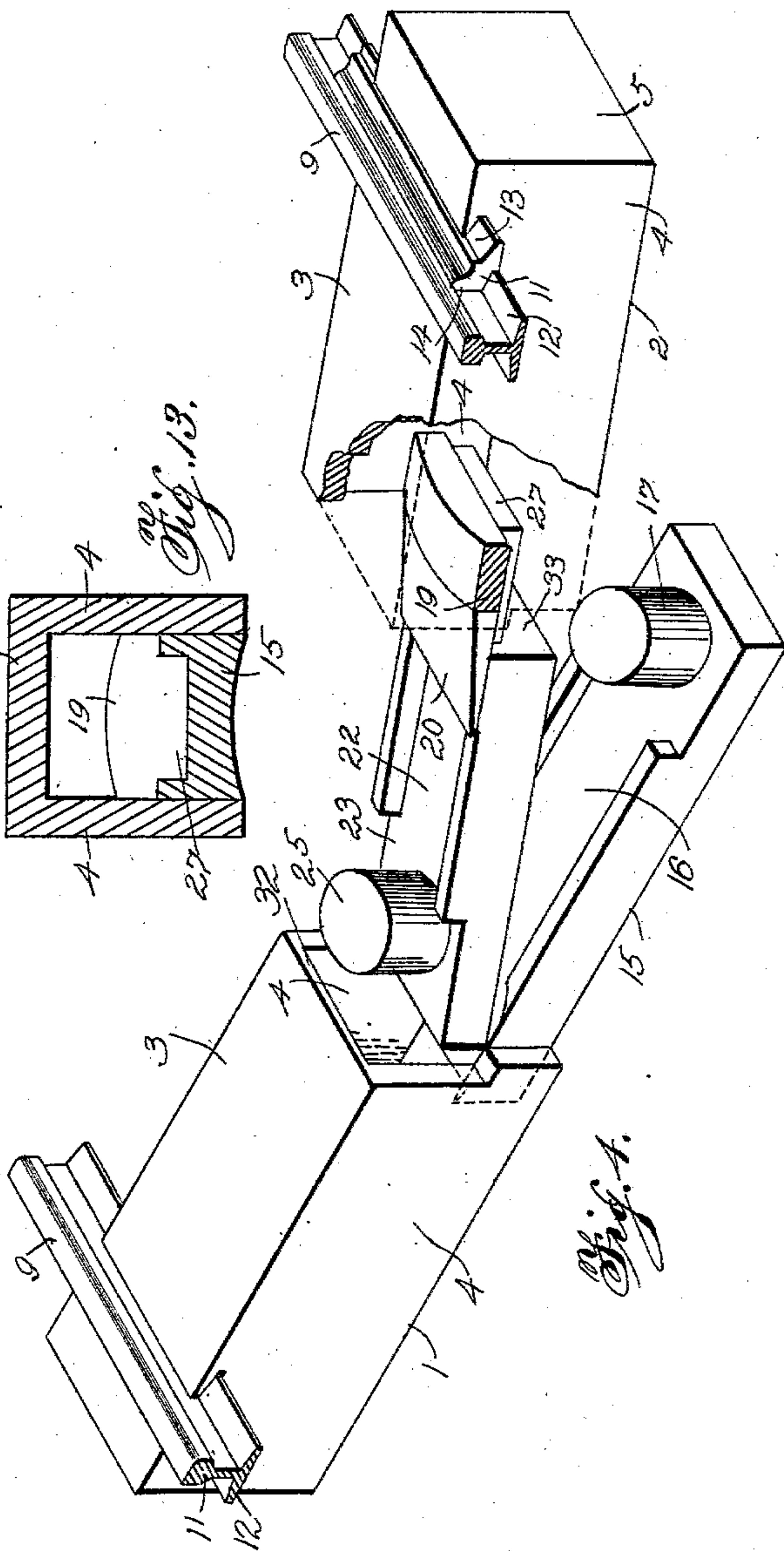
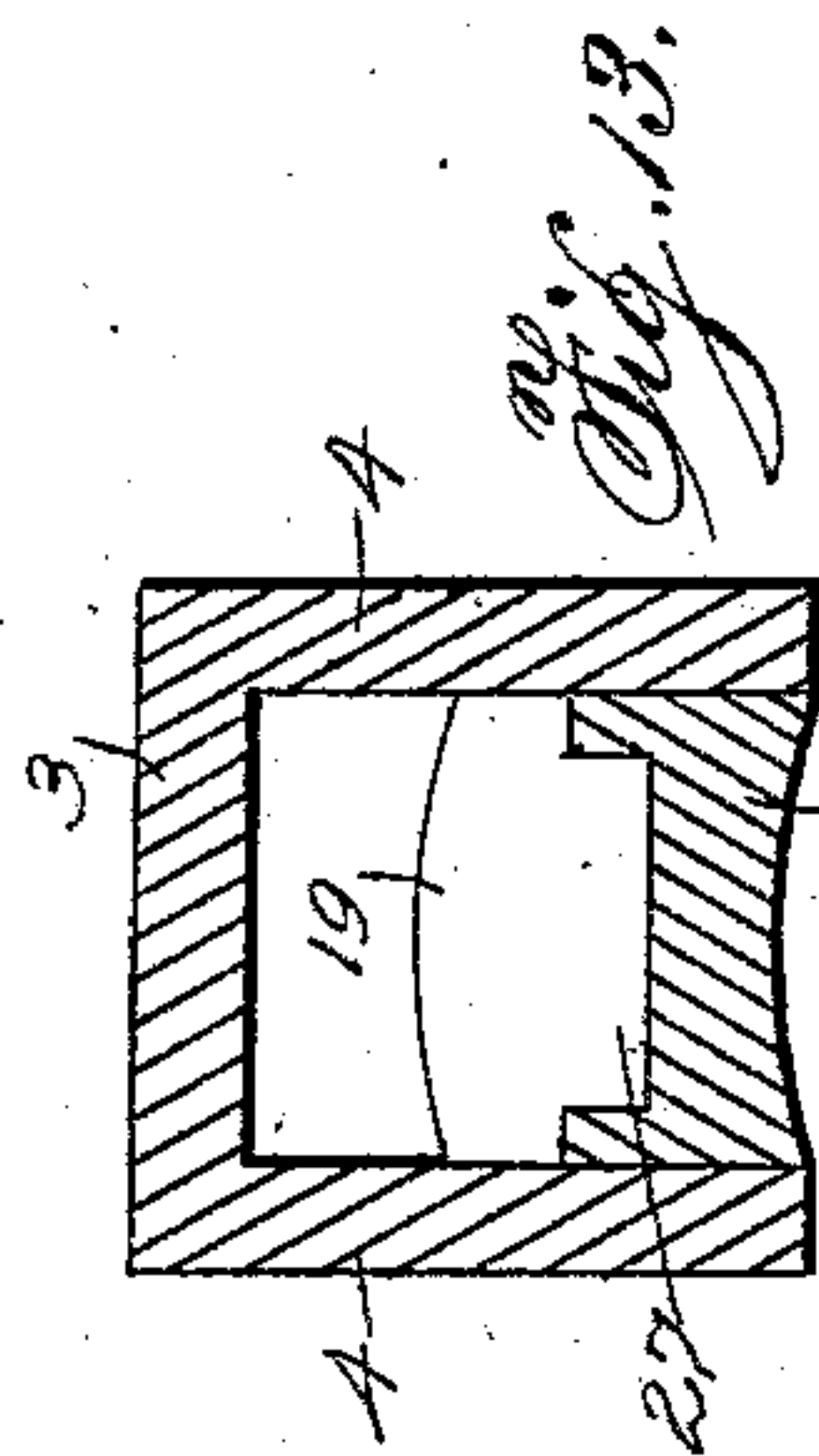
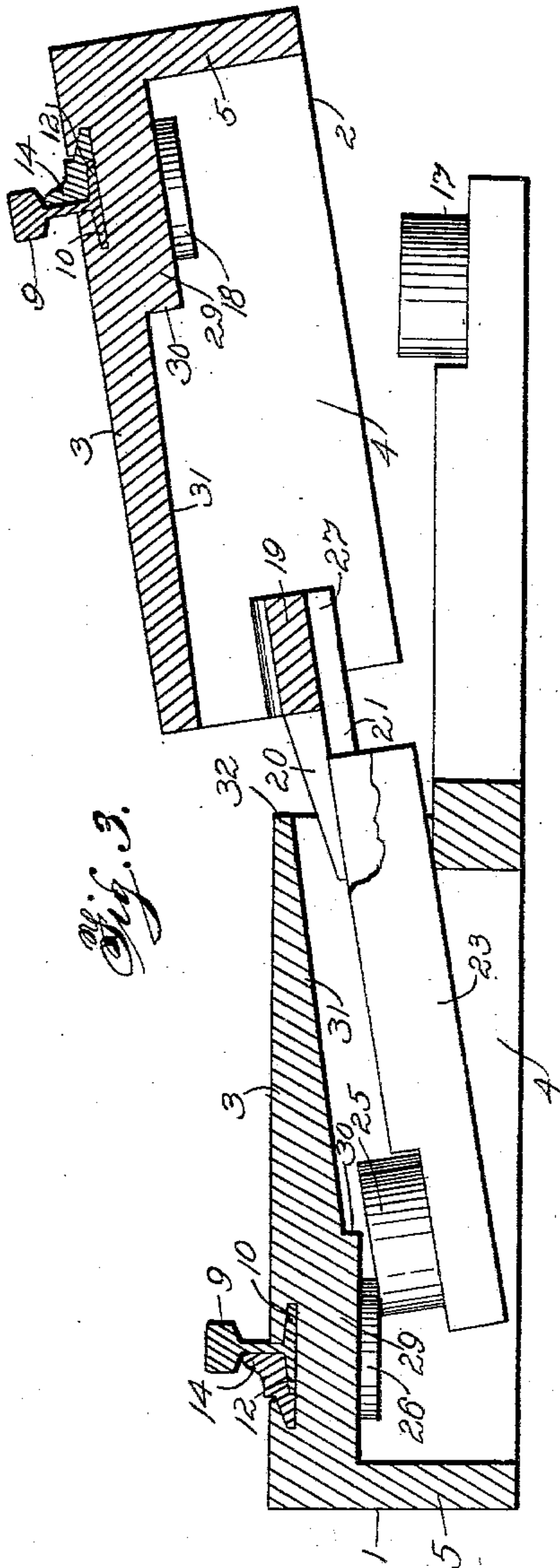
H. D. LEEKING & J. K. HARTMAN.

RAILWAY CROSS TIE.

APPLICATION FILED NOV. 25, 1902.

NO MODEL.

3 SHEETS—SHEET 2.



WITNESSES:

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Frank E. Wallach

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No. 753,502.

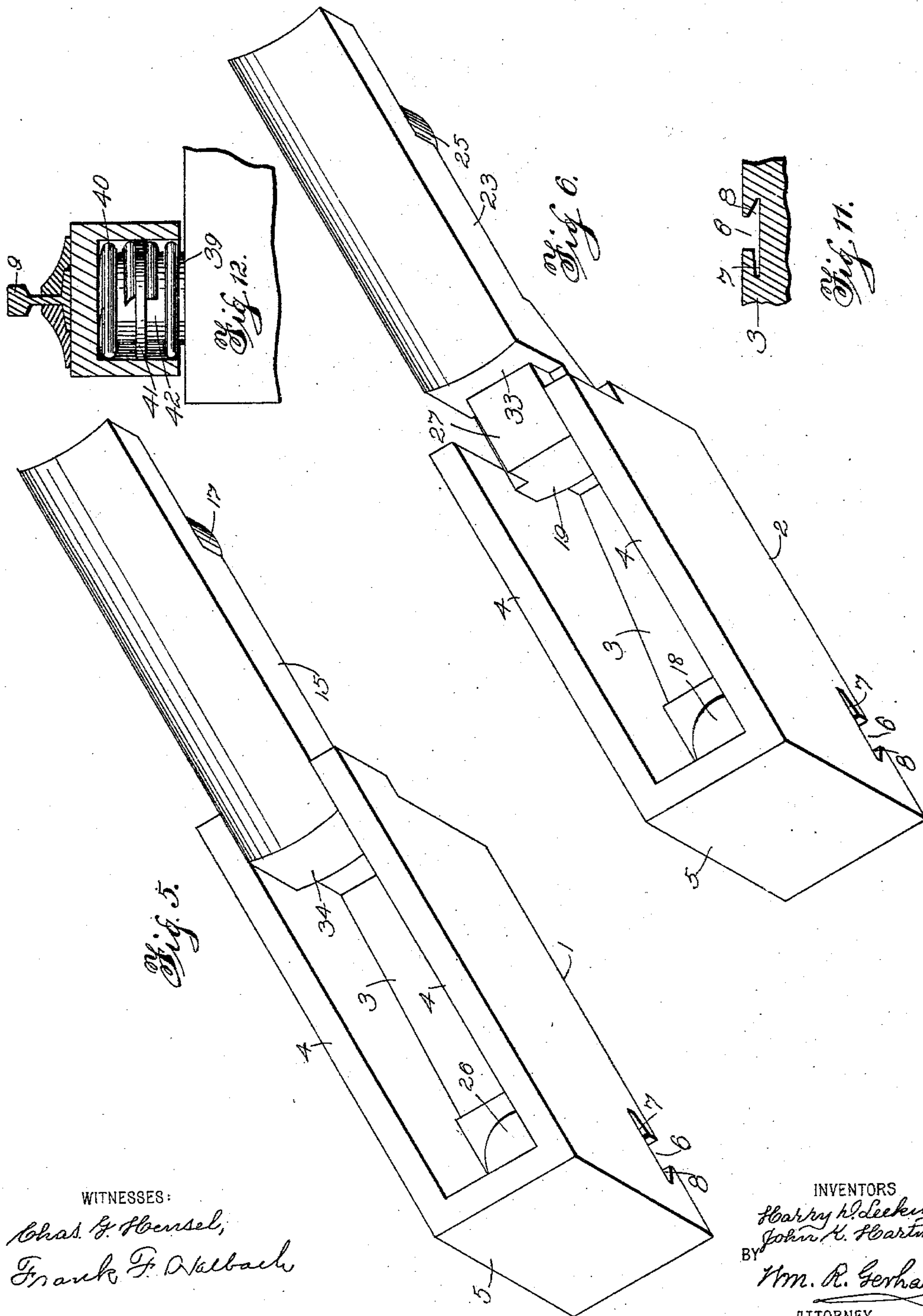
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3 SHEETS—SHEET 3.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

HARRY D. LEEKING AND JOHN K. HARTMAN, OF LANCASTER,  
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## RAILWAY CROSS-TIE.

SPECIFICATION forming part of Letters Patent No. 753,502, dated March 1, 1904.

Application filed November 25, 1902. Serial No. 132,718. (No model.)

*To all whom it may concern:*

Be it known that we, HARRY D. LEEKING and JOHN K. HARTMAN, citizens of the United States, and residents of Lancaster, in the county of Lancaster and State of Pennsylvania, (whose post-office address is Lancaster,) have invented certain Improvements in Railway Cross-Ties, of which the following is a specification.

This invention relates to improvements in metallic railway-ties; and the objects of the improvements are, first, to produce a sectional tie whereby either end may more or less yield or give independently of the other, and, second, to so construct the tie that it will afford a yielding support for the rail independently of the solidity of the bed upon which it rests.

The invention consists in the construction and combination of the various parts, as hereinafter fully described and then pointed out in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 is a top plan view of a tie embodying our invention; Fig. 2, a longitudinal section thereof, the parts being in their normal positions; Fig. 3, a similar section, but showing the sections of the tie in the positions occupied thereby as they are about being united or separated; Fig. 4, a top perspective view, the sections being shown in a position similar to that illustrated in Fig. 3, the separation being somewhat greater; Fig. 5, a bottom perspective view of box end section 1, and Fig. 6 a similar view of box end section 2. Fig. 7 is a section of a modified construction of one of the yielding supports, and Fig. 8 a top view of the same. Fig. 9 is a top view of a modified construction of the rail-fasteners, and Fig. 10 a side view of one of said fasteners. Fig. 11 is an end view of one of the rail-seats, and Fig. 12 a side elevation of a modified construction of one of the springs.

Similar numerals indicate like parts throughout the several views.

Referring to the details of the drawings, it will be observed that the tie is divided into two sections. Each section has a box-like outer end open at the bottom and at its inner end, and when these inner ends are joined together

or are made to meet each other, as shown in Figs. 1 and 2, the top, ends, and sides of the tie are formed by the united box ends. 1 and 2 respectively indicate said box ends, each of which comprises a top plate 3, side walls 4, and end walls 5. On each box end is a rail-seat formed by a transverse groove 6, having longitudinally-disposed recesses 7 and 8, respectively, in the opposite walls thereof. The rail 9 is set on or in this seat and then shoved sidewise until one of the flanges 10 of the base engages recess 7, after which a tapered key 11 is pushed through said groove on the opposite side of the rail. The key embraces the flange 12 of the rail, and it comprises a flange 13, that engages recess 8 of groove 6, and a lip 14, that laps flange 12 and bears against the web of the rail.

From the lower part of the inner end of box end 1 a bearing 15, having a channel 16, extends into and to the end wall of box end 2, and on the free end of bearing 15 is a cylindrical stud 17, that is located immediately below a corresponding stud 18 on the under side of the top plate of box end 2.

Above the bottom of the open end of box end 2 is a cross-bar 19, from which there projects a tongue 20, formed on the bottom whereof is a plate 21, that engages in the channel 22 of the bearing 23, wherethrough box end 2 and bearing 23 are united. Plate 21 is of such thickness that when the box ends are united they lie in the same horizontal plane, the bearing of each box end extending into and to the end wall of the other box end. On the free end of bearing 23 is a cylindrical stud 25, located immediately below a corresponding stud 26 on the under side of the top plate of box end 1, being the counterpart of the stud on bearing 15 and that on the under side of the top plate of box end 2. The outer end 27 of plate 21 extends back of tongue 20 and engages channel 16 of bearing 15, aiding in maintaining the rigidity of the two sections.

28 indicates bearing-springs coiled around the cylindrical studs 17 and 18 and 25 and 26, respectively. The lower ends of these springs



rest on the bearings 15 and 23, and the upper ends engage the reinforce 29 at the ends of top plates 3, the reinforce in each plate lying beneath the rail-seat of that plate. Each reinforce is separated from the inner portion of its top plate by a shoulder 30, and from said shoulders the under sides of the top plates taper upward toward the outer ends of the same, as seen at 31. The taper of the top plate of box end 1 is greater than that of box end 2, and the meeting edge 32 of that plate of box end 1 is consequently thinner than that of the top plate of box end 2, which facilitates the joining and the separating of the sections, as will be described.

In connecting the sections, box end 2, with its bearing 23, is placed in the position with reference to box end 1 and its bearing 15. (Shown in Fig. 4.) Bearing 23 is then moved into box end 1, as seen in Fig. 3, which movement is continued until the parts are completely united, as illustrated in Figs. 1 and 2, in which position the outer end 27 of plate 21, engaging channel 16 of bearing 15, shoulder 33, formed by the inner end of bearing 23, engages the shoulder 34, formed by the inner end of bearing 15, and the other parts occupy the relative positions shown in Fig. 2.

In Figs. 7 and 8 is illustrated a modified construction of one of the yielding supports, wherein the stud 35 is placed on top of the tie-section, and the rail-seat is on a cap 36, that fits over said stud, the spring 37 embracing the stud and resting on the top of the tie-section and bearing against the top of the cap, all as seen in Fig. 7.

Figs. 9 and 10 show a modification in the construction of the rail-fastener, in which horizontally-disposed sockets are formed in the web of the rail and vertically-disposed sockets in the top of the tie, and an elbow-shaped fastener 38, having studs on its ends that engage said sockets, is located on each side of the rail.

In Fig. 12 is seen a modification in the construction of a spring forming one of the yielding supports. In this case there are two springs, one, 39, being placed below and the other, 40, above an annular plate 41, that encircles the stud 42.

We do not confine ourselves to the details of construction herein shown and described, as it is obvious that many alterations may be made therein without departing from the principle and scope of our invention.

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

1. In combination, a sectional cross-tie, and box ends having interlocking bearings, for the purpose specified.

2. In combination, a sectional cross-tie, and box ends having bearings separably interlocking, for the purpose specified.

3. In combination, a sectional cross-tie, and box ends having interlocking bearings, the bearing of each of said box ends projecting into the other box end.

4. The combination, in a sectional cross-tie, of box ends, each of said ends having a bearing projecting into the other box end, and interlocking shoulders on said bearings.

5. The combination, in a sectional cross-tie, of box ends opening the one toward the other, bearings projecting from each of said open ends and into the other open end, and interlocking shoulders on said bearings, for the purpose specified.

6. The combination, in a sectional cross-tie, of box ends opening the one toward the other, bearings projecting from each of said open box ends and into the other open box end, the bearing of one of the box ends having a channel therein, a tongue projecting from the other box end and connecting said other box end and the bearing thereof and engaging the channel in said bearing of the first-mentioned box end, and interlocking shoulders on said bearings, for the purpose specified.

7. The combination, in a sectional cross-tie, of box ends opening the one toward the other, a bearing projecting from each of said open box ends and into the other open box end, the bearing of one of the box ends having a channel therein, a tongue projecting from the other box end and connecting said other box end and the bearing thereof and having a backward extension engaging the channel in said bearing of the first-mentioned box end, and interlocking shoulders on the bearings and located beneath said tongue, for the purpose specified.

8. The combination, in a sectional cross-tie, of box ends opening the one toward the other, and a bearing on each of the box ends and projecting into the other box end and to the end wall thereof, for the purpose specified.

9. The combination, in a sectional cross-tie, of box ends opening the one toward the other, a bearing on each of the box ends and projecting into the other box end and to the end wall thereof, a bearing of one of the box ends having a channel therein, a tongue projecting from the other box end and connecting said other box end and the bearing thereof and having a backward extension engaging the channel in said bearing of the first-mentioned box end, and interlocking shoulders on the bearings and located beneath said tongue, for the purpose specified.

10. The combination, in a cross tie divided transversely into sections, of box ends, rail-seats on the box ends, a bearing on each of said box ends and projecting into the other box end and to and beneath the rail-seat thereon, and springs beneath the rail-seats and on said bearings and supporting the top plates of the box ends.



11. The combination, in a cross-tie divided  
transversely into sections, of box ends, rail-  
seats on the box ends, studs beneath the rail-  
seats and on the under sides of the top plates  
5 of the box ends, a bearing on each of said box  
ends and projecting into the other box end,  
studs on said bearings and located beneath

the studs on said top plates, and springs coiled  
around said studs, for the purpose specified.

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JOHN K. HARTMAN.

Witnesses:

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