

W. W. MECHLING & J. E. SMITH.  
METAL RAILROAD TIE.  
APPLICATION FILED NOV. 17, 1908.

928,467.

Patented July 20, 1909.

Fig. 1.

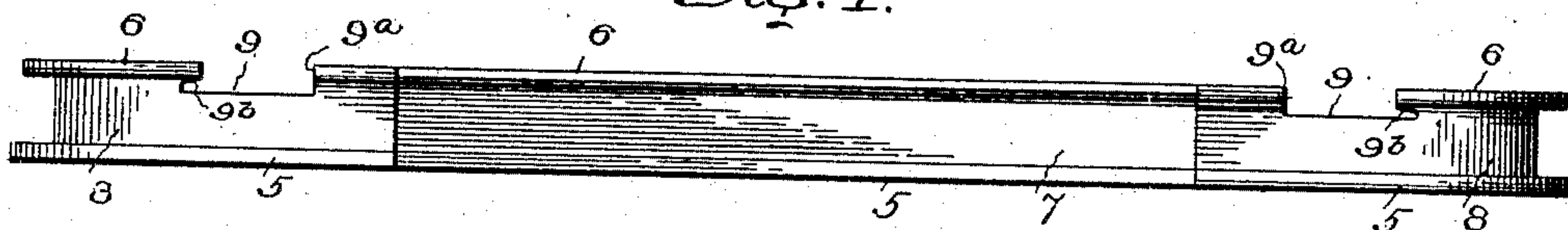


Fig. 2.

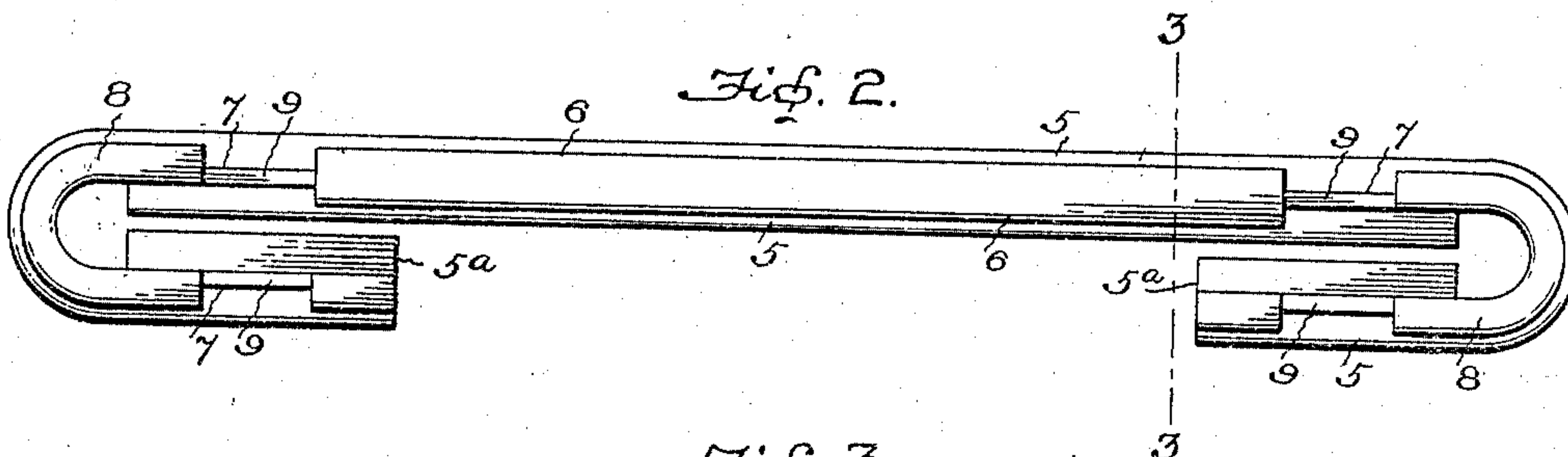


Fig. 3.

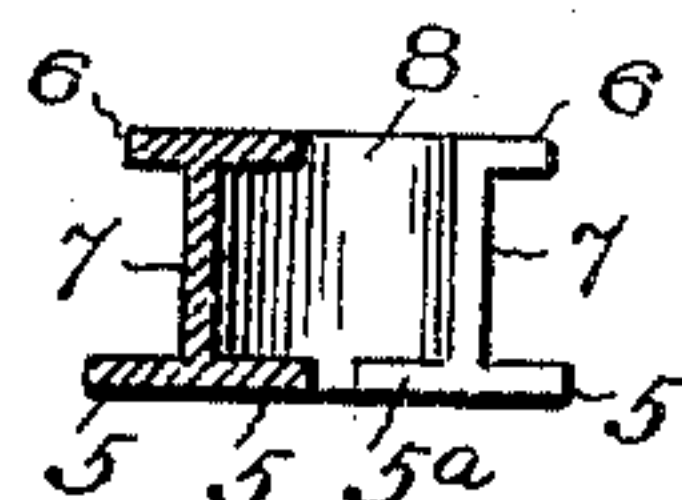


Fig. 4.

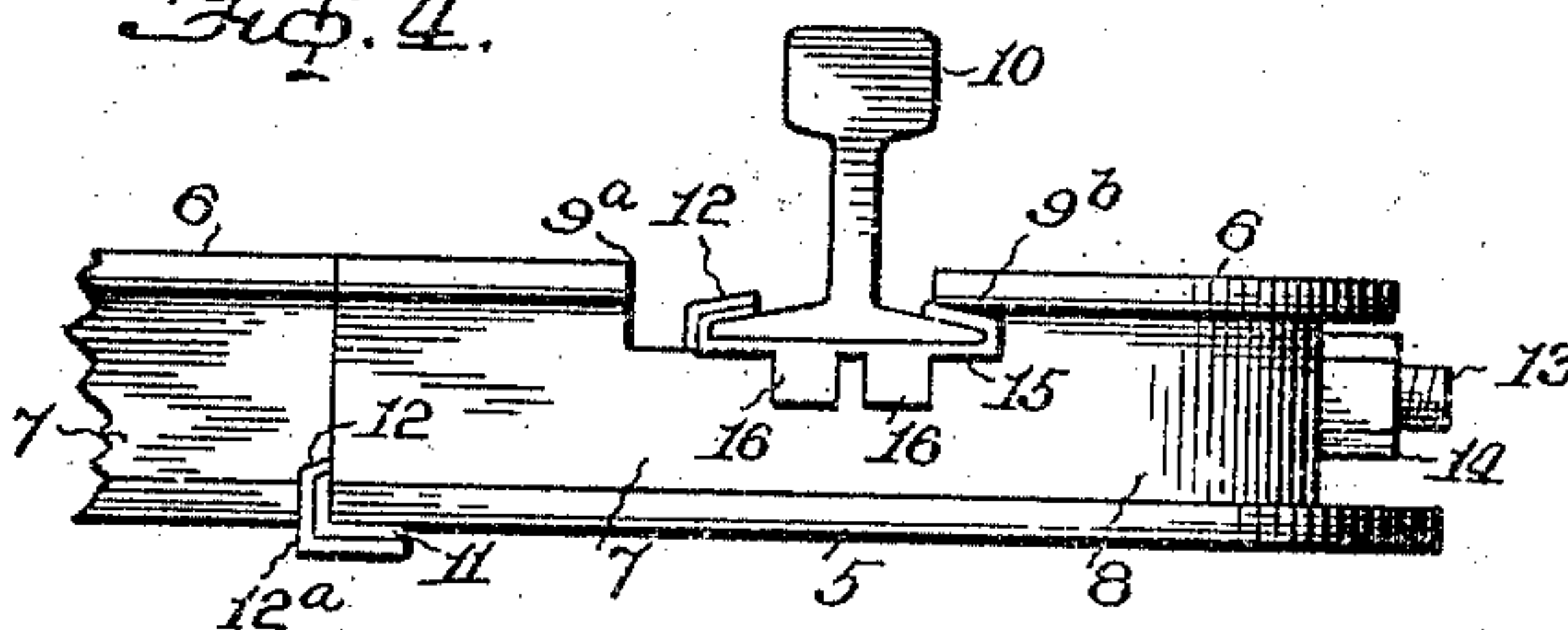


Fig. 5.

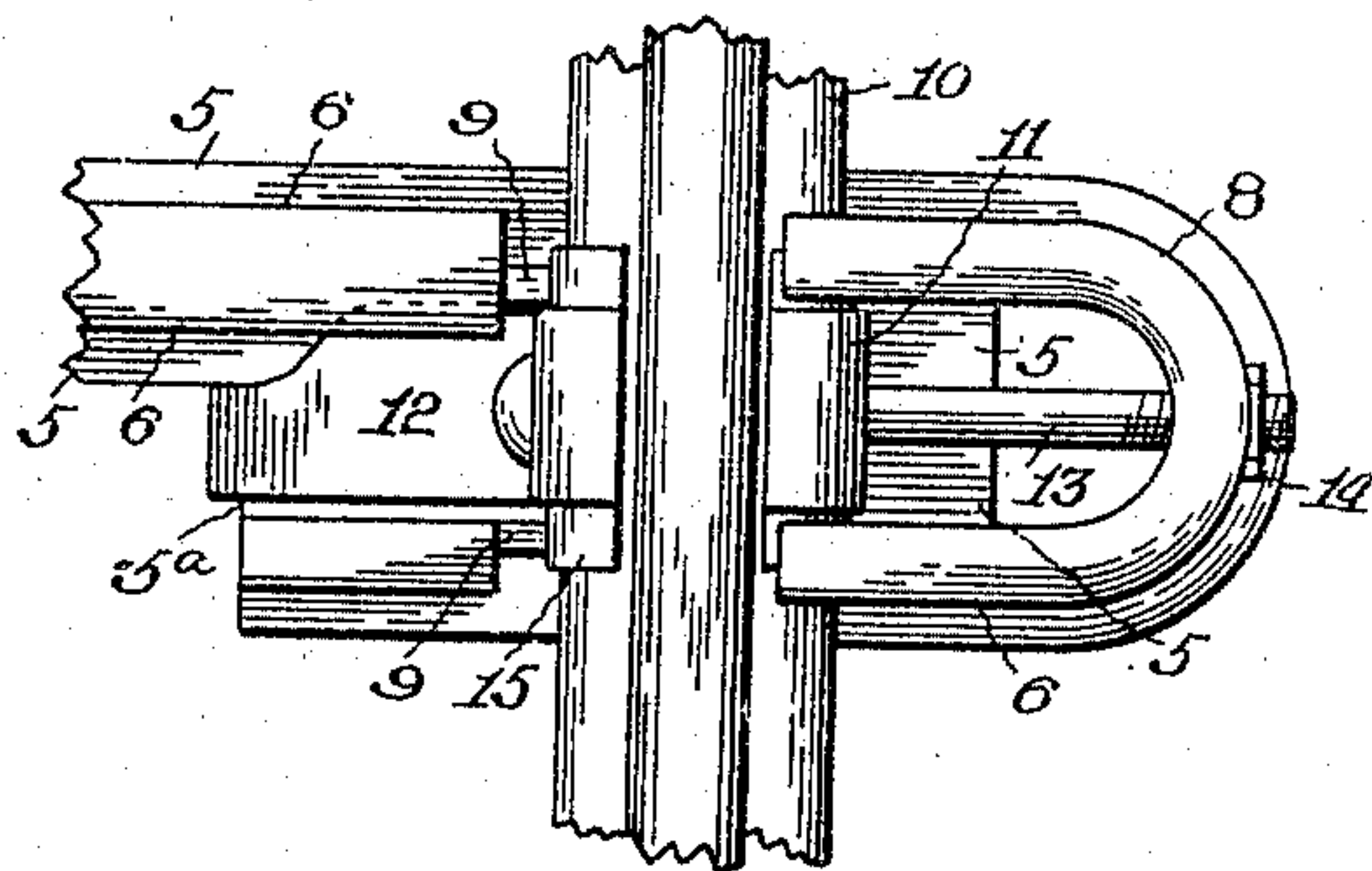
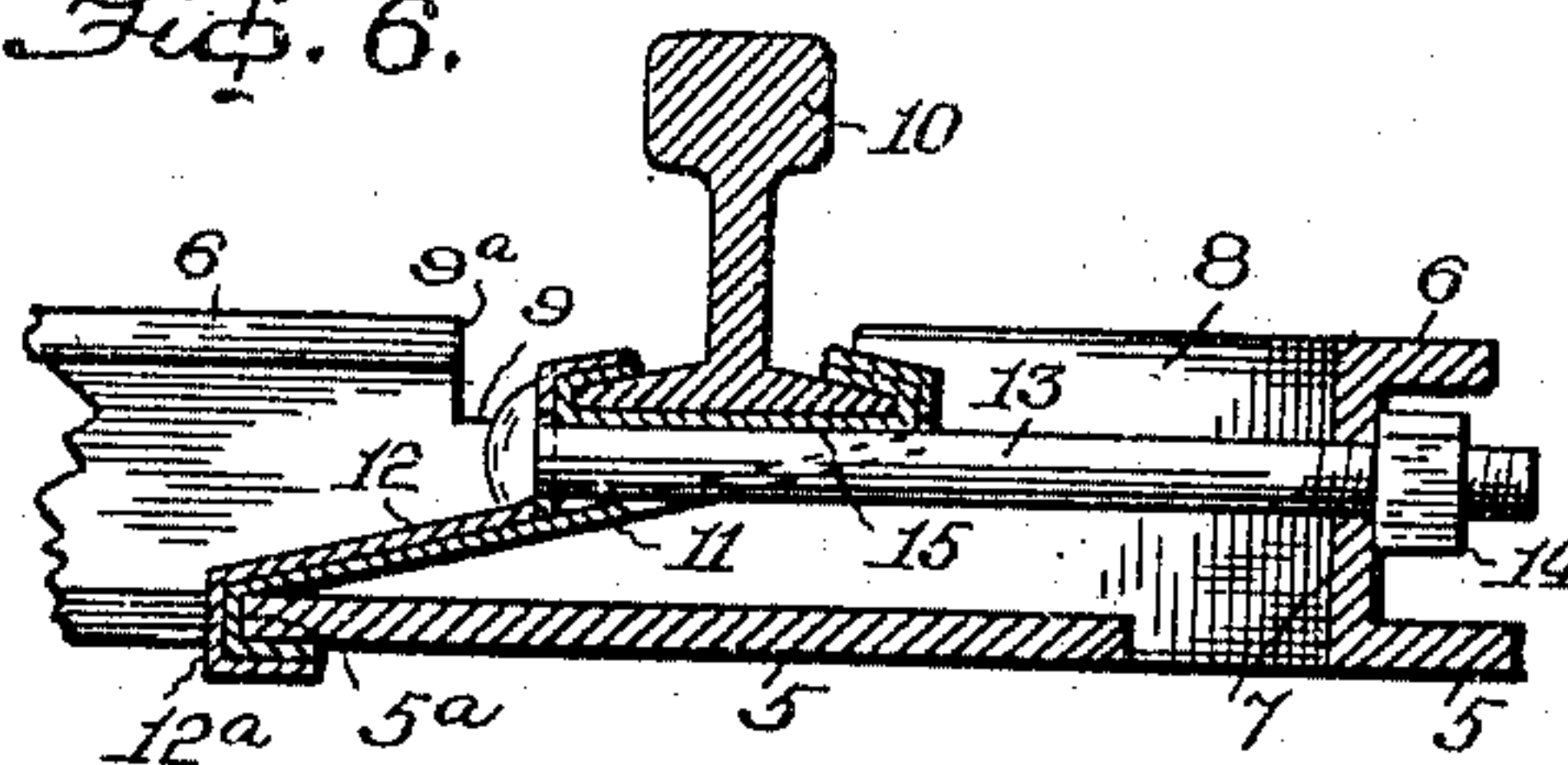


Fig. 6.



Witnesses:-

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# UNITED STATES PATENT OFFICE.

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## METAL RAILROAD-TIE.

No. 928,467.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed November 17, 1908. Serial No. 462,994.

*To all whom it may concern:*

Be it known that we, WILLIAM W. MECHLING and JACOB E. SMITH, citizens of the United States, residing at Munhall and Homestead, respectively, in the county of Allegheny and State of Pennsylvania, have invented a Metal Railroad-Tie, of which the following is a specification.

Our invention is an improvement in railroad ties, and relates more especially to the class of metal railroad ties which are adapted to take the place of the ordinary wooden ties.

The principal objects of our present invention are to provide a metal railroad tie, including rail securing means therefor, of light construction, and possessing strength and durability, whereby the same may supplant the ordinary wooden tie and support the rails in a more effective manner.

With these principal objects in view our invention consists in the combination with a metal tie having loops at its ends with depressions at the upper edges of the loops to receive the rails, of devices for securing the rails in said depressions; all as hereinafter particularly described and specifically set forth in the claims.

In the accompanying drawings, which form a part of this specification: Figure 1 is a side elevation of the metal tie which we employ in carrying out our present invention. Fig. 2 is a plan view thereof. Fig. 3 is a sectional view through the metal tie, on the line 3—3 of Fig. 2. Fig. 4 is a side view of one end of the tie, showing the application of the rail securing means. Fig. 5 is a plan view of the construction embodied in Fig. 4. Fig. 6 is a longitudinal vertical sectional view through the rail securing means and tie.

Like numerals of reference indicate like parts in all the figures of the drawings.

In carrying out our invention we employ a metal tie which in the present instance is made up of an I-beam disposed with the wide lateral flanges 5 lowermost to form the base portion of the tie, while the narrower lateral flanges 6 at the upper side of the vertical wall 7 serve to increase the strength and stability of the tie in use. This I-beam is bent upon itself at its ends to provide loops 8, which increase the bearing capacity of the tie in the roadbed, and also provide

for the support of the rails. For the purpose of forming these loops the flanges 5 and 6 at the inner side of the connecting portion of each loop are cut away, as shown in the drawings, the upper flange, 6, being cut away to a greater distance from said connecting portion than the lower flange 5 to give more space for the fastening devices hereinafter described.

The upper part of the members of each loop 8 of the metal tie are recessed to provide rail-seats 9, each having a straight vertical wall 9<sup>a</sup> at the inner end and an inclined wall 9<sup>b</sup> at the outer end, the latter forming a jaw which is adapted to overlies the base flange of the railroad rail, as 10, when the said rail is seated within the recess or seat. As will be noted, the end of the inner base-flange of the free member of the loop 8 of the metal tie forms a shoulder, as 5<sup>a</sup>, and with this shoulder is adapted to engage certain parts of the rail securing device which we shall now describe.

11 designates a plate which is bent at one end, in the form of a hook to engage the shoulder 5<sup>a</sup>, and at its other end is also bent in the form of a hook to pass over the outer edge of the base-flange of the rail 10; and 12 designates a companion plate which overlies the aforesaid plate and is bent at one end, as at 12<sup>a</sup>, to engage the similarly bent end of the plate 11, and at its other end is bent upwardly and forwardly to overlies or engage the inner edge of the base-flange of the rail 10, as shown clearly in Fig. 6 of the drawings. As will be seen by reference to Fig. 5 both plates are reduced in width at one end so as to engage the shoulder 5<sup>a</sup> and escape the adjoining base-flange 5 of the tie. For the purpose of fastening these plates, and particularly to clamp the rail securely in the rail-seats of the metal tie, we provide a bolt 13, which passes through openings therefor in the plates immediately below the rail and through an opening in the outer end of the loop of the tie, and has threaded thereon a binding nut 14, the head of the bolt in the present instance bearing against the plate 12, while the nut bears against the outer end of the tie. By this arrangement the rail is securely fastened to the tie by a peculiar form of clamping means which will effectually withstand the lateral strain or pressure which may come upon the rail, inasmuch as



the fastening plates are braced against movement in one direction—toward the end of the tie—by means of the flange or shoulder 5<sup>a</sup>, and against movement in the other direction by means of the clamping-bolt, the latter also serving to tightly clamp the rail between the inner bent ends of said plates.

In the present instance we use in connection with the rail fastening means described a bearing-plate 15, which extends across the loop of the tie from one vertical wall to the other, being seated at its ends in the recesses or rail-seats 9, and beyond the latter formed with downwardly projecting lips 16 adapted to bear against the opposite sides of the tie. When this bearing-plate is employed the bent inner ends of the fastening plates 11 and 12 overlie the opposite inturned edges of the same. In some instances, also, insulating material, as a sheet of fiber, may be interposed between the bearing-plate 15 and the rail 10, for the purpose of insulating the latter from the metal tie and metal fastening devices.

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

1. In combination with a metal railroad tie and rail supported thereon, the tie having a shoulder beyond the inner side of the rail, of plates bent at one end to engage the shoulder and bent at the other end to engage the rail, and a bolt for clamping the plates upon the rail and to the tie, substantially as shown and described.

2. In combination with a railroad tie and rail supported thereon, the tie having a shoulder beyond the inner side of the rail, of a pair of plates bent at one end to engage the shoulder and bent at the other end to engage the opposite edges of the rail, respectively, and a bolt clamping the plates upon the rail and to the tie, substantially as shown and described.

3. In combination with a metal railroad tie having loops at its ends each provided at its inner portion with an inwardly-projecting flange forming a shoulder, of a rail securing device comprising plates bent at one end to engage the aforesaid shoulder and bent at the other end to engage the rail at opposite sides thereof, respectively, and a bolt passing through the plates beneath the rail

for clamping said plates upon the rail and to the tie.

4. In combination with a metal railroad tie having loops at its ends each provided with an inwardly projecting flange forming a shoulder and with depressions or rail-seats at their upper edges, of a rail securing device comprising companion plates bent at one end to engage the shoulder and bent at the other end to engage the opposite edges of the rail, respectively, and a bolt clamping the plates upon the rail and to the tie, said bolt passing through the plates below the rail and through the outer end of the loop of the tie, substantially as shown and described.

5. In combination with a metal railroad tie formed from an I-beam bent at its ends to form loops the upper edges of which are provided with recesses to receive the rails and with jaws to engage the outer edges of said rails, of fastening devices for the rails comprising plates bent at one end to engage a flange of the loop of the metal tie and at the other end bent to engage the opposite edges of the rail, respectively, and a bolt clamping the plates upon the rail and to the tie, said bolt passing through the plates below the rail and through the outer end of the loop of the tie.

6. In combination with a metal tie formed from an I-beam bent upon itself at its ends to form loops having an engaging shoulder and recesses or rail-seats provided with jaws at their outer ends, of a rail securing device comprising a bearing-plate extending across the loop into the recesses and bent downwardly at its end against the sides of the tie, companion plates bent at one end to engage the aforesaid shoulder and at the other end to engage the opposite edges of the rail, respectively, and a bolt clamping the plates upon the rail and to the tie, substantially as shown and described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM W. MECHLING.  
JACOB E. SMITH.

Witnesses:

JOHN J. CAVANAUGH,  
JAMES H. STARK.