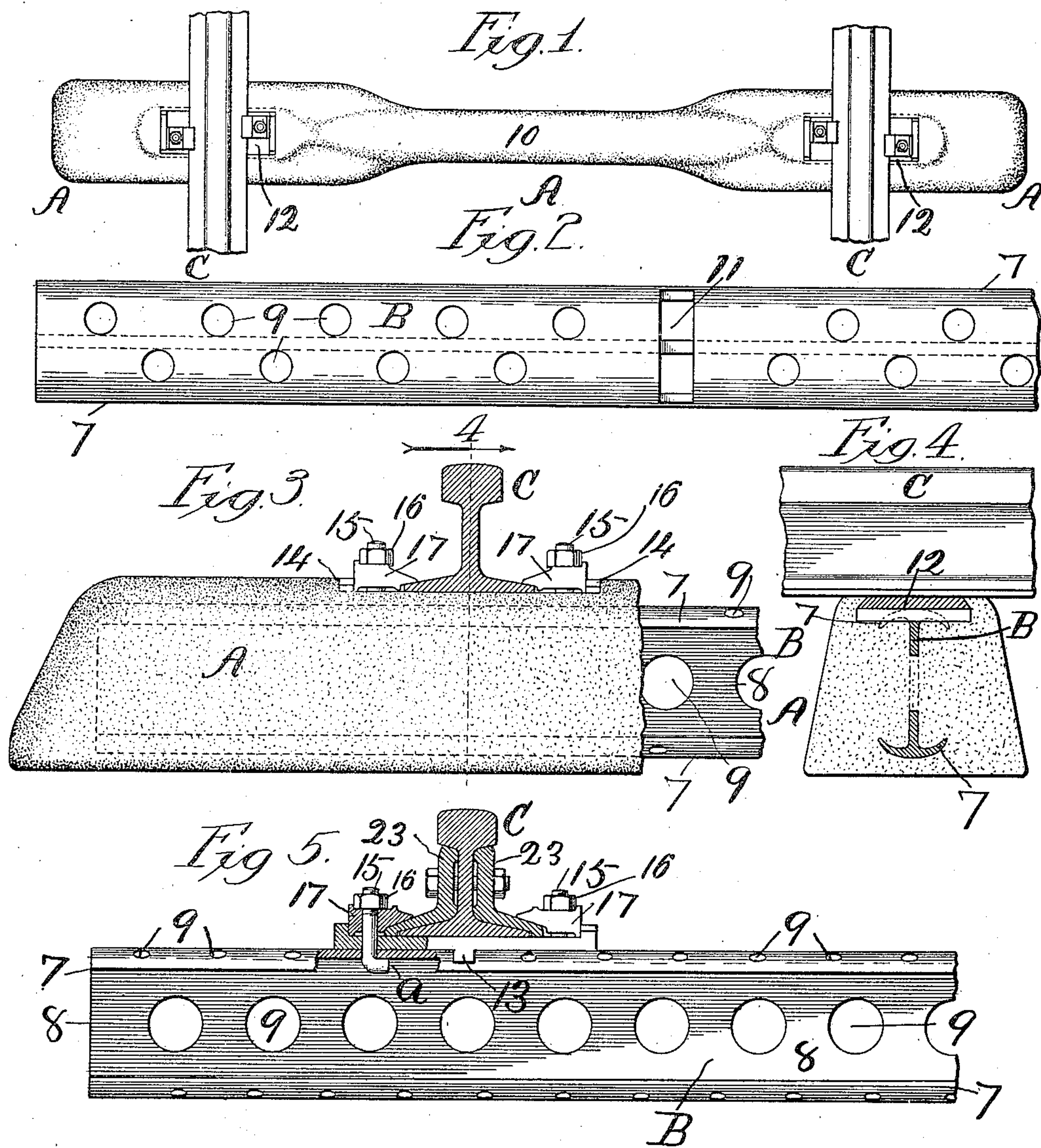


J. J. HARRELL.
RAILWAY TIE.
APPLICATION FILED APR. 19, 1909.

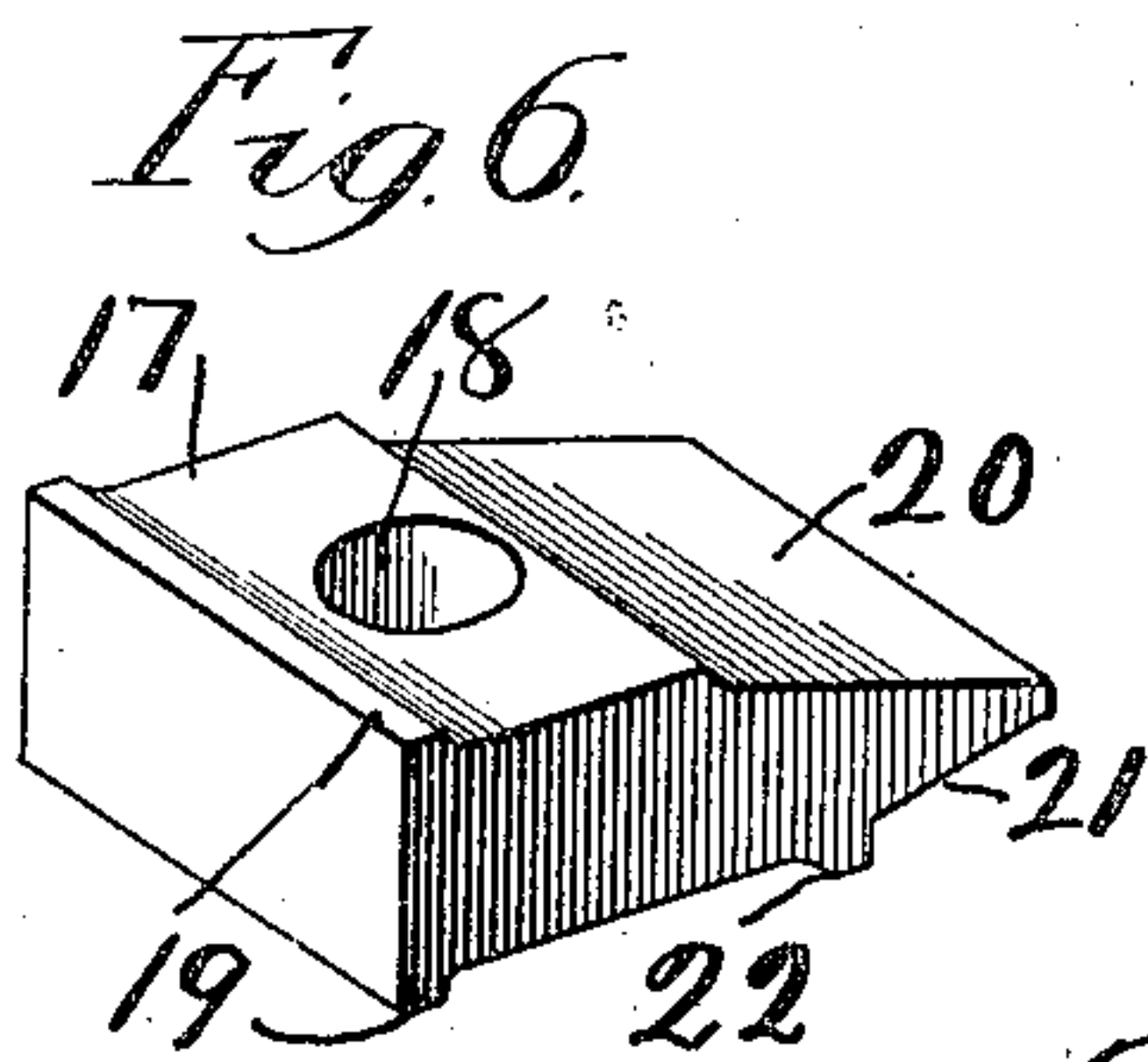
999,449.

Patented Aug. 1, 1911.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOSEPH J. HARRELL, OF CHICAGO, ILLINOIS.

RAILWAY-TIE.

999,449.

Specification of Letters Patent.

Patented Aug. 1, 1911.

Application filed April 19, 1909. Serial No. 490,869.

To all whom it may concern:

Be it known that I, JOSEPH J. HARRELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Ties, of which the following is a specification.

This invention relates to composite railway ties and has for one of its objects, to provide a device of this character that can be manufactured with facility and possessing great strength and durability.

Another object is to provide a tie-structure comprising a metal core inclosed in a body of concrete, cement or other material that can be handled in a plastic condition.

Another object is to combine in a tie-structure means for lessening the strain on the rail fastening bolts and prevent the rails from spreading.

Another object is to provide a core or reinforce of such a form as to leave the concrete wall of the tie a continuous solid body and not partly separated into divisions by laterally extended plates or framework.

In providing a substitute for wood ties, practical experimenting has proven that it is a very difficult matter to safely secure the track-rails to a metal or composite-tie and prevent the rails from spreading.

Figure 1 is a plan of a tie-structure embodying the improved features. Fig. 2 is a plan of the metal core-reinforce. Fig. 3 is a broken-away side elevation. Fig. 4 is a transverse section, on line 4, Fig. 3. Fig. 5 is an elevation of the metal core, showing a track-rail and fastening devices. Fig. 6 is a detail of a fastening plate.

The tie-structure comprises a concrete or cement body A and a core or reinforce B embedded therein. In the process of manufacture, the concrete or other material used, is first reduced to a proper plastic consistency and then involved or otherwise made into the desired form and inclosing the tie-core. The metal core B is in the form or shape of a standard I-beam, (Fig. 4) with the difference that the edges of the companion anchor-flange 7 are curved inward toward each other and present a cupped out or channel like contour, similar to that of an anchor-fluke, in affording an increased holding and binding effect. The web 8 and flanges 7 of the core are provided with a number of perforations 9, through which the plastic material will cement together and

form an integral union through and around the core and greatly lessen the liability of disintegration.

The relative approximate proportions of the core and enveloping concrete body are shown in Fig. 4, which is a transverse section through the widest end part of the tie. It will be noted by reference to Fig. 1, that the respective ends, supporting the track-rails C, are of a greater width than the central part 10 which is somewhat contracted to a symmetrical form, lessening the weight and saving in material, yet affording all the strength and durability necessary. The core stops short of the respective ends, as indicated by dotted lines, in Fig. 3.

The means for securing the track-rails in place will be next described. The core B is provided in the upper side with companion transverse slots 11, in line with each track-rail. But one of the slots is shown, and that in Fig. 2. The companion rail seating plates 12, seating on top of the reinforcing core, have a rib 13 formed on the under side thereof which engages the slots 11, as best shown in Fig. 5. These plates are provided at each end with a shoulder 14 and are perforated for the insertion of the fastening bolts 15. The lower ends of the bolts are bent around at right angles, as at α , to engage the adjacent surface of the core and have a clamping action when the nuts 16 are set up. A clamping member, 17 (Fig. 6) has an aperture 18 for the passage of the bolts 15, and has a double flange 19, formed on one end thereof. The other end of the member 17 is beveled to provide the inclined surface 20 on one side and a corresponding surface 21 on the opposite side. When the members 17 are used between the respective ends of the track-rails, they are placed on so as to bring the rib 22 on the under side, as shown in Fig. 3 and corresponding to the position in Fig. 6. In this position the rib 22 will contact the foot of the rail and assist in keeping the parts in place. The members 17 are turned upside down when used at the junction of the rails with the angle joint-plates 23, as shown in Fig. 5. Reversing the members 17 brings the longer beveled surface 20 on the underside to closely fit the corresponding incline of the angle plates 23. In either position the members 17 are held level by the flange 19, so that when assembled all the parts fit together.

It will be noted that the clamping members 17 bear against the shoulders 14 on the respective ends of the plates 12 on which the rails rest, which has the effect of largely
 5 relieving the strain on the bolts 15 from a lateral or spreading pressure. By this arrangement it will be understood that the lateral pressure will be more equally divided between the track rails as the plates 12, and
 10 associated parts will coöperate together whether the pressure comes from one side or the other.

Having thus described my invention, what I claim is:—

15 1. In a railway-tie, a concrete body, a core-reinforce enveloped therein and having substantially the contour of an I-beam, and provided in the line of the track-rails, with slots, companion seating-plates pro-
 20 vided with ribs engaging said slots, and means for securing said rails and plates against displacement.

2. In a railway-tie, a core-reinforce em-

bedded in plastic material and having slots formed therein, seating-plates having shoul- 25
 ders on the respective ends thereof, clamping-members engaging said shoulders when in their assembled position, and means for locking said members in securing the rails
 30 in place.

3. In a railway tie, a core-reinforce provided with slots in line with the track-rails, seating plates having means for engaging said slots in preventing lateral displacement, clamping-members, having the inner 35
 edge beveled and overlapping the rail-flanges, and fastening-bolts inserted down through said plates and clamping-members and anchored in said core.

In testimony whereof I affix my signature 40
 in presence of two witnesses.

JOSEPH J. HARRELL.

Witnesses:

G. S. HUTTON,

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
 Washington, D. C."