

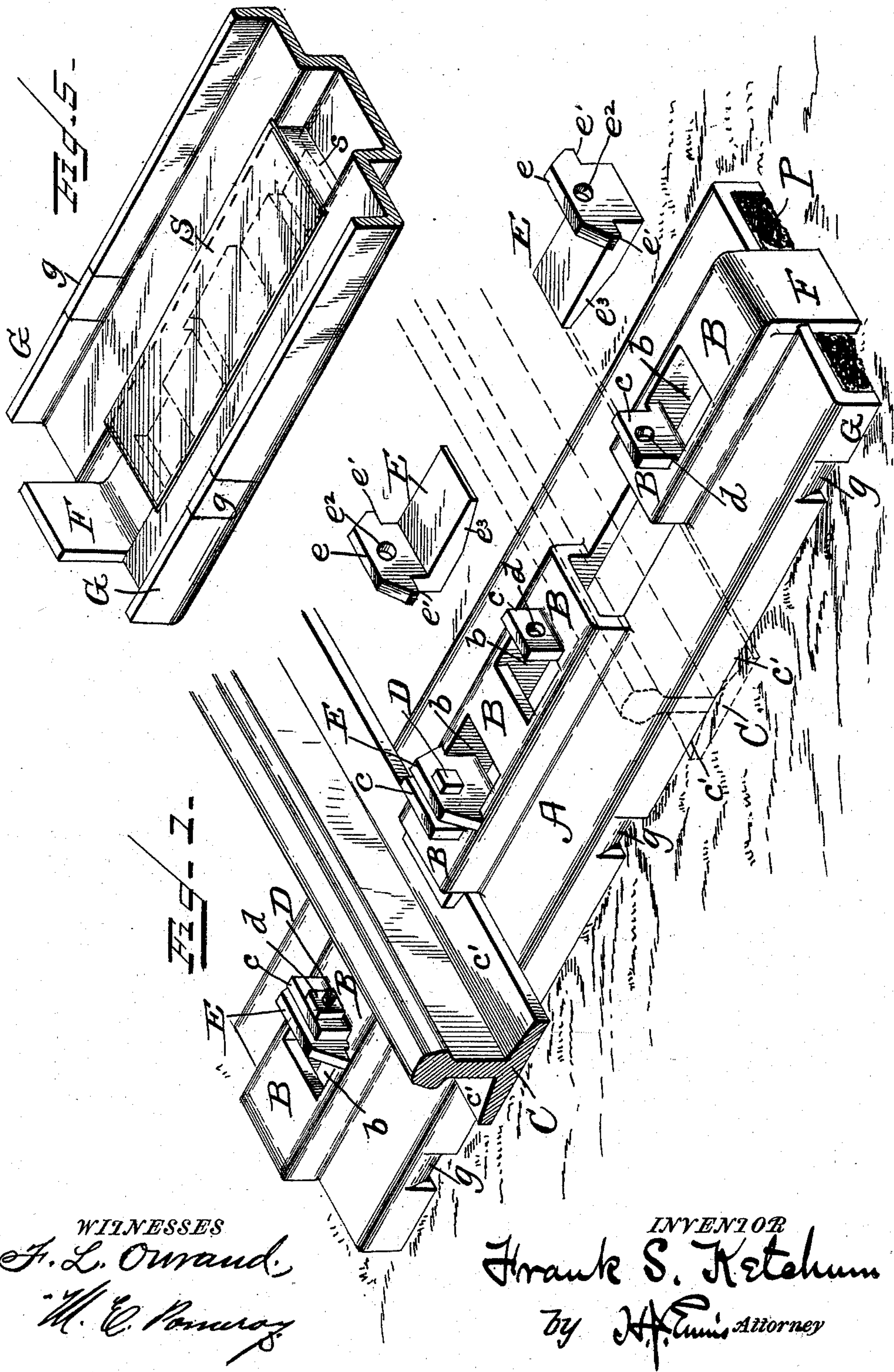
(No Model.)

2 Sheets—Sheet 1.

F. S. KETCHUM.
RAILROAD TIE.

No. 475,981.

Patented May 31, 1892.



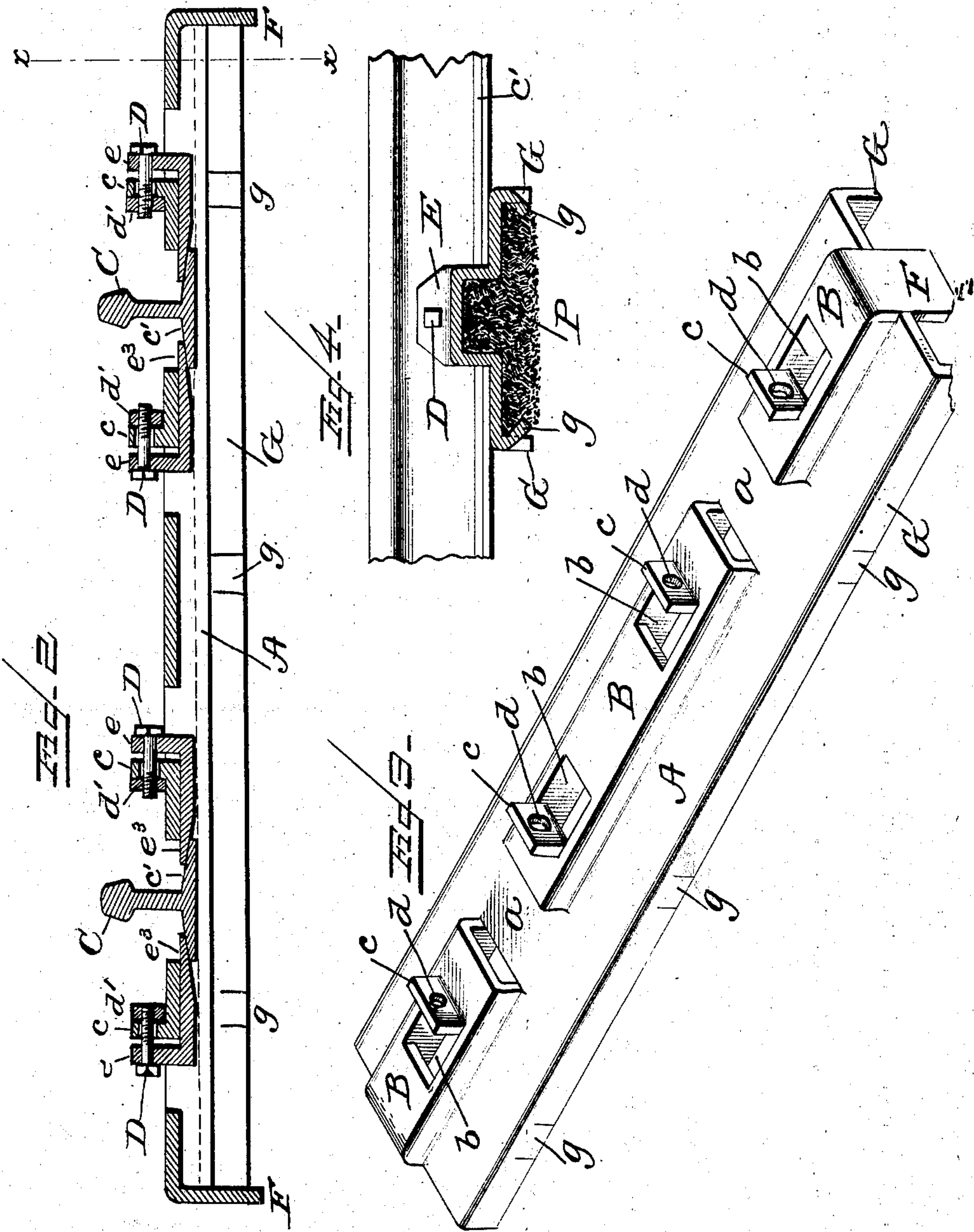
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2 Sheets—Sheet 2.

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WITNESSES
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UNITED STATES PATENT OFFICE.

FRANK S. KETCHUM, OF NEW YORK, N. Y.

RAILROAD-TIE.

SPECIFICATION forming part of Letters Patent No. 475,981, dated May 31, 1892.

Application filed January 15, 1892. Serial No. 418,193. (No model.)

To all whom it may concern:

Be it known that I, FRANK S. KETCHUM, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Railroad-Ties; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My present invention has relation to metallic railroad-ties; and the object is to produce a tie capable of being cheaply made and expeditiously ballasted, in combination with devices which will form a track-fastener for the rails; and to these ends the novelty consists in the construction and combination of the several parts of the same, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings the same letters of reference indicate the same parts of the invention.

Figure 1 is a perspective view of my improved ballasted metallic tie with the rail on the left hand locked in position on the tie and the position of the right-hand rail shown in dotted lines and the locking-wedges removed and shown in perspective a short distance above. Fig. 2 is a longitudinal central section of Fig. 1. Fig. 3 is a view in perspective of the tie with its integral parts. Fig. 4 is a cross-section on the line $x x$ of Fig. 2, and Fig. 5 is a perspective view of one end of the tie inverted and in position for filling in the ballasting material.

A is the tie proper, and consists of a single piece of rolled, stamped, or cast metal, and is very clearly shown by itself in Fig. 3.

B is a longitudinal central rib provided with recesses $a a$, which form the seats for the rails C C, and it will be observed that the shoulders formed by the rib B on each side of the recesses $a a$ effectually prevent the least possible tendency to the lateral displacement of the rails, and this is a very important feature of my invention, especially when

there is a possibility to spread the rails on a straight track, or, as in the case of curves, when the centrifugal force of the train is thrown wholly on the outer rail, and thus widen the distance between it and its fellow. The rib B is provided with slots $b b b b$, and at the end of each is a knee c , bent up from the metal of the rib proper, and each knee has a vertically-oblong hole d for the reception of the bolt D.

E is a wedge-shaped key having an angular head e , shoulders e' , a bolt-hole e^2 , and the forward end e^3 , inclined or beveled from below forwardly, as shown in the detached views in Fig. 1. One of these keys E is inserted in the one of the slots b so that its beveled end e^3 laps over the flange c' of the rail C and the bolt D placed through the holes e^2 in the head e and d in the knee c , and the nut d' is then held in position, its lower side engaging the flat surface of the top face of the rib B, which prevents the nut from turning, and the bolt is then screwed home. The same operation is then carried out with the rest of the keys and the slots, and the result is a position lock between the rail and the tie, and it will be observed by reference to the left-hand portion of Fig. 1 that this is accomplished and great strength secured by the leverage of the wedge-shaped end of the key, where it bears upon the rail-flange, being supported by the shoulders of the head of the key on the side flanges of the slots b , so that the whole strain comes where the metal is the strongest to bear it, and the office of the bolt D is simply to hold the wedge-key in place, and by reason of the hole d in the knee c being oblong no lateral strain whatever comes on the bolt itself. Each end of the tie is provided with an integral downwardly-projecting ear F, which extends beyond the line of the base of the side flanges G G, and when the tie is in position these ears extend into the ground and prevent end motion of the ties.

Referring to Fig. 5, the tie is shown inverted. The inside of the rib B, over the openings, is covered by a piece of sheet metal S, having downwardly-bent ends s , which extend into the channel formed by the rib B. The tie being in this position and the plate S in place to protect the wedge-retaining re-

cesses, any concrete, cement, slag mass, stone, or any other suitable ballasting P is filled in, and when about to set the ears *g* of the side flanges *G* are bent in, as shown in Fig. 4, and serve to hold the ballast in position while the ties are being laid. It will thus be seen that a ballasted tie is produced, and at the same time the rough surface of the ballasting mass takes a firm hold on the ground and very largely assists in preventing the displacement of the ties.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A sheet-metal railroad-tie having a raised upper side and a correspondingly-depressed under surface and having said under surface filled with a suitable ballasting material previous to the laying of the tie in position, as and for the purpose set forth.

2. A sheet-metal railroad-tie having depending end ears, as at *F*, and having the space between said ears filled with a ballasting mass previous to the laying of the tie, as and for the purpose set forth.

3. A sheet-metal railroad-tie having a central longitudinal rib, angular side flanges, and angular end ears, the whole formed of

one piece of metal, as and for the purpose set forth.

4. A sheet-metal railroad-tie having a central longitudinal rib, recesses which form the rail-seat, and slots formed in the face of said rib and having integral knees formed of the metal punched from said slots, in combination with an angular wedge-shaped key adapted to enter said slots and be secured there in connection with the ears above mentioned, as and for the purpose set forth.

5. A metallic railroad-tie having a central rib provided with rail-seat recesses and slots, at the ends of which are upwardly-retaining ears, in combination with a railroad-rail and a locking wedge-shaped key adapted to be secured in said slot and lock the rail to the tie, as and for the purpose set forth.

6. The combination, with the tie constructed as described and having the slot *b*, of the key *E*, bearing beveled portion *e*³ and one or more shoulders *e'*, as set forth.

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

FRANK S. KETCHUM.

Witnesses:

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D. W. GLOSSIE.