A. H. CAMPBELL.

RAILROAD TIES.

No. 190,739. Patented May 15, 1877.

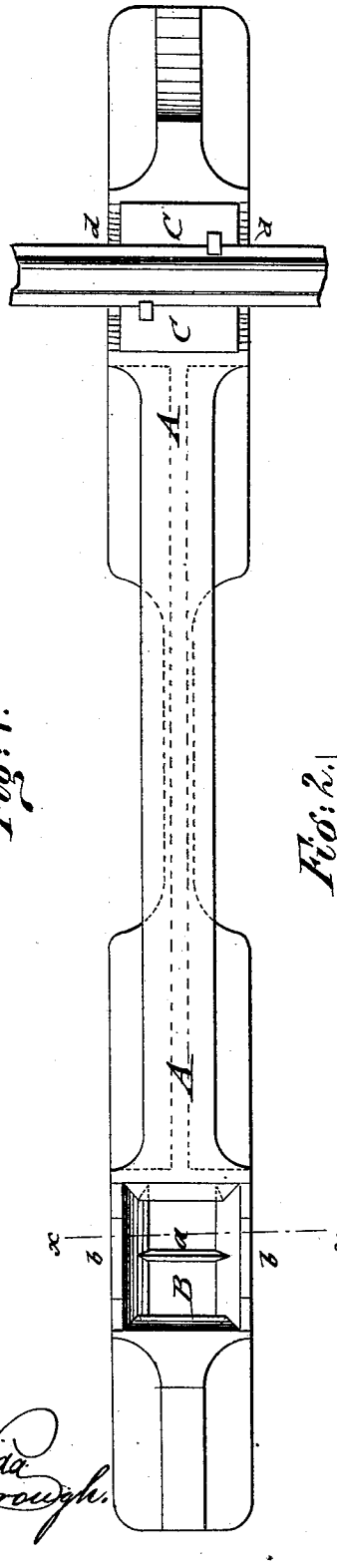

Fig: 1.

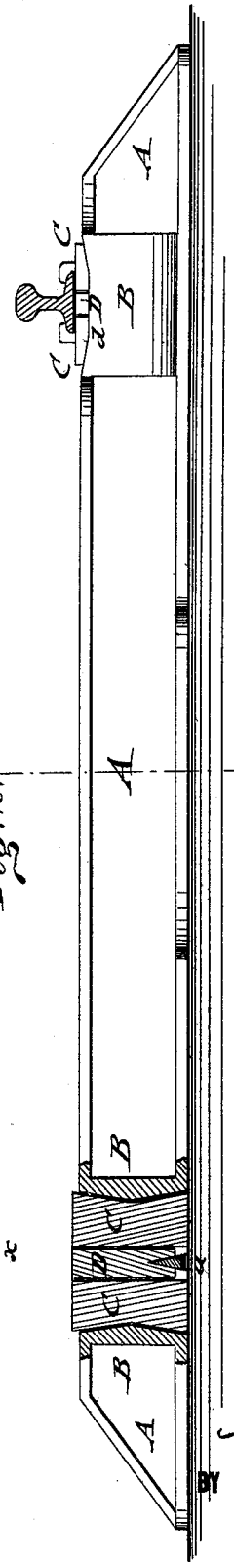

Fig: 2.

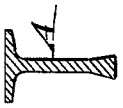

Fig: 4.

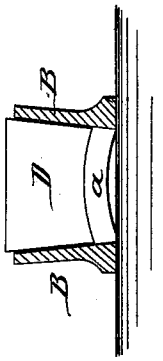

Fig: 3.

WITNESSES:

Chas. Nida

J. H. Scarborough.

INVENTOR:

A. H. Campbell.

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALEXANDER H. CAMPBELL, OF LIBERTY, INDIANA.

IMPROVEMENT IN RAILROAD-TIES.

Specification forming part of Letters Patent No. **190,739**, dated May 15, 1877; application filed April 16, 1877.

To all whom it may concern:

Be it known that I, ALEXANDER H. CAMPBELL, of Liberty, in the county of Union and State of Indiana, have invented a new and Improved Railroad-Tie, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a top view; Fig. 2, a sectional side elevation of my improved railroad-tie; and Figs. 3 and 4 are vertical transverse sections of the same, respectively, on line *x x*, Fig. 1, and *y y*, Fig. 2.

Similar letters of reference indicate corresponding parts.

The object of this invention is to construct an improved railroad cross-tie which is made of wood and iron, in such a manner as to combine the strength and durability of metallic ties with the elasticity of wooden ties, the material being so arranged as to give the greatest amount of strength without exceeding in weight that of an oak tie of corresponding size.

The invention consists of a metallic cross-tie of double T-shaped cross-section, of which the bottom flange is cut out at the center. The tie is provided with sockets having bottom wedges for wooden filling-blocks, retained by a central key driven down upon the wedge.

In the drawing, A represents a railroad cross-tie, which is preferably made of cast-iron, and of double T-shaped cross-section, beveled off at the ends. The bottom flange of the double T-shaped tie is removed at both sides at the center of the tie, as shown in Figs. 1 and 3, in order to get rid of the spring of the tie, and of the consequent disturbing of the ballast and the formation of a bed for the accumulation of water. The top flange resists the upward thrust, enough ballast being disposed between the ties and packed against their vertical ribs to preserve them in position and shed the water. The cross-tie A is provided at the ends with sockets B, with a central bottom wedge, *a*, cast therewith, and running either in the direction of the tie or of the rails, as desired. The sockets B are filled by wooden blocks C, which are securely fastened into the sockets by central keys D, that are driven down in the wedge-piece, so as to spread and lock the blocks C rigidly into position in the sockets. I prefer to arrange the wedge and blocks in the direction of the rail, which has the advantage that it does not expose the joints of the blocks to the influence of the weather, on account of the base of the rail covering the same. This position of the blocks is also more favorable for drawing and redriving the spike during the life of the tie. The side faces of the sockets are made angular, while the end faces are slightly inclined, as shown, respectively, in Figs. 2 and 3, which facilitates the placing in position and locking of the blocks and the driving of the key. The key may be dispensed with and the blocks be driven directly on the wedge; but this is objectionable, as, in this case, the angle or intersection-line of each of the two angular surfaces of the socket would be made a fulcrum when the blocks are tightened against the sides of the sockets below by the wedge, and they would, therefore, press together above and tend to recede from its sides, allowing ingress of water. The fiber of the wood is presented endwise to the iron rail, and, in consequence, much less likely to wear beneath its pressure. It may be of advantage to cut a shallow channel on top of the blocks for the rails to assist the spikes in resisting the lateral thrust. The wooden filling-blocks are made to project slightly above the top of the sockets, partly for convenience in cutting off to a plane surface, and partly to allow for settling from seasoning or compression. The plane surface, of the upper half of the socket having equal slope or inclination as the surfaces of the lower half allows the descent of the shrunken timber. The ends of the sockets under the rails are recessed or cut down at *b*, as shown in Figs. 1 and 2, to prevent their resting on the metal of the tie, in consequence of settling or compression of the timber, so that the rails rest throughout on wood, the tie combining, thus, the elastic feature of a wooden tie with the durability of a metal tie.

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

1. A metallic railroad cross-tie made of double T-shaped cross-section, whose bottom flange is cut away at both sides of the central

part of the tie, substantially as and for the purpose described.

2. The combination of a metallic cross-tie, having end sockets and central bottom wedges, with wooden rail-bearing blocks driven therein, substantially as and for the purpose described.

3. The combination of a metallic cross-tie, having end sockets and central bottom wedge, with wooden filling-blocks and a central locking-key, substantially in the manner and for the purpose specified.

4. The combination of a metallic cross-tie, having end sockets, central bottom wedge, angular sides, and inclined ends, with wooden filling-blocks of corresponding shape and a central locking-key, substantially as and for the purpose specified.

5. The metallic cross-tie A, having sockets B, whose ends are recessed or cut away below the rails to prevent the rails from bearing thereon on settling of filling-blocks, substantially as specified.

ALEXANDER H. CAMPBELL.

Witnesses:
H. HUSTED,
WM. CAMPBELL.