(No Model.)

M. F. BONZANO.

METALLIC CROSS TIE.

No. 441,926. Patented Dec. 2, 1890.

FIG. 1.

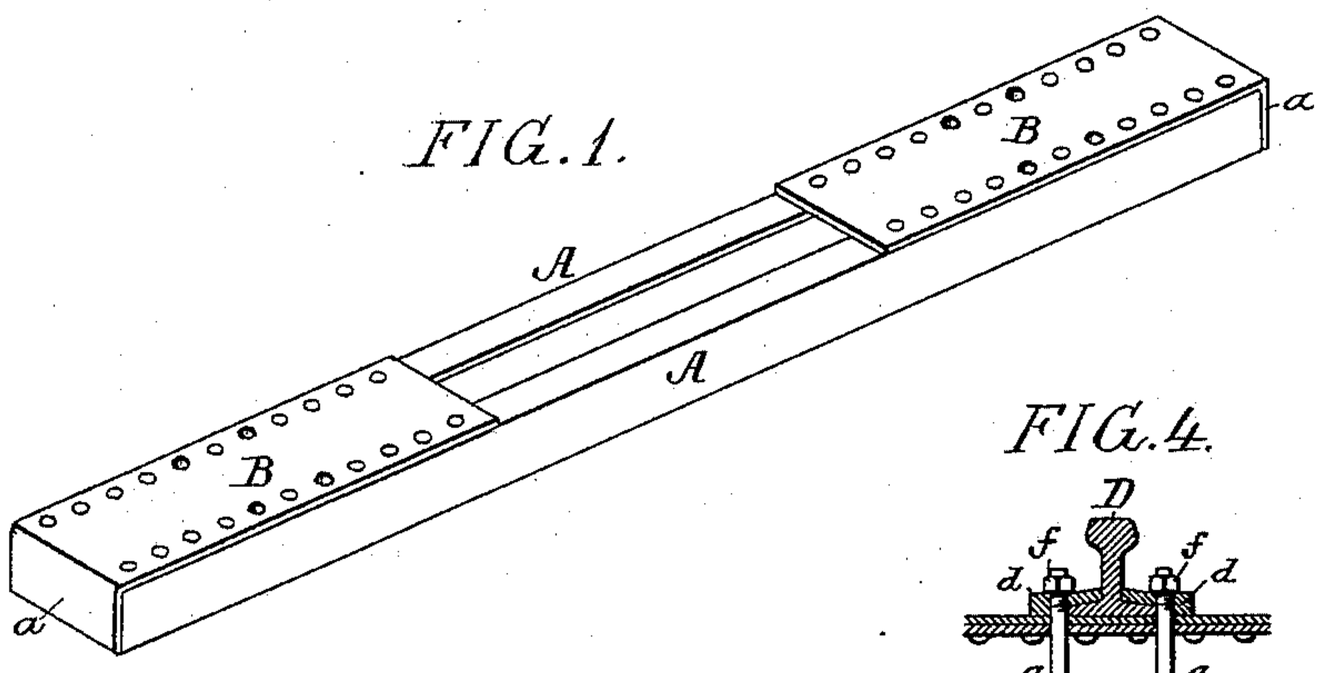


FIG. 4.

FIG. 2.

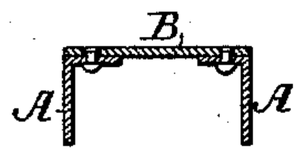


FIG. 3.

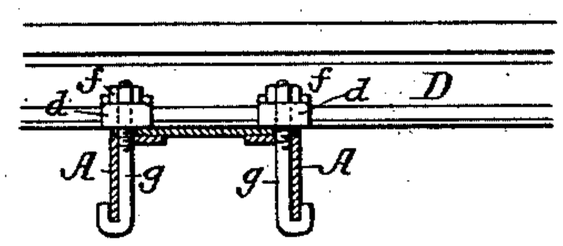


FIG. 5.

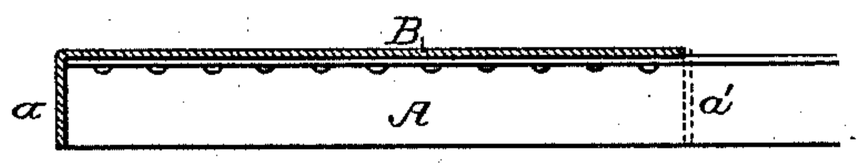


FIG. 9.

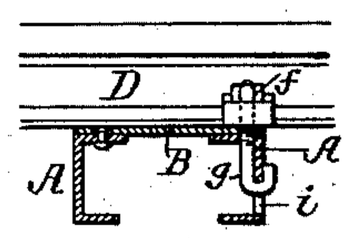


FIG. 8.

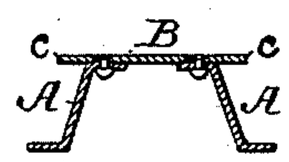


FIG. 6.

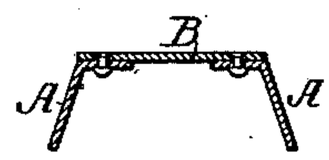
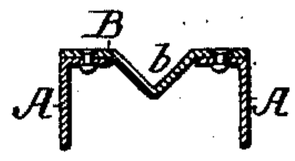


FIG. 7



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UNITED STATES PATENT OFFICE.

MAXIMILIAN F. BONZANO, OF PHILADELPHIA, PENNSYLVANIA.

METALLIC CROSS-TIE.

SPECIFICATION forming part of Letters Patent No. 441,926, dated December 2, 1890.

Application filed September 1, 1890. Serial No. 363,635. (No model.)

To all whom it may concern:

Be it known that I, MAXIMILIAN F. BONZANO, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Metallic Cross-Ties, of which the following is a specification.

My invention consists of certain modifications of or improvements in the metallic cross-tie forming the subject of my application, Serial No. 347,289, filed April 10, 1890, one of the objects of the present invention being to provide for the formation of a composite or built-up tie possessing the advantageous features of the former tie, and a further object being to permit of the ready formation of flanges on the sides of the tie for the purpose of strengthening the same.

In the accompanying drawings, Figure 1 is a perspective view of one form of the improved tie. Fig. 2 is a transverse section of the same. Fig. 3 is a similar view showing the rail and rail-fastenings applied to the tie. Fig. 4 is a longitudinal section of part of the tie, showing in transverse section the rail and its fastenings. Fig. 5 is a longitudinal section of the end portion of the improved tie. Figs. 6 and 7 are transverse sections of modified forms of the tie, and Figs. 8 and 9 are transverse sections of special forms of the improved tie designed for increasing the strength of the same, Fig. 9 also illustrating part of the rail and one of the fastenings therefor.

The tie shown in Fig. 1 consists of a pair of angle-bars A A, the top flanges of which at and near each end of the tie are connected by transverse plates B, riveted to said top flanges and forming the supports for the opposite rails, the end portion of each plate being bent downward, as shown at *a*, Fig. 5, so as to close the outer end of the tie and give the same a lateral bearing upon the ballast, the inner end of the plate being also, if desired, bent downward between the opposite bars A, as shown by dotted lines at *a'* in Fig. 5, so as to form a tie the central portion of which is open at the top, the tie having at each end a box closed or partly closed on all four sides and at the top, but open at the bottom, as in the tie described in my former application.

The angle-bars A can be more readily procured in some localities than the channel-bar, from which the former tie was made, while the plates B can be made from old boiler-iron or other scrap, which can be cheaply obtained.

In Fig. 6 I have shown bars A having flanges at an obtuse angle, so as to form a tie with flaring sides, and in Fig. 7 I have shown the plate B provided with a central groove or depression *b*, thus forming a strengthening rib or corrugation extending throughout the length of the plate. One of the main advantages, however, of the composite tie is that it provides for the convenient manufacture of a tie having flanges both at top and bottom for the purpose of adding to the longitudinal rigidity of the tie and enabling it to better resist deflection, such as might otherwise be caused by the vertical thrust or strain to which the tie is subjected in use.

In the tie shown in Fig. 8 the opposite side bars A have internal flanges at top for connection with the top plates and external flanges at the bottom, each top plate projecting laterally beyond the side bars, so as to form in effect external flanges *c;* but it is preferable to form the opposite bars with internal flanges both at top and bottom, as shown, for instance, in Fig. 9.

Each rail D is supported upon one of the plates B of the tie, a block of wood or other elastic or semi-elastic and sound-deadening material being, if desired, interposed between the base of the rail and the plate B, and the rail is confined to the plate by clamps *d*, which are held in place by nuts *f*, adapted to bolts *g*, the latter passing through the clamps and through the plate B and upper flanges of the bars A, the lower end of each bolt being hooked for engagement with the side flange of the bar, and this side flange being preferably notched, as at *i*, for the reception of the hooked end of the bolt, as shown in Figs. 4 and 9.

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

1. A metallic cross-tie consisting of opposite angle-bars and rail-supporting plates connecting said bars at the ends of the tie and having depending fingers, so as to form open-bottomed ballast-receiving boxes, the central portion of the tie being open at the top, substantially as specified.

2. A metallic cross-tie consisting of opposite angle-bars having flanges at top and bottom, and rail-supporting plates bolted or riveted to the upper flanges of the bars at the opposite ends of the tie and having depending fingers, so as to form open-bottomed ballast-receiving boxes, the central portion of the tie being open at the top, substantially as specified.

3. A metallic cross-tie consisting of opposite angle-bars, each having an internally-projecting flange at top and bottom, with rail-supporting plates bolted or riveted to the upper flanges of the bars at opposite ends of the tie, the central portion of the tie being open at the top, substantially as specified.

4. A metallic cross-tie consisting of opposite angle-bars and rail-supporting plates bolted or riveted to the upper flanges of said bars at opposite ends of the tie, the central portion of the tie being open at the top, and the rail-supporting plates having depending fingers at each end, so as to form at each end of the tie a box closed or partially closed at both ends, but open at the bottom, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MAXIMILIAN F. BONZANO.

Witnesses:
EUGENE ELTERICH,
HARRY SMITH.