

W. D. FORSYTH.

CROSS TIE.

APPLICATION FILED NOV. 2, 1910.

996,631.

Patented July 4, 1911.

FIG. 1.

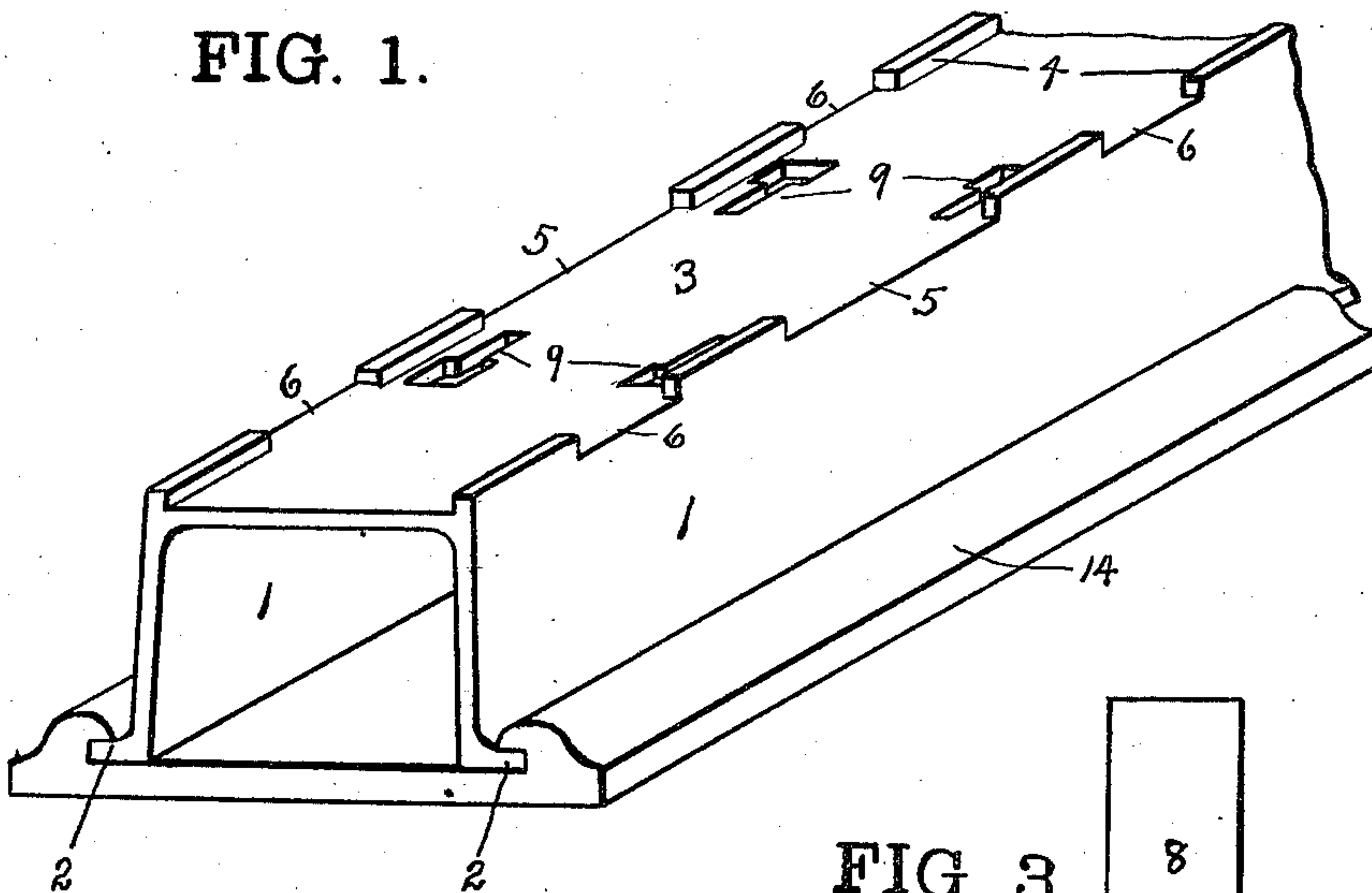


FIG. 2.

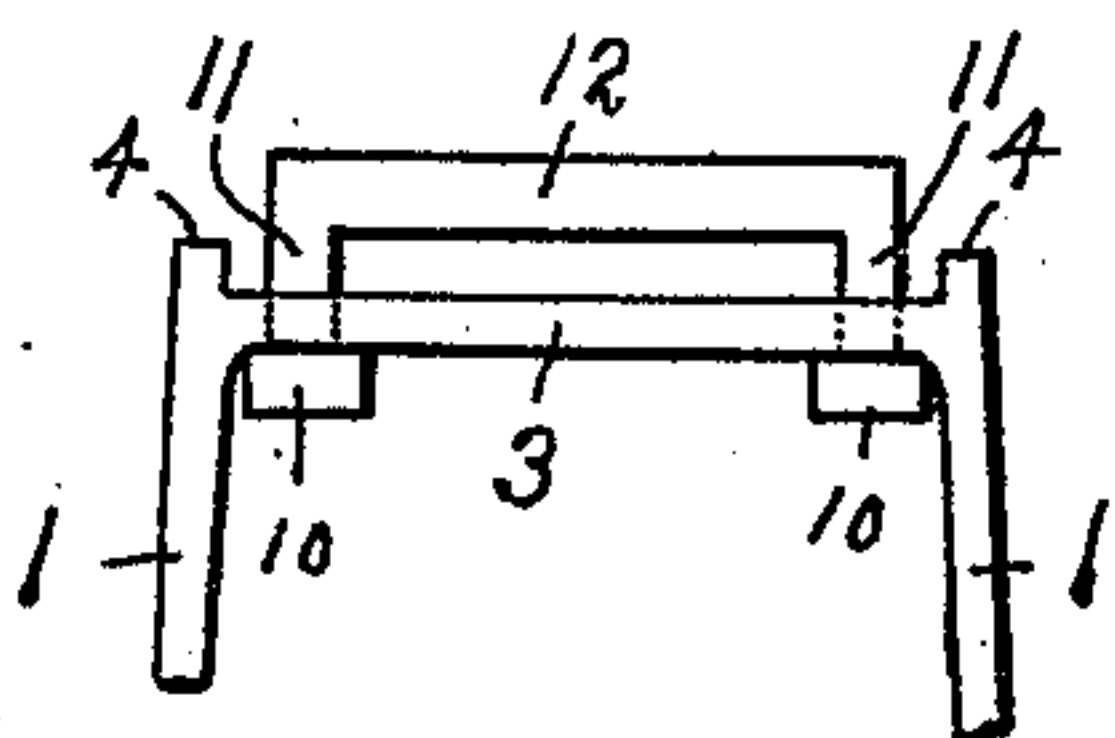


FIG. 3.

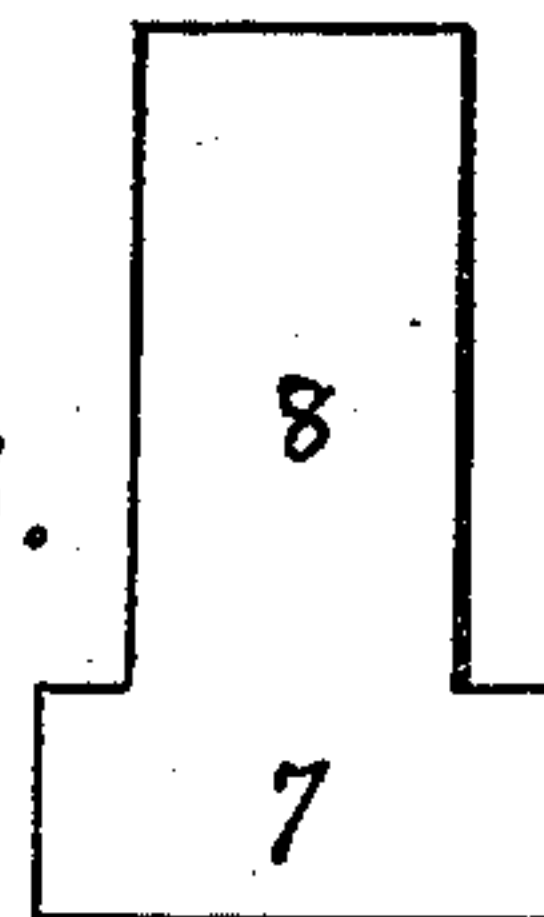


FIG. 4.

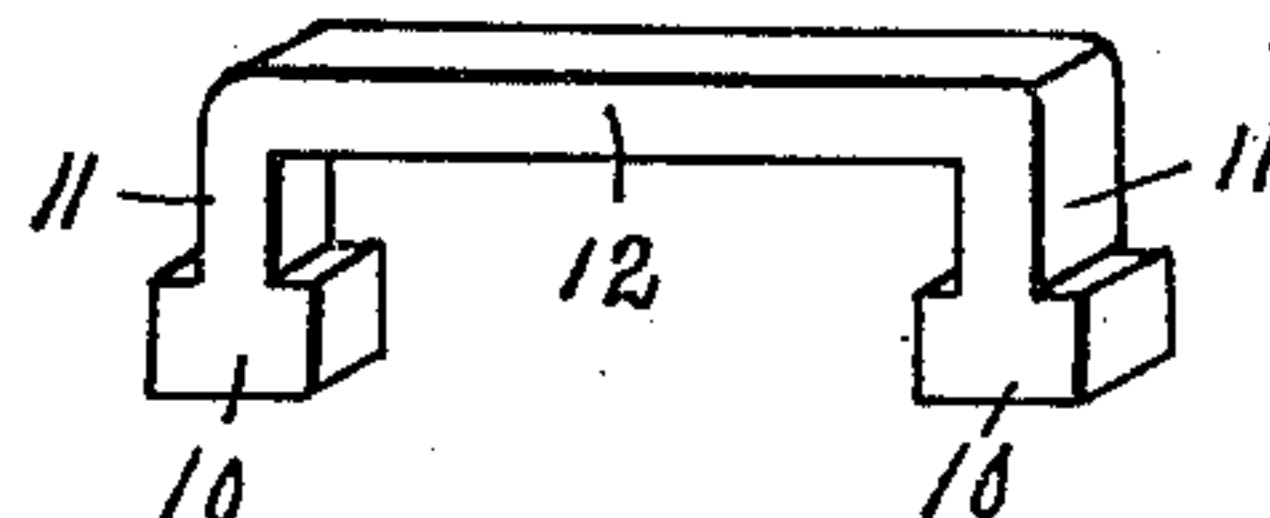
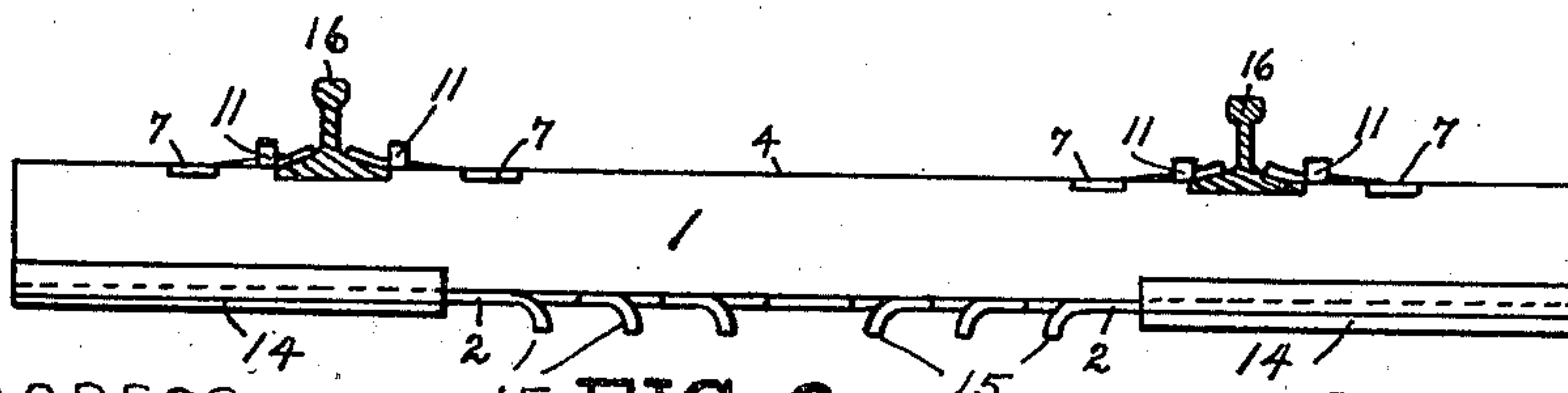
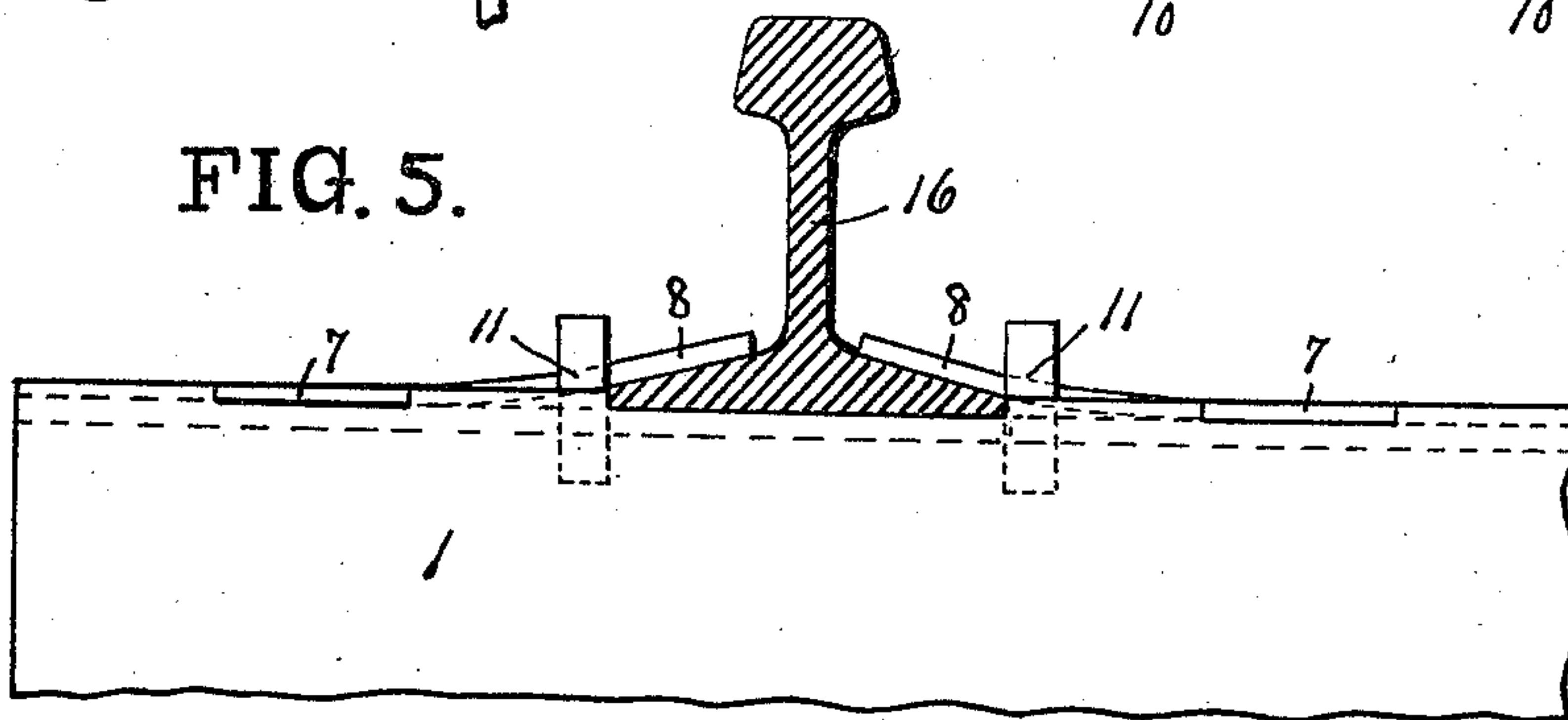


FIG. 5.



Witnesses.

A. M. Wilcox
E. M. Brown

FIG. 6.

Inventor.

William D. Forsyth
BY *Edward N. Pagelsen*,
Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM D. FORSYTH, OF YOUNGSTOWN, OHIO.

CROSS-TIE.

996,631.

Specification of Letters Patent.

Patented July 4, 1911.

Application filed November 2, 1910. Serial No. 590,296.

To all whom it may concern:

Be it known that I, WILLIAM D. FORSYTH, a citizen of the United States, and a resident of Youngstown, in the county of Mahoning and State of Ohio, have invented a new and useful Cross-Tie, of which the following is a specification.

This invention relates to metal cross-ties for railways, and its object is to provide cross-ties which may be rolled in continuous bars, which will have proper bearing surfaces only where needed, and which will be provided with strong and reliable fastening devices for the rails.

In the accompanying drawings, Figure 1 is a perspective of one end of this improved cross-tie. Fig. 2 is an end elevation of the upper portion of the same showing a stirrup in position. Fig. 3 is a plan of a key. Fig. 4 is a perspective of a stirrup on a larger scale. Fig. 5 is a side elevation of a portion of a tie showing a rail in position. Fig. 6 is a side elevation of this improved cross-tie on a smaller scale.

Similar reference characters refer to like parts throughout the several views.

The cross-tie illustrated in the drawings has sides 1 provided with lower flanges 2, a top plate 3, and ribs 4 along the edges of the plate 3. These ribs are cutaway to form notches 5 to receive the rails 16 and notches 6 to receive the heads 7 of the keys 8. T shaped slots 9 in pairs are formed in the plate 3, the larger portions of the slots being of sufficient size to admit the heads 10 of the stirrups, the smaller portions of the slots being of proper size to receive the upright portions 11 of the stirrups which may be of any desired cross-section. The upright portions are connected by the bars 12, the distance between the uprights being slightly greater than the width of the keys 8. On the lower flanges 2 may be driven the footing-plates 14, which may be of any desired length. The lower flanges 2 may be properly sheared so the prongs 15 may be bent down to furnish engaging means so the cross-tie will be prevented from slipping endwise on the road-bed.

When the cross-ties have been properly placed on the road-bed, the footing-plates 14, being previously positioned, the rails are laid in the notches 5 and secured together by fish-plates. As the notches 5 are properly cut, the gage of the track will be perfect. The heads 10 of the stirrups are

then lowered through the slots 9 and the stirrups moved toward the rails into the smaller portions of the slots. The keys 8 are then pushed through the stirrups until their inner ends bear on the edges of the rail-flanges. It will then be necessary to drive the keys inward, the heads 7 sliding on the ribs 4. The keys should be made of resilient metal so that after the heads reach the notches 6, they will spring down into them as shown in Figs. 5 and 6. The wide stiff keys will hold the rails down in the notches 5 against the top 3. To release the rail, a wedge is driven under the head end of the key and the part 7 is lifted out of the notch 6, whereupon the key can be driven back. The stirrup may be sheared from a proper plate but is preferably forged. All the other parts may be rolled and sheared to proper form.

Many changes in the proportions and details may be made in this construction without departing from the spirit of my invention. Thus the stirrup may be made integral with the top 3 instead of being removable, and the notches 6 may be less deep than the notches 5. The holding-down power of the stirrups substantially equals half the breaking stress of both of the uprights 11, which is vastly greater than the holding down power of the ordinary spike driven into a first-class wood tie. If desired, the sides 1 may be entirely omitted.

Having now explained my construction, what I claim as my invention and desire to secure by Letters Patent is:—

1. In a cross-tie, the combination of a body comprising a flat plate, notched ribs along the edges of the plate, and downwardly extending sides provided with bearing flanges along their lower edges, said plate having T shaped slots in pairs, a stirrup substantially in the form of an inverted U having its ends in each pair of slots, and keys extending beneath the cross bars of the stirrups and having their inner ends bearing on the flanges of rails and their outer ends bearing on the plate.

2. In a cross-tie, the combination of a body approximately H shaped in cross section with the intermediate plate horizontal and having the upwardly extending portions notched to receive the rails, stirrups substantially in the form of an inverted U, having their ends in slots in said plate, positioned parallel to and on each side of the

rails, and flat resilient holding devices driven through beneath the cross bars of the stirrups and having their inner ends bearing on the flanges of the rails.

5 3. In a cross-tie, the combination of a body approximately H shaped in cross-section with the intermediate plate horizontal and having the upwardly extending portions notched to receive rails, loops project-
10 ing upward from said plate on each side of the rails, and flat resilient holding devices for the rails driven under said loops and having their inner ends bearing on the flanges of the rails.

15 4. In a cross-tie, the combination of a body approximately H shaped in cross-section with the intermediate plate horizontal and having the upwardly extending portions notched to receive rails, and the downwardly
20 extending portions flanged, means to secure rails to said body, and footing-plates extending beneath the ends of the body and engaging the adjacent flanges, said flanges being formed into downwardly extending
25 prongs between said footing-plates.

5. In a cross-tie, the combination of a body embodying a flat, horizontal, slotted plate and ribs extending along the edges of

the plate having notches to receive rails, stirrups comprising cross-bars and down- 30 wardly extending portions having heads, the slots in the plate being in pairs and T-shaped to admit the heads of the stirrups and hold the same when the stirrups are moved in the slots toward the rails, keys 35 adapted to be driven underneath the cross-bars of the stirrups with their inner ends bearing on the rail flanges, said keys formed with heads adapted to rest in proper notches in said ribs when in rail-engaging position. 40

6. In a cross-tie, the combination of a body comprising a horizontal plate and downwardly extending sides, said plate hav-
ing four pairs of slots, a stirrup projecting from and up across between each pair of 45 slots, and flat resilient keys driven under the stirrups with their inner ends bearing on the flanges of the rails.

In testimony whereof I have signed this specification in the presence of two subscrib- 50 ing witnesses.

WILLIAM D. FORSYTH.

Witnesses:

EDWARD N. PAGELSEN,
ELIZABETH M. BROWN.

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