

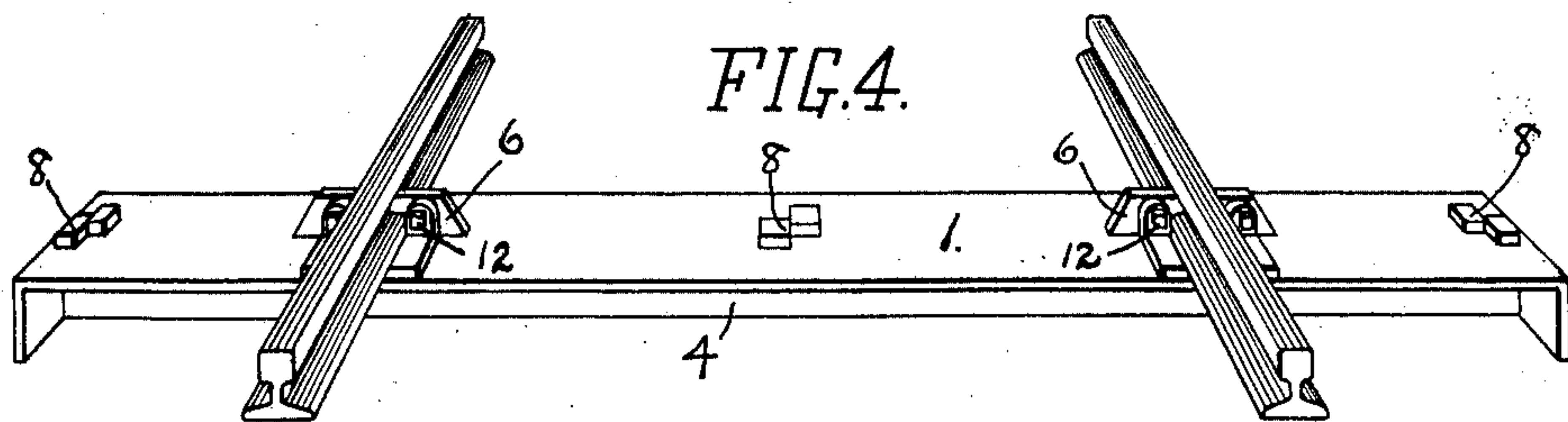
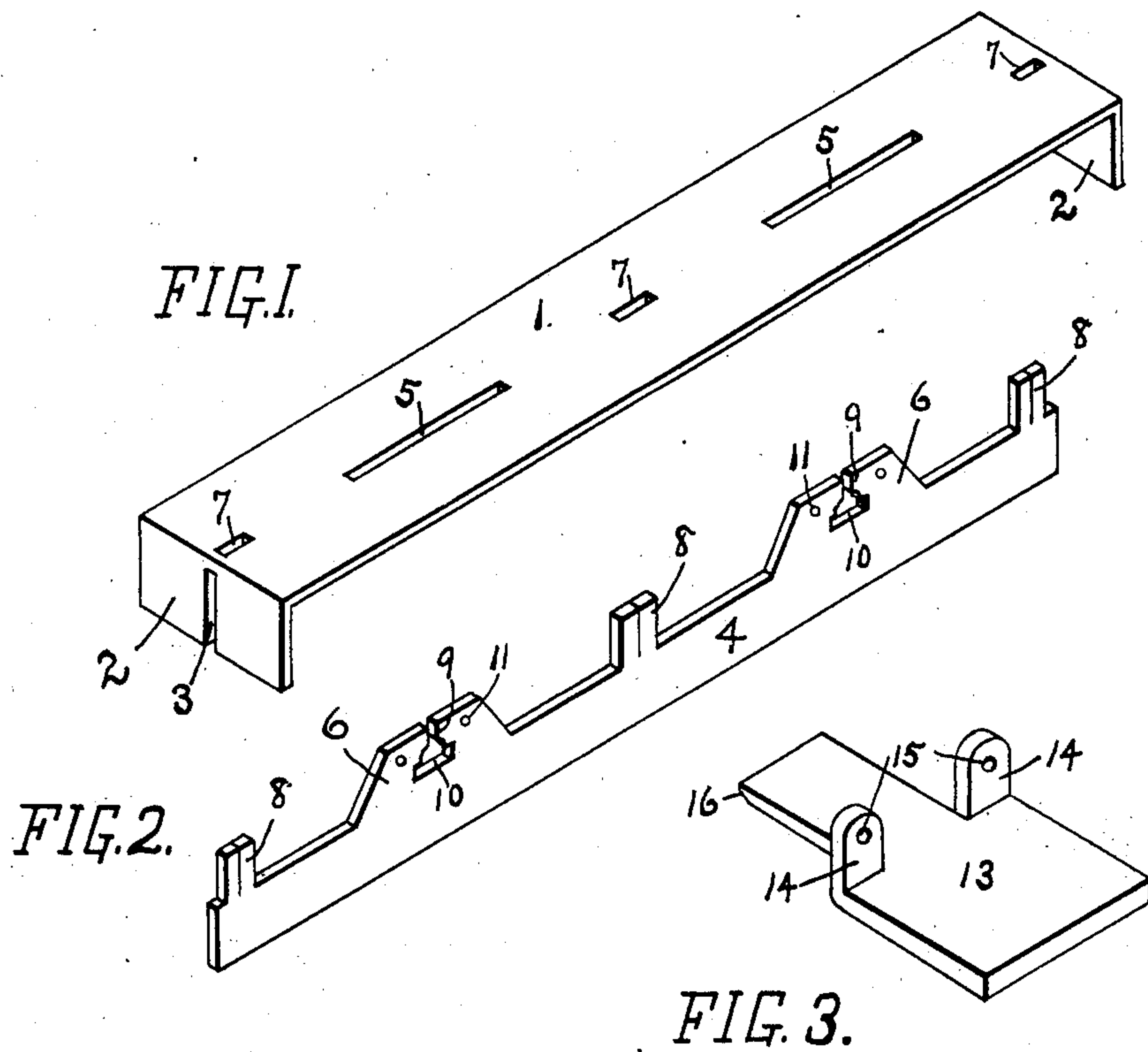
No. 826,527.

PATENTED JULY 24, 1906.

G. E. ANGELL.

CROSS TIE.

APPLICATION FILED FEB. 17, 1906.



Witnesses:

*John H. Herrick*  
*W. Bruce Hudson*

By his Attorney

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# UNITED STATES PATENT OFFICE.

GEORGE E. ANGELL, OF DETROIT, MICHIGAN.

## CROSS-TIE.

No. 826,527.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed February 17, 1906. Serial No. 301,623.

*To all whom it may concern:*

Be it known that I, GEORGE E. ANGELL, a citizen of the United States, and a resident of Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Cross-Tie, of which the following is a specification.

My improvements relate to metal cross-ties for steam and electric railways; and the object of my invention is to produce a cross-tie having maximum strength for minimum weight.

My invention consists in a cross-tie composed of a flat body portion that shall have ample bearing-surface on the ballast, a rib that shall furnish sufficient transverse strength and have connecting devices between the rib and body and gripping means between the rails and the cross-tie, and bearing-plates between the rails and body portion of the tie.

A cross-tie embodying my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective of the body portion. Fig. 2 is a perspective of the rib. Fig. 3 is a perspective of the bearing-plate. Fig. 4 is a perspective of the entire cross-tie with two sections of rails secured thereto.

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

The necessary characteristics of cross-ties are ample bearing-surface on the ballast, transverse stiffness, and complete union between the rails and ties. In my cross-tie, as shown, the body portion 1 may be of any desired length, width, and thickness, according to the character of the track, and for standard roads will be of the same length and breadth as the ordinary oak tie now in use. The ends 2 are turned down to keep the ballast from working out from under the ends of the cross-tie. These ends may be provided with slots 3 to receive the ends of the rib 4. Slots 5 permit the rail-jaws 6 to project through, while a series of slots 7 permit the extensions 8 of the rib to pass through, which extensions may be split and one half bent over and down in one direction and the other half in the other direction, as shown in Fig. 4, to provide complete union between the body portion and the rib.

The jaws 6 are provided with vertical slots 9 for the web of the rail, horizontal slots 10 for the bearing-plates, and holes 11 for the bolts 12, that hold the bearing-plates in posi-

tion. The metal of the jaws where the vertical and horizontal slots come together is cut away to furnish space for the lower flange of the rails.

The bearing-plates 13 may be slightly tapered, so as to firmly wedge the lower flanges of the rails against the jaws. These plates have upturned lugs 14, having holes 15 for the bolts 12.

To lay the track, the cross-ties when assembled are placed on the road-bed. The rails are then slipped through the openings in the jaws 6 and the rails and ties moved laterally to position and the rail ends joined. The bearing-plates are then driven in and bolted in place. Ballast is then rammed under the ties, the rib on each tie then preventing the track from creeping. As the blow of the train-load is received from the rail by a comparatively heavy plate, there is little danger of the constant hammering warping the tie, as is now often the case where the rail rests directly upon the metal rail. The slight taper of the bearing-plate permits the union between the rail and cross-tie being made perfect, thus preventing the tipping of the rail now noticeable where even the best of wood ties are employed. The end 16 of the bearing-plate is sharply tapered to permit its ready introduction between the body portion of the cross-tie and the rail.

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

1. In a cross-tie, the combination of a flat plate having downturned slotted ends and having a series of slots in its main portion, a vertical rib extending beneath the plate and through the slots in the ends, and having split extensions projecting upward through a plurality of the slots in the plate and adapted to be bent to unite the rib and plate, and having slotted jaws projecting through other slots in the plate and adapted to engage the rails, and bearing-plates adapted to extend through the slotted jaws of the rib beneath the rails and having perforated lugs whereby the bearing-plates may be held in position.

2. A cross-tie comprising a flat plate having downturned ends, a vertical rib extending longitudinally beneath said plate, upwardly-extending slotted jaws adapted to engage the webs and lower flanges of rails, and bearing-plates adapted to pass through the slots in the jaws beneath the rails.



3. Across-tie comprising a flat plate, a vertical rib extending longitudinally beneath said plate, upwardly-extending slotted jaws adapted to engage the lower flanges of rails,  
5 and bearing-plates adapted to pass through the slots in the jaws and beneath the rails.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

GEORGE E. ANGELL.

Witnesses:

W. BRUCE HUDSON,  
EDWARD N. PAGELSEN.