

No. 706,523.

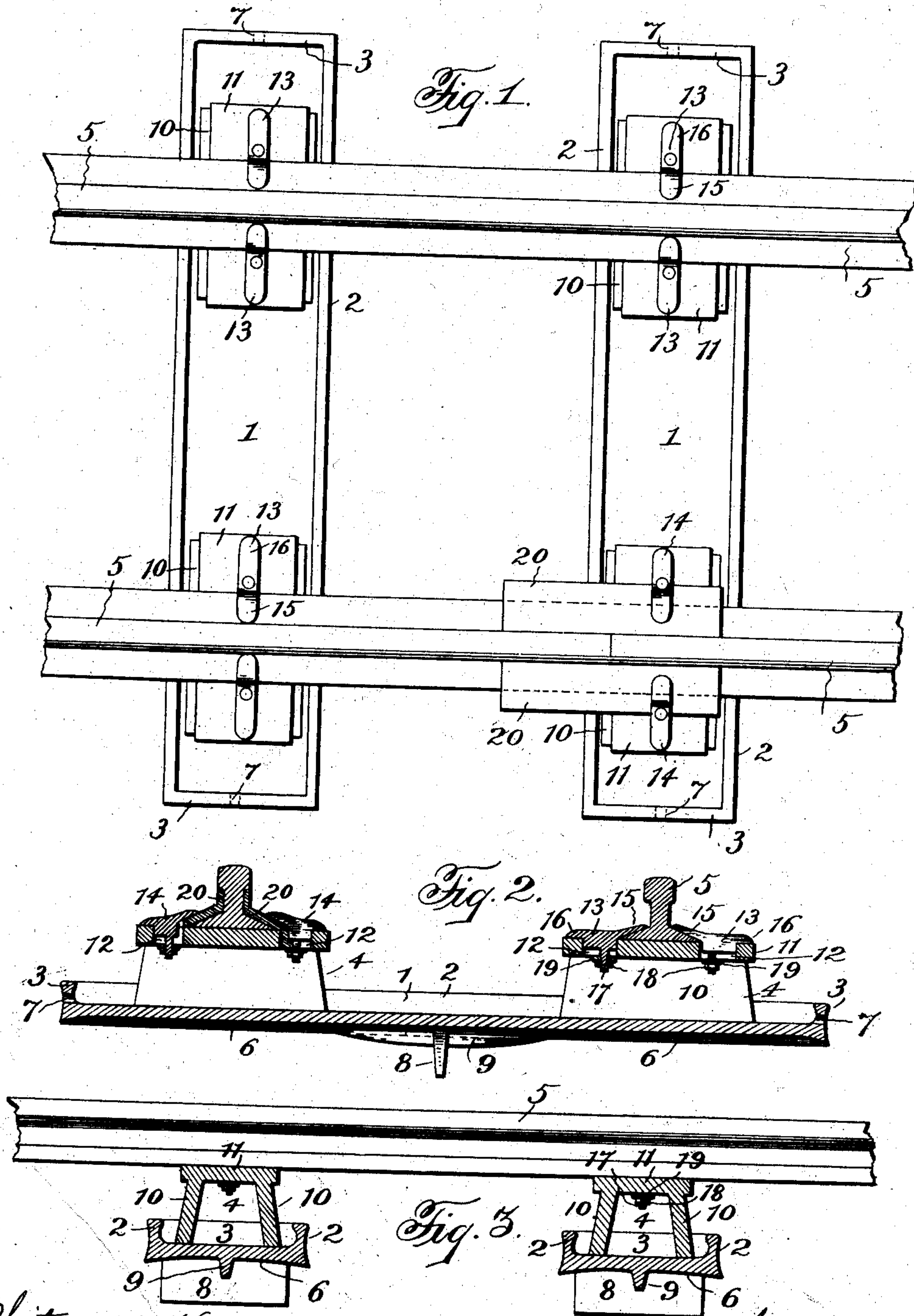
J. E. BURNS.

Patented Aug. 12, 1902.

CROSS TIE.

(Application filed May 29, 1902.)

(No Model.)



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JOHN E. BURNS, OF NORTHPORT, NEW YORK.

## CROSS-TIE.

SPECIFICATION forming part of Letters Patent No. 706,523, dated August 12, 1902.

Application filed May 29, 1902. Serial No. 109,486. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN E. BURNS, a citizen of the United States, residing at Northport, in the county of Suffolk and State of New York, have invented a new and useful Cross-Tie; and I do hereby 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.

The invention relates to improvements in cross-ties; and it has for its object to provide a metallic cross-tie of great strength, durability, and efficiency adapted to be securely anchored in the ballast of a road-bed and capable of affording a firm support for the rails and enabling the same to be readily removed and readily replaced.

The invention consists in the novel construction and arrangement of parts hereinafter described and shown, and particularly pointed out in the claims.

In the drawings forming part of this specification, and in which like numerals of reference designate corresponding parts, Figure 1 is a plan view of a cross-tie constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the same, showing the long rail-engaging clamps at one end and the short fish-plate-engaging clamps at the other end. Fig. 3 is a transverse sectional view.

Referring to the drawings, 1 designates a cross-tie constructed of suitable metal and provided at its sides and ends with upwardly-extending flanges 2 and 3, forming walls of a trough, and the said cross-tie is adapted to receive a portion of the ballast and to be embedded in the same. The trough forms the bottom or body of the cross-tie, which is provided with upwardly-extending rail-chairs 4, adapted to support rails 5. The bottom of the trough has its lower face 6 concaved to cause the ballast to pack under it and to enable it to obtain a firm hold on the ballast, so that it will not slip when it is subjected to a heavy strain or vibration. The side and end walls or flanges are provided with inner and outer concave faces to enable the cross-ties to obtain a firm hold on the ballast and to enable the same to pack in and around it. The end flanges or walls 3 are provided with

drain-opening 7 to permit any moisture to drain from the interior of the trough.

In order to prevent the cross-tie from slipping longitudinally, it is provided at its center with a depending transverse flange 8, and it has a longitudinal flange 9 at each side of the transverse flange 8. The transverse flange, which is tapering in cross-section, extends a considerable distance below the trough, and the longitudinal flange is tapering in width and length and is adapted to resist any lateral movement of the cross-tie.

Each rail-chair, which is hollow, is composed of inclined upwardly-converging sides 10, located between the side flanges or walls of the trough and connected by horizontal top 11, which receives the rails. The sides 10 of the rail-chair are suitably fixed to the bottom of the trough, and the top of the rail-chair is designed to be arranged level with the surface of the road-bed, and it will be clear that the weight of the cross-tie and the weight of the material of the road-bed upon the cross-tie will firmly hold the latter in position; but, if desired, the cross-tie may be filled with cement or other material to increase its strength and stability.

The top of the rail-chair, which receives the rail, is provided at opposite sides of the same with slots 12, adapted to receive clamps 13 and 14 for holding the rails in position. The clamp 13 consists of a rectangular body portion fitting within the slot and provided at its inner end with an engaging portion or jaw 15 and at its outer end with a lip 16. The jaw 15 is located above the upper face of the rail-chair and spaced from the same to receive the bottom flange of the rail, and the lip 16 rests upon the top of the chair. The clamp 13 is provided with a depending threaded shank 17, which receives a nut 18 for engaging a plate or washer 19, and the latter fits against the lower face of the top of the rail-chair, the nut and the plate being located within the same. The clamp 13 directly engages the rail, and the clamp 14, which is provided with a shorter body portion, is adapted to engage a fish-plate 20 and to be arranged at a rail-joint. By locating the nuts within the rail-chairs they can be removed only by means of a ratchet-wrench and are not liable to be tampered with, as will be readily ap-



parent. Also as the cross-ties will be all constructed of a similar gage for the same road there will be no difficulty in properly laying the rails, as the cross-tie will form a gage  
5 and maintain the proper parallelism of the rails.

It will be seen that the cross-tie is exceedingly simple and inexpensive in construction, that it possesses great strength and durability,  
10 and that it will enable rails to be quickly laid. Also it will be clear that the cross-tie when embedded in the ballast of the road-bed will be firmly held in position. Also the cross-tie is applicable to trestles, bridges, and the  
15 like, and the bottom of the cross-tie may be provided with perforations for the reception of suitable fastening devices for securing it to trestles and bridges.

What I claim is—

20 1. A cross-tie comprising a trough-like body

portion, having side and end walls provided with concave faces, and rail-chairs arranged between the side and end walls, substantially as described.

2. A cross-tie comprising a trough-like body 25 portion having side and end walls and provided with depending bottom flanges, and rail-chairs arranged between the side flanges, substantially as described.

3. A cross-tie comprising a trough-like body 30 portion, having side and end walls, and the upwardly-extending hollow rail-chairs, substantially as described.

In testimony whereof I have hereto affixed my signature in the presence of two witnesses. 35

JOHN E. BURNS.

Witnesses:

CHAS. B. PARTRIDGE,  
HENRY G. SIMPSON.