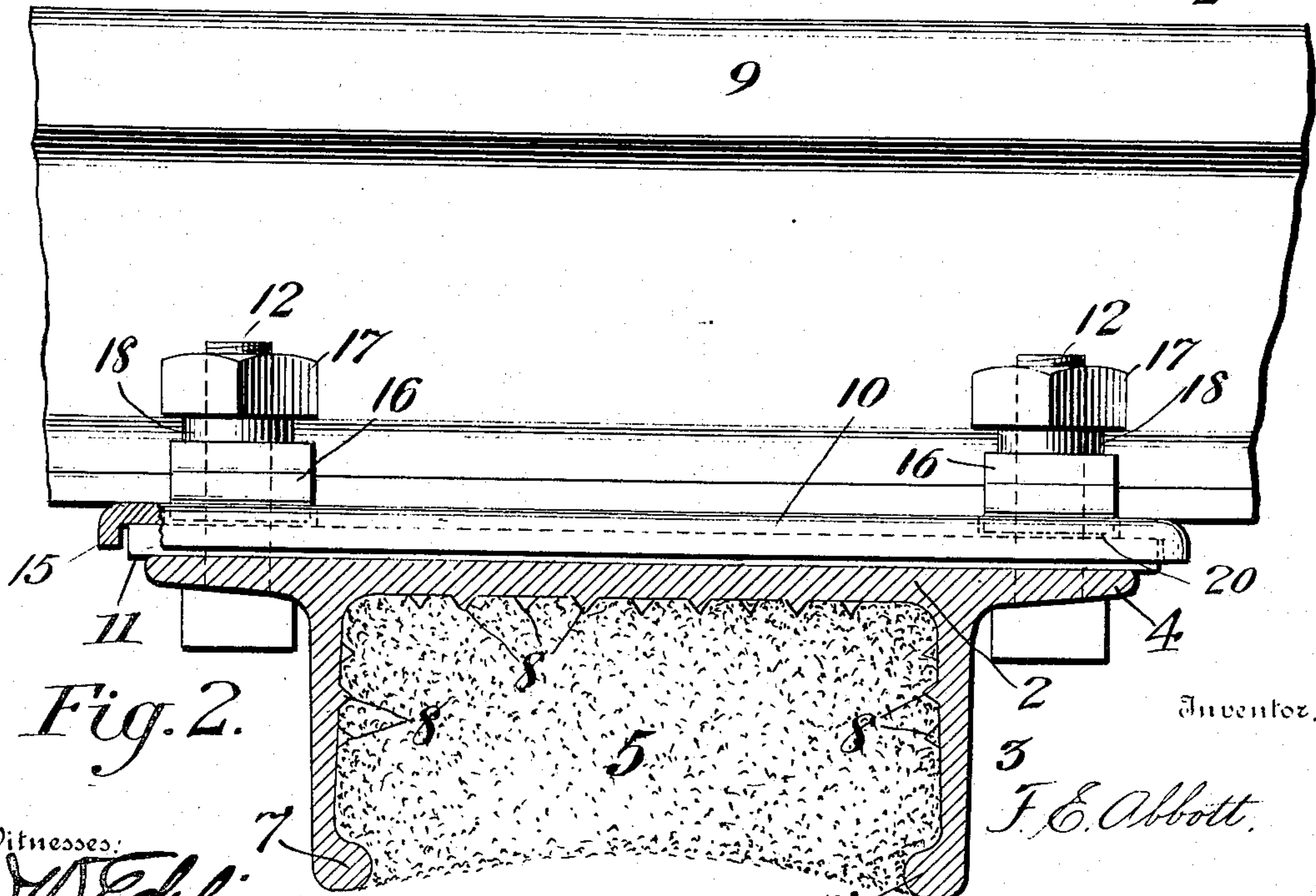
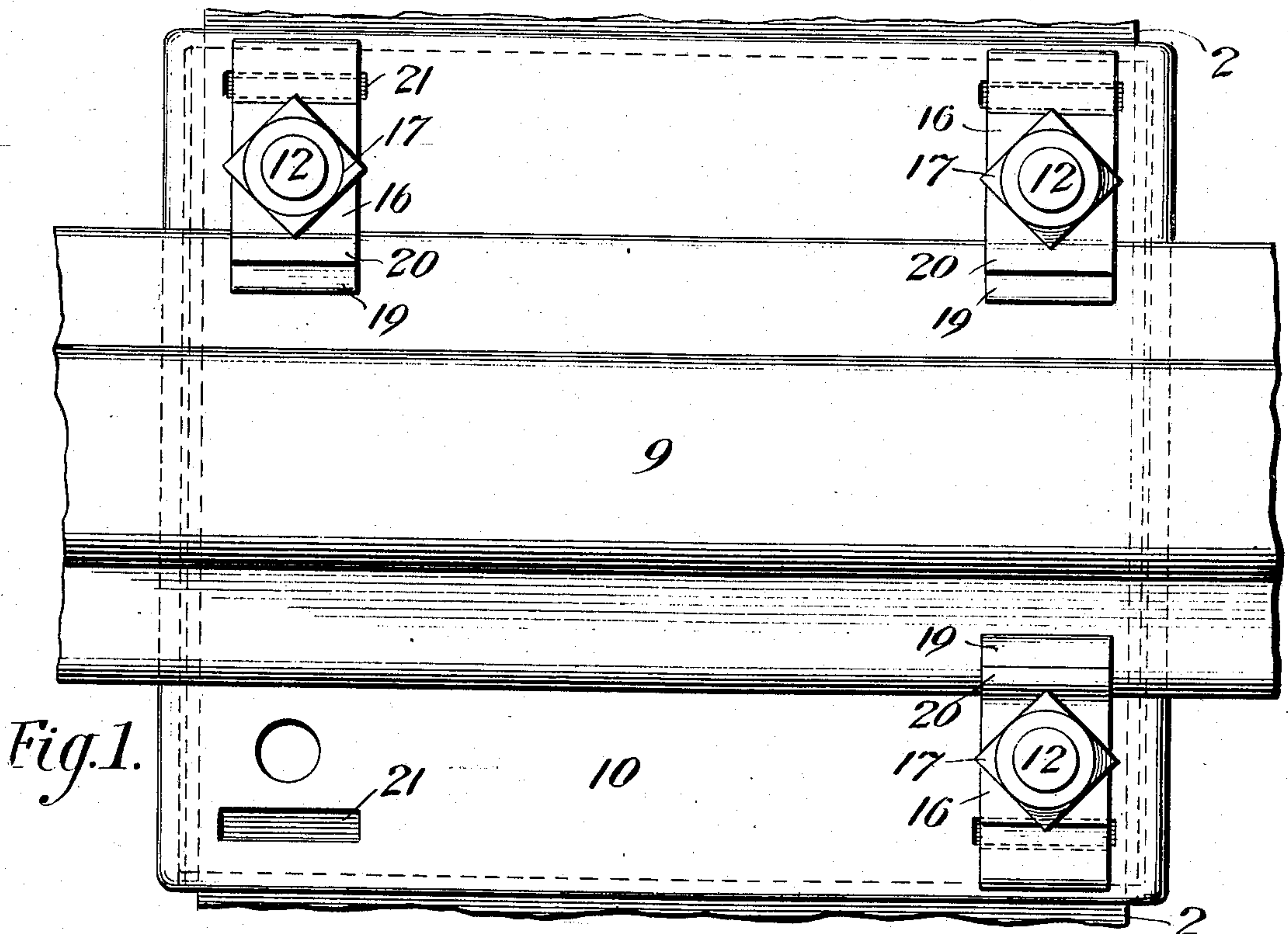


F. E. ABBOTT.
RAILWAY CROSS TIE.
APPLICATION FILED APR. 11, 1907.

911,022.

Patented Feb. 2, 1909.
2 SHEETS—SHEET 1.



Witnesses:
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R. C. Galt.

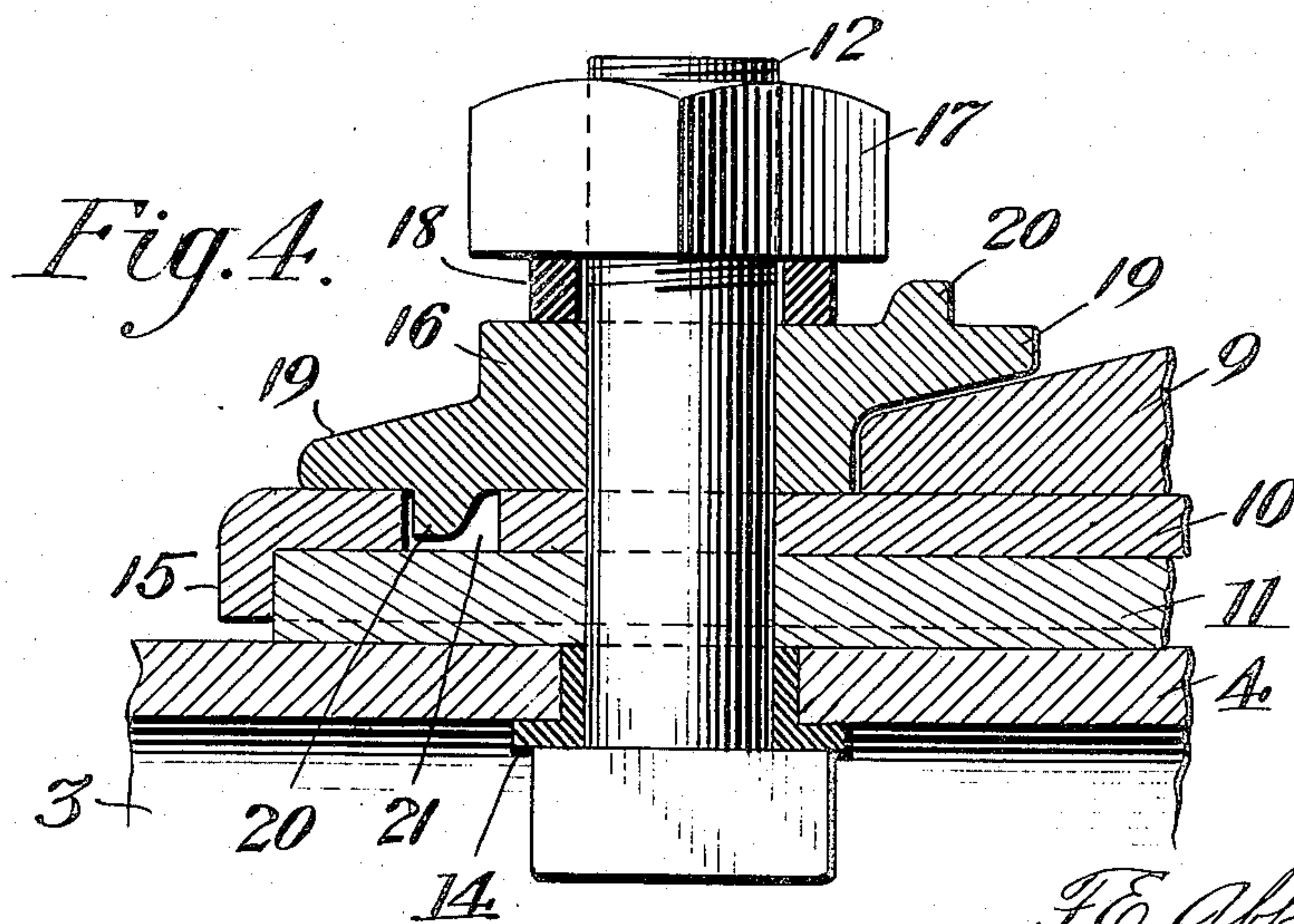
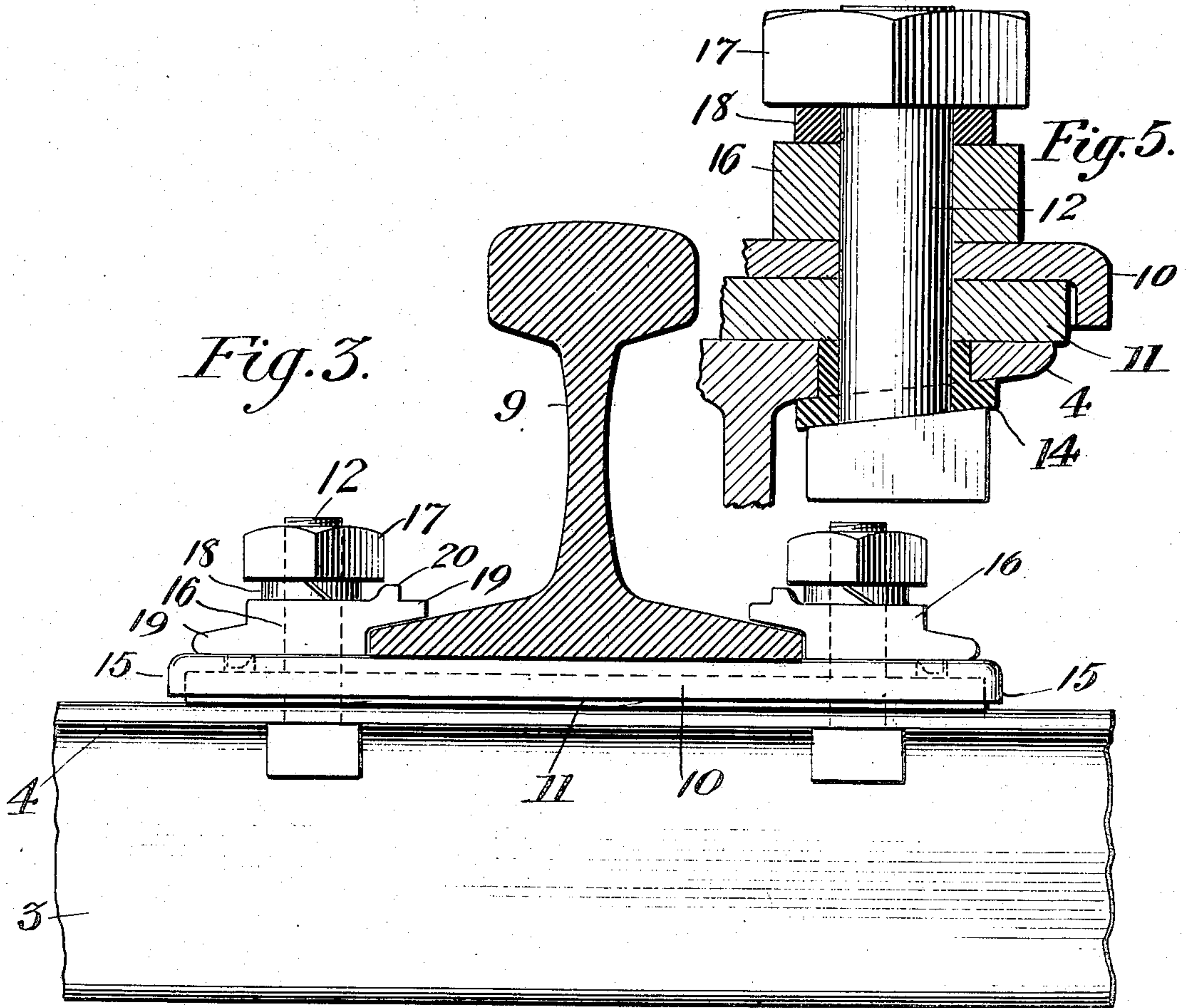
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UNITED STATES PATENT OFFICE.

FRANKLIN E. ABBOTT, OF BUFFALO, NEW YORK.

RAILWAY CROSS-TIE.

No. 911,022.

Specification of Letters Patent.

Patented Feb. 2, 1909.

Application filed April 11, 1907. Serial No. 367,476.

To all whom it may concern:

Be it known that I, FRANKLIN E. ABBOTT, a citizen of the United States, residing in the city of Buffalo, county of Erie, State of New York, have invented certain new and useful Improvements in Railway Cross-Ties; 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.

This invention relates to railway cross ties or stringers and rail supporting and fastening means therefor.

The object of the invention is to provide a metallic cross tie having sufficient weight and frictional surface to hold the same in position in the ballast, an ample base or support for the rails and also to provide means whereby the rails may be readily and removably secured to the ties.

The invention also contemplates the provision of rail fastening means, which will relieve the bolts from shearing strains, and, while made to standards, are so constructed as to be reversible to alter the gage of the track whenever such alteration is found necessary, as for example on curves.

The invention has also in view the provision of means for effectively insulating the rails from the cross ties, the insulating medium also constituting a cushion to reduce noise and take up shocks.

In the accompanying drawings, Figure 1 is a fragmentary view of my improved tie showing a rail section in position. Fig. 2 is a cross sectional elevation of a tie showing the mode of securing the rails thereto. Fig. 3 is a side elevation of a portion of the tie and rail fastening means, showing the rail in cross section. Fig. 4 is an enlarged vertical section taken transversely of the rail and through one of the securing means. Fig. 5 is a vertical section taken at right angles to that shown in Fig. 4.

The metallic portion of the tie is of a modified channel form, having a top plate or web 2, with downwardly projecting webs or flanges 3 located inside of the side edges of the top plate, so as to provide flanges 4 projecting outwardly beyond said webs for the purpose of receiving the rail fastening means. This metallic portion of the tie is of uniform section from end to end, so that it may be conveniently made by rolling. It is adapted to be placed in the road bed with the plate or

web 2 uppermost and horizontal and the webs or legs 3 projecting downwardly.

To give sufficient weight to the tie, and also to provide additional frictional engagement with the ballast, the hollow lower portion is provided with a suitable filling material 5, which is preferably of cement or concrete, and may, if desired, be of any suitable material packed and compressed in place. The bottom of the filling material, is, of course, in frictional engagement with the ballast and will materially aid in reducing the endwise movement of the tie.

In order to more securely hold the tie in position in the ballast and prevent it from being jarred out, the bottom face of this filling 5 may conveniently be made concave, as shown. The lower edges of the webs or flanges 3 are provided with inwardly projecting ribs or beads 7, which strengthen said webs or flanges 3 and serve to lock the filling firmly in place, and the inner faces of said webs or flanges 3, as well as the bottom face of the top plate 2, are preferably roughened or ribbed in the rolling operation, to provide additional anchorage for the filling. To effect this result, slight projections 8, as illustrated in Fig. 2, may be provided on the inner surfaces of the channel, but it will be understood that any other convenient mode of roughening the surface may be employed.

The rails 9 rest upon the base plate 10, which is separated from the metallic cross tie by a suitable layer or plate of insulating material 11, which may be of fiber, wood or any other suitable insulating material, and which, preferably, will also be sufficiently elastic to give a cushioning effect to reduce noise and take up shock. The rail fastening bolts 12 extend up through holes in the flanges 4 of the tie and through corresponding holes formed in the base plate 10 and intermediate plate 11. Each of said bolts is insulated from the flange 4 by means of a flanged fiber ring 14 surrounding the bolt and projecting through the hole in the flange 4. If a board or other similar fiber is employed as an intermediate plate 11, there is always some liability of splitting, and, in order to hold the plate in place and prevent it escaping, should it split, the metallic base plate 10 is flanged, preferably on all edges, as shown at 15, in order to form a shallow pan-like structure which caps and entirely incloses the intermediate plate 11 on its top and sides, and therefore prevents

the latter from getting out of place under any conditions.

The rails are held in place by means of clips 16 which are perforated to receive the bolts 12, which latter are provided with nuts 17 held against accidental turning by spring washers 18. The clips 16 are formed with flat top and bottom faces and at their ends with projecting beveled or inclined portions 19 which overlap the face flanges of the rails. Said clips are also provided with lugs 20 adapted to enter holes or recesses 21 in the base plate, so as to relieve the bolts of all shearing strains. The base plate 10 serves substantially as a tie between the clips on the two opposite sides of the rails. The clips 16 have both ends and both faces alike so that they are reversible, and either end may be made to overlap the base flanges of the rail. One of the ends, however, is slightly shorter than the other, that is to say, shorter with reference to the center of the bolt hole therethrough. Consequently by reversing the clips, the gage of the track may be altered, as, for instance, on curves where the gage should be somewhat greater than on straight tracks. These clips are of standard form and may conveniently be made by rolling, Fig. 4 showing the cross section of the bar to be rolled, and which is formed into clips by cutting the bar into short sections and appropriately punching or drilling the bolt holes therein. Inasmuch as the metallic portion of the cross tie may also be formed by rolling, it will be noted that all parts of the structure can be made to standards.

The flanges 4 of each cross tie are preferably provided with four holes in each flange for receiving the rail fastening bolts 12, although, if desired, only two clips need be used for each rail fastening, said clips being arranged diagonally with respect to the rail. The holes in the flanges will be punched at such distances apart so as to accommodate the widest standard rail base, and then, by merely varying the length of the fastening clips, any rail of lesser base may be secured to the tie; consequently when track is being relaid with rails of a different width of base, it is not necessary to remove the cross ties, but merely to substitute a different and appropriate size of clip to suit the change in the rail base.

Inasmuch as the outwardly projecting flanges 4 of the cross tie always lie substantially at the surface of the ballast, it will be apparent that the rail fastening bolts may be

applied and removed with a minimum amount of disturbance to the ballast.

Having thus described my invention, what I claim is:—

1. A railway cross tie or stringer, comprising a metallic member having a top plate or web and legs or flanges projecting downwardly therefrom inside of its side edges and beaded longitudinally of their lower edges, thereby leaving outwardly projecting flanges which are perforated for receiving rail fastening means.

2. A railway cross tie or stringer comprising a metallic member having a top plate or web and legs or flanges projecting downwardly therefrom inside of its side edges, thereby leaving outwardly projecting flanges at the top for receiving rail fastening means, and a composite filling between the top plate and downwardly projecting legs.

3. A railway cross tie or stringer, comprising a metallic member having a top plate or web and legs or flanges projecting downwardly therefrom inside of its side edges, thereby leaving outwardly projecting flanges at the top for receiving the rail fastening means, said top plate and downwardly projecting legs being roughened on their inner faces and filling material such as cement filling the space between said legs and top plate.

4. A railway cross tie or stringer, comprising a metallic member of modified channel form having the flanges or legs projecting downwardly and having outwardly projecting flanges at the top, said flanges or legs having an inwardly projecting beading extending longitudinally thereof and filling material between said legs or flanges and the top of the tie, said filling material having a concave lower face.

5. A metallic tie rolled, or otherwise shaped, in the form of a trough-like structure having flanges formed integrally with and projecting from the top plate and extending longitudinally thereof, together with a filling of concrete.

6. A metallic tie rolled, or otherwise shaped, in the form of a trough-like structure having rounded lower edges on the supporting walls and an inwardly projecting beading extending longitudinally thereof, and a filling of concrete.

In testimony whereof I affix my signature, in presence of two witnesses.

FRANKLIN E. ABBOTT.

Witnesses:

GEORGE W. SMITH,
EDWARD J. SYNE.