

M. F. BONZANO.
METALLIC CROSS TIE.
APPLICATION FILED JUNE 19, 1906.

Fig. 1.

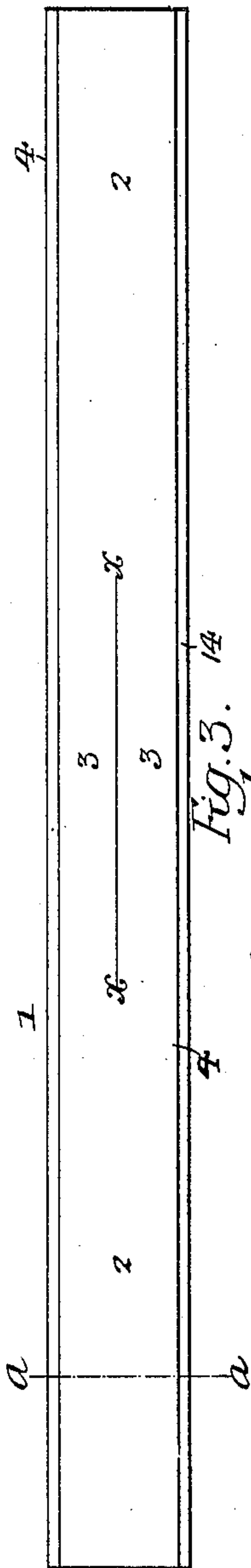


Fig. 3.

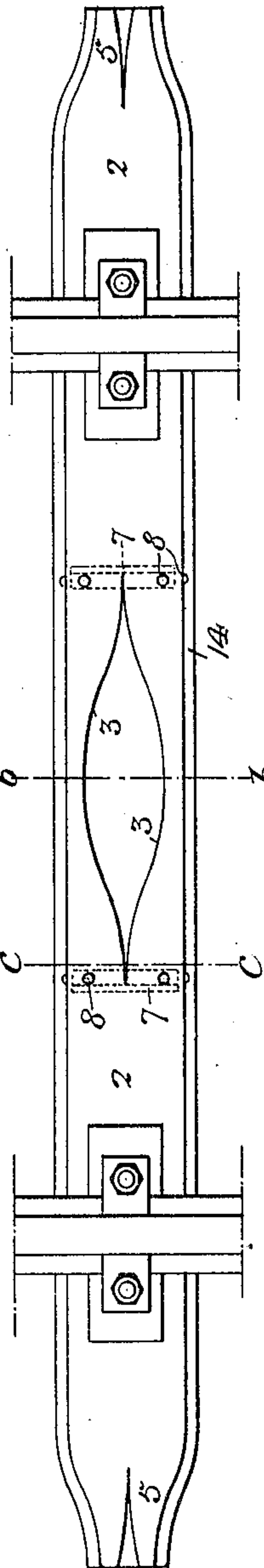


Fig. 4.

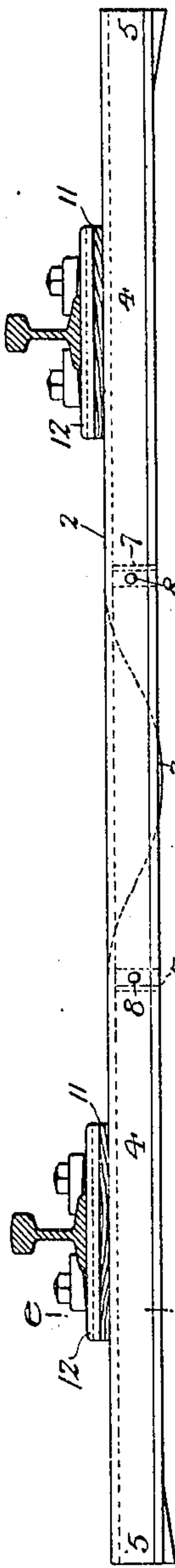


Fig. 5.

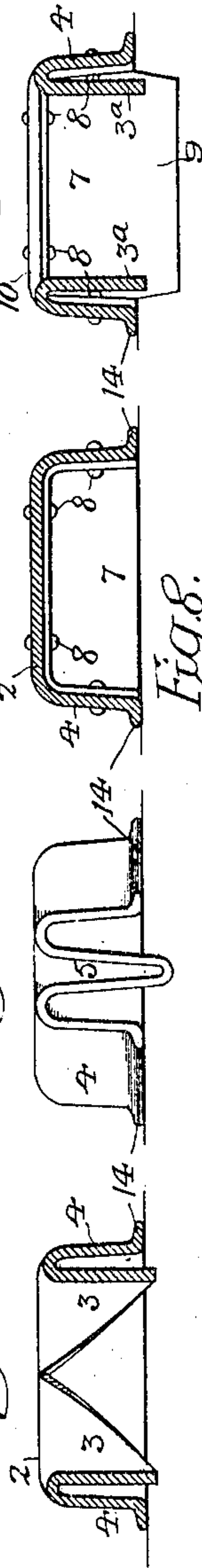


Fig. 6.

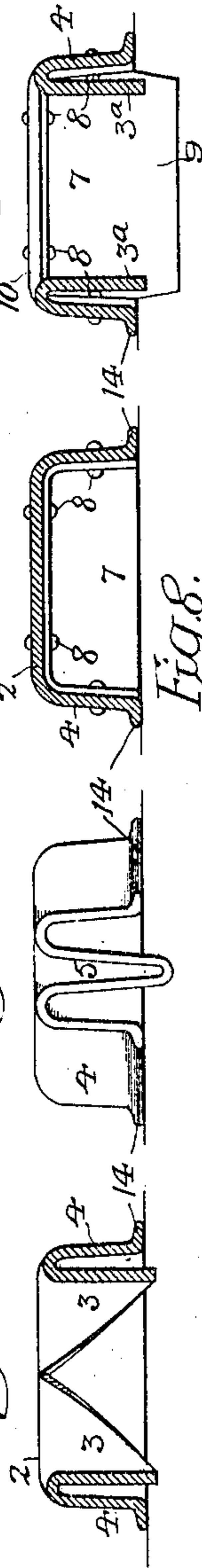


Fig. 7.

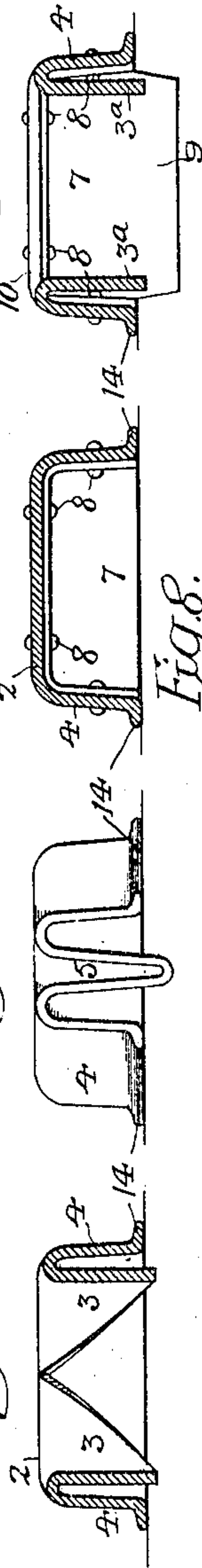


Fig. 8.

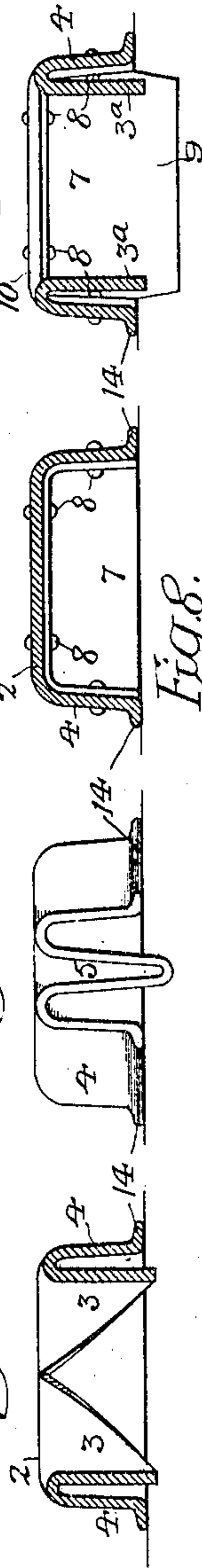


Fig. 9.

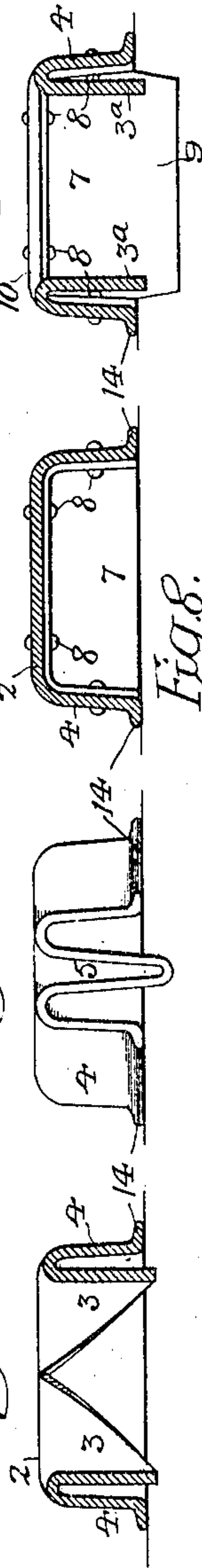
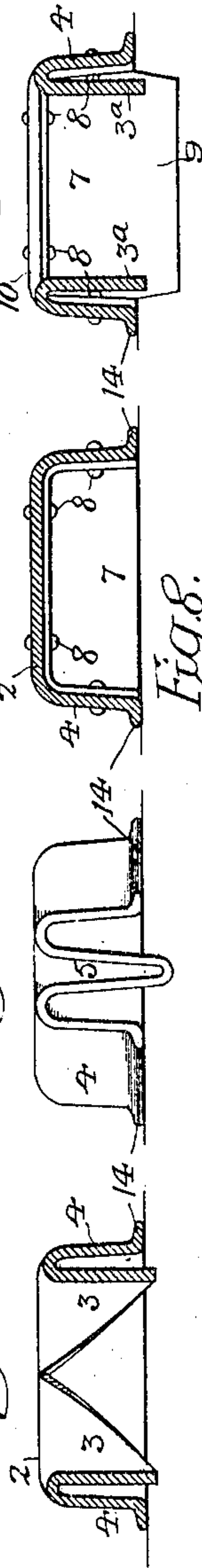


Fig. 10.



Witnesses:

Walter A. Pullinger

Wills & Burrows

Fig. 2.

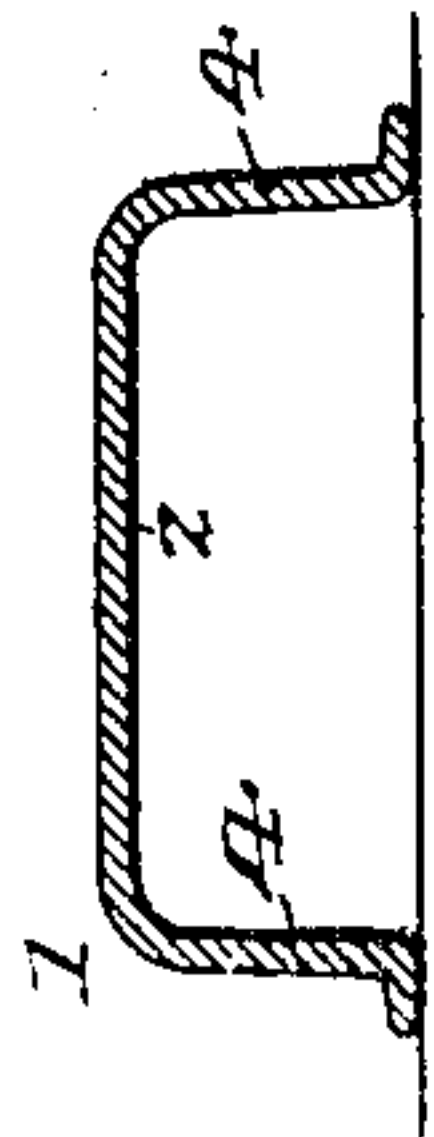
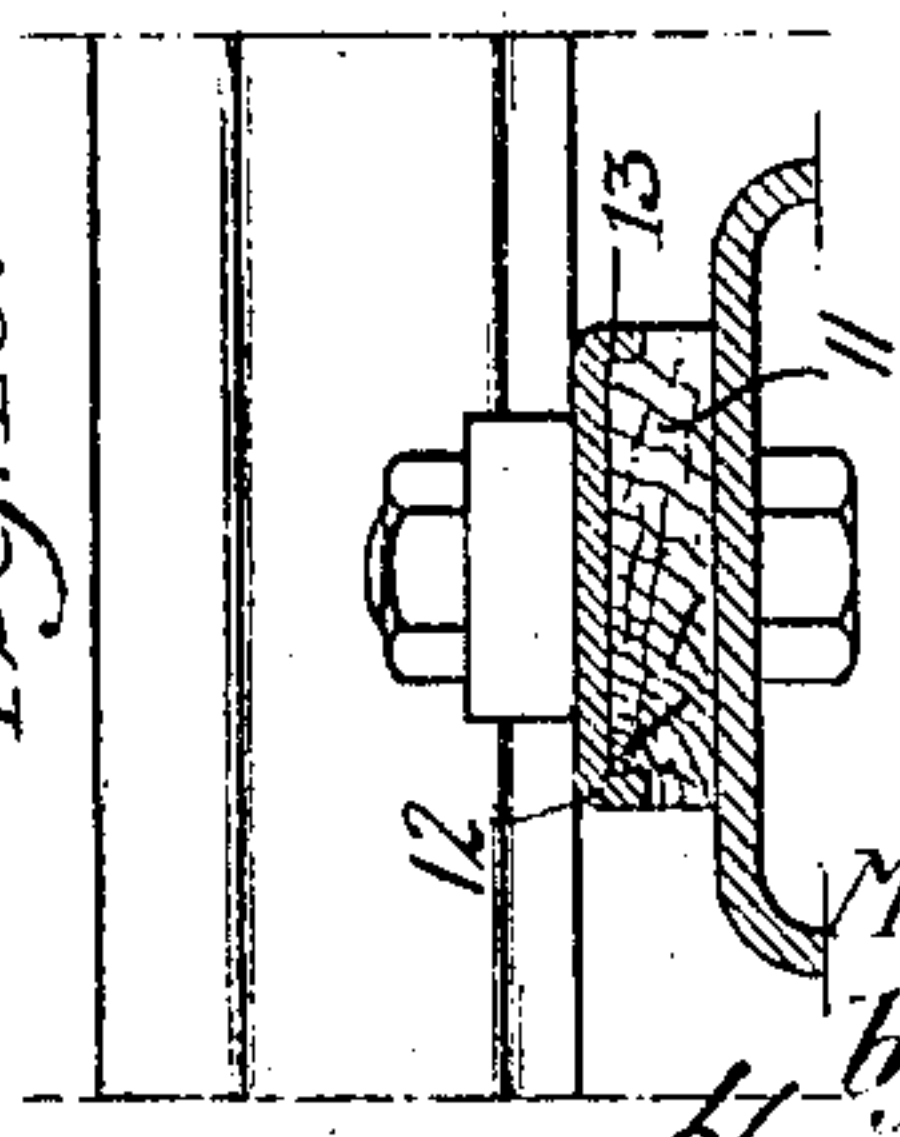


Fig. 10.



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UNITED STATES PATENT OFFICE.

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METALLIC CROSS-TIE.

No. 844,774.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed June 19, 1906. Serial No. 322,377.

To all whom it may concern:

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

My invention relates to metallic cross-ties, and consists of an improved structure which may be made from a channel-beam or trough-section and is so constructed as to provide means for retaining a portion of the ballast, thus insuring the holding of the tie in the proper relative position with respect to the road-bed.

My invention is fully shown in the accompanying drawings, in which—

Figure 1 is a plan view of a channel-beam or trough-section blank having its upper web cut preparatory to forming my improved tie. Fig. 2 is a cross-sectional view of the channel-beam or trough-section, taken on the line *a a*, Fig. 1. Fig. 3 is a plan view of the finished tie made in accordance with my invention with the rails in place. Fig. 4 is a side elevation of the finished tie. Fig. 5 is an end elevation of the same. Fig. 6 is a sectional view on the line *b b*, Fig. 3. Fig. 7 is a sectional view on the line *c c*, Fig. 3. Fig. 8 is a plan view of a modified form of tie embodying my invention. Fig. 9 is a sectional view of the same on the line *d d*, Fig. 8; and Fig. 10 is a sectional view on the line *e e*, Fig. 4.

The principal feature of my invention is to form a channel-beam or trough-section into a railroad-tie and provide the same with ballast-holding pockets on the under side at the points beneath the lines of the rails. In making my improved tie I take a channel-beam or trough-section of metal, such as shown at 1 in Fig. 1, and slit the top web 2 of the same on the line *x x*. I then place the beam between dies or in any other suitable way compress the top web 2 of the same at the slit portion, so that the sections 3 are pressed down toward or against the side walls 4 of the channel-beam, and as said walls are flared outwardly to a greater or less extent the pressed-down portions may be vertically disposed at their central part or pushed against said side walls. This action materially strengthens the central portion of the tie and provides one end for each of the ballast-holding pockets on the under side of the tie beneath the rail-supporting portions. The bent-down portion may extend below the

side walls, as shown in Figs. 4 and 6. To form the other ends of said pockets, the ends of the tie are compressed or crimped, as shown at 5 in Figs. 3 and 5, which condition may be accomplished by subjecting such ends to the action of pressure between dies or in any other suitable manner. These crimped ends 5 and the gussets formed by pressing down the central portion of the upper web 2 of the tie provide at either end of the tie structure ballast-holding pockets that materially assist in retaining the tie in a fixed position. To insure, however, that the ballast will be held from displacement toward the center of the tie, I may provide the cross-plates 7, which are riveted at 8 to the side walls of the tie. These plates may be discontinued below the side flanges of the beam forming the tie, as shown in Fig. 7, or they may project some distance below the same, as shown at 9 in Fig. 9, as may be desired. In the latter instance they form additional means to prevent the longitudinal movement of the tie.

In the modified structure shown in Fig. 8 the top web 2 of the tie is cut in line with the greatest length thereof and also at the ends, as at 10, at right angles thereto. The portions 3^a of the top web are then pressed down, as clearly illustrated in Fig. 9 of the drawings, adding additional strength to the side walls of the tie. In this modified form of structure the cross-plates 7 will be provided at the ends of the tie, as well as at the ends of the central cut, and with the side walls of the channel structure will form the necessary ballast-holding pockets. If desired, the cut at the central portion of the tie may be longer, thereby providing longer gussets to stiffen the tie, with shorter, though sufficiently large, ballast-holding pockets.

The rails may be secured to the ties by any suitable form of fastening; but they are by preference, to secure a certain amount of elasticity, mounted on blocks 11, of wood, fiber, or other suitable material, which carry metal wear and load-distributing plates 12, interposed between said blocks and the tread of the rails. These plates are flanged, as clearly shown at 13 in Fig. 10, and fit over the edges of said blocks.

The form of channel-beam or trough-section which I have shown is provided with a strengthening rib or flange 14 at the base of the side walls, and this materially stiffens the tie structure and affords a better support upon the road-bed than an unflanged wall.

I claim—

1. A metallic cross-tie, consisting of a channel bar or beam having the central portion of its top web cut longitudinally and the metal thereof displaced toward or against the side walls of said channel-bar.

2. A metallic cross-tie, consisting of a channel bar or beam having the central portion of its top web cut longitudinally and the metal thereof displaced toward or against the side walls of said channel-bar, and having open-bottomed ballast-receiving boxes or pockets to support the rails.

3. A metallic cross-tie, consisting of a channel bar or beam having the central portion of its top web cut longitudinally and the metal thereof displaced toward or against the side walls of said channel-bar, and having open-bottomed ballast-receiving boxes or pockets with flat top bearings for the support of the rails.

4. A metallic cross-tie, consisting of a channel bar or beam having its central portion cut and the metal thereof displaced toward or against the side walls of said channel-bar, and having the ends of the same crushed or crimped so as to form open-bottomed ballast-receiving boxes to support the rails.

5. A metallic cross-tie, consisting of a channel bar or beam having its central portion cut and the metal thereof displaced toward or against the side walls of said channel-bar, and having the ends of the same crushed or crimped so as to form open-bottomed ballast-receiving boxes with flat top bearings for the support of the rails.

6. A metallic cross-tie, consisting of a channel bar or beam having its central portion cut and the metal thereof displaced toward or against the side walls of said channel-bar, and having the ends of the same crushed or crimped, in combination with cross-plates secured to the inner walls of the channel bar or beam and forming with said ends open-bottomed ballast-receiving boxes to support the rails.

7. A metallic cross-tie, consisting of a channel bar or beam having its central portion cut and the metal thereof displaced toward or against the side walls of said channel-bar and having the ends of the same crushed or crimped, in combination with cross-plates secured to the inner walls of the

channel bar or beam and forming with said ends open-bottomed ballast-receiving boxes with flat top bearings for the support of the rails.

8. A metallic cross-tie, consisting of a channel bar or beam with flanged side walls having its central portion cut and the metal thereof displaced toward or against the side walls of said channel-bar, and having the end of the same crushed or crimped, in combination with cross-plates secured to the inner walls of the channel bar or beam and forming with said ends open-bottomed ballast-receiving boxes with flat top bearings for the support of the rails.

9. A metallic cross-tie, consisting of a channel bar or beam having its central portion cut and the metal thereof displaced toward or against the side walls of said channel-bar, in combination with cross-plates secured to the inner walls of the channel bar or beam and forming with said ends open-bottomed ballast-receiving boxes with flat top bearings for the support of the rails.

10. A metallic cross-tie, consisting of a channel bar or beam having ballast-holding pockets formed in the under side of the same, in combination with blocks of wood or other suitable material carried by the upper side of the tie over said ballast-holding pockets and upon which the rails rest, wear and load-distributing plates interposed between said blocks and the rails, and fastening means passing through said tie, block and plate and confining said rails in place.

11. A metallic cross-tie, consisting of a channel bar or beam having ballast-holding pockets formed in the under side of the same, in combination with blocks of wood or other suitable material carried by the upper side of the tie over said ballast-holding pockets and upon which the rails rest, flanged wear and load-distributing plates interposed between said blocks and the rails, and fastening means passing through said tie, block and plate and confining said rails in place.

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

MAXIMILIAN F. BONZANO.

Witnesses:

W. E. ROODCAP,
G. H. GRIMM.