June 14, 1927. 1,632,181

K. C. GARDNER

CROSSTIE FOR RAILWAY CARS

Filed Jan. 12, 1927 2 Sheets-Sheet 1

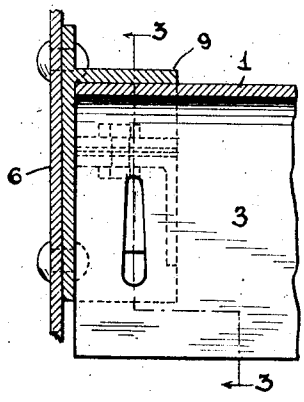


Fig. 1

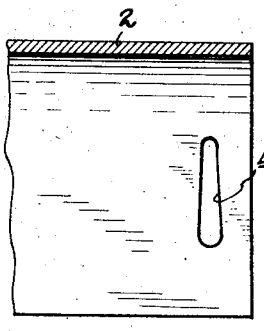


Fig. 2

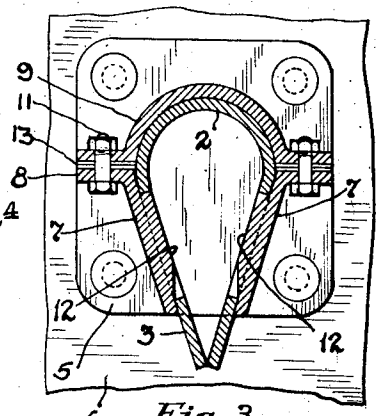


Fig. 3

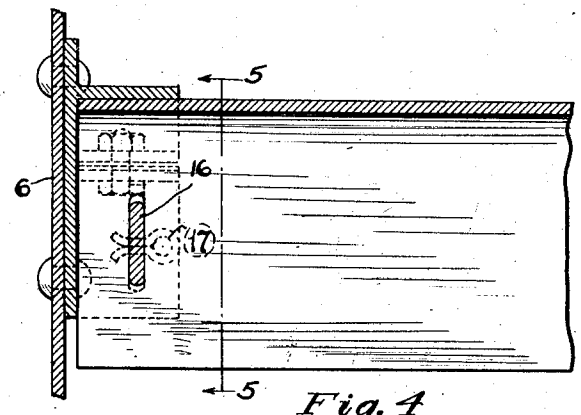


Fig. 4

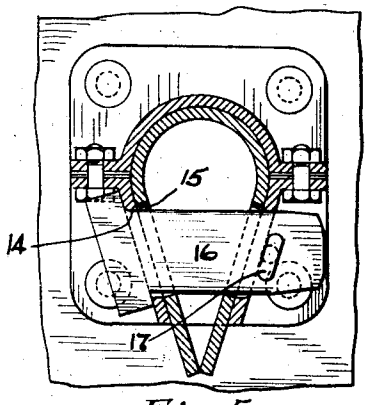


Fig. 5

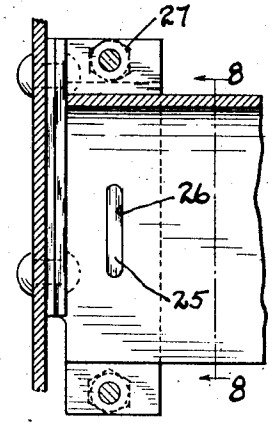


Fig. 6

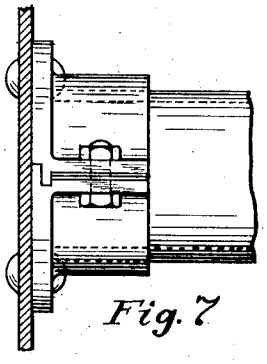


Fig. 7

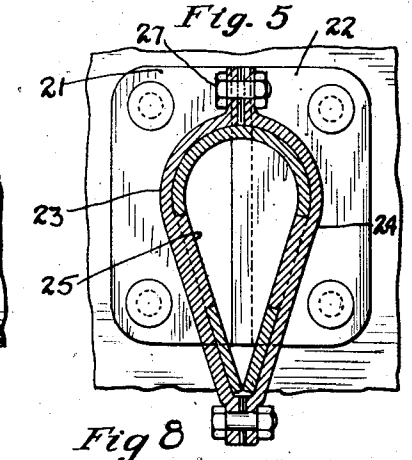


Fig 8

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CROSSTIE FOR RAILWAY CARS

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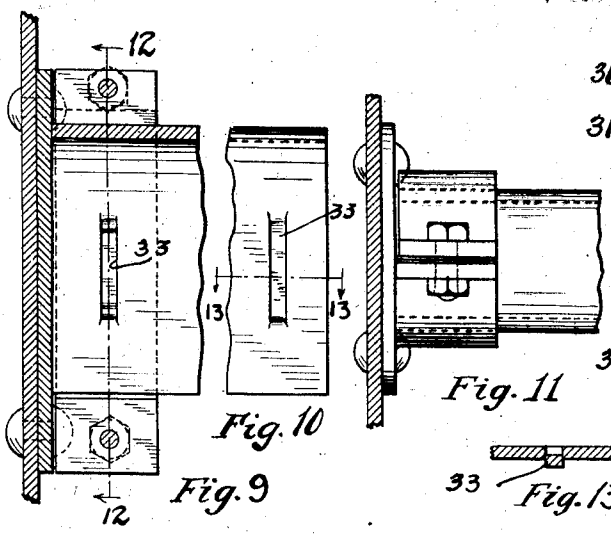


Fig. 9

Fig. 10

Fig. 11

Fig. 13

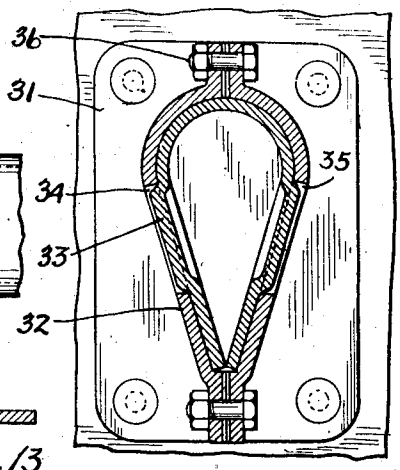


Fig. 12

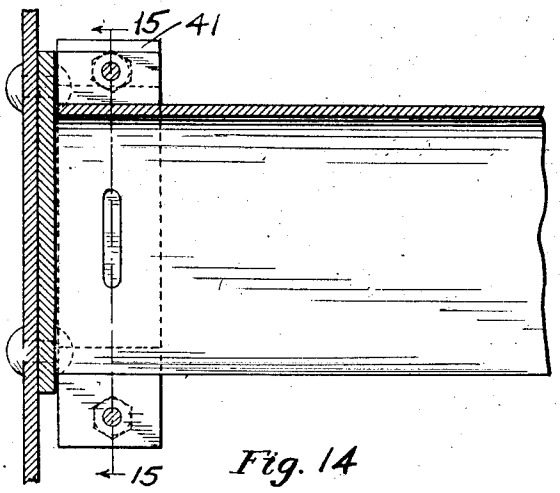


Fig. 14

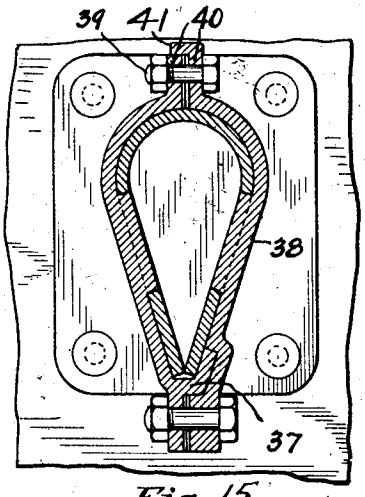


Fig. 15

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Patented June 14, 1927. 1,632,181

UNITED STATES PATENT OFFICE.

KENNETH C. GARDNER, OF GREENVILLE, PENNSYLVANIA, ASSIGNOR TO THE GREENVILLE STEEL CAR COMPANY, OF GREENVILLE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

CROSSTIE FOR RAILWAY CARS.

Application filed January 12, 1927. Serial No. 160,614.

This invention as indicated relates to a cross tie or cross brace for railway cars. More particularly it comprises a structure adapted to be positioned transversely of railway cars of the gondola or hopper type. It is intended especially to provide a cross tie which may readily be replaceable and which may be manufactured together with its supporting members at a minimum cost.

One form of cross tie suitable for this purpose is illustrated in a companion application filed on Jan. 12, 1927, Serial No. 160,615, for "car construction". The present form of construction embodies changes in the construction of the supporting member as well as in the ends of the cross tie to cooperate therewith. To the accomplishment of the foregoing and related ends, said invention, then consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is a central vertical sectional view of one end of a cross tie and support embodying the principles of my invention; Fig. 2 is a central vertical sectional view of the end of a cross tie of the type shown in Fig. 1; Fig. 3 is a transverse sectional view taken along the line 3—3, shown in Fig. 1, looking in the direction of the arrows; Fig. 4 is a central vertical sectional view of a modified form of cross tie and support; Fig. 5 is a sectional view taken along the line 5—5 shown in Fig. 4, looking in the direction of the arrows; Fig. 6 is a central vertical sectional view of another modified form of construction of cross tie and support; Fig. 7 is a top plan view of the structure in Fig. 6; Fig. 8 is a transverse sectional view taken along the line 8—8 shown in Fig. 6, looking in the direction of the arrows; Fig. 9 is a central vertical sectional view of another modified form of cross tie and support; Fig. 10 is a fragmentary side elevation showing one end of the cross tie; Fig. 11 is a top plan view shown in Fig. 9; Fig. 12 is a transverse sectional view taken along the line 12—12 shown in Fig. 9; Fig. 13 is a sectional detail view taken along the lines 13—13 shown in Fig. 10; Fig. 14 is a central sectional view of another modified form of construction; and Fig. 15 is a transverse sectional view taken along the line 15—15 shown in Fig. 14.

As is clearly shown in Figs. 1 to 3 of the drawing in my preferred form of construction, I provided a cross tie 1, preferably formed of an elongated sheet of metal of uniform gauge and bent adjacent its upper edge 2 to substantially semi-circular cross-sectional outline, with its side portions 3 substantially flat and angularly approaching each other at their lower edges. The cross tie adjacent its ends is provided with slots 4 which as is shown in Figs. 1 and 2 are spaced from and are substantially parallel to the end edges of the cross tie and extend through each of the side walls of the folded sheet in alignment with each other at the respective ends of the tie. The slots are preferably somewhat wider across their lower portions, their side edges being inclined upwardly toward each other.

The ends of the cross ties are adapted to be supported in sockets comprising a base plate 5, adapted to be riveted to the side wall 6 of a railway car or other structure, and having a pair of flanges 7 projecting forwardly therefrom and inclined downwardly toward each other in V-shape. Said flanges have horizontal sections 8 adjacent their upper edges against which the ends of a strap 9 of semi-circular outline centrally are adapted to engage. Suitable bolts 11 engaged through aligned perforations in the ends of the horizontal sections and the strap respectively serve to hold the strap in rigid engagement. The inclined walls of the supporting member are provided with inwardly projecting lugs 12 which are of smaller diameter adjacent their upper ends than adjacent their bases, their side faces corresponding in inclination to the side edges of the slots heretofore described.

The method of attaching the structure illustrated in Figs. 1 to 3, it is believed will be obvious. The supporting plates are firmly riveted to the opposite inner side walls of the car body and the cross tie is then driven downwardly until its slots adjacent the ends engage over the inclined lugs on the supporting members. The final seating

of the cross tie in the supports is accomplished by tightening the strap across the upper section of the cross tie. Shims or washers 13 may be interposed between the strap ends and the supporting members.

In place of the lugs illustrated in Figs. 1 to 3, it has been found that for certain installations slots 14, 15, may be formed through the walls of the cross tie spaced from its ends as well as through the downwardly projecting flanges of the supporting member as is shown in Figs. 4 and 5. A flat key 16 having a head of suitable shape is then inserted through the aligned slots and held in position by means of a cotter pin 17.

In the form of construction shown in Figs. 6 to 8, the supporting plate is formed in two sections 21, 22, offset along a central line to interengage, each of which has a forwardly projecting cross tie engaging member 23, 24, of curved outline similar to that of a vertical half section of the end of the cross tie. A lug 25 is formed upon each of the inclined walls of said forwardly projecting flanges which is adapted to engage similarly shaped slots 26 spaced from the ends of the cross tie. The plate sections are assembled by engaging the lugs in the slots and clamping the plates by means of the securing bolts 27 through the projections on the tie-engaging members. Each base plate combination is then riveted to its adjacent car side. When it is desired to remove the cross tie, it is only necessary to remove one set of rivets and detach the plate on that side from holding engagement with the cross tie.

The construction shown in Figs. 9 to 12 is somewhat similar to that illustrated in Figs. 6 to 8, but the base plate 31 is formed in one piece and carries one suitably shaped forwardly projecting tie engaging member 32. The ends of the cross tie in place of being slotted are provided on each side with outwardly projecting ribs 33 which are struck up from the sheet of the cross tie parallel to and spaced from the respective ends thereof. The projecting tie engaging member on the base plate is provided with a slot 34 suitable to receive one of the ribs or lugs on the cross tie and a strap of an outline similar to a one-half section of the cross tie is adapted to fit against the opposite side thereof, said strap having a slot 35 to receive the projecting lug on the opposite side of the cross tie. When the strap is bolted against the projecting flange by means of suitable fastening members 36 engaged through the apertures in projecting sections of the support, the cross tie will be securely held against the base plate. To remove the cross tie with this form of construction, it is only necessary to remove the bolts above and below the same.

A still further form of construction is illustrated in Figs. 14 and 15 wherein the base plate is formed with an integral portion which not only extends along a one-half lateral section of the cross tie but is provided with a bottom groove 37 within which the end of the cross tie is adapted to engage. A detachable plate 38 is adapted to fit against the side of the cross tie being secured by means of bolts 39 through extension lugs 40 on the parts as in the construction shown in Fig. 12.

One of said lugs, however, is formed with a laterally projecting edge 41 which will extend over the line of connection with its companion member and will serve to prevent the entrance of dirt or moisture. A similar laterally projecting edge may be provided for supporting members of the type shown in Figs. 8 and 12.

In each of the constructions illustrated a cross tie is used which is formed of a sheet of metal bent to the form indicated and provided with either slots or lugs to interengage with a fastening and supporting member. Said constructions may be cheaply manufactured and form an extremely rigid brace for the car structure, and one which will withstand exposure to the weather and severe usage and at the same time be readily replaceable if injured.

Other modes of applying the principle of my invention may be employed instead of those explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. An article of the character described, having in combination a cross tie formed of a single sheet of metal bent to semi-circular cross-section adjacent its upper edge and having depending side walls which approach each other adjacent their lower edges, a supporting member for each end of the cross tie, each having a plurality of parts adapted to be engaged over the adjacent end of said cross tie and means formed in said supporting member and said cross tie for interengaging to prevent longitudinal displacement of said cross tie and means for securing said supporting member to the side walls of the structure to be braced.

2. An article of the character described, having in combination a cross tie formed of a single sheet of metal bent to semi-circular cross section adjacent its upper edge and having depending side walls which approach each other adjacent their lower edges, a supporting member for each end of the cross tie, each having a plurality of parts adapted to be engaged over the adjacent end of said cross tie and a lug and slot provided on said supporting member and said cross tie for interengaging to prevent longitudinal dis-

placement of said cross tie and means for securing said supporting member to the side walls of the structure to be braced, said supporting means having a detachable plate whereby said cross tie may be readily removed.

3. An article of the character described, having in combination a cross tie formed of a single sheet of metal bent to semi-circular cross section adjacent its upper edge and having substantially flat depending side walls which approach each other adjacent their lower edges, a supporting member for each end of the cross tie, each having a plurality of parts adapted to be engaged over the adjacent end of said cross tie and means formed in said supporting member and said cross tie for interengaging to prevent longitudinal displacement of said cross tie and means for securing said supporting plate to the side walls of the structure to be braced, one of the sections of said supporting member being formed integrally with said supporting member and provided with a bottom groove within which the lower edges of the cross tie are adapted to seat and the other section of said supporting member being adapted to be engaged against the opposite side of said cross tie.

Signed by me this 4th day of January, 1927.

KENNETH C. GARDNER.