April 23, 1929. K. C. GARDNER 1,710,501

WELDED CROSS BRACE

Filed Dec. 8, 1927

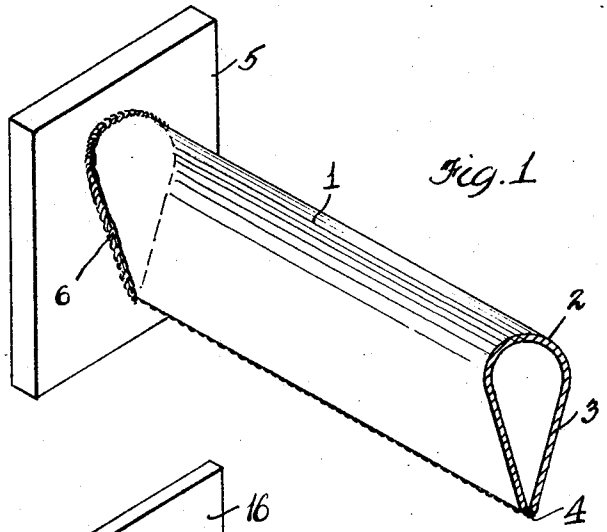


Fig. 1

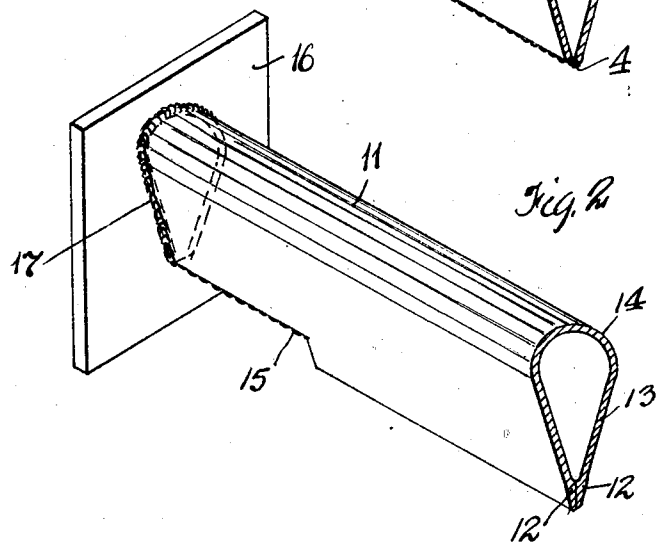


Fig. 2

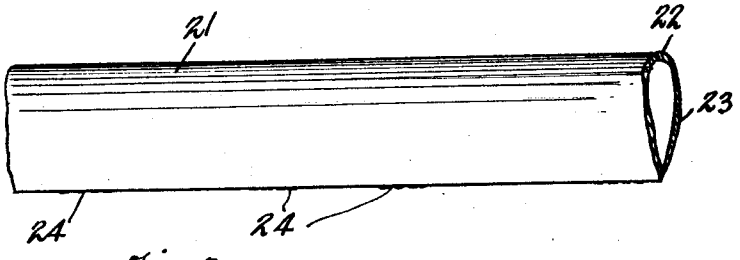


Fig. 3

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UNITED STATES PATENT OFFICE.

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

WELDED CROSS BRACE.

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This invention as indicated relates to a cross-brace for railway car bodies and the like. More particularly it comprises a cross-brace having a central portion formed of elongated metal plates folded along a central median line so as to provide a rounded upper edge and side portions approaching each other and having said meeting edges united to each other, preferably by means of electric welding. The invention also contemplates the supporting of said central member on end plates of suitable gauge by welding the same to said end plates to provide a substantially integral structure. It also has in view the modification of the lower edge of the folded central structure so as to provide for an increase of the amount of metal along said lower edge whereby the central portion of the structure will be reinforced so as to withstand stresses applied at points removed from the supported ends of said structural member, forming in effect a truss at such point. 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 structure embodying the invention, such disclosed means constituting, however, but several of various structural forms in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is a perspective view showing one end portion of the cross-brace embodying the principles of my invention; Fig. 2 is a view similar to Fig. 1 showing a modified form of construction; and Fig. 3 is a perspective view of the central member showing a modified form of welded lower edge.

As is clearly shown in Fig. 1 of the drawing, the preferred form of device comprises a central member 1 preferably formed of an elongated metal plate folded along a central median line so as to provide a rounded upper edge 2 preferably of substantially semi-circular cross-section and having side portions 3 inclined toward each other and united at their lower edges by means of a welding operation which provides a seam of additional metal 4 on the under side of said central member. The side portions may be substantially flat and at an angle to each other affording maximum strength for a minimum weight of material. The central member is provided at each end with a supporting plate 5 at right angles thereto, being integrally united to said plates preferably by arc welding whereby the ends of the central member and plates will be held united over an area 6 at the meeting point of said end plates and central member providing a fillet and increased thickness of metal at the point of union.

In order to provide for the fabrication of a brace having exceptional capacity to resist stresses directed against the central portion of said brace, the form of construction illustrated in Fig. 2 may be used. In said structure the central member 11 is formed from a strip of metal having thickened edges 12 at its margins along its lower central portion, but which may extend the full length of the central member, if desired. The stock used to form said member may comprise a standard channel member which is bent downwardly with the flange portions folded outwardly so as to provide an outer surface presenting substantially flat sides 13 approaching each other from the folded upper portion 14 of said central member which provides an upper edge of substantially semi-circular outline. The thickened lower edge of the central member, as stated, may be extended throughout the length of the same but preferably is cut away adjacent each end to provide an end portion 15 of said central member of substantially the cross-section of the central member 1 shown in Fig. 1. The meeting edges of the central member may be welded throughout their length or the end portions 15 of said central member alone may be welded and the central portion of the brace be free of such weld, the reinforced lower edge of the same being relied upon to provide sufficient rigidity to said member, owing to the distribution and greater amount of metal at such point. The brace having a central member of the form illustrated in Fig. 2 may be united to the end plates at its respective ends in a manner similar to that of the form shown in Fig. 1, the flat end plate 16 being joined to the end of the brace member by a welding operation, preferably arc welding, which provides a somewhat increased amount of metal at the meeting point 17 of said members.

While a continuous weld throughout the length of the brace has been indicated in connection with the structure shown in Fig. 1, for certain purpose it may be found desirable to unite the lower edges of the folded plate to each other at spaced intervals. Thus the central member 21 shown in Fig. 3 is formed of a metal plate folded in the manner of the structures shown in Figs. 1 and 2 to provide a rounded upper edge 22 and substantially flat sides 23 approaching each other and the lower edges of which are united at spaced intervals by means of welds 24. The central member is united at its respective ends to the end plates in a manner similar to the other two members heretofore described by means of a welding operation, preferably arc welding.

It will be noted that the widened upper portion and the inclined lower sides of the cross-brace serve to space hooks and loading equipment from the lower edge of the brace in such a manner that but slight possibility of interference with the loading equipment occurs.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the structure 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 central brace member comprising a metal sheet folded along a central median line, and having its lower edges integrally united, and end plates integrally connected with each end thereof.

2. An article of the character described having in combination a central brace member comprising a metal sheet folded along a central median line, and having its lower edges integrally united over a portion of their length, and end plates integrally connected with each end thereof.

3. An article of the character described having in combination a central brace member comprising a metal sheet folded along a central median line, and having substantially flat side portions approaching each other adjacent their lower edges, and end plates abutted against and welded to the respective ends of said central member.

4. An article of the character described having in combination a central brace member comprising a metal sheet folded along a central median line, and having an enlargement adjacent its lower edges, and means integrally uniting said lower edges over a portion of their length, and end plates integrally connected to the respective ends of said central member.

5. An article of the character described having in combination a central brace member comprising a metal sheet folded along a central median line, and having an enlargement centrally of its lower edges, and means integrally uniting said lower edges over a portion of their length, and end plates integrally connected to the respective ends of said central member.

Signed by me this 5th day of December, 1927.

KENNETH C. GARDNER.