July 10, 1923. 1,461,704

C. D. BONSALL

CARLINE

Filed Aug. 7, 1920 2 Sheets-Sheet 1

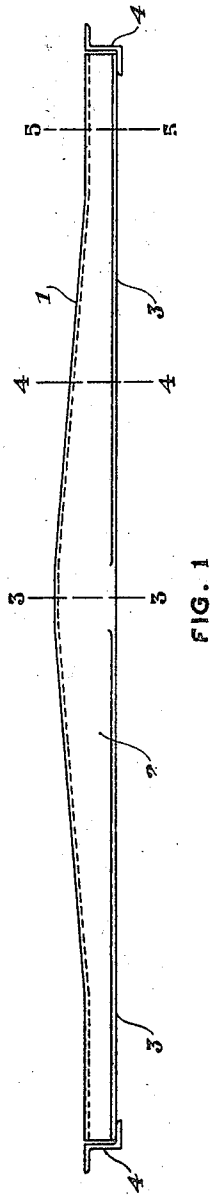


FIG. 1

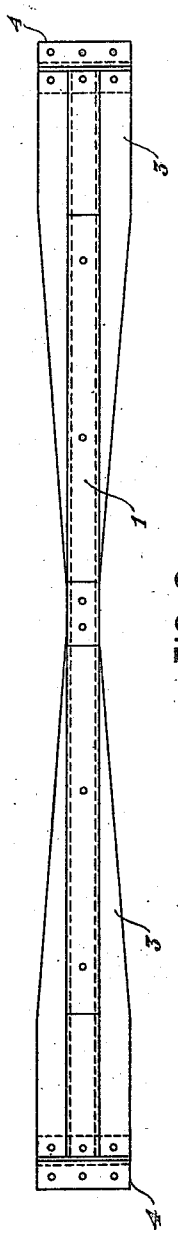


FIG. 2

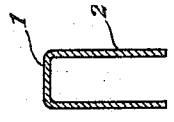


FIG. 3

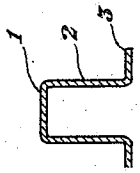


FIG. 4

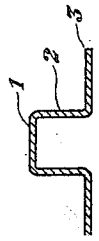


FIG. 5

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July 10, 1923. 1,461,704

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CARLINE

Filed Aug. 7, 1920 2 Sheets-Sheet 2

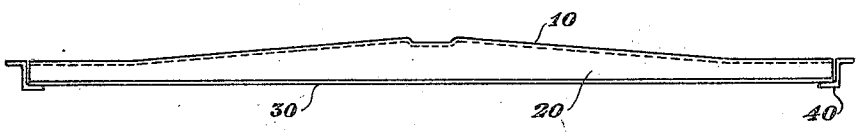


FIG. 6

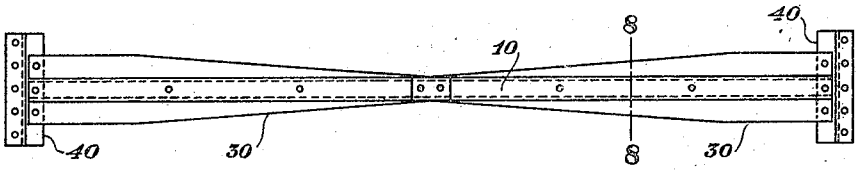


FIG. 7

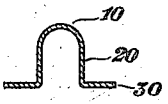


FIG. 8

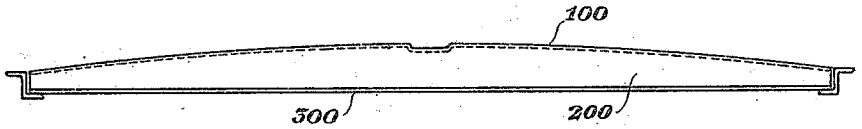


FIG. 9

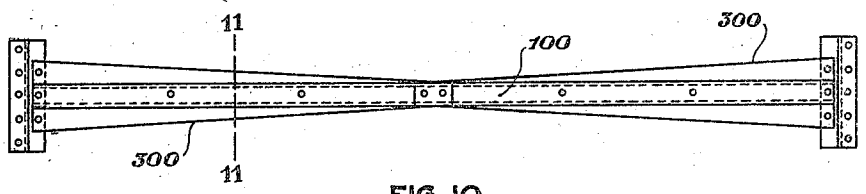


FIG. 10

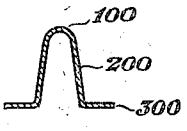


FIG. 11

Inventor
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Patented July 10, 1923. 1,461,704

UNITED STATES PATENT OFFICE.

CHARLES D. BONSALL, OF PARNASSUS, PENNSYLVANIA, ASSIGNOR TO P. H. MURPHY COMPANY, OF PARNASSUS, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

CARLINE.

Application filed August 7, 1920. Serial No. 401,842.

To all whom it may concern:

Be it known that I, CHARLES D. BONSALL, a citizen of the United States, residing at Parnassus, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Carlines, of which the following is a specification.

This invention relates to improvements in railway car roofs and more particularly to metal carlines for railway box cars.

It is the object of this invention to provide a metal carline pressed from a rectangular sheet of metal without being trimmed that is strong and yet light to be used on a car having either metal or wooden side plates. It is also the object of this invention to produce a metal carline in which the metal is equally distributed on both sides of the longitudinal central line of the carline producing an equal amount of resistance on both sides of the carline to the tendency of the carline to twist due to the end thrusts of the purlins or the racking or weaving of the car.

While the preferred forms of this invention are illustrated upon the accompanying sheets of drawings, yet it is to be understood that minor detail changes may be made without departing from the scope thereof.

In the drawing:

Figure 1 is a view in side elevation of a carline embodying one form of this invention.

Figure 2 is a top plan view of Figure 1.

Figure 3 is an enlarged detail view in section on the line 3—3 of Figure 1.

Figure 4 is an enlarged detail view in section on the line 4—4 of Figure 1.

Figure 5 is an enlarged detail view in section on the line 5—5 of Figure 1.

Figure 6 is a view in side elevation of a carline embodying a modified form of this invention.

Figure 7 is a top plan view of Figure 6.

Figure 8 is an enlarged detail view in section on the line 8—8 of Figure 7.

Figure 9 is a view in side elevation of a carline embodying another modified form of this invention.

Figure 10 is a top plan view of Figure 9.

Figure 11 is an enlarged detail view in section on the line 11—11 of Figure 9.

The carline illustrating the Figures 1 to 5 of the drawing is pressed from a rectangular sheet of metal with a struck up portion in the form of an inverted U extending centrally throughout its length and having a substantially flat top 1, and substantially flat webs 2 on each side which terminate in substantially flat horizontal flanges 3. In this form of carline the height of the top 1 of the struck up portion above the flanges 3 remains constant and parallel to the plane of the flanges for an equal distance from each end and then increases equally on both sides until adjacent the middle where it again remains constant and parallel to the plane of the flanges, forming a substantially horizontal portion. The bottoms of the webs 2 lie in the same horizontal plane and their height increases with the height of top 1, the greatest height being at the middle portion. The width of the rectangular sheet of metal from which the carline is pressed is such that the webs 2 at the middle, or greatest constant height, terminate in the horizontal plane of the bottom of the carline, as shown in Figure 3. As the height of the top 1 decreases on each side of this portion the surplus metal in the webs 2 is turned outward into the horizontal flanges 3, the width of which increase uniformly in accordance with the slope of the top until it reaches the portion of constant height adjacent the ends where the width of the flanges also remain constant. From Figures 3, 4 and 5 it is readily seen that the amount of metal on each side of the longitudinal center line of the carline remains constant throughout its length and each side of the carline is equally reinforced by the flanges 3 to resist twisting forces.

The form illustrated in Figures 6, 7 and 8 differs in that the top 10 is transversely curved on the arc of a circle tangent to the webs 20, as shown in Figure 7, and the height of the top above the plane of the bottom increases constantly on each side from the portions of constant height adjacent the ends until the middle is reached and consequently the webs 20 merge at the middle into the flanges 30.

Some cars are provided with a curved roof and Figures 9 and 10 illustrate a form of carline constructed in accordance with this invention to be used in such a roof. In this form the height of the top 100 increases constantly from each end of the carline so that the top will lie in the arc of a circle parallel to the crown of the roof, therefore, the webs 200 will increase constantly in

height towards the middle and the flanges 300 will increase constantly in width from the middle to the ends of the carline. The webs may be constructed parallel as shown in Figures 3, 4, 5 and 8 or departing from the top at an angle to each other, as shown in Figure 11, and the top of the carline may be substantially flat, as shown in Figures 1 to 5, or formed on the arc of a circle tangent to the web, as shown in Figures 8 and 11, without departing from the spirit of this invention. In the forms illustrated in Figures 6, 7, 9 and 10, the top of the carline at the middle is pressed flat for supporting the ridges of the roof.

The means for securing the ends of the carline to the side plates of the car, as shown in Figures 1 and 2, comprising a Z bar 4 with the end of the carline abutting the web and flanges 3 resting upon and secured to the lower angle and the upper angle extending outward to rest upon and be secured to the side plate. In this form three rivet or bolt holes are provided in the projecting flange of the Z bar. Where it is desired to provide a greater number of rivets or bolts a Z bar 40 of greater length than the width of the bottom of the carline is provided, as shown in Figures 7 and 10.

What I claim is:

1. A carline comprising a longitudinal portion of substantially inverted U section of uniform width with webs on each side terminating in the same horizontal plane and decreasing in height towards each end and having flanges in said plane increasing in width towards each end.

2. A carline comprising a longitudinal portion of substantially inverted U section of uniform width and side webs terminating in the same plane throughout their length, the crown of the U extending parallel to the bottom plane a distance from each end and then increasing in height uniformly on each side towards the middle, the webs turned into flanges lying in the plane of the bottom increasing in width from the middle as the crown decreases in height.

3. A carline comprising a central longitudinal portion of substantially inverted U section of uniform width from end to end, the side webs of which terminate at the bottom in the same horizontal plane, a portion of the crown of the U at the middle and adjacent each end formed parallel to the bottom plane and having sloping portions therebetween increasing uniformly in height towards the middle portion, flanges turned outward from the bottoms of the webs of greatest width at the ends of the carline, which width decreases in proportion to the increase in height of the crown and the flanges merge into the web as this point is reached.

4. A carline comprising a longitudinal portion of uniform width of metal having similar depending webs on each side terminating in one and the same longitudinal plane, said webs decreasing in height towards each end and presenting the greatest amount of metal therein to support loads therebetween and having flanges in said plane increasing in width towards each end.

5. A carline comprising a longitudinal portion of uniform width of metal having similar depending webs on each side terminating in one and the same longitudinal plane and decreasing in height towards each end and having flanges in said plane increasing in width and presenting the greatest amount of metal therein to resist torsional strains at the ends.

6. A carline comprising a longitudinal portion of uniform width of metal having similar depending webs presenting an equal amount of metal on each side of the longitudinal center line, said webs decreasing in height towards each end and presenting the greatest amount of metal therein to support loads therebetween, and having flanges increasing in width and presenting the greatest amount of metal therein to resist torsional strains at the ends.

7. A metal carline comprising a longitudinal portion of uniform width having similar depending webs turning throughout a portion of their length into similar flanges on each side of the longitudinal and transverse center lines, maintaining an equal amount of metal on each side of the longitudinal center line irrespective of variations in the height of the webs and presenting a maximum amount of metal in a vertical direction between the flanged portions.

CHARLES D. BONSALL.