Aug. 19, 1924. 1,505,554

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METAL END STRUCTURE FOR RAILWAY CARS

Filed Oct. 1, 1920 2 Sheets-Sheet 1

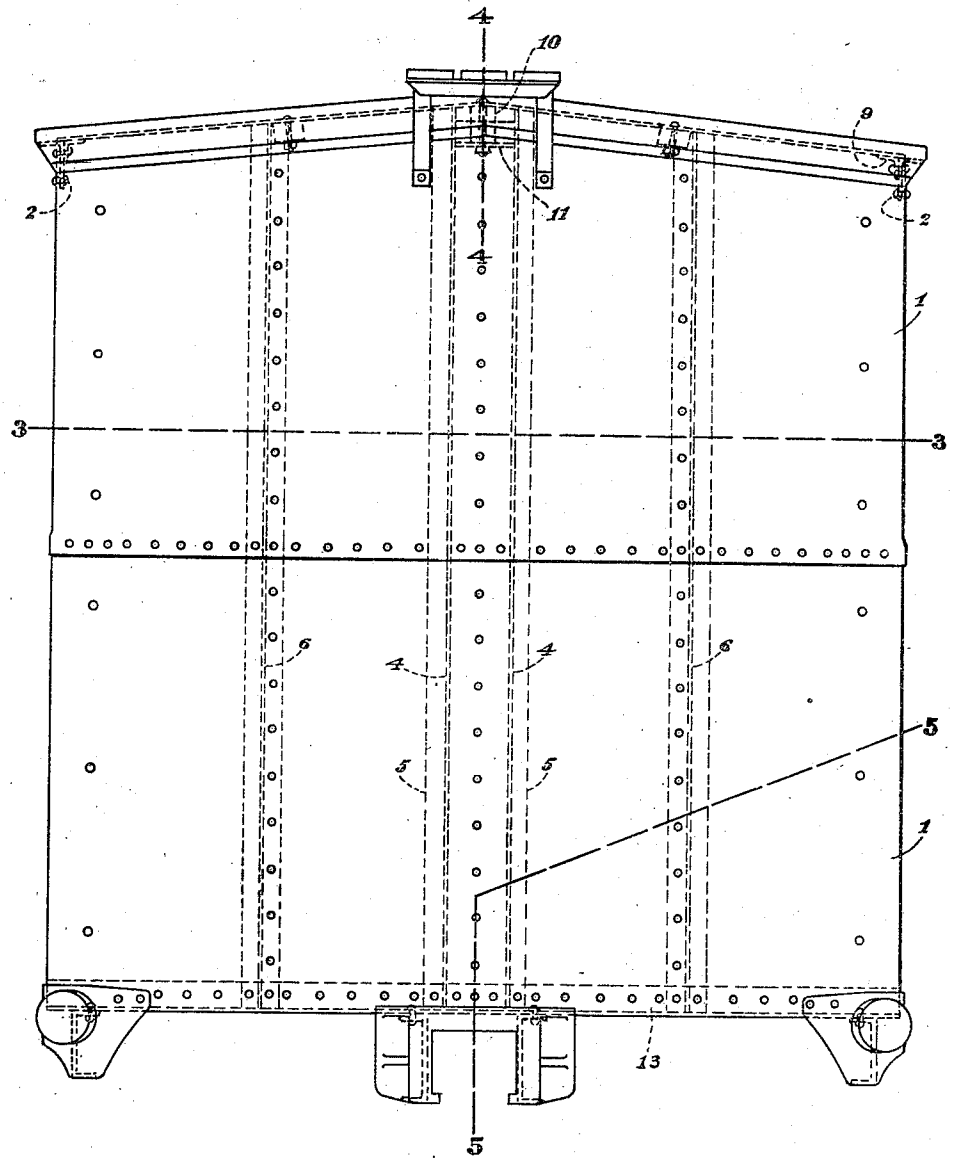


FIG. 1

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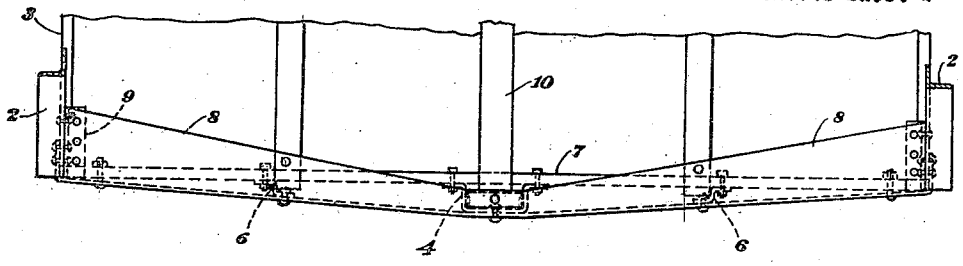


FIG. 2

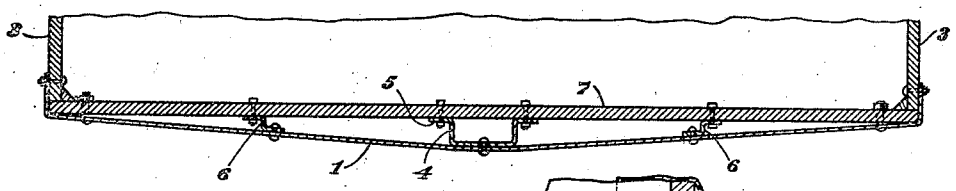


FIG. 3

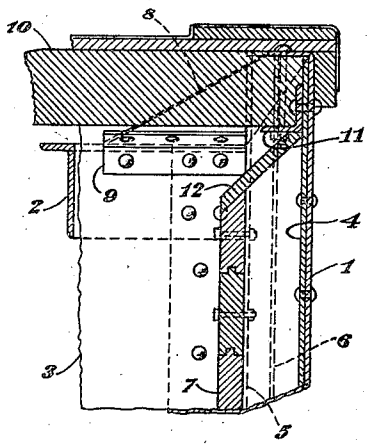


FIG. 4

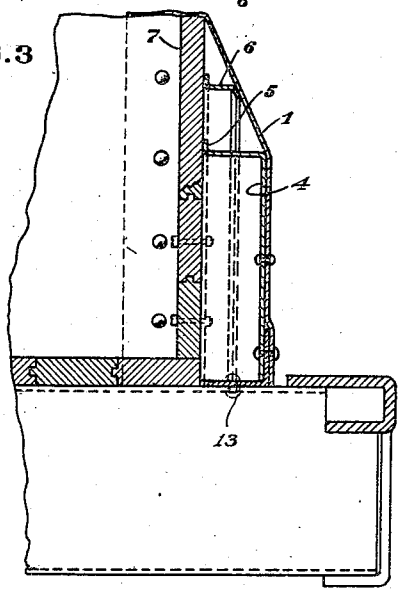


FIG. 5

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Patented Aug. 19, 1924. 1,505,554

UNITED STATES PATENT OFFICE.

GARTH G. GILPIN, OF RIVERSIDE, ILLINOIS, ASSIGNOR TO WALTER P. MURPHY, OF CHICAGO, ILLINOIS.

METAL END STRUCTURE FOR RAILWAY CARS.

Application filed October 1, 1920. Serial No. 413,987.

To all whom it may concern:

Be it known that I, GARTH G. GILPIN, a citizen of the United States, residing at Riverside, in the county of Cook and State of Illinois, have invented new and useful Improvements in Metal End Structures for Railway Cars, of which the following is a specification.

This invention relates to improvements in the construction of ends for cars and more particularly to metal end structures for railway cars.

The ends of railway cars for carrying freight are subject to great strains and stresses caused by the shifting of the cargo in the starting, stopping and switching of the train and also torsional strains caused by the weaving of the car while the train is in motion. It is the object of this invention to provide an end that is simple and inexpensive to manufacture, that can be readily applied to both old and new wooden or metal box cars, gondola cars, stock cars and other cars used for similar purposes which will from its form and contour be particularly adapted to resist the internal and external impacts, stresses and strains that may be imposed upon it.

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

In the drawings:

Figure 1 is a view in end elevation of this improved end as applied to a single sheath box car.

Figure 2 is a top plane view of a fragment of the end of the car illustrated in Figure 1, with the roof removed.

Figure 3 is a horizontal sectional view taken on the line 3—3 of Figure 1.

Figure 4 is an enlarged fragmentary vertical sectional view of the ridge taken on the line 4—4 of Figure 1.

Figure 5 is an enlarged fragmentary vertical sectional view of the end sill connection taken on the line 5—5 of Figure 1.

In accordance with this invention the exterior end is formed of metal sheets or panels 1 extending from side to side, overlapping and riveted together at their meeting edges and flanged at their side edges, which flanges are adapted to be secured to the side plates 2, side sill 13 and side sheathing 3. A middle end post or strut 4 is provided which is in the form of a channel having flanges 5 extending in opposite directions from the ends of the respective sides of the channel in line with the ends of the side walls of the car, and having the web of the channel engaging the panels 1 forming the exterior car end and secured thereto by a series of rivets passing through the middle of the panel and center of the web. Intermediate end posts 6 may be provided on each side, preferably half-way between the middle end post and car sides of rolled shapes of Z bar like form of lesser depth than the middle end post having oppositely extending flanges with the flanges towards the center of the end on each post secured by a series of rivets to the intermediate portions of the end panels 1. A wooden interior end or lining 7 is secured to the end posts 4 and 6 by a series of bolts passing through the lining and interior flanges of the posts, as shown in Figure 3, the middle end post will perform its function as a strut whether or not it is attached to the exterior metallic panel or the interior wooden lining, nevertheless such attachments may be desirable to hold the parts of the car in their proper relation against the vibration of the car in motion.

The lining 7 lies in the plane between the ends of the car sides, the middle end post is arranged exterior thereto and, as the panels are exterior to the end post, each panel is bent on vertical lines on each side of the middle end post so that the exterior and interior walls merge to a common plane or line of contact and their flanged edges embrace the ends of the car sides, and, therefore, the end forms in effect a truss throughout its extent, the panels acting as tension members and the lining as compression members to interior impacts or blows and vice versa upon receiving exterior blows, the middle end post constituting a strut. The ends of the lining boards 7 abut against the vertical

edge flanges of the panel so that the tension and compression members of the truss will properly function.

The middle end post or strut is here shown positioned vertically. However, it may be positioned horizontally and still come within the scope of this invention as the wooden lining and metallic panel would still act as compression and tension members respectively, of the truss. If positioned horizontally the strut need not necessarily be placed midway between the top and bottom of the panel but may be placed nearer the floor where the greater impacts are received. In this lower position it would still act as a strut.

The upper edge of the upper end plate is preferably flanged as shown in Figure 2, with the flanges 8 on each side of the middle end post increasing in width towards the car sides. These flanges terminate short of the side plates 2 and rest upon and are bolted to angle irons 9 which in turn are bolted to the side plates. The ridge 10 of the roof passes under the flange of the upper panel and is secured by angle iron 11 to the web of the middle end post 4, as shown in Figure 4. The space between the top of the lining 7 and the upper panel of the end is closed by an angular strip 12 beveled to conform to the contour of the panel and secured to the lining. The end sill may be in the form of an angle iron 13 with the vertical arm attached to the bottoms of the middle and intermediate end posts 4 and 6, and with the lower edge of the panel 1 secured on the exterior of said arm, as shown in Figure 5. Any convenient form of end sill may be used or the middle end post may be attached directly to the longitudinal center member of the underframe of the car. I have described the middle post as a strut but a further advantage is gained by attaching this middle post at the top and bottom to the frame members of the car because it then becomes a beam. The car end as an entirety then has the dual strength of the truss and the beam.

What I claim is:

1. In a freight car, the combination with the car sides and interior end lining, of end posts of different depths exterior of the lining, and a metal end secured exteriorly to the end posts and to the car sides, the opposite sides of which are at an angle to each other.

2. In a freight car, the combination with the car sides and interior end lining, of a middle end post and intermediate end posts of lesser depth exterior of the lining, and a metal end secured exteriorly to the end posts and to the car sides, the opposite sides of which are at an angle to each other.

3. In a freight car, the combination with the car sides and interior end lining, of a middle end post in the form of a flanged channel and flanged intermediate end posts of lesser depth exterior of the lining with the flanges of the middle end post and a flange of each intermediate end post secured to the lining, and a metal end secured exteriorly to the end post and to the car sides, the opposite sides of which are at an angle to each other.

4. In a freight car, the combination with the car sides and interior end lining, of a middle end post in the form of a flanged channel and flanged intermediate end posts of lesser depth exterior of the lining with the flanges of the middle end post and a flange of each intermediate end post secured to the lining, a metal end secured exteriorly to the end posts and to the car sides, the opposite sides of which are at an angle to each other, and an end sill in the form of an angle iron supporting the bottoms of the end posts and secured thereto and to the bottom edge of the metal end.

5. In a freight car, the combination with the car sides, side plates and interior end lining, of a middle end post in the form of a flanged channel and flanged intermediate end posts of lesser depth exterior of the lining with the flanges of the midle end post and a flange of each intermediate end post secured to the lining, a metal end secured exteriorly to the end posts and to the car sides, the opposite sides of which are at an angle to each other, an end sill in the form of an angle iron supporting the bottoms of the end posts, secured thereto and to the bottom edge of the metal end, and flanges on the upper edge of the metal end secured to the side plates.

6. An end for a railway car comprising a wooden interior end wall, a metallic exterior end wall, and a vertical strut positioned therebetween, said end walls converging substantially to a line of contact.

7. An end for a railway car comprising a wooden interior end wall, a metallic exterior end wall, and a strut positioned therebetween, said end walls converging substantially to a line of contact.

8. In a railway car the combination of a roof frame member, an underframe member, a vertical strut having its ends secured to said members, an interior wooden end wall, an exterior metallic end wall, said strut positioned between said end walls, said end walls converging substantially to a line of contact.

9. In a railway car the combination of longitudinal frame members, an interior wooden end wall, an exterior metallic wall, a vertical strut positioned between said walls and secured to said members, said end walls converging substantially to a line of contact.

10. In a railway car the combination of side walls, a wooden interior end wall, a

metallic exterior end wall having vertical flanges overlapping said side walls, whereby said wooden end walls abut against said flange, said end walls converging substantially to a line of contact.

11. An end for a railway car comprising an interior end wall, an exterior end wall, and a strut positioned therebetween, said exterior wall deflected adjacent said strut so that said end walls converge together adjacent the side walls of the car.

12. An end for a railway car comprising an interior end wall, an exterior end wall, and a strut positioned therebetween, one of said walls deflected adjacent said strut so that said end walls converge together adjacent the side walls of the car.

GARTH G. GILPIN.