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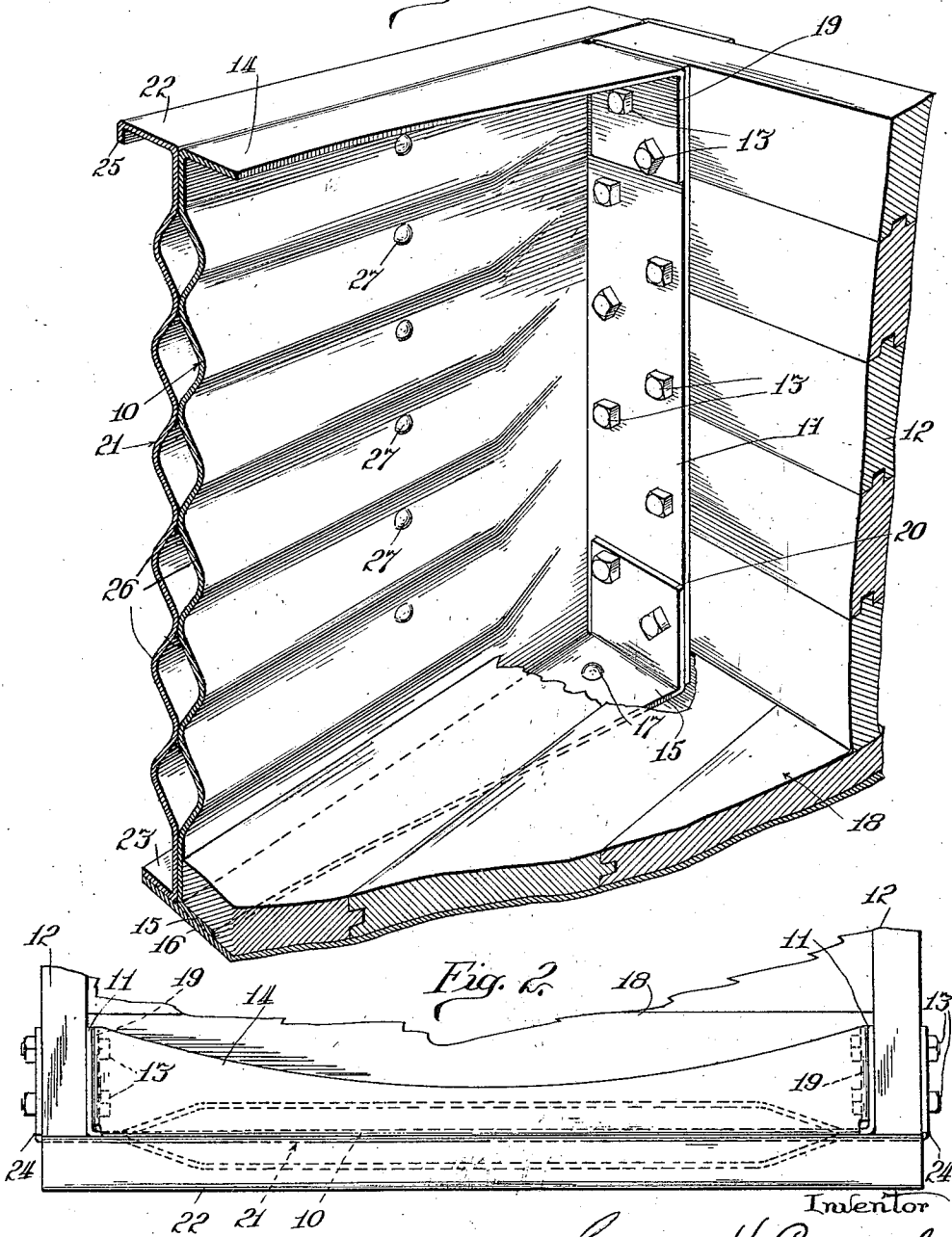
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RAILWAY CAR END WALL

Original Filed Feb. 6, 1920

*Fig. 1.*



*Fig. 2.*

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# UNITED STATES PATENT OFFICE.

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## RAILWAY-CAR END WALL.

Original application filed February 6, 1920, Serial No. 356,693. Divided and this application filed August 3, 1922. Serial No. 579,318.

*To all whom it may concern:*

Be it known that I, SAMUEL H. CONWELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Car End Walls, of which the following is a specification.

My invention relates to a metal end wall structure for railway cars, more particularly for railway cars of the gondola type; and one of the primary objects of the invention is to provide a car end structure which will be extremely strong and rigid as against impact from without, inertia thrusts of the cargo, and the weaving stresses set up in the body of the car by sudden starting and stopping and the swinging movement of the car in rounding curves and passing over inequalities of the track.

Another object of the invention in its specific application to gondola cars is to provide a top chord construction for the car end which will be very strong in itself and so constructed as to rigidify the body of the car as a whole.

The invention consists of the new and improved devices, constructions and arrangements, to be hereinafter described and claimed, for carrying out the above stated objects and such other incidental objects as will be referred to in the following description of the preferred embodiment of the invention, shown in the accompanying drawing.

In the drawing—

Fig. 1 is a fragmentary view in perspective of the end of a gondola car constructed in accordance with my invention, the structure being viewed from the interior of the car; and

Fig. 2 is a fragmentary plan view of the end of the car.

Referring to the drawing, 10 indicates a sheet of metal provided, preferably, with means constituting inwardly projecting flanges along all four of its edges. In the construction shown, these flanges are integral with the body of the sheet, being formed by suitably severing and bending the edges of said sheets. The numerals 11, 11 designate flanges formed along the vertical edges of sheet 10, these flanges being secured to the side walls 12, 12 of the car by means, for example, of bolts 13. 14 designates a

flange along the upper edge of sheet 10 and 15 a flange along the lower edge thereof, flange 15 being secured to the under frame of the car, indicated at 16, by means of rivets 17, or other suitable fastening devices. The floor of the car is indicated at 18. The ends 19 of flange 14, and also the ends 20 of flange 15 are preferably bent over as shown, and secured to the vertical flanges 11. The sheet 10 with its flanges and the means for unifying the same, constitutes, therefore, a shallow box-like structure of very considerable strength, which is arranged between and secured to the side walls of the car.

In order to give additional strength and rigidity to the end structure, a second sheet of metal 21 is provided, this sheet being arranged face to face with sheet 10 and being provided, preferably, with an upper outstanding flange 22, in alignment with flange 14 of sheet 10, a lower outstanding flange 23 secured to the under frame 16, and flanges 24, 24, along its vertical edges, the latter flanges overlapping the side walls 12 of the car on the outside, and being secured thereto by means of the fastening devices 13, above mentioned.

Preferably flange 22 of sheet 21 is formed with a downturned lip 25 and both sheets 10 and 21 may be formed with suitable reinforcing corrugations. Preferably these corrugations, designated 26 in the drawing, are disposed so that those of one sheet align with those of the other, the sheets being secured one to the other, at points between the corrugations, by means of rivets 27. The end wall of the car is thus reinforced by a series of hollow tubular elements which give the structure very great strength and rigidity.

It will be observed that the flange 14 is considerably wider at the ends than at the middle, and the same may be the case with the lower flange 15. When the construction of my invention is applied to a gondola car, as shown and described, the flanges 14 and 22 constitute the top chord of the end wall. It is important that this top chord be strong, as it often happens that heavy articles are loaded into the car over its end walls. A part of the cargo may rest upon or come into contact with the top of the end wall, either in loading or while the car is in transit. The end top chord of a gondola car is peculiarly apt to be subjected to more or less destructive

shocks and pressure as is the case, moreover, with the end wall of the car as a whole. The primary function of the top chord is to rigidify the upper edge of the end wall so that the wall will not be crushed, bent or deflected either when loaded from above or when it is subjected to impacts from without or cargo thrusts from within, and as against the tendency of the car body to weave. The top chord construction, as herein shown and described, is particularly well calculated because of the constructions described to perform this function efficiently. Its increased width at the ends, that is at the side walls of the car, materially increases its strength and particularly its capacity for resisting weaving strains. If sheet 10 is corrugated, as shown, the pressing of the corrugations will involve necessarily a drawing in of the edges of the plate parallel thereto, that is to say, the upper and lower edges of the sheet as it is placed on the car. By bending over these edges on straight lines, flanges will be produced which are wider near their ends than at the middle. Trimming will not be required. However, it is realized that the increased width of the top chord at its ends might be accomplished in other ways.

This application is a division of my co-pending application Serial No. 356,693, filed February 6, 1920.

I claim:

1. The combination with the side walls of a gondola car, of a sheet metal panel provided along its upper edge with a rigidifying chord extending across the car from side to side thereof and increasing in width toward the sides of the car.
2. The combination with the side walls of a gondola car, of a sheet metal panel provided along its upper edge with a rigidifying chord comprising flanges projecting from said panel in opposite directions and extending across the car from side to side thereof; one of said flanges increasing in width toward the side walls of the car.
3. The combination with the side walls of a gondola car, of a sheet metal panel comprising metal sheets arranged face to face and formed with attaching flanges which overlap the inner and outer surfaces of the side walls said sheets having their upper edges bent over on horizontal lines to provide a reinforcing chord comprising oppositely disposed flanges, one of said flanges increasing in width toward the side walls of the car and being formed at its extremities with angularly disposed portions adapted to be secured to the flanges which overlap the inner surfaces of the side walls of the car.
4. The combination with the side walls of a gondola car, of an end structure comprising a metal sheet, the upper edge of which is bent over and formed to provide a top chord flange, wider at the ends than at the middle.
5. The combination with the side walls of a gondola car, of an end structure comprising a metal sheet, the upper edge of which is bent over and formed to provide a top chord flange, wider at the ends than at the middle, and means for securing the ends of said flange to the side walls of the car.
6. The combination with the side walls of a gondola car, of a sheet metal panel provided along its upper edge with a rigidifying chord extending across the car from side to side thereof and increasing in width toward the sides of the car, and means for securing the ends of said chord to the side walls of the car.
7. An end structure for a railway car comprising a sheet metal panel, the upper and vertical edges of which are bent over to provide integral flanges, the end portions of said upper flange being bent down, overlapped upon and secured to said vertical flanges.
8. An end structure for a railway car comprising a sheet metal panel provided at its upper, lower and vertical edges with angularly projecting flanges, the flange along the said lower edge increasing in width toward its ends, and means for uniting the ends of the upper and lower flanges with said vertical flanges to form, with the body of the panel a box-like construction.
9. An end structure for a railway car comprising a sheet metal panel, the upper, lower and vertical edges of which are bent over to provide integral flanges, the flange along the said upper edge increasing in width toward its ends, and means for uniting said flanges so as to form with the body of the panel, a box-like construction.
10. An end structure for a railway car comprising a sheet metal panel, the upper, lower and vertical edges of which are bent over to provide integral flanges, the ends of the upper and lower flanges being bent, overlapped upon, and secured to said vertical flanges.
11. The combination with the side walls of a railway car, of an end wall comprising a box-like metal structure having upper, lower and vertical flanges, said upper and lower flanges increasing in width toward their ends, which structure is arranged between said side walls and secured thereto.
12. The combination with the side walls of a railway car, of an end wall comprising a box-like metal structure having upper, lower and vertical flanges, which structure is arranged between said side walls and secured thereto, and a sheet of metal arranged face to face with said box-like structure having flanges overlapping the said side walls on the outside thereof.

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13. The combination with the side walls of a railway car, of an end wall comprising a box-like metal structure having upper, lower and vertical flanges, which structure is arranged between said side walls and secured thereto, and a sheet of metal arranged face to face with said box-like structure having flanges overlapping the said side walls on the outside thereof, the contacting portions of said sheet and structure being formed with aligning corrugations constituting together a series of hollow ribs.

14. The combination with the side walls of a railway car, of an end wall comprising a box-like metal structure having upper, lower and vertical flanges, which structure is arranged between said side walls and secured thereto, and a sheet of metal arranged face to face with said box-like structure having flanges overlapping the said side walls on the outside thereof, and a flange along its upper edge aligning with the upper flange of said structure.

15. The combination with the side walls of a railway car, of an end wall comprising a sheet of metal, the upper, lower and vertical edges of which are bent to form integral flanges and united to form with the body of the sheet a box-like structure, which is arranged between said side walls, and a metal sheet arranged face to face with said structure having integral flanges overlapping the side walls of the car on the outside thereof.

16. The combination with the side walls of a railway car, of an end wall comprising a sheet of metal, the upper, lower and vertical edges of which are bent to form integral

flanges and united to form with the body of the sheet a box-like structure which is arranged between said side walls, and a metal sheet arranged face to face with said structure having integral flanges overlapping the side walls of the car on the outside thereof and an integral flange along its upper edge.

17. The combination with the side walls of a railway car, of an end wall comprising a sheet of metal, the upper, lower and vertical edges of which are bent to form integral flanges and united to form with the body of the sheet a box-like structure which is arranged between said side walls, and a metal sheet arranged face to face with said structure having integral flanges overlapping the side walls of the car on the outside thereof and integral flanges on its upper and lower edges.

18. The combination with the side walls of a railway car, of an end wall comprising a sheet of metal, the upper, lower and vertical edges of which are bent over to form integral flanges and united to form with the body of the sheet, a box-like structure which is arranged between said side walls, and a metal sheet arranged face to face with said structure and secured thereto.

19. The combination with the side walls of a railway car, of an end wall comprising a box-like metal structure having upper, lower and vertical flanges, which structure is arranged between said side walls and secured thereto, and a sheet of metal arranged face to face with said box-like structure and secured thereto.

SAMUEL H. CONWELL.