Jan. 2, 1923. 1,440,636

V. E. SISSON.
RAILWAY CAR.
ORIGINAL FILED OCT. 17, 1917.

Fig. 1.

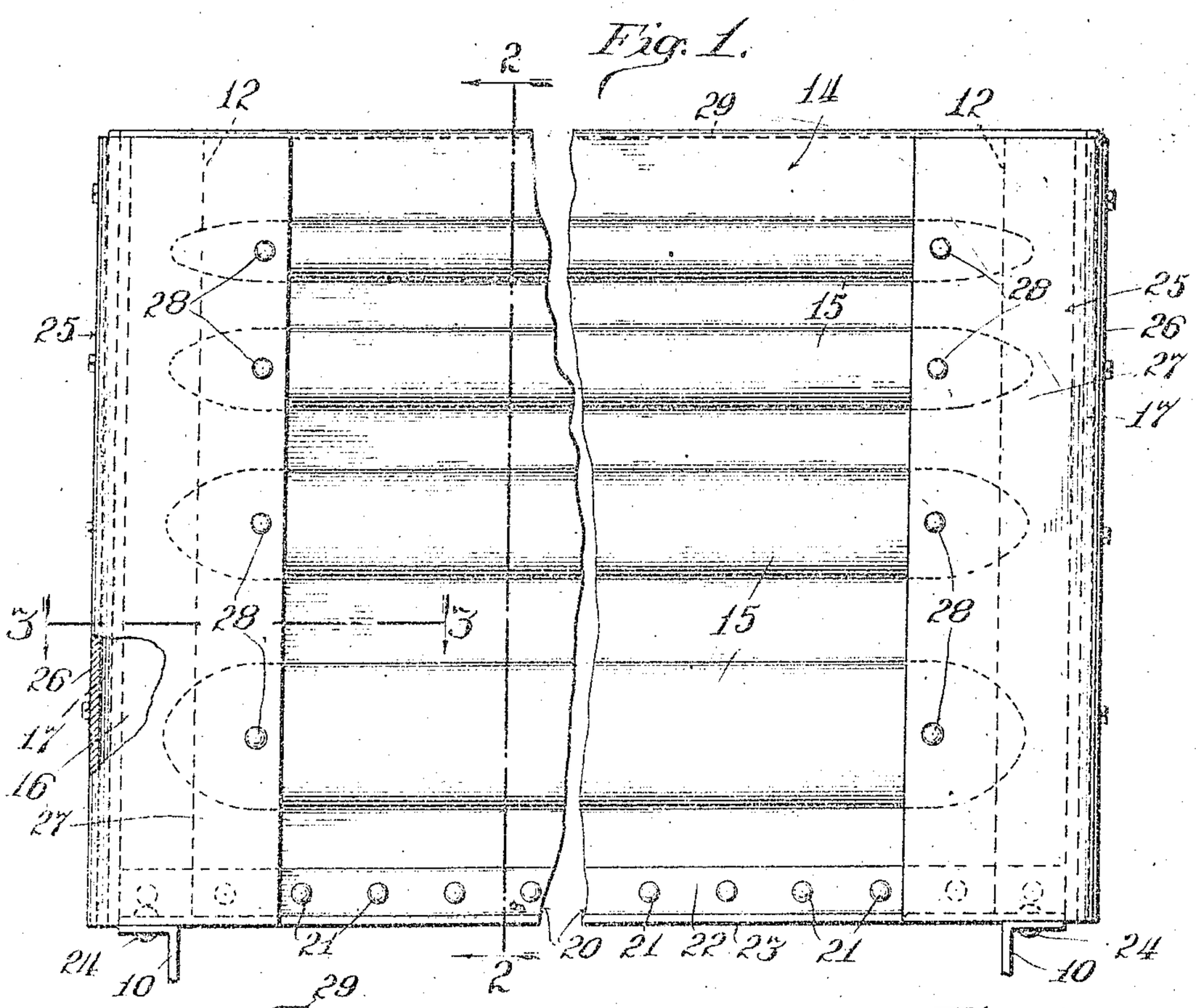


Fig. 2.

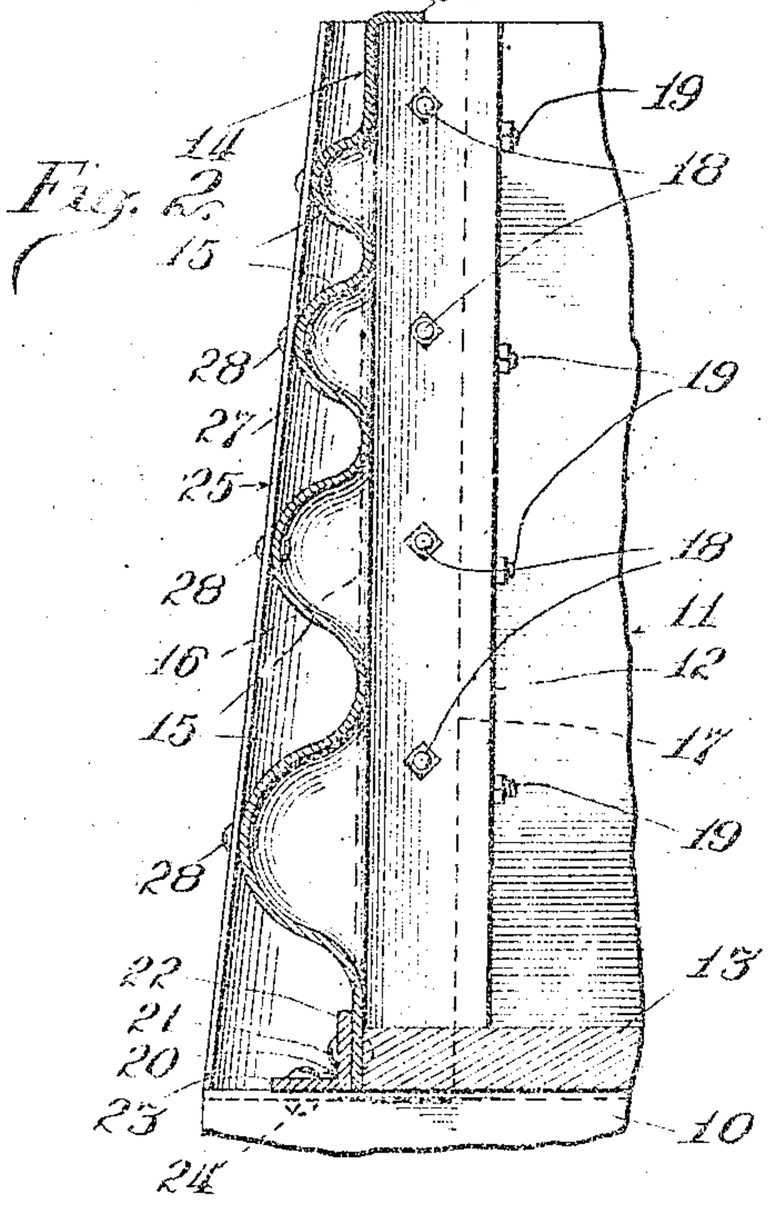


Fig. 3.

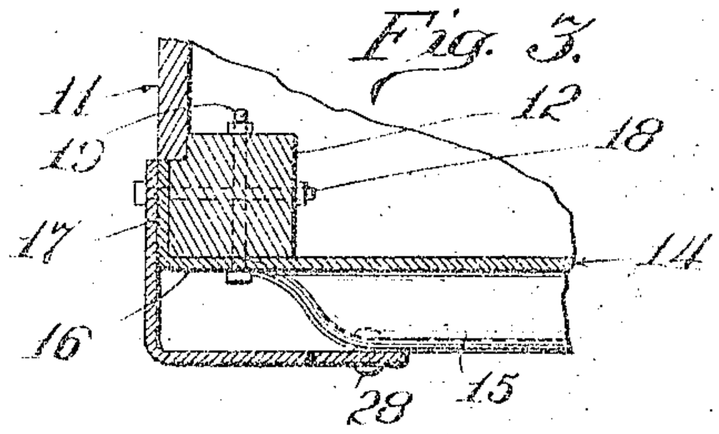
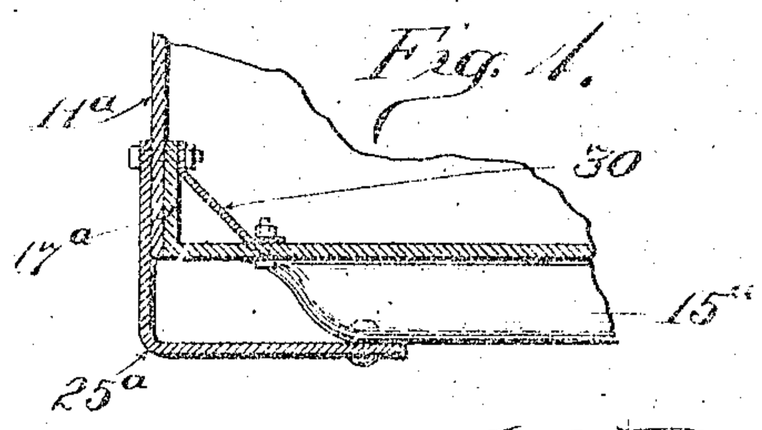


Fig. 4.



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UNITED STATES PATENT OFFICE.

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RAILWAY CAR.

Original application filed October 17, 1917, Serial No. 197,107. Renewed May 31, 1921, Serial No. 473,779. Divided and this application filed April 18, 1921. Serial No. 462,147.

To all whom it may concern:

Be it known that I, VINTON E. SISSON, 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 Cars, of which the following is a specification.

My invention relates to railway cars, and has for its object to provide a new and improved car end structure which will have the necessary strength and rigidity to withstand the various stresses to which the end walls of railway freight cars are subjected when in service. Where the contents of a car consist of grain or other material in bulk of the character usually loaded in box cars, or if the material is of the character usually loaded in gondola cars, for example, coal, crushed stone, or the like, the greatest stress imposed on the end walls of the car is in the region of the lower half of the wall. This portion of the end wall is also subject to severe stresses incident to the inertia thrusts of the cargo due to the sudden starting or stopping of the car, particularly when the cargo consists of heavy movable objects, such as railroad rails, or car wheels. Accordingly it is an object of my invention to provide a car end structure which is so formed and reinforced as to be strongest in the region of greatest stress.

My invention consists in the novel arrangements, constructions and combinations of parts, hereinafter described and claimed, for carrying out the above stated objects, and such other incidental objects as will appear from the following description.

My invention is illustrated in certain preferred embodiments in the accompanying drawing, wherein—

Fig. 1 is an elevation of an end wall structure made in accordance with my invention, applied to a gondola car;

Fig. 2 is a vertical section taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary view in section of the corner construction of the end wall shown in Fig. 1, this view being taken on line 3—3 of Fig. 1, and

Fig. 4 is a view similar to Fig. 3, illustrating a modified form of end post.

Like characters of reference indicate like parts in the several figures of the drawings.

In the drawings I have shown my improved car end wall structure in connection with a car of the gondola type, though the principles disclosed could obviously be embodied in an end wall structure suitable for box cars.

Referring first to Figs. 1 to 3 inclusive of the drawings, 10 designates the side sills, 11 the side walls, 12 the corner posts, and 13 the flooring of a gondola car. The end wall of the car consists, preferably, of a single metal sheet 14 formed with a plurality of parallel corrugations 15 which extend horizontally across the end and terminate within the edges of the sheet, so as to provide flat marginal portions 16. The corrugations project outwardly from the plane of the sheet and preferably increase in depth uniformly from the top to the bottom of the sheet, so as to provide the greatest strength adjacent the floor of the car. The flat marginal portions 16 adjacent the vertical edges of the sheets are bent at right angles to the body portion of the sheet to provide attaching flanges 17 which overlap the outer surfaces of the side walls of the car and are firmly secured to the corner posts by bolts 18, 19. The lower margin of the sheet is secured to the end sill 20 by rivets 21. By providing the end sheet 14 with corrugations having the greatest strength adjacent the floor of the car, it is possible to use a relatively light end sill and thereby minimize the weight of the car without sacrificing the strength and rigidity necessary to provide a firm attachment of the end sheet to the under framing of the car, and to maintain the side and draft sills of the under framing in their proper alignment. The end sill 20 is illustrated in Figs. 1 and 2 as consisting of an angle bar arranged with its vertical flange 22 against the outer face of the sheet and its horizontal flange 23 secured by rivets 24 to the side sills 10. The end sill may be similarly secured to the draft sills and to intermediate sills when the latter are employed.

In order to provide further reinforcement for the end structure adjacent the corners of the car, I preferably provide vertically extending angular posts 25, 25, which are provided in each case with a flange 26 which overlaps and is secured to the side wall of the car, and with a flange 27 which overlaps the extremities of the corrugations 15. The flanges 27 of the angular posts are preferably

straight and contact with the outer portion of each corrugation, and are secured to the end sheet at the several points of contact by rivets 28. The flanges 26 of the angular posts 25 preferably increase in width toward their lower extremities so as to conform with the increase in depth of the corrugations 15 of the end sheet. The upper edge of the sheet 14 is bent at right angles to the body portion of the sheet, as indicated at 29, so as to provide a horizontally disposed stiffening flange. This rigidifying flange preferably projects inwardly and, if desired, may be secured to the side wall structure in any suitable manner.

In Fig. 4 I have shown a modification which is particularly suitable for gondola cars, or cars of other types, having steel side wall construction. In this figure the attaching flanges 17ª of the end sheet preferably fit against the inner surfaces of the side walls 11ª. The angular rigidifying members 25ª for the corners of the car overlap the outer surfaces of the side walls of the car and project over and are riveted to the ends of the corrugations 15ª of the end sheet in substantially the same manner as that shown in Figs. 1, 2 and 3.

In this construction, the corners of the car are further reinforced by vertically extending metal strips 30. These metal strips are in the nature of gusset plates which extend the full height of the car body and are riveted or otherwise suitably secured to the inner surface of the end sheet and to the side sheets 11ª and attaching flanges 17ª.

In the drawing I have shown the end wall made of a single sheet having corrugations which merge one into the other, each successive corrugation from the top to the bottom of the end being deeper than the one above it. This construction is considered preferable, especially for a gondola car, but might obviously be modified, for example, by making the end of more than one sheet, or by spacing the corrugations or stiffening ribs so that they will not merge one into the other. Other modifications will be possible. I therefore do not wish to be limited to the specific structures shown or described, except in so far as expressly limited in the appended claims.

This application is a division of my copending application Serial No. 197,107, filed October 4, 1917, renewed May 31, 1921, as Serial No. 473,779.

I claim:

1. In an end structure for railway cars, a metal sheet having a series of horizontal corrugations therein which terminate within the edges of the sheet, the depths of which increase from the top to the bottom of the sheet.

2. In an end structure for railway cars, a sheet metal end structure having therein horizontal rigidifying ribs of varying depth which terminate within the edges of the sheet, the deepest rigidifying rib being near the floor of the car.

3. In an end structure for railway cars, a metal end structure having therein horizontal corrugations of varying depth and width which terminate within the edges of the sheet, the deepest corrugations being near the floor of the car.

4. In a railway car, a sheet metal end structure having therein a series of horizontal corrugations which terminate within the edges of the sheet, the depths of which increase from the top of said structure to the bottom thereof.

5. In a railway car, a sheet metal end structure having therein a series of horizontal corrugations which terminate within the edges of the sheet, the depths of which increase uniformly from the top of said structure to the bottom thereof.

6. In a railway car, a sheet metal end structure comprising a metal sheet having therein a series of horizontal rigidifying ribs which terminate within the edges of the sheet and are so proportioned that the ribs in the lower half of the sheet are of greater strength than the ribs in the upper half of said sheet.

7. In a railway car, a sheet metal end panel having horizontal corrugations therein which increase in depth toward the bottom of the panel and terminate within the edges of the panel to provide flat marginal portions adapted to be attached to the side wall structures of the car.

8. In a railway car, a sheet metal end panel having horizontal corrugations therein which increase in depth toward the bottom of the panel and terminate within the edges of the panel to provide flat marginal portions adapted to be attached to the side wall structures of the car, and rigidifying members overlapping the margins of said panel and the extremities of said corrugations.

9. In a railway car, a sheet metal end panel having horizontal corrugations therein which increase in depth toward the bottom of the panel and terminate within the edges of the panel to provide flat marginal portions; said flat marginal portions being bent over to provide flanges adapted to overlap and be attached to the side wall structures of the car.

10. In an end structure for railway cars, the combination with an end sheet having horizontal corrugations which increase in depth toward the bottom of the sheet and terminate within the vertical edges thereof, of separately formed reinforcing and attaching members overlapping the margins of the sheet and secured to the body of the car.

11. In an end structure for railway cars,

the combination with an end sheet having horizontal corrugations which increase in depth toward the bottom of the sheet and terminate within the vertical edges thereof, of separately formed angular members overlapping the margins of the sheet and secured to the body of the car.

12. In an end structure for railway cars, the combination with an end sheet having horizontal corrugations which increase in depth toward the bottom of the sheet and terminate within the vertical edges thereof, of separately formed angular post members having flanges overlapping and secured to the extremities of said corrugations and flanges overlapping and secured to the side walls of the car.

13. The combination with a gondola car, of an end sheet having flat portions along its upper, lower and vertical margins and formed in its intermediate portion with horizontal rigidifying ribs proportioned so as to increase in strength toward the bottom of the sheet, and attaching members overlapping said sheet and having flanges thereon attached to the body of the car.

14. The combination with the corner posts of a gondola car, of a sheet metal end structure having flat margins secured thereto and formed with horizontal corrugations increasing in depth toward the bottom of said structure and terminating within the edges thereof, and angular attaching members overlapping said structure and fastened to the body of said car.

15. The combination with the corner posts of a gondola car, of an end sheet having flat margins secured thereto and formed with horizontal corrugations increasing in depth toward the bottom of said sheet and terminating within the edges thereof, and attaching members overlapping the margins of said sheet and secured to the corrugations therein and having flanges thereon attached to the body of the car.

16. The combination with the corner posts of a gondola car, of an end sheet having flat margins and side flanges secured thereto and formed with horizontal corrugations increasing in depth toward the bottom of said sheet and terminating within the edges thereof, and angular attaching members overlapping said sheet and secured to the body of the car.

17. The combination with the corner posts of a gondola car, of an end sheet having flat margins and side flanges secured to said corner posts and formed with horizontal corrugations increasing in depth toward the bottom and terminating within the edges thereof, and attaching members overlapping said sheet and secured to the corrugations thereof and having flanges overlapping the side flanges on said sheet and secured to said posts.

18. The combination with the corner posts of a gondola car, of an end structure having flat margins secured to said posts and formed with horizontal corrugations extending outwardly from the plane of said posts and increasing in depth toward the bottom of the sheet, and means for securing said sheet to said corner posts.

19. The combination with the side wall structures of a gondola car, of an end sheet having flat margins and side and top flanges, and formed with corrugations merging one into the other and progressively increasing in depth toward the bottom of said sheet, attaching members overlapping the margins of said sheet and having flanges thereon extending over said side flanges and secured with said flanges to the side wall structures of the car.

20. In a gondola car, an end sheet having angularly disposed side flanges, angular corner posts in the angles between said flanges and said sheets, and exterior attaching members overlapping the margins of said sheets and having flanges thereon secured to the side wall structures of the car.

21. The combination in a gondola car, of an end sheet having angularly disposed side flanges and transverse corrugations therein, increasing in depth toward the bottom of the sheet, angular corner posts in the angles between said flanges and said sheets and exterior attaching members overlapping the margins of said sheet and having flanges thereon secured to said posts.

22. The combination with the corner post of a gondola car, of an end structure having flat margins secured thereto and formed with horizontal corrugations increasing in depth toward the bottom of said sheet and terminating within the edges thereof, and attaching members overlapping said corrugations and secured at intervals thereto.

23. The combination with the side walls and underframing of a railway car, of an end sheet having flat margins and transverse corrugations increasing in depth toward the bottom of said sheet and terminating within the edges thereof, attaching members secured to the side walls of the car, and overlapping the extremities of said corrugations, and means for attaching said sheet to the underframing of the car.

24. The combination with the side wall structures and underframing of a railway car, of an end sheet having flat margins and transverse corrugations increasing in depth toward the bottom of said sheet and projecting outwardly from the plane of said sheet, attaching members for securing the vertical margins of said sheet to the side wall structures of the car and means for attaching the lower margin of said sheet

to the underframing comprising a transverse rigidifying member secured to the lower margin of the sheet and to a longitudinal sill of the underframing.

25. The combination with the side wall structures and underframing of a gondola car, of an end sheet having flat margins and transverse rigidifying ribs extending outwardly from the plane of said sheet, means for attaching the vertical margins of said sheet to the side wall structures, means for rigidifying the upper margin thereof and means comprising an angular end sill for securing the lower margin of said sheet to the underframing of the car.

VINTON E. SISSON.