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V. E. Sisson.  
RAILWAY CAR END WALL.  
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Fig. 1.

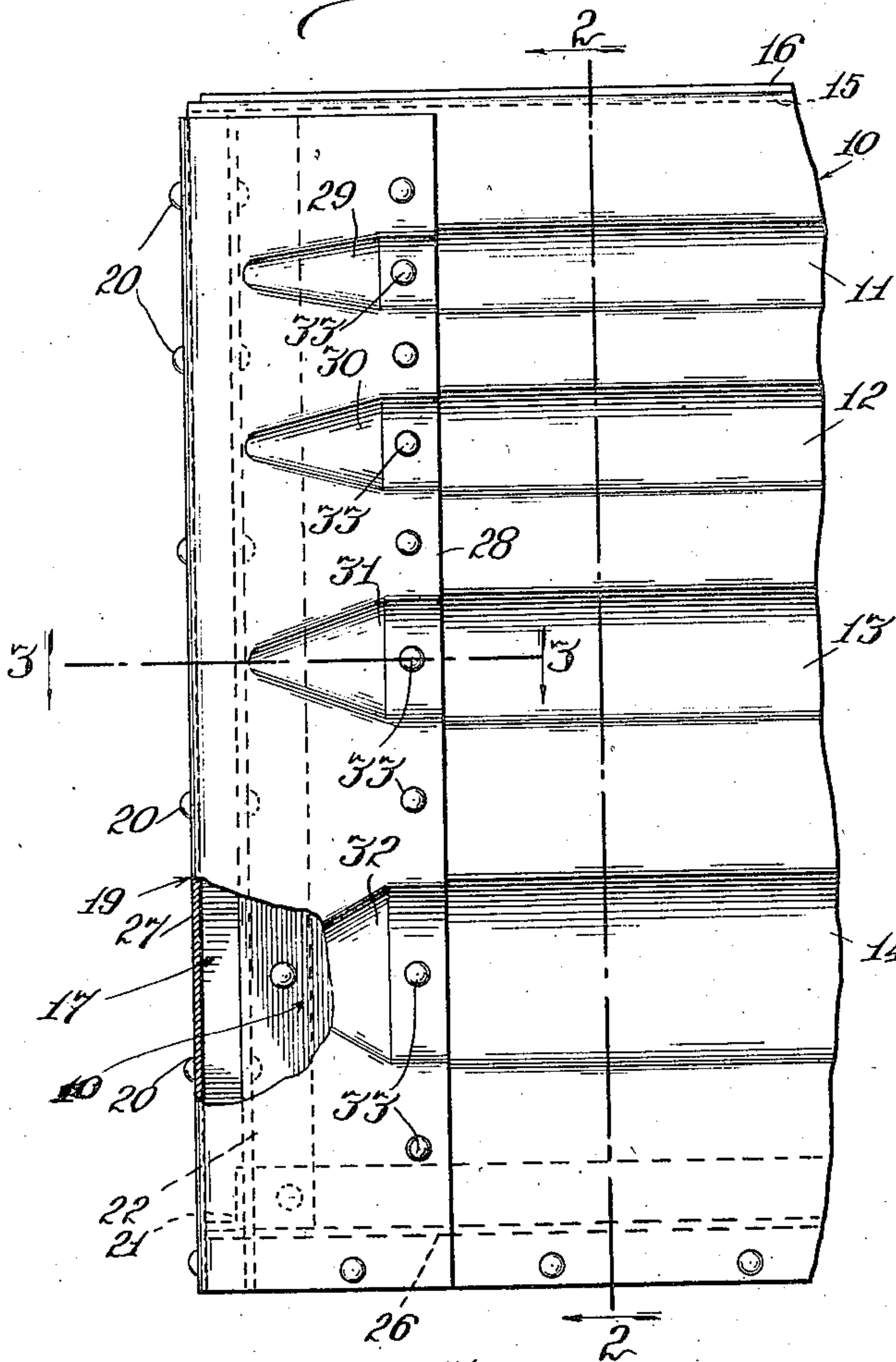


Fig. 2.

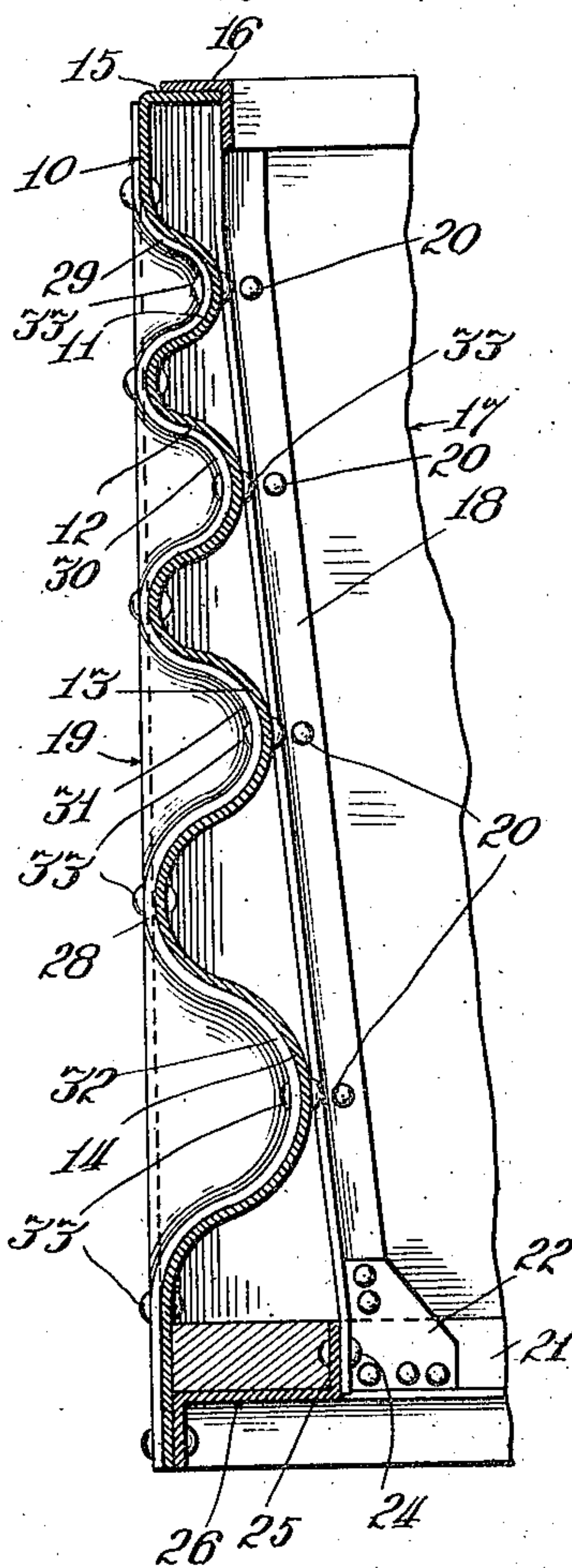
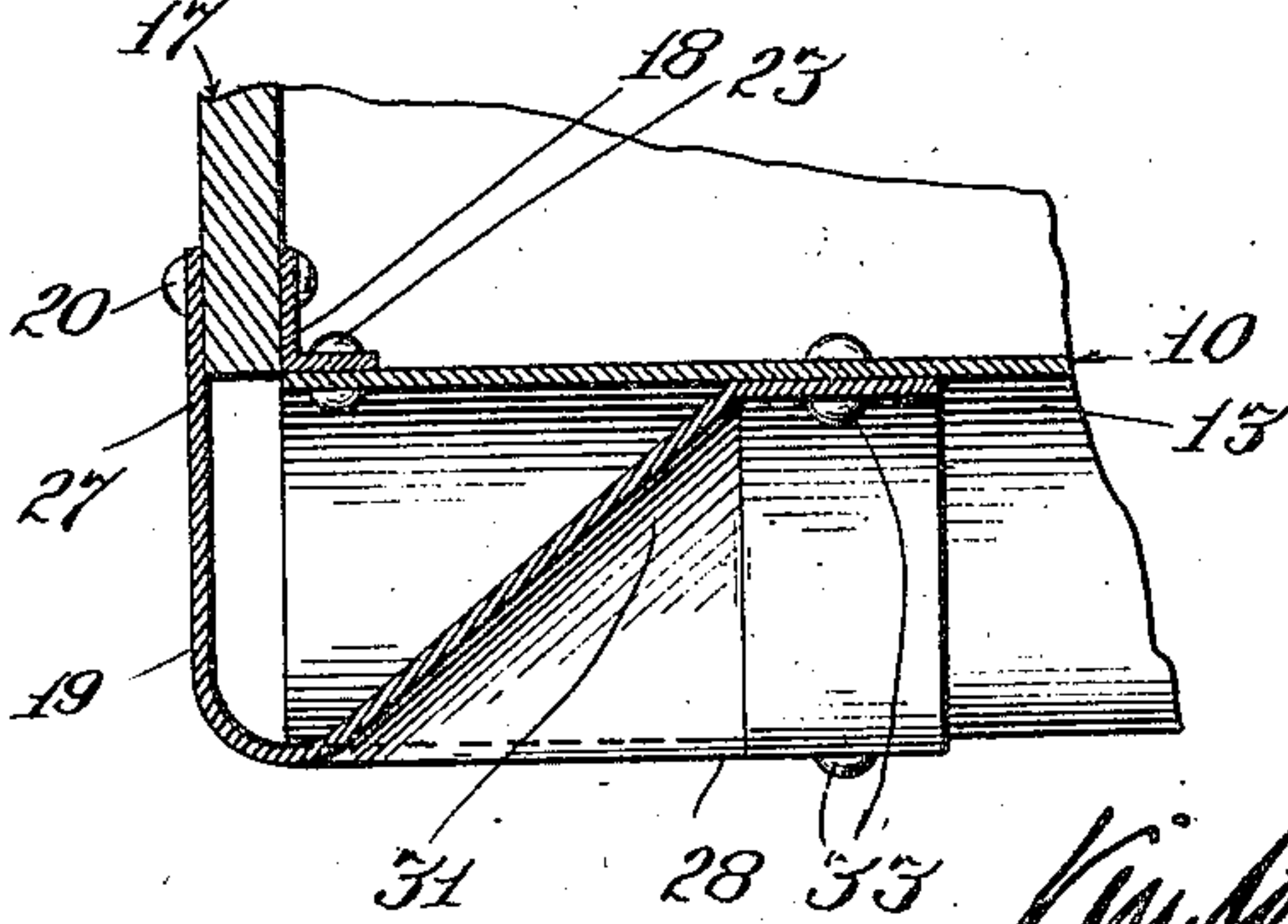


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## RAILWAY-CAR END WALL.

Original application filed October 17, 1917, Serial No. 197,107. Renewed May 31, 1921, Serial No. 473,779. Divided and this application filed June 9, 1922. Serial No. 567,019.

*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-Car End Walls, of which the following is a specification.

My invention relates to railway cars, and has for its object to provide a new and improved end structure for a railway car which will have very considerable strength and rigidity so as to be able to withstand the various stresses to which the end walls of railway freight cars are subjected when in service. Where the contents of the car consists of grain or other material in bulk of the character usually loaded in box cars, or if the material is of the character usually transported in gondola cars, as, for example, coal, crushed stone, or the like, the greatest stress imposed upon 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 sudden starting and stopping, particularly when the cargo consists of heavy movable objects, such as railroad rails, car wheels, pipes, or the like.

The principal object of my invention is to provide a car end structure which is so formed and reinforced as to be very considerably stronger in the lower portion thereof where the stresses are liable to be greatest.

The invention consists in the novel arrangements, constructions and combinations of parts, to be hereinafter described and claimed, for carrying out the above stated objects and such other incidental objects as will appear from the following description of the preferred embodiment of the invention shown in the accompanying drawing, wherein—

Fig. 1 is a fragmentary view, in elevation, with a part in section, of the gondola car end wall constructed in accordance with my invention,

Fig. 2 is a vertical sectional view on line 2—2 of Fig. 1, and

Fig. 3 is a detail sectional plan on line 3—3 of Fig. 1.

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

Referring to the drawing, the end wall of the car as shown consists of a sheet of metal 10 provided with a series of inwardly pressed corrugations 11, 12, 13 and 14, which are progressively greater in cross sectional area, width and depth, that is, from the top of the sheet to the bottom. The upper edge of the sheet is bent over to form an inwardly projecting flange 15 which is rigidified by means of an angle bar 16. The end sheet 10 is secured to each side wall 17 by a pair of angular members 18, 19. The member 18 is slanted, as shown in Fig. 2, to accommodate for the increasing depth of the corrugations toward the bottom of the sheet, is secured to the side wall 17 by rivets 20 and is anchored to the side sill 21 of the car by means of a gusset plate 22. It is secured to the end sheet 10 by rivets 23 and is also secured by rivet 24 to the upstanding flange 25 of a Z-bar 26 which, in the construction shown, forms the end sill of the car. The flange 27 of the attaching member 19 is secured to the side wall 17 by rivets 20, before mentioned. The other flange 28 of member 19 is formed with depressions or corrugations 29, 30, 31, 32 adapted to fit the corrugations 11, 12, 13 and 14 of the end sheet. The latter preferably extend to the edges of the sheet although this is not essential. Flange 28 is secured to the end sheet by a line of rivets 32.

A car end constructed as shown is extremely strong and rigid so as to withstand the stresses to which the end of a railway car is subjected. The lower portion of the wall is considerably stronger than the upper portion so that the end is well calculated to withstand both the greater hydrostatic pressure at the bottom of the car, when the car is loaded with bulk material, and also the greater stresses resulting from the shifting of



heavy articles of lading, such as rails, pipe, and the like, which stresses are more likely to be exerted against the bottom of the end than the top. The end may be constructed at low cost since the sheet may be corrugated by a rolling or other cold process of bending. This is possible because of the fact that the corrugations extend to the edges of the sheet.

10 This application is a division of my co-pending application Serial No. 197,107 filed October 17, 1917, renewed as Serial No. 473,779, filed May 31, 1921.

I claim:

15 1. A metal end structure for a railway car formed with horizontal corrugations therein increasing in depth toward the bottom of the sheet, and a separately formed attaching member provided with corrugations which fit the corrugations of the end sheet, and with a flange adapted to be secured to the body of the car.

2. A metal end structure for a railway car comprising an end sheet formed with horizontal corrugations therein which project inwardly from the plane of the sheet and increase in depth toward the lower edge thereof, and a pair of angular attaching members at each side of the sheet, one of which is corrugated to fit the corrugations of said sheet between which the edge of the sheet is fastened.

3. In a gondola car, an end sheet flanged at its upper edge and having horizontal corrugations formed therein and increasing in depth toward the bottom thereof, pairs of converging angular attaching members overlapping the respective sides of the sheet and between which said sheet is secured, and a marginal reinforcing member secured to the flange at the upper edge of said sheet and running across the car; certain of said converging angular attaching members being formed with corrugations which fit the corrugations of said end sheet.

4. In a gondola car, a sheet metal end structure flanged at its upper edge and having transverse corrugations formed therein, which increase in depth toward the bottom thereof, attaching angular members overlapping the opposite edges of said sheet and provided with corrugated flanges adapted to fit the corrugations of said sheets, angular attaching members secured to the inner face of said sheet and to the side wall structure of the car, and an angular reinforcing member running across the top of said car and secured to the flange on said sheet.

5. In a gondola car, an end sheet flanged at its upper edge and having transverse corrugations formed therein, the depths of which increase toward the bottom of the sheet, pairs of angular attaching members overlapping the respective sides of the sheet and between which said sheet is secured, cer-

tain of said attaching members being formed with corrugations adapted to fit the corrugations of the sheet, and an end plate to which the upper flanged edge of said sheet is fastened.

6. In an end structure for a railway car, the combination of an end sheet having substantially horizontal corrugations therein extending from edge to edge of the sheet, the depths of which increase toward the floor of the car, and an angular attaching member overlapping the margin of said sheet and having corrugations therein which conform to the corrugations in the end sheet.

7. In an end structure for a railway car, the combination of an end sheet having substantially horizontal corrugations therein extending from edge to edge of the sheet and projecting inwardly from the plane of said sheet, the depths of which corrugations increase toward the floor of the car, and an angular attaching member overlapping the margin of said sheet and having corrugations therein which conform to the corrugations in said sheet.

8. In an end structure for a railway car, an end sheet having a plurality of substantially horizontal corrugations formed therein and extending to the edges of the sheet, which corrugations merge one into another, project inwardly from the plane of the sheet and are of progressively larger cross sectional area from the top of said sheet toward the bottom, in combination with means for securing said end sheet to the side walls of the car comprising angular attaching members having flanges which are formed to fit the corrugations of the end sheet.

9. In an end structure for a railway car, the combination of an end sheet formed with inwardly pressed corrugations of different cross sectional areas, and an attaching member extending transversely of said corrugations, overlapping one edge of the sheet and formed with depressions to fit into the corrugations of the end sheet.

10. In an end structure for a railway car, the combination of an end sheet formed with corrugations of different cross sectional areas, and a pair of attaching members extending transversely of said corrugations at opposite sides of one edge of said sheet, one of which members is formed with corrugations to fit the corrugations of said sheet.

11. In an end structure for a railway car, the combination of an end sheet formed with substantially horizontal corrugations of different cross sectional areas, and an attaching member along one of the vertical edges of said sheet which is formed with corrugations to fit the corrugations of the end sheet.

12. In an end structure for a railway car, the combination of an end sheet formed with substantially horizontal corrugations



of different cross sectional areas which are inwardly pressed from the plane of the sheet, and an attaching member extending along and overlapping one of the vertical edges of the sheet which is formed with depressions to fit into the corrugations of said end sheet.

13. In an end structure for a railway car, the combination of an end sheet formed with substantially horizontal corrugations of different cross sectional areas which extend to one of the vertical edges of the sheet, and an attaching member extending along said edge formed with corrugations which fit the corrugations of said end sheet.

14. In an end structure for a railway car, the combination of an end sheet formed with substantially horizontal corrugations of different cross sectional areas, and a pair of attaching members extending along one of the vertical edges of the sheet on opposite sides thereof, one of which members is formed with corrugations to fit the corrugations of said sheet.

15. In an end structure for a railway car, the combination of an end sheet formed with horizontal corrugations of progressively increasing cross sectional areas from the top to the bottom of the sheet, and an attaching member extending along one vertical edge of said sheet which is formed with corrugations to fit the corrugations of said end sheet.

16. The combination with the end frame and side walls of a gondola car, of an end structure consisting of a single sheet of metal formed with horizontal, in-pressed corrugations of progressively increasing cross sectional area from the top of the sheet to the bottom, the upper edge of the sheet being formed with an inturned

flange, a pair of angular attaching members for securing each vertical edge of the sheet to the adjacent side wall of the car, one member being on the inside of the sheet and attached to the in-pressed corrugations, and the other member overlapping the edge of the sheet and being formed with depressions which fit into and are attached to said corrugations, and an angle bar top chord secured to said inturned flange.

17. The combination with an end frame and side walls of a gondola car, of an end structure consisting of a single sheet of metal formed with horizontal, in-pressed corrugations of progressively increasing cross sectional area from the top of the sheet to the bottom, and a pair of angular attaching members for securing each vertical edge of the sheet to the adjacent side wall of the car, one member being on the inside of the sheet and attached to the in-pressed corrugations, and the other member overlapping the edge of the sheet and being formed with depressions which fit into and are attached to said corrugations.

18. The combination with the end frame and side walls of a gondola car, of an end structure consisting of a single sheet of metal formed with horizontal, in-pressed corrugations which extend to the edges of the sheet, and a pair of angular attaching members for securing each vertical edge of the sheet to the adjacent side wall of the car, one member being on the inside of the sheet and attached to the in-pressed corrugations, and the other member overlapping the edge of the sheet and being formed with depressions which fit into and are attached to said corrugations.

VINTON E. SISSON.