

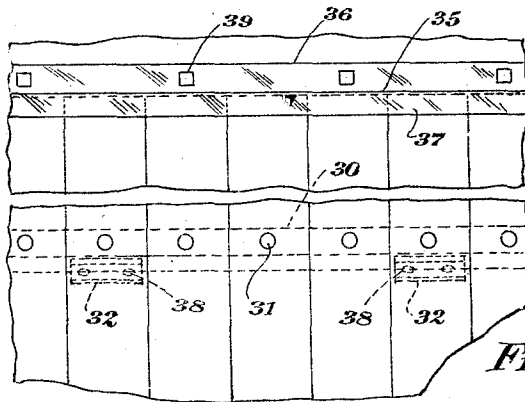
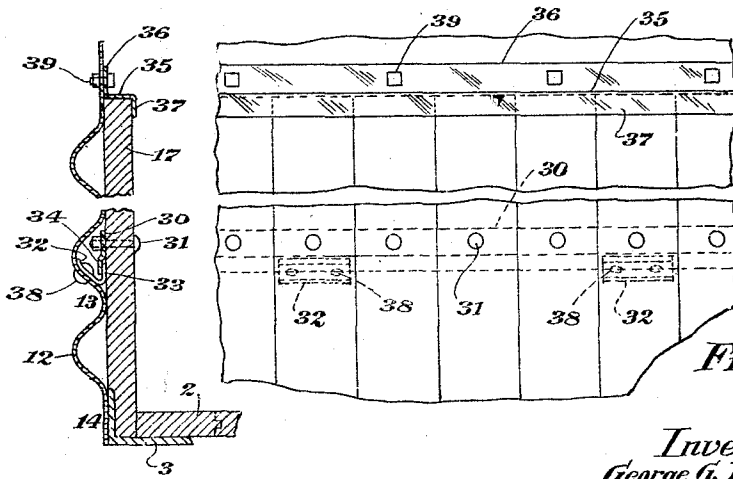
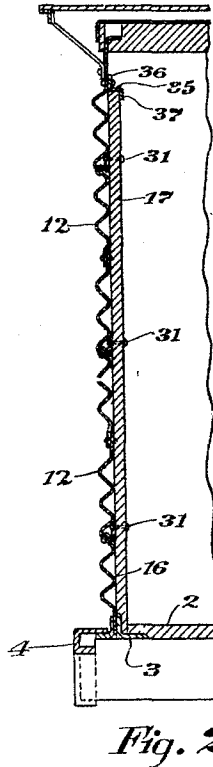
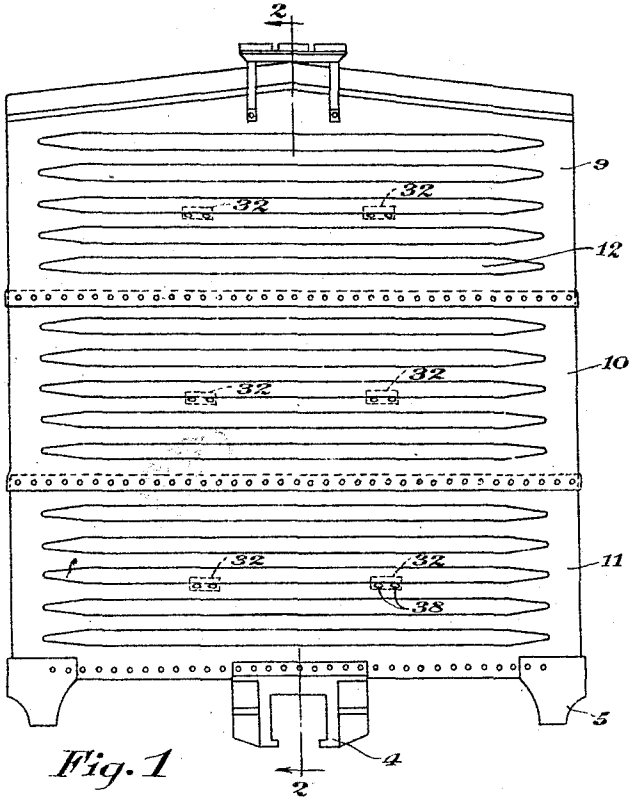
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END STRUCTURE FOR RAILWAY CARS

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# UNITED STATES PATENT OFFICE.

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## END STRUCTURE FOR RAILWAY CARS.

Application filed December 10, 1923. Serial No. 679,631.

*To all whom it may concern:*

Be it known that we, GEORGE G. LYNCH and LUCIUS S. PRATT, residing, respectively, at Wilmington, county of New Hanover, State of North Carolina, and at Roanoke, county of Roanoke, State of Virginia, and being citizens of the United States, have invented certain new and useful Improvements in End Structures for Railway Cars, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and to use the same, reference being had to the accompanying drawings, which illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof within the scope of the claims will occur to persons skilled in the art.

Metallic ends for railway cars have been devised and are now in extensive use which are made of a plurality of metallic plates having parallel corrugations formed therein extending alternately inwardly and outwardly from the neutral axis of the corrugated panel. The corrugated plate is of ample strength to resist the shocks of the shifting lading and to resist the torsional strains set up by the weaving of the car.

It is necessary, however, to line these metallic ends with a wooden lining so that the car may be used to transport any kind of lading. The lining prevents the moisture, due to condensation, on the inside of the metal plate, coming in contact with the grain lading and causing mildew, or if the car is loaded with cement, this moisture would cause hardening of portions of the cement requiring resacking. There are also limitations regarding the loading of explosives prescribed by the Bureau of Explosives of the Interstate Commerce Commission. It is also frequently found necessary to drive nails into the side or end of the car when blocking the lading.

Corrugated ends have been lined by positioning nailing strips within the corrugated portion and nailing the lining to such nailing strips. These nailing strips, of course, are subject to shrinkage which may cause a loose lining.

One of the objects of our invention is to

eliminate such nailing strips and secure the lining boards directly to the corrugated end in such a manner that each lining board bears directly against it. Any thrust or load imposed upon the lining board is, therefore, transmitted directly to the corrugated end and acts as a beam for only the short span of the distance between the corrugations. The construction, therefore, materially strengthens the lining boards; thus reducing the possibility of their breaking or splitting.

Another object of the invention is to provide means to hold the boards directly in contact with the apices of the inwardly projecting corrugations.

Another object of the invention is to strengthen the corrugated end by using the lining to distribute the load over several of the corrugations which is accomplished by positioning the boards vertically if the corrugations are positioned horizontally or vice versa, or so that the direction of the corrugation is substantially ninety degrees from the direction of the lining boards.

Another object of the invention is to provide an end lining or inner end wall for an end of a car which can be assembled as a unit and installed in the car as a unit and to provide means for holding such unitary lining in place at intervals along the length of the component boards and additional securing means at the top and bottom of the lining. Unitary end linings could be made up in advance of requirements and placed in stock at convenient places along the railroad.

Another object of the invention is to provide means of securing a lining in place which permits such lining to be readily removed and replaced and which necessitates the removal of a very few fastening means, thus reducing the time the car is out of service.

Another object of the invention is to provide a lining with means for resisting or retarding warping of the component boards, which means cooperate with other parts of the car to hold the lining in place.

Another object of the invention is to provide means for movably securing a lining to a car end wall which means is entirely within the integral corrugation of a corrugated end wall so that the lining boards

may bear upon the corrugations, and furthermore, the attaching means do not occupy needed space; in other words, do not increase the train length or decrease the inside length of the car. Furthermore, such means do not penetrate from the outside to the inside of the end wall of the car, which might cause a leak by moisture following such means.

10 In the drawings:

Fig. 1 is an end elevation of a railway car with our invention applied thereon.

Fig. 2 is a cross section drawn along line 2-2 of Fig. 1.

15 Fig. 3 is an enlarged fragmentary section of Fig. 2.

Fig. 4 is a fragmentary elevation of Fig. 3.

A plurality of parallel lining boards forming an inner wall 17 are secured together by the offset metallic strip 30 and bolts 31 or other convenient means. The end lining may be thus assembled as a unit in the wood mill in quantities and transported to the repair track for installation in the car as needed.

Rivets 38 secure clips 32 within the corrugations of the metallic plate forming the outside wall of the car, which clips are provided with upturned flanges 33 which co-act with the offset portions 34 of the strips 30. This engagement may be loose or tight as desired. A long flanged metallic strip may be used instead of a series of clips 32. The entire engaging means is within the corrugations so that the lining may bear against the corrugations.

Means of fastening the clips to the corrugated end wall are positioned in the underside of the corrugations 12, which reduce the possibility of a leak in case of a loose rivet or bolt, and furthermore, the rivet hole is on the neutral axis of the corrugated panel so that the reduction in strength, due to the hole, is a minimum.

20 To install the assembled unitary lining it is placed against the corrugated wall so that the lower end of portion 34 of strip 30 is above the upper end of flange 33 and it is then lowered into place. The boards are then restricted against horizontal movement. The flooring 2 is then installed which retains the lower end of the boards 17 in place.

The upper ends of the boards 17 are restrained against vertical movement by the Z-bar 35 which has a flange 36 secured to the end wall and flange 37 overlapping the lining boards. The outer flange 37 is not essential, in which case the boards 17 might

be fastened to the horizontal part of the member 35.

We claim:

1. In a railway car, the combination of a corrugated metallic end wall, lining boards extending transversely to said corrugations, an offset strip secured to said lining boards, and a clip secured to said metallic end wall, said strip co-acting with said clip to hold said lining boards close to said metallic end wall.

2. In a railway car, the combination of a corrugated metallic outer end wall, a wooden inner end wall, offset strips secured to one of said walls, and flanged clips secured to the other of said walls, said strips and clips within said corrugation co-acting to hold said walls close to each other.

3. In a railway car, the combination of a metallic end wall having integral corrugations formed therein, a plurality of parallel boards, an offset strip securing said boards together so as to form a unitary end lining, and a flanged clip engaging said offset strip constituting means within said corrugations to removably secure said unitary end lining to said end wall.

4. In a railway car, the combination of a metallic end wall having integral corrugations formed therein with sloping upper and lower portions, a plurality of boards forming a lining, an offset member secured to said lining, and a flanged member secured to the lower sloping portion of said corrugation, said members co-acting with each other to hold said lining close to said end wall.

5. In a railway car, the combination of a metallic end wall having integral horizontal corrugations formed therein, a plurality of vertical lining boards, offset strips secured to said boards so as to form a unitary end lining, flanged clips secured to said end wall within said corrugations, said strips co-acting with said clips to hold said unitary end lining close to the end wall.

6. In a railway car, the combination of a metallic end wall having integral horizontal corrugations formed therein, a plurality of vertical lining boards, offset strips secured to said boards so as to form a unitary end lining, flanged clips secured to said end wall within said corrugations, said strips co-acting with said clips to hold said unitary end lining close to the end wall, and separate means to prevent the vertical movement of said unitary end lining.

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