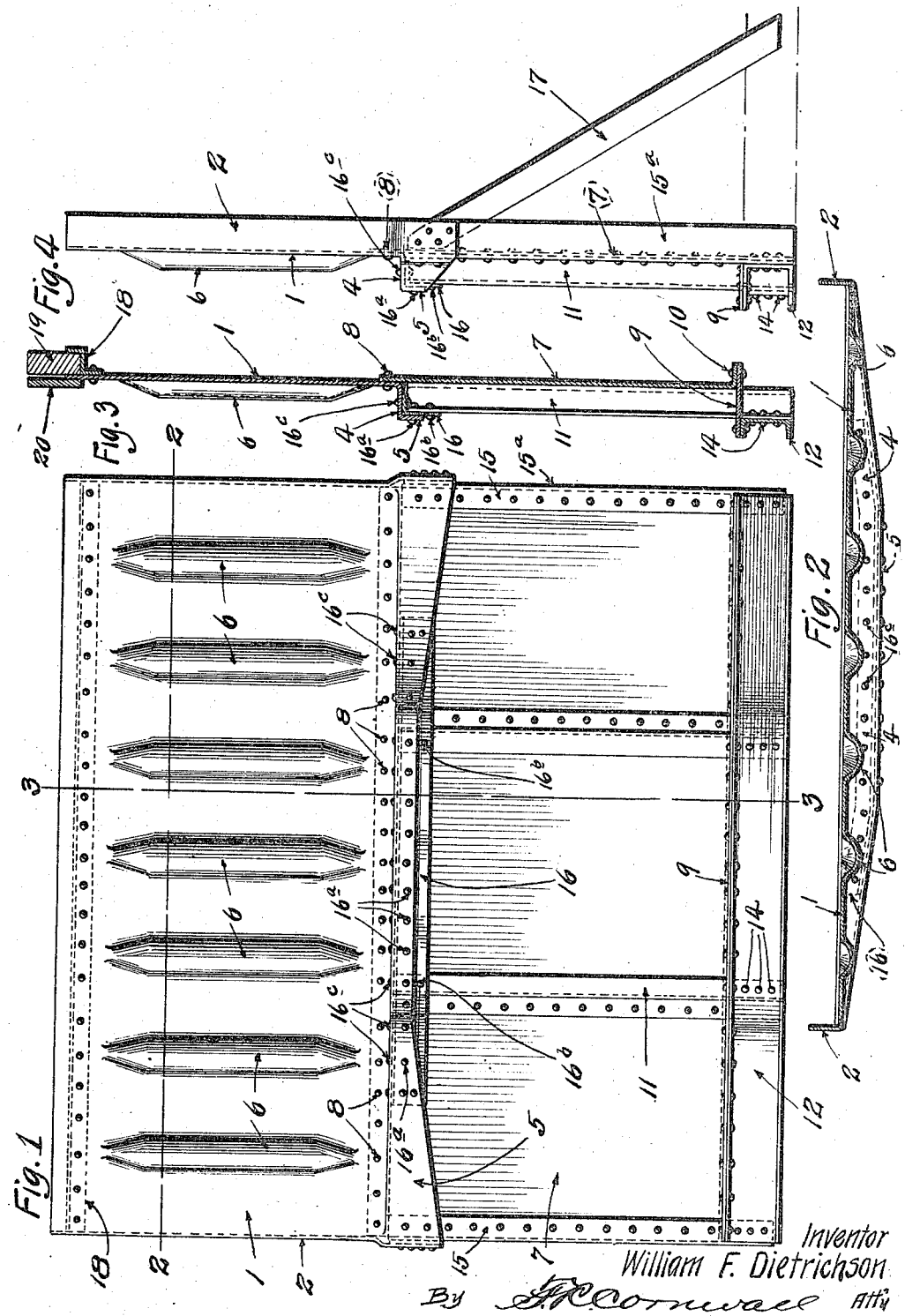
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METALLIC END FOR RAILWAY CARS.

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1,224,719.

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By [illegible] Attys

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# UNITED STATES PATENT OFFICE.

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## METALLIC END FOR RAILWAY-CARS.

1,224,719. Specification of Letters Patent. Patented May 1, 1917.

Application filed April 26, 1916. Serial No. 93,626.

*To all whom it may concern:*

Be it known that I, WILLIAM F. DIETRICHSON, a subject of the King of Nórway, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Metallic Ends 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 use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates generally to railway car structures, and more specifically to an improved construction for the ends of freight cars.

As is well known in practice, the ends of freight cars are subjected to destructive influences, such as the thrusts of the cargo under its inertia when the car is suddenly started or stopped, and hence the provision of a very strong end structure originally, and also one which may be readily repaired and the parts thereof replaced with facility, are factors of great importance in car building.

In recent practice, it has become common to form the car end of sheet metal, suitably reinforced to give it the necessary stiffness and stability, and subdivided into sections which are susceptible of individual replacement in case of damage.

Different cars, of course, are designed to carry different loads, and an end construction which might be sufficiently strong for one car, would not be sufficiently strong for a car designed for a heavier load. Therefore, in order to secure the greatest economy, it naturally follows that ends should be constructed for each of the several different load-capacity cars. However, in view of the great variation in load-capacity of cars, it is not practical or economical to construct an end for each class of cars. The basis of this statement is obvious when it is remembered that these ends are carried as supply parts in repair shops, in which shops cars of every size and description are repaired.

It is the purpose of my invention to provide an end construction which is designed to meet all requirements and variations as to strength in the most practical and economical fashion. This I do by providing an end structure wherein all the major parts, such as those requiring special shaping, are uniform for all applications of the end, but which also includes one or more load carrying elements which may be varied at will to suit the particular circumstance, and which, because of their intrinsic nature, may be readily shaped in any repair shop. In this fashion, I am enabled to provide a structure capable of wide variety of applications, yet containing for the most part uniform parts.

My invention also contemplates improvement in the manner in which metallic ends may be secured to the car structure, the purpose being to provide a more substantial and stable connection between the end structure and the framing members of the car.

With these, and other objects in view, the which will be pointed out hereinafter or obvious upon an understanding of the structure, I have devised a metallic car end structure one form of which, for the purpose of illustration, is disclosed in the accompanying drawings in which:

Figure 1 is a front elevation;

Fig. 2 is a horizontal section substantially on line 2—2 of Fig. 1;

Fig. 3 is a vertical section substantially on line 3—3 of Fig. 1; and

Fig. 4 is a side view.

Referring to these drawings by reference characters, it will be understood that 1 represents an upper panel of sheet metal having its lateral edges turned rearwardly to provide flanges 2 and its lower margin flanged outwardly in L form to form a web 4 and the flange 5. The web is widest across the central portion of the panel and tapers in width gradually toward the side margins. As a consequence of forming the web in this fashion, the flange 5 is narrowest across the central portion of the panel, and increases in width toward the side margins. Suitable corrugations 6 are preferably provided in the panel 1 so as to give it the necessary stiffness and stability to resist bending moments due to local horizontal end thrusts.

Associated with the upper panel 1 is a lower panel 7 in the form of a flat sheet riveted at its upper margin to the panel 1 adjacent the web 4 by rivets 8. The lower margin of the panel 7 is flanged rearwardly and connected to the end sill cover plate 9 by the rivets 10. On the outer side of the lower panel 7 are riveted one or more vertical reinforcing members 11 which are

lengths of any suitable pressed or commercial shape, such as the Z bars shown. At their lower ends these vertical reinforcing members pass through apertures in the end sill cover plate and are riveted to the end sill 12 by the rivets 14. At the lateral margins of the lower panel 7 angle members 15 of any suitable commercial form are riveted, their lower extremities being passed through apertures in the cover plate and being riveted to the extremities of the end sill, and their free flanges 15[a] extending rearwardly. The size and contour of the web 4 and flange 5 are such as to embrace the vertical reinforcing members 11 and the angles 15, to which the flange is secured by rivets. This construction at the lower edge of panel 1 provides a truss member extending completely across the end structure substantially at its girth line, and providing a very stiff and stable reinforcement across the zone most subject to cargo thrusts. In this truss member, the upper portion of the lower panel forms the compression member with respect to cargo thrusts, the flange 5 forms the tension member, and the web 4 and reinforcing members 11 form struts between the tension and compression members.

The parts so far described may be termed the uniform members of the end structure, by which I mean to indicate that these members may be employed in end structures designed for any of a wide variety of maximum loads. As the variable element of my structure, which variable element, as indicated above, is designed to be varied to meet the requirements of the particular car, I employ an angle member 16. This is an ordinary commercial or pressed shape which is commonly kept in stock at any repair shop, as it is susceptible of a wide variety of uses. This member is inserted between the upper extremities of the vertical reinforcing members 11 and the flange 5 and web 4 of the upper section. It is arranged to extend transversely of the end at the girth line, its length being determined in each instance by the requirements of the particular case. It is shaped to follow the contour of the flange 5, to which it is secured by rivets 16[a], and it also embraces the reinforcing elements 11 to which it is secured by rivets 16[b]. Its horizontal flange is secured to the web 4 by suitable fastenings, such as the rivets 16[c]. This variable transverse reinforcement 16, as stated, may be varied in length to suit the particular case, and may also be varied in weight as conditions require. It is inserted at the point where the end structure is subjected to the greatest stresses, yet at the same time any necessary variations in its weight or length will not change the end clearance of the structure.

This variable member combines with the shaped lower margin of the upper panel to form a very stiff transverse reinforcement, and it also coöperates with the vertical reinforcing members 11 to form a central reinforcement for both the lower and upper panels as it will resist horizontal end thrusts transmitted, in the lower panel, by vertical members 11, and in the upper panel, through the vertical corrugations. Any suitable means may be employed for anchoring the transverse reinforcing construction at its ends, such as the diagonal brace arrangement 17 illustrated in Fig. 4, or any equivalent arrangement, such as suitable anchorage to side girths or side posts. At the upper margin of the upper panel a Z bar 18 is riveted in such a position as to transmit end thrust reactions to the side plates of the car, and to receive the end plate 19. The facia plate 20 extends across the upper margin of the panel on the exterior thereof so as to form an effective weather closure.

From the foregoing description, it will be seen that my invention provides an end structure in which all of the major portions requiring special forming, such as the upper and lower panels, may be uniform for all applications of the end, yet the weight of the structure as a whole may be varied as required by variations in smaller parts, such as the transverse member 16, which variable part is readily made from material commonly in stock in any repair shop and which requires no unusual forming. Of course, the vertical members 11 may be varied if circumstances demand, and they too, being of any of a variety of adaptable commercial shapes, may be easily fabricated in the repair shop. It will be seen, therefore, that this end structure is one which permits of great economy because of the fact that while substantially all of its parts are uniform for all applications, it is susceptible of variation in certain of its minor members which will adapt it to any of a wide variety of requirements.

I am aware that the invention as herein described and illustrated may be embodied in a variety of forms not herein specifically mentioned, and that the illustrative form herein disclosed is susceptible of modifications and variations still within the scope of the invention, which is indicated in the following claims.

What I claim is:

1. A car end including a pair of conjoined panels, one of which has its margin shaped with a web and flange overlapping the other, a bar member disposed intermediate the overlapped portions of the panels and extending longitudinally thereof, and other bar members affixed to one of the panels and forming struts between the same and the first

mentioned bar member for the purpose described.

2. A car end including two sheet metal panels, the first of which has a margin shaped with a web and flange to overlap the second panel and form a stiffening member extending longitudinally of the panels, the second panel having bar members affixed thereto and extending outwardly therefrom into coöperation with the overlapping margin of the first panel to form struts for the said stiffening member.

3. A car end including conjoined upper and lower panels, the upper panel having its lower margin flanged outwardly and downwardly to overlap the lower panel and provide a longitudinal stiffening member, and vertical bar members applied to the lower panel and connected at their upper extremities to the said stiffening member.

4. A car end including conjoined upper and lower panels, the lower margin of the upper panel being flanged outwardly to overlap the lower panel, vertical stiffening members applied to the lower panel, a transversely extending bar member applied to the upper portions of said vertical members and combined with the flanged margin of the upper panel to provide a transverse stiffening member.

5. In a car end, the combination of a lower panel, a second panel disposed thereabove and connected thereto, said second panel having its lower margin overlapping the lower panel, and a vertical reinforcing member applied to the lower panel and having its upper portion disposed between the lower panel and the lower margin of the second panel.

6. In a car end structure, the combination of a pair of conjoined panels one of said panels having its margin overlapping the other panel and formed with a web of varying width and a flange, and struts connecting the upper portion of the lower panel and said flange; the construction providing a reinforcing or stiffening member in the nature of a truss wherein the lower panel forms the compression member and the flange on the upper panel the tension member with respect to cargo thrusts.

7. In a car construction, conjoined upper and lower wall panels, the upper panel having an outwardly deflected portion overlapping the lower panel and forming a tension member to stiffen the structure transversely, a transversely extending bar member combined with said outwardly deflected portion of the upper panel, and members connected to the lower panel and disposed to maintain the bar member spaced apart therefrom whereby the lower panel becomes a compression member coöperating with the said tension member.

8. In a car end structure, the combination of a lower panel, bar members affixed thereto to stiffen the same vertically, and an upper panel conjoined to the lower panel and having portions overlapping the outer margins of said bar members and secured thereto.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 22nd day of April, 1916.

WILLIAM F. DIETRICHSON.

Witnesses:

OSCAR HOCHBERG,

BLASDEL SHAPLEIGH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."