C. W. DAKE.

CAR END.

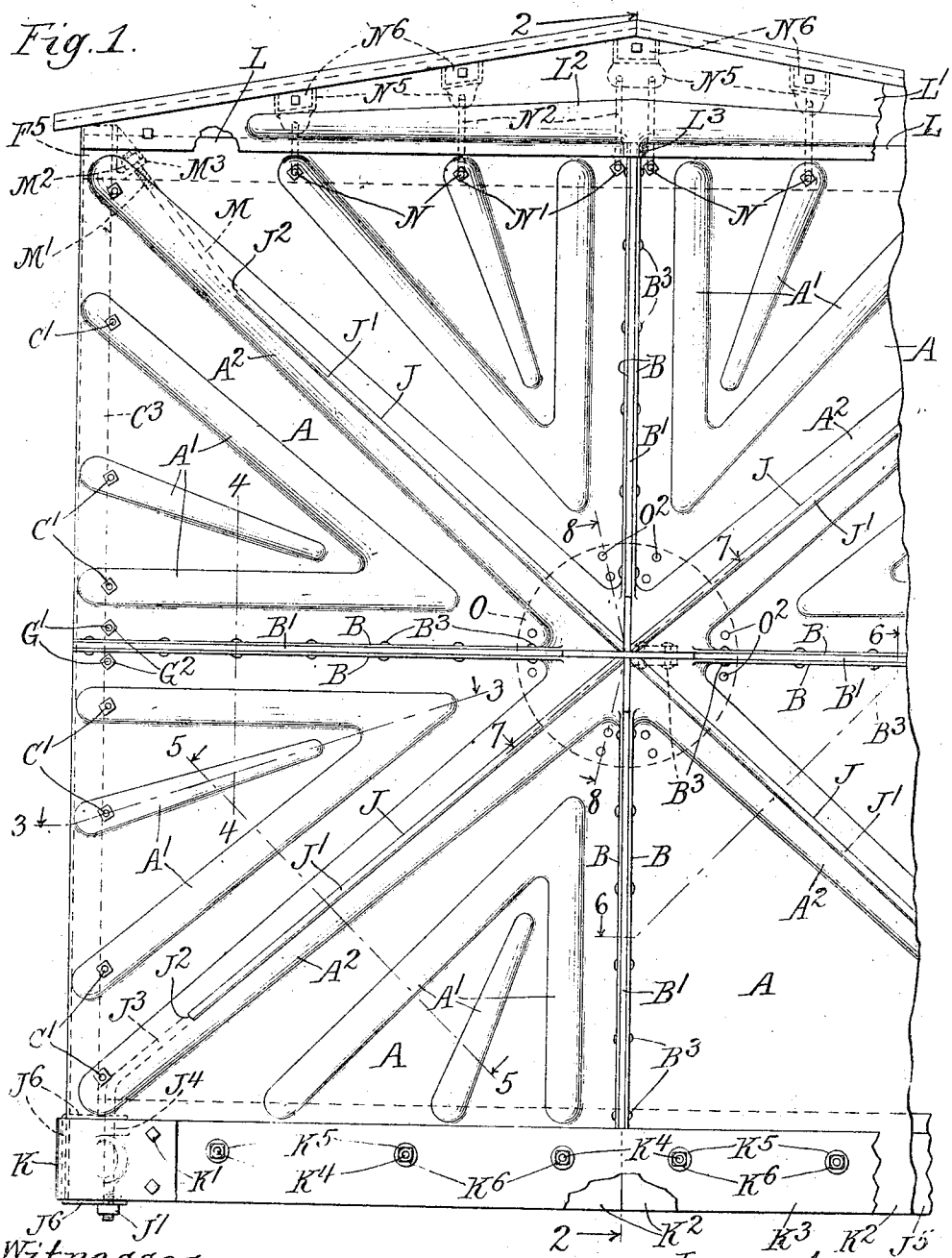
APPLICATION FILED FEB. 1, 1915.

1,254,030.

Patented Jan. 22, 1918.

3 SHEETS—SHEET 1.

Fig. 1.



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Reese S. Rice.

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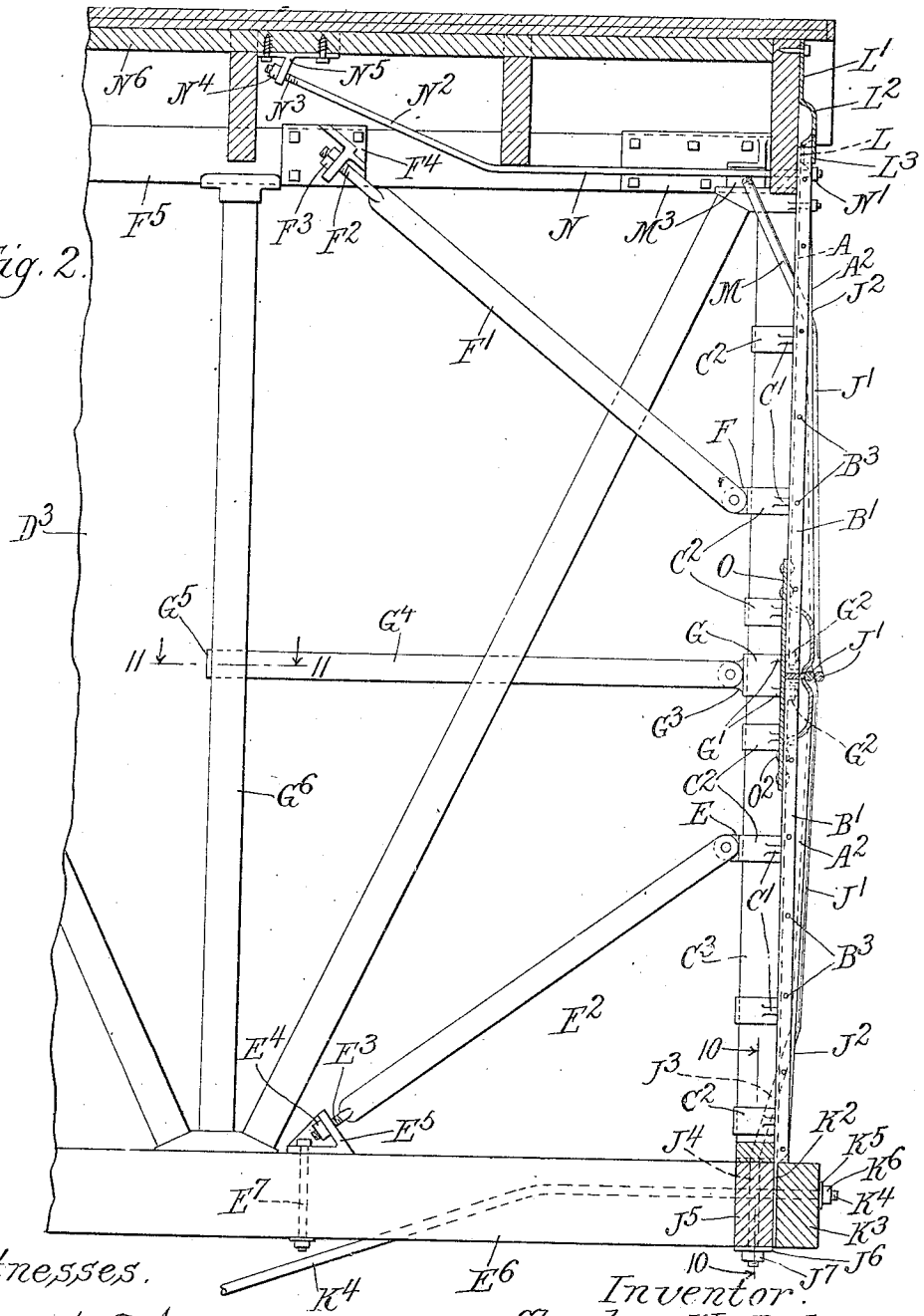
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1,254,030.

Patented Jan. 22, 1918.

3 SHEETS—SHEET 2.

Fig. 2.



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1,254,030.

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3 SHEETS—SHEET 3.

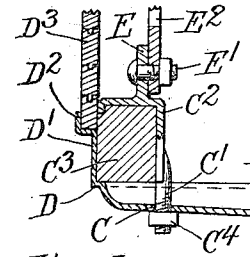


Fig. 3.

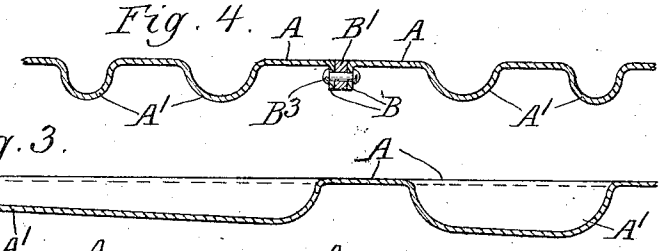


Fig. 4.

Fig. 5.

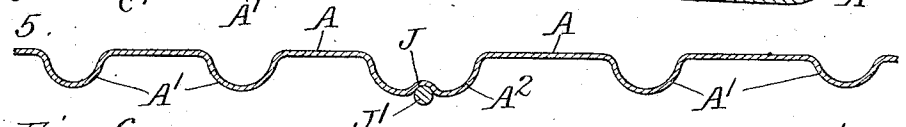


Fig. 6.

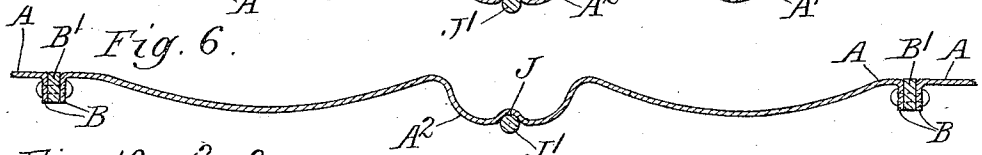


Fig. 10.

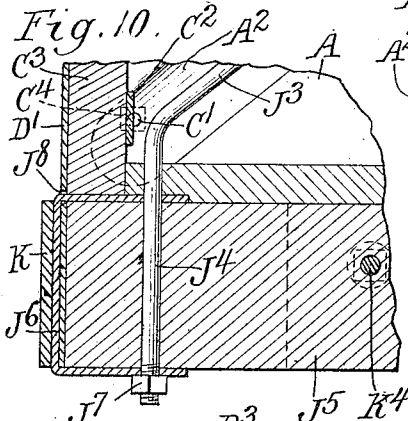


Fig. 7.

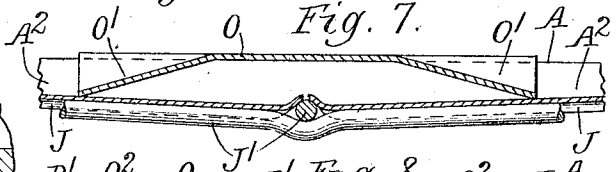


Fig. 8.

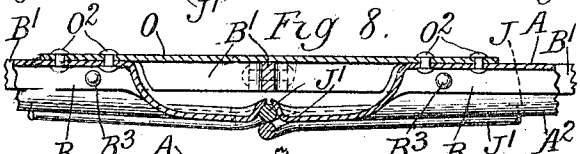


Fig. 9.

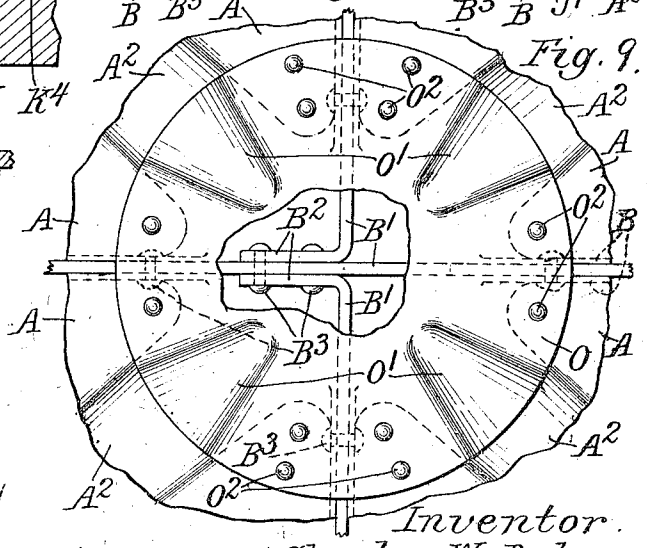


Fig. 11.

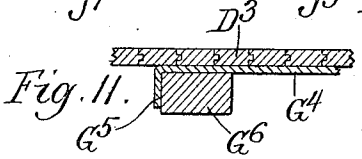
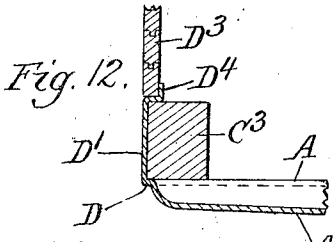


Fig. 12.



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UNITED STATES PATENT OFFICE.

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CAR END.

1,254,030. Specification of Letters Patent. Patented Jan. 22, 1918.

Application filed February 1, 1915. Serial No. 5,364.

To all whom it may concern:

Be it known that I, CHARLES W. DAKE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Car Ends, of which the following is a specification.

My invention relates to car ends, particularly to metallic or sheet metal ends adapted to be applied to any kind of car whether having a metal or wooden frame.

It is illustrated in the accompanying drawings wherein—

Figure 1 is an elevation of a car containing my invention;

Fig. 2 is a vertical section of the car end on the line 2—2 of Fig. 1;

Fig. 3 a section on the line 3—3 of Fig. 1;

Fig. 4 a section on the line 4—4 of Fig. 1;

Fig. 5 a section on the line 5—5 of Fig. 1;

Fig. 6 a section on the line 6—6 of Fig. 1;

Fig. 7 a section on the line 7—7 of Fig. 1;

Fig. 8 a section on the line 8—8 of Fig. 1;

Fig. 9 is an inside elevation of the central part of the car end with parts broken away;

Fig. 10 is a section on the line 10—10 of Fig. 2;

Fig. 11 is a section on the line 11—11 of Fig. 2;

Fig. 12 is a section of a modification of a part shown in Fig. 3.

Like parts are indicated by the same letter in all the figures.

A, A are sheet metal plates and they are preferably assembled in groups of four so as to form a complete end for the body of the car. These plates may have corrugations as A^1, A^1, or they may have continuous smooth surfaces. Each has preferably a diagonal corrugation A^2 arranged so that there is a continuous diagonal corrugation in each direction across the complete car end and section to brace the same. The short corrugations on the respective plates strengthen such plates. The abutting edges of adjacent plates are preferably flanged as at B, B and interposed between them are straps B^1, B^1. The horizontal strap is continuous and passes from one edge of the car end to the other. The vertical straps are bent over as at B^2, B^2 onto the sides of the horizontal strap. The several strap portions and plate flanges are secured together by the rivets B^3, B^3. The corrugations preferably extend to the edge of the plates or to the corner formed by bending the plate about the car structure, and at the ends of such corrugations are holes C through which project the bolt C^1 from the angle irons C^2 which engage the back of the car posts C^3. The nut C^4 on the bolt C^1 engages the outside of the corrugations A^1 and thus the plate which forms the car end is securely held in position. The plate preferably has an offset or edge D which engages the outer edge of the car post, while the flat surface of the plate A just immediate the corrugations also rests against the outer surfaces of the post. Thus the angle iron and bolt securely clamp the two opposite faces of the post and hold the plate securely in position. D^1 is a lateral extension of the car end which lies along the outside of the post and D^2 is an angular offset which overlies the car siding D^3. Some of these angle irons are complete as described, others have the projections E therefrom. To one of these projections E is pivotally secured by means of the bolt E^1 the brace E^2, which is in turn secured by its threaded end E^3 and nut E^4 to the anchor piece E^5 placed on the car sill E^6 and held in position by the anchor bolt E^7 which passes through the sill. One of the upper angle irons C^2 has an offset F to which is pivotally attached a brace F^1 which by means of its screw-threaded end F^2 and the nut F^3 is attached to the anchor plate F^4 which is bolted to one of the longitudinal upper car frames F^5.

G is a large angle bar provided with two bolts G^1, G^1 which pass through the plate and are provided with outer ends G^2 which secure the two plates in like manner in position. This enlarged angle iron has the projection G^3 to which is pivotally attached the brace G^4 which passes along the side of the car and is bent over so as to form an angle end G^5 which passes around the vertical car frame piece G^6 so as to hold all the parts in proper relation.

In Fig. 3 I have shown the extension of

the sheet metal car end as overlying the side of the car. In Fig. 12 I have shown a modification. Here the angle edge is reversed as shown at D^4 so that the car siding D^3 lies outside of such angle piece and parallel with the lateral portion D^1 of the car end. The bracing corrugations A^2 are widest and deepest at their inner ends and diminishing in both directions toward their outer ends. Each has an inwardly pressed groove J to receive the bracing rod J^1. These two rods overlap each other as indicated in Fig. 8. Each toward its outer end passes from the outer to the inner side of the plate by penetrating at J^2, J^2 the corrugation. At the lower end the rod J^1 after passing through the plate is inwardly bent as at J^3 and then is carried into the vertical position at J^4 and carried downwardly through the transverse car sill J^5 and through the two portions of an angle plate J^6, where it and they are secured in position by the nut J^7. The upper portion of the angle plate passes through a slot J^8 in the side portion of the car end.

The usual corner securing plate K passes around the end of the sill over the outer portion of the angle plate J^6 and is secured in position by the bolts K^1, K^1 which pass through the sill. The lower edge of the sheet metal plates which form the car ends project at K^2 toward the bottom of the sill and outside of them lies another car sill K^3. The parts are held together and the two ends of the car secured together by the tie rods K^4 which pass through both of the sills and terminate in a washer K^5 and a nut K^6 outside the outer sill. The upper edge of the two upper plates of the car end terminate in strips L which lie under the upper plate L^1, which upper plate is angular on its upper edge to accommodate itself to the shape of the car roof and has an outward projection or corrugation L^2 with a central corrugation L^3 which overhangs the flanges B at the top of the car end. The upper end of the rod J^1 passes through the corrugation at J^2 and is inwardly bent at M and secured by means of a screw-threaded end M^1 and nut M^2 to the anchor plate M^3 which is bolted to the upper longitudinal timber F^5 of the car. N, N are a series of brace rods which pass through the upper edge of the plates and particularly where possible through the upper ends of the corrugations. These rods pass through the plate, being secured by the nuts N^1, N^1, are carried backwardly under the carlines, are then bent upwardly at N^2 and finally by means of their screw ends N^3 and the nuts N^4 are secured to the anchor plates N^5 which are bolted to the longitudinal roof frames N^6.

The details of these constructions will be varied according to the positions in which the several parts fall. O is a strengthening plate which may be flat or slightly bent or corrugated at O^1 to accommodate itself to the corrugations of the sheet metal plates. It is bolted at O^2, O^2 to the plates A, and thus it serves to hold all the parts securely together. As previously stated, the corrugations extend from corner to corner, are at their deepest and widest at the middle and both measurements decrease toward their ends. This need not be the case with reference to the strengthening or stiffening corrugations. The parts C^1 and C^2 constitute in effect a clamping hook which comprises one member to inclose the back side of the side post and another to pass through and provide means for securing the plate and clamping hook together so that the side post or frame member of the car end may be clamped against the sheet metal plate.

I do not wish to be limited, of course, to the particular size, form, shape and arrangement of the several parts here illustrated. All may be greatly altered without departing from the spirit of my invention.

The use and operation of my invention are as follows:

I desire first to call attention to certain important features. The car end may be made of a single plate, or preferably in two or four sections, but in any event these bracing corrugations extend diagonally from corner to corner. It may have other corrugations extending from edge to edge through the center. These two corrugations are preferably wider or deeper or both than they are at their outer ends. They serve, therefore, as bracing corrugations to give the truss effect to the end of the car as against pressure from within or without.

To further increase this bracing and strengthening effect, I use either bracing rods or bracing straps, but I prefer both. In the case of straps they rotate vertically or horizontally and are bolted together at their inner ends to make a spider and this spider lies between the upturned or flanged edges of the plate when plate sections are used and would lie in appropriate slots of a similar nature if the plate were made of a single sheet. The bracing rods lie outside the straps and not only brace the end, but also serve as a means of attachment for the end to the timbers of the car. These attachments are made by means of braces and angle irons in such way as to attach the car end to the frame of the car without weakening the car timbers or interfering with the carlines. The plate is anchored by means of anchor bars or secured by means of angle bars to the post and timbers. The car end is secured at the bottom by means of the tie rods of the car and at the top by means of

attachment to the longitudinal upper timbers of the car.

The car end finally is specially strengthened by means of the central stiffening plate which overlies the inner ends of central portions of the bracing sections or any other corrugations which may be brought toward the center of the plate and is there secured to the plate which forms the car end.

With the car end so formed and assembled and secured, the car end itself is very stiff and rigid as against internal and external pressure. It is secured around the edges to the timbers of the car and particularly the longitudinal timbers and tie rods so as to securely anchor it and to transmit internal pressure against one end of the car to the other end and all this without interfering with the usual structure of the car frame or cutting or weakening the carlines, or cutting or weakening the post or timbers themselves.

I have described my invention as a car end. It will be obvious, however, that except for such arrangements as are made for the attachment of the plate or plates to the car end, the sheet metal structure is equally applicable for any other purpose and particularly for the building up of the sides of cars. I wish, therefore, my expression car end, so far as it applies to the sheet metal structure itself, at least to be understood as relating to and covering sheet metal structures of the kind suitable for car ends or for other purposes.

I claim:

1. A car end composed of sheet metal sections bulging outwardly from the plane of the car end perimeter and separate metal strengthening strips between such sections in such plane.

2. A car end composed of flanged sheet metal sections bulging outwardly from the plane of the car end perimeter and separate metal strengthening strips between the flanges of such sections in such plane.

3. A car end composed of sheet metal sections with flat surfaces in the plane of the car end perimeter and outwardly bulging portions and separate metal strengthening strips between such sections in such plane.

4. A car end composed of sheet metal sections bulging outwardly from the plane of the car end perimeter and strengthening strips between such sections in such plane, such strips underlying the metal portion of such bulging car end.

5. A car end composed of flanged sheet metal sections bulging outwardly from the plane of the car end perimeter and strengthening strips between the flanges of such sections in such plane, such strips underlying the metal portion of such bulging car end.

6. A car end composed of sheet metal sections with flat surfaces in the plane of the car end perimeter and outwardly bulging portions and strengthening strips between such sections in such plane, such strips underlying the metal portion of such bulging car end.

7. A car end composed of sheet metal sections bulging outwardly from the plane of the car end perimeter and strengthening strips between such sections in such plane, one of said strips formed in two sections bent over and secured at their inner ends to the other strip.

8. A car end composed of flanged sheet metal sections bulging outwardly from the plane of the car end perimeter and strengthening strips between the flanges of such sections in such plane, one of said strips formed in two sections bent over and secured at their inner ends to the other strip.

9. A car end composed of sheet metal sections with flat surfaces in the plane of the car end perimeter and outwardly bulging portions and strengthening strips between such sections in such plane, one of said strips formed in two sections bent over and secured at their inner ends to the other strip.

10. A car end plate having diagonally disposed and intersecting corrugations with securing rods which lie along the top of said corrugations, and pass through the same to the extremity of such corrugations.

11. A car end plate having diagonally disposed and intersecting corrugations with securing rods which lie along the top of said corrugations, and pass through the same to the extremity of such corrugations, said securing rods made fast to the frame of the car for the purpose of bracing and holding the car end in place.

12. A car end plate comprising sections having diagonally disposed and intersecting corrugations with securing rods which lie along the top of said corrugations, and pass through the same to the extremity of such corrugations.

13. A car end plate comprising sections having a corrugated surface with securing rods lying along said corrugations and in part on both sides of the plate, said sections provided with contiguous flanges and strengthening straps which lie between and are secured to said flanges.

14. A car end plate comprising sections having corrugations extending approximately from edge to edge with securing rods lying along said corrugations and in part on both sides of the plate, said sections provided with contiguous flanges and strengthening straps which lie between and are secured to said flanges.

15. A car end plate comprising sections having diagonally disposed and intersecting corrugations with securing rods which lie along the top of said corrugations, and pass

through the same to the extremity of such corrugations, said sections provided with contiguous flanges and strengthening straps which lie between and are secured to said flanges.

16. A car end composed of sheet metal sections bulging outwardly from the plane of the car end perimeter and strengthening strips between such sections in such plane and securing rods which overlie the middle bulging portion of said end, pass through the same near its perimeter and are secured to the car end frame.

17. A car end composed of flanged sheet metal sections bulging outwardly from the plane of the car end perimeter and strengthening strips between the flanges of such sections in such plane, and securing rods which overlie the middle bulging portion of said end, pass through the same near its perimeter and are secured to the car end frame.

18. A car end composed of sheet metal sections with outwardly bulging portions and strengthening strips between such sections in the plane of the car end and securing rods which overlie the middle bulging portion of said end, pass through the same near its perimeter and are secured to the car end frame.

19. A car end composed of sheet metal sections bulging outwardly from the plane of the car end perimeter and strengthening strips between such sections in such plane and a central strengthening plate which overlies the strips and the central bulging portion of the car end.

20. A car end composed of sheet metal sections bulging outwardly from the plane of the car end perimeter and strengthening strips between such sections in such plane and securing rods which overlie the middle bulging portion of said end, pass through the same near its perimeter and are secured to the car end frame and a central strengthening plate which overlies the central bulging portion of the car.

21. A car end plate comprising a series of sections provided with diagonal corrugations, contiguous flanged surfaces, straps which lie between the flanges and are secured thereto, and a central strengthening plate which overlies the straps and the corrugations.

22. A car end plate comprising a series of sections having diagonal corrugations, securing rods which pass along said corrugations and lie on both sides of the plate, and a central strengthening plate which overlies the corrugations.

23. A car end comprising a series of sections having diagonal corrugations, flanges at their contiguous edges, straps which lie between the flanges and are secured thereto, rods which lie along the corrugations and on both sides of the plate, and a central strengthening plate which overlies the intersection of the corrugations.

24. A car end comprising a sheet metal plate in combination with anchors which overlie the inner sides of the vertical posts of the car end frame and are secured to the end plate and the car frame.

25. A car end comprising a sheet metal plate with anchors which encircle the inner edge of the car end frame pieces, means for securing them to the plate, and braces from the anchors to anchor plates on the longitudinal frames.

26. A car end comprising a sheet metal plate on the outer side of the longitudinal frame of the car end with securing rods attached thereto passing backward under the carlines and anchor plates on the inner side of the longitudinal frame of the car end to which such rods are attached.

27. A car end structure comprising an end plate, a post adjacent one side thereof, a holding hook surrounding the two inner sides of the post and means for clamping said plate and hook together against the post.

28. A car end structure comprising a post, a car end plate adjacent said post and a lateral extension on the plate substantially at right angles to the plane thereof and overlying the outside of the post, and an inward flange on such extension to overlie the face of the post opposite the face against which the car end rests.

29. In a car end structure an end plate, a supporting post therefor, a clamping hook engaging said post and attached to the end plate, a reinforcing link pivoted on said hook and means for anchoring said link.

30. A car end comprising supporting posts, a car end plate mounted thereon, a clamping hook engaging said post and clamped to and holding the car end plate, a tension link pivoted on the clamping hook and means for anchoring the end thereof.

31. A car end comprising supporting posts, a car end plate mounted thereon, a clamping hook engaging said post and clamped to and holding the car end plate, a tension link pivoted on the clamping hook, the end thereof being anchored to the body of the car.

32. A car end comprising supporting posts, a car end plate mounted thereon, a clamping hook engaging said post and clamped to and holding the car end plate, a tension link pivoted on the clamping hook, the end thereof being anchored to the car frame.

33. A car end comprising supporting posts, a car end plate mounted thereon, a clamping hook engaging said post and clamped to and holding the car end plate,

a tension link pivoted on the clamping hook, the end thereof being anchored to one of the longitudinal car frame members.

34. A car end structure comprising an end plate, an end frame supporting said plate and a flange thereon surrounding and hooked over a portion of said frame.

35. A car end structure comprising an end plate, a vertical post adjacent one edge thereof, a flange formed at the edge of the car end plate and bent so as to overlie the outer face of said post and bent inwardly to engage the post on the side opposed to the end plate.

In testimony whereof, I affix my signature in the presence of two witnesses this 27th day of January, 1915.

CHARLES W. DAKE.

Witnesses:
BESSIE S. RICE,
GENEVA HERTH.