

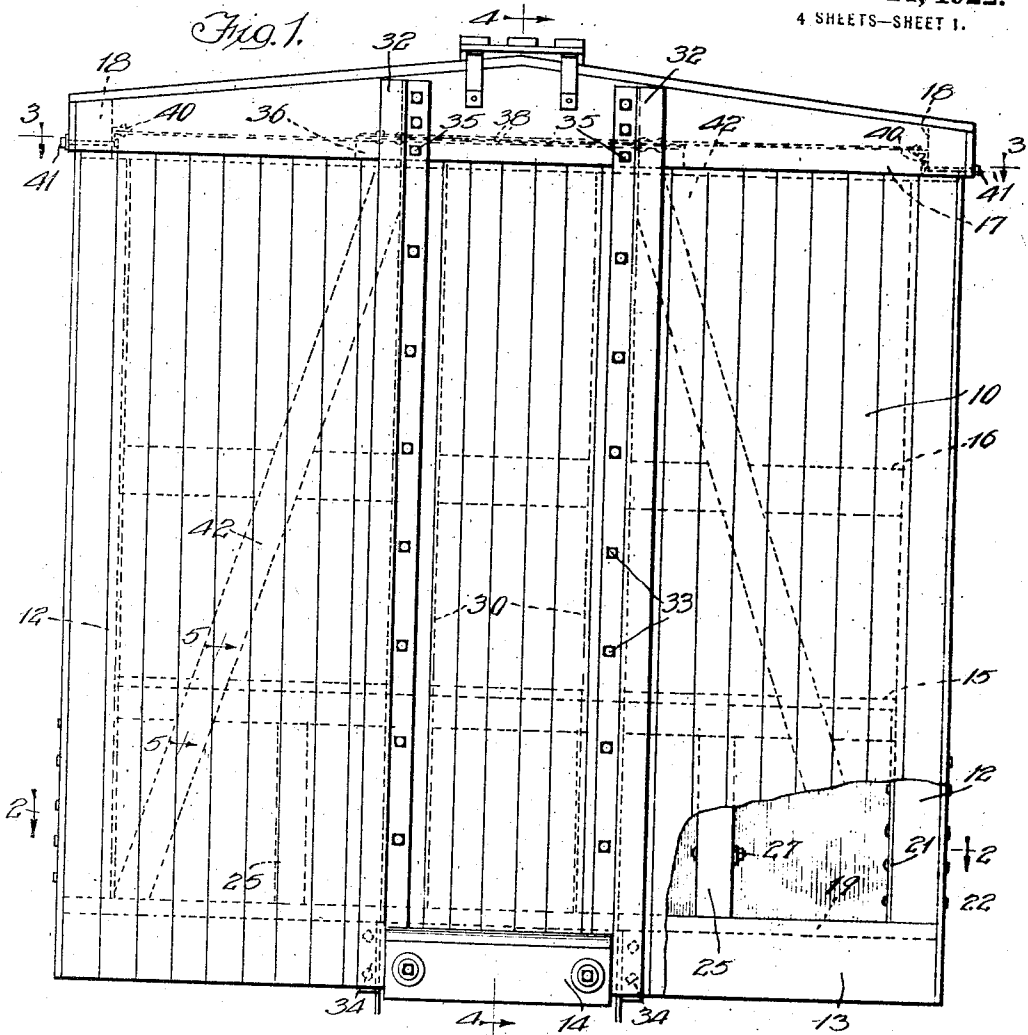
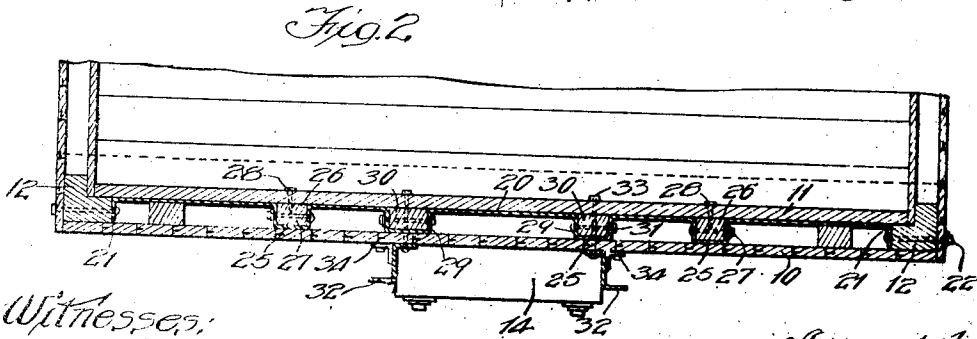
W. P. MURPHY.
RAILWAY CAR.

APPLICATION FILED APR. 9, 1919.

1,404,469.

Patented Jan. 24, 1922.

4 SHEETS—SHEET 1.



Witnesses:

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Inventor:
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1,404,469.

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4 SHEETS—SHEET 2.

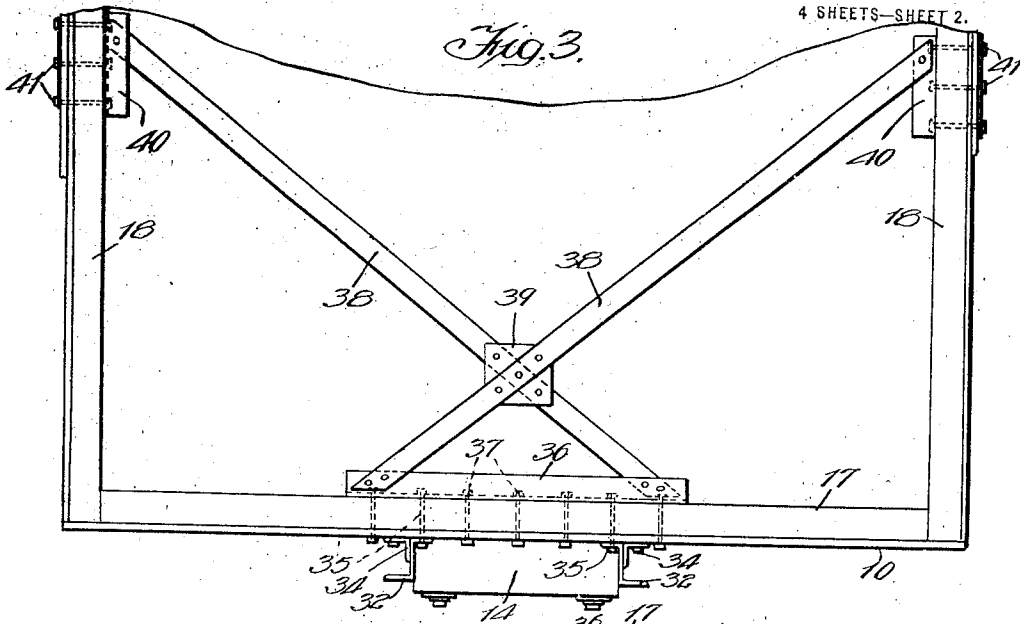


Fig. 4.

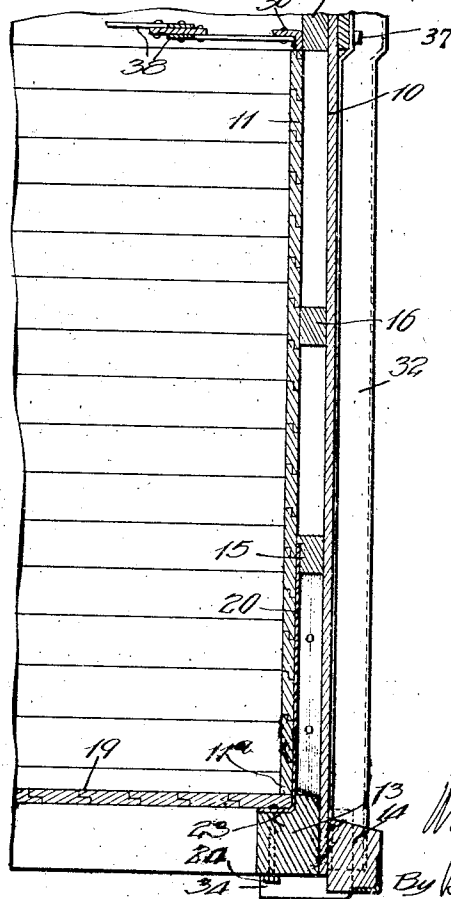
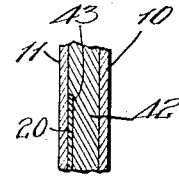


Fig. 5.



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4 SHEETS—SHEET 3.

Fig. 6.

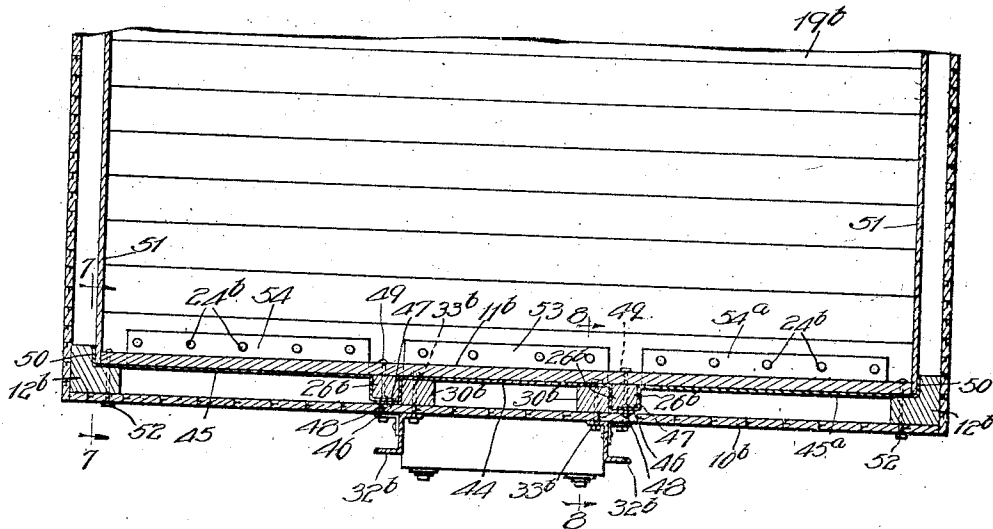


Fig. 7.

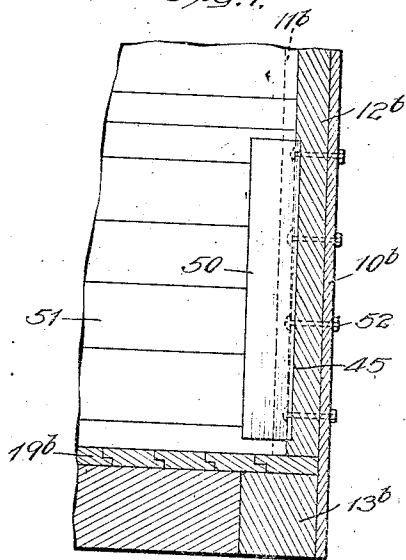
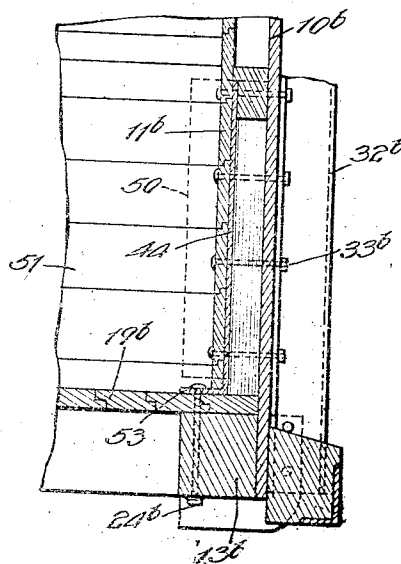


Fig. 8.



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4 SHEETS—SHEET 4.

Fig. 9

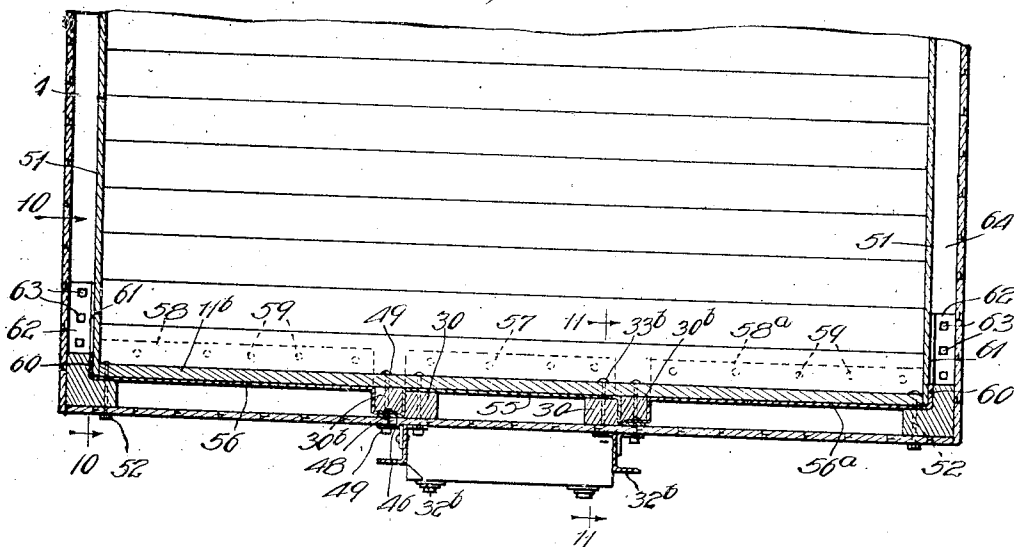


Fig. 10.

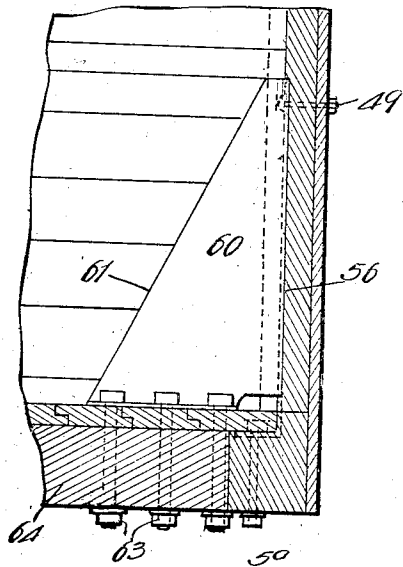
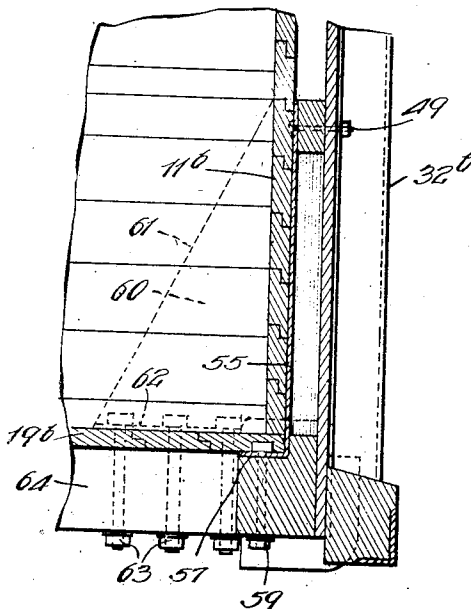


Fig. 11.



Witnesses:

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UNITED STATES PATENT OFFICE.

WALTER P. MURPHY, OF NEW YORK, N. Y.

RAILWAY CAR.

1,404,469.

Specification of Letters Patent. Patented Jan. 24, 1922.

Application filed April 9, 1919. Serial No. 288,854.

To all whom it may concern:

Be it known that I, WALTER P. MURPHY, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Railway Cars, of which the following is a specification.

My invention relates to the construction of railway cars, more particularly box cars, and its object is to provide a metal reinforcement for the wooden end wall of a railway car which will be simple in structure, and inexpensive to fabricate and install, and which can be readily applied either to new cars or to old cars requiring repair. The reinforcing structure of my invention is of such character as to strengthen the end wall of the car to which it is applied, both as against the inertia thrusts of the lading and also as against the tendency of the car to weave and distort the framing thereof. As the heavier parts of the cargo of the box car are usually placed on or near the floor it is the lower part of the car end wall which is apt to receive the severest cargo thrusts. To strengthen the end against such thrusts I provide a steel plate extending across the car from side to side and so arranged that it does not involve reconstructing the sheathing nor prevent the use of a wooden lining which, for well known reasons, is usually required even in case of cars having metal walls or metal ends. Preferably the reinforcement of my invention involves the use of a reinforcing panel at the bottom of the end wall which is arranged between the outer sheathing and the inner lining of the car so that it does not appreciably shorten the inside length of the car nor increase its overall longitudinal dimension. The reinforcing plate is so formed as to facilitate the installation of the inner lining.

The invention consists of the new and improved constructions, arrangements and devices, 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 certain preferred embodiments of the invention shown in the accompanying drawings.

In the drawings,

Fig. 1 is an end elevation of the superstructure of a box car, the outer sheathing being broken away to better illustrate the

reinforcing structure applied to the end of a car.

Fig. 2 is a sectional plan on line 2—2 of Fig. 1.

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

Fig. 4 is a fragmentary vertical sectional view on line 4—4 of Fig. 1.

Fig. 5 is a detail section on line 5—5 of Fig. 1.

Fig. 6 is a sectional plan view illustrating a modification.

Figs. 7 and 8 are vertical sectional views taken on lines 7—7 and 8—8, respectively, of Fig. 6.

Fig. 9 is a view similar to Fig. 6 illustrating a further modification, and

Figs. 10 and 11 are vertical sections taken on lines 10—10 and 11—11, respectively, of Fig. 9.

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

Referring to the drawings, 10 indicates the outer sheathing of the car, 11 the inner lining, consisting preferably of horizontally extending lining boards, 12 the corner posts, 13 the end sill, 14 the dead wood, 15, 16 the end belt rails, 17 the end plate, 18 the side plates, and 19 the flooring of the car. Between the outer end sheathing and the inner end lining is arranged a steel plate 20 which extends across the car from side to side and is anchored to the framing of the car in any suitable manner. For example, the vertical edges of the plate are shown as provided with upstanding flanges 21 secured to the corner posts 12 by bolts 22 and the lower edge of the plate is provided with a flange 23 interrupted as hereinafter described and secured to the end sill 13 by bolts 24. The flange 23 preferably extends around the lower lining board 11 and under the flooring boards 19 so as to provide a grain proofing arrangement along the end of the car. The reinforcing plate may extend as far up the end of the car as may be considered desirable. Preferably, however, it will extend only part way up the end, for example, as far as the first end belt rail 15, which, in the construction shown, is rabbeted for the upper edge of the plate. The plate is formed with recesses or vertical channels 25 in which are arranged wooden nailing strips 26 held in place by transverse bolts 27. These bolts binding the channel portions of the plate to the nailing strips 26 give rigidity to the

plate considered as a plate girder. The lower lining boards, that is, the boards below the lower belt rail 15 may be secured to the nailing strips 26 by ordinary nails 28. If
 5 desired, the plate 20 may also be formed with channels 29 to receive the end posts 30 which may be secured to the plate by bolts 31.

It is desirable to further reinforce the end of the car particularly where the plate
 10 20 extends only part way up the end wall. This additional reinforcement is preferably provided by a pair of vertical reinforcing members, Z-bars 32 for example, which extend from sill to roof of the car, parallel-
 15 ing the wooden end posts 30, and are secured to said posts and to the channeled portions 29 of the reinforcing plate 20 by means of bolts 33. The lower ends of the Z-bars are preferably attached to the end
 20 sill by means of angular gussets 34. The upper ends of the Z-bars are fastened by bolts 35 to an angle bar 36 secured to the end plate 17 by bolts 37. A bracing structure consisting of a pair of intersecting
 25 braces 38 secured together by plate 39 at their intersection, transmits the thrust on the angle bar 36 to the side plates 18 of the car, the inner ends of the members 38 being riveted to angular brackets 40 secured
 30 to the side plates 18 by bolts 41.

Where the end framing of the car employs diagonal posts or braces 42 the lower ends of these posts or braces may be gained out at 43 (Fig. 5) to make room for the rein-
 35 forcing plate 20.

In the modification shown in Figs. 6 to 8 inclusive, the reinforcing structure consists preferably of a center sheet 44 and
 40 sheets 45, 45^a arranged at opposite sides thereof. The center sheet is fitted between the end lining boards 11^b and the end posts 30^b of the car and the vertical edges of the sheet bent around the posts. These edges
 45 are also bent to provide flanges 46 which bear against the inner surface of the end sheathing 10^b. The inner vertical edges of the sheets 45, 45^a are bent at right angles to the body of the sheet and formed with angular flanges 47 which overlap and are
 50 secured to the flanges 46 by rivets 48. This construction rigidifies the end posts 30^b at their lower ends and also provides suitable recesses in which the nailing strips 26^b may be seated. The center sheet is secured in
 55 place by means of the bolts 33^b which pass through the end posts and one of the flanges of the Z-bar reinforcing posts 32^b. The end lining is preferably secured to the strips 26^b by bolts 49. The outer vertical edges
 60 of the sheets 45, 45^a are formed with flanges 50 which fit within a recessed portion of the corner posts 12^b and extend back of the side lining 51. The outer ends of these sheets are secured to the corner posts by
 65 bolts 52. In order to provide a grain proof

connection between the end lining and the floor and to also further rigidify the car end, the lower edge of the sheets 44, 45, 45^a are formed with flanges 53, 54, 54^a, respectively, which extend under the end lining
 70 and are secured to the flooring 19^b by bolts 24^b which extend through the end sill 13^b.

In Figs. 9 to 11 inclusive, another modification is shown in which the end reinforcing structure consists of three sheets, 55, 56, 56^a which are constructed and secured
 75 to the car framing in substantially the same manner as the corresponding sheets 53, 54, 54^a illustrated in the three preceding figures with the exception that the flanges 57, 58, 58^a
 80 at the lower edges of the sheets instead of extending between the end lining and the flooring extend under the flooring and are secured to the end sill by bolts 59. The
 85 car framing of this construction is further rigidified adjacent the corner posts by providing the outer edges of the metal sheet 56, 56^a with angular flanges 60 which increase in width from the top of the sheets to the
 90 floor of the car as indicated at 61 in Fig. 10. These flanges preferably extend back of the side lining of the car and are formed at their lower edge with out bent attaching
 95 flanges 62 which are secured to the flooring by bolts 63 which pass through the side sills 64.

The upper portion of the car end structures shown in Figs. 6 to 11 inclusive, are preferably reinforced in the same manner
 100 as that shown in Figs. 1 to 4 inclusive.

I claim:

1. In combination with the outer sheathing and inner lining of a railway car, a metal rigidifying plate arranged between
 105 said sheathing and lining which terminates at a point partway up the end of the car and is adapted to reinforce the car end against cargo thrusts and weaving strains.

2. In combination with the outer sheathing and inner lining of a railway car, a
 110 metal rigidifying plate arranged to extend across the car end between said sheathing and lining, and which terminates at a point part way up the end wall of the car adapted to resist the cargo thrusts and weaving
 115 strains at the lower portion of the end.

3. In combination with the outer sheathing and inner lining of a railway car, a re-
 120 inforcing metal plate arranged between said sheathing and lining and which terminates at a point partway up the end of the car, a pair of upright reinforcing members on the outside of the end wall, and means for anchoring the upper ends of the same to the
 125 framing of the car.

4. In combination with the outer sheathing and inner lining of a railway car, a re-
 130 inforcing metal plate arranged between said sheathing and lining and which terminates at a point part way up the end wall, a pair

of upright reinforcing members on the outside of the end wall extending from floor to roof, and means for anchoring the extremities of said reinforcing members to the

under frame and roof framing of the car.

5. In combination with the outer sheathing and inner lining of a railway car, a reinforcing metal plate arranged between said sheathing and lining and which terminates at a point partway up the end of the car, a pair of upright reinforcing members on the outside of the end wall, and means for securing said upright members to said reinforcing plate.

6. In combination with the outer sheathing and inner lining of a railway car, a reinforcing metal plate arranged between said sheathing and lining and which terminates at a point part way up the end wall thereof, a pair of upright reinforcing members on the outside of the end wall, and means for securing said upright members to the reinforcing plate and to the roof frame and under frame of the car.

7. In combination with the outer sheathing and inner lining of a railway car, a reinforcing metal panel arranged to extend across the end wall between said sheathing and lining, and formed with channels, and wooden members in said channels to which the inner lining of the car is attached.

8. In combination with the outer sheathing and inner lining of a railway car, the latter composed of horizontally disposed lining boards, a reinforcing metal panel arranged to extend across the end wall between said sheathing and lining and formed with vertical channels, and wooden members in said channels to which the lining boards are attached.

9. In combination with the outer sheathing and inner lining of a railway car, the latter composed of horizontally disposed lining boards, a reinforcing metal panel arranged between said sheathing and lining and formed with vertical channels, wooden members in said channels to which the lining boards are attached, and fastening devices extending transversely through the channel portions of the panel and said wooden members.

10. In combination with the corner posts, outer sheathing and inner lining of a railway box car, of a reinforcing panel between said sheathing and lining formed with flanges attached to said corner posts and with recesses, and wood members in said recesses to which the inner lining of the car is fastened.

11. In combination with upright members, outer sheathing and inner lining of a railway box car, of a reinforcing panel between said sheathing and lining formed with recesses for said upright members.

12. In combination with the end sill, outer

sheathing and inner lining of a railway box car, a reinforcing metal plate extending across the end of the car, arranged between said sheathing and lining and formed at its lower edge with a flange anchored to said end sill.

13. In combination with the end sill, outer sheathing and inner lining of a railway box car, a reinforcing metal plate extending across the end of the car arranged between said sheathing and lining and formed at its lower edge with a flange anchored to said end sill and intervening between the same and the flooring of the car.

14. In combination with the corner posts, end posts, outer sheathing and inner lining of a railway car, the inner lining being composed of horizontally disposed lining boards, a reinforcing metal panel extending across the car from side to side and secured to said corner posts, and with vertical channels between the end posts and the corner posts, nailing strips in said channels to which the lining boards are secured, and Z bars on the outside of the car aligned with said end posts and anchored to the roof framing and under framing of the car.

15. In combination with the outer sheathing and inner lining of a railway car, a reinforcing structure arranged between said sheathing and lining comprising a metal panel secured to the car framing and which terminates at a point part way up the end of the car.

16. In combination with the outer sheathing and inner lining of a railway car, a reinforcing structure arranged between said sheathing and lining comprising a plurality of metal sheets secured to the car framing and which terminates at a point part way up the end of the car.

17. In combination with the outer sheathing, inner lining and end framing of a railway car, a reinforcing structure for the car end comprising a center sheet secured between the end lining and end posts of the car and having flanges along its vertical edges which extend around the end posts, sheets disposed on opposite sides of said center sheet provided along their inner vertical edges with angular flanges which overlap the said flanges of the center sheet and provide recesses adapted to receive nailing strips or posts to which the end lining is secured, said sheets being provided along their lower edge with inturned flanges which lap the floor of the car and adjacent the corner posts with vertical flanges.

18. In combination with the outer sheathing, inner lining and end framing of a railway car, a reinforcing structure for the car end comprising a center sheet secured between the end lining and end posts of the car and having flanges along its vertical edges which extend around the end posts,

130

5 sheets disposed on opposite sides of said center sheet provided along their inner vertical edges with angular flanges which overlap the said flanges of the center sheet and provide recesses adapted to receive nailing strips or posts to which the end lining is secured, said sheets being provided along their lower edges with inturned flanges which extend under the floor of the car and adjacent the corner posts with vertical flanges which increase in width toward the floor and are provided with attaching flanges adapted to be secured to the floor of the car.

WALTER P. MURPHY.