June 11, 1940. P. E. FINGER 2,204,348

FREIGHT CAR CONSTRUCTION

Filed Nov. 23, 1938 2 Sheets-Sheet 1

Fig. 1.

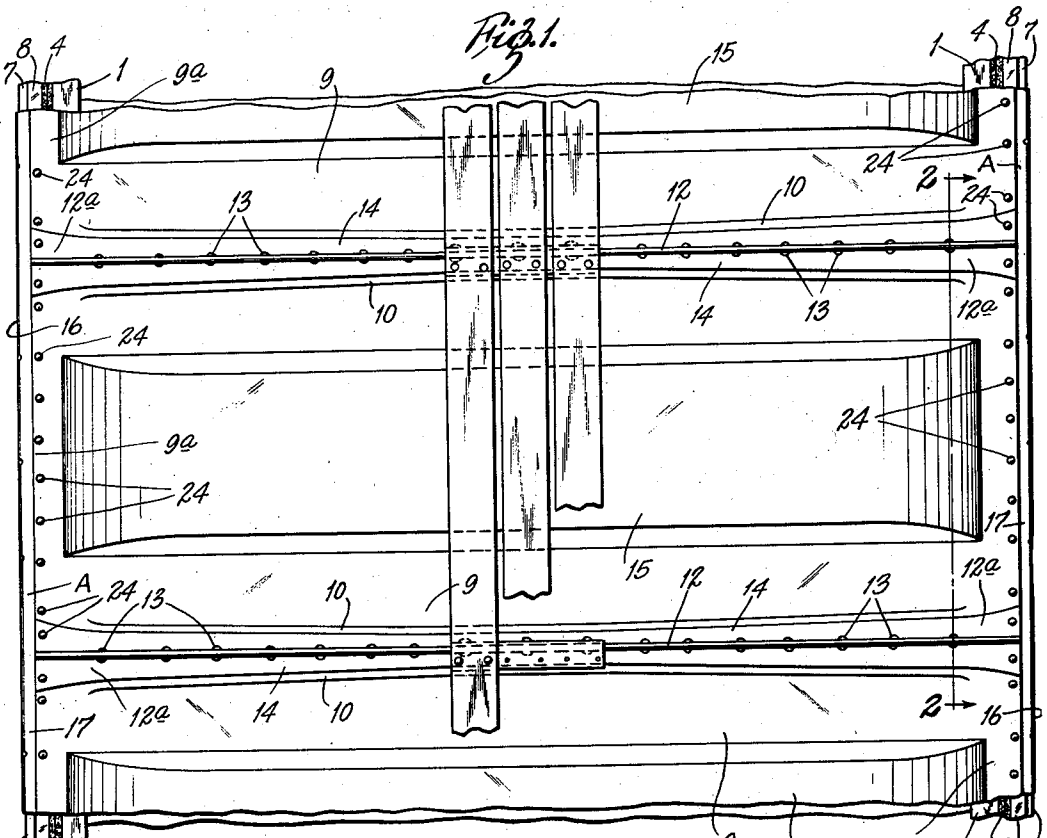
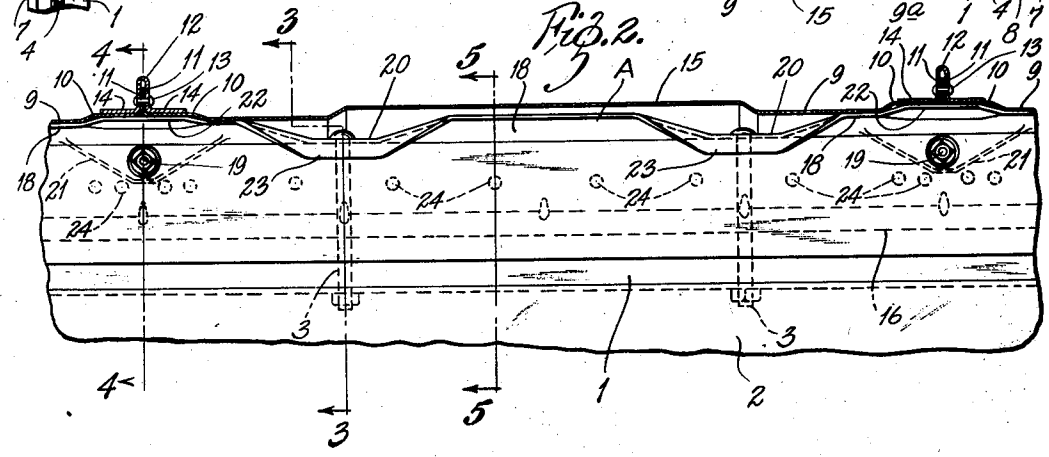


Fig. 2.



INVENTOR:

Paul E. Finger

by Parker & Parker-Brown

HIS ATTORNEYS.

June 11, 1940. P. E. FINGER 2,204,348

FREIGHT CAR CONSTRUCTION

Filed Nov. 23, 1938 2 Sheets-Sheet 2

Fig. 3.

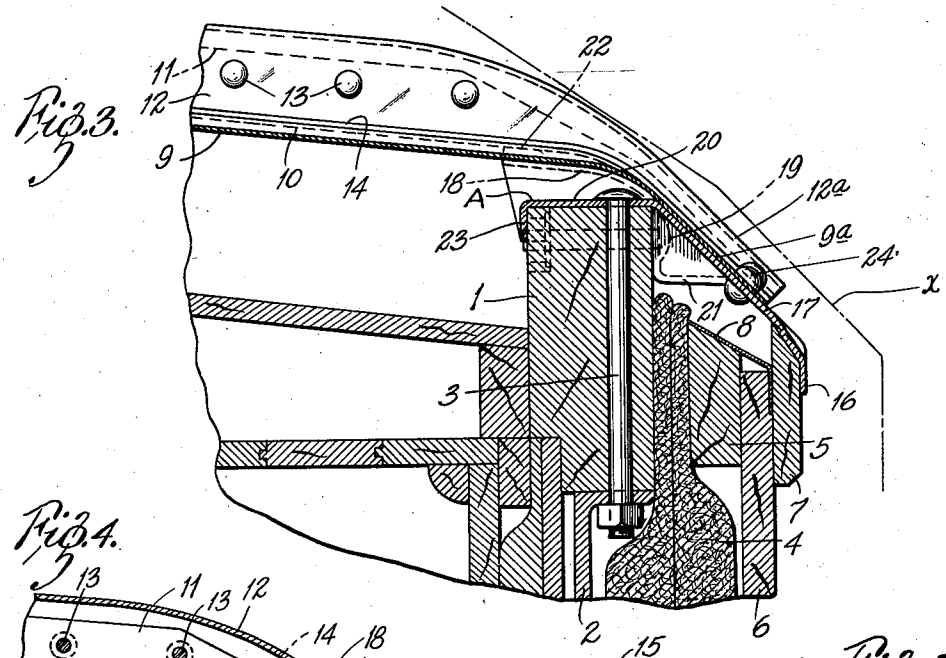


Fig. 4.

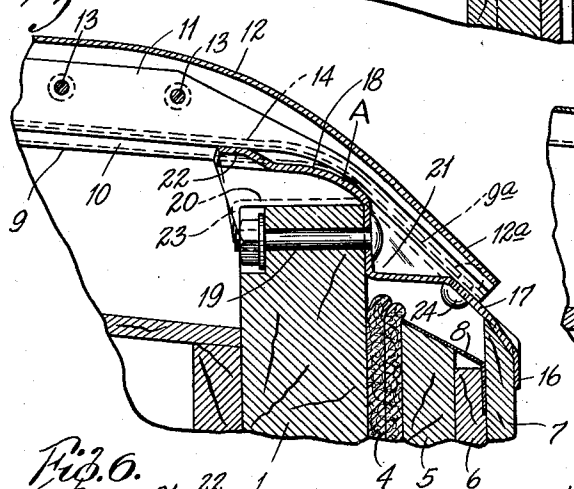


Fig. 5.

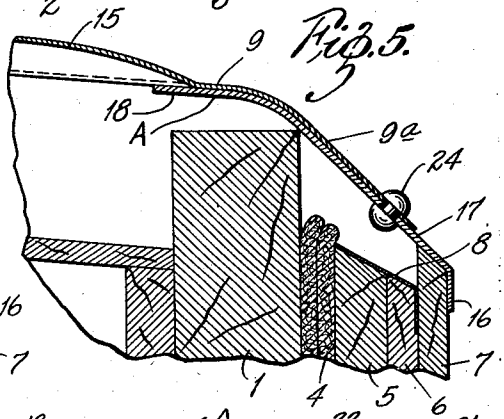


Fig. 6.

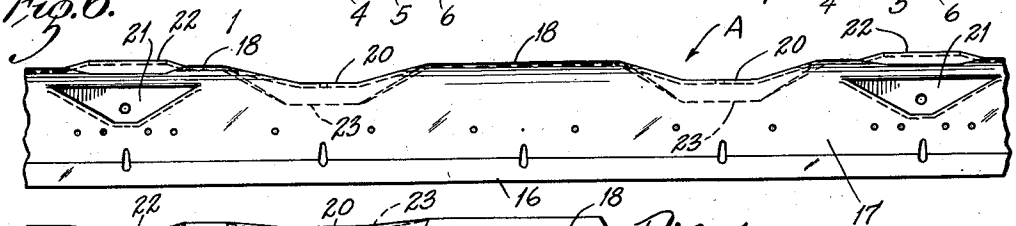
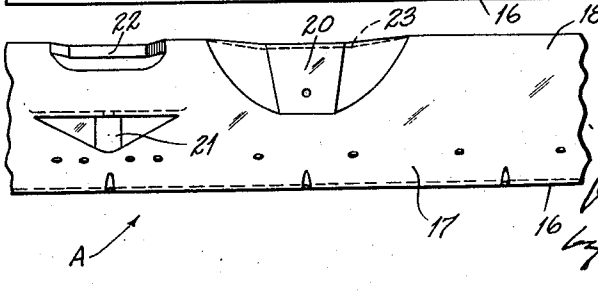


Fig. 7.



INVENTOR.

Paul E. Finger

by Parker Parker & Brown

HIS ATTORNEYS

Patented June 11, 1940 2,204,348

UNITED STATES PATENT OFFICE

2,204,348

FREIGHT CAR CONSTRUCTION

Paul E. Finger, New Kensington, Pa., assignor to Standard Railway Equipment Manufacturing Company, New Kensington, Pa., a corporation of Delaware

Application November 23, 1938, Serial No. 241,922

14 Claims. (Cl. 105—404)

This invention relates principally to railway freight cars of the type having a metal roof and wooden side plates. It has for its principal objects to better provide for the support and attachment of the roof at the side plates, to conform the eaves portions of the roof as closely as practicable to the established tunnel clearance outline so as to afford maximum headroom and maximum loading capacity, to provide for covering and protecting the upper portions of the side walls of the car, and to provide for simplicity and cheapness of construction and increased strength and rigidity at the eaves. The invention consists in the construction of parts and arrangements and combination of parts hereinafter described and claimed.

In the accompanying drawings, which form part of this specification and wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a plan view of a portion of a freight car embodying my invention,

Fig. 2 is a vertical longitudinal section through the roof on the line 2—2 in Fig. 1,

Fig. 3 is an enlarged fragmentary vertical cross-section through the car at one of the side plates on the line 3—3 in Fig. 2.

Figs. 4 and 5 are cross-sections similar to Fig. 3 on the lines 4—4 and 5—5 respectively, in Fig. 2,

Fig. 6 is an outside side elevational view of a section of the pressed metal strip for covering the top of the side walls of the car and for supporting the roof above said wall; and

Fig. 7 is a plan view of a portion of said strip.

In the accompanying drawings, my invention is illustrated in connection with a refrigerator car having side walls comprising a wooden side plate 1 at the top of each side wall and a reinforcing metal angle 2 secured to the bottom of said side plate by a series of vertically disposed carriage bolts 3. Each side wall also includes insulating material 4, a wooden cleat 5, wooden side sheathing 6, a wooden side fascia 7, and a metal flashing 8, all disposed below the level of the top of the side plate 1.

The roof illustrated in the drawings comprises metal roof sheets 9 that slope downwardly from the ridge to the side plates of the car at a relatively low inclination and have raised side marginal panels 10 with upstanding seam flanges 11 along their outer edges. The seam flanges of adjacent sheets are straddled by seam caps 12 that are secured thereto by horizontal rivets 13 and have outstanding base flanges 14 that rest upon the raised side marginal panels 10 of said sheets. As shown in the drawings, the sheets have ribs 15 extending lengthwise thereof at a higher elevation than their side marginal panels 10 after the manner of the so-called neutral axis type of roof. The eaves end portions 9a and 12a of the roof sheets and seam caps, respectively, slope downwardly over the side walls of the car at a relatively steep inclination approximately equal to the slope of the established tunnel clearance outline X for car roofs above the side plates. The roof sheets and seam caps terminate short of the outer faces of the side fascia boards 7, the portions 12a of the seam caps are of reduced length and the roof ribs 15 merge into the bodies of the roof sheets short of the steeply inclined eaves end portions 9a thereof.

The above roof is supported on and attached to the top of each side wall of the car by means of a pressed metal member A that extends longitudinally of said wall and serves to cover and strengthen the same. This metal member or plate inclines upwardly and inwardly over the top of the car side wall and has a depending flange 16 that overlaps the outer face of the wooden fascia. The portion 17 of said plate that covers the side wall between the outer faces of the side plate and fascia, respectively, inclines at approximately the same angle as the established tunnel clearance outline; and the portion 18 of said member located inwardly of the relatively steep portion 17 extends inwardly and upwardly at a low angle corresponding to the slope of the roof sheets upwardly of the side plate.

The combined roof support and side wall cover plate A is secured to the side plate by means of the vertical bolts 3 hereinbefore referred to and also by means of a series of horizontally disposed bolts 19. The inner marginal portion of the member A has portions 20 thereof depressed at longitudinally spaced intervals to seat flatwise upon the horizontal top surface of the wooden side plate, and the bottoms of the depressions have openings therein for the vertical bolts 3, whose heads are accommodated in said recesses. The member A also has portions thereof depressed at longitudinally spaced intervals to form angular pockets 21 whose vertical side walls bear flatwise against the outer face of the side plate and have horizontal holes therein for the horizontal bolts 19, whose heads are disposed therein entirely below the upper surface of the relatively steep portion 17 of said member. The inner marginal portion of the member A is off-set upwardly as at 22, to form seats for the raised side marginal panels 10 of the roof sheets; and the surplus

metal resulting from the depressed portions 20 of said member is utilized to form down-turned flanges 23 that overlap the inner face of the side plate opposite said depressed portions. The horizontal bolts 18 are preferably located beneath the roof seams; and two vertical bolts 3 are preferably located between seams, the eaves ends of the roof sheets and seam caps are secured to the relatively steep portion 17 of the member A preferably by means of rivets 24.

The construction hereinbefore described has several advantages. The eaves portions of the roof closely follow the established tunnel clearance outline and thus enable such portions to be located as high above the rails as the clearance outline will permit. The plate member A covers and protects the entire top of the side car wall, including the side plate insulation, cleat, side sheathing and fascia and provides adequate support for the eaves ends of the roof sheets which are rigidly secured thereto. Said member is secured to side plate by both vertical and horizontal bolts whose heads are covered and protected by the roof sheets; and the depression for the bolt heads form flat bearing surfaces for said member both at the top and the outer side of the side plate. Said member also overlaps the outer face of the fascia and the inner face of the side plate and thus tends to prevent relative sidewise movement thereof and the parts therebetween.

What I claim is:

1. In a freight car construction, wooden side plates, metal cover plates having portions seated on the tops of the respective side plates and portions extending outwardly therebeyond, and a metal roof spanning from side plate to side plate with its eaves end portions supported on, and secured to the outwardly extending portions of said metal plates beyond the outer faces of said side plates, the outwardly extending portions of said metal plates and the eaves end portions of the roof supported thereon and secured thereto being inclined downwardly and outwardly beyond said side plates at an angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof.

2. In a freight car construction, wooden side plates, metal cover plates having portions seated on the tops of the respective side plates and portions extending outwardly therebeyond, and a metal roof spanning from side plate to side plate with its eaves end portions supported on, and secured to the outwardly extending portions of said metal plates beyond the outer faces of said side plates, the outwardly extending portions of said metal plates and the eaves end portions of the roof supported thereon and secured thereto being inclined downwardly and outwardly beyond said side plates at a relatively steep angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof, the portions of said metal plates and said roof located inwardly of their steeply inclined portions being disposed at a relatively low downward inclination above said side plates.

3. In a freight car construction, wooden side plates, metal plates having portions supported on the respective side plates and portions extending outwardly therefrom, and a metal roof spanning from side plate to side plate with its eaves end portions supported on and secured to the outwardly extending portions of said metal plates, the eaves end portions of said roof and the outwardly extending portions of said metal plates being inclined downwardly at an angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof, said metal plates having depressed portions that seat on the tops of said side plates and depressed portions that bear against the outer faces of said side plates, bolts extending vertically through said side plates and said metal plates with their heads seated in said first mentioned depressed portions, and bolts extending horizontally through said side plates and said metal plates with their heads seated in said second mentioned depressed portions.

4. In a freight car construction, wooden side plates, metal plates having portions supported on the respective side plates and portions extending outwardly therefrom, and a metal roof spanning from side plate to side plate with its eaves end portions supported on and secured to the outwardly extending portions of said metal plates, the eaves end portions of said roof and the outwardly extending portions of said metal plates being inclined downwardly at a relatively steep angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof, the portions of said metal plates and said roof located inwardly of their steeply inclined portions being inclined outwardly and downwardly at a relatively low angle, said metal plates having a series of depressed portions spaced apart longitudinally thereof that seat on the tops of said side plates and a series of depressed portions spaced apart longitudinally thereof that bear against the outer faces of said side plates, bolts extending vertically through said side plates and said metal plates with their heads seated in said first mentioned depressed portions, and bolts extending horizontally through said side plates and said metal plates with their heads seated in said second mentioned depressed portions.

5. In a freight car construction, wooden side plates, metal plates supported on the respective side and a metal roof spanning from side plate to side plate with its eaves ends supported on and secured to said metal plates, the outer side marginal portions of said metal plates and the portions of the roof supported thereon being inclined downwardly and outwardly at an angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof, said metal plates having depressed portions that seat on the tops of said side plates and depressed portions that bear against the outer faces of said side plates, bolts extending vertically through said side plates and said metal plates with their heads seated in said first mentioned depressed portions, and bolts extending horizontally through said side plates and said metal plates with their heads seated in said second mentioned depressed portions.

6. In a freight car construction, wooden side plates, metal plates supported on the respective side plates and having depending flanges along their side edges and a metal roof spanning from side plate to side plate with its eaves ends supported on and secured to said metal plates, the outer side marginal portions of said metal plates and the portions of the roof supported thereon being inclined downwardly and outwardly at a relatively steep angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof, the inner marginal portions of said metal plates being inclined out-

wardly and downwardly at a relatively low angle, said metal plates having depressed portions that seat on the tops of said side plates and depressed portions that bear against the outer faces of said side plates, bolts extending vertically through said side plates and said metal plates with their heads seated in said first mentioned depressed portions, and bolts extending horizontally through said side plates and said metal plates with their heads seated in said second mentioned depressed portions.

7. In a freight car construction, wooden side plates, metal plates supported on the respective side plates and a metal roof spanning from side plate to side plate with its eaves ends supported on and secured to said metal plates, the outer side marginal portions of said metal plates and the portions of the roof supported thereon being inclined downwardly and outwardly at an angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof, said metal plates having depressed portions that seat on the tops of said side plates and depressed portions that bear against the outer faces of said side plates, bolts extending vertically through said side plates and said metal plates with their heads seated in said first mentioned depressed portions, and bolts extending horizontally through said side plates and said metal plates with their heads seated in said second mentioned depressed portions, said metal plates having continuous depending flanges along their outer side margins and depending flanges along their inner side margins located opposite said first mentioned depressed portions.

8. In a freight car construction having wooden side plates and side sheathing and fascia boards disposed outwardly of said side plates below the level of the tops thereof, metal plates supported on the tops of the respective side plates and extending outwardly therebeyond over said side sheathing and fascia boards, and a metal roof spanning from side plate to side plate with its eaves end portions supported on and secured to said outwardly extending portions of said metal plates outwardly of said side plates, the eaves end portions of said roof and the outwardly extending portions of said metal plates being inclined downwardly and outwardly beyond said side plates over the tops of said side sheathing and fascia boards at an angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof.

9. In a freight car construction having wooden side plates and side sheathing and fascia boards disposed below the level of the tops of said side plates, metal plates supported on the tops of the respective side plates and extending outwardly therefrom over said side sheathing and fascia boards, and a metal roof spanning from side plate to side plate with its eaves end portions secured on and supported to said outwardly extending portions of said metal plates, the eaves end portions of said roof and the outwardly extending portions of said metal plates being inclined outwardly and downwardly at an angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof, said metal plates having depending flanges along their outer margins that overlap the outer faces of the fascia boards and flanges along their inner margins that overlap the inner faces of said side plates.

10. In a freight car construction having wooden side plates and side sheathing and fascia boards disposed below the level of the tops of said side plates, metal plates supported on the tops of the respective side plates and extending outwardly therefrom over said side sheathing and fascia boards, and a metal roof spanning from side plate to side plate with its eaves end portions supported on and secured to said outwardly extending portions of said metal plates, the eaves end portions of said roof and the outwardly extending portions of said metal plates being inclined outwardly and downwardly at an angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof, said metal plates having depending flanges along their outer margins that overlap the outer faces of said fascia boards and flanges along their inner margins that overlap the inner faces of said side plates, said metal plates having depressed portions that seat on the tops of said side plates and depressed portions that bear against the outer faces of said side plates, bolts extending vertically through said side plates and said metal plates with their heads seated in said first mentioned recesses, and bolts extending horizontally through said side plates and said metal plates with their heads seated in said second mentioned depressed portions.

11. A metal car roof supporting plate having a downwardly and outwardly inclined outer side marginal portion disposed at an angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof and an inner marginal portion disposed at a lower inclination, depressed portions adapted to seat upon the top of the side plate of the car and depressed portions adapted to bear against the side of said side plate.

12. A metal car roof supporting plate having a downwardly and outwardly inclined outer side marginal portion disposed at an angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof and an inner marginal portion disposed at a lower inclination, depressed portions adapted to seat upon the top of the side plate of the car and depressed portions adapted to bear against the side of said side plate, and spaced from said first mentioned depressed portions lengthwise of said metal plate.

13. A metal car roof supporting plate having a downwardly and outwardly inclined outer side marginal portion disposed at an angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof and an inner marginal portion disposed at a lower inclination, depressed portions adapted to seat upon the top of the side plate of the car and depressed portions adapted to bear against the side of said side plate, and spaced from said first mentioned depressed portions lengthwise of said metal plate, said metal plate having a continuous depending flange along its outer edge and a series of depending flanges spaced apart along its inner edge disposed opposite said first mentioned depressed portions.

14. A metal car roof supporting plate having a downwardly and outwardly inclined outer side marginal portion disposed at an angle approximately equal to the slope of the established clearance outline for car roofs above the eaves thereof and an inner marginal portion disposed at a lower inclination, depressed portions adapted to seat upon the top of the side plate of the car and depressed portions adapted to bear against

the side of said side plate, and spaced from said first mentioned depressed portions lengthwise of said metal plate, said metal plate having a continuous depending flange along its outer edge and a series of depending flanges spaced apart along its inner edge disposed opposite said first mentioned depressed portions, the inner marginal portion of said metal being off-set upwardly opposite said second mentioned depressed portions, and the side plate engaging portions of said first and second mentioned depressed portions having bolt holes therein.

PAUL E. FINGER.