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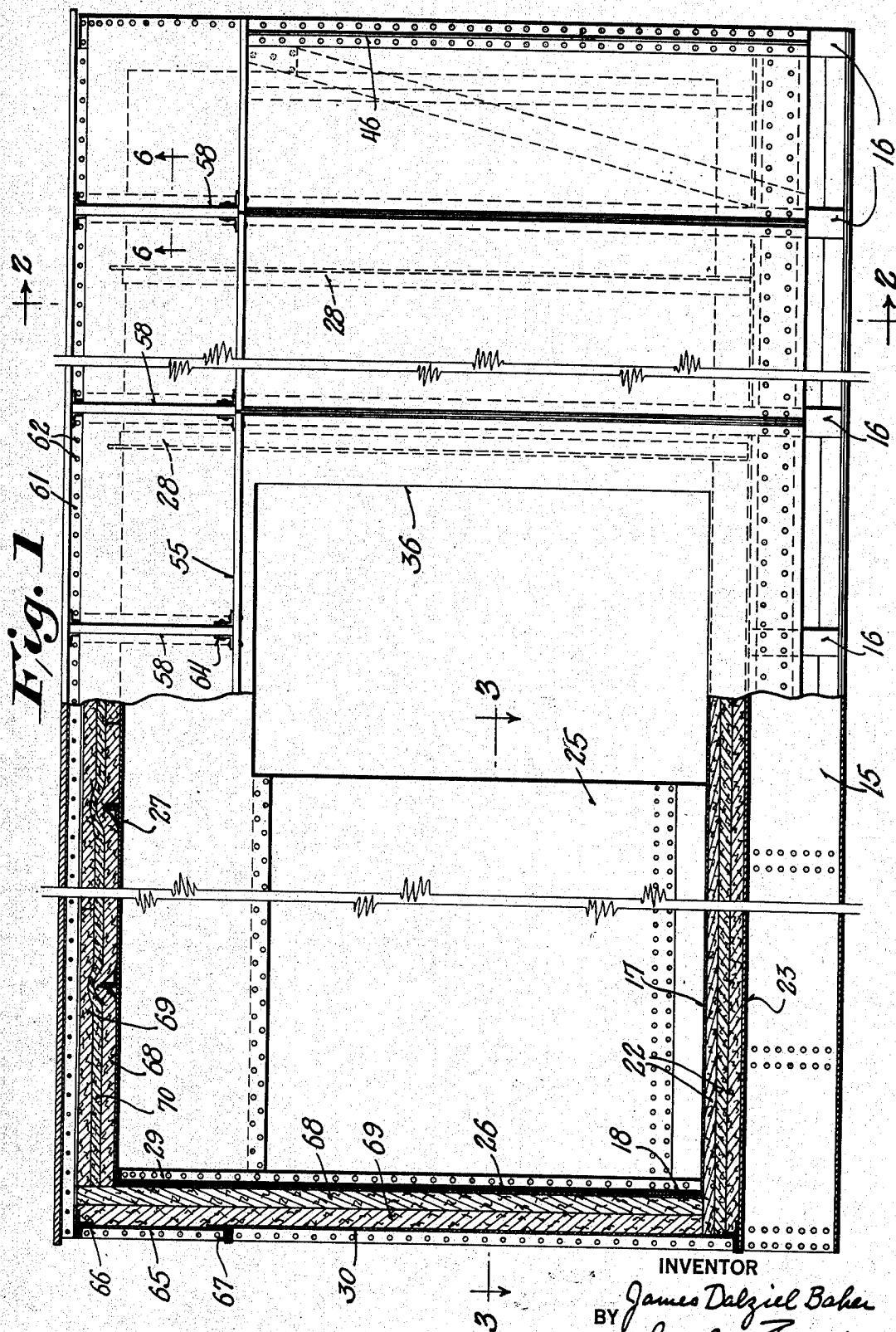
J. D. BAKER

2,078,787

CAR CONSTRUCTION

Filed April 1, 1933

3 Sheets-Sheet 1



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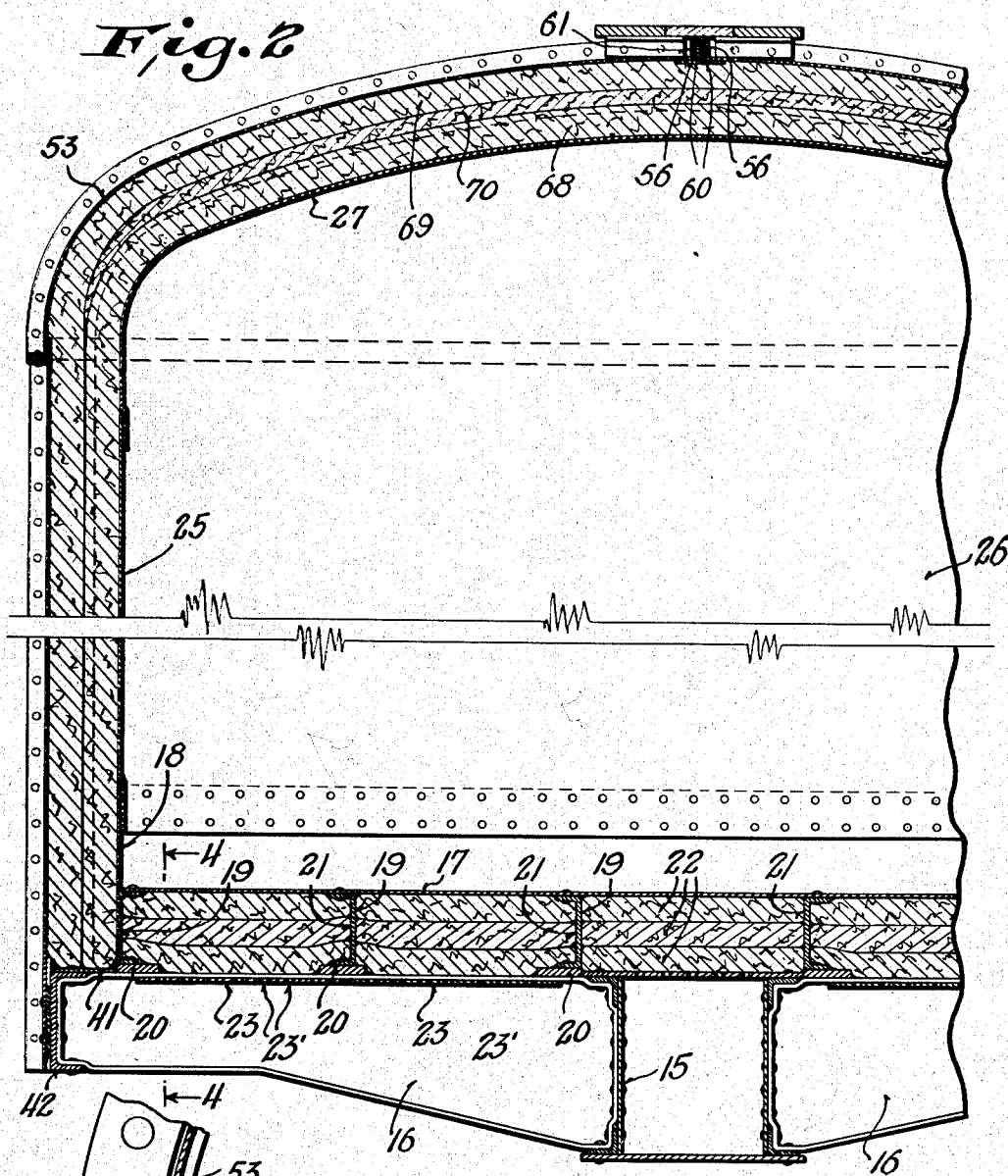
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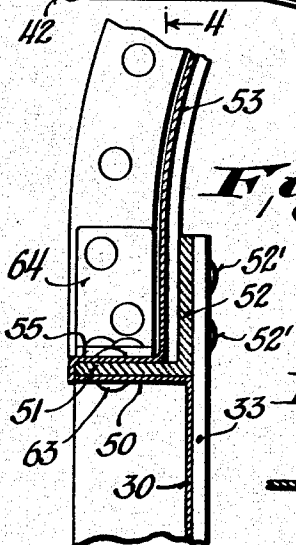
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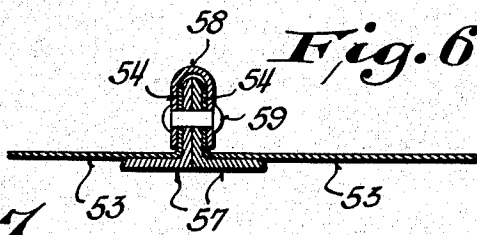
*Fig. 2*



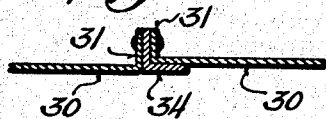
*Fig. 5*



*Fig. 6*



*Fig. 7*



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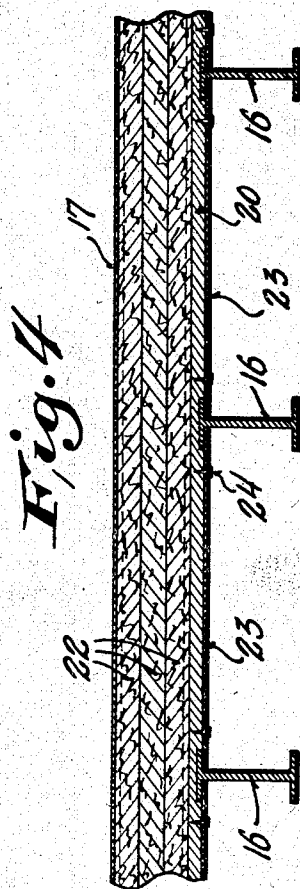
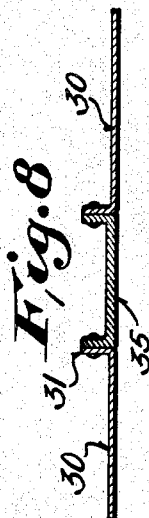
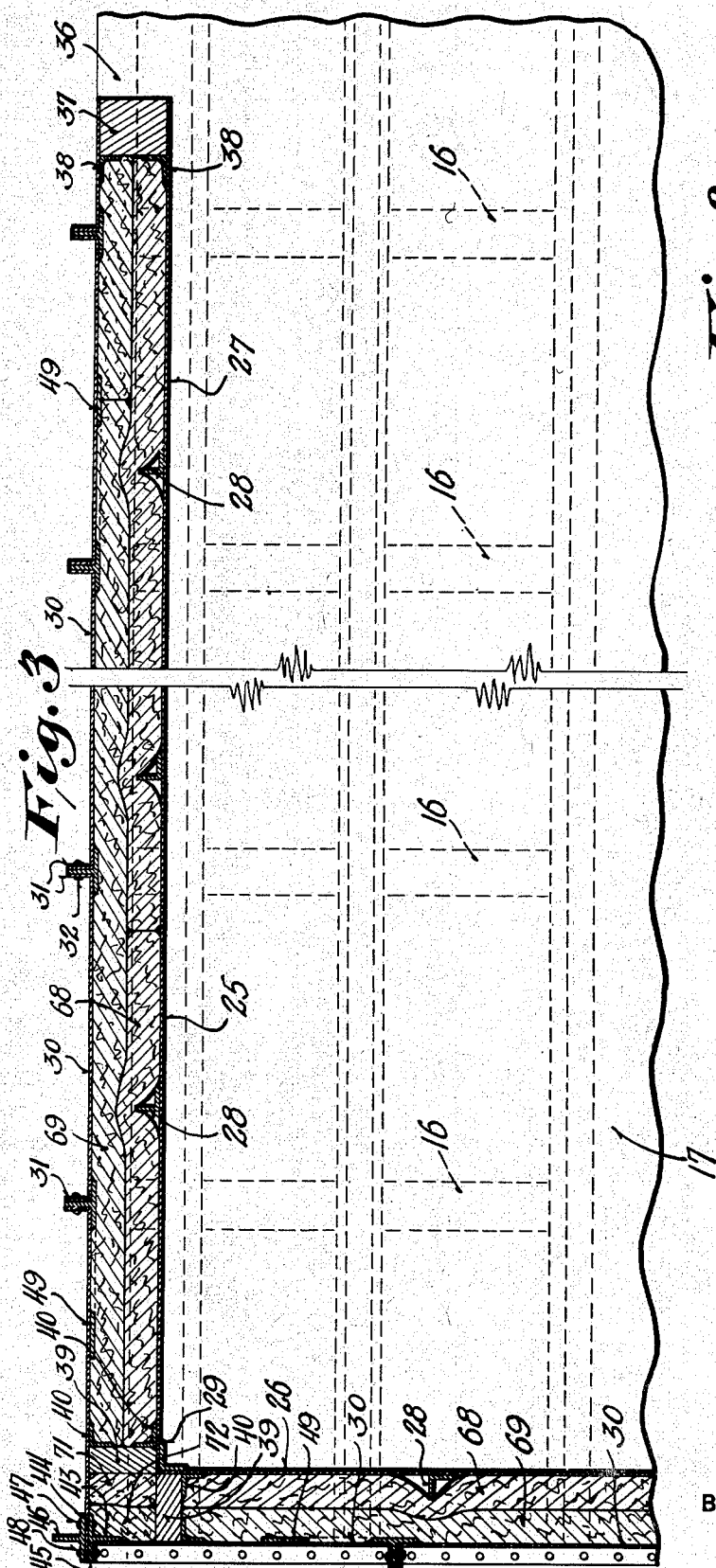
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CAR CONSTRUCTION

Filed April 1, 1933

3 Sheets-Sheet 3



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## UNITED STATES PATENT OFFICE

2,078,787

## CAR CONSTRUCTION

James Dalziel Baker, Chicago, Ill., assignor to  
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Application April 1, 1933, Serial No. 663,884

3 Claims. (Cl. 105-409)

The invention relates to car construction and more particularly to an all metal car construction for use as a refrigerator or freight car.

One of the objects of the invention is to provide a car structure having separate inside and outside shells of the desired strength and which in case of a refrigerator car has suitable insulation between these shells, the outside shell being so constructed that repairs to the structure may be effected from the outside. More particularly according to the present invention the side walls, ends and roof of the car are formed of panels which may be removed entirely from the outside of the car and without disturbing any portion of the inside structure of the walls, ends or roof of the car.

A further object of the invention is to provide a car construction in which the insulation between the inside and outside shells may be applied without undue compression and preferably in one continuous piece, extending from side to side over the roof, and its application and efficiency is not interfered with by frame members connecting said shells.

A further object of the invention is to provide an efficient connection between the sides and roof portions of the outer shell of the car.

A further object of the invention is to provide a wall construction in which condensation of moisture upon the outside of the inner shell or container is prevented by a suitable coating or cement, or insulating material cemented to the steel surface.

A further object of the invention is to provide a wall construction in which the inner course of insulation is supported and secured in place where necessary to the inside shell and the outside course of insulation to said inner course by a suitable moisture-proof cement which may be applied in strips or spots at suitable intervals.

A further object of the invention is to provide an improved floor construction for refrigerator cars wherein the insulation therefor is protected from floor drainage and is readily removable from beneath the main floor of the car.

A further object of the invention is to provide an improved corner construction for car or container bodies.

A further object of the invention is to provide an improved all metal roof which can be applied to or removed from the car as a whole or in separate pieces.

The invention further consists in the several features hereinafter set forth and more particu-

larly defined by claims at the conclusion hereof. In the drawings:

Fig. 1 is a side elevation view of a car body embodying the invention, parts being broken away and parts being shown in section;

Fig. 2 is a detail sectional view taken on the line 2-2 of Fig. 1;

Fig. 3 is a detail sectional view taken on the line 3-3 of Fig. 1;

Fig. 4 is a detail sectional view taken on the line 4-4 of Fig. 2;

Fig. 5 is an enlarged sectional view of the joint between the roof and side of the outer shell;

Fig. 6 is an enlarged sectional view of one of the roof joints taken on the line 6-6 of Fig. 1;

Fig. 7 is a view of a modified form of outer shell construction;

Fig. 8 is a view similar to Fig. 7 showing another modification;

Fig. 9 is a view similar to Fig. 7 showing another modification.

Referring to the drawings, the numeral 15 designates the longitudinally extending main frame beam and 16 the cross beams or ribs secured to said main beam at spaced intervals.

The floor 17 is formed by steel plates which are suitably riveted or welded together to provide a water tight floor construction in which the plating extends upwardly at the sides and ends of the car as indicated at 18, said flooring resting on and secured to a plurality of spaced longitudinally extending metal floor bearers or frame members 19 which are preferably thermally insulated from the main frame members by strips 20 of wood or other suitable insulating material which rest upon the cross beams or ribs 16 as shown in Figs. 2 and 4. This construction thus provides a plurality of lengthwise extending cavities 21 beneath the floor 17 which cavities are filled with a plurality of layers 22 of suitable insulating material. These layers are inserted into the cavities from below and are held in place by subfloor plates 23 removably secured to the strips 20 by screws 24 or other suitable fastening means, said plates preferably provided with a plurality of openings 23' to permit free drainage of any moisture that might form or collect in said cavities 21. Thus the insulation in the present instance cannot come in contact with any moisture in the car itself and may be readily inspected and renewed if necessary from outside the car body.

The side walls 25 and the end walls 26 which form the inner shell of the car or container body are formed of suitable metal plates or sheathing riveted or otherwise suitably joined

together and to the upturned floor portions 18. The roofing 27 for this inner shell is formed by similar plates or sheathing which is riveted or otherwise suitably joined to the side and end walls. This inner shell is reinforced at spaced intervals by angle iron frame members 28 secured to the outer side of said sheathing and extending up the sides and over the roof and also upwardly at the ends of said shell as shown in Figs. 1 and 3. The inner side of the corners of the inner shell are also reinforced by the angle iron frame members 29.

The outer structure or shell is, with the exception of the corners and door openings, free of any connection with the inner shell. The sides and ends of this outer shell are formed in each instance of a plurality of metal plates 30 which are suitably joined together and connected to the frame of the car, these plates being so connected that they may be readily removed entirely from the outside of the car and without disturbing any of the inside wall structure of the car. Preferably the sides of the plates 30 have flanges 31 secured by rivets 32 or other suitable fastening means to the frame members 33 of T-bar form shown in Fig. 3 or the frame member 34 of angle form shown in Fig. 7 or the frame member 35 of channel form shown in Fig. 8, in each instance it being noted that the flanged connections thus provided between said plates and frame members permit disconnection of the sides of the plates from the outside. As a further modification, the plates 30 may have their side flanges 31 directly riveted or otherwise suitably directly connected together as shown in Fig. 9.

At the door openings 36, frame members 37 of wood or other suitable insulating material are disposed between the plates forming the inner and outer shells, said members being reinforced by angle iron frame members 38 secured thereto and also connected to the adjacent wall plates.

At the corners, frame members 39 of wood or other suitable insulating material are disposed between the plates forming the inner and outer shells, said members being reinforced by angle iron frame members 40 secured thereto and also connected to the adjacent wall plates.

It is to be noted that the angle iron frame members 38 as well as the frame members 40 are in each instance spaced from each other so that no metal conducting path is provided between the outer and inner side walls of the structure thus far described, though a subfloor metal channel member 41 is disposed between said walls and supported upon the ribs 16 and a lengthwise extending channel beam 42 secured to the end portions of said ribs or beams 16, said subfloor however, preferably being out of direct contact with the plates forming the outer wall. This subfloor channel member 41 may have openings to permit the drainage of any moisture from the space between the inner and outer walls.

For reinforcing the side and end walls at the corners I have provided in each instance, and as best shown in Fig. 3, a T-bar 43 whose base flange portion 44 is secured to the side wall plate that extends to the corner and whose base flange portion 45 is secured to the flange 31 of the end wall plate 30, a reinforcing T-bar 46 being also secured to said plates by the same rivets 47 and 48 which respectively secure the T-bar 43 to the side and end wall plates above mentioned.

The outer shell structure is also preferably reinforced adjacent the door openings and at the

corners by diagonally extending angle iron brace bars 49.

The plates forming the sides and end walls of the outer shell have outwardly extending end flanges 50 to which an angle iron frame member 51 is secured, which member extends around the entire car and forms a support and connection for the roof structure. Where the T-bars 33 are used, a portion of the web is cut away adjacent the upper end 52 of each bar, so that one side of the angle frame member 51 abuts against and is secured to this end as by rivets 52'.

The roof is formed by a plurality of metal plates 53 extending from the sides to the center, said plates having their adjacent sides connected together, their upper ends also connected together and their lower ends connected to the frame or rail 51. Each plate 53 has side flanges 54, and end flanges 55 and 56. The side joints are formed as shown in detail in Fig. 6 wherein the side flanges 54 are shown abutting oppositely disposed arched angle iron frame bars 57 which extend from one side of the roof to the other and whose lower ends are secured to the rail 51 and the ends 52 by the rivets 52', said bars and said flanges 54 being secured together and to a U-shaped weather strip 58 by rivets 59. The joint between upper ends of the plates is identical with the form of side joint just described, the flanges 56 being secured to short lengthwise extending oppositely disposed angle iron frame bars 60 and weather strip sections 61 by rivets 62, the bars 60 being also suitably secured to the arched bars 57. The end flanges 55, as shown in Fig. 5, rest on the frame member 51 to which they are secured by rivets 63 and the roof is further reinforced at the lower end portions of the side joints by angle iron braces 64 riveted to the side joint construction above described and also to the flanges 55 and the member 51. End plates 65 are secured to arched T-bars 66 at the end portions of the roof and have flanges 67 at their lower ends secured to that portion of the rail member 51 at the ends of the car body.

Thus with the roof above described when the fastening means connecting the roof plates and their frame members with the rail or frame member 51 are removed the entire roof structure for the outer shell may be removed if desired. Also it will be noted that since the parts are riveted together from the outside any one of the plates may be removed from the outside if desired.

From the foregoing description it will be noted that I have provided a double wall structure comprising an inner and an outer shell in which the parts forming the outer shell may be readily replaced without interfering with the inner shell in any way.

Where the car is to be used as a refrigerator car the space between the walls of the inner and outer shells is filled with suitable insulating material. As shown I have provided an inner course 68 and an outer course 69 of insulating material and it will be noted from Fig. 2 that for the sides and top these courses preferably are formed by layers of insulating material which extend from one side of the car body to the other over the roof in continuous pieces, a filler layer 70 also being shown interposed between the inner and outer courses over the roof.

It will be noted that since the space between the inner and outer shells is substantially free of structural framing members, the insulation will not be subjected to undue compression and con-

sequent reduction of its efficiency. It is also to be noted that the corner spaces have insulating layers 71 and 72 mounted therein.

In order to prevent the condensation of moisture upon the outside of the inner metal shell or container and the inner side of the outer shell, these surfaces may be coated with a suitable coating to prevent such condensation. For example, a coating for this purpose may comprise a mixture of cork granules, asphalt and asbestos fibres that may be painted onto these surfaces, or an insulating material such as hair felt may be cemented directly to the metal surfaces.

For supporting the weight of the insulation and securing the same in place where necessary it is preferred to cement the inner course 68 to the inside metal shell and the outside course 69 to inside course by means of a suitable moisture proof cement which may be applied in strips or spots at required intervals.

It will of course be understood that the metal used for the frame members and the sheathing or plates is steel and that from the foregoing description I have provided an all steel car body having inner and outer shells which form a strong construction and which may be made of light weight.

The usual icing compartments formed in the

end portions of the car have not been shown as their construction is readily understood by those skilled in this art.

I desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except in so far as such limitations are included in the appended claims.

What I claim as my invention is:

1. In a car body, the combination of an inner metallic shell, an outer metallic shell separately supported and spaced from said inner shell at its sides and roof portions and removable from the exterior of the car body, and layers of insulating material disposed in the space between said shells and extending from side to side over said roof portion and uninterruptedly throughout the length thereof.

2. In a car body, the combination of side plating extending to the corner, reinforcing frame members on opposite sides of said plating at the corner, and end plating secured to said members and said side plating at said corner.

3. In a car body, the combination of side plating extending to the corner, reinforcing T-bars on opposite sides of said plating at the corner, and end plating secured to the base portions of said T-bars at said corner.

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