

Nov. 21, 1939.

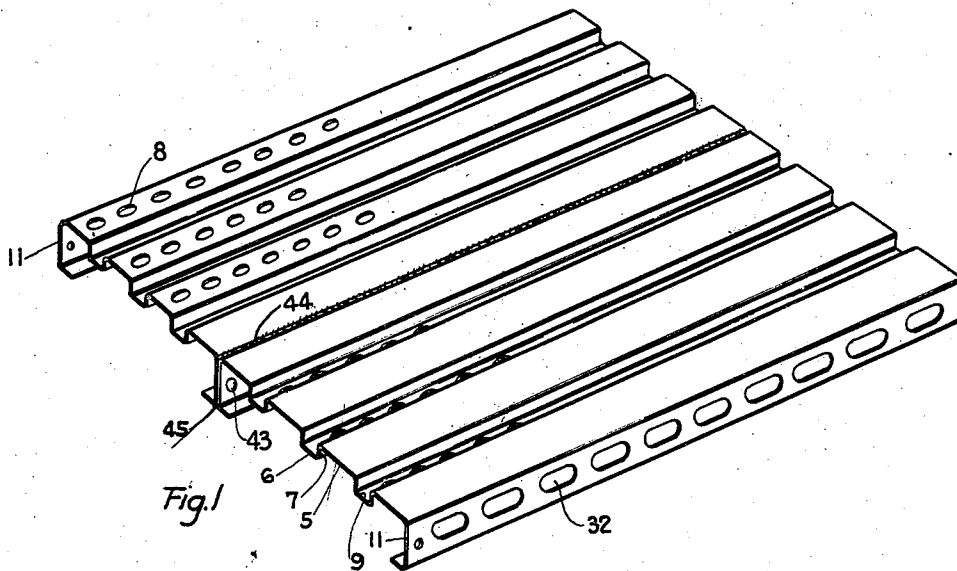
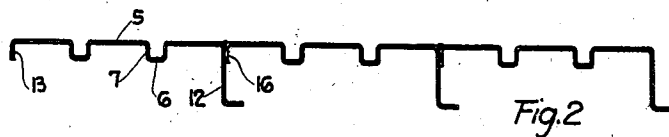
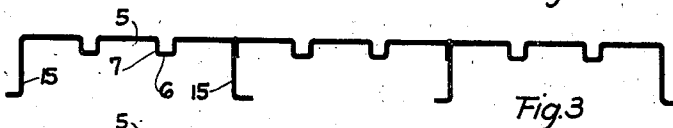
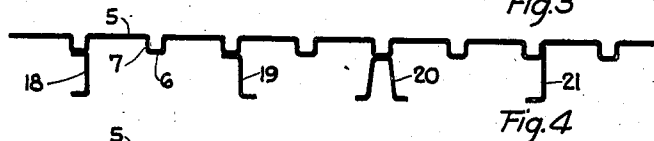
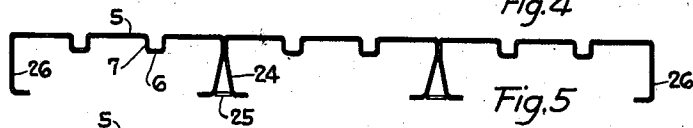
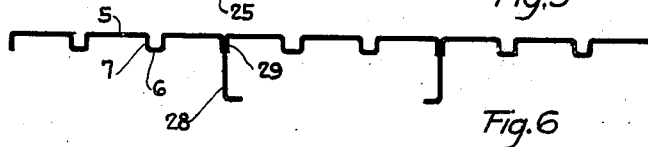
C. D. BONSALL

2,180,502

REFRIGERATOR CAR FLOOR RACK

Filed Dec. 12, 1936

2 Sheets-Sheet 1



Inventor:
Charles D. Bonsall
Clinton C. Benson
Attorney

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C. D. BONSALE

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REFRIGERATOR CAR FLOOR RACK

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2 Sheets-Sheet 2

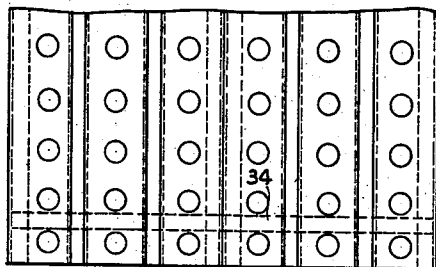


Fig. 8

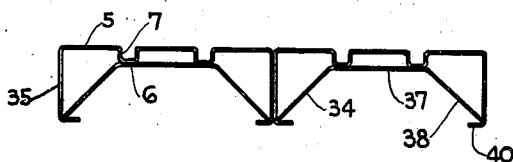


Fig. 7

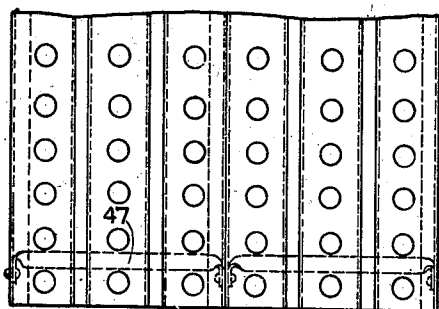


Fig. 10

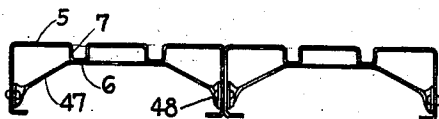


Fig. 9

Inventor:
Charles D. Bonsall
Anton C. Lissner
Attorney

UNITED STATES PATENT OFFICE

2,180,502

REFRIGERATOR CAR FLOOR RACK

Charles David Bonsall, Pittsburgh, Pa., assignor,
by mesne assignments, to Standard Railway
Equipment Manufacturing Company, a cor-
poration of Delaware

Application December 12, 1936, Serial No. 115,516

7 Claims. (Cl. 105—375)

The invention relates to insulated refrigerator cars used to transport perishable commodities, such as vegetables, fruits, berries, meats, eggs, frozen fish, etc., and to maintain such commodities while in transit within a predetermined range of temperature, thus necessitating the use of a cooling means in the summer and a heating means in the winter. It has been found that perishable commodities which have not been allowed to get too cold (freeze) or too hot (bake) have a high market value because they have a longer storage life.

The invention relates specifically to "floor racks" for such refrigerator cars which comprise a foraminous or perforated floor, arranged to support the lading in the car in spaced relation to the insulated floor of the car so that air, after it has been cooled by a refrigerant, or heated by a heater, may pass under the lading and through the foraminous floor and up through or between the lading.

Spaced apart wooden slats supported by wooden stringers have been used for this purpose, but such construction is objectionable because it becomes insanitary, retains odors, becomes water sogged and heavy, and is expensive to maintain.

An object of the invention is to provide a floor rack comprising a foraminous floor supported by stringers which is very light in weight for its strength; has a large total area of apertures in the foraminous floor for the passage of circulating air; offers the minimum resistance to the air moving in a horizontal direction under the foraminous floor; is economical to make and install or remove from the car; is cheap to maintain; is sanitary and will provide a substantially smooth surface for walking upon and rolling trucks thereupon.

In the drawings:

Fig. 1 shows a typical unit of my improved floor rack.

Figs. 2 to 6 inclusive show modified constructions of the design shown in Fig. 1.

Figs. 7 and 8 show a method of bracing the sections forming the floor rack.

Figs. 9 and 10 show a modification of the construction shown in Figs. 7 and 8.

The floor rack preferably consists of a plurality of sections secured together for cooperation and to form units for installation in the car. These units are hinged to the side wall of the car. If refrigerant bunkers are used in the end of the car the channels of my floor rack extend lengthwise of the car to accommodate longitudinal circulation of the air. If side or top refrigerant

bunkers are used my channels extend crosswise of the car to accommodate lateral circulation of the air.

The floor rack comprises a plurality of metallic sheets formed with alternate upper (5) and lower (6) portions in spaced parallel planes which are connected by substantially vertical webs 7. This construction provides a plurality of parallel beams wherein the upper portions 5 are the compression members and the lower portions 6 are the tension members and the webs 7 are the connections therebetween. Apertures 8 are provided in either the upper or the lower portions, but preferably in both of such portions, because it is desirable to procure as large an apertured area as possible for the movement of circulating air through the foraminous floor.

I preferably make the upper portions 5 greater in width than the lower portions 6 to provide a relatively smooth surface for walking and trucking rolled vehicles over the foraminous floor. I also provide relatively large apertures 8 in the upper portions and relatively small apertures 9 in the lower portions so that the remaining cross sectional area of the plate through the apertures is about the same in the upper portions as in the lower portions so that the metallic plate as a beam will comprise a balanced section to provide great strength for its weight.

The foraminous floor comprises a plurality of metallic sheets fabricated as above described, some of which sheets are formed with integral depending flanges forming stringers which extend below the lower portions for engagement with the floor of the refrigerator car so as to provide a space between the foraminous floor of the rack and the floor of the car for air circulation. Fig. 1 shows a metallic sheet having such a depending flange 11 at each side margin thereof; Fig. 2 shows an arrangement wherein each metallic sheet is formed with a depending flange 12 at one side margin and a short connecting flange 13 at the other side margin which is secured to the adjacent sheet (by either welding or riveting). Fig. 3 shows an arrangement wherein every other sheet is provided with a depending flange 15 at each margin which rests upon the floor of the car, while the sheets therebetween are provided with short connecting flanges 16 which are secured to the adjacent sheet. Fig. 4 shows an arrangement wherein the foraminous floor comprises a plurality of upper (5) and lower (6) portions in spaced apart planes having separate stringers engaging one of the lower portions and extending to and engaging the floor of the car;

for instance, 18 shows a channel section; 19 a Z-section; 20 an inverted channel section and 21 an L-section. Fig. 5 shows an arrangement wherein each sheet is provided with a depending flange 24 at each margin thereof with the flanges of adjacent sheets flared and provided with a stiffener 25 therebetween to form a braced foot or stringer. The flanges 26 adjacent the side wall of the center of the car need not be flared. Fig. 6 shows an arrangement wherein a separate L-shaped stringer 28 is provided which is interposed between adjacent sheets and secured thereby by the attaching flanges 29 by welding or riveting.

These attaching flanges or stringers, whether separate or integral with the metallic sheets, are preferably provided with apertures 32 to allow for free circulation of air in a horizontal direction below the foraminous floor. These apertures are as large as possible consistent with strength requirements.

The cross members 34 extend between and are secured to the adjacent flanges or stringers 35 and are arranged to sustain the foraminous floor between the flanges. In order not to reduce the flue area below the foraminous floor, that is, to minimize the resistance of the movement of the circulating air, I preferably make these cross members 34 of flat bars each having a horizontal part 37 supporting the lower portions 6 of the foraminous floor and other parts 38 extending diagonally therefrom to the depending flanges or stringers 35 to which they are attached. I preferably provide depending flanges with re-flanges 40 and connect the ends of the cross members 34 to the depending flanges 35 at their junctions with the re-flanges 40, as shown in Figs. 7 and 8.

The depending flanges of adjacent sections are preferably secured together to form a cooperating unit for installation in or removal from the car and for this purpose I provide means to secure the flanges together, such as rivets 43, shown in Fig. 1, or by welding (44) the upper portions of adjacent sheets together and welding (45) the re-flanges of the depending flanges together, all of which is shown in Fig. 1. I preferably secure the cross members 47 of adjacent sections together so that they will mutually reinforce each other; for instance, by the use of the rivet 48 shown in Fig. 9.

The accompanying drawings illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof, within the scope of the claims, will occur to persons skilled in the art.

I claim:

1. In a refrigerator car having a floor, a floor rack spaced above said floor to provide a flue therebetween and means to induce an air current in said flue, said rack comprising a metallic sheet formed with alternating upper and lower portions in spaced apart parallel planes connected by webs, one of said portions being provided with apertures, said sheet formed with a depending flange at each side margin thereof parallel with the webs which extend below the portions for engagement with the floor of the car, said flanges formed with re-flanges, and cross members each having horizontal parts supporting said lower portions and other parts extending diagonally therefrom which are secured to said flanges at their junctures with the re-flanges.

2. In a refrigerator car having a floor, a floor rack spaced above said floor to provide a flue therebetween and means to induce an air current in said flue, said rack comprising a metallic sheet formed with alternating upper and lower portions in spaced apart parallel planes connected by webs, one of said portions being provided with apertures, said sheet formed with a depending flange at each side margin thereof parallel with the webs which extend below the portions for engagement with the floor of the car, said flanges formed with re-flanges, and cross members extending between and secured to said flanges which support said lower portions, said cross members resting upon said re-flanges.

3. In a refrigerator car having a floor, a floor rack spaced above said floor to provide a flue therebetween and means to induce an air current in said flue, said rack consisting of a plurality of units, each unit comprising a metallic sheet formed with alternating upper and lower portions in spaced apart parallel planes connected by webs, said sheet formed with a depending flange at each side margin thereof parallel with the webs which extend below the portions for engagement with the floor of the car, cross members extending between and secured to said flanges which support said lower portions and brace the flanges against distortion, and means to secure the adjacent flanges of adjacent units together to form a floor rack, said adjacent flanges being flared relative to each other.

4. In a refrigerator car having a floor, a floor rack spaced above said floor to provide a flue therebetween and means to induce an air current in said flue, said rack consisting of a plurality of units, each unit comprising a metallic sheet formed with alternating upper and lower portions in spaced apart parallel planes connected by webs, said sheet formed with a depending flange at each side margin thereof parallel with the webs which extend below the portions for engagement with the floor of the car, cross members extending between and secured to said flanges which support said lower portions and brace the flanges against distortion, and means to secure the flanges and the cross members of adjacent units together to form a floor rack.

5. A floor rack for a refrigerator car comprising metallic sheets formed with alternating upper and lower portions in spaced parallel planes connected by webs with one of said portions being apertured, spaced supports extending parallel with the webs which support the metallic sheets in spaced relation to the floor of the car, and cross members having horizontal parts sustaining the lower portions and other parts extending diagonally therefrom which are secured to the supports adjacent the lower parts thereof to brace said supports.

6. In a refrigerator car having a floor, a floor rack comprising a metallic sheet formed with depending parallel marginal flanges supporting said sheet in spaced relation to the floor to form a flue and means to induce an air current in said flue, said metallic sheet formed with upper and lower portions connected by webs parallel to said flanges, and cross members each formed of a bar having a horizontal part secured to said lower portions and diagonally extending end parts secured to said depending flanges whereby the air current may move between said webs and around said cross braces.

7. In a refrigerator car having a floor, a floor rack comprising a plurality of metallic sheets

5 formed with depending parallel marginal flanges supporting said sheet in spaced relation to the floor to form a flue and means to induce an air current in said flue, said metallic sheet formed with upper and lower portions connected by webs parallel to said flanges, and cross members supporting said sheets between said flanges, said

cross members so formed and positioned that the air current may move between said webs, the depending flanges of adjacent sheets being flared and stiffeners between said flared portions and means to secure said flanges together.

CHARLES DAVID BONSALE.