Sept. 10, 1940. C. D. BONSALL 2,214,547

FLOOR RACK FOR REFRIGERATION CARS

Original Filed Dec. 12, 1936

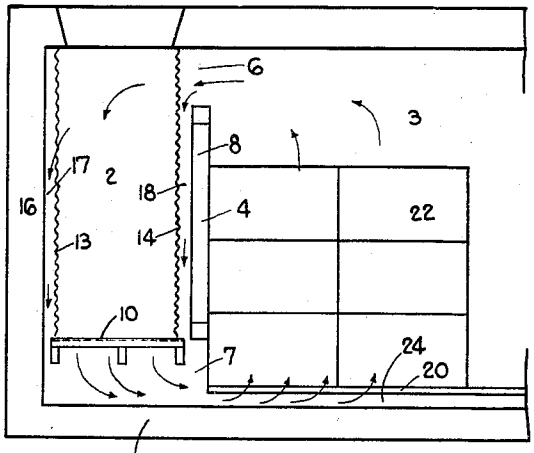


Fig. 1

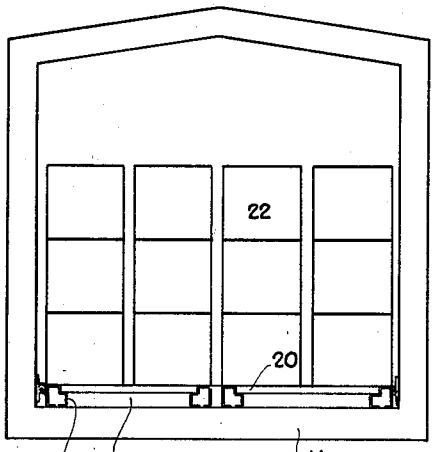


Fig. 2

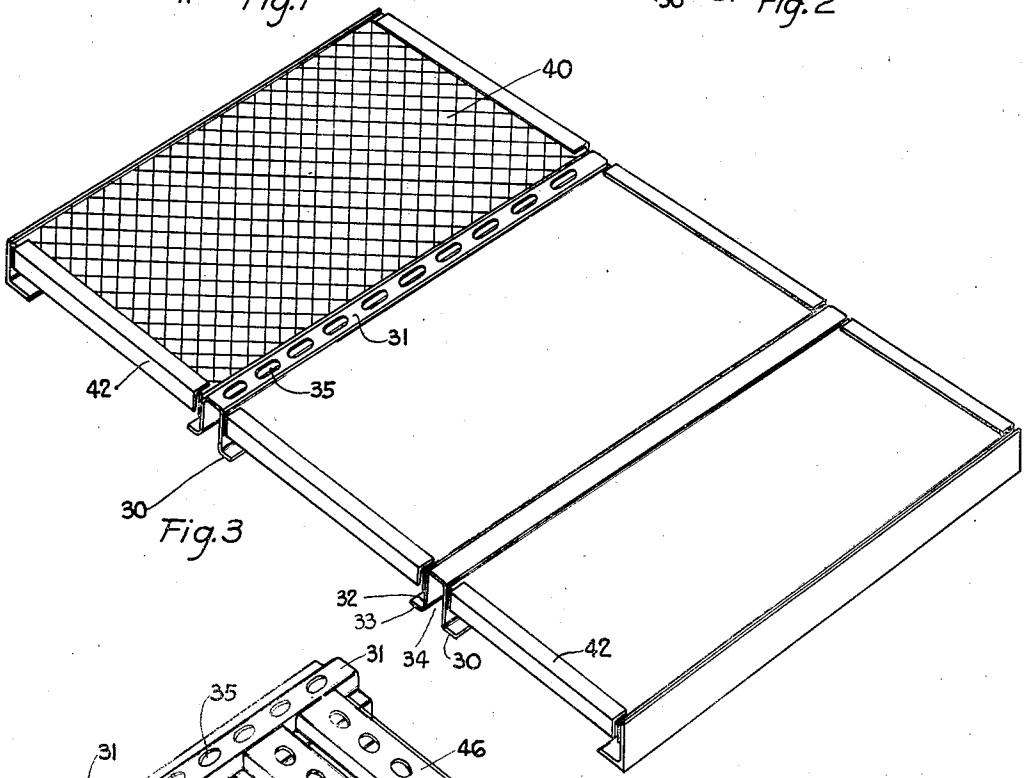


Fig. 3

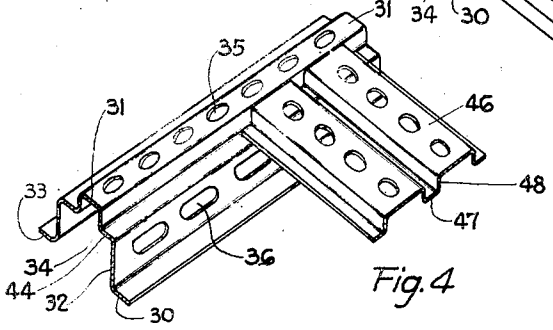


Fig. 4

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FLOOR RACK FOR REFRIGERATION CARS

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Substituted for abandoned application Serial No. 115,515, December 12, 1936. This application May 11, 1939, Serial No. 273,117

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 unsanitary, 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 drawing:

Fig. 1 shows a fragmentary longitudinal section through an ordinary refrigerator car.

Fig. 2 is a cross section of the car of Fig. 1.

Fig. 3 is a typical floor rack according to my invention.

Fig. 4 shows a modified construction of my floor rack.

Figs. 1 and 2 show lengthwise and crosswise cross sections respectively of an ordinary refrigerator car wherein the refrigerant causes a convection circulation of air between the refrigerant chamber 2 and the lading compartment 3. The bulkhead 4 separates the refrigerant chamber 2 from the lading compartment 3 and is provided with openings 6—7 adjacent the ceiling and floor of the car respectively and a solid wall 8 therebetween. A refrigerant, such as ice, is supported by grates 10 in spaced relation to the floor 11 and is retained by the ice basket 13—14 away from the end wall 16 and bulkhead 4 respectively to provide air flues 17 and 18.

A foraminous floor 20 supports the lading 22 away from the floor 11 of the car so as to provide a space 24 between the floor and the lading. The air cooled by the refrigerant passes through the lower opening 7 in the bulkhead 4 and below the foraminous floor 20, thence up through the lading 22 and being warmed thereby, rises and enters into the refrigerant chamber 2 through the upper bulkhead opening 6 where it is cooled and repeats the cycle.

The floor rack comprises a plurality of stringers 30 each comprising a perforated web 31 and preferably perforated depending flanges 32 which may rest upon the floor. These flanges may be provided with reflanges 33 to increase the bearing area of the stringer upon the floor and to increase the beam strength of the stringer.

The space between the depending flanges 32 and the web 31 provides a hollow portion 34 which communicates with the refrigerant chamber 2 so that air may pass from the refrigerant chamber through the hollow portion of the stringer and rise upwardly therefrom through the apertures 35 in the web or move laterally therefrom through the apertures 36 in the depending flanges.

A foraminous floor 40, such as expanded metal, wire netting or perforated metallic plate extends between and is secured to the stringers 30 and the top of the foraminous floor is preferably substantially flush with the tops of the webs 31 of the stringers.

The stiffeners 42 extend between and are secured to the stringers. The foraminous floor is preferably secured along its four edges to the stringers 30 and stiffeners 42 respectively to provide a drum construction which is very strong to support a vertical load.

Fig. 4 shows a modified construction wherein the depending flange is offset laterally to provide a shoulder or recess 44 for engagement by a foraminous floor which nests therein. This is desirable when the foraminous floor is relatively thick vertically as shown, for instance by the floor of Fig. 4, which comprises spaced apart compression members 46 and spaced apart tension members 47 connected by webs 48. These members are preferably perforated.

The accompanying drawing illustrates 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.

This application is a substitute for former application Serial No. 115,515, filed Dec. 12, 1936.

I claim:

1. In a refrigerator car having a car wall with a vertically extending air flue adjacent thereto in combination with a floor rack comprising a plurality of stringers each having a hollow portion communicating with said air flue and a foraminous floor extending between and secured to the stringers, said stringers provided with apertures between the hollow portions thereof and the space above the stringers whereby air may circulate from said flue through said hollow portions into said space.

2. In a refrigerator car having a car wall with a vertically extending air flue adjacent thereto in combination with a floor rack comprising a plurality of stringers each having a hollow portion communicating with said air flue and a foraminous floor extending between and secured to the stringers and an air space below said floor, said stringers provided with apertures between the hollow portions thereof and the space below the foraminous floor whereby air may circulate from said flue through said hollow portions into said space.

3. In a refrigerator car having a car wall with a vertically extending air flue adjacent thereto in combination with a floor rack comprising a plurality of stringers each having a hollow portion communicating with said air flue and a foraminous floor extending between and secured to the stringers and an air space below said floor, said stringers provided with apertures between the hollow portions thereof and the space above the stringers and other apertures between the hollow portions thereof and the space below the foraminous floor whereby air may circulate from said flue through said hollow portions and apertures into both of said spaces.

4. In a refrigerator car having a wall with a flue adjacent thereto and a floor rack for supporting the car lading so as to provide a space between the lading and the floor of the car communicating with said flue, said floor rack comprising stringers, each stringer comprising a perforated web with depending flanges forming a hollow portion communicating with said flue, said flanges resting upon the floor of the car, and a foraminous floor extending between and secured to said stringers substantially flush with the webs thereof, and means to induce an air current from said flue thru said space and foraminous floor and also thru said hollow portion and said perforated web.

5. In a refrigerator car having a wall with a flue adjacent thereto and a floor rack for supporting the car lading so as to provide a space between the lading and the floor of the car communicating with said flue, said floor rack comprising stringers, each stringer comprising a perforated web with depending flanges forming a hollow portion communicating with said flue, said flanges resting upon the floor of the car, an expanded metal floor extending between and secured to said stringers substantially flush with the webs thereof, and stiffeners secured to said floor which extend between and are secured to said stringers at the opposite margins of the floor, and means to induce an air current from said flue thru said space and foraminous floor, and also thru said hollow portion and said perforated web.

6. In a refrigerator car having a wall with a flue adjacent thereto and a floor rack for supporting the car lading so as to provide a space between the lading and the floor of the car communicating with said flue, said floor rack comprising stringers, each stringer comprising a perforated web with perforated depending flanges forming a hollow portion communicating with said flue, said flanges resting upon the floor of the car, and a foraminous floor extending between and secured to said stringers substantially flush with the webs thereof, and means to induce an air current from said flue thru said space and foraminous floor, and also thru said hollow portion and said perforated web.

7. In a refrigerator car having a wall with a flue adjacent thereto and a floor rack for supporting the car lading so as to provide a space between the lading and the floor of the car communicating with said flue, said floor rack comprising stringers, each stringer comprising a perforated web with depending flanges forming a hollow portion communicating with said flue, each of said flanges being offset laterally to provide recesses, said flanges resting upon the floor of the car, and a foraminous floor comprising spaced apart tension and compression members connected by webs nesting in said recesses and secured to said flanges, and means to induce an air current from said flue thru said space and foraminous floor, and also thru said hollow portion and said perforated web.

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