June 13, 1939. V. E. SISSON 2,162,361

REFRIGERATOR CAR FLOOR RACK

Filed Jan. 24, 1938 2 Sheets-Sheet 1

Fig. 1.

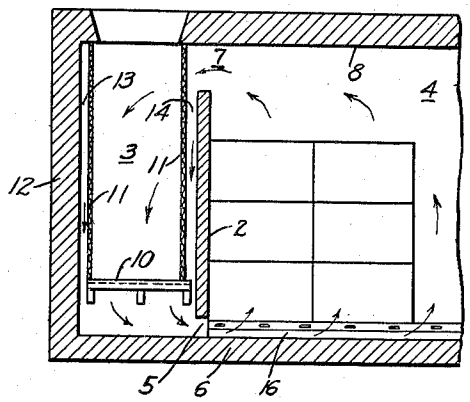


Fig. 2.

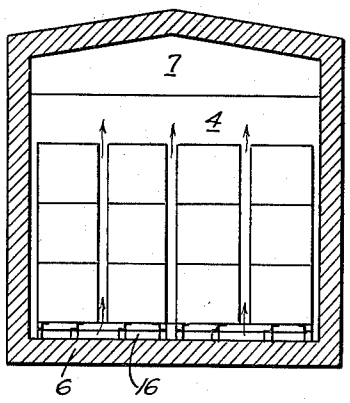


Fig. 3.

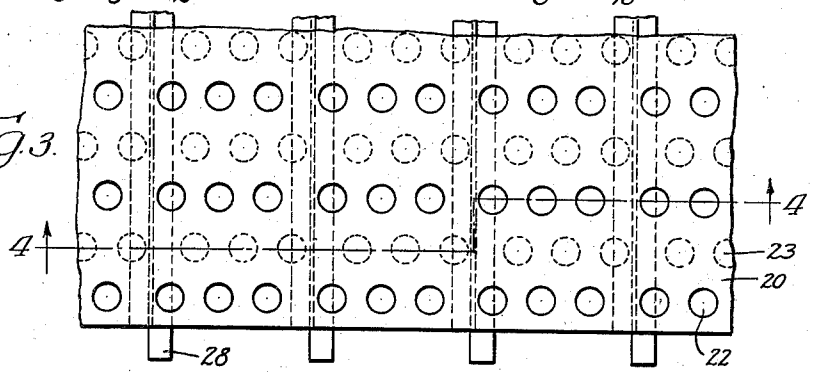
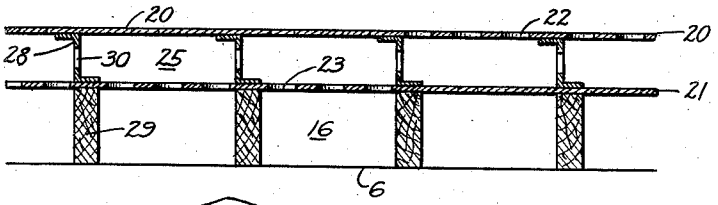


Fig. 4.



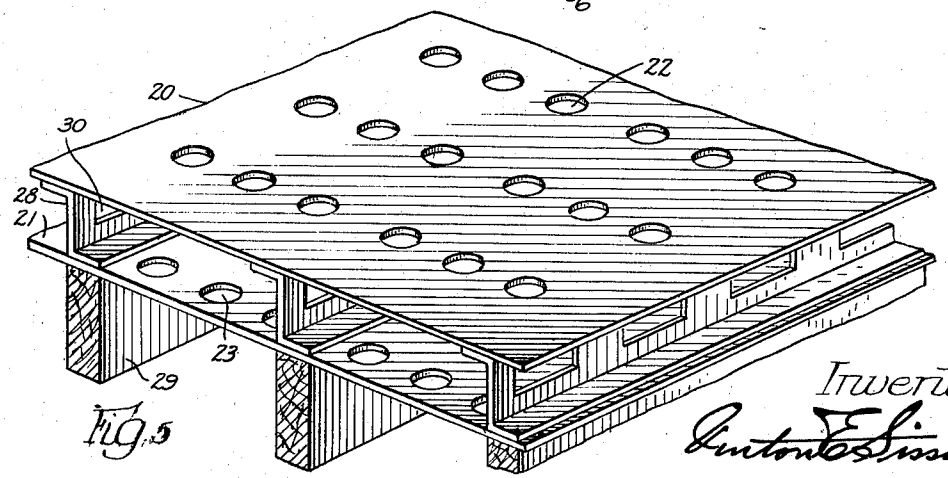


Fig. 5

Inventor:
Vinton E. Sisson

June 13, 1939. V. E. SISSON 2,162,361

REFRIGERATOR CAR FLOOR RACK

Filed Jan. 24, 1938 2 Sheets-Sheet 2

Fig. 6.

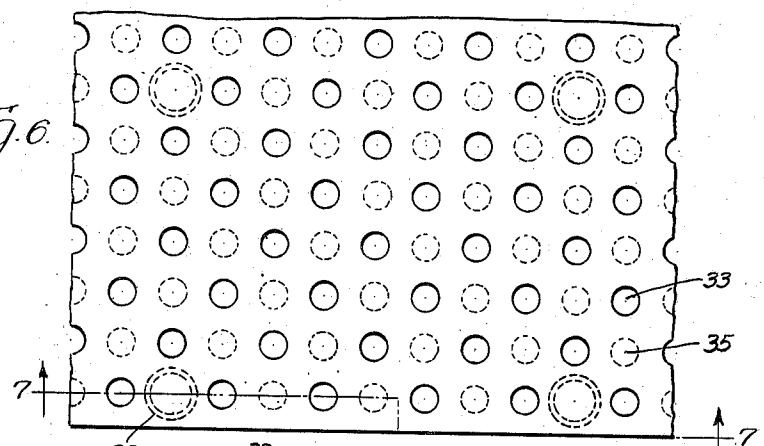


Fig. 7.

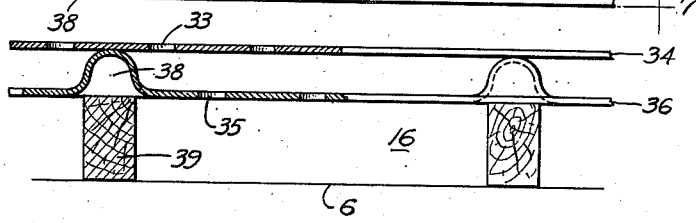


Fig. 8.

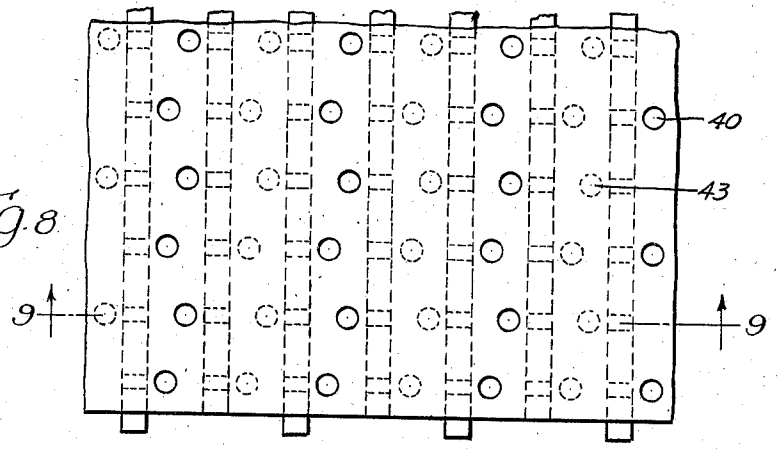
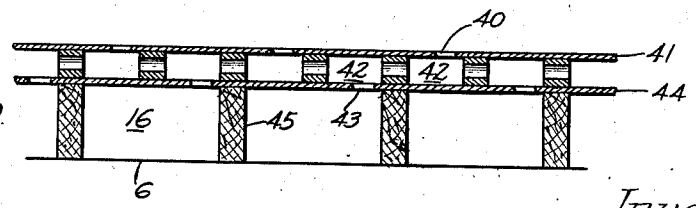


Fig. 9.



Inventor:

Vinton E. Sisson

Patented June 13, 1939 2,162,361

UNITED STATES PATENT OFFICE

2,162,361

REFRIGERATOR CAR FLOOR RACK

Vinton E. Sisson, Winnetka, Ill., assignor to Standard Railway Equipment Manufacturing Company, Chicago, Ill., a corporation of Delaware

Application January 24, 1938, Serial No. 186,516

4 Claims. (Cl. 105—375)

The invention relates to insulated railway 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.

In a refrigerator car water ice is associated with certain elements of the car to establish a convection circulation of air between the refrigerant chamber and the lading compartment to cool the lading in the car (as hereinafter described). A foraminous floor supports the lading in spaced relation to the insulated floor of the car.

It is desirable to allow at least some of the melted ice to remain on the insulated floor of the car below the foraminous floor to produce further insulation between the outside of the car and the air flues below the foraminous floor and also to further cool the circulating air. The melted ice (water) has a temperature of about 32° Fahrenheit when no salt is used and as low as 14° Fahrenheit when 25% salt is mixed with the lump ice, therefore, it can effectively perform the two above mentioned functions. The service movements of the car, that is, the stopping and starting, as well as the swaying movement, cause the melted ice to be thrown against the foraminous floor supports, bulkhead supports, threshold and other projections and splash through the openings in the foraminous floor and against the lading. In package lading the containers would be soiled and in loose lading such dampness might cause the commodity to rot.

An object of the invention is to position the refrigerant ice so that the melted ice (water) will drain upon the insulated floor below the foraminous floor and to construct the foraminous floor so that the melted ice (water) will not splash through the foraminous floor.

In the drawings:

Figs. 1 and 2 show the relation of my improved floor rack to the other elements of a refrigerator car to guide the circulating air from the refrigerant chamber to the lading compartment for cooling a lading as hereinafter described.

Figs. 3, 4 and 5 show the preferred form of the invention wherein Fig. 4 is a section on line 4—4 of Fig. 3 and Fig. 5 is a perspective section of the device.

Figs. 6 and 7 show another form of the invention wherein Fig. 7 is a section on line 7—7 of Fig. 6. In this modification the sheets are spaced apart by embossments.

Figs. 8 and 9 show still another form of the invention wherein Fig. 9 is a section on line 9—9 of Fig. 8. In this modification the space between the sheets is divided into parallel flues with apertures in the upper and lower sheets, respectively, in alternating flues.

In the form of my invention illustrated the refrigerator car is provided with a bulkhead 2 separating the refrigerant chamber 3 from the lading compartment 4. The bulkhead 2 is provided with an aperture 5 adjacent the floor 6 of the car and an aperture 7 adjacent the ceiling 8 of the car with a solid wall therebetween.

A refrigerant, such as ice, is supported by the ice supporting means 10 in the refrigerant chamber 3 in spaced relation to the floor 6 of the car and the basket (or netting) 11 spaces the refrigerant from the end wall 12 and bulkhead 2 to provide the flues 13—14. The apertured floor rack supports the lading so as to provide the space 16 which communicates with the flues 13—14. A refrigerant, such as ice in the refrigerant chamber, induces a convection circulation of air from the flues 13—14, through the flue space 16 and the apertures in the floor rack, and as the air is warmed by the lading, it rises and passes through the bulkhead upper opening 7, and thence through the flues 13—14, and being cooled by the refrigerant, repeats the convection cycle. The ice supporting means 10 is foraminous so that as the ice melts the water drops to the floor 6 and moves along the floor under the floor rack.

In the form of my invention illustrated in Figs. 3, 4 and 5 the foraminous floor comprises an apertured or perforated upper (preferably metallic) sheet 20 positioned above and spaced apart from an apertured or perforated (preferably metallic) lower sheet 21 wherein the apertures 22 in the upper sheet 20 do not register with the apertures 23 in the lower sheet whereby air circulating in the space 16 between the foraminous floor and the insulated floor 6 may pass through the apertures in both the upper sheet 20 and the lower sheet 21 into the lading compartment 4. Such circulating air is also free to move in the spaces 25 between the upper and lower sheets 20—21. With such a construction, however, the service movements of the car cannot cause the

melted ice on the insulated floor 6 of the car to splash through both the apertures in the upper and lower sheets, or in other words, splash through the foraminous floor.

The spaced apart parallel web members 28 divide the spaces between the upper and lower sheets 20—21 into a series of parallel flues 25—25 preferably extending in the direction of movement of the circulating air and preferably parallel to the flues between the spacers 29 which support the foraminous floor upon the insulated floor 6. These web members are perforated 30 to allow air to pass therethrough between adjacent flues 25.

In the modification shown in Figs. 6 and 7 the apertures 33 in the upper sheet 34 do not register with the apertures 35 in the lower sheet 36. In this modification the upper and lower sheets are held in spaced relation to each other by an embossment 38 formed in one (or both) of the sheets and secured preferably by welding to the other of said sheets. The supporting stringers or spacers are shown as 39. The embossments are preferably formed in the lower sheet 36, as shown, so that the upper sheet 34 will remain flat to provide a smooth upper surface for the foraminous floor.

In the modification shown in Figs. 8 and 9 the apertures 40 in the upper sheet 41 are over certain of the flues 42 and the apertures 43 in the lower sheet 44 are below certain of the flues 42. The apertures in the upper and lower sheets 41—44 are preferably in alternating flues 42—42. The supporting stringers or spacers are shown as 45. These stringers 45 may be of any desired material or shape.

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, the combination of an insulated floor, spacers supporting a foraminous floor above the insulated floor, a space between said floors, ice associated with other elements of the car to induce an air current in said space upon melting thereof and so that the melted ice drains upon the insulated floor, said foraminous floor comprising spaced apart upper and lower apertured sheets connected by spaced apart substantially parallel perforated web members to provide a series of parallel flues extending in the direction of movement of the air current, the apertures in the upper sheet being over certain of said flues and the apertures in the lower sheet being under other of said flues.

2. In a refrigerator car, the combination of an insulated floor, spacers supporting a foraminous floor above the insulated floor, a space between said floors, ice associated with other elements of the car to induce an air current in said space upon melting thereof and so that the melted ice drains upon the insulated floor, said foraminous floor comprising spaced apart upper and lower apertured sheets wherein the apertures in one sheet do not register with the apertures in the other sheet.

3. In a refrigerator car, the combination of an insulated floor, spacers supporting a foraminous floor above the insulated floor, a space between said floors, ice associated with other elements of the car to induce an air current in said space upon melting thereof and so that the melted ice drains upon the insulated floor, said foraminous floor comprising spaced apart upper and lower apertured sheets connected by spaced apart substantially parallel web members to provide a series of parallel flues extending in the direction of movement of the air current, the apertures in one sheet being out of register with the apertures in the other sheet.

4. In a refrigerator car, the combination of an insulated floor, spacers supporting a foraminous floor above the insulated floor, a space between said floors, means to induce an air current in said space, said foraminous floor comprising spaced apart upper and lower apertured sheets wherein the apertures in one sheet do not register with the apertures in the other sheet, said lower sheet formed with a plurality of embossments secured to the upper sheet between the apertures therein.

VINTON E. SISSON.