Feb. 11, 1941. C. E. CREDE 2,231,208

FLOOR RACK FOR REFRIGERATOR CARS

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Fig. 1.

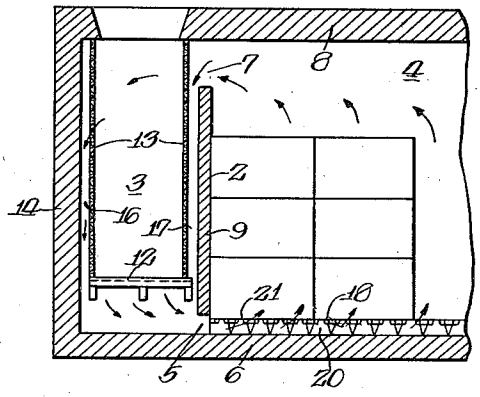


Fig. 2.

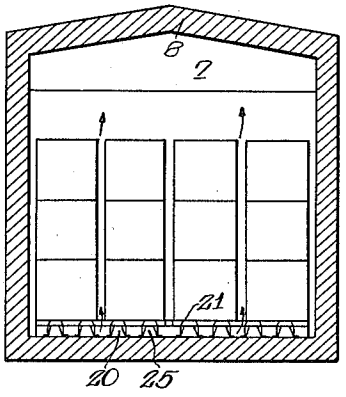
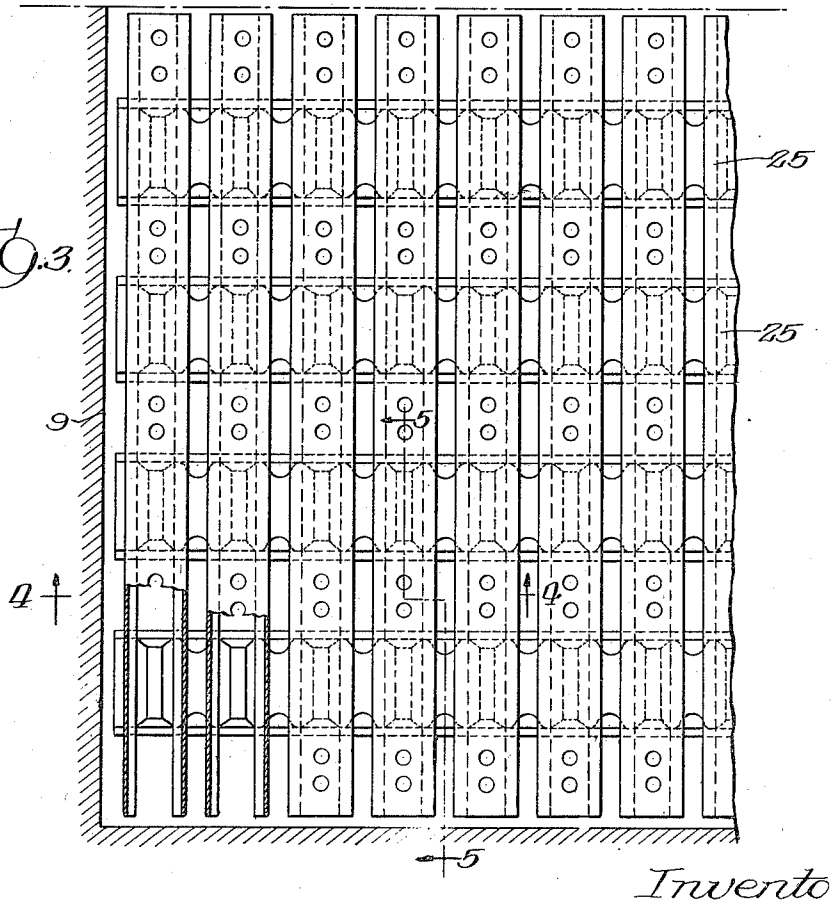


Fig. 3.



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Fig. 4.

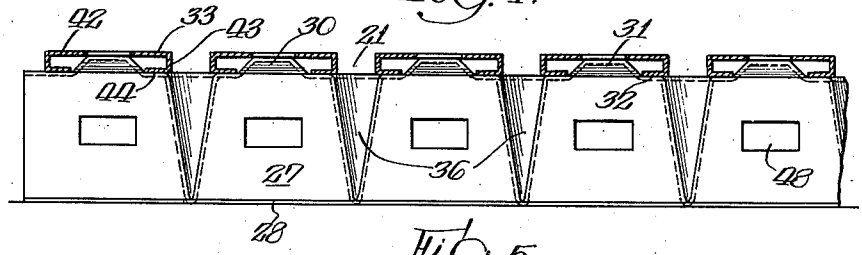
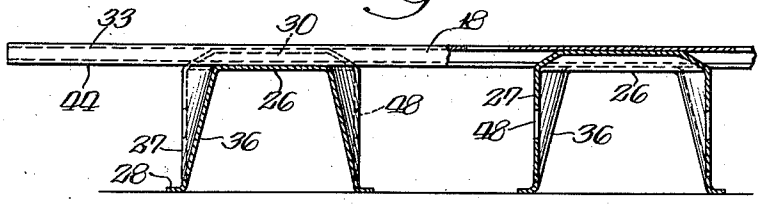


Fig. 5.



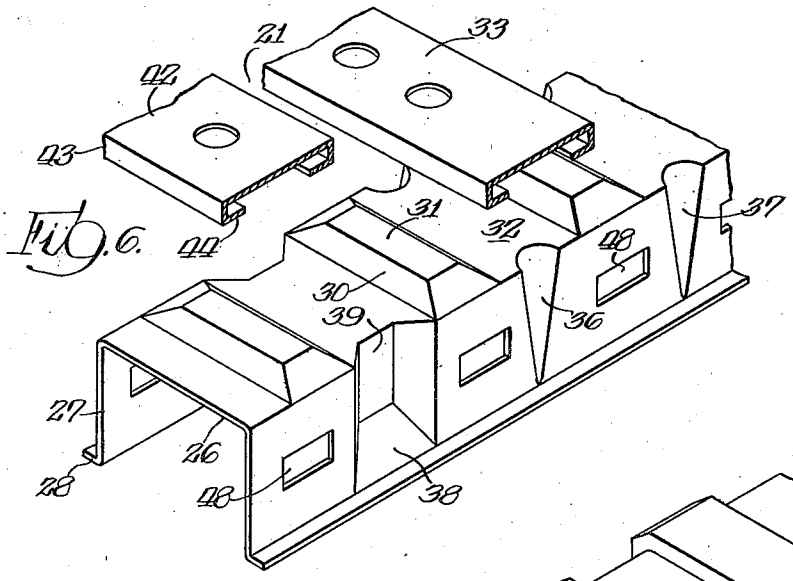


Fig. 6.

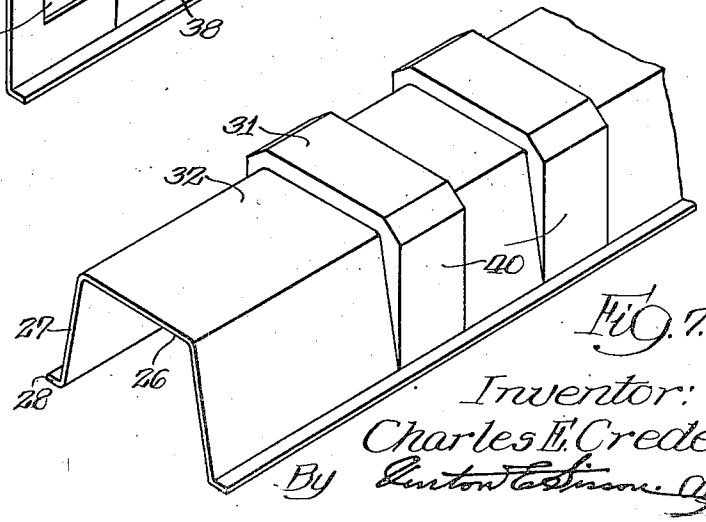


Fig. 7.

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FLOOR RACK FOR REFRIGERATOR CARS

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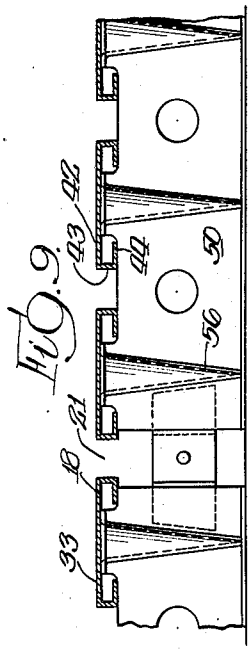


Fig. 9.

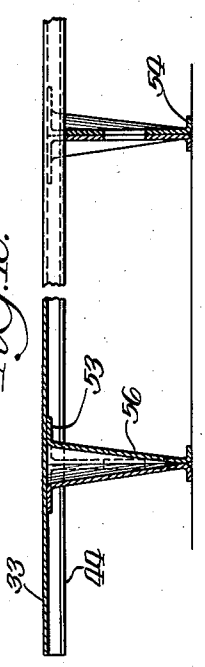


Fig. 10.

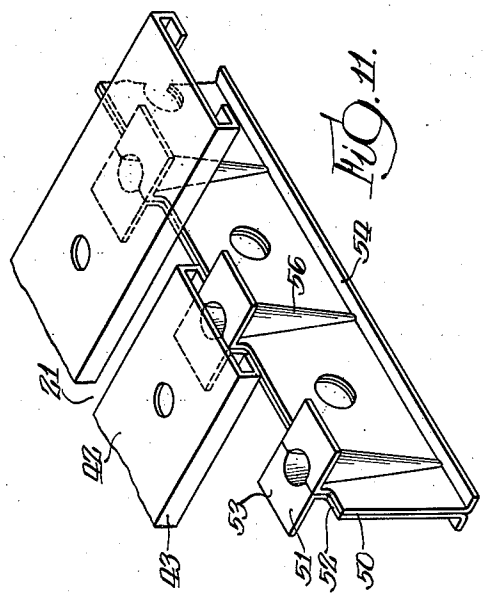


Fig. 11.

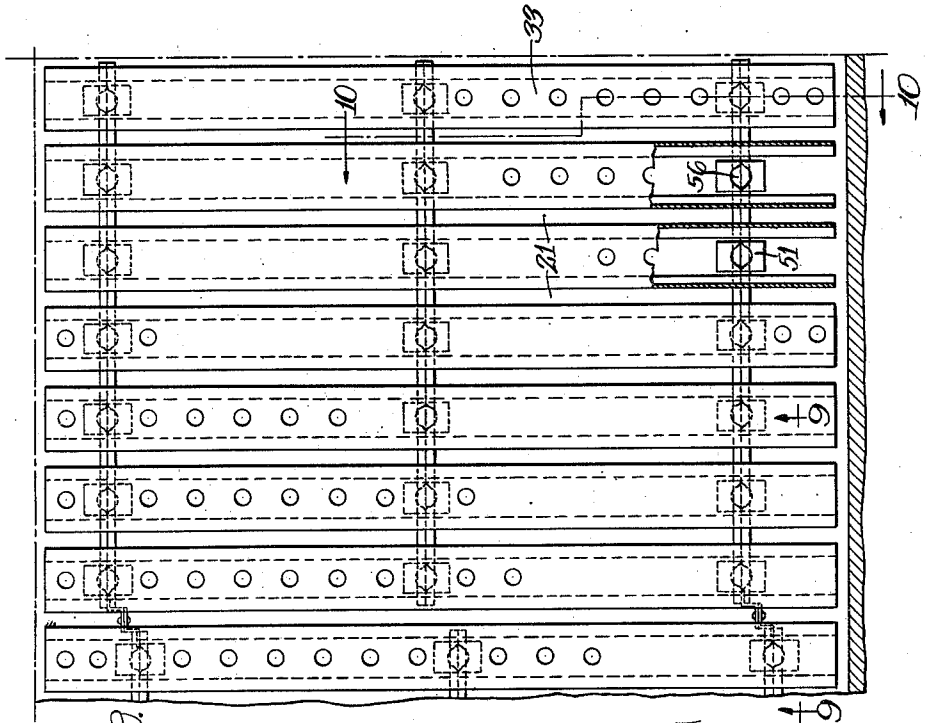


Fig. 8.

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Patented Feb. 11, 1941

2,231,208

UNITED STATES PATENT OFFICE

2,231,208

FLOOR RACK FOR REFRIGERATOR CARS

Charles E. Crede, Pittsburgh, Pa., assignor to Standard Railway Equipment Manufacturing Company, Chicago, Ill., a corporation of Delaware

Application December 20, 1937, Serial No. 180,749

5 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 object of the invention is to provide a floor rack for a refrigerator car which is very strong to support vertical loads and has great strength in a horizontal direction (to resist the tendency of a shifting load to move the floor rack sidewise) without materially retarding the flow of air below the floor rack or materially reducing the amount of air flow through the floor rack.

In the drawings:

Figs. 1 and 2 show the corelation of my device to the other elements of a refrigerator car.

Fig. 3 is a plan view of my floor rack.

Fig. 4 is an enlarged section on line 4—4 of Fig. 3.

Fig. 5 is an enlarged section on line 5—5 of Fig. 3.

Fig. 6 is a perspective view showing the relation between the stringer and the slats.

Fig. 7 shows a modified construction of the form shown in Figs. 1–7 inclusive.

Figs. 8–11 inclusive show another form of my invention wherein—

Fig. 8 is a plan view.

Fig. 9 is an enlarged section on line 9—9 of Fig. 8.

Fig. 10 is an enlarged section on line 10—10 of Fig. 8.

Fig. 11 is a perspective view showing the relation between the stringers and slats.

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 9 therebetween.

A refrigerant is supported by the grates 12 in the refrigerant chamber 3 in spaced relation to the floor 6 of the car and the basket (or netting) 13 spaces the refrigerant from the end wall 14 and bulkhead 2 to provide the flues 16—17. The apertured floor rack 18 supports the lading so as to provide the space or flue 20 which communicates with the flues 16—17. A refrigerant, such as ice, in the refrigerant chamber induces a convection circulation of air from the flues 16—17 through the flue space 20 and the aperture 21 in the floor rack 18, and as the air is warmed by the lading, it rises and passes through the bulkhead upper opening 7, and thence through the flues 16—17, and being cooled by the refrigerant, repeats the convection cycle.

In the form of my invention shown in Figs. 1–7 inclusive the floor rack comprises a plurality of spaced apart stringers 25 supporting a foraminous floor in which each stringer comprises an inverted channel shape member comprising a web 26 with depending marginal flanges 27 which are preferably provided with reflanges 28 to engage the floor of the car.

The web 26 is formed with spaced apart embossments 30 to provide alternating upper (31) and lower (32) portions for supporting the foraminous floor slats 33. The portions of the flanges 27—27 between the embossment 30 may be formed with vertical stiffening corrugations 36 which spring from the web 26 (at 37) and preferably merge into the flange 27 (at 38) adjacent the reflange 28. The embossments 30 and the corrugations 36 tend to prevent the flanges 27—27 from spreading apart when the stringer is subjected to a vertical load, such as a lading resting upon the foraminous floor. Numeral 39 shows a modification of the vertical embossment 36 wherein the sides thereof substantially coincide with the sides of the horizontal embossments 30.

Fig. 7 shows a modification wherein the embossment 40 traverses the web 26 and both of the depending flanges 27 to form a yoke construction to prevent the flanges from spreading apart under a vertical load.

In the modification shown the foraminous floor comprises a plurality of spaced apart slats 33 preferably made of metallic sheets with each slat having a body part 42 resting upon one of the upper portions 31 of the stringer 25 and each slat is also provided with depending marginal flanges 43 resting upon lower portions 32 of the stringer. In such a construction the slats form very strong beams between adjacent stringers because the body portions 42 are directly supported by the stringers and also the depending stiffening marginal flanges 43 are supported directly by stringers. Any suitable means may be used to secure the slats 33 to the stringers

25, as riveting or welding. It may be desirable to weld the body portion 42 of each slat 33 to each stringer 25 and also weld the depending marginal flanges 43 to each stringer.

I preferably provide each marginal flange 43 of the slats 33 with inturned reflanges 44 which preferably engage embossments 30 (at 45) to resist the tendency of the slats 33 to move in a horizontal plane caused by a shifting lading due to the service movements of the car. If desirable the depending flanges 43 may engage the embossments 30 directly.

In the above described construction the stringers 25 are preferably positioned parallel to the direction of the movement of the circulating air but apertures 48 are provided in the depending flanges so that air may move therethrough.

In the modification shown in Figs. 9 to 11 inclusive each stringer comprises a vertically disposed metallic plate 50 resting upon the floor of the car with the upper margin thereof notched to provide alternating upper (51) and lower (52) portions which engage the body parts 42 and depending flanges 43 of the several slats 33 as heretofore described. The parts of the plate forming the upper portions 51 are preferably provided with a flange 53 and the lower margin of the plate is also provided with a flange 54 resting upon the floor of the car. The parts of the stringer below the upper portions 51 are formed with stiffening corrugations 56 extending between the flanges 53 and the flange 54. Such a corrugation forms a column to transfer a vertical load from the slat to the floor and also forms a stiffening means to prevent the metallic plate from deflecting laterally under stress.

If a stronger floor rack is desired two metallic plates formed with stiffening corrugations may be secured together back to back, as shown particularly in Fig. 11.

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 rack for supporting a lading in spaced relation to said floor to provide a flue therebetween and means to induce an air current in said flue, said rack comprising an inverted channel shaped stringer comprising a web with depending marginal flanges resting upon said floor, said web formed to provide alternating upper and lower portions and a plurality of spaced apart slats, each having a body part resting upon one of said upper portions and depending marginal flanges resting upon said lower portions.

2. In a refrigerator car having a floor, a rack for supporting a lading in spaced relation to said floor to provide a flue therebetween and means to induce an air current in said flue, said rack comprising an inverted channel shaped stringer comprising a web with depending marginal flanges having embossments in said web to provide alternating upper and lower portions and a plurality of spaced apart slats, each having a body part resting upon one of said upper portions and depending marginal flanges with inturned reflanges resting upon said lower portions and engaging said embossments.

3. In a refrigerator car having a floor, a rack for supporting a lading in spaced relation to said floor to provide a flue therebetween and means to induce an air current in said flue, said rack comprising an inverted channel shaped stringer comprising a web with depending marginal flanges having embossments traversing the web and depending flanges to provide alternating upper and lower portions and a plurality of spaced apart slats, each having a body part resting upon one of said upper portions and depending marginal flanges resting upon said lower portions.

4. In a refrigerator car having a floor, a rack for supporting a lading in spaced relation to said floor to provide a flue therebetween, and means to induce an air current in said flue, said rack comprising an inverted channel shaped stringer comprising a web with depending marginal flanges having embossments in said web to provide alternating upper and lower portions and a plurality of spaced apart slats, each having a body part resting upon one of said upper portions and depending marginal flanges with inturned reflanges resting upon said lower portions.

5. In a refrigerator car having a floor, a rack for supporting a lading in spaced relation to said floor to provide a flue therebetween, and means to induce an air current in said flue, said rack comprising an inverted channel shaped stringer comprising a web with depending marginal flanges having embossments in said web to provide alternating upper and lower portions, said flanges having stiffening corrugations merging into said web in staggered relation to said embossments and a plurality of spaced apart slats, each having a body part resting upon one of said upper portions and depending marginal flanges resting upon said lower portions.

CHARLES E. CREDE.