April 11, 1967 C. R. JOHNSTON ETAL 3,313,071

FLOOR RACKS

Filed April 20, 1964 4 Sheets-Sheet 1

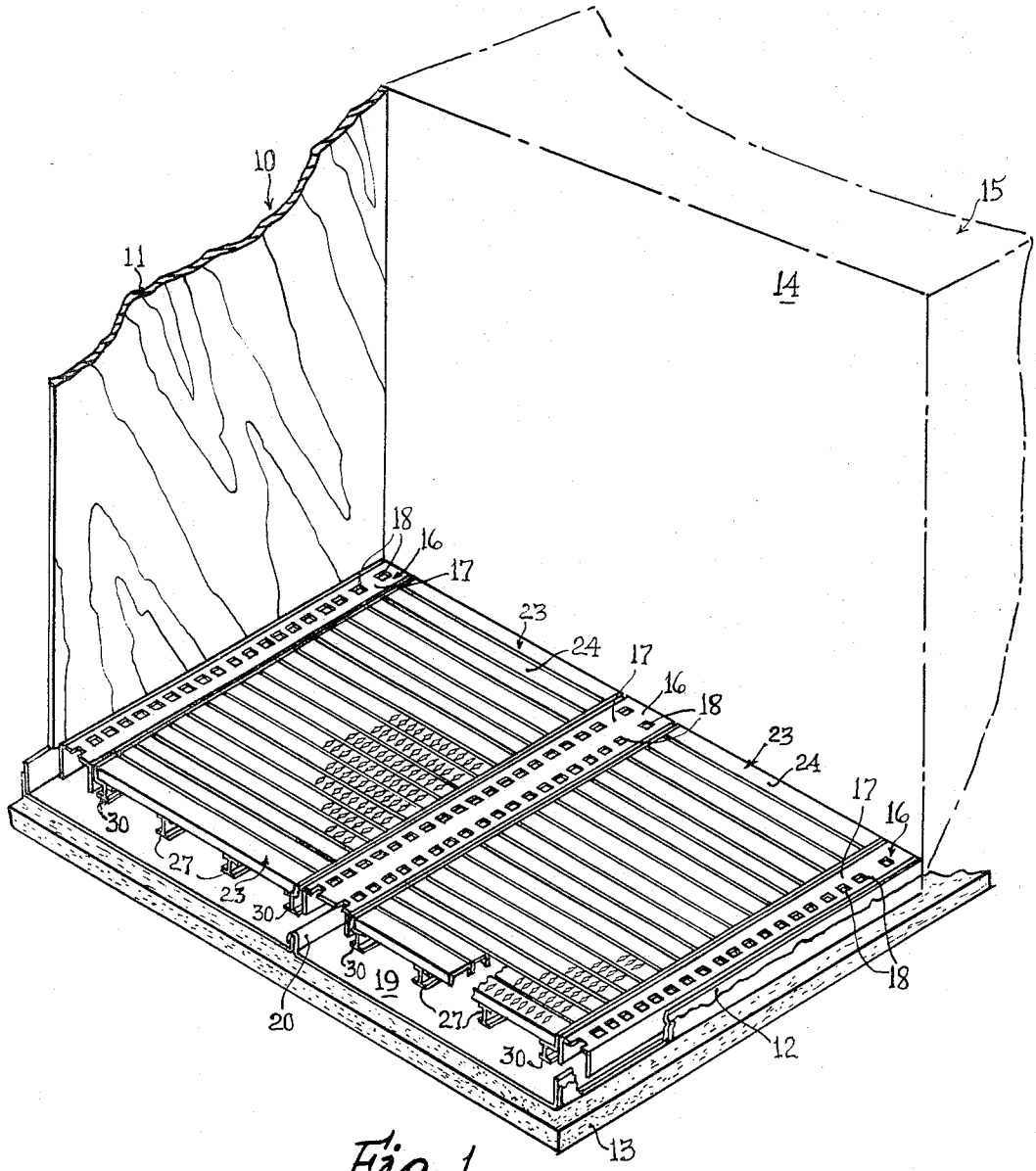


Fig. 1.

INVENTORS.
CHARLES RICHARD JOHNSTON
HARRY G. ROBERTSON
BY Edward C. Threedy
THEIR ATTORNEY.

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FLOOR RACKS

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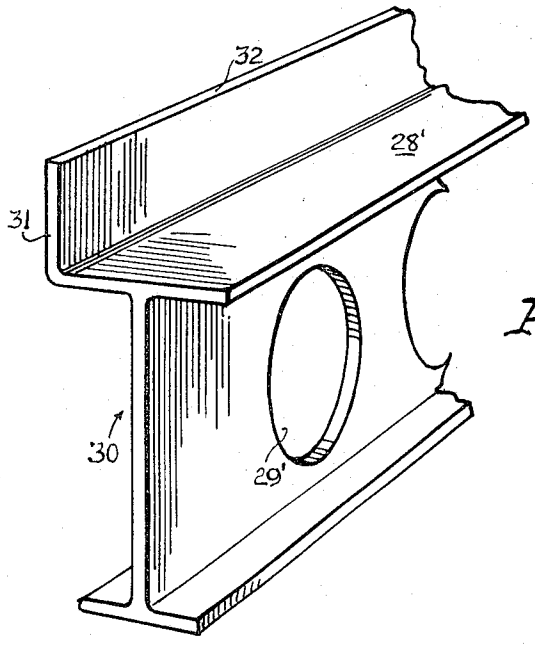


Fig. 2.

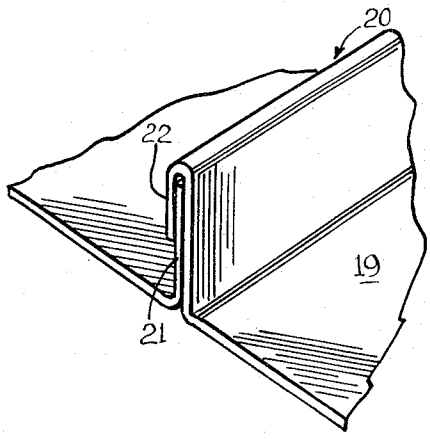


Fig. 5.

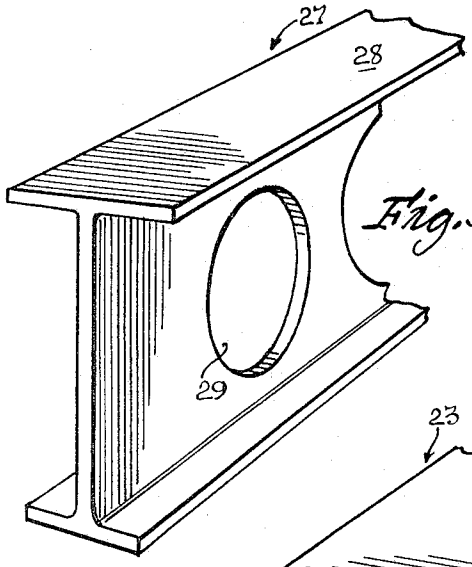


Fig. 3.

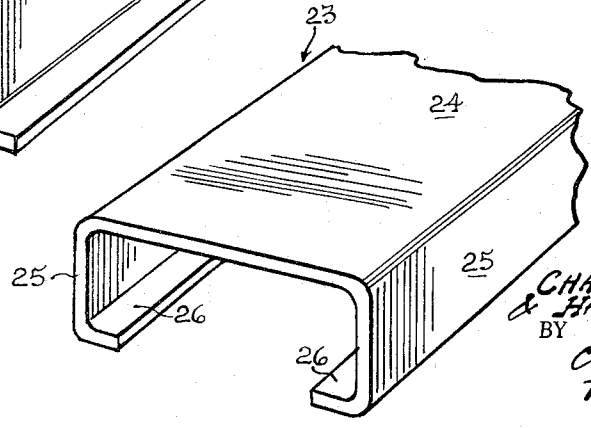


Fig. 4.

INVENTORS.
CHARLES RICHARD JOHNSTON
& HARRY G. ROBERTSON
BY
Edward C. Wheedy
THEIR ATTORNEY.

April 11, 1967 C. R. JOHNSTON ET AL 3,313,071

FLOOR RACKS

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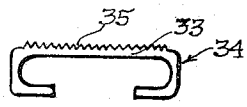


Fig. 7.

Fig. 6.

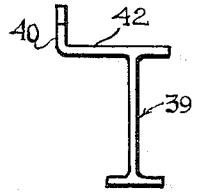


Fig. 8.

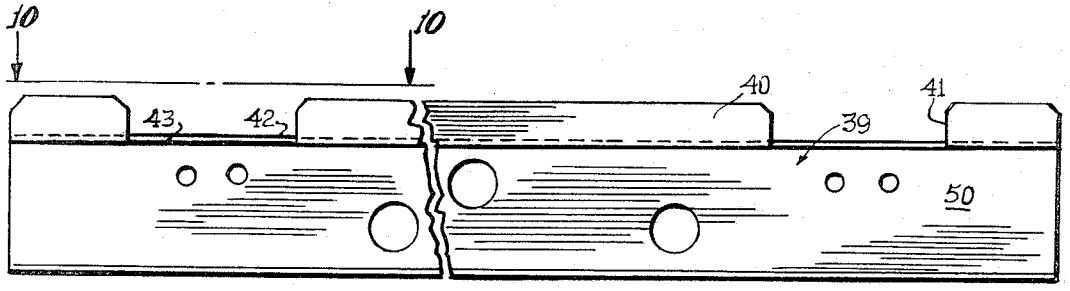


Fig. 9.

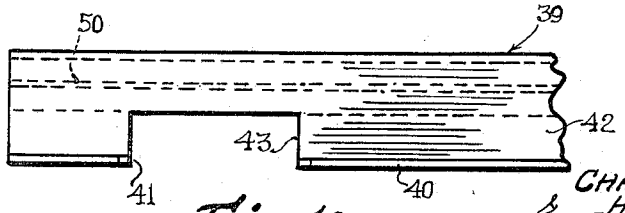


Fig. 10.

INVENTORS.
CHARLES RICHARD JOHNSTON
& HARRY G. ROBERTSON
BY
Edward C. Threedy
THEIR ATTORNEY.

April 11, 1967 C. R. JOHNSTON ETAL 3,313,071

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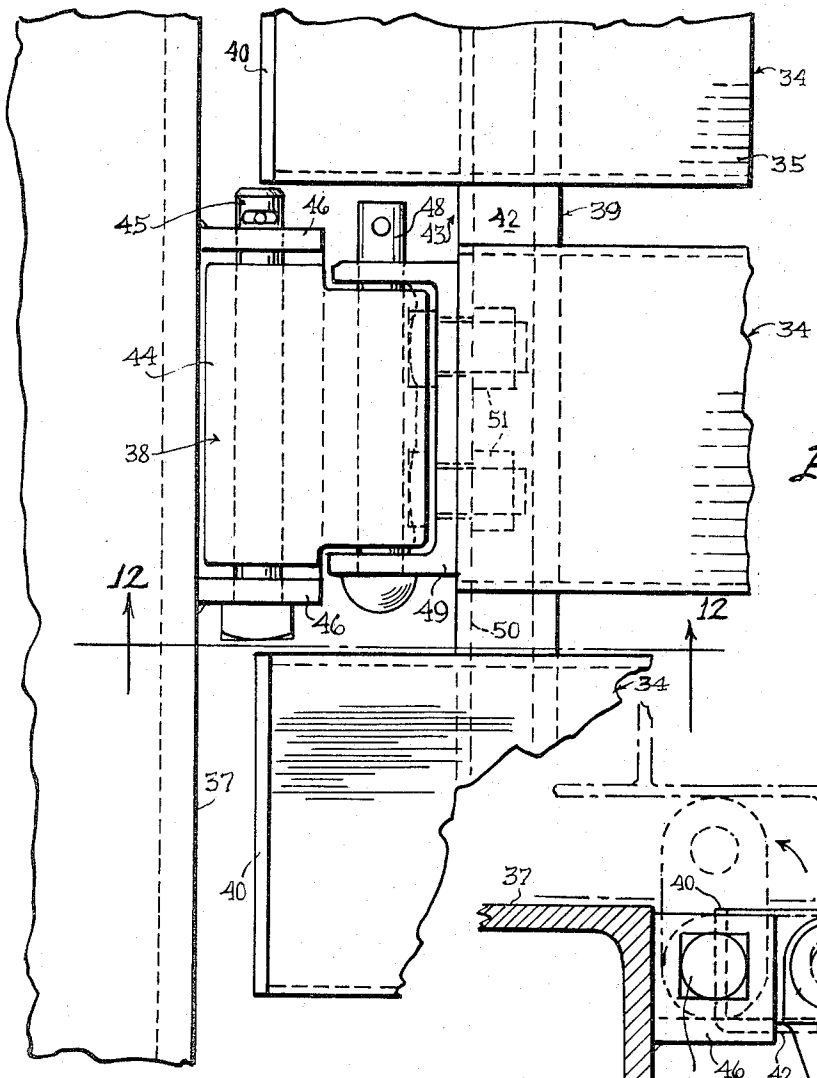


Fig. 11.

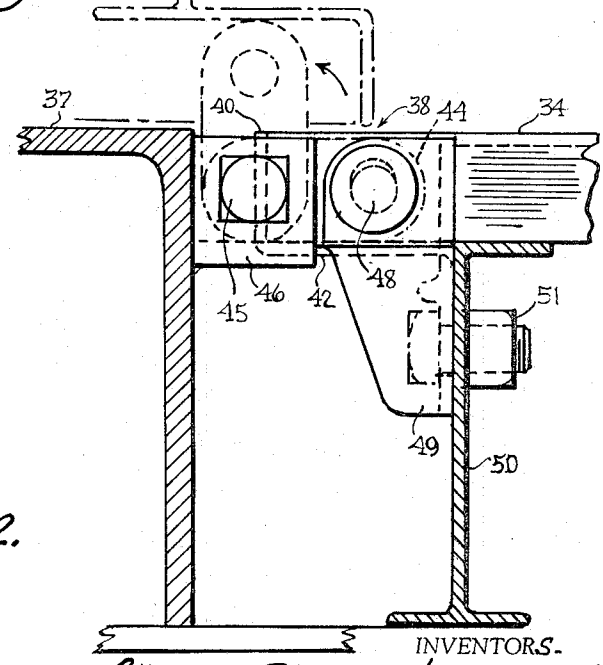


Fig. 12.

INVENTORS.
CHARLES RICHARD JOHNSTON &
BY HARRY G. ROBERTSON
Edward C. Hoseley.
THEIR ATTORNEY.

United States Patent Office 3,313,071 Patented Apr. 11, 1967

3,313,071

FLOOR RACKS

Charles R. Johnston, Chicago, and Harry G. Robertson, Blue Island, Ill., assignors, by mesne assignments, to Charles Richard Johnston, Palatine, Ill.

Filed Apr. 20, 1964, Ser. No. 361,047
2 Claims. (Cl. 52—177)

Our invention relates to new and useful improvements in floor racks and more particularly to a prefabricated metallic floor rack to be utilized in refrigerated storage compartments.

One of the objects of the invention is the provision of an improved floor rack which is adapted to provide a maximum strength with a minimum amount of weight and which is adapted to be used for a long period of time without necessity for repair or replacement. The floor racks usually cover substantially the whole floor of the refrigerated storage compartment, and they support the load therein and receive the brunt of the wear which occurs when the merchandise is moved about by trucks or by sliding, dragging, or other forms of handling.

Another object of the invention is the provision of an improved floor rack structure including a simplified mode of supporting the floor racks in elevated position against the walls of the compartment and an improved structure for mounting the necessary fittings by means of which conduction of heat through the fastening devices is eliminated.

Another object of the invention is the provision of an improved metal floor rack provided with a novel covering of such a structure that it is adapted to permit the sliding of boxes, barrels, sacks, cartons, etc. over the floor rack without tearing or breaking or catching of nails in the ventilation apertures of the floor rack covering.

Another object of the invention is the provision of an improved metal floor rack having means for locking the cross frame members to the stringers during the manufacture of the device, so that the cross frame members and stringers can be held in predetermined position for welding, without the necessity of jigs or other securing devices between these members.

Another object of the invention is the provision of an improved metal floor rack having its sections arranged to be folded up against the side wall and having the door sections arranged to fold against the adjacent rack sections and provided with an improved type of latching device for holding the door sections in elevated and folded position.

Another object of the invention is the provision of an improved metal floor rack structure which permits the cross circulation of air under the top of the floor rack, as well as the circulation of air longitudinally of the storage compartment between the stringers of the floor racks.

Another object of the invention is the provision of an improved stringer structure for metal floor racks, by means of which a maximum amount of strength is provided for supporting the load in the storage compartment in spaced relation to the flooring and a maximum cross ventilation may be secured.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

FIG. 1 is a fragmentary perspective view of a pair of floor racks in a refrigerated storage compartment;

FIG. 2 is a fragmentary perspective view of one of the floor rack stringers;

FIG. 3 is a fragmentary perspective view of another floor sack stringer;

FIG. 4 is a fragmentary perspective view of the floor-forming member as used in our floor rack;

FIG. 5 is a fragmentary perspective view of a standing center seam for the aluminum insulating member utilized in our floor racks;

FIG. 6 is a fragmentary perspective view of a modified floor rack;

FIG. 7 is an end elevational view of the floor-forming member as used in the modified floor rack of FIG. 6;

FIG. 8 is an end elevational view of a stringer as used in the floor rack construction;

FIG. 9 is a fragmentary side elevational view of the stringer of FIG. 8;

FIG. 10 is a fragmentary top plan view taken on line 10—10 of FIG. 9;

FIG. 11 is a fragmentary top plan view of a hinge connection for our floor rack;

FIG. 12 is a fragmentary detailed sectional view taken on line 12—12 of FIG. 11.

Referring to FIG. 1, we disclose a refrigerated storage compartment 10 comprising side walls 11 and 12, a floor 13, and one end wall 14 which divides the storage compartment from refrigerator compartment 15.

Mounted upon the floor 13 are a plurality of load divider spacers 16. These spacers are substantially U-shaped in cross section and inverted upon the floor 13 so as to present a wide flat web portion 17. This web portion 17 has formed therein in horizontal alignment a plurality of apertures 18 which receive and hold freight-retaining members.

Between the spacers 16 and the floor 13, we have laid an aluminum insulating sheet 19. The longitudinal edges of this aluminum insulating sheet 19 are adapted to be wrapped around and between the inner side walls 11 and 12 and any suitable exterior walls which may be utilized. As shown in FIG. 1, this aluminum insulating sheet 19 terminates into a center vertically extending seam 20 which is positioned between the supporting legs of the center spacer 16. This center seam 20, as shown in FIG. 5, consists of a vertical flange 21 formed on one longitudinal edge of one section of the aluminum sheet, and a U-shaped socket-forming flange 22 formed on the corresponding opposite longitudinal edge of the juxtaposed aluminum sheet 19.

The floor rack as shown in FIG. 1, comprises a plurality of parallelly extending, spaced apart, floor-forming members 23. These floor-forming members 23, as seen in FIG. 4, are substantially U-shaped in cross section and are so formed to provide a web portion 24 which is of a greater width than the oppositely extending arms 25 of such U-shaped member 23. The free ends of the arms 25 are turned inwardly to provide base members 26.

To support the floor-forming members 23 in a position where the top surface of the web portion 24 will lie in a horizontal plane with respect to the top surfaces of the spacers 16, we provide a plurality of supporting stringers. Certain of these stringers 27, more clearly shown in FIG. 3, are substantially I-shaped in cross section and thereby provide a substantially flat support 28 for the floor-forming members 23 which are welded thereon. The medial leg of the I-shaped stringer 27 may be provided throughout its longitudinal length with a plurality of apertures 29 which permit the free circulation of air therethrough.

Referring to FIG. 2, we show end stringers 30. These end stringers 30 are substantially I-shaped in cross section but provide along one longitudinal edge of the substantially flat top support 28' a vertically extending flange 31. As shown in FIG. 1, the stringers 27 are so positioned that they provide medial support for the floor-

forming members 23 while the stringers 30 provide end supports for such floor-forming members 23. The stringers 30 are adapted to be spaced adjacent to and extend parallel with the spacers 16, and the vertically extending flange 31 thereof is of a height whereby its top longitudinal edge 32 will lie in the same horizontal plane with respect to the spacers 16. When the floor-forming members 23 are placed on the stringers 27 and 30, their web portions 24 will lie in the same horizontal plane so as to present an uninterrupted surface.

Referring to FIG. 6, we show a floor rack comprising the same structural parts as heretofore described, with the exception that the web portion 33 of the modified floor-forming members 34 is serrated as at 35. It should be noted that these serrations are not parallel to the longitudinal length of the floor-forming members 34.

In the modified form as shown in FIG. 6, the floor racks are adapted to be hingedly connected as at 36 to the center spacer 37 to accommodate double-leaf hinges 38 as seen in FIGS. 11 and 12. The stringer 39 of the modified floor rack which is adjacent to and extending parallel with the center spacer 37, has its vertically extending flange 40 notched as at 41. As seen in FIG. 10, the substantially flat top support 42 of the stringer 39 is also notched inwardly as at 43.

Referring to FIG. 11, the double-leaf hinge 38 comprises a hinge plate 44 which is connected by a hinge pin 45 to a pair of spaced apart hinge mounting plates 46 carried by the side wall of the spacer 37. This hinge plate 44 is in turn connected by a hinge pin 48 to a second to a pair of spaced apart hinge mounting plates 46 carried by the side wall of the spacer 37. This hinge plate 44 is in turn connected by a hinge pin 48 to a second hinge plate 49 connected to the medial vertical support of leg 50 of the stringer 39. This second hinge plate 49 is connected to the stringer 39 by means of nuts and bolts 51, as seen in FIGS. 11 and 12.

By this arrangement the floor rack may be raised from the position shown in FIG. 6 and pivoted about its hinge connection to a position where it will lie in facial abutment atop the spacer 37 and the corresponding floor rack positioned on the opposite side of such spacer. Such hinge position is shown in dotted lines in FIG. 12.

The construction of the floor rack, as hereinbefore described, presents an anti-frost, anti-skid, freight-supporting floor which is readily positioned within a refrigerated freight storage compartment. The particularly constructed end stringers correctly position the floor-forming members on weight-supporting stringers and prevent any lateral shifting thereof due to excess weight of the freight stored thereon. The aluminum envelope in the form of the insulating sheet which is positioned beneath the floor rack and the spacers and which wraps behind the side wall lining of the compartment, maintains the refrigerated condition of the compartment while at the same time permitting the compartment to be easily cleaned and maintained without affecting the basic structure of such compartment. The hinged connection between the floor rack and the spacers also aids in the cleaning and maintenance of the storage compartment as required.

We have formed our floor-forming members of aluminum so as to result in a durable but light-weight structure.

While we have illustrated and described the preferred form of construction for carrying our invention into

effect, this is capable of variation and modification without departing from the spirit of the invention. We, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail ourselves of such variations and modifications as come within the scope of the appended claims.

Having thus described our invention, what we claim as new and desire to protect by Letters Patent is:

1. In floor racks for refrigerated storage compartments, the combination of

(a) a plurality of elongated spacer rails carried by the floor of the compartment so positioned that there is a rail adjacent each of the side walls of the compartment and a center rail substantially dividing the floor into equal sections,

(b) floor racks for each section comprising a plurality of elongated stringers spaced between and extending parallel to said rails with certain of said stringers adjacent said rails formed to provide a horizontally extending support terminating at one edge into a longitudinal vertically extending flange with the top of said flange extending coplanar to the top of said rails, and with other of said stringers intermediate said rails being substantially I-shaped in cross section to provide a medial horizontal support for floor-forming members, and a plurality of floor-forming members extending transversely of and throughout the length of said stringers in a spaced relation with respect to each other, said members mounted upon said support provided by said other of said stringers, and with their opposite ends mounted upon and in abutting and in horizontal alignment with the vertical flanges of said certain of said stringers,

(c) means beneath said racks and said rails for insulating said racks from the floor and walls of the storage compartment,

(d) and hinge means connected to one of said certain of said stringers in the plane of the floor forming members, connecting one of said floor racks to said center rail whereby said floor rack may be pivoted into a position where it will lie in facial abutment upon said center rail.

2. A floor rack as defined in claim 1 wherein the insulating means comprises an aluminum envelope type sheet which extends beneath said rails and said floor-forming members, and wherein the floor-forming members are substantially U-shaped in cross section and so formed as to provide a freight-supporting web portion of a width greater than the side flanges forming the U-shaped members, with said web portion providing an anti-frost, anti-skid supporting surface lying in the same horizontal plane as the top surface of said spacer rails so as to provide an uninterrupted floor.

References Cited by the Examiner

UNITED STATES PATENTS

2,279,545	4/1942	Zane	52—664 X
2,291,472	7/1942	Johnston	52—71
2,669,193	2/1954	Osborn	52—669

FOREIGN PATENTS

457,903	7/1949	Canada.
1,195,497	5/1959	France.

HARRISON R. MOSELEY, *Primary Examiner.*

KENNETH DOWNEY, *Examiner.*