

Dec. 24, 1940.

E. W. ZANE

2,226,042

FLOOR RACK

Filed Jan. 17, 1938

4 Sheets-Sheet 1

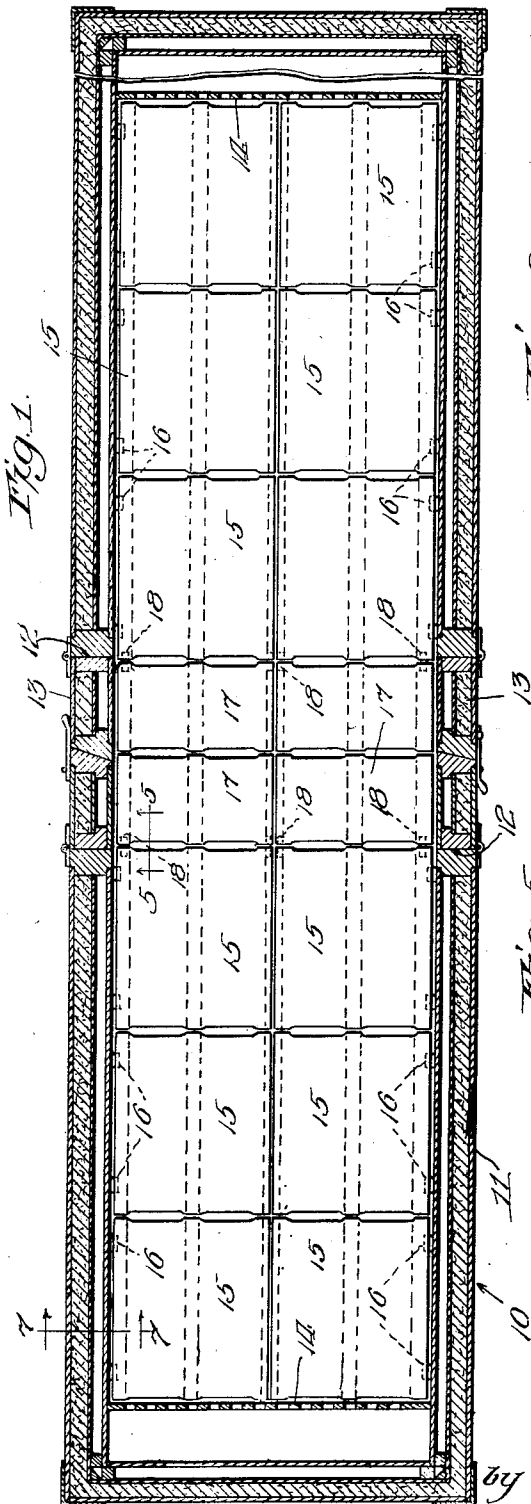


Fig. 0.

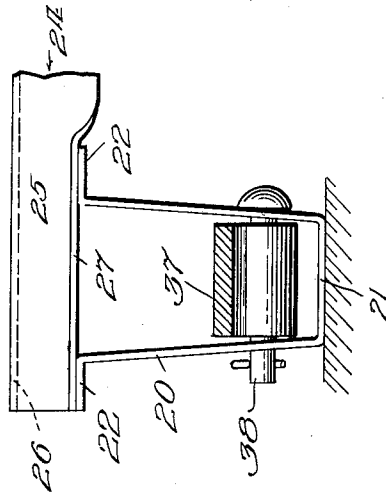
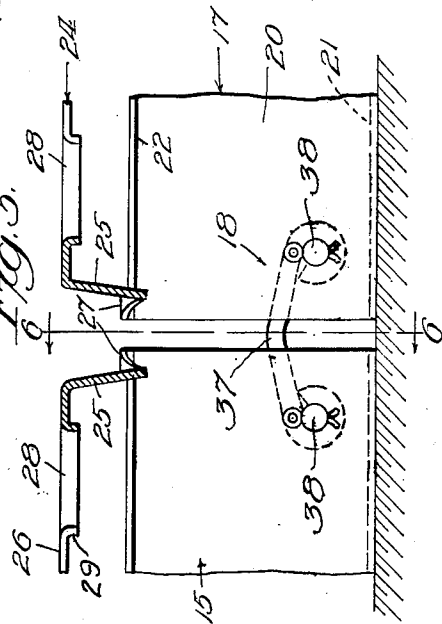


Fig. 5.



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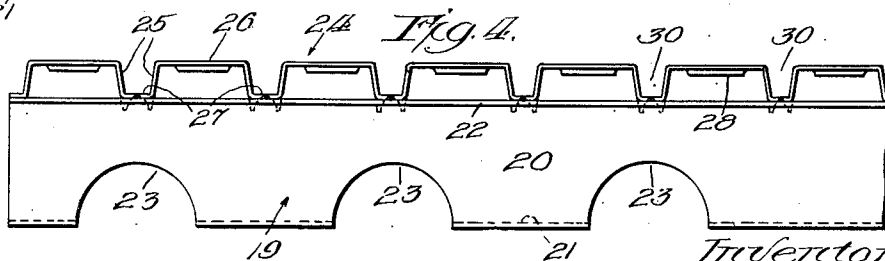
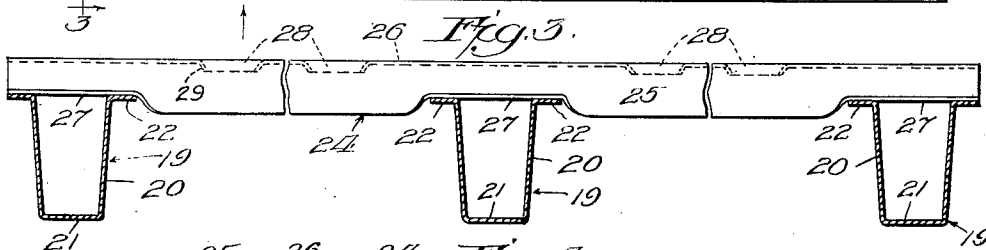
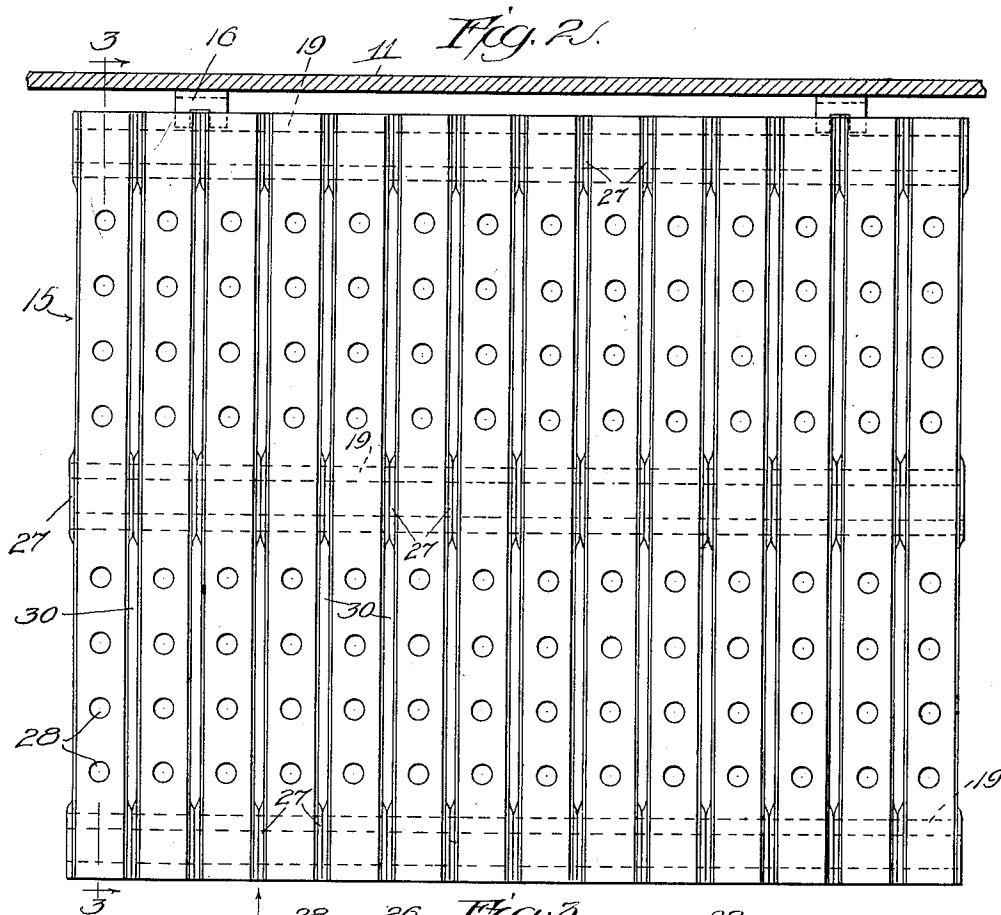
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4 Sheets-Sheet 2



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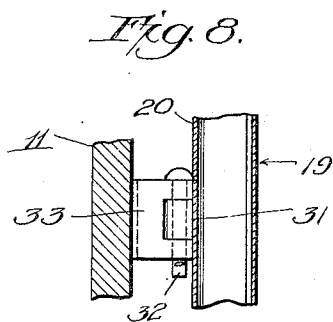
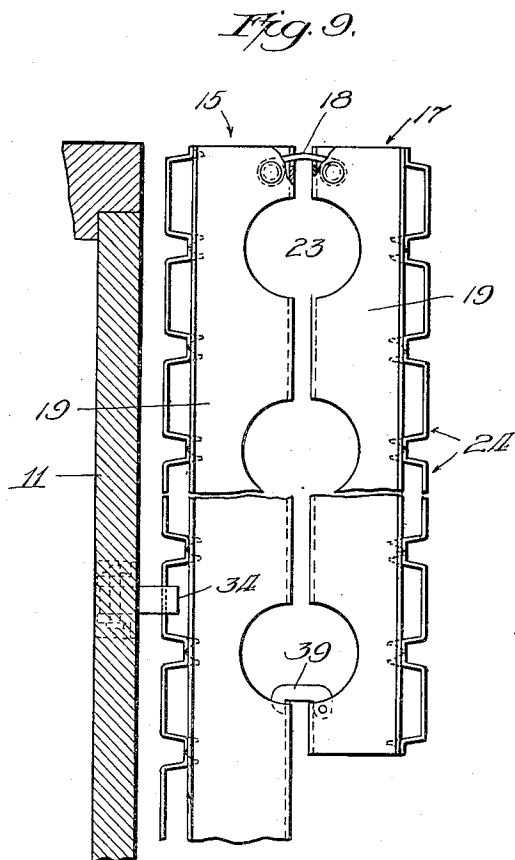
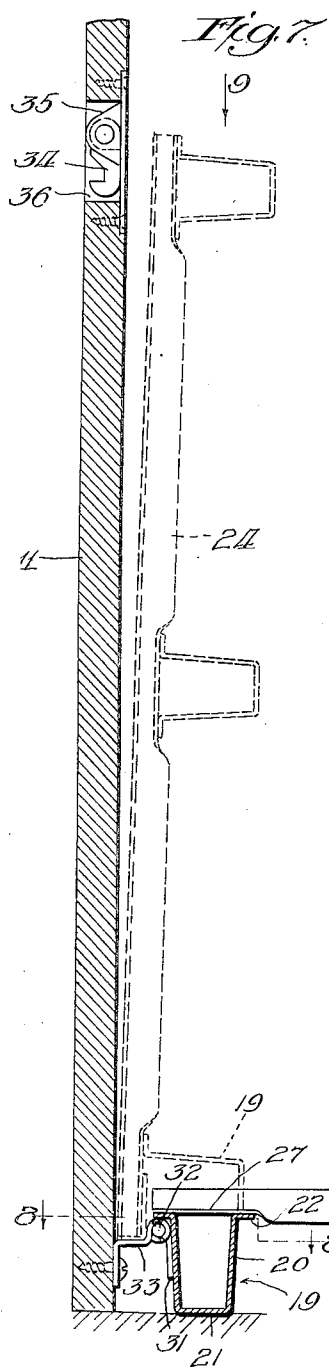
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4 Sheets-Sheet 3



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Fig. 11.

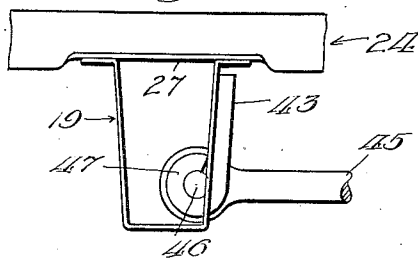


Fig. 12.

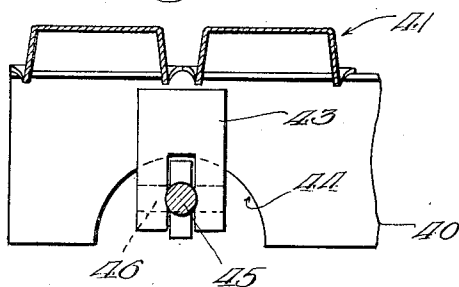


Fig. 10.

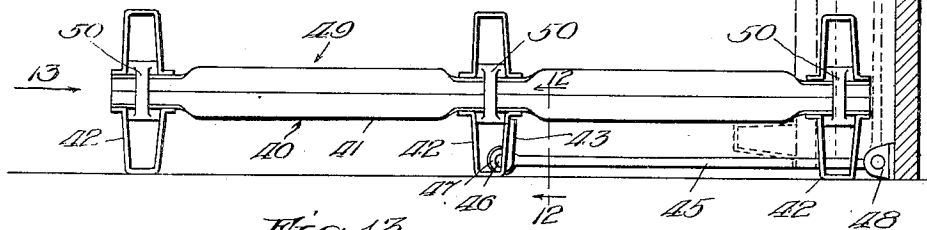


Fig. 13.

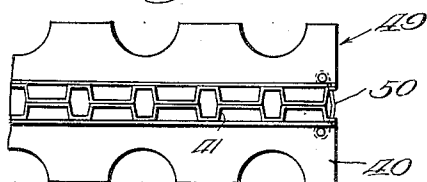


Fig. 14.

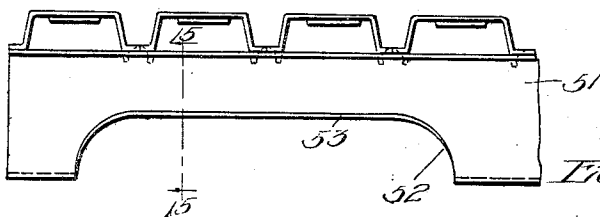
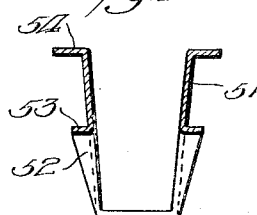


Fig. 15.



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UNITED STATES PATENT OFFICE

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FLOOR RACK

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Application January 17, 1938, Serial No. 185,335

10 Claims. (Cl. 105—375)

My invention relates to floor racks for railway cars and more particularly to that type which is employed in refrigerator cars to sustain the lading for cooling or warming by the circulating medium of the car.

In shipping perishable freight by refrigerator car, excepting those classes which are customarily suspended from the car ceiling, the goods are ordinarily spaced from the floor by wooden floor racks. By this means, it is possible to secure a free circulation of the cooling or warming air beneath, as well as along the sides and top of, the goods while in transit. However, such racks are prone to odor absorption from the lading so that it is both difficult and expensive to maintain them in a sanitary condition. Further objections are their susceptibility to damage and the ease with which they may be surreptitiously removed by unauthorized persons.

It is, therefore, one object of my invention to provide an all-metallic floor rack which constitutes a permanent fixture in the car, which can be readily cleaned, and which is preferably made in individual sections that are hinged to and foldable against the side of the car to facilitate cleaning of the latter.

A further object is to provide a rack composed of sheet metal stringers and slats having specially designed sections to obtain maximum strength with lightness of weight and which are appropriately perforated and spaced to obtain free circulation of the car atmosphere.

A further object is to devise a rack which is hinged to lie against the side of the car in a position which exposes a surface substantially free from obstructions.

A further object is to devise a floor rack in which the sections at the car entrance are capable of being folded together with the adjacent sections against the side wall or of being swung to overlie the adjacent sections while the latter are in their normal position on the floor, thus permitting the ready movement of hand trucks and other conveyances into and out of the car.

These and further objects of my invention will be set forth in the following specification, reference being had to the accompanying drawings, and the novel means by which said objects are effectuated will be definitely pointed out in the claims.

In the drawings:

Figure 1 is a sectional plan view of the body of a typical refrigerator car showing my improved racks in position on the floor thereof, the

outlines only of the several racks being illustrated for the sake of clarity;

Fig. 2 is an enlarged plan view of one of the standard rack units, that is, a unit which is ordinarily positioned between the bulkhead of the car and the entrance thereto;

Fig. 3 is an enlarged section along the line 3—3 in Fig. 2, looking in the direction of the arrows;

Fig. 4 is a fragmentary end view of the unit shown in Fig. 2, looking in the direction of the arrow 4 in said figure;

Fig. 5 is an enlarged section taken along the line 5—5 in Fig. 1, looking in the direction of the arrows, and showing the hinged connection between one of the standard rack units and one of the door units that lies opposite the car entrance;

Fig. 6 is a section along the line 6—6 in Fig. 5, looking in the direction of the arrows;

Fig. 7 is a fragmentary section taken along the line 7—7 in Fig. 1, looking in the direction of the arrows, showing a portion of one of the standard units in normal position on the car floor and, in dotted lines, the same rack swung to a latched position close to the inside lining of the car;

Fig. 8 is a plan view of the hinge connection of the standard rack to the car lining, as taken along the line 8—8 in Fig. 7, looking in the direction of the arrows;

Fig. 9 is a plan view, partly in section, of one of the standard racks which lies adjacent the car entrance, as viewed in the direction of the arrow 9 in Fig. 7, and also the folded and latched position relative thereto of the hingedly connected door rack unit;

Fig. 10 is an end elevation showing a modified arrangement of hingedly connecting a standard rack unit to the car lining and also a variation in the method of hingedly connecting a door rack unit to an adjacent standard unit;

Fig. 11 is an enlarged, fragmentary elevation showing the connection of one end of the hinged link in Fig. 10 to an intermediate stringer of the rack;

Fig. 12 is an enlarged section along the line 12—12 in Fig. 10, looking in the direction of the arrows;

Fig. 13 is a reduced, fragmentary elevation looking in the direction of the arrow 13 in Fig. 10 and showing a door rack unit folded to rest on the adjacent standard unit while the latter is in position on the car floor;

Fig. 14 is a fragmentary elevation, correspond-

ing to that shown in Fig. 4 and showing a modified ventilating opening in the side wall of the floor stringer; and

Fig. 15 is a section along the line 15—15 in Fig. 14, looking in the direction of the arrows.

Referring to the drawings, the numeral 10 designates a typical body for a refrigerator car having an inside lining 11, a door opening 12 which is closed by doors 13 which may be of the usual pivoted or sliding type, and the customary bulkhead 14 which separates the icing compartment from the lading space.

A plurality of standard rack units 15 are hingedly connected to the inside lining 11 between the bulkheads at each end of the car and the door opening 12, these units when in normal position on the floor lying in adjacent and symmetrical relation on opposite sides of the longitudinal center line of the car. It will be understood, however, that sufficient clearance is provided between the several units so that they may be freely moved independently of each other. Opposite the door opening and on both sides of the indicated car center line is a pair of door units 17, each of which is connected to the adjacent standard unit by hinges 18.

Referring more particularly to Figs. 2 to 4, inclusive, each standard rack is composed of a plurality of metallic stringers 19 which are spaced transversely of the car and extend longitudinally thereof. Each stringer 19 is formed as an open top channel having outwardly tapering side walls 20 which are connected by a web 21 that rests directly on the car floor when the rack is in load sustaining position. The upper edges of the side walls 20, as viewed in Fig. 3, are bent laterally to form flanges 22 for a purpose presently explained and each side wall contains spaced apertures 23 for air circulation. The stringers 19 are connected transversely thereof by a plurality of metallic slats 24, each of which is formed as an inverted channel having outwardly tapering side walls 25 which are connected by a web 26 upon which the lading directly rests. In the regions where each slat contacts a stringer 19, the lower edges of the side walls 25 are bent laterally to form flanges 27 which rest directly on the flanges 22 and may be secured thereto in any appropriate manner, as by electro-welding, to form a rigid structure. A series of perforations 28 are spaced along the web 26 of each slat and act in conjunction with the perforations 23 in the several stringers and the spacings 30 formed between the adjacent side walls of the slats to obtain a free circulation of the air under and upwardly through the racks. Each perforation is preferably rimmed by a flange 29 to further strengthen the same and the slat.

Preferably, the stringers and slats are made of sheet metal of appropriate gauge which is galvanized to prevent corrosion of the racks. Rigidity of the rack as a whole is insured by the method of securing the stringers and slats together, and by abutting the edges of the flanges 27 of adjacent slats, as clearly illustrated in Fig. 2. Moreover, the provision of tapering the side walls of the slats and stringers provides for the required strength of these elements of the racks, while at the same time permitting the use of a relatively light gauge metal.

As already indicated, each of the standard racks 15 is connected to the inside lining of the car by a pair of hinges 16, each of which comprises a hinged part 31 that may be welded to the side wall of the adjacent stringer 19 and which

is pivotally connected by a pin 32 to the other hinged part 33 that is fastened in any approved manner to the indicated lining adjacent the floor of the car. Preferably, the hinged part 33 is shaped to offset the pin 32 a distance from the lining 11 sufficient to enable the rack to be swung to the vertical dotted position illustrated in Fig. 7. In this position, the hooked end of a latch 34 may engage the open end of one of the slats to retain the rack in the raised position and thus facilitate cleaning of the car interior. Preferably, the latch 34 is pivoted on a bracket 35 that is located wholly within a recess 36 provided in the lining 11, so that, when the rack is resting on the floor, the latch is housed wholly within the recess, thus obviating any possibility of the latch chafing, marring, or scarring the lading while in transit. This particular latch construction can be easily inserted in the car lining without removing any considerable portion thereof.

Each of the door rack units is constructed the same as one of the standard racks except that the former is smaller, that is, the stringers are shorter in length and there are a smaller number of slats. As already indicated, each door section is connected to the adjacent standard unit by means of hinges 18 which are more particularly illustrated in Fig. 5. Each of these hinges merely comprises a short length of flat stock 37 whose ends are bent to encircle hinge pins 38 mounted respectively in the standard and door units. By this arrangement, it is possible, after the indicated standard unit has been swung to the dotted position illustrated in Fig. 7, or to the full line position shown in Fig. 9, to then swing the door unit to the position illustrated in Fig. 9, both racks then being off the floor with the standard rack held in the raised position by the latch 34 and the door rack held to the standard rack by means of a simple latch member 39 which may be pivotally mounted on one of the stringers of the door rack. The walls of the standard and door rack units adjacent the hinges 18 may be cut out to enable the units to occupy the positions illustrated in Fig. 9.

In Fig. 10 is illustrated a modified arrangement for hingedly connecting a standard unit to the car lining and also of hingedly connecting a door unit to the adjacent standard unit.

The numeral 40 designates a standard unit which may be generally fabricated as hereinbefore described and which comprises slats 41 that are spaced from the car floor by spaced, longitudinally extending stringers 42. Instead of hinging this unit to the car lining in the manner illustrated in Fig. 7, this modification contemplates an intermediate portion of the rack hinged to the car lining by an elongated link, so that when the rack is swung to lie adjacent the wall of the car, the relatively smooth surfaces of the slats 41 will be exposed, as contrasted with an exposing of the stringers.

Accordingly, the plate portion of a hinged part 43 is securely fastened, as by welding or in any other approved manner, to that side wall of the intermediate stringer 42 which faces the wall of the car to which the unit in question is to be hinged. Preferably, the hinged part 43 is secured to the stringer just above a ventilating opening 44, corresponding to the opening 23 in Fig. 4, and the lower end of this part is bifurcated to receive one end of a hinged link 45 that is supported by a hinged pin 46 mounted in the curved portion 47 of the hinge. The link 45 extends transversely of the car beneath the rack and is

hinged to a bracket 48 secured to the car lining. By this arrangement, it is possible to lift the inner edge of the rack 40 and move the same to the dotted position illustrated in Fig. 10, i. e., one in which the stringers are disposed adjacent the car lining and the smoother surfaces of the slats 41 face outwardly. As many of the hinged links 45 may be employed as desired and they may be located in the positions generally indicated by the hinges 16 in Fig. 2, or in other positions as required.

The standard rack may be held in the raised position by a latch 55 which is preferably set in the car lining and which engages the uppermost stringer 42, while the door unit may be secured against inadvertent swinging by a simple pivoted latch 56 which is mounted on either the standard or the door unit. For convenience, the latch 56 is illustrated only in the dotted position of the racks.

For convenience, Fig. 10 also illustrates a modified hinge connection of a door unit 49 to the adjacent standard unit 40. This connection is provided by means of hinged straps 50 which may be generally similar in construction to the hinges 18 illustrated in Fig. 5, but preferably secured to the associated unit and appropriately bent, so that the door rack unit may be folded to overlie the adjacent standard unit while the latter is still resting on the car floor. By this arrangement, it is possible to permit the free wheeling of hand trucks and other conveyances into and out of the car from a loading platform.

In Figs. 14 and 15 is illustrated a further modification of the rack and this change consists in the use of enlarged ventilating openings 52, corresponding to the opening 23, which are appropriately spaced along the side walls of the stringer 51. In order to insure a proper strength for the stringer along these openings, it is contemplated that a flange 53 will extend along the upper edge of the opening 52, the flange having its maximum thickness along the upper edge of the opening and tapering down to nothing in the curved end portions thereof, as clearly indicated in Fig. 14. Preferably, the flange 53 does not extend beyond the outer edge of the laterally extending flange 54, corresponding to the flange 22 in Fig. 3. The enlarged opening 52, in addition to procuring proper air circulation, also facilitates flushing of the car floor while the racks are resting thereon.

Due to its rigid construction and strength, my improved rack is capable of withstanding buffing and switching shocks while loaded, so that complete air circulation in the car is assured during transit. Moreover, the use of metal exclusively precludes any problems of odor absorption, thus materially enhancing the sanitary characteristics of the rack.

I claim:

1. The combination of a floor rack for railway cars, and hinge means fastened to the car adjacent the junction of the floor and a side wall and to the rack at a point thereof such that the rack may be swung to a position adjacent the wall with the load supporting side disposed outwardly, the distance between the point and the edge of the rack remote from said junction when the rack is on the floor being not greater than the height of the point above the floor when the rack is swung against the wall.

2. A floor rack for refrigerator cars comprising slats for supporting the lading, stringers for spacing the slats from the floor, and hinges secured to the car adjacent the junction of the

floor and a side wall and to an intermediate stringer at a point thereof such that the rack may be swung to a position adjacent the wall with the slats disposed outwardly, the distance between the point and the outer edge of the rack remote from said junction when the rack is on the floor being not greater than the height of the point above the floor when the rack is swung against the wall.

3. A slatted floor for elevating the lading above the floor of a refrigerator car comprising a plurality of spaced, parallel, metallic channel stringers adapted to rest on and extend longitudinally of the car floor, each stringer having flanges extending laterally from the upwardly projecting side walls thereof, and a plurality of spaced, metallic, inverted channel slats on which the lading rests disposed transversely of the stringers, the side walls of each slat extending downwardly and outwardly from the web thereof for resisting side thrusts of the lading occasioned by buffing and surging shocks during transit and those due to the movement of loading trucks and extending below the stringer flanges between the stringers to increase and vertically strengthen the slat section, the portions of each slat above the stringers having a reduced vertical section created by flanging the slat side walls for attachment to the stringer flanges.

4. A slatted floor for elevating the lading above the floor of a refrigerator car comprising a plurality of spaced, parallel, metallic channel stringers adapted to rest on and extend longitudinally of the car floor, each stringer having flanges extending laterally from the upwardly projecting side walls thereof, and a plurality of metallic, inverted channel slats on which the lading rests disposed transversely of the stringers, the side walls of each slat extending downwardly and outwardly from the web thereof for resisting side thrusts of the lading occasioned by buffing and surging shocks during transit and those due to the movement of loading trucks and extending below the stringer flanges between the stringers to increase and vertically strengthen the slat section, the portions of each slat above the stringers having a reduced vertical section created by flanging the slat side walls for attachment to the stringer flanges, and the stringers and slats being perforated and the slat side walls between the stringers being spaced to facilitate air circulation.

5. A floor rack for a refrigerator car for supporting a lading in spaced relation to the main floor of the car to provide a flue therebetween comprising a plurality of stringers and a plurality of metallic slats extending between and supported by the stringers, the slats being spaced apart between the stringers to provide for air circulation from the flue to the lading compartment, each of the slats comprising a body part and marginal depending flanges which are deepest between the stringers, the depending flanges being formed with outwardly projecting refflages which rest upon and are secured to the stringers in abutting relation only substantially above the stringers with the refflages of the adjacent slats.

6. A floor rack for a refrigerator car for supporting a lading in spaced relation to the main floor of the car to provide a flue therebetween, comprising a plurality of stringers and a plurality of metallic slats extending between and supported by the stringers, the slats being spaced apart between the stringers to provide for air circulation from the flue to the lading compartment,

- each of the slats comprising a body part and marginal depending flanges, each of the stringers comprising spaced apart side walls with upper lateral flanges, the depending flanges being
5 formed with outwardly projecting refflages which rest upon and are secured to both lateral flanges of each stringer in abutting relation only substantially above the stringers with the refflages of the adjacent slats.
- 10 7. A floor rack for a refrigerator car for supporting a lading in spaced relation to the main floor of the car to provide a flue therebetween, comprising a plurality of stringers and a plurality of metallic slats extending between and supported
15 by the stringers, the slats being spaced apart between the stringers to provide for air circulation from the flue to the lading compartment, each of the slats comprising a body part and marginal depending flanges, the depending
20 flanges, being formed with outwardly projecting refflages which rest upon and are secured to the stringers in abutting relation only substantially above the stringers with the refflages of the adjacent slats.
- 25 8. A structure as defined in claim 7 wherein the refflages are formed only substantially above the stringers and the depending flanges are spaced apart between the stringers for air circulation.
9. A rack as defined in claim 7 having welded material for securing the slats together and to the stringers.
10. A slatted floor for elevating the lading above the floor of a refrigerator car comprising a
5 plurality of spaced, parallel, metallic channel stringers adapted to rest on and extend longitudinally of the car floor, each stringer having flanges extending laterally from the upwardly projecting side walls thereof, and a plurality of
10 spaced metallic inverted channel slats on which the lading rests disposed transversely of the stringers, the side walls of each slat extending downwardly and outwardly from the web thereof and below the stringer flanges between the
15 stringers to increase and vertically strengthen the slat section, the portions of each slat above the stringers having a reduced vertical section created by flanging the slat side walls for attachment to the stringer flanges, the flanges of
20 each slat being disposed in abutting relation to the flanges of adjacent slats to thereby, in conjunction with the slat side walls, resist side thrusts of the lading occasioned by buffing and surging shocks during transit and those due to
25 the movement of loading trucks.

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