

April 13, 1943.

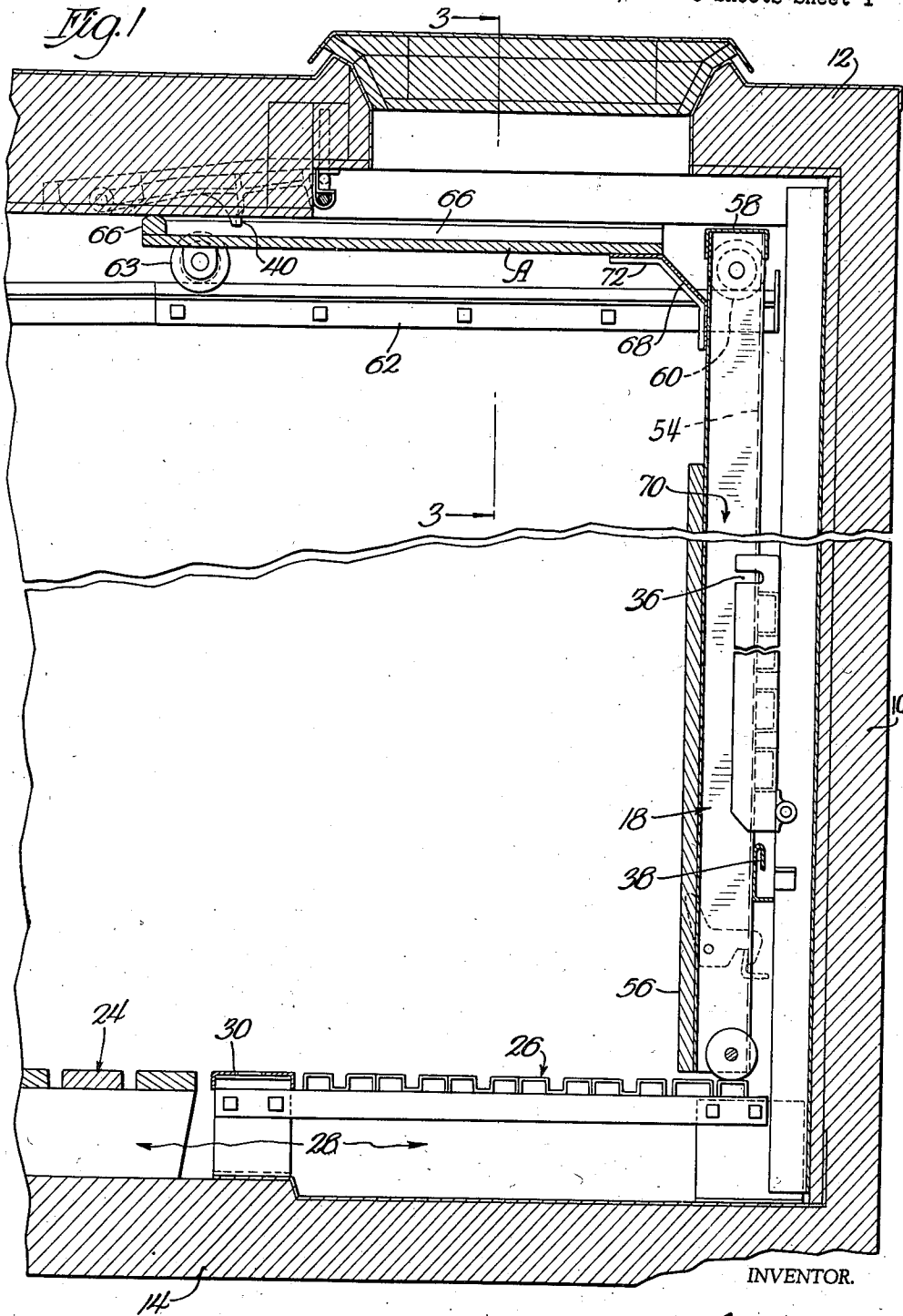
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2,316,265

CONVERTIBLE BULKHEAD FOR REFRIGERATOR CARS

Filed Feb. 4, 1942

3 Sheets-Sheet 1



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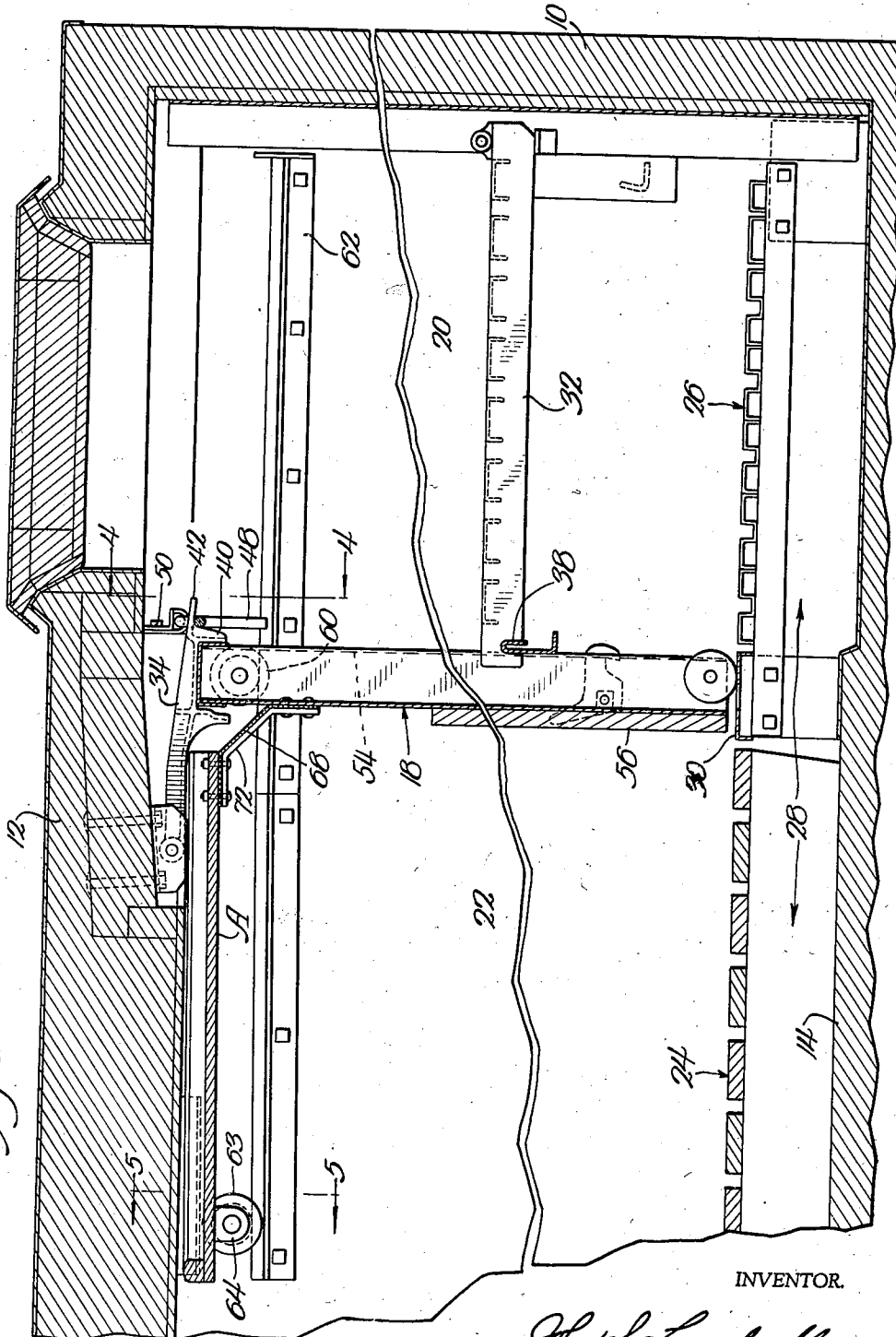
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3 Sheets-Sheet 2

Fig. 2



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2,316,265

CONVERTIBLE BULKHEAD FOR
REFRIGERATOR CARS

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Application February 4, 1942, Serial No. 429,462

6 Claims. (Cl. 62—19)

The invention relates to bulkheads for refrigerator cars and particularly to bulkheads which form a wall of an ice bunker in the end of a car, said bulkheads being movable from extended, ice bunker forming position to a stored position adjacent the end wall of the car, such as shown and described in my Patent No. 2,238,700 dated April 15, 1941.

The conventional refrigerator car has an ice bunker in each end thereof and is provided with hatches above the bunker through which ice is placed in the bunker. When convertible bulkheads are used they are stored against the end wall of the car, for lading not requiring ice bunker refrigeration, and a portion of the lading is placed underneath the hatches in the roof of the car. A large percentage of lading hauled in refrigerator cars requires ventilation instead of refrigeration and is obtained by fastening the hatch covers in full or partly open positions. Where part of the lading is directly underneath partly or fully opened hatches it becomes necessary to protect same from ice, snow, rain and cinders as these elements damage the lading. It is also necessary that the lading be protected from thieves. The lading must therefore be protected from the elements and against pilferage and, at the same time, must be ventilated by air entering the hatches at one end of the car and leaving by the hatches at the opposite end of the car.

The present invention is an improvement over the structure shown and claimed in my Patent No. 2,238,700 and has for its principal object the provision of improved means for preventing pilferage of the car lading and the deflecting of air and air-borne elements, entering the car through the hatches, in a predetermined direction.

An object is to provide a deflector which will be automatically moved to operative position underneath and across the hatches when the bulkhead is moved to stored position and car lading is placed underneath the hatches.

Another object is to provide a combined deflector and pilfer-proof closure for the hatches of refrigerator cars having convertible bulkheads.

A further object is to provide a combined deflector and pilfer-proof closure which will direct the incoming air downwardly along the end wall of the car and into the air space intermediate the car lading and the car floor.

The prior art shows numerous types of pilfer-proof hatch closures designed to permit the entrance of air through the hatches for ventilation

purposes but these closures did not prevent air-borne dust, cinders, snow and rain from falling upon and harming the lading underneath the hatches. It is pointed out that the present invention has for one of its principal objects the providing of means for keeping air-borne elements off the lading below the hatches and at the same time providing for necessary ventilation for certain commodities.

In the drawings, Fig. 1 is a fragmentary vertical sectional view taken through the end portion of a car, along line 1—1 of Fig. 3, showing the bulkhead in stored position and the deflector in position to deflect air-borne matter toward the end wall of the car.

Fig. 2 is a fragmentary vertical section of the same end portion of the car, showing the bulkhead in extended position and the deflector in stored position adjacent the car ceiling.

Fig. 3 is a fragmentary vertical sectional view taken along line 3—3 of Fig. 1, the bulkhead being shown in stored position and the deflector, being in operative position beneath the hatch opening.

Fig. 4 is a fragmentary vertical sectional view taken along line 4—4 of Fig. 2.

Fig. 5 is a fragmentary vertical sectional view taken along line 5—5 of Fig. 2, showing one of the supporting rollers for the deflector and the track for supporting said rollers.

In the drawings, the reference numeral 10 indicates the end wall, 12 indicates the roof, 14 indicates the floor and 16 the side walls of a refrigerator car, all of which may be of conventional insulated construction. A bulkhead 18 may extend transversely of the car, in parallel spaced relation with the end wall 10, to form one of the vertical walls defining an ice bunker 20 in the end of the car, said bulkhead separating the ice bunker 20 from an adjacent lading compartment 22, as best shown in Fig. 2. The lading compartment 22 may be provided with the conventional floor racks 24 and the ice bunker may be provided with floor racks 26, both of the floor racks being of slatted or other foraminous construction and being adapted to support car lading in overlying spaced relationship with the car floor 14 and permit an interchange of air between the lading compartment, ice bunker and the air duct 28 intermediate the lading and the car floor 14. A sill 30 may extend transversely of the car, coincident with the lower margin of the extended bulkhead 18 and intermediate the floor racks 24 and 26, adapted to provide a support for the extended bulkhead. Sill 30 may be rigidly af-

fixed to the car floor 14 and in overlying spaced relationship therewith by means of spaced apart pedestals in the manner shown in my Patent No. 2,238,700, whereby to permit free circulation of air between the air duct 28 in the lading compartment and the air duct 28 in the ice bunker portion of the car. The bulkhead 18 may be secured in extended, ice bunker forming position by means of an ice grate 32 and arm members 34, said grate and arm members being shown in bulkhead anchoring position in Fig. 2 and shown in stored, inoperative position in Fig. 1. The grate 32 may comprise a slatted panel hingedly secured to the end wall of the car and swingable from a horizontal, ice-supporting, bulkhead-anchoring position to a vertical stored position adjacent and parallel with the end wall of the car. The free margin of the grate 32 may be provided with a hooked portion 36 adapted to engage and interlock with a detent member 38 mounted upon the bulkhead. The arm members 34 may be pivotally secured to the car ceiling and may be provided with forked free end portions 40 adapted to fit over and secure the upper portion of the extended bulkhead in position. The free end portion 40 of the arm member 34 may be provided with an extending lip 42 adapted for lifting the arm member 34 out of holding engagement with the bulkhead. A rod 44 may extend transversely of the car adjacent the ceiling and may be provided with crank portions 46 adapted to normally underlie the lips 42 of the arm members 34 whereby, when the rod 44 is rotated by the lever 46, the crank portions 46 will simultaneously lift a plurality of the arm members 34 out of holding engagement with the bulkhead. The rod 44 may be secured to a portion of the car ceiling by means of brackets 50 which may be of any suitable type.

The bulkhead may comprise a plurality of spaced apart vertically extending posts 52, sheet metal panels 54 secured to the posts 52 in position to form a substantially plane wall of the bulkhead, a wooden lining 56 secured to the posts 52 to form a substantially plane wall in parallel spaced relationship with the sheet metal panels 54, and a channel member 58 adapted to fit over and connect the aligned upper end portions of the posts 52 and serve as an upper frame member for the bulkhead. The bulkhead may be provided adjacent its upper side margins with rollers 60. A track 62 may be secured to each of the opposed car side walls in position to support the bulkhead while it is being moved from extended to stored position.

The description this far has been of refrigerator car construction which is not claimed herein as part of the present invention. The essential features of this invention are found in the improvements hereinafter described. More particularly, these features are to be found in the deflector "A", its connection with the bulkhead and the mounting therefor providing for sliding movement into and out of operative position beneath the hatch, for the purposes set forth.

The deflector A may comprise an elongated rectangular panel of wood or other suitable material, opposed end portions of the deflector being in parallel adjacent relation with the opposed side walls of the car. The deflector A may lie in a substantially horizontal plane below and adjacent the ceiling of the car, with one of its longitudinal margins secured to the upper portion of the bulkhead 18 and the op-

posed longitudinal margin supported upon the tracks 62 by means of rollers 63 mounted upon the deflector by suitable brackets 64. The tracks 62 may extend in a horizontal plane from a point adjacent the end wall of the car to a point substantially coincident with the deflector roller 63 (with the bulkhead in stored position). The opposed end margins, and the longitudinal margin of the deflector farthest away from the end wall of the car may be provided with an upstanding flange 66 adapted to substantially engage the car ceiling when the deflector is in operative position underneath the hatch opening. The margin of the deflector adjacent the upper portion of the bulkhead may be secured thereto by means of an elongated metal plate 68 having a horizontally disposed margin secured to the deflector and an opposed margin extending in a vertical plane secured to the bulkhead, with an intermediate body portion of said plate 68 downwardly inclined from the deflector to the bulkhead. It will be seen that any cinders or other foreign material, entering the car through the hatches, will be deflected toward the bulkhead and the end of the car when the bulkhead is in stored position and the deflector is in operative position beneath and across the hatch opening.

The wooden lining 56 and the metal panels 54 form spaced apart vertically extending walls on the bulkhead 18 in order to provide a vertically extending air duct 70 in the bulkhead 18, the duct 70 being adapted to permit air and air-borne elements to enter the car through the hatches whence the deflector A may direct said air and air-borne elements downwardly through the duct 70. The floor racks 26 and the sill 30 are of foraminous construction throughout their lading supporting surfaces whereby to permit the descending air in the duct 70 to freely enter the air duct 28 intermediate the lading and the car floor 14, when the bulkhead is in either extended or stored positions. The portions of the opposed tracks 62 farthest away from the end wall of the car may be slightly downwardly inclined whereby, upon movement of the bulkhead and deflector away from the end wall of the car, the upstanding flange 66 of the deflector will move away from the car ceiling in order to minimize any frictional resistance between the flange 66 and the car ceiling upon initial movement of the bulkhead to extended position.

The ceiling of the car above the ice bunker may be upwardly recessed in order to permit the entrance of a greater volume of air into the car than would be the case if the ceiling were not so recessed.

Spaced apart metal bars 72 may be used coincident with the bulkhead posts 52 whereby to reinforce the connection between the metal plate 68 and the bulkhead and deflector.

The accompanying drawings illustrate a preferred embodiment 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 convertible ice bunker in an end thereof, a hatch opening in the ceiling of the car above said bunker, a transverse bulkhead forming one wall of said bunker and being movable to a stored position

adjacent the end wall of the car, a deflector wall disposed in adjacent underlying substantially parallel relationship with said ceiling movable into and out of position beneath and across the hatch opening, said deflector wall being affixed adjacent one of its margins to the upper portion of said bulkhead and being supported adjacent its opposed margin by track means mounted upon the car, said deflector wall being bodily movable longitudinally of the car when the bulkhead is moved from one position to another.

2. In a refrigerator car having a convertible ice bunker in an end thereof, a hatch opening in the ceiling of the car above said bunker, a transverse bulkhead forming one wall of said bunker and being movable to a stored position adjacent the end wall of the car when the bunker is not required, a deflector wall lying in a substantially horizontal plane in adjacent underlying relationship with said ceiling and hatch opening when the bulkhead is in stored position, said deflector wall being affixed adjacent one of its margins to the upper portion of said bulkhead and being supported adjacent its opposed margin by track means mounted within the car, said deflector wall being adapted to deflect air entering the car through the hatch opening and direct said air in a predetermined direction laterally of the car, said deflector wall being movable to an inoperative position clear of the hatch opening as the bulkhead is moved to extended bunker forming position.

3. In a refrigerator car having a convertible ice bunker in an end thereof, a hatch opening in the ceiling of the car above said bunker, a transverse bulkhead forming a wall of said bunker and being selectively movable to a stored position adjacent the end wall of the car when the bunker is not needed, a substantially horizontally disposed deflector wall in adjacent underlying relationship with said ceiling and hatch opening when said bulkhead is in stored position, said deflector wall being affixed adjacent one of its margins to the upper portion of the bulkhead and being movably supported adjacent its opposed margin by track means mounted within the car, said deflector wall being spaced from said ceiling by an upstanding peripheral wall, said peripheral wall being interrupted adjacent the bulkhead, said deflector wall being adapted to deflect air entering the car through the hatch opening and direct said air through the interrupted portion of said peripheral wall in a direction laterally of the car and toward said bulkhead.

4. In a refrigerator car having a convertible ice bunker in an end thereof, a hatch opening in the ceiling of the car above said bunker, a transverse bulkhead forming a wall of said bunker and being selectively movable to a stored position adjacent the end wall of the car, a substantially horizontal section of sub-ceiling in underlying ad-

jacent relationship with said ceiling extending transversely of and substantially to the opposed side walls of the car, said section being disposed across and underneath the hatch opening when the bulkhead is in stored position whereby to intercept air entering the car through the hatchway and deflect said air in a predetermined direction laterally of the car, said section being affixed adjacent one of its margins to the upper portion of said bulkhead whereby said section will be moved into and out of air deflecting position beneath the hatch opening as the bulkhead is moved toward and away from its stored position, respectively.

5. In a refrigerator car having a convertible ice bunker in an end thereof, a hatch opening in the ceiling of the car above said bunker, a transverse bulkhead forming a wall of said bunker and being selectively movable to a stored position adjacent the end wall of the car, a shelf-like portion of sub-ceiling secured to the upper portion of said bulkhead and extending laterally therefrom in underlying adjacent spaced relationship with said ceiling and said hatch opening when said bulkhead is in stored position, said sub-ceiling being adapted to deflect air entering the car through the hatch opening in a predetermined direction laterally of the car, track means mounted within the car adapted to movably support said bulkhead and the free margin of said sub-ceiling, said track means being adapted to hold said sub-ceiling parallel with the ceiling of the car when the bulkhead is in stored position and being downwardly inclined adjacent one end portion thereof whereby said sub-ceiling will progressively move away from the car ceiling as the bulkhead and sub-ceiling is moved to predetermined position away from the end wall of the car.

6. In a refrigerator car having a convertible ice bunker in an end thereof, a hatch opening in the ceiling of the car above said bunker, a hollow bulkhead extending transversely of the car and forming a wall of said bunker, said bulkhead being movable to a stored position adjacent the end wall of the car, an air deflecting wall lying in a substantially horizontal plane adjacent and underneath the ceiling and hatch opening when the bulkhead is in stored position adapted to intercept and deflect air entering the car through said hatch opening into the hollow bulkhead whereby said air is carried downwardly through said hollow bulkhead toward the floor of the car, said air deflecting wall being affixed adjacent a margin thereof to the upper portion of said bulkhead whereby said last named wall will be moved into and out of air deflecting position beneath the hatch opening as the bulkhead is moved toward and away from its stored position, respectively.

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