May 14, 1940. J O BRELSFORD ET AL 2,200,465

PORTABLE REFRIGERATOR

Filed Nov. 14, 1938 2 Sheets-Sheet 1

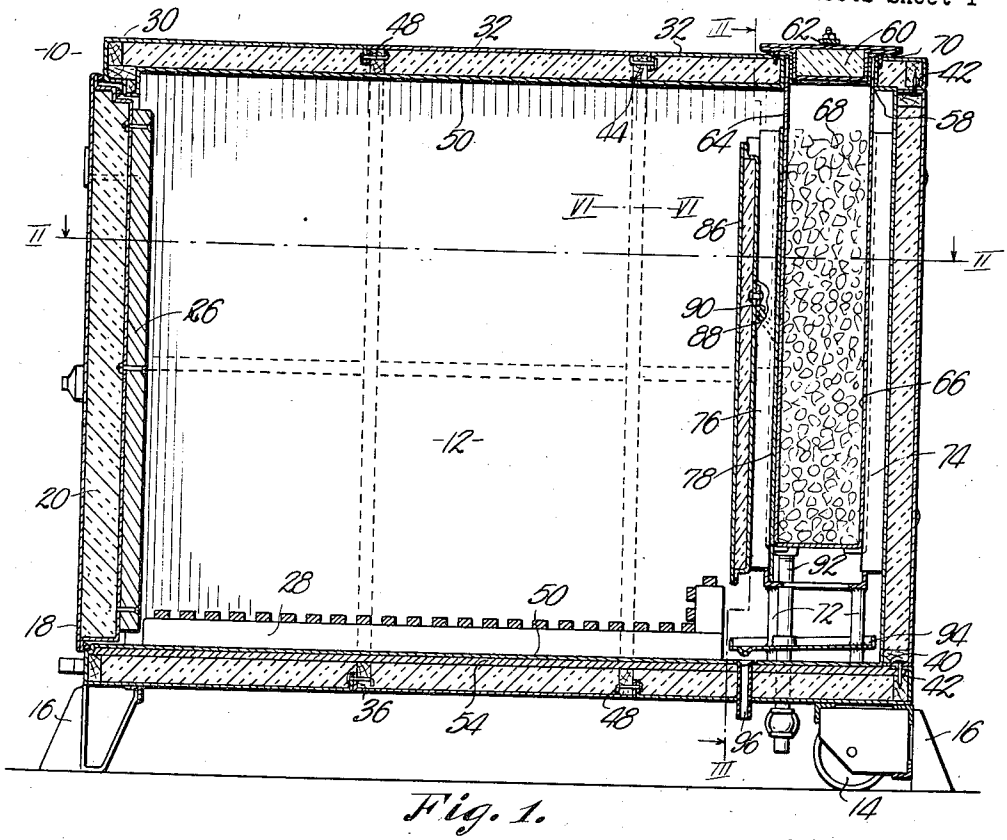


Fig. 1.

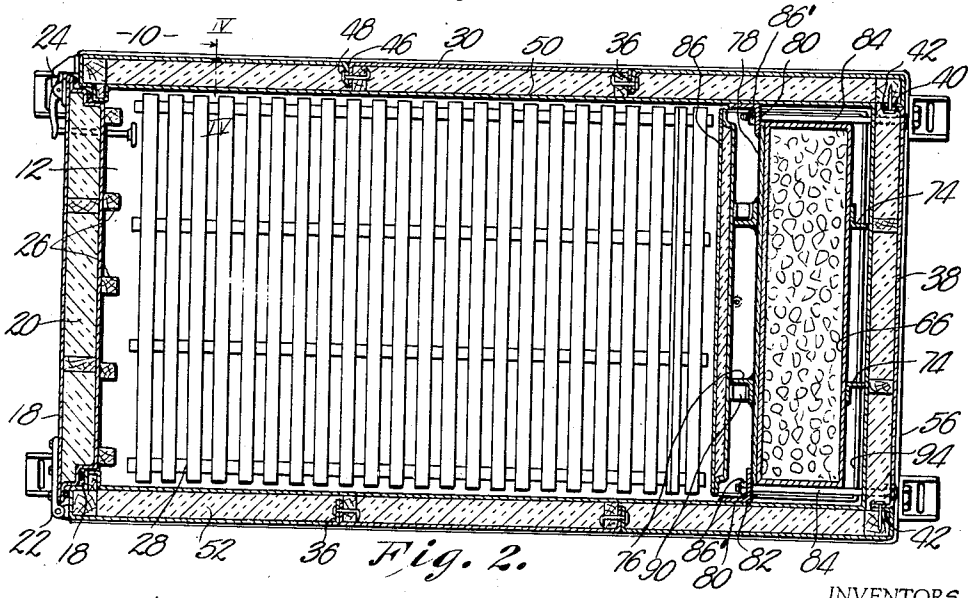


Fig. 2.

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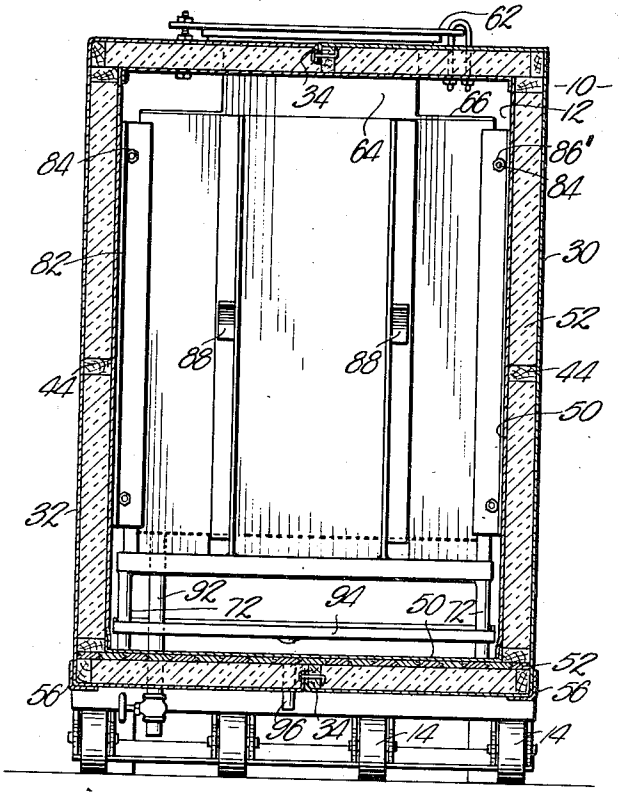


Fig. 3.

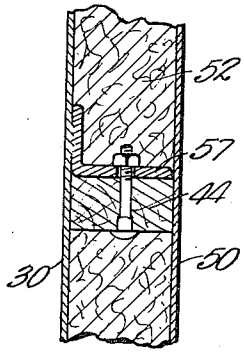


Fig. 4.

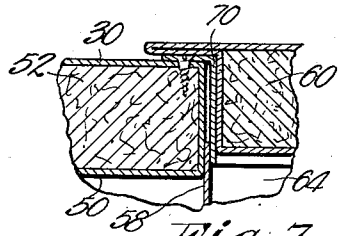


Fig. 7.

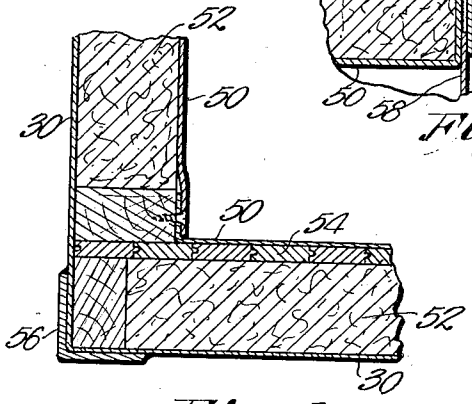


Fig. 5.

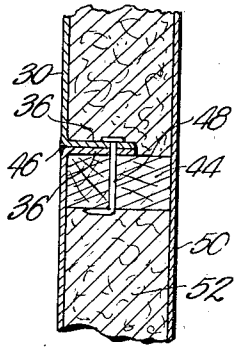


Fig. 6.

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UNITED STATES PATENT OFFICE

2,200,465

PORTABLE REFRIGERATOR

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Application November 14, 1938, Serial No. 240,234

8 Claims. (Cl. 62—19)

This invention relates to refrigerators and particularly to the cabinet or portable refrigerators in the nature of those employed by railroads and truck lines for transporting perishables in quantities smaller than carload lots.

Portable refrigerators embodying this invention are usually provided with means for conveniently moving the cabinets from dock to car or vice versa, and means for anchoring the cabinet in the car or truck for transportation. As the result of special handling, it is vitally necessary that the cabinet construction be of a rugged nature and that the ice or brine tank of the refrigerator be securely positioned yet removably mounted so that the box may be thoroughly cleansed at the end of each comparatively short hauling.

The primary object of this invention, therefore, is to provide a refrigerator with a specially constructed ice or brine tank, which tank has means for precluding accidental displacement in any direction as the same is supported in spaced relation to the walls of the refrigerator cabinet.

A further aim of this invention is the provision of a removable baffle of insulating material that is mounted upon the aforementioned tank in such fashion as to employ the action of gravity in maintaining the same in operative position and so that an air space is set off between baffle and tank.

A still further object of this invention is to provide a refrigerator cabinet which is strong, durable and will withstand the hard usage to which portable refrigerators are subjected, said cabinet including a unitary sheet metal sheathing welded or otherwise rigidly fastened together, prior to associating therewith, the reinforcing frame work and lining.

Minor objects including specific details of construction and manner of assembly, will appear during the course of the following specification, referring to the accompanying drawings wherein:

Figure 1 is a vertical central longitudinal sectional view through a portable refrigerator, embodying the present invention.

Fig. 2 is a horizontal sectional view through the same, taken on line II—II of Fig. 1.

Fig. 3 is a vertical sectional view through the refrigerator taken on line III—III of Fig. 1.

Fig. 4 is an enlarged fragmentary detailed sectional view taken on line IV—IV of Fig. 2.

Fig. 5 is a similar sectional view through one corner of the cabinet of the refrigerator.

Fig. 6 is an enlarged fragmentary sectional view through a portion of the cabinet wall, taken on line VI—VI of Fig. 1; and,

Fig. 7 is an enlarged fragmentary detailed sectional view through a portion of the refrigerator at the ice-receiving opening thereof.

Cabinet 10 of the refrigerator has a compartment 12 therein for the reception of perishables that are to be shipped. This cabinet has rollers 14 thereon and suitable anchoring mechanism 16, by means of which the cabinet may be secured against displacement when moved into position within the car or truck.

One end of cabinet 10 has an opening 18 through which perishables may be introduced into compartment 12 and a door 20 of insulating material may be moved to and from the closed position through the medium of hinges 22, which are employed to support the door in the operative position.

A conventional latch 24 also forms a part of the door assembly, and cleats 26 on the inner face of door 20 insures that the lading will not come so close to the face of the door as to preclude proper circulation of air within compartment 12. The perishables contained in compartment 12 are supported by false floor 28 which also provides an air space so that the hereinafter described brine or ice tank may effectively serve as a cooling medium.

In constructing cabinet 10 a unitary sheet metal sheathing 30 is first produced. This sheathing is polygonal in transverse cross-section and a number of sheet metal panels 32 are bent to form U-shaped members, the ends of the legs of which meet on the longitudinal medial line of the sheathing, as indicated by Fig. 3.

The abutting ends of these U-shaped panels 32 are inturned to form flanges 34 and these flanges are welded together so that a number of circumscribing units are created. Each of these units consists of two U-shaped members, the ends of which are inturned and securely welded together. The edges of the U-shaped units are likewise turned inwardly to form flanges 36. These flanges 36 are welded together and in the instance shown in Fig. 3, three of the circumscribing units are fastened together to form a tubular shell which is polygonal in cross-section and which is open at both ends. To finish the sheathing, a panel 38 having inturned flanges 40, is set into the open end and welded to the inturned channels 42 of panels 32, comprising the circumscribing unit at the end of the sheathing which is being closed. When the sheathing 30 is securely welded together, inturned flanges 34 and 36 thereof establish reinforcing ribs which lend rigidity to the sheathing and provide means

of attaching frame 44 thereto. This sheathing prior to the introduction of frame 44, is unitary and self-supporting.

The seams that are visible on the outer face of this sheathing may be filled with solder or the like, as shown at 46, so that the exterior face of the cabinet, insofar as the sheathing is concerned, is smooth and without projections of any kind. Such construction is highly desirable and necessary because the portable refrigerator is usually anchored in a car or truck with other merchandise and any friction created by relative movement of cabinet 10 and associated container, would immediately cause damage.

Frame 44 comprises a number of interconnected wooden elements, all of which are secured to sheathing 30 through the medium of nails, screws or analogous means shown at 48. Frame 44 not only serves as a reinforcing skeleton, but provides a support for lining 50 which is sheet metal and may be secured to frame 44 in any conventional manner known in the art.

A filling of insulating material 52 is inserted between sheathing 30 and lining 50. Lining 50 at the bottom of compartment 12, overlies flooring 54, which is carried by frame 44 and the weight of the lading is transmitted from flooring 54 to the chassis 56 upon which cabinet 10 is mounted. An intermediate member of frame 44 lies between the top and bottom of cabinet 10 to overcome any tendency of the panels to bulge. A bracket 57 carried by these members 44 of frame 44 is welded to the inner face of panels 30, as shown in Fig. 4.

An opening 58 provided through the top of cabinet 10 near one end thereof, is closable by plug 60 that may be clamped in place by a bar 62 so that neck 64 of tank 66 is sealed after ice 68 has been introduced thereto.

Tank 66 has a width slightly less than the inside width of compartment 12 and the height of tank 66 is such as to allow spaces in the top and bottom thereof, when the tank is in the operative position. The upper portion of tank 66 is reduced in cross-sectional area to create a neck 64 and this neck extends upwardly into opening 58 when the tank is assembled with cabinet 10.

The upward movement of tank 66 is limited by collar 70 which extends around the edge of compartment 10 forming opening 58. This collar 70 is L-shaped in cross-sectional form and one leg thereof is fastened to cabinet 10 while the other leg extends into neck 64, as illustrated in Fig. 7. Plug 60 is circumscribed by collar 70 when the parts are assembled.

A specially formed rack having legs 72, spacers 74 and spacers 76, carries tank 66, and legs 72 of this rack rest upon the floor of the cabinet 10. Legs 72 support the bottom of tank 66 in spaced relation to the floor of cabinet 10 and spacers 74 hold one side of tank 66 in spaced relation to the end of cabinet 10, close to which opening 58 is formed.

The wall of tank 66 which supports spacers 76 should be reinforced and to accomplish this end, a plate 78 is provided and welded directly to the side of tank 66.

A clamp 80 is used at each side of tank 66 to preclude lateral movement thereof, in paths of travel intersecting the major plane of tank 66. These clamps each comprise an angle-iron 82 held in place by bolts 84, and the nuts 86' on the threaded ends of bolts 84 are all that need be manipulated when it is desired to loosen the tank for removal.

A baffle 86 of insulating material is mounted upon the inner side of tank 66 and the means for holding the baffle in spaced relation to tank 66, is in the nature of a pair of upwardly and outwardly inclined ears 88 carried by spacers 76 and a pair of downwardly and outwardly inclined hangers 90 carried by baffle 86. Reference to Fig. 1 indicates the manner in which the action of gravity maintains baffle 86 in place against spacers 76.

A drain pipe 92 extends downwardly through the bottom of cabinet 10 from tank 66 and a drip pan 94 is carried by legs 72 beneath tank 66, so as to collect any condensate that may drip from the tank or frame. This drip pan 94 empties into a drain tube 96 that also extends through the bottom of cabinet 10.

Frequent, periodic removal of tank 66 is necessary when refrigerators of the character described, are in use. When it is necessary to remove tank 66, the operator merely lifts baffle 86 from position, removes nuts 86' and collar 70, and proceeds to lift the tank and associated frame upwardly until legs 72 and the lower portion of tank 66 can be inclined and lowered, so as to withdraw neck 64 from opening 58.

False floor 28 is likewise easily removable and when this floor, baffle 86 and tank 66 are removed, the inner surface of compartment 12 may be thoroughly washed and cleansed. Tank 66 may be quickly replaced and no skilled labor or special tools are necessary to accomplish the end.

It is notable that neck 64 is long enough to allow the top of tank 66 to be spaced from the top of cabinet 10, not only to facilitate removal of the tank, but to provide a space for the free circulation of air. Manifestly, a complete cycle from tank 66 around the lading and back to tank 66 may occur, if the lading is not stacked so high as to restrict movement of air between the top of cabinet 10 and the top of the lading.

Tank 66 and its associated parts may be constructed separately and apart from cabinet 10 and then moved to position. Likewise a new tank 66 may be installed without altering or mutilating cabinet 10, or any part thereof.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a portable refrigerator, a cabinet having an opening formed through the top near one end thereof; a tank in the cabinet provided with a reduced neck extending outwardly into said opening from the upper part of the tank; and a rack secured to the tank removably supporting the tank within the cabinet said tank and rack being movable to and from the operative position in the cabinet as a unit.

2. In a portable refrigerator, a cabinet having an opening formed through the top near one end thereof; a tank in the cabinet provided with a reduced neck extending outwardly into said opening from the upper part of the tank; a rack secured to the tank removably supporting the tank within the cabinet; and a removable retaining collar carried by the cabinet at the edge thereof around the opening for engaging the neck to preclude outward movement of the tank and neck, said tank and rack being movable to and from the operative position in the cabinet as a unit.

3. In a portable refrigerator, a cabinet having an opening formed through the top near one end thereof; a tank in the cabinet provided with a reduced neck extending outwardly into said open-

ing from the upper part of the tank; a rack secured to the tank removably supporting the tank within the cabinet; and a removable retaining collar carried by the cabinet at the edge thereof around the opening for engaging the neck to preclude outward movement of the tank and neck, said rack including legs resting on the bottom of the cabinet at the lower part of the tank to hold the tank in spaced relation with the bottom of the cabinet and to preclude inward movement of the tank and neck, said tank and rack being movable to and from the operative position in the cabinet as a unit.

4. In a portable refrigerator, a cabinet having an opening formed through the top near one end thereof; a tank in the cabinet provided with a reduced neck extending outwardly into said opening from the upper part of the tank; a rack secured to the tank removably supporting the tank within the cabinet; and a removable retaining collar carried by the cabinet at the edge thereof around the opening for engaging the neck to preclude outward movement of the tank and neck, said rack including legs resting on the bottom of the cabinet at the lower part of the tank to hold the tank in spaced relation with the bottom of the cabinet and to preclude inward movement of the tank and neck, said rack having spacers between the tank and cabinet walls to create passageways for air.

5. In a portable refrigerator, a cabinet having an opening formed through the top near one end thereof; a tank in the cabinet provided with a reduced neck extending outwardly into said opening from the upper part of the tank; and a rack secured to the tank removably supporting the tank within the cabinet, said rack including legs at the lower part of the tank for holding the tank in spaced relation to the bottom of the cabinet, spacers between the tank and cabinet walls to create passageways for air, and a drip pan mounted on the legs beneath the tank above the bottom of the cabinet, said tank, said rack, and the drip pan being movable as a unit to and from the operative position in the cabinet.

6. In a portable refrigerator, a box-like cabinet having an opening formed through the top near one end thereof; a tank in the cabinet provided with a reduced neck extending outwardly into said opening from the upper part of the tank as the upper wall of the tank is in spaced relation with the top of the cabinet; a rack secured to the tank to hold the tank in spaced relation with the bottom and sides of the cabinet; and a baffle of insulating material removably held through the action of gravity against the rack in spaced relation to the tank.

7. In a portable refrigerator, a box-like cabinet having an opening formed through the top near one end thereof; a tank in the cabinet provided with a reduced neck extending outwardly into said opening from the upper part of the tank as the upper wall of the tank is in spaced relation with the top of the cabinet; a rack secured to the tank to hold the tank in spaced relation with the bottom and sides of the cabinet; a baffle of insulating material removably mounted on the tank in spaced relation thereto; and means for removably mounting the baffle on the rack including a plurality of upwardly and outwardly inclined ears on the rack and a plurality of downwardly and outwardly inclined hangers on the baffle, said ears at the hangers having downwardly inclined, complementary, engaging faces whereby the action of gravity upon the baffle maintains the same in position.

8. In a portable refrigerator, a box-like cabinet having an opening formed through the top near one end thereof; a brine tank in the cabinet provided with a reduced neck extending outwardly into said opening from the upper part of the tank as the upper wall of the tank is in spaced relation with the top of the cabinet and as the bottom wall of the tank is spaced above the bottom of the cabinet; a removable retaining collar carried by the cabinet at the edge thereof around the opening for engaging the neck of the tank to preclude accidental outward movement of the tank and neck; a rack secured to the tank including legs at the bottom of the tank to preclude inward movement of the tank and neck; and spacers along two opposed sides of the tank; a baffle of insulating material removably mounted on the rack, said spacers serving to create air spaces between said tank and the said one end of the cabinet; and clamps in engagement with the tank to preclude movement of the tank and rack in paths of travel intersecting the said outward and inward movement.

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