

March 11, 1941.

H. WALLACE
REFRIGERATOR

2,234,639

Filed April 8, 1937

2 Sheets-Sheet 1

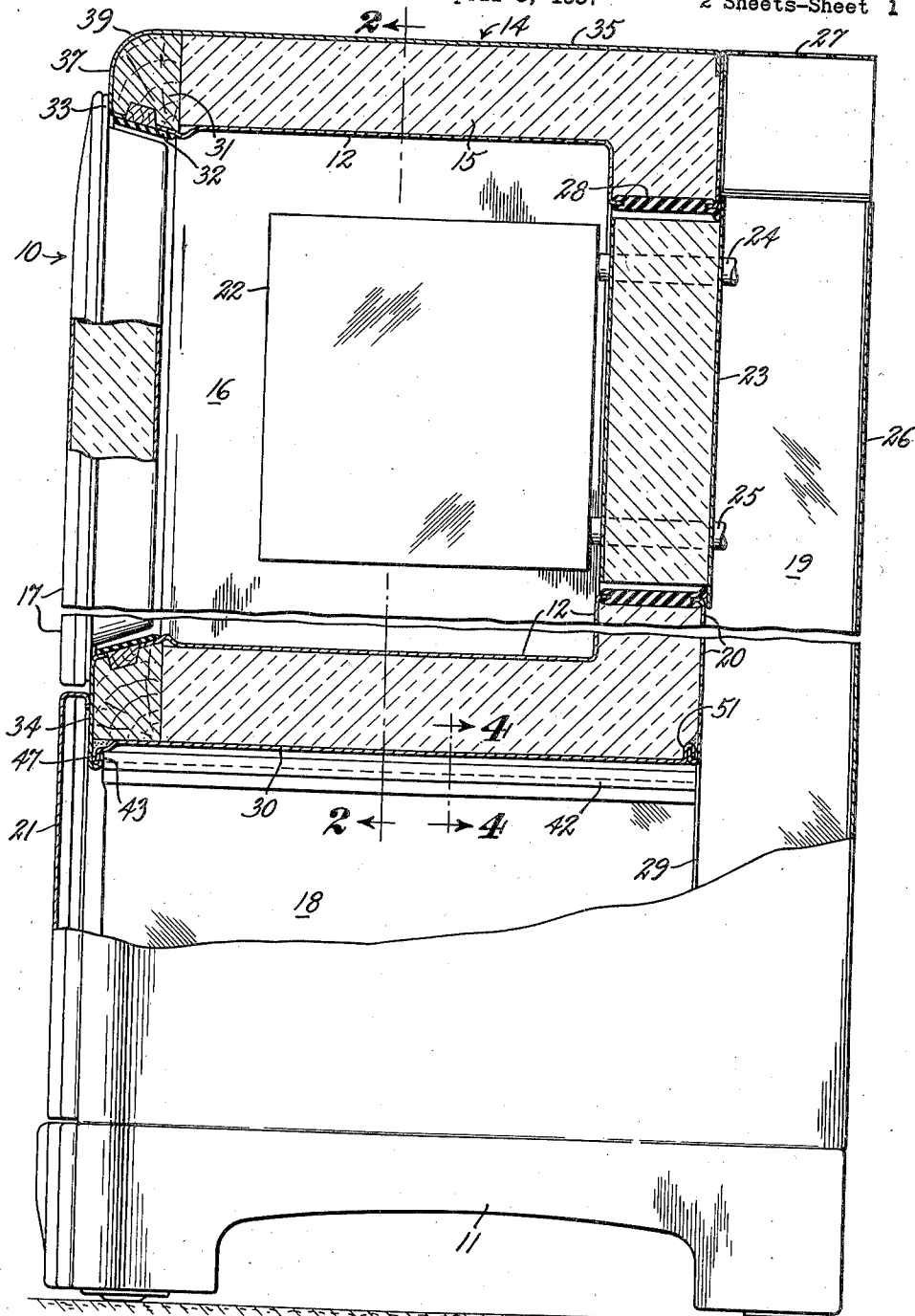


Fig. 1.

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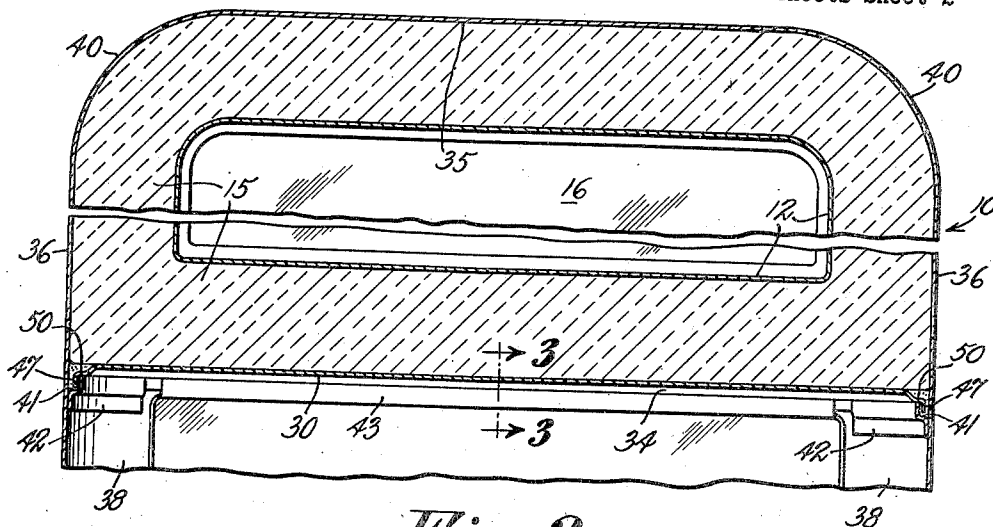
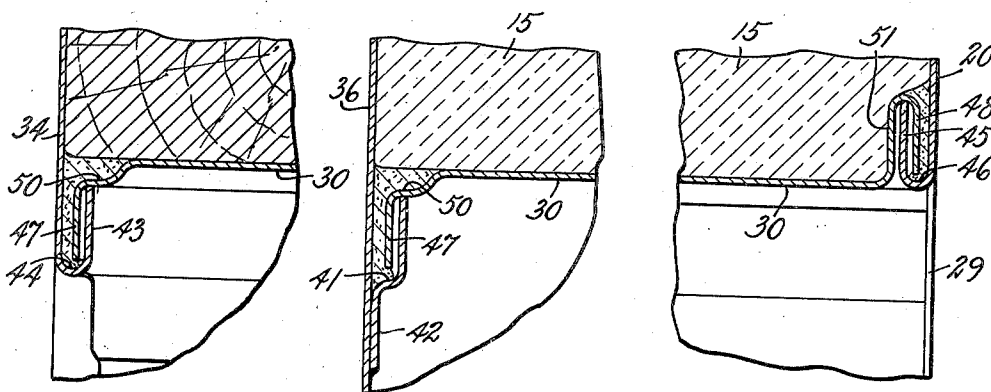


Fig. 3.

Fig. 4.

Fig. 5.



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REFRIGERATOR

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10 Claims. (Cl. 220—9)

My invention relates to refrigerators, and more particularly to refrigerator cabinet structure.

It is an object of the invention to provide an improvement in refrigerator cabinets for effectively preventing the infiltration of air into a thermally insulated storage compartment.

The above and other objects and advantages of the invention will be more fully understood from the following description taken in connection with the accompanying drawings forming a part of this specification, and of which Fig. 1 is a side vertical section of a refrigerator cabinet embodying the invention; Fig. 2 is a fragmentary sectional view taken at line 2—2 of Fig. 1 to illustrate more clearly the interior of the front of the cabinet; Figs. 3 and 4 are enlarged fragmentary sectional views taken at lines 3—3 and 4—4 of Figs. 2 and 1, respectively, to illustrate more clearly the manner in which the bottom horizontal plate of the upper insulated storage space is secured to the front and lateral side walls of the cabinet; and Fig. 5 is an enlarged fragmentary sectional view of a part of Fig. 1 to illustrate more clearly the manner in which the bottom plate is secured to the rear enclosure member of the cabinet.

Referring to Fig. 1, I have shown the invention embodied in a refrigerator comprising a cabinet 10 provided with a base 11 and having an inner metal shell or liner 12 arranged within an outer metal shell 14 and insulated therefrom with any suitable insulating material 15. The inner shell 12 defines a thermally insulated storage space 16 having an opening, and at the opening a door 17 is hinged to the front of the cabinet. Below the storage space 16 is a compartment 18 which extends to the rear of the cabinet and communicates with an upward extending compartment 19 which is substantially the same height as the cabinet 10. The lateral side walls of the outer shell 14 extend or project beyond a metal plate or rear panel 20 of the rear insulated wall of the storage space 16 to provide the compartment 19, and at the opening of the lower compartment 18 a door 21 is hinged to the front of the cabinet.

A cooling element or evaporator 22 of a refrigerating system is disposed in the storage space 16 to maintain the latter at a desired low temperature. The refrigerating system, which may be either of an absorption or compression type, may be housed in the lower and vertical compartments 18 and 19. In order to arrange the cooling element 22 within the storage space 16, the rear wall of the storage space may be provided with an opening having a removable wall part or cover 23

through which extend conduits 24 and 25 connecting the cooling element 22 with other parts of the refrigerating system. The heat rejecting parts of the system are preferably housed in the vertical compartment 19 which forms a flue through which an upward flow of air is induced by natural draft. The parts of the refrigerating system associated with the cooling element 22 have not been shown in the drawings, since their illustration is not necessary for an understanding of the present invention.

The vertically extending compartment 19 may be partly or fully enclosed by a rear plate 26. A perforated enclosure member 27 is fixed to the upper part of compartment 19 to permit upward flow of air in the latter. The rear panel 20 serves as a closure member and extends between the lateral side walls of the outer shell 14. The upper part of panel 20 and rear wall of liner 12 are provided with flanged openings to receive the grooved edges of a trim 28 defining the opening for the removable cover 23. The lower part of panel 20 is provided with an enlarged opening 29 whereby the compartments 18 and 19 are in open communication. A bottom plate 30 for the upper storage space 16 is supported and secured in position at the lateral side walls, front and rear panel of the cabinet, as will be described hereinafter. The bottom plate 30 and rear panel 20 form a container within the shell 14 into which the insulating material 15 and inner liner 12 are insertable through the front of the cabinet.

The edges of the outer shell 14 and inner shell 12 about the upper door opening are secured to a wooden frame 31. About the upper door opening are secured finishing or trim strips 32 which are preferably formed of an insulating material, such as the material commercially known as Bakelite. The door 17 is provided with a ledge to which is fixed a gasket 33 which bears against the outer shell 14 and a cross member 34 when the door is in its closed position.

The outer shell 14 is preferably formed from a single sheet of metal to provide the top 35, lateral side walls 36, and marginal front portions 37 and 38. The outer shell 14 is preferably formed to provide rounded corners about the entire front and at the top thereof, as indicated at 39 and 40 in Figs. 1 and 2. The outer shell 14 and the manner in which it is formed are fully described and claimed in application Serial No. 135,629 of A. C. Shuart and H. L. Axford, filed April 8, 1937.

In accordance with this invention the bottom plate 30 is provided with a flange about the periphery thereof, and the front, lateral side walls

and rear enclosure member are constructed and arranged to provide horizontal grooves to receive the flange of the bottom plate and support the latter in a stable position. In the preferred embodiment shown in the drawings, horizontal grooves 41 are formed at the lateral side walls 36 by angle members 42 which are secured thereto, as by welding, for example. The angle members 42 extend from the rear enclosure member 20 toward the front of the cabinet and are curved at the front rounded corners, as shown most clearly in Fig. 2.

The forward ends of the angle members are adjacent to the ends of cross member 34 which extends between and is secured to the front marginal portions of the outer shell 14. The lower edge 43 of cross member 34 is bent back upon itself to provide a horizontal groove 44 which is at the same height as the grooves 41. The upper edge 45 of the opening 29 is bent back upon itself to form a horizontal groove 46 which is substantially at the same height as grooves 41 and 44.

The bottom plate 30 about the periphery thereof is provided with downward extending flanges 47 and 48 which fit into the grooves 41, 44 and 46, thereby supporting plate 30 in a stable position within the shell 14. The front and side flanges 47 extend downward from a depressed peripheral edge portion 50, as shown most clearly in Figs. 3 and 4. The rear flange 48 is formed by an upward extending portion 51 which is bent back upon itself, as shown most clearly in Fig. 5. The grooves 41, 44 and 46 are filled with a suitable sealing compound, such as the form of hydrolene commercially known as Korite, for example, to effectively seal the periphery of plate 30 to the cross member 34 at the front of the cabinet, to the lateral side walls 36 and to the rear enclosure member 20. The grooves 41 and 44 are preferably filled to the level indicated in Figs. 3 and 4, so that the depressed peripheral edge portion 50 is also covered with the sealing compound.

By providing the depressed portion 50 and filling the depression with the compound, the portions of the periphery of plate 30 where the flanges do not fit into the grooves, as between the upturned edge 43 of cross member 34 and the ends of angle members 42, for example, are also effectively sealed. In other words, in the regions between the ends of the grooves 41, 44 and 46, the periphery of plate 30 is also sealed to the outer walls of the cabinet to provide a substantially air-tight seal. The periphery of the rear enclosure member 20 and the top 35 and lateral side walls 36 of the outer shell 14 are also sealed with a suitable insulated compound, so that the outer members of the thermally insulated walls of storage compartment 16 are effectively sealed against infiltration of air.

By providing the bottom plate 30 with flanges and supporting the plate within the shell 14 in the manner just described, an unusually strong bottom support for the upper storage space 16 is provided. The particular arrangement set forth is such that the assembly of the cabinet is facilitated considerably. When the outer shell 14 is formed from a single sheet of metal, for example, the angle members 42 may be secured to the sheet before it is bent to form the top and lateral side walls of the cabinet. The bent edges 43 and 45 on the cross member 34 and rear enclosure member 20, respectively, may be formed when these members are blanked. After the cross member 34 and rear enclosure member

20 are secured in place, it is only necessary to place the bottom plate 30 in the grooves and pour the sealing compound about the peripheral edge thereof.

Although a single embodiment of the improved refrigerator cabinet structure has been shown and described, I do not wish to be limited to the particular arrangement set forth, and I intend in the following claims to cover all modifications which do not depart from the spirit and scope of the invention.

What is claimed is:

1. A refrigerator including a shell having a top, lateral side walls, a front, and a rear closure member straddling the lateral side walls and the top, a bottom plate having a depressed peripheral edge portion and a flange extending downward from the edge of the depressed portion, means providing a substantially horizontal groove about the interior of the shell to receive the flange of the bottom plate and support the latter in position, the relative proportion of the flange and the groove providing means being such that the groove is wider than the space taken up by the flange to facilitate the insertion of the flange into the groove and also to provide a pocket facing the outer surface of the flange which is open above the bottom plate, the open pocket facing the outer surface of the flange facilitating the introduction of a sealing compound into the groove and the depressed peripheral edge portion from above the bottom plate.

2. A refrigerator including a cabinet having thermally insulated walls defining a storage compartment, the bottom insulated wall of said compartment including a substantially horizontal plate having a flange at the periphery thereof, the horizontal plate having a depressed peripheral edge portion from the outer edge of which the flange depends, the cabinet being constructed to provide a substantially horizontal groove having breaks or gaps along its length and arranged to receive the flange, the relative proportion of the flange and the groove being such that the groove is wider than the space taken up by the flange to facilitate the insertion of the flange into the groove and also to provide a pocket facing the outer surface of the flange which is open above the bottom plate, and a sealing compound in the groove and in the depressed peripheral edge portion adjacent the breaks or gaps in the groove.

3. A refrigerator comprising a cabinet having thermally insulated walls defining a storage compartment, the rear insulated wall including a vertical closure member having a lower edge terminating at the region of the bottom insulated wall, the bottom insulated wall including a horizontal plate having a flange about the periphery thereof, the flange at the rear of the bottom plate being substantially inverted U-shape and extending above the top surface of the horizontal plate, the edge of the vertical closure member at the region of the bottom insulated wall being bent back upon itself to form a groove adapted to receive the inverted U-shaped flange and provide an open pocket facing the outer surface of the flange, the open pocket facilitating the introduction of a sealing compound into the groove from above the bottom plate.

4. A refrigerator including a shell having a top, lateral side walls, a front, and a rear closure member straddling the lateral side walls and the top, a bottom plate having a flange at the periphery thereof, means providing grooves at the front,

lateral side walls and rear closure member to receive the flange and support the bottom plate in position, the grooves at the front, lateral side walls and rear closure member having breaks or gaps between the ends thereof, at least the parts of the bottom plate adjacent the breaks or gaps having depressed peripheral edge portions from which the flange extends downwardly, the relative proportion of the flange and the grooves providing pockets facing the outer surface of the flange which are open from above the bottom plate, and a sealing compound in the grooves and the depressed peripheral edge portions.

5. A refrigerator including a cabinet having thermally insulated walls defining a storage compartment, the bottom insulated wall of the compartment including a substantially horizontal plate having a flange at the periphery thereof, the horizontal plate having a depressed peripheral edge portion forming a pocket and from which the flange extends downwardly, the cabinet being constructed and arranged to provide a broken horizontal groove to receive the flange and support the bottom plate in position, the pocket being adjacent the break in the groove, and the groove and the pocket being adapted to receive a sealing compound.

6. A refrigerator including a shell having a top, lateral side walls, a front, and a rear closure member straddling the side walls and the top, a substantially horizontal bottom plate having a downturned peripheral flange, means fixedly secured to the front, side walls and closure member providing an upwardly open groove about the interior of the shell to receive the flange of the bottom plate and support the same in stable position, said bottom plate having supporting engagement with the inner edge of said groove and said flange projecting into said groove and terminating short of the bottom thereof, the rela-

tive dimensions of the flange and groove being such that a peripheral space is provided between the outer edge of the groove and flange to facilitate the introduction of sealing compound into the groove.

7. A refrigerator as set forth in claim 6 in which the means providing a horizontal groove includes members secured to the lateral side walls and also bent portions formed integrally with the front and the rear closure member.

8. A refrigerator as set forth in claim 6 in which the rear closure member is provided with an opening, and the means providing the horizontal groove includes a bent portion at the upper edge of the opening.

9. A refrigerator as set forth in claim 6 in which the portion of the flange at the rear of the bottom plate is substantially inverted U-shaped.

10. A refrigerator including a shell having substantially horizontal top and bottom members, lateral side walls, a front and a rear closure member straddling the side walls and said top member, one of said horizontal members including a substantially horizontal plate having a downturned peripheral flange, means fixedly secured to the front, side walls and closure member providing an upwardly open groove about the interior of the shell to receive the flange of said plate and support the same in stable position, said plate having supporting engagement with the inner edge of said groove and said flange projecting into said groove and terminating short of the bottom of said groove, the relative dimensions of the flange and the groove being such that a peripheral space is provided between the outer edge of the groove and the flange to facilitate the introduction of sealing compound into the groove.

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