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REFRIGERATOR CABINET CONSTRUCTION

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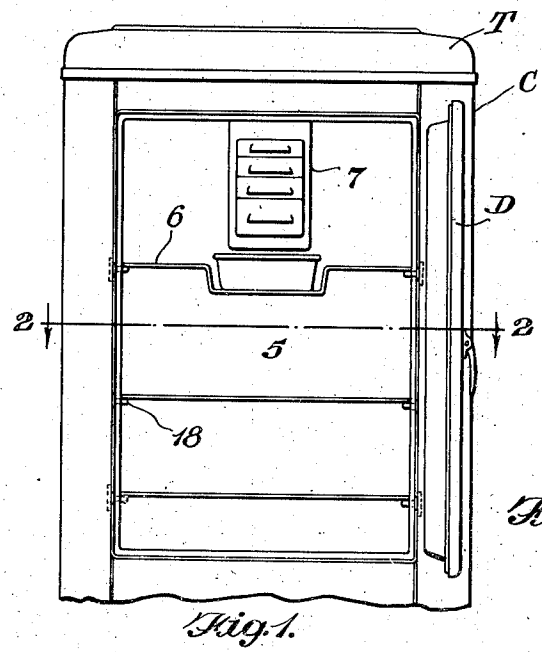
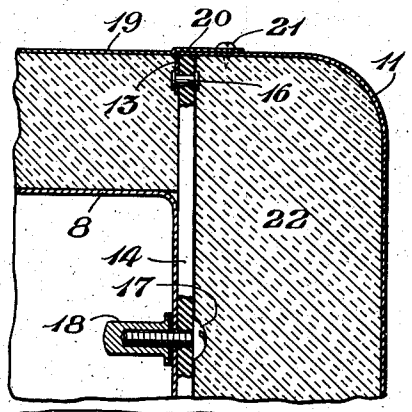


Fig. 1.



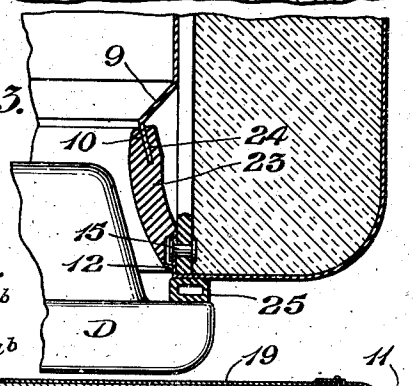


Fig. 3.

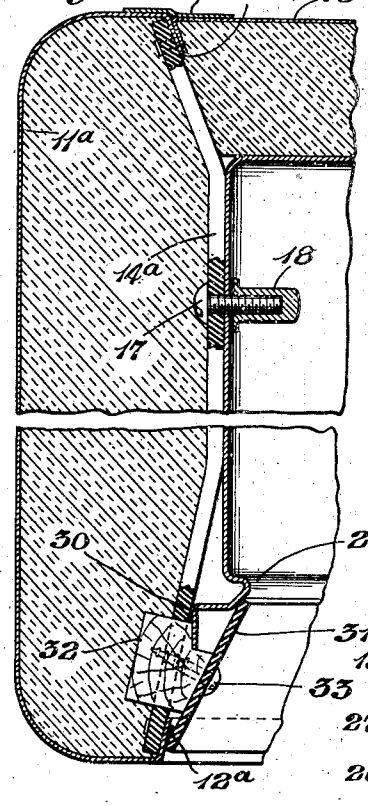


Fig. 4.

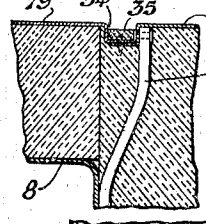


Fig. 6.

Fig. 2.

Fig. 5.

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REFRIGERATOR CABINET CONSTRUCTION

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Application March 17, 1938, Serial No. 196,567

6 Claims. (Cl. 220—15)

This invention relates to refrigerator cabinet construction and has in view the provision of co-acting structural members in a refrigerator body or cabinet which, among other advantages, permit elimination of woodwork, such, for example, as the wood frame at the front of the cabinet to which the food compartment liner was attached in cabinets of conventional design, said members also functioning to rigidly brace the inner liner and outer shell of the cabinet.

More specifically, the invention contemplates an "all-steel" refrigerator cabinet embodying supporting means for the liner which also function to brace the outer shell and body parts generally and by the use of which certain parts are eliminated and assembling of the respective parts is expedited, an important feature in the modern volume production type of refrigerator body plant. The invention also contemplates an improved type of liner and breaker strip organization, as well as improvements in the structure and assembling of the body parts generally.

In the drawing:

Fig. 1 is a view in front elevation of a refrigerator cabinet constructed in accordance with the features of the invention, the door being shown in open position;

Fig. 2 is a section taken substantially on the line 2—2, Fig. 1;

Fig. 3 is an enlarged transverse sectional view taken through one side of the cabinet;

Fig. 4 is a view similar to Fig. 3 showing a modification in structure;

Fig. 5 is a detail fragmentary sectional view of the end portion of one of the liner supports, showing a slight modification in the structure of the latter; and,

Fig. 6 is a fragmentary transverse sectional view of the rear insulated wall of a refrigerator cabinet illustrating a method of applying the back panel to the cabinet.

Referring to the drawing in detail, a refrigerator cabinet is generally indicated at C and has a food compartment 5 therein, in which are mounted a series of shelves 6. The conventional evaporator 7 is shown in the center of the upper portion of the food compartment. The cabinet door is indicated at D.

Referring to the sectional views in Figs. 2 and 3, it will be noted that the cabinet is provided with an inner shell or liner 8 which is usually made of sheet metal having its interior surface enameled, the said liner being open at the front to provide a door opening and around this opening the edge portion of the liner is provided with an inturned edge portion 9 terminating in a reversely-turned marginal breaker-strip flange 10.

The cabinet illustrated is of that type wherein the liner side panels and back are made up as separate units, insulated and assembled with a top T fitted thereon. The opposite side portions of the cabinet are identical, each side comprising an outer shell 11 of sheet metal which at its front edge terminates in an inturned flange 12 and at its back edge terminates in a like flange 13.

To provide a support for the food compartment or liner 8 and to reinforce the parts of the cabinet generally, a series of supporting members in the form of elongated brackets or strips 14 are provided and are preferably, but not necessarily, formed in whole of fibrous or like material having a low ratio of heat conductivity. Each of these strips is shown extending transversely from front to back with its front end adjacent the front edge of the outer shell 11 and the flange 12 secured thereto as by rivets 15, and its rear end adjacent the rear edge of the shell 11 and the flange 13 of the latter riveted thereto as by rivet 16. The intermediate portion of the strip has projected therethrough a plurality of screws 17, each of which also extends through the liner 8. Shelf studs 18 are threaded on the projecting ends of the screws 17 and firmly clamp the strips and liner in assembled relation.

The back wall 19 of the outer shell is preferably formed along its marginal edge with an outward offset 20 adapted to overlap the adjacent edge of the shell 11 and is shown secured thereto by suitable means such as rivets 21.

Suitable insulating material 22, which may be and preferably is in block form, is inserted between the outer shell of the cabinet and inner liner or food compartment.

The construction just described lends itself to the use of a snap-on breaker strip, indicated at 23, and having a longitudinal kerf or slot 24 formed in the one edge thereof and adapted to receive the flange 10 of the liner 8. The front edge of the breaker strip abuts snugly against the adjacent inturned edge or flange 12 of the shell 11. The flanged edge 10 of the liner is turned inwardly at an angle such as will cause the breaker strip to bear or flex against the adjacent flange 12 of the shell 11.

A suitable sealing strip 25 is provided around the front edge of the food compartment to effect a seal between the latter and the door D.

In assembling the cabinet, each side panel comprising the liner 11 with its insulation 22 and the strips 14 secured in place at opposite ends

thereof may be applied as a unit to the liner 8 with the screws 17 projecting through the latter. The shelf studs 18 are then applied and secured tightly in place, thereby locking the panel and liner together while at the same time providing reinforced supports or shelf studs for the shelves 6. The back wall 19 may then be secured to the liner 11 and the breaker strip 23 and seal 25 applied as shown.

The strips 14 may be as numerous as desired and of suitable width and thickness, but these strips are preferably positioned transversely, front to back, and spaced to provide means for supporting the respective shelves 6, thereby effecting a saving over installations where individual or separate means are used for this purpose.

The strips 14 are preferably made wholly of suitable material having low heat conductivity such as pressed fiber or the like. However, these strips may be made in part of metal as illustrated in Fig. 5, where the central or supporting part of the strip, indicated at 26, is formed of metal and is connected to an insulating block 27, which abuts against the liner 11 and receives the inturned flange 13.

Fig. 4 illustrates how varying shapes of liner or food compartment supports may be utilized to accommodate different shaped cabinet side panels and food compartments, particularly where the panel does not line up front to back. The strip in this instance is indicated at 14*a* and has its opposite ends turned outwardly and secured to a flange 13*a* formed on the back wall 19*a*. The outer shell 11*a* of the side panel is formed with inturned flanges at opposite edges which overlie the flanges 12 and 13*a* and are riveted thereto. In this instance, separate strips or brackets 28 may be applied along the joint between the side panel and the back wall and secured thereto in a suitable manner. The screws 17 and shelf studs 18 may be of the same identical type as those shown in the preceding figures.

The liner in this instance is provided with a bead 29 adjacent its front edge terminating in an inset flange 30.

A conventional type of breaker strip 31 may be used in this instance and is shown secured in place through the medium of anchor blocks 32 and screws 33.

Fig. 6 shows a method of applying the back panel whereby a tight seal is assured. In this instance, one of the supporting brackets or strips for the liner 8 is indicated at 14*b* and has its rear end secured to a flanged portion formed on the wall 11*b* of the outer shell. The back panel 19*b* is formed with a flange which mates with the flange of the shell to form an elongated channel 34. After the cabinet has been built up and insulated, the back panel is put in place and attached by suitable means, such as metal screws, to the outer shell 11*b*, and a sealing compound is then poured in the channel over the screw heads. A highly effective seal is thus provided for the back of the cabinet.

The construction illustrated in Fig. 6 has the further advantage in that the seal is at all times visible from the back of the cabinet so that it is possible simply by exterior inspection to know that the cabinet is sealed. The sealing compound is preferably of that type that can be scraped or otherwise removed from the channel 34 with relative ease, after which the screws or fastening means are rendered accessible for easy removal of the back panel.

The improved back panel sealing construction of Fig. 6 is of particular advantage when using loose insulation between the inner and outer walls of the cabinet, such for example as Balsam wool fiber and the like. It will be seen that when the back panel is removed, the insulation compartments between the inner and outer walls will be accessible at all points, rendering it comparatively easy to pack the loose insulation into said compartments. After the insulation operation is completed, it is only necessary to lay in the back panel and then apply the securing means or screws and the sealing compound in channel 34. It will be noted that not only are the retaining means or screws covered by the sealing compound, but the joint as well is also covered by the seal.

From the foregoing it will be seen that substantially the entire body with the exception, of course, of the insulation is comprised of sheet metal parts. While the base portion of the cabinet including the machinery compartment, is not shown herein, it will be understood that the side panels may be extended and reinforced by suitable metal structure or shapes to provide a suitable supporting base. The liner-supporting members or brackets 14 serve to anchor the said liner to the front and back walls of the cabinet and in conjunction with the flanged edges of the outer shell provide the necessary rigidity to take up shocks incident to door opening and closing operations, there being no possibility of displacement of the food compartment liner with respect to the outer shell. While it is preferred to utilize shelf studs on the screws 17, it will be understood that other types of fastening members may be adopted and particularly in instances where the shelves are supported in a manner such as not to require shelf studs.

The foregoing and other obvious changes in structure and design may be adopted without departing from the spirit or scope of the invention as defined by the appended claims.

I claim:

1. In a refrigerator cabinet, an inner liner defining a food compartment, an outer frame structure spaced from said inner liner with insulation material therebetween, a plurality of shell-reinforcing and liner-supporting brackets having their opposite ends connected to said frame structure and their intermediate portions connected to said liner, and shelf supporting members anchored to said brackets and projected through the liner to the interior of the food compartment.

2. In a refrigerator cabinet having an inner liner defining a food compartment and an outer shell spaced from said inner liner with insulation therebetween, a plurality of shell-reinforcing and liner-supporting members in the form of elongated brackets with their opposite ends connected to said outer shell and their intermediate portions connected to the liner, and means projected through the liner to the interior of the food compartment securing said liner to said strips, said means having shelf-engaging members connected thereto and also serving to hold the parts in assembled relation.

3. In a refrigerator cabinet, an inner liner defining a food compartment with its front terminating in a door opening and an outer shell spaced from said liner with insulating material therebetween, said outer shell having front and

back inturned flanges, a plurality of liner-supporting members in the form of elongated strips each having its intermediate portion connected to the liner and its rear end connected to said back flange and its front end connected to said front flange adjacent said door opening.

4. In a refrigerator cabinet, an inner liner defining a food compartment with its front terminating in a door opening and an outer shell spaced from said liner with insulating material therebetween, said outer shell having front and back inturned flanges, a plurality of liner-supporting members in the form of elongated strips each having its intermediate portion connected to the liner and its rear end connected to said back flange and its front end connected to said front flange adjacent said door opening, and screws inserted through said strips and liner, and shelf supporting studs mounted on said screws.

5. In a refrigerator cabinet having an inner liner defining a food compartment and an outer metallic shell spaced from said liner with insulation material therebetween, hanger brackets extending from front to back walls of the outer shell on opposite sides of the liner, means connecting the opposite ends of each of said brackets to said walls and whereby said brackets serve to reinforce the shell and render the latter more rigid, and means securing the intermediate portion of said brackets directly to the liner thereby suspending said liner from said brackets.

6. In a refrigerator cabinet, an inner liner defining a food compartment, an outer metallic shell spaced from said liner with insulation material therebetween, hanger brackets of poor heat conductivity extending from front to back wall of the outer shell on opposite sides of the liner, the outer shell being provided with inwardly projecting lips or flanges and the ends of said brackets being rigidly connected to said lips or flanges and whereby the brackets serve to reinforce the shell and render the latter more rigid, and means securing the intermediate portions of said brackets directly to said liner and in supporting relation therewith thereby suspending the liner from and in spaced relation with respect to the outer shell.

CHARLES RUSSELL FORD.