Aug. 19, 1947. T. W. RUNDELL 2,426,055

REFRIGERATOR CABINET CONSTRUCTION

Filed Feb. 26, 1944

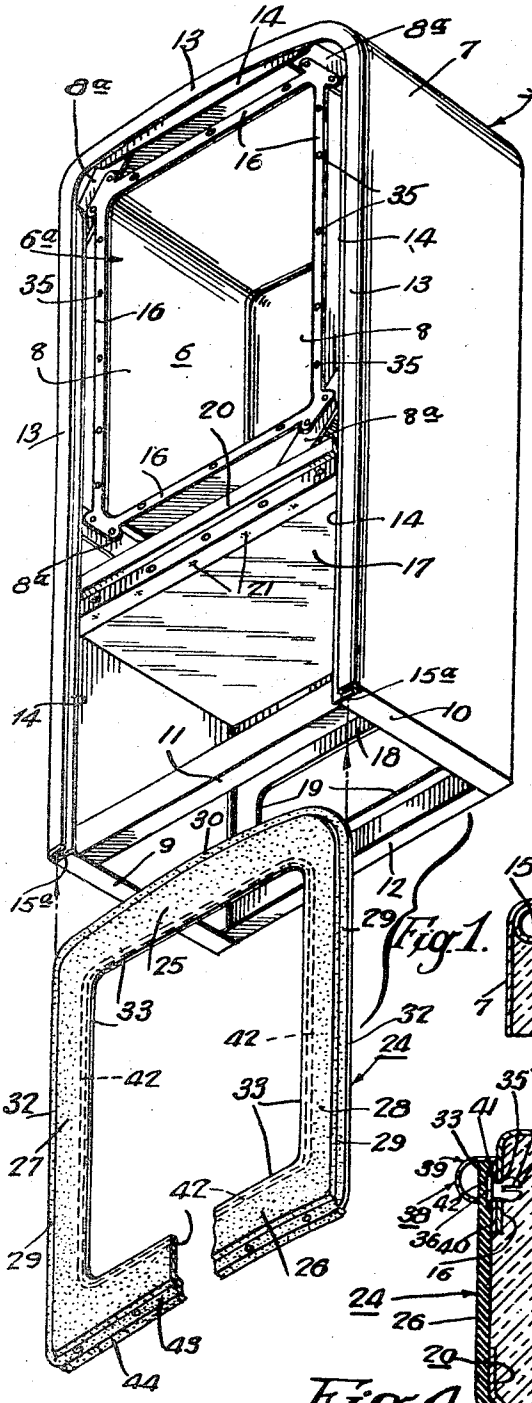


Fig. 1.

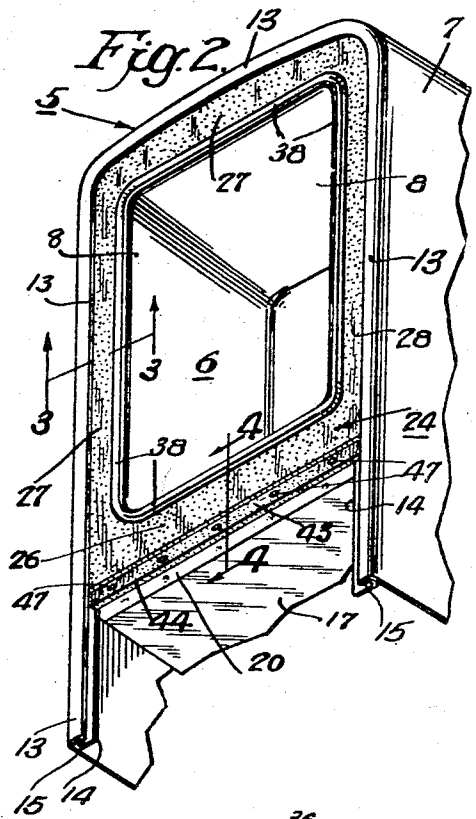


Fig. 2.

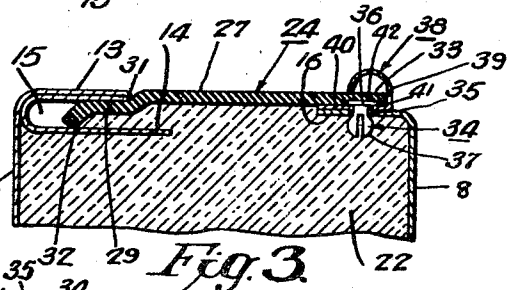


Fig. 3.

Fig. 4.

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Patented Aug. 19, 1947

2,426,055

UNITED STATES PATENT OFFICE

2,426,055

REFRIGERATOR CABINET CONSTRUCTION

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Application February 26, 1944, Serial No. 524,053

2 Claims. (Cl. 220—9)

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The present invention relates to refrigerator cabinet construction and particularly to the construction and mounting of thermo-break means employed to close the space intervening between the outer shell and inner lining members at the door opening side of such a cabinet. More specifically, the invention pertains to a breaker-strip assembly of the type providing co-planar surfaces at the front of the cabinet around the door opening.

Heretofore, in order to prevent transfer of heat from the outer shell to the inner lining member of the cabinet and to provide co-planar surfaces at the door opening, it has been customary to mount a plurality of individual flat breaker strips, that is one-strip at each of the top, bottom and opposite side portions of the door opening. The use of such individual strips makes it necessary to employ spring elements for frictionally retaining the strips against vibration and displacement, and necessitates also the use of so-called corner clips extending between the outer shell and inner lining member of the cabinet to seal the gap between the adjoining ends of the breaker strips. Since the corner clips are usually made of metal, they afford a heat leakage path which defeats complete prevention of heat conduction between the cabinet outer shell and inner lining member.

It is a primary object of the invention to provide a construction wherein a unitary breaker strip member may be easily and quickly mounted on the cabinet and be retained securely in place thereon without the use of spring elements and corner clips, said member being capable of effectively sealing the space and precluding thermal conduction between the outer shell and the inner liner around the door opening.

It is another object of the invention to provide a novel assembly wherein a unitary breaker strip cooperates with cabinet structural parts to facilitate the mounting of the breaker strip member and reduce to a minimum the number of elements required to secure said member in position, thereby hastening production and effecting a saving in manufacturing cost.

Still another object of the invention is to provide a unitary breaker strip member constructed to blend with adjoining portions of the cabinet frame, thereby providing a substantially smooth continuous surface which not only enhances the appearance of the cabinet but further eliminates condensate-catching pockets with the result that rust and paint breakdown are prevented without the use or application of sealing compounds.

Other objects and advantages of the invention

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will appear to those skilled in the art from the following detailed description and accompanying drawing in which:

Fig. 1 is a perspective view of a disassembled breaker-strip member and associated cabinet framework constructed in accordance with this invention and illustrating the mode of assembly;

Fig. 2 is a perspective view similar to Fig. 1 and showing the breaker member in position on the cabinet;

Fig. 3 is an enlarged cross-sectional detail looking in the general direction of line 3—3 in Fig. 2; and

Fig. 4 is an enlarged cross-sectional detail looking in the general direction of line 4—4 of Fig. 2.

Referring to the drawings Fig. 1 shows a domestic refrigerator cabinet 5 containing a food storage compartment 6 in the upper and major section thereof. The cabinet comprises an outer shell 7 and an inner liner 8, said liner defining the compartment 6 and being supported within said outer shell in spaced relation thereto by means of corner braces 8. As shown at 6a, the liner 8 has an open side affording access to the compartment 6.

The outer shell 7 is fabricated, preferably, of sheet metal and has a generally inverted U-shaped configuration. The bottom edge portions of the shell 7 are bent inwardly at right angles to the sides of said shell thus providing flanges 9 and 10 respectively cooperating with front and rear cross-pieces 11 and 12 to form the cabinet base.

The forward edge portion of the shell 7 is reversely bent at right angles so as to form a facing flange 13 and a flange 14 disposed rearwardly of the flange 13, said flanges cooperating to provide a continuous channel 15 of generally U-shaped cross-sectional formation extending about the top and sides of said open side of the food storage compartment 6 and terminating at the bottom of the cabinet in open ends as shown at 15a.

The liner 8 is also bent at right angles outwardly from the open side 6a of the food storage compartment 6 to form about said open side, a flange 16 extending toward the channel 15 of the shell 7.

A bottom pan 17 spans the sides of the outer shell 7 and extends from front to back of the cabinet. The pan 17 is arranged in spaced relation to the bottom wall of the inner liner 8 and has its rear edge portion bent downwardly to form a back wall 18 for the lower and minor section of

the cabinet, said wall having a window 19 providing access into said lower section for the purpose of installing and servicing the usual motor-compressor unit (not shown). An angular generally L-shaped metallic strip 20 is secured to the front edge portion of the pan 17 preferably by means of spot welding, as indicated at 21 in Fig. 4.

The space between the adjacent portions of the inner liner 8 and the outer shell 7 and between said liner and the bottom pan 17, is filled with suitable insulating material 22 as is customary in the art.

In order to close the gap between the forward edges of the outer shell 7 and the inner liner 8 and to conceal and retain the insulating material therebetween, and in accordance with this invention, a unitary breaker strip member 24 is provided, preferably of a non-metallic and non-hygroscopic thermal-insulating material or a material having relatively poor heat conductive properties. The breaker strip member 24 has a substantially rectangular frame-like configuration comprising continuous top, bottom and opposite side portions respectively designated by the reference characters 25, 26, 27 and 28. The outer edge portions 29 of the opposite sides 27 and 28 of said member 24 are adapted, as indicated by the arrows in Fig. 1, to be entered into the open ends 15a of the channel 15 and advanced therein until the breaker strip member 24 as a whole reaches its operative position on the cabinet, as shown in Fig. 2.

In this position, edge portion 29 forming the outer margin of the opposite sides 27 and 28, and the edge portion 30 forming the outer margin of the top 25 of the breaker strip member 24 are adapted to fit into the channel 15 formed in the outer shell 7 of the cabinet and, as shown in Fig. 3, said edge portions are depressed from the plane of the outer face of the said member 24, so that the said face will lie flush with and extend contiguously to the outer face of the flange 13 of the shell 7. The depressed edge portions 29 and 30 provide a surface 31 for snug engagement with the inner face of the flange 13 aforesaid and for maintaining said engagement the said edge portions 29 and 30 are terminated in angular sections 32 which, as shown in Fig. 4, react against the flange 14. With this construction, a positive frictional action is obtained between the breaker strip member 24 and U-shaped channel 15 to securely hold the breaker strip member in the desired position against the flange 13 and to restrain the member against vibration and accidental displacement.

The continuous inner edge portion 33 forming the inner margin of the breaker strip member 24 is adapted to be secured to the flange 16 of the inner liner 8 by means of suitable snap fasteners 34 engageable with said flange through conveniently located openings 35, and said fasteners 34 may be secured at the inner edge portion 33 of the breaker strip member 24 by means of a clip member 38. The fasteners 34 and clip member 38 may be and preferably are of the type disclosed and claimed in applicant's prior Patent No. 2,313,671 issued March 9, 1943.

As best shown in Figs. 3 and 4, the fasteners 34 comprise head and resilient shank portions 36 and 37 respectively, and the clip member 38 is of generally J-shaped cross-section, having its formed-end portion 39 arranged to receive the inner edge portion 33 of the breaker strip member 24 with the leg portion 40 of said clip member underlying the rear surface of the breaker strip member. The clip member is provided with suitable apertures 41 spaced apart a distance corresponding to the spacing between the openings 35 in the flange 16 of the inner liner 8, and the shank portions 37 of the fasteners 34 project through said apertures 41, with the head portions 36 of the fasteners disposed between the leg portion 40 of the clip member and the breaker strip member 24, the latter being grooved or recessed, as indicated at 42, to receive said head portions 36, as shown in said Figs. 3 and 4 of the drawing. In addition to providing a means for securing the fasteners 34 to the breaker strip member 24, the clip member 38, particularly the end portion 39 thereof which engages over the inner edge 33 of said breaker strip member, provides a trim for said inner edge portion which otherwise would be exposed to view. Thus, the clip member 38 materially enhances the appearance of the breaker strip assembly.

As more clearly shown in Fig. 4, the lower outer edge portion 43 of the breaker strip member 24 is depressed to lie inwardly of the plane of the outer face of the bottom portion 26 of said member and terminates in a right angular inturned flange 44, this flange being adapted to abut the under side of the L-shaped strip 20 which, as previously described, is secured to the forward edge of the bottom pan 17. This edge portion 43 is provided with a series of spaced apertures 45 registering with aperture 46 in the upstanding leg of the L-shape strip 20 for receiving suitable securing elements indicated at 47 in Fig. 4, to lock the breaker strip member in position on the cabinet.

In practice, it is found desirable to first insert the snap-fasteners 34 through the openings 41 in the clip member 38, after which the latter is engaged over the inner edge portion 33 of the breaker strip member 24 with the heads 36 of the said fasteners disposed in the groove or recesses 42 in the member 24. Thereafter, the edge portions 29 at the sides 27 and 28 of the breaker strip member, are inserted into the open ends 15a of the channel 15, and the member 24 then slidably advanced in the channel into the operative position where the edge portion 39 at the top of said member enters the corresponding portion of the channel and the edge portion 44 at the bottom section 26 abuts the underside of the bottom pan-carried strip 20.

In order that the projecting shank portions 37 of the fastener elements 34 may clear any part of the cabinet structure which might interfere with the free sliding movement of the breaker strip member, the inner side edges of said member may be flexed manually until the member reaches its final position, whereupon the shank portions 37 of the fastener elements 34 may be snapped or projected through the openings 35 in the flange 16 of the inner liner 8, and the securing elements 47 inserted into the aligned apertures 45 and 46 in the bottom outer edge portion of the breaker strip member and in adjoining portion of the angular strip 20. In this manner the breaker strip member 24 becomes rigidly fixed in its operative position.

It is to be noted that the breaker strip member 24 is preferably of a width somewhat less than the maximum spacing between the bottom of the channel 15 and the openings 32 in the flange 16 of the inner liner 8 so that, normally, the outer edge portions 29 and 30 of the breaker strip member 24 do not extend the full depth of said channel as shown in Fig. 3, thus providing sufficient tolerance for slight adjustments in the spacing

of the adjacent wall portions of the outer shell 3 and the inner liner 14.

After the breaker strip 24 has been fixed in its operative position, the construction of the refrigerator cabinet 5 may be completed by mounting the doors, the closing panels and other accessories, and by finishing the entire structure in accordance with the usual practice.

From the foregoing description, it will be appreciated that the present invention provides a breaker strip assembly which may be mounted readily and quickly in the cabinet structure and which may be positively retained thereon without the use of springs, corner clips or the like. The construction is such that the breaker strip member 24 may readily be removed from the cabinet if necessary. Also, the construction and association of the breaker strip member 24 with the cabinet structure provide an arrangement capable of effectively sealing the space and insuring non-conductance of heat between the outer shell and inner liner around the periphery of the door opening.

Whereas a particular embodiment of the invention has been herein shown and described, it is to be understood that the invention is not limited thereto, and that changes and modifications may be made within the scope of the appended claims.

I claim:

1. In a refrigerator cabinet, an outer shell having top and side sections, an inner liner having top, side and bottom sections and mounted within said shell with the top and side sections of the liner in spaced relation to the top and side sections of the shell, said shell further having an integral channel extending continuously about the top and side sections thereof, and said inner liner having a continuous flange about its top, side and bottom sections, a bottom pan member spanning the side sections of said shell and disposed in spaced relation to the bottom section of said liner, the channel at said side sections of the shell terminating in open ends below said bottom pan, a substantially rigid unitary frame like breaker strip member having outer and inner marginal edges, said outer edges being disposed for introduction into said channel through the open ends thereof and being slidable in said channel to a position wherein the said outer edges are in engagement with the top and side sections of the shell and with said pan member, and said inner edge carrying means for detachable engagement with the said flange of the liner.

2. In a refrigerator cabinet, an outer shell having top and side sections, an inner liner having top, side, and bottom sections mounted within said shell with the top and side sections of the liner in spaced relation to the top and side sections of the shell, said shell further having an integral channel extending continuously about the top and side sections thereof, and said inner liner having a continuous flange about its top, side, and bottom sections, a member spanning the side sections of said shell and disposed in spaced relation to the bottom section of said liner, the channel at said side sections of the shell terminating in open ends below said member, a substantially rigid unitary frame like breaker-strip having outer and inner marginal edges, said outer edges being disposed for introduction into said channel through the open ends thereof and being slidable in said channel to a position wherein the said outer edges are in engagement with the top and side sections of the shell and with said member, and means to secure the inner edge of said breaker-strip to the said flange of the liner.

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