Aug. 26, 1947. T. W. RUNDELL 2,426,525

REFRIGERATOR CABINET

Filed Dec. 31, 1943

Fig. 1.

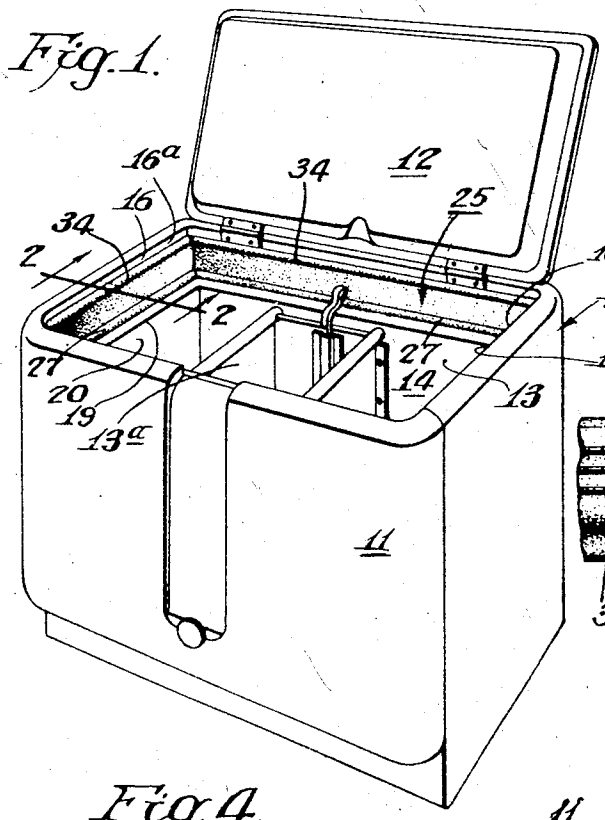


Fig. 5.

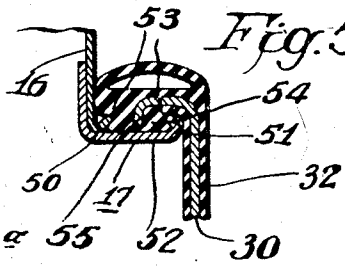


Fig. 3.

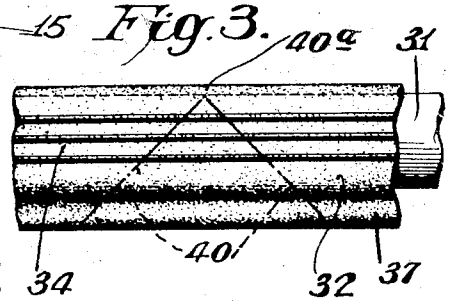


Fig. 4.

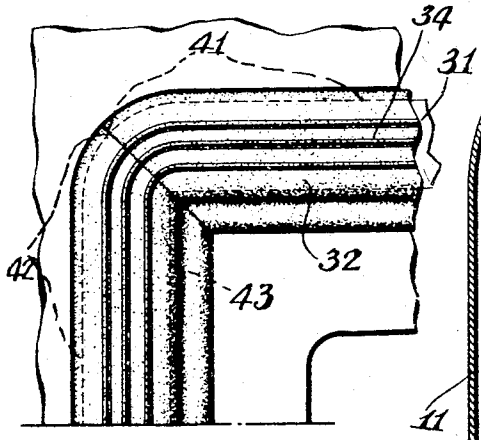
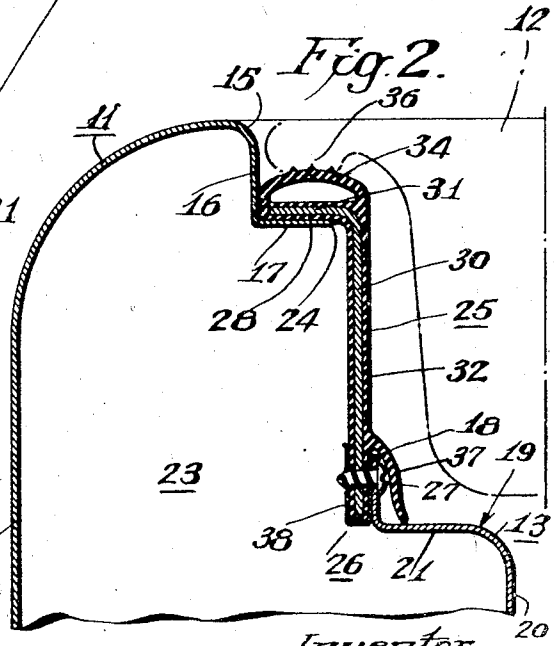


Fig. 2.



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REFRIGERATOR CABINET

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1 Claim. (Cl. 220—15)

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This invention relates to an improved construction for the cabinets of refrigerators primarily of the horizontal top-access type, and relates more particularly to an improved means for supporting the inner liner within the outer shell of the said cabinet.

It is well known in the art that refrigerators would operate more efficiently if the inner liner and the outer shell were thermally isolated from each other. In practice, this is not feasible, however, since for practical reasons the liner must be supported within the shell in a manner to produce a substantially unitary structure, and no known material of a character useful for so uniting the shell and liner is completely thermally non-conductive. The horizontal top-access type of refrigerator has presented a special problem in this respect and a principal object of the present invention is to provide a generally improved, more economical, and thermally more efficient means for supporting the inner liner in the shell of refrigerators of this type.

Another object of the invention is to provide a novel breaker-strip arrangement for horizontal top-access refrigerators wherein the inner liner is supported entirely by suspension from the outer shell through the medium of said strip.

Still another object of the invention is to provide an inner liner support means which, insofar as known materials permit, will thermally isolate the liner from the outer shell.

A further object is to provide a novel structure of the type described wherein the breaker strip functions also to provide an air tight seal between the door and the refrigerated interior space of the cabinet.

A still further object is to provide a horizontal top-access refrigerator in which the inner liner may be supported in suspension within the outer shell by a unitary gasket-breaker-strip structure without the use of fastening means, such as screws or bolts, between the outer shell and the said structure.

A further object is to provide a unitary gasket-breaker-strip liner support for refrigerators of the type described which may be assembled with the inner liner prior to assembly of the liner with the outer shell, and which materially facilitate assembly and disassembly of the liner with said shell.

The invention further contemplates the provision of an inexpensive and sturdy breaker strip gasket structure which may be readily produced in its unitary self-sustaining substantially rectangular frame like form and to the required dimensions from a stock composite strip material.

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The manner in which the foregoing objects are attained will be understood from the following description in conjunction with the several views of the accompanying drawings, in which:

Fig. 1 is a perspective view of a horizontal top-access refrigerator embodying the invention;

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

Fig. 3 is a fragmentary plan view of the breaker strip and sealing gasket structure showing a method of forming a corner thereof;

Fig. 4 is a fragmentary plan view showing another corner construction; and

Fig. 5 is a fragmentary sectional view similar to Fig. 2 showing a modification within the scope of the invention.

Referring to Fig. 1 of the drawings, the reference character 10 designates in general a horizontal top-access refrigerator of suitable design but preferably constructed in accordance with the principles disclosed in a co-pending application, Serial No. 516,521. The refrigerator 10 includes an outer shell or finish panel 11, a closure lid or door 12, an interior metal lining or tank 13 forming a food storage compartment 14 within the shell 11, all of a generally rectangular shape, and an evaporator 13a within said liner.

As illustrated in Fig. 2, the substantially rectangular exterior shell 11 has in its upper periphery 15 a shallow internally depending wall portion 16 from which projects inwardly a narrow horizontal flange or shelf portion 17. The inner liner or tank 13, also substantially rectangular in shape, has an integral, vertical rim portion 18 slightly offset from the upper peripheral edge 19 of the vertical side walls 20 of the main body of the liner through the medium of a horizontal shoulder portion 21, thereby affording an ample space 23 for insulation between the outer shell 11 and the liner 13. This space 23 may be filled with any suitable insulating material. The overall dimensions of the upper end of substantially rectangular liner 13, as defined by the rim 18, are slightly less than the substantially rectangular access opening 16a in the shell 11, as defined by the inner edge 24 of the shelf portion 17, thereby to permit the liner 13 to be lowered through the said opening for assembly with the shell.

In accordance with the invention, a substantially rectangular, unitary gasket-breaker-strip member 25 has a lower edge portion 26 secured to the vertical rim 18 of the liner 13, as by screws 27, and a peripheral flange portion 28, in seating engagement with the horizontal shelf 17 of

the shell 11, the said member 25 thereby acting to support the liner 13 in suspension within the cabinet 11.

The member 25 preferably comprises a wide, self-sustaining, rigid, and relatively thin frame member 30 having a short outwardly extending flange 31 at its upper periphery, and formed of a material, such as pressed wood, having low thermal conductivity. The frame member 30 including the flange 31 are covered with a material, such as rubber, which also has low thermal conductivity, and which provides a protective and non-hygroscopic covering 32 for the said member.

The portion of the covering 32 which overlies the flange 31, is provided with an integral hollow, resilient and compressible bead or gasket portion 34 which cooperates with the outer flange 36 of the door 12 to form an air-tight seal for the food compartment 14 of the cabinet when the door is closed. The lower portion 26 of the covering 32 is provided with a depending tab or trim flap 37 which is arranged to cover and conceal the heads of the attaching screws 27. Although the lower part of the membber 25 is illustrated as being secured to the outside of the rim 18, it should be understood that it may as readily be secured to the inside without departing from the invention. Speed lock nuts 38 in the shape of inverted U-shaped clips may be provided for the screws 27.

Various suitable methods have been devised for forming the member 25, said methods including either drawing or extruding the covering over a pre-formed continuous L-shaped strip of the inner frame-forming material, and thereafter forming the frame-like member by suitable means from the composite stock strip material thus produced. One means for forming the member from a stock material of this character is illustrated in Fig. 3, and includes the steps of cutting out of the pre-formed stock material the triangular portion bounded by lines 40, 40, leaving the portion 40*a* of the resilient covering material at the apex of the cut-out to act as a hinge upon which the uncut portion of the material at each side of the cut may be turned to draw the cut edges 40, 40 together. Thereafter the adjoined edges of the covering may be vulcanized together; and the edges of the frame material 30 may, if desired, be united, as by glue, or other suitable means, to thereby form a rigid self-sustaining structure.

A method of forming a corner construction having a greater radius at the outer periphery is illustrated in Fig. 4. This method includes pre-forming a number of short sections, 41, 42 etc., wherein the end portions of the flange 31 have been rounded to the desired shape and thereafter covered with the covering material 32, as previously described in connection with Fig. 3, the curbed ends of the composite material then being joined together, as illustrated at 43, by suitable means, such for example as that previously described.

In the previously described embodiment, no special means is provided for securing the flanged upper end of the gasket-breaker-strip to the shelf 17 of the outer shell upon which it seats, and this strip and the pendent liner are therefore loosely suspended from the shelf and are entirely free for immediate withdrawal through the open top of the shell if such withdrawal should be required. Fig. 5 illustrates a modified construction wherein the shelf 17 has been altered to provide a narrow upwardly and inwardly turned flange 50 and an opposed upwardly and outwardly turned flange 51. The flange 50 is in this instance an integral part of the portion 16, and the opposed flange 51 is formed on an angular member 52 the vertical leg of which is welded or otherwise secured to the said portion 16 of the shell 11. The opposed flanges form in effect a peripheral dovetail channel 53 which receives and holds a depending thickened portion 54 of the covering material 32, this portion 54 being reinforced by a downwardly turned edge portion 55 of the inner framing material 30. This arrangement more positively prevents displacement of the flange relative to the shelf and affords a more positive seal therebetween.

The unitary structure 25 forms a highly efficient thermal breaker-strip between the inner liner 13 and the outer shell 11; acts as a sealing gasket for cooperation with the door 12 to seal the food compartment 14 in an air-tight, leakproof manner; and functions further as a means for supporting the inner liner 13 on the outer shell 11. In this triple function it reduces to a minimum heat transfer by conduction between the inner liner and the shell, and effectively seals the refrigerated space within the cabinet. It is evident also that the structure 25 may readily be secured to the inner liner 13 prior to introduction of the liner into the shell 11, and that subsequent assembly of the liner with the shell may be easily and quickly accomplished by simply lowering said liner into the shell until the flange 28 of the unitary structure 25 comes to rest upon the shelf 17. No special fastening means is required between the said structure and the shell and a substantial saving in the time, labor, and expense of the assembly operation is effected. The resilient covering of the structure provides a substantially positive seal between the flange 28 of the structure 25 and the shelf 17 of the outer shell, which prevents moisture from entering the insulation space 23. The covering provides a like seal between the vertical rim 18 of the liner 13 and the lower edge portion of the structure 25.

It will be understood that the apparatus herein described and shown, including the configuration of the several parts thereof, is merely illustrative of the inventive principles involved, and that these principles may be applied to other physical embodiments within the scope of the claim without departing from the spirit of the invention.

I claim:

A top-access refrigerator comprising an outer shell having in the top thereof an access opening defined by an internally depending peripheral wall portion terminating in an inwardly extending horizontal flange portion extending completely around said access opening, a liner internally of said shell having a peripheral rim portion spaced below said horizontal flange portion of the shell, and a unitary breaker-strip coextensive with said flange portion, said breaker-strip suspending said liner from said shell and constituting the sole support for said liner, said breaker-strip having a lower peripheral edge portion secured to said liner rim portion and an upper outwardly extending horizontal peripheral flange portion arranged to overlie and be supported on the horizontal flange portion of said outer shell, said strip comprising an inner relatively rigid framing member and an outer covering enclosing said framing member, said fram-

ing member and said covering being of low heat conducting capacity and said strip serving to substantially thermally isolate the liner from said shell.

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