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H. J. SCULLEN

2,336,644

REFRIGERATING APPARATUS

Filed April 23, 1941

Fig. 1.

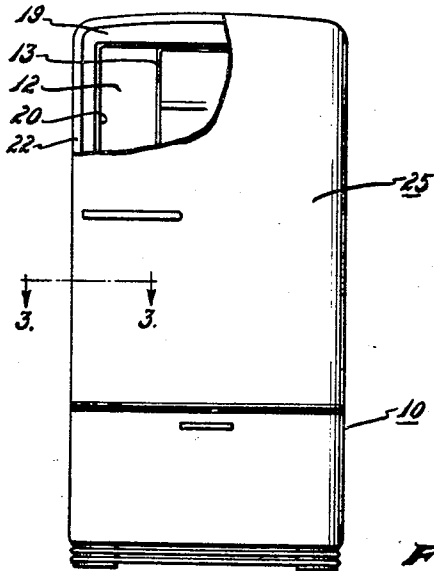


Fig. 2.

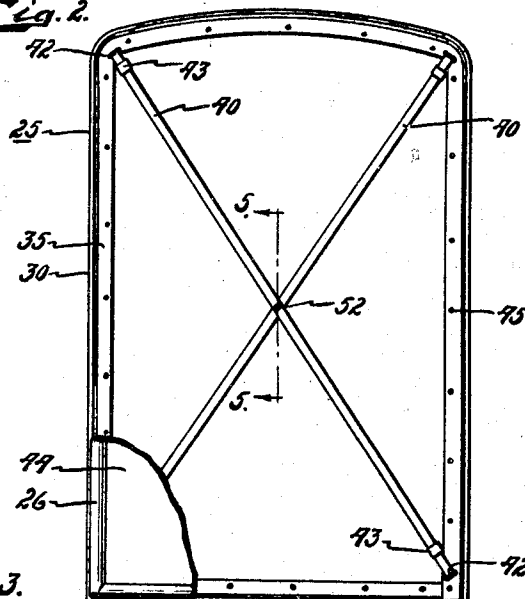


Fig. 3.

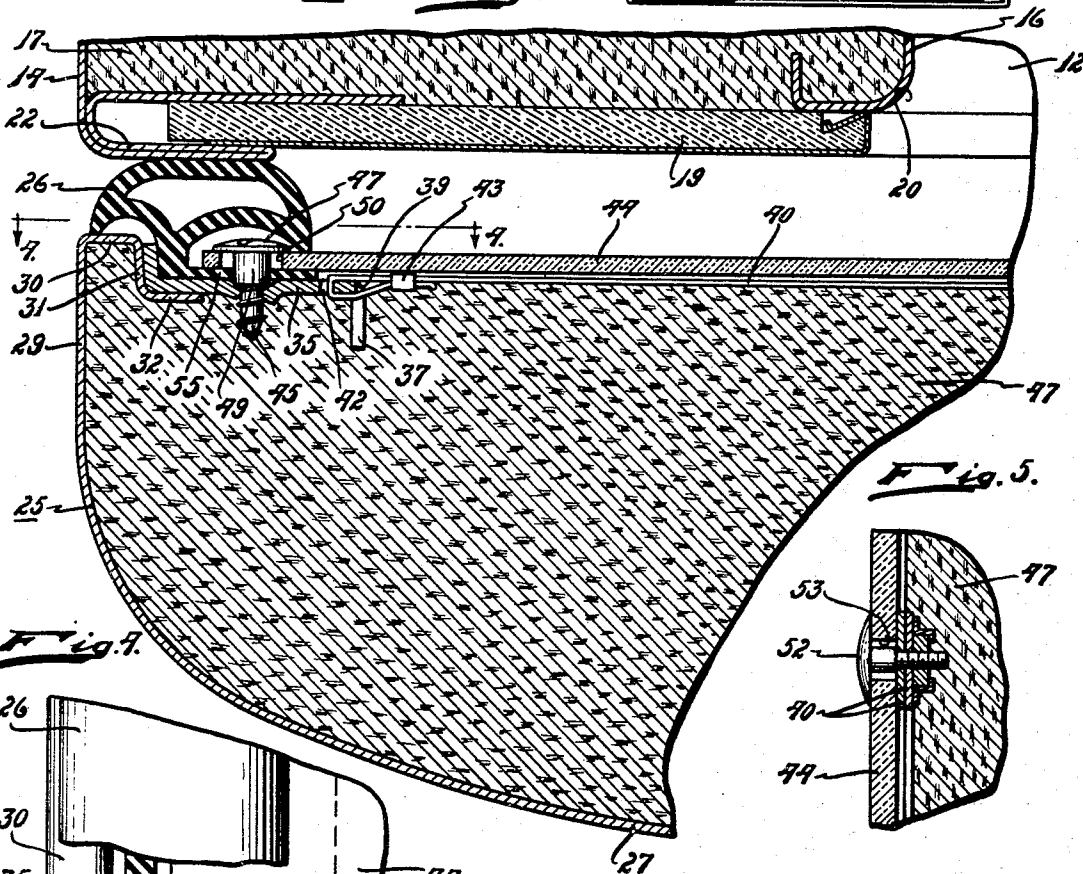


Fig. 5.

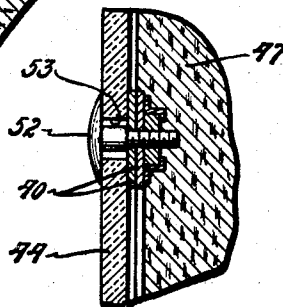
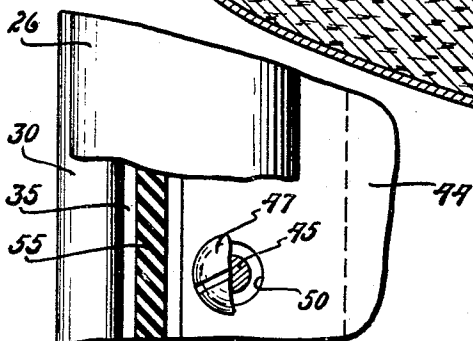


Fig. 7.



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REFRIGERATING APPARATUS

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3 Claims. (Cl. 20—35)

This invention relates to refrigerating apparatus and more particularly to refrigerator cabinets.

It is an object of the present invention to provide an improved door for a refrigerator cabinet.

It is another object of the present invention to provide an improved door for a refrigerator cabinet which is of rigid construction whereby the outer door panel is stiffened against twisting or buckling with the inner panel secured in floating relation thereto.

It is a further object of the present invention to provide an improved door for a refrigerator cabinet which comprises of an external shell of dish-like conformation having a concealed sunken and reinforced rim to which is secured a non-metallic inner panel in such a manner as to permit free expansion and contraction of the panel.

The invention itself, however, both as to its organization, and its method of operation together with additional objects and advantages thereof will best be understood from the following description of specific embodiments when read in conjunction with the accompanying drawing, in which:

Fig. 1 is a front view of a refrigerator cabinet embodying the present invention;

Fig. 2 is a rear view of the refrigerator cabinet door with parts broken away;

Fig. 3 is a fragmentary enlarged view taken along line 3—3 of Fig. 1;

Fig. 4 is a fragmentary view with parts broken away and parts shown in section taken along line 4—4 of Fig. 3; and

Fig. 5 is a fragmentary enlarged cross sectional view taken along line 5—5 of Fig. 2.

In accordance with the present invention I have provided a door for a refrigerator cabinet which is constructed of sheet metal which forms the outer wall and the side walls and which has an inner panel constructed of plastic material or the like. The inner panel is substantially flat and for this reason does not have any reinforcing characteristics which are usually present in dish shaped panels. Consequently such panel may warp in the event of moisture absorption in any part thereof. Since the inner panel is exposed to the interior of the refrigerator and moisture may condense upon a portion of that panel, there is likely to be some absorption of moisture. In the event the panel is rigidly secured about its peripheral edges to the metallic portion of the door any absorption of moisture

in the panel would tend to cause the panel to expand and result in warping of the door. By my improved arrangement I have arranged so that the inner panel is carried in floating relation with the metallic part of the door. It is so arranged so that if moisture is absorbed in any portion of the panel the panel may expand without causing buckling or warping of the panel.

Shown in the drawing is a refrigerator cabinet 10 having a food storage compartment 12 in which is disposed a refrigerant evaporating element 13 which preferably operates below freezing for cooling circulating air in compartment 12 and for making ice in the well known manner. The cabinet 10 comprises an outer shell 14 and an inner shell or liner 16 in spaced apart relation for placing suitable heat insulation material 17 therebetween and forming insulated top, bottom rear and side walls enclosing the food storage compartment. The inner liner 16 and outer shell 14 are interconnectively joined together by a breaker strip 19 adjacent the door opening 20 of the compartment 12. The breaker strip together with the inwardly turned portion 22 of the outer shell 14 forms the front wall of the cabinet.

Closing the opening 20 is a swingably mounted door 25. A gasket 26 extends peripherally about the perimeter of the door and engages against the edge 22 of the outer shell in forming an air tight seal therewith to prevent air entering the food storage compartment.

The door 25 is constructed with an outer sheet metal panel 27 formed with sides 29. The sides 29 terminate with an inwardly turned peripherally extending section 30. The marginal edge 32 of the section 30 is inset in parallel relation to the section 30 with the intermediate interconnecting portion 31 extending reversely to the sides 29. The marginal edge 32 forms a ledge extending continuously about the door to which is secured by weld or the like a frame member 35. The frame member 35 extends continuously with the inset portion 32 and section 30, and the portion lying thereagainst is secured thereto by weld with the major portion of the frame extending towards the center of the door beyond the edge 32. The marginal edge 37 of the frame is bent at right angles, as at 39. The frame 35 serves to strengthen and stiffen the panel 27. To further stiffen the panel against twisting or buckling there are provided diagonally extending straps 40 tying opposite corners of the frame. The ends of the straps are passed through slots 42 provided in the frame and tied by clips 43.

Where desired, rods with turnbuckles (not shown) may be used instead of straps 40. The door also includes an inner panel 44 which is held to the frame 35 by screws 45 having heads 47 and shank 49. The screws 45 extend through apertures 50 provided in the panel 44. The shank 49 of screw 45 is arranged to seat upon the frame 35 and retain the head 47 sufficiently spaced from the frame 35 that the panel 44 is free to slide beneath the head of the screw while at the same time the screw head will retain the panel 44 secured to the frame 35. The apertures 50 are somewhat larger than the shank but of lesser diameter than the head 47 of screw 45.

The panel 44 is preferably formed of "Micarta" or other plastic material of low heat conductivity. The panel 44 is also secured at the central portion thereof by screw 52 to straps 40 at the point of their intersection. The screw 52 passes through aperture 53 which is somewhat larger than the shank of the screw and holds the panel to the straps 40 in the same manner that screws 45 hold the panel to frame 35.

The door gasket 26 is secured by tongue 55 which extends between the frame 35 and panel 44 to be pierced by the screws 45. The tongue 55 also serves as an insulation strip to prevent heat conduction between the inner and outer panels. The gasket 26 is constructed so as to overlap the marginal edge of the panel 44 and conceal the heads of the screws 45. Since the tongue 55 of gasket 26 is resilient it will readily be appreciated that the screw head 47 resiliently clamps the panel 44 to the frame 35. This tongue being resilient, it is also yieldable and in the event the panel should in any part thereof absorb moisture and tend to cause expansion of the panel such panel may readily, due to such expansion, slide beneath the heads 47 of the screws 45.

From the above described arrangement it will be noted that there is provided a door construction whereby the outer panel is reinforced and stiffened independently of said inner panel which is secured thereto in a floating relation.

While I have shown and described the preferred form of my invention, I do not wish to limit myself to the precise details as shown and

described but wish to avail myself of such variations and modifications as may come within the scope of the appended claims.

I claim:

1. A door for a cabinet comprising sheet material to provide side walls and an angular inset portion extending inwardly from said side walls, a reinforcing angular member positioned in engagement with and secured to said angular inset portion, a non-metallic panel positioned within said inset portion, means for securing said panel to said angular member, a plurality of substantially large openings formed in the marginal edge of said panel, and each of said securing means passing through a respective opening having substantially a smaller cross-sectional area within said opening than said opening to permit expandable and contractual movement of said panel.

2. A door for a cabinet comprising a shell of sheet material to provide side walls having a continuing portion extending inwardly to form an off-set ledge, a frame secured to said off-set ledge for strengthening the ledge to prevent twisting of the shell, an insulating panel having characteristics of expansion upon absorption of moisture forming the rear side of said door and supported on said frame, and means carried by said frame adapted to engage the said panel to hold said panel in position while allowing for expansion and contraction of said panel and permitting the panel to move with respect to said engaging means.

3. A door for a cabinet comprising a shell of sheet material to provide side walls, and an angular inset portion extending inwardly from and forming a continuing portion of said side walls, a reinforcing angular member positioned in engagement with and secured to said angular inset portion, additional wall means having characteristics of expansion upon absorption of moisture, and means for securing said additional wall means in sliding relation to said member to permit movement of said additional wall means relative to said member upon expansion of said additional wall means.

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