Sept. 15, 1942. E. D. DRAKE 2,296,024

REFRIGERATING APPARATUS

Filed July 18, 1941

Fig. 1.

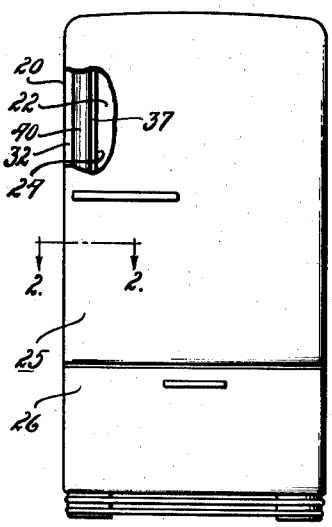



Fig. 3.

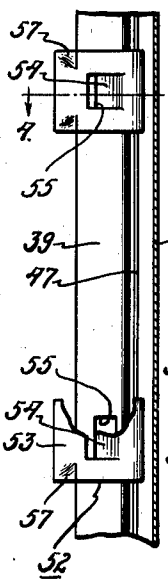



Fig. 5.

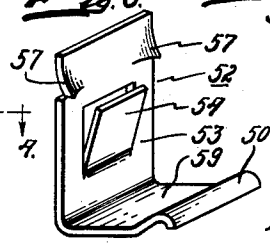



Fig. 6.

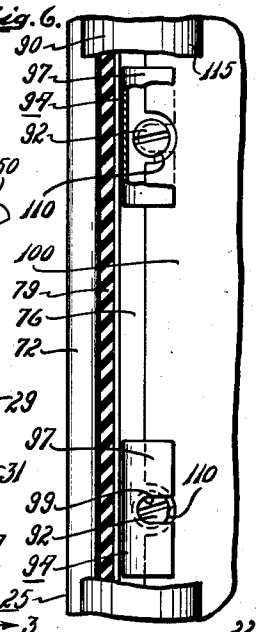



Fig. 4.

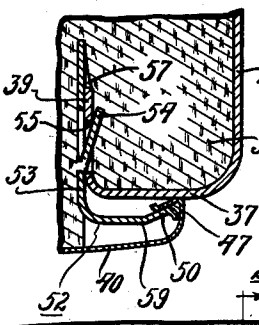



Fig. 2.

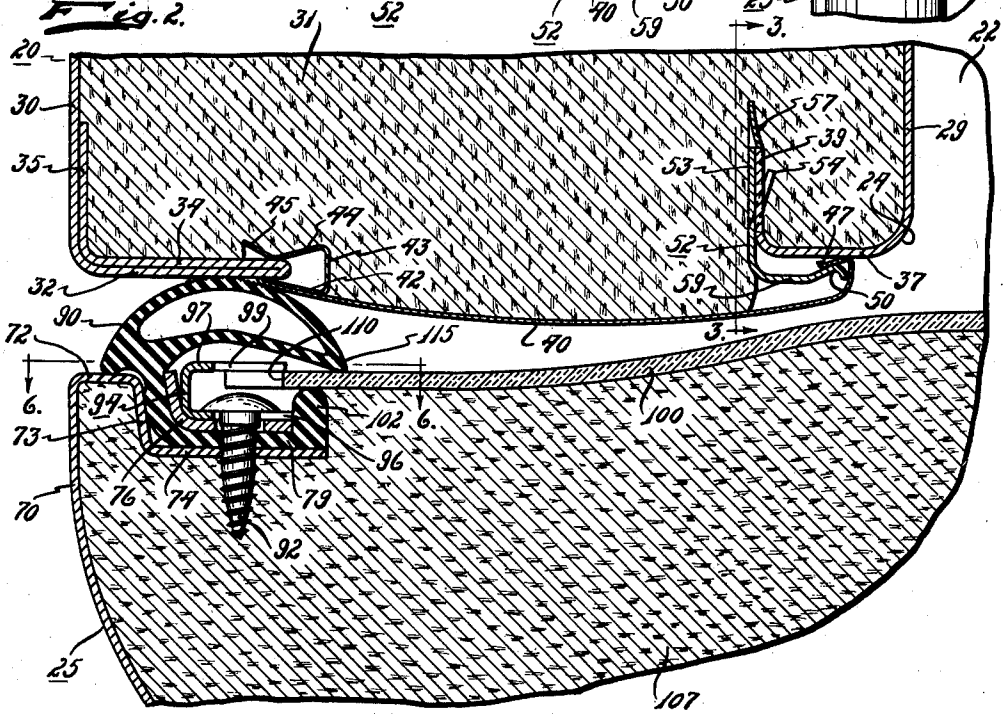
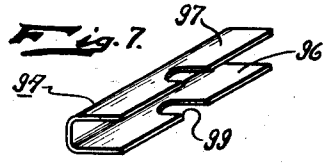



Fig. 7.




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# UNITED STATES PATENT OFFICE

2,296,024

## REFRIGERATING APPARATUS

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Application July 18, 1941, Serial No. 402,901

5 Claims. (Cl. 20—35)

The present invention relates to refrigerating apparatus, and more particularly to cabinet construction.

It is an object of the present invention to provide an improved arrangement for securing a breaker strip to the metal walls of a refrigerator cabinet.

Another object of the present invention is to provide a clip arrangement which is self-lockingly attached to one of the walls, and a breaker strip which is self-lockingly attached by means of the clip arrangement.

A further object of the present invention is to provide a metallic breaker strip formed of relative thin metal.

A further object of the present invention is to provide the inner panel of the door of insulating material mounted in floating relation to permit free expansion and contraction thereof.

A further object is to secure the inner door panel in floating relation to the door by a resilient gasket.

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 with parts broken away and shown embodied therein the present invention;

Fig. 2 is a fragmentary cross sectional view taken along line 2—2 of Fig. 1;

Fig. 3 is a fragmentary cross sectional view taken along line 3—3 of Fig. 2;

Fig. 4 is a fragmentary cross sectional view taken along line 4—4 of Fig. 3;

Fig. 5 is a perspective view of a fastening member embodied in the present invention;

Fig. 6 is a fragmentary cross section view taken along line 6—6 of Fig. 2; and

Fig. 7 is a perspective view of a fastening member embodied in the present invention.

Shown in the drawing is a refrigerator cabinet 20 of the household type having a food storage compartment 22 to which access is had through opening 24. The opening is closed by a door 25. The circulating air in the compartment is cooled by a mechanical refrigerating apparatus of which the compressor-condenser unit thereof is located in a second compartment to which access may be had through the closure member 26. As the refrigerating apparatus forms no part of the present invention, it is not shown as any of the well known types may be used.

The cabinet is constructed with an inner metal casing, shell or liner 29 and an outer metal casing or shell 30. The walls of the inner and outer casing are in spaced parallel relation between which is placed suitable heat insulation material 31. The inner shell 29 forms the walls of the food storage compartment.

The marginal edge of the outer shell 30 is inwardly turned to form a front wall portion 32 peripherally about the opening 26. The portion 31 extends a terminable distance towards the inner liner where it is bent upon itself to extend reversely towards the side wall, as at 34, to thence extend its remaining portion with the side wall, as at 35. The rear portion 34 and 35 are preferably welded to the front portion of the shell to form a portion of the side wall and the front wall of double wall thickness, and thereby add rigidity to the outer shell.

The inner liner is outwardly flanged to provide a front wall 37 extending peripherally about the opening 24. The marginal edge of the front wall portion 37 is bent at right angles to extend rearwardly and parallel to the side walls of the liner, as at 39. The portion 37 of the inner liner and portion 31 of the outer shell terminate a spatial distance apart and are joined by a relatively thin breaker strip 40.

The breaker strip 40 is preferably formed of stainless steel or the like and is preferably formed of .010 inch thick metal, though other heavier material may be used and suitably coated with enamel, or plated. Similar breaker strips are positioned along the other side of the cabinet on the front wall adjacent the opening 24 thereof, and immediately above the food storage compartment at the top of the cabinet, and also immediately below the food storage compartment. Since the principle of attaching the other breaker strips are the same, there is only shown in detail the breaker strip 40 and the way it is attached.

The breaker strip 40 extends preferably in a convex curve from edge of outer shell over to the flange of the inner shell. One of the longitudinal edges of the breaker strip is formed U-shape, being first bent reversely upon itself to form a double wall portion 42, thence bent at right angles to form bight section 43, thence bent to extend, as at 44, angularly towards the section 42 and having its marginal edge bent angularly outwardly, as at 45. The U-shaped section is adapted to engage over and embrace

opposite sides of the double wall section with the portion 42 engaging the side 32 and the portion 44 engaging the side 34. The opposite longitudinal edge of the breaker strip extends to contact the front portion 37 of the inner liner and thence bent to extend inwardly, as at 47, to engage past and press downwardly upon the rounded end 50 of an L-shaped member 52 and form an interlock with the end 50 against ready withdrawal.

The member 52 comprises a leg section 53 which lies flush against the flange section 39 and is secured thereto by tongue 54 punched outwardly from the leg 53 to enter an opening 55 in flange 39 and engage the rear side of the flange. The leg 53 is cut inwardly from each side at a determinable distance from its top edge to provide inwardly flared tongues 57 at each of the top corners which are adapted to engage and rest upon the top edge of the flange 39 and with the engagement of tongue 54 fixedly lock the member 52 upon the flange. The members 52 are attached at spaced intervals along the flange 39.

This arrangement is one which provides a rapid and easy assembly in that the members 52 are attached by moving the leg 53 flush against the side of flange 30 so that the tongue 54 enters the opening 55 to engage the rear side of the flange 39, and continuing the inward movement until the tongues 57 snap over the top edge of the flange 39. It will be noted that the tongue 54 tends to move the leg 53 in flush engagement against the side of the flange 39 thus with the tongues 57 in engagement over the top edge the member 52 is securely affixed in position. The other leg 59 of member 52 is in spaced parallel relation to the front wall portion 37 of the inner liner forming a pocket therewith. The breaker strip 40 is then attached by sliding the U-shaped section over the end of the doubled wall section of the outer shell, with the end 47 engaging the radiused end 50 on the leg 59.

The door 25 comprises an outer shell of dish like conformation having upwardly extending sides 70 which are bent inwardly at right angles to form a peripherally extending ledge 72. The extended metal from ledge 72 extends downwardly to form a section 73 parallel to the sides 70 and thence bent at right angles to extend inwardly, as at 74. The ledge 74 extends peripherally about the door parallel to the ledge 72. Clampingly secured by an L-shaped strip 76 to the ledge 74 is tongue 79 formed integrally with the door seal gasket 90. Preferably, the gasket 90 and the parts joined thereto are formed of resilient rubber. The strip 76 is secured by screws 92 which pierce the tongue 79 and thread into the ledge 74. Also secured by screws 92 and resting on the strip 76 are U-shaped members 94 having leg sections 96 and 97 each provided with an inwardly cut slot 99. An inner panel 100, forming the inner side of the door, is secured by resting upon the abutment 102 formed integrally with the tongue 79 and its marginal edge engaging the underside of the leg 97 of member 94. The gasket 90 lies over the ledge 72 and over a marginal portion of the panel 100 so as to conceal the securing means. The gasket 90 is adapted to engage and form a seal with the front wall 34 of the cabinet so as to prevent air entering the food storage compartment.

Suitable heat insulation material 107 is provided between the spaced inner and outer panels of the door.

In the assembling of the door, the member 94 is slid by means of the slot 99 so that the leg 96 engages under the head of a respective screw, and the panel 100 set so as to engage under leg 97 with notch 110 in alignment with the slot 99 so that a screw driver may pass through to engage the screw head for purpose of threading the screw into the ledge 77. The gasket 90 is turned upward during this operation. When the screw is fully threaded into the ledge the leg 97 will securely hold down the edge of the panel against the abutment 102. This arrangement secures the panel 100 in floating relation permitting it to freely expand or contract. This is desirous as the panel is formed of compositional matter, such as plastic, which has the tendency to absorb moisture condensed thereon which causes the panel to expand outwardly. As the expansion is not uniform throughout, but depends upon the amount of absorption, the present arrangement permits free expansion at any peripheral point for the members 94 are set at spaced intervals about the edge of the panel so that at no point is the panel pierced by any affixing means. The pressure of the leg 97 upon the edge of the panel against the resilient abutment 102 is only enough to provide frictional resistance to prevent shifting movement of the panel, but never enough to cause a binding action to prevent expansion.

In the door construction shown, I have disclosed the use of the U-shaped member 94. However, in some instances, it is desirable to omit this U-shaped member entirely. When the U-shaped member is omitted the head of screw 92 will rest on member 76. When the U-shaped member is omitted, the panel 100 will rest on abutment 102 and will be held in that position by edge 115 of gasket which is rigid enough to hold the panel in position while permitting lateral expansion of the panel. In this instance the gasket material is the sole supporting means for the panel 100. Also, if desired, the U-shaped member may be used without engaging either side of the panel by having the side 97 thereof spaced above the panel and in this case the gasket is the sole support of the panel. In the case of large doors it may be desirable to use the U-shaped members.

While I have shown and described the preferred form of my invention, I do not wish to limit myself to the precise detail as shown 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 having inwardly turned portions and downwardly offset ledge portions united therewith, a panel forming the inner side of said door extending between said ledge portions, a door seal having a tongue portion extending along said ledge, said tongue having a resilient raised portion for supporting said panel, clamping members engaging the edge of said panel for holding said panel against said raised portion to permit expansion or contraction movement of said panel, and means for securing said clamping members and said tongue to said ledge portions.

2. A cabinet door comprising sheet metal material formed to provide front, top, bottom and side walls, a resilient gasket secured to said material and extending around the rear edge of the door and being provided with a pocket of lesser width at the entrance thereto than at the rear of the entrance of said pocket and a thin non-

metallic insulating panel forming the rear wall of said door and having its edges extending into said pocket whereby the gasket material forming the entrance portion of the pocket frictionally engages said panel to secure and hold said panel in floating position with respect to said walls without the aid of additional means.

3. A cabinet door comprising material arranged to form the front and side walls, a gasket having a pocket carried by said material and an insulating panel forming the rear wall of said door and being secured and carried by said gasket in said pocket.

4. A cabinet door comprising wall means, a gasket having a pocket, a U-shaped member arranged for securing said gasket to said wall means and an insulating panel carried by said gasket and having an edge extending into said pocket and into the mouth of said U-shaped member.

5. A door for a cabinet comprising sheet material to provide side walls having inwardly turned portions and downwardly offset ledge portions united therewith, a panel forming the inner side of said door extending between said ledge portions, a door seal having a tongue portion extending along said ledge portions, said tongue having a resilient raised portion for supporting said panel and clamping means engaging the edge of said panel for holding said panel against said raised portion to permit expansion or contraction movement of said panel.

EARL D. DRAKE.