Oct. 28, 1947. B. C. JOHNSON 2,429,816

BREAKER STRIP CONSTRUCTION

Filed Sept. 18, 1944

Fig-1

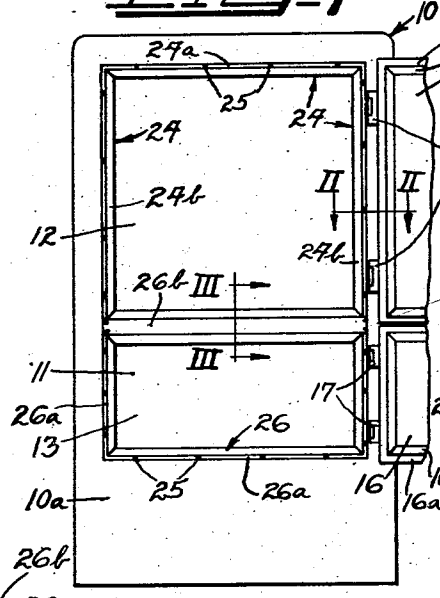


Fig-2

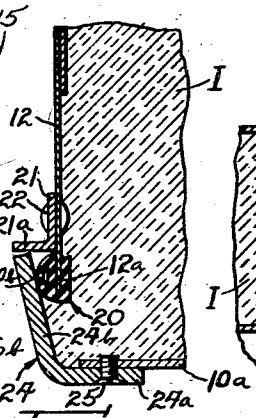


Fig-3

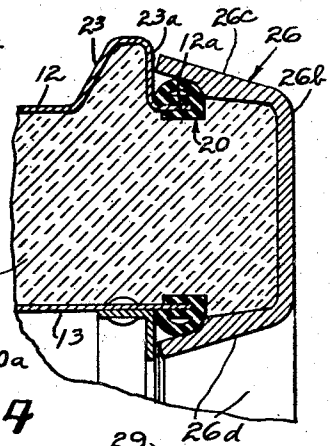


Fig-4

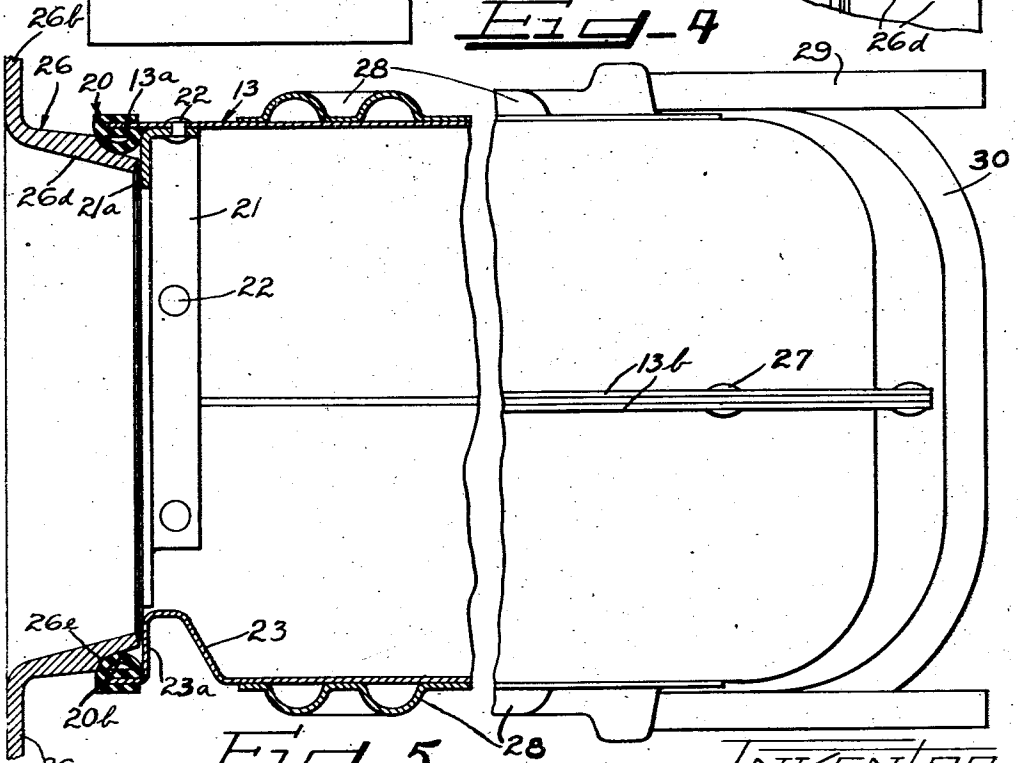
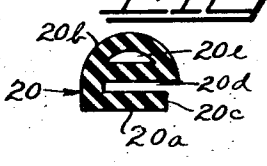


Fig-5



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Patented Oct. 28, 1947 2,429,816

UNITED STATES PATENT OFFICE

2,429,816

BREAKER STRIP CONSTRUCTION

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Application September 18, 1944, Serial No. 554,609

1 Claim. (Cl. 220—9)

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This invention relates to cabinet constructions wherein liners are maintained in insulated but sealed relationship with outside cabinet walls.

Specifically the invention deals with breaker strip constructions for refrigerator cabinets.

The invention will be hereinafter specifically described as embodied in a refrigerator cabinet, but it should be understood that the principles of the invention are applicable to all constructions involving spaced walls to be maintained in insulated but sealed relationship.

According to this invention, a refrigerator cabinet having a door opening in the front wall thereof receives, through this front wall, one or more open front casings forming the liner or liners for the cabinet. These casings, like the cabinet walls, are formed of metal but are spaced from the cabinet walls. As is customary, the space between the liner casing and the cabinet wall is filled with insulation.

Breaker strips composed of metal, plastic, wood, or any desired material, connect the open front of the casing or front wall of the liner with the cabinet around the door opening thereof. In accordance with this invention, the breaker strip is maintained in sealed, insulated relation with the casings or liners by means of an inexpensive, simple, and readily applied extruded rubber or rubber-like sealing strip.

The mouth of each casing has forwardly projecting peripheral edges that readily receive the sealing strip thereon. The casing is also preferably equipped with an inwardly projecting abutment wall adjacent the inlet mouth for bottoming the sealing strip.

The breaker strips, which can be in several pieces or in one molded piece, are secured to the front wall of the cabinet and are bottomed on the sealing strip in sealing relation therewith, but spaced from the liner wall. Thus the sealing strip maintains the breaker strip in sealed insulated relationship with the casing or liner and, if desired, the breaker strip can be composed of a heat-conducting material, since the non-heat conducting sealing strip will prevent heat conduction from the liner to the cabinet walls.

It is, then, an object of this invention to provide a simplified, inexpensive, and easily assembled breaker strip and sealing strip assembly for refrigerator cabinets.

Another object of the invention is to provide an arrangement for sealingly connecting spaced walls in insulated relationship.

A still further object of the invention is to provide a breaker strip construction which makes

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possible the use of heat-conducting breaker strips without sacrificing insulating efficiency.

Another object of the invention is to provide a sealing strip arrangement for the liners of refrigerators which will cooperate with breaker strips to maintain the liners in sealed but insulated relation with the refrigerator cabinet walls.

A specific object of the invention is to provide a refrigerator cabinet with metal casing inserts defining the space to be refrigerated wherein the casing inserts have forwardly projecting peripheral edges receiving a rubber or rubber-like sealing strip, and wherein the cabinet breaker strip is bottomed on this sealing strip.

Other and further objects of the invention will be apparent to those skilled in the art from the following detailed description of the annexed sheet of drawings which, by way of preferred example only, illustrates one embodiment of the invention.

On the drawings:

Figure 1 is a fragmentary front elevational view of a refrigerator cabinet equipped with a breaker strip construction according to this invention.

Figure 2 is a fragmentary horizontal cross-sectional view taken along the line II—II of Figure 1.

Figure 3 is a fragmentary vertical cross-sectional view taken along the line III—III of Figure 1.

Figure 4 is a broken side elevational view, with parts in vertical cross section, of a cabinet liner casing for the cabinet of Figure 1 illustrating a molded one-piece breaker strip and seal strip arrangement according to this invention.

Figure 5 is an enlarged transverse cross-sectional view of the sealing strip shown in Figures 2 to 4.

As shown on the drawings:

In Figure 1, the reference numeral 10 designates generally a refrigerator cabinet having a front wall 10a with a door opening 11 therein. The cabinet 10 has side, top, and back walls. Liner casings 12 and 13 are inserted in the door opening 11 in spaced superimposed relation. Each casing has top, bottom, and side walls and has an open front end registering with the door opening 11.

The casings 12 and 13 are mounted in spaced relationship from the walls of the cabinet 10. The casing 12 defines a general food compartment for the cabinet, while the casing 13 defines a deep-freeze compartment for the cabinet. The compartment 12 is closed by means of a door 14 hinged on the cabinet by means of hinges 15, while the deep-freeze compartment is closed by a

door 16 hinged on the cabinet by means of hinges 17.

The doors 14 and 16 have marginal flanges 14a and 16a respectively adapted to overlie the door opening 11, together with thick central portions 14b and 16b respectively defined by beveled side walls adapted to project into the door opening when the doors are closed.

As shown in Figures 2 and 3, insulation I fills the space between the casing walls and the cabinet walls.

As shown in Figure 2, the casing 12 has a forwardly projecting front edge portion 12a extending around the periphery thereof at the front of the casing, and this portion receives a rubber sealing strip 20 thereon. The rubber sealing strip 20, as best shown in Figure 5, has a flat wall 20a along one side thereof and an arcuate wall 20b extending around the remainder of the strip to the back wall 20c. A groove 20d extends into the strip from the back wall 20c for an appreciable distance to receive the peripheral edge 12a of the casing 12.

The strip has a hollow portion 20e on one side of the groove 20d to provide a resiliently deformable cushion wall portion 20b.

The casing 12 has a U-shaped metal angle strip 21 riveted thereto by means of rivets 22 around the top and side walls thereof. One leg 21a of the strip 21 extends inwardly from the casing wall adjacent the edge portion 12a thereof to form an abutment.

As shown in Figure 3, the bottom wall of the casing 12 has a raised bead 23 thereon providing an abutment wall 23a adjacent the portion 12a of the casing.

The front wall 10a of the cabinet is spaced from the projecting edge 12a of the casing around the sides and top of the casing, and breaker strips 24 bridge this space. These breaker strips 24, as shown in Figures 1 and 2, have flat flange portions 24a overlying the front wall 10a of the cabinet and secured thereto by means of screws 25. The breaker strips 24 have inwardly projecting sloping flanges 24b extending from the flanges 24a across the space between the cabinet wall 10a and the front edge 12a of the casing 12 into closely spaced relation with the leg 21a of the metal angle strip 21. These flanges 24b of the breaker strips 24, however, rest on the cushioned face portion 20b of the sealing strip 20 in sealing engagement therewith. Thus the top and side walls of the casing 12 are connected in sealed but insulated relation with the front wall 10a of the cabinet.

As shown in Figures 3 and 4, the bottom casing 13 has a forwardly projecting front edge portion 13a bottomed around the top and sides of the casing by the leg 21a of an angle strip 21, and by an abutment wall 23a of a bead 23 in the same manner as the casing 12. A second sealing strip 20 is seated on this projecting front edge portion 13a, and is bottomed on the leg 21a of the angle strip 21, and on the wall 23a of the bead 23, all as described in connection with the casing 12. However, a different type of breaker piece 26 is used. This breaker piece 26 is a molded plastic one-piece member with an outturned flange 26a along the bottom and sides thereof secured to the front wall 10a of the cabinet 10 by means of screws such as 25, together with a flange 26b extending from the top side thereof across the space between the casings 12 and 13, and having an inturned sloping flange portion 26c bottomed on the seal strip 20 carried by the bottom wall of the

casing 12 as shown in Figure 3. In other words, the molded breaker piece 26 forms the breaker strip for the bottom wall of the casing 12, and has a flange portion forming a front wall for the cabinet between the casing openings.

The breaker piece 26 has an inwardly sloping peripheral flange 26d extending inwardly from the inner ends of the flanges 26a and 26b into sealing engagement with the cushioned portion 20b of the sealing strip 20, but terminating in spaced relation from the flange 21a and the wall 23a. This flange 26d can have an arcuately shaped portion 26e as shown in Figure 4, to better receive a greater area of the curved portion 20b of the sealing strip.

The casing 13 is made of two riveted-together stamped metal pans having mating flanges 13b, 13b connected by rivets 27.

In order to cool the interior of the casing 13, the same can have refrigerant duct-defining plates 28 integrally secured to the top and bottom walls thereof. The ducts in the top plate 28 can receive refrigerant from a tube 29, while the ducts in the bottom plate 28 can receive refrigerant from ducts in the top plate through a connecting tube 30 extending in back of the casing 13 in the space provided between the back wall of the cabinet and the back wall of the casing. The construction of the casing 12 is similar to the construction of the casing 13.

While three separate breaker strips 24 have been illustrated and described as connecting the front wall 10a of the cabinet with the sealing strip 20 on the top and side walls of the casing 12, and while a one-piece breaker 26 of molded plastic construction has been described as connecting the front wall 10a of the cabinet with the sealing strip around the entire periphery of the casing 13, as well as with the sealing strip on the bottom wall of the casing 12, it should be understood that other breaker strip arrangements can be used without in any way departing from the scope of this invention. Two different strip arrangements have been selected to merely illustrate that the breaker strips can be separate straight pieces abutted together in the corners around the door opening, or can be of one-piece molded construction around the entire doorway.

The flanges 24b of the breaker strips 24 and the flanges 26c and 26d of the breaker piece 26 are sloped to receive the sloped marginal walls 14b and 16b of the doors 14 and 16 in closely spaced relation. As is customary in refrigerator cabinet constructions, door sealing strips can be provided on the flanges 14a and 16a of the doors for engaging the front wall 10a of the cabinet around the door opening 11 of the cabinet.

The beaded portions 23 of the casings 12 and 13 are provided to form the abutment for the sealing strips 20 in place of the strip 21 along the bottoms of the casings 12 and 13, so that the bottom wall of the casing will have an integral dam preventing drainage of liquids out of the open front of the casing, as when the casing is being defrosted.

From the above descriptions it will be understood that the invention provides a simplified breaker strip construction embodying an inexpensive, easily assembled rubber or rubber-like sealing strip. This sealing strip can be cheaply extruded, and is readily replaceable. Since it not only forms a seal, but also is composed of non-heat-conducting material, the breaker strips can, if desired, be made of heat-conducting ma-

terial such as metal without sacrificing insulating efficiency of the refrigerator cabinet. However, molded plastic strips or pieces are preferred.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claim.

I claim as my invention:

A refrigerant breaker strip construction comprising an outer casing having a portion defining a doorway, an inner casing in said outer casing having an open front defined by walls projecting toward said doorway but spaced from said outer casing, means providing an abutment projecting inwardly from the walls inside said inner casing and comprising angular flanges with at least one leg thereof attached to said inner casing walls and the other leg projecting therefrom, a resiliently flexible sealing strip having a groove for receiving edge portions of the walls of said inner casing, said strip being bottomed on a leg of said flanged abutment and providing a cushion around the mouth of the inner casing, and a breaker strip having an outer flange portion secured to said outer casing and an inwardly projecting flange portion extending from said outer flange portion across a space to said inner casing in spaced relation to said abutment and in sealing engagement with said sealing strip so as to maintain the inner and outer casings in sealed but insulated relation at said doorway and between said breaker strip and the edge portions of the inner casing walls.

BERNARD C. JOHNSON.

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