July 11, 1950 R. L. BENSON 2,514,926

REFRIGERATOR CABINET STRUCTURE

Filed Aug. 23, 1945

Fig. 1

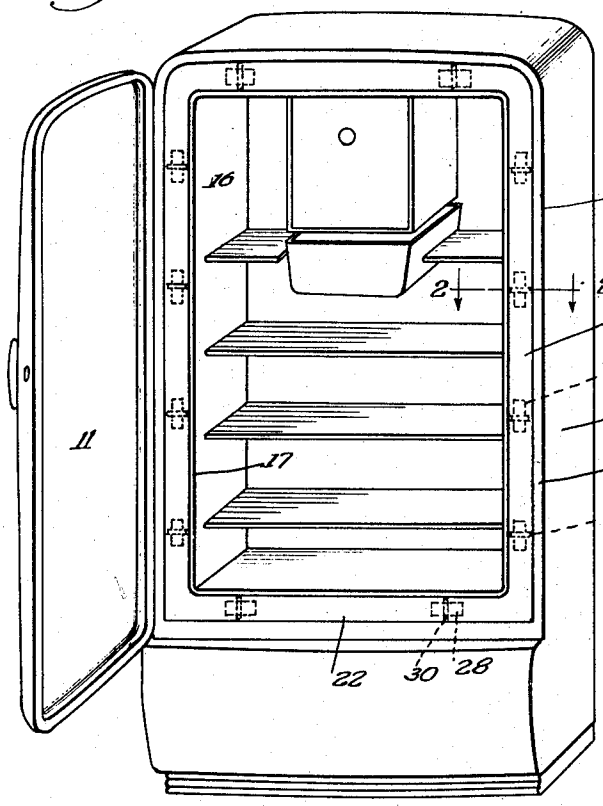


Fig. 3

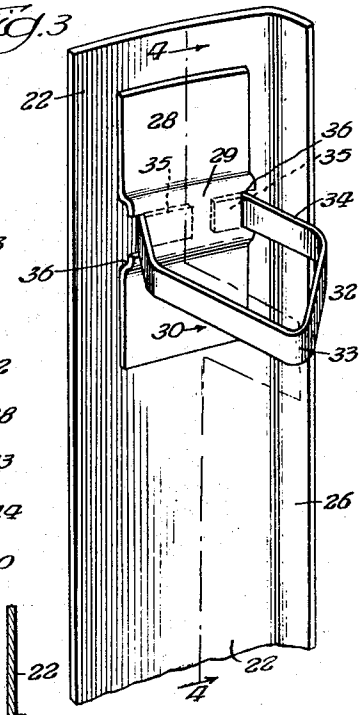




Fig. 4

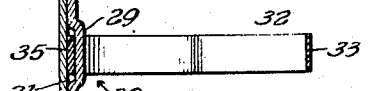


Fig. 2

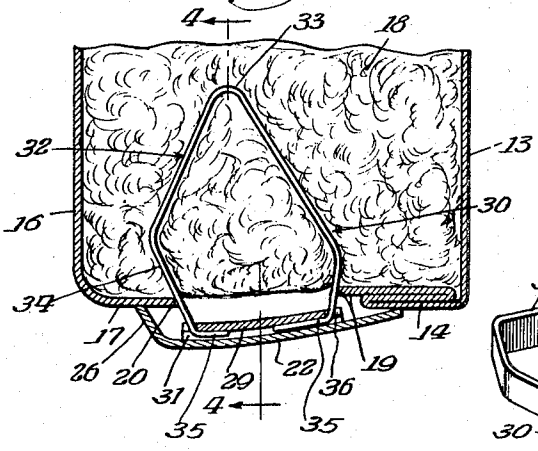


Fig. 5

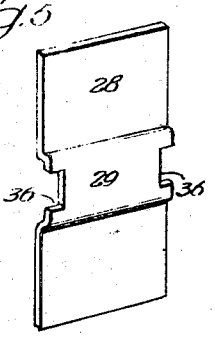
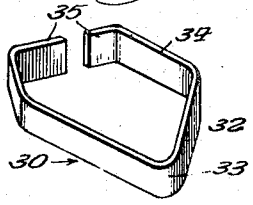


Fig. 6



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REFRIGERATOR CABINET STRUCTURE

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3 Claims. (Cl. 220—9)

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The invention relates to refrigerator cabinet structures and more particularly to the means for attaching breaker strips to cabinet walls, door and around openings in the cabinet.

Desiderata in refrigerator cabinets with breaker strips are attaching devices: which avoid the use of securing elements which extend through the breaker strip and are exposed or visible on the outer face thereof; by which the strips may be removably and directly secured to the walls so that channelled strips in which the margins of the breaker strips are confined and unnecessary, which include resilient clips which are detachable from the breaker strips, for replacement or permitting the strips to be stacked during shipment or storage without danger of scratching the faces of the strips; which include clips which removably and securely hold the breaker strips in engagement with the walls of the cabinet, are resilient to press the strips into engagement with the inner and outer walls of the cabinet, and are simple in construction and can be economically fabricated.

One object of the invention is to provide a breaker strip and attaching devices embodying these desiderata.

Another object of the invention is to provide a breaker strip with resilient clips which are directly engageable with the walls between which the strip is placed for removably securing the breaker strip directly in relation with the edges of the walls.

Another object of the invention is to provide a breaker strip with devices for detachably mounting the breaker strip on the walls which is simple in construction, will efficiently secure the breaker strip in its mounted relation and can be economically fabricated.

Other objects of the invention will appear from the detailed description.

The invention consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings:

Fig. 1 is a perspective of a refrigerator cabinet equipped with a breaker strip and attaching devices embodying the invention.

Fig. 2 is a section taken on line 2—2 of Fig. 1.

Fig. 3 is a perspective of a portion of a breaker strip and one of the attaching devices.

Fig. 4 is a section of the breaker strip and one of the clips taken on line 4—4 of Fig. 2.

Fig. 5 is a perspective view of one of the plates bonded to the inner face of the breaker strip.

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Fig. 6 is a perspective view of one of the resilient clips.

The invention is exemplified in a refrigerator cabinet which is provided with an opening in its front which is normally closed by a door 11 hinged to one side of the cabinet. The cabinet-structure includes an outer wall 13 or wrapper which is provided with a rearwardly extending flange 14 which may be formed of overlapping integral portions and an inner wall or liner 16 which is provided with a forwardly extending flange 17. These walls are usually formed of sheet metal which are secured together with a space between them which is packed with insulating material 18 for preventing heat transfer between the walls. The rear edge 19 of flange 14 on outer wall 13 and the front edge 20 of flange 17 are spaced apart to eliminate as far as possible a direct metallic path between the wrapper 13 and liner 16. This spacing leaves a gap between the inner and outer walls and exposes the insulating material 18. This gap or space is adapted to be covered by a breaker strip 22 which may extend in one piece around the sides, top and bottom of the cabinet around the door opening, or, if desired, be formed in sections positioned around the door opening. The outer margin of the breaker strip overlaps the outer face of rearwardly extending flange 14 on outer wall 13, and its inner margin, which may be provided with an angular portion 26, overlaps and is adapted to engage the outer face of flange 17 of liner 16. This breaker strip 22 is usually formed of any desired material, preferably material having a low co-efficient of heat conductivity. At spaced intervals substantially flat plates 28 are secured to the inner face of the breaker strip by being cemented thereto with a high strength adhesive, for example, such as is commercially known as "Cycleweld" or "Metlbond." Each plate 28 constitutes an element for detachably connecting a resilient clip, generally designated 30, to the breaker strip 22. The plates 28, being bonded to the inner face of the breaker strip, provide an attachment element on said strip which is interiorly attached to the strip leaving the outer face of said strip unmarred and without visible screws or rivets. The central portion of each plate 28 is bent to form an offset portion 29 which forms an open-ended transverse socket 31 between the breaker strip and the plate for detachably retaining an attaching clip 30.

Each clip 30 is formed of a strip of flat resilient metal bent to form a pair of integral convergent

members 32 joined together at 33 to provide a substantially V-shaped portion, a pair of members 34 which diverge toward the convergent members 32 and a pair of inturned tongues or terminals 35. The offset portion 29 of each plate 28 is formed with notches 36 into which fit the ends of the divergent members 34 adjacent tongues 35. The tongues or terminals 35 are adapted to slide into and out of socket 31 through its open ends. The convergent members 32 constitute a V-shaped portion which, when forced between the edges 19 and 20 of flanges 14 and 17, respectively, will contract the clip 30 until the meeting corners between divergent members 34 and convergent members 32 have passed through the gap between said flanges. The divergent members 34 react on the edges 19 and 20 to cam the breaker strip 22 into engagement toward flanges 14 and 17 when clips 30 have been inserted between the inner and outer walls and the breaker strip engages said walls, as illustrated in Fig. 2. The clips then extend into the loose insulating material 18.

The breaker strip 22 is placed in position to cover the gaps between the flanges on the inner and outer walls of the cabinet by applying outward pressure and forcing the clips through said gaps. As the clips are forced through the gaps, their convergent members 32 will contract until the divergent members 34 pass into said gap between the edges of the flanges of the walls. The strip 22 is then forced inwardly toward said walls until the divergent members 34 exert a camming pressure against the edges of flanges 14 and 17 and force and hold the margins of the breaker strip in engagement with the exposed faces of said flanges. When access is desired to the space between the inner and outer walls or repair may be necessary in the clips, the breaker strip can be pried away from said flanges on the walls until the convergent members 32 have passed into said gap, whereupon the strip can be freely separated from the flanges. When the strip is removed from the cabinet, the clips can be readily replaced, when desired.

In fabricating the breaker strip and its attaching devices, plates 28 are cemented to the inner face of the breaker strip. The resilient clips are separately fabricated. The strips and clips may be readily stacked or packed for storage or shipment until they are to be used. The clips are then spread and their tongues 35 are inserted in open ends of sockets 30 between the offset portions 29 of plates 28. The inherent resiliency of the clips will press the tongues and convergent members 32 into notches 36 in the edges of the offset portions 29 so they will be resiliently locked to plates 28 and the breaker strip 22 will project from and be secured to said breaker strip.

The invention exemplifies a breaker strip with attaching devices which are detachably connected thereto without screws or rivets which extend through the breaker strip. The invention also exemplifies a detaching device for the breaker strip which includes a plate which is bonded to the inner face of the breaker strip to which the resilient clip is detachably connected. The invention also exemplifies a clip for securing the breaker strip on the cabinet which directly engages the flanges on the inner and outer walls of the cabinet and by camming pressure holds the breaker strip against said flanges. The clips which are formed of flat strips of resilient metal extend into the insulating material and are of

sufficient length to form a heat transfer path of low co-efficiency for preventing excessive heat transfer. The invention also exemplifies attaching devices which are adapted for use with a unitary breaker strip which extends around the door opening or which may be formed in sections and is also applicable to walls in which the flanges on the inner and outer walls are stepped or obtusely and acutely angled, as well understood in the art.

The invention is not to be understood as limited to the details described, since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. Means for securing to a refrigerator cabinet provided with an outer wall and an inner wall having margins with a substantially continuous gap between them, a breaker strip having a continuous, flat unbroken planar surface throughout its width adapted to overlie said margin for covering said gap, comprising: a plate bonded to the inner face of said planar surface and provided with a transversely extending offset portion protruding outwardly from said planar surface, a clip having convergent and divergent members adapted to pass into said gap, the divergent members having outer side surfaces resiliently engaging the margins of said walls for securing the strip to cover said gap and inner surfaces contacting said plate at the ends of said offset portion of said plate, and inturned tongues integral with said clip extending between the offset portion of said plate and said inner surface of said breaker strip for securing the clip to the breaker strip, the width of said plate being substantially equal to the width of said gap for fixedly securing said clip between the ends of said plate and said margins when said breaker strip is mounted upon said cabinet.

2. Means for securing to a refrigerator cabinet provided with an outer wall and an inner wall having margins with a substantially continuous gap therebetween, a breaker strip having a continuous flat unbroken planar surface throughout its width adapted to overlie said margin for covering the gap comprising: a plate bonded to the inner face of said planar surface and provided with an off-set portion forming an open-ended, transversely extending outwardly protruding socket at the inner surface of said breaker strip, a clip of substantially flat metal provided with resilient convergent and divergent members having outer side faces for resiliently engaging the margins of the walls for securing the breaker strip to cover the gap and inner surfaces for engaging the ends of said socket, said clip having inturned tongues formed thereon extending between said socket and planar surface and removably fitting in said socket for detachably securing the clip to the breaker strip, the width of said plate being substantially equal to the width of said gap for fixedly securing said clip between the ends of said plate and said margins when said breaker strip is mounted upon said cabinet.

3. Means for securing to a refrigerator cabinet provided with an outer wall and an inner wall having margins with a substantially continuous gap between said margins, a breaker strip adapted to overlap said margins for covering the gap, comprising: a plate bonded to the inner surface

of said breaker strip and provided with an off-set portion forming an open-ended, transversely extending socket at the inner surface of said strip, notches at the ends of the off-set portion and a clip of substantially flat metal provided with resilient, convergent and divergent members adapted to pass into said gap, said divergent members having side faces adapted to resiliently engage the margins of the walls, inner faces adapted to engage the base of said notches and edge portions adapted to engage the side edges of said notches, and inturned tongues integral with the clip removably extending into the socket for detachably securing the clip to the breaker strip.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
295,495	Irwin et al.	Mar. 18, 1884
310,716	Palmer	Jan. 13, 1885
2,100,017	Van Uum	Nov. 23, 1937
2,178,719	Cotter	Nov. 7, 1939
2,192,359	Lombard	Mar. 5, 1940
2,238,416	Foster	Apr. 15, 1941
2,277,838	Baker	Mar. 31, 1942
2,284,301	Rieser	May 26, 1942
2,324,245	Swedman	July 13, 1943
2,330,988	Nave	Oct. 5, 1943