March 4, 1952 C. E. SULCEK 2,587,922

BREAKER STRIP CONSTRUCTION

Filed April 7, 1949 2 SHEETS—SHEET 1

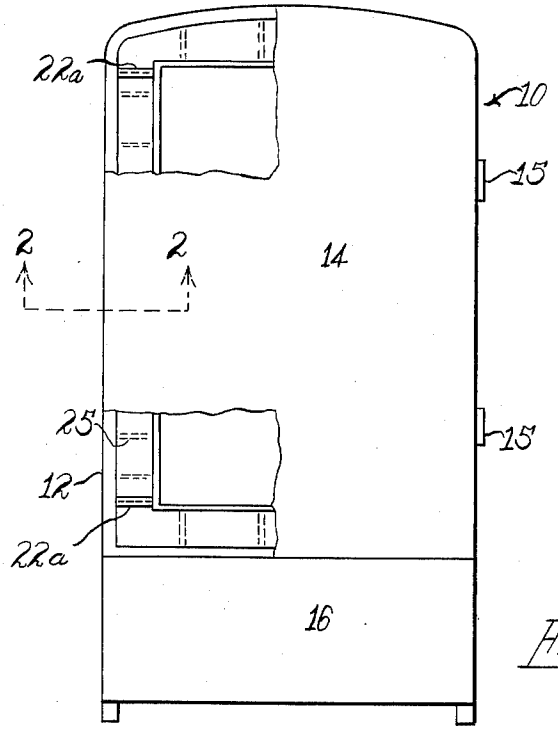


FIG. 1

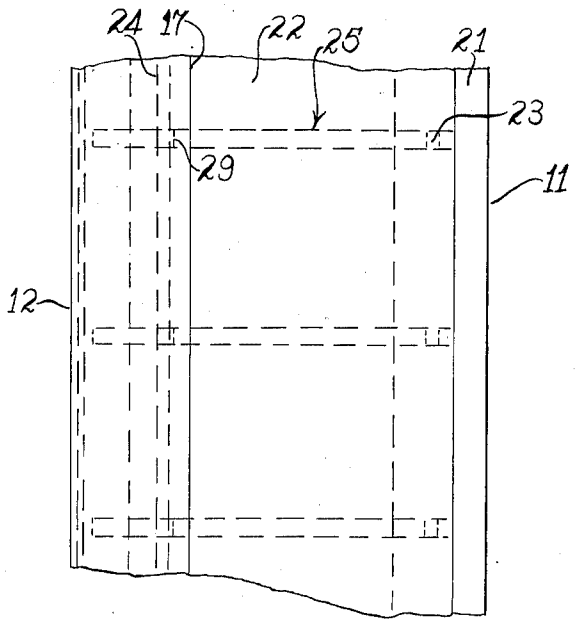


FIG. 6

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BREAKER STRIP CONSTRUCTION

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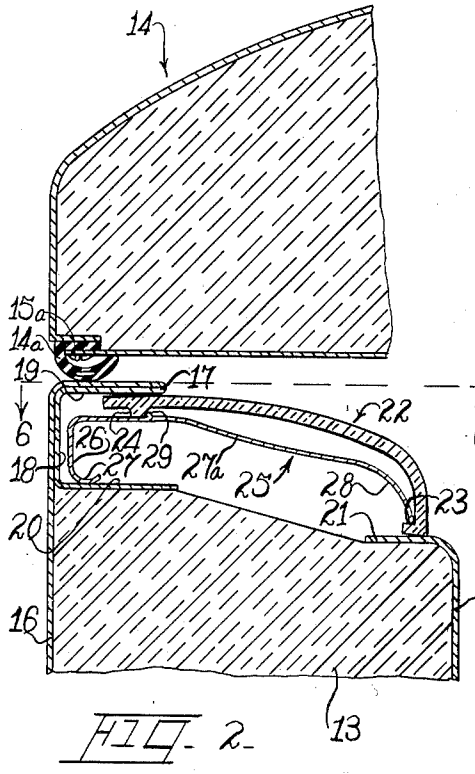


FIG. 2.

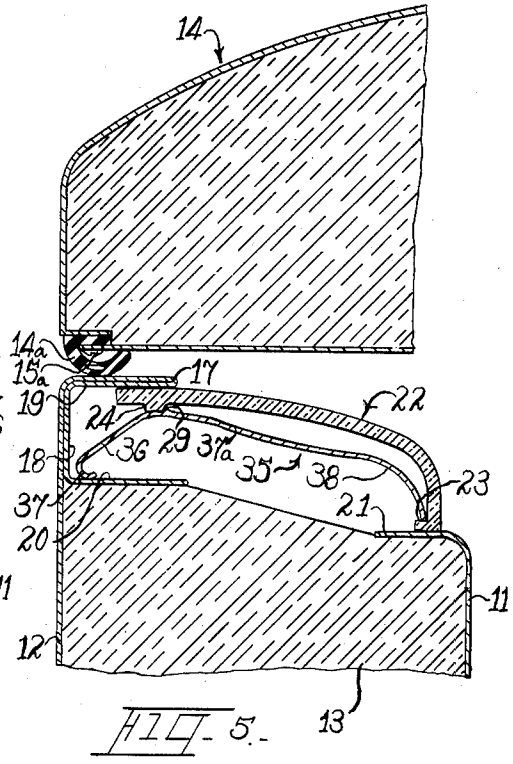


FIG. 5.

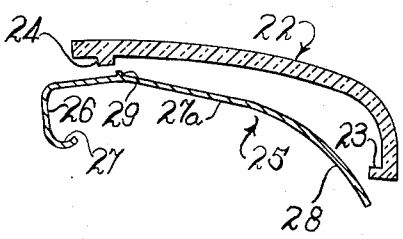


FIG. 3.

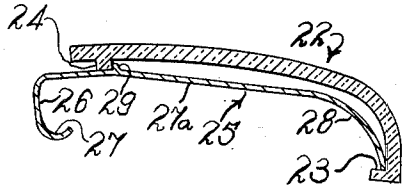


FIG. 4.

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UNITED STATES PATENT OFFICE

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BREAKER STRIP CONSTRUCTION

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2 Claims. (Cl. 220—9)

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This invention relates to refrigerator cabinet constructions, but more particularly is it concerned with the breaker strip assembly which is employed as a heat-break between the inner and outer walls of cabinets or chests of this character.

In the past, various devices have been proposed in an effort to produce an effective heat-break structure, commonly termed a breaker strip, between the inner liner and the outer shell in refrigerated cabinets, but generally such assemblies usually involved complicated structures and securing means that were difficult and expensive to install and frequently failed to provide the smooth, neat, concealed securing means and attractive appearance desired in cabinets of this character. Although considerable time and effort has been directed toward the development of a simple, attractive and easy to install heat-break member in association with a concealed securing assembly, there has been no general or universal acceptance by the industry of the devices heretofore proposed; hence, the problem of providing a breaker strip assembly which embodies substantially all the necessary and desirable qualities of such a structure has remained unsolved. The advent of the transversely curved heat-break member has, of course, further complicated this problem.

The present invention, therefore, has for its principal object the provision of an inexpensive, easy to install and attractive breaker strip assembly including concealed securing means which may be readily incorporated in a conventional refrigerated cabinet.

Another important object is to provide a breaker strip assembly wherein a preformed heat-break member adapted for positioning between the inner and outer walls of the cabinet may be secured therebetween by detachable resilient means.

A further object is to provide an inexpensive and easily formed resilient means for detachably affixing a preformed heat-break member in position between the inner and outer walls of a refrigerated cabinet.

A still further object is to provide a breaker strip assembly having a heat-break member fashioned with a curved cross section and which may be detachably affixed in position by resilient retaining means.

A yet still further object is to provide a breaker strip assembly having a preformed and curved heat-break member with inwardly projecting extensions adapted to constrain resilient

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retaining means for detachably affixing said member in position between the inner and outer walls of a refrigerated cabinet.

A further important object is to provide a simple, yet rugged, breaker strip assembly which may be readily positioned in place between the inner and outer walls of a refrigerated cabinet after completion of the assembly of said cabinet.

Another object is to provide a simple and inexpensive resilient retaining clip which may be spring loaded in such manner as to firmly but detachably secure a preformed heat-break member in position between the inner and outer walls of a refrigerated cabinet.

A further object is to provide a resilient retaining clip, having one end portion thereof bent inwardly, that is adapted for detachably securing a preformed heat-break member in position between the inner and outer walls of a refrigerated cabinet.

Another object is to provide a floating-type breaker strip assembly that is readily adapted for installation between the inner and outer walls of a refrigerated cabinet and which is highly effective even though said walls are not in exact alinement or other variations in cabinet construction make such installation a thermal seal therebetween difficult.

Further objects and advantages of the invention will be apparent from the full description, reference being had to the accompanying drawings wherein preferred forms of the invention are clearly shown.

Figure 1 is a front elevation of a household type refrigerator cabinet utilizing the present invention and having portions of the figure broken away to show more clearly the application of such invention to a cabinet of this character.

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

Figure 3 is a disassembled section of the spring clip and heat-break member and shows the relationship between these elements prior to loading of the spring and the placement thereof in position to retain said member between the walls of a cabinet.

Figure 4 is a section of the heat-break member and spring clip and shows the spring in a partially loaded position between the abutments provided therefor on said member.

Figure 5 is a section of the breaker strip assembly showing one modified form of the spring clip.

Figure 6 is a plan view taken on line 6—6 of Fig. 2 and shows a portion of the breaker strip assembly installed in a refrigerated cabinet.

Referring specifically to the drawings, it will be noted that a conventional front-opening type of refrigerator cabinet has been illustrated, but, since the present invention is likewise applicable to other types of refrigerated cabinets, its application should not be limited to the specific embodiment shown. In the drawings, the numeral 10 indicates a conventional refrigerator cabinet comprising an inner shell 11, spaced from an outer shell 12 and separated therefrom by suitable insulation material 13, a closure door 14 hingedly supported by hinges 15 on said outer shell, a resilient sealing member 14a secured by suitable means such as the screws 15a to the door, and a lower front cover portion 16. The outer and inner shells are more or less conventional in construction and are formed with a top, opposite side walls and a bottom, which, for purpose of simplification, have not been shown in detail or numbered unnecessarily in the drawings.

The forward marginal edge of the outer shell 12 is bent back over itself and then inwardly as indicated at 17 to form a channel 18 having parallel spaced apart extensions or lips 19 and 20, while the forward marginal edge of the inner shell 11 is angled over to form an inwardly projecting flange or lip 21. It will be understood, of course, that the entire forward marginal edge of both the inner and outer shells adjacent the door opening are fashioned as indicated since the breaker strip generally completely encompasses said opening. It will be noted also that the forward marginal edges of the inner and outer shells do not lie in the same plane, thus increasing the length of the heat path therebetween. Another reason for this deviation will presently become manifest.

A preformed breaker strip of heat-break member 22, fashioned from a low-heat conducting plastic or fibrous material of the non-hydroscopic and non-metallic type, is fashioned preferably so as to provide a transversely curved contoured portion proximate one edge thereof, substantially illustrated in Figures 2, 3, 4 and 5. Such member may, if desired, be fabricated in a plurality of sections and then installed end to end around the door opening, but, for the purpose of improving appearance, it is preferred that such member be fashioned so that only one such section is required on each side and one each on the top and bottom of the door opening. By so doing it will be necessary to have exposed joints only near the corners where the side sections join the top and bottom sections respectively. The curved contour of this heat-break member is especially desirable because it greatly adds to the appearance of the refrigerator cabinet, particularly when the door is opened, and because the tendency to become damaged as a result of articles coming in contact with the edges thereof while being placed in or removed from the interior of the refrigerator is greatly reduced. It is further advantageous because the curve therein provides increased structural strength which, as is well understood, may advantageously be utilized in materials of this character.

If desired, the ends of each section of the heat-break member 22 may be cut or formed, as indicated in Figure 1, in order to facilitate assembly, and to improve the appearance thereof after the end or side sections are positioned

adjacent the respective top and bottom sections. Suitable cover plates 22a may be provided, if desired, for positioning over such joints, and conventional securing means may be employed for fixedly securing such plates in position.

A turned-in lip or flange 23 fashioned along one marginal edge, and a laterally extending rib 24 spaced inwardly from the opposite marginal edge of said heat-break member provide abutments that function for purposes which will be more fully explained hereinafter.

A spring clip member, indicated generally by the numeral 25, fashioned from some suitable resilient material, such as spring steel or the like, is provided with an inwardly bent portion 26 proximate one end thereof while the end itself is inwardly turned as indicated at 27, and the opposite end of said member is formed with a flat portion 27a contiguous with a large radius curved portion as shown at 28. Spaced from one end of the clip, on the face opposite the inwardly turned portion 27, there is provided an outwardly projecting extension or lip 29 which, if desired, may readily be fashioned by punching a portion of the material out from the clip. Preferably this lip is located at the point where the end portion 26 joins the flat portion 27a. The configuration of the clip member 25 is best illustrated in Figure 3 wherein the member is shown as fabricated and before any portion thereof has been spring loaded by placing it under compression or tension. A plurality of such clip members may be employed and it has been found desirable to provide sufficient clip members to permit spacing at intervals of approximately six inches throughout the length of each section of the heat-break member.

A modified form of the spring clip member is illustrated in Figure 5. In this form the clip 35 comprises an inwardly angled portion 36, an inwardly curved end 37, and a flat intermediate portion 37a that joins the end portion 36 with a large radius curved opposite end portion 38 and an outwardly directed lip or extension 39. In this modification the end portion 36 is angled off from the remainder of the clip at a substantially greater angle than that provided in the other preferred embodiment but the operation and function thereof is substantially identical; hence it falls well within an accepted modification of the invention.

In assembling and installing the present invention in a refrigerated cabinet, a spring clip 25 is first positioned so that the lip 29 thereon abuts the rib 24 on the heat-break member, then the opposite or curved end portion 28 of said clip is forced into abutting relation with the flange 23, extending along one edge of said member, so that the portion of the spring clip between these ribbed abutments becomes partially loaded and, as a result of being so compressed, assume the position illustrated in Figure 4. A plurality of similar clips, spaced preferably approximately six inches apart, may then be placed in position against each section of the heat-break member before such section is positioned in place between the walls of the cabinet. With the clips in place the sections of th heat-break member are now ready to be installed and placed between the inturned forward marginal edges of the refrigerator, one such section usually being positioned at a time. This is best accomplished by placing the inwardly curved end portion 27 of each clip against the inwardly extending lip 20 of the outer shell, then by exerting a slight downward pressure on the heat-break member as it is moved

toward the outer shell the outer edge thereof will easily slide underneath the extending lip 19 while at the same time the opposite or curved edge portion of said member seats itself on the inwardly turned extension 21 of the inner shell. It will be appreciated that as the heat-break member is forced underneath the extension 19 of the outer shell the inwardly turned end portion 26, of the spring clip 25, becomes loaded and thus tends to hold said member securely in position against said extension. At the same time the reactive pressure from the extension 20 against the curved end portion 27 of the spring clip tends to slightly rotate said clip about a fulcrum at the point where the clip contacts the rib 29 on the heat-break member, but, since the opposite end 28 of the clip is securely positioned against the flange 23, the flat and curved portions of the clip will not be able to move without carrying with them the opposite edge of the heat-break member 22, thus operating to pinion this member securely in seating relation against the inturned flange 21 of the inner shell. In order to facilitate assembly, the top and bottom sections are first placed in position and then each of the side sections, after which the cover plates 22*a* are installed. The operation of the modified spring clip, illustrated in Figure 5, is substantially identical to that heretofore described.

From the above it will now be apparent that the present invention provides a highly satisfactory breaker-strip assembly, including a curved heat-break member and concealed securing means, that may be easily installed after assembly of the cabinet. Furthermore, the proposed invention provides a neat, attractive and inexpensive means for bridging the space between the outer marginal edges of the inner and outer walls of a refrigerated cabinet with a very effective heat-break member. The device proposed is simple and rugged and may readily be installed in conventional refrigerated cabinets without appreciable alteration of such cabinets.

Although only a preferred form of the invention has been illustrated and described in detail, it will be apparent to those skilled in the art that various modifications may be made therein without departing from the spirit of the invention or the scope of the appended claims.

What is claimed is:

1. In refrigerator cabinet construction, the combination of inner and outer shells having heat insulation therebetween and provided with a door opening, said shells having edge portions bent inwardly toward each other and disposed in different planes and spaced apart peripherally of the door opening, a member spaced from one of said edge portions and parallel therewith forming a channel opening outwardly toward the other shell, a heat-break member provided with an inwardly turned flange along one edge and an inwardly directed rib-like projection extending parallel to and proximate the opposite edge thereof, said heat-break member being adapted to bridge the space between the shells with one edge of said member extending into said channel while the opposite edge thereof seats on the inturned edge portion of the other shell, detachable resilient means fashioned with an inwardly bent end portion, an intermediate flat portion, an opposite end portion having a large radius curve therein and an outwardly directed projection proximate said first end portion, said resilient means being further fashioned so that the combined overall length of the intermediate portion and large curved end portion is greater than the minimum distance between the rib-like projection and the inturned flange of said heat-break member, and having one end portion of said means adapted for positioning in said channel and against one face of said heat-break member so that a portion of the opposite face of said member is urged against one inner face of said channel while the remainder of said means is adapted for being forcibly positioned between the rib-like projection and the inturned flange of said heat-break member in such manner that the inturned flange edge of said member is urged to seat against the inturned edge of the other shell.

2. In refrigerator cabinet construction, the combination of inner and outer shells having heat insulation therebetween and provided with a door opening, said shells having edge portions bent inwardly toward each other and disposed in different planes and spaced apart peripherally of the door opening, a member spaced from one of said edge portions and parallel therewith forming a channel opening outwardly toward the other shell, a heat-break member provided with an inwardly turned flange along one edge and an inwardly directed rib-like projection extending parallel to and proximate the opposite edge thereof, said heat-break member being adapted to bridge the space between the shells with one edge of said member extending into said channel while the opposite edge thereof seats on the inturned edge portion of the other shell, detachable resilient means fashioned as an integral member with an inwardly bent end portion, an intermediate and substantially flat portion, an opposite end portion having a large radius curve therein and an outwardly directed lip proximate said first end portion, said member being further fashioned so that the overall distance from said lip to the exposed end of the large curved end portion thereof is greater when said member is non-compressed than the minimum spacing between the rib-like projection and the inturned flange of said heat-break member, and having a portion of said resilient means adapted for positioning in said channel so as to urge one edge of said heat-break member against one inner face of said channel while at the same time the projecting lip on said means is brought into contact with the rib-like projection on the heat-break member and the opposite end of said means is forcibly positioned against the inner surface of the inwardly turned flange of said heat-break member whereby the said flanged edge is urged to seat in close fitting relationship with the inturned edge of the other shell.

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