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CABINET STRUCTURE

Filed Jan. 9, 1964

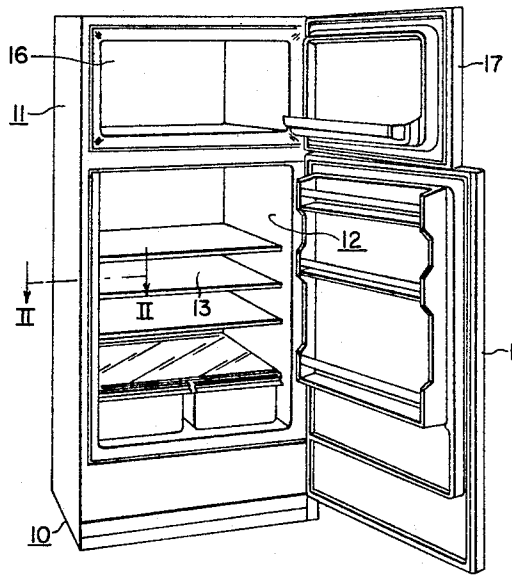


Fig.1.

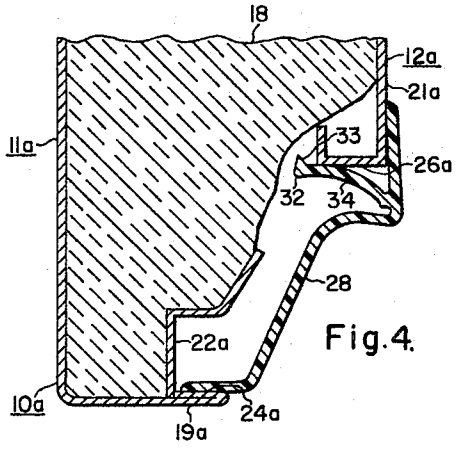


Fig.4.

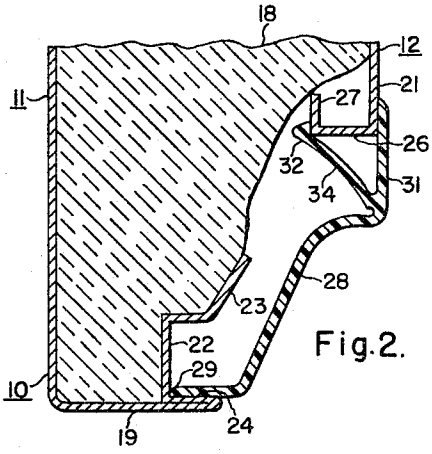


Fig.2.

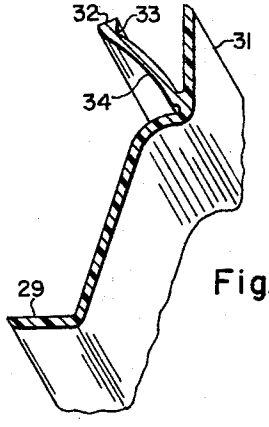


Fig.3.

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CABINET STRUCTURE

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This invention relates to refrigerator cabinets, and more particularly to a breaker strip construction for use in such cabinets.

In the design of a refrigerated cabinet structure for use in a domestic refrigerator, it is customary to provide an outer shell cabinet and inner liner shell structure having an insulating material, for example glass wool or foam, disposed therebetween. The inner liner and outer shell are generally sealed adjacent the liner opening by a breaker strip of resilient flexible material.

One of the problems accompanying the fabrication of these cabinets, is that of holding the alignment of the liner shell relative to the cabinet shell to a tolerance which permits a single breaker strip construction to adquately seal the gap produced by the spaced relation of these elements. In addition to adequately sealing the space between the liner and cabinet shell, the breaker strip generally is in a position for close scrutiny by the user, and therefore should present an attractive appearance when positioned on the cabinet. Heretofore various breaker strip, liner, and cabinet shell arrangements have been provided, without supplying an adequate solution to the problem.

In general, when a deep positioned liner is provided in a cabinet (that is a liner that is close to the rear of the cabinet shell) the prior art breaker strips have had the tendency to pull away from the liner or the cabinet shell, thereby permitting moisture to enter the space provided for insulation. When the opposite conditions prevail, and a shallow food compartment liner occurs during a production run, the prior art breaker strip has a tendency to buckle outwardly, thereby producing an unattractive appearing seal between the liner and the cabinet.

The present invention therefore has as an object to provide a refrigerated cabinet having a novel breaker strip arrangement which functions over a wide variation in liner spacings within the cabinet shell.

A further object of the invention is to provide a refrigerated cabinet having a breaker strip arrangement which provides a moisture tight seal, is pleasing in appearance, and is adaptable to fit a wide range of liner locations within the cabinet shell.

These objects of the invention, and other objects which will become apparent as the description proceeds, are achieved by providing a cabinet structure having an inner liner and an outer cabinet shell disposed in spaced relation with a novel breaker strip disposed across the gap between the front edge portions of each of the members. The breaker strip has one edge portion disposed adjacent the front edge portion of the cabinet shell in a manner providing for a variation in lateral support of the breaker strip and limiting forward movement of the strip. The opposite edge of the breaker strip has a substantially V-shaped portion opening rearwardly and comprising a leg member disposed adjacent the liner inner wall, and a tab member disposed adjacent an outwardly extending flange of the liner edge portion. The V-shaped member is disposed in relation to the inner shell edge portion such that

contact of the outwardly extending flange with the tab member provides a clamping force between the leg member and the inner shell edge portion. The breaker strip of the present invention thereby is adaptable to a great number of liner and outer shell combinations having wide variations in liner to shell location.

The several objects, advantages and features of the invention will become apparent from the following description in which reference is made to the accompanying drawings, wherein:

FIG. 1 is a perspective view showing a refrigerator cabinet having the invention employed therein;

FIG. 2 is an enlarged fragmentary sectional view taken along line II—II of FIG. 1, showing the invention in detail;

FIG. 3 is a sectional perspective view showing an element of the invention removed from the refrigerator cabinet; and

FIG. 4 is a fragmentary sectional view similar to FIG. 2 but showing the invention employed in a different refrigerator cabinet similar to the cabinet shown in FIG. 1.

Although the principles of the invention are broadly applicable to refrigerated cabinets in general, the invention has been herein illustrated in a domestic refrigerator cabinet, and will be so described.

Referring to the drawings, especially FIGURES 1 and 2, there is shown a refrigerator cabinet **10** having an outer shell **11** in which is nested an inner shell **12**, or liner, to provide a storage compartment **13**. The storage compartment **13** has a front access opening which may be closed by a door **14** shown in the open position in FIG. 1.

As best shown in FIG. 1, the refrigerator cabinet **10** is also provided with a second compartment **16** provided with a closure member **17**, also shown in the open position. It should be understood that although the invention is explained in detail with reference to the storage compartment **13**, it is equally applicable to the shell structure and breaker strip combination to be found in compartment **16**.

Referring now to FIG. 2, it will be seen that an insulating material **18**, which may be of the glass wool type or a polyurethane foam, is provided in the space between the shell **11** and the shell **12**. As also shown in this figure, the outer shell **11** has a front edge portion **19** extending inwardly towards the inner shell **12**, and the inner shell is provided with a front edge portion **21** disposed inwardly and rearwardly of the portion **19** providing a gap therebetween. The shell **11** is bent upon itself to provide a channel shaped portion **22** having a rearwardly inward extending flange **23**, and rearwardly facing surface **24**. At the edge portion **21** of the inner shell **12** there is provided an outwardly extending flange **26** having a rearwardly extending foot portion **27** at one edge thereof to produce a generally L-shaped member.

To provide a seal across the gap between the outer shell **11** and the inner shell **12**, a resilient flexible breaker strip member **28** is disposed having a first edge **29** in contact with the surface **24** and supported against forward movement by the front edge portion **19**. The opposite edge of the breaker strip **28** has a substantially V-shaped portion comprising a rearwardly protruding leg member **31** and an outwardly extending flexible tab member **32**. The breaker strip **28** may be fabricated from any suitable material, for example styrene acrylonitrile copolymer, which is commony used for breaker strip applications.

As shown in FIG. 3, the flexible tab member **32** has a notch **33**, and an arched portion **34** which is generally convex toward the flange **26** when in the assembled position.

Referring again to FIG. 2, there is shown a portion of a cabinet wherein the shell **12** is deeply nested toward the rear of the outer shell **11** resulting in a relatively large gap between the shell members. In addition, the liner **12** is disposed relatively closer to the shell **11** in a lateral direction. With the shell **11** and inner shell **12** so located, the breaker strip **28** is designed to provide a locking engagement between the V-shaped portion of the breaker strip **28** and the inner shell **12**, by engagement of the outwardly extending flange **26** in the notch **33** of the flexible tab **32**, and contact of the leg member **31** with the front edge portion **21**. With the shell **11** and the inner shell **12** closely spaced as shown, the breaker strip edge **29** bottoms in the channel member **22** in addition to being tightly received adjacent the surface **24** to provide a tight seal at the edge portion **19**.

It should here be mentioned that in addition to providing a clamping engagement at the flange **26**, the generally V-shaped portion of the breaker strip is advantageous in applications having foamed in place insulation. By providing a relatively large space between the tab **32** and the leg **31**, liquid foaming material flowing past the seal between the tab **32** and the flange **26** is forced to travel through a circuitous path to flow between the leg member **31** and the flange **26** is thereby hardened before leakage to the outside of the cabinet can occur.

Referring now to FIG. 4, there is shown a cabinet **10*a*** similar to cabinet **10**, but having an outer shell **11*a*** and an inner shell **12*a*** located in different spaced relationship than the inner shell **12** and outer shell **11** of the cabinet **10**. The inner shell **12*a*** is located forwardly in the outer shell and has been separated from the shell **11*a*** a greater distance. Excepting the location of the liner **12*a*** relative to the cabinet shell **11*a***, the inner and outer shell members have elements respectively similar to those elements of the cabinet **10**. The inner shell **12*a*** is provided with a front edge portion **21*a*** and an outwardly extending flange **26*a***, and the outer shell **11*a*** is provided with a front edge portion **19*a*** having a rearwardly facing surface **24*a*** and a channel-shaped portion **22*a***.

As will be seen clearly in FIG. 4, the breaker strip **28**, when disposed in the gap between the shell members **11*a*** and **12*a*** assumes a different position relative to the elements of cabinet **10*a***, but is still effective to produce a tight seal across the gap.

Here again, the flexible leg member **31** is located adjacent the inner surface of the edge portion **21*a***. However, the flange **26*a*** is now disposed adjacent the arched portion **34** of the tap member **32**, rather than in the notch **33** as in the cabinet **10**. With the edge portion **21*a*** so disposed relative to the V-shaped portion of the breaker strip **28**, and the breaker strip **28** so designed, contact of the outwardly extending flange **26*a*** with the arched portion **34** causes a pivoting action about the base of the V section, thereby producing a clamping force between the leg member **31** and the edge portion **21*a***, to provide a tight seal at this point.

Regarding the edge **29** of the breaker strip, here again the edge member is in contact with the surface **24*a*** and forward movement of the breaker strip **28** is limited by the contact of the surface with the edge. Due to the increase in lateral displacement between the shell members **11*a*** and **12*a***, the edge **29** is displaced slightly from the channel member **22*a***. However, as was found with the opposite edge of the breaker strip **28**, the seal is still retained between the breaker strip **28** and the edge portion **19*a*** by the novel design of the breaker strip member.

From the foregoing, it should be obvious that the present invention provides a refrigerated cabinet structure which permits a wide latitude in relationships between cabinet and liner structure. For this reason, the present

invention is of extreme importance in the mass production techniques employed in refrigerator construction.

While the invention has been shown in but one form it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What is claimed is:

1. A refrigerated cabinet comprising:
an outer shell,
an inner shell nested in said outer shell in spaced relation and having a front access opening thereto providing a storage compartment,
said outer shell having a front edge portion extending inwardly toward said inner shell, and
said inner shell having a front edge portion disposed inwardly and rearwardly of said outer shell edge portion providing a gap therebetween,
a resilient flexible breaker strip disposed across said gap and having one edge in contact and supported against forward movement by, said outer shell front edge portion,
The opposite edge of said breaker strip having a substantially V-shaped portion opening rearwardly and comprising;
a rearwardly protruding leg member disposed adjacent an inner surface of said inner shell edge portion, and
a rearwardly outwardly extending flexible, tab member having an inwardly arched portion, and,
said inner shell edge portion having an outwardly extending flange provided thereon,
said flange being disposed across said rear opening of said V-shaped portion to contact said flexible tab member,
said V-shaped portion being so disposed in relation to said inner shell edge member that contact of said outwardly extending flange with said arched portion of said tab member provides a clamping force between said leg member and said inner shell edge portion.

2. The structure of claim **1** further characterized by said resilient breaker strip having a rearwardly arched portion connecting said one edge wtih said opposite edge, and
said flexible tab member having a notch provided for receiving said outwardly extending flange.

3. A refrigerator cabinet comprising:
an outer shell,
an inner shell nested in said outer shell in spaced relation thereto and having a front access opening thereto providing a storage compartment.
said outer shell having a front edge portion extending inwardly toward said inner shell, and
said inner shell having a front edge portion disposed inwardly and rearwardly of said outer shell edge portion providing a gap therebetween,
a resilient flexible breaker strip disposed across said gap and having one edge provided with an adjacent front facing surface in contact with said outer shell front edge portion to limit forward movement of said breaker strip,
said outer shell front edge portion having a rearwardly extending flange disposed adjacent said breaker strip one edge to limit outward movement of said breaker strip,
said breaker strip further having a substantially V-shaped portion disposed at the opposite edge thereof and
a rearwardly arched portion connecting said one edge of said breaker strip to said V-shaped portion,
said V-shaped portion opening rearwardly and comprising;
a rearwardly protruding leg member disposed adjacent and substantially parallel to, an inner surface of said inner shell edge portion, and

a rearwardly outwardly extending tab member having an inwardly arched portion, and

said inner shell edge portion having an outwardly extending flange provided thereon,

said flange being disposed across said rear opening of said V-shaped member to contact said flexible tab member,

said V-shaped member being so disposed in relation to said inner shell edge portion that contact of said outwardly extending flange with said arched portion of said tab member provides a clamping force between said leg member and said inner shell edge portion.

References Cited by the Examiner

UNITED STATES PATENTS

2,432,751	12/1947	Goulooze	220—9
2,662,660	12/1953	Frykdahl	220—9
2,679,944	6/1954	Morton	220—9
2,940,632	6/1960	Dickinson et al.	220—15

FOREIGN PATENTS

1,286,498	1/1962	France.

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