United States Patent [19]

Turner et al.

[11] **3,834,779**

[45] **Sept. 10, 1974**

[54] **REFRIGERATOR CABINET**

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[73] Assignee: **General Electric Company,** Louisville, Ky.

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[52] **U.S. Cl.**..... **312/214,** 62/285, 220/9 G

[51] **Int. Cl.**... **A47b 81/00,** F25d 11/00, B65d 25/18

[58] **Field of Search** ..... 62/285, 414, 419, DIG. 3; 312/214; 220/9 G, DIG. 18, 9 R

[56] **References Cited**

UNITED STATES PATENTS

2,581,692	1/1952	Morton et al.	220/9 R
3,240,029	3/1966	Wurtz	220/9 R X
3,280,583	10/1966	Jones et al.	62/285
3,622,215	11/1971	Roberts	312/214

FOREIGN PATENTS OR APPLICATIONS

977,415	12/1964	Great Britain	312/214

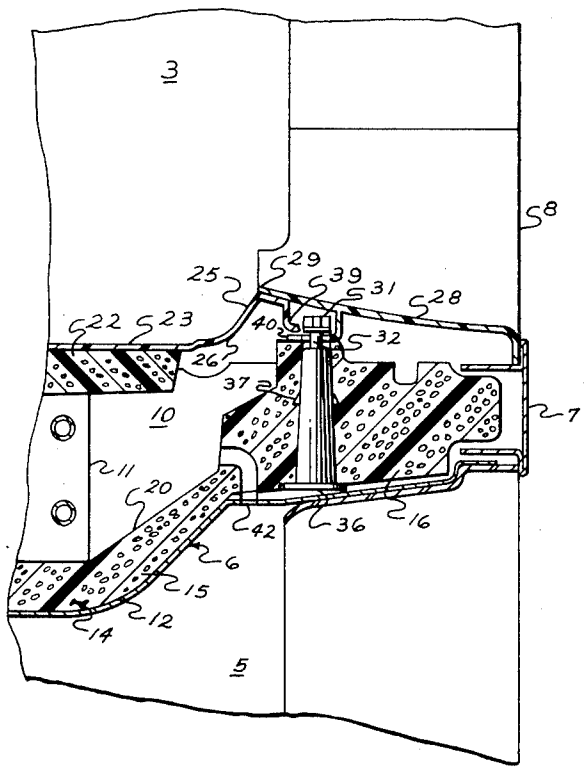
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[57] **ABSTRACT**

A refrigerator cabinet comprising a storage compartment, an evaporator chamber below the storage compartment including a recessed foamed plastic body supporting an evaporator and a removable plastic sheet member forming the cover for the evaporator chamber and the bottom wall of the storage compartment includes a breaker strip overlapping and securing the front edge of the sheet member and anchoring means embedded in the foamed plastic body for anchoring the breaker strip.

6 Claims, 3 Drawing Figures



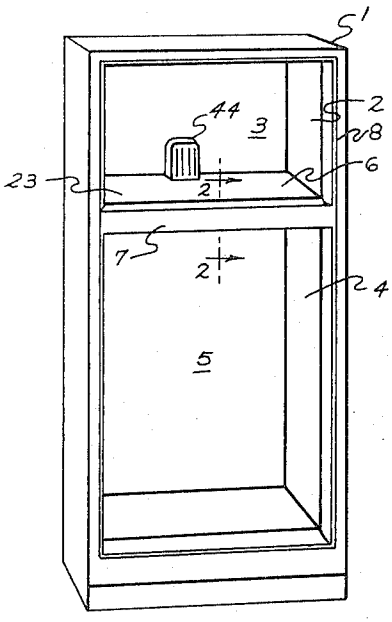


FIG. 1

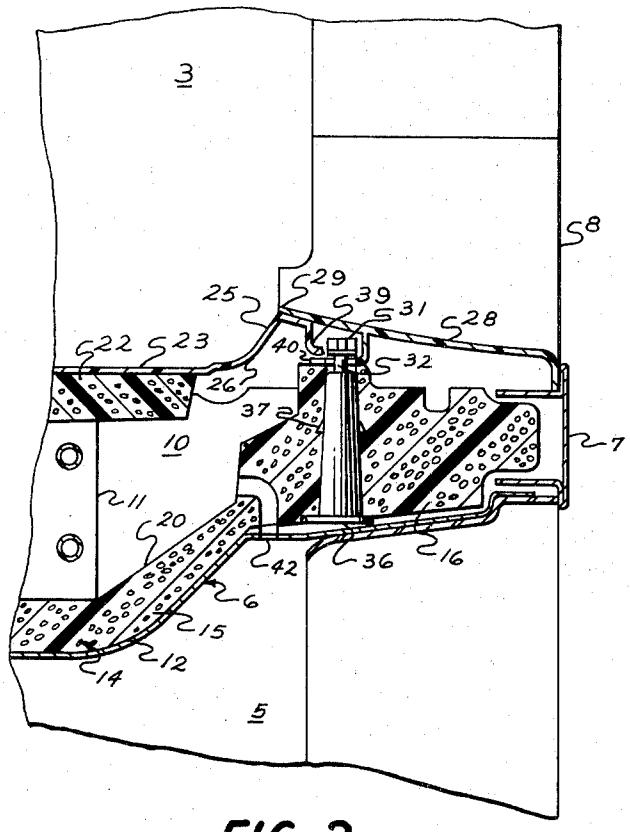


FIG. 2

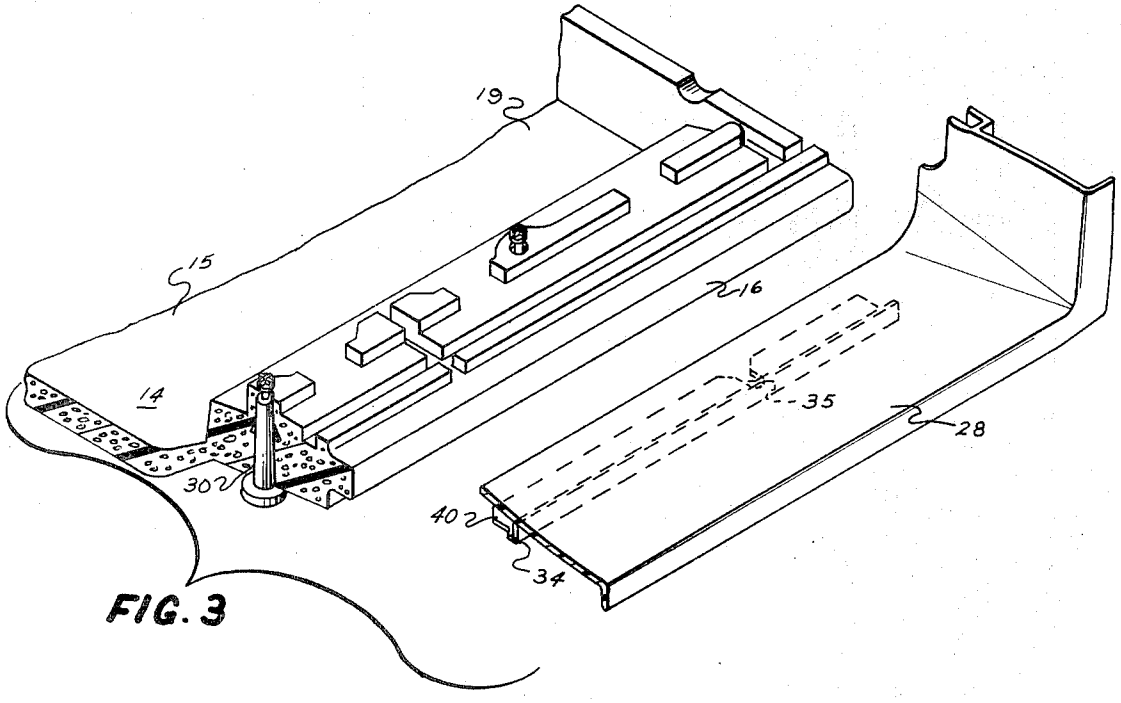


FIG. 3

REFRIGERATOR CABINET

BACKGROUND OF THE INVENTION

The present invention relates to a household refrigerator of the type in which the evaporator is contained within an evaporator chamber below a storage compartment and the chamber is provided with a removable cover forming a bottom wall of the storage compartment and providing servicing access to the various components contained in the evaporator chamber. Such a refrigerator is described, for example, in U.S. Pat. No. 3,280,583-Jones et al. The present invention is an improvement on the refrigerator construction of the Jones et al patent and is directed particularly to the provision of an improved, lower-cost construction and arrangement of components common to the evaporator chamber and the storage compartment.

SUMMARY OF THE INVENTION

In accordance with the present invention, there is provided a refrigerator cabinet comprising a liner means defining a storage compartment having an access opening at the front thereof and shell means having forward edge portions including a bottom edge portion spaced from the adjacent edge of the liner. An evaporator chamber is provided below the storage compartment and includes a removable cover member forming the top wall of the chamber and the bottom wall of the storage compartment. The evaporator chamber contains a body of rigid foamed plastic insulating material having a recess therein for containing an evaporator, the front wall portion of the foamed plastic body extending forwardly of the cover member. A breaker strip bridging the space between the forward edge of the cover member and the adjacent portion of the shell overlaps the forward edge of the cover member. One or more vertically extending anchoring members extending through the front wall portion of the foamed plastic body are provided with enlarged head portions adapted to be received in slots provided on the breaker strip for securing the breaker strip.

BRIEF DESCRIPTION OF THE DRAWING

With reference to the accompanying drawing:

FIG. 1 is a perspective view of a two-temperature refrigerator cabinet embodying the present invention;

FIG. 2 is a horizontal sectional view taken generally along line 2—2 of FIG. 1; and

FIG. 3 is an exploded perspective view of portions of certain components of the cabinet.

DESCRIPTION OF THE PREFERRED EMBODIMENT

While the present invention is applicable to any refrigerator of the type including a horizontal evaporator chamber positioned immediately below a storage compartment, it will be particularly described with reference to a cabinet such as that described in the aforementioned Jones et al patent in which the evaporator chamber forms part of the partition separating upper and lower storage compartments. Such a refrigerator cabinet comprises an outer shell 1 and liner means spaced from the shell 1 and including a liner 2 generally defining a freezer compartment 3 at the top of the cabinet and a liner 4 defining a fresh food compartment 5 in the lower portion of the cabinet. The compartments

are separated by a partition 6, the front or forward edge of which is formed by a horizontal mullion 7 forming part of the shell. The mullion 7, together with the inwardly extending flanges 8 on the shell 1, define the access openings to the storage compartments 3 and 5.

The partition 6 includes an evaporator chamber 10 containing an evaporator 11 employed to cool the storage compartments 3 and 5. More specifically, the partition 6 comprises a bottom wall 12 which is part of the liner 4 and which forms the top wall of the lower storage compartment 5. A body 14 of rigid foamed plastic insulating material, such as Styrofoam or a rigid polyurethane foam, is supported on wall 12, this body 14 including a bottom wall 15 and a front wall portion 16 extending substantially the full width of the cabinet as represented by the mullion 7. The body 14 is preformed to define generally a recess 19 for receiving the evaporator 11. A metal drain pan 20 is positioned between the bottom wall 15 of the foamed plastic body and the evaporator and serves as means for collecting condensate from the evaporator during the defrosting thereof.

The top wall structure of the evaporator chamber includes a foamed plastic insulating pad 22 generally supported on the upper surface of the evaporator 11 and a removable cover member 23 of sheet plastic forming the top wall of the evaporator chamber and the bottom wall of the upper storage compartment 3.

As shown in FIG. 2 of the drawing, the forward portion 25 of the cover member 23 slants upwardly and is provided with a plurality of louvers or air passages 26 providing air-flow communication between the storage compartment 3 and the evaporator chamber 10. The forward edge portion 25 of the cover 23 terminates short of or, in other words, is spaced from the face of the cabinet as defined in part by the mullion 7 and this space is bridged by means of a breaker strip 28, the inner edge 29 overlapping the front edge of the cover member 23 forwardly of the louvers 26.

In the refrigerator construction of the Jones et al. patent, the freezer bottom wall is formed of sheet steel and hence provides a rigid self-supporting structure for, in turn, supporting the relatively flexible plastic breaker strip. In a preferred aspect of the present invention, the cover 23 is formed of a plastic sheet material and the supporting functions of the breaker strip and cover 23 are reversed. Specifically, in accordance with the present invention, means are provided for supporting or anchoring the breaker strip 28 so that it can be used to support the forward edge 25 of the cover member 23 or, in other words, the floor of the compartment 3. To this end, there are provided a plurality of vertically extending anchoring members 30 in the front wall portion 16 of the foamed plastic body member 14, each of these elements 30 having enlarged head portions 31 defining neck portions 32 and the breaker strip 28 is provided with a longitudinally extending L-shaped flange 34 on its bottom surface, which not only provides longitudinal rigidity to the strip but also includes a plurality of notches 35, each adapted to mate with a corresponding neck 32 of an anchoring member 30 thereby tying down the breaker strip 28 to the body 14 so that it is in retaining position relative to the forward edge portion 25 of the cover member 23.

Preferably, undersized holes are formed in the foamed plastic body 14 during the molding thereof and the tapering anchoring members 30 are pressed up-

wardly through these holes to the position illustrated in FIGS. 2 and 3 of the drawing in which enlarged base portions 36 on the anchoring members engage the lower surface of the foamed body member and prevent the anchoring members from being pulled upwardly through the foam material. Also, as assembled within the partition as shown in FIG. 2 of the drawing, the base portions 36 rest on the forward end of the solid liner top wall 12. The anchoring members 30 may also be provided with a plurality of flanges 37 to prevent rotation thereof and also to further anchor these members within the foamed body.

The extreme forward edge 39 of the cover member 23 is formed downwardly to engage or substantially rest on the horizontal leg 40 of the L-shaped flange 42 with the adjacent area between edge 32 and louvers 26 in substantial contact with the bottom surface of the breaker strip 29. The cover member 23 is installed by placing this front edge 39 into the slot defined by the L-shaped flange 34 and the rear end of the cover member 23 and then rotating the rear end of the cover downwardly into a horizontal position as illustrated in FIG. 2 of the drawing. Suitable supports (not shown) are provided for supporting the rear portions of the cover member 23. In this position, the entire length of the front edge of the cover is longitudinally supported by the breaker strip against vertical movement in either direction. For servicing the components contained within the evaporator chamber, the assembling operations are reversed. The rear portion of the cover member 23 is raised to a position in which the forward edge can be slipped from beneath the breaker strip 28.

The refrigerating operation of the refrigerator is similar to that described in the aforementioned Jones et al. patent, it being understood that fan means and various controls, as taught in the Jones et al. patent, are also provided in the evaporator chamber. Upon operation of the refrigerant compressor and fan means, compartment air from the compartment 3 is drawn into the evaporator chamber through the louvers 26, while compartment air from the compartment 5 is drawn into the evaporator chamber through passages 42 extending through the chamber bottom wall 12 and adjacent portions of the foamed body member 14. The cooled air is returned to the compartments through suitable passages in the rear portion of the chamber, the return passage to the storage compartment 3 being represented by the raised and louvered section 44 (FIG. 1) in the cover 23.

While there has been shown and described a specific embodiment of the present invention, it is not limited thereto and it is intended by the appended claims to cover all modifications within the true spirit and scope of the invention.

We claim:

1. A refrigerator cabinet comprising an outer shell including a face portion defining an access opening;

said cabinet containing liner means defining a storage compartment and an evaporator compartment below said storage compartment;

a removable cover member forming the top wall of said evaporator chamber and the bottom wall of said storage compartment having a forward edge spaced from the adjacent shell face portion;

said evaporator compartment containing a body of rigid foamed plastic including a front section and an evaporator supported on said body;

a breaker strip bridging said space and having an inner edge overlying said front section and the forward edge of said removable wall member; and

means for anchoring the inner edge portion of said breaker strip comprising a solid plastic insert in said front section having an enlarged head portion projecting above said front section and means carried by said breaker strip for engaging said head portion.

2. A cabinet according to claim 1 in which said cover is a plastic sheet material.

3. A cabinet according to claim 2 in which said cover includes an upwardly extending louvered section adjacent and below the plane of said breaker strip.

4. A cabinet according to claim 1 in which said means carried by said breaker strip comprises a notched L-shaped flange on said breaker strip.

5. A refrigerator cabinet comprising a liner means defining a storage compartment having an access opening at the front thereof and shell means having forward edge portions including a bottom edge portion spaced from the adjacent edges of said liner defining said access opening;

an evaporator chamber below said storage compartment and including a bottom wall;

a body of rigid foamed plastic insulating material supported on said chamber bottom wall within said chamber and comprising wall portions including a front wall portion defining an evaporator recess containing an evaporator;

a removable cover member of plastic sheet material forming the top wall of said chamber and the bottom wall of said liner means;

a vertically extending anchoring member extending through said front wall portion and having an enlarged base supported on said chamber bottom wall and an enlarged head projecting above the top of said front wall portion;

a breaker strip bridging the space between the forward edge of said cover member and the bottom edge portion of said shell and including an inner edge overlying said anchoring member head portion and the forward edge of said cover member;

said breaker strip including an L-shaped flange having a notch therein for engaging said head portion for anchoring the inner edge of said breaker strip.

6. A cabinet according to claim 5 in which the forward edge of said cover member is restrained within the space formed by said L-shaped flange.

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