

April 24, 1951

L. J. AMORE

2,549,879

REFRIGERATOR CABINET CONSTRUCTION

Filed Sept. 4, 1946

2 Sheets-Sheet 1

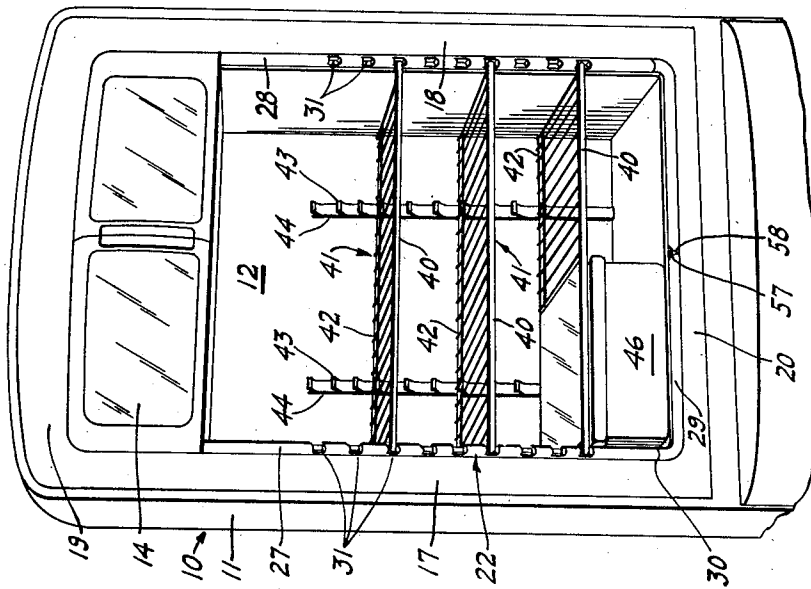


FIG. 1.

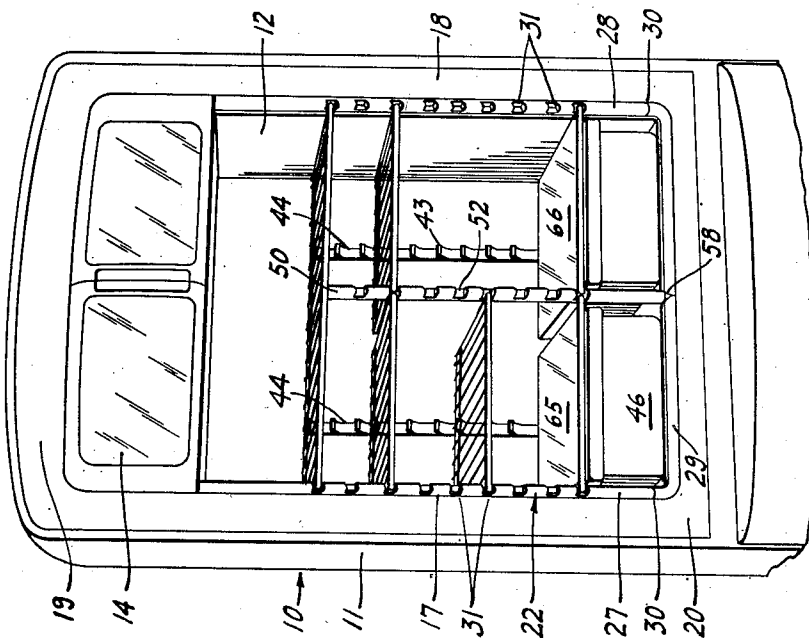


FIG. 2.

INVENTOR.
LEO J. AMORE
BY
Brown, Henk & Lynne
AGENTS

April 24, 1951

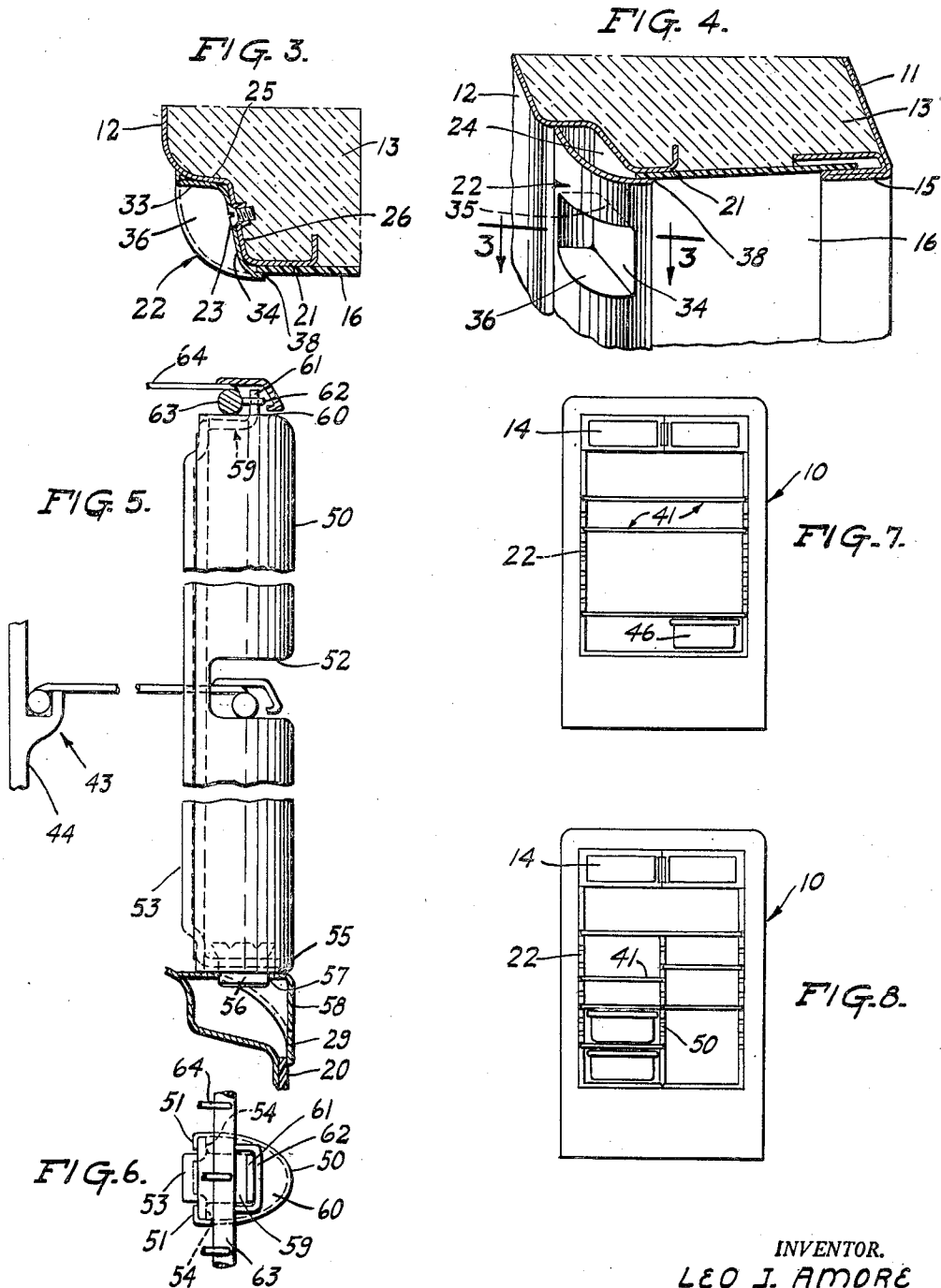
L. J. AMORE

2,549,879

REFRIGERATOR CABINET CONSTRUCTION

Filed Sept. 4, 1946

2 Sheets-Sheet 2



INVENTOR.
LEO J. AMORE
BY
Brown, Denk & Lynnestvedt
AGENTS

UNITED STATES PATENT OFFICE

2,549,879

REFRIGERATOR CABINET CONSTRUCTION

Leo J. Amore, Philadelphia, Pa., assignor to
Philco Corporation, Philadelphia, Pa., a corporation of Pennsylvania

Application September 4, 1946, Serial No. 694,778

5 Claims. (Cl. 312-214)

1

This invention relates to refrigerator cabinets and, more particularly, to the construction and arrangement of the shelving and breaker-strip trim thereof.

It is the primary object of the invention to provide new and improved refrigerator cabinet construction.

Another object of the invention is to provide refrigerator cabinet construction which affords maximum flexibility of shelf arrangement.

A further object of the invention is the provision, in refrigerator cabinet construction, of a novel breaker-strip trim-member around the throat of the food storage compartment liner.

Still further, it is an object of the invention to provide a breaker-strip trim-member which will permit the use of a flat breaker-strip between the peripheries of the outer shell and inner liner while still achieving the effect of a curved throat contour, blending from the plane of the breaker-strip into the plane of the liner walls.

More specifically it is an object of the invention to utilize the breaker-strip trim to assist in adjustably supporting shelves within the cabinet.

In accordance with a feature of the invention, shelves may be adjustably supported within a refrigerator cabinet, without the necessity of aperturing the side walls of the inner liner.

With the foregoing objects and advantages in mind, a preferred embodiment of the invention has been illustrated in the accompanying drawings, wherein:

Figure 1 is a fragmentary perspective view of a refrigerator cabinet embodying the present invention;

Figure 2 is a view similar to Figure 1, and illustrating an additional feature of the invention;

Figures 3, 4, 5, and 6 are detail views of various elements of the invention; and

Figures 7 and 8 are diagrammatic views showing further the flexibility of shelf arrangement afforded by the invention.

Referring now in more detail to the drawings, and particularly to Figure 1 thereof, the numeral 10 designates a refrigerator cabinet comprising an open front outer shell 11, and an open front inner liner 12, the latter providing the food storage compartment within the cabinet. The open fronts of the shell and the liner are in substantially the same plane, as shown fragmentarily in Figure 4, and provide the cabinet with a front access opening. A door (not shown) is, of course, employed and closes the opening in a substantially airtight manner.

Any suitable insulating material 13 (see Figures 3 and 4) may be provided between the walls of the outer shell and inner liner to insulate the food storage compartment. An evaporator section 14, the details of which form no particular part of the present invention, is shown positioned

2

within the upper part of the compartment, and provides the means by which the compartment is cooled.

As is clearly shown in Figure 4, and in accordance with common practice, the marginal portion around the front opening of the outer shell is formed with inwardly turned flanging 15 providing a recess adapted to receive one edge of a flat breaker-strip 16. This breaker-strip is constructed of any suitable and preferably hard insulating material, and is positioned angularly with respect to the walls of said compartment across the space between the marginal portions of the liner and shell, to close the gap therebetween in a manner preventing the flow of heat from one to the other, and forming therewith the door jamb of the cabinet.

Breaker-strip 16 may be formed in a single flat piece framing the compartment opening, but, for convenience in assembly, is preferably composed of four separate pieces, including two side pieces 17 and 18, and top and bottom pieces 19 and 20, respectively. The inner edge of the breaker-strip rests against a flange 21 formed on the marginal edge of the liner, and is clamped in this position by a breaker-strip trim member 22. The strip or member 22 is secured, as by screws 23 (Figures 3 and 4), over a pocket 24 extending peripherally about the liner and formed by outwardly and forwardly bent liner portions 25 and 26, respectively.

As seen more clearly in Figures 1 and 2, trim strips 27 and 28 are positioned on opposite sides of the liner with their upper ends terminating at the bottom edge of evaporator section 14, which latter substantially fills the space at the top of the liner and obviates the necessity of continuing the strips past that point. It will be understood, that if desired, the strip may, in cases where the evaporator is not so constructed, extend around the whole marginal portion of the liner.

As in the case of the breaker-strip, the trim-strip may also be constructed in a single piece, but it has been found preferable to form it of parallel side pieces 27 and 28, and a bottom piece 29 connecting the lower ends of said side pieces, as is indicated by the numeral 30 in Figures 1 and 2.

Each trim strip is preferably made of sheet metal, formed arcuately and subtending an angle of substantially 90°, to blend the plane of the flat breaker-strips smoothly into the plane of the liner walls, and so achieve the effect of a curved throat contour extending around the marginal portion of the food compartment.

Also, in further accordance with the present invention, side pieces 27 and 28 are each provided with a plurality of indentations, or open front pockets 31 spaced preferably at regular intervals

3

along its length so that positioning of the strips, as heretofore described, places opposite pockets in the same horizontal plane. It will be noted that pockets 31 are positioned outside of the space between the side walls of the compartment and out of the plane of said side walls.

While pockets 31 may be formed on the strips in any convenient manner, it has been found best to form them as an integral part of the strips by pressing, or drawing the surface metal of the strips inwardly. The pocket, thus formed, comprises vertical side walls 33 and 34, and top and bottom walls 35 and 36 respectively. Vertical walls 33 and 34 are angled in conformity with liner portions 25 and 26, as clearly shown in Figure 3, thus assuring proper positioning of the strip in pocket 24. The strip is held in place by the screws 23, the shanks of which pass through apertures in walls 34 of the strip pockets and are threadably engaged with wall 26 of liner pocket 24. It can be seen that the inner edge of breaker-strip 16 is clamped between liner flange 21 and the outer edge of trim-strip 22, as indicated at 38, thus firmly positioning said breaker strip across the space between the outer shell and the liner.

It is common to coat refrigerator inner liners with white porcelain, or some similar vitreous enamel, said coating being wiped away from the marginal portion of the liner before "firing," thus leaving an edging of the usual black base enamel exposed. It is an additional feature of the present invention that this black edging, which extends inwardly of the marginal flange 21 and partially over wall 26, is concealed by the trim-strip which covers this area.

From the foregoing description it is clearly evident that this invention permits the use of a flat breaker-strip while still providing a smooth curved throat contour about the food compartment, and that the construction is additionally advantageous in that it conceals the black edging commonly provided around the marginal portion of the liner, thus enhancing the general appearance of the cabinet. Furthermore, the strip aids in positioning the breaker-strip over the gap between the marginal portions of the outer shell and inner liner.

In accordance with another aspect of the invention, and with particular reference to Figure 1, it will be noted that the aforesaid pockets 31, which are spaced in the same horizontal plane, are adapted to support oppositely extended ends of forward cross rails 40 of shelves 41. While each pair of oppositely arranged pockets may serve this function, only three shelves have been illustrated, since the primary purpose of the construction is to increase the flexibility of shelf arrangement. For the purposes of the present invention, the rear cross rails 42 of the shelves may be supported in any convenient manner and, as shown, are supported and releasably retained by upwardly hooked members 43 carried by a pair of vertically positioned strips 44, suitably secured to the rear wall of the inner liner.

Each strip 44 is provided along its length with a plurality of such hooks, spaced vertically at intervals corresponding to those between pockets 31, and each is positioned to lie in the same horizontal plane as a corresponding pair of said pockets.

To position a shelf within the cabinet, it is slid into the compartment in a substantially horizontal position until rear cross rail 42 is just above a pair of hooked members 43, and the ends

4

of front cross rail 40 are received within pockets 31, the rear rail is then dropped behind the hooked members 43. To remove a shelf, the above procedure is reversed.

With reference to Figures 1, 3, 4 and 7, and from the foregoing description, it can readily be seen that the invention affords an extremely flexible shelf arrangement for the food storage compartment of a refrigerator cabinet. For example, and as seen in Figure 1, the shelves may be evenly spaced from each other, leaving a substantially larger space over the top shelf, or, as seen in Figure 7, may be arranged in a manner providing a larger space in an intermediate portion of the compartment. Then too, different shelf constructions may be used to provide further flexibility. For example, a crisper pan 46 may be suspended from one shelf and shifted to different parts of the compartment, as desired.

Now with reference to Figures 2, 5, 6 and 8, still another feature of the invention will be described. In accordance with this feature a post 50 is provided midway between, and in the plane of trim-strips 27 and 28. If desired, the post may be of solid construction, but as clearly shown in Figures 5 and 6, is preferably of sheet metal formed in a semi-oval shape (Figure 6) with inturned flanges 51 along its rear edges, and a plurality of transverse slits or open front pockets 52 in the curved front portion thereof. Pockets 52 are spaced at intervals corresponding to the spacing of trim-strip pockets 31, and lie in the same horizontal planes. A channel-shaped member 53, having outwardly extending flanges 54 to which flanges 51 are attached, forms the back wall of the post, and also serves to reinforce it against buckling under the pressure of loaded shelves supported thereby.

With particular reference to Figure 5, it will be noted that the flat bottom wall 55 of post 50 carries a stud 56 which extends downwardly and snugly through an opening 57 in a platform 58 formed in the center of, and integral with bottom portion 29 of trim-strip 22. Stud 56 and opening 57 may be of any desired complementary configuration, such as round, oval, or square, and it should be understood that this particular manner of releasably connecting the post and the strip is illustrative of the preferred form only, and that such may be accomplished in other ways.

The upper end 59 of channel member 53 is bent forwardly beneath top wall 60 of the post, thence upwardly through said top wall to thus provide a flat sided stud 61 which fits snugly within a forwardly extending wire loop 62 provided at the center of cross rail 63 of top shelf 64, thus releasably retaining the post securely in its vertical position, and against rotative movements.

Positioning of the top shelf within the food storage space is accomplished in the manner already described in connection with shelves 42 in Figure 1, except that loop 62 is engaged over stud 61 just prior to the engagement of the ends of the front cross rail within trim-strip pocket 31.

Thus it is evident that the apparatus of the invention is also adapted to accommodate shelves of only half width. When the vertical rail 50 is used, one end of the front cross rail of each shelf is received in one of the trim-strip pockets 31, and the other end occupies half the width of a post pocket 52, the back rail being supported substantially at its center by the hooked member 43, it being understood that strips 44 are

positioned on the back liner wall in planes lying substantially midway between post 50 and each side wall.

The shelf arrangements shown in Figures 2 and 8 illustrate two of the many additional variations afforded by the use of the center post and half shelves. For example, the crisper pans attached to half shelves 55 and 56 may be arranged side-by-side, as shown in Figure 2, or in stacked relation as shown in Figure 8, with the other half-shelves in any of the many available positions afforded by the plurality of supporting means.

I claim:

1. In a refrigerator cabinet, an open front outer shell, an open front inner liner having wall portions defining a storage compartment, a door spanning the width of said storage compartment and affording access thereto, said liner being positioned within said shell in spaced relation therewith so that the forward marginal edge portions of said shell and liner lie in confronting spaced relation, breaker-strip means extending peripherally about said edge portions and closing the space between said shell and liner and being disposed at the forward edge of the storage compartment and outwardly of the planes of the compartment-defining wall portions, breaker-strip trim positioned along the juncture of said breaker-strip means and liner and extending around a substantial portion of the open front of said cabinet, a vertically extending post dividing the front opening of the liner into separate areas and lying substantially in the plane of said trim, and means on said trim and said post cooperable adjustably to support forward edge portions of cabinet shelves.

2. A construction in accordance with claim 1, and further characterized in that said post is removably mounted upon said cabinet, whereby to provide support for shelves of partial width, when the post is in place, and to accommodate shelves of full width when the post is removed.

3. In a refrigerator cabinet including an open front outer shell and an open front inner liner providing a storage compartment having a generally rectangular vertically extending front opening, said liner being positioned within said shell in spaced relation therewith so that the forward marginal edge portions of said shell and liner lie in confronting spaced relation; breaker-strip means extending peripherally about said edge portions and closing the space between said shell and liner, breaker-strip trim having portions extending horizontally along the lower portion of the compartment opening and vertically along the side portions thereof, a vertically extending post dividing the compartment opening into separate areas and lying generally in the plane of said trim, the lower end of said post being releasably engaged with the horizontally extending portion of said trim, first support means carried by said post, second support means carried by the vertically extending portions of said trim, said first and second support means being cooperable to support forward portions of cabinet shelving, and means releasably engaging an upper portion of said post to effect rigid support of the same, said last-mentioned means comprising a shelf having one portion coupled to the said upper portion of said post whereby to effect

such releasable engagement and having a forward corner portion supported by the said support means carried by said trim.

4. In a refrigerator cabinet, an open front outer shell, an open front inner liner having wall portions defining a storage compartment with a forwardly presented access opening, said liner being positioned in said shell in spaced relation therewith so that the forward marginal edge portions of said shell and liner lie in spaced relation at the forward portion of the cabinet, and strip-like framing means including a plurality of vertically spaced indentations comprised of pockets formed from material of said framing means and extending inwardly toward the space between said outer shell and inner liner, said strip-like framing means bridging the gap between the forward marginal edge portions of said shell and liner and having a portion contoured rearwardly toward the compartment and forming the throat of said cabinet opening, said pockets being disposed adjacent the said throat of said cabinet opening and constituting shelf-supporting recesses facing across the said cabinet opening and also being open for access in a direction substantially normal to the plane of the cabinet opening.

5. In a refrigerator cabinet, an open front outer shell, an open front inner liner having wall portions defining a storage compartment with a forwardly presented access opening, said liner being positioned within said shell in spaced relation therewith so that the forward marginal edge portions of said shell and liner lie in spaced relation at the forward portion of the cabinet, strip-like framing means including a plurality of vertically spaced indentations comprised of pockets formed from material of said framing means and extending inwardly toward the space between said outer shell and inner liner, said strip-like framing means bridging the gap between the forward marginal edge portions of said shell and liner and having an arcuate portion contoured rearwardly toward the compartment and forming the throat of said cabinet opening, said pockets being disposed in said arcuate rearwardly contoured portion and constituting shelf-supporting recesses facing across the said cabinet opening and also being open for access in a direction substantially normal to the plane of the cabinet opening, and shelves disposed within said compartment, said shelves having lateral extensions supported within said recesses.

LEO J. AMORE.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
721,404	Wege	Feb. 24, 1903
1,784,843	Kuckel	Feb. 25, 1930
2,299,655	Reeves	Oct. 20, 1942
2,317,232	Swedman	Apr. 20, 1943
2,321,865	Schweller	June 15, 1943
2,427,767	Drake	Sept. 23, 1947

FOREIGN PATENTS

Number	Country	Date
23,063	Great Britain	A. D. 1912