July 13, 1943. E. SWEDMAN 2,324,245

REFRIGERATOR SPACER CONSTRUCTION

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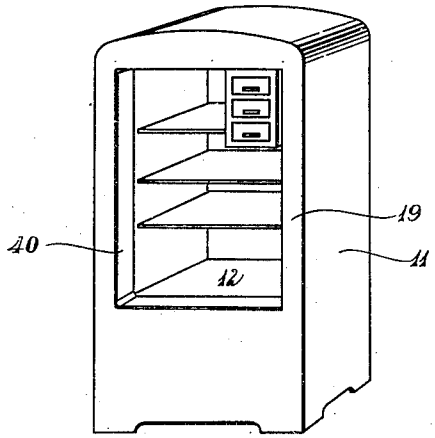


FIG. 1.

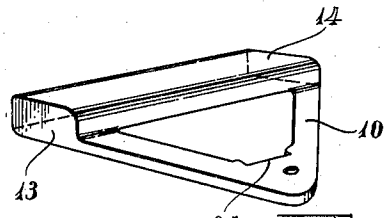


FIG. 4.

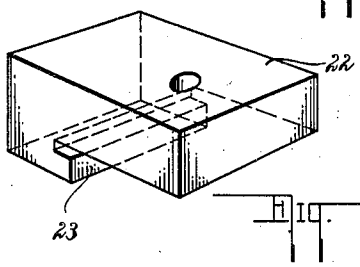


FIG. 6.

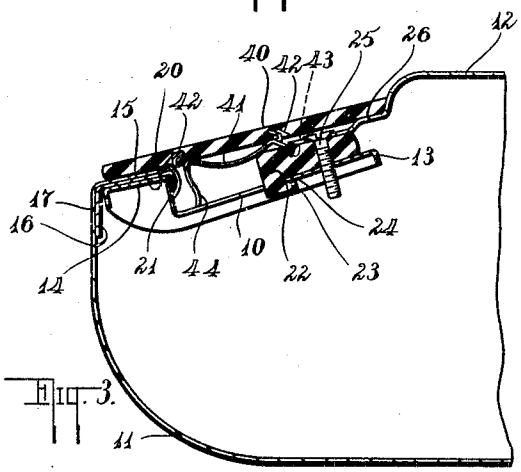


FIG. 3.

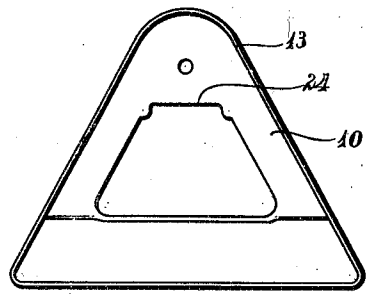


FIG. 5.

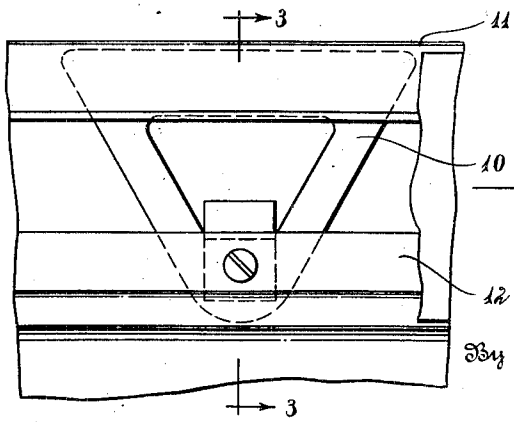


FIG. 2.

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REFRIGERATOR SPACER CONSTRUCTION

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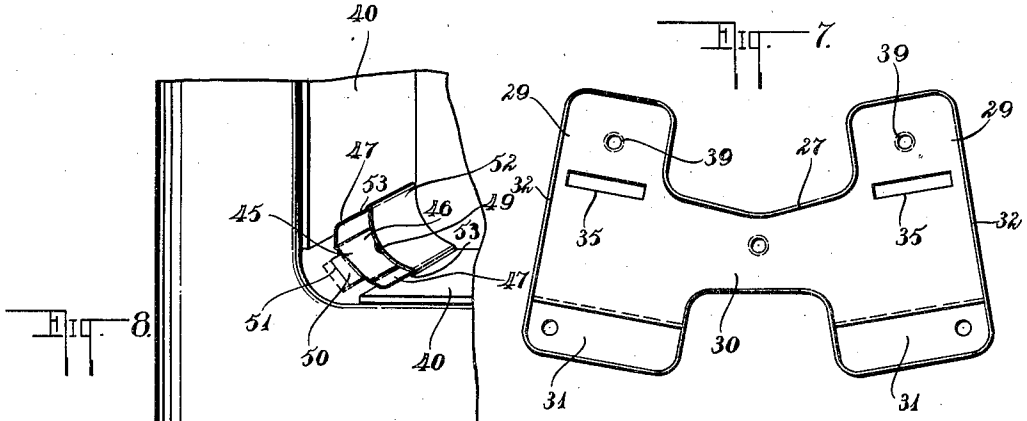


Fig. 8.

Fig. 7.

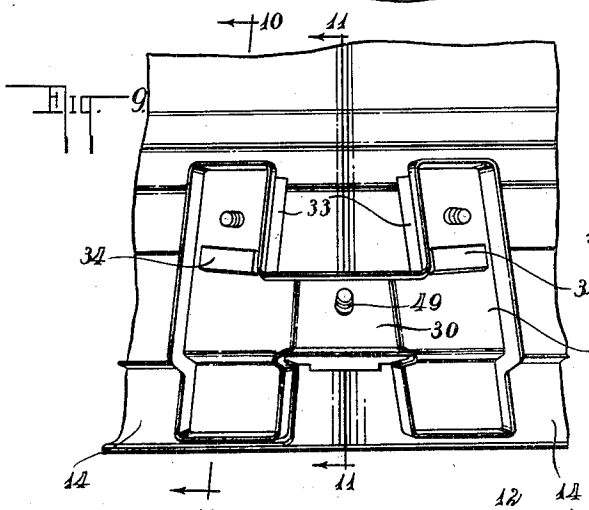


Fig. 9.

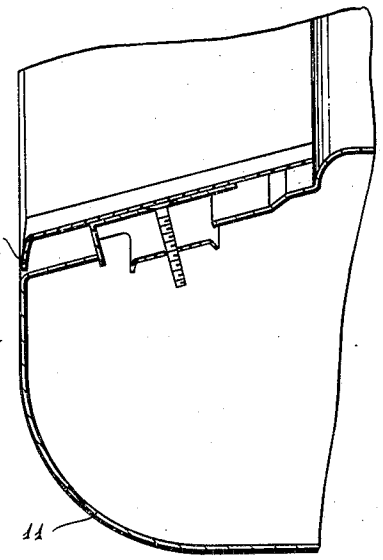


Fig. 11.

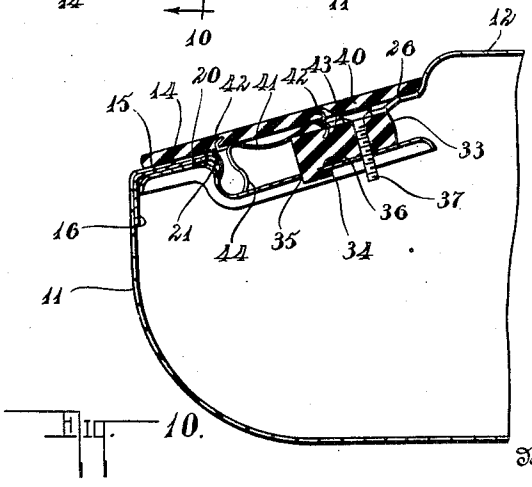


Fig. 10.

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Patented July 13, 1943 2,324,245

UNITED STATES PATENT OFFICE

2,324,245

REFRIGERATOR SPACER CONSTRUCTION

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Application November 20, 1940, Serial No. 366,393

6 Claims. (Cl. 220—15)

My invention relates to an improvement in refrigerator spacer construction providing a brace and spacer between the inner and outer sheathings of a refrigerator for holding the liner, breaker strip, and the corner trim.

Various means have been used for connecting the inner liner of a refrigerator and supporting this inner liner in definite relation to the outer metallic refrigerator covering. Certain of these constructions have used non-metallic breaker strip elements connected along one edge to the liner and along the other edge to the outer metallic refrigerator covering. Other constructions have utilized a heavy wooden frame within the refrigerator between the lining and the outer covering to support the two elements in definite relationship. All of these prior constructions have certain disadvantages, as either the strength of the construction or the light weight of the construction has been sacrificed to provide the desired result. Certain of these constructions are extremely difficult to assemble, and it is therefore desired in the present invention to provide a spacer construction which is light in weight, extremely strong, and which may facilitate the assembly of the refrigerator.

It is a feature of the present invention to provide a spacer element which is welded or otherwise secured to one of the refrigerator coverings being connected either to the liner or to the outer covering. This spacer is in turn secured to the other element or covering in such a way as to prevent any appreciable amount of heat transfer between the lining and the outer covering and to provide a rigid and light weight structure.

It is a feature of my invention to provide spacers which may for example be connected to the outer sheathing to extend inwardly therefrom, and to be spaced from the liner by means of a nonmetallic spacing element such as a block of rubber or the like. The only metallic connection between the inner and outer coverings is through a screw, bolt, or other fastening means which may extend through both the liner and the metal spacing element.

It is a feature of my invention to provide a novel corner construction which may be used to support the corners of the liner in proper set relationship to the outer covering. These corner members are right angularly arranged so that they guide the liner into proper relation with the outer covering of the refrigerator. A clamping means is provided in conjunction with the corner members, which clamping member acts to clamp the ends of the breaker strip in proper position between the inner and outer coverings. This clamping strip is so constructed as to provide a guide for a slidably secured corner trim element which covers the joint between the ends of the breaker strips arranged at right angles to one another.

It is a feature of my invention to combine a corner spacing element, a clamp for the ends of the spacer strips, and a support for a corner trim element in one unit. Thus the refrigerator may be assembled with great ease and with the loss of little time.

It is a feature of my invention that the connecting means between the inner and outer refrigerator sheathings may enable the refrigerator to be quickly and easily assembled. It is only necessary to use one set of bolts or screws in fastening the inner and outer refrigerator coverings together, thus cutting down the time required to assemble the inner and outer sheathings almost in half. While time is of course required to weld or otherwise affix the spacer elements in place, this operation may be accomplished with little difficulty as the task may be done before the liner is in place so that easy access is afforded to both sides of the spacing elements.

These and other objects and novel features of my invention will be clearly and fully set forth in the following specification and claims.

In the drawings forming a part of my specification:

Figure 1 is a perspective view of a refrigerator showing my new construction.

Figure 2 is a detail view of a portion of the edge of the inner and outer refrigerator coverings showing a spacing element in place therebetween.

Figure 3 is a sectional view through the spacer, the position of the section being indicated by the line 3—3 of Figure 2.

Figure 4 is a perspective view of the spacing element before it is attached to the outer covering.

Figure 5 is a bottom or inside view of the spacing element showing the edge flanges thereupon which reinforce the spacer construction.

Figure 6 is a perspective view of a resilient block which is interposed between the spacer element and the inner refrigerator lining to prevent the transfer of heat from the outer covering to the lining.

Figure 7 is a plan view of the died-out formation of the corner spacing element.

Figure 8 is a perspective view of a corner showing the manner in which the corner trim element

is secured thereto and illustrating the clamp for the ends of the spacer strips.

Figure 9 is a view looking toward the corner spacing element showing the manner in which this element is connected to the inner and outer sheathings.

Figure 10 is a cross-sectional view, the position of the section being indicated by the line 10—10 of Figure 9.

Figure 11 is a cross-sectional view through the center of the corner element, the position of the section being indicated by the line 11—11 of Figure 9.

In the modern refrigerator it is common practice to form the outer covering of the refrigerator of metal and to provide a metal interior which is secured to the outer covering about the door opening. The inner and outer coverings of the refrigerator are ordinarily held in spaced relationship by a nonmetallic connecting element, and this element may either form a breaker strip or may be covered by a breaker strip which conceals the fastening means. The breaker strips come together at the corner and in some instances a corner trim element acts as a fillet between the adjacent strips to conceal the joint therebetween. In the present construction spacer brackets 10 are provided between the outer refrigerator covering 11 and the inner lining 12. As best illustrated in Figures 2, 3, 4, and 5 of the drawings, the spacer elements 10 are generally triangular in shape and are provided with inturned marginal edge flanges 13 in order to reinforce the spacers. As will be evident from Figure 4 of the drawings, the spacer 10 is offset to provide a connecting portion 14 designed to be secured adjacent the surface of the outer covering and which is located preferably on a plane substantially parallel to the plane of the remainder of the spacing elements. As best illustrated in Figure 3 of the drawings, the outer covering 11 is provided with an inturned edge flange 15 thereupon which is reinforced by a substantially channel-shaped strip 16 having a flange 17 designed to overlie the front surface 19 of the refrigerator encircling the door opening and a base 20 which underlies the inturned flange 15. The edge 21 of the channel opposite the edge 17 thereof acts to further reinforce the edge of the outer covering member, and the spacer 10 is connected with the offset portion 14 flatly against this base 20 of the channel element 16.

An insulating block 22 is positioned between the spacers 10 and the lining 12 as best illustrated in Figure 3. This insulating block 22 is provided with a lip 23 designed to engage beneath the spacer 10 along an edge 24 thereof, this lip 23 acting to hold the block in proper relation to the spacer. A metal screw, bolt or the like 25 is designed to extend through the marginal flange 26 of the lining 12 through the insulating block 22 and to threadably engage the spacer so that the insulating block 22 may be compressed between the flange 26 of the lining 12 and the spacers 13, thus securing the outer covering of the refrigerator 11 to the liner 12.

At each corner of the refrigerator door opening I provide a corner spacer element shown in its died-out formation in Figure 7 of the drawings. This construction is in somewhat the general form of a letter H having a pair of separating elements forming the vertical ends of the H and having a connecting strip forming the cross bar of the same. In actual use, one of the end separating members is on a plane at substantially right angles to the plane of the other so that when the corner connecting member is in place, it acts to support two adjacent edges of the inner liner.

The corner spacer 27 is provided with a pair of end spacing strips 29 connected by an intermediate connecting member 30. Each of the end spacing strips 29 is provided with an offset end 31 which is designed to overlie the inner surface of the reinforcing channel 14 and be welded or otherwise affixed thereto. A marginal edge flange 32 encircles the corner spacing element 27 to reinforce the same. Resilient nonmetallic spacer blocks 33 are interposed between one end of each of the separating members 29 and the marginal edge 26 of the refrigerator liner 12. Thus a minimum of heat transfer is permitted between the corner spacer element 27 and the inner liner 12. Each rubber block 33 is provided with a lip 34 which extends through a slot 35 in the spacing members 29 and engages an edge 36 of this slot. This lip 34 holds the rubber blocks in place while the corner element is being assembled.

The offset ends 31 of the corner block are first welded or otherwise affixed to the marginal reinforcing channel 14; and upon insertion of the inner liner 12 through the door opening of the outer casing, the corner separating elements 27 act to guide the liner into place. When the liner is in proper place, bolts 37 or metal screws are inserted through openings in the marginal edge 26 of the liner 27 through the rubber spacing blocks 33 which are similar to the blocks 22 and which are threaded into openings 39 in the spacer members 29. Thus in order to secure the liner 12 to the outer covering 11, it is only necessary to insert two metal screws or the like through each corner spacer 27 and one metal screw or the like through each of the spacer elements 10 and through the lining in order to hold the liner 12 and the outer casing 11 in proper spaced relationship.

After the liner has been inserted in place, it is desirable to attach a breaker strip or covering molding over the joint between the marginal edge 15 of the outer covering and the marginal edge 26 of the liner 12. This I may accomplish in any one of a number of ways one method being illustrated in the drawings. As illustrated in the drawings, the breaker strips or molding 40 are formed continuously along each of the edges of the opening and are of a width to cover the marginal edge 26 of the liner and the marginal edge 15 of the outer covering member. A spring clip 41 may be longitudinally slidably engaged in grooves 42 in the rear surface of the breaker or molding strip 40. This spring clip 41 may have one end 43 which is engageable beneath the marginal edge 26 of the liner 12 and a spring loop 44 which may engage against the edge of the reinforcing channel 14. Thus the spring clips 41 may engage between the liners and may hold the breaker strip or molding 43 in proper position overlying the joint between the inner and outer coverings.

In order to hold the ends of the breaker or liner strips securely in place, I provide a clamping plate 45 at each corner. This clamping plate includes a flat base portion 46 designed to extend angularly between the ends of the strips 40 and extending substantially parallel to the connecting portion 30 of the corner spacing members 27 and two opposed inclined side flanges 47. The side flanges 47 are designed to overlie the ex-

treme edges of the molding strips **40** and a bolt **49** extends through the base portion **46** of the clamping strip and is threaded into the connecting portion **30** of the corner spacing element, thus securely clamping the ends of the breaker strips in place. In order to prevent the clamping plate **45** from twisting, an ear **50** is provided on the end of the base portion **46** of the clamping plate which extends through a slot **51** or notch in the inturned marginal edge **15** of the outer covering member.

In order to conceal the clamping plate **45** and to form an attractive corner trim to conceal the joint between the ends of adjacent breaker strips, I provide an arcuated plate **52** having inturned edges **53** thereupon, and having an end flange **54** thereon to extend down into engagement with the outer covering member **11**. The inturned edges **53** form opposed channels to engage about the edges of the flanges **47**. Thus the corner trim elements **52** may be slidably inserted into place from the outside and may act as a fillet between the adjacent ends of the breaker strips **40** and to conceal the clamping members **45** and the ends of the breaker strips.

In accordance with the patent statutes I have described the principles of construction of my refrigerator spacer construction; and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that this is only illustrative of a means of carrying out my invention, and that obvious changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A spacer clip for refrigerators comprising a substantially triangular body, a flanged marginal edge thereon, an offset edge on said body, said body having an opening therethrough having two sides parallel to said offset edge, and connecting sides parallel the remaining body sides, a block of insulation overlying the apex of said triangular body opposite to said offset edge, said block having a lip of insulating material embracing the body adjacent said apex.

2. A refrigerator construction comprising an outer metallic covering having a substantially rectangular door opening therein, an inner liner having a similar opening therein, a corner connecting spacer comprising a pair of spacing strips and an intermediate connecting strip, one end of each of said spacing strips being secured to said outer covering member along two adjacent edges of said rectangular opening to said outer covering, insulation means interposed between the other ends of said connecting strips and said liner, securing means securing said other ends to said liner, breaker strips overlying the edges of said inner liner and said outer covering, and clamping means overlying the ends of said breaker strip and secured to said connecting strip, and trough-shaped trim means overlying said clamping means, and inturned substantially parallel edges on said trim means slidably engaging the opposed edges of said clamping means.

3. A refrigerator construction comprising an outer metallic covering having a substantially rectangular door opening therein, a liner in spaced relation to said covering having a similar door opening therein, a corner spacer element comprising a pair of spaced spacer strips connected by a connecting strip, one end of one spacer strip being secured to said covering along one edge of said door opening and one end of the other spacer strip being secured to said covering along an adjacent edge of said door opening, insulation interposed between said spacer strip and said liner, means securing said spacer strips to said liner, breaker strips overlying the marginal edges of said covering and liner to conceal said edges, clamping means overlying the adjacent ends of said breaker strips at the corners, and means securing said clamping means to said connecting strip, and trough-shaped trim means overlying said clamping means, and inturned substantially parallel edges in said trim means slidably engaging the opposed edges of said clamping means.

4. A refrigerator comprising inner and outer metallic coverings having substantially aligned spaced marginal edges encircling the refrigerator door opening, corner spacer elements engaging and connecting the marginal edges of both of said coverings along two adjoining edges thereof, breaker strips overlying the marginal covering edges, the ends of said strips being positioned adjacent the corners of said opening, clamping means overlying said strip ends, and means securing said clamping means to said spacer elements, and trough-shaped trim means overlying said clamping means, and inturned substantially parallel edges in said trim means slidably engaging the opposed edges of said clamping means.

5. A refrigerator comprising inner and outer metallic coverings having substantially rectangular openings therein and having spaced substantially aligned marginal edges thereon, corner spacer elements connecting said coverings at the corners of said openings, breaker strips overlying said coverings between said corners, clamping means overlying the ends of said strips at the corners of said openings, means connecting said clamping means to said spacer elements, and trough-shaped trim means overlying said clamping means, and inturned substantially parallel edges in said trim means slidably engaging the opposed edges of said clamping means.

6. A refrigerator comprising spaced inner and outer coverings having registering substantially rectangular door openings therein, corner connecting means connecting said inner and outer coverings at the corners of said door openings, breaker strip means concealing the joint between said coverings between said corners, clamping means covering the adjacent ends of said breaker strips at the corners, means securing said clamping means to said corner connecting means, trough-shaped trim means overlying said clamping means, and inturned substantially parallel edges on said trim means slidably engaging the opposed edges of said clamping means.

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