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2,190,233

REFRIGERATOR DOOR

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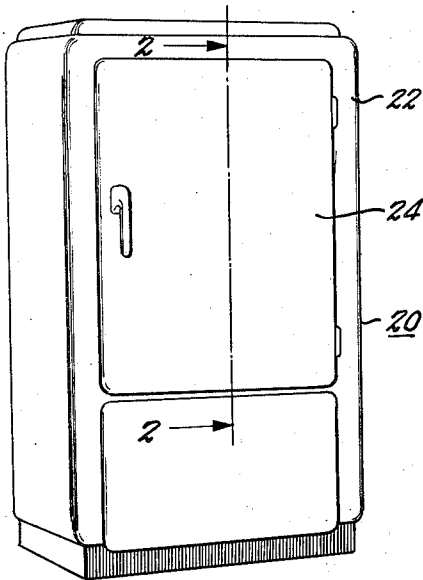


FIG. 1

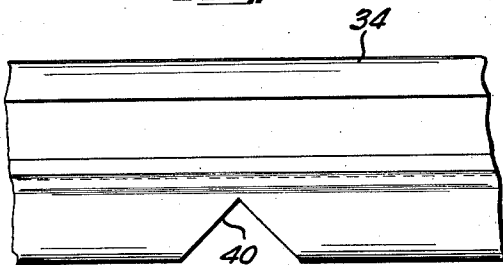


FIG. 3

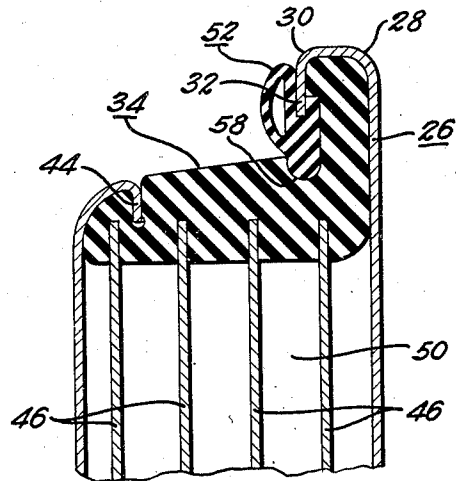


FIG. 2

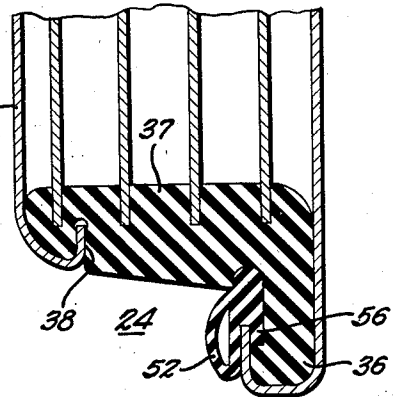


FIG. 4

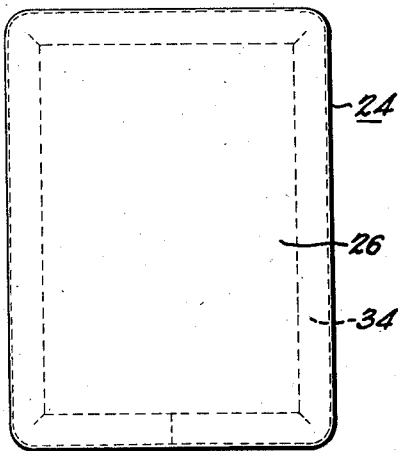
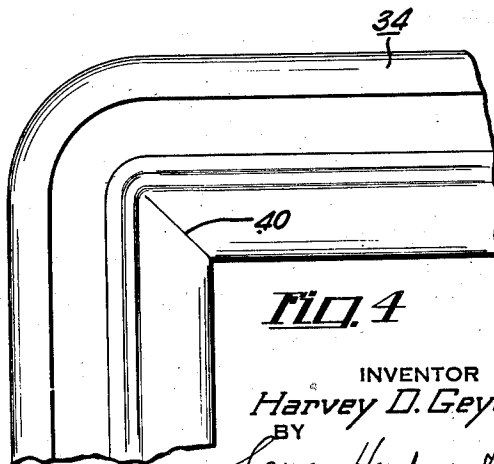


FIG. 5



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REFRIGERATOR DOOR

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6 Claims. (Cl. 20—35)

The present invention relates to door assemblies and more particularly to insulated door assemblies such as are used on refrigerators and the like.

One of the objects of the present invention is to provide a door assembly including an inner and outer panel, said panels being separated by a resilient rubber frame member to provide a space therebetween, said frame member being fabricated in a straight piece and then bent to shape to form a door frame.

In carrying out the above object, it is a further object to provide a trough around the periphery of the outer door panel by bending the edges of the panel outwardly and then inwardly, said trough being adapted to receive an L-shaped leg on the frame member for holding the frame member to the outer panel, the inner panel having a similar trough around the periphery thereof of the flange of which is adapted to be inserted into a slot in the frame member for holding the inner panel to the frame member.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein preferred embodiments of the present invention are clearly shown.

In the drawing:

Fig. 1 is an illustration of a refrigerator cabinet showing one application of the present door assembly.

Fig. 2 is an enlarged section taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary view of a frame member showing a notch therein to facilitate bending thereof.

Fig. 4 is a fragmentary view of a frame member when the same is bent at right angles at the notched portion thereof, and

Fig. 5 is a view illustrating the frame member in place within the outer panel.

The present invention is directed to a simple and inexpensive door construction wherein the door can be readily disassembled and wherein new parts may be easily and quickly assembled thereto. The usual type of door assemblies, such as insulated door assemblies used in connection with refrigerators and the like, include a wooden frame construction disposed between the inner and outer metal panels. It is the usual practice to secure the panels to the frame assemblies by screws and then cover the exposed portions of the wooden door frame and the edges of the panels with breaker strips which are screwed to the door frames. The use of the wooden frame is

necessary since in insulated door assemblies, the inner and outer panels thereof must be separated from one another by a material having a low coefficient of heat conductivity to minimize the conduction of heat from the outer door panel to the inner door panel.

The present invention contemplates the use of a resilient rubber door frame in place of the usual wooden frame, rubber having a low coefficient of heat conductivity. Then too, resilient rubber provides a frame which is inexpensive and easily assembled to the door panels without the use of screws etc.

Referring to the drawing, Fig. 1 illustrates the refrigerator 20 including a cabinet 22 and a door assembly 24 hinged thereto. The door assembly 24 includes an outer panel 26 which is bent upwardly at 28 and then inwardly at 30 to form flanges 32 therearound. The flanges 32 thereby form a trough with the main surface of the panel 26, which trough extends entirely around the periphery of the panel. A frame member 34 preferably formed from resilient rubber or some similar resilient material such as synthetic rubbers, polymerized isoprene, etc., is provided by extruding rubber stock through a die having a configuration similar to the desired cross section of the frame. The extruded stock is then cured in long straight lengths in a conventional manner. The frame member 34 is substantially L-shaped in cross-section and includes a leg or extension 36 and a second leg 37 which has a slot 38 molded therein. When making a frame, the frame member 34 is cut to a length equivalent to the peripheral length of the door panel 26 and is then notched as at 40 in four places corresponding to the position of the corners of the panel in the development of the periphery outer of the door panel. The frame member 34 is next bent at one of the notched portions as shown in Fig. 4 and due to the notching thereof a right angled corner is provided. The leg 36 of frame member 34 is then inserted within the trough formed by flanges 32 of panel 26 and this insertion is continued until the entire frame member is in place with the leg 36 thereof within the trough of the panel 26. Such an assembly may be noted in Fig. 5.

An inner panel 42 of similar shape, but of reduced dimensions to panel 26, is also provided with a trough around the periphery thereof as formed between flanges 44 and the main surface of the panel 42. This trough is formed by bending the edges of the panel 42 outwardly and then inwardly as previously explained in connection with the panel 26. In the assembly of panel 42

to the door the flanges 44 are snapped into place within the slot 38 in leg 37 of the frame member 34. This is made possible since the frame member 34 is resilient and can be pressed inwardly at the sides thereof until the flanges 44 snap into the slot 38 whereupon the frame member resumes its normal position.

In the present embodiment a series of sheets 46 are disposed in slots in the frame or otherwise held in place within the space 50 between the panel 26 and panel 42. The sheets are used as insulators and may be cardboard covered with aluminum foil. The sheets 46 preferably are put in place prior to the assembly of the panel 42. If desired, sheets 46 may be eliminated and the dead air space between the panels can be utilized as an insulating medium, or some other insulating material such as cork, mineral wool, hard blown rubber, etc., can be filled in the space 50 prior to the assembly of the panel 42. In this manner the air space 50 formed between the panel 26 and the panel 42 is insulated against heat conduction.

A sealing strip 52 comprising in cross section a tubular section 54 and an L-shaped extension 56 is provided for sealing the door to the cabinet 22 when the door is closed. The tubular section 52 partially collapses when the door is closed and thereby substantially completely seals the door to the cabinet. The sealing strip 52 is held to the door by the engagement of the extension 56 with the under side of flanges 32 of panel 26, thus the sealing strip 52 is clamped or held between the flanges 32 and leg 36 of the door frame 34. The frame 34 is formed at 58 so as to accommodate entry of the sealing strip 52. The strip 52 can be assembled to the door by merely snapping the same in place and likewise can be easily removed by reversing the operation.

The construction of the resilient rubber door frame may be modified if desired to include a wooden frame for engaging and holding one of the door panels in place and having a resilient rubber portion disposed to engage the other panel. In other words one panel can be readily snapped in and out of place, while the other panel would be fixed to the wooden frame.

It is also apparent that the resilient rubber frame could be molded to shape, rather than extruded, in which case the inner and outer panels could be readily snapped in place upon the frame. Such a construction is clearly within the scope of my invention.

The present invention materially reduces the stock of materials necessary in the fabrication of door assemblies, it merely being necessary to stock long lengths of rubber and then cut the same to the correct length to be used with the various sizes of door panels. Furthermore, a door assembly made in accordance with the present invention is easy to service in the field. Door panels, as used on refrigerator doors, are usually enameled, and when, through accident, such a door becomes chipped it is an easy matter to replace the same, when a rubber door frame as herein disclosed is utilized since the old panels can be snapped out of place and new panels can readily be snapped in place. Another advantage of the present invention is the elimination of the usual breaker strips, used as a finish on the refrigerator door. The exposed surface of the rubber door frame has a good appearance and due to the construction herein described

none of the edges of either the outer or inner panel of the door are exposed.

From the foregoing it will be apparent that I have provided a door assembly which is easily assembled and disassembled and which eliminates the use of screws and the usual breaker strips.

While the embodiments of the present invention as herein disclosed, constitute preferred forms, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. A door assembly comprising an inner and an outer panel, a frame member including a resilient rubber portion interposed between the said panels, and means on the resilient rubber portion of the frame member for releasably engaging one of said panels whereby the said panel may be snapped in place on the resilient portion of said frame member.

2. An insulated door assembly comprising in combination; an outer panel and an inner panel and a resilient rubber frame member of L-shaped cross section for providing two spaced legs thereon, said frame member being disposed between said panels for separating the same and for providing a space therebetween adapted to receive insulating material, a flange on the outer panel adapted to over-lie one of the legs of the frame member for releasably retaining the frame member in place, the other leg of the frame member including a slot for receiving a portion of the inner panel for releasably retaining the inner panel in place against the frame member.

3. A door assembly, comprising in combination; a panel having the edges thereof bent outwardly and then inwardly to form a trough therearound, a frame member substantially L-shaped in cross-section and fabricated from a non-metallic resilient material comprising two leg portions and including a slot in one of said leg portions, said frame member being adapted to be inserted within said panel around the periphery thereof with one of said legs extending within the trough section of the panel for releasably retaining the frame member in place, a second panel including a trough therearound, said second panel being adapted to fit over the frame member and snapped thereto with the flange of the trough section thereof fitting into said slot within the frame member, said second panel thereby being releasably retained in place, and a sealing strip having an extending portion thereon which is adapted to be clamped between the first mentioned panel and the frame member for retaining said sealing strip in place, said sealing strip over-lying the exposed edge of the first mentioned panel.

4. A door assembly, comprising in combination, an outer panel, an inner panel, and a soft rubber frame member interposed between said panels for spacing said panels one from the other, and for releasably retaining said panels in position.

5. A door assembly, comprising in combination, an outer panel, an inner panel, a soft rubber frame member interposed between said panels for spacing said panels one from the other, and for releasably retaining said panels in position, and a strip of resilient material extending around the door and in engagement with one of said panels and the frame member, for concealing the joint between said panel and the frame

member, said strip being held in place by said panel and the frame member.

6. A door assembly, comprising in combination, a resilient rubber frame member of L-shaped cross section for providing vertical and horizontal legs thereon, said frame member being adapted to be bent to correspond to the shape of the door, a notch in the vertical leg and ex-

tending longitudinally thereof, a panel releasably held in place by the horizontal leg of said frame member and overlying said leg, and a second panel spaced from said first mentioned panel by said frame member and releasably held in place in said notch. 5

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