Dec. 19, 1933. H. WALLACE ET AL 1,940,655

REFRIGERATING APPARATUS

Filed Dec. 31, 1929 3 Sheets-Sheet 1

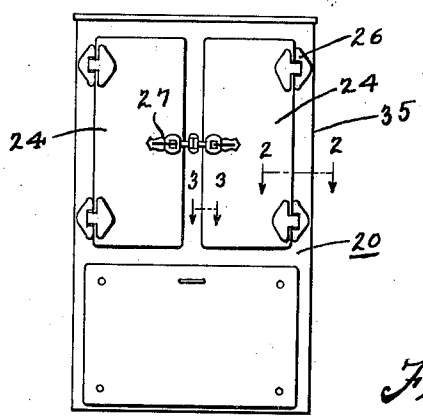


Fig. 1.

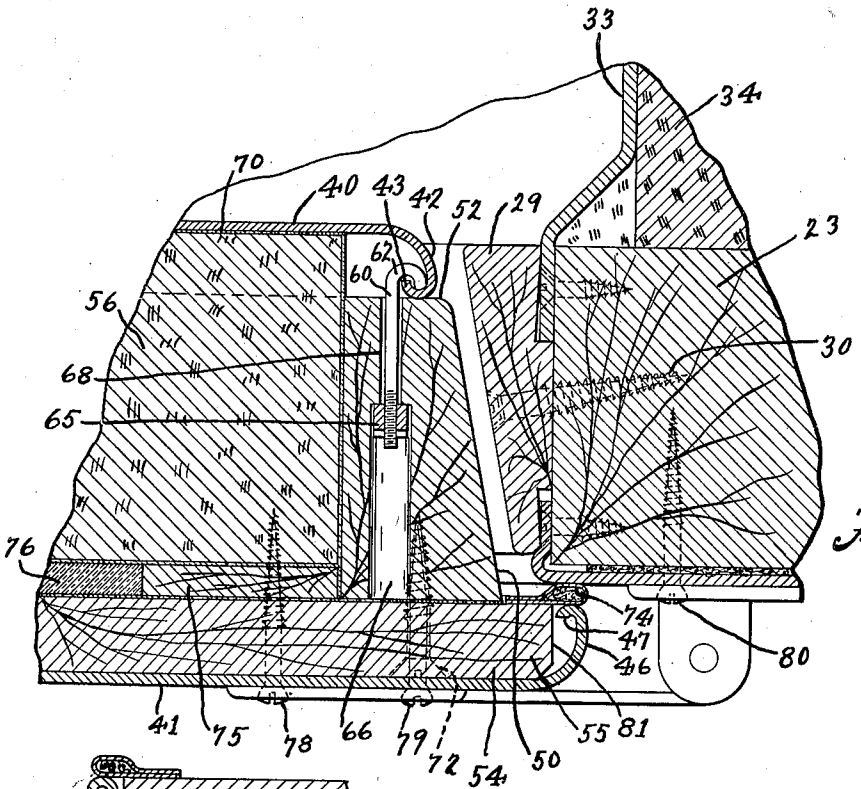


Fig. 2.

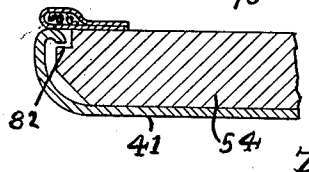


Fig. 3.

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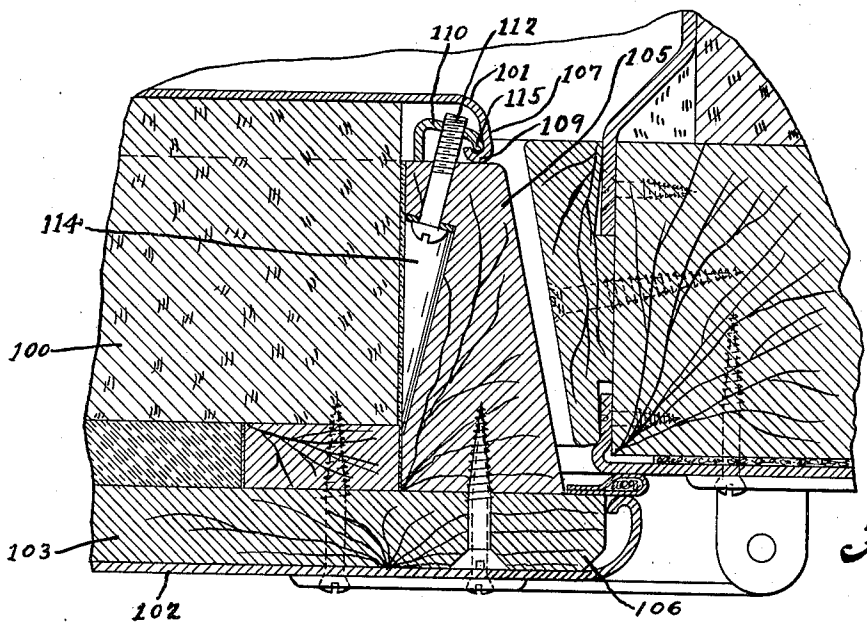


Fig. 4.

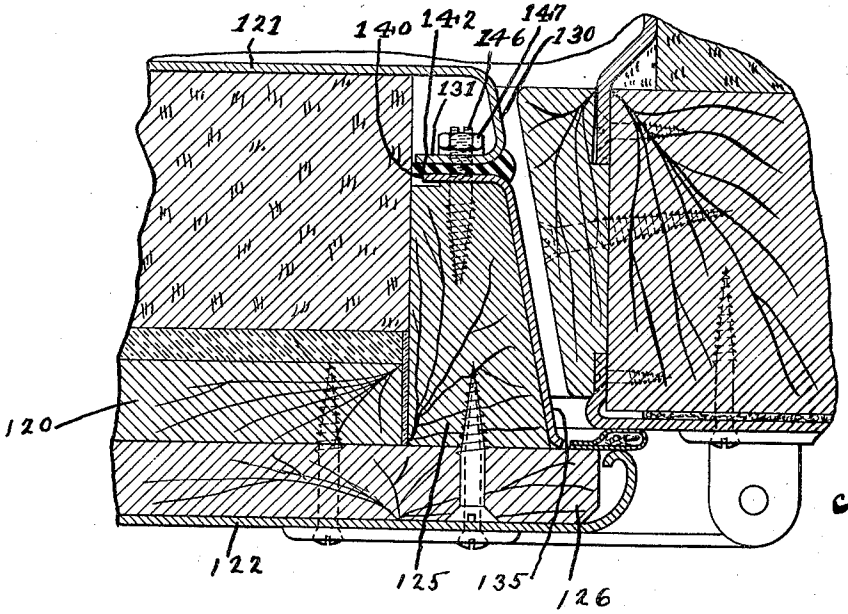


Fig. 5.

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REFRIGERATING APPARATUS

Filed Dec. 31, 1929 3 Sheets-Sheet 3

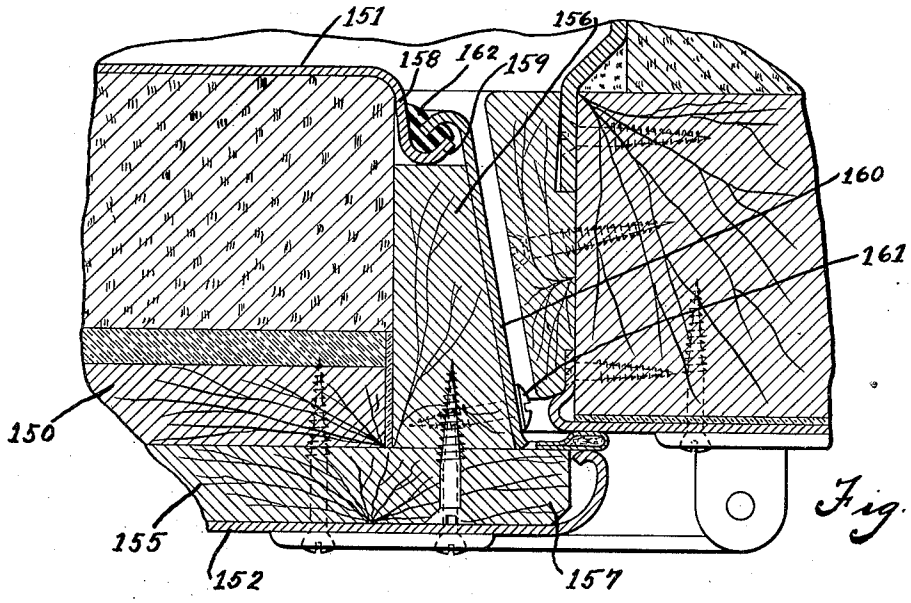


Fig. 6.

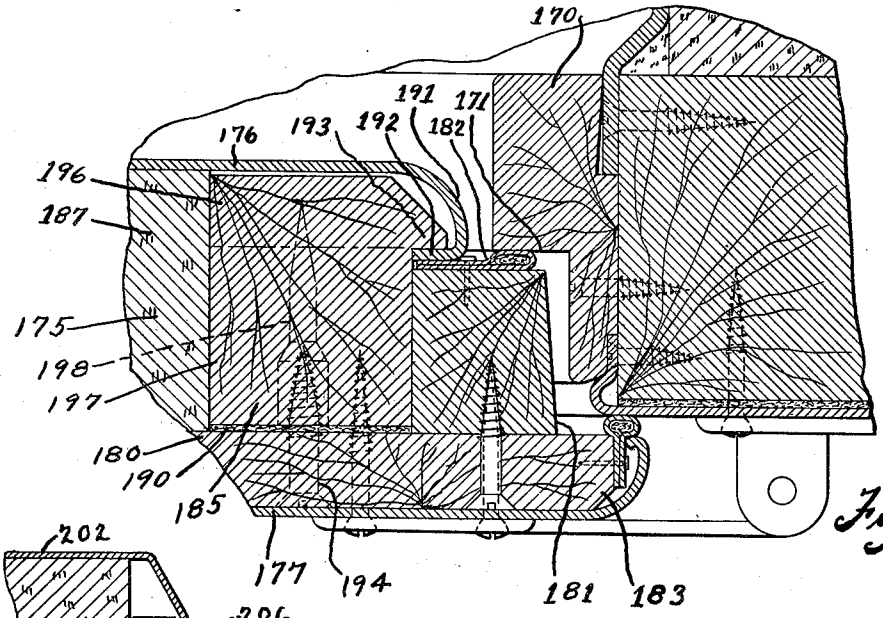


Fig. 7.

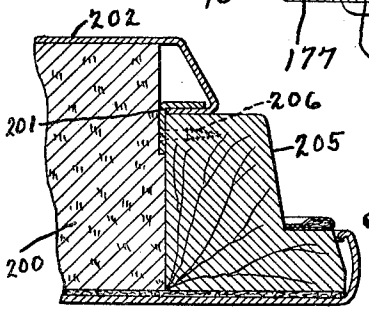


Fig. 8

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Patented Dec. 19, 1933 1,940,655

UNITED STATES PATENT OFFICE

1,940,655

REFRIGERATING APPARATUS

Hugh Wallace and William C. Holbrook, Dayton, Ohio, assignors to Frigidaire Corporation, Dayton, Ohio, a corporation of Delaware

Application December 31, 1929
Serial No. 417,701

12 Claims. (Cl. 20—35)

This invention relates to refrigerating apparatus and more particularly to a door for a refrigerator cabinet.

One of the objects of the present invention is to provide a door having a method of construction which facilitates the assembly of spaced apart metal pans thereon.

More specifically it is an object to provide improved means for securing one or both of said pans to the door frame.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of the present invention is more clearly shown.

In the drawings:

Fig. 1 is a front view of a cabinet embodying features of the present invention;

Fig. 2 is a fragmentary view in cross-section of a refrigerator door embodying features of the present invention and showing a portion of a cabinet, the view being taken in the direction of the arrows 2—2 of Fig. 1;

Fig. 3 is a fragmentary view in cross-section of the refrigerator door shown in Fig. 2, the view being taken in the direction of the arrows 3—3 of Fig. 1; and

Figs. 4 to 8 inclusive are similar views as shown in Fig. 2 of other refrigerator doors.

This invention may be embodied in a refrigerator which may be of the type which may be mechanically cooled which may comprise in general a cabinet or refrigerator designated by the numeral 20. The cabinet 20 may be provided with a door jamb construction designated 23, doors 24, hinge means 26 and latch means 27. The door jamb may include a finishing strip 29 of wood or moulded material which may be fastened to the door jamb 23 by screws 30. The cabinet 20 may be provided with a food compartment lining 33 which may be insulated by insulation 34, and with an outer casing 35.

The door 24 may be of the pan construction. Thus the door may include an inner pan 40 and an outer pan 41. The inner pan 40 may be provided with an edge 42 which, if desired, may be continued as an inwardly extending curled edge 43. The outer pan 41 may be provided with an edge 46 which, if desired, may be continued as an inwardly directed curled edge 47. A rectangular wood frame 50 may be provided for the door. The frame 50 may be made in two major parts, namely a pan separating portion 52 and a pan strengthening portion 54 which forms a flanged edge 55 for the frame 50. The door 24 may be insulated by insulation 56 disposed between the pan separating portion 52.

The pan separating portion 52 of the frame 50 is adapted to carry an adjustable hook-shaped member 60 for clamping the inner pan 40 to the frame 50. The hook-shaped member 60 includes a pin 62 having a screw threaded end cooperating with an adjustable plug 65. The pan separating portion 52 of the frame 50 may be provided with a counterbored opening 66 for receiving the adjustable plug 65 and with a concentric opening 68 for receiving the straight portion of the pin 62. Obviously the counterbored portion 66 may extend through the pan strengthening portion 54 of the frame 50.

As shown in Fig. 2 the hook-shaped member 60 is carried by the pan separating portion 52 adjacent the inwardly curled edge 43 of the pan 40 and extends over said edge and engages same. By turning the plug 65 the pan 40 may be clamped to the side of the frame 50, a portion of the curled edge 43 abutting the side of the frame 50. The insulation 56 wrapped in suiltable moisture proofing material 70 may then be inserted between the pan separating portion 52. Thereafter, the pan strengthening portion 54 may be secured to the pan separating portion 52 by means of screws 72. The pan strengthening portion includes a gasket seal 74 for sealing the door about the outer casing 35, and includes two wooden strips 75 extending longitudinally on said rectangular frame 50, and is provided with insulation 76 between said strips. The strips 75 may be secured to the pan strengthening portion 54 in any suitable manner and are adapted to serve as a guide for the frame portion 54 for locating said portion in proper relation with the pan separating portion 52. Thereafter, the hinge means 26 may be secured to the door by means of screws 78 and 79, thus clamping the pan 41 to the hinge side of the portion 54, the screw 78 extending into the wooden strip 75 and the screw 79 extending through the portion 54 and into the portion 52 of the frame 50. The other part of the hinge means 26 may be secured with the door jamb construction by means of screws 80. The latch means 27 may be secured to the door by means of screws (not shown), thus clamping the latch side of the pan 41 to the portion 54. The top, bottom and hinge sides of the flanged edge 55 of the door frame are provided with flat portions 81. On the latched means side of said door frame, as shown in Fig. 3, the flanged end of the frame portion 54 may be provided with a notched portion 82. This notched portion is to protect the door

pan 41 along the side which is secured to said frame by means of the latch 27. In assembling the door the curled edge 47 of the outer pan 41 is placed in position over the notched portion 82 before the top, bottom and hinge side of the pan is placed in position. Thus it will be noted that the outer pan 41 is secured to the frame portion 54 by the hinge and latch means, and that said pan edge stops adjacent the flanged edge 81 of the frame portion 54.

Thus it will be noted that there is provided a door which is made of metal pans, and is provided with a pan separating portion 52 which tends to prevent the conduction of heat into the interior of the cabinet 20 from the exterior thereof, thus preventing the condensation of moisture on the outer casing 35 adjacent the doors 24. It will also be noted that there is provided improved means for securing one of said pans to said frame.

Other refrigerator doors which we have invented are shown in Figs. 4 to 8 inclusive. In Fig. 4 there is shown a door 100 similar to the door shown in Fig. 2. The door 100 includes an inner pan 101 and an outer pan 102. The door also includes a substantially rectangular frame 103 which may be constructed in two major parts, namely a pan separating portion 105 and a pan strengthening portion 106. The inner pan 101 may be provided with an edge 107 which may be continued as an inwardly directed curled edge 109. The inner pan 101 may be clamped to the pan separating portion 105 of the frame 50 by a hook-shaped clamping member 110. The hook-shaped clamping member 110 may be drawn into position by screws 112 extending through an upwardly sloping recessed portion 114 provided in the pan separating portion 105. By turning the screw 112 one edge of the hook-shaped clamping member 110 will abut the side of the frame portion 105 while the hooked end 115 of the clamping member 110 will engage the inwardly curled edge 109 to thus clamp the inner pan 101 to the frame 103. The outer pan 102 may be secured to the portion 106 of said frame 100 in a similar manner as the outer pan 41 is secured to the frame portion 54 as shown in Fig. 2.

In Fig. 5 there is shown a door 120 having a slightly different construction than the door shown in Fig. 2. The door 120 includes an inner pan 121 and an outer pan 122. The door 120 includes a frame constructed of two major parts, namely a pan separating portion 125 and a pan strengthening portion 126. The inner pan 121 may be provided with an edge 130 and which may continue as an inwardly directing flange 131. The pan separating portion 125 includes an outer metal surface 135. The outer metal surface 135 may continue as an inwardly directing flange 140. Insulation, preferably rubber, 142 may be disposed between the flanges 131 and 140. Insulation 142 is adapted to prevent the conduction of heat into the inner of the cabinet from the exterior thereof to thus prevent condensation of moisture on the outer casing of the cabinet adjacent the door. The inner pan 120 is clamped to the door by means of a screw 146 and a nut 147 which extends into the pan separating portion 125 through the flanges 131 and 140. Screw 146 is provided with the nut 147 for drawing the flange 131 towards the side of the pan separating member 125 and for clamping the outer metal surface to the portion 125. The outer pan 122 may be secured to the door frame in a similar manner as the outer pan 41 is secured to the door frame portion 54 as shown in Fig. 2.

Fig. 6 shows a door 150 of slightly different construction than the doors shown in Figs. 2, 4 and 5. The door 150 includes an inner metal pan 151 and an outer metal pan 152. The door 150 includes a substantially rectangular wooden frame 155 which may be made in two major parts, namely a pan separating portion 156 and a pan strengthening portion 157. The inner pan 151 may be provided with an edge 158 which may be continued as an outwardly directed curled edge 159. The pan separating portion is provided with an outer metal surface forming a hook-shaped member 160 which metal surface is secured to the outer sides of the pan separating portion by means of screw 161. The hook-shaped member is adapted to engage suitable gasket material 162 carried in the outwardly extending curled edge of the inner pan 151. The gasket material 162 may be of any suitable insulating material, preferably rubber, to prevent the conduction of heat into the cabinet from the exterior thereof. By this arrangement the screws 161 will draw the hook-shaped member 160 downwardly to engage the insulation 162 to thus rigidly clamp the inner pan 151 to the pan separating portion 156 of the door frame 155. The outer metal pan 152 may be secured to the pan strengthening portion in a like manner as shown in Fig. 2.

In Fig. 7 there is shown a door and door jamb construction of a slightly different construction than the door jamb shown in Figs. 2, 4, 5 and 6. The door jamb construction includes a finishing strip 170 which may be made of wooden or moulded material and which is provided with a flanged offset 171. The door designated generally as 175 includes an inner metal pan 176 and an outer metal pan 177. The door 175 includes a substantially rectangular wooden frame 180 which may be made of three major parts, namely a pan separating portion 181 which carries a gasket seal 182 adapted to engage the flanged offset 171, a pan strengthening portion 183 and a pan clamping hook-shaped member 185. Insulation 187 may be disposed between the pan clamping member of the frame 180. Insulation preferably felt 190 may be disposed between the clamping member 185 and the pan strengthening portion 183. The inner metal pan 176 may be provided with an edge 191 which may continue as an inwardly directed flange 192. The clamping member is provided with a hook-shaped end 193. By the present arrangement the clamping member 185 may be drawn downwardly by screws 194 thus causing the hook-shaped end 193 of the member 185 to clamp the inner metal pan 176 to the pan separating portion 181 of the frame 180. As shown in dot and dash lines the clamping member 185 may be made into separate parts, namely 196 and 197 and are attached or secured together by means of screws 198. The outer metal pan 177 may be secured to the pan strengthening portion in a like manner as shown in Fig. 2.

In Fig. 8 there is shown a portion of a door designated as 200 which is of similar construction as the door shown in Fig. 7. However, an angular metal bracket 201 is used for clamping an inner metal pan 202 to the door jamb 205 by means of screws 206.

While the form of embodiment of the invention as herein disclosed, constitutes a preferred form, 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 for a refrigerator comprising in combination a frame, a pan on one side of said frame, said pan having an inwardly directed flanged edge, and a hook-shaped member engaging said edge for clamping said pan to said frame.

2. A door for a refrigerator comprising in combination a frame, a metal pan on one side of said frame, said pan having an inwardly curled edge, and an adjustable hook-shaped member extending over and engaging said curled edge for clamping said pan to said frame.

3. A door for a refrigerator comprising in combination a frame, a metal pan on one side of said frame, said pan having an inwardly curled edge abutting said side of said frame; and an unexposed adjustable hook-shaped member extending over and engaging said curled edge for clamping said pan to said frame.

4. A door for a refrigerator comprising in combination a frame, a pan on one side of said frame, said pan having an inwardly curled edge, and an adjustable hook-shaped member unexposed to the exterior of said door, said hook-shaped member extending over and engaging said curled edge for clamping said pan to said frame.

5. A door for a refrigerator comprising in combination a frame having a flanged edge, insulation within said frame, a pan on one side of said frame with its edge adjacent the flanged edge of said frame, a second pan on the other side of said frame, said second pan having a turned-in edge portion, there being a gap between the edges of said pans, and unexposed adjustable nut and bolt means embedded in and carried by said frame for clamping said turned-in edge portion of said second named pan to said frame.

6. A door for a refrigerator comprising in combination a frame having a flanged edge, insulation within said frame, a pan on one side of said frame with its edge adjacent the flanged edge of said frame, a second pan on the other side of said frame, there being a gap between the edge of said pans, said second named pan having an inwardly extending curled edge abutting said side of said frame, and an unexposed adjustable hook-shaped member extending over and engaging said curled edge for clamping said second named pan to said frame.

7. A door for a refrigerator comprising in combination a frame having a flanged edge, insulation within said frame, a metal pan on one side of said frame with its edge stopping adjacent the flanged edge of said frame, a second metal pan on the other side of said frame, said second named pan having an inwardly extending curled edge of which a portion thereof abuts said side of said frame, and an unexposed adjustable hook-shaped member carried by said frame adjacent said curled edge and extending over said curled edge for engaging same to thereby clamp said second named pan to said side of the frame.

8. A door for a refrigerator comprising in combination a rectangular frame, a metal pan on each side of said frame, one of said pans having a turned-in edge portion, said frame including a pan separating portion and a pan strengthening portion, insulation between portions of said pan separating portion, and an unexposed adjustable hook-shaped member carried by said pan separating portion for clamping the turned-in edge portion of one of said pans to said frame, said hook-shaped member being concealed by said pan and said frame.

9. A door for a refrigerator comprising in combination a rectangular frame, a metal pan on each side of said frame, one of said pans having an inwardly curled edge of which a portion thereof abuts said frame, said frame including a pan separating portion and a pan strengthening portion, insulation between portions of said pan separating portion, and an unexposed adjustable hook-shaped member carried by said pan separating portion for engaging said curled edge for clamping the pan to said frame.

10. A door for a refrigerator comprising in combination a frame, a pan on one side of said frame, said pan having an inwardly curled edge abutting said side of said frame, and an unexposed adjustable hook-shaped member passing through a portion of said frame and extending over and engaging said curled edge for clamping said pan to said frame.

11. A door for a refrigerator comprising in combination a frame having a flanged edge, insulation within said frame, a metal pan on one side of said frame with its edge adjacent the flanged edge of said frame, a second metal pan on the other side of said frame, said second pan having a turned-in edge portion, there being a gap between the edges of said pans, and an unexposed adjustable hook-shaped member passing through a portion of said frame and clamping said turned-in edge portion of said second named pan to said frame, said hook shaped member being concealed by said second pan and said frame.

12. A door for a refrigerator comprising in combination a rectangular frame, a metal pan on each side of said frame, said frame including a pan separating portion and a pan strengthening portion, insulation between said pan separating portion, and an unexposed adjustable hook-shaped member for clamping one of said pans to said frame, said member comprising a pin screw-threaded on one end and a hook formed on its other end, said pin extending through a portion of said frame, and a threaded member cooperating with said screw-threaded end.

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