

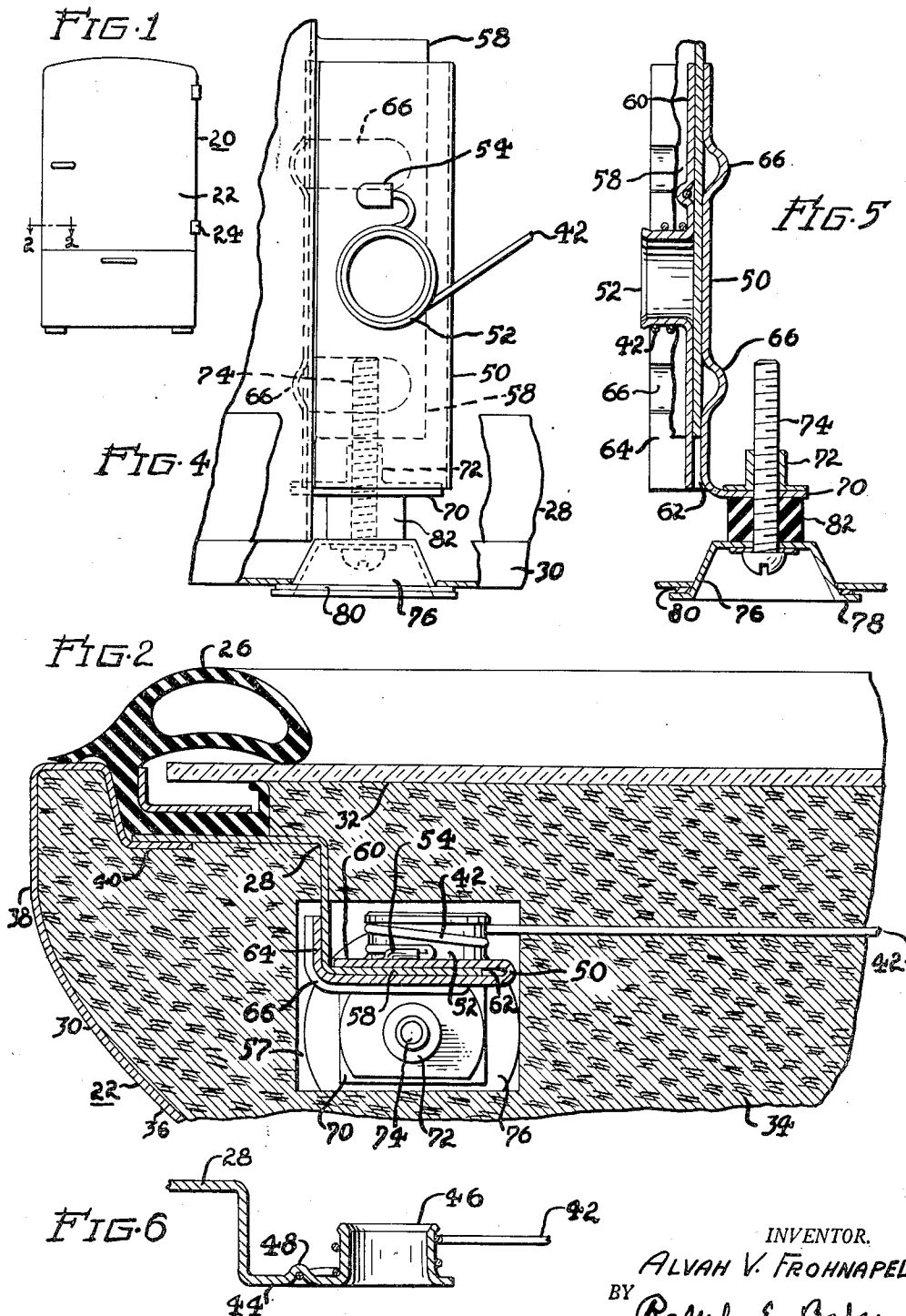
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A. V. FROHNAPEL
REFRIGERATING APPARATUS

2,551,369

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2 Sheets-Sheet 1

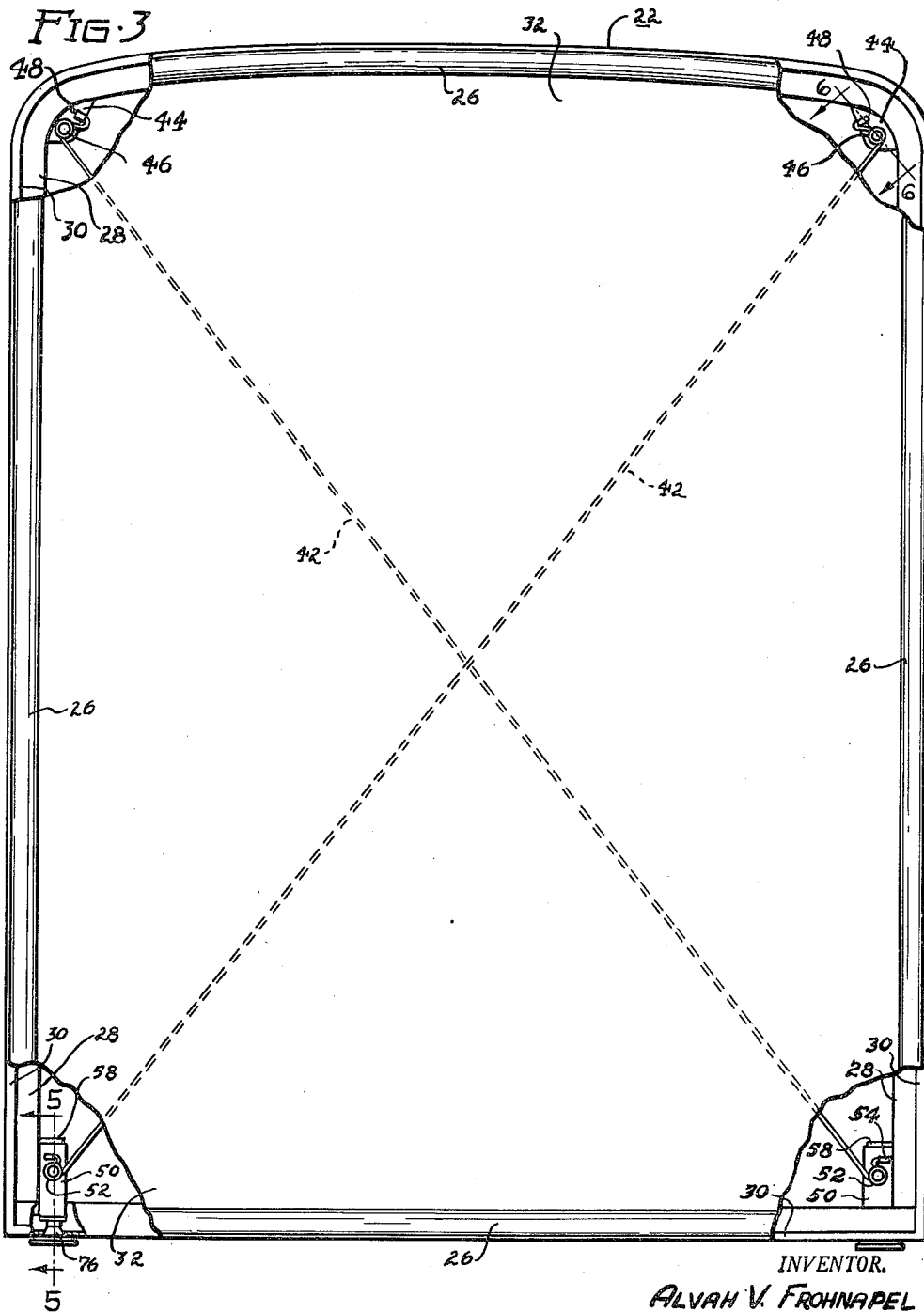


INVENTOR,
ALVAH V. FROHNAPEL
BY *Ralph E. Baker*
ATTORNEY

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2 Sheets-Sheet 2



INVENTOR.
ALVAH V. FROHNAPEL
BY *Ralph E. Baker*
ATTORNEY

UNITED STATES PATENT OFFICE

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REFRIGERATING APPARATUS

Alvah V. Frohnape, Detroit, Mich., assignor to
Nash-Kelvinator Corporation, Detroit, Mich.,
a corporation of Maryland

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1 Claim. (Cl. 20—38)

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This invention relates generally to refrigerator cabinets and more particularly to doors therefor.

It is an object of the present invention to provide for a refrigerator cabinet door, a light weight, low cost adjustable door reinforcing means to effect a coplanar seal tight fit between the door and cabinet.

Another object of the invention is to provide improved, individual adjustment devices for adjusting a refrigerator door coplanar with a wall of the cabinet to insure a good airtight seal therebetween.

Another object of the invention is to provide an improved light weight door having a sealed in door fitting adjustment to insure against entrance of air into the door.

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

In the drawings:

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

Fig. 2 is an enlarged fragmentary cross sectional view of the refrigerator cabinet, taken along the line 2—2 of Figure 1;

Fig. 3 is a rear elevational view of the cabinet door with corner portions broken away to show certain details of construction;

Fig. 4 is an enlarged, fragmentary view of the lower corner of the door of Figure 3;

Fig. 5 is a vertical sectional view of the door, taken along the line 5—5 of Figure 3; and

Fig. 6 is an enlarged fragmentary cross sectional view of the door, taken along line 6—6 of Figure 3.

Referring to the drawings by characters of reference the refrigerator shown includes a cabinet 20 having a food storage compartment access door 22, supported on hinges 24 which may be secured to one of the side walls of the cabinet. On the inner surface of the door 22, a gasket 26 is provided to engage the cabinet front wall around the food storage compartment doorway to effect a good seal therewith when the door is closed. This gasket 26 may be made of any suitable gasket material, such as rubber.

The refrigerator door 22 comprises in general a reinforcing frame 28, an outer casing or shell 30 and an inner facing panel 32. Insulation 34 is provided between the outer casing 30 and the inner facing panel 32 which insulation, although represented as cork in the drawings, may be of

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any suitable type. The inner facing panel 32 is held to the frame by the rubber gasket 26 which may be bonded or otherwise secured to the frame 28. In the present construction, the gasket 26 is of general channel section to receive an outer marginal portion of the door inner panel 32. The door casing 30 is made of sheet metal formed to provide a front panel 36 and sides 38. The casing sides 38 have an intumed, continuous flange 40 around the edges thereof which flange is offset inwardly toward the front panel 36 and is secured to the frame 28 on the opposite side thereof from the gasket 26, preferably by welding.

In order to reinforce the door inexpensively and without greatly increasing its weight, I provide a pair of tie members 42, preferably piano wires connecting diagonally opposite corners of the door, the tie wires 42 extending through the insulation 34 between the inner and outer panels. At each of the upper corners of the door, the door frame 28 is provided with an integral gusset 44 each of which is formed with a tubular, laterally extending securing post 46 to which the tie wires 42 are secured. End portions of the tie wires 42 are wound around the anchor posts 46, the terminal ends of the tie wires preferably being held in retainers 48, formed out of the gussets 44.

At each lower corner of the door, I provide a movably adjustable anchor member 50 to which the lower ends of the tie wires 42 are respectively secured. These anchor members 50 are preferably made of sheet metal formed, like the gussets 44, with a laterally extending tubular post 52 around which lower end portions of the tie wires 42 are wound, the tie wires 42 having their terminal ends held in retainers 54 formed out of the anchor members 50. As shown, the insulation 34 is omitted around the anchor members 50, providing a clearance space 57 therefor, adjacent the lower edge of the door frame 28. The anchor members 50 are vertically and individually adjustable on guides 58, preferably flanges extending inwardly from opposite sides of the frame 28, adjacent the bottom thereof. The sheet metal anchor members 50 each have a side marginal portion 60 thereof bent back in spaced relation on itself providing a channel slideway 62 for receiving the guide flange 58, the opposite side of each of the anchor members being flanged, as at 64, to fit complementary in sliding relation with the side of the frame 28. These sheet metal anchor members 50 may be provided with stiffening beads or corrugations 66.

At their lower edges, the anchor members 50 are each provided with a horizontal flange 70

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to which is welded a nut 72 having screwthreaded engagement with an adjustment screw 74 for vertically adjusting the anchor members. In the bottom edge of the door an aperture is provided to receive a sealing cup 76 for and held in place by the adjustment screw 74. The sealing cup 76 has an outturned, continuous flange 78 around its outer end engaging a gasket 80 which is held under compression against the bottom of the door by the screw 74 to insure a fluid tight joint between the door and the cup. Between the inner end of the cup 76 and the anchor member flange 70, a gasket 82, preferably of soft rubber surrounds the screw 74 and is held under compression thereby to insure against leakage of air past the screw to the interior of the door.

In the event that the door seal 26 does not properly seat against the front wall of the cabinet, correction may be made by adjusting the tension of one or the other or both of the tie wires 42, by means of the adjustment screws 74. The reinforcing tie wires 42 may be tightened and/or loosened, as required, to warp the door at its corners until the door gasket 26 seats in proper sealing relation against the front wall of the cabinet. Upon turning of the adjustment screws 74, the anchor members 50 move vertically, guided by the frame guides 58, to vary the tension on the tie wires. These tie wires 42 are disposed closer to the inner door panel 32 than to the outer panel so that when the wires are tightened the corners of the door casing 30 will be pulled inwardly, flexibility of the casing 30 being relied upon to cause the corners to move outwardly when tension on the tie wires is decreased. By providing wire tie members and small adjustable anchor members therefor guided on the door frame it will be appreciated that I have provided an inexpensive light weight door of the character which may be adjusted to seal tightly with a refrigerator cabinet.

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Although only a preferred form of the invention has been illustrated, and that form described in detail, it will be apparent to those skilled in the art that various modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claim.

I claim:

In a refrigerator cabinet door, inner and outer door panels separated by heat insulation, said outer panel having top, bottom and sides extended toward said inner panel and having inturned flanges, a reinforcing frame secured to said flanges, a vertical slideway on said frame offset therefrom toward said outer panel and embedded in said insulation, an anchor member vertically slidable on said slideway adjacent the bottom of said outer panel, a post carried by said anchor member on one side thereof, a diagonal tie member attached at one end to said post and at the other end to an upper corner of said frame, an opening in the bottom of said outer panel, a cup closing said opening and projecting inwardly of said bottom, an adjustment screw on the other side of said anchor member from said post having a screw threaded connection with said anchor member and anchored to said cup, and a gasket surrounding said adjustment screw between said anchor member and said cup to prevent air leakage into the interior of the door.

ALVAH V. FROHNAPEL.

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