

July 18, 1939.

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2,166,534

RIGHT AND LEFT OPENING DOOR AND HANGER STRUCTURE

Filed April 9, 1938

2 Sheets-Sheet 1

Fig. 1.

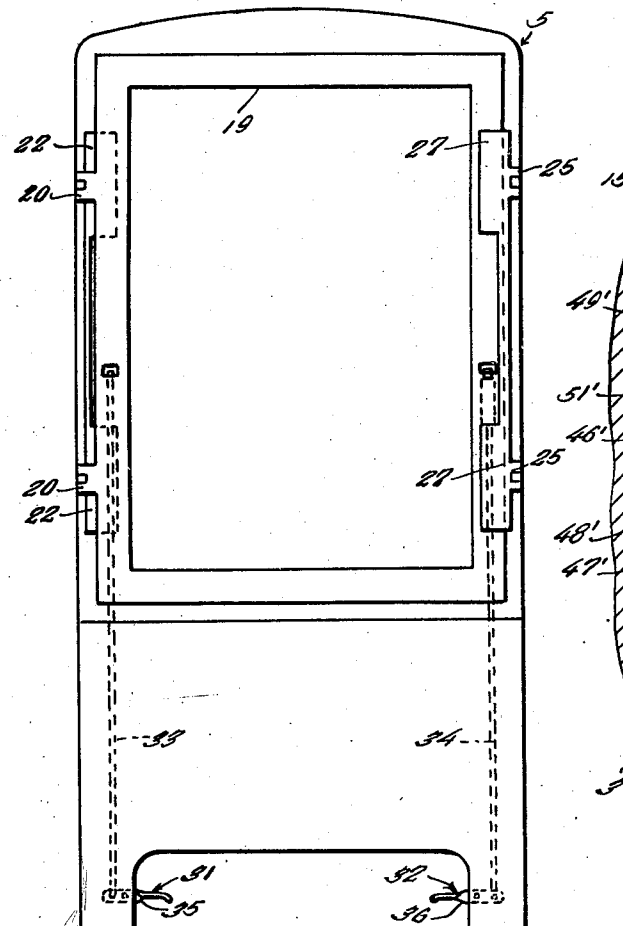


Fig. 2.

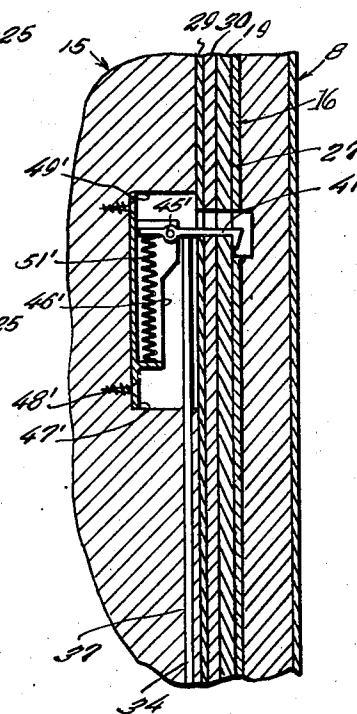
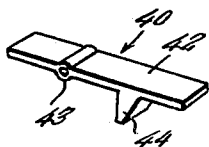


Fig. 3.

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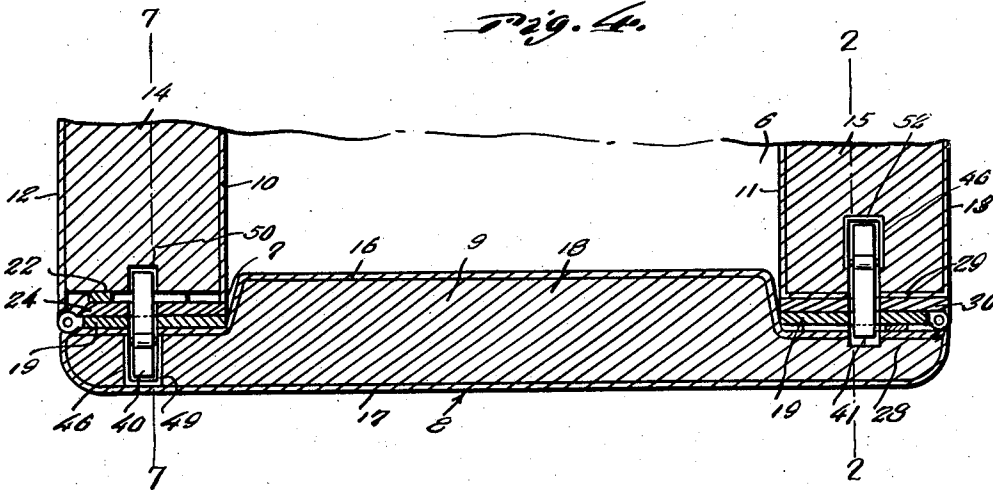
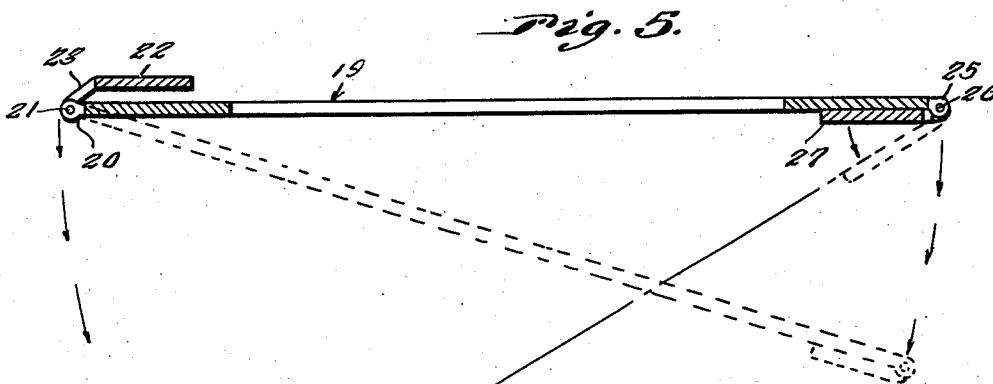
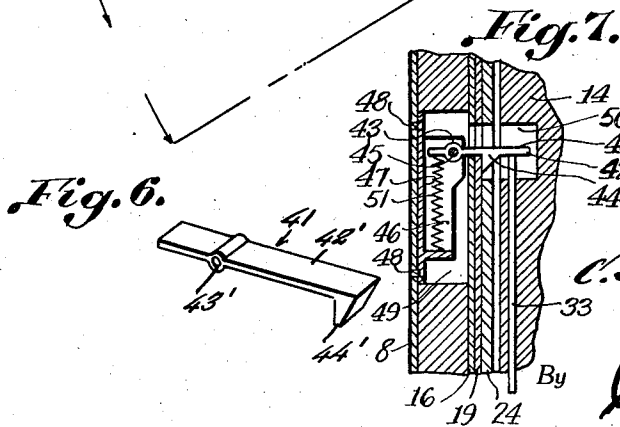
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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RIGHT AND LEFT OPENING DOOR AND
HANGER STRUCTURE

Calvert S. Rosenfeld, Darby, Pa.

Application April 9, 1938, Serial No. 201,138

2 Claims. (Cl. 16-147)

The present invention relates to closures for cabinets, such as refrigerators or the like which in use must be sealed for air tightness when closed, and relates more particularly to a hanger for so supporting the closure or door that it can be opened from either the right or left side of the cabinet.

One object of the invention is to provide a door supporting hanger which is so arranged with respect to the coating face of a cabinet as to ensure a perfect seal about the opening to the cabinet when the door thereto is closed. A further object is to provide a novel door wherein exposed hardware is reduced to a minimum.

Another important object of my invention is to provide arrangements of the character indicated which reduce the manufacturing requirements of furnishing cabinets with either left opening or right opening doors.

Another important object of my invention is to provide arrangements of the character indicated which are more advantageously susceptible to shaping and finishing in a variety of forms, such as are dictated by modern taste, in the execution of cabinets.

Other important objects of my invention will be apparent from a reading of the description taken in connection with the drawings herein, wherein for purposes of illustration I have set forth a preferred embodiment of my invention.

In the drawings:

Figure 1 represents a front elevation of a cabinet with the door removed to more clearly disclose a hanger embodying one form of the present invention.

Figure 2 is an enlarged transverse vertical sectional view taken on line 2-2 of Figure 1.

Figure 3 is a perspective view of the pivoted latch in use in the left hand portion of the device as shown in Figure 1.

Figure 4 is a horizontal sectional view taken through Figure 1 just above the latches and showing the door in a fully closed position.

Figure 5 is a horizontal sectional view, with the door removed, taken through the hinge mechanism and showing the mechanism in a fully closed position, a partial left hand open position being shown in phantom lines, and a partial right hand open position being shown in dotted lines.

Figure 6 is a perspective view of the pivoted latch shown in Figure 2.

Figure 7 represents a section on line 7-7 of Figure 1.

Referring in detail to the drawings, the numeral 5 designates a cabinet, such as the cabinet

of a modern refrigerator which includes a refrigerating chamber 6 having a front opening 7 giving access to the chamber 6 and a door which is generally designated 8 which has a protuberance 9 which when the door is mounted on the front of a cabinet and is in a closed position, extends into the opening 7 to close and seal the refrigerating chamber 6. The side walls of the cabinet have inner metal linings 10, 11, respectively, and exterior metal linings 12, 13, respectively, between which are blocks 14, 15, respectively, of wood or other suitable body forming insulating material. The door 8 is formed of a back plate 16 and a front plate 17 between which is a body of insulating material 18 such as wood or other suitable material.

In accordance with the present invention I provide a rectangular annular hanger or frame 19 which encircles the protuberance 9 and lies flush against the marginal portions of the back plate 16 of the door 8 and which has on its left side at properly vertically spaced intervals pin barrels 20 which extend away from the hanger 19 to the extreme left side of the cabinet 5, each mounting a hinge pin 21 on which the hinge leaf 22 is pivoted, the hinge leaf having an acute angularly offset portion 23 which adapts the hinge leaf to assume a position parallelly spaced from the back of the hanger 19, as shown in Figure 5 of the drawings. The hinge leaf or plate 22 is fastened by suitable means to the front of the wall forming block 14 as illustrated in Figure 4 of the drawings, with a wood or other suitable material plate or strip 24 interposed between the front of the plate 22 and the back of the hanger 19. A suitable number of vertically spaced hinge leaves 22, such as two in the case of the illustrative form of the invention shown herein, having been attached to the front end of the side wall 14 of the cabinet, the frame having been arranged to lie unattached to the back of the left marginal portions of the door, the frame 19 is hingedly supported on the cabinet so that its right hand edge may be swung away from the right hand side of the cabinet in a right hand opening manner.

At the side of the hanger 19 opposite the hinge leaves 22 pin barrels 25 are provided having hinge pins 26 which pivotally support hinge plates 27 which are arranged to lie in a closed position against the front of the frame 19 as illustrated in Figure 5 of the drawings. This offsetting of the pin barrels 25, as well as the pin barrels 20, locates the hinge pins 26 and 21 so as to insure a free and complete swing of the door to full

open position. Furthermore this construction forms a marginal space around the hanger 19, namely between the outer edge of the hanger and the sides of the cabinet 5. Likewise a marginal space is formed on the inner side of the door in a corresponding position and these spaces serve to receive any suitable type of compression gasket to ensure an effective seal when the door is closed. These hinge plates 27 are fixedly secured to depressed receiving portions 28 of the marginal part of the right hand side of the back of the door 8, whereby the door 8 is hingedly mounted on the hanger 19 for left hand opening operation. As shown in Figure 4 of the drawings, the front end of the right hand side wall of the cabinet is faced by plating 29 which connects with the inner and outer plates 11, 13 and that a strip 30 of wood or other suitable material is interposed between the back of the hanger 19 and the plate 29, the strips 24 and 30, because of these arrangements provide the finished facing of the front of the cabinet at the left and right hand sides.

By reference to Figure 5 of the drawings in connection with what has been described it will be seen that when the door 8 is operated in a left opening manner the door 8 will come away from the cabinet and leave the hanger 19 in place on the front of the cabinet, the door pivoting on the hinge pins 26, and that in a right hand opening action of the door 8, the hanger 19 will come away from the cabinet with the door and the door will hinge on the pins 21. These arrangements make it possible to open the refrigerator door from either side, this in turn making it possible to reach the contents of the refrigerating chamber 6 which may be predeterminedly located at a particular side of the refrigerating chamber, with a minimum opening action of the door, so that the selected contents may be reached more quickly and the temperature in the refrigerating chamber less reduced by unnecessary opening of the door. It will also be obvious that due to the optional opening of the door from either side, the refrigerator may be disposed with respect to furniture in a room without having to consider from which side the door opens, this being an especially desirable feature when the door and hinge structure is incorporated in a refrigerator or other similar cabinet for use in a small modern apartment.

A left hand opener 31 and a right hand opener 32 are provided, each opener including a respective vertical rod 33, 34 pivoted at its lower end to an operating lever 35, 36 pivoted on the lower part of the cabinet, the rods being respectively slidably received in openings 37 formed in the wall forms 14, 15. These rods are arranged to selectively operate and release the respective latches or catches which are carried by the door in the case of the left hand catch, and by the right hand wall of the cabinet in the case of the right hand catch. Locating the left hand catch in the door facing towards the cabinet and the right hand catch in the cabinet facing towards the door provides means for respectively preventing the hanger 19 from coming away from the front of the cabinet when the door is opened from the left side and preventing the hanger 19 from leaving the door when the door is opened from the right side. The left hand catch is shown in Figure 3 and is generally designated 40 while the right hand catch shown in Figure 6 is generally designated 41.

The left hand catch 40, shown in Figure 3, comprises a flat bar 42 which has a pivot pin

barrel 43 at one side of the middle thereof and a depending tapered latch or nose 44 depending therefrom at the opposite side of the middle thereof, and the pin barrel 43 receives a pin or pivot 45 which is mounted between the sides of a spring casing 46 which has a base 47 penetrated by securing means 48 entering the back wall of an accommodating opening 49 formed in the rear face of the left side of the door 8. The latch equipped portion of the catch extends forwardly through registering openings in the wood strip 24 and in the frame 19, in the reverse of the order named to reach into an opening 50 formed in the block 14 of the left hand wall element of the cabinet, and a suitable spring 51 acting vertically in the casing 46 acts against the short arm of the catch to keep the nose 44 engaged behind the hanger 19, whereby left hand opening of the door 8 is positively prevented until the nose 44 has been unseated by raising the long 20 arm of the catch by operation of the operator 31.

The latch 41 on the right hand side of the refrigerator cabinet consists of a bar 42' having a pin barrel 43' at one side of the middle thereof, and the tapered nose 44' is located at the extremity of the long arm of the catch instead of intermediate the ends of the long arm thereof as in the case of the catch 40 shown in Figure 3. The catch 41 shown in Figure 6 is supported by a pin 45' mounted between the sides of a casing 46' which is seated in an accommodating opening 52 formed in the front of the block 15 of the right hand side wall member of the cabinet, with a spring 51' bearing against the underside of the short arm of the catch so as to keep the tapered latch or nose 44' in engaged position. The long arm of the catch 41 projects forwardly through the wood strip 30 and the hanger 19, whereby the latch or nose 44' engages against the front of the hanger 19 to prevent right opening of the door 8 until the operator 32 has been depressed to cause the rod 34 to move upwardly and engage the long arm of the catch 41 and raise the latch 44'. Suitable openings in the wood strip and the hanger 19 are formed therein in a substantially registering manner.

Although I have shown and described herein a preferred embodiment of my invention, it is to be definitely understood that I do not desire to limit the application of the invention thereto, and any change or changes may be made in the structure and arrangement of the parts, within the spirit of the invention and the scope of the subjoined claims.

Having described the invention, what is claimed as new is:

1. A mounting for the door of a cabinet having an access opening, consisting of an annular hanger encircling said opening and located between the opposed faces of the cabinet and the door, the overall dimensions of said hanger with respect to the corresponding dimensions of the cabinet and the door being such as to form a circumferential space about said hanger and between the opposed faces of the cabinet and the door to receive a compressible gasket for sealing purposes, means including pin barrels for hinging one side of said hanger to the front of said cabinet, means including pin barrels for hinging the opposite side of said hanger to said door, each pin barrel on the hanger being formed in a lateral offset in the plane of said hanger, latching devices for respectively locking one side of said hanger to said cabinet and the other side of said hanger

to said door, and independent operating means for controlling said latching devices.

2. A mounting for the door of a cabinet having an access opening, consisting of an annular hanger encircling said opening with one face seating against the front of said cabinet and with the opposite face seating against the inner face of a door, said hanger having a width and length less than the corresponding dimensions of both the door and cabinet to form a marginal space about said hanger and between the front of the cabinet and the inner face of the door to receive a suitable compressible gasket, means for hinging one side of said hanger to the front of said cabinet, means for hinging the opposite side of said

hanger to the inner face of said door, a latch means attached to and projecting outwardly from one marginal front wall of said cabinet to enter an opening in the inner face of the door to engage said hanger, and a latch means attached to and projecting inwardly from the inner face of the door to enter an opening in the opposite marginal wall of said cabinet to engage said hanger, whereby when the door is swung about one hinge means the hanger swings therewith and when the door is swung about the other hinge means the hanger remains latched to said cabinet.

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