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DOOR LATCHING MECHANISM

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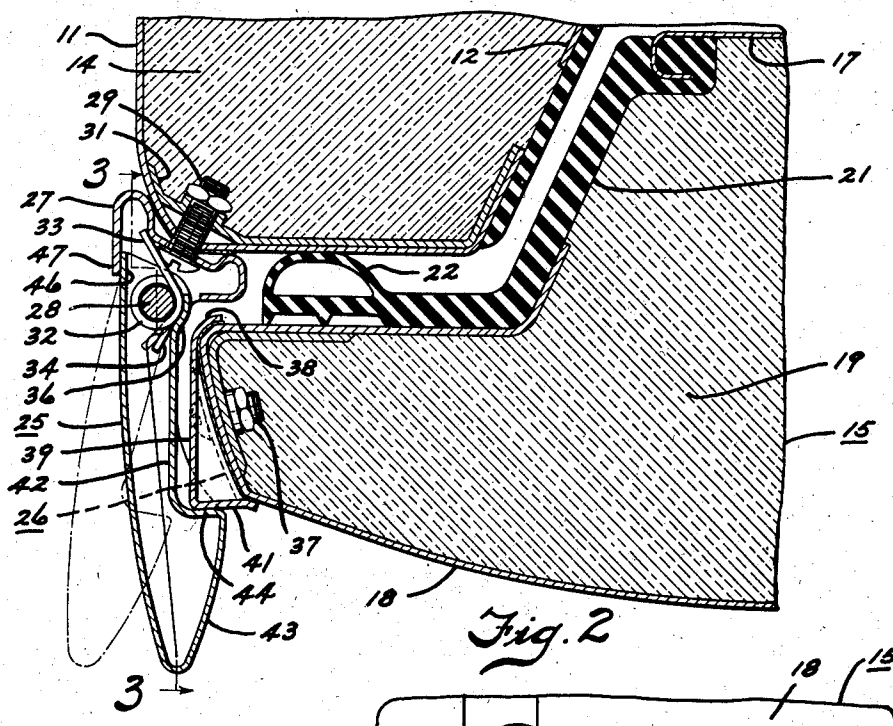


Fig. 2

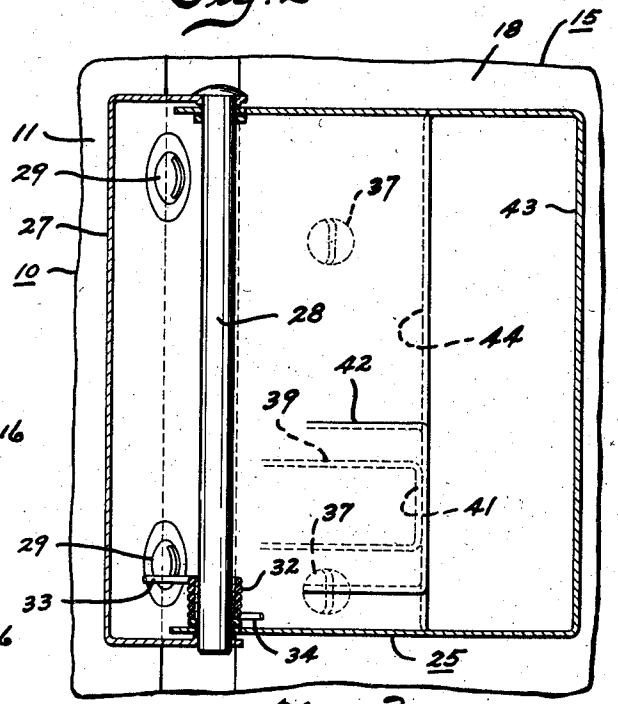


Fig. 3

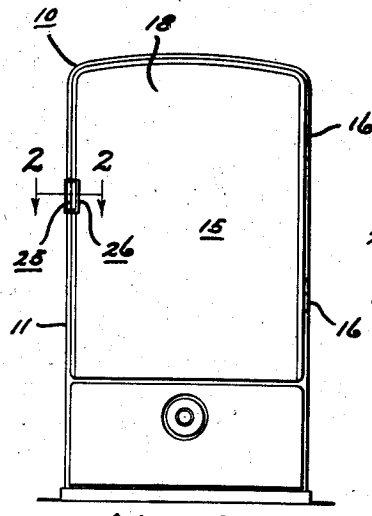


Fig. 1

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DOOR LATCHING MECHANISM

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2 Claims. (Cl. 292—128)

This invention relates to refrigerating apparatus and particularly to latches for doors of refrigerator cabinets.

Heretofore, refrigerator door latches have largely been of the pivot lever type in which by pulling outwardly on the handle of the lever the door was opened. When approaching the refrigerator with both hands full of articles to be placed therein, no hand is available to open the door and such a latch cannot readily be operated without setting down some of the articles. More recently mechanisms have been provided wherein the door latch is operated by a push button to release the door and wherein separate spring devices force the door open after being released. In such push button operated latches, the latch strike has been mounted on the cabinet door frame while the latch bolt and its releasing mechanism has been carried by the door. In addition to such latches being complicated and too expensive for use on low-cost domestic refrigerators, they have not been entirely satisfactory. For example, when the push button is struck by the user to release the latch mechanism, the door quickly swings open and is likely to knock articles out of the hands of the user or results in marring the finish on the door upon striking the articles.

An object of my invention is to provide an improved compact and inexpensive latch device or mechanism for a door of a refrigerator cabinet which facilitates opening of the door while handling articles to be placed in the refrigerator.

Another object of my invention is to provide a latch for a door of a refrigerator cabinet wherein the latch strike is on the door and wherein the other part of the latch is mounted on the cabinet and serves as the latch catch as well as the manually operated means for releasing the catch from its strike.

In carrying out the foregoing objects, it is still another object of my invention to minimize parts of a latch mechanism for a refrigerator cabinet door whereby a simple improved latch device of low manufacturing cost is provided, while at the same time providing a latch that is neat in appearance, sufficiently sturdy and not likely to get out of order.

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

In the drawing:

Fig. 1 is a front view of a refrigerator cabinet having the latch device of the present invention incorporated therein;

Fig. 2 is an enlarged horizontal fragmentary sectional view taken on the line 2—2 of Fig. 1 showing the cabinet door hold in closed position by the present latch device; and

Fig. 3 is a vertical sectional view of a part of the latch device taken on the line 3—3 of Fig. 2.

Referring to the drawing, I have shown in Fig. 1 thereof, for illustrating my invention, a refrigerator cabinet 10 of the household type. Cabinet 10 comprises outer and inner metal walls 11 and 12 respectively (see Fig. 2) having insulating material 14 therebetween to form the usual insulated food storage compartment therein adapted to be refrigerated. The food compartment is provided with an access opening which is normally closed by a door 15. Door 15 is pivotally mounted on the cabinet 10 by a plurality of hinges 16 so as to be swingable horizontally away from the food compartment access opening to afford access to the interior of the compartment. The door 15 includes inner and outer metal wall members 17 and 18 respectively (see Fig. 2) having insulated material 19 interposed therebetween. An insulating member, comprising a breaker strip portion 21, extends between the edges of the metal door members 17 and 18 at the periphery of the door, and this insulating member also includes a gasket seal portion 22 which engages the front wall 11 of cabinet 10 to seal the food compartment access opening thereof.

The latch device or latching mechanism for maintaining the door in closed position and for permitting opening of the door includes a combined catch and bolt or handle member, generally represented by the reference character 25, and a striker element 26. Striker element 26 and handle member 25 are of substantially the same size in their vertical dimensions. The handle member 25 comprises a hollow metal piece mounted upon the front corner part of cabinet 10. This metal handle piece 25 is pivotally mounted upon ears provided on a support member 27 by a rod or pin 28. A gasket of any suitable material is disposed between the outer wall 11 of cabinet 10 and the support member 27. Support member 27 is secured to cabinet 10 by bolts 29 which pass through a metal reinforcing piece 31 welded or otherwise suitably secured to the inner surface of the cabinet outer wall 11. A coil spring 32 surrounds the rod or pin 28 and has its one end portion 33 engaging the support member 27 while its opposite end portion 34 engages a part 36 of member 25. Spring 32 is com-

pressed when placed between the elements, as described, so that its tension will be applied to the handle member 25 for forcing the member 25 toward the latch strike element 26. A gasket of any suitable material is disposed between the outer door member 18 and striker element 26. Striker element 26 is in the form of a metal plate mounted upon the vertical edge, opposite hinges 16, of door 15 by bolts 37 which pass through a reinforcing member welded or otherwise suitably secured to the inner surface of the outer wall 18 of door 15. This plate has a striking surface 38 overlapping or extending a short distance around the corner of the edge of door 15 for a purpose to be presently described. Near the bottom of striker plate element 26 there is provided a raised part 39 which terminates in a shoulder forming a latching surface 41 at the front of the vertical edge of door 15, the purpose of which will become apparent hereinafter. It will be noted that the pivotally mounted member 25 is provided with a depressed part 42 near the bottom thereof (see Fig. 3) which provides a recess for receiving the raised part 39 of element 26. The outer end part 43 of member 25 is tapered and forms a handle portion therefor, which portion projects outwardly a substantial distance beyond the front face of door 15. Intermediate the handle end 43 of member 25 and the depressed part 42 thereof, there is provided a catch or latching surface 44 normally engaging the latching surface 41 on striker element 26 to hold the door in closed position.

It is apparent that since member 25 is pivotally mounted it may be moved horizontally or to the left, as shown by the dot-dash lines in Fig. 2 of the drawing, to unlatch the door latching mechanism. It is to be understood that in the present construction the gasket 22, carried by door 15 and which seals the door to the cabinet front wall 11, is preferably of such shape or design that when the latch mechanism is released the resiliency of this gasket, due to its being somewhat compressed, forces the door open. It may, however, be desirable to employ additional means for moving the door to open position upon release of the latch such as, for example, springs which may be disposed in the hinges 16 or spring press buttons spaced along the edge of the compartment access opening and adapted to engage the door when the door is moved to closed position.

Assuming that door 15 is closed and sealing the food storage chamber of cabinet 10, as shown in Fig. 1 of the drawing, the latching device or mechanism is in the position shown in full lines in Fig. 2. In order to open door 15 to gain access to the food compartment or chamber, the projecting handle portion 43 of member 25 may be moved horizontally against the force exerted by spring 32, to the left as viewed in Fig. 2 of the drawing into the dot-dash line position indicated. This movement of member 25 causes the catch portion or latching surface 44 thereof to be disengaged from the latching surface 41, provided on striker element 26, to thereby release the door 15. Upon release of door 15, the compression force of resilient gasket 22, or any other suitable spring means not shown but which may be provided as previously explained, will move the door horizontally and outwardly away from the front of cabinet 10 about its vertical mounting on hinges 16. When the member 25 is released, spring 32 will again force the member to the right, as viewed in Fig. 2, into the path of the striker element 26 upon closing of the door 15. A tail part 46 on member 25, closely adjacent the pivot pin 28, engages a part 47 of mounting plate or support member 27 which overlaps the tail part 46 to thereby form a stop for limiting the return movement of member 25. When door 15 is moved toward closed position, the tapered end part 43 of member 25 engages the striking surface 38 on element 26. This surface 38 moves the latch bolt or handle member 25 so that the tapered part of end 43 thereof slides along the raised surface 39 on element 26. During closing movement of door 15, the catch or latching surface 44 comes into alignment with the latching surface 41 on element 26 whereupon the raised part 39 of element 26 is received in the recess 42 of member 25 and the latching surfaces 41 and 44 are brought into engagement with one another. The latching surfaces 41 and 44 brought into registration with one another, as described, will therefore latch or lock the door 15 in its closed position against the resiliency of gasket 22. It is to be noted that the latch device disclosed automatically latches door 15 in position to close or seal the food compartment access opening when the door is moved toward or against the front of cabinet 10. Thus, the handle or bolt member 25 of the latching mechanism need be manipulated only when the door 15 is to be opened.

From the foregoing, it will be apparent that I have provided a latching device for a refrigerator cabinet door which facilitates opening of the door when the user's hands are not free to actuate the latch handle, in which case the user may employ an elbow to push on the latch handle to release the door. Thus articles carried in the user's hands need not be set down prior to unlatching a cabinet door provided with a latch device of the present disclosure. In addition to presenting certain advantages over latching systems heretofore commonly employed in refrigerator cabinets, my latch device is of simplified construction, inexpensive, neat in appearance and not likely to get out of order. In the present latch device, the movable latching member serves both as a latch bolt and latch handle to thereby obviate the use of complicated mechanisms ordinarily interposed between a latch handle and a bolt to be actuated by the handle.

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.

I claim:

1. A latching mechanism for a door hingedly mounted on a cabinet of the front opening type so that the door may swing about an axis between a closed position and an open position, said mechanism comprising a support secured to the cabinet adjacent the door jamb, a pin carried and spaced by said support from the cabinet, a swingable means pivotally mounted on said pin and forming a combined catch and operating member adapted to engage a striker element on an edge of the door and the striker element having a catch portion thereon, a spring for normally urging said means toward the striker element on the door, said support having spaced side walls one of which extends outwardly of the cabinet and overlaps the inner end of the catch and operating member to provide therewith stop means for the door-latching position of said member, said means having an end part extending beyond

the front face of the door and serving as a handle for said operating member, a catch portion formed on said means intermediate said end part thereof and its pivotal mounting adapted to maintain the door in closed position, and said handle end of said means being adapted to receive a force applied thereto in a direction substantially paralleling the front of the cabinet to release said catch portion on said operating member from the catch portion of the striker element for permitting opening of the door.

2. A latching mechanism for a door hingedly mounted on a cabinet of the front opening type so that the door may swing horizontally about a vertical axis between a closed position and an open position, said mechanism comprising a sheet metal support secured to the front of the cabinet adjacent the door jamb and having outwardly projecting upper and lower ears, a vertically disposed pin carried by said ears and spaced from the front of the cabinet, a horizontally swingable hollow sheet metal means pivotally mounted on said pin and forming a combined catch and operating member adapted to engage a sheet metal striker element on a vertical edge of the door and the striker element having a catch portion thereon, a spring coiled about said pin having its one end bearing against said support and its other end bearing against said means for normally urging the means toward the striker element on the door, said support having spaced side walls one of which extends outwardly of the cabinet and overlaps the inner end of the catch and operating member to provide therewith stop means for the door-latching position of said member, said spaced side walls and said hollow sheet metal means together concealing said pin and said spring, said means having an end part extending beyond the front face of the door and serving as a handle for said operating member, a catch portion formed on said means intermediate said end part thereof and its pivotal mounting engageable with the catch portion on said striker element and adapted to maintain the door in closed position, and said handle end of said means being adapted to receive a horizontal force applied thereto in a direction substantially paralleling the front of the cabinet to release said catch portion on said operating member from the catch portion of the striker element for permitting opening of the door.

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