July 18, 1939. D. SWARD 2,166,735

LATCH

Filed May 15, 1937 2 Sheets-Sheet 1

Fig. 1.

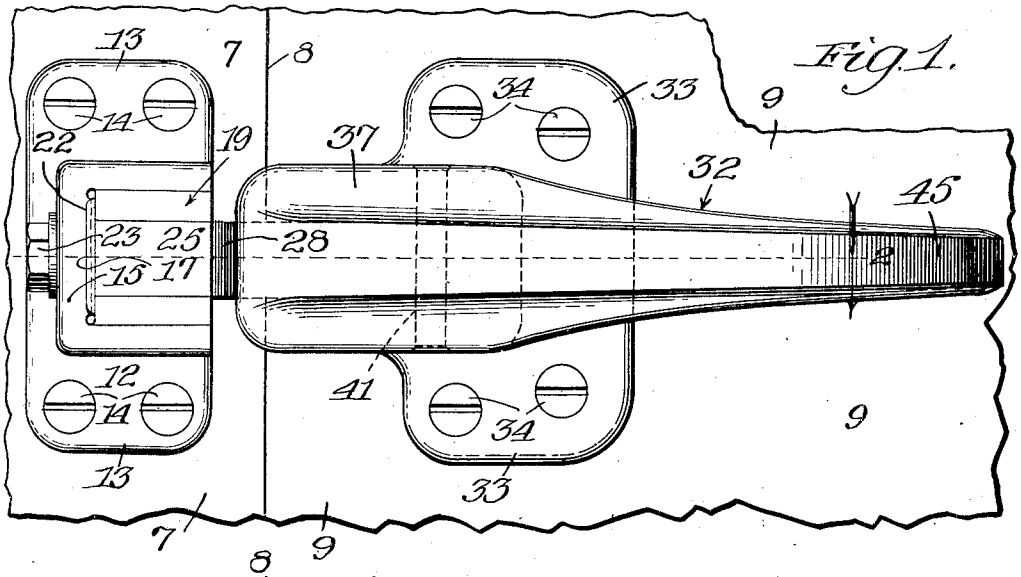


Fig. 2.

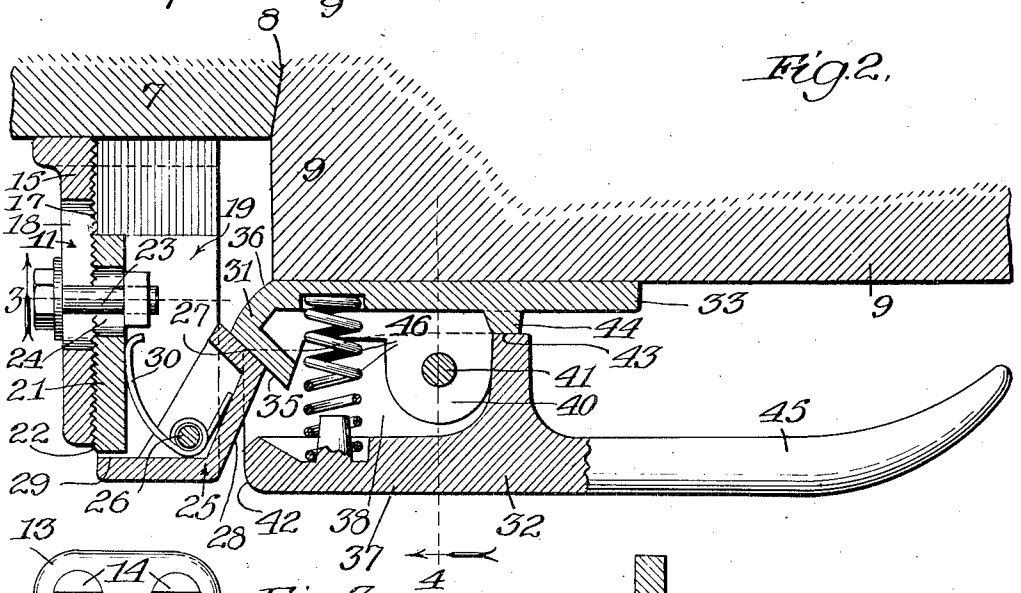


Fig. 3.

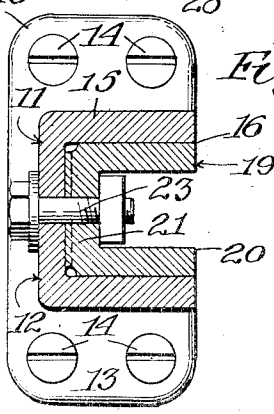
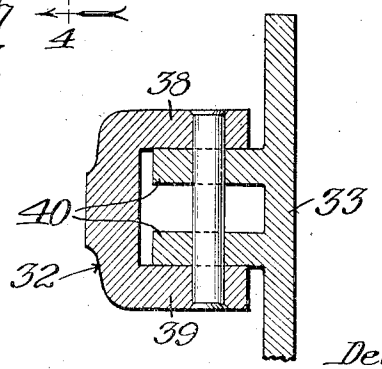


Fig. 4.



Inventor:
Delbert Sward,
By Chritton, Wiles, Davies, Kirschbaum & Dawson,
Attys.

July 18, 1939. D. SWARD 2,166,735

LATCH

Filed May 15, 1937 2 Sheets-Sheet 2

Fig. 5.

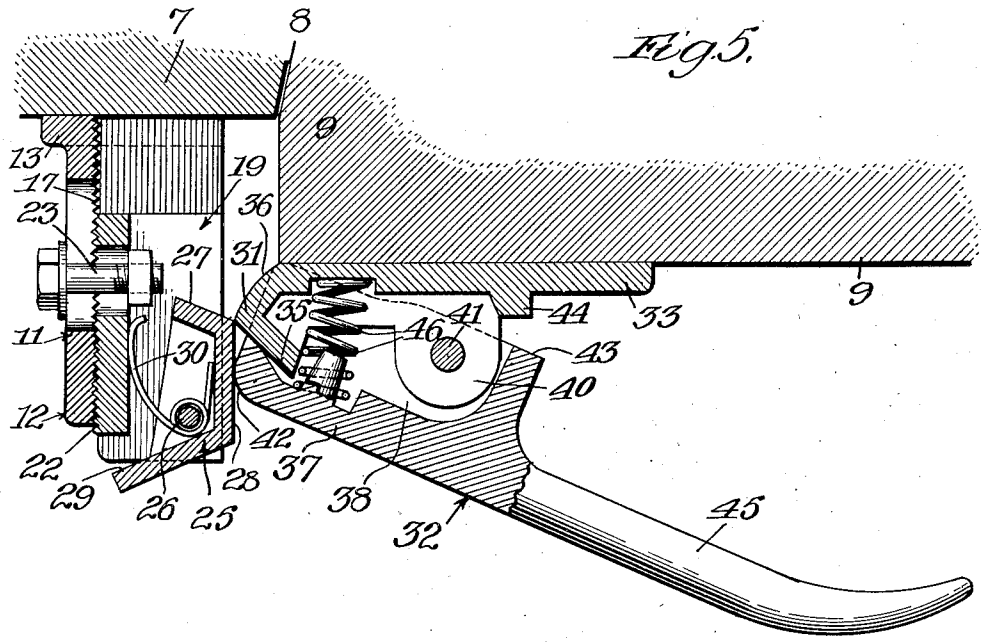
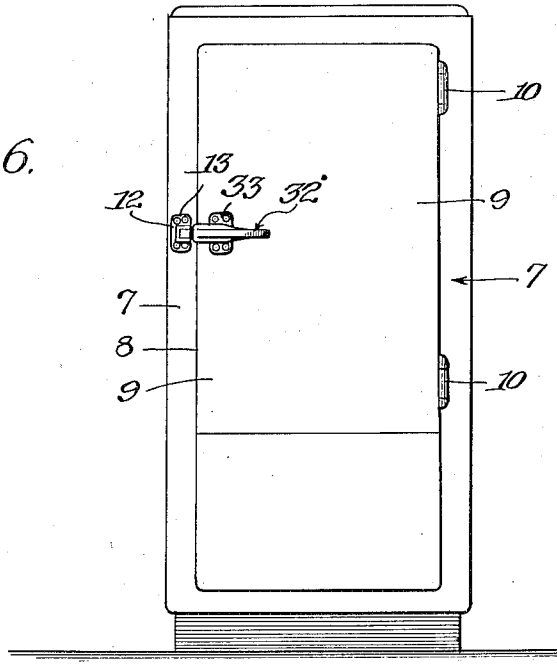


Fig. 6.



Inventor:
Delbert Sward,
By Chritton, Wills, Davies, Kirschbaum & Dawson,
Attys.

Patented July 18, 1939 2,166,735

UNITED STATES PATENT OFFICE

2,166,735

LATCH

Delbert Sward, Freeport, Ill., assignor to Arcade Manufacturing Company, Freeport, Ill., a corporation of Illinois

Application May 15, 1937, Serial No. 142,910

1 Claim. (Cl. 292—226)

My invention relates to latches, in general, but more particularly to latches for refrigerator doors of the type wherein the latch becomes automatically latched upon swinging the door to closed position and comprising a single hand lever for the unlatching and opening of the door.

My general object is to provide a novel, simple, durable, and positively operating latch and by which the door may be held in tightly closed position in its latched condition; and other objects as will be manifest from the following description.

Referring to the accompanying drawings:

Figure 1 is a broken face view of the front of a refrigerator structure having an opening equipped with a door hinged thereto and provided with latch means for the door in accordance with my invention, the door being shown in tightly closed condition.

Figure 2 is a sectional view of the construction of Fig. 1, the section being taken at the line 2 on Fig. 1 and viewed in the direction of the arrow.

Figure 3 is a sectional view taken at the line 3 on Fig. 2 and viewed in the direction of the arrow.

Figure 4 is a sectional view taken at the line 4 on Fig. 2 and viewed in the direction of the arrow.

Figure 5 is a broken plan sectional view of the construction shown in Fig. 1, showing the parts in the position they assume upon operating them to unlatching position; and

Figure 6, a view in front elevation of a complete refrigerator structure equipped with my improved latch means.

In the drawings, 7 represents a refrigerator structure having an opening 8 in its front wall, and 9 a door forming a closure for said opening and hinged to the front wall of the receptacle as represented at 10 and in accordance with common practice.

The particular illustrated embodiment of the invention comprises a detent structure 11 for attachment to the outer face of the front wall of the refrigerator adjacent the side of the opening 8 opposite that at which the door 9 is hinged, this detent structure comprising a casing 12 secured at flanges 13 thereon to the refrigerator wall by screws 14 and having a forwardly projecting hollow post portion 15 open as indicated at 16 adjacent the door opening, with its opposite wall serrated and slotted as indicated at 17 and 18, respectively.

Adjustable in the post 15 is a slide 19 of U-shape in cross section with its open side 20 coincident with the opening 16 and forming with the post portion 15 a supporting structure for a detent hereinafter described, the base wall 21 of this slide having serrations 22 adapted to intermesh with the serrated surface 17 of the post. A clamping bolt 23 extending through a slot 24 in the slide 19 and through the opening 18, serves to hold the slide in adjusted position on the post.

The detent structure also comprises a detent 25 pivoted on a pin 26 secured to the slide 19, to rock in a horizontal plane in the particular construction shown and thus at a substantially right angle to the plane of the front wall of the refrigerator.

The detent 25 has surfaces 27 and 28 disposed at an angle to each other, shown as an oblique angle, and a stop portion 29 which engages the outer end of the slide 19 under the action of a coil spring 30 surrounding the pivot pin 26 with its ends pressing against the detent and the slide, respectively, when the detent is freed of restraint obstructing the seating thereof as stated, namely, when out of engagement with the other parts of the latch hereinafter described.

In the normal position of the detent 25 its nose portion bounded by the surfaces 27 and 28 extends outwardly beyond the post and slide as shown, its surfaces 27 and 28 inclining in a direction away from the opening 8 rearwardly and forwardly, respectively.

The other parts of the latch mechanism comprise a keeper 31 rigid on the door 9 and a hand lever 32 pivoted on the door, both for cooperation with the detent 25.

The keeper 31 constitutes a terminal end portion of plate 33 secured to the door as by screws 34 in line with the detent structure as shown, the keeper being formed with surfaces 35 and 36 projecting beyond the adjacent side edge of the door 9.

The surface 35 inclines relative to the face of the door at substantially the same angle as the surface 27 of the detent extends relative to the face of the door in the normal position of the latter; and its surface 36, shown as slightly curved, slopes from the terminal end of the keeper rearwardly in a direction away from the post 15.

The hand lever 32, shown as having an end portion 37 of general U-shape in cross section presenting upper and lower flanges 38 and 39, straddles a pair of ears 40 projecting outwardly from the plate 33 and to which the lever is pivoted, to rock on a substantially vertical axis, by

means of a pivot pin 41 passing through the flanges 38 and 39 and the ears 40.

The terminal end of the portion 37 is shown as formed with a curved outer surface 42 adapted to engage the surface 28 of the detent for disengaging the latter from the keeper 31, in the rocking of the lever 32 in clockwise direction in Fig. 2.

The pivot 41 of the lever 32 is shown as located between the ends of the portion 37 of the lever, the latter being provided between its ends with a surface 43 cooperating with a boss 44 on the plate 33 to limit the rocking of the lever 32 in counterclockwise direction in Fig. 2 beyond the position therein shown, that portion of the lever which is provided beyond the stop surface referred to being in the form of a bar 45 adapted to be grasped by the one opening the door.

The lever 32 is normally urged at all times, to rotate in counterclockwise direction, by a coil spring 46 interposed between the plate 33 and the portion 37 of the lever, between the pivot 41 and the end of the lever which engages the detent.

Assuming the door to be in open condition, the pushing of the door toward closed position causes the keeper 31 to ride at its surface 36 against the surface 28 of the detent 25 thereby rocking the latter in counterclockwise direction in Fig. 2 and permitting the high point of the keeper to pass the high point of the detent, whereupon the detent swings back, engaging at its surface 27 with the surface 35 of the keeper to obstruct outward movement of the door; the parts referred to being so positioned relative to each other that the detent 25 is free of obstruction to rotate in clockwise direction in Fig. 2 under the action of the spring 30 while in engagement with the surface 35, in the closed position of the door, except as restrained by the keeper 31, whereby the detent exerts continuing force against the keeper 31, in a direction of such closing movement which holds the door closed under tension.

To open the door the operator grasps the lever 32 at its handle portion 45, pulling forwardly thereon which serves to first engage the lever 32 with the surface 28 of the detent and rock it to the position shown in Fig. 5 in which the detent is removed from a position obstructing outward movement of the door and keeper 31. By reason of the provision of the surfaces 27 and 35 as shown and described, the surface 27 of the detent starts to swing away from the surface 35 of the keeper upon the initial engagement of the lever 32 with the surface 28 and as the spring 30 offers a yielding resistance to the swinging of the detent by the lever 32, a high degree of leverage is exerted through the lever 32 tending to move the door to open position which is very desirable inasmuch as oftentimes the doors stick and require the exertion of considerable force against them for opening.

As will be understood, following the cracking of the door in the movement of the parts to the position shown in Fig. 5, the door is fully opened by the operator continuing outward pull on the lever 45.

The provision of the adjustable slide 15 is desirable as it enables the detent to be adjusted into the desired position for functioning with the best results in connection with the other parts of the latch.

While I have illustrated and described a particular construction embodying my invention, I do not wish to be understood as intending to limit it thereto as the same may be variously modified and altered and the invention embodied in other forms of structures, without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent is:

Latch mechanism adapted for association with a hinged door having an abutment member and a lever release means cooperating therewith; the mechanism comprising a hollow post open at one side thereof, a hollow slide in said post having an open side located at the open side of the post, means to hold said slide in adjusted position on the post, and a detent pivoted within said slide and extending through its open side, a spring urging projection of the detent, said detent having a portion extending across and normally contacting the front of the slide, and said detent at the open side of the slide having a double cam surface.

DELBERT SWARD.