

June 26, 1928.

1,675,176

F. J. JARECKI

LATCH

Filed May 26, 1924

2 Sheets-Sheet 1

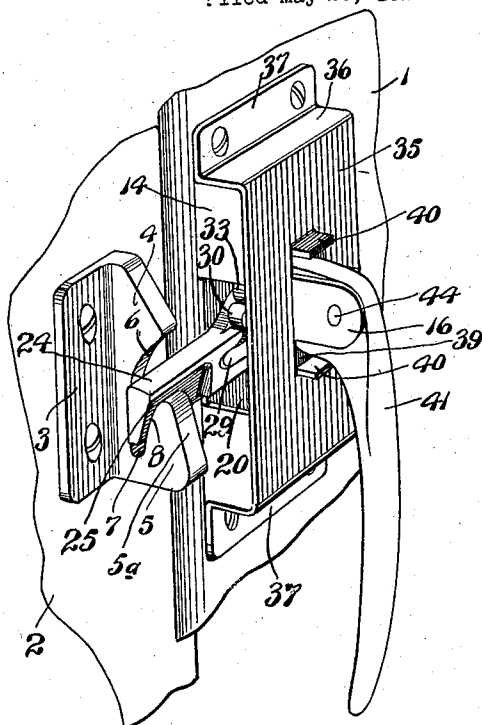


Fig. 1.

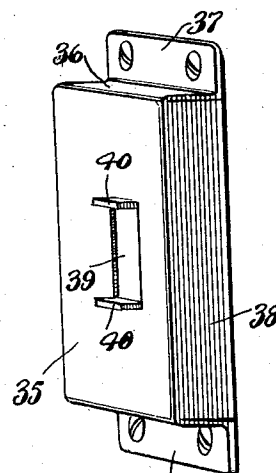


Fig. 2.

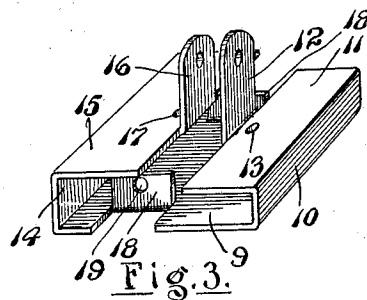


Fig. 3.

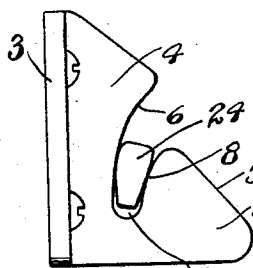


Fig. 4.

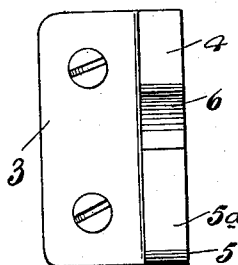


Fig. 5.

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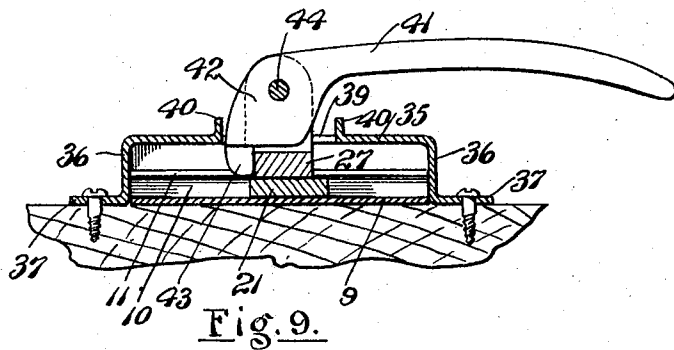
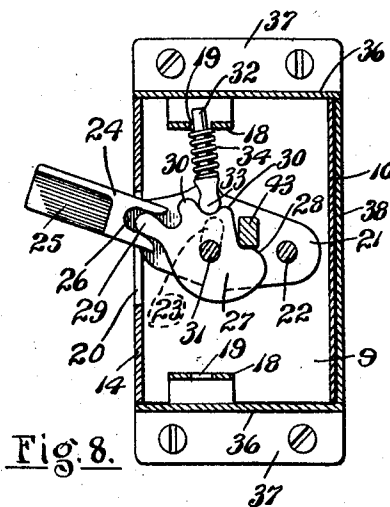
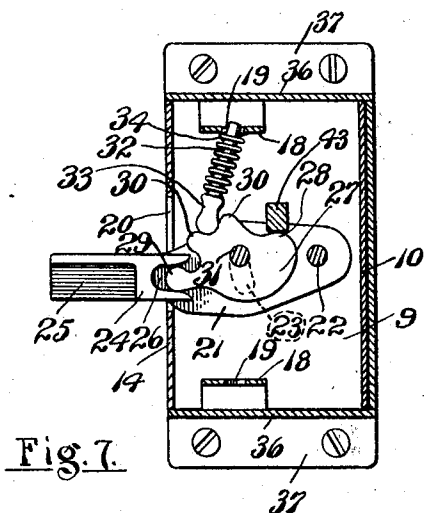
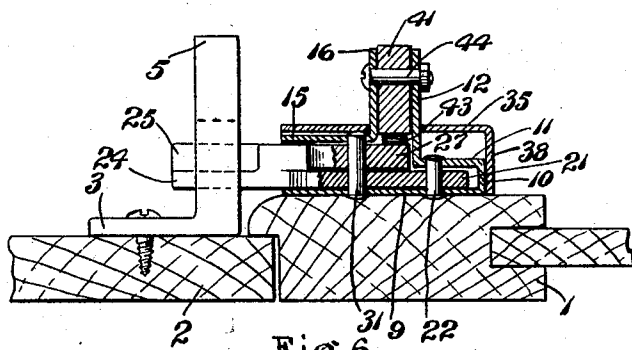
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LATCH

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2 Sheets-Sheet 2 2



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UNITED STATES PATENT OFFICE.

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LATCH.

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This invention relates to latches of the type which may be used with swinging doors being adapted for use with refrigerators, kitchen cabinets, cupboards and the like. It is a primary object and purpose of the present invention to construct a latch which serves in connection with a keeper attached to a door frame, the latch being attached to the door, to securely hold the door in closed position and which may be operated manually so as to release the latch when the door is to be opened, the latch lever or bolt engaging with the keeper being moved to and automatically held in a position different from its latching position; and when the door is closed the lever engages against a portion of the keeper so that it is moved automatically to latching position and spring pressed into engagement with the keeper to hold the door securely in closed position. The invention includes various novel constructions and arrangements of parts for effectively attaining the end stated as well as many others not at this time enumerated but which will appear as understanding of the invention is had from the following description taken in connection with the accompanying drawings, in which,

Fig. 1 is a perspective view showing a fragmentary portion of a door and a door casing with the latch attached to the door and a keeper attached to the casing.

Fig. 2 is a perspective view of the outer housing member of the latch.

Fig. 3 is a perspective view of the inner supporting member of the latch on which the latch bolt or lever is mounted.

Figs. 4 and 5 are side and front elevations, respectively, of the keeper.

Fig. 6 is a horizontal section through the latch midway between its upper and lower ends and showing the keeper in under plan view.

Fig. 7 is a vertical section taken through the latch parallel to the face of the door and showing the latch bolt or lever in its normal operative position.

Fig. 8 is a view like that shown in Fig. 7, with the latch lever or bolt in the position it occupies when the door is to be opened, and

Fig. 9 is a vertical section centrally through the latch in a plane parallel to the vertical free edge of the door.

Like reference characters refer to like

parts in the different views in the drawing.

The door 1 shown is or may be of any desired construction adapted to close a door opening around which is a door casing 2 the door being hingedly mounted at one vertical edge. On the door casing adjacent the free vertical edge of the door a keeper is mounted. This keeper includes a base 3 adapted to be secured by screws to the door casing 2, from which the keeper portion 4 extends forwardly, it including a lower section 5 projecting in a forward direction farther than the part 4, there being a downwardly extending slot 7 between said parts 4 and 5 having curved or inclined cam sides 6 and 8 as shown. The section 5 also has an inclined outer side 5^a.

In the latch construction, an inner supporting member formed of a single piece of sheet metal is used, having a flat bottom 9 from one vertical edge of which a side 10 is turned at right angles for a short distance terminating in an outer or top section 11 which is turned back over one side of the bottom 9 in parallelism therewith. At the edge of the top section 11 an outwardly extending ear 12 is formed, as best shown in Fig. 3. At the opposite vertical edge of the bottom 9 the metal is turned at right angles to make a side 14 paralleling the side 10 the metal then being turned again at right angles over the bottom 9 to make a second top section extending toward the section 11 but in a different plane farther out therefrom, it also at its free edge having an outwardly turned ear 16 which parallels the ear 12 previously described. The end portions of the ears 12 and 16 have alined openings for the mounting of an operating handle as will hereafter appear and in the top sections 11 and 15 two openings 13 and 17 are made, there being openings in the bottom 9 in direct alinement with said openings 13 and 17. At each end of the base 9 a lug 18 is struck therefrom and turned toward the top section 15 each lug being formed with an opening 19 therethrough. The side 14 has an opening 20 extending its full width between its upper and lower ends as best shown in Fig. 1.

A latch bar or bolt 21 is located within the inner member of the latch and extends through the opening 20 described. A pin 22 passes through the inner end of the bolt or lever 21, through the opening 13 and the

similar opening in the bottom 9 whereby the latch bolt is pivotally mounted. The latch bolt is flattened so that its thickness is substantially equal to the distance between the bottom 9 and the top section 11. A slot 23 arc-shaped with a center of curvature coincident with the axis of the pin 22 is cut through the bolt 21 a distance from said pin 22. At the outer end, the latch bolt is thickened as indicated at 24 the projecting outer end portion being formed with an inclined cam side 25 while at the inner-end a socket 26 is formed on the outer side as best shown in Figs. 7 and 8.

Lying directly over the thinner portion of the latch bolt 21 is a member 27 of irregular shape, at its upper edge and near its inner end having a curved projection 28 and at its outer end being formed with a projection 29 adapted to fit in the socket 26 previously described. Between the projections 28 and 29 and at the upper side of the member 27 are two other projections 30 between which is formed a shallow recess or seat as shown. A pin 31 passes through the member 27 the slot 23 in the latch bar, the opening 17 in the top section 15, and the aligned opening in the bottom 9 thereby pivotally mounting said member 27 on the pin 31 while the latch lever has a limited movement with respect to the pin prescribed by the length of the slot 23.

A rod 32 is formed with the head 33, the head seating in the recess between the projections 30 and the end of the rod passing through the opening 19 of the upper lugs 18. A coiled spring 34 is positioned around the rod 32 between said lug and the head 33.

The latch mechanism described is covered by an outer casing or housing which may be formed from sheet metal or cast from metal as may seem best. This casing or housing has a top or outer side 35 with upper and lower ends 36 turned inwardly at right angles and then turned outwardly at right angles to form attaching ears 37 for the passage of screws therethrough into the door to connect the housing to the door. The housing also includes an inwardly extending side 38. The side of the housing nearest the free vertical edge of the door to which it is attached is open. The supporting member shown in Fig. 3 is located within the housing, ears 12 and 16 extending outwardly through a rectangular opening 39 made in the outer side 35 of the housing. A lug 40 integral with the housing extends outwardly both at the upper and lower ends of the opening 39. An operating handle 41 depends below the ears 12 and 16 and at its upper end is turned inwardly; as indicated at 42, passing between ears and terminating in a finger 43 which bears against the portion 28 of the member 27, a pivot pin 44 passing through the ears 12 and 16 and the

part 42 at the upper end of the depending handle 41 to pivotally mount said handle.

As shown in Fig. 7, the latch bolt or lever is located substantially horizontal and the force of the spring 44 is transmitted thereto through rod 32 having its head 33 bearing against member 27 and said member 27 having projection 29 seated in the socket 26. And when the latch is attached to a door and the door closed, the projecting end 24 of the latch bolt is seated in the slot 7 of the keeper holding the door securely in closed position. When the door is to be opened, handle 41 is grasped and pulled outwardly at its lower end this causing the finger 43 to press against the member 27 and turn it in a clockwise direction about pivot 33 whereupon the part 29 is likewise turned and carries the latch lever or bolt upwardly about its pivot 22. At the same time the spring carrying rod 32 is turned from the position shown in Fig. 7 to that shown in Fig. 8, it being evident that the line of force of the spring passes from one side of the axis of pin 31 to the other thereby causing the spring to hold the latch lever or bolt in the upper position shown in Fig. 8. The handle member is free and may drop to its normal position. When the door is closed the upper edge portion of the outer end of the latch lever or bolt strikes against the inclined cam surface 6 of the keeper thereby turning the latch lever or bolt about its pivot 22 and carrying the spring carrying rod 32 almost immediately to a position where the force of the spring may be extended to force the inclined side 25 of the outer end portion 24 of the latch bolt or lever against the cam side 8 of the keeper slot and wedge the door by spring pressure to closed position.

This construction is practical and effective. It is easily manufactured and assembled at low cost. By turning a lug 18 at each end of the bottom 9, of the inner supporting structure the construction can be used on doors that swing either to the right or to the left, merely making two different forms of latch levers or bolts 21 one for the right and one for the left swinging door. The remainder of the construction is identical in both forms though in the assembly the spring carrying rod 32 will be passed through the opposite lug 18 from that shown in Figs. 7 and 8, the supporting member of the latch housing being turned end for end. Because the latch lever does not have to ride over the nose of the keeper, strains on the hinges and on the screws attaching the hinges and the latch to the door are eliminated; though if for any cause the latch lever should be accidentally moved to its lower position before the door is closed it can return over the inclined side 5* of the keeper until it has reached the keeper slot 7.

The invention is defined in the appended

claims and is to be considered as comprehensive of all forms of structure coming within the scope of the claims.

I claim:

5 1. In a latch, a housing adapted to be attached to a door, a latch lever pivotally mounted within the housing and at one end extending through and beyond the housing, an irregularly-shaped member lying over
10 the latch lever between the housing and pivotally mounted between its ends, connections between one end of said member and the latch lever, spring means bearing against said member and a manually operated
15 handle member movably mounted and adapted to engage with said irregularly-shaped member to turn the same to elevate the projecting end of the latch lever and turn the irregularly-shaped member about
20 its pivot thereby changing the position of the spring means so that its line of force passes from one side to the other of the pivotal axis about which said irregularly-shaped member turns, substantially as described.
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2. In a latch, the combination with a door and a door frame therefor, a latch secured to the door and a keeper secured to the door frame, said latch comprising a support, a
30 latch lever pivotally mounted on the support adapted to engage with the keeper when in its lowermost position, manually operated means for lifting the latch lever out of engagement with the keeper, spring
35 means associated with the latch lever operating to hold the lever in lifted position when moved thereto, said keeper including a lower lever holding portion and an upper projecting portion against which the upper edge
40 of the latch lever strikes when the door is closed to thereby move the lever in a downward direction until the spring means is moved to position to act on the lever to force it in a downward direction, substantially as described.
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3. In a latch, a housing, a supporting member located within the housing, a latch lever pivotally mounted at one end to said supporting member and extending outwardly through and beyond a side of the housing, an irregularly-shaped member located over and between the ends of the latch lever a pivot pin passing through the latch lever and the irregularly-shaped member, said latch lever having a slot through which the pin passes, pivotal connections between one end of said member and the latch lever, a rod having a head at one end bearing against the irregularly-shaped member, a

lug turned from the supporting member
60 through which the rod passes at its other end, a spring around the rod between said lug and head, and a manually operated handle member pivotally mounted on the housing and engaging against said irregularly-shaped member adjacent the end
65 thereof opposite the end connected with the latch lever, substantially as and for the purpose described.

4. A latch comprising a support, a latch lever pivotally mounted at one end thereto, a pivotally mounted member located over the latch lever, pivotal connections between said member and lever at one end of the member, manually operated means to engage against the member at the opposite end thereof to turn the lever about its pivot, and spring means acting on said member shifted by the turning thereof on its pivot so that the line of force of the spring passes
80 from one side to the other of the pivotal axis of said member.

5. A latch comprising an inner supporting member formed of sheet metal and including a bottom, upwardly turned spaced
85 apart sides and two top sections turned inwardly toward each other from said sides, a latch lever pivotally mounted at one end between the bottom and one of said top sections, said lever extending outwardly
90 through a side of the supporting member and having a free end, said lever being formed with an arc-shaped slot between its ends, two ears extending upwardly one from the inner edge of each of the top sections, a latch housing covering the supporting member and having an opening in its upper side through which the ears extend, a member located over the latch lever between its ends said member being pivotally mounted
100 between its ends on a pivot pin located between the bottom and the other top section of the inner supporting member, interengaging pivotal connections between one end of said member and the lever, a handle member located between, pivotally connected to and depending from said ears, said handle member having an inner projecting portion terminating in a finger lying over the end of said member opposite the end connected to the lever, and spring means disposed between said member and the inner supporting member shiftable with the operation of the handle to move across the pivotal axis of the member located over the lever.
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In testimony whereof I affix my signature.

FRANK J. JARECKI.