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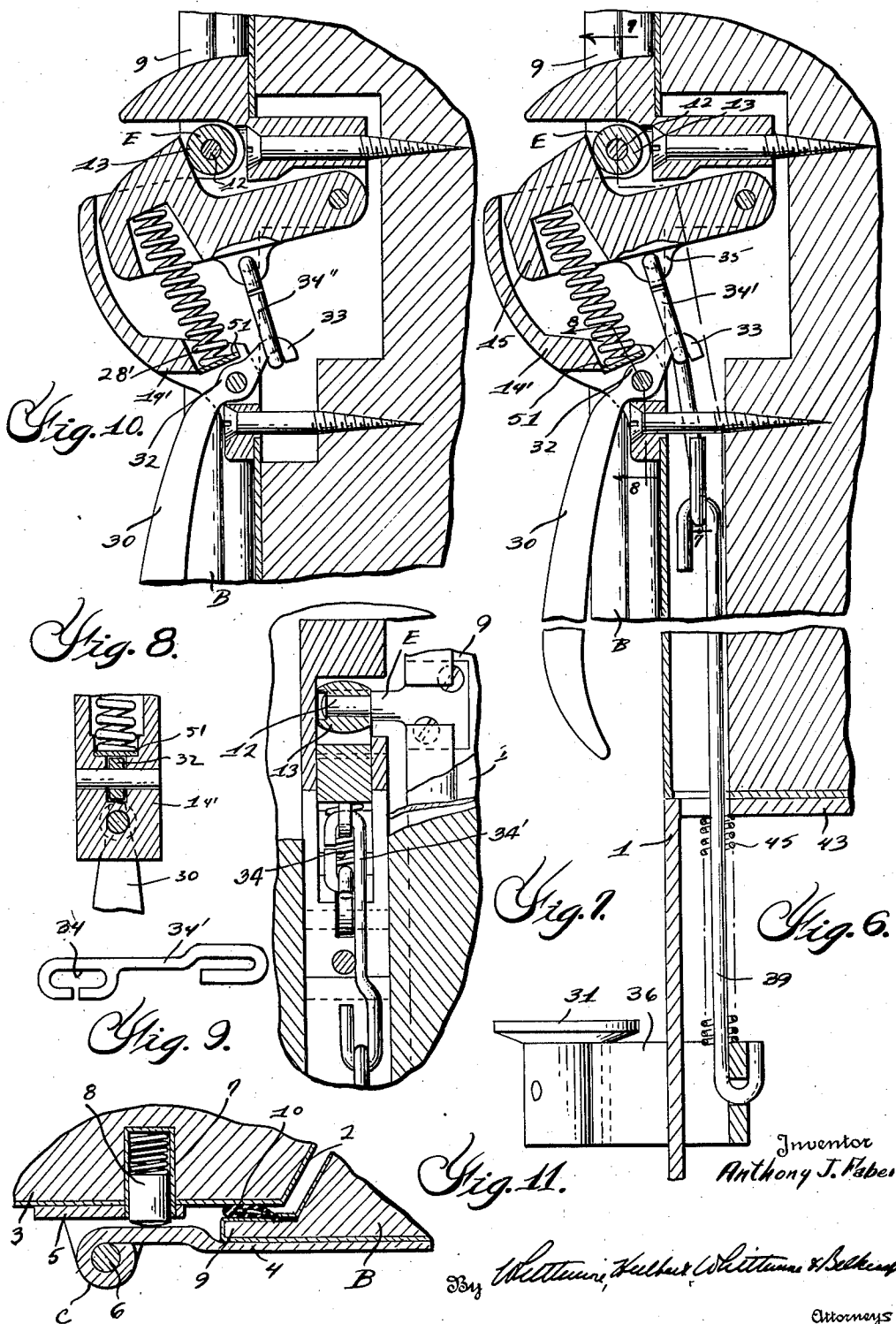
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LATCH MECHANISM

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2 Sheets-Sheet 2



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LATCH MECHANISM

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This invention relates generally to latch mechanism for hinged closures such as the doors of refrigerator cabinets, and consists of certain novel features of construction, combinations and arrangements of parts that will be hereinafter more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a perspective view of a refrigerator cabinet with mechanism embodying my invention applied thereto;

Figure 2 is an enlarged fragmentary vertical sectional view through the cabinet and a portion of my latch mechanism;

Figure 2A is a sectional view taken on the line 2A-2A of Figure 2;

Figure 3 is a sectional view taken on the line 3-3 of Figure 2;

Figure 4 is a sectional view taken on the line 4-4 of Figure 2;

Figure 5 is a sectional view taken on the line 5-5 of Figure 2;

Figure 6 is a view similar to Figure 2 but showing a slight modification;

Figure 7 is a sectional view taken on the line 7-7 of Figure 6;

Figure 8 is a sectional view taken on the line 8-8 of Figure 6;

Figure 9 is a detail view of the link depending from the pivotal striker element;

Figure 10 is a fragmentary vertical sectional view through the cabinet and showing another modification;

Figure 11 is a sectional view taken on the line 11-11 of Figure 1.

Referring now to the drawings, A is a refrigerator cabinet of substantially rectangular configuration having suitable supporting legs 1 at the lower corners thereof and having an opening 2 in its front wall 3. B is a door for closing the opening; C are hinges for supporting said door; and D is the door latch mechanism embodying my invention. As shown, the hinge leaves 4 and 5 respectively are fastened to the outer sides of the door and front wall and are connected together by suitable pins 6. 7 are flange sockets projecting through the leaves 5 into the front wall 3, and 8 are spring pressed plungers in the sockets 7 and engageable with the hinge leaves 4 on the door to urge the latter outwardly.

The door B may be any suitable construction but preferably has a lateral flange 9 overlapping the front wall 3 of the cabinet at the edges of the opening 2. 10 is a yieldable strip secured

upon the inner side of the flange 9 for engagement with the front wall 3 of the cabinet upon closing of the door, while E is a latch bolt for the door projecting forwardly from said flange 9 upon the outer side of the strip 10. Preferably this latch bolt E comprises a pin 12 and a roller 13. The keeper or striker structure of my latch mechanism is preferably carried by the front wall 3 and includes a casing 14, pivotal striker 15 and coil spring 16. As shown, the casing 14 is mounted upon the outer side of the front wall 3 and is provided adjacent its upper end with a rearwardly extending portion 17 that is received within the front wall 3 of the cabinet. Any suitable means such as the screws 18 and 19 respectively may be used to secure the casing 14 to said front wall. Preferably the casing 14 has a vertically curved or rounded forward edge 20 and is provided in substantially horizontal alignment with the rearwardly extending portion 17 with a horizontally extending elongated slot 21 that opens outwardly through a side wall 22 and the curved front edge 20 of the casing and is adapted to receive the latch bolt E when the door B is in closed position. The striker 15 has a shank 23 pivoted in the rearwardly extending portion 17 of the casing and is provided at its forward end with a head 24 having a curved upper edge 25 and a flat rear edge 26. The coil spring 16 is terminally received within opposed recesses 27 and 28 respectively in the striker 15 and casing 14 and normally holds the head 24 in raised position in the slot 21 so as to be in the path of the latch bolt E. Thus when the door is moved toward closing position the roller 13 of the latch bolt will engage the curved edge 25 of the striker head 24 and will cause the latter to be moved downwardly against the tension of the spring 16. As soon as the roller 13 passes beyond the curved edge 25 the head 24 will be raised by the spring 16 so that the flat rear edge 26 will be in front of the roller 13. Thus the door B will be held in closed position. In this connection it will be noted that the flat rear edge 26 of the head 24 is inclined somewhat so as to simulate a cam when the head 24 is in raised position in front of the latch bolt and that the strip 10 is carried by the flange 9 of the door in advance of the latch bolt. Hence the door B will be cushioned when closed and the pressure exerted by the spring 16 to the head 24 will be transmitted by the cam surface through the bolt E to the door B with the result that a tight seal between the flange 9, strip 10 and front wall 3 of the cabinet will be obtained. Either a hand lever 30 or a pedal 31 may be

used to actuate the striker 15. Referring to Figure 6, the shank 32 of the hand lever is pivoted in the casing 14' and is provided inwardly beyond its pivot with a hooked portion 33 that is received in and engages the lower end of a slot 34 in a link 34' depending from a lug 35 of the striker 15. The pedal 31 is at one side of the cabinet adjacent one of the front legs 1 and has a shank 36 pivoted as at 37 to a bracket 38 fastened to the leg 1. A rod 39 is connected to a shank 36 intermediate its ends and extends upwardly through openings 40, 41 and 42 respectively in the top 43 of the leg 1 and bottom and front walls respectively of the cabinet, and has a sliding connection with the lower end of the link 34'. A coil spring 45 sleeved upon the rod 39 and terminally connected to the shank 36 and top 43 of the leg maintains the pedal 31 at the proper distance from the bottom of the cabinet. If desired the handle 30 alone may be used as illustrated in Figure 10, in which event the hooked portion 33 engages the lower end of a link 34' depending from the lug 35; the pedal 31 alone may be used as illustrated in Figure 2, in which event the rod 39 has a sliding connection with a link 44 depending from the lug 35; or both may be used as illustrated in Figure 6. In this connection it will be noted that the construction and arrangement of the link 34' and shank 32 are such that the pedal 31 may be operated without affecting the lever 30 and that the construction and arrangement of the link 34', spring 45 and rod 39 are such that the lever 30 may be operated without disturbing the pedal 31. It will also be noted that the bottom 50 of the socket 28 for the spring 16 illustrated in Figure 2 where the pedal alone is used, is an integral part of the casing 14, whereas in Figures 6, 8 and 10 respectively where the lever 30 is used alone or in combination with the pedal, the bottom 51 of the socket 28' for the spring is in the form of a movable gasket that is located just above the shank 32 so that the lever 30 will normally be held in lowered position.

In use when the lever 30 is used to actuate the striker 15, the hooked portion 33, link 34' and head 24 will be lowered against the tension of the spring 16 upon pulling the handle 30 outwardly. As a result the latch bolt E will be released and the spring pressed plunger 8 will urge the door B to open position. Due to the sliding connection between the rod 39 and the link 34' and the provision of the tension spring 45, the rod 39 and pedal 31 will remain undisturbed in raised position when the striker 15 is actuated as aforesaid by the lever 30. Upon release of the lever 30 the spring 16 will return the handle to normal lowered position. When the pedal 31 is used to actuate the striker 15, the rod 39, link 34' and head 24 will be lowered against the tension of the spring 16. As a result the latch bolt E will be released and the spring pressed plunger 8 will force the door to open position. Due to the slotted connection between the link 34' and the hooked portion 33 of the lever 30, the latter will remain undisturbed when the striker 15 is actuated as aforesaid by the pedal 31. When the pedal 31 is released, the spring 16 will return the striker 15, link 34', rod 39 and pedal 31 to normal position. Upon closing the door the sealing strip 10 will abut the front wall 3 of the cabinet and will cushion the door. When moving to closed position the latch bolt E will enter the slot 21 and will ride upon the curved upper edge 25 of the striker, consequently the head 24

will be lowered against the tension of the spring 16 until the bolt E passes beyond the rear end of said edge 25 whereupon the head 24 will be raised by the spring 16 so that the flat face 26 will be in front of the latch bolt. As a result the door B will be held in closed position. Moreover, the construction and arrangement of parts are such that a tight seal is provided between the door B and front wall 3 of the cabinet when the bolt E is in rear of the head 24.

Thus from the foregoing it will be apparent that I have provided an extremely practical and efficient latch mechanism wherein the usual or conventional lock and striker have been eliminated. Instead a simpler and less expensive structure has been provided. My construction is especially useful for refrigerator cabinets, etc., however, it is not limited to such use for obviously it can be used with many other structures wherein closures or hinged members are provided. The striker 15 and sealing strip 10 function as shock absorbing members so that the door B may be closed easily and with little noise. In this connection it will be noted that the spring 16 has many functions, among them being to hold the head 24 of the striker in position to be engaged by the latch bolt E upon closing the door so that the cushion effect aforesaid may be obtained; to hold the head 24 upwardly so as to constitute a stop or abutment for the bolt E when the door is fully closed so that such door will be held in closed position; to normally hold the link 34', rod 39 and pedal 31 in uppermost position; and in Figures 6, 8 and 10 respectively to normally hold the lever 30 in lowered position.

What I claim as my invention is:

1. Door latch bolt securing mechanism, including a casing attachable to a suitable support for the door and having a substantially horizontal slot therein for receiving a latch bolt, means for initially cushioning and subsequently holding the latch bolt upon movement thereof into the slot including a striker having a shank pivotally connected to a part of the casing and having a head movable vertically relative to the slot, a coil spring extending between the head and a lower part of the casing and normally holding the head in horizontal alignment with the slot so as to be in the path of a bolt entering the slot, and means for lowering the head so as to be free of the slot including a member pivotally connected to the lower part aforesaid of the casing beneath the spring and having portions respectively outside and within the casing, and a connection between the striker shank and the portion just mentioned within said casing.
2. Door latch bolt securing mechanism, including a casing attachable to a suitable support for the door and having a substantially horizontal slot therein for receiving a latch bolt, means for initially cushioning and subsequently holding the latch bolt upon movement thereof into the slot including a striker having a shank pivotally connected to the casing and provided at its forward end with a head that is movable vertically relative to the slot and that is provided with a curved upper edge and a flat rear edge for successive engagement by the latch bolt, yieldable means associated with a part of the casing and said head for maintaining the latter in substantially horizontal alignment with the slot so as to be in the path of the bolt entering the slot, and means for moving the head against the tension of said yieldable means, including a link connected to the shank

intermediate the head and pivot thereof, and manually operable means connected to said link.

3. Door latch bolt securing mechanism including a movable latch bolt striker, yieldable means for holding the striker in operative position for engagement by a door latch bolt, a hand lever, a pedal, and means operable by either the pedal or lever for actuating the striker against said yieldable means and operable by said yieldable means to return either the pedal or the lever to normal position.

4. Door latch bolt securing mechanism including a movable latch bolt striker, a hand lever, a pedal, and an operating connection between the pedal and striker including means alternately actuable by and movable independently of said lever.

5. Door latch bolt securing mechanism including a pivotally mounted latch bolt striker, a pedal, a lever, and an operating connection between said pedal and striker including two loosely connected links, one being actuable by the lever and movable longitudinally of the other.

6. Door latch bolt securing mechanism including a movable latch bolt striker, a pedal, a lever, an operating connection between said pedal and striker including two loosely connected links, one

of said links being actuable by the lever and movable longitudinally of the other, and means associated with the other of said links for holding said pedal against movement during movement of the lever.

7. Door latch bolt securing mechanism including a movable latch bolt striker, a lever, a pedal, and an operating connection between the pedal and striker including a member having a slotted connection with said lever.

8. Door latch bolt securing mechanism including a movable latch bolt striker, and actuating means for said striker including a pair of loosely connected links, and independently operable members, one of said members being connected to one of said links, and the other of said members being loosely connected to the other of said links.

9. Door latch bolt securing mechanism including a movable latch bolt striker, a lever, a pedal, an operating connection between the pedal and striker including a part operable by the lever, and yieldable means normally holding the striker in operative position to be engaged by a latch bolt and operable to restore the lever and pedal to normal position after they have been operated.

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