May 2, 1939. G. E. ROEDDING 2,156,513

LATCH

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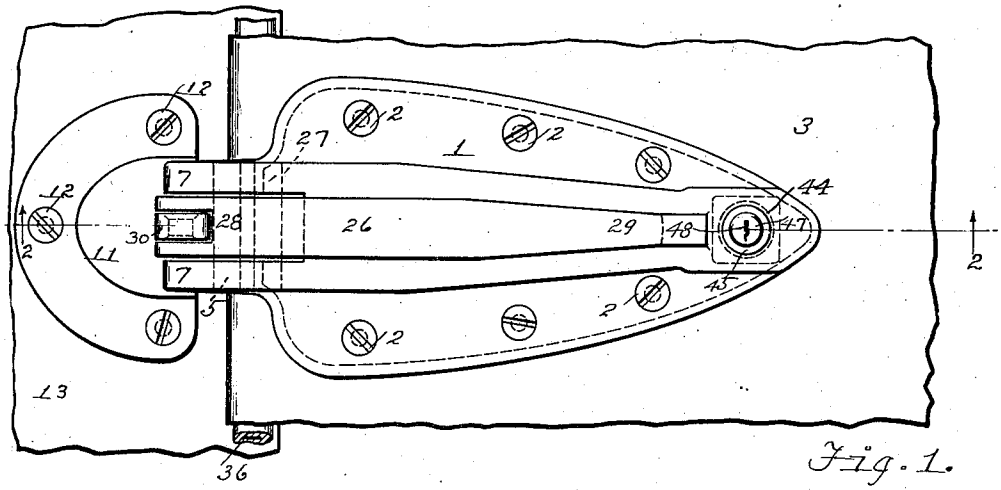


Fig. 1.

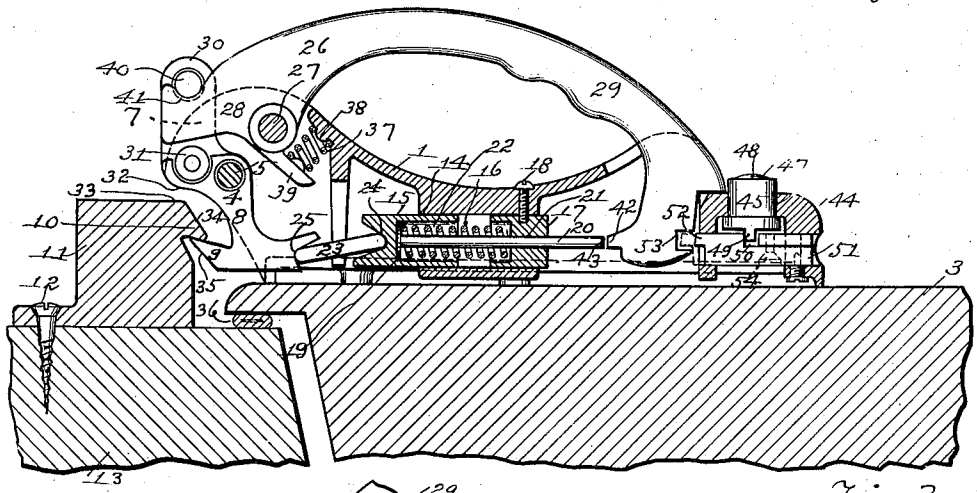


Fig. 2.

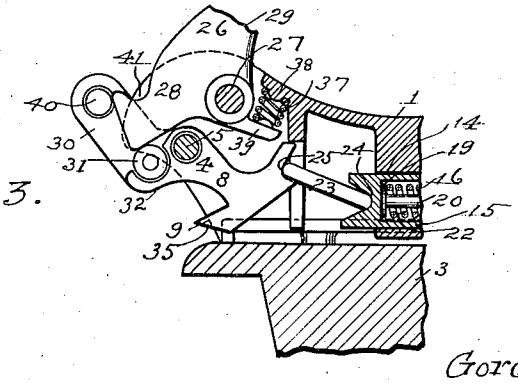


Fig. 3.

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LATCH

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4 Claims. (Cl. 292—332)

The present invention relates to latches, particularly such as are especially adapted for latching the closures of refrigerators and the like; and its object is to provide such a latch having improved means for locking its latch bolt against retraction; and further, to provide in such a latch a turnably mounted handle for operating the latch bolt and improved means for locking the handle in a position preventing retraction of said bolt; and further, to provide in such a latch an improved latch bolt; and further, to provide in such a latch improved means for urging the latch bolt into, and holding the same in, its operative latching position; and further, to provide in such a latch improved means for urging the latch bolt into, and holding the same in, its retracted position.

These and any other objects hereinafter appearing are attained by, and the invention finds preferable embodiment in, the illustrative latch structure particularly described in the body of this specification and illustrated by the accompanying drawing, in which:—

Figure 1 is an elevational front view of a portion of a refrigerator or the like with a latch keeper mounted thereon, and of the free edge portion of the swingable closure for the refrigerator's door opening with a latch structure mounted thereon;

Figure 2 is an under-side view of the latch structure and keeper, shown partially in horizontal section taken on line 2—2 of Figure 1, the closure and jamb portion of the refrigerator being shown in like section;

Figure 3 is an enlarged fragmentary view, similar to Figure 2, of certain parts of the latch structure in another position in which the latch bolt is retracted.

In the casing 1, mounted as by screws 2 on the face of the refrigerator's closure 3, the lever latch bolt 4 is fulcrumed on the pivot pin 5 extending therethrough and through openings in the spaced forward end portions 7 of the casing, the inner or rearward arm 8 of this bolt having on its forward edge a hook portion 9 latchingly engaging the hook portion 10 of a suitable keeper 11 mounted as by screws 12 on the face of the jamb 13 of the refrigerator.

In the casing's horizontal slide bearing 14 the hollow member 15 is urged forwardly (toward the bolt 4) by a spring 16 pressing between the plug 17 (removably held in said bearing as by a set screw 18) and the head 19 of a rod 20 slidable in a bearing 21 in the plug, this head abutting on the bottom of the chamber 22 of said member 15. A member or toggle arm 23 turnably seats at its rear end in a notch bearing 24 in the forward end of member 15 and at its forward end in a notch bearing or toggle joint 25 in the rearward edge of the bolt's arm 8 opposite its hook portion 9. It will be seen that in Figure 2 the spring 16 urges the latch bolt forwardly toward its engagement with the keeper and yieldingly holds the same therein.

The manually operated lever handle 26 is fulcrumed in the casing on a pivot pin 27 extending therethrough and through the spaced sides 7 of the forward end of the casing and has a forward arm 28. When the other (the rearward) arm 29 of this lever handle is grasped and drawn outwardly to open the closure, its forward arm 28 is brought into engagement with the forward or outer arm 30 of the latch bolt (i. e., the roll 31 desirably mounted thereon), so that as the handle's arm 29 is drawn outwardly the latch bolt's inner or rearward arm 8 is swung rearwardly out of engagement with the keeper.

This inner arm 8 of the bolt and the member 23 form a toggle so that when the parts are in the position shown in Figure 2, in which the knuckle or toggle joint 25 is inwardly of the direct line which extends between the notch 24 of member 15 and the bolt's fulcrum 5, the spring 16 strongly urges the bolt into its operative position engaging the keeper; but as the handle's arm 29 is drawn outwardly, its forward arm 28 engaging the bolt's forward or outer arm 30 (i. e., its roll 31) and turning its other (i. e., its rearward or inner arm 8) rearwardly, brings the toggle joint 25 outwardly, and when this toggle joint slightly passes said line to break the toggle, the spring 16 acts to turn the bolt to the position shown in Figure 3 in which the bolt is held retracted by this spring.

When the handle is released (the closure being open and the bolt 4 and member 23 being in the position seen in Figure 3), the slamming of the closure shut causes the inner edge 32 of the bolt's forward or outer arm 30 to strike the outer surface 33 of the keeper thus turning the bolt's rearward or inner arm 8 inwardly (i. e., toward the face of the closure) and when the toggle joint 25 passes inwardly of said line (i. e., toward the closure) thus breaking the toggle, the spring 16 urges the bolt's arm 8 forwardly and returns the bolt to its operative engagement with the keeper shown in Figure 2.

In the closing movement of the closure the inclined surfaces 34, 35 of the keeper and bolt slidably engage compressing the spring 16, and the

resilient packing strip 36 is compressed between the closure and the door jamb by the expanding of the spring after the latch bolt has passed dead center.

Spring 37 pressing between the casing at 38 and the short arm 39 of the handle urges this handle to the position shown in Figure 2. The latch bolt and its operating handle may be locked in said position by inserting the bolt of a suitable padlock (not shown) through the opening 40 in the forward or outer arm 30 of the latch bolt 4 to engage the outer edge of the forward arm 28 of the handle, seating in its notch 41. The lock's bolt thus holds the lever latch bolt 4 against turning on its fulcrum 5.

Additional means are shown for holding this latch bolt against retraction even though the bolt of the padlock or the upper end of arm 30 of the latch bolt be broken, such means comprising a stop 42 carried by a movable member, as the arm 29 of the handle 26, when locked in the position seen in Figure 2.

If a tool, as a bar or screw driver, be inserted to force the arm 28 of the latch bolt 4 rearwardly, the rear end 43 of the slidable rod 20 will almost immediately strike the stop 42 on the handle's rear arm 29. This handle is locked in the position seen in this view by any suitable locking means. The particular locking means illustrated at the right hand side of Figures 1 and 2 (and being no part of the present invention but which may be adopted for this purpose) comprises a hollow post 44 carried by the latch casing having a cylinder portion 45 with a bearing in which a barrel 47 is turnable by a suitable key inserted in the lock's key hole 48. This barrel has on its inner end an eccentrical lug 49 engaging in the transverse notch 50 of this lock's bolt 51 so that, when the barrel is turned by said key to one position said lug slides the lock bolt to the position shown in solid lines in Figure 2 releasing the lever handle; but when the tumbler is turned from its said position it slides this bolt forwardly to the position indicated in broken lines in said view, in which its forward end 52 engages in the handle's keeper notch 53 to lock said handle in the position seen in Figure 2. The bolt 51 has a longitudinal guiding slot with a screw 54 therein threaded in the latch casing.

The invention being intended to be pointed out in the claims, is not to be limited to or by details of construction and arrangement of the particular embodiment thereof illustrated by the drawing or hereinbefore described.

I claim:

1. A latch structure comprising: a latch bolt movable to and from its operative position engaging its keeper; a pivotally mounted operating handle turnable in engagement with the bolt to retract the same, the handle and the bolt having portions mutually registering in the operative position of the bolt and adapted to receive means for locking the handle and the bolt against relative movement retracting the bolt.

2. A latch structure for refrigerators and the like, comprising: a latch casing; a latch bolt pivotally mounted in the casing, turnable to and from operative position engaging its keeper and having a bearing in its rearward edge; a member slidable in the casing toward and from the bolt and having a bearing in its forward end; a toggle arm turnable at its forward and rearward ends in the bearings respectively, and with the bolt forming a toggle; a spring pressing said member forwardly and thereby alternately urging the bolt into and holding the same in its operative and retracted positions respectively; an operating handle pivotally mounted in the casing and turnable in engagement with the bolt to retract the same and turn the toggle arm to break the toggle against the pressure of the spring; a stop on the body with which the bolt engages in the closing movement of the closure for turning the toggle arm reversely to break the toggle against the pressure of the spring so that the bolt and toggle arm may be returned by the spring to their initial positions wherein the bolt operatively engages the keeper.

3. A latch structure for refrigerators and the like, comprising: a latch casing; a latch bolt pivotally mounted in the casing, turnable to and from operative position engaging its keeper and having a bearing in its rearward edge; a member slidable in the casing toward and from the bolt and having a bearing in its forward end; a toggle arm turnable at its forward and rearward ends in the bearings respectively, and with the bolt forming a toggle; a spring pressing said member forwardly and thereby alternately urging the bolt into and holding the same in its operative and retracted positions respectively; an operating handle pivotally mounted in the casing and turnable in engagement with the bolt to retract the same and turn the toggle arm to break the toggle against the pressure of the spring; a stop on the body with which the bolt engages in the closing movement of the closure for turning the toggle arm reversely to break the toggle against the pressure of the spring so that the bolt and toggle arm may be returned by the spring to their initial positions wherein the bolt operatively engages the keeper; a spring pressing between the casing and the handle for urging the handle to its position wherein the bolt engages the keeper.

4. A latch structure comprising: a latch casing having a slide bearing with a plug in its rear end having a slide bearing therethrough; a latch bolt pivotally mounted in the casing turnable to operative position and to retracted position and having a bearing in its rear edge; a hollow member slidable in the first mentioned bearing toward and from the bolt and having a bearing in its forward end; a toggle arm turnable at its ends in the bearings and with the bolt forming a toggle; a rod slidable in the second mentioned bearing toward and from the bolt and having a head in the hollow member and a projecting rear end; a spring pressing between said head and the plug for urging the hollow member and the rod forwardly and thereby alternately urging the bolt to its said positions respectively; an operating handle having a stop pivotally mounted in the casing and turnable outwardly in engagement with the bolt to retract the same and to turn the toggle arm against the pressure of the spring to break the toggle; means for turning the toggle arm reversely to break the toggle against the pressure of the spring so that the bolt and toggle arm may be returned by the spring to their initial position wherein the bolt is turned to operative position, said stop being in the line of the rod's sliding movement in the handle's inwardly turned position wherein the bolt is in its operative position and the rear end of the rod being in such close proximity to the stop as to prevent retraction of the bolt while the handle remains in its said inwardly turned position.

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