Jan. 25, 1955 G. WARTIAN 2,700,566

LATCH MECHANISM

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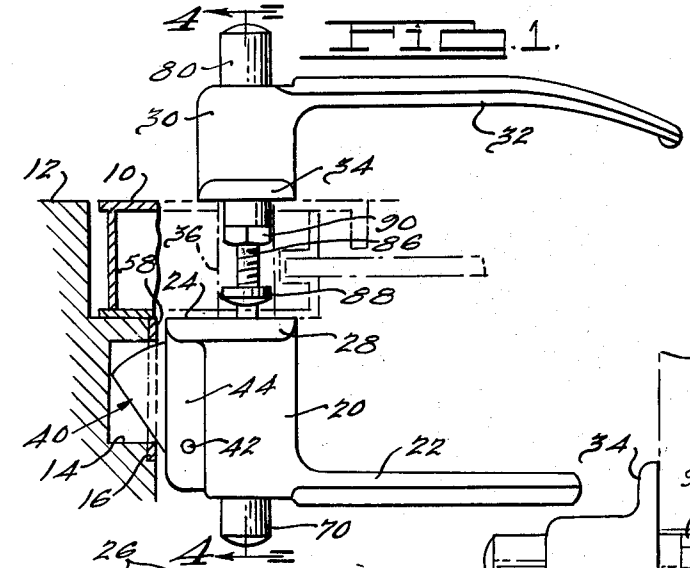


Fig. 1.

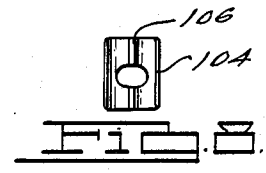


Fig. 8.

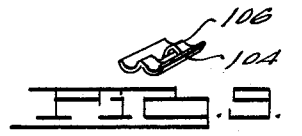


Fig. 9.

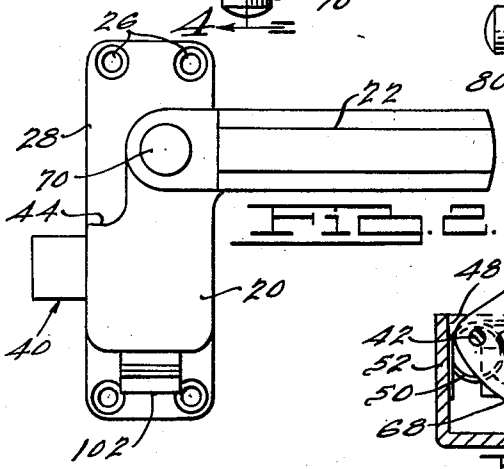


Fig. 2.

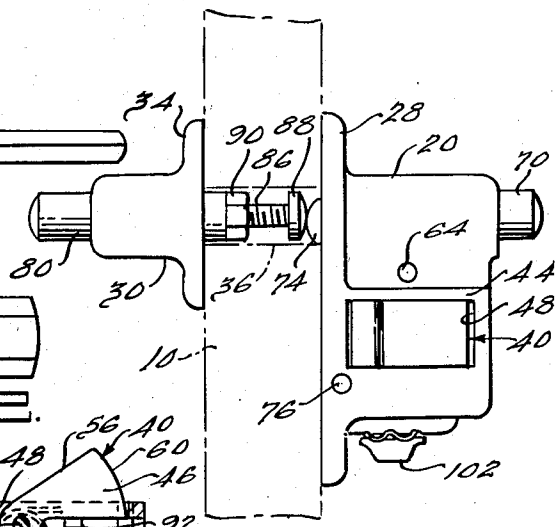


Fig. 3.

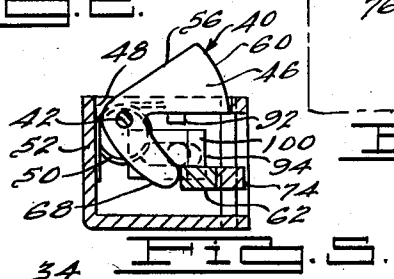


Fig. 5.

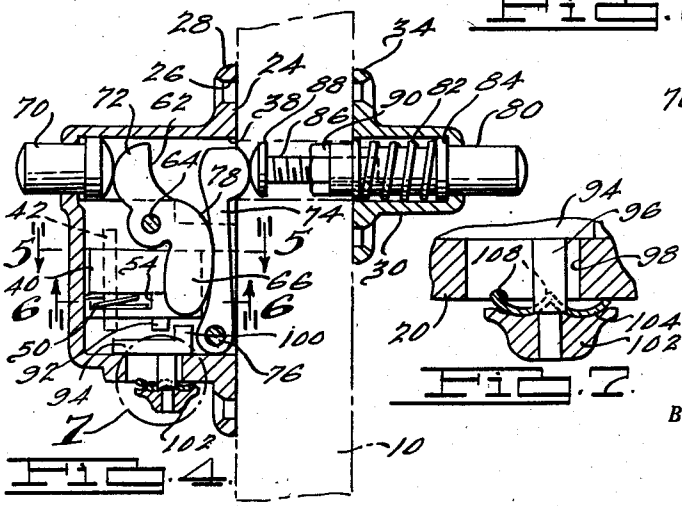


Fig. 4.

Fig. 7.

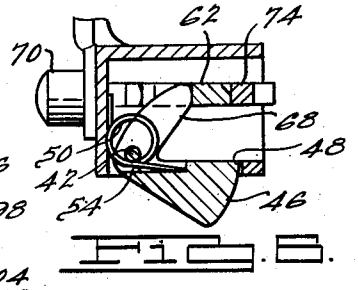


Fig. 6.

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LATCH MECHANISM

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3 Claims. (Cl. 292—221)

This invention relates to latch mechanism and has particular reference to a latch of the swinging latch bolt type which may be operated from either side of the closure on which it is used by push type operating members.

The latch mechanism of this invention is particularly suited for use on storm doors, screen doors, or the like, and is inexpensive to manufacture and easy to install. The device consists in general of a casing containing latch mechanism and actuating means therefor adapted to be mounted entirely on one side of a door, and an actuating plunger mounted on the other side of the door and extending through an opening in the door into engagement with the latch mechanism for operating the latch from the other side of the door. The latch mechanism is not located within a recess or cavity formed in the door, as in conventional constructions, and it is only necessary to provide a single, rather small diameter hole through the door through which the actuating plunger extends, thus greatly simplifying installation of the device. A feature of particular importance is that by means of this arrangement it is possible to use my improved form of latch on doors of different thicknesses by making the effective length of the actuating plunger adjustable. The latch member may be locked in either its latched or unlatched position by means of a lock mechanism of improved construction.

A principal object of the invention, therefore, is to provide a new and improved latch mechanism for use with a door.

A further object of the invention is to provide a latch mechanism which can be used on doors of different thicknesses.

Another object of the invention is to provide a latch mechanism which is simple in construction, inexpensive to manufacture, and easy to install.

Other and further objects of the invention will be apparent from the following description and claims and may be understood by reference to the accompanying drawings, of which there is one sheet, which by way of illustration show a preferred embodiment of the invention and what I now consider to be the best mode in which I have contemplated applying the principles of my invention. Other embodiments of the invention may be used without departing from the scope of the present invention as set forth in the appended claims.

In the drawings:

Fig. 1 is a top plan view of the latch mechanism showing the same installed on a door which is in closed position;

Fig. 2 is a front elevation of a portion of the latch mechanism shown in Fig. 1;

Fig. 3 is a side elevational view of the latch mechanism viewed from the left-hand side of Fig. 1;

Fig. 4 is a vertical sectional view taken along lines 4—4 of Fig. 1;

Fig. 5 is a sectional view taken along lines 5—5 of Fig. 4;

Fig. 6 is a sectional view taken along lines 6—6 of Fig. 4;

Fig. 7 is an enlarged fragmentary view of the structure within the circle numbered 7 of Fig. 4;

Fig. 8 is an elevational view of a spring washer forming a part of the lock mechanism; and

Fig. 9 is a perspective view of the spring washer shown in Fig. 8.

Referring more particularly to the drawings, in Fig. 1

there is disclosed a portion of a door 10 hinged at its right side, viewed from the inside of the door, within a frame indicated at 12 provided with a recess 14 and a striker plate 16 bordering the recess 14. The latch mechanism consists of a casing 20 containing latch mechanism to be described hereinafter and having an integral handle 22. The casing 20 has a surface 24 adapted to seat against one side of the door 10 and is secured to the door by means of suitable screws or the like, not shown, extending through holes 26 provided in a flange portion 28. A casing 30 having an integral handle 32 and a mounting flange 34 is adapted to be mounted on the other side of the door in a manner similar to the manner in which casing 20 is secured to the door. The door 10 may be made of metal as disclosed, and aside from providing suitable holes for the screws which mount the casings on the door, it is only necessary to form a single, relatively small diameter opening, such as that indicated at 36, through the door to accommodate the latch mechanism.

The casing 20 is hollow and the surface 24 thereof which seats against the door is provided with an opening 38. A substantially V-shaped latch bolt member 40 is pivotally mounted in the casing for swinging movement about a vertical axis on a pin 42 extending through openings formed in an offset portion 44 of the casing 20. The pin 42 extends through the apex of the V-shaped latch member 40, and one end 46 of the latch member is arranged for swinging movement through an opening 48 in the offset portion 44 of the casing between latched and unlatched positions thereof. A spring 50 has one end thereof seated against the end wall 52 of the casing and is coiled around pin 42 and has its other end seated within a recess 54 in the arm 46 of latch member 40 to bias the latch member toward its latched position. The latch member 40 has a cam surface 56 which is adapted to engage the edge 58 of a striker plate 16 when the door is moved to closed position, the latch member being pivoted into the casing against the force of spring 50 at such time. The arm 46 also has a surface 60 which is adapted to engage the striker plate when the door is in closed position to prevent opening of the door unless the actuating means for the latch member is operated.

The actuating means for the latch member includes a lever 62 pivoted to the casing by a pin 64 for pivotal movement about a horizontal axis parallel to the surface 24 of the casing 20. One end 66 of the lever 62 is adapted to engage the other end 68 of latch member 40, and a push button 70 slidably mounted in the casing 20 adjacent the inner end of the handle 22 is engageable with the end 72 of lever 62. Depression of push button 70 will pivot lever 62 about pin 64 so that the lever will react against the end 68 of latch member 40 and pivot the latch member to its unlatched position through the opening 48 in casing 20. Release of push button 70 will permit the latch member to return to its latched position under the influence of spring 50.

A second lever 74 has one end pivoted to the casing about a pin 76 which is parallel to pin 64. The intermediate portion of lever 74 engages a cam surface 78 formed on lever 62 and pivotal movement of lever 74 in a counterclockwise direction as viewed in Fig. 4 will effect pivoting of lever 62 in a clockwise direction about its pin 64 to pivot the latch member to its unlatched position as described.

The casing 30 has an actuating plunger or push button 80 slidably mounted therein and biased toward its outer position by a spring 82 surrounding the plunger 80 and bearing against a collar 84 thereof and against the door. A threaded member 86 having a rounded head 88 is threaded into the inner end of plunger 80 and secured in an adjusted position thereof by a nut 90. It will be seen that depression of plunger 80 will actuate the lever mechanism previously described in such manner as to swing the latch bolt 40 to its unlatched position and that upon release of plunger 80 the same will return to its outer position under the influence of spring 82, and that the latch member 40 and levers 62 and 74 will be returned to their normal or latched positions by spring 50. Since the actuating plunger 80 and the

extension 86 thereof are substantially the sole portions of the latch mechanism which are located between the opposite sides of the door, it will be seen that the latch mechanism described herein can be used with doors of different thicknesses merely by adjusting the effective length of the actuating plunger, which may be accomplished by threading the member 86 into or out of the inner end of the plunger 80.

The latch member 40 has a projection 92 which is adapted to engage an edge of the casing 20 defining the opening 48 through which the latch bolt 40 swings, and the projection 92 limits the movement of the latch bolt toward its latched position under the influence of the spring 50. A means is provided for locking the latch member in either its latched or unlatched position, and such means comprises a slidable lock member 94 having a stem 96 slidable within a slot 98 provided in the bottom wall of the casing 20. The lock member 94 has a projection 100 which, when the lock member is moved through the slot into the position shown in Fig. 4, is adapted to be positioned out of the path of movement of projection 92 so that the latch member may be moved between latched and unlatched positions thereof. When the lock member 94 is slid to its locking position by means of a thumb piece 102, the head 100 of lock member 94 will be positioned in the path of movement of the projection 92 on latch member 40 so as to prevent movement of latch member 40. The part 100 will be positioned between the casing and the projection 92 if the latch member is moved to its unlatched position by push button 70, and lock member 94 then moved to its locking position. With the latch member in its latching position, movement of lock 94 to its locking position will position the part 100 in the path of projection 92 to prevent pivotal movement of the latch member. A spring washer 104 illustrated in Figs. 8 and 9 and having a central ridge 106 is arranged between casing 20 and the thumb piece 102 to resiliently maintain the lock member in either of its two positions. The casing is provided with grooves 108 into which the central ridge 106 and one of the curved ends of the spring washer 104 are adapted to be seated in either position of the lock 94 to form detent means resiliently retaining the lock in either position.

While I have illustrated and described a preferred embodiment of my invention, it is understood that this is capable of modification and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. In a latch mechanism for a closure, a casing having a surface adapted to be secured against one side of the closure, said casing having an opening in one wall thereof, a latch member pivoted in said casing on a vertical axis and having one end thereof swingable through said opening between latched and unlatched positions thereof, spring means reacting on said casing and said latch member and biasing said latch member toward its latched position, a lever pivoted in said casing for swinging movement in a vertical plane and having one end engageable with the other end of said latch member, an operating button slidably mounted in said casing and engageable with the other end of said lever and operable upon depression thereof for pivoting said lever to cause the same to react on the other end of said latch member in such manner as to swing said latch member to its unlatched position against the force of said spring, and a second lever pivoted to said casing for swinging movement in the same vertical plane as said first lever and engageable with said first lever between the pivot points of said levers, said second lever upon actuation thereof being operable to pivot said first lever in such manner as to cause the same to react on said other end of said latch member and swing said latch member to its unlatched position, said surface of said casing having an opening therein through which said second lever is accessible for actuation thereof, said opening being substantially aligned with said operating button.

2. Latch mechanism for use with a closure comprising a hollow, vertically elongated, relatively narrow casing member having a vertical surface adapted to be seated against one side of the closure, a substantially V-shaped latch member pivoted about a vertical axis at the apex of the V to said casing and having one end thereof swingable into and out of said casing between latched and unlatched positions thereof and the other end disposed in said casing, spring means biasing said latch member toward its latched position, a lever pivoted to said casing about a horizontal axis parallel to said surface of said casing and swingable in a vertical plane within said casing, said lever having one end engageable with the other end of said latch member, an operating button slidably mounted in said casing and engageable with the other end of said lever and operable upon depression thereof for pivoting said lever to cause the same to react on the other end of said latch member in such manner as to pivot said latch member to its unlatched position, a second lever pivoted to said casing and swingable in the same vertical plane as said first lever and disposed in said casing between said first lever and said surface of said casing, said second lever being engageable with said one end of said first lever upon actuation thereof to pivot said first lever in such manner as to cause the same to react on said other end of said latch member for pivoting said latch member to its unlatched position, said surface of said casing having an opening therein through which said second lever is accessible for actuation thereof, a lock member mounted on said casing and movable into and out of the path of said latch member when the latter is in either latched or unlatched positions thereof for preventing actuation of said latch member by said levers.

3. Latch mechanism for use with a closure comprising a hollow vertically elongated, relatively narrow casing member having a vertical surface adapted to be seated against one side of the closure, a substantially V-shaped latch member pivoted about a vertical axis at the apex of the V to said casing and having one end thereof swingable into and out of said casing between latched and unlatched positions thereof and the other end disposed in said casing, spring means biasing said latch member toward its latched position, a lever pivoted to said casing about a horizontal axis parallel to said surface of said casing and swingable in a vertical plane within said casing, said lever having one end engageable with the other end of said latch member, an operating button slidably mounted in said casing and engageable with the other end of said lever and operable upon depression thereof for pivoting said lever to cause the same to react on the other end of said latch member in such manner as to pivot said latch member to its unlatched position, a second lever pivoted to said casing and swingable in the same vertical plane as said first lever and disposed in said casing between said first lever and said surface of said casing, said second lever being engageable with said one end of said first lever upon actuation thereof to pivot said first lever in such manner as to cause the same to react on said other end of said latch member for pivoting said latch member to its unlatched position, said surface of said casing having an opening therein through which said second lever is accessible for actuation thereof, and an actuating plunger adapted to be slidably mounted on the other side of said closure and engageable with said second lever through said opening in said casing.

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