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DOOR LATCH AND CONTROL THEREOF

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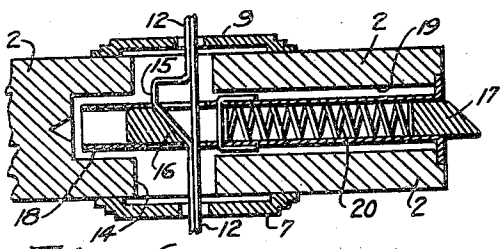


Fig. 4

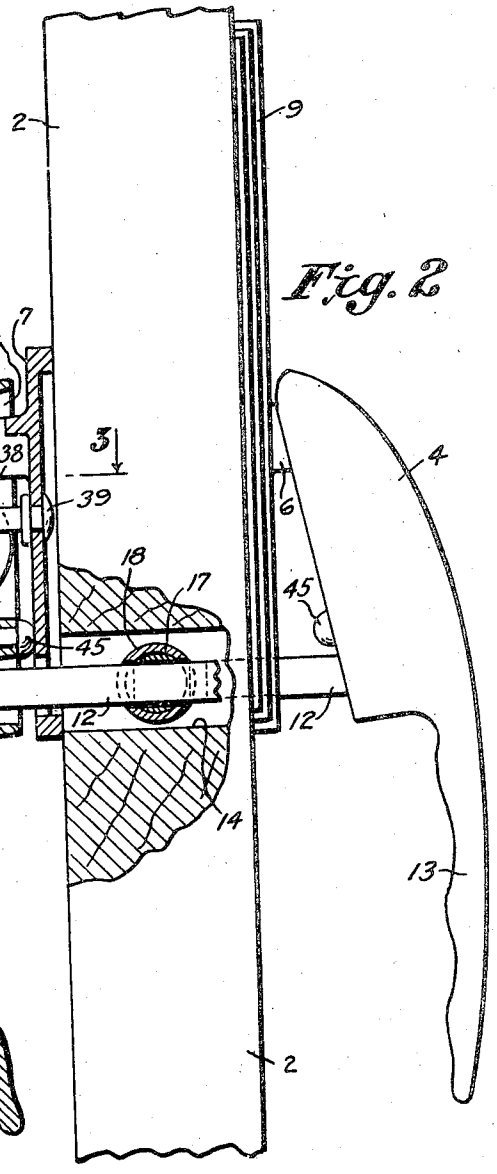
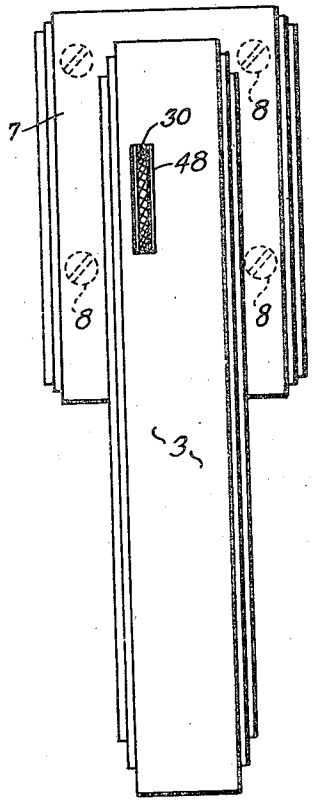


Fig. 2

Fig. 1



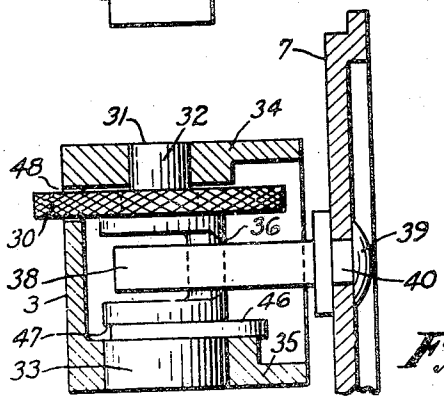


Fig. 3

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DOOR LATCH AND CONTROL THEREOF

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1

This invention relates to door latches comprising a sliding bolt adapted to be actuated by handles of the push-pull operating type, and more specifically to such a latch that can be locked in one of its positions as for example when the door is closed, the invention having for its object to provide a construction which is simple in construction, easy to manipulate, and more efficient in operation than those heretofore proposed.

A particular object of this invention is the provision of a locking means which may be operated readily while the door handle is in the grasp of a person, necessitating only the manipulation of the thumb to operate said means.

Another object of the invention is the provision of a rotatable locking means carried by the handle and coengageable with a stationary member carried by the plate by which the handle is mounted on the door, whereby when the locking means is given rotation in one direction it will engage said member to prevent actuation of the handle, and when reversely rotated said means will become disengaged from said member to permit actuation of the handle.

Still another object of the invention is the provision of yieldable means, disposed between the movable handle and its stationary mounting plate, to cause securement of the coengagement of the locking means with the stationary member carried by said plate.

With these and other objects in view the invention resides in the novel details of construction and combinations of parts, as will be disclosed more fully hereinafter and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification and in which like numerals designate like parts in all the views—

Fig. 1 is a front elevational view of a door handle to which this invention has been applied;

Fig. 2 is an edge view of a door to which this latch and its control have been applied, one of the door handles being shown in vertical section to illustrate the details of construction;

Fig. 3 is a horizontal sectional view of the control for the latch, said view taken as on the line 3—3 of Fig. 2 and looking in the direction of the arrows; and

Fig. 4 is a horizontal sectional view of the latch.

A door is indicated at 2 provided with an inside handle 3 and an outside handle 4, each handle being pivotally mounted as at 5 to a lug 6 carried by a face plate such as 7 secured to the door as by the indicated screws 8 and/or by through bolts or other securing means as desired. The face

2

plate 7 for the inner side of the door may be relatively small as indicated in Figs. 1 and 2, and the face plate for the outer side of the door may have greater vertical dimension as indicated at 9 in order to accommodate the usual key-operated lock not illustrated but well understood, or the face plates for both sides of the door may be substantially identical.

The handle 3 is formed in its lower portion with a hand-grip 10 just above which there is provided a pin 11 engaged by one end of a link 12 whose other end engages a corresponding pin in the hand-grip portion 13 of the other handle 4, said link passing through a bore 14 provided in the door whereby, when one handle is moved in a direction toward the door, the other handle will be moved in a direction away from the door, and vice versa. Said link is provided with a cam member 15 coengageable with a complemental cam portion 16 formed in the rear end of a bolt 17 slidable axially in the cylinder 18 mounted in a second bore 19 formed in said door, said second bore being at right angles to the bore 14, said bolt 17 having the usually formed (bevelled) outermost end adapted to protrude beyond the edge face of the door and constituting the latch for securing the door in its closed position by coengagement with a keeper secured to the door jamb. The bolt is suitably apertured to pass the link 12.

Thus it will be understood that when the link 12 is moved to the left for example as seen in Fig. 2 the cam member 15 thereof through coengagement with the cam portion 16 of the bolt 17 will cause said bolt to be slid in its cylindrical casing 18 inwardly of the door thereby unlatching the door to permit the opening thereof. When the link is moved in the opposite direction its cam will move in a direction tending to cause disengagement with the bolt cam, whereupon said bolt under the action of a spring 20 may slide outwardly with respect to the door resulting in a latched condition of the door when in its closed position. One form of practical latch construction is illustrated in Fig. 4.

Above the hand-grip 10 of the handle 3, and positioned to be readily actuated by the thumb, is a knurled wheel 30 rigidly mounted upon a crankshaft generally identified by the numeral 31 whose ends 32 and 33 are journaled in the side walls such as 34 and 35 of said handle, the crank 36 being eccentric to the axis of the crankshaft and adapted to be rotated thereby into and out of a pocket 37 formed on the underside of a bar or post 38 rigidly mounted by burring 39 to the

face plate 7, said mounting preferably comprising a square stud 40 snugly fitted within a square opening in said face plate to prevent rotation of said bar. The extreme free end of said bar is preferably provided with a similar pocket 41 also engageable by the crank 36.

By this construction, and as will be readily seen from Figs. 2 and 3, when the knurled wheel 30 is turned in one direction the crank 36 will be moved to engagement with the pocket 37 of said bar for locking the handle 3 in its down position as shown in Fig. 2 so that the door will be maintained latched in its closed position, notwithstanding attempts by a person to open the door by manipulation of the handle 4. In other words the coengagement of crank 36 and pocket 37 will serve as a lock for maintaining the door in closed position. When, however, the knurled wheel is given opposite rotation, the crank 36 will become disengaged from the pocket 37 and will be limited in its rotation by engagement with the other pocket 41, and the disengagement of crank 36 and pocket 37 will "unlock" the down position of handle 3 and thereby permit the unlatching of the closed door by proper manipulation of either handle.

A block of rubber 45 may be provided for each handle to prevent unnecessary noise, when the handle is moved downwardly, as would occur by the metal-to-metal contact between the handle and its associated face plate. The rubber block carried by the handle 3 additionally serves as a yieldable means to permit snapping engagement and disengagement of the crank 36 with respect to its pocket 37 and/or insures the normal retention of said crank in said pocket. This is brought about by virtue of the compressibility of said block against face plate 7 resulting in a force exerted arcuately with respect to the handle pivot 5 to force said crank tightly against the concave surface of said pocket. To disengage said crank from said pocket, a slight pressure is exerted upon the handle to further compress the rubber block 45, which movement "loosens" the crank with respect to its surface contact with said pocket whereupon rotation of the knurled wheel 30 will cause said crank easily to pass the extreme point, edge or hook of said pocket.

Any suitable means may be provided for retaining the crank shaft 31 in position, such as the retaining ring or clip 46 engageable in the groove 47 of the crank shaft and bearing against the inner surface of wall 35 of the handle. The knurled wheel 30 has a portion extending outwardly of the handle through the slot 48 provided therefor adjacent the inner surface of the opposite wall 34 of said handle; thus it will be understood that axial movement of the crank shaft in one direction is prevented by engagement of the knurled wheel 30 with the wall 34, and is prevented from movement in the opposite direction by engagement of the retaining clip 46 with the opposite wall 35.

It is obvious that those skilled in the art may vary the details of construction and arrangements of parts without departing from the spirit of this invention wherefore it is desired not to be limited to the exact foregoing disclosure except as may be required by the claims.

What is claimed is:

1. Control means for door latches of the sliding bolt type comprising a reciprocable link disposed transversely with respect to and for sliding the bolt, two plates fixed to opposite faces of the door, two handles, means to pivotally connect one end of each handle to one of said plates, means to pivotally connect the ends of said link to respective handles so that the free end of each handle may be actuated as a lever to move said link longitudinally to slide the bolt into operative and inoperative positions, a stationary retaining member secured to one of said plates, and a rotatable member carried by a handle, said rotatable member movable into coengagement with said retaining member to lock the handle against pivotal movement.

2. Control means for door latches of the sliding bolt type comprising a reciprocable link disposed transversely with respect to and for sliding the bolt, two plates fixed to opposite faces of the door, two handles, means to pivotally connect one end of each handle to one of said plates, means to pivotally connect the ends of said link to respective handles so that the free end of each handle may be actuated as a lever to move said link longitudinally to slide the bolt into operative and inoperative positions, a stationary retaining member secured to one of said plates and extending into a cavity formed in one of said handles, and a rotatable member disposed in the cavity of said handle and provided with operating means having a portion disposed externally of said handle, said rotatable member movable into coengagement with said retaining member to lock the handle against pivotal movement.

3. Control means for door latches of the sliding bolt type comprising a reciprocable link disposed transversely with respect to and for sliding the bolt, two plates fixed to opposite faces of the door, two handles, means to pivotally connect one end of each handle to one of said plates, means to pivotally connect the ends of said link to respective handles so that the free end of each handle may be actuated as a lever to move said link longitudinally to slide the bolt into operative and inoperative positions, a stationary retaining member secured to one of said plates and provided with a pocket and a rotatable member journaled in opposite walls of a handle and comprising an eccentrically mounted portion and an actuating element to move said portion into and out of engagement with said pocket, said portion and said pocket when engaged constituting a lock to prevent pivotal movement of said handle.

4. Control means for door latches of the sliding bolt type comprising a reciprocable link disposed transversely with respect to and for sliding the bolt, two plates fixed to opposite faces of the door, two handles, means to pivotally connect one end of each handle to one of said plates, means to pivotally connect the ends of said link to respective handles so that the free end of each handle may be actuated as a lever to move said link longitudinally to slide the bolt into operative and inoperative positions, a stationary retaining member secured to one of said plates and provided with a pocket, and a rotatable cam carried by a handle, said cam movable into coengagement with the pocket of said retaining member to lock the handle against pivotal movement.

5. Control means for door latches of the sliding bolt type comprising a reciprocable link disposed transversely with respect to and for sliding the bolt, two plates fixed to opposite faces of the door, two handles, means to pivotally connect one end of each handle to one of said plates, means to pivotally connect the ends of said link to respective handles so that the free end of each handle may be actuated as a lever to move said link longitudinally to slide the bolt into opera-

tive and inoperative positions, a stationary retaining member secured to one of said plates and provided with a pocket, and a crankshaft carried by a handle, the crank thereof movable into coengagement with the pocket of said retaining member to lock the handle against pivotal movement.

6. Latching means for a door provided with a slidable latching bolt and a member for actuating the same, said means comprising two handles pivotally mounted upon opposite sides of the door, said handles being adapted to operate the bolt-actuating member from either side of the door, and locking means associated with one of said handles for rendering both of said handles inoperative, said locking means comprising two interfitting members, one of said members being stationary and the other rotatable, and a yieldable element carried by the one of said handles for holding the coengaged members under tension.

7. Latching means for a door provided with a slidable latching bolt and a member for actuating the same, said means comprising two handles pivotally mounted upon opposite sides of the door, said handles being adapted to operate the bolt-actuating member from either side of the door, and locking means comprising a stationary retaining member and a rotatable member, the stationary member being secured to and extending

outwardly with respect to the surface of the door and extending into a handle, the rotatable member being carried by one of the handles and movable into coengagement with said retaining member for rendering both of said handles inoperative.

8. Latching means for a door provided with a slidable latching bolt and a member for actuating the same, said means comprising two handles pivotally mounted upon opposite sides of the door, said handles being adapted to operate the bolt-actuating member from either side of the door, and locking means for rendering both of said handles inoperative, said locking means comprising a door-carried stationary retaining member and a crankshaft having an intermediate offset portion coengageable with the stationary member, said crankshaft rotatably mounted within one of said handles.

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