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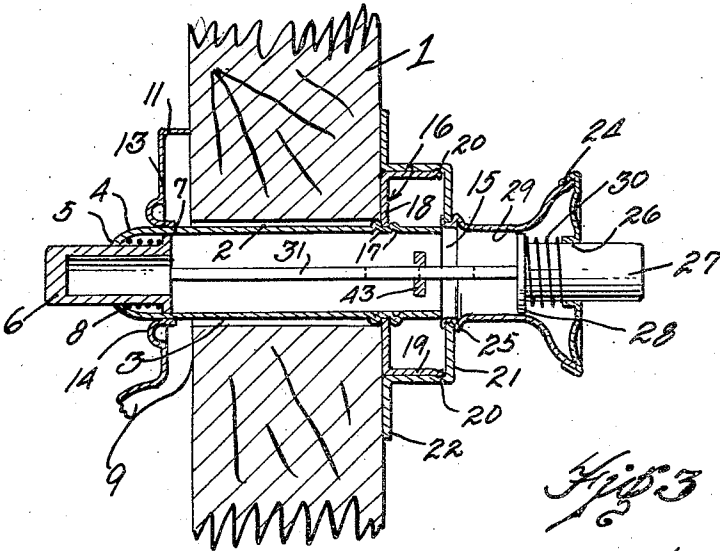
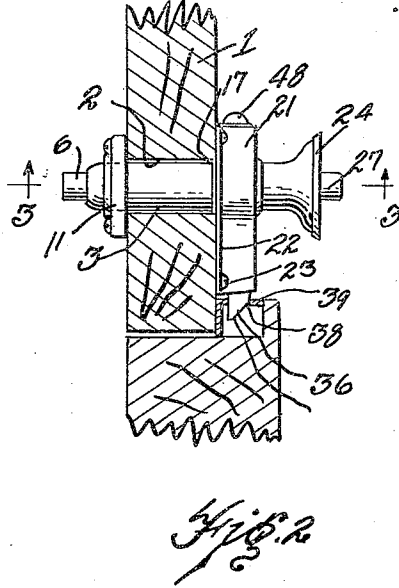
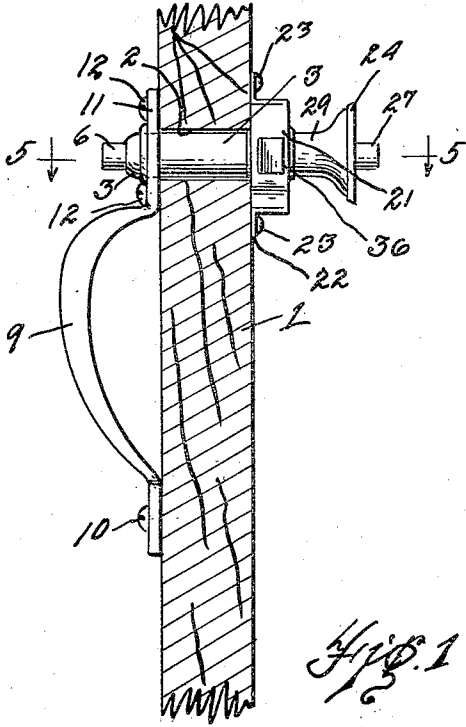
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DOORLATCH

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2 Sheets-Sheet 1



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DOORLATCH

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This invention relates to door latches and an object of the invention is to provide a door latch that is operable from either side of the door by the movement of a plunger.

Another object of the invention is to provide a door latch that is composed principally of sheet metal parts so that the manufacturing cost is comparatively inexpensive, and further that the parts are so constructed that the latch may be assembled as a unit without the use of screws or threaded parts.

Another object of the invention is the provision of a latch which is operable by a plunger positioned on the inside and one on the outside of the door and an actuator element for retracting the bolt floating between the inner ends of the plungers and the actuator extending through a slot in the bolt and provided with a V groove so that as either plunger is pressed in toward the door the bolt will be retracted from locking engagement with the striker plate.

Another object of the invention is the provision of a latch which may be assembled with doors of varying thicknesses without changing any of the parts and without detracting from the appearance of the latch when assembled with the door.

These objects and the several novel features of the invention are hereinafter more fully described and claimed and the preferred form of construction by which these objects are attained is shown in the accompanying drawings in which—

Fig. 1 is a side elevation of my improved latch assembled to a door.

Fig. 2 is a top plan view thereof.

Fig. 3 is an enlarged sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a detail view of the channel shaped member for carrying the bolt.

Fig. 5 is a section taken substantially on line 5—5 of Fig. 1, showing the bolt in the extended position.

Fig. 6 is a similar view showing the bolt in the retracted position.

Fig. 7 is a section taken on line 7—7 of Fig. 5 showing the means for locking the bolt in the extended position.

Referring now to the drawings it will be

seen that the door 1 is provided with the aperture 2 for receiving the tube like member 3 therein. The outer end of the tube like member 3 is curved inwardly as indicated at 4 and is provided at its end with the aperture 5 for receiving the plunger 6 therein. The inner end of the plunger 6 is provided with the flange end 7 of a diameter slightly less than the inner diameter of the tube like member 3. A spring 8 encircles the plunger 6 and has one end abutting the flange 7 and the other end abutting the curved inturned portion 4 of the tube 3. A handle 9 has its lower end screwed to the outside of the door as indicated at 10 and the upper end of the same is formed with an approximately square portion 11, the same being screwed to the outside of the door as indicated at 12.

The portion 11 is formed centrally thereof with the aperture 13 forming a snug fit for the outer diameter of the tube 3 and the portion around the aperture is formed with the raised or beaded portion 14. The tube 3, at its inner end, is open as indicated at 15 and a channel shaped member 16 is secured to the tube 3 intermediate the ends thereof by the crimped out portions 17. The channel shaped member 16 is formed with a base portion 18 and the side walls 19 and, as shown in Fig. 4, the side walls are provided adjacent their ends with the indents 20, for a purpose to be later described. A housing 21 is provided with the flanged portions 22 the same being secured to the inner side of the door by means of the screws 23. A pull knob 24 is rigidly secured to the housing 21 as indicated at 25 and the outer end of the same is provided with an aperture 26 for guiding the plunger 27 therein, the same being similar to the plunger 6 and provided with a flanged end 28 of a diameter slightly less than the inner diameter of the barrel portion 29 formed integral with the pull knob 24. A spring 30 encircles the plunger 27, one end abutting the flanged portion 28 of the same and the other end abutting the pull knob 24. An actuator 31, more clearly shown in Figs. 3, 5 and 6 is positioned between the inner ends of the

plungers 6 and 27 and is slidable within the tube 3 and, as more clearly indicated in Figs. 5 and 6, the actuator is provided with a V notch 32 having the shoulders 33 and 34 at each end thereof.

The said shoulders will limit the movement of the actuator in either direction, as will be more fully described. The bolt 35 is provided with the enlarged portion 36, the same being beveled as indicated at 37 for permitting the bolt to enter the aperture 38 provided in the striker plate 39. A flat plate 40 extends from the enlarged portion 36 and is provided centrally thereof with the aperture 41 of a length at least equal to the width of the actuator 31. The end wall 42 of the aperture 41 is beveled at each side, as will be more readily understood by reference to Figs. 5 and 6, so that as the actuator is moved in either direction the bolt will be retracted and when either of the shoulders 33 or 34 strike the side of the plate 40, the actuator will reach the limit of its movement. A coiled spring 43 encircles the plate 40 and one end abuts the enlarged portion 36 of the bolt 35 while the other end abuts the tube 3. It will be understood that the tube 3 is provided with suitable apertures 44 for permitting the plate 40 to be slidable therein. A lock 45 is provided in one end of the housing 21 and consists of an angle 46 and a pin 47 having an enlarged head 48 secured thereto. The pin 47 extends through an elongated aperture 49 in the housing 21, as will be more clearly understood by reference to Fig. 7, and a flat spring 50 is interposed between the angle iron 45 and the inner face of the end wall of the housing to maintain the lock in any position it is desired to be left.

By moving the lock 45 to the right in Fig. 7 the returned portion 52 will be moved over the end of the bolt 35 thus preventing the same from being retracted. As the lock 45 is on the inside of the door the bolt may be left in the locked position thus preventing anyone from the outside from opening the door unless the lock is moved to the unlocked position. It will thus be seen that as either plunger 6 or 27 is pressed in toward the door the bolt will be retracted and when the pressure is removed from the plunger, the spring 43 will move the bolt 35 to the extended position as the beveled end 42 of the aperture 41 will be moved down the inclined face of the notch 32 until it has reached the position at the bottom of the V notch. When it is desired to assemble the latch the plunger 6, having the spring 8 thereon, will be inserted through the aperture 4 formed in the end of the tube 3, the same having previously been assembled to the channel shaped member 16. The bolt 35 having the spring 43 thereon will then be inserted through the apertures 44 formed

in the tube 3 and the same forced in against the action of the spring until the aperture 41 in the plate 40 has come into alignment with the interior of the tube 3. The actuator 31 will then be inserted into the tube and through the aperture 41 in the plate 40 until the V notch 32 has come into alignment with the bolt whereupon the bolt 36 may be released. The channel shaped member 16 may then be pressed into the housing 21 and the indents 20 on the channel shaped member will bind against the inner sides of the housing holding the member 16 in place in the housing.

It will be understood that the pull knob 24, having the plunger 27 inserted therein, will have been previously assembled to the housing so that when the channel shaped member 16 has been assembled with the housing 21 the whole unit will be ready for insertion in the door, which has previously been provided with the aperture 2 for receiving the tube 3 therein. It will be seen that the rounded end 4 of the tube 3 will extend a sufficient distance through the outside of the door to allow the squared portion 11 of the handle 9 to be placed thereover. The screws 10 and 12 will then be screwed into the door and likewise the screws 23 for securing the housing 21 will be screwed to the inner face of the door and the latch will then be ready for operation.

By the construction heretofore described it will be seen that the latch may be applied to doors of varying thicknesses without altering any of the parts, as the tube 3 will simply extend through the squared portion 11 of the handle 9 to a greater or less degree depending upon the thickness of the door.

From the foregoing description it becomes evident that I have provided a latch which may be quickly and easily assembled as a unit without any screws or threaded parts and when the latch has been assembled as a unit the same may be assembled quickly to doors of varying thicknesses without altering or changing any of the parts and without detracting from the appearance of the latch when assembled to a door.

Having thus fully described my invention, its utility and mode of operation, what I claim and desire to secure by Letters Patent of the United States is—

1. A door latch comprising a tube like member, a pair of spring-pressed plungers positioned at opposite ends respectively of the tube member, an actuator element slidable in the tube, said actuator element being unconnected with the plungers and having its respective opposite ends engaged thereby, the actuator element having a V notch in one edge thereof, a bolt extending through the tube like member and provided with an aperture, the end wall of the aperture in the bolt engaging in the V notch in the actuator

whereby movement will be imparted to the bolt upon movement of either of the plungers.

2. A door latch comprising a tube like member, a pair of spring-pressed plungers positioned at opposite ends respectively of the tube member, an actuator element slidable in the tube, said actuator element being unconnected with the plungers and having its respective opposite ends engaged thereby, the actuator element having a V notch in one edge thereof, a housing adapted to be secured to the inner face of the door, and provided with an aperture on one end thereof, a bolt slidable in the housing and having one end projecting through the aperture in the housing, the other end of the bolt extending through the tube like member and provided with an aperture, the end wall of the aperture in the bolt engaging in the V notch in the actuator whereby movement will be imparted to the bolt upon movement of either of the plungers.

3. A door latch comprising a tube like member, a pair of spring-pressed plungers positioned at opposite ends respectively of the tube member, an actuator element slidable in the tube, said actuator element being unconnected with the plungers and having its respective opposite ends engaged thereby, a bolt positioned at right angles to the tube like member and connected to the actuator element in such a manner that movement of either plunger will impart movement to the bolt.

4. A door latch comprising a tube like member, a plunger positioned in each end of the same, an actuator element slidable in the tube, a bolt positioned at right angles to the tube and connected to the actuator element in such a manner that movement of either plunger will impart movement to the bolt, and a handle adapted to be connected to one side of a door and provided with an aperture through which one end of the tube, and the respective plunger projects thereby permitting the latch to be assembled with doors of varying thicknesses without changing any of the parts thereof.

5. A door latch comprising a tube like member, a spring-pressed plunger positioned in each end of the same, an actuator element slidable in the tube, the ends of the same being unconnected with but engaged by the inner ends of the said plungers, a bolt positioned at right angles to the tube and connected to the actuator element in such a manner that movement of either plunger will impart movement to the bolt, and a handle adapted to be connected to one side of a door and provided with an aperture through which one end of the tube and the respective plunger projects permitting the latch to be assembled with doors of varying thicknesses without changing any of the parts thereof.

6. A door latch comprising a tube like member, a pair of spring-pressed plungers positioned at opposite ends respectively of the tube member, an actuator element slidable in the tube, said actuator element being unconnected with the plungers and having its respective ends in abutting relation with the inner ends of the said plungers, the actuator element having a V notch in one edge thereof, a bolt extending through the tube like member and provided with an aperture, the end wall of the aperture in the bolt engaging in the V notch in the actuator whereby retracting movement will be imparted to the bolt upon movement of either of the plungers, and a handle adapted to be connected to one side of a door and provided with an aperture through which one end of the tube and the respective plunger projects thereby permitting the latch to be assembled with doors of varying thicknesses without changing any of the parts thereof.

7. A door latch comprising a tube like member, a pair of spring-pressed plungers each respectively positioned in an end of the tube, an actuator element slidable in the tube and having a V notch cut in one side thereof, said notch terminating in spaced shoulder portions, a bolt having an aperture, the end wall of which engages in the notch of the actuator, whereby retracting movement may be imparted to the bolt upon movement of either plunger and the actuator may be limited in movement by reason of a shoulder portion of the notch engaging the bolt.

In testimony whereof I sign this specification.

IVAN T. QUARNSTROM.