H. A. HOLT.

DOOR LATCH.

APPLICATION FILED MAY 20, 1914.

1,133,437. Patented Mar. 30, 1915.

Fig. 3.

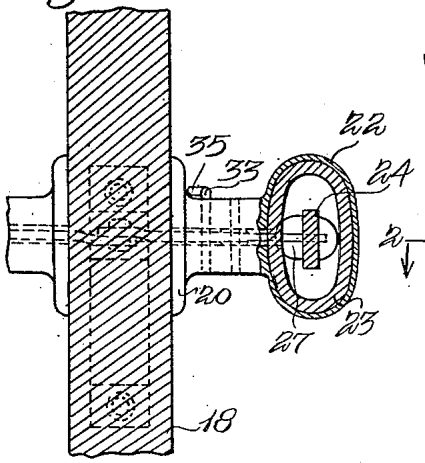


Fig. 1.

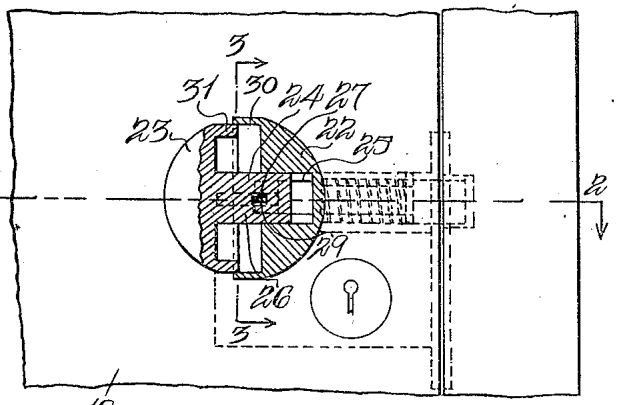


Fig. 2.

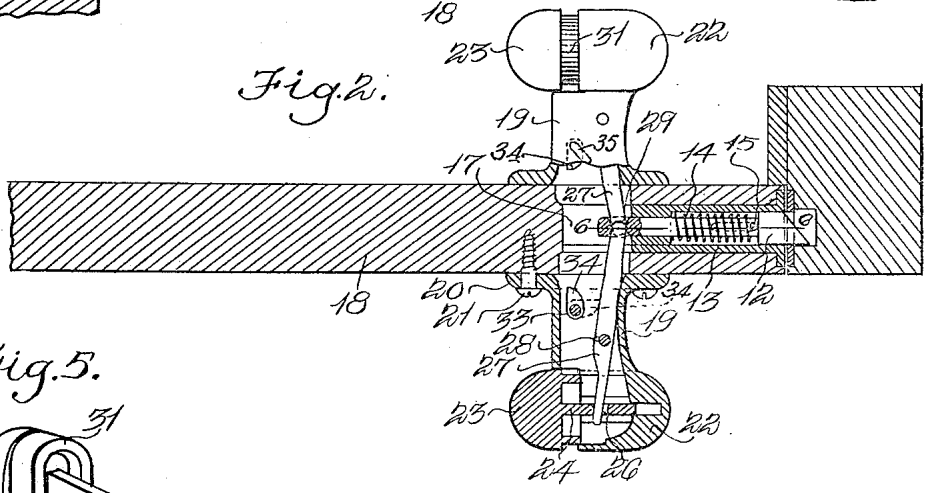


Fig. 5.

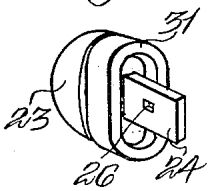


Fig. 6.

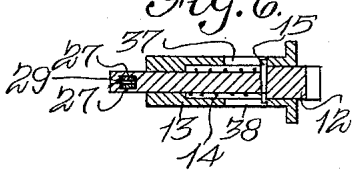
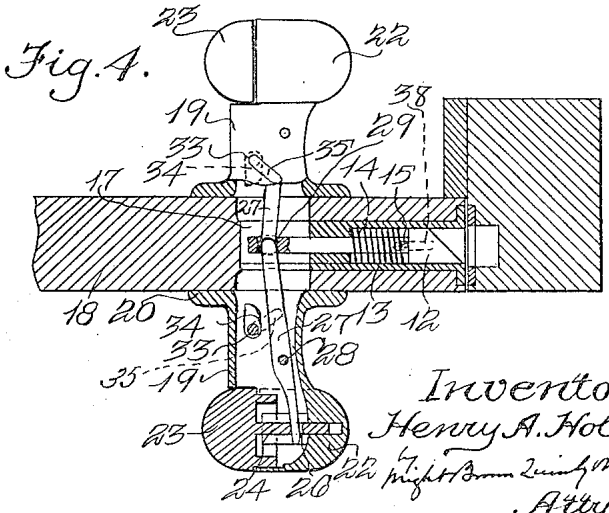


Fig. 4.



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UNITED STATES PATENT OFFICE.

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DOOR-LATCH.

1,133,437. Specification of Letters Patent. Patented Mar. 30, 1915.

Application filed May 20, 1914. Serial No. 839,731.

To all whom it may concern:

Be it known that I, HENRY A. HOLT, a citizen of the United States, and a resident of Wilton, in the county of Hillsboro and State of New Hampshire, have invented certain new and useful Improvements in Door-Latches, of which the following is a specification.

This invention relates to a door latch, the bolt of which is projected by a spring and is retractable by a knob-shaped handle mounted on the door.

The invention is embodied in a latch the knob-shaped handle of which is of telescopic construction and composed of a shank rigidly attached to the door, the telescopic knob composed of a fixed head on said shank, and a movable head slidingly engaged and guided by the fixed head, and connections between the movable head and the bolt, whereby the bolt is retracted by a movement of the movable head which contracts the telescopic knob, the construction being such that the knob may be contracted and the bolt retracted by pressure against the movable head, so that the bolt may be retracted to open the door by the pressure of a bundle carried by the operator's hand.

The object of the invention is to enable the bolt to be retracted without requiring a grasping pressure of the operator's hand on the knob, so that when the hand is occupied in holding a bundle, the bundle may be used as a means for imparting the pressure which retracts the bolt.

Of the accompanying drawings, forming a part of this specification,—Figure 1 represents a side elevation of a portion of a door in its casing, the door being provided with a latch embodying my invention, and the telescopic knob being shown in section. Fig. 2 represents a section on line 2—2 of Fig. 1. Fig. 3 represents a section on line 3—3 of Fig. 1. Fig. 4 represents a view similar to Fig. 2, showing the telescopic knob contracted to retract the bolt. Fig. 5 represents a perspective view of the movable head of the knob. Fig. 6 represents a section on line 6—6 of Fig. 2.

The same reference characters indicate the same parts in all of the figures.

In the drawings,—12 represents the latch bolt which is movable in a suitable casing 13, and is normally projected, as shown by Figs. 1 and 2, by a spring 14, bearing at one end on an abutment in the casing 13, and at its other end on a pin 15 attached to the bolt. The outer end portion of the bolt is enlarged, and its inner end portion is reduced and projects into an opening 17 in the door 18, the casing being provided with a longitudinal opening, enlarged at one end to receive the outer portion of the bolt, and extending through the inner end.

19 represents a tubular shank having a flange 20 rigidly attached by screws 21 to the door 18, the interior of the hollow shank communicating with the opening 17 in the door. The outer end of the shank 19 is provided with a head or enlargement 22 which constitutes the fixed member of a telescopic knob. Said knob is completed by a complemental movable head 23 having an ear 24 which projects into a recess 25 formed in the fixed head 22. The ear 24 has a slot 26 with which the outer arm of a lever 27 is slidably or loosely engaged. Said lever is adapted to swing on a fulcrum pin 28 attached to the shank 19, and its inner arm projects from the inner end of the shank 19 into the opening 17 and is slidably or loosely engaged with a slot 29 formed in the inner end of the bolt 12. The walls of the recess 25 in the fixed head constitute guides for the ear 24 on the movable member. The fixed head 22 is preferably provided with a flange 30, the inner surface of which forms a guide for the outer surface of a flange 31 formed on the head 23. It will now be seen that means are provided for guiding the head 23 in a rectilinear path, so that the knob may be expanded, as shown by Figs. 1 and 2, or contracted, as shown by Fig. 4. It will also be seen that the bolt-projecting spring 14 acts through the lever 27 and the ear 24 to normally hold the movable head 23 in its knob-expanding position. When the knob is contracted, as shown by Fig. 4, by pressure exerted on the movable head 23, the ear 24, and lever 27 impart motion from the head 23 to retract the bolt 12. The pressure which contracts the knob may be applied through a bundle carried by the hand of the operator, so that actual contact with the operator's hand is not required.

As shown by Figs. 2 and 4, the slot 29 in the bolt is made of sufficient width to receive the ends of two levers 27, so that the bolt may be retracted from either the inside or the outside of the door.

To permit the bolt to be locked in its projected position, I provide a stud 33 which is

journaled in bearings in the shank 19 and is provided within the shank with a locking arm 34, and externally with a handle 35, by which the arm 34 may be turned to the position shown by dotted lines, Fig. 2, to bear on the lever 27 and thus lock the bolt 12 through said lever.

The knob when in its normal expanded position, presents an appearance closely resembling that of an ordinary rotatable knob, so that my invention does not involve a radical departure in appearance from an ordinary knob latch.

The pin 15 projects from the bolt, and enters slots 37, 38 in the casing 13, the pin and slots being so arranged that the outer ends of the slots and the projecting ends of the pin constitute stop members which limit the projection of the bolt by the spring, as shown by Fig. 6. The pin is removable from the bolt through the slot 37, and when the pin is removed the bolt may be withdrawn from the casing, turned one half over and then reinserted, with its beveled face facing in the opposite direction. The latch may therefore be adapted for either a right hand or a left hand door.

It will be seen that the inner wall of the flange 30 and the wall of the recess 25 constitute respectively outer and inner fixed guide members, and that the outer surface of the flange 31 and the surface of the ear 24 constitute respectively outer and inner movable guide members complemental to the said fixed guide members. Said outer and inner members coöperate in guiding the movable head 23 in a rectilinear path, and preventing it from tipping and binding while moving, particularly when it is pushed inwardly by pressure exerted obliquely by a bundle held by the operator, or otherwise. The said outer and inner guide members also enable the spring 14 to act effectively through the bolt 12 and the lever 27, in forcing the movable head 23 outwardly, said head being prevented from tipping and binding during its outward movement.

The casing 13 may be made so much narrower than the door that the mortise formed in the door for the reception of the casing does not materially weaken even a relatively narrow door.

I claim:

1. A door latch comprising a hollow shank adapted to be rigidly attached to a door, a telescopic knob, composed of a fixed head provided with outer and inner fixed guide members on said shank, and a movable head provided with complemental inner and outer movable guide members, slidingly engaged with said fixed guide members, a bolt, a bolt-projecting spring, and connections between the bolt and the movable head whereby the knob is expanded when the bolt is projected, the bolt being retractable by the contraction of the knob.

2. A door latch comprising a hollow shank adapted to be rigidly attached to a door, a telescopic knob, composed of a fixed head on said shank, provided with a guiding flange and with a guiding recess, and a movable head slidingly engaged with the fixed head and provided with a face formed to slide on the inner surface of said guiding flange, and with an ear which is movable in and guided by said recess, a bolt, a bolt-projecting spring, and a lever fulcrumed in said shank and engaged with the said ear and with the bolt to hold the knob expanded when the bolt is projected, and to retract the bolt when the knob is contracted.

3. A door latch comprising a hollow shank adapted to be rigidly attached to a door, a telescopic knob, composed of a fixed head on said shank, provided with a recess, and a movable head slidingly engaged with the fixed member and provided with an ear which is movable in said recess, a bolt, a bolt-projecting spring, and means carried by the shank for locking said lever in its normal position to prevent the retraction of the bolt.

4. A door latch comprising a hollow shank adapted to be rigidly attached to a door, a telescopic knob, composed of a fixed head on said shank, provided with a recess, and a movable head slidingly engaged with the fixed head and provided with an ear which is movable in said recess, a bolt, a bolt-projecting spring, a stud journaled in said shank and provided within the shank with a locking arm adapted to engage said lever, and with an external handle.

5. A door latch comprising a casing having a slot, a bevel-faced bolt movable in the casing and having a pin movable in said slot, a bolt-projecting spring bearing on said pin, the pin being removable to permit the bolt to be adjusted for a right or a left hand door, and means for retracting the bolt.

In testimony whereof I have affixed my signature, in presence of two witnesses.

HENRY A. HOLT.

Witnesses:
S. S. PIERCE,
GEORGE S. PROCTOR.