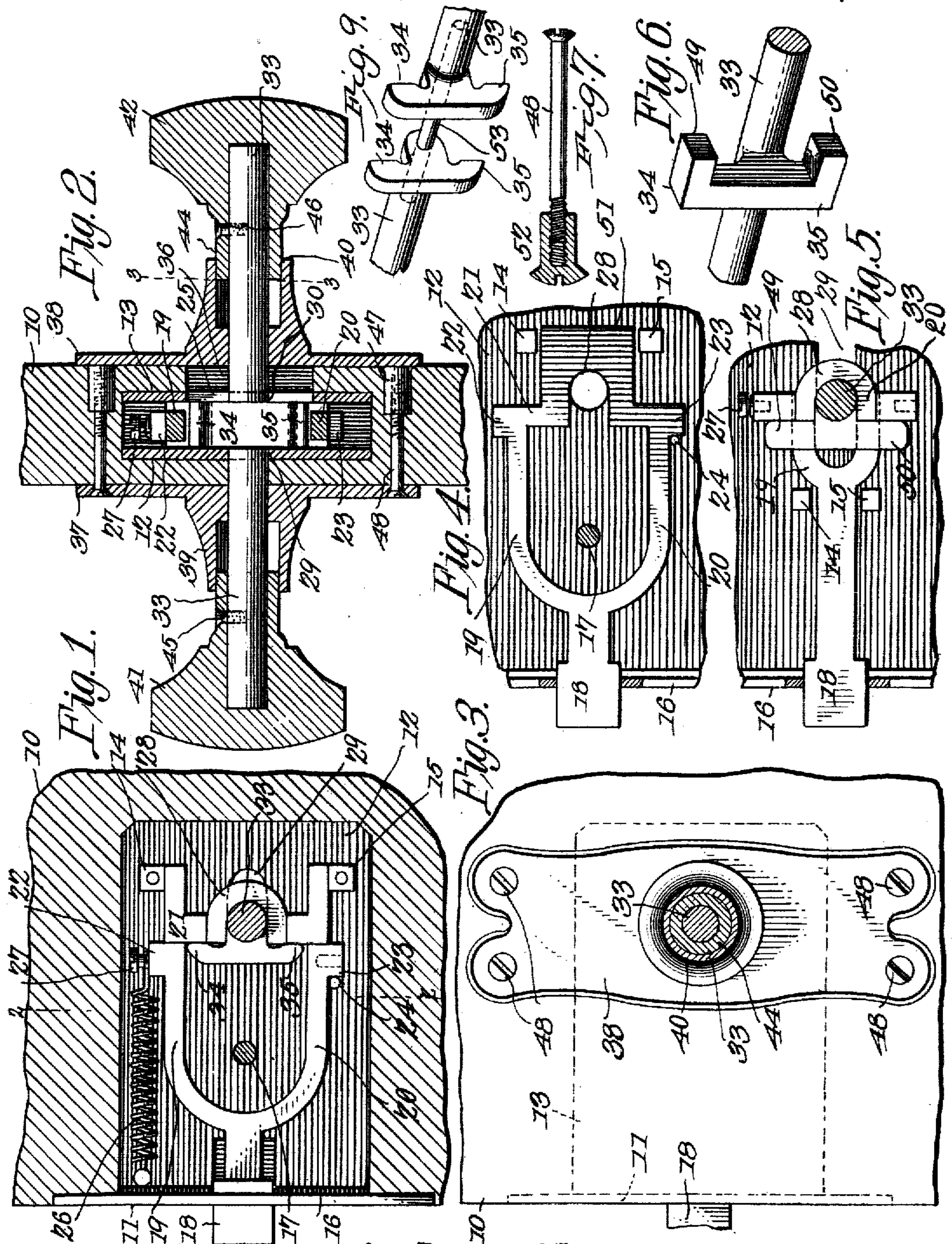


No. 814,186.

PATENTED MAR. 6, 1906.

J. CHRISTENSEN.  
KNOB LATCH.

APPLICATION FILED JAN. 11, 1904.



Witnesses  
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*Fig. 8.* 16  
33  
34  
35

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# UNITED STATES PATENT OFFICE.

JESSE CHRISTENSEN, OF CLARINDA, IOWA.

## KNOB-LATCH.

No. 814,186.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed January 11, 1904. Serial No. 188,558.

*To all whom it may concern:*

Be it known that I, JESSE CHRISTENSEN, a citizen of the United States, residing at Clarinda, in the county of Page and State of Iowa, have invented a new and useful Knob-Latch, of which the following is a specification.

This invention relates to improvements in builders' hardware of the class known as "knob-latches," and has for its object to simplify and improve the construction and produce a device of this character which may be applied to doors of different thicknesses without changing the structure or adjustments of any of the parts.

The invention further consists in the production of a device of this character wherein lost motion is eliminated and wherein, in event of the wearing of the parts, they will be automatically taken up and lost motion from that cause obviated.

The invention further consists in the novel construction of the latch-bolt, whereby lateral strains are obviated and the ease of action and consequent durability of the structure increased.

With these and other objects in view, as will appear as the nature of the invention is better understood, the same consists in certain novel features of construction and combination of parts, as hereinafter shown and described, and specified in the claims.

In the accompanying drawings, forming a part of this specification, and in which corresponding parts are denoted by like designating characters, there is illustrated the preferred form and several modified forms of the embodiment of the invention capable of carrying the same into practical operation, it being understood that the invention is not necessarily limited thereto, as modifications may be made therein without departing from the principle of the invention or sacrificing any of its advantages, and the right is therefore reserved of making all the changes which may fall within the scope of the invention and of the claims made therefor.

In the drawings thus employed, Figure 1 is a longitudinal sectional elevation, and Fig. 2 is a transverse section on the line 2 2 of Fig. 1, of the device applied to a door. Fig. 3 is a view in section on the line 3 3 of Fig. 2. Figs. 4 and 5 illustrate modifications in the construction. Fig. 6 is a perspective view of a portion of the spindle employed in the modified construction shown in Fig. 5. Fig. 7 is a modified form of the escutcheon building-

bolt. Fig. 8 is a view similar to Fig. 6, illustrating the form of spindle employed when the knobs on opposite sides of the door operate independently. Fig. 9 is a detail perspective view of the spindle arranged for independently-operable knobs.

The improved device herein illustrated is designed more particularly for use in a mortise in the edge of the door, and for the purpose of illustration is shown thus applied and consists of a casing inserted into the swinging edge of a door 10 and with a face-plate 11 of the usual construction embedded in the door and secured by screws or other fastening means. The casing is composed of two cheek-plates 12 13, spaced apart and held in their spaced position by spreader members 14 15 at the rear or inner ends and by offsets 16 on the inner face of the face-plate 11 to limit the inward movement, and further connected by a binding-screw to prevent separation.

The latch-bolt consists of the outer or forward portion 18, having the usual inclined terminal for engagement with the striker on the door-jamb and branching rear portion 19 20, connected by an intermediate transverse bar 21, this construction providing a relatively large aperture intermediately of the bolt. The rear portions of the side members 19 20 of the bolt rest between the spacer members 14 15, separating the cheek-plates, which thus form guides to the rear end of the bolt and prevent vertical movement thereof. The spacer members will be so located relative to the bolt that when the latter is in its projected position the rear ends of the side members of the bolt will be flush with the rear faces of the spacer members, while stop-lugs 22 23, extending from the outer faces of the side members, will be so located relative to the spacer members that they will engage the latter when the bolt is in its withdrawn position. A spring 26 is connected between the bolt and one of the cheek-plates 12 or 13 to yieldingly hold the bolt normally in its projected position. The spring 26 will preferably be connected by a clamp-screw 27 to one of the stop-lugs 22 23, and by providing each of the stop-lugs with a threaded aperture for the clamp-screw the device can be quickly transformed into a reversible knob-latch by merely releasing the clamp-screw, reversing the bolt, and connecting the clamp-screw to the stop-lug. The transverse bar 21 is formed with its central portion 28 curved



rearwardly, and the cheek-plates 12 13 are formed with elongated apertures 29 30 opposite this curved portion of the bolt, the door 10 being likewise provided with apertures in alinement with the cheek-plate apertures. The curved portion of the bolt and the alined elongated apertures in the several parts provide for the reception of the knob-spindle 33 and its movement longitudinally of the cheek-plates when required, as hereinafter described. The spindle 33 is provided with oppositely-extending cam-lugs 34 35, preferably integral with the spindle and positioned at one side of the same. The ends of the cam-lugs engage the transverse bar 21 adjacent to the side members 19 20 of the bolt, and when the spindle is oscillated in either direction it will be obvious that the cam-lugs will throw the bolt. The sides of the cam-lugs just fill the space between the cheek-plates 11 12, so that they serve as stops to prevent longitudinal movement to the spindle, while permitting free oscillatory movement thereto. The bolt will be maintained in constant yieldable engagement with the cam-lugs 34 35 by spring 26, so that lost motion will not occur between the parts no matter how much wear may take place, as hereinafter more fully explained. A stop-pin 24 is disposed upon the plate 12 in position to be engaged by one of the stop-lugs on the bolt to prevent abnormal forward movement to the bolt.

The elongated aperture 30 in the detachable cheek-plate 13 is provided with lateral extensions 25, and the aperture in the adjacent portion of the door 10 will be provided with corresponding extensions 36 to provide for the insertion of the cam-lugs on the spindle. To insert the spindle, the latch-bolt is pushed in to its withdrawn position by pressure upon the end 18, which will move the curved portion 28 of the transverse bar 21 to a position in alinement with the rear ends of the elongated apertures, which will relieve the apertures from all obstructions and permit the insertion of the spindle and its attached cam-lugs. Then when the bolt is released the spring 26 will draw the bolt and spindle forward, with the latter positioned in the forward ends of the elongated apertures. Then when the escutcheons are applied they will form bearings for the spindle to retain it rotatively in proper position. The escutcheons 37 38 are preferably elongated and provided with relatively elongated sleeves 39 40, concentric to the spindle and spaced therefrom. The knobs 41 42 are formed with relatively elongated shanks 43 44 for engaging the sleeves 39 40 and are attached to the spindle, as by clamp-screws 45 46. One of the escutcheon-plates is provided with one or more relatively elongated bosses or studs 47, internally threaded and adapted to receive the threaded ends of clamp-bolts 48, extend-

ing through the other escutcheon-plate and also through the door 10, above and below the lock-casing, and by which means the escutcheon-plates are firmly united. By this simple arrangement the spindle is maintained in position independently of the escutcheon-plates, except that the latter form bearings therefor, so that the same size of lock can be applied to doors of different thicknesses, as the elongated sleeves 39 40 permit the elongated shanks 43 44 to freely slide therein as the escutcheon-plates are attached to thicker or thinner doors, as the case may be. Furthermore, the fastenings 48 maintain the sockets 39 of the escutcheon-plates in absolute alinement, thereby to prevent binding of the spindle and the knobs upon the escutcheon-plates and their sockets. The cam-lugs 34 35 thus serve as effectual stops to prevent longitudinal movement of the spindle, while leaving it free to be oscillated, as will be obvious. The spindle and knobs will thus retain the same relative position no matter what the thickness of the door or the position of the escutcheon-plates may be. This is an important feature of the invention and adds materially to its value and efficiency by dispensing with the troublesome and annoying adjustment of the knobs upon the spindle. In the improved structure one threaded aperture only is required in the spindle, as the knobs are never adjusted upon the spindles as in ordinary lock structures. By this arrangement also it will be obvious that no lost motion occurs longitudinally of the spindle, as the cam-lugs operating between the cheek-plates prevents it.

As before noted, the spring 26, holding the bolt normally in its projected position, maintains the transverse bar 21 in constant engagement with the cam-lugs when the spindle is at rest. Hence lost motion can never occur between these parts, and in event of wear or change of shape from other causes the spring will automatically take up the space otherwise caused thereby and keep the parts closely engaged and effectually prevent rattling or looseness.

By this arrangement it will be noted that a very simple, cheaply-constructed, and efficient device is produced which can be readily applied to any thickness within the range of the sleeves 39 40 and threaded studs 47.

The escutcheon-plates and knobs may be of any desired form or fanciful design and ornamented in any desired manner.

The cheek-plates and spindle will preferably be of steel and the bolt and exposed portions of brass, bronze, or other metal usually employed for corresponding portions of locks of ordinary construction.

The parts may be of any desired size to adapt it to any size of door or to doors employed for any required purpose.

In Figs. 4, 5, 6, and 7 various slight modi-



fications in the structure are shown, which may be employed, if required. In Fig. 4 the belt is shown with a rearward extension 51, operating between the spacer members 14 15, whose location is changed to correspond therewith. In Fig. 5 the side members 19 20 of the bolt are shown placed nearer together and with the spacer members 14 15 disposed between the aperture in the bolt and the face-plate 11 and with the ends of the transverse bar 21 extended to receive offset ends 49 50 on the cam-lugs 34 35, as in Fig. 6. In Fig. 7 a modification in the manner of constructing the tie-bolts 48 is shown, consisting in substituting for the boss or stud 47, attached to one of the escutcheons, an elongated nut 52 for insertion through one of the escutcheon-plates and provided with an enlarged head to support it in place. In Fig. 8 the cam-lugs 34 35 are shown separate from the spindle and connected thereto, as by a clamp screw or rivet, which construction may be employed under some circumstances, if required. In Fig. 9 is shown the form of the spindle employed in outside doors where the knobs operate independently, the spindle being in two parts with a center pin 53 for guiding the adjacent inner ends and with the member 34 35 divided longitudinally, so that

each part will act independently upon the cross-bar 21; but these various modifications will not constitute a departure from the principle of the invention, as the same results are produced in all and in substantially the same manner.

Having thus described the invention, what is claimed is—

In a lock, the combination with a casing, of a slidable bolt having a beveled head and provided with lateral stop-shoulders at opposite sides thereof, each stop-shoulder being provided with a threaded opening, a screw removably carried in the threaded opening of one of the shoulders and capable of engagement with either of the threaded openings, guides carried by the casing at opposite sides of the bolt and in the paths of the shoulders to limit endwise play of the bolt, and a spring connected to the casing and detachably engaged with the screw to yieldably maintain the bolt at its forward limit.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JESSE CHRISTENSEN.

Witnesses:

WALTER W. HILL,  
C. A. WENSTRAND.