(No Model.)

J. E. ARMSTRONG.

LATCH AND LOCK.

No. 491,793. Patented Feb. 14, 1893.

Fig. 1.

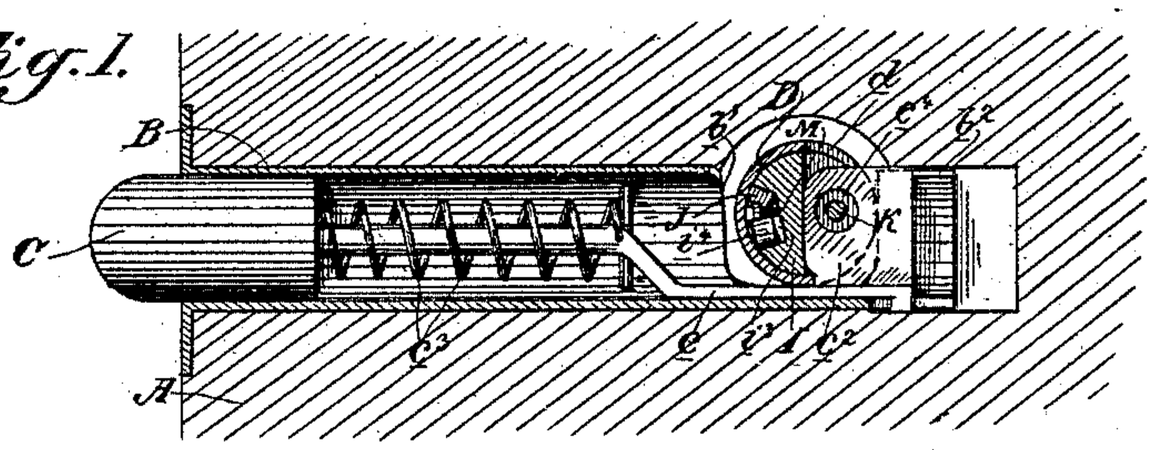


Fig. 4.

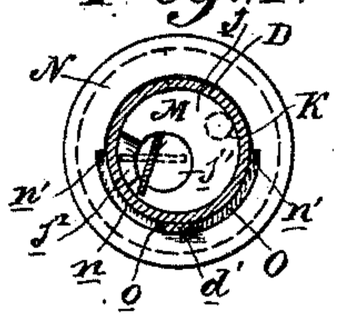


Fig. 5.

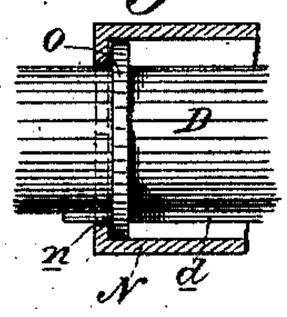


Fig. 2.

Fig. 6.

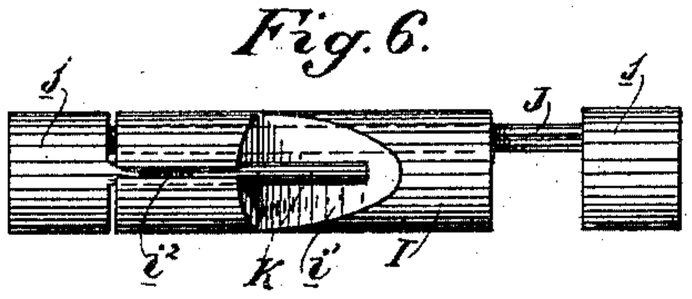
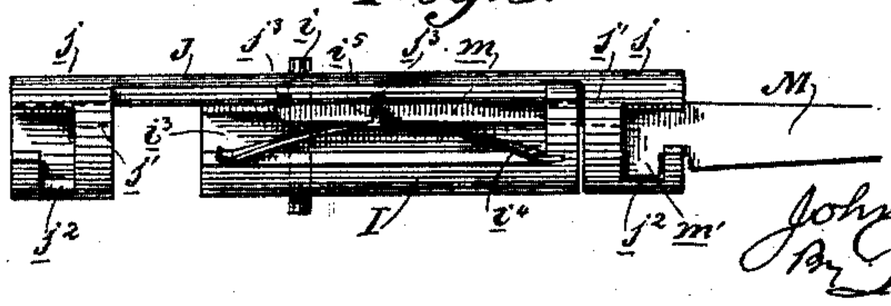


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN E. ARMSTRONG, OF SANTA CRUZ, CALIFORNIA.

LATCH AND LOCK.

SPECIFICATION forming part of Letters Patent No. 491,793, dated February 14, 1893.

Application filed November 3, 1892. Serial No. 450,871. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. ARMSTRONG, a citizen of the United States, residing at Santa Cruz, Santa Cruz county, State of California, have invented an Improvement in a Latch and Lock Combined; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of combined latches and locks for doors, in which a reciprocating latch bolt having a contact lug, is operated by a movable knob spindle.

My invention is an improvement upon that latch and lock combined, secured to me by Letters Patent of the United States No. 483,318, dated September 27, 1892, and it consists principally in the novel means for locking and releasing the latch bolt, which I shall hereinafter fully describe and shall specifically point out in the claims.

It also consists in minor details of construction and arrangement relating to the several parts.

The object of my invention is to provide simple and effective means for locking and releasing the latch bolt, and to provide for the convenient location of the locking device in the knob spindle and the key-way in the knob, whereby the latter may be easily found, and the necessity for a separate key-way and escutcheon avoided.

Referring to the accompanying drawings for a more complete explanation of my invention,—Figure 1 is a vertical section of the door in the line of the latch-bolt and sheath. Fig. 2 is a section at right angles to Fig. 1, showing the device in a locked condition. Fig. 3 is a rear elevation of the guide piece I, showing the engagement of the key. Fig. 4 is an end view showing the seating of the knob spindle in sleeve N. Fig. 5 is a vertical section of same. Fig. 6 is a front elevation of guide piece I showing locking-pin K projected.

A is the door, in the edge of which is made a hole in which is seated the sheath B, containing the reciprocating latch bolt C, having the usual beveled outer end. The bolt has a shank or stem *c*. The sheath B, near its inner end, is recessed at b' and slotted backwardly at b^2. The shank *c* of the latch bolt has a contact lug c^2 exposed in the recess b' of the sheath and guided in its movement by the slot b^2. The latch bolt is held projected by a spring c^3 in the sheath.

Through the door is made a hole at right angles to the hole in which the sheath B is seated. In this hole is fitted the knob spindle D adapted to have both a rotary and a longitudinal movement therein. This spindle crosses the sheath B at right angles, and lies in its recess b'. Its side is provided with a notch forming an inclined plane or cam *d* which bears against the front of the contact lug c^2 of the latch bolt. These parts are substantially the same as in my previous patent above mentioned, and their operation is that, when the knob spindle is rotated in either direction, its inclined plane or cam, bearing with either its top or bottom edges against lug c^2, will force said lug back and withdraw the latch bolt. Also, when the spindle is moved longitudinally, its inclined plane or cam, moving past lug c^2, will force said lug back and withdraw the latch bolt.

The novel locking and releasing mechanism of my present invention is as follows:—Fitted within the spindle D and secured by a cross pin *i* is a fixed guide piece I which has in one side a notch i' corresponding to and lying directly behind the notch or cam *d* of the spindle; and it has also a pin-way groove i^2 extending from said notch i' to the end of the guide piece. In the other side of said piece is a longitudinal passage i^3 opening out at both ends of the piece. In one side of this passage is seated a flat spring i^4 carrying a holding pin i^5.

J is a sliding stem fitted in the passage i^3 of the guide piece and carrying upon its projecting ends the heads *j*, which said heads have key-ways j' extending through them and in line with the open ends of passage i^3 of the guide piece. These heads have also the offset sockets j^2 for the engagement of the key ward. In the stem J are the holes j^3 to receive the holding pin i^5 of spring i^4. One of the heads *j* carries the locking pin K which plays back and fourth in the pin-way groove i^2 of the guide piece. In the contact lug c^2 of the sliding latch bolt is made a hole c^4 which lies in line with the locking pin K. In the knob center is seated the slitted key tumbler L. The key M may be of any suitable shape.

I have here shown it of the spiral type. Its inner end m is long and straight and it is provided with the ward m'.

The operation is as follows:—In an unlocked position, the stem J is pushed over, so that the locking pin K is fully withdrawn into its pin-way groove. The stem is held in this position securely by the engagement of holding pin i^5 with one of the holes j^3 in said stem. To lock the latch bolt, the key M is inserted. Its end passes through the tumbler L, into the spindle, and through the head j into the passage i^3 of guide piece I, wherein the long straight end m of the key, lies on edge directly behind the spring i^4, and the ward m' of the key lies opposite the offset socket j^2 in head j. Now by turning the key slightly, two results are effected, namely, first, the end m of the key, turning flat wise, forces spring i^4 back and causes its holding pin i^5 to withdraw from the hole j^3 thereby freeing the stem J; and second, the ward m' of the key enters and engages the offset socket j^2. Now by pushing in or pulling out on the key, according to the side of the door from which the operation is being effected, (for it will be observed that the locking and unlocking can be done from either side) the stem J and its heads j are moved over, thereby projecting the locking pin K through the hole c^4 in the contact lug c of the latch bolt C. The stem J is now held in this position, upon the removal of the key, by the holding pin i^5 coming to its engagement with the other hole j^3 in said stem. The engagement of the locking pin with the contact lug fully locks the latch bolt. To unlock said bolt, the key is again inserted, turned partially to release the holding pin i^5 from the stem J and to cause its ward to engage the head of said stem, and then moved to slide said stem and its heads, whereby the locking pin K is withdrawn from the contact lug of the latch bolt. Secured to one side of the door is a sleeve N through which the knob spindle freely passes. In the outer end of the sleeve is made a recess n terminating in shoulders n'. Upon the knob spindle is a long rib d' which plays back and forth in recess n and by engagement with shoulders n' limits and defines the extent of the rotary movement of the spindle. But to hold the spindle central in the sleeve and prevent it from sagging down into the recess, I have fitted, just within the end of the sleeve, a freely turnable washer O, which snugly embraces the spindle, said washer having a notch o which receives the rib d' of the spindle. This washer turns freely with the spindle and serves, at all times, as a support to keep said spindle central in the sleeve N. A single coil spring P connected at one end to the spindle D and at its other end to the sleeve N serves to control both the rotary and longitudinal movements of the spindle.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

1. In a combined latch and lock, having a reciprocating latch bolt with a contact lug, and a knob spindle with a cam impinging upon said lug to actuate the latch bolt, a locking pin carried by the knob spindle and adapted to be thrown into and out of engagement with the contact lug of the latch bolt, to lock and release said bolt, substantially as herein described.

2. In a combined latch and lock, having a reciprocating latch bolt with a contact lug and a knob spindle with a cam impinging upon said lug to actuate the latch bolt, a locking pin carried by the knob spindle and adapted to be projected through an opening in said contact lug and to be withdrawn therefrom to lock and release the latch bolt, substantially as herein described.

3. In a combined latch and lock having a reciprocating latch bolt with a contact lug and a knob spindle with a cam impinging on said contact lug to actuate the latch bolt, a locking pin within the knob spindle and adapted to engage and release said contact lug, and a suitable key-way through the knob and spindle whereby the locking pin is reached to be operated from without, substantially as herein described.

4. In a combined latch and lock, the combination of the reciprocating latch bolt having a perforated contact lug, a knob spindle having a cam impinging on said lug to actuate the latch bolt, a fixed guide piece within the spindle, a locking pin mounted in said piece and adapted to engage and relieve the perforated lug of the latch bolt, and suitable keyways in the knob, the spindle and guide piece whereby the locking pin is reached to be operated from without, substantially as herein described.

5. In combination with the latch bolt having the perforated lug and the knob spindle with its cam, a fixed guide piece within the spindle, the sliding stem mounted in said piece and having end heads, the locking pin carried by one of said heads and adapted by the movement of the stem to be projected through and to be withdrawn from the contact lug of the latch bolt, and suitable keyways in the knob and spindle to permit the entrance and engagement of a key with the heads of the sliding stem, substantially as herein described.

6. In combination with the latch-bolt having the perforated lug and the knob spindle with its cam, the fixed guide piece in the spindle, having the passage i^3, the spring with its holding pin in said passage, the sliding stem J in said passage adapted to be engaged and relieved by the holding pin, the engaging heads of the stem, the locking pin carried by one of said heads and adapted by the movement of the stem to engage and release the

contact lug of the latch bolts, and suitable key-ways in the knob, the spindle and stem heads to receive a key for engaging the heads and relieving the stem of the holding pin, substantially as herein described.

7. In a combined latch and lock as herein described, the combination of the fixed piece I in the knob spindle having the passage i^3 with spring and holding pin therein, the sliding stem J in said passage having holes engaged by the holding pin, and end heads with offset sockets and key-ways, the locking pin carried by one of said heads, and a key having a long straight end for releasing the holding pin and a ward for engaging the end heads of the sliding stem, substantially as herein described.

8. In a combined latch and lock, the combination of the knob spindle having the limiting rib, the fixed sleeve N with its recess and stop shoulders and the freely turnable washer in the sleeve and snugly embracing the spindle, substantially as herein described.

9. In a combined latch and lock, the combination of the axially turnable and longitudinally movable knob spindle, the fixed sleeve at one end thereof, and the single coil spring secured to said spindle and to the sleeve, substantially as herein described.

In witness whereof I have hereunto set my hand.

JOHN E. ARMSTRONG.

Witnesses:
F. L. STEVENS,
CHARLES CRAGHILL.