

No. 881,860.

F. HERBECK.
DOOR LATCH AND LOCK.
APPLICATION FILED NOV. 9, 1905.

PATENTED MAR. 10, 1908.

2 SHEETS—SHEET 1.

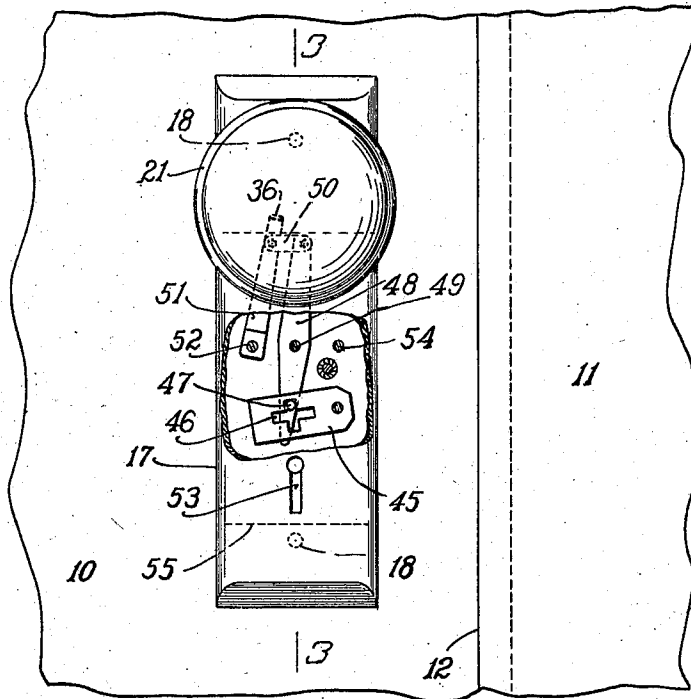


FIG. 1.

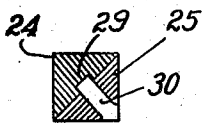


FIG. 8.

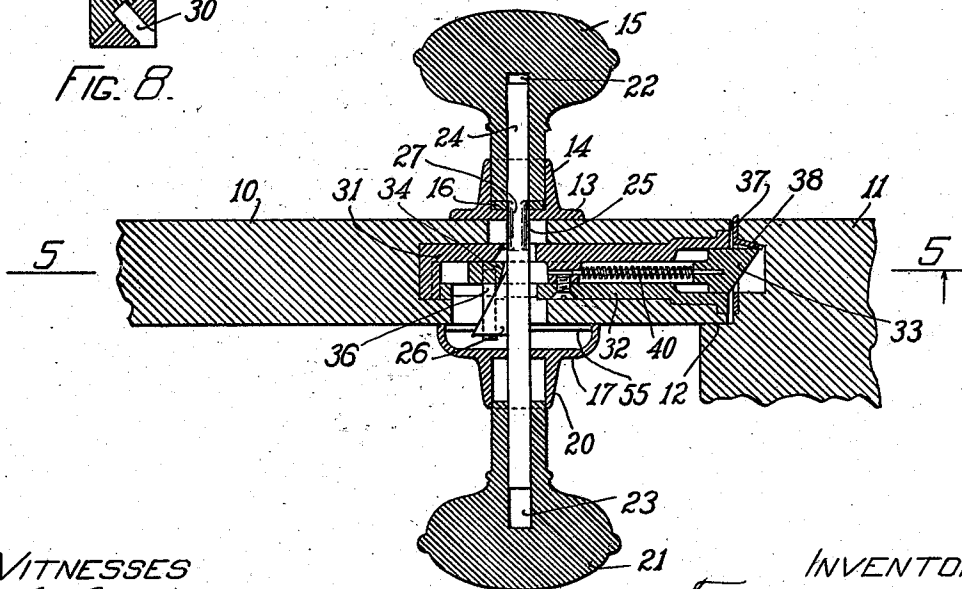


FIG. 2.

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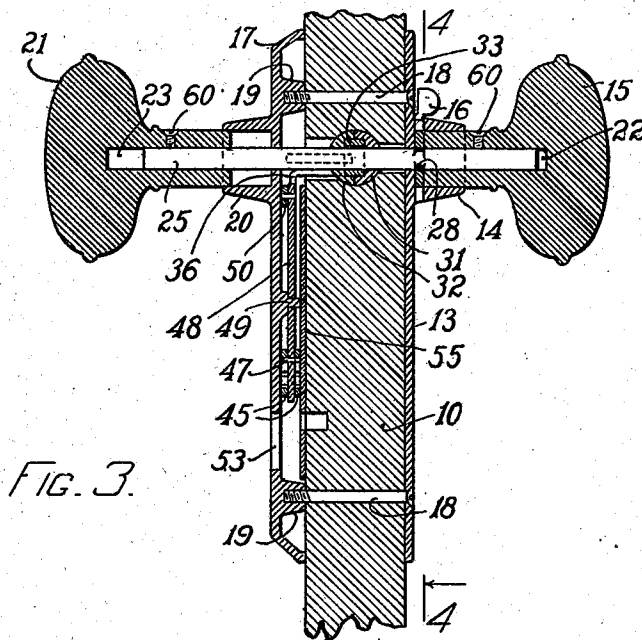
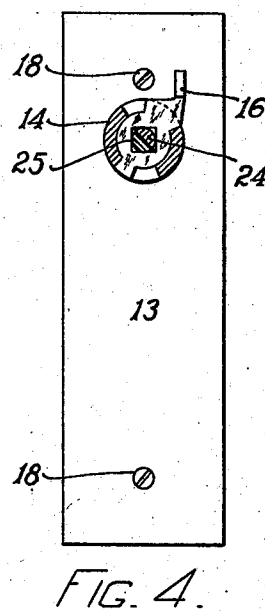
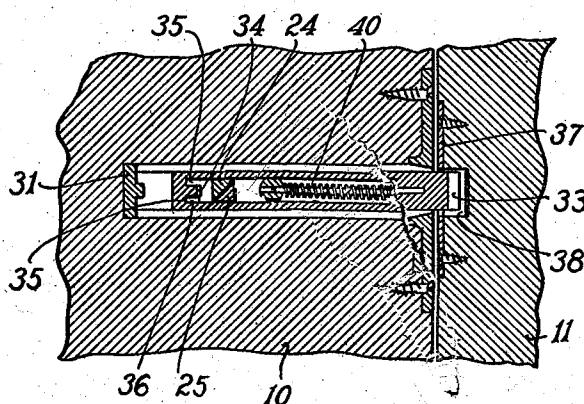
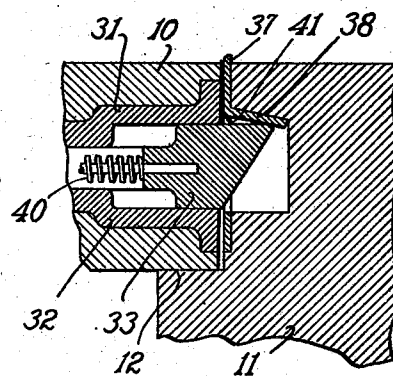
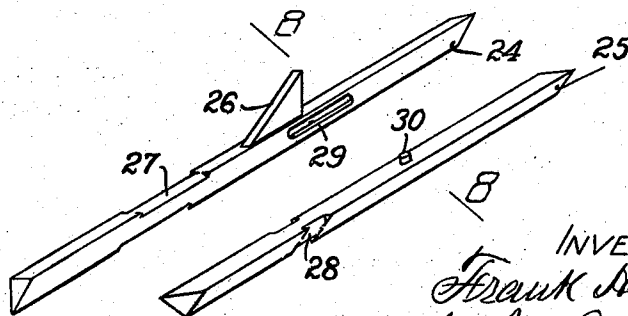
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UNITED STATES PATENT OFFICE.

FRANK HERBECK, OF ORANGE, MASSACHUSETTS.

DOOR LATCH AND LOCK.

No. 881,860.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed November 9, 1905. Serial No. 286,526.

To all whom it may concern:

Be it known that I, FRANK HERBECK, of Orange, in the county of Franklin and State of Massachusetts, have invented certain new and useful Improvements in Door Latches and Locks, of which the following is a specification.

This invention relates to door latches and locks, and more particularly to that class wherein the door is opened by simple pressure on the knob, without any rotary motion thereof, being in effect, an improvement on the Duncan Patent No. 480,075, dated August 2, 1892.

The special features of this invention are, the split spindle for the door knob, giving adjustability for different thicknesses of doors; the wedge shaped cam for operating the sliding bolt; the simplicity of mounting on a door, due to the small amount of mortising required and the combination of these devices with a key lock.

In the drawings:—Figure 1 is an outside elevation of that portion of a door and its casing which contains the lock, a part being broken out to show internal construction. Fig. 2 is a plan section on line 2—2 of Fig. 1. Fig. 3 is a vertical section on line 3—3 of Fig. 1. Fig. 4 is a like section on line 4—4 of Fig. 3. Fig. 5 is a vertical section on line 5—5 of Fig. 2. Fig. 6 is an enlarged detail of a portion of Fig. 2. Fig. 7 is an enlarged perspective of the two parts of the split knob spindle. Fig. 8 is a transverse section corresponding to line 8—8 of Fig. 7.

10 represents a portion of the door, 11 the casing and 12 the door jamb.

Mounted upon the inner side of the door is the plate 13, formed with a hollow boss 14 to receive the reciprocating shank of the inner knob 15, such boss being transversely recessed at its base to receive the oscillating hand lock 16.

On the outer side of door 10 and opposite to plate 13 is mounted the elongated shell or case 17, which is secured in place by screw bolts 18, said bolts passing entirely through the door from the inner side, their threaded ends entering threaded recesses in bosses 19 in case 17. (See Fig. 3.) By this means I render it impossible to remove case 17 from the outside without breaking or damaging it. Case 17 has likewise a boss 20 hollowed to receive and permit reciprocation of the shank of outer knob 21. Knobs 15 and 21 are formed with central longitudinal recesses

22, 23, formed to receive the two halves 24, 25 of the split spindle. These halves are here shown triangular, so that when united they form a square, (best seen in Figs. 5 and 8). Half 24 is provided, midway of its length, and on the surface which is vertical when in use, with a laterally projecting wedge shaped cam block 26, (see Fig. 2) and has a half-rounded portion 27, Fig. 7, formed to act in conjunction with hand lock 16. Half 25 has also a half-rounded portion 28, which however, is shorter in extent than the portion 27. The purpose of this is to permit a sliding of the halves 24, 25 on each other in adjusting the composite spindle for different thicknesses of doors, without destroying the circular formation required in the oscillation of hand lock 16. This hand lock has a square central aperture for reciprocation of the spindle; but when turned to its locking position, the walls of such aperture engage the shoulders or rectangular projections of the spindle at the ends of its rounded portion, thus preventing its longitudinal movement and holding the door locked.

Halves 24 and 25 of the spindle are provided respectively with an elongated slot 29 and a pin 30 for engaging the same. This is to prevent the removal of half 25, in case both knobs 15 and 21 should be removed.

I form the latch bolt socket of two metal halves 31 and 32 and mount within them the sliding spring pressed bolt 33, as in Pat. No. 480,075 referred to before.

Instead of using the pivoted tongue J of said patent to retract the latch bolt, I shape its inner end as shown in Figs. 2, 3 and 5, wherein 34 is an inclined surface formed as a bearing to co-act with wedge block 26 on the reciprocating spindle, and 35, 35 are recesses formed to receive the tang 36 of the key unlocking mechanism. By means of these two recesses 35, 35, my lock is interchangeable, and can be used either right or left hand, making use of either recess 35, as the case requires.

To guard the door against rattling, I provide casing 11 with the usual metal guard 37, but shape this with an inwardly inclined portion 38 for receiving the head of bolt 33. The action of spring 40 tends to keep bolt 33 out against inclined portion 38, but it is limited by the seating of door 10 against jamb 12. If the wood of the door shrinks, the latch bolt 33 is projected farther out, thus bringing the door again up to jamb 12. I

prefer to shape this inclined portion 38 with a square edge as at 41, (see Fig. 6) so that there will always be a sufficient catch of the bolt 33 in case the door 10 should swell. If the incline 38 continued to the face of the guard 37, there would be some liability to neglect the door until its hold in the casing became too slight for security.

The key mechanism, shown in Figs. 1 and 3, consists of the usual tumblers 45, 45, here provided with cruciform slots 46 for receiving pin 47 in key lever 48. Lever 48 has its fulcrum at 49 and is pivotally connected at its upper end by link 50 to bar 51, which has a fulcrum at 52. The upper end of bar 51 is provided with an inwardly projecting tang 36, Figs. 3 and 5, which engages one of the recesses 35 before described. 53 is the key hole. The action is too simple to need extended description; but it should be said that by providing an alternative fulcrum 54 for bar 51, see Fig. 1, the lock may be operated either right or left hand.

The parts comprising the key mechanism just described are held in place in case 17 by means of plate 55, secured thereto.

The general operation is as follows. When the door is closed and the parts are in position shown in Fig. 2, a straight push from the outside on knob 21, or a straight pull from the inside on knob 15 causes the two knob shanks to respectively advance and recede in their bosses 20 and 14. As these shanks are secured to the knob spindle by set-screws 60, this action causes wedge block 26 to advance, and by pressing against inclined surface 34 of latch bolt 33, it compels said bolt to recede within its sheath until the door is free to open. Releasing the knob permits spring 40 to return the parts to the normal position, and when the door is closed, the spring 40 yields sufficiently to permit bolt 33 to engage guard 37 without affecting the positions of any of the other parts. When the hand lock 16 is operated to prevent the use of the knobs, a key can be inserted from the outside, and by turning in the proper direction, it operates to move bolt 33 back, against the action of spring 40, through the engagement of tang 36 with recess 35, (see Fig. 1) and does not affect the knobs.

I claim as my invention:

1. The described improvement in door latches and locks, consisting in the spring-pressed latch-bolt, the rectangular, reciprocating knob-spindle passing through said

bolt and divided longitudinally into relatively adjustable half-sections suitably secured for joint use, such sections having half-round intermediate portions and one section being formed with a rigid, wedge-like projection for retracting said bolt, in combination with an oscillatory locking piece surrounding the composite spindle at its rounded portion and adapted to engage the angular shoulders at the ends thereof when desired, substantially as set forth.

2. The described two part composite knob-spindle adapted for slight longitudinal adjustment, formed with adjacent half-round portions of different lengths, one member of such spindle having a short lengthwise slot and the other provided with a stud entering the same, in combination with the oscillatory locking piece surrounding the composite spindle and adapted to turn on its rounded portion when the door is closed and lock the door by engaging the terminal shoulders of said portion, substantially as set forth.

3. The improvement in door-latch mechanism, comprising the prolonged spring-pressed latch bolt, movable in a socket in the door and having at its inner end a bearing for the spindle cam, the reciprocating knob-spindle passing through such bolt transversely and formed with an integral cam-like projection engaging said bearing to retract the latch bolt, in combination with the inside plate and outside shell having hollow hubs for reciprocation of the spindle, said shell inclosing the key-lock mechanism, substantially as set forth.

4. The improvement in door latches and locks comprising the reciprocating knob-spindle formed with a lateral wedge-like cam, the latch bolt slotted for passage of the spindle, and having a bearing for said cam to act on, and adjacent recesses, in combination with key lock mechanism including a slotted tumbler actuated by the key, pivoted levers linked near their upper ends, one of them having a stud at foot engaging the tumbler slots and the other having alternate fulcrums and formed at its free end with an offset arm or tang entering a recess in the latch bolt, substantially as set forth.

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

FRANK HERBECK.

Witnesses:

JAMES D. KIMBALL,
FRANK E. BARNES.