H. H. DANIELS.

Combined Latch and Lock.

No. 215,580. **Patented May 20, 1879.**

FIG. 1.

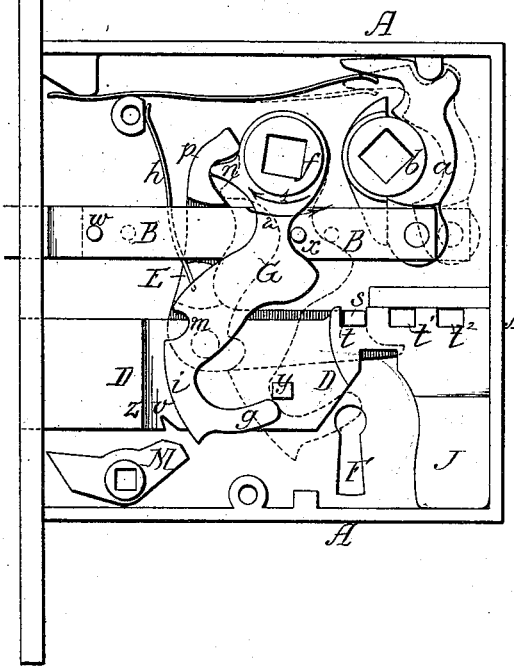


FIG. 2.

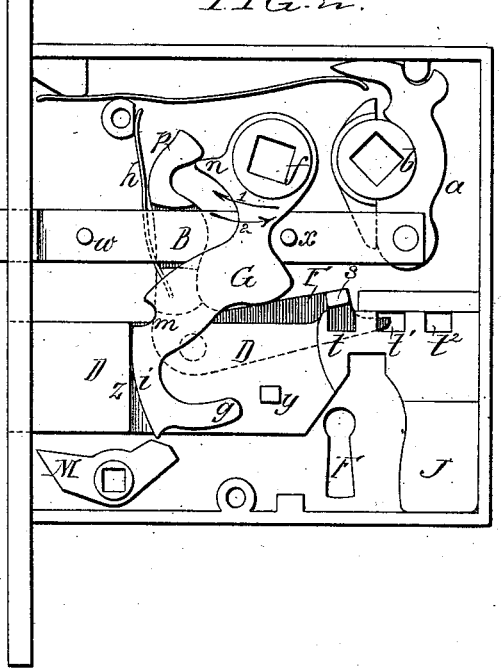


FIG. 3.

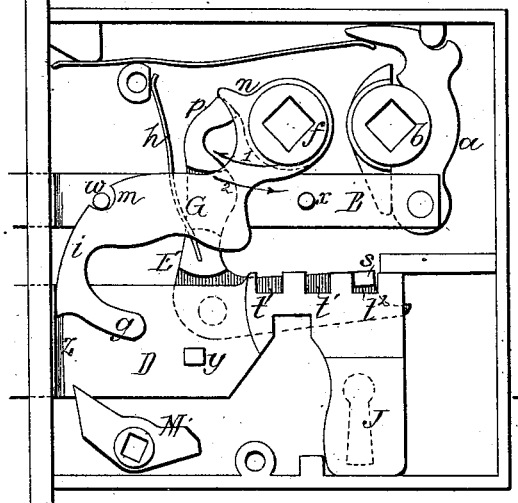
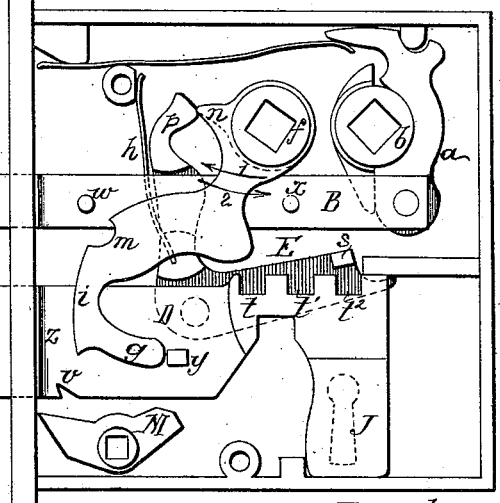


FIG. 4.



Witnesses,
John M. Dumon.
Thomas McElvaine

Inventor,
Henry H. Daniels
by his attorneys
Howson & Howson

2 Sheets—Sheet 2.

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FIG 6.

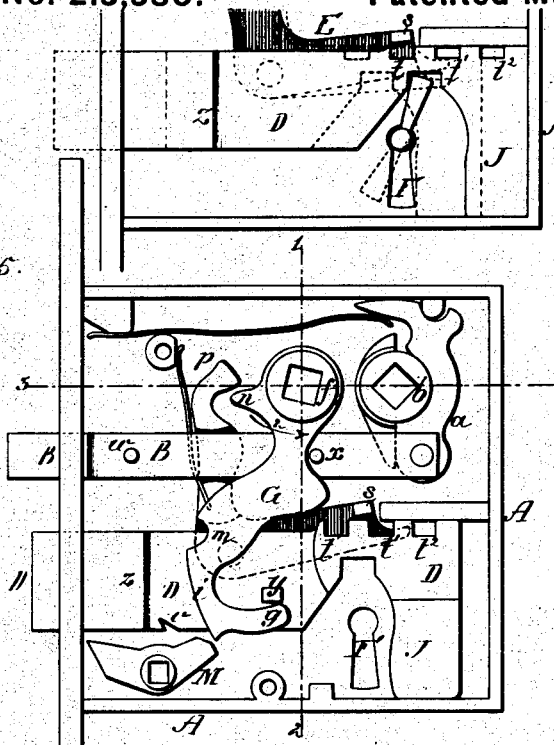


FIG 8.

FIG 6.

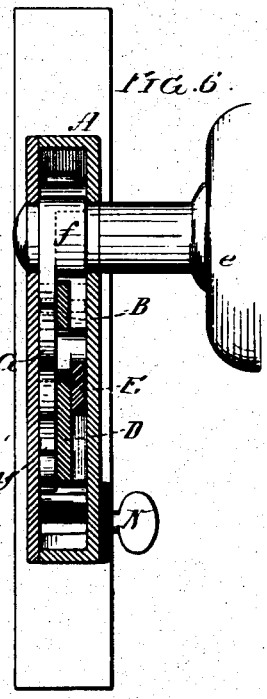
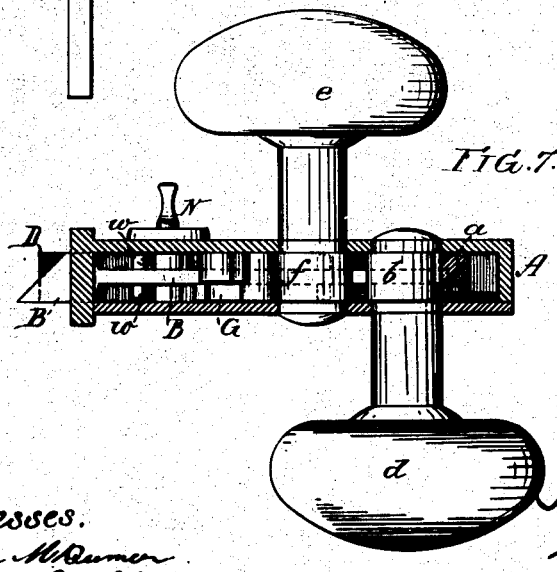


FIG 7.



Witnesses.
John McNamee
Thomas McIlvaine

Inventor,
Henry H. Daniels
by his Attorney
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UNITED STATES PATENT OFFICE.

HENRY H. DANIELS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN COMBINED LATCH AND LOCK.

Specification forming part of Letters Patent No. **215,580**, dated May 20, 1879; application filed October 7, 1878.

To all whom it may concern:

Be it known that I, HENRY H. DANIELS, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Locks, of which the following is a specification.

The main object of my invention is to so construct a door-lock as to increase its security without materially increasing its cost.

In the accompanying drawings, Figures 1, 2, 3, and 4, Sheet 1, and Fig. 5, Sheet 2, are face views of the lock with the cover-plate removed and the working parts in different positions; Fig. 6, a transverse vertical section on the line 1 2, Fig. 5; Fig. 7, a sectional plan on the line 3 4, Fig. 5; and Fig. 8, a diagram showing the method of operating the locking-bolt with a key.

A is the casing of the lock; B, the latch-bolt; D, the locking-bolt; E, the tumbler, and F the key-hole.

The inner end of the latch-bolt B is connected, as usual, to a spring-lever, *a*, which is acted upon by an arm upon a hub, *b*, an opening in the latter receiving the spindle of a knob, *d*, which is arranged upon the outside of the door, and thus serves as a means of operating the latch-bolt in the ordinary manner.

Instead of the spindle of the knob *d* extending completely through the lock and door, as usual, and being provided on the inside of the latter with another knob, the knob *e* on the inside of the door is carried by a spindle independent of that of the knob *d*, and this independent spindle is adapted to an opening in a hub, *f*, which is secured to or forms part of an arm, G. The conformation of this arm G is peculiar, it having at the lower end a finger, *g*, and at the upper end adjacent to the hub *f* a projection, *n*, while the front edge, *i*, of the arm is curved and has formed in it a notch, *m*.

The tumbler E is pivoted to the lock-case and is made in the form of a bell-crank lever, having at the end of one of its arms a lug, *s*, which is adapted to one or other of three notches, *t*, t^1, and t^2, formed in the upper edge of the locking-bolt D, the lug thereby serving to retain the locking-bolt in the three positions which it assumes—that is to say, either fully extended, partially extended, or entirely retracted.

The tumbler E is acted upon by a spring, *h*, the tendency of which is to depress the end of the arm carrying the lug *s*, thereby causing the said lug to enter one of the notches in the bolt D.

The operation of the tumbler so as to lift the lug *s* out of the notches in the bolt D is effected either by a key inserted through the key-hole F or by means of the projection *n* on the arm G, said projection acting on the bent end *p* of the upwardly-projecting arm of the tumbler.

The latch-bolt B has two projecting pins, *w* and *x*, through the medium of which said lock-bolt is operated and locked in position by the arm G, as described hereinafter. These pins pass entirely through the latch-bolt and project from both sides of the same, whereby said bolt may be adjusted so as to form either a right or left hand lock.

A lug, *y*, projects from the bolt D in such a position that it will be acted upon by the lower end of the arm G as the latter is vibrated, as hereinafter set forth.

The rear end of the bolt D extends downward, so as to form a block, J, which, when the bolt is fully extended, covers the key-hole F and prevents the insertion of a key.

In the lower front corner of the lock-casing is arranged a latch-lever, M, which acts in conjunction with a recess, *v*, in the under side of the bolt D, so as to retain the latter in its extended or locked condition, the operation of the lever being effected by a thumb-piece, N, on the inner side of the lock-casing.

The operation of the lock is as follows: When the parts are in the position shown in Fig. 1 the locking-bolt D is retracted, and the latch-bolt B is in condition for being operated either from the outside of the door through the medium of the knob *d*, hub *b*, and lever *a*, or from the inside of the door through the medium of the knob *e*, hub *f*, and arm G, the upper portion of the latter acting upon the pin *x* on the latch-bolt, and the finger *g* of the arm passing under the lug *y* of the locking-bolt, as shown by dotted lines.

When the parts are in the position shown by full lines in Fig. 1, the locking-bolt may be operated by a key inserted through the key-hole F either from the inside or outside of the door, as shown in Fig. 8, one of the wards of the key operating the tumbler E, and the other

the bolt D, in the usual manner. When operated by a key, however, the bolt D is only projected to about one-half of its full extent, the lug *s* of the tumbler E resting in the middle notch, t^1, of the bolt. This is done in order that the block J on the bolt D will not come in contact with the key and prevent the withdrawal of the latter from the key-hole.

In locking a door from the inside by means of the knob *e*, the latter is turned so as to cause a movement of the hub *f* and arm G in the direction of the arrows 1 in Figs. 1, 2, and 3. The first effect of this movement of the arm G is to cause its projection *n* to strike the bent end *p* of the upwardly-projecting arm of the tumbler E, and thus cause the said tumbler to turn on its pivot, so as to elevate the lug *s* from the notch *t* of the bolt D. (See Fig. 2. As the movement of the arm G continues its curved front edge strikes the shoulder *z*, formed by the enlarged head of the bolt D, and causes the latter to move forward, this movement continuing until the parts assume the positions shown in Fig. 3. The key-hole F is now obstructed by the block J, the pin *w* on the latch-lever rests in the notch *m* in the front edge of the arm G, so that inward movement of the latch is prevented, and the lug *s* of the tumbler E rests in the notch t^2 of the bolt D, so as to lock the latter, the end *p* of the upwardly-projecting arm of the tumbler resting against the under side of the projection *n* of the arm G, and thereby preventing the latter from falling by its own weight from the position to which it has been moved.

The latch-bolt being held by the arm G and the key-hole obstructed by the block J, any attempt to open the door by means of a key, or by operating the outer knob, *d*, must necessarily be unavailing, while any attempt to move the bolt by boring through the door, so as to gain access to the outer end of the spindle of the knob *e*, may be frustrated by the adjustment of the locking-latch *m*, as shown in Fig. 3.

In unlocking the door from the inside the knob *e* is turned so as to cause a movement of the arm G in the direction of the arrows 2 in Figs. 1, 3, 4, and 5. The parts being in the positions shown in Fig. 3, (with the exception of the latch M, which is first turned down,) the first effect of this movement will be to free the pin *w* on the bolt B and elevate the lug *s* of the tumbler E clear of the notches of the bolt D. The finger *g* of the arm G is then brought to bear on the lug *y* of the bolt D, as shown in Fig. 4, the said bolt, as the arm continues to move, being retracted until it reaches about the position shown in Fig. 5. By this time the end of the finger *g* of the arm G has slipped down below the lug *y*, and said arm G continues to swing without operating the bolt D, the upper portion of the arm, however, acting on the pin *x* of the latch-bolt B, so as to retract the latter. This movement continues until the lug *y* is struck by the body of the arm G at the base of the finger *g*, when the bolt D will be fully retracted, as shown by dotted lines in Fig. 1.

I am aware that it is not new to operate both the latch-bolt and locking-bolt of a lock by the same knob-spindle, and this therefore I do not claim, broadly; but

I claim as my invention—

1. The combination, in a lock, of the latch-bolt B and locking-bolt D, with a hub, *f*, adapted to a knob-spindle, and having an arm, G, for acting on pins or projections on both bolts B and D, all substantially as specified.

2. The combination, in a lock, of the latch-bolt B and locking-bolt D, the independent knobs *d* and *e* on opposite sides of the case, the latch-bolt operating hub *b* adapted to the spindle of the knob *d*, and the hub *f* adapted to the spindle of the knob *e*, and having an arm, G, for acting on both the latch-bolt B and locking-bolt D, all as set forth.

3. The combination of the lock-case having a key-hole, F, the latch-bolt B, the locking-bolt D, the tumbler E, and the hub *f*, having an arm, G, for operating the bolt D, and a lug, *n*, for operating the tumbler, all substantially as set forth.

4. The combination of the arm G, having a finger, *g*, with the bolt D and its lug *y*, and the bolt B and its pin *x*, all as specified.

5. The combination of the bolt B, having a pin, *w*, and the bolt D, having a shoulder, *z*, with the arm G, which operates the bolt D, and has a notch, *m*, adapted for the reception of the pin *w*, all as set forth.

6. The combination of the notched bolt D, the tumbler E, having a lug, *s*, and projection *p*, and the operating-arm G, having a projection, *n*, all as described.

7. The combination of the lock-casing A, having a key-hole, F, the bolt D, having a shoulder, *z*, a block, J, and notches *t*, t^1, and t^2, the tumbler E, having a lug, *s*, and projection *p*, and the operating-arm G, having a lug, *n*, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY H. DANIELS.

Witnesses:
ALEX. PATTERSON,
HARRY SMITH.