Allen & Brady,

Door Lock.

No. 68,334. Patented Sep. 3, 1867.

Fig. 2.

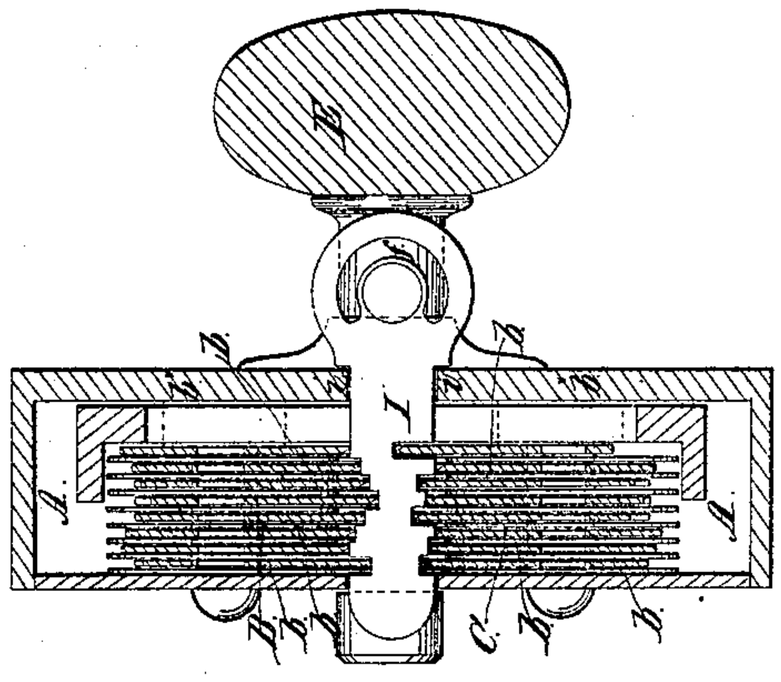

Fig. 1.

Witnesses.

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EDWIN ALLEN AND JAMES BRADY, OF NORWICH, CONNECTICUT.

Letters Patent No. 68,334, *dated September* 3, 1867.

IMPROVEMENT IN DOOR-LOCKS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, EDWIN ALLEN and JAMES BRADY, both of Norwich, in the county of New London, and State of Connecticut, have invented certain new and useful Improvements in Locks; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a portion of this specification, in which—

Figure 1 is a side view of a lock constructed according to our invention, with one side of the casing removed to show the internal parts thereof.

Figure 2 is a vertical transverse section, taken in the line *x x* of fig. 1.

Similar letters of reference indicate corresponding parts in both figures.

This invention consists in a novel means of working the tumblers, whereby the removal of the key from the lock, except when the parts are in position to lock the door to which the lock is attached, is effectually prevented, thus guarding against the liability of the door being left in an unlocked position when closed. The invention further consists in a novel arrangement of parts, whereby the most efficient action of the leading features of the invention is secured.

To enable others to understand the construction and operation of our invention, we will proceed to describe it with reference to the drawings.

The rectangular case of the lock is marked A, and pivoted opposite each other by pivots *a* at suitable points therein are two sets, B C, of tumblers. These tumblers are formed of flat steel plates, and their shape is shown more fully in the side view, fig. 1. The tumblers of each series are separated from each other by a series of plates, *b*, which are placed alternately therewith, and kept in position by being attached to the pivots *a*, as represented more fully in the aforesaid fig. 1. Each of the tumblers of each of the sets B C is connected with the opposite tumbler of the other set by means of a spiral spring, *c*, which draws the ends *d* of the tumblers together, as hereinafter more fully explained. The pivoted end of each of the aforesaid tumblers is formed with an inwardly-extending arm, *e*, the extremities of the arms of the two series closely approaching each other in such manner as to be simultaneously acted upon by a cam, D, which is secured to the transverse shank *f* of the knob E. Formed upon one end of this cam D are two teeth or cogs, *g*, which work or gear into a notch and tooth, *a**, formed in and upon the sliding-frame F, as shown in dotted lines in fig. 1. This sliding-frame moves longitudinally within the case A, at one side thereof, and has formed upon its outer end two bolts, G, which work through suitable slots in the end of the case A. Extending back from each of the said bolts is a rectangular spur, *h*, which, when the sliding-frame F is drawn back in unlocking the door to which the lock is attached, fits into the rectangular recesses *m* of the tumblers of the adjacent series B or C, as the case may be, as hereinafter further set forth. The key-hole *i*, formed in the outer plate *b** of the case A, is situated midway between the free ends of the two series of tumblers, the shape and position of the same being shown more clearly in dotted outline in fig. 1. The key I consists of an oblong metallic plate of a width and thickness corresponding to the length and width of the key-hole, and notched or recessed at its opposite longitudinal edges, as represented in fig. 2, in such manner that when inserted through the key-hole between the two sets B C of tumblers it will hold the tumblers of each set in such position that the rectangular slot or recess *m* thereof will be brought in line with each other, to permit the spurs *h* of the sliding-frame F to pass into the same when such frame is moved back in the operation of unlocking, as hereinbefore set forth.

In the operation of unlocking, the knob E is first turned in the direction indicated by the arrow in fig. 1, and causes the cam D to act upon the arms *e* of the two sets of tumblers in such manner as to spread apart the free ends of the two series B C of the said tumblers, which, being done, the key I is thrust through the key-hole into the space between the said series, and the knob E is turned in an opposite direction, whereupon the springs *c* force the tumblers inward, so that each of the tumblers fits into one of the notches of the key I, and the said notches being of such depth and so arranged that when the tumblers rest in them, as just set forth, the slots or recesses *m* of each series will be in line with each other, and be situated immediately behind the spurs *h* of the sliding-frame F. The knob is then turned further in the same direction, which causes the teeth *g* to move the frame inward sufficiently to bring the bolts G inward beyond the end of the case A, and thus unlock the door to which the lock is attached. Inasmuch as when in this position the tumblers are fitted into the recesses or

notches of the key I, it follows that the said key cannot be withdrawn, so that when the key is in the lock it will afford a certain indication that the same is in an unlocked position. In the locking operation the knob is again turned in the direction of the arrow, and moves the sliding-frame F outward, thus bringing the spurs *h* out of the recesses *m*, and causing the bolts G to project out from the case A, after which it operates the tumblers to bring the same from the notches in the key I, which is then withdrawn, whereupon the reverse movement of the cam D allows the springs *c* to bring the free ends of the two series of tumblers together, as shown in fig. 1, thus effectually closing the key-hole, at the same time that any backward or unlocking movement of the frame F is prevented by the portions *m** of the tumblers which are brought into position immediately behind the spurs *h*, as shown in the aforesaid fig. 1, the inward movement of the tumblers being properly limited by a transverse stop, *n*, situated at a suitable point at the ends of the two series of the same.

What we claim as our invention,, and desire to secure by Letters Patent, is—

1. The combination of the two opposite sets of tumblers, the key I, notched on both sides or edges, and the cam D, applied to operate simultaneously on both sets of tumblers, substantially as and for the purpose specified.

2. The cam D, constructed with teeth *g*, the sliding-frame, furnished with bolts G and spurs *h*, and the two opposite sets of tumblers, arranged to operate in relation with each other and with the key I, springs *c*, and stop *n*, substantially as and for the purpose specified.

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Witnesses:
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