2 Sheets—Sheet 1.

J. H. KINSMAN.

LOCKS FOR DOORS, &c.

No. 185,761. Patented Dec. 26, 1876.

Fig 1

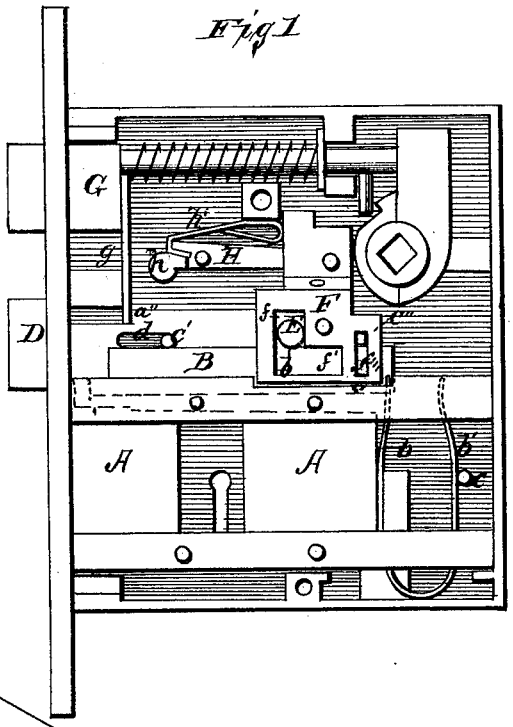


Fig 4.

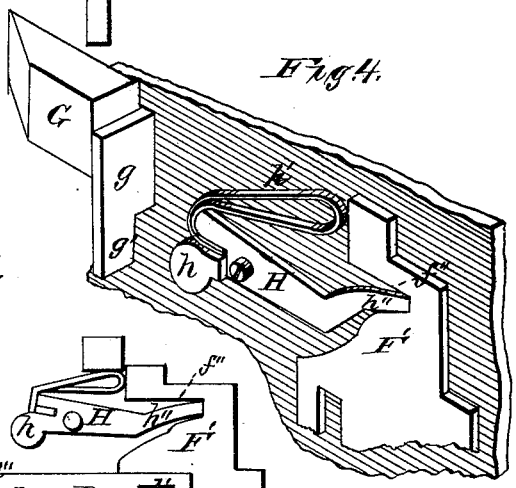
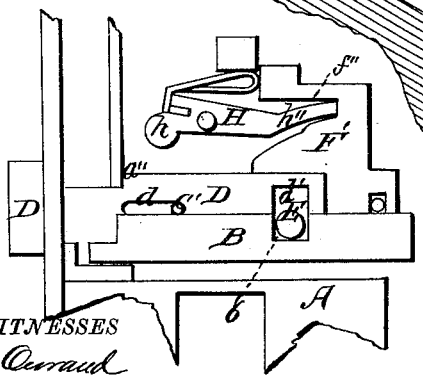


Fig. 3.



WITNESSES

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2 Sheets—Sheet 2.

J. H. KINSMAN.

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Fig. 2.

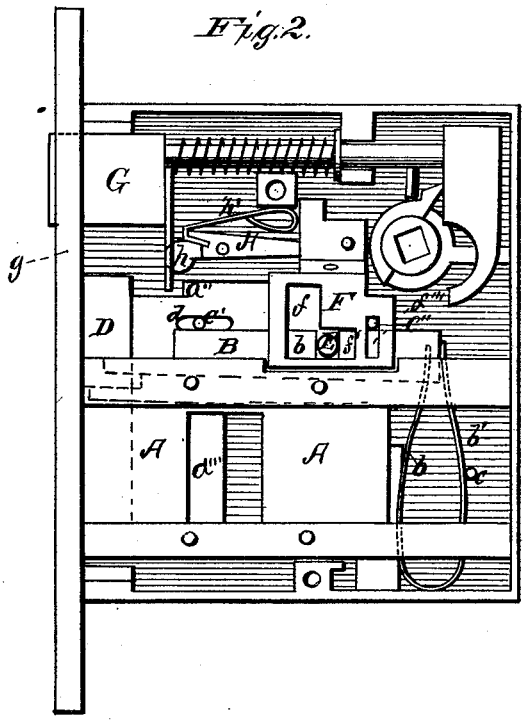
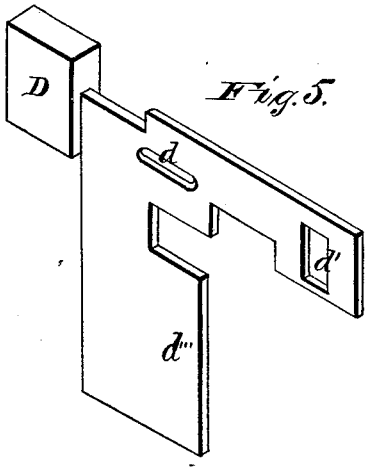


Fig. 5.



WITNESSES

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JOHN H. KINSMAN, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN LOCKS FOR DOORS, &c.

Specification forming part of Letters Patent No. **185,761**, dated December 26, 1876; application filed July 20, 1876.

To all whom it may concern:

Be it known that I, JOHN H. KINSMAN, of Salem, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Locks, of which the following is a specification:

Figure 1 is a plan view, with top plate of the lock removed, showing the internal parts in position when the lock is locked. Fig. 2 is a detail plan view, showing the tumblers, rollers, and bolt when the lock is unlocked. Fig. 3 is a detail view, showing parts with top movable guide-plate away. Fig. 4 is a perspective view in detail to show the leg of the latch adapted to operate on the lever that moves the roller guide-plates. Fig. 5 is a perspective view of the bolt.

The purpose of the present invention is to produce a lock in which the bolt shall be held, when locked, by a movable roller, that cannot be reached from the outside to be moved, and which is placed in position to stay the bolt, and is removed therefrom by the movements of the tumblers, as the bolt is being thrown or returned; and to this end it consists more particularly in the combination, with a lock having a series of primary and secondary tumblers, of a bolt, and locking-roller fitting and moving vertically in a slot in said bolt, and vertically or horizontally in a right angled slot in the movable guide-plates operated by a suitable spring-lever attachment moved by an arm on the latch so as to fall into or be removed from a suitable seat in the secondary tumblers; and in the general combination and arrangement of the several parts of the lock to produce the end aforesaid, all as will now be more in detail set out and explained.

In the drawings, A denotes the primary, and B the secondary, tumblers placed between washers in the lock in such a manner as to admit of free movement in concert with each other. The said secondary tumblers B are provided each with a bent spring, *b*, at its rear end. Each spring is secured at one end to a tumbler, while its free end *b'* is bent up and behind it, and, being braced by the post *c*, as shown, is adapted to operate with said free end upon the tumbler, in conjunction with and assisting the other and fixed end of the spring, as shown in Fig. 2. By this means said spring is double-acting, and certainty of movement of the tumblers is attained. The bolt D has a horizontal movement on post *c'* in slot *d*, about midway its length, and has a vertical slot, *d'*, of considerably larger dimensions near its inner end. This latter slot is not only the pathway in which the roller E is adapted to move vertically, but in conjunction with said roller, and the upper end of the right-angled slots *f f'*, in the upper and lower guide-plates F F', forms a stop to hold the bolt when the lock is locked. In this position the said roller is held at both ends, so that it can have no forward or backward movement, and being stayed upon the upper edges of the tumblers B, can have no vertical motion, and, as the roller passes through the slot *d'* in said bolt, it will firmly hold said bolt so that it cannot be thrown back.

If, now, it shall be desired to unlock the lock, the primary and secondary tumblers will be moved by the key till the slots *b* in the secondary tumblers are in conjunction under the roller. At this moment the weight of the roller E will cause it to fall into the seat made by the conjunction of said slots. Now, if the latch G shall be drawn in by the turning of the handle or knob, its depending arm *g* will engage upon the shoulder *a''* of the bolt, and cause said bolt to retract in conjunction with the latch. The bolt will, in this movement, also carry the roller E along the horizontal part *f''* of the right-angled slot in the guide-plates, and thus will cause the secondary tumblers to move back likewise. At this point the slot *g'* in the arm *g* of the latch will engage upon the rounded end of the arm *h* of spring-lever H, which has a spring, *h'*, suitably braced against a post, or otherwise, and causes its inner arm or projection *h''*, operating in slot *f''* of guide-plate F', to throw up said plate. This will also carry with it the plate F, which is attached to it, and the two will thus take the roller out of the slots in the secondary tumblers. The said tumblers, thus being released, will be thrown a little forward by the action of spring *b b'*, and the roller E will rest in the inner end of the right-angled slot in the guide-plates, and upon the upper edges of said tumblers. The bolt is

thus withdrawn, and now the latch can be operated free from any connection with the locking mechanism.

To throw the bolt now, to lock the lock, the leg d''' is moved by the key, the roller is thus carried forward, passes into the vertical portion f of the slot in the guide-plates, which are thus thrown down by the spring-lever H, and the guide-plates, roller, and bolt will be in the position referred to at the beginning of the specification. The guide-plates may have slots f''', which are adapted to receive the post c'', and thus steady the movement of said plates.

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

1. The combination of bolt D, having slot d', with the notched secondary tumblers, movable guide-plates, and roller E, substantially as and for the purposes described.

2. The combination of the latch, having a depending and notched arm with the bolt, and the spring-lever adapted to operate the guide-plates and roller, substantially as set forth.

3. The combination of the springs b with tumblers B, each spring having a free end, b', and adapted to operate at both ends on the tumbler, to which it is connected, substantially as and for the purposes set forth.

4. In a lock, having primary and secondary tumblers, as described, the combination of a roller and movable guide-plates with the bolt, substantially as and for the purposes set forth.

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

JOHN H. KINSMAN.

Witnesses:
WILLIAM FITCH,
PHILIP MCNICKLE.