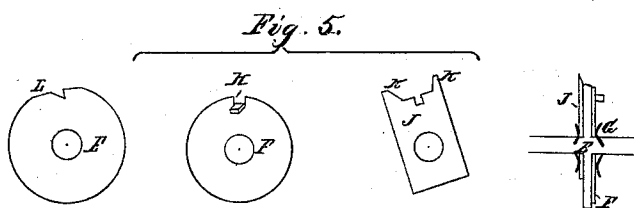
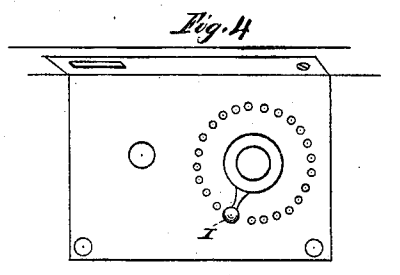
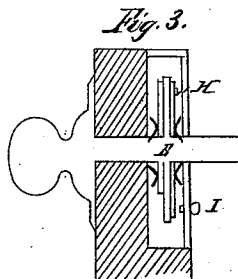
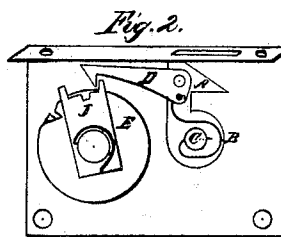
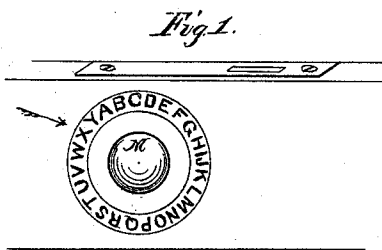


S. Lloyd,
Combination Lock.
No. 113,316.

Patented Apr. 4. 1871.



Witnesses.
W. B. Whitney
James R. Adams

Inventor.
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United States Patent Office.

SAMUEL LOYD, OF NEW YORK, N. Y.

Letters Patent No. 113,316, dated April 4, 1871.

IMPROVEMENT IN COMBINATION LOCKS.

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

I, SAMUEL LOYD, of the city and county of New York, have invented certain Improvements in Locks, of which the following is a specification:

Nature and Object of the Invention.

The object of my invention is to construct an inexpensive, simple, and convenient permutation lock, in which the combinations are set, and the lock unfastened, by the turning of a handle or knob to certain points indicated upon the dial, and requiring no key.

The nature of my invention relates to the peculiar form and combination of rollers and friction springs, and to the adjustable pin by which the notches are directed to their proper positions for receiving the ratchet which draws the bolt.

Description of the Accompanying Drawing.

Figure 1 is a front view of the lock as fastened upon a desk, showing the index and knob by which the lock is to be opened.

Figure 2 shows the lock in a similar position, with the knob and front of the desk removed, thereby exposing the working of the lock.

Figure 3 is a side view, showing the knob and rollers.

Figure 4 shows the back of the lock, with the manner of changing the combinations from the inside of the desk.

Figure 5 shows the form and combination of the rollers and friction springs, designed for purposes now to be explained.

General Description.

In the accompanying drawing—

Fig. 2 represents my principle or invention as applied to a spring or snap-lock, the bolt of which, A, is pressed forward by the curved wire spring B.

One end of the spring B is made fast to the rivet C upon which the bolt turns, while the other end is hooked to the ratchet D and serves to make it press upon the wheel E, besides serving as a bolt-spring.

The wheel E is either cast from one piece of metal with the shaft of the knob of the lock, or is made permanently fast to it, so that, when the ratchet D enters the notch furnished upon the wheel E, it connects with the bolt A, which is then drawn back by turning the knob.

Upon one side of the wheel E is placed a roller of thin metal, F, fig. 5, also furnished with a notch, so that the ratchet can only enter when both of the notches are brought together.

This roller turns freely upon the shaft of the wheel E, and is merely held in its position by a small friction spring, G, passing through the shaft and pressing it

against the wheel E, fig. 5, so that it will revolve with it.

When the notch H is formed in this roller F, fig. 5, the small piece of metal is bent so as to form a tooth standing out at right angles from the side. A pin inserted in the back of the lock I, fig. 3, comes in contact with the tooth as the main wheel E is revolved, and holds the roller until the two notches are brought together, whereupon reverse the motion until the proper point is reached for the ratchet to enter.

Fig. 4 shows the back of the lock with a series of holes corresponding to the number of figures upon the front dial, so that, by inserting the pin I into different places, it will vary the point at which the roller F will be stopped, and, therefore, allows you to set the lock to as many different combinations. It will be observed that it is only the first letter, however, which is capable of being thus changed.

In addition to the roller F to prevent the ratchet D from entering the wheel E, another thin piece of metal is added, which is also fitted loosely upon the shaft and pressed against the main wheel by a friction spring; but, being provided with two points or guards which come in contact with the ratchet, it is prevented from revolving but a short distance with the wheel, (see J in fig. 2 and fig. 5.) Its surface represents a small segment of a circle between the guards K K, fig. 5, and a notch, into which the ratchet must of necessity pass when entering those of the wheel E and roller F.

The object of this segment with its notch in the center is that it is always thrown past the point of the ratchet, and therefore necessitates the junction of the notches at a point which is sufficiently distant to prevent the ratchet from betraying to the sense of touch.

Also, to prevent the ratchet from bearing upon the roller F or segment J, which are but lightly bound to the wheel E by the pressure of the friction-springs, the wheel E is made somewhat larger, except near the notch L, fig. 5, where it gradually declines to the same diameter as the others.

The roller and segment are thus protected from all action of the ratchet, except at the extremely small point of entrance of the notch L.

This notch L, it will be observed, is formed with a gradual inclined plane on one side, for the purpose of raising and throwing the ratchet out of the notches by a continuation of a forward movement.

Supposing the lock now to be set to A X: Simply turn the knob M backward, as in unwinding, until you have made one entire revolution, and the arrow points exactly at the letter A; then reverse the movement, and turn forward until you reach the letter X; then turn back again toward the first letter; and the

ratchet fastens once upon the wheel and the bolt is drawn backward.

Claims.

I claim as my invention—

1. Slotted movable guards, rollers, or segments thereof, which are connected to the shaft of the handle of locks by friction springs, and by the strength of which springs they are guided to their proper positions by turning the axle upon which they revolve, as described by E F J, substantially as and for the purpose hereinbefore set forth.

2. A wheel or segment thereof revolving upon the same axis with the other rollers by means of a friction

spring, furnished with a small slot for receiving the dog, and also provided with projections which limit its movements by coming in contact with the dog, substantially as and for the purpose hereinbefore set forth.

3. The combination of the bent tooth of the roller F with the stationary pin I, and the series of holes in the back plate, as in fig. 4, for making changes without taking the lock apart, as and for the purposes hereinbefore set forth.

SAMUEL LOYD.

Witnesses:

W. B. PUTNEY,
JAS. R. ADAMS.