(No Model.)

P. W. LOWNES.

PERMUTATION LOCK.

No. 589,844. Patented Sept. 14, 1897.

Fig. 1.

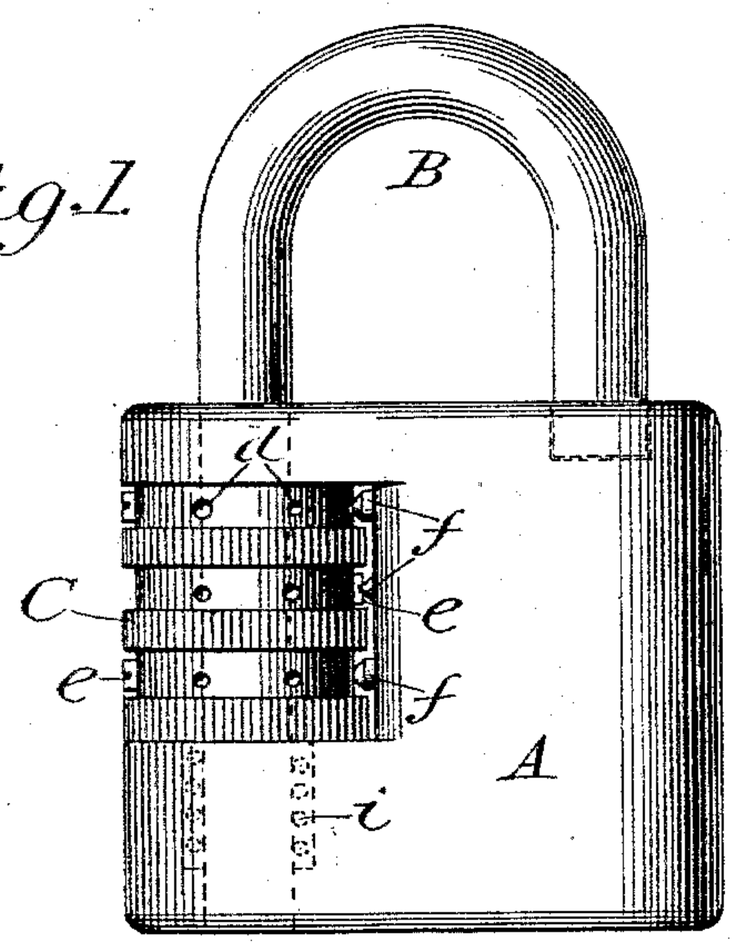


Fig. 2.

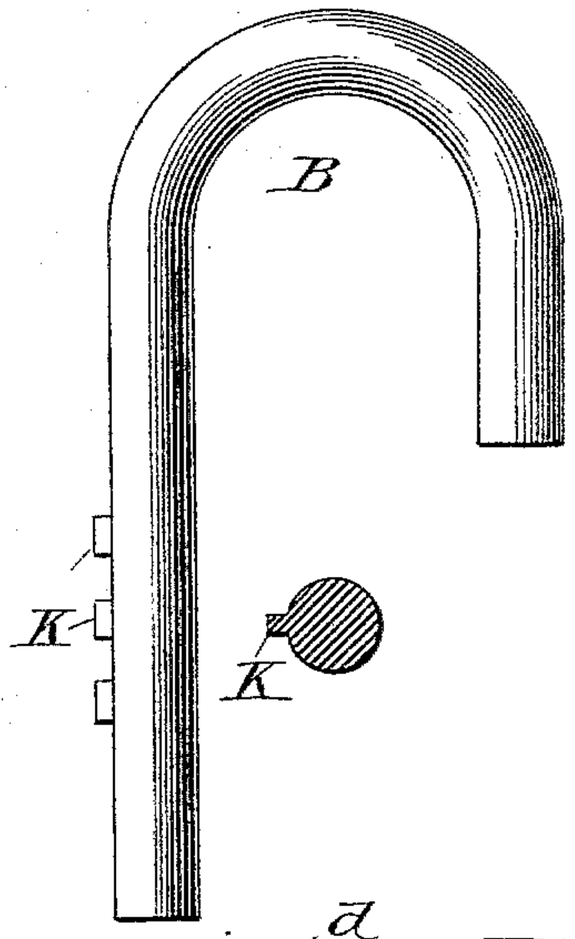


Fig. 3.

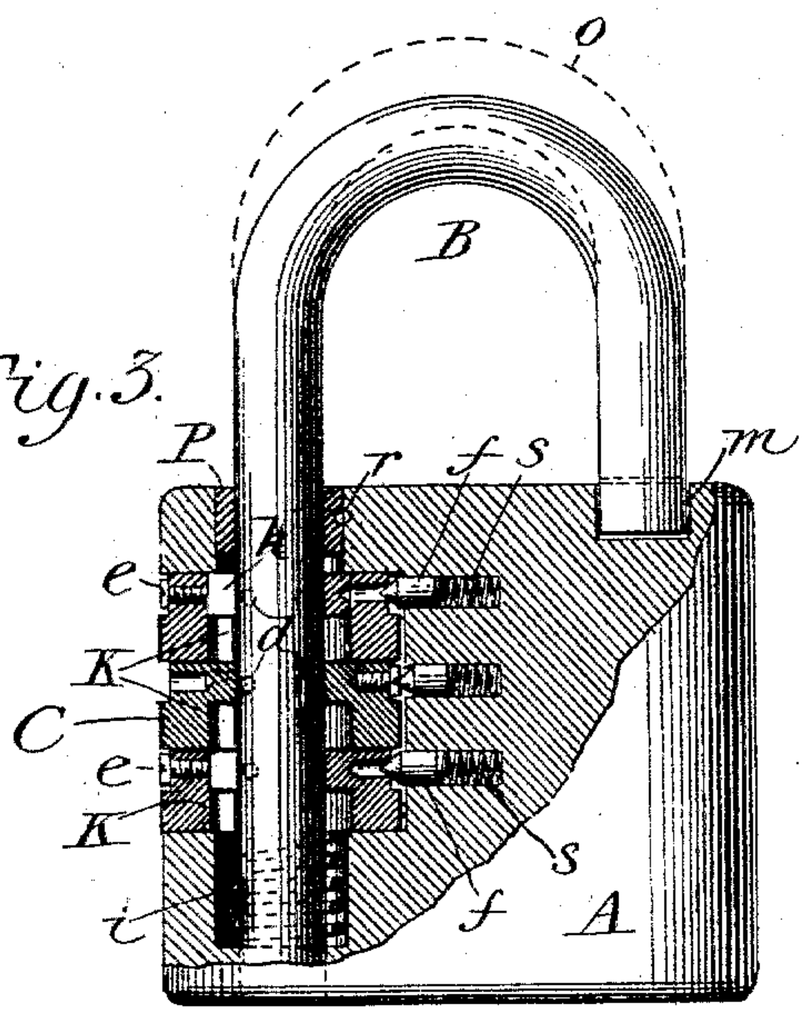


Fig. 4.

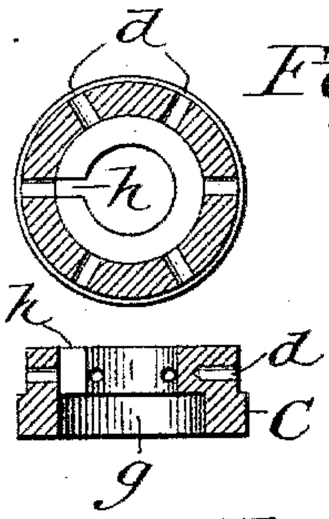
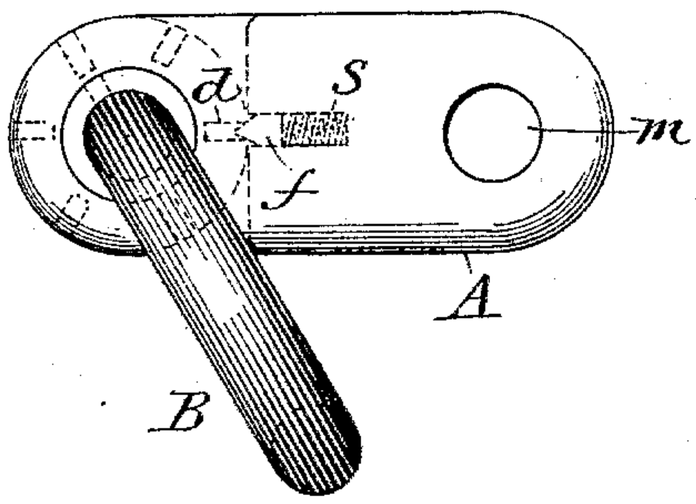


Fig. 5.



Witnesses:
Sandford Duncan
W. V. Wilson

Inventor:
Phineas W Lownes

UNITED STATES PATENT OFFICE.

PHINEAS W. LOWNES, OF HUNTSVILLE, ALABAMA.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 589,844, dated September 14, 1897.

Application filed October 19, 1896. Serial No. 609,373. (No model.)

To all whom it may concern:

Be it known that I, PHINEAS W. LOWNES, a citizen of the United States, residing at Huntsville, in the county of Madison and State of Alabama, have invented a new and useful Improvement in Permutation-Locks, of which the following, with the accompanying drawings, is a specification.

My invention relates to improvements in permutation or combination locks whereby a lock the mechanism of which is composed of visible tumblers revolving on a spindle may be operated entirely by the sense of feeling, doing away with the necessity of a light or of a figured or lettered dial. This system in the present instance and drawings I have applied to a padlock; but it may equally well be applied to various other styles of locks without any change in the substantial part of the invention. I attain these objects by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a view of a padlock embodying my invention. Fig. 2 is a view of the bar or shackle withdrawn and a section of the same. Fig. 3 is a view of the lock with a portion cut away, showing the mechanism in section. Fig. 4 shows vertical and transverse sections of one of the tumblers. Fig. 5 shows a top view of the lock with the shackle partly withdrawn and turned to one side, as when unlocked.

Similar letters refer to similar parts throughout the several views.

This lock consists of a body A, on one side of which and forming a part of it there is a recess for holding the tumblers C C C through the body of the lock A, and through and across this recess is a hole through which passes the shaft or shank of the shackle B, which has on one side short ribs or blades *k k k*, Fig. 2, corresponding in number and position with the tumblers C C C—that is, when the shaft is in its position in the lock one of the ribs comes in the center of each tumbler, the length of each of these ribs being the same as half the thickness of the tumbler within which it works. In the recess in the body and strung loosely on this shackle-shank are the tumblers C C C, each tumbler being bored out the size of the shank B and counterbored at *g*, Fig. 4, a distance corresponding to the length of the rib *k*. Through the remaining part of the thickness of the tumbler—that is, from the bottom of the counterbore to the other side—is cut a slot or keyseat *h*, Fig. 4, of proper size for the ribs *k k k* to pass freely through. Radially around the outside of each tumbler are drilled at equal distances holes *d d d*, &c., Fig. 4. In the body A, right behind each tumbler and opposite to the row of holes therein, is a small spring-plunger *f f f*, Fig. 3, the end of which is tapered, so that it will catch in each of these holes as they come in front of it.

The operation of the lock is this: When the lock is closed and the shackle is down to place, each rib *k* is in the counterbore *g*, Fig. 4, of its corresponding tumbler, which is large enough to let the tumbler revolve freely around the rib *k*. When, however, the tumblers are turned around so that the slots *h*, Fig. 4, are over and in line with the ribs *k k k* the shackle may be drawn out and swung to one side, as in Fig. 5, and the lock may be opened, but it is obvious that until these slots are in line it cannot be moved. Into one of the holes in the edge of each of the tumblers is a plug or screw, the head of which comes out just far enough to strike against plungers *f f f* and act as a stop. Now these holes *d d d* and the slots *h* and the plungers *f f f* being all placed with reference to the position of the ribs *k k k* it will be seen that at some point in the revolution of the tumbler C, as the plunger *f* strikes into one of the holes *d*, the slot *h* will be opposite to and in line with rib *k*, and the plug *e* having been turned back against the plunger *f* as a starting-point and the number of intervening holes being known it is very easy to count them by feeling or by hearing as the plunger strikes into them successively in being turned around, thus enabling any one knowing the combination to open the lock, even though in the dark.

In the drawings, Fig. 3, P is a bushing to prevent the shackle from being completely withdrawn, and *i* is a spiral spring to force the shackle up when the tumblers come into line. The combination may be changed at will by changing the position of the plug *e* from one hole to another.

I claim—

1. In a permutation-lock, the combination

with a series of visible revolving tumblers having a system of holes, or notches arranged at equal distances around the outer edge, and in one hole of each of said tumblers having a plug or screw, to act as a stop or guide, of a series of plungers, arranged to drop into said notches or holes as they pass successively under said plungers, the whole forming a provision whereby the location of the slot in the inside of the tumbler may be arranged by the sense of feeling or hearing; all for the purpose and substantially as set forth.

2. A permutation-lock, consisting of a body with a recess in one side thereof, a shackle fitted with ribs, passing through said recess, of a system of counterbored and slotted tumblers fitted to revolve thereon and to be operated in conjunction with said ribs on said shackle, of a series of holes or notches located circumferentially around said tumblers, and plungers located in the body and arranged to work in said notches or holes; forming thereby a provision for the opening and closing of the lock without the use of dials or figures, but by the sense of feeling, or by hearing the plungers as they engage in the holes or notches, all substantially as set forth.

PHINEAS W. LOWNES. [L. S.]

Witnesses:
LAWTON W. WHITE,
JNO. S. REED.