

J. L. Hall,
Permutation Padlock.
No 81,630. Patented Sep. 1, 1868.

Fig: 1.

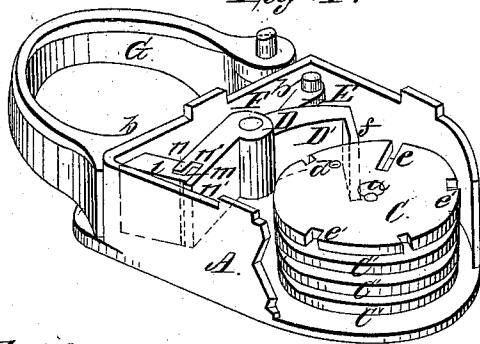


Fig: 2.

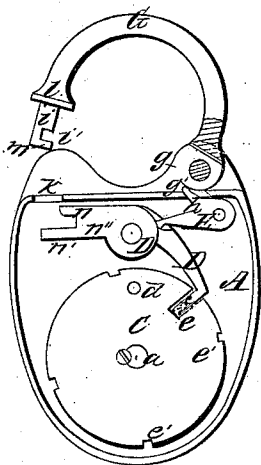


Fig: 3.

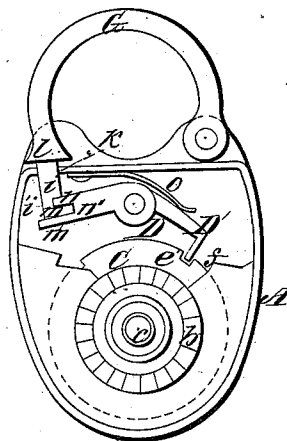
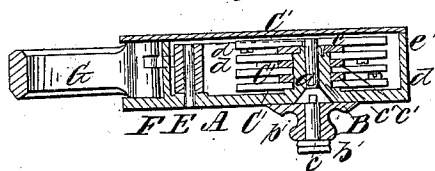


Fig: 5.



Fig: 4.



Witnesses:
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JOSEPH L. HALL, OF CINCINNATI, OHIO.

Letters Patent No. 81,630, dated September 1, 1868.

IMPROVEMENT IN COMBINATION-PADLOCKS.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOSEPH L. HALL, of Cincinnati, in the county of Hamilton, and State of Ohio, have invented a new and useful Improvement in Combination-Padlocks, of which the following is a full and clear description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to combination no-key-hole padlocks; and consists in a novel construction and combination of a series of rotating tumblers and rocking lock-bolt, arranged to be operated by the hasp of the lock.

In the drawings—

Figure 1 is a perspective view, with one of the plates of the casing removed.

Figure 2 is a plan of the same, showing the lock opened.

Figure 3 is a plan view, with a part of one of the plates of the casing removed, showing the lock closed, and the index and dial-plates.

Figure 4 is a view of a longitudinal section, taken through the hub and the axis of the rocking lock-bolt, and

Figure 5 is a perspective view of a part detached.

I construct my combination no-key-hole padlock in the usual form, and provide the front plate of the casing, A, with the cylindrical hub, B, projecting inwardly, as shown in fig. 4.

In this hub, B, I insert a spindle, *a*, having a conical head, *p*, which I countersink in the casing A, and to it attach, on the outside of the casing, an index-plate, *b*, by a thumb-screw, *c''*, which passes through the axis of the index-plate *b*, and taps into the head *p* of the spindle *a*, which is flush with the outer face of the lock, as clearly shown in fig. 4.

Around the index-plate *b*, I make a dial on the face of the casing A, so that the revolutions of the index-plate may be counted.

On the inner end of the spindle *a*, which projects far enough beyond the end of the hub B for that purpose, I firmly secure the circular guard-tumbler C, and under it, and on the hub B, so as to move freely about it, I place a series of similar-shaped tumblers, C', with a series of washers, *c c'*, interposed between them, and rigidly attached to the hub B.

Each of these tumblers I provide with a pin, *d*, so that when the guard-tumbler C is revolved by the spindle *a*, its pin, *d*, will come in contact or engage with the pin in the tumbler next under it, and so on through the whole series, as shown in fig. 4.

These tumblers I also provide with a deep recess, termed a gating, *e*, of exactly the same form and shape as shown in figs. 1 and 2, so that, when in line, they may admit the dog *f*, for the purpose hereinafter explained.

The guard-tumbler C, I make a little larger in size than the others, and provide its edge with any number of shallower recesses, *e'*, called "false gatings," as shown in figs. 1 and 2.

Also, within the casing, and between the tumblers and its upper edge-plate, I pivot a rocking lock-bolt, D, shaped as shown in figs. 1, 2, and 3, and having one arm, D', provided with a dog, *f*, made of the requisite size and form, and turned in the proper direction to easily enter the gatings in the tumblers, when the same are in line.

The opposite end of the rocking lock-bolt D, I provide with a mouth, *n''*, having a short upper jaw, *n*, curved on its under outer end, and a long under jaw, *n'*, projecting beyond it, as clearly shown in figs. 2 and 3, and made of the requisite length to permit the jaws *n n'* to come directly under the hole *k*, through which the shank *i* of the hasp G enters, as shown in the same figures.

The fore end of the hasp G, I provide with a shank, *i*, of the proper size to enter easily the hole *k* in the casing, and also with a collar, *l*, to limit the depth to which it may enter.

The shank *i*, I provide with a recess, *i'*, on its inner face, from its lower side, with the lip *m*, which also forms the end of the shank, and extends a little inwardly, and has its upper outer end rounded, as shown in fig. 2.

The opposite end of the hasp G, which is hinged to the casing, I provide with an eccentric, F, shaped as clearly shown in fig. 5, by pivoting it in the eye of the hasp and on the pin of its hinge, as shown in fig. 2.

This eccentric F may be rigidly attached to the eye of the hasp, or form a part of it, as it is arranged to turn with it. On its front face it is provided with a lip, *g*, which forms part of the recess *g'*, as shown in figs. 2 and 5.

Within the casing, and under the eye of the hasp, I pivot a trip, E, shaped as shown in fig. 2, with a short arm, *h*, to enter into the recess *g'* of the eccentric, F, when the hasp is down, and in thus entering, to relieve the bearing of its long arm on the arm D' of the rocking lock-bolt D, and when the hasp is raised up, so that the pressure of the projecting part of the eccentric on the short arm *h* may cause the long arm of the trip E to press upon the arm D' of the rocking lock-bolt D, and hold its dog, *f*, in the gatings, *e*, of the tumblers, as shown in fig. 2.

It is obvious this same result may be accomplished in various ways by springs, one of which is shown in fig. 3, by the spring *o*. I prefer, however, to use an eccentric, F, and trip, E, as described.

Under the index-plate *b*, I attach a pin, *r*, which fits into a corresponding recess in the head of the spindle *a*, and thus connects the index-plate with the spindle, so that they must turn together when the thumb-screw *c'* is in its place, as shown in fig. 4.

The index-plate *b*, I provide with divisions, near its outer edge, as shown in fig. 3, and number them as on a dial. These divisions, as they pass any fixed point on the face of the casing, will enable me to count the revolutions, or parts of revolutions, made in turning the index-plate either way, to set the tumblers in order, that their gatings may be in line, to allow the entrance of the dog *f* of the rocking lock-bolt D.

This done, I find out the combination of movements necessary to be made by noting the movements of the index-plate, in order to open the lock.

By making other recesses in the head of the spindle *a* for the pin *r*, on the under face of the dial-plate to fit into, it is obvious that the revolutions of the index-plate would have to be different in order to open the lock, and thus I would have a new combination.

In this way, I can have one or more combinations for opening the same lock, no one of which can be used without a knowledge of it, and so that a knowledge of one will be no clew to the others.

This arrangement, I think, would be of especial service in the express and mail-service of the country.

In operating my lock, I first, before it is put together, take a register of its combinations for reference. Supposing the lock to be open, as shown in fig. 2, then the gateways in the tumblers are in line, and the dog *f* of the rocking lock-bolt is in them, and is held there by the eccentric, F, pressing upon the trip E, which bears upon the arm D', as shown in the same figure.

To close the lock, I simply press down the fore end of the hasp G. The shank *i* enters the hole *k*, in the casing, the lip *m* slips over the jaw *n*, and enters the mouth, *n''*, of the rocking lock-bolt D, and locks with it, and, at the same time, the end of the shank *i* bears against the jaw *n*, pressing it down till the shoulder *l* of the shank *i* strikes against the casing about the hole *k*, thus limiting the movement of the hasp, and consequently that of the rocking lock-bolt D, against which its shank, *i*, presses.

As the hasp G is thus pressed down, the eccentric F is turned with it, and the arm *h* of the trip E enters the recess *g'* of the eccentric, and relieves the other end of the trip from pressing or bearing upon the arm D' of the rocking lock-bolt D, and, at the same time, the rocking lock-bolt D is tilted sufficiently to remove its dog, *f*, from the gateways *e* of the tumblers.

When this is done, it is only necessary to turn the thumb-screw *c* and break up the combination, when the lock is fast.

To open the lock, you set the tumblers by turning the thumb-screw and index-plate *b*, which are connected with the spindle *a*, as shown by your register, so that their gateways, *e*, will be in line and immediately opposite the end of the dog *f*, then pull upon the hasp G, when the rocking lock-bolt D will turn on its pivot, releasing the hasp at one end, and entering its dog *f*, in the gateways of the tumblers, at the other, in which it will be held by the trip E until removed by fastening the lock again.

The object of the false gatings *e'* is to mislead and deceive parties attempting to operate the lock without a knowledge of the combination.

Having thus described my invention, what I claim is—

1. The combination of a series of rotating tumblers with a rocking lock-bolt, operated by the hasp only, and enclosed in a case having no key-hole, substantially as described.
2. The combination of a series of rotating tumblers, C', the rocking lock-bolt D, and the tripping-lever E, or its equivalent, all constructed and arranged to operate substantially as described.

Witnesses:

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