J. MEYER.

PERMUTATION LOCK.

No. 183,504. Patented Oct. 24, 1876.

Fig. 1

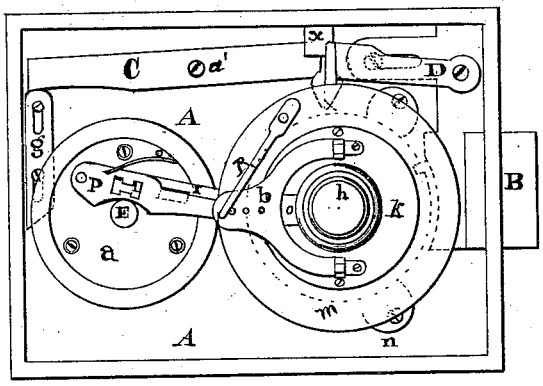


Fig. 2

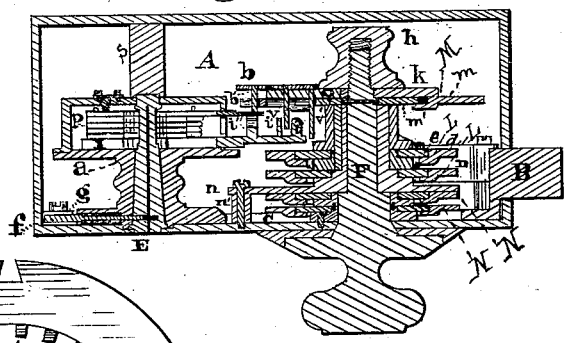


Fig. 4

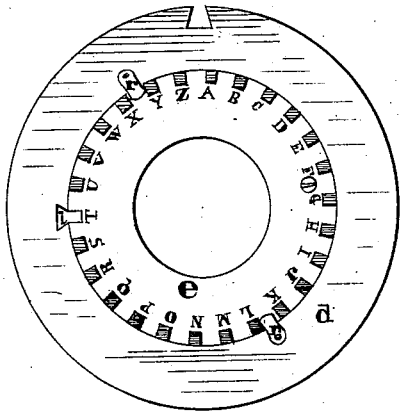


Fig. 3

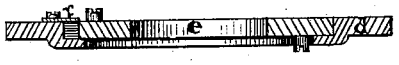
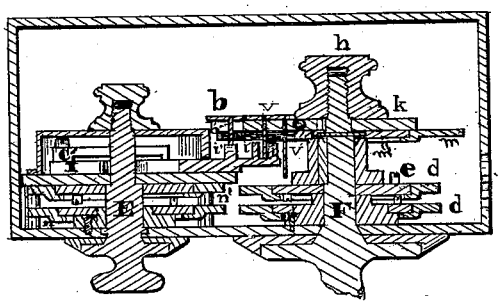


Fig. 5



Attest
James Moore
E. L. Grafton.

Inventor
John Meyer
By Lyo. J. Murray
his Atty

UNITED STATES PATENT OFFICE.

JOHN MEYER, OF COVINGTON, KENTUCKY.

IMPROVEMENT IN PERMUTATION-LOCKS.

Specification forming part of Letters Patent No. **183,504**, dated October 24, 1876; application filed November 24, 1875.

To all whom it may concern:

Be it known that I, JOHN MEYER, of Covington, in the county of Kenton and State of Kentucky, have invented a new and useful Improvement in Permutation-Locks, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of this invention is to disconnect the tumblers of a combination-lock from the spindle by which they are operated, so as to relieve them from all strain, and prevent the possibility of "feeling" for the slots.

The invention consists in providing a secondary lock, to be operated by a key, or the common dial-knob, to act upon a slide in the driving-wheel of the main lock, for the purpose of coupling or uncoupling the spindle and tumblers of the main lock, and in the peculiar construction of the driving-wheel which adapts it to this use.

In the annexed drawing, Figure 1 is a plan view of the lock, the back of the plate and cap that covers the secondary lock being removed. Fig. 2 is a horizontal section taken through the center of the spindle, and looking toward the top of the lock. Fig. 3 is a plan view of one of the tumblers. Fig. 4 is an axial section of the same. Fig. 5 is a similar view to Fig. 2, and shows the mode of constructing the lock when the secondary lock is a combination-lock instead of a key-lock.

A is the outer case; B, the bolt, and D the dog, pivoted to the bolt and controlled by the tumblers of the main lock, a stud, *x*, being formed on or secured to the case to prevent endwise movement of the dog D, except by the tumblers. L L refer to the tumblers of the main lock, mounted to turn loosely on a stationary collar on the spindle F thereof. Each tumbler consists of an outer ring, *d*, and an inner ring, *e*. The inner ring is notched upon its periphery, and the notches are lettered or numbered to correspond with the dial-plate on the outside of the lock-case. These rings of the tumblers are connected together by a dovetailed pin, *l*, and the inner ring rests upon an offset formed on the outer ring, a button, *r*, being used to prevent the vertical displacement of the inner ring.

To change the tumbler, the button *r* is turned, the inner ring lifted out and shifted, so that the pin *l* will enter the notch opposite the desired letter.

These tumblers L of the main lock are operated through the medium of the driving-wheel M, composed, primarily, of an outer ring, *m*, and a disk, *m'*, notched around its periphery. The disk *m'* is keyed to the spindle F of the main lock. A cap, *k*, is secured on the upper surface of the ring *m*, holding the disk *m'* in position. This cap is slotted to receive the slide *o*, having two pins, V V', which project through a slot in the ring *m* of the driving-wheel. The pin V is engaged between the projections *i i'* of the bolt I of the secondary lock. That portion of the slide *o* which enters the slot in the ring *m* is adapted also to enter any one of the notches in the disk *m'*, for the purpose of coupling the ring *m* to said disk, which is accomplished by the proper movement of the bolt I of the secondary lock. When the slide *o* has thus coupled the ring *m* to the disk *m'* of the driving-wheel, its pin V' will be in position to act upon the upwardly-projecting stud on the next adjacent tumbler L of the main lock, so that all the tumblers L may then be set by the driving-wheel by properly manipulating or turning the main spindle F.

The pin V passes through the slide *o*, so that it may be engaged by one or the other of two holes in a pivoted catch, *b*. A pin, *b'*, is fixed in the outer end of the pivoted catch, projecting through a slot in the ring *m* of the driving-wheel, and resting upon a beveled projection, *i''*, of the bolt I of the secondary lock. The purpose of this catch, which is pressed down by a spring, P, is to lock the slide *o* in either position.

The secondary lock (illustrated in Figs. 1 and 2) is a key-lock, composed of a series of lever-tumblers, P, fitted to turn upon a pin projecting from the standard *a* above the bolt I, and inclosed in a suitable case within the main-lock case, so as to guard the action of the key on the bolt I. These tumblers are set, in the usual way, by a key passing into the lock through a slot or key-hole in the spindle E, to permit the key to shoot the bolt I, for the purpose of coupling or uncoupling the ring *m* and disk *m'* of the driving-wheel by

the slide *o*. The outer lever-tumbler P of the secondary lock is elongated, to pass out of its case under the pin *b'*, for the purpose of lifting it when the bolt I is to be moved. The outer end of this lever-tumbler P is held, by a spring, down onto the beveled projection *i''* of the bolt I, so that in moving said tumbler by the key it will ride up on the projection, and thus lift the pivoted catch, as described. The spindle E may be protected by a stud, *s*, secured to the back plate of the case. The key-hole of this secondary lock is guarded by a plate, *f*, actuated by a spring, the tendency of which is to withdraw it, so as to expose the key-hole for the introduction of the key. This guard is pushed across the key-hole by the beveled end of the slide *g*, which is controlled by a lever, C, which is pivoted to the case at *a'*, and has a dog at the other end, resting on the tumblers N on the spindle F of the main lock. These tumblers are constructed, preferably, like the tumblers L; but one of them is fixed on the spindle F, so that by it the other may be set, if two only are used, as shown in this instance. The tumblers L and the tumblers N are separated by a bridge-plate, *n*, supported on standards *n'*. When the dog of lever C rests on the periphery of tumblers N the spring-guard *f* will be held across the key-hole of the secondary lock; but when the dog drops into the notches of these tumblers N, the guard will be drawn back by its spring to expose the key-hole. The secondary lock (shown in Fig. 5) is a combination-lock. In this case the bolt I thereof is operated by a dog, C', pivoted to the bolt, and adapted to engage the notches in the tumblers. The bolt I is supported and slides on the bridge-plate covering the tumblers. The catch *b*, for locking the slide *o*, will be lifted, in this case, by the beveled projection *i''* on bolt I.

The arrangement of the tumblers and their washers or collars upon the arbors of the main lock and the secondary lock (when a combination-lock) and the construction of the arbors are the same as in combination-locks of this class now in use.

When the tumblers N are used for controlling the key-hole guard of the secondary lock, the driving-tumbler thereof and the driving-wheel of the main-lock tumblers must be set to the same letter, so that when the key-hole of the secondary lock is exposed the slide *o* will be in line with the studs *i* and *i'* upon the bolt I of the secondary lock.

It is evident that the driving-wheel of the main lock may be either above or below the other tumblers thereof; but, as the combination of the driven tumblers is governed by the driving-tumbler, it is necessary that the disk *m* of the latter should be brought to the proper position before the bolt I of the secondary lock is moved for either coupling or uncoupling the tumblers, in order to avoid changing the combination in the one case, and to secure the action of the projections of bolt I upon the slide *o* in the other.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The bolt I of the secondary lock, having the projections *i i' i''*, in combination with the driving-wheel of the main lock, provided with the slide *o*, having pins V V', whereby the driving-wheel is connected with, and disconnected from, the tumblers of the main lock, substantially as described.

2. The driving-wheel composed of an inner disk, *m'*, and an outer ring, *m*, in combination with cap *k*, catch *b*, and slide *o*, with its pins V and V', the parts being constructed to operate substantially as specified.

JOHN MEYER.

Witnesses:
GEO. J. MURRAY,
JAMES MOORE.