O. E. PILLARD.

Improvement in Permutation-Locks.

No. 114,706. Patented May 9, 1871.

Fig. 1.

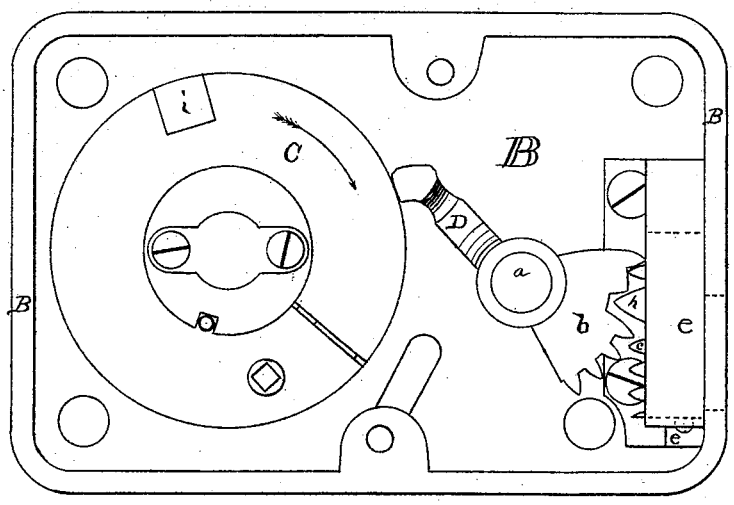
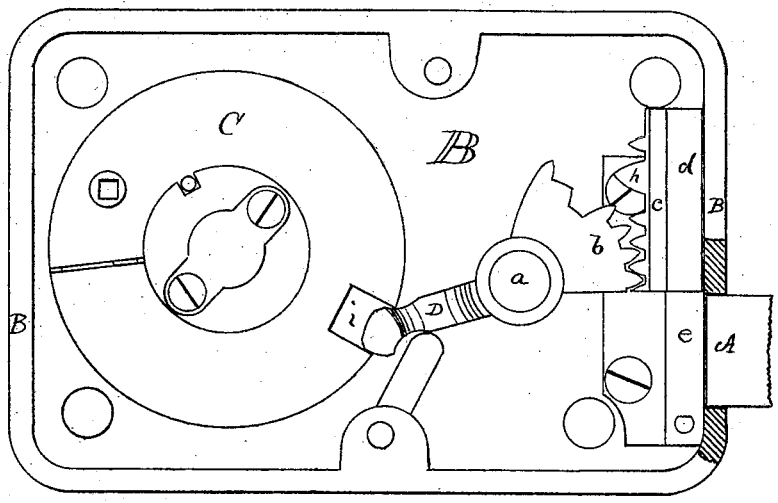


Fig. 2.



Witnesses.

C. A. Shepard

Nellie Shepard

Inventor.

Oliver E. Pillard

By James Shepard. Atty.

United States Patent Office.

OLIVER E. PILLARD, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO FREDERICK H. NORTH, OF SAME PLACE.

Letters Patent No. 114,706, dated May 9, 1871.

IMPROVEMENT IN PERMUTATION-LOCKS.

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

I, OLIVER E. PILLARD, of New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Locks, of which the following is a specification.

My invention consists in the combination of a set of permutation-tumblers with a dog, segment, rack, and slide for locking a bolt in place, as hereinafter described.

Also, in the employment of a large tooth in the said rack and combination, for the purpose of causing the dog to engage with the tumblers previous to any movement of the slide.

In the accompanying drawing—

Figures 1 and 2 are side elevations of a lock embodying my invention.

The usual cap or plate is removed in order to show the interior of the lock.

Fig. 1 shows the position of the parts when locked, and fig. 2, when unlocked. In the latter a portion is removed and the case represented as broken, to better show the other parts.

This invention relates to that class of locks which, instead of sliding or throwing a bolt, is designed to lock or fasten a bolt sliding in any proper guides outside of the lock-case.

The lock is secured immediately in front of the end of the ordinary sliding bolt which secures a door in place, so that, in order to unlock the door, the end of the ordinary bolt A (fig. 2) must slide into the lock-case B through an opening indicated by broken lines in fig. 1, and shown with the bolt A resting therein in fig. 2.

C designates a set of permutation-wheels or tumblers of the class known as friction-tumblers, but may be of any other class of the ordinary permutation-tumblers.

On one side of the tumblers C is a dog or lever, D, which oscillates on the stud *a* and is provided at one end with a segment-gear, *b*.

The segment-gear *b* meshes into the rack *c* on the slide *d*, fig. 2.

The said slide works up and down in the ways *e e*, so as to come directly in front of the opening in the case B, before described.

In the rack *c* I make a large tooth, *h*, and a corresponding large space in the segment-gear *b*, by which means I obtain more "back-lash," or play, when the slide is down, as in fig. 1, than can be obtained with uniform teeth, while, at the same time, when the slide is elevated so that the small teeth of the segment and rack *b c* engage, there is no more back-lash than in ordinary gear.

To unlock the lock the well-known tumblers C are rotated in the direction indicated by the dart in fig. 1, and when all the notches *i* of the several tumblers come directly in front of the dog D its weight will cause, (the end near the tumblers being the heaviest) and the back-lash will allow, the end of the dog D to enter the notches *i* previous to any movement of the slide *d*.

When the back-lash is all taken up the continued movement of the tumblers and dog throw the slide *d* away from the front of the opening and end of the bolt A, as shown in fig. 2, when the bolt can pass freely into the case B and allow the door to be thus unlocked.

Reverse the movement of the tumblers, and the slide is again thrown down, as shown in fig. 1, when, of course, the tumblers may be set or operated in the usual manner.

By the employment of the slide and ways the ways *e e*, which may be made very strong, receive all the pressure that may be exerted to throw the bolt A inward when locked, and therefore such pressure is entirely removed from the dog D and stud A, as well as the tumblers.

By the employment of the large tooth *h* the dog enters the notch sufficient to obtain a firm hold to operate the slide previous to any movement of the latter, and therefore, if the slide is bound in place by pressure or otherwise, it will not prevent the dog from properly engaging with the tumblers.

I claim as my invention—

1. The combination of a set of permutation-tumblers, C, dog, D, segment and rack *b c*, and slide *d*, all combined and operating together, substantially as described.

2. The combination of a set of permutation-tumblers, C, dog D, segment and rack *b c*, large tooth *h*, and slide *d*, all combined and operating together, substantially as described.

OLIVER E. PILLARD.

Witnesses:

JAMES SHEPARD,

H. C. BOWERS.