

GEORGE L. DAMON.

Improvement in Permutation Locks.

No. 115,445.

Patented May 30, 1871.

FIG. 1.

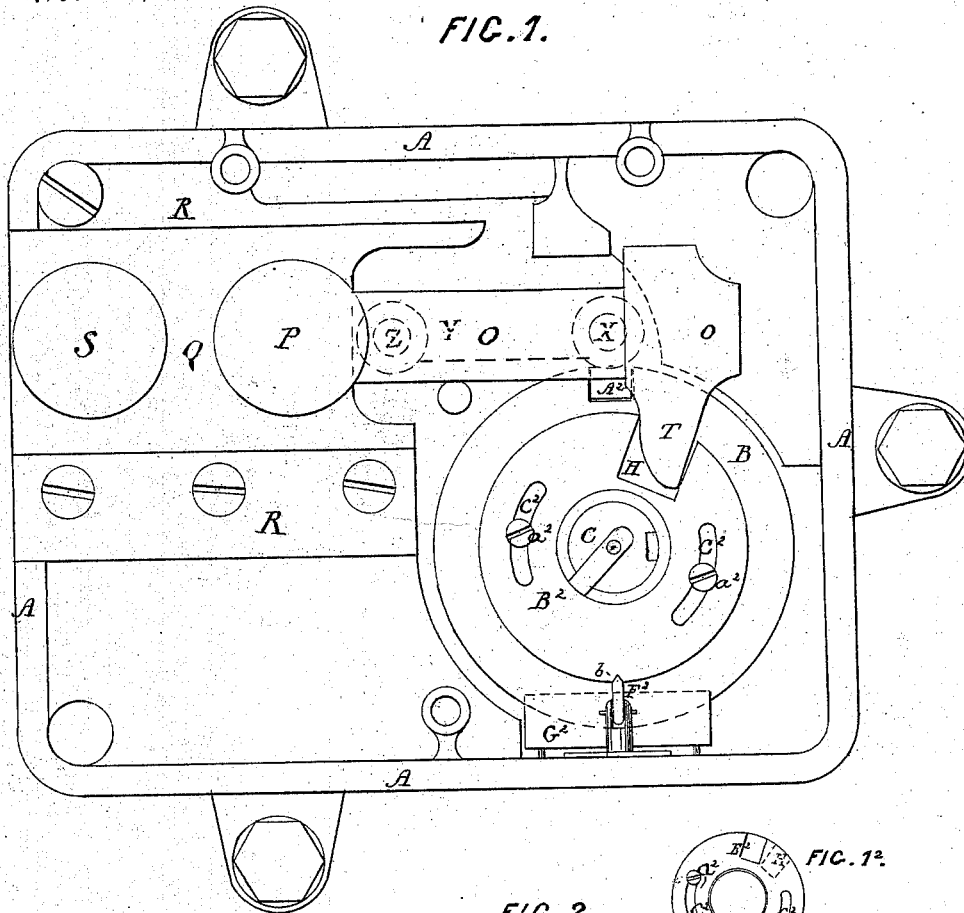
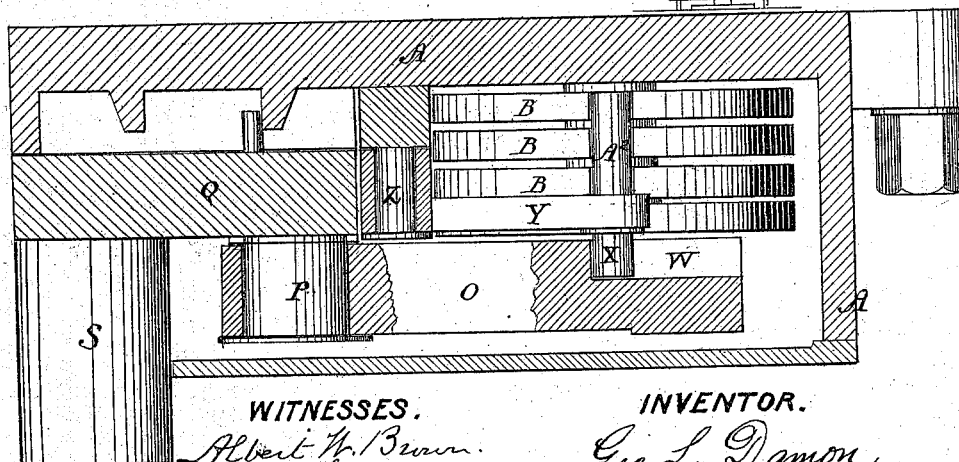
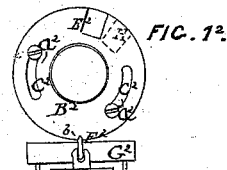


FIG. 2.



WITNESSES.

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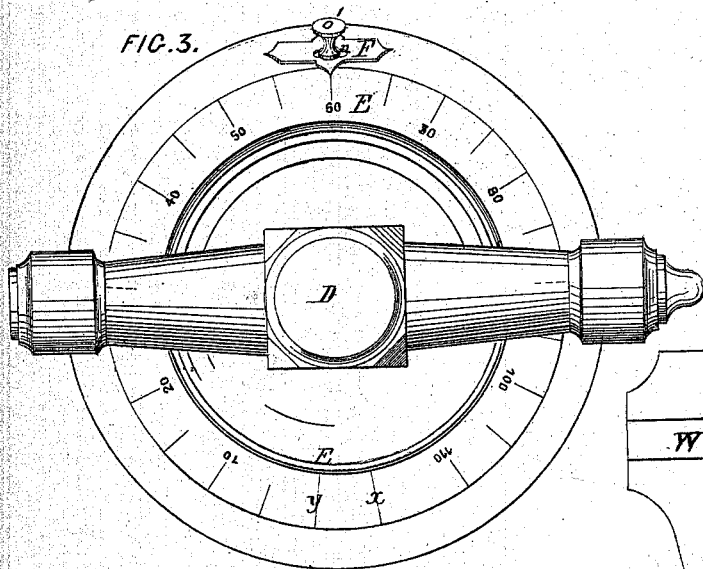


FIG. 4.

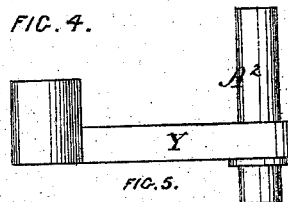


FIG. 5.

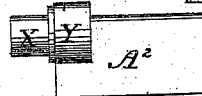


FIG. 6.

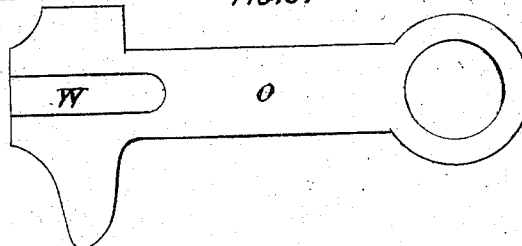


FIG. 7.



FIG. 8.

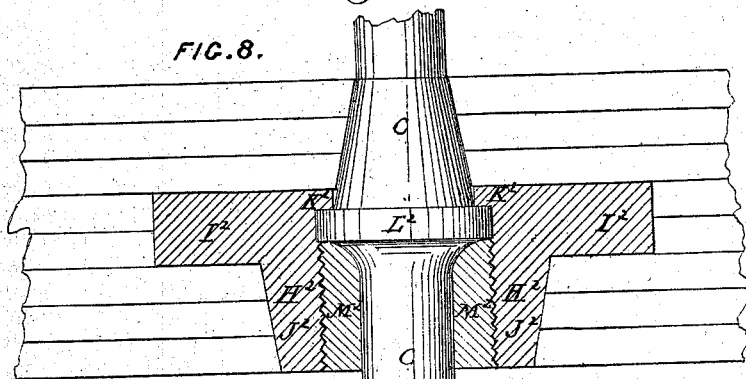
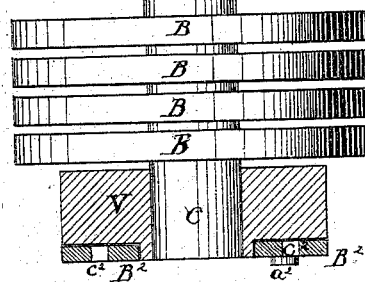
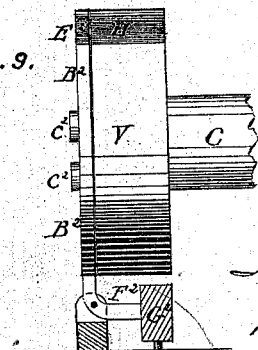


FIG. 9.



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UNITED STATES PATENT OFFICE.

GEORGE L. DAMON, OF CAMBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN PERMUTATION LOCKS.

Specification forming part of Letters Patent No. 115,445, dated May 30, 1871.

To all whom it may concern:

Be it known that I, GEORGE L. DAMON, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Locks; and that the following is a full and exact description of the same, reference being had to the accompanying drawing.

The present invention relates more particularly to that class of locks known as combination locks; and it consists, first, of parts arranged, as will be hereinafter described, between the spindle carrying the tumblers and the bolt of the lock, to allow both the tumblers to be operated and the bolts thrown by and through one handle or spindle; second, of a spindle for combination or other locks, or for throwing bolts of safe-doors, &c., that is constructed with a flange or rim, in combination with a bushing built within the door, &c., and constructed with a shoulder, against which the spindle-shoulder comes to a bearing, and with a female-screw thread, to receive a similar male-screw nut from the inside of safe-door, &c.; third, of an index-hand or pointer, constructed with an elongated slot, for a purpose to be hereinafter stated.

In the accompanying drawing my improvements in locks are illustrated. In Plate 1, Figure 1 is a view in elevation of the interior of a lock constructed according thereto. Fig. 1², a face view, in elevation and detail, of the loose and fixed disks of tumbler-spindle. Fig. 2, a horizontal section in a plane above that of the rotary tumblers. In Plate 2, Fig. 3 is a face view of the graduated dial and handle to tumbler-spindle. Figs. 4, 5, and 6, views in detail of the principal connecting parts between rotary tumblers and the door-bolts. Fig. 7, a view in detail of an index or pointer. Fig. 8, a horizontal section through thickness of safe-door, showing mode of securing tumbler-spindle therein, and also the arrangement of fixed and loose disks on tumbler-spindle. Fig. 9, edge view of loose and fixed disks on tumbler-spindle, with the spring-catch for retaining the loose disk at certain times in vertical section.

A, in the drawing, represents the inclosing-case or box for the locking devices. B, a series of rotary tumblers, arranged in the usual manner upon a common spindle or shaft, C, hav-

ing on one end a handle, D, for convenience in turning it, and a graduated dial or face, E, by and through which and an index-hand, F, the said tumblers are brought to their relative position required to secure the unlocking of the lock. O, a dog, hung at one end to a fulcrum, P, of a bolt, Q, arranged to slide between horizontal parallel dovetail guides R fixed within the lock-casing. The bolt Q is provided with a stud or head, S, to which the ordinary connecting-bar for door-bolts is fastened. This dog O extends over the plane of the rotary tumblers, and, by its projection or nose T, connection is made with the notch H of fixed disk V when said disk is in proper position therefor. The inside face of dog O, for a portion of its length, has a groove, W, receiving a stud or pin, X, of an arm, Y, arranged behind dog O, and hung on a fixed fulcrum, Z, of the lock-case. The arm Y is provided with a bar, A², extending at a right angle thereto over and across the series of rotary tumblers. The fence or bar A² of arm Y drops into the notches of the tumblers, when they are brought in a corresponding plane or line therewith. The dog O and arm Y, respectively, drop as if one into the notches of tumblers B and of fixed disk V; but when, through turning the fixed disk V to move the bolt Q, the dog O, interlocked with said fixed disk, moves along upon the arm Y, which remains stationary, the groove W and pin X connection permit the same. B², a circular disk, placed loosely upon the tumbler-spindle C, against the face of the fixed disk V. The loose disk B² is secured to the fixed disk V by concentric circular slots C² in conjunction with headed pins a². (See Figs. 1, 1², and 9.) This loose disk B² is provided with a notch, E², similar to the fixed disk V; and at a certain point of its periphery has a slight indentation, b, to receive the angular end of a vertical swinging lever-catch, F², pivoted to the lock-case and arranged in proper position to interlock with said indentation, and by a weight, G², or other means, to be so held with a yielding pressure. The diameter of the loose disk B² should be equal to that of the fixed disk V, but it may be greater; and in the operation of adjusting the rotary tumblers to a combination to open the locks the loose disk B², as shown in Fig. 1², Plate I, bridges over

the notch in fixed disk V, and forms a bearing for the dog to travel over as the fixed disk and tumblers are turned, holding the dog at bay—or, in other words, from giving the least indication to an outside person at any time of the position of the notch to fixed disk. But with the rotary tumblers set, by reversing the movement of the handle until a certain graduation of the dial-face, say X, is brought to the index F, and then reversing the movement of the handle again till the graduation, say y, is brought to the same index F, the notches of the fixed and loose disks will correspond and be in proper position to receive the dog O. The first reverse movement brings the notch of the loose disk to the proper place, where, by the interlocking of the weighted catch F², it is retained while the next movement reverse to the first stated is being made, which latter movement brings the notch of fixed disk opposite and to correspond with that of the loose disk, as before stated, completing, as is apparent, the setting of the tumblers and disks so that the throwing of the bolt, as before stated, can be accomplished.

The spindle C is secured in the door as follows: H², a bushing, constructed with a flange, I², by which, as the door is built of its several plates, it is firmly secured within the door between some of its layers or plates. The bushing, by its band or body J², extends to the inside face of door, and upon its internal periphery is made a female-screw thread, terminating at the inner end with a shoulder, K². The spindle C has a shoulder, L², which comes to a seat against the shoulder K² of bushing

H²; and within the bushing around the spindle is screwed an annular screw-nut, M², coming to a bearing against the shoulder of spindle C, securing the spindle in place. To force the spindle either in or out, obviously it is resisted in the one direction by the screw-nut, and in the other by the shoulder of the bushing and the plates of safe-door between it and the outside face of the door. The index or pointer F is constructed with one elongated slot, n, through which, with a screw-bolt, o', the pointer is secured in place for the graduated dial. As the pointer has an elongated slot it is obvious, by loosening the screw, it can be changed from its proper position, thus confusing outside operators on the lock.

Claims.

1. The lever O and arm Y, the lever O hung to a fixed point of the bolt Q and the arm Y to the case, and the two connected together through pin X and slot W for the lever O to move on the arm Y, and both constructed and arranged to interlock with the tumblers B and fixed disk V of spindle C, as described, for the purpose specified.

2. The bushing H², having a female-screw thread, a shoulder, K², and a flange, I², in combination with annular screw-nut M² and spindle C, as and for the purpose described.

3. An index or pointer, F, having an elongated slot, n, as and for the purpose described.

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Witnesses:

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