

(Model.)

G. M. HATHAWAY.

PERMUTATION LOCK.

No. 251,876.

Patented Jan. 3, 1882.

Fig. 1.

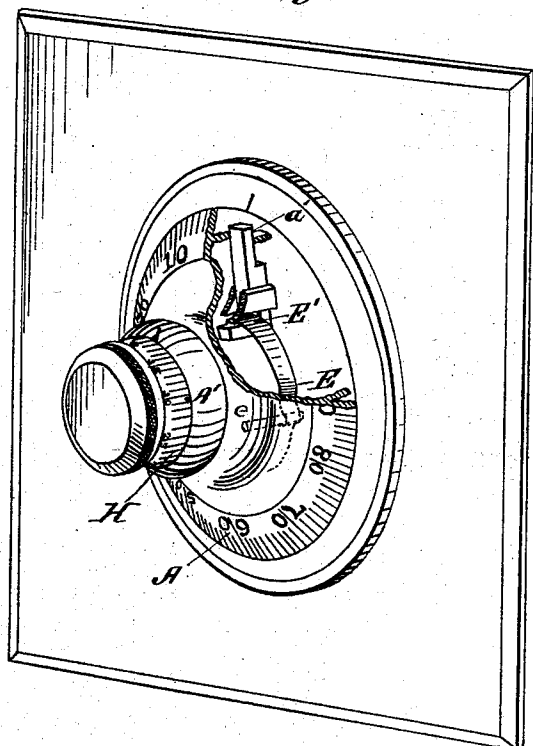


Fig. 2.

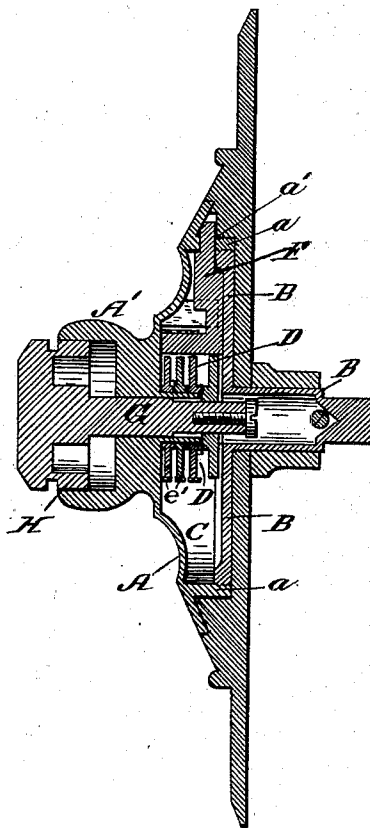


Fig. 3.

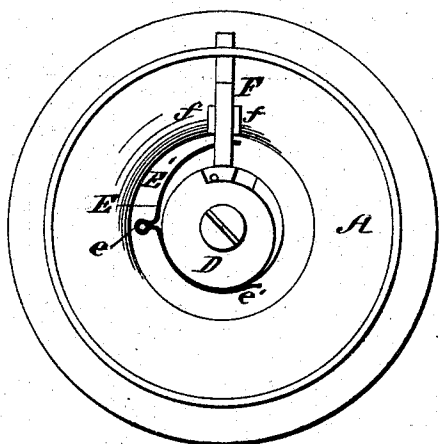
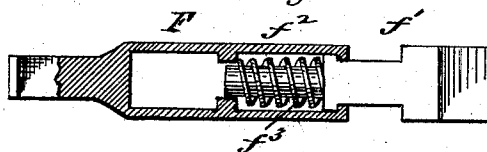


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

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PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 251,876, dated January 3, 1882.

Application filed July 1, 1881. (Model.)

To all whom it may concern:

Be it known that I, GEORGE M. HATHAWAY, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Permutation-Lock Dials; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to permutation-locks; and the novelty consists in the construction and arrangement of parts, as will be more fully hereinafter set forth, and specifically pointed out in the claims.

The object of the invention is not only to produce a practically safe permutation-lock, but also to lock the combination by an auxiliary combination and to secure the dial against manipulation by mischievous persons who may be desirous to work out by experiment the combination for future service. Experts in this art have demonstrated that nearly every permutation-lock may be opened if the operator has time and patience. Hence when a bank vault or safe is closed after business hours the burglar must learn the combination by the manipulation of the dial and put the combination "on" before business hours upon the following day—say in a space of twelve hours. In such case it is desirable that the manipulation of the dial-plate should be prevented, and an obvious way would be to lock the dial in its bearings against turning. This being the object in view, it is evidently desirable that the means for locking the dial should not be readily apparent, either to denote its use or invite conjecture, and that the means should be sufficiently complex to be difficult to avoid, the cost in this art always being subordinate to safety and convenience.

My invention consists in a dial-plate in the back or concave side of which is guided a slide-bolt or equivalent mechanism operated by a series of permutation-disks within the dial disk or frame. The knob operates the main spindle, and in a recess in the knob I conceal a smaller

dial having a short spindle, and by these means I manipulate the dial-bolt to lock the main combination "off." The safe being locked and the combination thrown off, the auxiliary lock is manipulated until the dial-bolt is received into a proper keeper and the dial locked fast. The auxiliary combination is then thrown off and the auxiliary dial forced in the knob, which then has the ordinary appearance, no indication being visible that the main dial and knob are not of the ordinary construction. In any event the work of the burglar is considerably more than doubled, as he must learn the construction, then work out the auxiliary combination, and then work out the main combination before he can succeed in opening the door. But with my construction I attain still greater and more advantageous results than merely duplicating the permutation mechanisms, and to a great extent modify the necessity of expensive and complicated time-locks. In a bank, for instance, the main combination may be given to one of the employes and the auxiliary combination to another. If by any circumstance either of the parties should prove unfaithful to his trust, the other party is a check against him; or if either of them should be overpowered and the combination be extorted from him, the burglar is but half successful, which, in this case, would be utter failure. It is obvious, also, that one party may have both combinations, that either lock may be left with the combination off in case of only temporary absence, and that a knowledge of both combinations is necessary to a ready admittance to the vault, whether in the possession of one or two individuals.

In the accompanying drawings, Figure 1 is a perspective view, partly in section; Fig. 2, a central vertical section; Fig. 3, a back plan view with the back plate removed; and Fig. 4, a modification of the bolt, by means of which the invention may be applicable to doors, &c.

Referring to the drawings, A represents the main dial, rigid with knob A', having a threaded flange, *a*, perforated at *a'*; and B, a spindle-plate having threaded periphery to operate in the flange *a*, and having permutation-connections with a main bolt and keeper, which are of ordinary construction, and therefore are not

shown in the drawings, by which the safe or other door is locked or unlocked at will by those who have the combination. The dial-disk A is concave upon its rear side, and between it and the spindle-plate B is an auxiliary lock-chamber, C, in which are located a series of permutation-disks, D, substantially similar to those exhibited in my former patents. To a stud, *e*, is secured a duplex spring, E, one arm of which is divided into fingers *e'*, one for each disk, and the other arm, *E'*, serves with a constant force to hold a slide-bolt, F, operating between guides *f* and through the aperture *a'* in the flange *a* in contact with the disks and into the slots or recesses when they register. The disks are held against turning upon an auxiliary spindle, G, having an auxiliary dial, H, which fits snugly in the knob A'. This spindle G and dial H may be pulled out of the knob and the disks be operated to control the bolt F at will.

The operation of the device is obvious from the foregoing description.

Modifications may be employed in details of construction without departing from the principle or affecting the advantages of the invention. For instance, as shown in Fig. 4, the slide-bolt F is in duplex form, one portion, *f'*, operating within the other portion, *f''*. The spring E forces the bolt in the disk-recesses and out of the keeper as soon as said recesses register; but if the auxiliary combination is off and the bolt is held outward by the disks the door may be readily closed without withdrawing the bolt F, the part *f'* of the bolt passing into the portion *f''* as the force of the spring *f''* is overcome.

I attach importance to the spring E, serving, as it does, with a constant force to withdraw the bolt from the keeper and to force it within the disk-recesses, thereby obviating the necessity of turning a knob or the like to retract the bolt from the keeper after the combination is thrown on. In other words the bolt is automatically withdrawn as soon as the combination is placed on by the action of this spring.

I deem it important to conceal the auxiliary locking means and to have the knob and dial present the appearance of an ordinary permutation-lock.

What I claim as new is—

1. In a permutation-lock, a concealed auxiliary permutation-lock within the main dial, and adapted to lock said main dial against manipulation, as and for the purposes set forth.

2. In a safe-lock, the combination of duplex dials, spindles, disks, and knobs, one concealed within the other and one adapted to lock the dial of the other when the combination is off, as specified.

3. The combination of the main dial A and knob A' and a main locking mechanism with the auxiliary locking mechanism, the bolt F, spindle G, and auxiliary knob and dial concealed within the knob A', and the duplex spring E, as specified.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE M. HATHAWAY.

Witnesses:

J. R. NOTTINGHAM,
C. S. DRURY.