

L. H. GANO.

Improvement in Permutation Locks.

No. 122,452.

Patented Jan. 2, 1872.

Fig. 1.

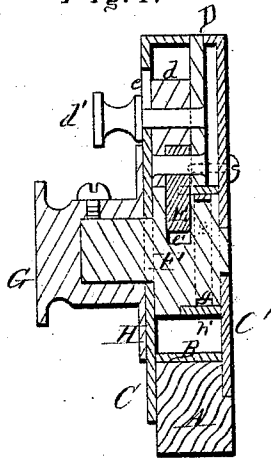


Fig. 2.

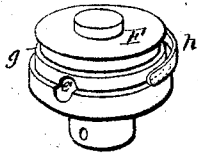


Fig. 3.

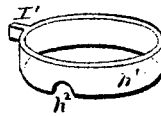
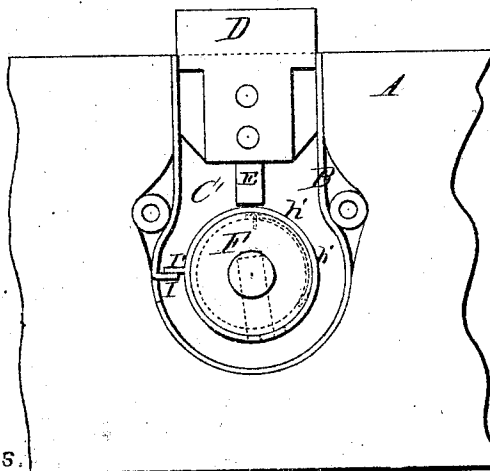


Fig. 4.



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Fig. 5.

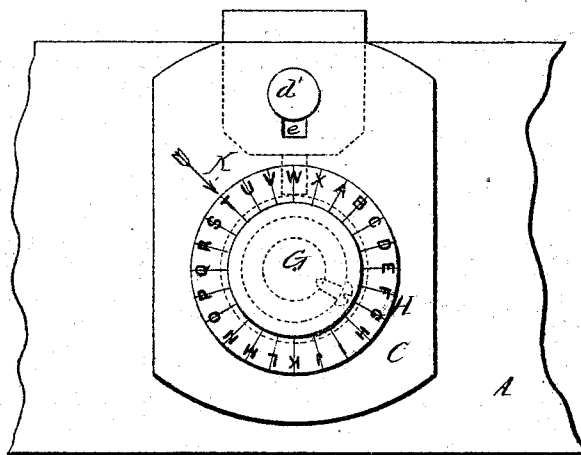
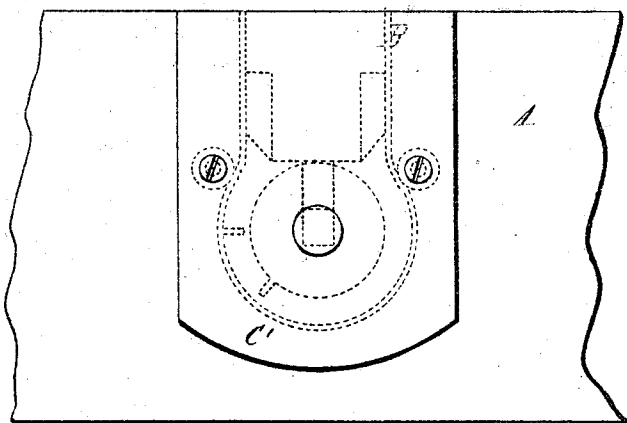


Fig. 6.



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UNITED STATES PATENT OFFICE.

LOUIS H. GANO, OF NEW YORK, N. Y.

IMPROVEMENT IN PERMUTATION LOCKS.

Specification forming part of Letters Patent No. 122,452, dated January 2, 1872.

To all whom it may concern:

Be it known that I, LOUIS H. GANO, of New York, in the county of New York and State of New York, have invented a new and valuable Improvement in Permutation Locks; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letter's and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a vertical section of my invention. Figs. 2 and 3 are detail views. Fig. 4 is an interior view of the lock. Fig. 5 is a face view, and Fig. 6 is a back view thereof.

This invention has relation to permutation locks; and it consists in the construction and novel arrangement of a chambered cylinder, notched and studded ring, studded case, reciprocating bolt, knob, and dial-plate, all as hereinafter described. The object of this invention is to provide a lock capable of various changes in the combinations and of such a nature that it cannot be opened except the combinations be first known and obtained, as hereinafter described.

This lock is designed to be applied to money-drawers, desks, safes, and to all other purposes for which a permutation lock may be advantageously used.

Referring to the accompanying drawing, A represents the till, lid, or other part to which the lock is attached, properly recessed to hold the case B, provided with the front and back plates C C', respectively. D designates the bolt, inclosed, as shown, within the case B. It is designed to have a reciprocating movement to lock and unlock it, and is projected through an opening in the edge of the case B to enter the bolt-socket. A shoulder or projection is formed on the bolt at *d* to prevent it from falling out of the case, and it is furnished with a knob, *d'*, the shank of which enters and moves along through a slot, *e*, cut in the front plate C of the case. From the inner end of the bolt a finger, E, projects, and fits a radial chamber, *e'*, formed in the cylinder F, which is journaled to and rotates within the case B. One of the spindles of the cylinder F protrudes through the face-plate C, and is furnished with a knob,

G, holding a dial-plate, H, on which are marked in regular order the letters of the alphabet from A to Z, forming a circular row near its edge. Around the periphery of the cylinder F a groove or channel, *g*, is formed, and in it is placed a spring, *h*, which exerts its force outwardly. A ring or collar of metal, marked *h'*, encircles the cylinder for about half its length, the latter being narrowed so that the surface of the ring and the exposed surface of the cylinder periphery will be flush and even. The ring *h'* is movable around the cylinder; but is kept in place when no stop is brought to bear on it by the force of the spring *h*, so that it will turn with the cylinder when the same is moved by the turning of the knob G. From one side of the case A a stud, I, projects a sufficient distance to nearly touch the ring *h'*, which is also provided with a stud, I'. These studs are arranged in such relation to each other as to come in contact when the cylinder F is turned around a sufficient distance. The chamber *e'* is cut partially in the wider and partially in the narrower part of the cylinder F, and hence may be one-half covered by the ring *h'*. But the ring *h'* has cut in its inner edge a semicircular recess, *h²*, which, when brought around to coincide with the chamber *e'*, produces an opening to let the bolt, projection, or finger E enter, allowing the bolt to be drawn back or unlocked. When the ring partially covers the chamber *e'* the withdrawing of the bolt is obstructed. Now, if the knob G is turned around a proper distance the projection I' on the ring *h'* will be brought into contact with the projection I, which will arrest the motion of the ring, and, supposing the recess in the ring and the chamber *e* to have coincided, will partially cover said chamber; hence the bolt, being out and locked, cannot be brought back until the chamber *e'* be again opened. In order to again open said chamber the knob G must be manipulated according to a system which is based on a preconcerted arrangement of parts. For instance, let the knob and disk be arranged in such relation to the cylinder F that in order to place the chamber *e'* on a line with the finger E the letter I on the disk must be opposite the arrow K marked on the plate C. Then let the ring be arranged so as to open the chamber. Now the bolt may

be drawn back or unlocked and then relocked. Again, let the bolt be pushed out and the knob turned around one or more revolutions; thus the chambers will be covered, as before described. The relative position of parts is such that in order to again adjust the lock for unlocking it the knob G must be turned in one direction until the letter T—the proper one to form the combination with I—reaches the arrow K. The motion is then reversed until I is brought before the arrow, after which the bolt may be unlocked. The knob and dial-plate may be adjusted independently of the cylinder F and ring *h'* so as to produce other combinations besides that of I and T—as, for instance, if the lock be manipulated until the bolt can be withdrawn, the letter I coinciding with the arrow K, and then, without moving the cylinder F, the dial and knob be turned until some other letter, as the letter A, be made to coincide with said arrow, and then made secure, obviously the letter combining with A must bear the same relation to it as T does to I, and so with the other letters. Hence it will be seen that by a proper variation in the relation of parts a great many changes may be produced in the combinations necessary to be known in order to have control of the locks.

By the use of the alphabet twenty-six different combinations may be produced in a single lock of surprising and remarkable simplicity. By the use of a larger or numerically-graduated disk a much larger number of combinations may be produced.

The plate C, it will be observed, overlaps the surface of the inner side of a door, the front of a money-drawer, or other article, and is to be secured in place after the lock is set in its appropriate recess.

I claim as my invention—

1. The permutation or changeable lock, having the chambered cylinder F, notched and studded ring *h'*, projection I, and bolt D, as and for the purpose specified.

2. In a permutation or changeable lock, the knob G or its equivalent and the dial H, in combination with the cylinder F, ring *h'*, and bolt D, substantially as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

LOUIS H. GANO.

Witnesses:

ASA JOHNSON,
WM. H. JOHNSON.

(93)