(Model.) 3 Sheets—Sheet 1.

R. D. GREEN.

PERMUTATION PADLOCK.

No. 305,686. Patented Sept. 23, 1884.

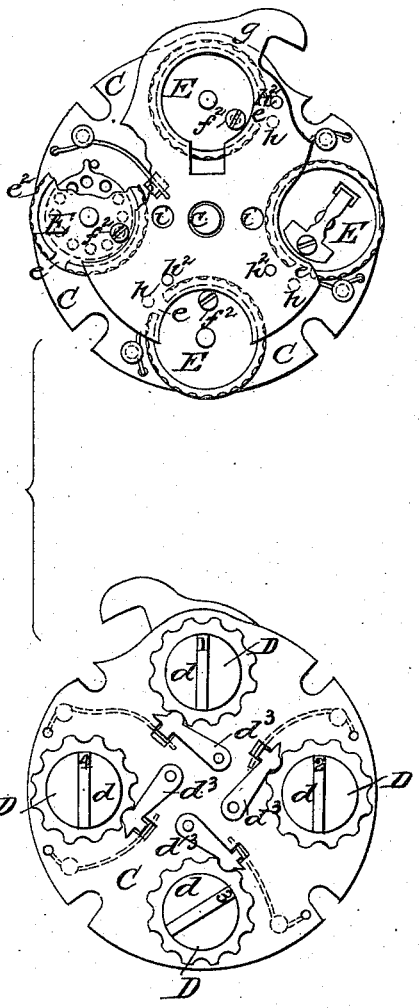

Fig. 1.

Witnesses:
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Jas L. Ewbank

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Robert D. Green by
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(Model.) 3 Sheets—Sheet 2.

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PERMUTATION PADLOCK.

No. 305,686. Patented Sept. 23, 1884.

Fig. 2.

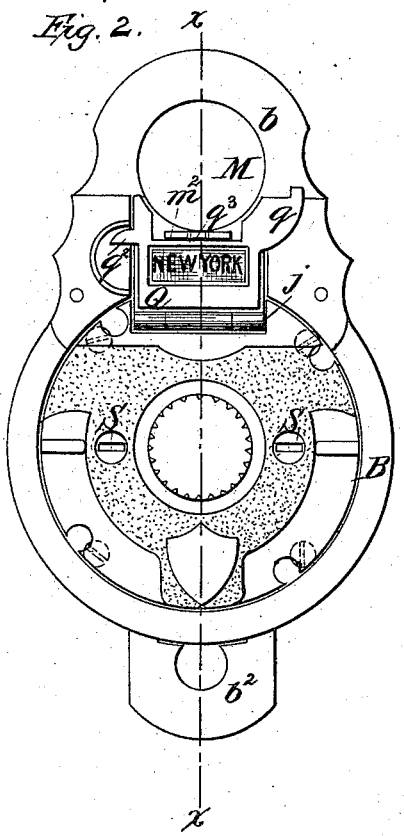


Fig. 3.

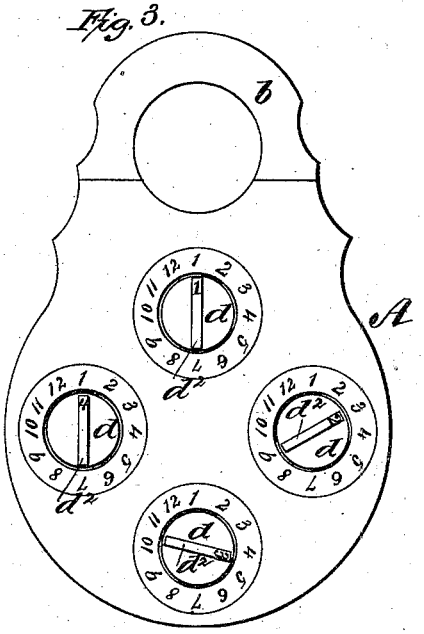


Fig. 6.

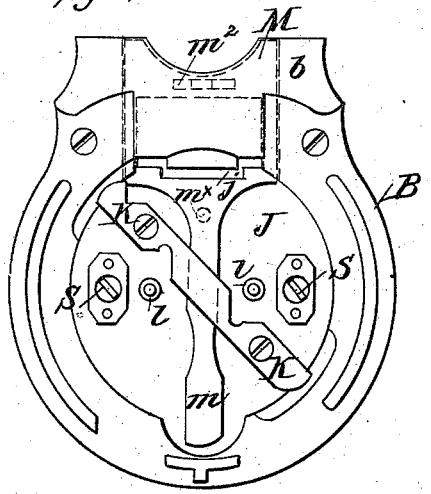
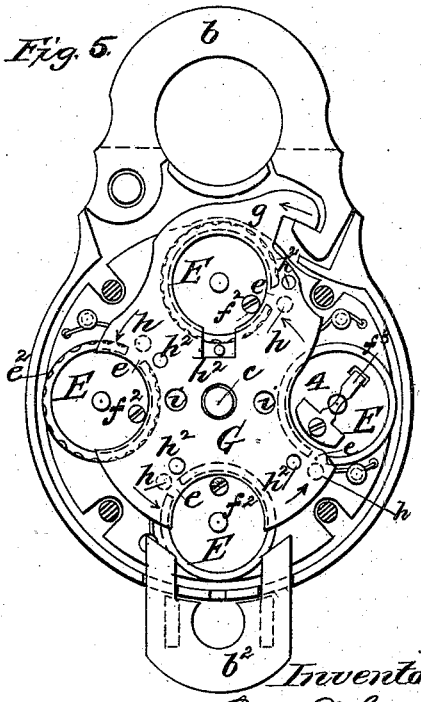


Fig. 5.



Witnesses:
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(Model.)

3 Sheets—Sheet 3.

R. D. GREEN.

PERMUTATION PADLOCK.

No. 305,686. Patented Sept. 23, 1884.

Fig. 4.

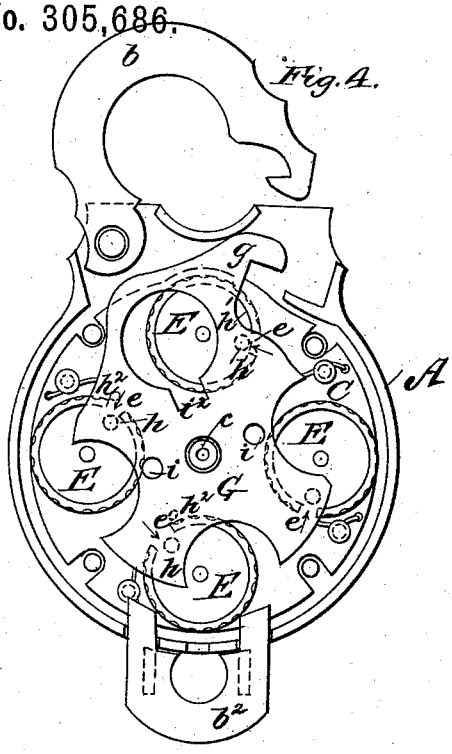


Fig. 7.

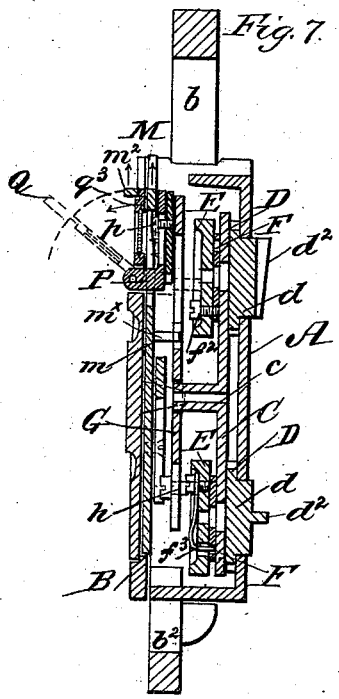


Fig. 8.

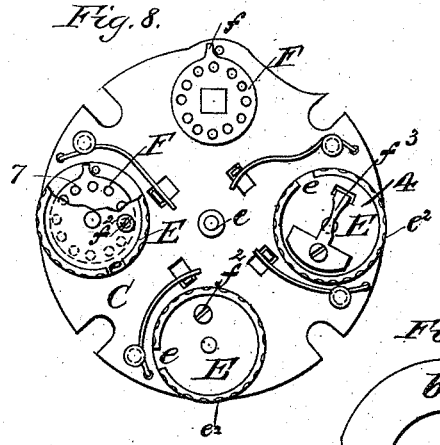


Fig. 9.

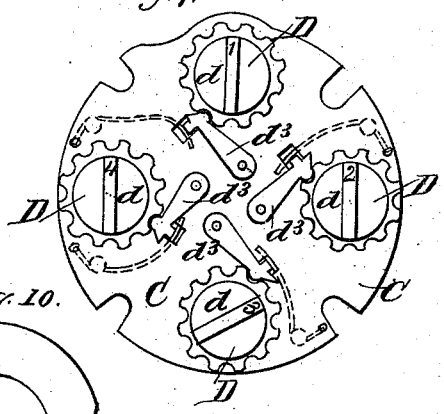
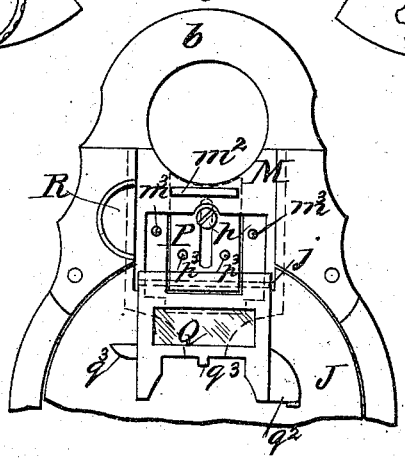


Fig. 10.



Witnesses:
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Inventor:
Robert D. Green by
Francis C. Bowen
Attorney.

UNITED STATES PATENT OFFICE.

ROBERT D. GREEN, OF COLUMBUS, MISSISSIPPI, ASSIGNOR OF ONE-HALF TO JULIA H. JORDAN, OF BROOKLYN, NEW YORK.

PERMUTATION-PADLOCK.

SPECIFICATION forming part of Letters Patent No. 305,686, dated September 23, 1884.

Application filed October 26, 1883. (Model.)

To all whom it may concern:

Be it known that I, ROBERT D. GREEN, a citizen of the United States, residing at Columbus, in the county of Lowndes and State of Mississippi, have invented certain new and useful Improvements in Permutation-Locks, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain improvements in permutation-locks similar to those for which Letters Patent No. 262,406 were granted to me under date of August 8, 1882.

The present invention is applicable not only to padlocks, but to locks for doors, desks, pianos, and various other articles, as well as to seal-locks, such as are used in the transportation of goods and merchandise by railway or otherwise.

The invention consists, essentially, in a novel construction, arrangement, and combination of the lock mechanism itself and of devices used in connection with said mechanism when applied to a seal-lock.

In the accompanying drawings, Figure 1 is a general view of the lock mechanism as applicable to a casing of any suitable description. Fig. 2 is a front view of a seal-lock with my improvement applied thereto. Fig. 3 is a back view of the same. Fig. 4 is a view showing the front plate removed and the parts unlocked. Fig. 5 is a similar view showing the parts locked. Fig. 6 is a view of the inner side of the front plate. Fig. 7 is a longitudinal vertical section taken in the line *x x* of Fig. 2. Figs. 8, 9, and 10 are detail views.

A represents the back plate of a casing or shell, provided with a peripherical rim, and B represents the front plate of said casing, which, when thus constructed, is provided with a bow or shackle, *b*, and a ring or staple, b^2, such as are usually employed in seal-locks.

C represents the main plate, which carries the lock mechanism, which plate may be of any suitable form, but is here shown as approximately circular. In this plate C, at four points about equidistant from each other, are four short shafts or points which extend on both sides of said plate. To one end of each point is attached a toothed wheel, D, on which is formed a boss or extension, *d*, concentric with the axis of said wheel and provided with a projecting rib or tongue, d^2, to serve as a thumb-piece, as hereinafter described. Each toothed wheel D is engaged by a spring-pawl, d^3, carried by the plate C. At the opposite end of each pivot is a circular plate or disk, E, having a peripherical rim extending toward the front plate. In this peripherical rim is a notch, *e*, and on the periphery of the disk are a number of notches, e^2, for the purpose hereinafter described. The disk E is loosely attached to said pivot, so that it may turn thereon when required.

Between the disk E and the main plate C is a circular plate, F, in which are a number of holes corresponding with the number of teeth and notches in the wheel D and having a tooth, *f*, projecting beyond its periphery. In the center of this plate is a square hole fitting a squared portion of the pivot, so as to turn with it. When the parts are in place the disk E is connected to the plate F by a screw, f^2, passing through the disk and into one of the holes in the plate, so that said plate and disk will move together. By unscrewing the screw f^2 the disk E may be turned on the pivot, so as to cause the screw to engage with a different hole in the plate, so as to change the combination.

Another mode of connecting and disconnecting the disk and plate is shown in the disk marked 4, in which, instead of the screw f^2, a spring, f^3, is employed. One end of the spring is secured to the disk E, and the other end is bent so as to extend through a hole in the disk and engage with one of the holes in the plate F. By withdrawing the point of the spring from the hole in the plate, the disk may be turned independently of the plate, and when the spring is released the parts are again connected, so as to move together. When the screws f^2 are used, the combination may be changed without removing the front plate by turning the disks until said screws are opposite revolving barrels S in the front plate, so that a screw-driver may be inserted and the screws turned, as described.

G represents the beak-plate. It is placed over the disk E, so as to oscillate on a pivot,

c, projecting from the center of the main plate C. At its upper portion is a beak, g, for engagement with the nose or hook of the shackle b.

At points near the peripheries of the disks E are pins h, extending rearward from the inner side of the plate. On two opposite sides of the pivot are two holes, i i, and above the pivot is a slot, i^2.

In the back plate, A, are four round holes, corresponding in size and location with the four bosses or extensions d. Around each hole is marked a circle of figures corresponding in number and location with teeth and notches on the disks E.

In the center of the front plate, B, is a circular opening, in which is fitted a circular plate, J, with a wide notch, j, in its upper edge. This plate is held in place by a bar, K, attached to the rear side, and having its ends engaging with rabbets at the edge of the opening.

On the rear side of the plate J are two rearwardly-extending pins, l l, for engagement with the holes i i in the beak-plate.

In the front plate, B, above the notch j is an opening provided with grooves, in which slides a skeleton frame, M, the lower end of which terminates in an elongated tongue, m, which extends down and works between the circular plate J and fastening-bar K, and carries a rearwardly-projecting pin, $m^\times$. At the upper end of the frame is a forwardly-projecting lug, m^2, in which is a hole.

Between the side pieces of the frame M slides a plate, P, provided with a slot running parallel with the vertical side pieces of the frame M. A screw, p, passes through this slot and into the back of the plate B, and by this means the frame M and plate P are connected so as to slide parallel with but independent of each other.

On the front surface of the side pieces of the frame M are two forwardly-projecting pins, m^3, and on the front surface of the plate P, on either side of its slot, are two similar pins, p^3.

To the lower end of the slotted plate P is hinged another plate, Q, which may be either of solid metal or of skeleton form with a glass face. At the upper right-hand corner of this plate Q is a lateral lug, q, and at the upper left-hand corner is another lateral lug, q^2, and between these lugs is a vertical lug, q^3. The lug q is for the purpose of raising the plate Q when unlocked. The lug q^2 is for engagement with a recess, R, in which the seal is placed, and the lug q^3 is for engagement with the hole in the lug m^2.

The operation of the invention is as follows: In order to form a combination so that the shackle and the beak-plate will engage with each other, the disks E are turned by means of the thumb-pieces d^2, so that the notches e are opposite the pins h. Then, by turning the circular plate J in the direction indicated by the arrows, the engagement of the pins l l with the holes i i throws back the beak g, so that the nose of the shackle may be inserted in place. Then, by turning the plate J in the opposite direction the shackle is locked. The plate Q is then moved down until it engages with the notch j in the circular plate, and thus prevents it from turning. The label or register is placed in position in the recess containing the pins p^3 and m^3, and if desired said label may be secured by adhesive substance. The hinge-plate Q is then turned up, so that its lug q^2 lies in the recess R, and is secured by lowering the frame M, so that the hole in the lug m^2 engages the lug q^3. The seal is then placed in the recess R. The mechanism is now securely locked by two different means—first, by the engagement of the plate Q with the notch j to prevent the plate J from turning, and, second, by the engagement of the pin $m^\times$ on the tongue m of the frame M with the slot in the beak-plate, so as to prevent said beak-plate from moving; but, as a further security, the disks E are turned by means of the thumb-pieces d^2 to positions other than those at which the mechanism was locked. For example, referring to Fig. 3, it will be seen that the thumb-pieces d^2 also serve as indicators, and the combination there indicated consists of the figures 1 3 4 1. By turning one or more of these indicators to any other figure this combination is destroyed, thus baffling any attempt at tampering with the lock. When the parts are locked, the plate J covers the screws by which the plates are secured together, so that they cannot be reached in order to unscrew them.

In order to unlock the mechanism, the indicators are turned to the former combination. Next, the plate Q is released by raising the frame M, so as to disengage the hole in the lug m from the lug q^3. Next, the plate Q is swung open and backward, which breaks the seal, by the lug q^2. Next, the frame M is raised to its highest point, carrying with it the plates P and Q, canceling the label or register by tearing it with the pins m^3 p^3, and releasing the plate Q from the notch j and the pin $m^\times$ from the slot i^2. Then, by turning the plate J the beak is disengaged from the shackle and the lock is opened. When the pins h are not to be used, they may be unscrewed from their holes and placed in other holes in the beak-plate for safe-keeping. This lock mechanism, as shown in the general view, Fig. 1, and the detail views, Figs. 8 and 9, is entirely independent of any particular form of shell or casing, and may be manufactured and sold in such shape, in the same manner as the mechanism of clocks and watches are furnished, so as to be applied to casings of any desired form or locks for any desired purpose.

The various parts of the mechanism are of such a character that they may be struck out with dies from sheet metal. When the pins h have been removed from the holes and placed in other holes, (marked h^2,) they will then engage with the notches e^2 in the periphery of the disks, and the clicking sound will still be heard when the disks are turned. By this means, when it is suspected that the combination has been discovered by a suspected person, the pins

may be removed without the knowledge of said person, who, finding that the lock will open without difficulty, will suppose that he has discovered the proper combination, and will thus be detected. When the pins are thus placed so as to engage with the notches e^2, their relation to the pawls d^3 and wheels D is such that in forming the combination the pawls are made to engage with the top of the teeth of the wheel instead of the spaces or notches between the teeth, so that the combination may be set at positions intermediate between the figures shown on the back plate, and thereby further complicate the combination.

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

1. The carrying-plate C and beak-plate G, pivoted together and constructed as described, to support a lock mechanism independently of any outside frame, thereby adapting such mechanism to a frame of any desired character, substantially as herein shown and described.

2. The combination of the beak-plate G, provided with the pins *h h*, the cup-shaped disks E, each having a notch, *e*, in the wall or flange and a series of notches, e^2, in the periphery, and the spring-pawls d^3, engaging the notches, substantially as shown and described.

3. The combination, with a lock mechanism constructed as described, of a front plate, B, provided with the circular plate J, carrying the pins *l l*, and the beak-plate having holes *i i* to receive the pins, substantially as and for the purposes specified.

4. The combination, with the front plate, B, having the recess R, and the circular plate J, having the notch *j*, of the swinging and sliding register-covering plate Q and the plate or frame M, constructed and operating substantially as herein described.

5. The combination, with the front plate, B, and the lock mechanism herein described, of the circular plate J, arranged to cover the screw-holes when locked, and the revolving barrels S, carried by said plate and arranged to admit a screw-driver, substantially as herein described.

6. The combination, with the disk E and perforated plate F, of the spring f^3, mounted on the disk to engage the plate for connecting and disconnecting the parts, substantially as herein described.

7. The combination, with the disks E, having the notches *e* e^2, the toothed wheel D, spring-pawls engaging said wheels, and the beak-plate G, of the removable pins *h*, whereby provision is made for the destruction of the combination without dispensing with the clicking produced by the action of the pawls d^3 on the toothed wheels D, as herein shown and described.

8. The combination, with the toothed wheels D, and disks E, having the notches e^2 on their peripheries, of the beak-plate G, having the removable pins *h* and holes h^2, whereby provision is made for setting the combination at points intermediate between the teeth of the wheels, substantially as herein described.

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

ROBERT D. GREEN.

Witnesses:
FRANCIS CLARE BOWEN,
JORDAN CHAMBERS.