(Model.)

2 Sheets—Sheet 1.

W. B. TURMAN.

PERMUTATION LOCK.

No. 336,358. Patented Feb. 16, 1886.

Fig. 1.

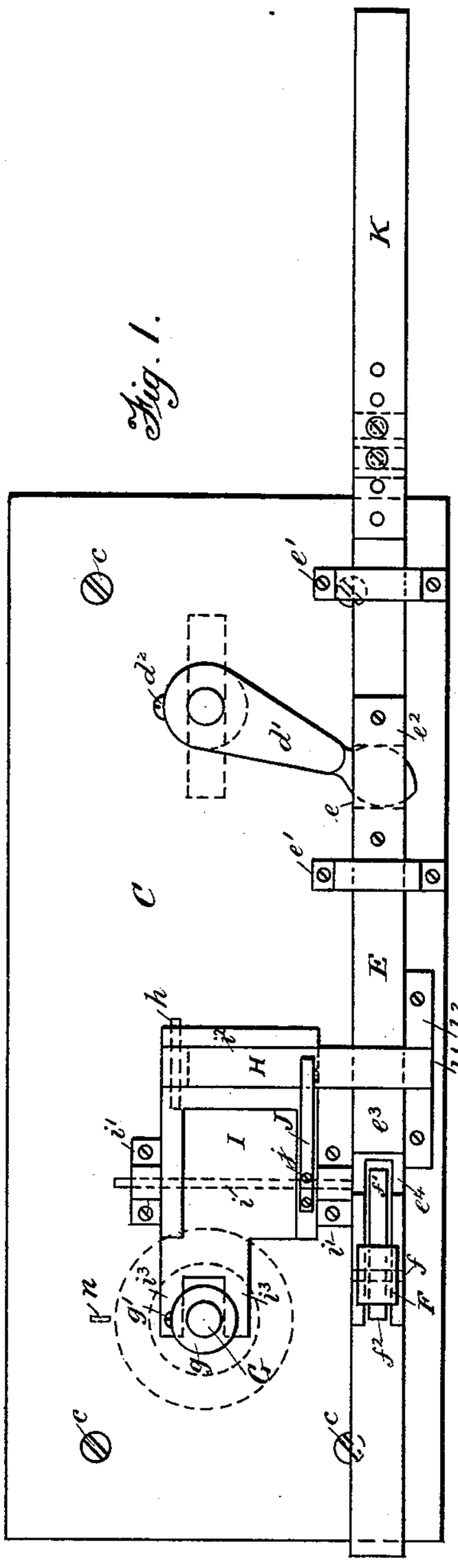


Fig. 2.

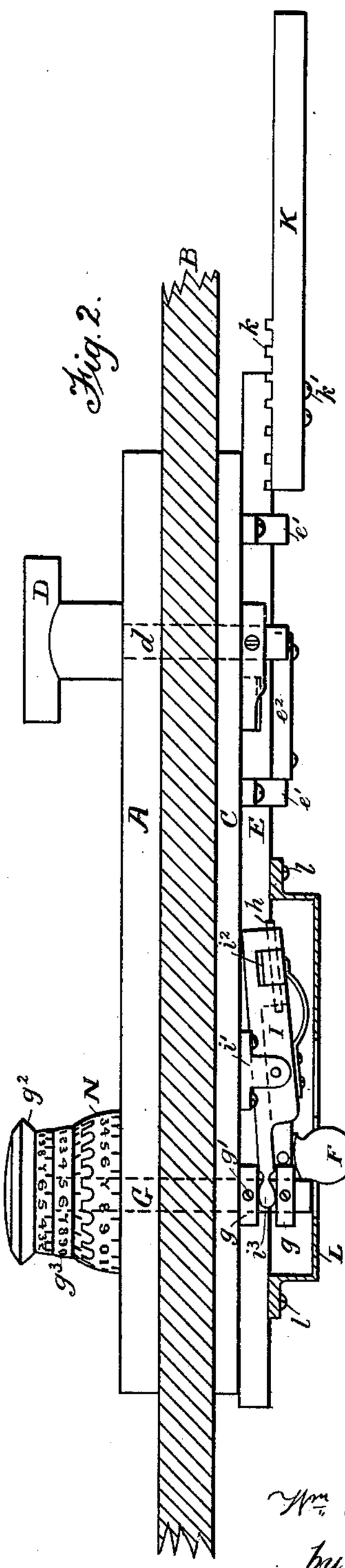
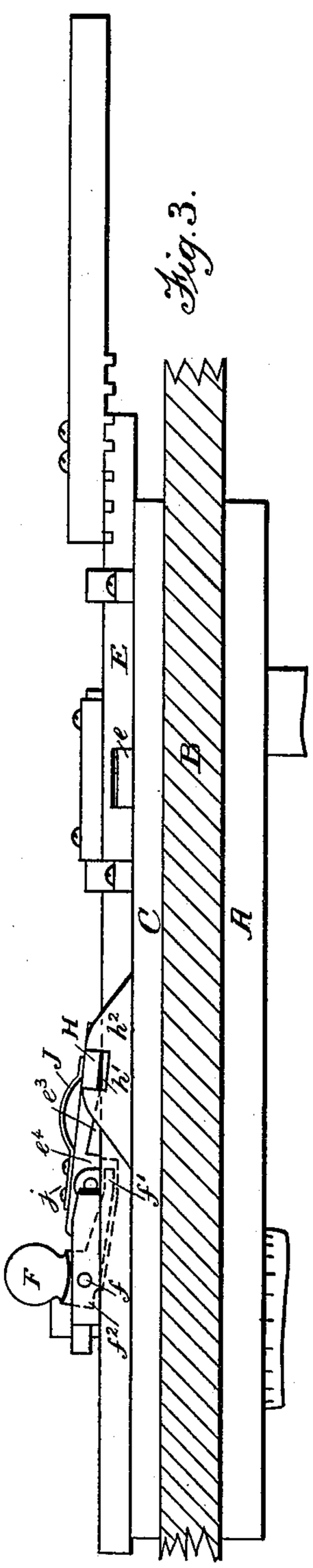


Fig. 3.



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(Model.)

2 Sheets—Sheet 2.

W. B. TURMAN.

PERMUTATION LOCK.

No. 336,358. Patented Feb. 16, 1886.

Fig. 4.

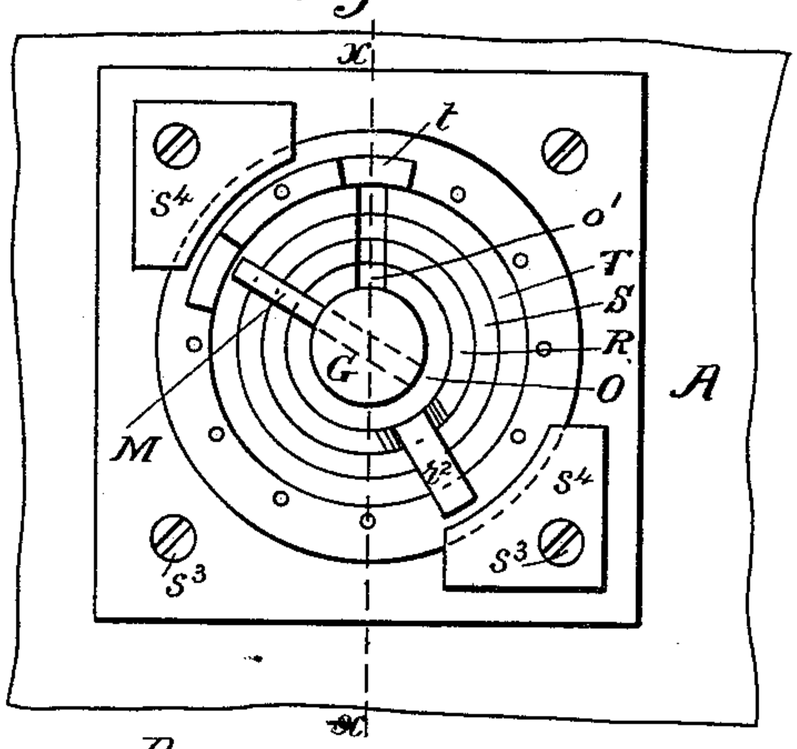


Fig. 5.

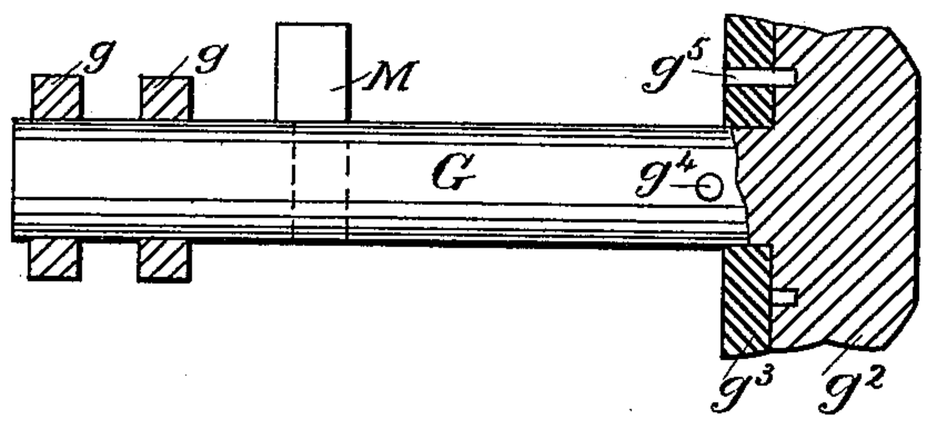


Fig. 6.

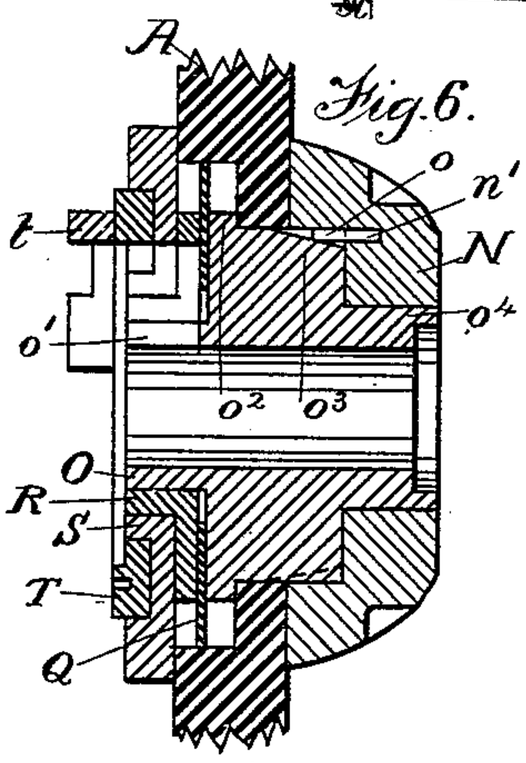


Fig. 8.

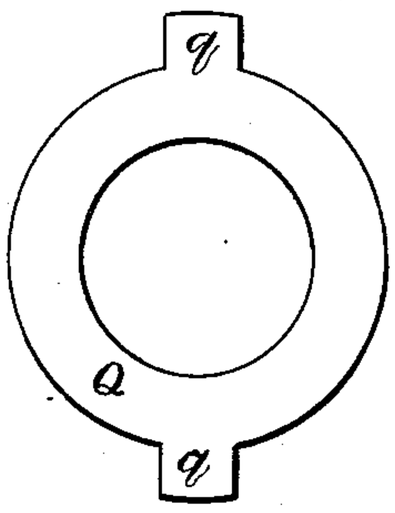


Fig. 7.

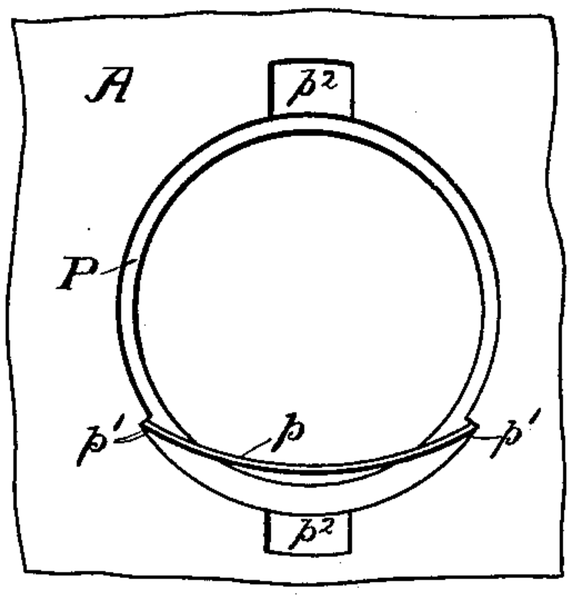


Fig. 9.

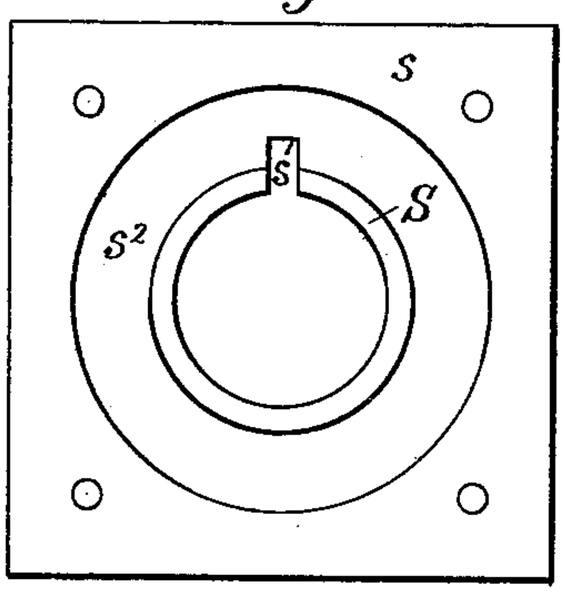


Fig. 10.

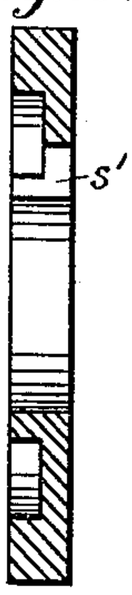


Fig. 11.

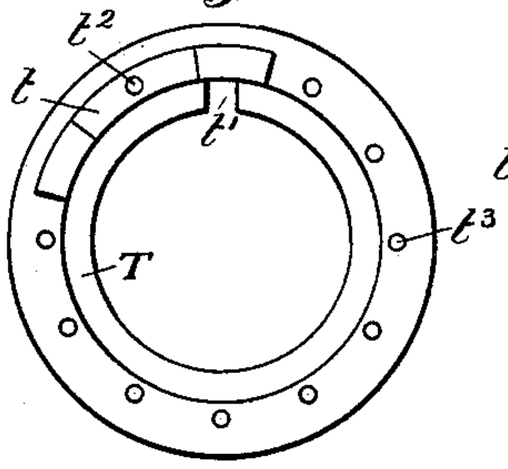


Fig. 12.

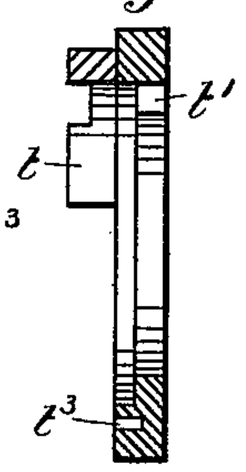


Fig. 13.

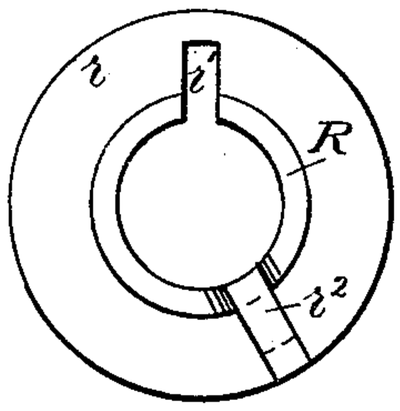
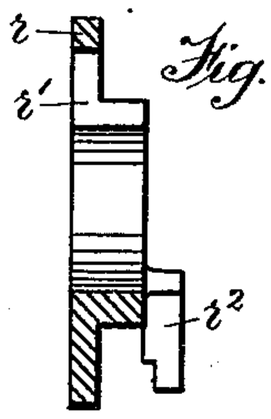


Fig. 14.



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UNITED STATES PATENT OFFICE.

WILLIAM B. TURMAN, OF WALDRON, ARKANSAS.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 336,358, dated February 16, 1886.

Application filed October 3, 1884. Serial No. 144,639. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM B. TURMAN, a citizen of the United States, residing at Waldron, in the county of Scott and State of Arkansas, have invented certain new and useful Improvements in Combination Door-Locks, of which the following is a description.

Figure 1 is a front elevation of those parts of the lock which come on the inside of the door with the case which covers them removed. Fig. 2 is a plan of the lock looking downward from above, showing a part of the door and the case in section. Fig. 3 is a view of the lock looking upward from below, also showing a part of the door in section. Fig. 4 is a detail elevation of part of the outside door-plate, draw-bar, and combination removed from the door, showing the combination in position to allow the door to be opened. Fig. 5 is a detail view of the draw-bar and disk, partly in section. Fig. 6 is a section through the rings and plates forming the combination, taken on the line *x x* in Fig. 4, but with the draw-bar removed. Fig. 7 is an elevation of a part of the outside door-plate removed from the door without the combination-rings. Fig. 8 is a detail of the washer. Fig. 9 is a front view of the stationary combination ring and plate. Fig. 10 is a section through the same. Fig. 11 is a front view of the outer combination-ring. Fig. 12 is a section through the same. Fig. 13 is a front view of the middle combination-ring. Fig. 14 is a section through the same.

My invention relates to combination-locks for doors; and it consists in the detailed construction of the parts by which the door to which said lock is applied can be readily locked from the outside, but cannot be again unlocked without a knowledge of the combination at which the lock has been set, while from the inside it can easily be locked or unlocked without the combination being brought into play.

I will now proceed to describe my invention with reference to the accompanying drawings, in which similar letters of reference indicate corresponding parts in all the figures.

A is a plate, attached to the outside of the door B, and to the plate C, which is placed on the inside of the door by the bolts or rivets *c*, which unite all three firmly together.

D is the handle for operating the bolt E from the outside.

F is a catch for operating the said bolt from the inside of the door.

G is the draw-bar controlled by the combination-rings within the door.

H is the locking-bar for securing the bolt E.

I is the locking-bar lever.

The handle D is provided with a stem, *d*, extending through the door. A latch, *d'*, is secured on this by a screw or pin, d^2. The stem *d* is made long, so that it can be used on doors of different thicknesses. The end of the latch *d'* engages with a slot, *e*, in the bolt E, and moves it back and forth when the handle is turned. The bolt E works in the guides *e'*, and is provided with a stop, e^2, which prevents it from being moved too far in either direction.

An inclined plane, e^3, is formed on the back of the bolt E, and has a cross-slot, e^4, in it to receive the locking-bar H. The continuation of the said inclined plane e^3 is slotted longitudinally, and the catch F is pivoted on the pin *f* between the sides thus formed. This catch F is formed with a toe, *f'*, bent round at right angles to the projecting portion of the catch, and extending under the locking-bar H, where it passes through the slot e^4, the bolt being cut away behind the toe *f'* so that it may act freely. A heel, f^2, is formed on the other side of the catch F, away from the toe *f'*, which presses on the bolt E when the catch has been pressed back far enough to raise the locking-bar H as high as required.

The locking-bar H consists of a rectangular bar of metal one end of which is pivoted on the pin *h* in the locking-bar lever I. The other end engages in a slot, *h'*, in the bracket h^2, formed on the back of the door-plate C.

The locking-bar lever I is pivoted on the pin *i*, between the brackets *i'*, formed on the back of plate C. At one end of the said lever I is formed a guide-slot, i^2, for the locking-bar H. The other end is made with arms i^3, for engaging with the collars on the draw-bar G.

J is a spring secured on the back of lever I by the screws *j*, and arranged to press downward upon the locking-bar H.

K is an extension of the bolt E, formed with projections *k* on the back of it, which fit into

corresponding grooves in the bolt E. The extension K is firmly secured to the bolt by the screws k', the part K engaging with a plate in the door-post. It is made separate from the bolt E, so that the lock may suit different doors without the bolt having to be cut to the exact length required.

L is an outer case or guard attached to the plate C by the screws l. It extends over the working parts and protects them from injury.

The draw-bar G is provided with loose collars g, attached to it by screws g'. The position of these collars may be arranged to suit the thickness of the door to which the lock is to be applied. The head g^2 is secured on the other end of the draw-bar. The disk g^3 comes against it, and is held in position by the pin g^4. A pin, g^5, is secured in the side of the disk, which engages with any one of a series of holes in the side of the head g^2, so that the letters or figures which are arranged round the circumference of the head and disk may be placed at different combinations. A key, M, projects from the side of the draw-bar, the use of which will be further explained.

N is a tumbler provided with notches on its circumference, so that it can be turned round with the fingers, and with a series of letters or figures, any one of which may be set to come opposite to a certain index-letter, n, on the plate A. This tumbler N is journaled on a boss forming a continuation of the inner ring, O, and is attached to it by a stop or stops, n', which engage with corresponding notches, o, on a shoulder on said inner ring, the center hole of which also forms a bearing for the draw-bar to turn in. The inner ring, O, has a slot, o', a flange, o^2, shoulder o^3 containing notches o, and a projecting boss, o^4.

The plate A is provided with a recess, P, on the inside, into which the flange o^2 fits, while the shoulder o^3 projects through the hole in the plate.

p is a spring, which is held in position by the notches p'. This spring bears against the flange o^2, so as to cause considerable friction by its pressure. The inner ring can be revolved by turning the tumbler M, but not by the draw-bar G, which is journaled in it, on account of the pressure of said spring.

Q is a washer, which comes against the outside of flange o^2 and separates it from the flanges on the middle ring. This washer is provided with projections q, which engage with the recesses p^2 in the plate A and keep the said washer always in one position.

R is the middle ring provided with the flange r, slot r', and finger r^2, for engaging with the key M in the draw-bar and with a stop on the outer ring.

S is the stationary ring provided with the slot s', and made solid with the plate s, provided with the recess s^2 for the outer ring, and by which it is attached by screws s^3 to the plate A.

s^4 are guide-plates held by two of the screws s^3. These serve to retain the outer ring in the recess s^2.

T is the outer ring provided with a stop, t, and with a slot, t'. The stop t is attached to the ring T by pins t^2, which engage with any of a series of holes, t^3, arranged on the circumference of the ring, so that the position of the said stop t may be altered with regard to the slot t', and the combination by which the lock is unfastened thereby varied.

The key M, projecting from the draw-bar, bears upon the ends of the rings O R S T, and is of such a length that when the slots o', r', s', and t' are brought into line it can be drawn back into them by pulling the draw-bar, but cannot be drawn back when the said rings are in any other position. This position is indicated by a certain combination of letters and figures on the head g^2, disk g^3, and tumbler N, which then come into line with one another and with the index-letter n on the plate A after certain rotations of the draw-bar. The slot s' being stationary, the slot o' is first brought into line with it by turning the tumbler N to a point when a certain figure on its circumference comes in line with the index-letter n. The draw-bar is then rotated, the key M presses against the finger r^2, which in turn presses against the stop t and turns the outer ring, T, until its slot t' is brought into line. This position is indicated by a certain combination of the letters and figures on the disk g^3 and tumbler N, which then come together. The draw-bar is then rotated in the opposite direction. The key M pressing against the opposite side of finger r^2 turns the middle ring, R, but leaves the outer ring, T, stationary, when the continued rotation of said draw-bar brings the slot r' into line, which position is indicated by the combination of the letters or figures which then occur on the disk g^3 and tumbler N. The key M can then enter into all the slots o' r' s' t' at once and the draw-bar can be drawn back. The action of drawing back the draw-bar moves the lever I and raises the locking-bar H out of connection with the bolt E, which can then be drawn back from the outside of the door by turning the handle D. The bolt E can be moved forward from the outside of the door by merely turning the handle D in the opposite direction, as the locking-bar H will then be lifted by the inclined plane e^3 on the back of said bolt E and will fall into the cross-slot e^4, thus holding the door locked.

From the inside the door can be either locked or unlocked without moving the draw-bar G. To lock it, the bolt E has simply to be pressed forward by pressing on the catch F in the desired direction of travel.

To unlock the door, the catch F should be pressed in the opposite direction until the heel f^2 touches the bolt. The toe f' will then have raised the locking-bar H, which turns on

the pin *h*, out of contact with said bolt E, and the continued pressure on the catch F will draw back the bolt and unlock the door.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the bolt E, provided with the slot e^4, the locking-bar H, locking-bar lever I, provided with slot i^2 and end i^3, spring J, and draw-bar G, provided with the key M, and with a series of combination-rings, substantially as described and shown, and for the purpose set forth.

2. The draw-bar G, provided with the key M and with the loose collars *g*, attached to said draw-bar by the screws *g'*, in combination with the lever I, having an end, i^3, engaging with said washers, and a series of combination-rings, substantially as described and shown.

3. The combination of the bolt E, provided with the inclined plane e^3 and slot e^4, the locking-bar H, the catch F, formed with a toe, *f'*, and heel f^2, the locking-bar lever I, provided with slot i^2 and end i^3, spring J, and draw-bar G, provided with the key M, and with a series of combination-rings, substantially as shown and specified.

4. The combination of the bolt E, provided with the inclined plane e^3 and slot e^4, the extension-piece K, formed with projections *k*, engaging with grooves in bolt E, the locking-bar H, catch F, formed with a toe, *f'*, and heel f^2, locking-bar lever I, provided with the slot i^2 and end i^3, spring J, and draw-bar G, provided with the key M, and with a series of combination-rings, substantially as shown and described.

5. The combination of the handle D, having the stem *d*, the latch *d'*, adjustable on said stem, bolt E, having slots *e* and e^4 and inclined plane e^3, locking-bar H, catch F, formed with a toe, *f'*, and heel f^2, locking-bar lever I, provided with slot i^2 and end i^3, spring J, and draw-bar G, provided with the key M, and with a series of combination-rings, substantially as described and shown.

6. The combination of the draw-bar G, having the key M and head g^2, the disk g^3, connected to said head by the pins g^4 and g^5, the tumbler N, the plate A, having the index-letter *n*, inner ring, O, provided with the slot *o'*, spring *p*, middle ring, R, having slot *r'* and finger r^2, stationary ring S, provided with slot *s'*, and the outer ring, T, provided with the slot *t'* and stop *t*, substantially as described and shown.

7. The combination of the draw-bar G, having the key M and head g^2, the tumbler N, plate A, having index-letter *n*, and recess P, spring *p*, washer Q, and a series of combination-rings, O R S T, having the slots *o' r' s' t'*, the finger r^2, and stop *t*, substantially as shown and described.

8. The combination of handle D, latch *d'*, bolt E, having inclined plane e^3 and slots *e* and e^4, catch F, locking-bar H, locking-bar lever I, having end i^3, spring J, draw-bar G, provided with the key M and head g^2, the tumbler N, plate A, having index-letter *n* and recess P, spring *p*, washer Q, and a series of combination-rings, O R S T, having the slots *o' r' s' t'*, the finger r^2, and stop *t*, substantially as described and shown, and for the purpose set forth.

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