No. 843,869. PATENTED FEB. 12, 1907.

W. F. CLAY.

LOCK.

APPLICATION FILED AUG. 10, 1906.

Fig. 2.

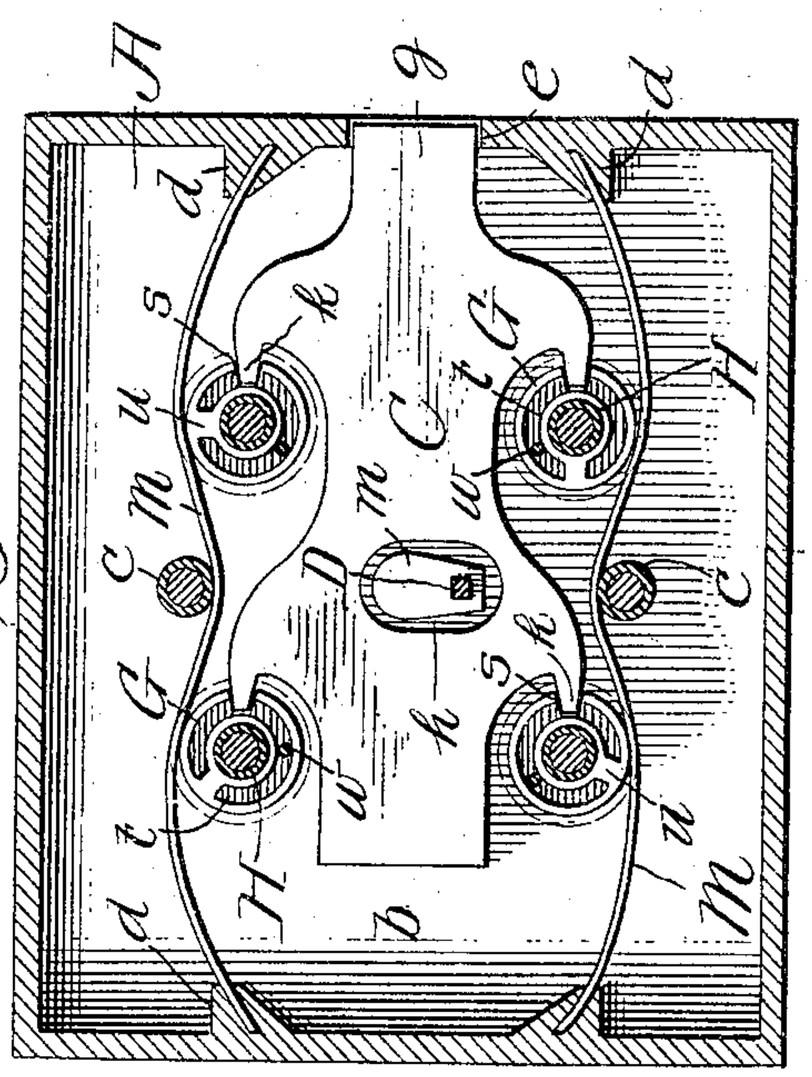


Fig. 4.

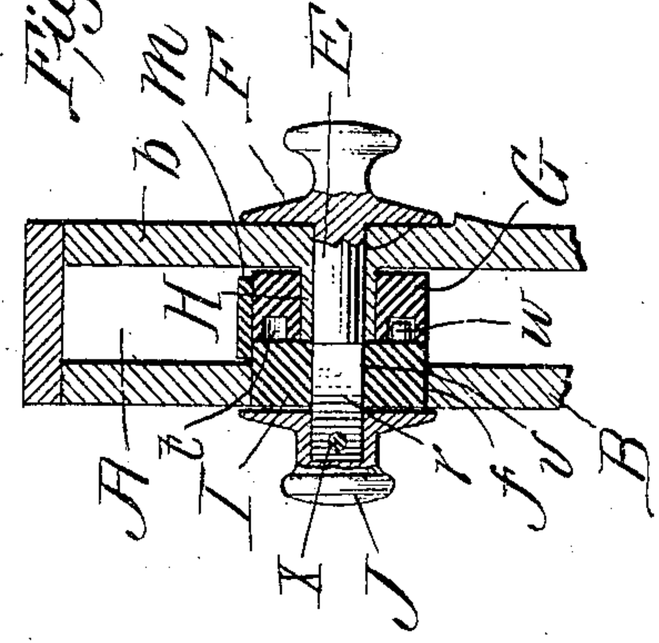


Fig. 1.

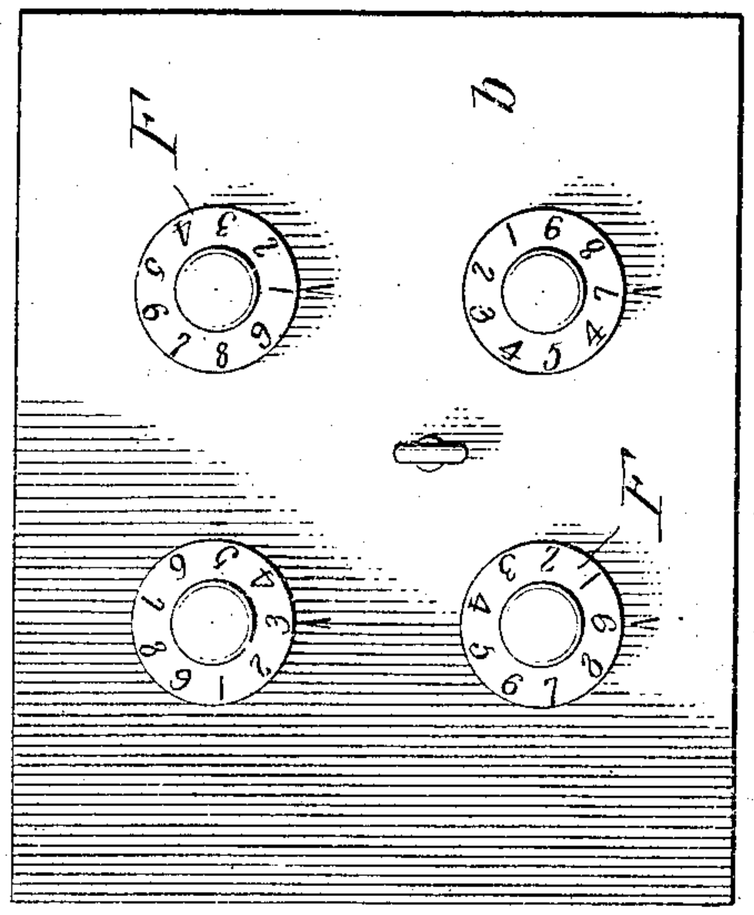


Fig. 3.

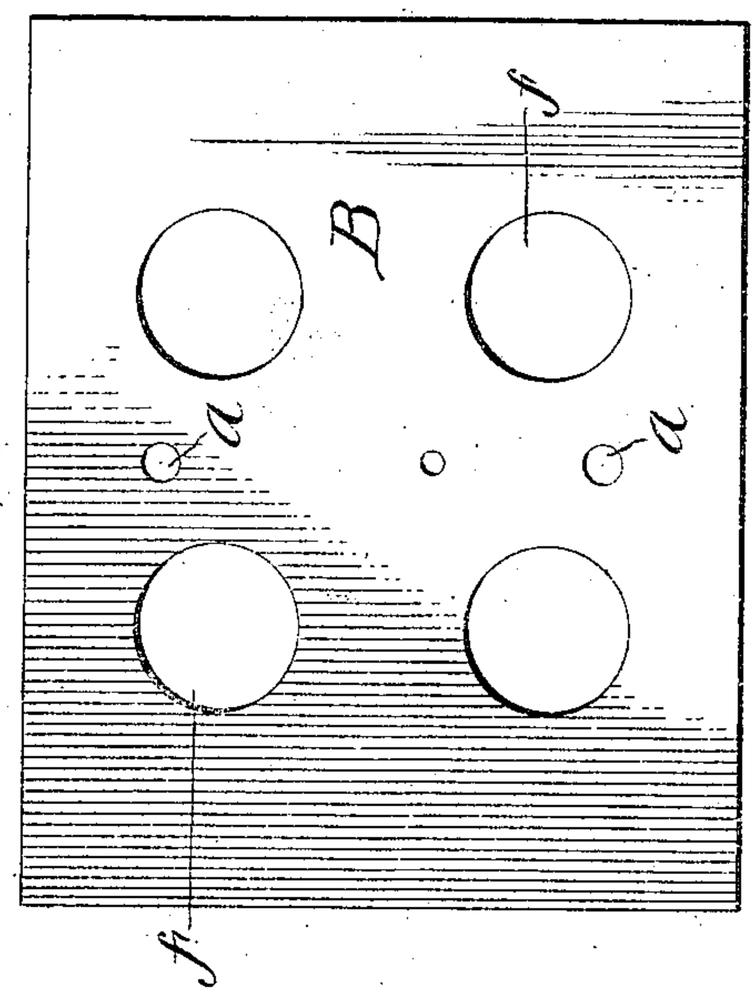
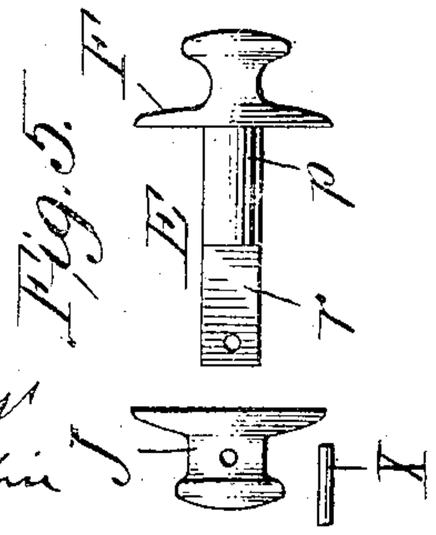


Fig. 5.



Witnesses

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WILLIAM F. CLAY, OF CAMDEN, NEW JERSEY.

LOCK.

No. 843,869. Specification of Letters Patent. Patented Feb. 12, 1907.

Application filed August 10, 1906. Serial No. 330,048.

To all whom it may concern:

Be it known that I, WILLIAM F. CLAY, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented new and useful Improvements in Locks, of which the following is a specification.

My invention pertains to permutation-locks, and it contemplates the provision of a permutation-lock constructed with a view of being operated from either side of a door and one in which the combination can be changed by simply taking out one or more of the disks and replacing same in different positions and in which the dials can be moved back after the bolt is retracted, so as to prevent unauthorized persons ascertaining the combination.

Other advantageous features of the lock will be fully understood from the following description and claims when the same are read in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of my novel lock with the dials adjusted so as to arrange the notched disks in position to permit of the slidable bolt being retracted, the combination in this particular case being 3197. Fig. 2 is an elevation of the lock with the back plate removed and showing the disks in position to permit of retraction of the slidable bolt. Fig. 3 is detail view of the back plate of the casing. Fig. 4 is an enlarged detail transverse section taken through the lock and showing one of the spindles and the parts appurtenant thereto. Fig. 5 comprises disconnected views of one of the spindles and the dial which is designed to be fixed thereon.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which—

A is the casing-body of my novel lock. The said casing-body is provided on its front wall *b* with interiorly-threaded posts *c*, and it is also provided on the inner sides of its end walls with bifurcated projections *d* and in one of said walls with an aperture *e* for a purpose which will presently appear.

B is the back plate of the casing, which is connected through the medium of screws, passed through openings *a* in the plate, to the posts *c*, and is provided with four (more or less) circular openings *f*.

C is the slidable bolt of the lock. This slidable bolt is provided with a reduced end *g* to pass through the aperture *e*, and is also provided with a large opening *h* and four (more or less) rearwardly-directed projections *k*.

D is a shaft journaled in and extending through the front wall *b* of the body-casing A and the back plate B and having a head *m* disposed in the aperture *h* of bolt C, and also having knobs or finger-pieces at its ends. By virtue of this provision it will be seen that when the bolt C is free to be moved in the direction of its length it may be conveniently moved by rocking the shaft D in one direction or the other to move the bolt inward or outward, as occasion demands.

E E are spindles extending transversely through the casing and having dials F at one end.

G G are disks mounted on tubular projections H, extending inward from the front wall *b* of the casing-body A and loosely surrounding the spindles.

I I are rotary tumblers carried by the spindles, and J J are dials designed to be detachably connected to the ends of the spindles remote from the ends bearing the dials F.

The spindles E, dials F, disks G, rotary tumblers I, and dials J are identical in construction, and therefore a detailed description of the parts shown in Fig. 4 and Fig. 5 will suffice to impart a definite understanding of all. Referring, therefore, to Figs. 4 and 5, it may be said that the dial F is formed integral with the spindle E, and in addition to the said dial F the spindle is provided with a portion *p* of circular form in cross-section, journaled in one tubular projection H on the casing-wall *b*, and is also provided with a portion *r* of angular form in cross-section. The disk G is loosely mounted on the tubular projection H mentioned, and is provided in its periphery with a notch *s* and in its inner side with a circular groove *t*, across which at one point extends a ward or bar *u* for a purpose which will be presently set forth. The rotary tumbler I is arranged in one of the apertures *f* of the back plate B and flush with the outer side of the said back plate, and it

is provided with an angular aperture *v*, receiving the angular portion *r* of spindle E, and is also provided with a stud *w*, which is movable in the groove *t* of the disk G and is designed to bring up against the ward *u* and move the disk G through the medium of said ward. The dial J is larger than the aperture *f*, so as to bear against the outer side of the back plate B, around the said aperture *f*, and is detachably connected to the spindle E through the medium of a pin *x* or other suitable means.

By virtue of all of the tumblers I being arranged in the apertures *f* of the back plate B and all of the dials J being detachably connected to the spindles E it will be apparent that when it is expedient to change the combination of the lock the same may be expeditiously accomplished by removing one or more of the dials J and one or more of the tumblers I and replacing the said tumblers in different positions on the spindles and then replacing the dials J and connecting the same to the ends of the spindles.

M M are springs seated at their ends in the bifurcated lugs *d* of the casing-body A and looped around the posts *c* and bearing at points intermediate the posts *c* and the lugs *d* against the perimeters of the disks G. These springs M have for their office to hold the disks G against too free or casual movement, so that it will be apparent that the said disks G will only be moved when the studs *w* of the tumblers I are pressed incident to rotation of the tumblers against the wards *u* of the said disks G.

The disks F and J are similarly figured, and index-points are provided on the face of the front plate *b*, as shown in Fig. 1, and also on the outer side of the back plate, so that the combination may be worked from either side of a door.

After the combination is properly worked and the disks G are positioned as shown in Fig. 2 relative to the bolt C it will be apparent that the bolt may be conveniently retracted by rocking the shaft D on its axis, the notches *s* of all of the disks G being then in a position to receive the projections *k* of the bolt. It will also be seen that through the medium of the shaft D the bolt C may be thrown forward with the same facility.

When the parts are in the relative positions shown in Fig. 2, it will be seen that the dials can be moved back so as to carry the studs *w* of the tumblers I away from the wards *u* of the disks G, this in order to prevent unauthorized persons from ascertaining the combination of the lock when the bolt C is retracted.

The before-described facility with which the combination of the lock may be changed will be appreciated as an important advantage when it is remembered that when the lock is used on coin-controlled and other apparatus it is frequently necessary to change the employees authorized to open the door or drawer to which the lock is applied.

The construction shown and described constitutes the present and preferred embodiment of my invention; but I desire it understood that in practice such changes in the form, construction, and relative arrangement of the parts may be made as fairly fall within the scope of my invention as claimed.

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

1. The combination in a permutation-lock, of a casing having a large circular opening in one of its walls, a slidable bolt arranged in the casing and having a rearwardly-directed projection, a spring secured in the casing, a spindle journaled in the casing and having a portion of angular form in cross-section extending through the said large circular opening, a dial detachably secured on the spindle at the outer side of and adjacent to the wall in which the large circular opening is formed, a rotatable disk mounted in the casing with its periphery in frictional contact with the spring and having a notch in its periphery to receive the projection on the bolt and also having a ward, and a circular tumbler having an angular aperture receiving the angular portion of the spindle, whereby it is caused to turn with the spindle and yet is removable therefrom, and also having a stud movable in the disk and arranged to bring up against the ward thereof; said tumbler being arranged and adapted to turn in the large circular opening in the wall of the casing with its outer side flush with the outer side of said wall and opposed to the inner side of the removable dial.

2. In a permutation-lock, the combination with a casing having bifurcated lugs on its end walls and also having large circular openings in one of its side walls, a transverse shaft journaled in the side walls of the casing and having a head, a slidable bolt arranged in the casing and having rearwardly-directed projections at its opposite sides and also having an opening receiving the head on the transverse shaft, and springs secured at their ends in the bifurcated lugs of the casing and extending longitudinally of the casing between the lugs at the ends thereof; of spindles extending transversely through the casing and having dials at its ends, the dials adjacent to the large openings in the wall of the casing being detachable, rotary disks mounted in the casing concentric with the spindles and with their peripheries in frictional contact with the springs at intermediate points in the length thereof and having notches in

their peripheries and also having wards, and rotary tumblers removably arranged on the spindles so as to turn therewith and with their outer sides flush with the outer side of the wall having the large circular openings in which openings they are disposed and being provided with studs movable in the disks and adapted to bring up against the wards.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM F. CLAY.

Witnesses:
WILLIAM I. SKINNER,
HARRY W. MORTON.