No. 834,817. PATENTED OCT. 30, 1906.

C. E. LEIGHTON.

LOCK PROTECTING DEVICE.

APPLICATION FILED APR. 27, 1906.

2 SHEETS—SHEET 1.

Fig. 1

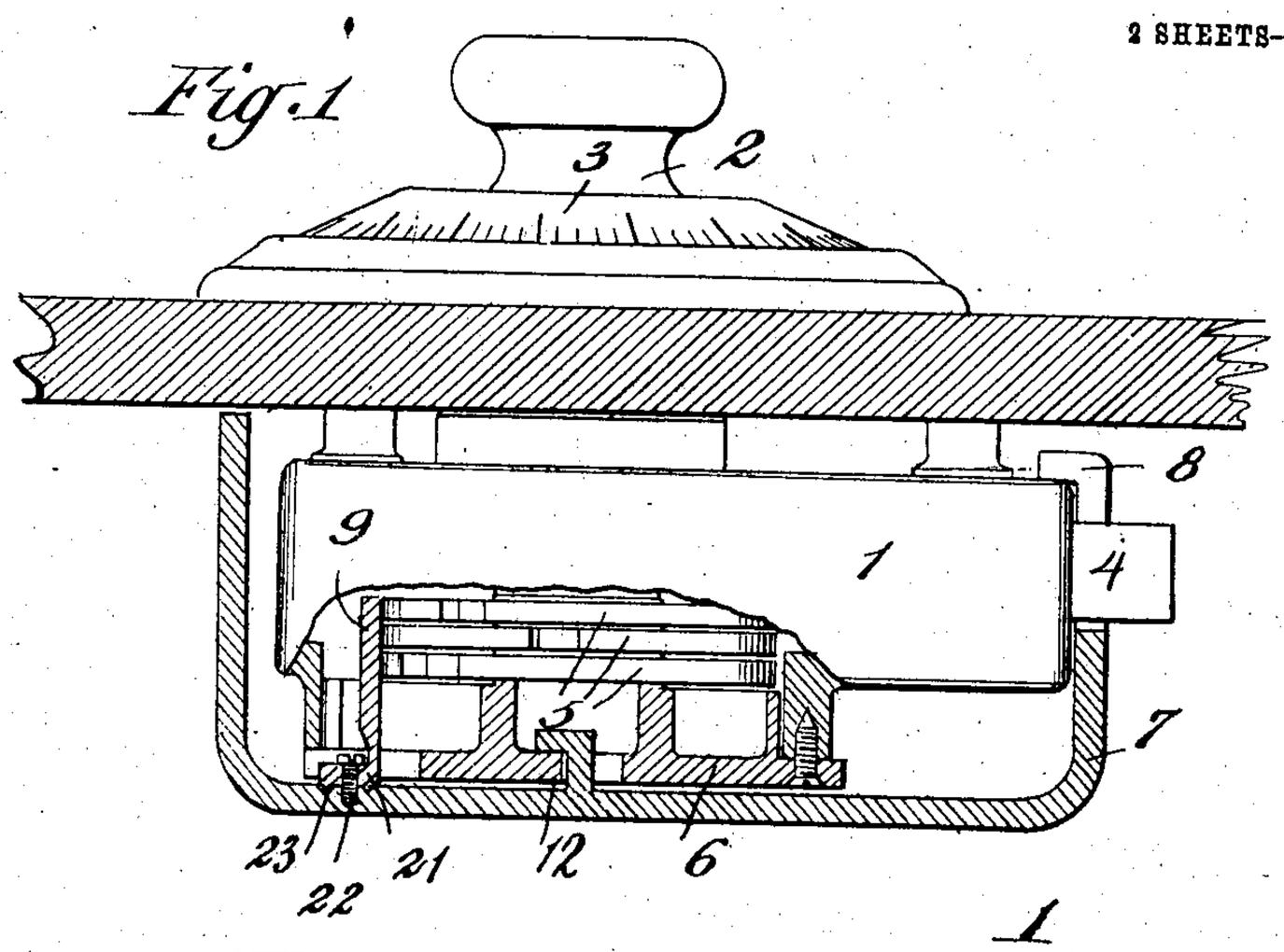


Fig. 2,

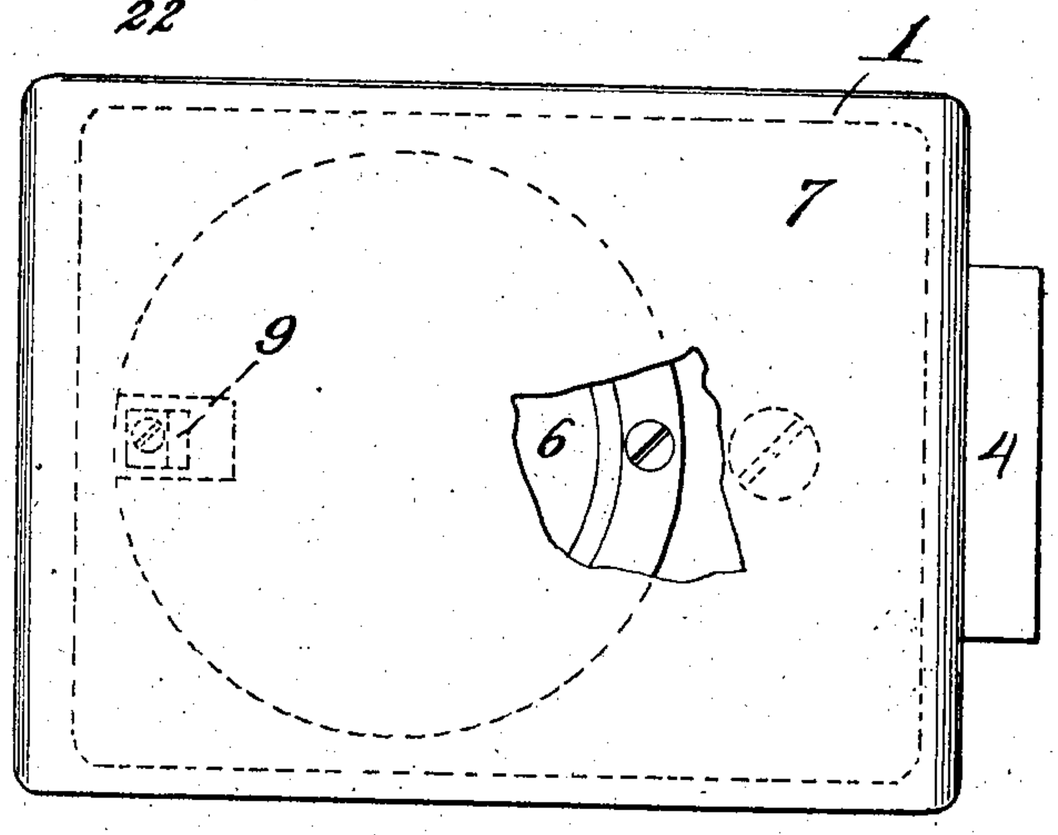


Fig. 6.

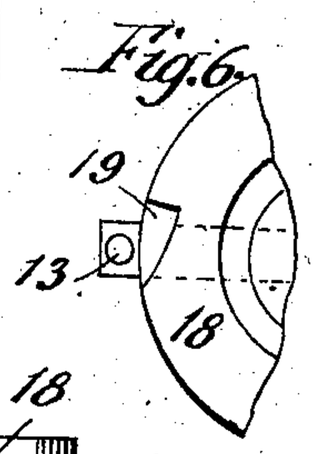


Fig. 4

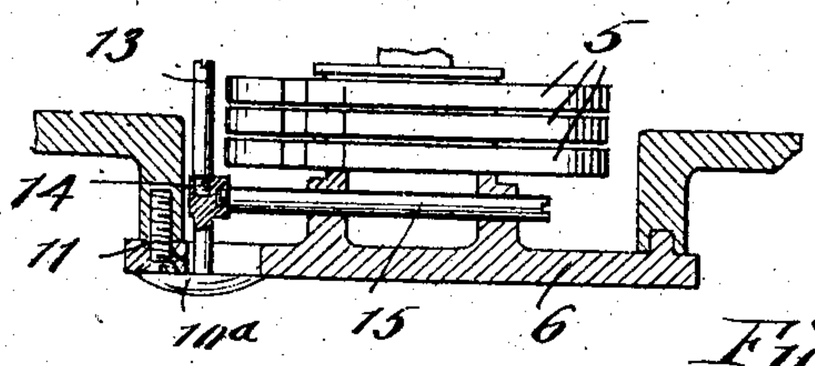


Fig. 5,

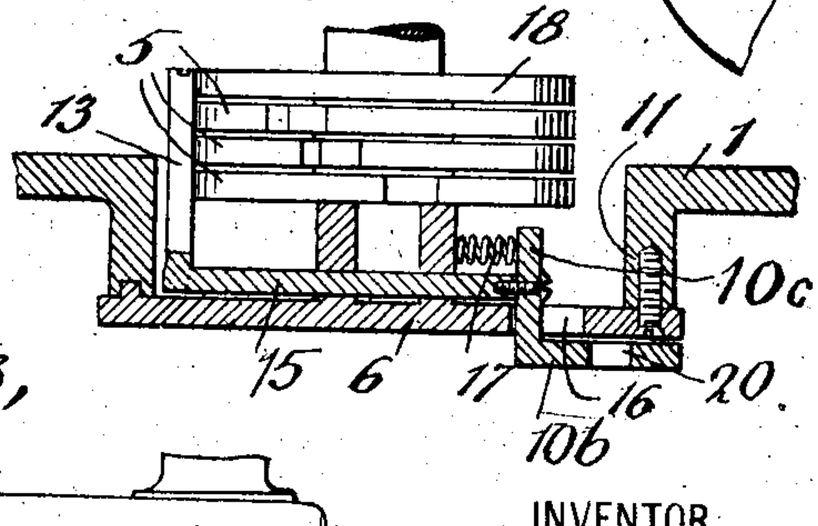
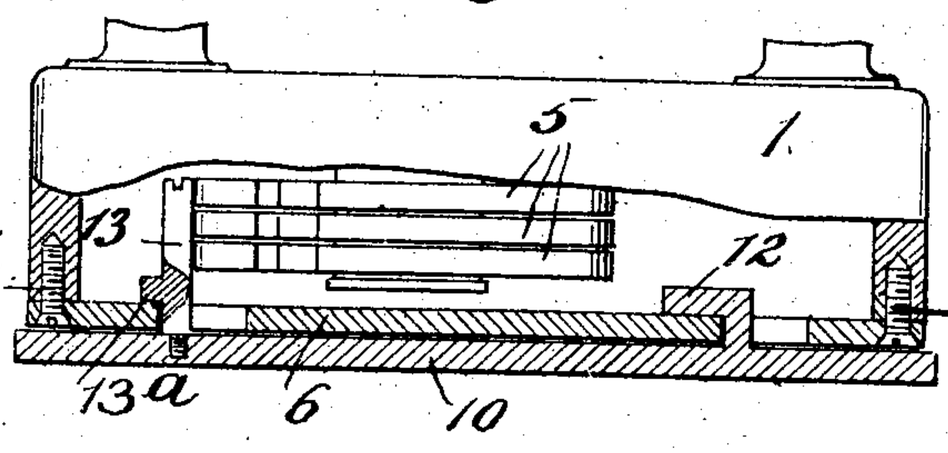


Fig. 3,



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2 SHEETS—SHEET 2.

Fig. 7.

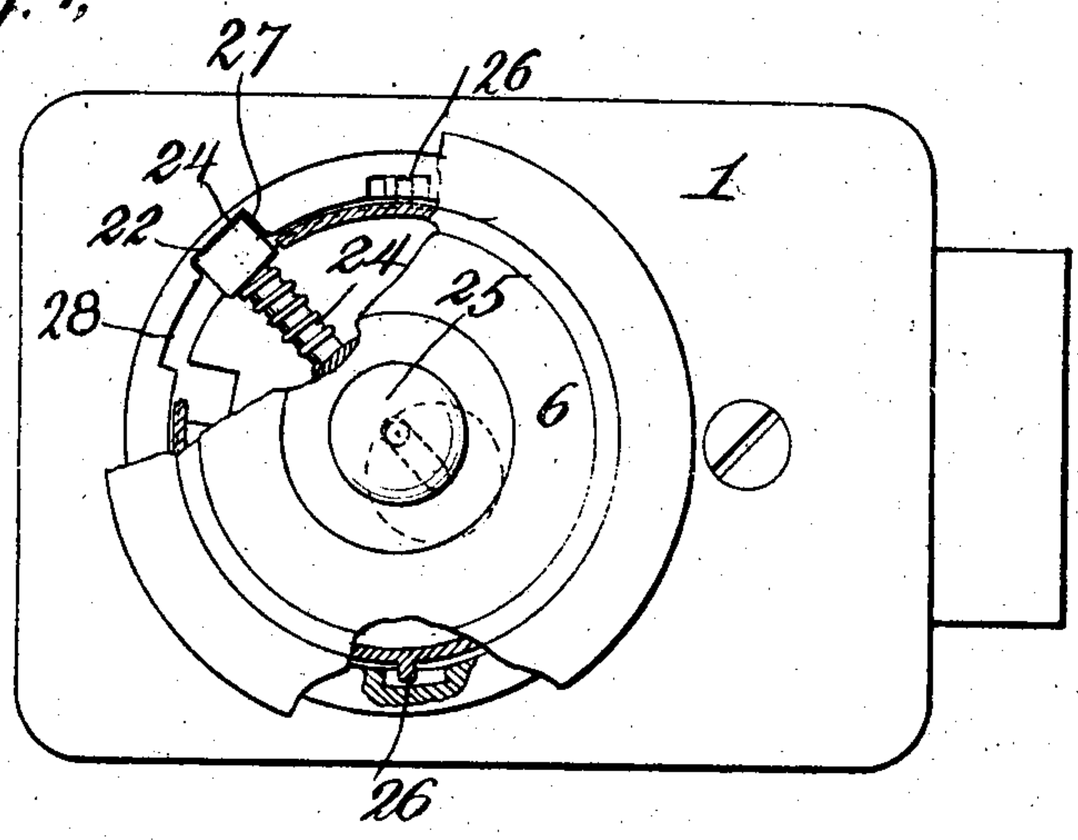


Fig. 7a.

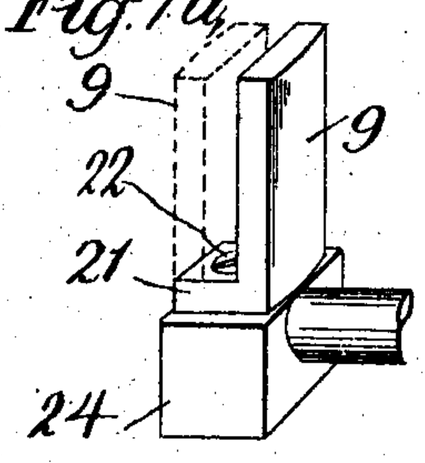


Fig. 8.

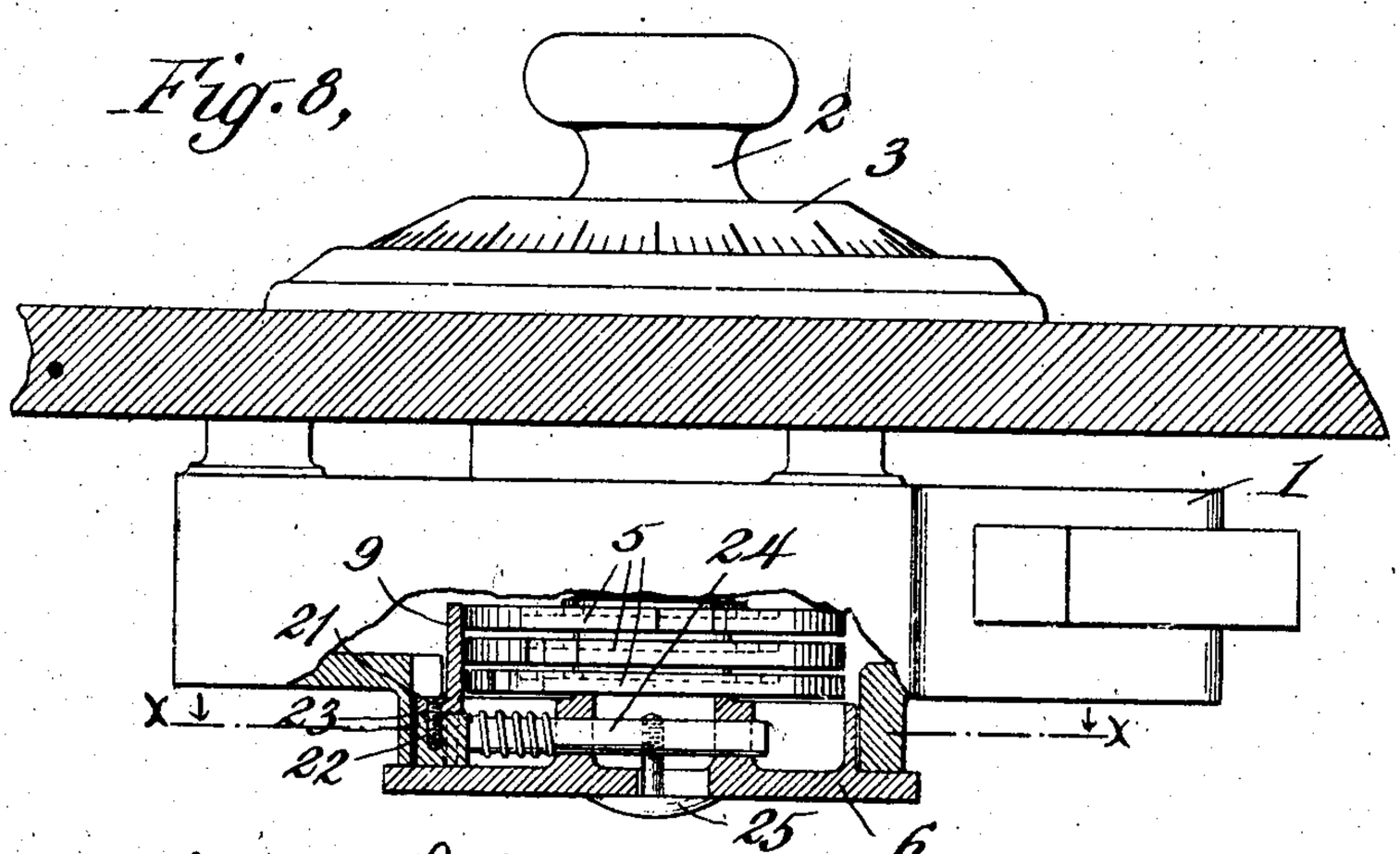
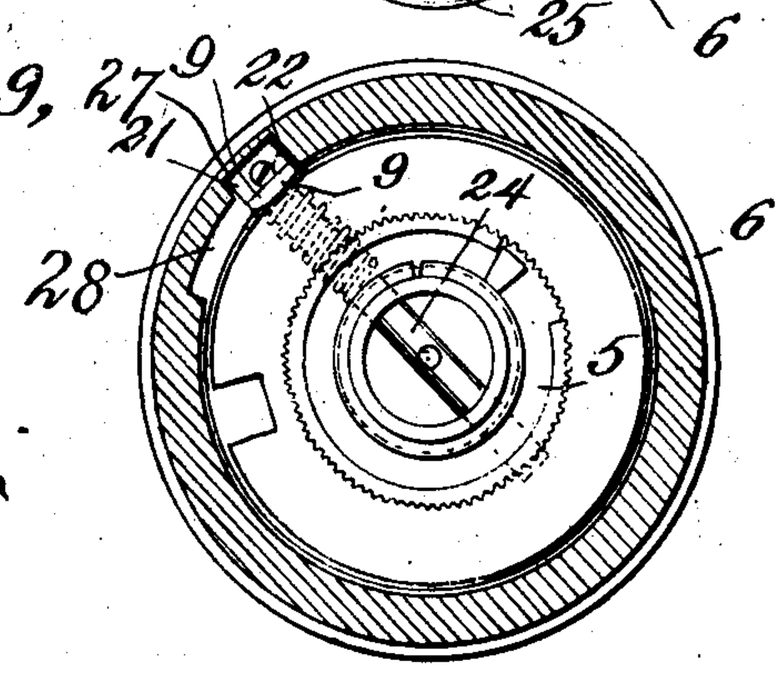


Fig. 9.



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UNITED STATES PATENT OFFICE.

CHARLES E. LEIGHTON, OF NEW YORK, N. Y.

LOCK-PROTECTING DEVICE.

No. 834,817. Specification of Letters Patent. Patented Oct. 30, 1906.

Application filed April 27, 1906. Serial No. 313,950.

To all whom it may concern:

Be it known that I, CHARLES E. LEIGHTON, a citizen of the United States, residing at New York, in the borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Lock-Protecting Devices; 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.

My invention relates to improvements in lock-protecting devices, and is particularly intended for use in connection with permutation-locks, such as those commonly used on the doors of safes and vaults, the purpose of my invention being to prevent persons who do not have the combination of the lock from gaining access to the lock-case or a part thereof while the door of the safe or vault is open, to prevent such persons from learning the combination of the lock by examination thereof or from becoming familiar with its construction, to prevent tampering with the lock, such as may lead to derangement thereof, and to afford increased protection to the lock against possible damage by fire, mechanical injury, &c. My improved lock-protecting device does not interfere at all with access to the interior of the lock by persons having the correct combination.

My invention consists in the novel construction of the lock-protecting device, in the novel means provided for preventing an accidental "locking out" when the protecting device is not in action or when the lock is being tested after changing the combination, in the novel means provided for altogether preventing access to the lock by persons not having the correct combination, and in other features, all as hereinafter described, and particularly pointed out in the claims.

The objects of my invention are to provide a simple, convenient, and inexpensive lock-protecting device, whereby access to the lock is entirely prevented except by persons authorized to handle the lock, to control said lock-protecting device by the same permutation mechanism which it protects, to provide improved and simple means for preventing locking-out when the protecting device is not in action or when testing the lock after changing the combination, and to make the device simple, reliable, inexpensive, and easy to apply.

I will now proceed to describe my invention with reference to the accompanying drawings, showing certain embodiments thereof, and will then point out the novel features in claims.

In the said drawings, Figure 1 shows a top view and partial section of a safe-lock with one form of my protecting device applied thereto. Fig. 2 shows a rear view of such protecting device in place on a lock, a portion being broken away. Fig. 3 shows a top view and partial longitudinal section of a lock and of an alternative form of protecting device thereon. Fig. 4 shows a partial longitudinal section of a lock, showing still another form of protecting device. Fig. 5 is a similar view illustrating still another lock-protecting device. Fig. 6 is a detail view of a portion of the "false tumbler" of the device shown in Fig. 5, and Figs. 7, 7ª, 8, and 9 are views of a lock having a cover-plate held in place by a sliding bolt provided with a movable "throw-out" member, Fig. 7 showing a rear view and partial section of such lock, Fig. 7ª a detail elevation of the locking-bolt and throw-out member, Fig. 8 a top view and partial section, and Fig. 9 a front view of the tumblers and a cross-section of the lock-case on section-line *x x* of Fig. 8.

My improved lock-protecting device may be made in various forms. In one of these forms (illustrated in Figs. 1 and 2) it comprises a casing completely inclosing the lock-casing and removable only when the permutation mechanism of the lock has been operated properly to that end. In these figures, 1 indicates a permutation-lock of ordinary construction; 2, the knob thereof; 3, the dial; 4, the main bolt, and 5 5 5 tumblers arranged to be rotated by rotation of the knob. I do not illustrate the construction of this lock in detail, as said lock may be of any suitable or ordinary construction. 6 designates a removable back section of the lock-casing or "back plate," by removing which access may be gained to the permutation mechanism for changing the combination or any other purpose. 7 designates the lock-protecting device. In the form shown it comprises a casing enveloping the casing of the lock and provided with a shoulder 8 and claw 12, which may be brought into or out of engagement

with the lock-case by moving the said protecting device 7 longitudinally. In the position shown the shoulder 8 is in engagement with the front of the lock-case, and the claw 12, working in a slot in back plate 6, is in engagement with said plate, so that the protecting device cannot be removed, and longitudinal motion to disengage shoulder 8 and claw 12 is prevented by a pin 9, secured to the protecting device 7, projecting through an opening in the back of the lock-casing and engaging tumblers 5. These tumblers prevent motion of said pin in such direction as to disengage the shoulder 8 and claw 12 from the lock except when the notches of all the tumblers are lined up opposite the said pin, to do which the permutation mechanism must be operated according to the correct combination, which is the same combination as that employed for the normal operation of the lock, the dial-ring of the lock, however, being provided with a special mark with respect to which the combination is read when operating the lock to release the protecting device. This form of protecting device not only prevents unauthorized entry into the lock-casing, but prevents tampering with the mechanism of the lock in any way and protects the lock against mechanical injury, fire, &c.

Another form of protecting device affording as complete protection against unauthorized entry and tampering with the lock and nearly as complete protection in other ways is shown in Fig. 3, in which 1, as before, designates the lock, 6 the removable back member of the lock-case, and 10 a guard-plate behind said back plate 6, masking the screws 11, holding the plate 6 in place, so that said screws may not be reached by a screw-driver or other tool. Plate 10 is secured to plate 6 by a claw 12, and a locking-screw 13, corresponding substantially to pin 9 in Fig. 1 and provided with a lug 13^a, coöperating with claw 12, normally prevents moving plate 10 to the right far enough to disengage 12 and 13^a from the back plate 6; but when the notches in the tumblers 5 are all lined up opposite this screw 13, as they will be when the permutation mechanism is operated according to the proper combination read with respect to the special mark on the front of the lock provided for the purpose, then plate 10 may be moved to the right, disengaged from the plate 6, and removed altogether, thus exposing the screws 11, holding plate 6 in place.

It is not necesssary that guard-plate 10 cover the entire back of the lock. Instead it may cover only that portion thereof to which access must first be gained before access is had to the permutation mechanism. This is illustrated in Fig. 4, in which the guard, here shown as a mere button 10^a, normally covers the single screw 11, holding the back 6 of the lock against removal, the movement of button 10^a being prevented by screw 13 and the tumblers except when the tumblers have their notches lined up opposite this screw 13. In Fig. 4 I also illustrate a very simple construction for the parts of the safety-locking device. The button 10^a has a block 14, to which is secured a guide-pin 15, sliding in a bearing in the back 6 of the lock-case, and to this block 14 the screw 13 is also secured. Obviously this is a very simple and inexpensive yet effective lock-protecting device.

In an application for Letters Patent by Frank Duesterwald, filed December 28, 1905, Serial No. 293,627, the said Duesterwald has illustrated and described a lock-protecting device embodying a sliding locking member normally engaged by the tumblers and prevented from moving to a release position until the permutation mechanism is properly operated, and when this has been done the said locking member is moved automatically to the release position by a spring. The same idea is applicable to my invention, according to which instead of actually locking in place the removable back plate of the lock I prevent access to some part to which access must be had before the back plate may be removed. Figs. 5 and 6 illustrate such a locking device. In Fig. 5 I have shown a guard-plate 10^b just in rear of the back plate 6 and removably connected by means of a lug 10^c, working in a slot 16 in said plate to a guide 15, working in bearings in plate 6, and I have shown plate 6 held in place by a screw 11, access to which is normally blocked by plate 10^b. A spring 17 tends to press this plate 10^b to the right, but is prevented from so doing by the engagement of its screw 13 with the tumblers 5 and a false tumbler 18, (said false tumbler being a disk normally mounted on the spindles of locks of this type and being the means through which the tumblers 5 are rotated when the main spindle 2 is rotated;) but when the notches of the tumblers are so opposite screw 13 a cam-notch 19 in said false tumbler is also opposite said screw 13, and the screw being permitted to move to the right by the action of spring 17 the hole 20 in plate 10^b is brought into line with screw 11, thus permitting the unscrewing of screw 11. When the spindle of the lock is again rotated, cam-notch 19 forces out screw 13, forcing the guard-plate 10^b to the left, and so blocking access to screw 11.

It is obvious that the above are only a few of the many ways in which my invention may be applied.

One portion of my invention relates to means whereby the lock-protecting device may be thrown out of action when so desired. It is important that this may be possible, for the convenience of the safe-lock trade, who will constantly handle the lock with said protection thereon, and who desire to have the device complete but in an unlocked condition in order that they may be free to inspect the

lock mechanism at any time without the trouble of unlocking same through the combination; also, after changing the combination of a lock the lock should be tested with the new combination before closing the door to which the lock is applied to guard against a possible mistake in reading the new combination, and since the same combination must be used to release the lock-protecting device once the lock-casing has been closed and said lock-protecting device put into operation said lock-protecting device must not go into operation until after the combination has been tested; otherwise if a mistake has been made in reading the combination it will be impossible to gain access to the interior of the lock to correct the mistake without breaking the lock. The said Frank Duesterwald, in Letters Patent No. 828,276, dated August 7, 1906, has shown one means for throwing the lock-protecting device out of action when desired, the same consisting in making that portion of the lock-protecting device which engages the tumblers a removable member. However, it is better not to remove such member, as if removed it may be lost or mislaid maliciously. It is better to make such member a permanent part of the lock-protecting device, but to so mount it that while remaining in place in such lock-protecting device it may be moved into or out of operative position at will. In Fig. 1 and certain other figures of the drawings I show one of the many possible ways of accomplishing this object, the same consisting in mounting the pin 9, which engages the tumblers as an eccentric member, rotatable with respect to the main portion of the lock-protecting device into and out of position to engage the tumblers. In the construction shown this is accomplished by providing the member 9 with a base 21, secured to the main portion of the lock-protecting device by a screw 22, with respect to which the main portion of member 9 is eccentric, and to prevent accidental rotation of said member 9 I provide ribs 23, fitting into corresponding recesses in plate 7, so that the member 9 can rotate only when the screw 22 is loosened. Pin 9 then constitutes what may be termed a movable "throw-out" member. The said construction of tumbler-engaging member is applicable to locks such as shown in the said Duesterwald patent, No. 828,276, in which the back plate of the lock is normally held in place by a sliding bolt carried by said back plate. This is illustrated in Figs. 7, 9, in which 6 designates the removable back of the lock-casing; 24, the said locking-bolt; 25, a button working through a slot in back 6 whereby said bolt may be moved into and out of engagement with the main portion of the lock-casing when permitted so to move, and 9 designates, as in Fig. 1, the eccentrically-mounted throw-out member adapted to be in a position to engage the tumblers, and so control the movement of the bolt 24, or to be in a position such that it cannot engage the tumblers, so leaving the bolt 24 free to move independent of the motion of the tumblers or their adjustment.

Back plate 6 is secured to the lock-casing 1 by bayonet-joints 26 and normally by engagement of the bolt 24 with a deep notch 27 of said casing, whereby the back plate is prevented from being turned to release the bayonet-joints. A shallower notch 28 extends from notch 27 on one side thereof. When pin 9 is turned, as shown in Fig. 8, bolt 24 can be withdrawn far enough to free the back plate only when all of the tumblers are lined up with their notches opposite pin 9. When pin 9 is turned back, as shown in dotted lines in Fig. 7[a], to throw said pin out of action, said pin is within the notch 27; but when it is desired to remove the back plate bolt 24 may be withdrawn until pin 9 is free to move within notch 28, (which is on the side toward which the back plate 6 must be turned to open the bayonet-joint,) and thus the lock-casing may be opened quite independent of the position of the tumblers.

In the constructions shown in Figs. 3 and 4 the removability of screws 13 permits the protective device to be thrown out of action when desired. In the construction shown in Fig. 5 the removability of member 10[b] accomplishes the same purpose.

What I claim is—

1. The combination with a permutation-lock comprising permutation mechanism and an inclosing casing therefor having a removable member affording access to such mechanism, and means for holding same in place, of a protecting device comprising a guard member having retaining means normally engaging a portion of said lock when in place thereon, said guard member in one position preventing access to the holding means of said removable member and provided with locking means normally engaged by said permutation mechanism but which when released thereby permits movement of said guard member to afford access to said holding means.

2. The combination with a permutation-lock comprising permutation mechanism and an inclosing casing therefor having a removable member affording access to such mechanism, and means for holding such member in place, of a protecting device comprising a guard member outside said casing but having retaining means normally engaging a portion of the lock when in place thereon, said guard member in one position preventing access to the holding means of said removable member, and provided with locking means projecting through said casing into engagement with said permutation mechanism.

3. A protecting device, for permutation-locks comprising permutation mechanism

and an inclosing casing therefor having a removable member affording access to such mechanism, and means for holding said member in place, said protecting device comprising a second casing inclosing the lock-casing when in place thereon and having retaining means holding it in place on said lock-casing in one position of said second casing, and locking means engaged by said permutation mechanism.

4. A protecting device, for permutation-locks comprising permutation mechanism and an inclosing casing therefor having a removable member affording access to such mechanism, and means for holding said member in place, said protecting device comprising a second casing inclosing the lock-casing when in place thereon and having retaining means holding it in place on said lock-casing in one position of said second casing, and comprising also a locking member projecting through an orifice in said first casing into engagement with said permutation mechanism.

5. The combination, with a permutation-lock comprising permutation mechanism, and an inclosing casing therefor having a removable member and means holding the same in place, of a protecting device comprising a guard member normally in the line of access to the holding means of said removable member, and a locking-pin coöperating with said permutation mechanism and normally holding said guard member in such obstructive position, but adapted when released by such permutation mechanism to permit movement of said guard member out of such obstructive position.

6. The combination, with a permutation-lock and a casing therefor, of a guard-casing normally inclosing but separable from said lock-casing, and in one position irremovable from said lock-casing, said guard-casing comprising locking means adapted to be engaged by the permutation mechanism to hold the guard-casing in such irremovable position until released by such permutation mechanism.

7. The combination, with a permutation-lock and a casing therefor, of a guard member normally preventing access to the casing of such lock and in such normal position irremovable from the lock but adapted to be moved into a position in which it is removable, said guard member provided with locking means projecting through an opening in the casing of said lock into engagement with the permutation mechanism thereof, and normally preventing movement of said guard member to the removable position until released by said permutation mechanism.

8. The combination, with a permutation-lock and a casing therefor, inclosing the same, of the guard member separate and independent of said casing and the locking member carried by said guard member, engaging the permutation mechanism of the lock, and normally preventing removal of said guard member until released by said permutation mechanism.

9. The combination, with a permutation-lock having a main locking-bolt and mechanism therefor, of the protecting member for said mechanism, and locking means therefor comprising throw-out means having two positions, in one of which such throw-out means engages the lock mechanism to prevent operation of said locking means except as permitted by such lock mechanism, while in the other position such throw-out means is not controlled by such lock mechanism.

10. The combination, with an inclosed permutation-lock, of a guard member adapted to prevent access to said lock and movable locking means, including throw-out means eccentrically mounted thereon and adapted to engage the permutation mechanism of said lock to prevent operation of the guard member.

11. A protecting device for permutation-locks, comprising guarding means adapted to prevent access to said locks and including a locking member comprising a throw-out member, adapted to be engaged and controlled by the permutation mechanism of such locks, said latter member movable on said locking member into and out of operative position.

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

CHAS. E. LEIGHTON.

Witnesses:
FRANK W. DUESTERWALD,
H. M. MARBLE.