

No. 710,071.

Patented Sept. 30, 1902.

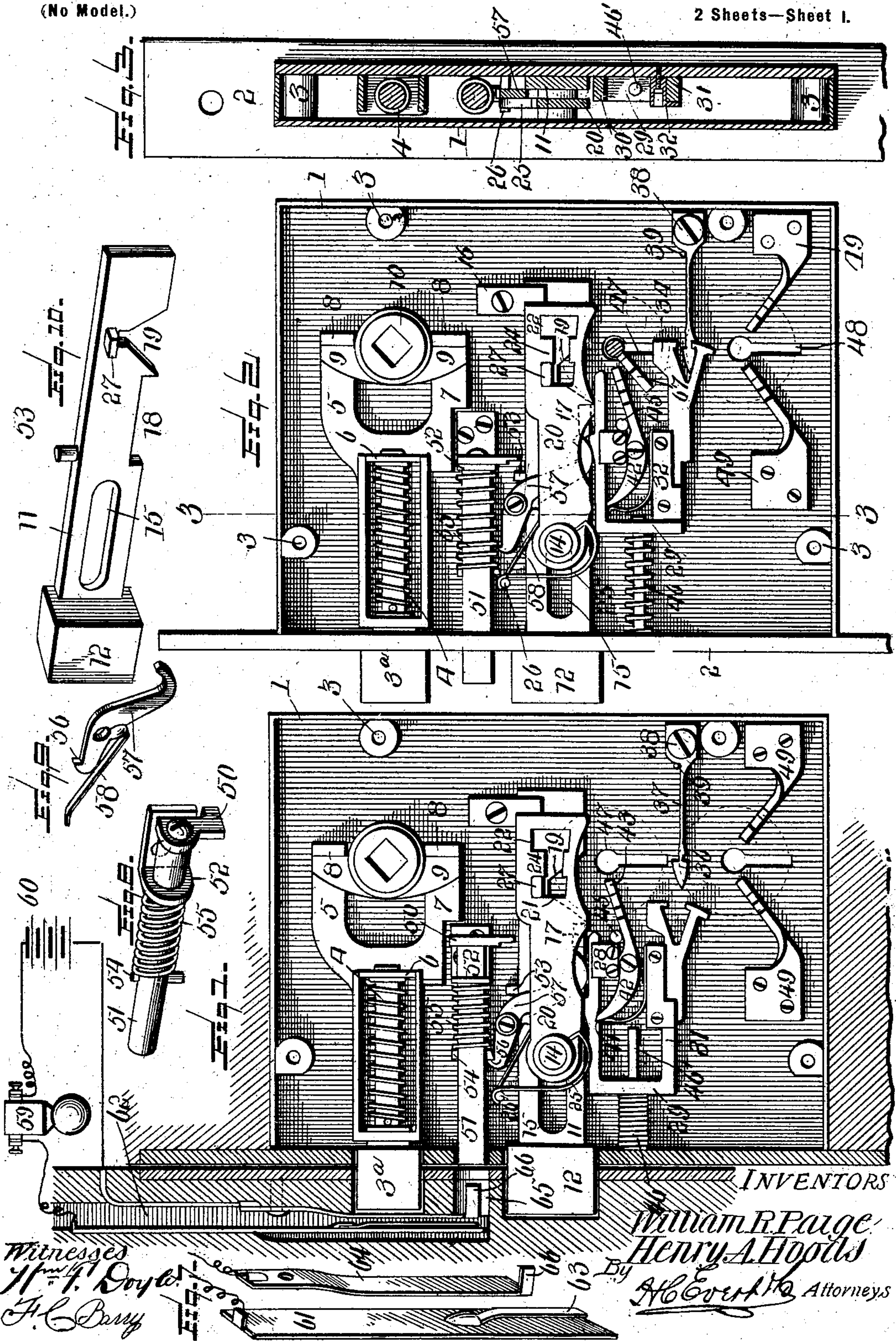
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LOCK.

(Application filed Mar. 1, 1902.)

(No Model.)

2 Sheets—Sheet 1.



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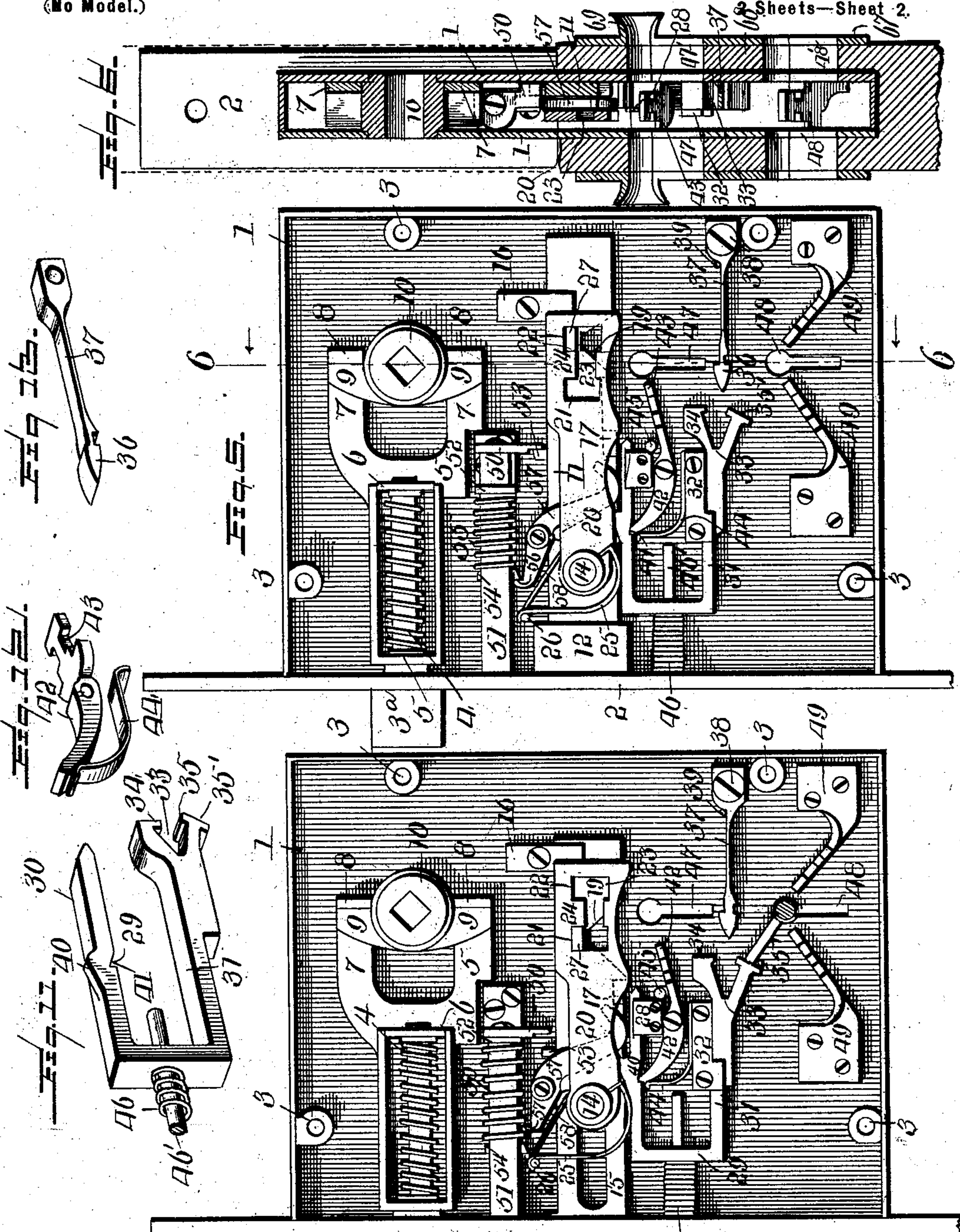
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(No Model.)

2 Sheets—Sheet 2.



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LOCK.

SPECIFICATION forming part of Letters Patent No. 710,071, dated September 30, 1902.

Application filed March 1, 1902. Serial No. 96,258. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM ROSS PAIGE and HENRY AXEL HOODS, citizens of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Locks, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in locks, and has for its main object the provision of novel means for locking and retaining a false key in the lock when such key is inserted for unlocking the
15 lock, and further aims to provide means whereby the possessor of the key adapted to unlock the lock may readily operate the mechanism so as to permit him to unlock the false key, remove it from the lock, and then
20 unlock the latter. In connection with this it is our object to construct a lock and provide mechanism to be actuated by the insertion of any false key into the lock which will complete a circuit and sound an alarm, whereby
25 notice will be given to the occupants of the building that others than those having the proper key or keys have attempted to operate the lock, such circuit being continued until such time as the proper key is inserted
30 into the lock and its mechanism actuated so as to restore the parts to such position as to break the circuit.

Briefly described, our invention consists of a gripping-frame which is slidably secured in the
35 casing of the lock and normally held out of engagement by means of a spring-pressed trigger. One end of this trigger is notched to correspond with the proper key, and when a false key is inserted—that is, a key having other configuration
40 than that required by the trigger—the false key fails to pass said trigger and engaging against the same actuates it so as to release the gripping-frame, and the latter under the tension of its spring is shot rapidly forward into
45 position beyond the path of travel of the false key, and in this position the gripping-frame is automatically locked, making it impossible to remove the false key from the lock. The lock-casing is provided at a point preferably
50 below the standard keyhole with a false keyhole or auxiliary keyhole, and arranged within the casing of the lock on opposite sides of

this false or auxiliary keyhole are guard-plates which are notched or shaped to conform to the proper key for the lock. Thus
55 should the possessor of the false key insert the latter into the auxiliary keyhole instead of into the proper or standard keyhole these guard-plates will prevent the turning of the key, except to a limited degree, in either direction, so that after the holder of one false
60 key has attempted to operate the lock, and thereby had the key gripped and held, he may not by insertion of another false key or other device into the false or auxiliary key-
65 hole obtain a release of the false key which is held by the gripping-frame. These guard-plates, however, being notched to conform to the proper key readily permit the latter to
70 pass, so that the locking means for the gripping-frame may be engaged and actuated to permit the release of the false key that is or has been held thereby. In connection with
75 this mechanism we provide means or mechanism adapted when the gripping-frame is released from its normal position by the insertion of a false key to also release a spring-held bolt and allow the same to engage and
80 make contact with a contact-strip located in the door-jamb, the contact-strip being connected to a suitable alarm and battery, which may be located at any desirable place within the building.

In order to enable others skilled in the art to clearly understand the invention and in
85 what manner it may be practiced, we will now proceed to describe the same in detail, reference being had in such description to the accompanying drawings, wherein like numerals will be employed to designate like parts
90 throughout the several views, in which—

Figure 1 is a plan view of our improved lock with one side removed, showing in section a portion of a door and of a door-jamb and also showing the manner of connecting
95 with the electric alarm. Fig. 2 is a detail plan view of the lock, showing the position of the parts when the latch-bolt and lock-bolt are in the locked position and the contact-pin in the released or circuit-closing position.
100 Fig. 3 is a transverse vertical sectional view taken on the line 3 3 of Fig. 2. Fig. 4 is a detail plan view of the lock with one side of the casing removed, showing the proper key

inserted in the auxiliary keyhole for the purpose of releasing the lock of the gripping-frame and for restoring the latter to its normal position in order that a false key could
 5 be removed from the keyhole and the proper key inserted therein to actuate the latch-bolt as well as the circuit-closing pin. Fig. 5 is a detail plan view of the lock with one side of the casing removed to show the parts in their
 10 normally retracted positions. Fig. 6 is a transverse vertical sectional view taken on the line 6-6 of Fig. 5, also showing the escutcheons and a part of the door in section. Fig. 7 is a detail perspective view of the two
 15 circuit-closing strips located in the door-jamb for completing the circuit to an electric alarm. Figs. 8, 9, 10, 11, 12, and 13 are detail perspective views of various parts of the mechanism which will be hereinafter more specifically described.

In the accompanying drawings the casing, as in the usual construction of locks, comprises a plate 1, cast with an integral flange around three sides thereof, with the front
 25 plate 2 connected to the other side, this front plate 2 being somewhat longer than the casing and provided with apertures for the reception of screws to hold the lock in position in the recess provided therefor in the edge of
 30 the door. Located at suitable intervals around the inner wall of the flange or sides of the casing are threaded bosses 3, adapted to receive the screws (not shown) by means of which the other side plate 1 of the casing
 35 is secured in position. The front plate 2 of the casing is provided in this instance with three openings—one for the reception of and to permit the operation of the lock-bolt, one to permit the operation of the latch-bolt, and
 40 the other to permit the operation of the circuit-closing or circuit-completing pin, which parts will be further described hereinafter. As in the usual practice, the latch-bolt 3^a is operative independently of the lock-bolt, and
 45 to this end the latch-bolt comprises a head and is normally projected through the opening in the plate 2 by means of a stiff coil-spring 4, that is arranged on the shank of the latch-bolt between the closed end of a
 50 yoke 5 and a lug 6, that is cast or otherwise made stationary with the casing. This yoke at its inner end is flattened and bifurcated, the ends thereof being turned out at right angles to the arms formed by the bifurcation,
 55 the arms 7 and angular ends 8 receiving lugs or ears 9, cast integral with the socket 10, mounted between the two side plates of the casing and having a square or other like opening to receive the spindle upon which the
 60 door-knobs are mounted. The socket 10 has its ends countersunk into the side plates of the casing, and it will be observed that when the knob (not shown) is turned the socket will be rotated in such a manner as to actuate the
 65 yoke and draw the latch-bolt within the casing to permit the opening of the door. Upon the release of the knob the spring 4 immedi-

ately returns the latch-bolt to its projected position.

The lock-bolt as constructed by us in practice and as a matter of further improvement
 70 consists of a substantially rectangular shank 11, having a head 12 on the outer end that operates in the opening provided therefor in the front plate 2. The flat shank lies in en-
 75 gagement with the one plate of the casing and is guided in its longitudinal movement by a stud or pin 14, projecting through a slot 15 in the shank, and is further guided by a guide-block 16, secured to one side plate of
 80 the casing. The throw of this lock-bolt in either direction is limited to the exact distance, so as to insure proper working of the various parts by means of a small stop-lug 17, which operates in a cut-away portion 18 in one
 85 edge of the shank 11. This shank is provided just beyond this cut-away portion 18 with a substantially V-shaped notch or recess 19 to receive the key-ward for the purpose of re-
 90 tracting or returning the lock-bolt to its position within the casing and for operating said lock-bolt to engage the same with its socket in the door-jamb and lock the door. Pivotaly mounted on the stud or pin 14 is a
 95 locking-lever 20, which is provided near its free end with openings 21, 22, communicating with each other through a passage 23, narrower than the width of the openings by reason of necks or lugs 24, formed in the walls
 100 of the openings and projecting toward each other from opposite sides thereof. This locking-lever is spring-held by means of a flat spring 25, the one end of which is inserted into a notch near the pivoted end of the lock-
 105 ing-lever and the other end of which is looped around a stud or pin 26, secured in one of the side plates of the casing. The shank of the lock-bolt carries a locking-stud 27 to engage in the opening 21 when the bolt is in the
 110 locked position and to similarly engage in the opening 22 when the bolt is in the retracted position.

Mounted in a guide-block 28, that is secured to one of the side plates of the casing, is the gripping-frame, which when released is ac-
 115 tuated so as to be moved into position to prevent the removal of the false key that has released the frame from its normal position. This gripping frame or device consists, essentially, of a yoke 29, (see Fig. 11,) the arm
 120 of which slides in the guide-block. The arm 31 of this yoke slides in a guide-block 32, also secured to the one side plate of the casing, this latter guide-block also acting as a stop to be engaged by the closed end of the yoke, whereby
 125 the movement of the latter when released is limited, and said closed end is prevented from striking any of the parts of the mechanism and injuring the same. The arm 31 at its
 130 free end is bifurcated and spread apart to form a somewhat dart-shaped opening 33, with inwardly-projecting shoulders 34, 35, partially closing the mouth of said opening. This dart or spear-shaped opening 33 in the

end of the arm 31 is adapted when the gripping device is released to receive a substantially spear-shaped head 36, formed on the free end of a spring-arm 37, mounted on a pin or screw 38 in the casing. A small stud or pin 39, as shown, may be placed to the one side of the spring-arm 37 in order to insure the return movement of the arm when released. The arm 30 of the yoke is constructed on its upper face with a cam 40 and on its underneath face directly opposite the cam with a notch 41. The purpose of the cam will be hereinafter described in connection with the alarm mechanism. Pivoted to one of the side plates of the casing between the arms 30 and 31 of the gripping device is a trigger 42, the pawl end of which is adapted to engage with the notch 41 of the arm 30 to normally hold the gripping-frame in the retracted position and the other end of which is constructed with a ward 43, corresponding in form to the ward of the proper key. The pawl end of the trigger is normally retained in engagement with the notch of the arm 30 by means of a spring 44, which is bowed so as to have its one end bear against the trigger adjacent to the pawl end of the latter, the body portion of the spring lying against and being secured in any suitable manner to the guide-block 32. A small stud or stop-pin 45, secured in the casing, limits the upward movement which may be imparted to the trigger by pressure on the ward end of the same. Secured in the closed end of the yoke forming the gripping frame or device is a stem 46, which works therein, being held by the front plate 2 of the casing, and arranged on this stem between the closed end of the yoke and the front plate 2 is a stiff coil-spring 46, which when the ward end 43 of the trigger is forced upwardly, and the pawl end of said trigger thereby disengaged from the notch 41, forces the gripping device forward into the path of travel of the key and partially over the key-hole, so as to prevent the withdrawal of the key that has been employed. The lock-casing is provided with a main keyhole 47 and an auxiliary keyhole 48. The main keyhole is located just below the lock-bolt and the auxiliary keyhole is located below the main keyhole in direct vertical alinement therewith. Secured in the lock-casing, to one of the side plates thereof, are two guard-plates 49, located one at each side of the auxiliary keyhole 48, these guard-plates being constructed with key-wards conforming to the ward of the proper key to operate the lock.

In connection with the retaining or gripping means for holding any false key which may be inserted into the lock we provide an alarm operated automatically in connection with the releasing of the gripping means from its normal position, and this mechanism comprises a circuit-closing pin 51, which is mounted to slide longitudinally in a small L-shaped lug or bracket 52, secured in the casing to one of the side plates thereof. The outer end of

this pin operates in an opening provided therefor in the front plate 2, and the pin carries on its inner end a lug 50, which is adapted to be engaged by a pin 53, carried by the shank 11 of the lock-bolt for the purpose of retracting automatically and simultaneously with the retracting or unlocking of the lock-bolt. Arranged on the circuit-pin 51 between the outwardly-extending portion of the L-shaped lug or bracket 52 and a pin 54, that passes transversely through the circuit-pin 51, is a stiff coil-spring 55, which tends to project said pin forward when its retaining means is released, so as to permit the pin to complete a circuit and sound an alarm, as will be further explained.

The end of the transverse pin that projects toward the lock-bolt is beveled, (see Figs. 1, 4, and 5,) so that when it engages the pawl end 56 of the pivoted retaining-dog 57 it will depress or actuate said pawl end of the dog, so as to allow the pin to pass beyond the same. This dog 57 is pivotally mounted on a pin or screw secured in one of the side plates of the casing directly above the lock-bolt, and the dog lies on the lock-bolt, between the latter and the locking-lever 20, its curved end projecting downward, so as to be engaged by the cam 40 on the arm 30 of the gripping device. This dog is spring-pressed by a spring 58, the one end of which contacts with the underneath face of the dog and the other end of which is looped over the pin 26. This circuit-closing pin, as stated, is adapted to complete an electrical circuit for sounding an alarm suitably located at any point in the building. The alarm 59 is connected to a suitable battery 60 and to a contact-strip 61, suitably disposed in the door-jamb 62. This contact-strip carries a contact 63, and suitably disposed in the door-jamb, in parallel alinement with the contact-strip 61, is a second contact-strip 64, which carries a stud or pin projecting into an opening 65, provided therefor in the door-jamb, said stud or pin 66 adapted to be engaged by the circuit-closing pin 51 when the latter is released, whereby the strip 64 is forced into contact with the contact 63 and a circuit is established by reason of the strip 64 being connected to the battery 60.

In describing the operation we will call attention to the fact that when the proper key is inserted in the keyhole 47 it conforms to and readily passes the key-ward 43 of the trigger 42 and may thus be directly engaged with the inclined walls of the recess or notch 19 in the lock-bolt to throw said bolt either to lock or unlock the same, the key engaging the locking-lever so as to raise the same and allow the lug 27 to travel through the passage-way 23, the said lug engaging in the opening 21 when the lock-bolt is in the locked position (see Figs. 1, 2, and 4) and in the opening 22 when the lock-bolt is in the unlocked position. (See Fig. 5.) The operation of this lock-bolt by means of the proper key in no manner operates any of the other mechanism

adapted to prevent the use of a false key for the unlocking of the door. In case, however, a false key is inserted into the keyhole 47, the ward of said key failing to pass the ward 5 43 of the trigger 42, the said trigger is actuated so as to disengage the pawl end thereof from the notch 41, and the retaining means for the trigger having been thus released the spring 46, exerting its pressure against the gripping- 10 frame, forces or shoots said frame forward beyond the false key 67 (see Fig. 2) into the path of said key and effectually prevents its removal. This gripping-frame is locked in this position by means of the spear-shaped head 15 36 entering into the similarly-shaped opening 33 in the arm 31, with the shoulder 35 engaging in the notch on the underneath side of the spring-arm 37, just back of the head thereof. The releasing of the gripping device has 20 caused its cam 40 to engage the lower end of the dog 57, and thus release the pawl end of the dog from the transverse pin 54, allowing the spring 55 to force or shoot the circuit-closing pin 51 forward, so as to engage the pin 66 25 and force the contact-strip 64 into engagement with the contact 63, and thereby complete a circuit to the alarm to sound the latter. Such circuit will remain closed until 30 one with the proper key releases the gripping device, removes the false key from the lock, and restores the parts to their normal positions. The false key, it will be observed, may be readily removed by any one possessing the 35 proper key for the lock by inserting the proper key into the false or auxiliary keyhole 48 and turning the key so as to engage with the end 35' of the arm 31. (See Fig. 4.) The key in describing its circle en- 40 gages and lifts the arm 37, so as to disengage the shoulder 35 from the notch in said arm, and the gripping device is forced back by said key until the pawl end of the trigger 42 again engages in the notch 41, where it is re- 45 tained by its spring 44. This proper key is then removed from the auxiliary keyhole, the false key is removed from the main keyhole, and the proper key inserted into the main keyhole, so as to throw the lock-bolt out of its locked position. This latter operation 50 causes the pin 53, carried by the lock-bolt, to engage the lug 50, carried by the circuit-closing pin 51, and returns said pin 51, so as to permit the pawl end 56 of the dog 57 to engage again with the end of the transverse pin 55 54 and hold said circuit-closing pin in the retracted position, thus breaking the circuit to the alarm. The lock-bolt may then again be thrown forward into the locked position, if that is the position in which it is desired to 60 have the same.

We preferably employ in connection with the lock escutcheon-plates 67 of a special construction. These plates we attach to each side of the door 68 and provide the same with 65 keyholes 47' 48' to register, respectively, with the keyholes 47 48 in the lock-casing and those in the door. Each escutcheon-plate is pro-

vided on its outer face with a somewhat funnel-shaped guide-flange 69, slotted at the lower side, so as to permit the key to enter. 70 This rim or guide-flange assists in the ready finding of the proper or main keyhole in the dark and also serves to render it difficult to operate any instrument other than a key which might be inserted in an attempt to 75 "pick" the lock.

We desire to call attention to the fact that not only is the false key securely gripped and retained within the casing after an attempt 80 to unlock the door with the same, but automatically with the operation of the gripping mechanism the circuit to the alarm is closed, so as to sound said alarm, and this circuit remains closed until such time as the false key 85 is removed, as it requires the use of the proper key in order to restore the parts to their normal positions and break the circuit. We also desire to call attention to the fact that the parts are few and simple, there being no com- 90 plicated mechanism liable to become out of order, and while the construction we have herein shown and described appears to be the preferable form of the invention as we have practiced the same, yet it will be no- 95 ticed that various slight changes may be made in the details of construction, and we therefore do not wish to limit ourselves to the exact construction shown and described, but may make such changes as come clearly 100 within the scope of the invention.

Having now fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a device of the character described, the combination with a lock having a casing, 105 of slidable means in said casing adapted to be normally held in a retracted position, and means in said casing adapted when engaged by a false key to release said first-named 110 means and allow the same to shoot forward into position to prevent the withdrawal of said false key.

2. In a device of the character described, the combination of a lock-casing provided 115 with an auxiliary keyhole, notched plates secured to the casing at each side of the said keyhole adapted to correspond with the wards of the key, a gripping-frame slidably mount- 120 ed in the casing, and means secured to the casing for holding said frame normally in the retracted position, substantially as described.

3. In a device of the character described, the combination with a lock-casing having an 125 auxiliary keyhole formed therein, of notched guard-plates secured to the casing at opposite sides of the keyhole, a gripping-frame mounted to slide in the casing of the lock, a spring-held trigger engaging the gripping- 130 frame to hold the same normally retracted, and means adapted when the trigger is released to project the gripping-frame into the path of travel of the key.

4. In a device of the character described, the combination of a lock-casing having an

auxiliary keyhole, guard-plates secured at opposite sides of said keyhole, a spring-pressed gripping-frame slidably mounted in the lock-casing, and a spring-held trigger normally holding said frame in the retracted position, the end of said trigger projecting into the path of travel of the key and notched to permit the passage of the proper key, substantially as described.

5. In combination with a lock having a casing provided with a main and an auxiliary keyhole, means secured at opposite sides of the auxiliary keyhole for preventing the rotation of a false key after insertion into the casing a gripping-frame slidably mounted in the casing and adapted when released to project into the path of travel of a key inserted through the main keyhole, and means for holding said gripping-frame normally in the retracted position, said means adapted to prevent the rotation of a false key inserted into the casing through the main keyhole, substantially as described.

6. In combination with a lock having its casing provided with a main keyhole and an auxiliary keyhole, spring-actuated means adapted to be engaged by a false key inserted through the main keyhole, spring-actuated means adapted to be released when the said first-named means is actuated by the false key whereby the second-named means is shifted to a position in the casing to prevent the removal of the false key, and means for locking said second-named means in the shifted position.

7. In combination with a lock having its casing provided with a main keyhole and an auxiliary keyhole, spring-actuated means adapted to be engaged by a false key inserted through the main keyhole, spring-actuated means adapted to be released when the first-named means is actuated by the false key whereby the second-named means is shifted to a position in the casing to prevent the removal of the false key, and means within the casing to prevent the rotation of a false key therein after insertion through the false keyhole.

8. In combination with a lock having its casing provided with a main keyhole and an auxiliary keyhole, spring-actuated means adapted to be engaged by a false key when inserted through the main keyhole, spring-actuated means adapted to be released when the first-named means is actuated by the false key whereby the second-named means is shifted to a position within the casing to prevent the removal of the false key, means for locking said second-named means in the shifted position, and means within the casing to prevent the rotation of a false key therein when inserted through the auxiliary keyhole, substantially as described.

9. In combination with a lock having a casing provided with a keyhole, and an alarm electrically connected to the lock, of means whereby the lock-bolt of the lock may be op-

erated by the proper key without completing the circuit to the alarm, and means adapted when actuated by a false key to simultaneously shift into position to prevent the withdrawal of said false key and to complete a circuit with said alarm.

10. In a lock, the combination with the lock-casing having a main keyhole, and an alarm electrically connected to the lock, of means for operating the lock-bolt by the proper key without completing the circuit to said alarm, and spring-actuated sliding means arranged in the casing adapted when actuated by a false key to simultaneously shift into position to prevent removal of the false key and to complete a circuit to the alarm, substantially as described.

11. In a lock, the combination of a casing having a main keyhole and an auxiliary keyhole, a latch-bolt and a lock-bolt arranged within the casing and operative independently, an alarm electrically connected to the lock and normally out of circuit therewith, and means arranged within the lock-casing and adapted when actuated to shift into position to prevent the withdrawal of the actuating-key and to simultaneously complete a circuit to the alarm.

12. In a lock, the combination with the lock mechanism including a lock-bolt, and an alarm electrically connected to the lock mechanism but normally out of circuit therewith, of means whereby the lock-bolt may be operated by the aid of the proper key without completing the circuit to the alarm, and means adapted when actuated by a false key to complete the electrical circuit to said alarm, substantially as described.

13. In a lock, the combination with the lock mechanism including a lock-bolt, operative by the proper key to desired positions without operation of the other parts of the lock mechanism, of means adapted when actuated by a false key to be shifted into position to prevent the removal of said key and to simultaneously release mechanism to sound an alarm.

14. In a lock, the combination with the lock mechanism, and the casing having a main and an auxiliary keyhole, of spring-actuated means arranged within the casing and adapted when released by a false key inserted in the main keyhole to be shifted into position to prevent the removal of the false key, substantially as described.

15. In a lock, the combination with the lock mechanism, and the casing having a main keyhole and an auxiliary keyhole, of spring-actuated means slidably arranged within the casing and adapted when released by a false key inserted through the main keyhole to be shifted into position to prevent the removal of the false key, substantially as described.

16. In a lock, the combination with the lock mechanism, and the casing having a main keyhole and an auxiliary keyhole, of spring-actuated means slidably arranged within the casing and adapted when released by a false key

inserted through the main keyhole to be shifted into position to prevent the removal of the false key, and means for locking the first-named means in the shifted position, substantially as described.

17. In a lock, the combination with the lock mechanism, and the lock-casing having a main keyhole, and an auxiliary keyhole, of notched guard-plates arranged at opposite sides of the auxiliary keyhole, as and for the purpose described.

18. In a lock, the combination with the lock mechanism, and the lock-casing having a main keyhole and an auxiliary keyhole, of means actuated only by a false key inserted through the main keyhole to prevent the removal of said false key, substantially as described.

19. In a lock, a lock-bolt operative by the proper key when inserted through the main keyhole in the casing, means held normally retracted in the casing and adapted when released by a false key inserted through the main keyhole to project into the path of travel of said key, a spring-arm for locking said means in its projected position, and guard-plates disposed to prevent the release of the said means

by a secondary false key inserted into the lock, substantially as described.

20. In a lock, a casing having a main and a false or auxiliary keyhole, a lock-bolt operative by a proper key inserted through the main keyhole, means adapted to project into the path of travel of a false key when inserted into the main keyhole to prevent the removal of said false key, and an alarm-circuit closer automatically operated by said means, substantially as described.

21. In a lock, the combination with the casing having a main and an auxiliary keyhole, of the lock mechanism, the circuit-closing device, and the false-key-retaining device, substantially as described.

In testimony whereof we affix our signatures in the presence of two witnesses.

WILLIAM ROSS PAIGE.
HENRY AXEL HOODS.

Witnesses to signature of William R. Paige:

W. A. CARLSON,
CHARLES BOSTROM.

Witnesses to signature of Henry A. Hoods:

L. MEININGER,
OSCAR THUNE LARSEN.