

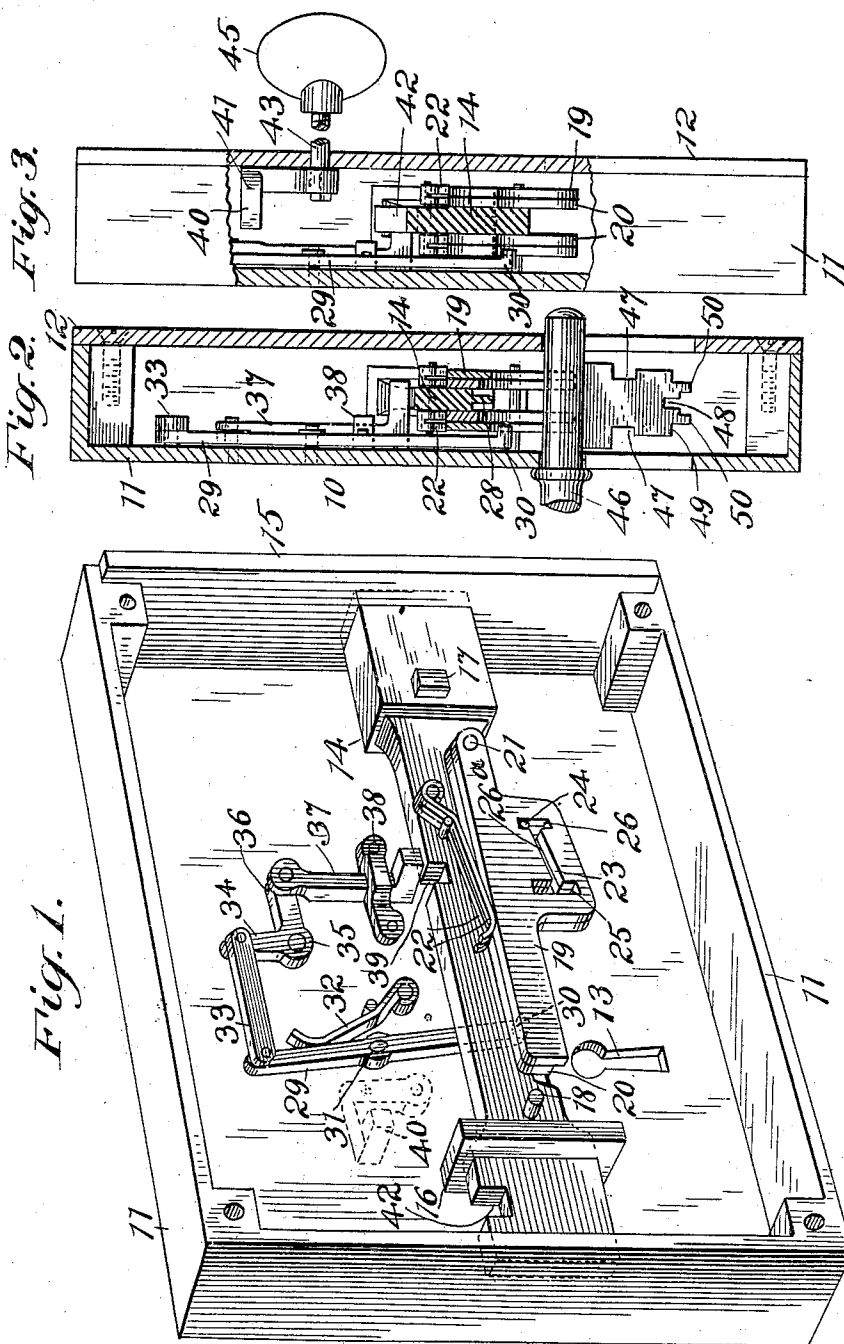
No. 874,694.

PATENTED DEC. 24, 1907.

F. F. MILLER.
LOCK.

APPLICATION FILED APR. 22, 1907.

2 SHEETS—SHEET 1.



Witnesses:
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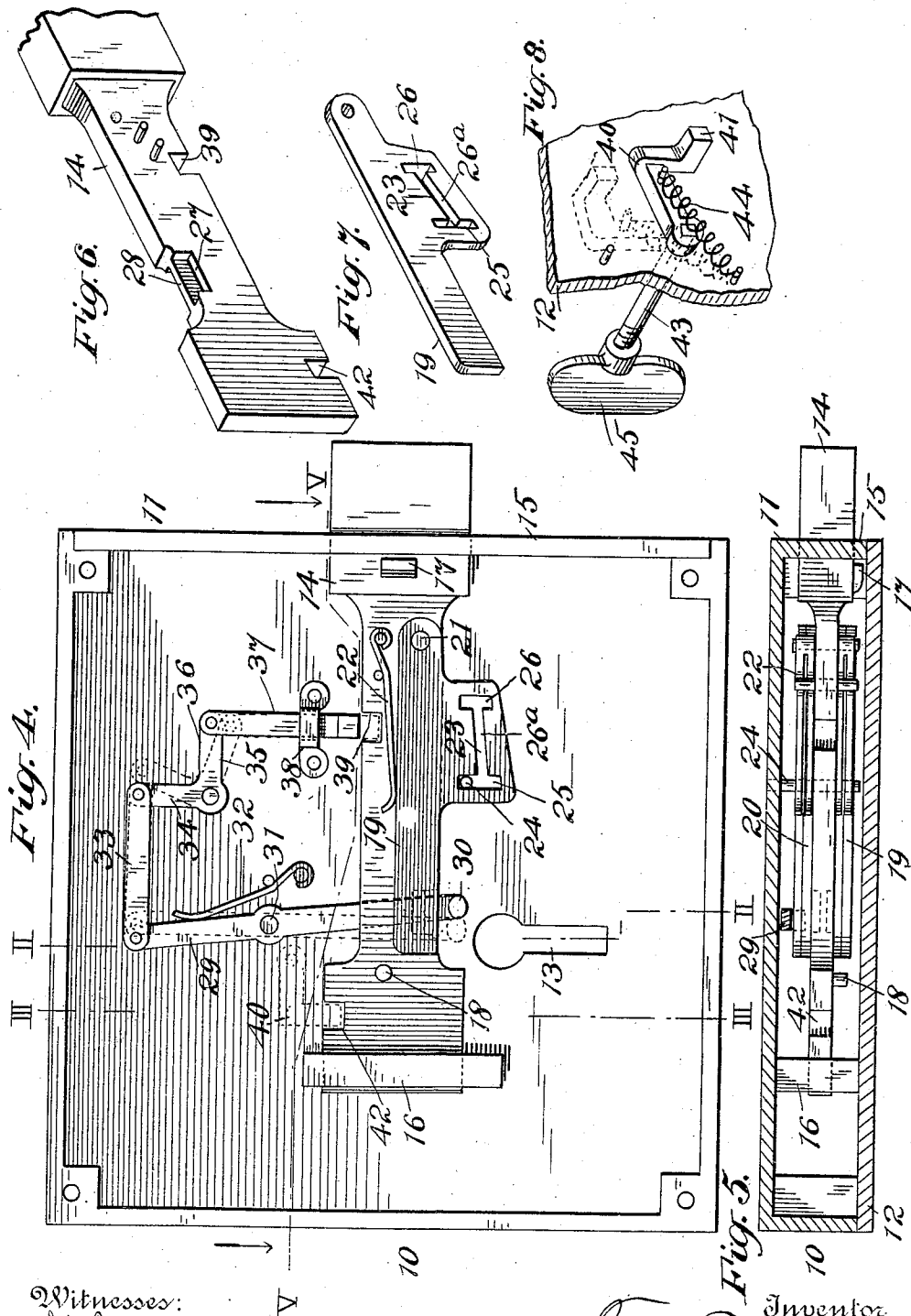
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UNITED STATES PATENT OFFICE.

FRANK F. MILLER, OF NEW YORK, N. Y., ASSIGNOR TO MARTIN B. FALSEY, OF NEW YORK, N. Y.

LOCK.

No. 874,694.

Specification of Letters Patent.

Patented Dec. 24, 1907.

Application filed April 22, 1907. Serial No. 369,516.

To all whom it may concern:

Be it known that I, FRANK F. MILLER, a citizen of the United States, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Locks, of which the following is a full, clear, and exact description.

This invention relates more particularly to a device adapted to be employed either as a mortised or outside lock.

The primary object of the invention is to provide simple and efficient means whereby it is practically impossible to pick the lock by means of skeleton or false keys; which is simple in construction; which has means whereby the bolt may be locked from the inside, so that the door cannot be opened; which has means which will positively lock the bolt and hold the same in case it should be attempted to release the bolt from the outside by any means other than the special key made for that purpose; and which is so constructed that it is practically impossible to make a wax impression from the parts to form a key when the lock is in place.

A further object of the invention is to provide simple and efficient means whereby, the bolt may have a series of tumblers carried thereby, and in which the bolt cannot be moved unless the tumblers are moved just the right distance.

With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a perspective view of one form of device embodying my invention, the inclosing plate being removed. Fig. 2 is a vertical section taken on the line II—II of Fig. 4. Fig. 3 is a vertical section, partly in elevation, taken on the line III—III of Fig. 4. Fig. 4 is an elevation of the lock with the front plate removed. Fig. 5 is a sectional plan view taken on the line V—V of Fig. 4. Fig. 6 is a fragmentary detail of the bolt in an inverted position. Fig. 7 is a detail perspective of one of the tumblers; and Fig. 8 is a fragmentary perspective view of the front plate with the night latch attached thereto.

The frame or casing 10 of the lock may be of the usual or of any preferred construction. As shown it has the usual main part or member 11, and the plate 12, which may be fas-

tened thereto, and which has the usual openings 13 for the key to adapt the same to enter either side of the lock in the usual manner. A bolt, catch or device 14 is slidably held in the casing, and has one end supported in the end 15 thereof, and its other end supported in a bracket or boss 16. This bolt has a stop 17 to limit its outward or locking movement, and a stop or projection 18 to limit its inward or unlocking movement, and said projections are adapted to engage the casing and the boss or bracket respectively. The bolt 14 has a plurality of tumblers 19 and 20 pivotally held at one end, as at 21, to the bolt, and these tumblers are normally forced downward by means of springs 22, which are secured to and are movable with the bolt. The tumblers 19 and 20 are arranged on opposite sides of the bolt 14, and the tumblers 19 are wider than the tumblers 20 at their ends near the key opening 13, said tumblers being arranged in pairs and adapted to be engaged by the wards of the key as is usual. The tumblers are each provided with an I-shaped slot 23 which is arranged in a substantially horizontal plane lengthwise of the bolt 14, and entering the slot of each tumbler is a pin or projection 24, which is held to the casing 10. The slot 23 of each tumbler has its parts 25 and 26 arranged in a substantially vertical plane, and as will be seen, it will be necessary for the key to raise the tumblers just the proper height to permit the bolt to be thrown so that said projection may enter the straight part 26^a of said slots, for if any of the tumblers are thrown too far, or not far enough the projection will not pass into the straight part 26^a of the slots, and will still prevent the bolt to be thrown either from a locked to an unlocked position or vice versa.

The bolt 14 is provided with a recessed part 27, best shown in Figs. 2 and 6, and the purpose of this part is to form a substantially fixed tumbler or ward 28 as a part of the bolt. This ward or part 28 will prevent the key from being turned at all unless the key is cut away to pass the same, and said part 28 and the recess 27 makes it difficult to form a wax impression for the purpose of making a false key.

As an additional means to prevent the bolt 14 being thrown, I provide a lever 29 which has a projecting end 30 arranged adjacent to the key openings 13. This lever 29 is pivoted at 31 and is normally forced in one direction

by a spring 32, and if the key is not cut away to pass by the end 30 of the lever 29, it will force the same to the position shown in dotted lines in Fig. 4. A link 33 connects the upper end of the lever 29 to the arm 34 of a bell-crank 35, and this bell-crank 35 has its arm 36 connected to a vertically movable detent or bar 37. The bar or detent 37 is slid-
 5 ingly held in a guide 38, and the lower end of said detent is adapted to engage a slot 39 or other engaging part of the bolt 14 when the lever 29 is moved to the position shown in dotted lines. As will be seen a false key which would engage the end 30 of the lever
 10 29 would force the detent 37 into the slot 39 of the bolt so as to positively hold the bolt from being thrown by the key, the spring 32 tending normally to disengage the detent 37 from the bolt.

To prevent the lock from being picked or opened from the outside by either the proper or a false key, I provide a latch 40 on the plate 12 of the lock casing. This latch has an L-shaped end 41 which is adapted to en-
 25 gage a slot 42 in the bolt, when thrown to the position shown in dotted lines in Fig. 4. The latch 40 has its arm connected to a rod 43 Fig. 8, and said latch is held either in a downward or in a raised position by the spring
 30 44, the said spring being so arranged that the latch will force the same to one side or the other of the pivoting point. The rod 43 varies according to whether the lock is mortised or is placed on the outside of the door, and said rod has one end thereof screw
 35 threaded and held to the rod is a handle 45, by which the latch may be raised or lowered to engage or be disengaged from the bolt. The reason for making the handle 45 and its
 40 connection with the latch as shown is to adapt the lock to be placed on either side of the door.

By an examination of Fig. 2 it will be seen that the key 46 may be inserted from either
 45 side of the casing to throw the bolt 14, and said key has slots or wards 47 in the bit to pass the end 30 of the lever 29, a ward 48 to pass the projection or part 28 of the bolt, and the wards 49 and 50 for raising the tumblers
 50 19 and 20 respectively, which are located on opposite sides of the bolt. Unless the key is so constructed the bolt cannot be thrown as it will either be positively locked by the de-
 55 vices already explained, or else the bit of the key cannot be moved past the bolt.

From the foregoing it will be seen that simple and efficient means are provided whereby it is practically impossible to pick the lock or to throw the bolt without employing the
 60 proper key made for that purpose; that the bolt is so arranged to not only carry the tumblers, but also serves in a way as a tumbler itself, that simple means is provided to lock the bolt either by the action of the tum-
 65 blers or by separate devices operated by the

key in case it should be made improperly, and that the lock is so constructed that it is difficult to make a wax impression of the parts from which to make a false key.

Having thus described my invention, I 70 claim as new and desire to secure by Letters Patent:—

1. In a lock, the combination with a cas- ing, of a bolt slidably held in said casing, a plurality of tumblers pivotally held to said bolt, means for limiting the movement of the tumblers to hold the same and prevent move-
 75 ment of the bolt, a detent movable toward the bolt and adapted to engage a part there- of, a lever, and means operatively connected 80 to the lever and to the detent whereby the latter may be operated to engage the bolt and rigidly hold the same when said means is moved by a key or other device.

2. In a lock, the combination with a cas- 85 ing, of a bolt slidably held in said casing, a detent movable toward the bolt and adapted to engage a part thereof, a lever pivotally held to the casing and having one end thereof arranged adjacent to the bolt, a spring nor-
 90 mally forcing the lever in one direction, a bell-crank connected at one end to the de- tent, and a link connecting the bell-crank at its other end to the lever whereby the detent may be operated to lock the bolt when the
 95 lever is moved.

3. In a lock, the combination with a cas- ing, of a bolt held in said casing and provided with an engaging part, a detent movable toward the bolt and adapted to engage a
 100 part thereof, a lever pivotally held to the casing and having one end thereof arranged adjacent to the bolt, a spring normally forc- ing the lever in one direction, a bell-crank
 105 connected at one end to the detent, and means connecting the bell-crank at its other end to the lever whereby the detent may be operated to lock the bolt when the lever is moved.

4. In a lock, the combination with a cas- 110 ing, of a bolt slidably held in said casing and provided with a slot, a detent movable toward the bolt and adapted to enter the slot, a lever pivotally held to the casing and having one end thereof arranged adjacent
 115 to the bolt, a spring normally forcing the lever in one direction, a plurality of tum- blers carried by the bolt, a bell-crank con- nected at one end to the detent, and a link
 120 connecting the bell-crank at its other end to the lever whereby the detent may be oper- ated to lock the bolt when the lever is moved.

5. A lock comprising a casing, a bolt slid- 125 ingly held in said casing and provided with a ward or fixed tumbler part, a plurality of tumblers pivotally held to the bolt and each provided with an I-shaped slot arranged lengthwise thereof, a projection on the cas-
 130 ing entering the slots and adapted to prevent the bolt from being thrown unless the pro-

jection registers with the longer or horizontal part of the slots, springs normally forcing the tumblers downward, means for limiting the throw of the bolt, and mechanism independent of the tumblers and bolt adapted to engage the latter unless the bolt is thrown by a properly made key.

6. A lock comprising a casing, a bolt slidably held in said casing and provided with a ward or fixed tumbler part, a plurality of tumblers pivotally held to the bolt each provided with an I-shaped slot arranged lengthwise thereof, a projection on the casing and entering the slots and adapted to prevent the bolt from being thrown unless the projection registers with the longer and horizontal part of each slot, springs normally forcing the tumblers downward, means for limiting the throw of the bolt, a detent slidably held in the casing, a lever having one end adjacent to the bolt and the tumblers, a spring normally forcing the lever in one direction, and connections between the lever and the detent whereby the lever when moved will force the detent into engagement with the bolt and prevent movement thereof.

7. A lock comprising a casing, a bolt slidably held in said casing and provided with a ward, a plurality of tumblers pivotally held to the bolt each provided with an I-shaped slot arranged lengthwise thereof, a projection on the casing and entering each slot and adapted to prevent the bolt from being thrown unless the projection registers with the longer and horizontal part of the slot, springs normally forcing the tumblers downward, means for limiting the throw of the bolt, said bolt having a slot in the upper surface thereof, a detent slidably held in the casing, a lever having one end adjacent to the bolt and the tumblers, a spring normally forcing the lever in one direction, a bell-crank, and a link connecting the bell-crank to the lever whereby the latter when moved will force the detent into the slot and prevent movement of the bolt.

This specification signed and witnessed this 11th day of April A. D. 1907.

FRANK F. MILLER.

Witnesses:

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L. H. LUNDIN.