(No Model.) 2 Sheets—Sheet 1.

B. KLEIN.

LOCK.

No. 536,957. Patented Apr. 2, 1895.

Fig: 1.

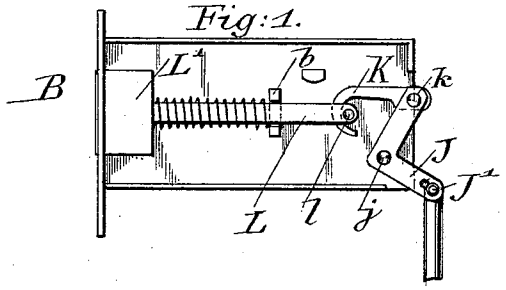
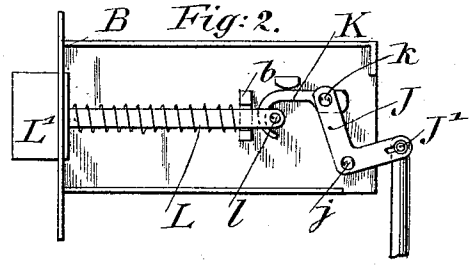
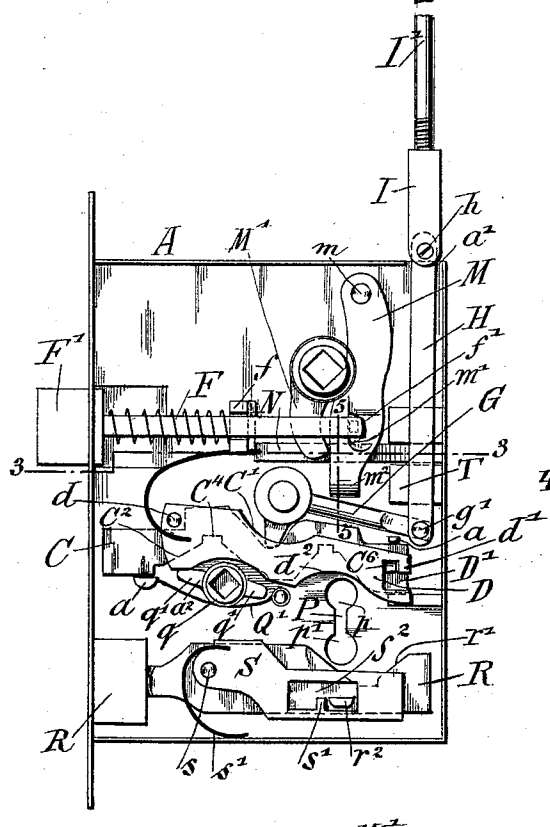
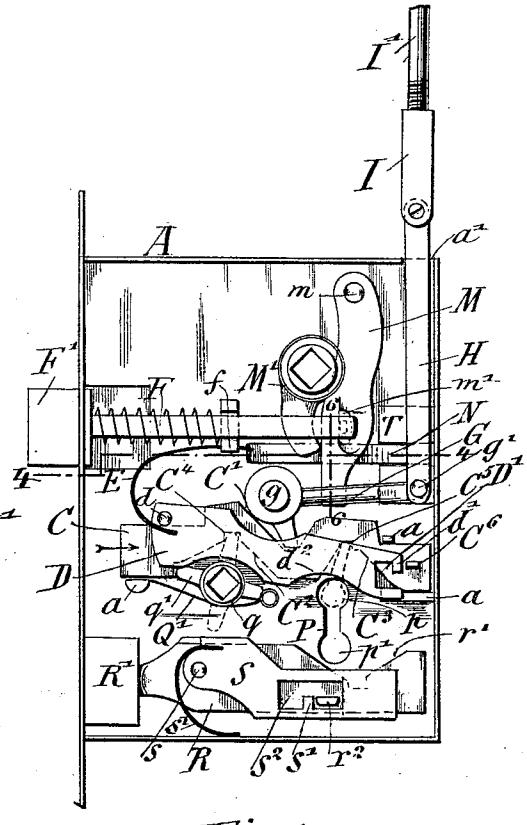


Fig: 2.







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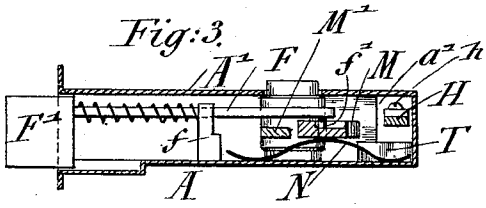

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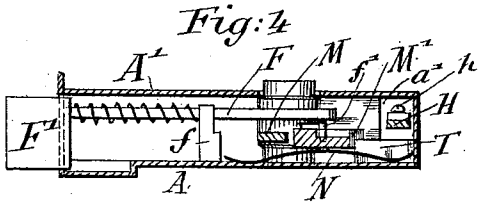

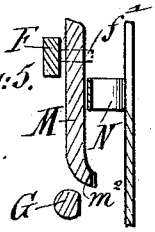

Fig: 5.

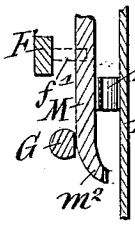

Fig: 6.

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(No Model.) 2 Sheets—Sheet 2.

B. KLEIN.

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Fig: 7.

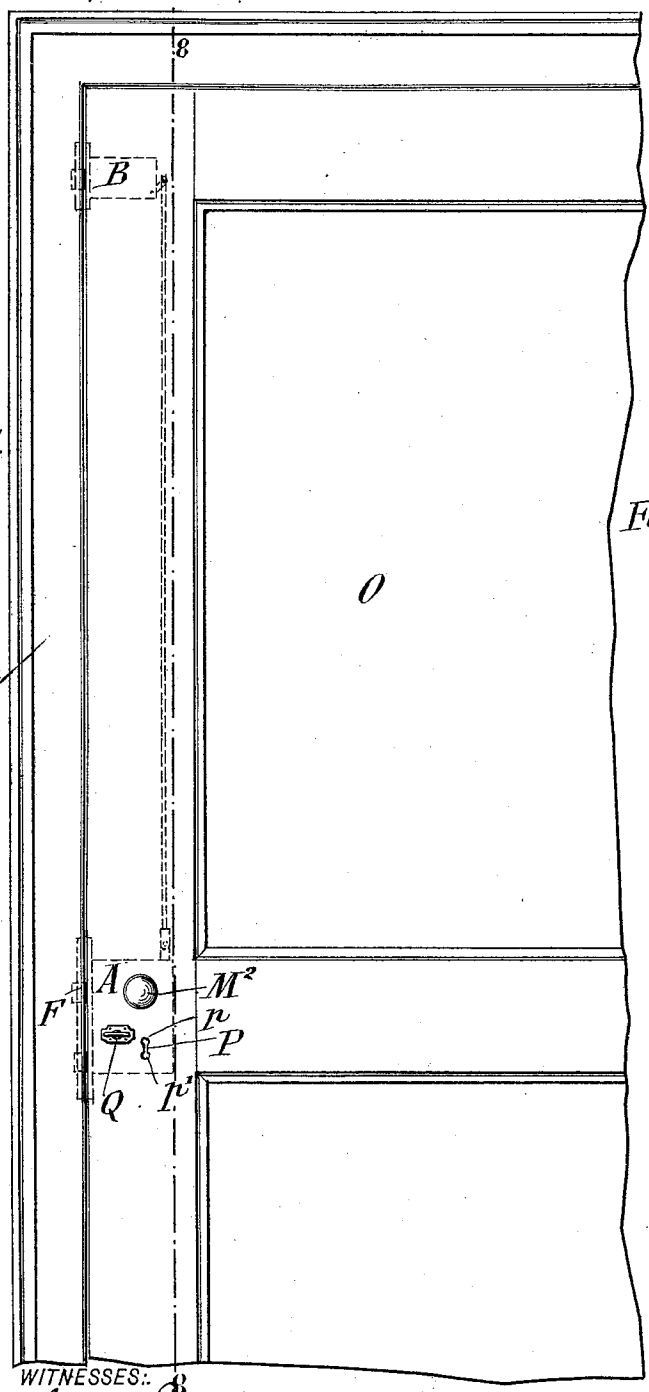
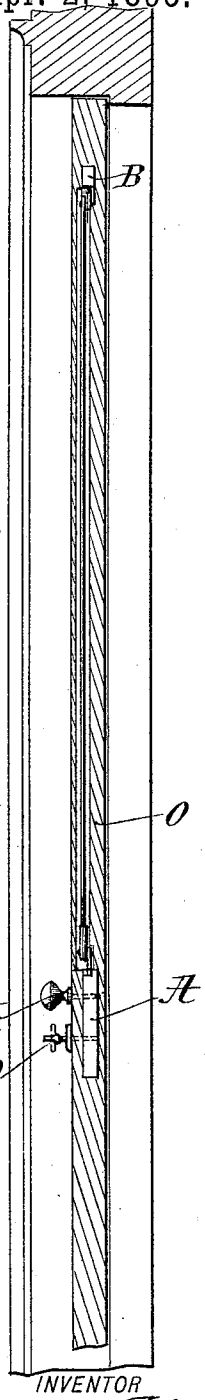


Fig: 8.



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UNITED STATES PATENT OFFICE.

BERNHARD KLEIN, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO WILLIAM ROSENSTEIN, OF SAME PLACE.

LOCK.

SPECIFICATION forming part of Letters Patent No. 536,957, dated April 2, 1895.

Application filed December 18, 1894. Serial No. 532,277. (No model.)

To all whom it may concern:

Be it known that I, BERNHARD KLEIN, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Door-Locks, of which the following is a specification.

My invention relates to door-locks, and especially to an improved mechanism for drawing or retracting several bolts simultaneously from one common point; and the objects of the invention are to provide a safe, reliable and substantial mechanism for locking the doors of hotels, tenements and the outside doors of dwelling-houses.

My invention consists of several spring-actuated catches which are connected together, so as to work in unison, the shanks of said catches being mounted to slide in casings which are attached to the door or door-frame as may be desired, the main-lock comprising a suitably notched sliding tumbler guided in the casing thereof, a spring-actuated pivoted tumbler which is suitably notched so as to receive a detent lug on the sliding tumbler, which may be engaged in the notch or disengaged therefrom by means of a key so that the slide may be reciprocated, a bell-crank lever, one end of which takes into one of the notches of the sliding tumbler, while the other end of the same is connected by suitable means with the auxiliary lock, and mechanism connected with the main-catch so that it may be operated by the knob when not locked against movement by means of said bell-crank lever, which to that end engages with a portion of said mechanism.

My invention further consists of a main locking bolt and mechanism for locking the catch-mechanism against movement, the same being accomplished through the medium of a single key, in which case the tumblers of the different parts are cut so as to receive the same, or two keys may be used, one for the main lock and the other for the tumbler mechanism which locks the catch-mechanism through the medium of the bell-crank lever; and my invention consists also of certain features of construction and combination of parts and details as will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings,—Figure 1 is a plan of the main and auxiliary locks with their connections, the cover-plates of the casings thereof being removed. Fig. 2 is a similar view to Fig. 1, excepting that the parts are shown in different positions. Fig. 3 is a transverse section on line 3—3, Fig. 1, showing the cover-plate. Fig. 4 is a transverse section on line 4—4, Fig. 2, also showing the cover-plate. Fig. 5 is a section on line 5—5, Fig. 1. Fig. 6 is a section on line 6—6, Fig. 2. Fig. 7 is an elevation showing my invention applied to a door, and Fig. 8 is a vertical section on line 8—8, of Fig. 7.

Similar letters of reference indicate corresponding parts.

Referring to Figs. 1 to 6 inclusive, A indicates the main case and B represents the auxiliary case of the respective locking-mechanisms, the case A having a cover-plate A′ and the case B also having a suitable cover-plate not shown.

Guided between suitable guide-lugs *a* projecting inwardly from the casing A is a sliding tumbler C which is provided on one edge with a notch C′, and in the other edges with notches C^2, C^3, the bottom of the notch C^2 being deepened by an angular recess C^4, and the bottom of the notch C^3 being deepened by an angular recess C^5.

Pivoted at one end on a pin *d* projecting from the casing is a tumbler D which has movable contact with the sliding tumbler C alongside of which it is arranged. The pivoted tumbler D is provided at the end opposite the pivot *d* with an L-shaped recess D′, which forms a hook-shaped finger *d′* at said end, so that when a detent lug C^6 on the adjacent side of the sliding tumbler C is received in said recess D′ it will be engaged behind the hook-shaped finger *d′*, whereby the sliding tumbler C is held against reciprocation. In order to hold the lug C^6 in the recess D′ a curved spring E is attached to the heel of the pivoted tumbler D at its pivotal ends, while the other end of said spring is seated against the guide *f* for the shank F of the spring-actuated beveled catch F′.

The short arm of a bell-crank lever G which is pivoted at g to the casing A takes into the notch C′ of the sliding tumbler C, while the long arm of the same is pivotally connected at g' with a link H which passes longitudinally along one side of the casing so as to extend through an opening a' at the top of the casing. The outer end of the link H is pivotally connected at h with a two-part connecting-rod, one portion I of which is provided with a screw-threaded opening, while the other part of the same is externally screw-threaded so as to be inserted in said opening whereby the respective parts of the connecting-rod I, I′ are adjustably connected. Case B of the auxiliary lock is open at its rear-end so as to permit of the rocking movement of a bell-crank lever J which is pivoted at j to the case B, one end of the bell-crank lever having a slot-and-pin connection at J′ with the part I′ of the connecting-rod I, I′, so as to allow of a slight play at that point while the other end of said bell-crank lever is pivotally connected at k with a sliding hook K guided in the case B, the operative end of said hook K engaging a pin l at the rear end of the shank L of the beveled spring-actuated catch L′, said shank being guided in the guide b of the case B. The catch-mechanism of the main-lock comprises besides the latch F′ and its shank F, a lever M hung loosely at one end on a pin m which projects inwardly from the casing, and the actuating-arm M′ which is operated by the spindle of the knob. The inner end of the shank F is provided with a pin f' which is received in an opening m' in said lever M. Arranged under the free end of lever M is a curved spring N, the tendency of which is to press the same outwardly toward the shank F.

Referring to Figs. 7 and 8, the parts of the lock are shown in dotted lines fitted in the mortises of the door O, so that the locking parts of the mechanism may engage in the strikes of the door-frame.

M^2 is the knob by which the latch F′ may be reciprocated in and out of the lock case as usual.

P is a key-hole which in the form of the invention shown, is provided at its ends with enlarged eyes p and p' respectively.

Q is a finger-piece projecting from the inner side of the door, the shank of which fits into the socket of a rotary barrel q which is pivotally mounted between opposite sides of the casing A, said barrel having oppositely projecting arms q', either one of which may be removed when desired, into the notch C^2 of the sliding tumbler C, said barrel being frictionally held against too free movement, by means of a curved spring Q′ which is fixed to the case and bears against the barrel q.

In Fig. 1, the catch F′ is free to be retracted and projected by means of the arm M′ which is operated by the knob M^2 so as to move the said arm against the pivoted lever M, whereby the latch is drawn in and can be projected by means of its actuating spring. In this position, if it be desired, the parts of an ordinary lock, shown in the lower part of Figs. 1 and 2 may be brought into play for the purpose of locking the door as usual.

R is the slider of an ordinary bolt R′, to which slider is pivoted at s the tumbler S which is controlled by a spring s' secured thereto at one end and bearing at its free-end against the end-wall of casing A, said slider having a wide notch r' and a side-lug r^2 which is adapted to engage at either side of a central projection S′ which is arranged in an opening S^2 of the pivoted tumbler S. By inserting the shank of a key into the eye p' of the key-hole and turning the key, the bit thereof being cut according to the formation of the slider R and the tumbler S, the recessed portion of said bit engages the tumbler S so as to rock the same, while the prolonged portions of the bit engage with the side-walls of the notch r in slider R so that the bolt R′ may be moved forward or projected, the lug r^2 being by the action of the bit of the key upon the tumbler S caused to be moved to the opposite side of the projection S′ of the tumbler, so that the bolt is held in projected position.

Upon inserting the shank of a second key into the eye p of the key-hole, the bit of the second key being cut according to the formation of the tumblers C and D, and turning the key in the key-hole, the recessed portion of the bit will engage with the recessed portion d^2 of the pivoted tumbler D, rock said tumbler on its pivot, release the detent lug C^6 from the hook-shaped portion d' and permit the prolonged portion of the bit of said key to enter the notch C^3 of the sliding tumbler C and engage the walls of said sliding tumbler so that the same may be moved in the direction of the arrow, Fig. 2, and locked against return movement by the detent lug C^6 which is engaged on the opposite side of the hook-shaped portion d'. The described sliding movement of the sliding tumbler C rocks the bell-crank lever G on its pivot so that the link H is projected outwardly through the casing, the connecting-rod I, I′, moved upwardly, the hook-shaped slide K moved inwardly in the auxiliary lock-case B′ and the auxiliary catch L′ projected, the latter being held by its spring in projected position until a downward pull is exerted on the connecting-rod I, I′; also by said sliding movement of the sliding tumbler C the long arm of the bell-crank lever G is caused to press upon the beveled end m^2 of the pivoted lever M, so that said lever is pressed away from the bell-crank lever, against the outward action of the spring N, whereby the lever M is caused to assume a position behind the stop T projecting from the interior of the casing. The shifting of the lever M behind the stop T prevents the knob M^2 from turning, for the reason that the arm M′ thereof which presses against the lever M cannot move the lever in the direction of the stop, and hence the catch F′ cannot be retracted. The two

catches F′ and L′ of the main and auxiliary locks respectively will therefore be locked in projected position, and the door or other swinging part to which the lock is applied very securely fastened. If further security is desired, the bolt R′ may also be projected so that the door is fastened by the three parts F′, L′ and R′.

Instead of using two keys as stated, only one key may be used, the parts R, S and C, D being correspondingly cut so as to receive the bit of the same key.

When the catches F′ and L′ are projected as shown in Fig. 2, and it is desired to let some one into the house who has no key, the finger-piece Q is used to that end, the person on the inside taking hold of and turning the same from horizontal position into vertical position as shown by dotted lines Fig. 2, so that the proper arm on the barrel q will be moved into the notch C^2 of the sliding tumbler and can engage the walls of said notch and move the sliding tumbler in the direction of the arrow while a shoulder q^2 on said barrel engages with the edge of the pivoted tumbler D and rocks the same on its pivot, permitting the lug C^6 of the sliding tumbler C to be disengaged from the tumbler D.

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

1. In combination with a main-lock casing and the knob-operated catch-mechanism, key-operated tumblers consisting of a sliding tumbler and a pivoted tumbler coacting with and adapted to lock the sliding tumbler against reciprocation, a lever disconnected from the catch-mechanism engaging with said sliding tumbler and adapted to be moved in contact, by the reciprocation of the sliding tumbler, with a movable part of the catch-mechanism, substantially as set forth.

2. In combination with the main-lock casing and the knob-operated catch-mechanism therein, a sliding tumbler guided in said casing, a pivoted tumbler coacting with the sliding tumbler and both adapted to be operated by a key, a bell-crank lever disconnected from and adapted to engage a movable part of the catch-mechanism, said bell-crank lever being engaged by the sliding tumbler, and an auxiliary catch suitably connected with the bell-crank lever, substantially as set forth.

3. In combination with the main-lock casing, knob-operated catch-mechanism arranged therein, a sliding tumbler, a pivoted tumbler coacting with the sliding tumbler both being adapted to be engaged by the sliding tumbler and in turn adapted to engage a movable part of the catch-mechanism, an auxiliary spring-actuated catch, means for guiding said catch, a bell-crank lever pivoted to the casing of the auxiliary catch and connected at one end with the shank of the same, and suitable connecting-devices between the two bell-crank levers, substantially as set forth.

4. In combination with the main-lock casing, catch-mechanism arranged in said casing, and consisting of a catch, the shank of which is guided within the casing, a pivoted lever connected with said shank, a knob-operated arm arranged in the casing and adapted to engage said lever, a sliding tumbler, a pivoted tumbler adapted to coact with the sliding tumbler, both of said tumblers being adapted to be actuated by a key, and a bell-crank lever engaging with said sliding tumbler and adapted to engage in turn with aforesaid lever, substantially as set forth.

5. In combination with the main-lock casing and catch-mechanism arranged therein, a sliding tumbler provided with notches, an armed barrel provided with an operating finger-piece adapted to engage in one of said notches, a pivoted tumbler coacting with said sliding tumbler, and a bell-crank lever engaged by its short arm in another of the notches of the sliding tumbler, the long arm of said bell-crank lever being adapted to engage a movable part of the catch-mechanism, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

BERNHARD KLEIN.

Witnesses:

PAUL GOEPEL,

GEORGE W. JAEKEL.