Aug. 15, 1933. J. HINES 1,922,043

LOCK

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Fig. 1.

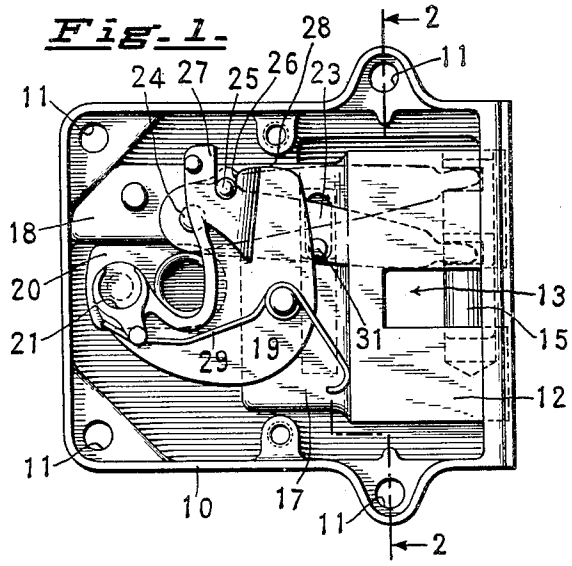


Fig. 2.

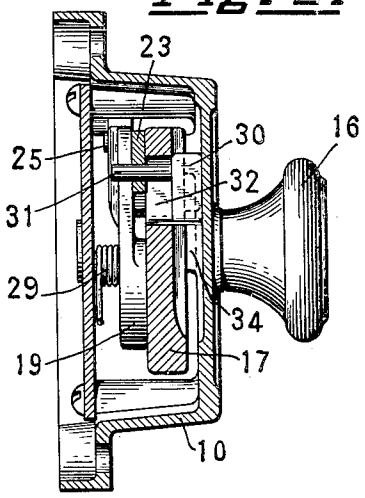


Fig. 3.

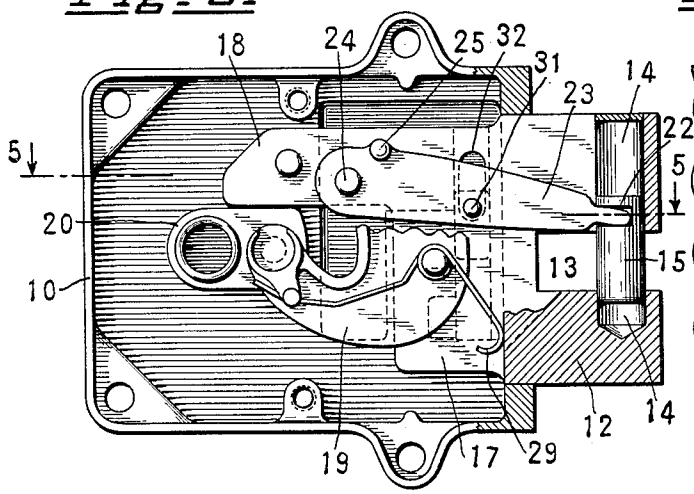


Fig. 4.

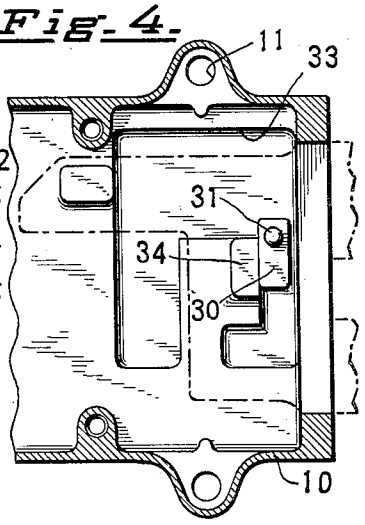


Fig. 5.

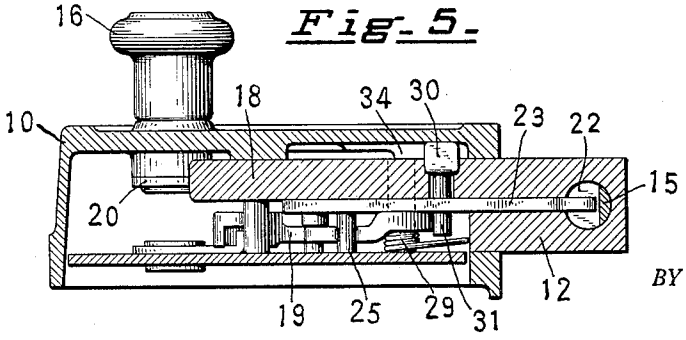
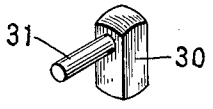


Fig. 6.



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LOCK

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Fig. 7.

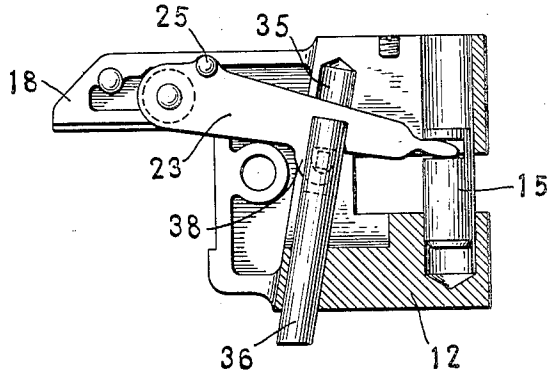


Fig. 8.

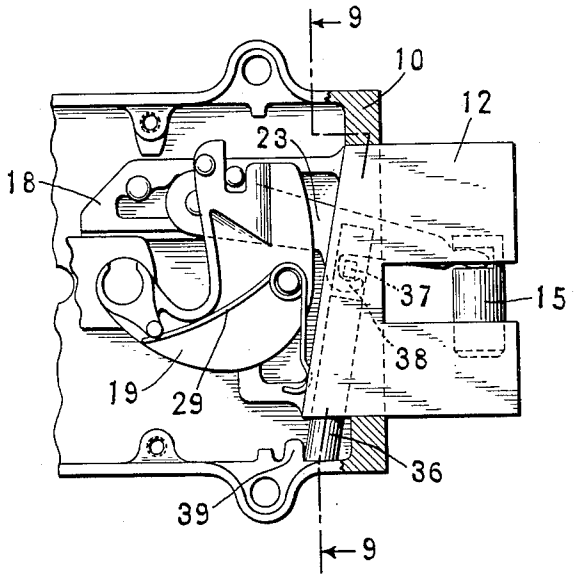
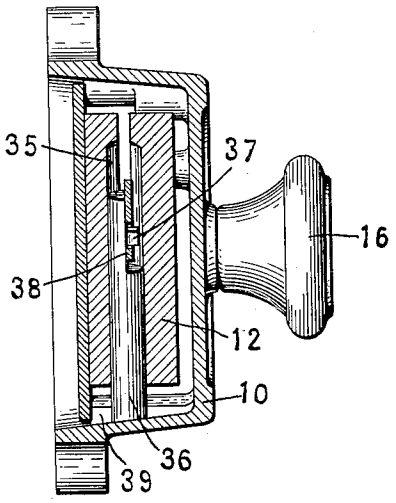


Fig. 9.



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Patented Aug. 15, 1933

1,922,043

UNITED STATES PATENT OFFICE

1,922,043

LOCK

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Application February 1, 1928. Serial No. 250,983
8 Claims. (Cl. 292—138)

This invention relates to a lock and particularly a lock of the jimmy-proof type.

It is an object of the invention to provide a device of this character, the parts of which will be relatively few in number and individually simple and rugged in construction, these parts being assembled readily to furnish a lock which may be sold at a relatively nominal figure and which will give service over long periods of time with freedom from mechanical difficulty.

A further object is that of constructing a lock of this nature in which, when the bolt is projected, it will be extremely difficult, if not entirely impossible, to force a retraction thereof by means, for example, of a jimmy and in which the mechanism provided for this purpose will operate in an improved manner to prevent any interference between the bolt and keeper during normal operation of the lock.

A still further object is that of furnishing a device of this type in which the parts may be operated with minimum of effort and in which there will be no tendency of the mechanism to bind.

With these and further objects in mind reference is had to the attached sheets of drawings illustrating one practical embodiment of the invention and in which:

Figure 1 is a face view of a case with a lock mechanism disposed therein and with the cover plate removed to disclose this mechanism;

Fig. 2 is a sectional view taken along the lines 2—2 in the direction of the arrows of Fig. 1;

Fig. 3 is a view similar to Fig. 1, showing the bolt in projected position;

Fig. 4 is a fragmentary view of the case;

Fig. 5 is a sectional plan view along the lines 5—5 of Fig. 3;

Fig. 6 is a perspective view of a locking lug, which may form a part of the mechanism illustrated; and

Figs. 7, 8 and 9 are partly sectional side elevations and a transverse sectional view respectively of a second preferred form of the invention.

In these views the numeral 10 indicates a lock case of any desired configuration, which has openings 11 through which fastening elements may pass in order to secure it to a door. The forward edge of this case is formed with a slot through which a bolt may be projected. This bolt includes, in the embodiment illustrated, a body 12 formed with a notch 13, the bolt being provided with transversely extending bores 14 in both of its outer portions, these bores being aligned and one of them serving to slidably house a bolt or pin 15, the outer end of which may project into the second bore, as shown in Figure 3.

A lock of this nature is ordinarily applied to the inner face of a door or closure and a knob 16 extending from the inner face of the case serves to throw the lock mechanism. It will be understood by those skilled in the art that the door or other closure is ordinarily formed with a bore substantially in line with the knob or other actuating element 16 and this bore receives, for example, a cylinder plug, which is operated by a proper key and serves to actuate a tail piece, the latter being connected with a crank element rotatably mounted upon the cover plate of the casing, which in turn is operatively connected to the lock mechanism. None of the foregoing has been illustrated in that, generally stated, it forms no part of the present invention and is unnecessary to a complete understanding thereof.

It will be observed, however, that the bolt 12 is formed with a rearwardly extending shank which has a relatively broad base 17 and a projecting portion 18. A bell crank lever 19 is pivotally supported upon the base portion 17 of the shank and has one of its arms pivotally connected to a crank 20 which is secured to move with the knob or other actuating mechanism 16. The forward face of this arm end of the bell crank lever may be formed with a receiving recess 21 for the accommodation of the end of the crank (not shown) which has been afore referred to as being mounted upon the cover plate. Irrespective of the manner in which this arm of the bell crank lever is moved forwardly and rearwardly, however, it will be understood that a projection or retraction of the bolt 12 will follow.

It will furthermore be appreciated that this latter bolt is received in a keeper associated, for example, with the jamb of a closure. This keeper, obviously, with the bolt projected, serves to prevent a sidewise movement of the closure with respect thereto and if—as has been previously done in the art—this keeper has a retaining portion, for example in the nature of a loop, it will be apparent that the bolt 15, if projected, will extend through the loop and prevent the retraction of the bolt 12 from the keeper. A convenient mechanism for effecting a proper actuation of the bolt 15 may be had, for example, by forming the inner end of the bolt 15 with a recess 22 into which the reduced end of a lever 23 extends, this lever being pivotally mounted as at 24, upon the projecting portion 18 of the bolt shank, and the lever carrying, at a point short of its pivotal mounting, a pin or lug 25. In order to swing the lever 23

the second arm of the bell crank lever 19 is formed with a notch 26 within which the pin or lug 25 may ride, one side edge of this notch presenting a cam portion and the opposite side 27 thereof being extended materially, so that the pin 25 cannot override this portion. Thus, it will be apparent that as the bell crank lever is rocked by means of the mechanism provided for this purpose and with the parts in the position shown in Figure 1, the initial rocking on the part of the bell crank lever will result in a camming action being effected between the edge of the slot 26 and the pin or lug 25, causing the latter to ride upwardly within the slot and beyond the same until it rests upon the upper edge 28 of the arm of the bell crank lever. In such position the lever 23 will lie as shown in dotted lines in Figure 1, with the bolt or pin 15 fully retracted, despite the fact that the bolt 12 has been advanced or projected to a practically negligible degree. A continued rocking of the arm 19 of the bell crank lever will now result in the bolt 12 being projected, it being apparent that during such projection the pin 25 will continue to bear against the upper edge 28 and consequently, the bolt 15 will remain housed. When, now, the bolt 12 has reached a position at which it is practically entirely projected, the bell crank lever will have been rocked to a point at which the notch 26 begins to align with the pin 25, the latter consequently entering the notch and causing the bolt 15 to assume a position at which it bridges the space extant between the arms of the bolt 12 and extends operatively with respect to the retaining portion of the keeper. Likewise, when the bolt 12 is to be retracted, it will be apparent that as the bell crank lever is initially rocked, the primary result will be a retraction of the bolt 15, as afore described, and this bolt will remain retracted throughout the entire withdrawal of the bolt 12 from the keeper and until it reaches a position such as that shown in Figure 1, whereupon, due to the alignment of the pin 25 and notch 26, the bolt 15 will again extend between the arms of the bolt 12.

It is pointed out at this time that when the lock mechanism is in projected position with the bolt member 12 fully extended, and the secondary bolt 15 extending between the arms of the same, then any attempt to forcibly retract the mechanism by means of exerting force against the end of the bolt 12 will simply result in a jamming of the pin 25 against the side wall of the notch 26, thus causing such retraction impossible. It is only upon actuation of the bell crank lever 19 that a normal sliding or camming cooperation occurs between the pin 25 and the side wall of the notch 26.

In order normally to maintain the bolt 12 in wholly projected or retracted position, a spring 29 may be employed which conveniently bears against the rear face of the bolt head 12, is coiled around the pivot pin of the bell crank lever and bears against a lug at the outer end of the arm 19 thereof, it being apparent that as an incident to achieving the result aforementioned, this spring will serve—due to the camming action between the pin 25 and the rear edges of the notch 26—to induce the bolt 15 to be projected automatically when the bolt 12 is at either of its extreme positions.

Preferably, in a lock of this nature some provision is made whereby the operating mechanism thereof will not be distorted if a forcible retraction of the bolt be attempted. To this end, and as has been illustrated in Figs. 2 and 5, a block 30 is mounted for sliding movement within a groove formed in the rear face of the bolt shank. This block carries a pin 31 which extends through a slot 32 in the bolt shank and into an opening formed in the lever 23. The lock case, as shown in Figure 4, may be formed with a U-shaped groove 33 and may have an integral lug portion 34 adjacent such groove. Consequently, the block 30, when the parts are in the position shown in Figure 3, will lie in advance of the lug 34 and it will be obvious that any strains on the bolt 12 will be resisted by contact between this block and lug. However, under proper operation and incident to the upward swinging of the lever 23, the block will move upwardly to clear the upper edge of the lug and the bolt 12 will thereupon be retracted into the lock case, after which the block will again move downwardly to extend into the second arm of the groove 33.

Finally, referring to Figs. 7, 8 and 9, it will be seen that the locking bolt there shown is similar in mechanical aspects to the bolt aforedescribed with the exception that this bolt is formed with an additional bore 35 within which a pin 36 rides, this bore being disposed to extend downwardly and rearwardly. The lever 23 in addition to actuating the bolt 15 serves to shift the pin to a point at which it is wholly housed within the bore or projects beyond the same. To this end the pin may have a reduced upper portion from the face of which a lug 37 extends and the lever may have a hook 38 projecting below this lug so that as the lever is shifted, the pin is likewise moved, it being observed that the parts are so proportioned that with the bolt 15 projected, the pin will extend beyond the edge of the dead-bolt 12. Thus it is unnecessary to form the lock casing with a groove such as has been shown in Fig. 4, but this casing has in the exemplification under consideration, an upwardly extending shoulder or stop 39 which preferably forms an integral part thereof. This shoulder is positioned so that as has been shown in Fig. 8, the pin end will lie adjacent thereto with the bolt projected. Consequently, if a forcible retraction of the dead-bolt is attempted, it will be patent that the only result will be that of forcing the pin end into intimate engagement with the shoulder thus preventing rearward movement of the dead-bolt except by a proper operation of the mechanism connected therewith.

From the foregoing it will be apparent that the objects hereinbefore brought out are achieved. It will be understood, however, that numerous changes in construction, as well as rearrangement of the parts might be resorted to without in the slightest departing from the spirit of the invention as defined by the claims.

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

1. A lock including in combination, a casing, a bolt projectable beyond said casing, a second bolt slidably mounted on said first bolt and extendable beyond the body thereof, a block movably carried by said first-named bolt, an extended portion forming a part of said casing and to be engaged by said block and act as a keeper for the same, a lever connected to said block to actuate the same, means connecting said second bolt to said lever and a means for rocking said

lever and projecting and retracting said first-named bolt.

2. A lock including in combination a casing, a bolt projectable beyond said casing, a second bolt slidably mounted on said first bolt and extendable beyond the body thereof, a block movably carried by said first-named bolt, an extended portion forming a part of said casing and to be engaged by said block and act as a keeper for the same, a bell crank lever rockingly mounted by said first-named bolt and presenting a cam surface, a second lever rockingly mounted by said first-named bolt and connected to said block and second bolt to project and retract the same, means associated with said second lever and actuated by engagement with said cam surface to rock said second lever and means connected to said bell crank lever for operating the same and projecting and retracting said first-named bolt.

3. A lock including a casing, a bolt projectable beyond said casing, a block slidably mounted on said bolt, a lever rockingly mounted by said bolt and having operative connection with said block, a shoulder forming a part of said casing and acting as a keeper for said block and means for projecting and retracting said bolt and rocking the lever carried thereby.

4. A lock including a casing, a bolt projectable beyond said casing, a block slidably mounted on said bolt, a lever rockingly mounted by said bolt and having operative connection with said block, a shoulder forming a part of said casing and acting as a keeper for said block and means for projecting and retracting said bolt and rocking the lever carried thereby, said block extending at an angle rearwardly and said bolt being formed with a correspondingly extended bore for the accommodation of said block.

5. A lock including a casing, a bolt, a lever rockingly connected to said bolt within said casing, means coupled to said lever to shift the same and effect a projection and retraction of said bolt with respect to said casing, a second lever rockingly mounted by said bolt, a second bolt actuated by said lever, cooperating surfaces forming a part of said first and second levers whereby upon the first lever being moved, the second lever will be shifted to retract and project the second bolt simultaneously with the projection and retraction of said first named bolt, and said surfaces being disposed to jam with respect to each other upon pressure being brought to bear against said first named bolt to forcibly retract the same.

6. A lock including a casing, a bolt, a lever rockingly connected to said bolt within said casing, means coupled to said lever to shift the same and effect a projection and retraction of said bolt with respect to said casing, a second lever rockingly mounted by said bolt, a second bolt actuated by said lever, cooperating surfaces forming a part of said first and second levers whereby upon the first lever being moved, the second lever will be shifted to retract and project the second bolt simultaneously with the projection and retraction of said first named bolt, an abutment within said casing, and a block secured to said second lever and operated by the latter to cooperate with said abutment and prevent a forcible shifting of said first named bolt.

7. A lock including a casing, a bolt, a lever rockingly connected to said bolt within said casing, means connected to said lever to shift the same and said bolt said lever being formed with a cam surface, a movable member mounted on said bolt and riding against said cam surface, and the cooperating cam and member being disposed to jam with respect to each other when pressure is exerted upon said bolt to forcibly retract the same.

8. A lock including a casing, a bolt, a lever rockingly connected to said bolt within said casing, means connected to said lever to shift the same and said bolt said lever being formed with a notch having an angularly extending cam surface, a pin movably connected to said bolt and riding within said notch, said cam surface being disposed to jam against said pin to prevent a forcible retraction of said bolt by the exertion of pressure against the same.

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