A. ARENS.

LOCK.

APPLICATION FILED OCT. 5, 1912.

1,052,996.

Patented Feb. 11, 1913.

2 SHEETS—SHEET 1.

Fig. 2.

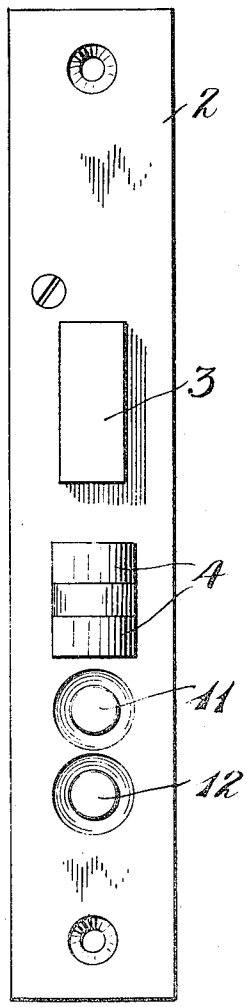
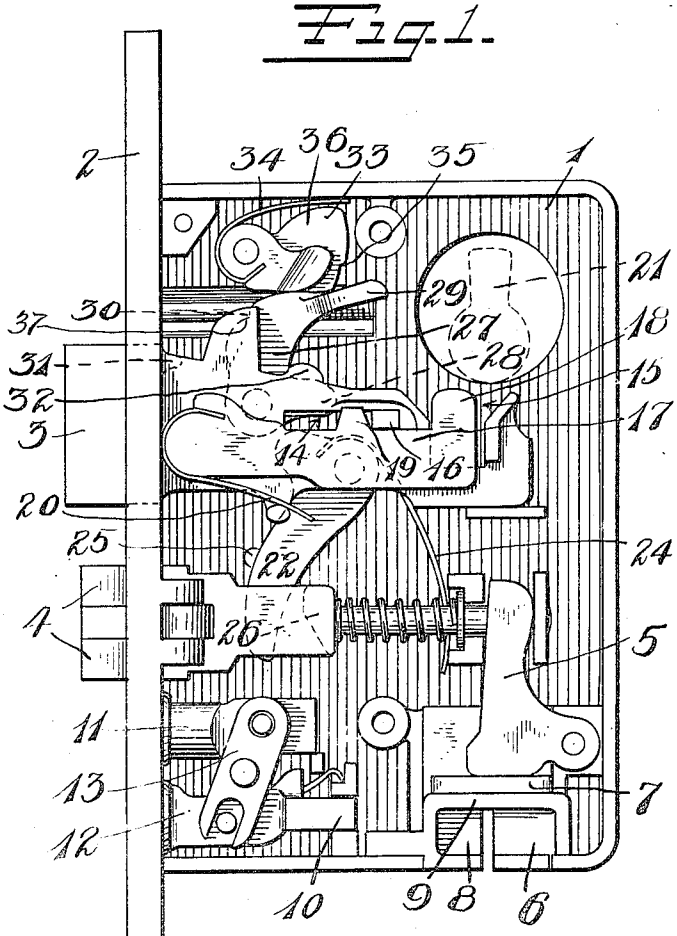


Fig. 1.



Witnesses:

Chas. A. Pearson

Lea M. Kunzikes

Inventor

AUGUST ARENS

By his Attorneys

Dickerson, Brown & Fitzpatrick

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2 SHEETS—SHEET 2.

Fig. 3.

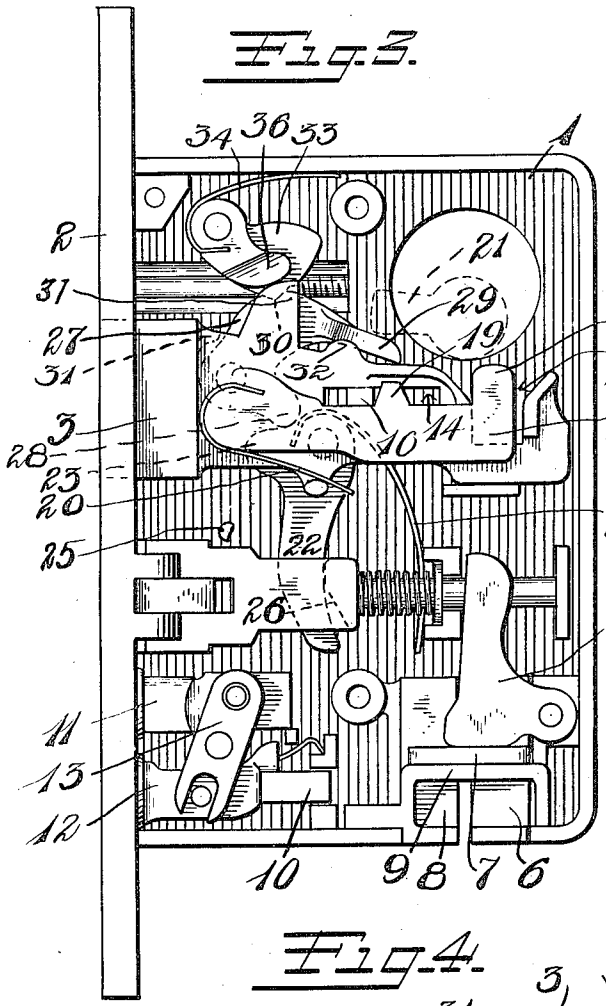


Fig. 6.

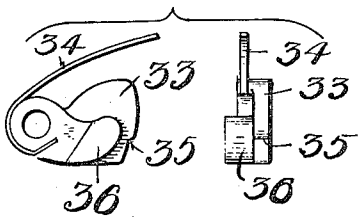


Fig. 7.

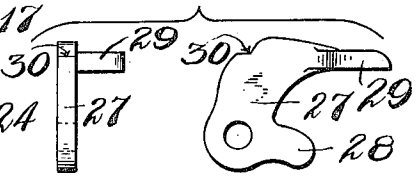


Fig. 8.

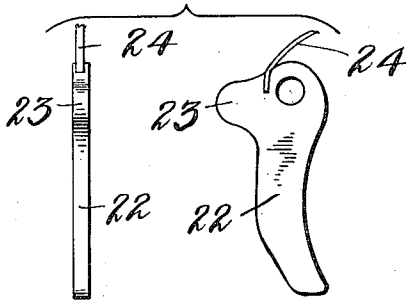


Fig. 4.

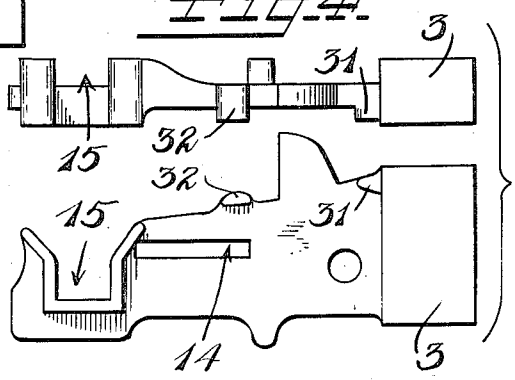
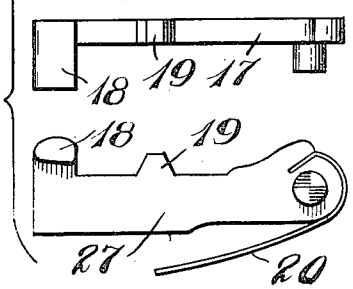


Fig. 5.



Witnesses:

Chas. A. Reard

Ida M. Munziker

Inventor

August Arens

By his Attorneys

Bartlett, Brownell & Mitchell

UNITED STATES PATENT OFFICE.

AUGUST ARENS, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO THE AMERICAN HARDWARE CORPORATION, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

LOCK.

1,052,996. Specification of Letters Patent. Patented Feb. 11, 1913.

Application filed October 5, 1912. Serial No. 724,060.

To all whom it may concern:

Be it known that I, AUGUST ARENS, a citizen of the United States, residing at New Britain, Hartford county, State of Connecticut, have invented certain new and useful Improvements in Locks, of which the following is a full, clear, and exact description.

This invention relates to the class of locks employing a key-controlled dead bolt and a latch bolt retractable through thumb pieces or knob spindles in the usual manner and independently retractable through a key.

The invention is designed to provide key-controlled means whereby the dead lock may be projected and retracted with the latch bolt left projected or retracted, as desired, and whereby both the dead and latch bolts may be held retracted so that a door to which the lock may be applied is made a freely swinging door. Also, means are provided for dogging the latch bolt from operation from one side of the door through the thumb piece or knob spindle. The utility of such a lock is illustrated by its application to the entrance door of a store. The latch bolt will, of course, be freely operable from both sides of the door by the thumb piece or knob spindle unless dogged through a night latch mechanism. By projecting the dead bolt, the store may be absolutely locked against entrance except through the owner's key. By operating the night latch mechanism, it may be locked against entrance during the temporary absence of the owner who may open it upon his return through his key. The dead bolt may be retracted and the latch bolt left projected so that the lock may be operable from either side by the thumb piece or knob spindle, or, both the dead bolt and latch bolt may be retracted and the latch bolt held retracted whereby the door is converted into a freely swinging door.

For the purposes of illustration I am showing the latch bolt provided with connections operable through the thumb pieces common with the lock of the store door type.

The foregoing and other advantages will be apparent from the more detailed description following, taken in connection with the accompanying drawings forming part thereof, and illustrating a preferable embodiment of the invention.

In these drawings: Figure 1 is a view in front elevation of a lock embodying the invention, the dead bolt and latch bolt being projected and the cover plate of the lock case being removed to disclose the interior mechanism. Fig. 2 is a view in elevation of the face plate of the lock. Fig. 3 is a view similar to Fig. 1 but with the dead bolt and latch bolt both retracted. Fig. 4 illustrates the dead bolt in top plan and rear elevation. Fig. 5 illustrates in top plan and rear elevation, the pivoted tumbler carried by the dead bolt. Fig. 6 illustrates front and end elevations of the blocking dog for the latch controlling levers. Fig. 7 illustrates in end and front elevations, the upper controlling lever for the latch bolt. Fig. 8 illustrates in end and front elevations, the coöperating lower controlling lever for the latch bolt.

Referring to the drawings by numerals: 1 indicates the lock case, and 2 the face plate thereof.

3 designates the dead bolt, and 4 a latch bolt of usual construction normally projected by a spring. The lever 5 is pivotally mounted in the lock case to engage the rear end of the latch bolt to retract the same.

6 designates a sliding plate having a flange 7 resting against the lower offset end of lever 5, while a second sliding plate 8 is seated adjacent the first and is provided with a flange 9 abutting the first flange 7. These two sliding plates are moved to swing the lever 5 on its pivot, thereby retracting the latch bolt, this movement of the sliding plates being effected through the usual thumb pieces extending out on opposite sides of the door. Thumb pieces are well known in this type of lock, and I have not deemed it necessary, therefore, to illustrate them in this connection. The sliding plate 8, which is operable by the exterior thumb piece may be dogged against latch-retracting movement by a dogging slide 10 controlled through the usual operating buttons 11 and 12 of a so-called "night latch" mechanism, these buttons being connected by a walking beam 13 as usual. I lay no claim to these specific latch-retracting and night latch features *per se*, as they are well known in the art. The dead bolt 3 intermediate its end is provided with a longitudinal slot 14, and closely adjacent its rear end, with a recess 15 extending inwardly from its upper edge.

16 designates a pin projecting upwardly from the lock case through the slot 14 in

the dead bolt and forming, in effect, a racking stump. A tumbler 17 is pivotally mounted on the forward end of the dead bolt with its tail formed with an abutment flange 18 projecting over into the recess 15 in the dead bolt. This tumbler 17 is gated at 19 to coöperate with the racking stump 16 and is normally pressed upwardly by a leaf spring 20 suitably secured to the dead bolt and the tumbler, this spring normally throwing the gate 19 and flange 18 upwardly so that the abutment flange extends up within the recess 15 to bring its upper face flush with or slightly above the upper face of the dead bolt and the gate 19 coöperating with the racking stump 16 to hold the dead bolt against projection or retraction until said gate is withdrawn.

The cover plate of the lock case carries a cylinder lock of the pin tumbler type (not shown) whose roll back arm 21 (shown in dotted lines in Figs. 1 and 3) is adapted, when rotated, to engage the abutment flange 18 at the tail of the tumbler 17 to depress said tumbler to clear the racking stump 16 so that by a further rotation of the roll back arm, it may engage the sides of the dead bolt adjacent the recess 15 therein and retract or project said bolt.

Coöperating with the dead bolt, roll back arm and latch bolt are the following instrumentalities designed to retract and to lock retracted and to permit the projection of the latch bolt. A retracting lever 22 is pivoted to the lock case and lies beneath the dead bolt and latch bolt. This lever is provided with an offset abutment 23 adjacent its upper pivoted end forming, in effect, a crank arm, and a leaf spring 24 connected to said lever and to the lock case normally throws the lever forward to engage the stop lug 25 projecting from the lock case. The lower end of this pivoted lever 22 extends under the shank of the latch bolt 4, which is provided with an abutment 26 projecting from its under face at its rear end and lying in the path of movement of the lower end of said lever 22. A second and coöperating lever 27 is pivotally mounted upon the lock case adjacent its lower end and extends beneath the dead bolt 3, this upper lever having a similar offset abutment 28 adjacent its lower pivoted end forming in effect a crank arm and coöperating with the offset abutment or crank arm 23 of the lower lever. The upper retracting lever 27 at its upper end is formed with a flanged extension 29 providing an abutment adapted to be positioned in the path of the roll back arm 21 of the cylinder lock. This upper lever 27 is further provided on its upper edge with a locking shoulder 30 for the purpose to be hereinafter described.

As before stated, both of the latch-retracting levers 22 and 27 are pivotally mounted in the lock case independently of the dead bolt and latch bolt, the upper lever being adapted for actuation by the roll back arm of the lock mechanism and also adapted to be positioned into and out of the path of rotation of said arm by lugs 31 and 32 projecting from the under face of the dead bolt 3 and located on either side of the retracting lever 27 so that when the dead bolt is projected, the lug 32 strikes the rear edge of lever 27 and throws its abutment 29 upwardly and out of the path of rotation of roll back arm 21 (see Fig. 1), and when the latch bolt is retracted, lug 31 strikes the front edge of lever 27 and throws its abutment in the path of the roll back arm (see Fig. 3). The specific form of these levers enables me to not only secure a very effective leverage for retracting the latch bolt, but provides a very quick action.

Pivotally mounted in the lock case above the upper retracting lever 27 is a coöperating blocking dog 33 pressed downwardly by a leaf spring 34 to bring its lower edge against the upper edge of lever 27. The edge of this blocking dog is formed with a locking shoulder 35 and a cam 36 extends outwardly from the face of said dog to cooperate with a cam 37 projecting upwardly from the upper edge of the dead bolt.

With the foregoing construction in mind, it will be seen that the operation of the lock is as follows: The latch bolt, when the dogging slide 10 is not thrown in, is operable from either side of the door by the finger pieces heretofore described. If the dogging slide 10 is thrown in by the night latch button, the latch bolt cannot be retracted from one side, for instance, the outside. With the latch bolt projected, in order to project the dead bolt, the roll back arm 21 of the cylinder lock is rotated in a clockwise direction to bring its end against the rear edge of the abutment flange 18 of the pivoted tumbler, depressing said tumbler and moving its gate 19 to clear the racking stump 16 whereupon further rotation of the roll back arm in the same direction will bring it against the dead bolt at the forward side of the aperture 15 therein and will project said dead bolt to dead-lock the door. This forward movement of the dead bolt will bring its lug 32 against the rear edge of the upper retracting lever 27 and throw its abutment flange upward out of the path of rotation of the roll back arm 21. This will bring the parts in the position shown in Fig. 1 of the drawings. If it is desired to merely retract the dead bolt so that the latch bolt may be retracted from either side of the door by means of the thumb pieces, the roll back arm 21 is now rotated in a counter-clockwise direction to depress the tumbler 17 and retract the dead bolt. This retracting movement of the dead bolt will bring its lug 31 against the for-

ward edge of the upper pivoted lever 27 and will throw its abutment flange downwardly and in the path of rotation of the roll back arm 21 so that if it is desired to retract the latch bolt in addition to the dead bolt, the roll back arm is given another revolution in the same direction, during the course of which its end will strike the abutment flange 29 of the upper pivoted lever 27 and through the coöperating crank arms 28 and 23 of the upper and lower levers, retract the latch bolt, the lower end of lever 22 engaging with the abutment 26 on the under face of the latch bolt to accomplish this retraction. This actuation of the upper lever 27 brings its locking shoulder 30 within the arc of movement of the locking dog 33 whose spring 34 will automatically throw said dog downwardly until its shoulder 35 abuts against the locking shoulder 30 of the upper lever 27, thereby dogging these levers against movement and preventing the projection of the latch bolt by its spring. This will bring the parts to the positions shown in Fig. 3 of the drawings and will make the door a freely swinging door. In this position, the cam 36 of the blocking dog abuts against the cam 37 of the dead bolt. To project the latch bolt again, the roll back arm 21 is moved in a clockwise direction to depress the tumbler 17 and project the dead bolt, this movement of the dead bolt moving its cam 37 against the face of cam 36 of the blocking dog and moving the locking shoulder 35 of said dog from engagement with the locking shoulder 30 of the upper retracting lever 27, whereupon the spring of the latch bolt will project said bolt and will move said retracting levers to the position shown in Fig. 1. If it is desired to retract the dead bolt and leave the latch bolt projected, it is now only necessary to rotate the roll back arm 21 in a counterclockwise direction, depressing tumbler 17 and retracting the dead bolt in the manner hereinbefore described, this bringing the abutment flange 29 in the path of the roll back arm so that the latch bolt can again be retracted, when desired, through the roll back arm 21.

While I have described a preferable embodiment of this invention, I desire it understood that modifications in the structure thereof may be made within the spirit of the invention and the scope of the appended claims.

What I claim, therefore, and desire to secure by Letters Patent is:

1. In a lock, in combination, a dead bolt, a latch bolt, key-controlled means for projecting and retracting said dead bolt, key-operated retracting means pivotally carried by the lock independently of said dead and latch bolts and adapted to be actuated to retract said latch bolt, and means to hold said latch bolt retracted.

2. In a lock, in combination, a dead bolt, a latch bolt, key-controlled means for projecting and retracting said dead bolt, key-operated retarding means pivotally carried by the lock independently of said dead and latch bolts and adapted to be actuated to retract said latch bolt, means to hold said latch bolt retracted, and means carried by said dead bolt operable by the movement thereof to release said latch bolt.

3. In a lock, in combination, a dead bolt, a latch bolt, key-controlled means for projecting and retracting said dead bolt, manually controlled means operable from either side of the lock for retracting said latch bolt, key-operated retracting means pivotally carried by said lock independently of said dead and latch bolts and adapted to be actuated to retract said latch bolt, and means automatically holding said latch bolt retracted.

4. In a lock, in combination, a dead bolt, a latch bolt, key-controlled means for projecting and retracting said dead bolt, manually controlled means operable from either side of the lock for retracting said latch bolt, key-operated retracting means pivotally carried by said lock independently of said dead and latch bolts and adapted to be actuated to retract said latch bolt, means automatically holding said latch bolt retracted, and means carried by said dead bolt operable by the movement thereof to release said latch bolt.

5. In a lock, in combination, a dead bolt, a latch bolt, key-controlled means for projecting and retracting said dead bolt, complemental coöperating latch-retracting levers pivotally carried by the lock independently of said dead bolt and latch bolt, key-controlled means adapted to engage one of said levers and move said levers to retract said latch bolt, and a blocking dog adapted to automatically engage one of said levers when so moved to block it against latch-releasing movement.

6. In a lock, in combination, a dead bolt, a latch bolt, a latch-retracting lever pivotally carried by the lock independently of said dead bolt and latch bolt, a key-controlled roll-back arm adapted to project and retract said dead bolt, and means carried by said dead bolt adapted to engage and move said retracting lever into and out of the path of said roll-back when said dead bolt is moved by said roll-back arm into its opposite positions, whereby said roll-back arm may be actuated to engage said lever, when positioned, and retract said latch bolt.

7. In a lock, in combination, a dead bolt, a latch bolt, key-controlled means for projecting and retracting said dead bolt, complemental coöperating latch-retracting levers pivotally carried by the lock independently of said dead bolt and latch bolt, key-controlled means adapted to engage one of

said levers and move said levers to retract said latch bolt, and means automatically engaging said lever when so positioned and dogging said lever against latch-releasing movement.

8. In a lock, in combination, a dead bolt, a latch bolt, key-controlled means for projecting and retracting said dead bolt, complemental coöperating latch-retracting levers pivotally carried by the lock independently of said dead bolt and latch bolt, key-controlled means adapted to engage one of said levers and move said levers to retract said latch bolt, a blocking dog adapted to automatically engage one of said levers when so moved to block it against latch-releasing movement, and means carried by the dead bolt adapted to engage and retract said dogging means when said dead bolt is moved to one of its positions whereby said latch bolt is released and projected.

9. In a lock, in combination, a dead bolt, a latch bolt, a latch-retracting lever pivotally carried by the lock independently of said dead bolt and latch bolt, a key-controlled roll-back arm adapted to project and retract said dead bolt, lugs carried by said dead bolt adapted to engage and move said retracting lever into and out of the path of said roll-back when said dead bolt is moved by said roll-back arm into its opposite positions, whereby said roll-back arm may be actuated to engage said lever, when positioned, and retract said latch bolt, means automatically engaging said lever when so positioned and dogging said lever against latch-releasing movement, and means carried by the dead bolt adapted to engage and retract said dogging means when said dead bolt is moved to one of its positions whereby said latch bolt is released and projected.

10. In a lock, in combination, a dead bolt, a latch bolt, a key-actuated roll-back arm adapted to project and retract said dead bolt, a latch-retracting lever pivotally carried by said lock independently of said dead bolt and latch bolt and adapted to be operated through said roll-back arm, means carried by said dead bolt adapted, upon projection thereof, to engage and position said lever out of the path of movement of said roll-back arm and upon retraction thereof, to move said lever within said path of movement whereby said roll-back arm may be actuated to engage and move said lever to retract said latch bolt, a blocking dog carried by said lock and adapted for automatic engagement with said lever when so moved to block it against latch-releasing movement, and means carried by the dead bolt engaging said blocking dog upon the projection of said dead bolt, to move said dog and release said latch bolt.

11. In a lock, in combination, a dead bolt, a latch bolt, key-controlled means for projecting and retracting said dead bolt, key-operated retracting means pivotally carried by the lock independently of said dead and latch bolts and adapted to be actuated to retract said latch bolt, means operated by the projection and retraction of said dead bolt to move said pivoted retracting means into and out of operative retracting position, means to hold said latch bolt retracted, and means carried by said dead bolt operable by the movement thereof to release said latch bolt.

12. In a lock, in combination, a dead bolt, a latch bolt, key-controlled means for projecting and retracting said dead bolt, manually controlled means operable from either side of the lock for retracting said latch bolt, key-operated retracting means pivotally carried by said lock independently of said dead and latch bolts and adapted to be actuated to retract said latch bolt, means operated by the projection and retraction of said dead bolt to move said pivoted retracting means into and out of operative retracting position, means automatically holding said latch bolt retracted, and means carried by said dead bolt operable by the movement thereof to release said latch bolt.

AUGUST ARENS.

Witnesses:
CHAS. A. PEARDY,
HENDERSON F. HILL.