(No Model.)

V. R. DUNNING.

LOCK.

No. 589,940. Patented Sept. 14, 1897.

Fig. 1.

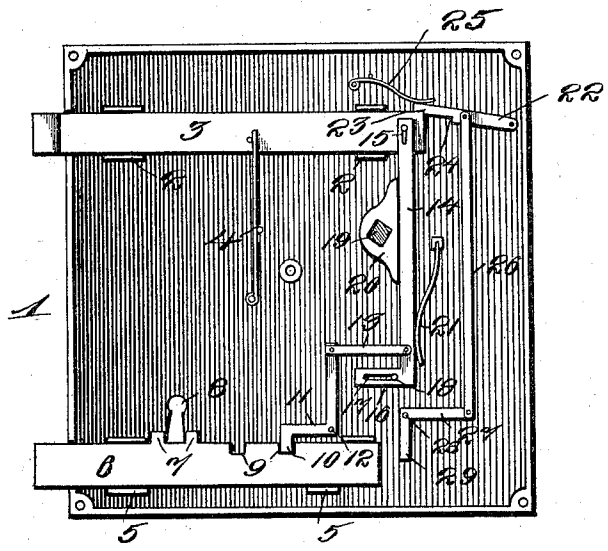
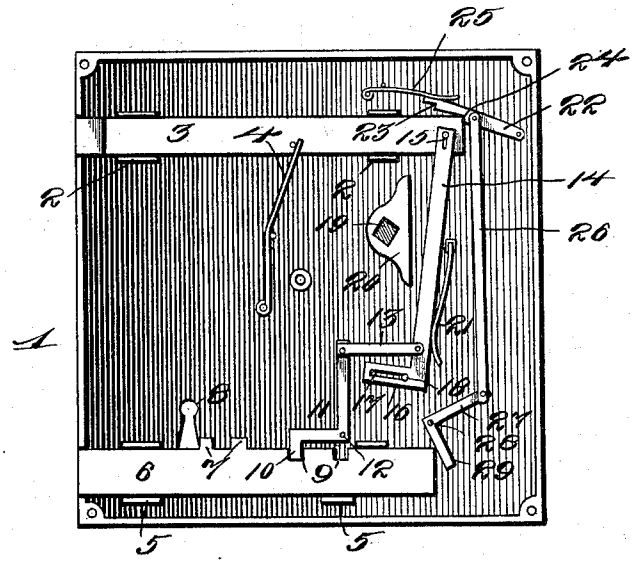


Fig. R.



WITNESSES

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LOCK.

SPECIFICATION forming part of Letters Patent No. 589,940, dated September 14, 1897.

Application filed November 6, 1896. Serial No. 611,260. (No model.)

To all whom it may concern:

Be it known that I, VIRGIL R. DUNNING, a citizen of the United States, residing at Mankato, in the county of Blue Earth and State of Minnesota, have invented certain new and useful Improvements in Door-Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in door-locks, the object of the same being to provide a device of this character by means of which the latch-bar and locking-bolt act in conjunction with each other, so that when the latter is in its locked position it will be impossible to operate the former until the key has been applied to shift the locking-bolt.

The invention consists of a slidingly-mounted latch-bar, a spring for normally holding said latch-bar in its outer position, a slidingly-mounted locking-bolt, means for shifting said locking-bolt by means of a key, stops on said bolt, a pivotally-mounted bell-crank lever having a tooth or projection thereon adapted to engage said stops, a swinging bar pivoted to the latch-bar and connected through a pitman with the upper end of said bell-crank lever, means actuated by the turning of the door-knob for moving said swinging bar, a pivotally-mounted stop-piece having shoulders thereon adapted to engage the rear end of said latch-bar, a pitman pivoted thereto and leading downwardly therefrom, and a bell-crank lever, to one arm of which the lower end of said pitman is connected, the other arm of said lever lying within the path of movement of said locking-bolt and adapted to be operated thereby when the latter is thrown to its rearward position.

The invention also consists in other details of construction and combinations of parts which will be hereinafter more fully described and claimed.

In the drawings forming part of this specification, Figure 1 represents a view of the lock-casing with one of the side plates thereof removed to show the operative mechanism, the latch-bar and locking-bolt being shown in the positions which they assume when locked. Fig. 2 is a similar view of the same, showing the parts in the positions they assume when the door is unlocked.

Like reference-numerals indicate like parts in both views.

The lock-casing 1 is adapted to be secured to the door in any suitable manner and is made up of side and end plates which are connected thereto by suitable bolts, screws, or rivets. Mounted to slide within suitable guides 2 2 at the upper end of the casing 1 is a latch-bar 3, whose outer end is beveled and is adapted to project through an opening in the outer edge of the casing 1. A spring 4 is provided for normally holding said latch-bar in its outer position. Also mounted to slide between suitable guides 5 5 at the lower end of the casing 1 is a locking-bolt 6, having lugs or projections 7 7 thereon, by means of which the same may be shifted from one position to another through the medium of a key inserted through the keyhole-slot 8. The upper surface of the locking-bolt 6 has notches or recesses 9 9 formed therein, into which is adapted to fit, according to the position of the locking-bolt, a tooth or projection 10 upon the outer end of one arm of a bell-crank lever 11, fulcrumed at 12 to the sides of the casing 1. The other arm of said bell-crank lever is connected through a pitman 13 with the lower end of a swinging rod or bar 14, which is pivoted in an elongated slot 15 to the rear end of the latch-bar 3. The lower end of the swinging bar 14 has an extension 16 thereto which extends at right angles thereto and is provided with an elongated slot 17, in which fits a pin 18, projecting from the sides of the casing 1.

19 represents the knob-shaft, to which is connected a block 20, having a flat side which normally lies substantially parallel to the swinging rod or bar 14 and by means of which said rod or bar may be shifted to one position or the other. A spring 21 tends to hold the lower end of the rod or bar 14 normally in the position in which it is shown in Fig. 1.

Pivoted at its rear end to the sides of the casing 1 is a stop-bar 22, provided with two notches or shoulders 23 and 24, respectively, against which the rear end of the latch-bar 3 is adapted to be thrown according to the position to which said latch-bar 3 is turned. The free end of said bar is normally urged downwardly by means of a spring 25. Piv-

oted to the stop-bar 22 and extending downwardly therefrom is a rod or pitman 26, which is connected at its lower end to one arm of a bell-crank lever 27, fulcrumed at 28 to the sides of the casing 1 and having its other arm 29 lying within the path of movement of the locking-bolt 6 and adapted to be engaged thereby when said bolt is in its rear position.

With the parts constructed as herein described it is thought that the operation of my improved lock may be readily understood. Briefly stated, however, it is as follows: In Fig. 1 of the drawings the parts are shown in their locking positions. If it be desired, however, to unlock the door or other device to which my lock is applied, the knob-shaft 19 is turned, forcing one end of the block 20 into engagement with the swinging rod or bar 14 and raising the tooth 10 out of engagement with the notches 9 through the pitman 13 and the bell-crank lever 11. The key fitting within the slot 8 is then turned slightly, moving the locking-bolt 6 a short distance to the rear, so that the tooth or projection 10 rests upon the upper edge of the locking-bolt 6. The pressure upon the knob-shaft is then released for the purpose of removing the pressure of the latch-bar 3 from the shoulder 24 on the stop-bar 22. The key is then turned to its extreme rearward position or until the tooth or projection 10 fits within the forward notch or recess 9 on the locking-bolt 6. Before this position of said locking-bolt has been reached, however, its rear end is brought into contact with the lower arm 29 of the bell-crank lever 27. This throws upwardly the pitman 26 and raises the stop-bar 22 against the pressure of the spring 25. A further turning of the knob-shaft 19, therefore, will, through the swinging bar 14, with which the block 20 engages, throw the latch-bar 3 to its rearward position against the stop 23. The door is then free to be opened, and thereafter the latch-bar 3 is free to be turned by the knob-shaft 19 until the locking-bolt 6 has been returned to its locking position. The parts are shown in their unlocked positions in Fig. 2 of the drawings. When it is desired to change them from the position shown in Fig. 2 to those shown in Fig. 1, it is merely necessary to turn the knob-shaft 19 so that the tooth or projection 10 on the bell-crank lever 11 will be released from the notch or recess 9 in the locking-bolt 6. When this has been done, the said locking-bolt is free to be turned by means of the key inserted through the slot 8 and engaging the lugs 7 7 on said bolt. At the same time, however, the spring 25, as well as gravity, forces the free end of the stop-bar 22 downwardly, so that the rear end of the latch-bar 3 engages the shoulder 24 on said stop-bar. The latch-bar 3 as well as the locking-bolt 6 are thereby held securely in the positions to which they have been turned. The spring 21 holds the lower end of the swinging bar 14 normally inwardly and thereby keeps the tooth or projection 10 in the notch or recess 9 in which it has been previously seated.

The device is extremely simple in construction, can be cheaply made, and is very effective for the purpose for which it was designed.

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

1. In a lock of the character described, the combination with a slidingly-mounted latch-bar, a spring for normally urging said latch-bar to its outer position, and a slidingly-mounted locking-bolt having means whereby the same may be shifted through the medium of a key, and provided with notches or recesses in one edge thereof, of a bell-crank lever having a tooth or projection upon one arm adapted to fit within one or the other of said notches or recesses, a swinging rod or bar pivoted to the rear end of said latch-bar, a pitman connecting the lower end of said swinging bar with the other arm of said bell-crank lever, and means actuated by the turning of the door-knob for swinging said pivotally-mounted rod or bar, substantially as and for the purpose described.

2. In a lock of the character described, the combination with a slidingly-mounted latch-bar, a spring for normally urging said latch-bar to its outer position, and a slidingly-mounted locking-bolt having means whereby the same may be shifted through the medium of a key, and provided with notches or recesses in one edge thereof, of a bell-crank lever having a tooth or projection upon one arm adapted to fit within one or the other of said notches or recesses, a swinging rod or bar pivoted to the rear end of said latch-bar, a pitman connecting the lower end of said swinging bar with the other arm of said bell-crank lever, a knob-shaft, and a block secured to said knob-shaft adjacent to said swinging rod or bar, whereby upon the turning of said shaft said pivotally-mounted rod or bar will be swung outwardly, substantially as and for the purpose described.

3. In a lock of the character described, the combination with a slidingly-mounted latch-bar, a spring for normally urging said latch-bar to its outer position, and a slidingly-mounted locking-bolt having means whereby the same may be shifted through the medium of a key, and provided with notches or recesses in one edge thereof, of a bell-crank lever having a tooth or projection upon one arm adapted to fit within one or the other of said notches or recesses, a swinging rod or bar pivotally mounted in an elongated slot to the rear end of said latch-bar and provided with an extension at its lower end having an elongated slot therein which surrounds a guide pin or stop, a spring for normally holding the lower end of said rod or bar inwardly, a pitman connecting the lower end of said rod or bar and the other arm of said bell-crank lever, a knob-shaft, and a block upon said knob-shaft adjacent to said rod or bar, where-

by upon the turning of said shaft said rod or bar will be swung to its outer position, substantially as and for the purpose described.

4. In a lock of the character described, the combination with a slidingly-mounted latch-bar, a spring for normally urging said latch-bar to its outer position, and a slidingly-mounted locking-bolt having means whereby the same may be shifted through the medium of a key, and provided with notches or recesses in one edge thereof, of a bell-crank lever having a tooth or projection upon one arm adapted to fit within one or the other of said notches or recesses, a swinging rod or bar pivoted to the rear end of said latch-bar, a pitman connecting the lower end of said swinging bar with the other arm of said bell-crank lever, means actuated by the turning of the door-knob for swinging said pivotally-mounted rod or bar, a stop-bar pivoted at one end to a stationary part of the device and having two shoulders thereon which are adapted to limit the rearward movement of said latch-bar according to the position to which said stop-bar is moved, a pitman pivoted to said stop-bar and leading downwardly therefrom, and a bell-crank lever one arm of which is pivoted to said pitman and the other of which lies within the path of movement of said locking-bolt and is adapted to be engaged thereby when said locking-bolt is in its rearward position, substantially as and for the purpose described.

5. In a lock of the character described, the combination with a slidingly-mounted latch-bar, a spring for normally urging said latch-bar to its outer position, and a slidingly-mounted locking-bolt having means whereby the same may be shifted through the medium of a key, and provided with notches or recesses in one edge thereof, of a bell-crank lever having a tooth or projection upon one arm adapted to fit within one or the other of said notches or recesses, a swinging rod or bar pivoted to the rear end of said latch-bar, a pitman connecting the lower end of said swinging bar with the other arm of said bell-crank lever, means actuated by the turning of the door-knob for swinging said pivotally-mounted rod or bar, a stop-bar pivoted at one end to a stationary part of the device and having two shoulders thereon which are adapted to limit the rearward movement of said latch-bar according to the position to which said stop-bar is moved, a spring for urging the free end of said stop-bar downwardly, a pitman pivoted to said stop-bar and leading downwardly therefrom, and a bell-crank lever one arm of which is pivoted to said pitman and the other of which lies within the path of movement of said locking-bolt and is adapted to be engaged thereby when said locking-bolt is in its rearward position, substantially as and for the purpose described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

VIRGIL R. DUNNING.

Witnesses:
J. T. WILLIAMS,
JENNIE MCCARTHY.