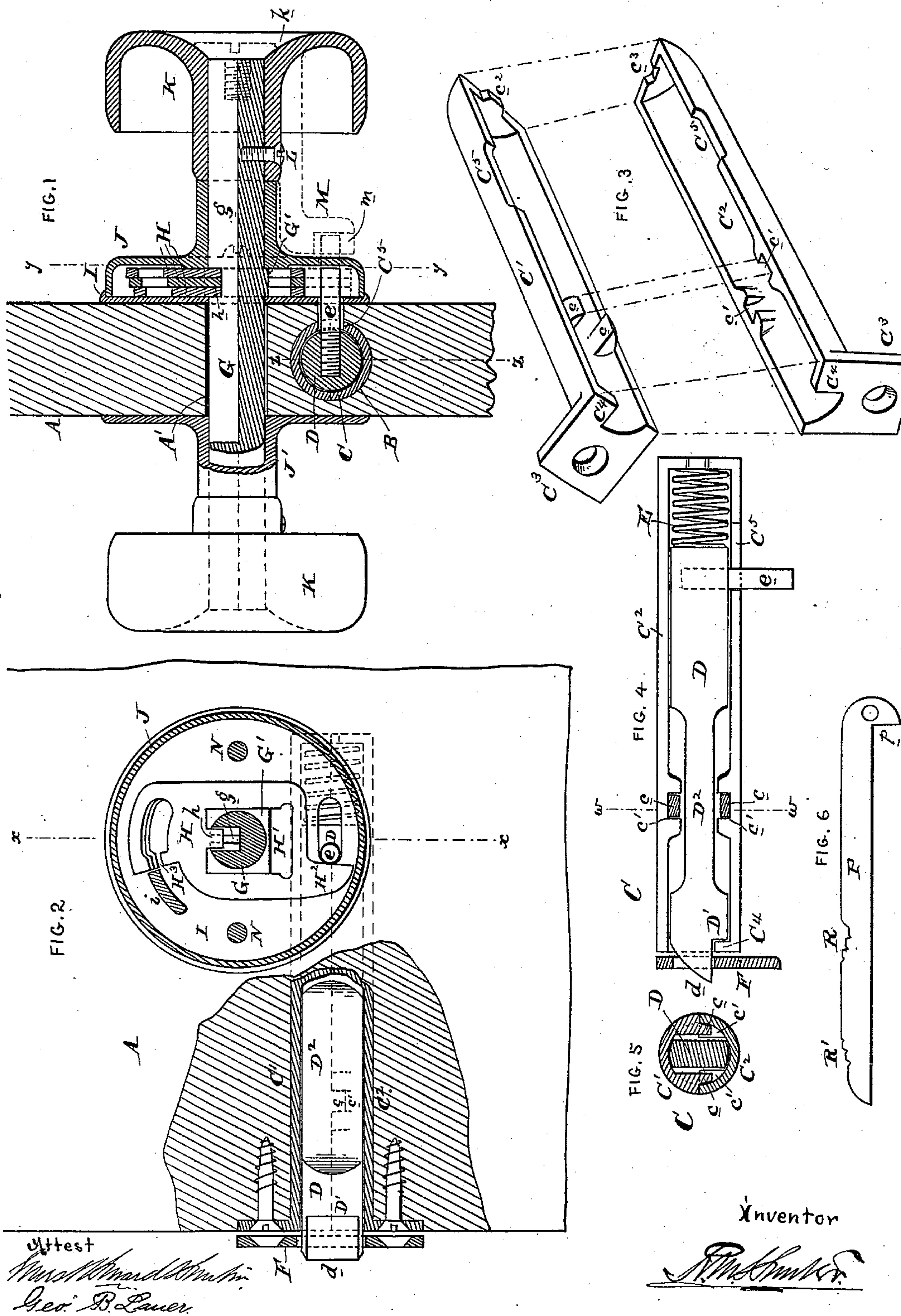


(No Model.)

R. M. HUNTER.  
LATCH AND LOCK COMBINED.

No. 464,282.

Patented Dec. 1, 1891.





# UNITED STATES PATENT OFFICE.

RUDOLPH M. HUNTER, OF PHILADELPHIA, PENNSYLVANIA.

## LATCH AND LOCK COMBINED.

SPECIFICATION forming part of Letters Patent No. 464,282, dated December 1, 1891.

Application filed May 22, 1891. Serial No. 393,696. (No model.)

*To all whom it may concern:*

Be it known that I, RUDOLPH M. HUNTER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Latches and Locks for Doors, of which the following is a specification.

My invention has reference to latches and locks for doors; and it consists of certain improvements, which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

My invention set out in this application has for its object the construction of a door-lock which shall be easily and quickly applied to doors, saving a large portion of the present cost in labor for attaching the lock to the door.

My invention also has for its object an economical construction whereby the cost of a fine appearing lock and handle shall be reduced to a minimum.

Furthermore, my invention, while combining simplicity and cheapness, embodies a construction employing tumblers or dogs, which permit the greatest security which could be desired for a door-lock of this character.

My invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a sectional elevation on line  $xx$  of Fig. 2 of a door-lock embodying my invention. Fig. 2 is a sectional front elevation, part being taken on line  $yy$  and part on line  $zz$  of Fig. 1. Fig. 3 is a perspective view of the bolt-socket with the two halves separated. Fig. 4 is a sectional plan view through the bolt-socket and box-lock and shows the bolt and its spring in plan. Fig. 5 is a cross-section of the bolt and socket on line  $ww$ , and Fig. 6 is a side elevation of the key.

A is the door. In the end of the door a hole B is bored, and into this is fitted a socket C, formed of the two halves  $C'$  and  $C^2$  of substantially the construction shown in Fig. 3. When these halves are placed together, the lugs  $c$  fit down into the recesses  $c'$  to prevent lateral or longitudinal movement of the two halves relatively to each other. Furthermore, the projection  $c^2$  at the rear of one part projects into the recess or notch  $c^3$  on the rear of the other part, thereby steadying the rear end against lateral movement as well as the forward

end. When these two parts are together, the notched portions  $C^5$  form a slot. The front portions of the parts  $C'$  and  $C^2$  are provided with flanges  $C^3$ , through which screws are passed to hold the socket in the door, as shown in Fig. 2. The front portions of the parts  $C'$  and  $C^2$  are also provided with projections  $C^4$ , which perform the function of acting as a stop for the shoulder  $D'$  of the bolt D. When the bolt D is placed in the socket, the said socket is driven into the hole B in the door, which it tightly fits. A spring E is placed between the end of the socket and the end of the bolt D, as best shown in Fig. 4, so that the bolt D is always pressed outward with the spring action. The front end of the bolt is made with the oblique nose  $d$  for catching into the box-lock F, which is secured by screws to the door jamb or frame. The bolt D is reduced in weight by forming its middle portion flat, as indicated at  $D^2$ , which construction also permits the employment of the parts  $c$  and  $c'$  in the socket. After the bolt and socket have been placed in the door a pin  $e$  is passed laterally through the slot  $C^5$  and screwed into the bolt B, as shown in the several figures. A second hole  $A'$  is bored through the door transversely to the first-mentioned hole B and may be somewhat larger than the handle-shaft G to avoid friction.

J and  $J'$  are two face-plates in which the handle-shaft G is journaled, and are secured upon opposite sides of the door by means of screws N in the ordinary way.

K are the handles, which are secured to the handle-shaft by means of screws L or otherwise. The shaft G is formed with a longitudinal slot  $g$  throughout its length, in which the key P is thrust when the door is to be opened or the lock kept in condition, so that by turning the handles the door may be readily opened. The handles also have an opening in their ends through which the key may pass. The key is preferably provided with a head  $p$  to limit the extent to which it enters the slot, and also is provided with the notched portions R and  $R'$ , which are similar but arranged in opposite directions for the purpose of opening the lock from either side of the door. One of the face-plates J is made recessed upon its under side and is preferred.



ably fitted against a disk I and forms a circular or annular compartment in which the tumblers H are placed. That portion of the shaft G which is inclosed between the face-plate J and the plate I is slightly enlarged and made square, as shown at G', having the two-fold purpose of acting as a bearing for the tumblers, and also properly adjusting the shaft G on the door and holding it in position, even should the handles be removed.

The tumblers H are preferably shaped as shown in Fig. 2 and provided with central rectangular opening H', which fits over the enlarged square portion G' of the shaft, so that when the shaft is turned the tumblers are turned also. When the tumblers are turned with the shaft, the bolt D is moved backward against the action of the spring E to unlock the door. These tumblers are also provided with slotted upper portions H<sup>3</sup>, so that when they are raised to the proper elevation the said slot or notch H<sup>3</sup> are in line with the projection i' upon the inner face of the face-plate J, (or, if desired, upon the disk I.) When the tumblers turn, they pass over the said projection without opposition. If the tumblers are not raised to their proper heights, the projection i offers an obstruction to their movement, and thereby locks the handle-shaft against movement, and consequently the bolt cannot be withdrawn. The several tumblers are provided with projecting portions h, which extend down into the slot g of the handle-shaft G and are adapted to be actuated by the notched portions of the key P, so as to elevate the tumblers to the requisite heights to insure the slots or notches H<sup>3</sup> coming in line with the projection i. As the tumblers are all located in one of the face-plates and are upon one side of the door, the notches R of the key, which would operate the said tumblers from the right-hand side of the door, would not operate the tumblers from the other side of the door, as is self-evident from an examination of Fig. 1, and consequently the key P is formed with notches R' for operating the tumblers from the left-hand handle. The handles are preferably recessed on their ends, as indicated, so as to receive the head portion of the key and prevent it projecting beyond the handle both for comfort and ornamental appearance. When the door is closed, it is not necessary to turn the handle, as the bolt may be pushed back against the action of the spring without affecting the tumblers in any manner, and consequently the same bolt D acts both as a latch and a lock. When the key is thrust into the end of the handle, the door is unlocked and may be opened by simply turning the handle; but when withdrawn or partly withdrawn the tumblers are locked against movement and the handle cannot be turned or the bolt withdrawn.

So far I have described my invention as applied to interior doors, or those between bedrooms and halls, where both handles are either

locked or unlocked with reference to movement, and I will now describe a slight modification to my invention which is adapted to front doors, in which case the key is designed to open the front door from the outside, and its insertion is necessary to the turning of the handle from that side, but in which the inner handle may be turned at any time for opening the door without the employment of a key. This movement is indicated in the dotted lines in Fig. 1, and consists simply in extending the pins e through the face-plate J and securing the inner handle K loosely upon the shaft G', or so that it may be rotated without turning the shaft G and connecting it with the bolt by means of a lug M, having a slot m, into which the pin e extends, so that upon turning the handle the bolt D may be drawn back even when the shaft G and the tumblers are locked against movement. In this manner the door may be opened from the inside at all times without the use of the key, but cannot be opened from the outside without the insertion of the key.

If desired, in place of the usual devices employed for unlocking the front handle, so that the door may be opened from the outside, for temporary use I may arrange to insert the key from the inside, as before described, and allow it to remain therein so long as the door is desired to be unlocked for the free opening of it from the outside without the employment of the key from that side of the door. By this means I accomplish with the cheap and economical construction herein set out all that is accomplished by the ordinary expensive door-locks. Aside from the reduced cost in the manufacture of the lock proper there is a saving of about seventy-five per cent. in the time required to apply the lock to the door, which is a point of great importance when considering large building operations.

While I prefer the construction herein set out, I do not limit myself thereto, as the details thereof may be modified in various ways without departing from the principles of my invention.

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

1. In a door-lock, the combination of a spring-bolt, a transverse rotary shaft provided with one or more handles for rotating it, a face-plate secured to the door and through which a shaft projects, and one or more tumblers arranged within the face-plate to operate the spring-bolt upon the operation of the shaft.

2. In a door-lock, the combination of a spring-bolt, a transverse rotary shaft provided with one or more handles for rotating it, a face-plate secured to the door and through which a shaft projects, one or more tumblers arranged within the face-plate to operate the spring-bolt upon the rotation of the shaft, and a key adapted to be thrust through the end of the handle and longitudinally over the



shaft to operate the said tumbler or tumblers for moving them into operative position.

3. In a door-lock, the combination of a door having a hole formed in its end and a second hole bored through the face of the door transversely to the first-mentioned hole, a tubular socket fitting into the hole on the end of the door, a spring-bolt movable in said socket and having a lateral projecting part or pin extending through the face of the door, a shaft extending transversely to the bolt through the second hole formed in the door and journaled in suitable bearings secured to the face of the door, one or more handles positively secured to the shaft to rotate it, a casing upon one side of the door, and tumblers inclosed within the casing for actuating the projection or pin of the bolt and operated by the rotation of the shaft.

4. In a door-lock, the combination of a door having a hole formed in its end and a second hole bored through the face of the door transversely to the first-mentioned hole, a tubular socket fitting into the hole on the end of the door, a spring-bolt movable in said socket and having a lateral projecting part or pin extending through the face of the door, a shaft extending transversely to the bolt through the second hole formed in the door and journaled in suitable bearings secured to the face of the door, one or more handles positively secured to the shaft to rotate it, a casing upon one side of the door, tumblers inclosed within the casing for actuating the projection or pin of the bolt and operated by the rotation of the shaft, and a key adapted to pass through the shaft for operating the tumblers for the purpose of releasing them, so that the rotation of the shaft may draw back the bolt.

5. The combination of a door having a hole bored in its edge and a second hole bored transversely to the first-mentioned hole through the face of the door and at a different elevation, a tubular socket secured in the first-mentioned hole, a spring-actuated bolt movably held in said socket, a rotatable slotted shaft extending through the transverse hole and journaled in suitable bearings upon the door, one or more tumblers connecting the shaft with the spring-actuated bolt upon one side of the door, a handle secured to the shaft upon the other side of the door, and a key adapted to be passed through the slot of the shaft and handle for operating the tumblers upon the inner side of the door.

6. The combination of a door having a hole bored in its edge and a second hole bored transversely to the first-mentioned hole through the face of the door and at a different elevation, a tubular socket secured in the first-mentioned hole, a spring-actuated bolt movably held in said socket, a rotatable slotted shaft extending through the transverse hole and journaled in suitable bearings upon the door, one or more tumblers connecting the shaft with the spring-actuated bolt upon the inner side of the door, a handle secured to the shaft

upon the outer side of the door, a casing for the tumblers, having a projection in connection with which the tumblers work, a key adapted to be passed through the slot of the shaft and handle from the outside for operating the tumblers upon the inner side of the door, and a handle loosely supported upon the inner side of the door and adapted to operate the bolt independently of the tumblers.

7. In a door-lock, the combination of two face-plates, a shaft journaled therein and having a keyway formed upon it, a handle secured to the shaft and having an aperture in its end through which the key may be inserted, one or more tumblers inclosed in one of the face-plates, a key adapted to pass through the handle and shaft to operate the tumbler or tumblers, and a spring-bolt adapted to be operated by the tumbler or tumblers after the key has been inserted.

8. In a door-lock, the combination of the face-plates J and J', the shaft G, having the groove g, one or more handles secured to the shaft, one or more tumblers H rotatable with the shaft, but adapted to move transversely to it under the action of the key, a key P, movable through the groove of the shaft for operating the tumbler or tumblers, a tubular socket C, arranged transversely to the shaft G, a bolt D, inclosed within the socket and having a lateral projection or pin e, adapted to be operated by the tumbler or tumblers, and a spring E within the socket pressing upon the bolt.

9. In a door-lock, the combination of the face-plates J and J', the shaft G, having the groove g, one or more handles K, secured to the shaft, one or more tumblers H rotatable with the shaft, but adapted to move transversely to it under the action of the key, a key P, movable through the groove of the shaft for operating the tumbler or tumblers, a tubular socket C, arranged transversely to the shaft G, a bolt D, inclosed within the socket and having a lateral projection or pin e, adapted to be operated by the tumbler or tumblers, a spring E within the socket pressing upon the bolt, and a handle loosely journaled with respect to the shaft G on the side adjacent to the face-plate J and connecting with the pin or projection e of the bolt, whereby the latter may be operated from the interior without rotating the shaft.

10. In a door-lock, a bolt-socket C, formed of two independent semi-cylindrical parts having notches which, when placed together, constitute a tubular socket provided with a slot C<sup>5</sup>, in combination with a bolt D, having a pin or projection e extending through the slot C<sup>5</sup>, and a spring E, arranged within the socket and between its ends and the bolt.

11. The combination of the socket C, formed of the two parts C' and C<sup>2</sup>, provided with notches which constitute a slot C<sup>5</sup> and with projections or shoulders C<sup>4</sup>, and lugs to prevent displacement of the parts when placed together, in combination with a bolt B, having



the beveled face  $d$  and the shoulder  $D'$ , a lateral projection or pin  $e$ , extending through the slot  $C^5$ , and a spring to force the bolt forward, so that its shoulder  $D'$  rests against the  
5 shoulder or projection  $C^4$ .

12. In a door-lock, the combination of a rotatable shaft, a hollow face-plate, one or more tumblers inclosed within the face-plate and adapted to control the rotation of the shaft,  
10 a projection in the path of the tumbler or

tumblers, and a key carried by the shaft for moving the tumblers to control the shaft and to permit it to operate the bolt.

In testimony of which invention I have hereunto set my hand.

R. M. HUNTER.

Witnesses:

ERNEST HOWARD HUNTER,  
S. T. YERKES.