No. 632,959. Patented Sept. 12, 1899.

J. CLEMENT.

LOCK.

(Application filed Apr. 8, 1899.

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

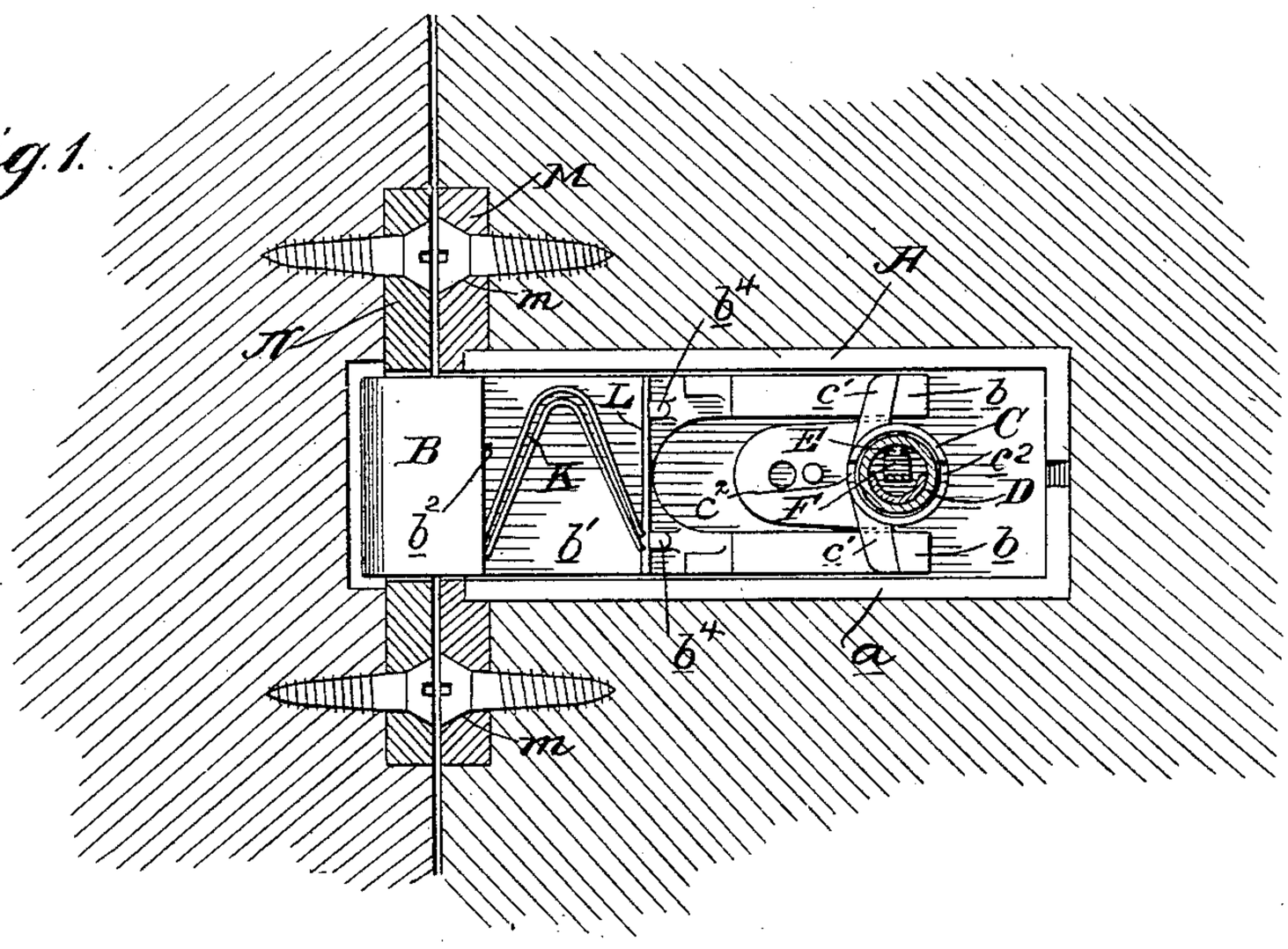
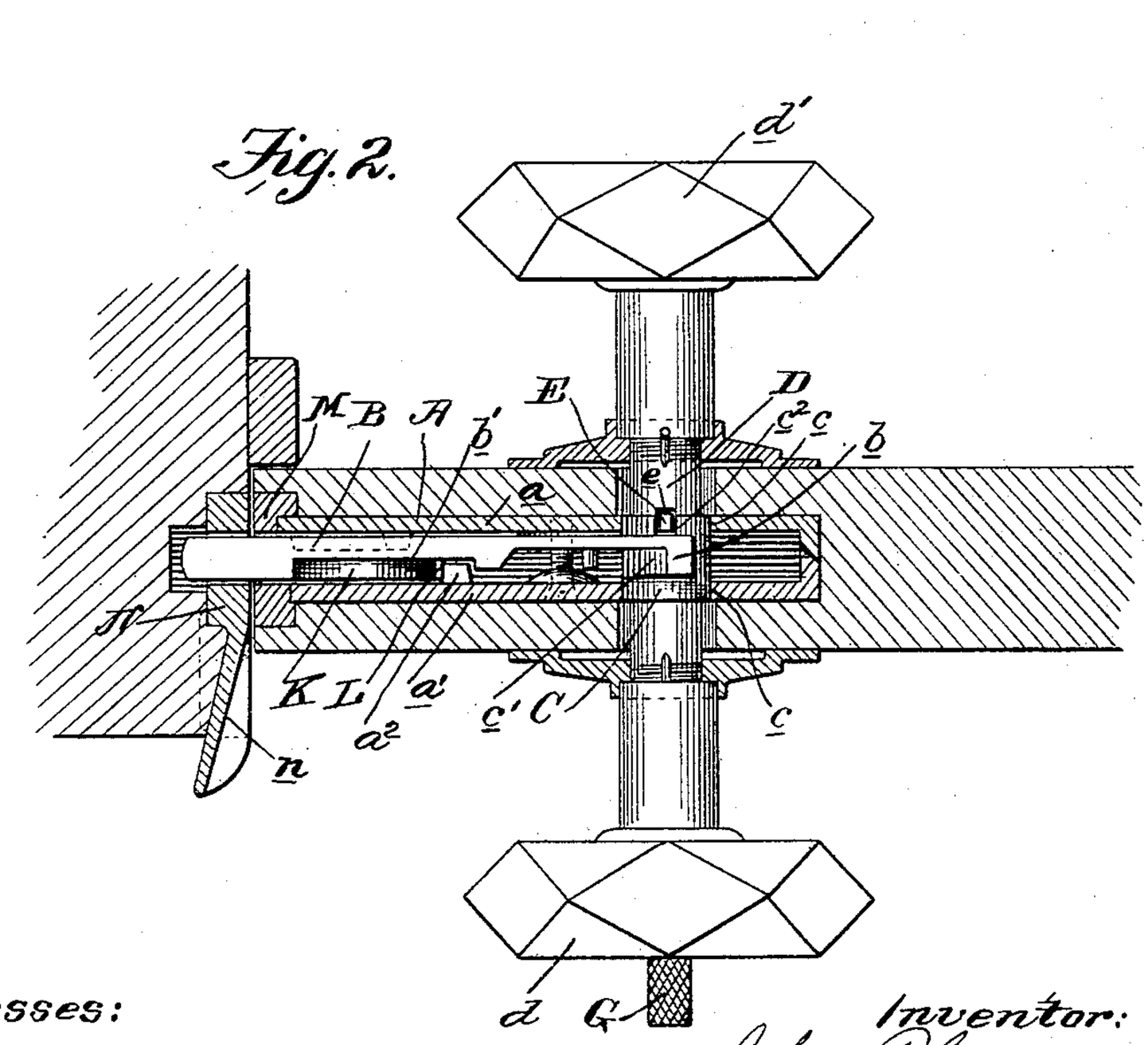


Fig. 2.



Witnesses:
G. A. Pennington
A. D. Wilson

Inventor:
John Clement
by Jos. H. Hunter
Atty.

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Fig. 3.

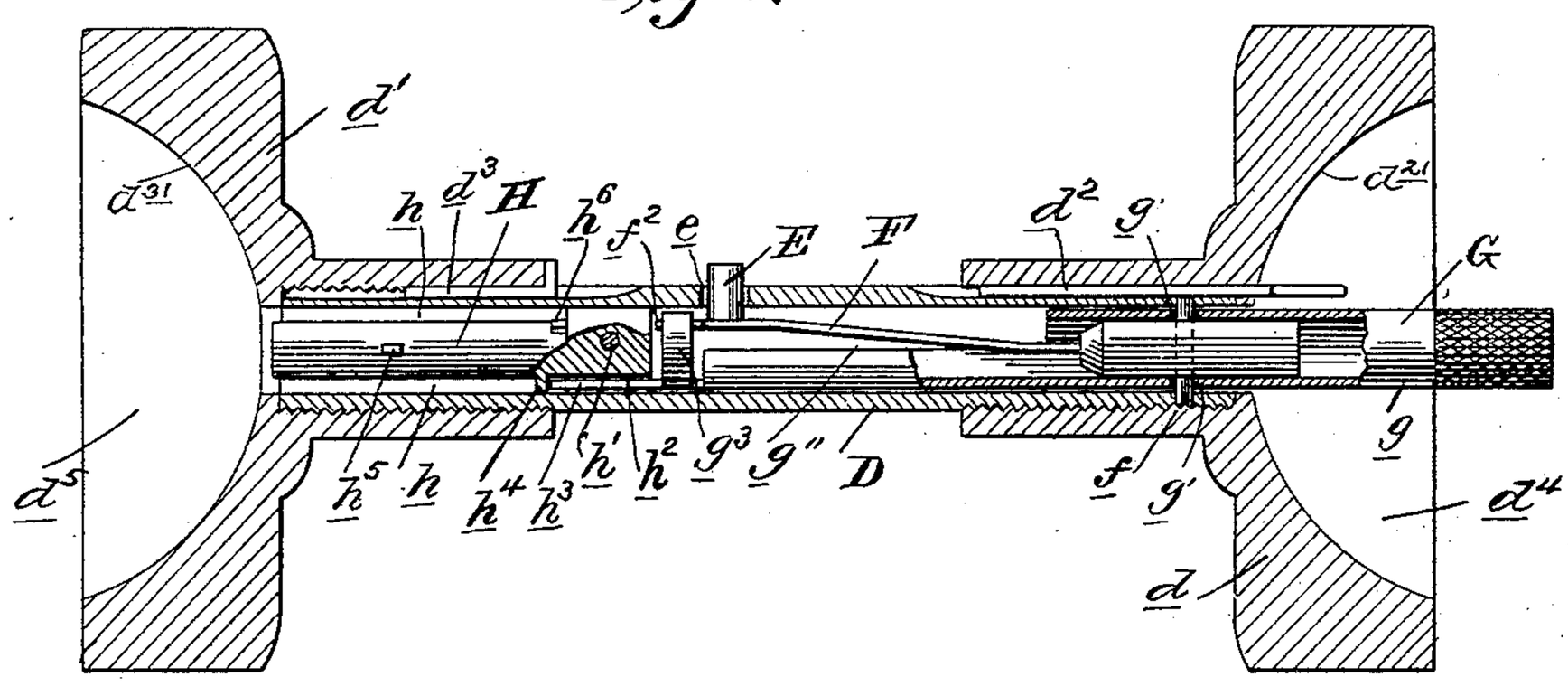


Fig. 4.

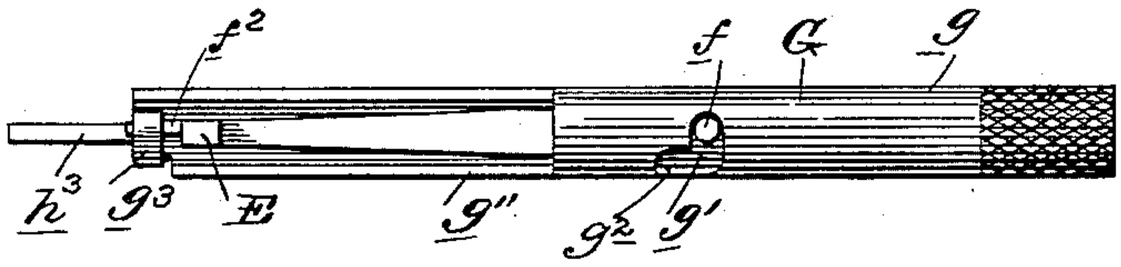


Fig. 5.

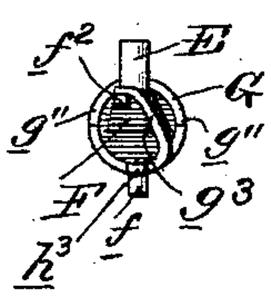


Fig. 6.

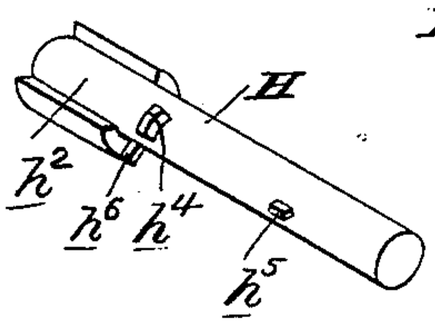


Fig. 7.

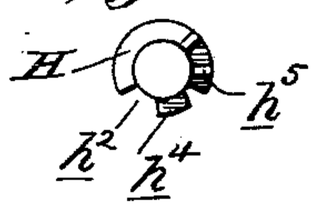


Fig. 9.

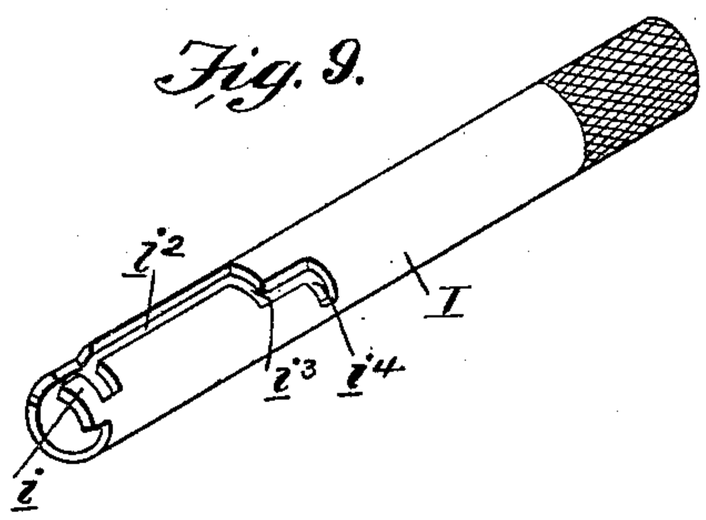
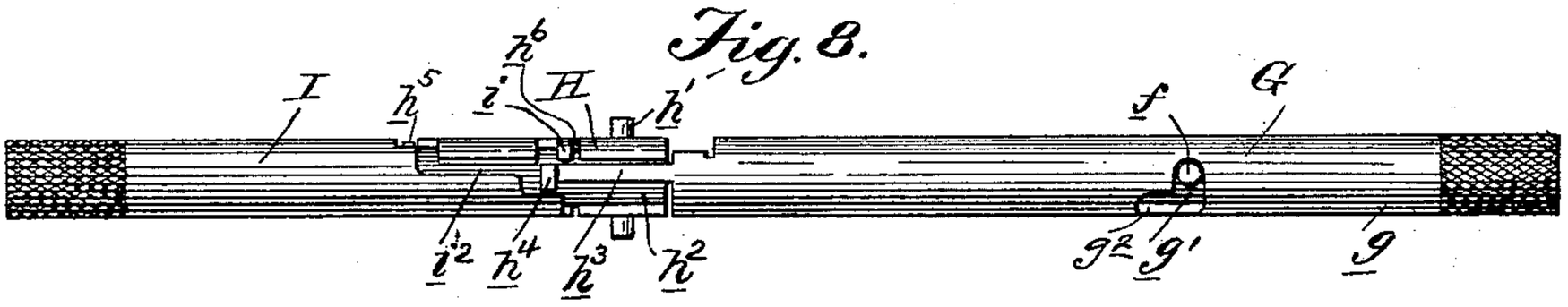


Fig. 8.



Witnesses:

G. A. Pennington

D. C. Taylor

Inventor:

John Clement

by Jos. H. Hunter

Atty.

UNITED STATES PATENT OFFICE.

JOHN CLEMENT, OF BARABOO, WISCONSIN.

LOCK.

SPECIFICATION forming part of Letters Patent No. 632,959, dated September 12, 1899.

Application filed April 8, 1899. Serial No. 712,215. (No model.)

To all whom it may concern:

Be it known that I, JOHN CLEMENT, a citizen of the United States, residing at Baraboo, in the county of Sauk and State of Wisconsin, have invented certain new and useful Improvements in 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.

This invention relates to improvements in locks, and especially to that class of locks provided with a bolt or latch, an operating knob or handle therefor, and means for operatively connecting the handle to or disconnecting it from the bolt or latch, whereby the bolt can be operated by the handle when connected and whereby the handle can be operated without operating the bolt when it is disconnected therefrom.

My invention has for its objects to provide a novel means for connecting the handle or knob operatively with the bolt from a key or device on the inside of the door and by a detachable key adapted to be used from the outside of the door, to provide a novel guard to prevent the operation of the bolt except by an authorized key, to provide a novel catch or device for connecting the knob-spindle or shaft to the bolt, to so construct the lock that the minimum number of parts only are necessary, so that the lock will occupy the least possible space, and to generally improve and simplify the lock.

With such and other objects in view the invention is embodied in the parts and the arrangement and combinations of parts hereinafter described, and particularly set forth in the claims.

In the accompanying drawings I have shown a lock embodying my improvements; but I desire it understood that I do not limit the invention in its useful applications to the particular construction which for the sake of illustration I have therein delineated.

In said drawings, Figure 1 is a vertical longitudinal sectional view of the lock, showing my invention applied thereto. Fig. 2 is a horizontal sectional view showing parts in elevation. Fig. 3 is a transverse sectional view, enlarged, through the knobs and knob-shaft. Fig. 4 is an elevation of the catch and inside operator removed from the knob spindle or shaft. Fig. 5 is an end elevation of the parts shown in Fig. 4. Fig. 6 is a perspective view of the key-guard removed from the knob-spindle. Fig. 7 is an end elevation of the said guard. Fig. 8 is a plan view showing the guard with the key and its relation to the catch removed from the spindle. Fig. 9 is a perspective view of the key.

Referring to the drawings, wherein like reference characters refer to like parts throughout the several views, A indicates a lock-casing, the lock in the present instance being a mortise-lock, B a sliding bolt therein, and C a barrel or sleeve mounted in bearings *c* in the lock-casing and provided with operating-arms *c'*, adapted when rotated in either direction to engage projections or lugs *b* on the bolt to retract the same.

The details and novel parts of the lock will be hereinafter described.

Passing through the sleeve or barrel C and freely rotatable therein is a knob shaft or cylinder D, which, as shown, is tubular in form and contains the operating parts of the catch (indicated at E) for locking the shaft D and barrel C together, which catch projects through an opening *e* in the knob-spindle D, as shown, and is secured to a spring F, secured, as by a pin *f*, from longitudinal or rotary movement within the spindle D. The catch E is by its spring F normally forced outward and when brought in register by a turning of the knob-spindle with one of the holes or notches c^2 in the barrel or sleeve C is forced by the spring into said hole or notch, thereby locking the knob shaft or spindle to the barrel C, when the barrel can be rotated by the knob-shaft to retract the bolt. The barrel shown has four such notches c^2, two on one side and two on the other side thereof, so that the knob-shaft can be inserted in the barrel and coöperate therewith from either side of the lock.

G indicates an operator for the latch or catch E on the inside of the door, and consists in the present instance of a tube rotatably mounted within the spindle D and pro-

jecting at its end g sufficiently far beyond the knob or handle (indicated at D) to enable it to be grasped and rotated. This tube G has at g' g' at diametrically opposite points therein notches or slots through which the pin f passes. These notches are of sufficient length to permit a partial rotation of the shaft or tube G, and each slot is provided at one end thereof with a longitudinal offset or enlargement of the slot g^2, permitting a slight longitudinal movement of the tube G for a purpose hereinafter specified. At g'' the tube G is cut away to provide space for the free movement of the spring F. g^3 indicates a cam or inclined lug on said shaft or tube G and adapted in the rotation of said tube in one direction—to the right, in this instance—to engage a projection or lug f^2 on the spring F and retract the latter, drawing the catch E out of the notches in the barrel C and into the hole e in the knob-shaft to permit a free rotation of the latter in the barrel. The operator just described for the catch E, it will be observed, is not intended for removal from the shaft, but is intended for the inside operator and remains in place at all times.

Within the knob-shaft at the outer end or end opposite the operator G is at guard-plug H, which at its inner end is of substantially the diameter of the bore of the knob-shaft and is at its outer end and for the greater portion of its length of reduced diameter, leaving an annular space between the plug and the inner wall of the knob-shaft, as indicated at h, for the introduction of an annular key or operating-sleeve, (indicated at I.) The guard-plug H is held fixedly in the knob-shaft in any suitable manner, as by a pin h' passing through the large end thereof and through the knob-shaft. The guard-plug at its enlarged end is cut away at h^2 or slotted to receive and permit the rotation therein of a longitudinally-extending finger h^3 on the operator G. This finger h^3 is adapted to be engaged by a suitable part, as i on the key I, to rotate the operator G after the latter has been turned to retract the catch E from the barrel C, so that after the knob-shaft has been disconnected from the barrel on the inside of the door by rotation of the operator to the right the engagement of the key with the finger h^3 will upon turning the key I to the left turn said operator G to the left and permit the spring F to throw the catch into one of the notches in the barrel and lock the knob-shaft to the same, thereby permitting the throwing or retraction of the bolt by the operation of the outside knob or handle, (indicated at d'.) Any suitable arrangement of guards to prevent the introduction of an unauthorized key may be provided, that shown being very efficient and comprising a projection h^4 on the guard-plug opposite the end of the slot h^2 and a sufficient distance therefrom to permit the introduction and rotation of the part i of the key. A second projection h^5, out of alinement with the projection h^4, is also provided, these two projections requiring a key of novel construction, such as indicated, to be used. The key shown is provided with the longitudinal slot i^2, having the lateral offset portions i^3 and i^4 to permit of the key being turned after it has been inserted. h^6 is a lug on the guard-plug, adapted to engage the rear end of the part i on the key to prevent rotation in the opposite direction. The construction of the guard and key, it will be observed, constitutes a very efficient means for preventing the insertion of an implement other than the properly-fashioned key to engage and operate the finger h^3. It will be observed that by means of the longitudinal extension g' of the slots g in the operator G the latter can be moved longitudinally to bring the finger h^3 out of the path of the part i of the key, and thus effectually prevent the operation of the catch E from the outside by the key or other means.

The knobs or handles d d' may be secured to the knob-shaft in any desirable or suitable manner, they being shown screwed onto the ends of the shaft and held from rotation thereon by means of keys d^2 d^3.

My lock proper is also of novel construction in the following particulars: The bolt B is practically of the same width as the casing A, but is sufficiently shorter than the casing to permit of its sliding longitudinally therein. The bolt is reduced in thickness, as indicated at b', for the provision of space for the operating-spring, (indicated at K.) This spring is held in place between the wall b^2 of the bolt and a bar L, movably supported on the reduced portion of the bolt and prevented from backward movement thereon beyond a certain point by the lugs or projections b^4. On one part of the lock-casing A, which is shown as being made in two parts a and a', are lugs or projections a^2, adapted when the parts of the casing are together to engage behind the bar L at the sides of the lugs or projections b^4 and prevent the rearward movement of the bar L when the bolt is retracted, thereby placing the spring K under tension, which will tend to force the bolt outward into engagement with the bolt-strike. It will thus be observed that the lock is constructed in a very compact and simple manner and that when the parts of the lock-casing are separated the spring is relieved from tension, thus avoiding the usual objections to a lock in which the springs are held between a part of the casing and the bolt and are liable when the casing is opened to spring out of place, thereby causing great annoyance and trouble in replacing the spring.

M indicates an edge plate suitably fashioned to engage the end of the lock-casing and provided with suitable screw-openings m m for the securing-screw. The plate M, as shown, is detached from the casing A. As will be seen from the drawings, the bolt is

made with parallel sides, and the lock-strike (indicated at N) is provided with a suitable projecting inclined portion *n* to be engaged by the bolt in the closing of the door. This, however, is immaterial, as the bolt can be, as is common, provided with a beveled face to engage the straight lock-strike.

In order that the operating-key and operator G may not project so far beyond the operating handles or knobs to disfigure the same and at the same time to provide sufficient space for grasping and operating the key and operator, I have shown each knob provided with a concavity or cup-shaped recess, (indicated at d^{21} and d^{31}, respectively.)

From the foregoing description it is believed the operation of the lock will be readily understood, it simply remaining to say that when the catch E is by its spring thrown out into engagemant with the barrel the operator simply turns the operator G to the right, retracting the catch E by the engagement of the cam-lug on the operator with the projection f^2 on the spring F, and that after the catch has been so retracted the operator G can be turned to the left to permit the spring F to again throw the catch into engagement with the barrel by the insertion of the key I and the turning thereof to the left, when the part *i* of the key will engage the finger h^3 of the operator and turn the latter.

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

1. In a lock, the combination with a bolt, of a knob or handle shaft, a barrel loosely sleeved on said shaft, and provided with means for throwing the bolt, a spring-catch carried by the shaft for locking said shaft to said barrel, and means for retracting said catch from engagement with said barrel, comprising an operator rotatably mounted in said shaft and provided with a cam-surface engaging a part connected to said catch, substantially as described.

2. In a lock, the combination with a bolt, of a knob or handle shaft, a barrel loosely sleeved thereon and provided with means for drawing said bolt, a spring-catch secured within the shaft for locking said shaft to said barrel, and an operator for said catch rotatably mounted in said shaft and provided with a cam portion adapted to engage over a portion of said catch for retracting said catch from engagement with said barrel, substantially as described.

3. In a lock, the combination with a bolt, a barrel, provided with means for drawing the bolt, a knob-shaft working loosely in said barrel, a catch for locking said shaft to said barrel, an operator for said catch in one end of said shaft adapted to be grasped and turned by hand to retract the catch, and a key adapted to be inserted in said shaft from the other end in engagement with said operator and to rotate the same to throw said catch into engagement with said barrel, substantially as described.

4. In a lock, the combination with a sliding bolt, of a barrel provided with means for throwing the bolt, a knob-shaft rotatably mounted in said barrel, a spring-pressed catch for locking said barrel to said shaft, an operator rotatably mounted in one end of said shaft provided with a cam-surface adapted to retract said catch and provided with a longitudinally-extended finger, a key adapted to be inserted in the other end of said shaft and provided with a part adapted to engage said finger to rotate said operator, substantially as described.

5. In a lock, the combination with a sliding bolt, of a knob or handle shaft, a barrel loosely sleeved on said shaft and provided with means for throwing said bolt, an operator in one end of said shaft, a catch for locking said shaft to the barrel and adapted to be operated by the rotation of said operator, a guard-plug in the other end of the shaft provided with a slot, a finger on said operator working in said slot, and a key adapted to engage said finger to rotate said operator, substantially as described.

6. In a lock, the combination with a sliding bolt, of a rotatable knob-shaft, a catch for operatively connecting said shaft with bolt-throwing means, an operator for said catch in one end of the shaft, a guard-plug in the other end of said shaft, and an annular key adapted to be inserted between said shaft and plug and provided with means for engaging said operator, substantially as described.

7. In a lock, the combination with a bolt and means for throwing the same comprising a rotatable knob-shaft, of a guard-plug in said shaft provided with a longitudinal slot, an operator and means in said shaft for operatively connecting the same with said bolt-throwing means, a guard-lug on said plug opposite the end of said slot and a key provided with a part *i* adapted to engage said operator, substantially as described.

8. In a lock, the combination of a knob-shaft, a guard-plug therein provided with a reduced portion, guard-lugs on said plug, and an annular key provided with slots to coöperate with said guard-lugs, substantially as described.

9. In a lock, the combination with a sliding bolt, of a barrel provided with means for throwing the same, a knob-shaft rotatably mounted in said barrel, a spring-catch for locking said shaft to said barrel, a pin for securing said spring-catch in said shaft, and an operator provided with a slot g' in which said pin works and with a longitudinal extension g^2 of said slot, substantially as and for the purpose described.

10. In a lock, the combination of a casing, a sliding bolt in said casing having a reduced portion, a bar in said reduced portion held

from movement in one direction by a lug on said bolt, a leaf-spring resting on said bolt and confined between said bar and a portion of said bolt, and lugs on the casing adapted to engage said bar and hold the same when said bolt is retracted to compress said spring, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN CLEMENT.

Witnesses:
L. W. FIELD,
JAS. E. CONGDON.