

No. 638,404.

Patented Dec. 5, 1899.

C. E. SMITH.
DOOR LOCK.

(Application filed Dec. 30, 1898.)

(No Model.)

Fig. 3.

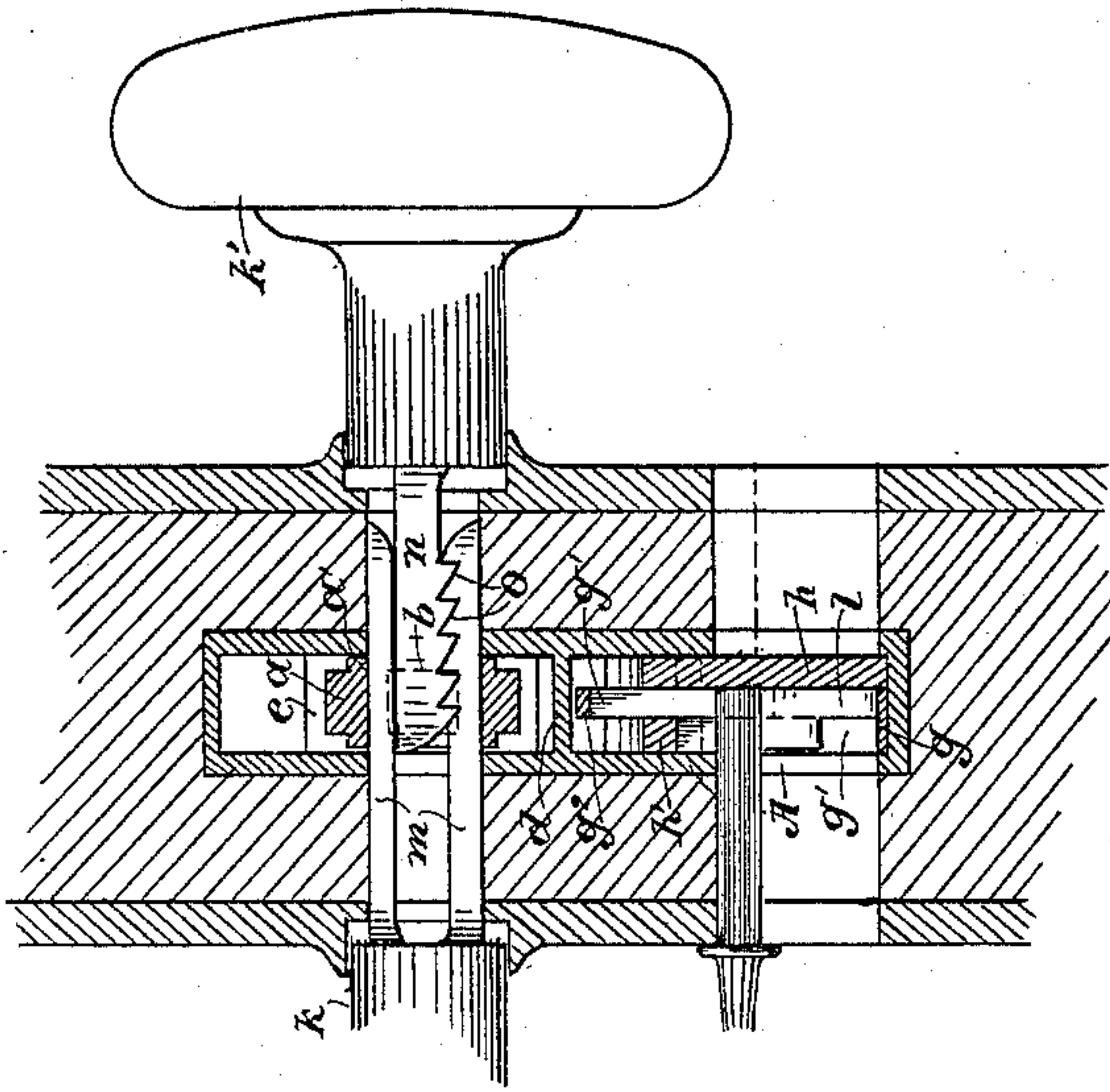


Fig. 1.

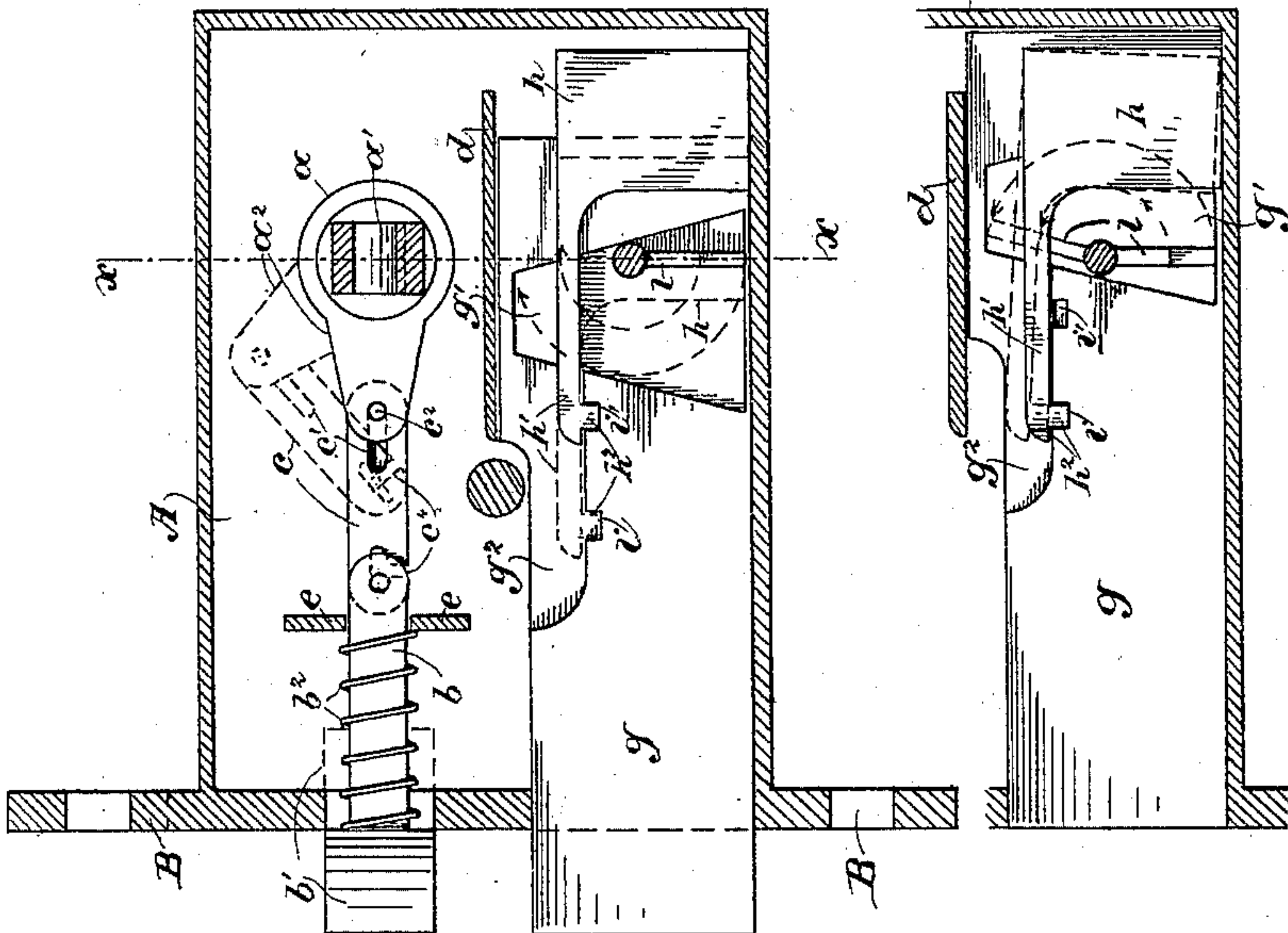
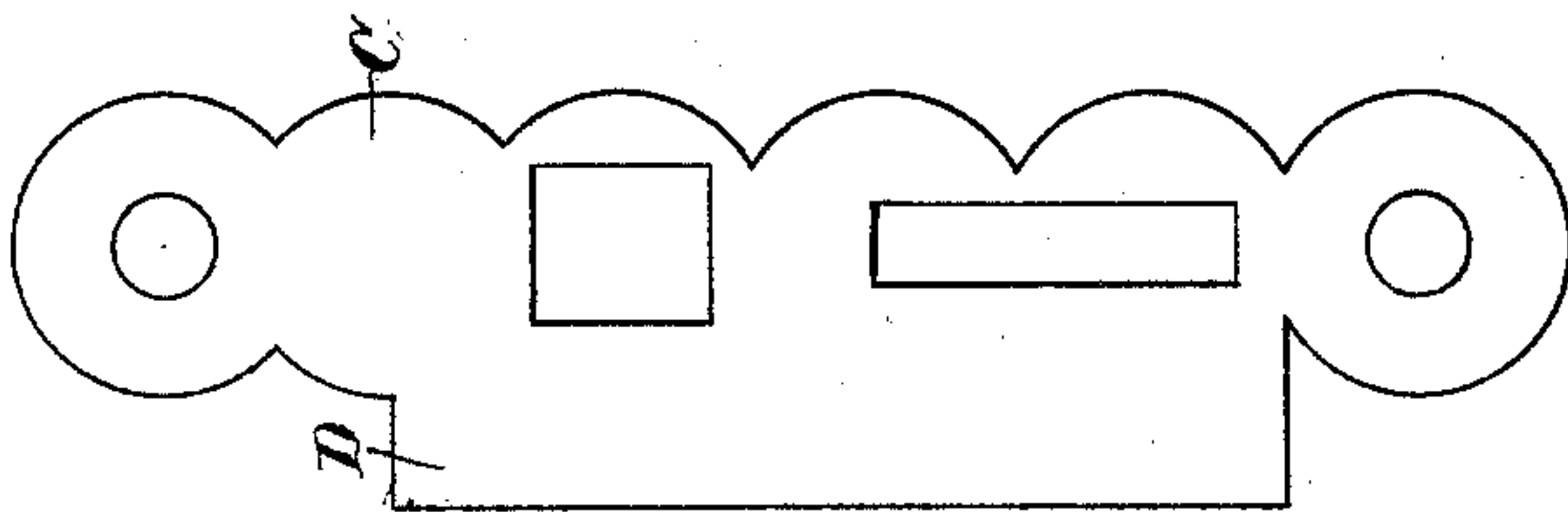


Fig. 4.

Fig. 2.



Witnesses,
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UNITED STATES PATENT OFFICE.

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DOOR-LOCK.

SPECIFICATION forming part of Letters Patent No. 638,404, dated December 5, 1899.

Application filed December 30, 1898. Serial No. 700,694. (No model.)

To all whom it may concern:

Be it known that I, CHARLES EDMOND SMITH, a citizen of the United States, residing at Oroville, county of Butte, State of California, have
5 invented an Improvement in Door-Locks; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a lock for doors.

It consists in the parts and the constructions and combinations of parts hereinafter
10 described and claimed.

Figure 1 is an interior view of the lock, one side of the case removed and the latch and lock bolts extended. Fig. 2 is a face view of
15 the socket-plate. Fig. 3 is a lateral section through the lock on line xx of Fig. 1. Fig. 4 shows the position of the parts connected with the bolt when the latter is withdrawn.

A is the casing of the lock, which may be
20 of any suitable or desired form adapted to contain the mechanism and may be fitted as a mortise-lock, as will be hereinafter described, or it may be adapted to be applied to one side of the door. This casing contains the spring-latch, which holds the door closed under ordinary conditions and which is operated by
25 knobs upon either side in the usual manner to retract the latch and allow the door to be opened. It also contains the locking-bolt, which is operated by a key. a is a cylindrical socket having a rectangular opening a' , adapted to receive the knob-shank, the latter carrying the knobs upon the outside, by which the shank and the sleeve a are turnable. From
30 one side of the socket or sleeve projects an arm a^2 . This arm is connected by a detachable link c with the inner end of the latch-bolt b , and this bolt has upon the outer end the latch b' , which is adapted to engage the
40 keeper fixed in the jamb of the door.

e e are two lugs cast or otherwise formed upon the casing and grooved or channeled, so that when the two parts of the lock are put together they form a complete opening, in
45 which the bolt b is slidable. Surrounding the bolt b is a spiral spring b^2 , and one end of it abuts against the fixed lugs e and the other presses against the shoulder of the latch b' , so as to normally force the latch outward to
50 engage with its proper keeper when the door is closed. The link c has a transverse open slot c^4 at one end, adapted to drop over a pin

on the rear end of the bolt, and thus make an easily-detachable connection, and it also has a longitudinal slot made in the opposite end, 55 as shown at c' , and the pin c^2 , which connects the arm a^2 with the link c , passes through the slot c' and is normally in contact with the inner end of the slot, being retained there by the action of the spring b^2 ; but whenever 60 the beveled edge of the latch b' strikes the plate, so that the latch is forced inward to allow the door to close, this slot allows the part c to slide correspondingly upon the pin c^2 without effect upon the other parts. When 65 the latch is to be withdrawn, it is done by turning either of the knobs in either direction, thus turning the arm a^2 and the connecting-link c into the position shown in dotted lines, either above or below, according to 70 the manner in which the knob is turned, and this retracts the latch b' and allows the door to be opened. Whenever the knob is released, the spring b^2 returns the parts into their normal position. 75

The lock-bolt g is slidable through the proper opening in the edge of the lock-case and is guided in its movements by a lug d , cast or fixed within the lock-case. The lock-bolt has a triangular-shaped opening made 80 through the lower part in line with the position of the keyhole, as shown at g' , and when the key is introduced and turned, if the bolt is extended, the key will strike against the rear end of this opening and retract the bolt. 85 If the bolt is retracted and it is to be extended to lock the door, the turning of the key l will cause it to strike against the front of said opening, and thus move the bolt outward. The rear end of the bolt is made thinner than 90 the body, and this thin portion also extends forwardly from the triangular opening G' , as shown at g^2 . The thin portion or web of the bolt is central in a vertical plane, leaving spaces or channels upon each side, and with- 95 in these channels fit the plates h , which have extensions h' fitting upon each side of the thin portion g^2 of the bolt. These extensions h' have lugs h^2 , and the thicker portions of the bolt G , at each side of the web g^2 , have 100 notches i , into which the lugs h^2 of the plates h may drop. Thus when the bolt is retracted the lug h^2 may drop into the front notch i , and when the bolt is forced out to lock the

door it may drop into the rear notch i' . These two plates lie upon opposite sides of the thin web at the rear portion of the bolt and may be approximately flush with the thicker front end of the bolt. When the door is unlocked, the lugs h^2 of both of these plates will be engaged by the forward notch i , the outer end of the bolt being flush with the edge of the lock.

10 When the key is inserted from either side to lock the door, the turn of the key causes it to first engage the lower side of the extension h' of the plate h , which is on that side of the lock-bolt upon which the key is inserted, thus releasing the lug h^2 from the notch i in the bolt. The continued turning of the key will advance the lock-bolt to lock the door, and the lug h^2 will drop into the rear notch i' and prevent the withdrawing of the bolt.

20 The plate h upon the opposite side not being disengaged from the notch i will be carried along with the bolt, so that its rear and deeper portion will be advanced and cover the key-hole. This prevents any introduction of a key from the opposite side or any tampering with the lock.

The knob-shank, as previously described, passes through the rectangular opening a' , and in order to fit it and the knobs to any door to which the lock may be applied I have shown the knobs k k' fixed to separate parts, which when united form the knob-shank. These parts consist of the parallel elastic plates m , projecting inwardly from one of the knobs and at a certain distance apart from each other, and the single plate n projecting from the other knob k' . These plates m m' are preferably made of spring-steel, one of them having a smooth inner surface and the other having ratchet teeth or notches o , formed on its inner face. The plate n has its back made smooth, corresponding with the inner face of one of the plates m , and its opposite face has teeth corresponding with those shown at o .

45 When the knobs are to be connected, one of the knobs K may be placed with the plates m passing through the rectangular slot a' , and the other plate n is introduced between the plates m by pressing the two knobs toward each other until they come into contact with the escutcheons upon each side of the door. The plates m , by reason of their elasticity and a sufficient size of the opening a' , will be separated by the introduction of the toothed plate n , and the teeth o will engage with and slip over each other, moving inwardly until the knobs are in contact with the escutcheons, when the teeth o , engaging, will prevent the knobs from being withdrawn.

60 In order to fit a mortise-lock without the time and labor ordinarily necessary, I have shown the lock-case made with a face-plate similar to the socket-plate C (shown in Fig. 2) in that it will have a series of convexities so placed with relation to each other that each one will fit the hole bored out by a carpenter's bit of the proper diameter. The up-

per and lower circular ends B, as shown in Fig. 1, represent that portion of the face-plate which is exterior to the lock-casing itself, and through these are made holes to receive the screws by which the lock is secured. The plate C, which contains the sockets for the latch and bolt and is located in the door-jamb, is made in the same manner as shown in Fig. 2, but has the additional strike-plate D cast with it.

The lock made in this manner is very simple, having but few parts and those easily disengaged or interchangeable and little liable to be disarranged or broken by hard usage.

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

1. In a lock, the casing, a latch-bolt guided and slidable through the edge plate of the lock, lugs through or between which the inner end of the bolt is slidable and guided, a spring surrounding the inner portion and compressed between the lugs and the outer portion of the bolt of the latch whereby the latter is normally forced outward, a turnable socket-piece through which the knob-shank passes, said socket-piece having an extension or arm at one side and a latching-link detachably connecting said extension with the inner end of the latch-bolt.

2. In a door-lock, a latch-bolt guided and slidable through the edge plate of the lock, lugs by which the inner end thereof is guided and a spring compressed between the lugs and the front end of the latch, a socket-piece through which the knob-shank passes and turnable thereby, said socket having an arm projecting normally in line with the line of movement of the latch-bolt, a connecting-link having a longitudinal slot in one end, into which slot the pin from the arm projects, a transverse slot or channel at the opposite end adapted to detachably engage with the pin upon the inner end of the latch-bolt whereby the latter may be retracted by turning the knob and free to move when the door is closed or without turning the knob.

3. In a door-lock, comprising independent latching and locking bolts, a latch-bolt movable by means of knobs, and a locking-bolt movable by means of an insertible key, said bolt having its rear end cut away to form a thin vertical web, notches made upon the thicker portion of the bolt at each side of said web, and one in advance of the other, and independent plates lying upon each side of the web and having lugs adapted to engage the aforesaid notches to hold the bolt locked in either a projected or retracted position, substantially as described.

4. In a door-lock, a bolt having a triangular or A-shaped notch formed in the rear portion and in the line transversely of the key-hole, a central web made in the rear part of the bolt and thinner than the main portion thereof, said web extending also horizontally along and below the top of the bolt whereby

horizontal and vertical shoulders are formed between the thicker and thinner parts of the bolt, plates fitting upon each side of said web with extensions along the thin upper portion, said extensions having projecting lugs, notches disposed one in advance of the other and formed in the horizontal shoulders of the bolt from each side of the web which are engaged by the lugs of the supplemental plates when the bolt is retracted, and also when it has been extended, said extensions being lifted by the key when the latter is turned so as to disengage the lug of one of the plates from its notch to allow the bolt to be moved, while the other plate is left in engagement so as to cover and protect the keyhole from the opposite side.

5. In a lock of the character described, a

horizontally-slidable locking-bolt, means for engaging said bolt by a turnable key whereby it is reciprocated within the casing, supplemental plates lying parallel with the bolt upon opposite sides thereof, and adapted to cover or uncover the keyhole from their respective sides, and means including notches in the bolt and lugs on the plates to engage said notches, for engaging said plates with the locking-bolt and disengaging one of them from the bolt when the key is introduced and turned.

In witness whereof I have hereunto set my hand.

CHARLES EDMOND SMITH. [L. S.]

Witnesses:

J. R. GRANT,

WILLIAM H. SCOTT.