No. 668,650. Patented Feb. 26, 1901.

C. J. LETZING.

DOOR LOCK.

(Application filed Sept. 20, 1899.)

(No Model.)

3 Sheets—Sheet 1.

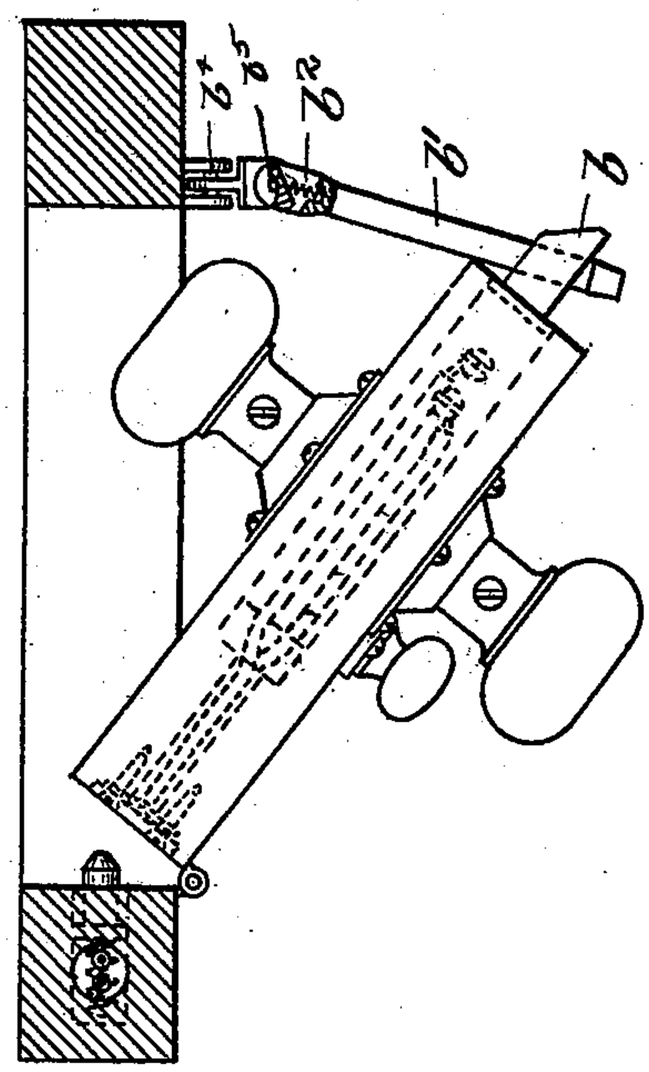
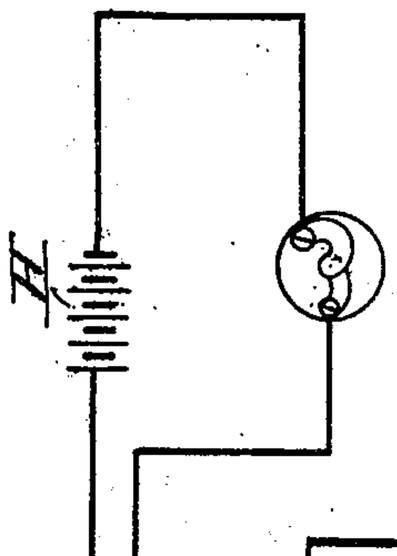
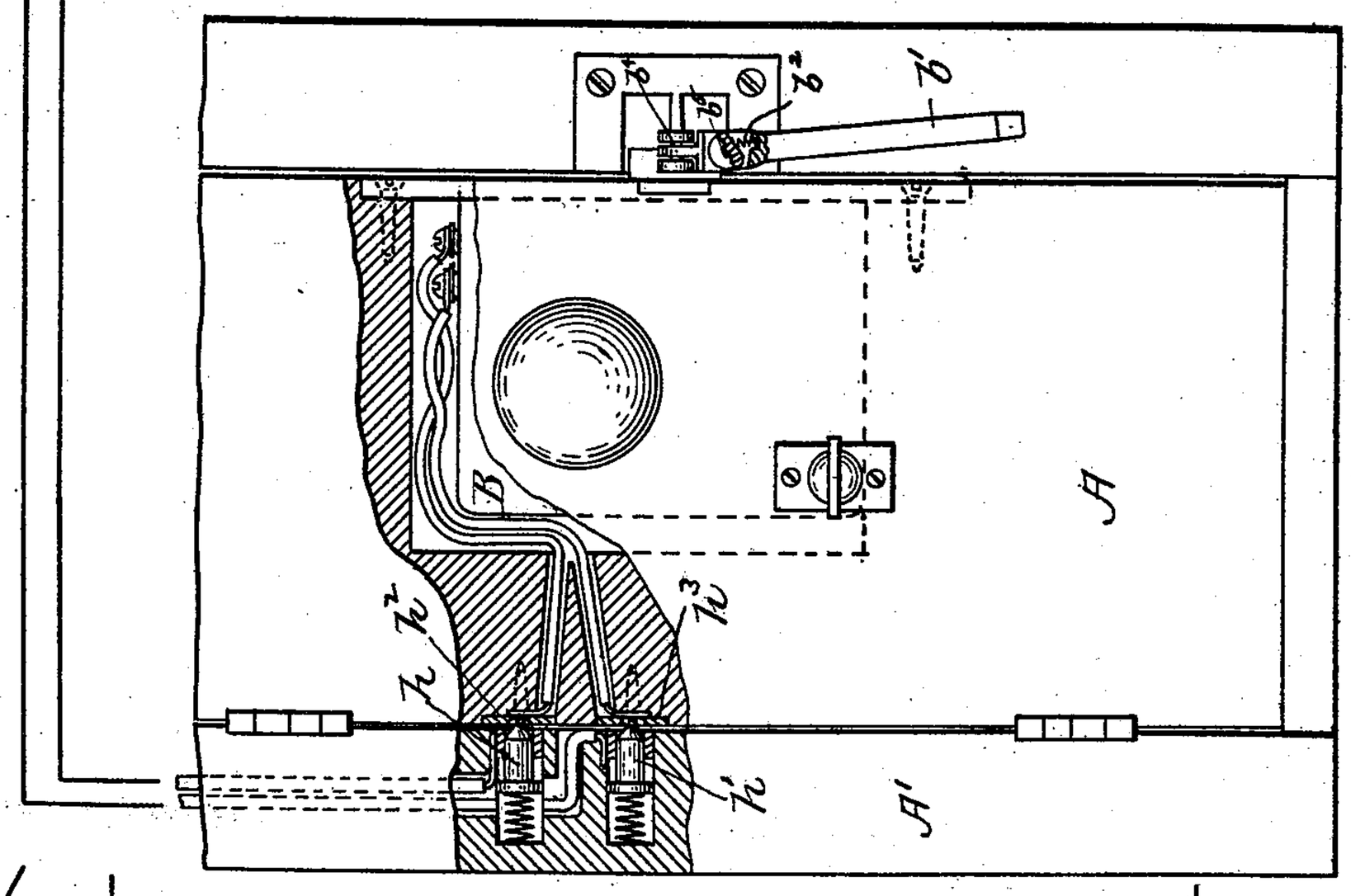


Fig. 2.





WITNESSES

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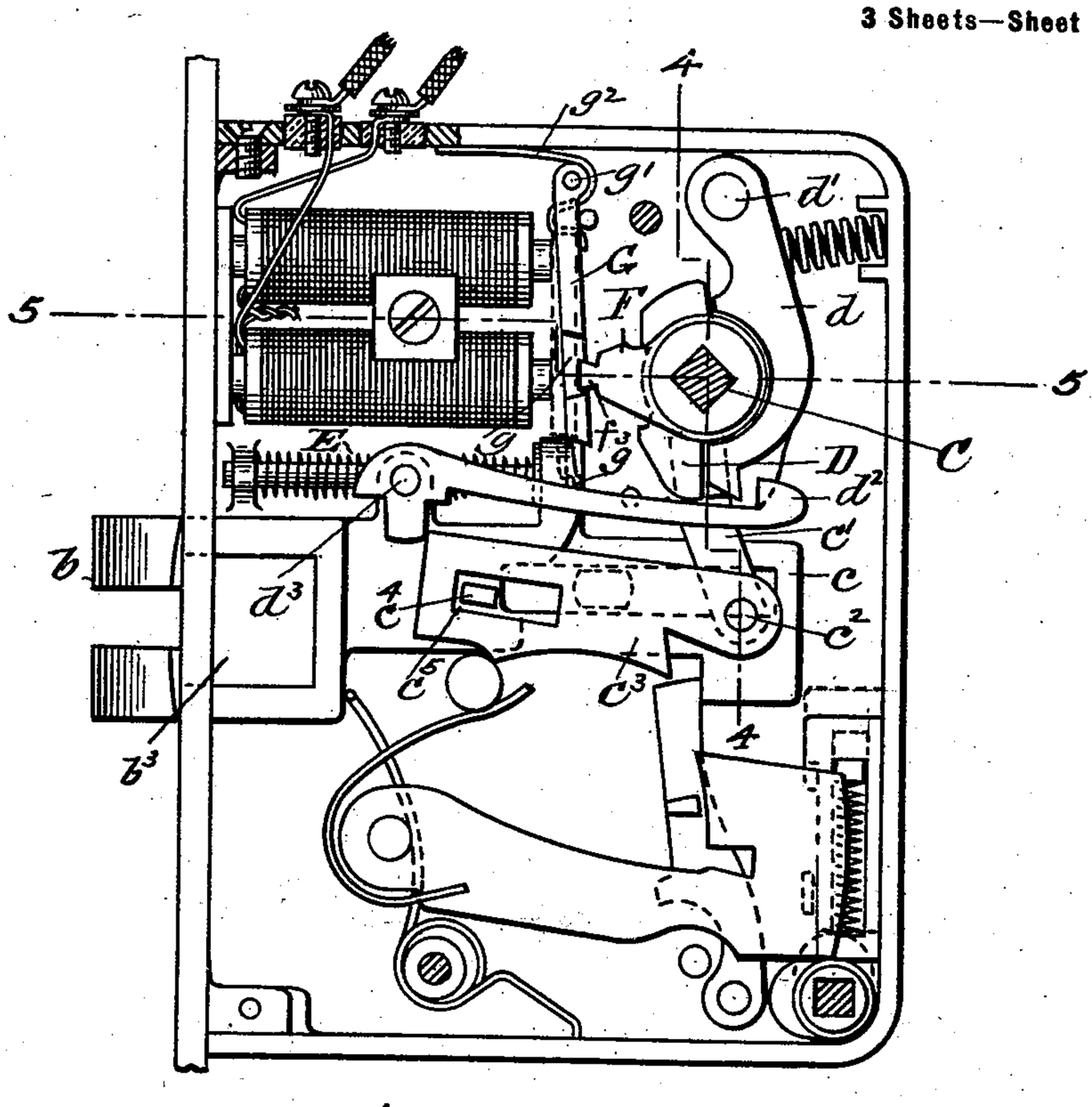

Fig. 3.

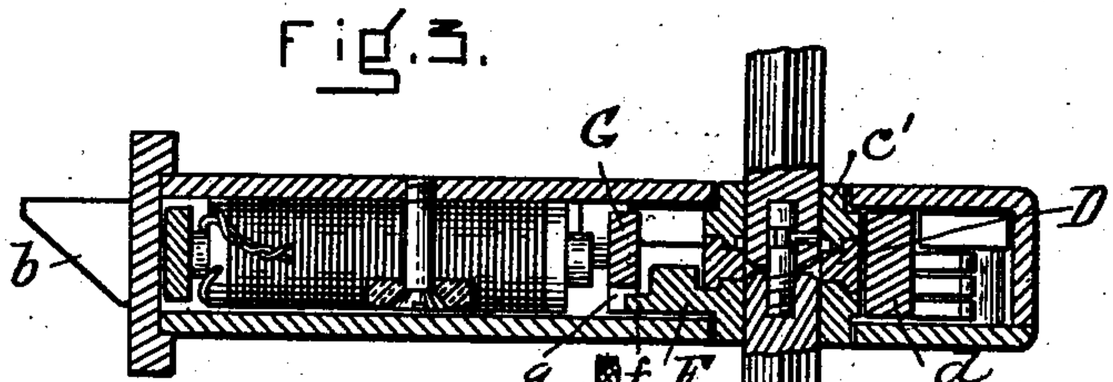

Fig. 5

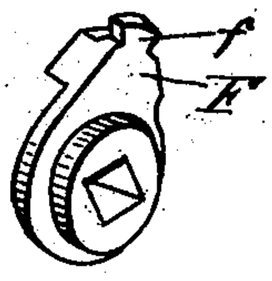

Fig. 7.

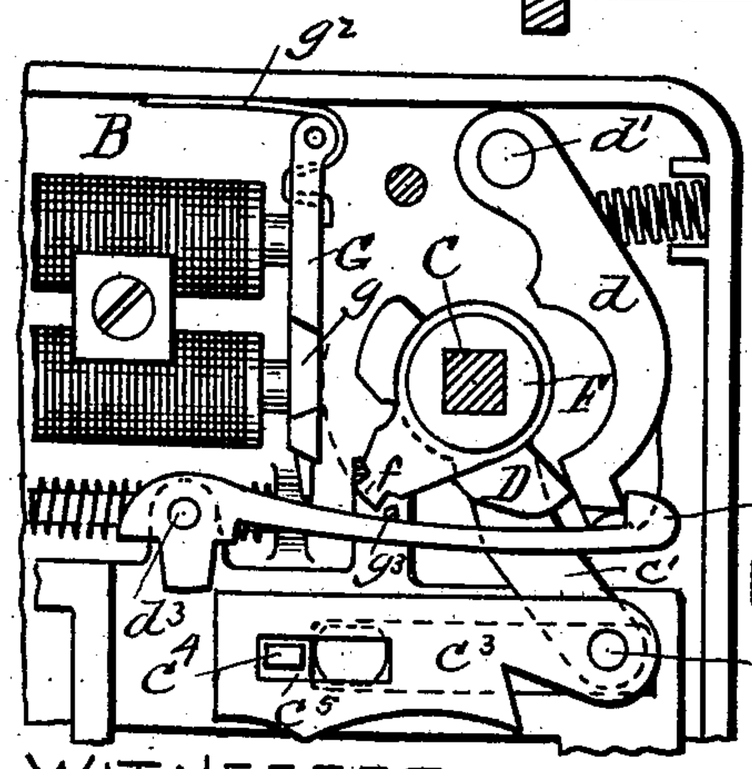

Fig. 6.

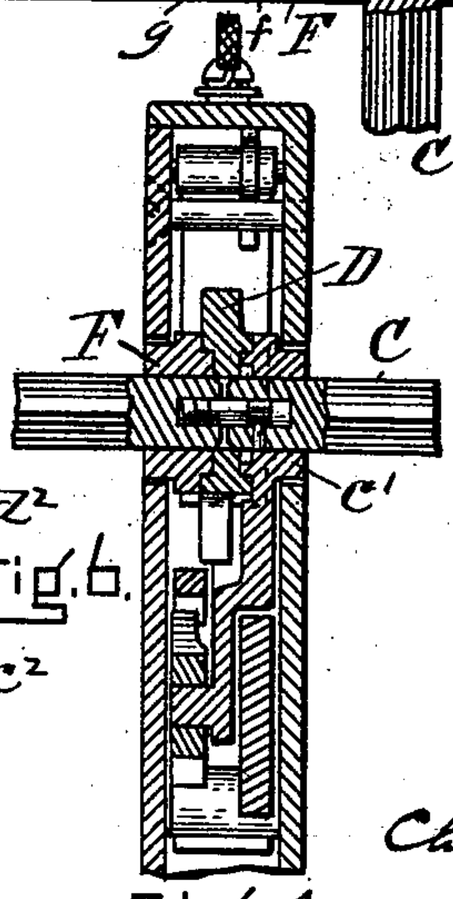

Fig. 4.

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3 Sheets—Sheet 3.

Fig. 8.

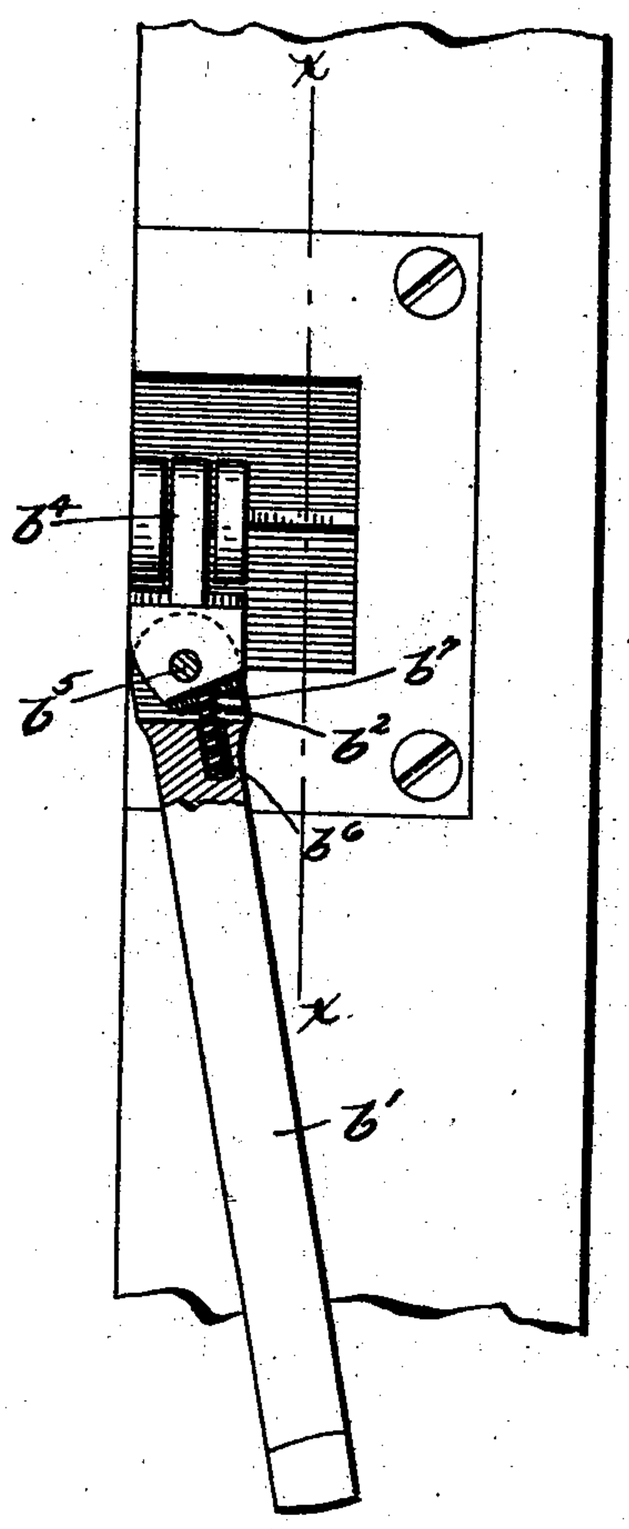
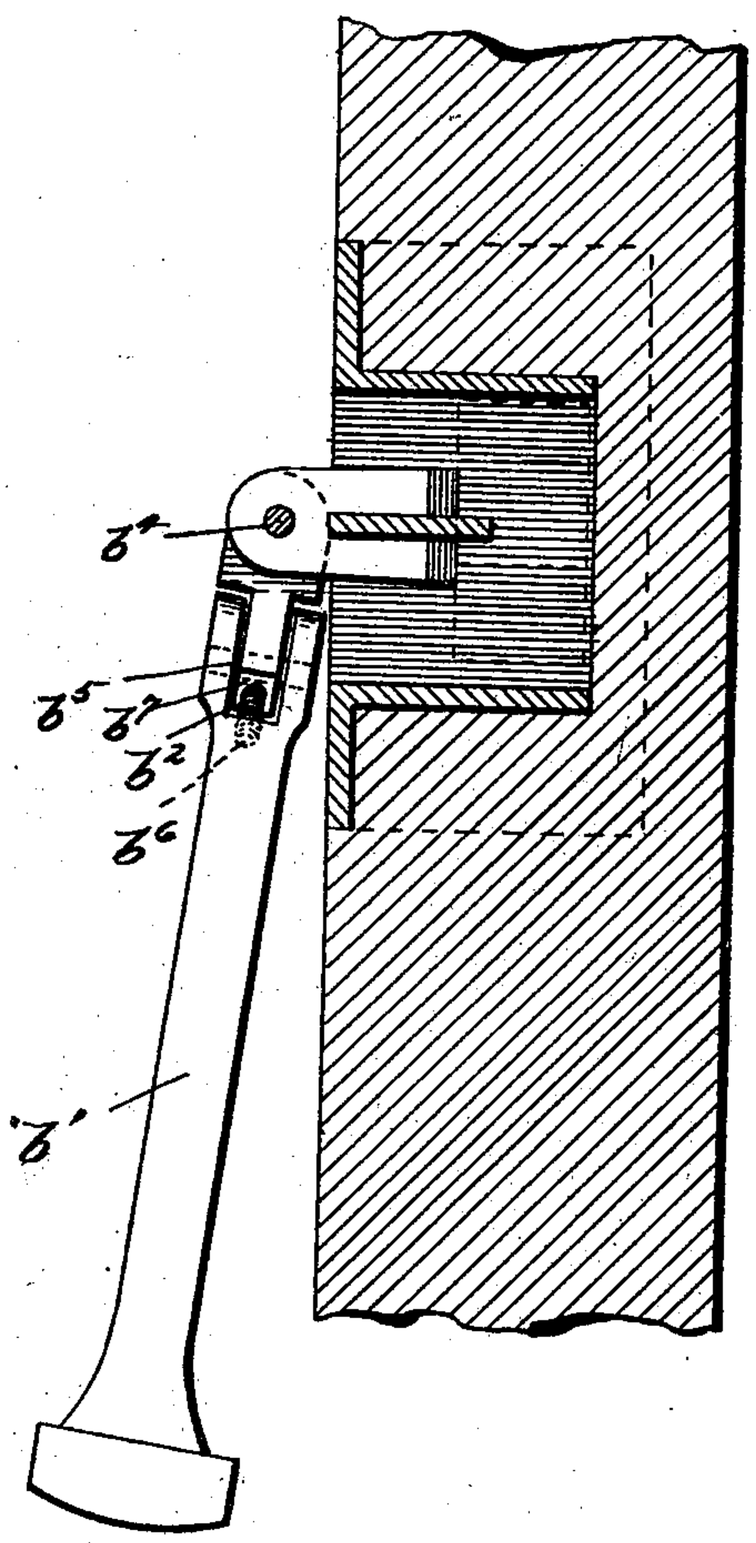


Fig. 9.



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UNITED STATES PATENT OFFICE.

CHRISTIAN J. LETZING, OF BOSTON, MASSACHUSETTS.

DOOR-LOCK.

SPECIFICATION forming part of Letters Patent No. 668,650, dated February 26, 1901.

Application filed September 20, 1899. Serial No. 731,100. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN J. LETZING, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Door-Locks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to the class of locks described in my Patent No. 341,025, dated May 4, 1886, and it refers especially to means whereby the latch of the door may be unlocked from outside by means of a magnet operated inside the house at any desired distance from the door and the latch then moved to open the door by the outer knob of the door.

It further relates to further details of construction, which will hereinafter be fully described.

In the drawings, Figure 1 is a view in elevation of a portion of a door and door-casing, showing the door as equipped with my improved lock and also showing portions of the door and casing removed to illustrate the electrical connections with the lock. Fig. 2 is a view in horizontal section of the door-casing and in plan of the door partly open, showing the latch engaged with the swinging locking-bar which limits the further opening of the same. Fig. 3 is a view, enlarged, of the lock-case with one plate removed and showing the operative mechanism of the lock. Fig. 4 is a view in vertical section upon the dotted line 4 4 of Fig. 3. Fig. 5 is a view in horizontal section upon the dotted line 5 5 of Fig. 3. Fig. 6 is a detail view of a portion of the lock mechanism, representing the parts in a different position from that shown by the corresponding parts in Fig. 3. Fig. 7 is a view in perspective of the knob-spindle lock. Fig. 8 is an enlarged view of the locking-bar, showing the spring which normally holds the said bar away from the door-opening. Fig. 9 is a sectional view taken on line x x of Fig. 8.

Referring to the drawings, A represents the door, and A′ the door frame or casing.

B is the lock.

b is the spring-latch. It is provided with two movements of the latch of the patent referred to and for the same reason, the movement of the latch inward into the lock B releasing the door and allowing it to be swung wide open and the outward movement of the latch allowing the door to be opened only to the limit of the locking, to be hereinafter described, said latch having a slotted outer end to engage the locking-bar. It is adapted to be used, when in its ordinary position, as an ordinary latch, making engagement with a holder in or on the casing in the same way that ordinary latches do. To permit of its further use in connection with the locking-bar, the holder and latch are made substantially as shown in my said patent in that the latch b has a widened slot b^3, which will allow said latch to ride over the holder and locking-bar when said latch is moved to its outward position, and the locking-bar b' is of the same character and attached thereto in the same manner or substantially the same manner, the only difference being that the locking-bar is connected by a compound or double joint b^4 b^5 with the holder, whereby it is permitted to swing downward as well as laterally and is provided with a spring b^2, which is mounted in a seat b^6 in the bar b' and bears against the inclined outer side b^7 of the outer joint and tends to throw the locking-bar away from the edge of the door-opening. The door-latch b has the outward movements and the inward movements imparted to it by mechanism substantially like that of the said patent, and it is locked and unlocked by wards and a key, substantially as therein shown. It has a long rearward extension c, mounted on a plate of the lock-case. It is moved inwardly and outwardly by means of the knob-spindle C, the knob-spindle extending through an enlargement of an arm c', which is connected at c^2 with a link c^3, connected with the latch-bar by a pin c^4, which extends from the latch-bar into a slot c^5 in the link, thereby providing for the necessary lost motion between the link and the latch-adjuster. The spindle also passes through a square hole in a tumbler D, which operates through a lever d, pivoted at d' to the case, a hook-latch d^2, pivoted at d^3 to the latch. Upon the movement of the knob the free end

of the tumbler *d* is brought into contact with the shoulder on the hook-latch, and the ordinary inward movement of the latch for the purpose of opening the door is communicated to it by turning the handle of either knob.

The spring E serves to move the latch outward and to hold it in its normal position, as represented in Fig. 3. There is also secured to the knob-spindle a spindle-lock F, which has a square hole through which the spindle extends and a radial extension, the end *f* of which enters the hole or slot *g* in the hinged armature G, which is pivoted at *g'* to the case. This armature is moved away from the magnet by a spring g^2 and when so moved engages the spindle-lock and holds it from being moved, and therefore the spindle in a locked position. The energizing of the magnet moves the armature away from the spindle-lock and permits the spindle to be turned. The armature when released from the magnet and unlatched from a latching device is moved into a position to be automatically engaged by the spindle-lock and will yield to permit the spindle-lock to ride thereon and enter the locking-hole therein. It is held latched away from the spindle-lock after the magnet has become deënergized by a catch g^3 on the hook d^2. The movement of this hook, however, in drawing inward the latch releases the armature. As the hook has a yielding movement on its pivot in opposition to a spring the end of the armature may ride by the catch when it is disengaged from the spindle-lock by the magnet. The magnet is energized from a push-button located at any desired point in the house, and I have represented the circuit as running from battery H to the door-casing, where there are two yielding contact-pins *h h'*, adapted to extend into the door-jamb when the door is opened and against which contact-plates h^2 h^3 in the door edge come into contact when the door is closed. The circuit extends in the door from these contact-plates to the lock-case and from the lock-case to the magnet.

It will be understood that the latch of the door is a spring-latch which automatically engages upon the closing of the door with its holder and that it is adapted to be opened from outside either by a key when the knob-spindle is locked or by the knob when the knob is unlocked by energizing the magnet. It will be seen, therefore, that the locking of the knob-spindle by means independent of the latch proper will prevent throwing of the latch by means of the knob, while leaving it free to be moved inwardly when the door is closing or by means of a key to unlock the door, thus guarding against entrance by unauthorized persons. It will also be understood that the latch is adapted to be used as a means for making connection with a bar for limiting the extent to which the door may be opened.

I would say that the spindle-lock and tumbler D may be integral, if desired.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a door-lock, the combination with a spring-latch normally held in latching position, of means for moving it inward to unlatching position, means for moving said latch outwardly to a position beyond its normal latching position, a restraining-bar hinged to the door-casing to engage said latch when the latch is in its extreme outward position, and limit the opening of the door, a door-spindle, connections between said latch-operating means and said spindle, means independent of said latch to engage said spindle and lock it against rotation while allowing free inward movement of the latch, and means for releasing said locking means.

2. In a door-lock, the combination with a spring-latch normally held in latching position, of means for moving it inward to unlatching position, means for moving said latch outwardly to a position beyond its normal latching position, a restraining-bar hinged to the door-casing to engage said latch when the latch is in its extreme outward position, and limit the opening of the door, a door-spindle, connections between said latch-operating means and said spindle, means for locking said spindle against rotation, a magnet controlling said spindle-locking means, and means for energizing said magnet.

3. In a door-lock, the combination with a spring-latch normally held in latching position, of means for moving it inward to unlatching position, means for moving said latch outwardly to a position beyond its normal latching position, a restraining-bar hinged to the said casing to engage the latch when the latch is in its extreme outward position and limit the opening of the door, a hook pivoted on said latch, a door-spindle having a locking extension thereon, connections between said spindle and said latch-operating means, a device engaging said spindle-locking extension to hold the spindle from rotation, means for releasing said spindle-locking device, and a catch on said hook to hold said spindle-locking device in inoperative position.

4. In a door-lock, the combination with a spring-latch normally held in latching position, of means for moving it inward to unlatching position, means for moving said latch outwardly to a position beyond its normal latching position, a restraining-bar hinged to the door-casing to engage said latch when the latch is in its extreme outward position and limit the opening of the door, a hook pivoted on said latch, a door-spindle having a locking extension thereon, connections between said spindle and said latch-operating means, a device engaging said spindle-locking extension to hold the spindle from rotation, means for releasing said spindle-locking device, a catch on said hook to hold said spindle-locking device in inoperative position, and means operated by the spindle to release said spindle-

locking device and allow it to return to its normal position.

5. In a lock, the combination with a spring-latch normally held in latching position, means for moving it inward to unlatching position, means for moving said latch outwardly to a position beyond its normal latching position, a restraining-bar hinged to the door-casing to engage said latch when the latch is in its extreme outward position and limit the opening of the door, a hook pivoted on said latch, a door-spindle having a locking extension thereon, connections between said spindle and said latch-operating means, an armature normally held in position to engage said spindle-locking extension, a magnet controlling said armature, means for energizing said magnet, a catch on said hook to hold said armature in retracted inoperative position, and means operated by said spindle to release said armature and allow it to return to its normal position.

6. In a lock, the combination with a spring-latch, of a spindle operatively connected therewith, a locking extension on said spindle, a spring-held armature normally in position to engage said locking extension and lock said spindle against rotation, a magnet to retract said armature to inoperative position, means for controlling said magnet, a hook pivoted on said spring-latch, a catch on said hook to hold said armature in retracted inoperative position, and connections between said hook and spindle whereby rotation of the spindle will move said hook and release said armature.

7. In a door-lock, the combination with the locking-latch, of a restraining-bar hinged to the door-casing and adapted to engage said latch and limit the opening of the door, said bar having a vertical and horizontal movement, and means for normally holding said bar away from the edge of the door-opening.

8. The locking-bar *b'* adapted to be moved horizontally and vertically and a spring for moving and holding it without the edge of the door-opening.

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