(No Model.)

R. A. PALMER.

CONTROLLING MECHANISM FOR LOCKS.

No. 559,308. Patented Apr. 28, 1896.

Fig. 1.

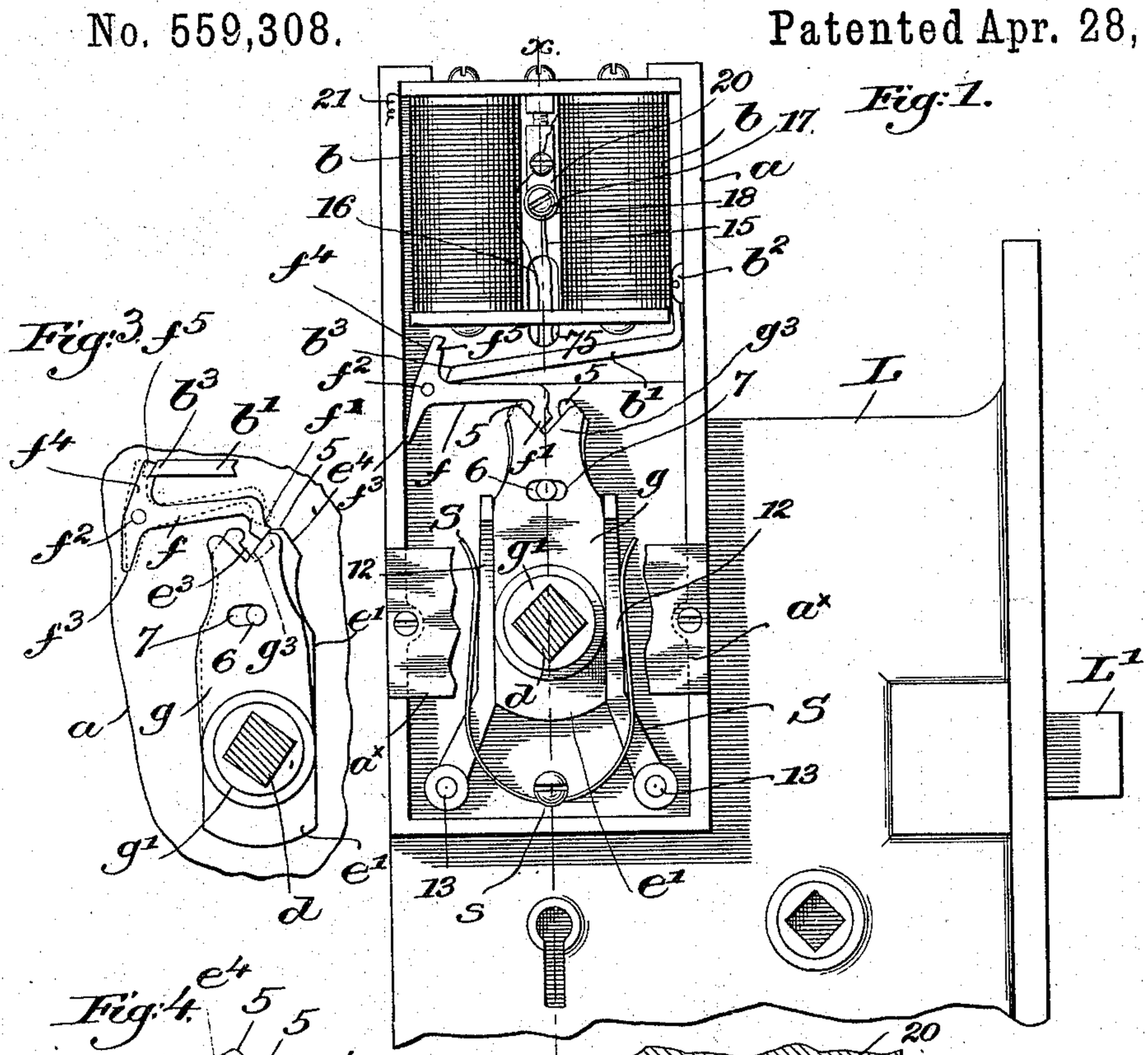


Fig. 3.

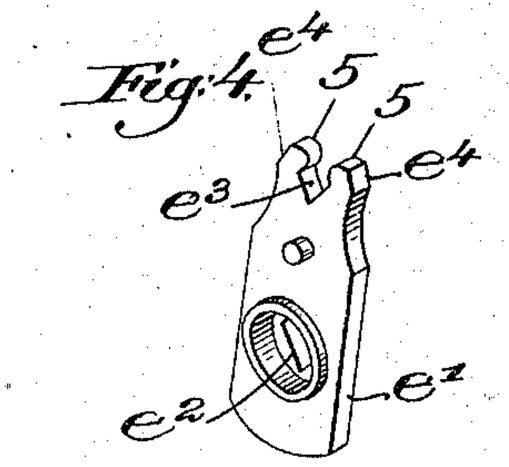
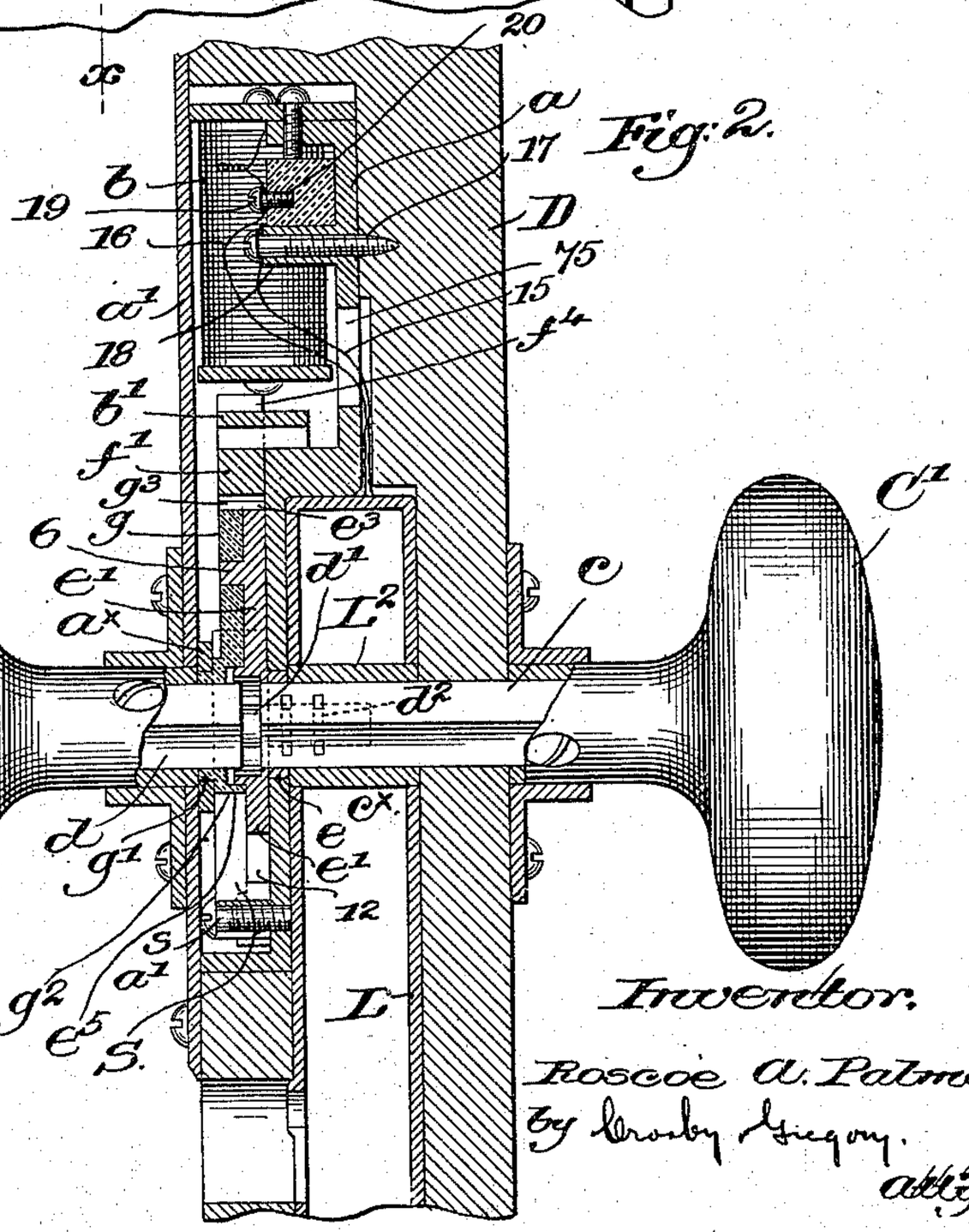


Fig. 4.

Fig. 2.



Witnesses.

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CONTROLLING MECHANISM FOR LOCKS.

SPECIFICATION forming part of Letters Patent No. 559,308, dated April 28, 1896.

Application filed August 14, 1895. Serial No. 559,220. (No model.)

To all whom it may concern:

Be it known that I, ROSCOE A. PALMER, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Controlling Mechanism for Door-Locks, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention relates to mechanism for controlling the latch or locking-bolt of a door from one or more distant points, whereby such latch or bolt is under ordinary circumstances locked automatically against retraction from the exterior, but which can be released at pleasure from any one of the distant points; and my invention has for its object the production of a simple and effective controlling mechanism which may be applied to and used in connection with any usual form of door-lock.

In accordance therewith my invention consists in a controlling mechanism for door-locks, substantially as will be fully described in the following specification and particularly pointed out in the claims.

Figure 1 in side elevation represents a sufficient portion of the inner side of a door-lock to be understood, with my invention applied thereto, the face-plate of the latter being removed for the sake of clearness. Fig. 2 is a vertical sectional view taken on the line $x\,x$, Fig. 1, the door being shown in section and the handles or knobs in elevation. Fig. 3 is a detail view, in elevation, of the locking devices and coöperating parts; and Fig. 4 is a perspective view of a portion of the locking device.

The usual lock-case L, having the latch-bolt L′, is shown in Fig. 2 as fitted into a recess in the door D, the inner side of the latter being mortised above and in front of the lock-case to receive therein the casing a, in which are supported the operative parts of the controlling mechanism. A cover-plate a' for the said casing is shown in section in Fig. 2, it being omitted in Fig. 1, to show the parts beneath. The casing is enlarged at its upper end to receive an electromagnet b, provided with an armature b', pivoted at b^2 and so arranged that when the magnet is energized the armature will be lifted into position shown in Fig. 3.

A two-part spindle $c\,d$ is extended through the casing a and the lock-case and provided respectively with suitable knobs or handles C′ D′, Fig. 2, the part c being squared to enter the usual tumbler L^2, Fig. 2, for operating the latch-bolt L′, the handle C′ being shown as on the outer side of the door.

One of the parts of the spindle, as d, is provided with a reduced cylindrical end d' to enter a suitable recess in the inner end of the part c, the end d' having one or more annular grooves d^2 therein (see Fig. 2) to be engaged by a key $c^\times$, inserted in the part c, whereby separation of the parts of the spindle is prevented, while permitting one part to be rotated, more or less, independently of the other.

The back of the casing a has an opening therein in alinement with the spindle to receive the boss e, formed on the back of an arm e', (shown separately in Fig. 4,) said boss having an opening e^2 therein corresponding in shape to the cross-section of the part c of the spindle to be entered thereby, so that the arm will move with the spindle part c. The upper end of the arm e' is notched at e^3, with rounded cam portions 5, and upwardly and inwardly beveled at each side of the notch, as at e^4, for a purpose to be described, said notch normally receiving the preferably spear-shaped end f' of a latch f, pivoted to the casing at f^2.

The latch f is oppositely extended at its pivoted end to form a stop f^3, to prevent undue movement thereof in a downward direction, and into an upturned arm f^4, inclined in the path of movement of the free end of the armature b' and provided with a notch f^5. When the latch is in its normal position (shown in Figs. 1 and 2) in engagement with the arm e', the latter can have very little movement, and by its connection with the part c of the spindle prevents rotation thereof by its knob C′ in either direction sufficient to operate the locking-bolt L′. When the part c of the spindle is thus held from operative movement, the door cannot be opened from the outside. The squared portion of the spindle part d is extended through a similarly-

shaped opening in the hub g' of a plate g, the said hub having a bearing in a cross-plate $a^{\times}$, secured to the casing a, (shown in Figs. 1 and 2 and broken out in the former figure,) the hub on its inner side having an annular flange g^2 concentric to an annular rib e^5 on the outer face of the arm e', the one forming a bearing for the other. At its upper end the plate g is provided with a V-shaped notch g^3, into which the end f' of the latch f normally enters, said end being of sufficient width for the purpose. Now by turning the spindle part or member d by means of the knob D', which, it will be remembered, is on the inner side of the door, the plate g is moved angularly in one or the other direction, and when moved far enough the inclined side of the notch g^3 will act upon the end f' of the latch to lift it, as shown by full lines, Fig. 3, bringing it into position to be acted upon by one of the cam portions 5 of the arm e'.

I have herein shown the arm e' and plate g connected by a pin 6 on one entering a slot 7 in the other, whereby movement of the plate to lift the latch into the position shown by full lines in Fig. 3 will be effected before any movement of the arm e' will take place. As soon, however, as the lost motion is taken up the arm and plate will move in unison, and the cam 5, acting on the end of the latch, will lift it entirely out of the notch e^3, thereby releasing the arm e', so that the spindle may be turned sufficiently to withdraw the locking-bolt L'. It will thus be evident that the door may be opened at any time from the inside; but that under normal conditions the door cannot be opened from the outside.

As soon as the knob-spindle is released the arm e' and plate g are returned to normal position (shown in Fig. 1) by arms 12, pivoted at 13 to the casing and acted upon by a bent spring S, held in place by a screw s, though any other suitable form of spring might be used, the arms 12 being preferably wide enough to bear against the longitudinal edges of both the arm and plate. Now when it is desired to permit the door to be opened from the outside the circuit 15 16, in which the magnet is included, is closed at any desired point, as by a push-button in some part of the building, and the magnet b is energized, attracting the armature b', which is turned on its pivot and moved into position shown in Fig. 3. As the armature is lifted its free end sweeps over the inclined arm f^4 of the latch f, turning the latter on its pivot until the preferably beveled end b^3 of the armature enters the notch f^5 in the arm, maintaining the latch in full-line position after the magnet is deënergized. The attraction of the armature thus acts to lift the latch and bring its end f' in the path of one of the cams 5 on the arm e', and by turning the knob C' the arm is swung to lift the latch entirely out of the notch e^3, so that the locking-bolt can be withdrawn. As the cam 5 lifts the latch, however, the arm f^4 is moved away from the armature b', releasing the latter and permitting it to return to normal position shown in Fig. 1, and when the knob is released the parts return to normal position, as described, the latch falling into the notch e^3 and locking the arm e', so that the controlling mechanism is reset, the beveled portions e^4 lifting the latch end in moving back to normal position. The spring S coöperates with the usual lock-spring in resetting the mechanism.

A number of push-buttons may be included in the circuit of the electromagnet b, by any one of which the circuit may be closed to energize the magnet, the wires 15 16, connected to the poles of the latter, passing through the door and leading to different points. As in all locks of this general character, the latch-bolt may be operated from the outside by a latch-key.

The casing a is recessed at 75, (see Figs. 1 and 2,) and through this recess the insulated wires 15 and 16 are led, one of the wires, as 15, being bared and wound about a screw 17, which enters a boss 18 of the casing, thereby bringing the metal casing into the circuit, the other wire 16 being held by a binding-screw 19, mounted in an insulating-block 20, and being thereafter connected to one of the magnet-coils. The other end of the coil-wire is bared and held in place at 21 (see Fig. 1) in contact with the metal casing a. By this construction the connection of the electromagnet b with the main circuit-wires is greatly facilitated.

In applying my controlling mechanism to an ordinary lock the usual knob-spindle is removed and the two-part spindle substituted.

I claim—

1. A two-part spindle for door-locks, one member of which is adapted to be operatively connected with the bolt of the lock, a locking device to normally prevent rotation of said member, and means controlled by rotation of the other spindle member to release the locked member and to thereafter move the two members in unison, substantially as described.

2. A two-part spindle for door-locks, one member of which is adapted to be operatively connected with the bolt of the lock, a locking device to normally prevent rotation of said member, and means to operate said locking device from a distant point and thereby release the said spindle member, combined with means controlled by rotation of the other spindle member to thereafter move the two spindle members in unison, substantially as described.

3. A two-part spindle for door-locks, one member of which is adapted to be operatively connected with the bolt of the lock, a locking device to normally prevent rotation of said member, connections between the spindle members whereby one may be partially rotated independently of the other, means to control the locking device from a distant point, to release the locked spindle member, and independent means operated by rotation

of the other spindle member to also control the locking device, substantially as described.

4. In a detachable controlling mechanism for door-locks, a two-part spindle, one member of which is adapted to be extended through the lock and operatively connected with the bolt, a notched locking-arm movable with said member, a coöperating latch to normally enter the notch and thereby lock the spindle member, means controlled by rotation of the other spindle member to partially withdraw the latch and to thereafter move the spindle members in unison, and a cam on the locking-arm thereby brought into engagement with the latch to complete its withdrawal, substantially as described.

5. In a detachable controlling mechanism for door-locks, a two-part spindle one member of which is adapted to be extended through the lock and operatively connected with the bolt, a notched locking-arm movable with said member, a coöperating latch to normally enter the notch and thereby lock the spindle member, means to partially withdraw the latch from the locking-arm, and a cam on said arm to complete the withdrawal of the latch when the released spindle member is rotated, substantially as described.

6. In a detachable controlling mechanism for door-locks, a two-part spindle, one member of which is adapted to be extended through the lock and operatively connected with the bolt, a notched locking-arm movable with said member, a normally-coöperating latch, to thereby lock the spindle member, connections between the spindle members whereby one may be partially rotated independently of the other, means to withdraw the latch from a distant point, an independent device controlled by rotation of the free spindle member to also withdraw the latch, and a cam on the locking-arm to engage the latch when the bolt is withdrawn and reset the releasing means controlled from a distant point, substantially as described.

7. A two-part spindle for door-locks, one member of which is adapted to be operatively connected with the bolt of the lock, a locking device, including a latch, to normally prevent rotation of said spindle member, an electro-magnet, its armature, adapted when attracted to positively move said latch into releasing position, and a detent to retain the armature and latch in such position, substantially as described.

8. A two-part spindle for door-locks, one member of which is adapted to be operatively connected with the bolt of the lock, a locking device, including a latch, to normally prevent rotation of said spindle member, an electro-magnet, its armature, adapted when attracted to positively move said latch into releasing position, a detent to retain the armature and latch in such position, and means controlled by movement of the released spindle member to disengage the armature from its detent, substantially as described.

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

ROSCOE A. PALMER.

Witnesses:

JOHN C. EDWARDS,

AUGUSTA E. DEAN.