(No Model.)

R. A. PALMER.

CONTROLLING MECHANISM FOR LOCKS.

No. 540,025. Patented May 28, 1895.

Fig: 1.

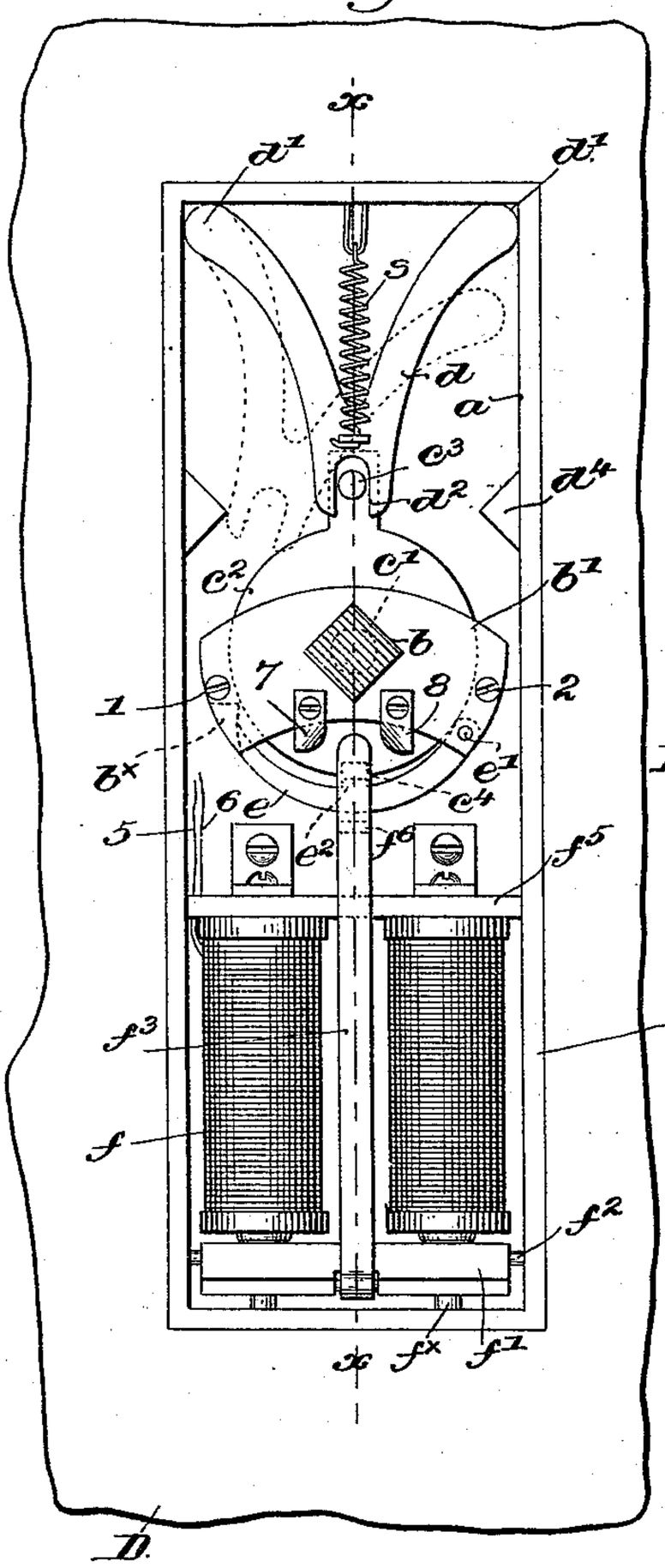


Fig: 2.

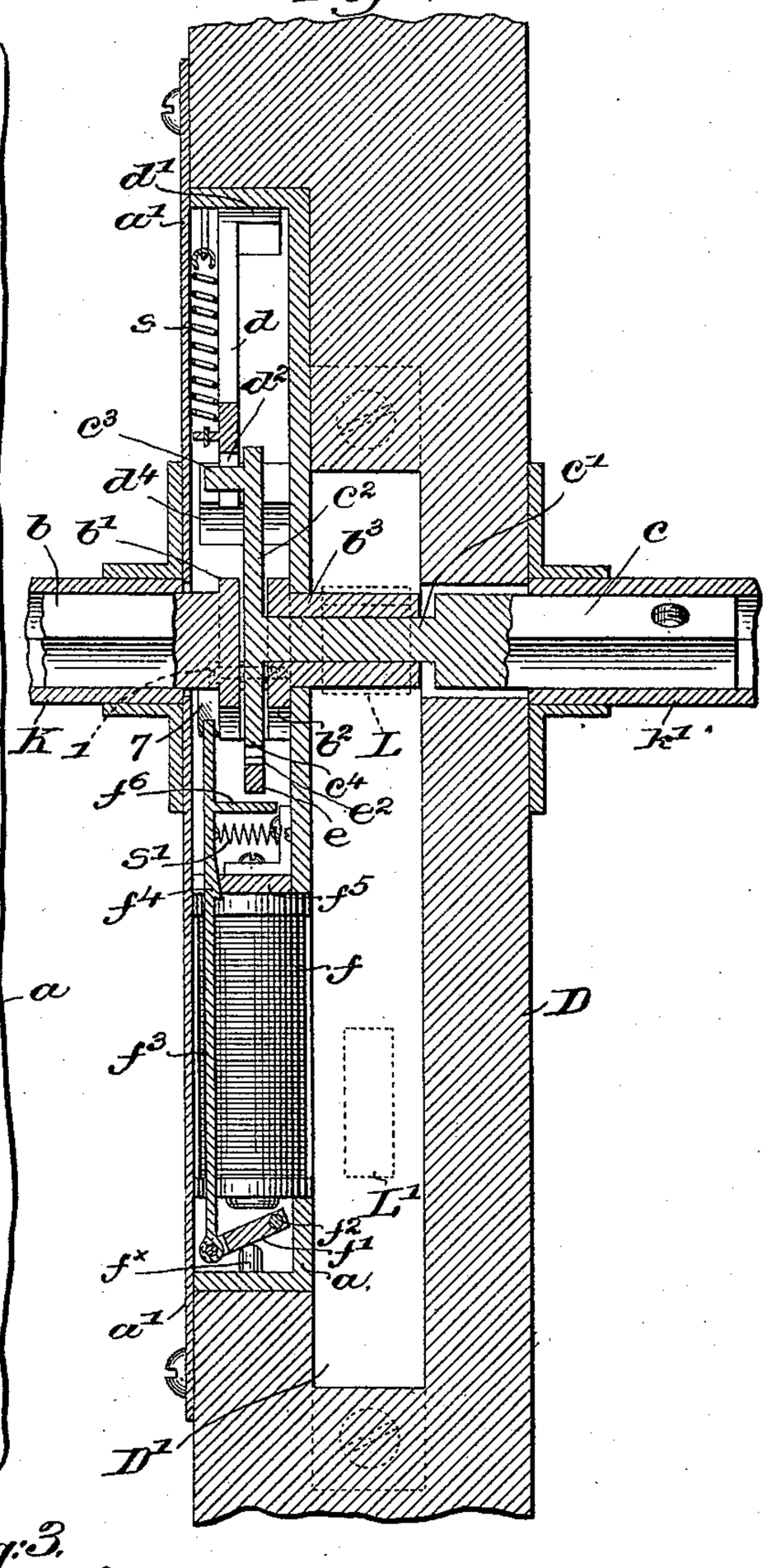
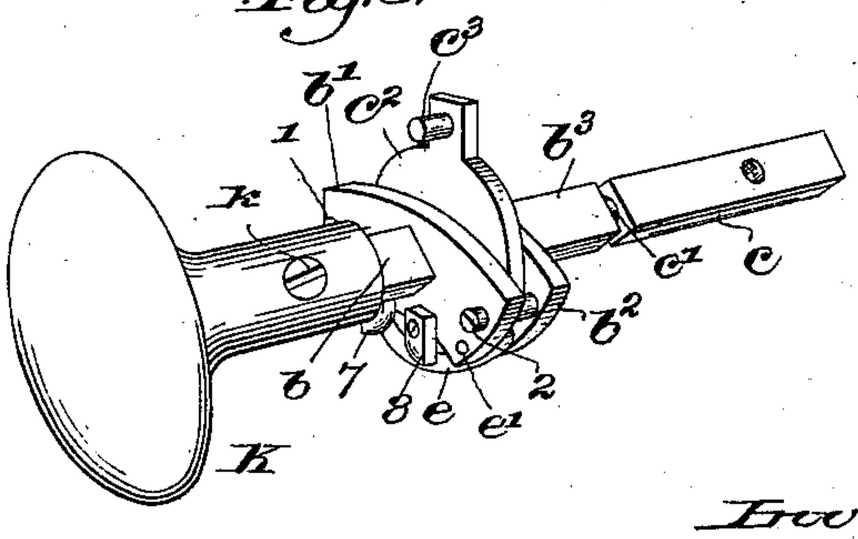


Fig: 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

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CONTROLLING MECHANISM FOR LOCKS.

SPECIFICATION forming part of Letters Patent No. 540,025, dated May 28, 1895.

Application filed February 4, 1895. Serial No. 537,165. (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 numerals on the drawings representing like parts.

Various mechanisms and forms of locks have been devised whereby the latch or locking bolt of a door may be controlled from one or more distant points, whereby such latch or bolt is automatically locked against retraction from the exterior, under ordinary circumstances, but which can be released when desired from one or more of the distant points. Such devices are particularly desirable for the street doors of apartment houses, the various tenants using the same entrance, and each tenant having under his control means for releasing the door lock at will. So far as I am aware, however, all such devices necessitate the employment of a specially designed and constructed lock and co-operating parts, of much greater cost than the ordinary door lock, and thus precluding their adoption save in the better class of apartment houses, and also in many other buildings wherein such protection would be desirable, but which is not employed on account of the expense.

This invention has for its object the production of a simple and efficient controlling mechanism which may be applied to and used in connection with any usual form of door lock, at a small expense and performing all the functions of the expensive apparatus now in the market.

My invention can be equally well applied to doors already fitted with usual locks as to those in process of construction.

In accordance therewith my invention consists in a normally disconnected two-part spindle, a notched disk on one member, a tumbler engaging sleeve rotatable on said member and rigidly connected to the other member, a coupling latch movable with the sleeve, an actuator to move the latch into engagement with the disk, an electro-magnet to positively move the actuator, and means to automatically release the actuator and uncouple the spindle members after the bolt has been moved, substantially as will be described.

Other features of my invention will be hereinafter described and particularly pointed out in the claims.

Figure 1 represents, in side elevation, a portion of the inner side of a door adjacent the usual lock with my invention applied thereto, the cover-plate and inside knob being removed. Fig. 2 is a vertical section taken on the line *x x*, Fig. 1, the inner and outer knobs being removed and the two-part spindle broken off to save space; and Fig. 3 is a perspective view of the two-part spindle and the normally-inoperative coupling therefor.

Inasmuch as my invention may be operatively applied to any ordinary form of door lock by simple removal of the usual knob spindle, I have shown in Fig. 2 the door D as recessed at D′ to receive therein the lock case, the relative positions of the latch-bolt L and key-bolt L′ being indicated by dotted lines. The door is mortised on its inner side to receive therein the casing *a*, within which the operative parts of the controlling mechanism are supported, said casing being provided with a cover-plate *a′*. Shown in Fig. 2.

A two-part spindle *b*, *c*, is extended through the casing *a* and the usual lock case, the part *b* having at its inner end an arc-like flange *b′*, rigidly connected to but slightly separated from a similar flange b^2 fast on a sleeve b^3, squared externally to enter the usual tumbler, not shown, for operating the latch-bolt L, a knob K being shown in Fig. 3 as secured by a set screw *k* to the part *b*, on the inner side of the door, by means of which the said latch-bolt may always be operated. The flanges *b′*, b^2, are herein shown as connected by screw bolts 1 and 2, but it is obvious that they could be otherwise connected. The flange b^2 limits the longitudinal movement of the sleeve b^3 and attached parts by bearing against the back of the casing *a*.

As shown clearly in Figs. 2 and 3, the part *c* of the two-part spindle is squared to receive therein the outer knob, the shank *k′* thereof being shown in section, Fig. 2, the said part *c* being reduced in diameter at *c′* and made cylindrical to enter loosely the corresponding bore in the sleeve b^3. A disk or plate c^2, shown

in Fig. 1, as substantially circular, is secured to or integral with the part c' of the spindle, between the flanges b' and b^2, and provided with a lug or projection c^3 and a peripheral notch c^4. A two-armed rocker d is rounded at its ends at d' to normally take bearings in the upper corners of the casing a, and is normally held in its central position, shown in full lines Fig. 1, by a spring s, attached at one end to the top of the casing and at its other end to the apex of the rocker d, which is slotted thereat at d^2 to embrace the lug or projection c^3 on the disk c^2. Rotation of the disk in one or the other direction by the part c of the spindle swings the rocker d about one or the other end d', against the action of the spring s, which returns the disk and part c to full line position Fig. 1 when released. Limiting stops d^4 prevent rotation of the disk c^2 in either direction by engaging the rocker d, as shown by dotted lines Fig. 1.

From the foregoing it will be obvious that partial rotation of the part c of the spindle will ordinarily have no effect on the latch-bolt L, while the latter may at all times be operated by the part b of the spindle.

A latch e, herein shown as curved, is pivoted at e' between the flanges b' and b^2, and provided at its upper side with a lug e^2 adapted to enter the notch c^4 of the disk c^2, the free end of the latch resting against and being prevented from falling by an abutment $b^\times$ on one of the flanges. See dotted lines, Fig. 1. If the latch is raised to enter the lug e^2 into the peripheral notch c^4 of the disk the two parts b and c of the spindle will be locked to move in unison, and at such time the latch-bolt L can be operated from the outside.

An electro-magnet f is mounted in the casing a, its armature f' being pivoted at f^2 and so arranged relative to the poles of the magnet that when they attract the armature, it will be lifted, and a rod f^3 pivoted to the latter will be raised until a lip f^4 thereon will catch upon the cross piece f^5, the rod being drawn inward by a spring s', though the spring may be otherwise located than herein shown. The rod f^3 has at its upper end a projection f^6 extending inward beneath the latch e, and when the armature is attracted and the rod lifted, said projection will engage and lift the latch e until the lug e^2 thereon enters the notch c^4 in the disk, the lip f^4 engaging the bar f^5 and maintaining the rod lifted after the magnet is de-energized by the breaking of the circuit in which the magnet is included by the wires 5, 6, Fig. 1. Rotation of the outer knob will then withdraw the latch bolt L, and the door can be opened, the rod f^3 serving as an actuator for the latch e, which is the operative member of the spindle coupling.

Cams 7 and 8 on the flange b' are located at opposite sides of the actuator f^3, and when the spindle is turned to withdraw the latch-bolt, as described, one or the other of the cams will engage and move the actuator outward to disengage the lip f^4 from its support f^5, and the weight of the actuator and armature will cause it to return to its normal position against a stop $f^\times$. Just as soon thereafter as the outer knob is released, the usual lock spring will return the spindle to normal position and the latch e will drop by gravity, withdrawing the lug e^2 from engagement with the disk c^2 and uncoupling the two parts b and c of the spindle.

The circuit of the electro-magnet f includes a number of push buttons at different points, by any one of which the circuit may be closed and the magnet energized to operate the actuator and couple the two parts of the spindle.

From the foregoing it will be seen that the two-part spindle is automatically uncoupled after each movement of the latch-bolt from the exterior, without further attention, and the lock is reset, as it were.

The conducting wires 5, 6, connected to the poles of the electro-magnet, pass through the door, and are connected by suitable connections with wires leading to different points.

To apply my controlling mechanism to an ordinary lock, the usual knob spindle is removed therefrom and the two-part spindle substituted, as shown and described.

I claim—

1. A normally disconnected two-part spindle, a notched disk on one member, a tumbler engaging sleeve rotatable on said member and rigidly connected to the other member, a coupling latch movable with the sleeve, an actuator to move the latch into engagement with the disk, an electro-magnet to positively move the actuator, and means to automatically release the actuator and uncouple the spindle members after the bolt has been moved, substantially as described.

2. A detachable controlling mechanism for and adapted to be applied to door locks, comprising a normally disconnected two-part spindle, a notched disk on one member, a tumbler engaging sleeve rotatable on said member and rigidly connected to the other member, a latch movable with the sleeve, to co-operate with the disk, an actuator to move it into engagement therewith to couple the two members of the spindle, an electro-magnet to positively move the actuator, a detent therefor, and means to automatically release the actuator and detent and thereby uncouple the spindle members after the bolt has been moved, substantially as described.

3. In a detachable controlling mechanism for door locks, a normally disconnected two-part spindle adapted to be extended through the lock, one member of which is adapted to be operatively connected with a latch-bolt, a spindle coupling, an actuator therefor, and an electro-magnet to positively move the actuator into operative position, to couple the two members of the spindle, substantially as described.

4. A two-part spindle, one member thereof having a sleeve-like portion to actuate a latch-

bolt, the other member entering and normally rotating independently of and within the sleeve, and a coupling to at times connect the two members of the spindle to rotate together, combined with an actuator for the coupling, an electro-magnet to positively move it into operative position, and a detent to retain the actuator in such position, and maintain the two members connected, substantially as described.

5. A two-part spindle, one member of which is adapted to actuate a latch-bolt, a normally inoperative latch carried on one, to at times engage a co-operating part of the other member, and an actuator for the latch, combined with an electro-magnet to positively move the actuator into operative position, a fixed detent for the actuator, and a releasing cam controlled by rotation of the spindle, to disengage the actuator from the detent after operation of the bolt, substantially as described.

6. A two-part spindle for door locks, one member being normally rotatable independently of the other, and adapted to be operatively connected with the latch-bolt, a spindle coupling, including a gravity latch, and a latch-actuator, combined with means to move the actuator positively from a distant point, a fixed detent for said actuator, and a cam movable with one member of the spindle to release the actuator from its detent by rotation of the coupled spindle, 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.