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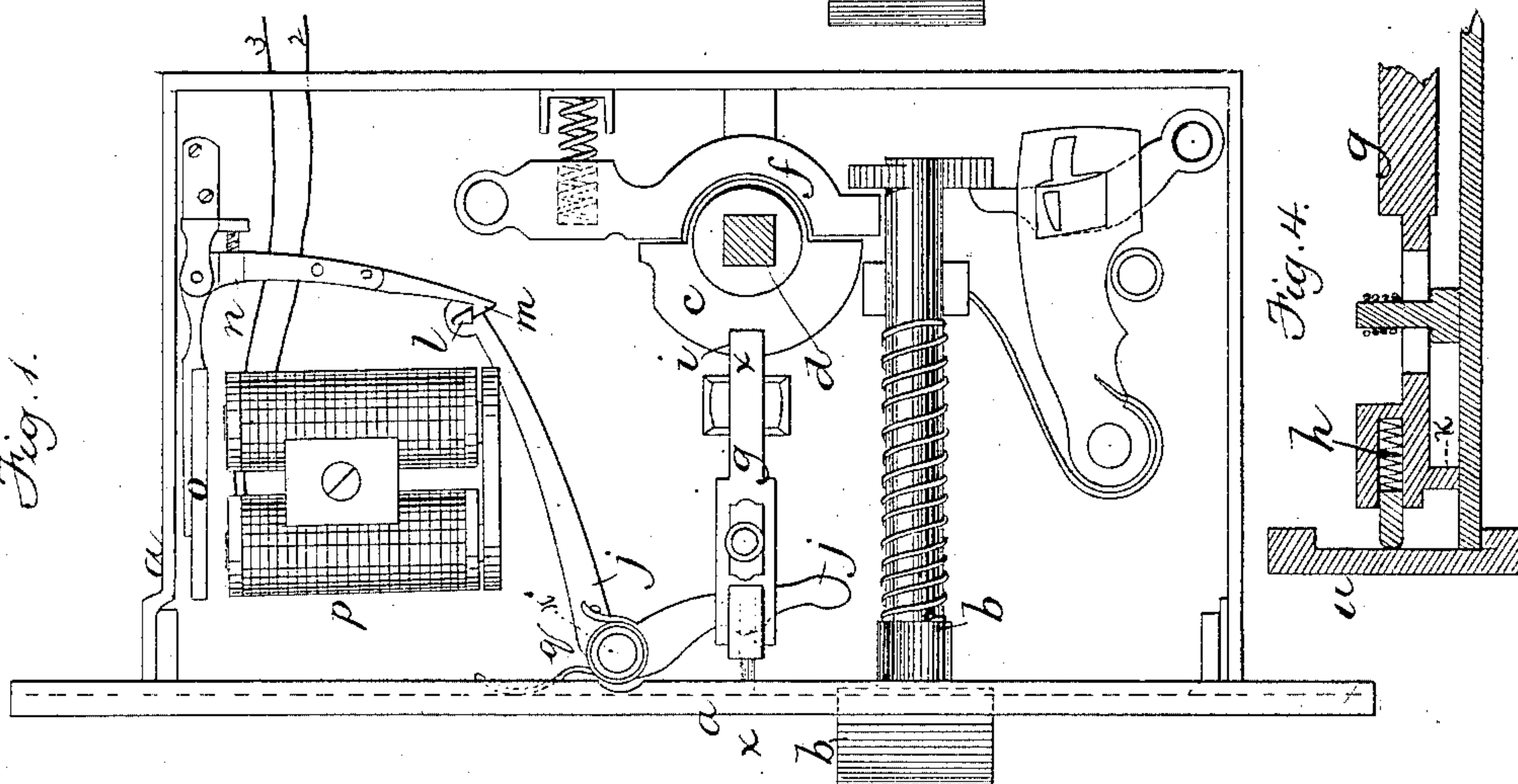
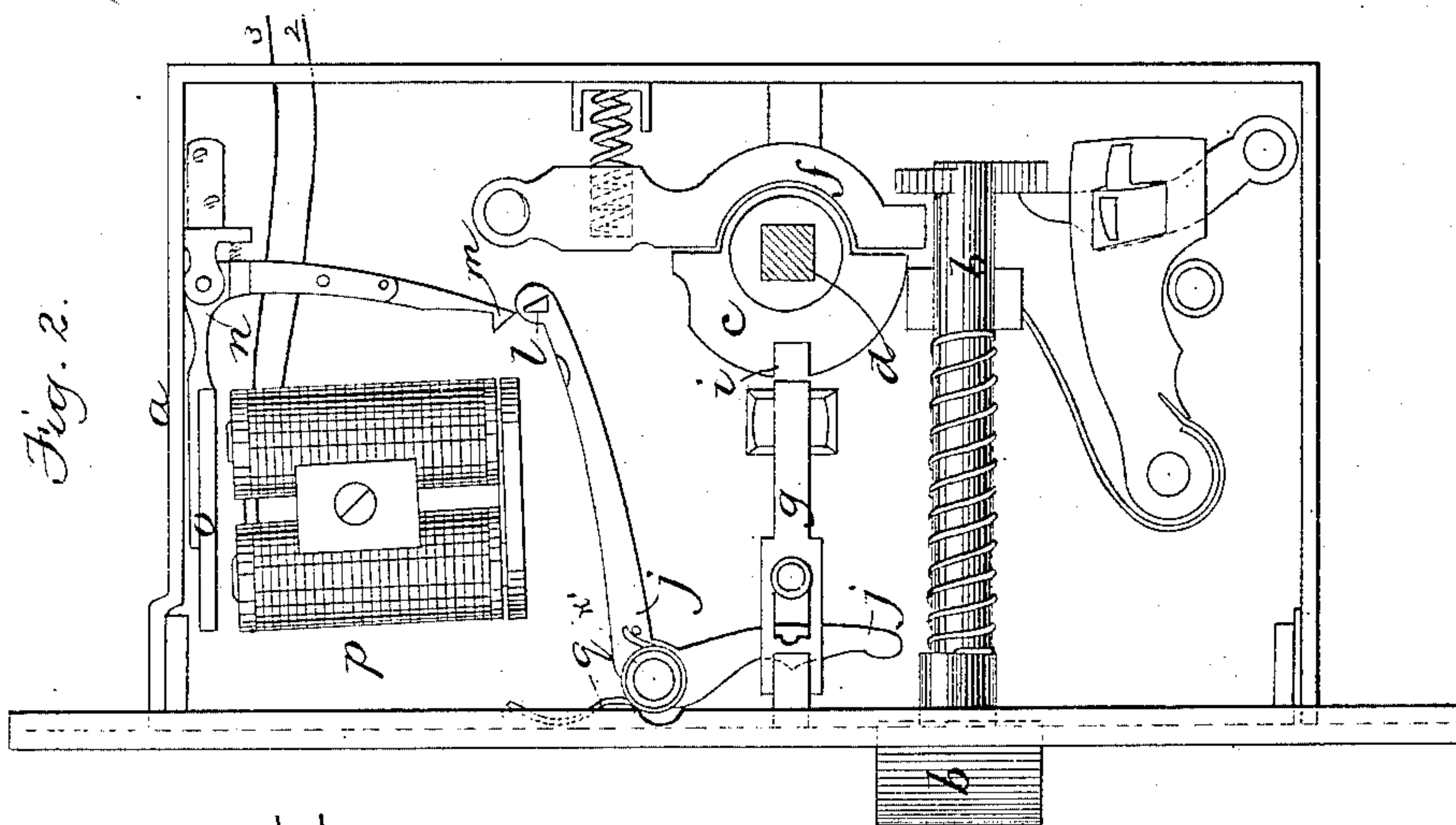
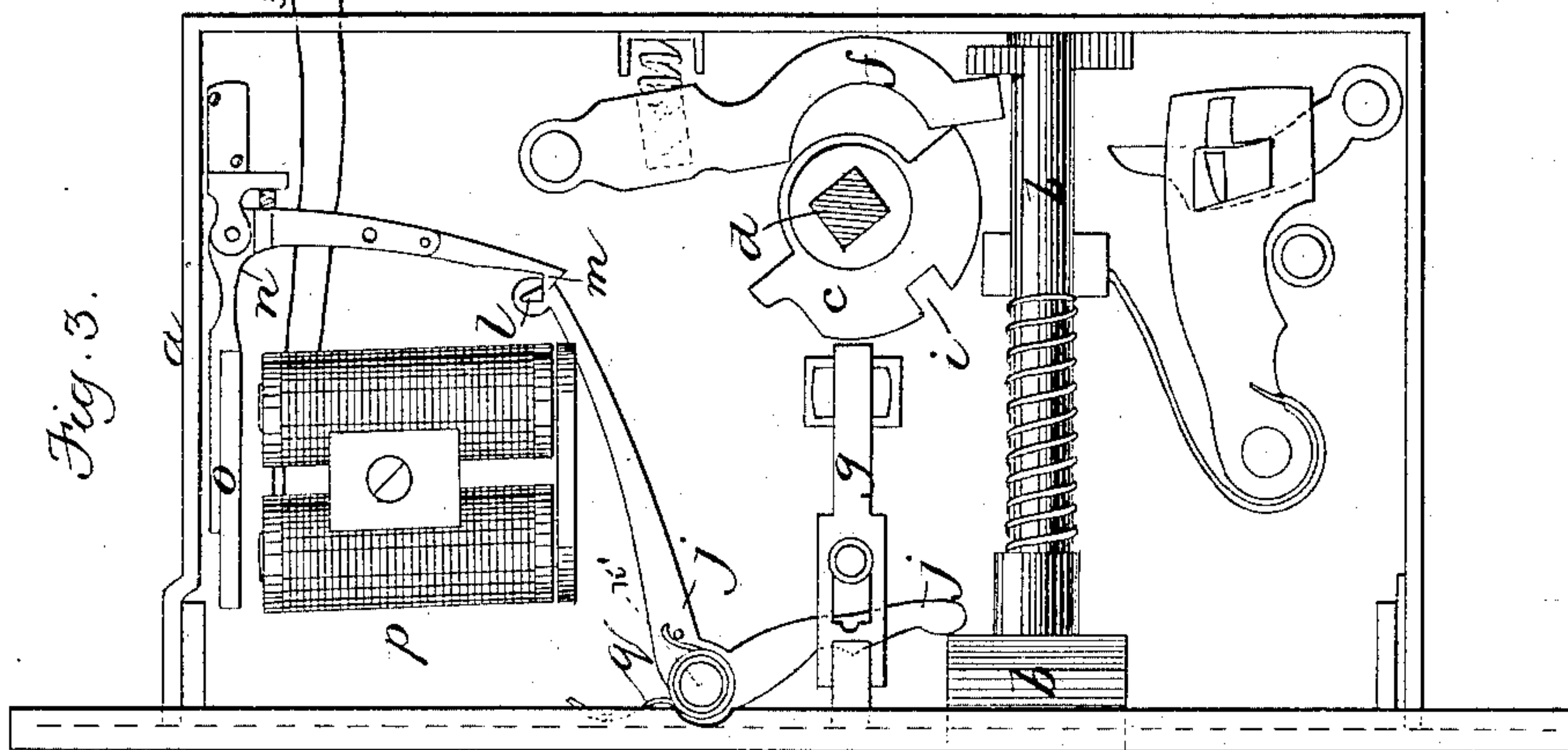
2 Sheets—Sheet 1.

G. E. THAXTER.

KNOB LOCKING AND RELEASING MECHANISM FOR LOCKS.

No. 315,186.

Patented Apr. 7, 1885.



Witnesses.
H. Brown.
A. L. White

Inventor
Geo. E. Thaxter
by night & Brown
Atty.

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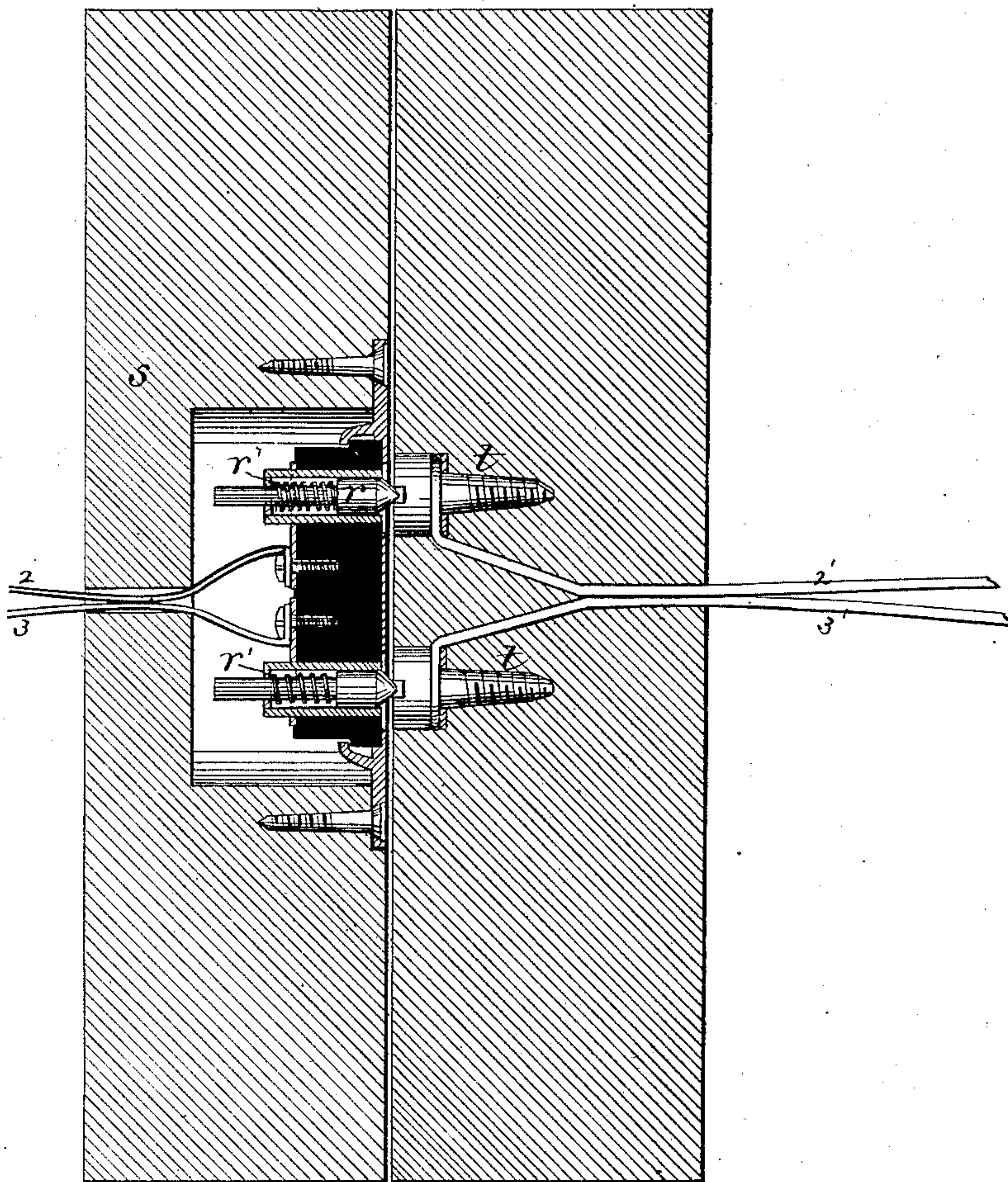
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Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE E. THAXTER, OF BOSTON, MASSACHUSETTS.

KNOB LOCKING AND RELEASING MECHANISM FOR LOCKS.

SPECIFICATION forming part of Letters Patent No. 315,186, dated April 7, 1885.

Application filed June 4, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. THAXTER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Knob Locking and Releasing Mechanisms for Locks, of which the following is a specification.

This invention has for its object the provision of mechanism whereby the latch or lock-bolt of the door of a building that is occupied by several different tenants, all using the same entrance, is automatically locked so that it cannot be retracted by the knob or key, and can be released and made capable of movement at the will of a person on any floor of the building.

The invention consists in the following instrumentalities: first, a device adapted to automatically lock the tumbler, engaged with the knob-spindle of a combined latch and lock when the bolt thereof is projected, so that the bolt cannot be retracted by the rotation of the knob; secondly, a spring-impelled lever adapted, when released, to withdraw the locking device from the tumbler and release the latter; and, thirdly, a detent adapted to normally hold said lever away from its normal position, and adapted to be moved by the closure of an electric circuit on any floor of the building, so as to release said lever and allow it to retract the tumbler-locking device, said lever being adapted to be afterward set for action by the retraction of the lock-bolt, all of which I will now proceed to describe.

Of the accompanying drawings, forming a part of this specification, Figures 1, 2, and 3 represent side elevations of a mortise-latch lock embodying my invention, certain parts being represented in different positions in the different figures to show different stages of the operation. Fig. 4 represents a section on line *xx*, Fig. 1. Fig. 5 represents a section showing the means used to connect the electro-magnet in the door with the fixed wires extending to the different floors of the building.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents the casing of the lock, *b* the bolt thereof, and *c* the tumbler through which the outside knob is enabled

to act on the bolt, the shank *d* of said knob passing through said tumbler and rotating it when the knob is turned, the tumbler bearing against a pivoted lever, *f*, which in turn bears against an arm on the rear end of the bolt *b*, so that when the tumbler is rotated, as shown in Fig. 3, it retracts the bolt. These parts are well known and do not of themselves form parts of my invention. In carrying out my invention I provide a bolt, *g*, adapted to slide in suitable guides in the casing *a* and pressed normally by a spring, *h*, (see Fig. 4,) against the margin of the tumbler, said bolt entering a notch, *i*, formed in the tumbler when the latter is in the position it occupies when the lock-bolt *b* is projected, as shown in Fig. 1, the bolt *g* locking the tumbler and preventing the outside knob from being rotated.

j represents a two-armed lever, pivoted at *k* to the casing. One of the arms of said lever extends across the bolt *g* and bears against a lug, *l*, formed on said bolt, its outer end projecting sufficiently far to cause it to be moved by the lock-bolt *b* when the latter is being retracted, as hereinafter described. The other arm of the lever *j* is provided with a catch or pin, *l*, which is engaged by a detent, *m*, when in the position shown in Figs. 1 and 3. The detent *m* is on one arm of an elbow-lever, *n*, to the other arm of which is secured the armature *o* of an electro-magnet, *p*, the poles of said magnet being arranged so that when they attract the armature they will move the detent *m* sufficiently to disengage it from the pin *l* of lever *j* and release the latter. The lever *j* has a spring, *q*, which is secured at one end to the lever and bears at the other end against the casing, the tendency of said spring being to force the lever from the position shown in Fig. 1 to that shown in Fig. 2, when the lever is released by the detent.

The operation is as follows: When the lock-bolt is projected, as shown in Fig. 1, the tumbler *c* stands in position to receive the bolt *g* into its notch, the bolt *g* being forced into the tumbler by its spring. When a person desires to open the door, he communicates with the occupant he desires to see through a speaking-tube or otherwise, and if the occupant desires to admit him a push-button is touched,

which closes a circuit through the magnet *p*, causing the latter to attract the armature *o*, thus releasing the lever *j*, which is forced by its spring *q* to the position shown in Fig. 2.

5 The movement of the lever to the last-described position causes it to push back the bolt *g* by its bearing on the lug *k* of said bolt, (see Fig. 4,) and thus release the tumbler *c*, which is therefore free to be turned. The
10 caller may now turn the knob to retract the bolt and open the door. The lock-bolt, in moving backwardly, strikes the lever *j* and moves it back to its former position, as shown in Fig. 3, the detent *m* re-engaging pin *l* of
15 the lever, so that the lever is set for the next action, the bolt *g* being free to spring into the notch of the tumbler when the latter is turned to the position it occupies when the door is closed. It will be seen, therefore, that the
20 knob-locking device is automatically reset after each release, so that no attention is required to make it operative. The conducting-wires 2 3, connected to the poles of the electro-magnet, pass through the door, and are
25 connected by suitable separable connections with fixed wires in the casing leading to the different floors of the building, the continuity of the conductors being broken when the door is opened and restored when the door is closed.
30 Said separable connections are shown in Fig. 5, and consist of spring-bolts *r r*, connected to the portions of the wires 2 3 that are on the door *s* and screws *t t*, set in the casing, so as to make contact with said bolts when the door
35 is closed, the wires 2' 3', leading to the different floors of the building, being connected to said screws. The springs *r' r'* press the bolts against the heads of the screws and prevent the shrinkage of the door and casing from
40 breaking the contact. The wires 2 3 are connected through the medium of a distant push-button or other like device when it is desired to close the circuit and energize the electro-magnet.

45 It is obvious that the tumbler on which the key of the lock acts in retracting the bolt may be locked by my improved mechanism; hence I do not limit its use to locking knob-tumblers alone.

50 I claim—

1. The combination, with the operative parts of a door-lock, of a locking-slide engaging therewith, a spring-impelled lever engaging the slide, a device for holding said lever, and an
55 electro-magnet for releasing the device, whereby the lever may operate the spring-slide and release the lock, substantially as described.

2. The combination, with the operative parts of a door-lock, of a locking spring-slide engag-

ing therewith, a spring-impelled lever engaging the slide, a detent upon one arm of a lever, an electro-magnet and an armature therefor engaging with the detent, the arrangement being such that when the magnet is energized the detent is disengaged, and the lever operates the slide to release the lock, substantially
60 as described. 65

3. The combination, with the operative parts of a lock, of a locking spring-slide engaging therewith, a spring-actuated lever which automatically operates the slide when released, and is adapted to be moved to its normal position by the operation of the lock, and an electro-magnet and armature engaging with the said lever and controlling its movements,
70 substantially as described. 75

4. The combination, in a door-lock, of a sliding bolt, a rotary shank, and connections between the shank and bolt, a spring-actuated slide engaging therewith, a spring-actuated
80 bell-crank lever engaging said slide, one end of the lever being controlled by an electro-magnet and armature, and the other being operated by the head of the bolt, the arrangement being such that when the bell-crank lever is released it withdraws the slide and the
85 bolt may be operated, which operation automatically sets the bell-crank to its normal position, substantially as described.

5. The combination, in a door-lock, of a bolt,
90 a rotary shank having a notched tumbler connected thereto, a pivoted lever between the tumbler and bolt, a spring-slide normally engaging the notch in the tumbler, a spring-actuated lever normally held by a detent on one
95 arm engaging the armature of an electro-magnet, the other arm normally bearing on the slide, and serving to operate the same to release the tumbler, and to be operated by the head of the bolt to be automatically set, and conducting-wires extending to a distant point, as and
100 for the purpose set forth.

6. The combination of the electro-magnet located in the casing of a door-lock, the wires 2 3, extending therefrom to the inner edge of
105 the door, the spring-bolts *r r* in the edge of the door, connected with said wires, the contact-screws *t t* in the casing, and wires 2' 3', leading to different parts of the building, as set forth. 110

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 31st day of May, 1884.

GEORGE E. THAXTER.

Witnesses:

C. F. BROWN,
A. E. WHITE.