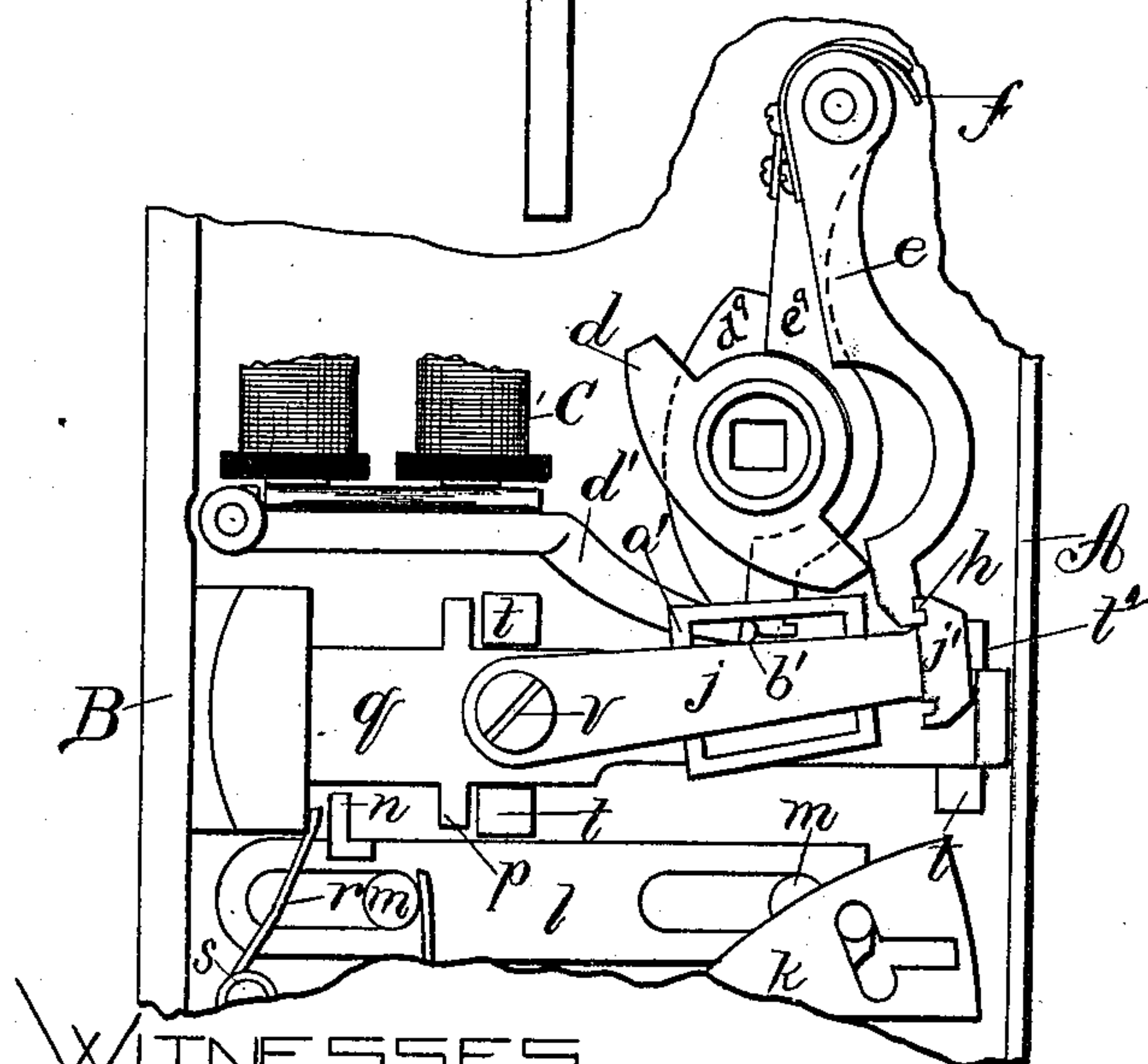
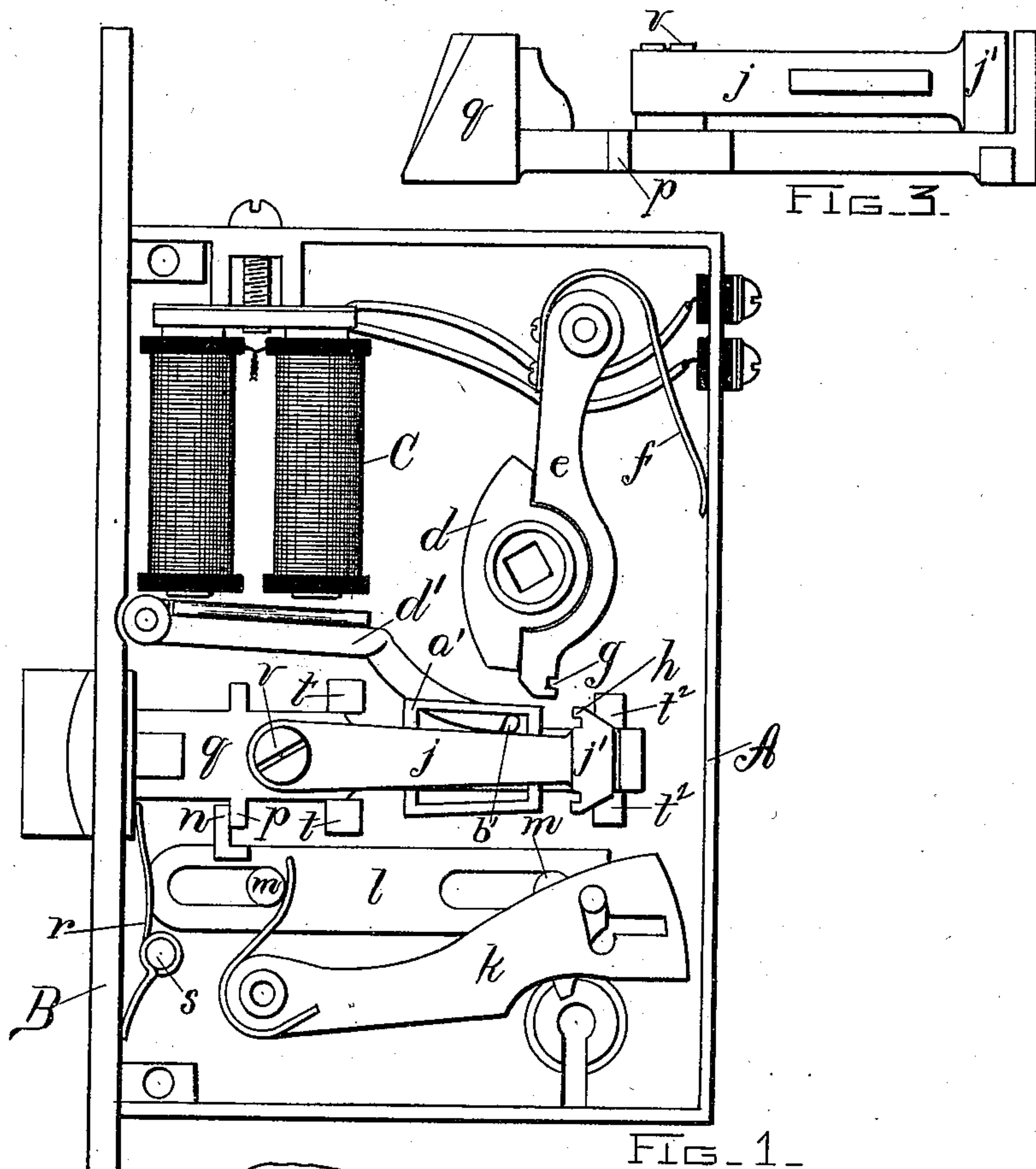


(No Model.)

L. B. TINKHAM.  
ELECTRIC LOCK.

No. 504,462.

Patented Sept. 5, 1893.



WITNESSES.

Arthur F. Randall  
Robert Wallace.

FIG. 2.

INVENTOR

Lemuel B. Tinkham  
By Macdonald Calver & Randall  
his attys.



# UNITED STATES PATENT OFFICE.

LEMUEL B. TINKHAM, OF QUINCY, MASSACHUSETTS.

## ELECTRIC LOCK.

SPECIFICATION forming part of Letters Patent No. 504,462, dated September 5, 1893.

Application filed May 12, 1892. Serial No. 432,805. (No model.)

### *To all whom it may concern:*

Be it known that I, LEMUEL B. TINKHAM, a citizen of the United States, residing at Quincy, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Electric Locks, of which the following is a specification, reference being had therein to the accompanying drawings.

Locks, which are provided with an electro magnet and mechanism intermediate the armature of the magnet and the operative parts of the lock, whereby said parts are locked or rendered inoperative for the purpose of withdrawing the bolt when the magnets are not energized, and which operate when the magnets are energized to release the mechanism, are well-known. All such locks now in use, so far as known to me, are open to various objections. In the case of some of them, if the magnets are energized by closing the circuit at some point, the devices which lock the operative parts of the lock are released and the said parts are only reset by opening the door and closing it. This is obviously an objection because the circuit may at any time be closed, by accident or design, and the door not opened, in which case the door is left unlocked. In the case of other locks, the device which renders the locks inoperative, cooperates with the tumblers so that the door knobs are normally rigid, and persons attempting to open the door subject the knobs and their shanks, oftentimes, to great strain, which loosens them and soon injures the parts. These are some of the more important objections to locks which are now in use.

My invention has for its object to provide an electric lock which shall be free from these objections, and others, which shall be durable and efficient, and which shall be simple in construction and comparatively inexpensive and it consists in a lock provided with an electro magnet and mechanism intermediate the magnet armature and the bolt, whereby the bolt which is out of the path of the movement of the tumbler lever will be brought into operative connection with said lever when the magnets are energized.

It further consists in certain details of construction all as hereinafter more fully set forth and the novel features of which are

pointed out in the claims which are appended hereto and made a part hereof.

I have shown my invention in the best form now known to me in the accompanying drawings, reference to which will be made in the following description and in which—

Figure 1 represents a side elevation of a lock embodying my invention, the side plate of the case being removed, and the parts being shown in the positions which they occupy when the door is locked. Fig. 2 is a similar view broken away showing the parts in the positions which they occupy when the bolt is withdrawn. Fig. 3 is a side elevation of the bolt and its pivoted lever or latch.

My device will be readily understood from the following description.

A represents the case of the lock and is of ordinary construction.

B is the face plate, the lock shown in the drawings being a mortise lock, similar in external appearance to those in common use.

C is an electro magnet of common form which is provided with suitable connecting wires by means of which it may be placed in the circuit of a battery. The electro magnet may be firmly secured in the case in any well known manner.

$d$  is the outer tumbler and  $e$  is the outer tumbler lever which is provided with a spring  $f$ .

$d^9$  is the inner tumbler, see Fig. 2, and  $e^9$  is the inner tumbler lever which is provided with a similar spring, as will be understood, the tumblers, levers, and springs being of common construction with the exception of a notch  $g$  which is provided in the lower end of the tumbler lever  $e$  for the purpose of engaging a projection  $h$  on the head of the movable latch  $j$  and thus insuring an operative contact between the head of said latch  $j$  and the end of the tumbler lever  $e$ . The recess  $g$  however is not an essential feature. Inner tumbler lever  $e'$  engages a projection  $h^2$  on the inner end of the bolt  $q$  and thereby operates to retract said bolt whenever the inner knob or handle is turned so as to turn the inner tumbler  $d'$ , as usual. The key levers  $k$  and their actuating springs are also of the usual construction and need not be specifically described. The slotted slide  $l$  which slides on studs which project from the case A is pro-



vided with a projection *n* which engages a projection *p* on the under side of the bolt *q*. When by the operation of the key the slide *l* is moved toward the rear the bolt *q* is withdrawn as will be clear. This feature is also well-known and forms no part of my present invention. The spring *r* which is secured to a stud *s* projecting from the case serves to throw the bolt *q* outwardly when it is released after being retracted. As the bolt moves outwardly it carries the slide *l* with it until the studs *m* come to a bearing at the end of the slots in said slide *l* in the well known manner. The bolt *q* projects through an aperture in the face plate *B* and is arranged to slide between the studs or projections *t* which are preferably cast on the case. To the bolt is connected a movable latch *j* which is preferably pivoted on the bolt as shown at *v* and which is provided with wings *a'* which are slotted to receive a pin *b'* which projects laterally from the extended end of the armature lever *d'*. The end of said armature lever is extended and bent or curved so that the pin *b'* at its extremity may engage the slot in said wing *a'*. The upper and lower sides of the latch *j* as also of the bolt *q* are made alike in order that they may be reversed if desired. Otherwise only one wing, for example, is necessary on the latch *j*. The latch normally falls into a position in which its enlarged head *j'* is located below the end of the tumbler lever *e* so that the outer knob of the door may be turned and the said tumbler lever swung when the parts are in their normal position as shown Fig. 1 without operating the bolt mechanism of the lock. If, however, the magnet *C* be energized the armature lever *d'* is raised, raising the latch *j* so that its enlarged head *j'* will be engaged by the lower end of the tumbler lever *e* when said lever is moved. If now the outer knob of the door be turned and the lever *e* swung on its pivot the bolt of the door will be retracted, the parts assuming the position shown Fig. 2. As previously stated the recess or notch *g* on the end of the lever *e* and the projection *h* on the head *j'* of the lever *j* interlock as shown Fig. 2 when the parts are in operative position and insure their operative contact. I prefer to notch the parts as shown but as will be clear, they may be constructed and will operate without being notched. When the circuit is broken and the knob released the door is again locked whether it has been opened or not. The door can be opened by turning the outer knob only while the circuit is closed and the armature attracted to the magnet as will be clear. In

case the bolt should not for any reason, be fully projected or thrown out by its spring *r* as frequently happens when the bolt binds, the operation of the lock will not be affected as the parts will operate with equal efficiency whether the bolt be projected fully or partially. This is an important advantage of my device.

I claim—

1. A lock in which the bolt is located out of the path of the tumbler lever, said bolt having connected thereto a movable latch, an electro magnet, and its armature, and suitable actuating mechanism intermediate said armature and said latch, whereby the latch is moved when the magnet is energized, for the purposes and substantially as set forth.

2. The combination in a lock in which the bolt is out of the path of the tumbler lever, with said bolt and tumbler lever, of a movable latch connected to said bolt, an electro magnet and a pivoted armature therefor, engaging said latch, for the purposes and substantially as shown and described.

3. The combination in a lock, with the tumbler and tumbler lever, said lever having a notch *g* at the end thereof, of the bolt *q*, the pivoted latch *j*, said latch being provided with a projection *h*, an electro-magnet, and an armature therefor engaging said latch for the purposes and substantially as set forth.

4. The combination in a lock, with the tumbler and tumbler lever, of the bolt *q*, pivoted latch *j* connected to said bolt, said latch being provided with a wing *a'*, the electro magnet and its armature, said armature being extended and provided with a pin *b'* which engages the wing *a'*, substantially as shown and described.

5. The combination in an electric lock with the tumbler lever *e*, of the bolt *q*, the pivoted latch *j*, having a head *j'* for engagement with said tumbler lever, said head *j'* being normally below and rearwardly of the engaging end of the tumbler lever, an electro magnet and a pivoted armature therefor, having a sliding engagement with said latch *j*, whereby when said latch is raised the tumbler lever will retract the bolt whether the bolt be fully projected from the lock case or not, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LEMUEL B. TINKHAM.

Witnesses:

WM. A. MACLEOD,  
ROBT. WALLACE.