(No Model.) 3 Sheets—Sheet 1.

P. & J. A. MEYER.

ELECTRIC LOCK.

No. 551,682. Patented Dec. 17, 1895.

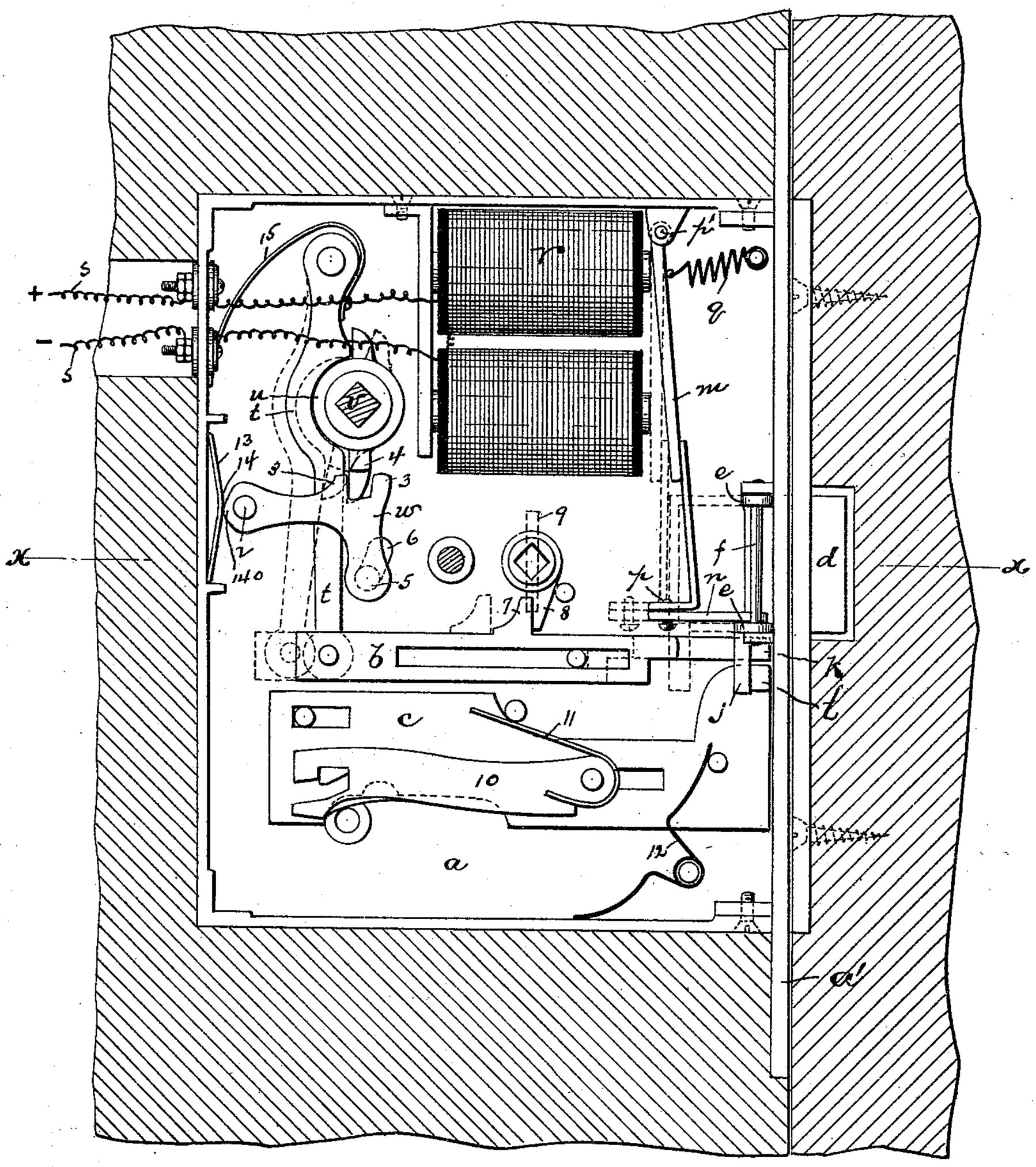


Fig. 1.

Witnesses
Robert Sollberger
Beatrice Charles.

Inventors
Philip Meyer,
Julius A. Meyer,
By Drake & Co. Atty's.

(No Model.) 3 Sheets—Sheet 2.

P. & J. A. MEYER.

ELECTRIC LOCK.

No. 551,682. Patented Dec. 17, 1895.

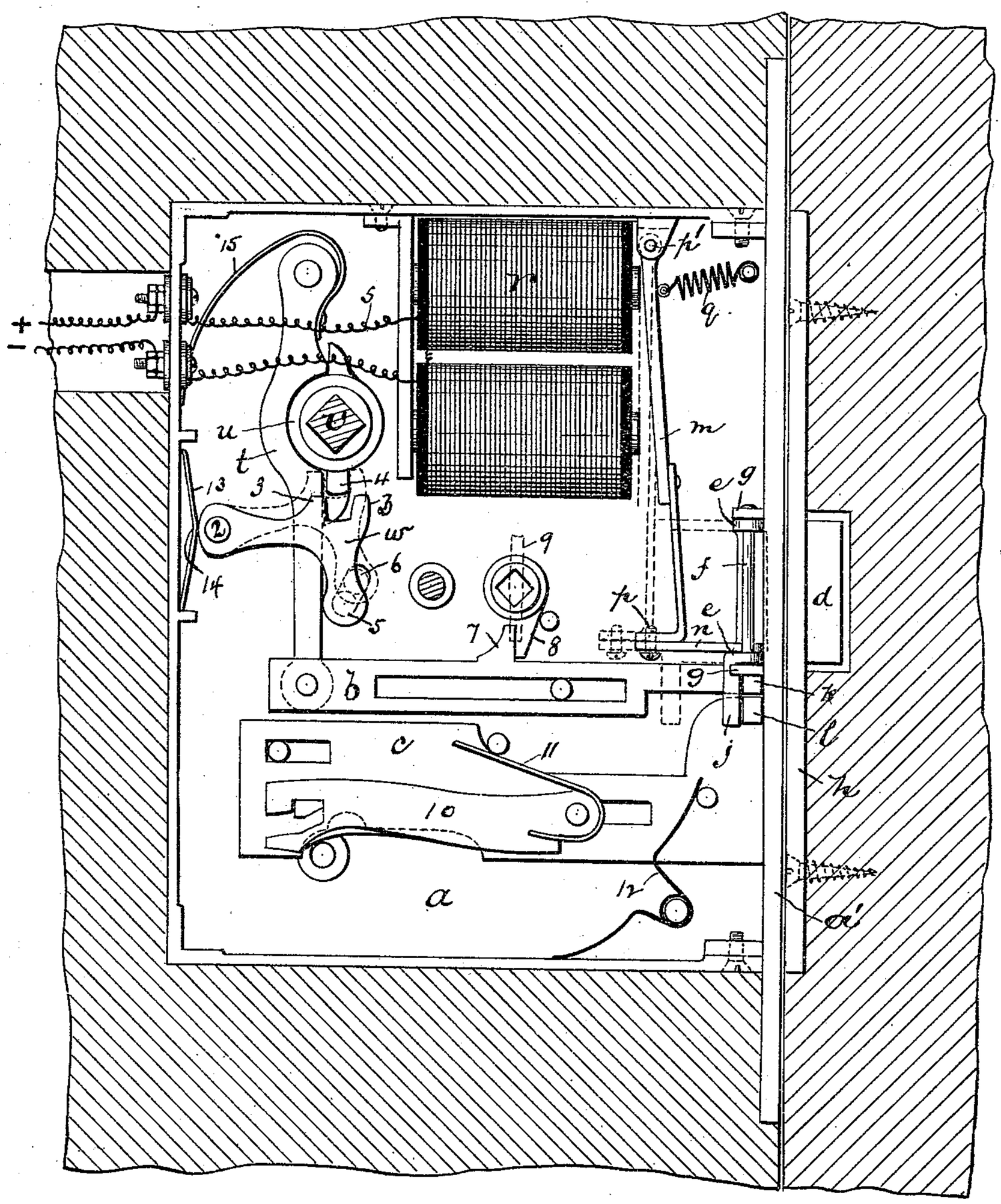


Fig. 2.

Witnesses
Robert Sollberger
Beatrice Charles.

Inventors:
Philip Meyer,
Julius A. Meyer,
By Drake & Atty's.

(No Model.) 3 Sheets—Sheet 3.

P. & J. A. MEYER.

ELECTRIC LOCK.

No. 551,682. Patented Dec. 17, 1895.

Fig. 3.

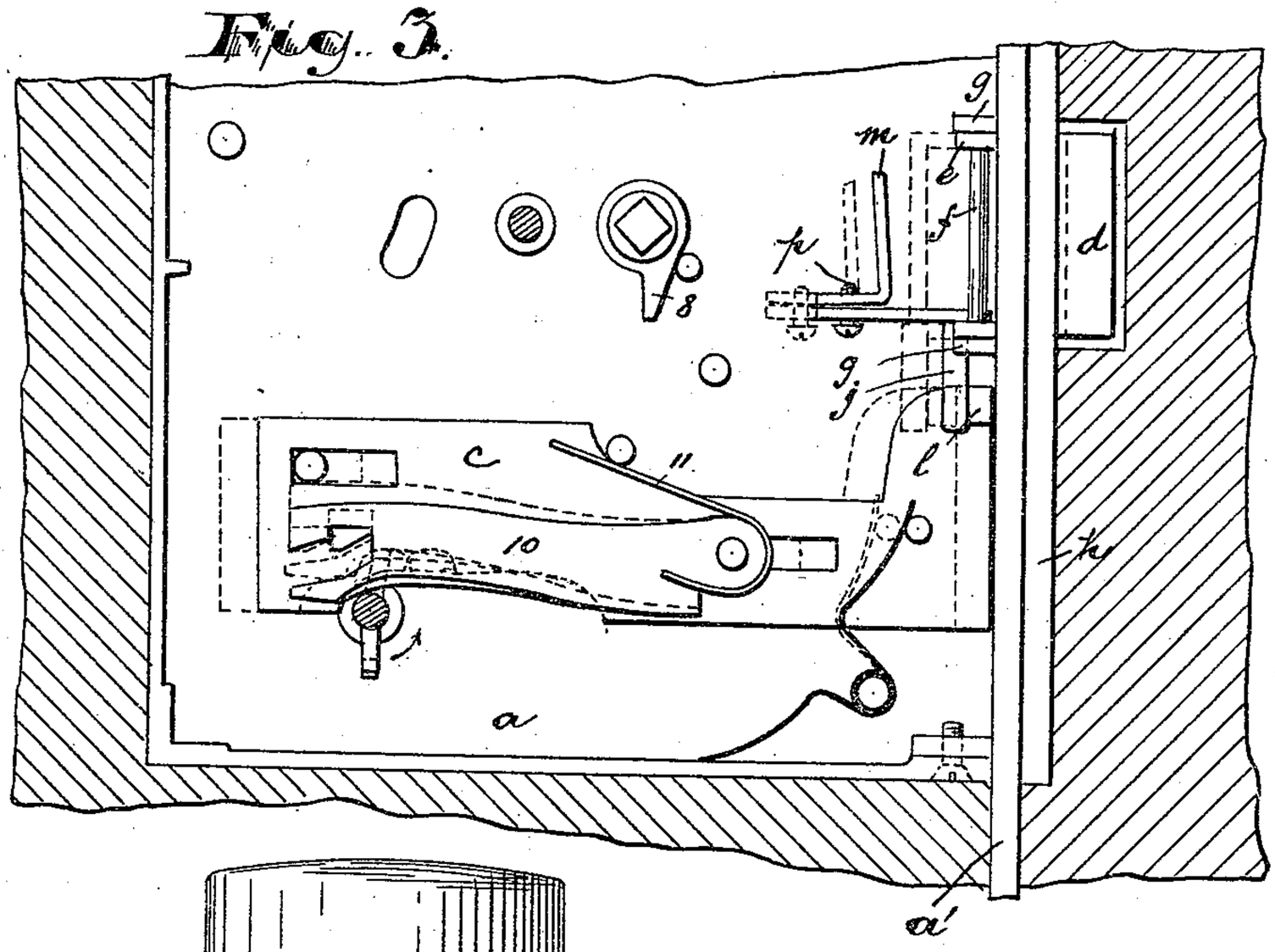


Fig. 4.

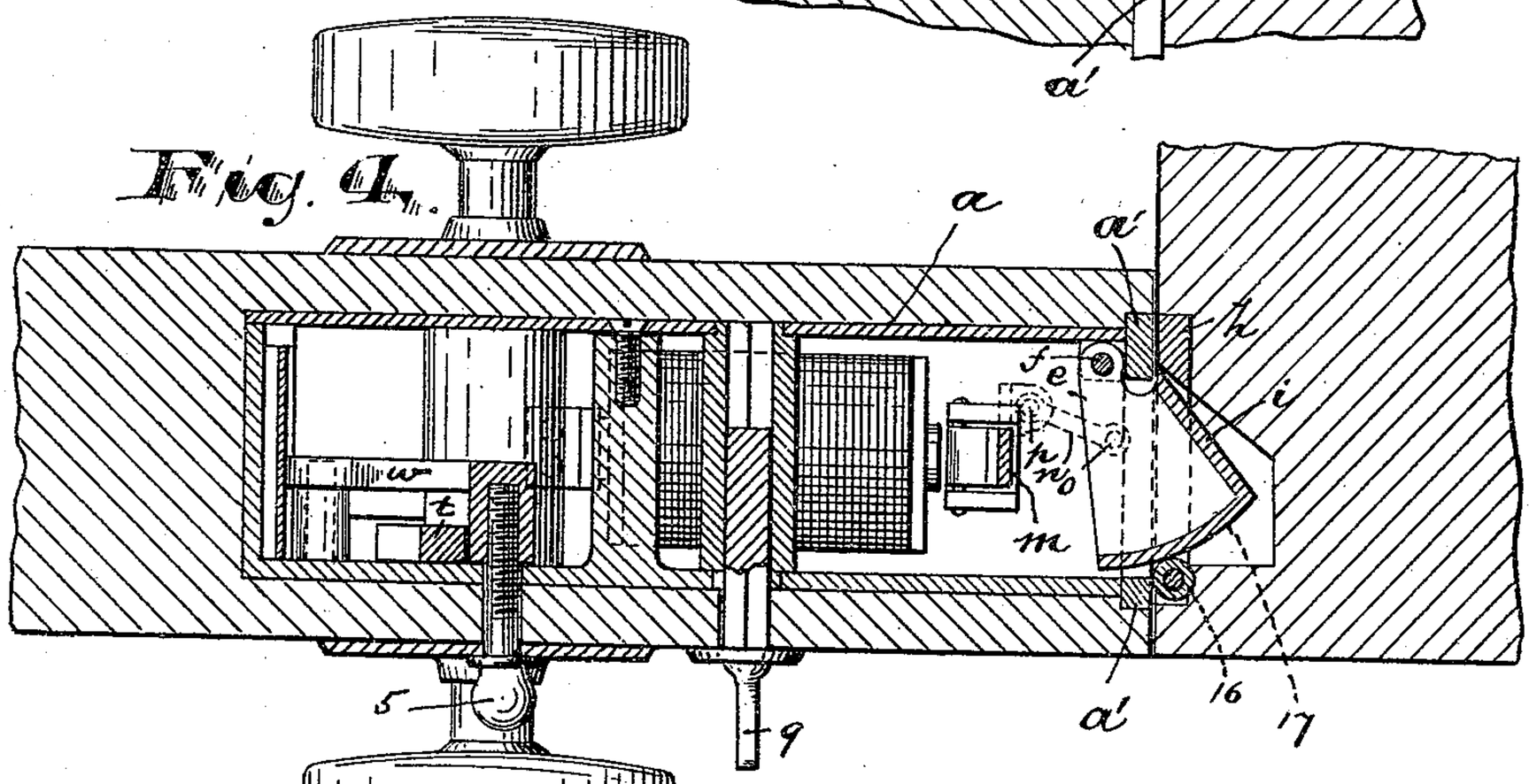


Fig 5.

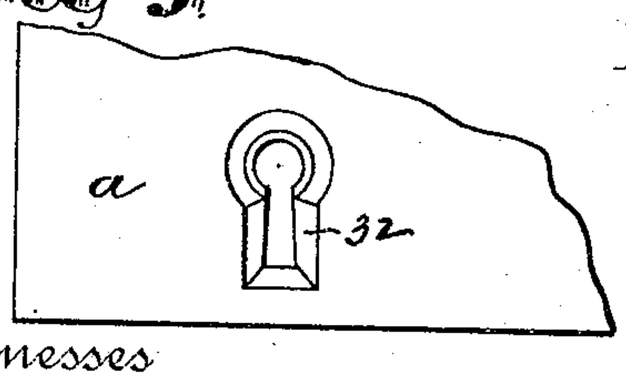
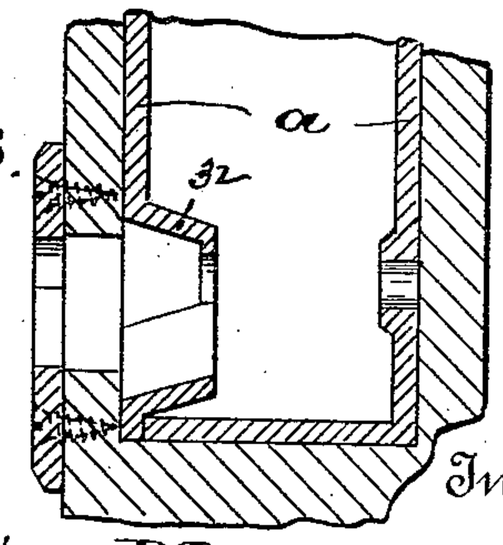


Fig. 6.



Witnesses
Robert Sallberger
Beatrice Charles.

Inventors:
Philip Meyer,
Julius A. Meyer,
By Drake & Co. Atty's.

UNITED STATES PATENT OFFICE.

PHILIP MEYER AND JULIUS A. MEYER, OF NEWARK, NEW JERSEY, ASSIGNORS OF ONE-THIRD TO EMIL BLUMENHEIN, OF SAME PLACE.

ELECTRIC LOCK.

SPECIFICATION forming part of Letters Patent No. 551,682, dated December 17, 1895.

Application filed February 23, 1895. Serial No. 539,365. (No model.)

To all whom it may concern:

Be it known that we, PHILIP MEYER and JULIUS A. MEYER, citizens of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Electric Locks; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and numerals of reference marked thereon, which form a part of this specification.

The objects of this invention are to reduce the cost of construction, to render the working parts more easy of operation and to thus avoid jarring and undue pressure upon the door in closing the same, to provide a bolt-head that is operable independent of the key-latch and knob-latch, so that the said latches may be operated by either the key or knob without affecting the electric appliances, the operation of either being accomplished without affecting the other and thus reducing the amount of friction which would otherwise be required, to provide a bolt-head that can be influenced more easily by a low electrical force, and to secure other advantages and results, some of which will be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved electrical lock adapted to be operated to unlock the doors by electricity, and in the arrangements and combinations of parts, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, embraced in three sheets, in which like letters and numerals of reference indicate corresponding parts in each of the several views, Figure 1 is a sectional view of a portion of a door and casing to which our improved lock and striker-plate are secured in any suitable manner, the variety of lock shown being what is known as a "mortise-lock," although the invention may be applied to a rim-lock without avoiding the invention, one of the side plates of the lock being removed to show more clearly the interior construction and operation of the parts. Fig. 2 is a similar view showing the operation of the parts that are controlled by the electrical circuit more clearly. Fig. 3 is a detail showing the relation of the key-bolt to the latch. Fig. 4 is a section taken at line *x*, Fig. 1. Fig. 5 is a detail plan showing the keyhole in one of the side plates of the lock, the side walls of said hole being of peculiar construction. Fig. 6 is a section showing more clearly the said hole and its relation to the escutcheon-plate and the door.

In said drawings, *a* indicates a suitable casing which may be made in any manner common in lock work.

b indicates the knob-latch, and *c* the key-latch.

d indicates the bolt-head which in the present construction is operable independently by the said knob-latch and key-latch and electrical devices. The said bolt-head is of peculiar construction and is easy of operation, so that a comparatively small electromotive force will be sufficient to move the same. The said bolt-head *d* consists of a casting which is provided with ears *e e*, perforated to receive a pivot *f*, which latter has its bearings in lugs *g g*, cast on the inner side of the lock-plate. The said bolt-head extends through an aperture in the lock-case and projects from the outer face of the face-plate *a'* of the case so as to engage the striker-plate *h* of the casing. Where it projects the said bolt-head is provided with an inclined surface *i* to engage said striker-plate and enable the said bolt-head to be easily repressed into the lock-case as the door is closed in the manner common in latch-bolts.

Integral with one of the ears of the bolt-head is formed an arm *j*, which extends into engagement with projections *k* and *l* of the knob-latch *b* and key-latch *c*, so that when either of the said latches is drawn back by the key or knob the said bolt-head will be turned on its pivot and drawn back into the lock-case to admit the opening of the door. The said bolt-head is also linked to the armature-lever *n*, stationed adjacent to said bolt-head within the lock-case, the link *n* being pivoted to the said bolt-head at *o*, Fig. 4, and to the armature-lever *m* at *p*. Said armature-lever is fulcrumed at *p'* to a suitable bearing formed

in the case and is held normally away from the magnet, so that the bolt-head is kept at its outwardly-projecting position by a spring *q*. The armature-lever *m* is operated by the magnet *r*, which is also stationed within the lock-case, the parts being so disposed as that should the electrical appliances become disarranged or inoperative for any reason it will not render the lock as a whole inoperative; but the key and knob-latches will be operable and effective and efficient in service independent of said electrical appliances.

The magnets are connected through circuit-wires *s* with a battery (not shown) in any suitable manner. The knob-latch *b* is operated through a lever *t* and follower *u* by a knob-spindle *v*, the said follower *u* and spindle *v* being of any usual construction. To lock the knob-spindle so that it cannot be turned from the outside or inside of the door, we employ a thumb-catch *w*, which is fulcrumed within the lock-case at 2. Said catch is provided with locking-jaws 3 3, which engage opposite sides of one of the projections 4 of the follower. It is also provided with a knob or button 5, Fig. 4, which projects through a small slot 6 in the lock-case to the inside of the door, where it may be operated by the fingers to prevent the knob from being turned. The thumb-catch *w* is held in either its locked or unlocked positions by a spring 13, which is bent as indicated in Figs. 1 and 2, so as to form an angle 14, which bears on the crest 140 of an oppositely-inclined portion of the catch lying closely adjacent to the pivot 2 thereof, so that, by turning the catch in one direction or the other, the spring will bear on one of the inclines or the other and thus hold the said catch in either of the desired positions. The knob-latch *b* and its lever *t* are held in their positions admitting the normal projection of the bolt-head by a spring 15, which may be of any suitable construction and arrangement.

In operating the device, the bolt-head is repressed so as to admit the opening of the door either by the knob-latch *b*, operating in connection with the lever *t*, follower *u*, and knob-spindle *v*, the longitudinal movement of the latch causing the projection *k* thereof to press back on the arm *j* and turn the bolt-head pivotally, or by the key-latch *c*, repressed by a key in any ordinary manner, the projection *l* in this event pressing in a similar manner on the arm *j*. When the lock is to be opened from a distance—say from the third story of a house—and is to be operated by means of the electrical connections, when the circuit is closed and the magnet *r* is magnetized, they draw the armature *m*, so that the link *n*, attached to said armature, causes the bolt-head to turn on its pivot, as before, in connection with the key and knob latches; but, because of the independence of the bolt-head from the said latches, the operation of repression is very easy, requiring but very limited power on the part of the magnet.

To facilitate the operation of repressing the bolt-head and to avoid the friction that would tend to require increased motive force, we have provided the lock-striker *h* with a roller, (shown in Fig. 4, at 16,) which engages the segmental portion 17 of the bolt, the roller revolving on its pivot as the bolt-head is repressed or drawn back, as will be understood.

The knob-latch *b* is also provided with a projection 7, which is operated by a follower 8, which in turn is operated by a finger-piece 9, projecting from the inside of the door, enabling the door to be opened from the inside when the knob has been locked by the catch *w*.

The key-latch *c* may be of any ordinary construction. We have shown it provided with tumblers 10, springs 11 governing the operation of said tumblers, and a spring 12, adapted to hold the said latch so that the projections *e* will not interfere with the normal projection of the bolt-head.

Another feature of the invention lies in the construction of the case *a* at the keyhole, by means of which the operation of inserting the key is rendered more easy and rapid.

It commonly occurs that the woodwork at the keyhole is cut out unnecessarily by the carpenter, so that a shoulder is formed by the case, the keyhole in said case being much smaller. This shoulder serves to frequently catch the key and prevent a rapid insertion into the lock-case. In the present case the lock-case is provided at the keyhole with inclined inwardly-projecting guide-walls 32. (Shown in Figs. 5 and 6.) The hole is thus to a degree funnel-shaped, the outer part being large and the inner part of the usual size to receive the key. By this means the shoulder or projection deemed objectionable is avoided.

Having thus described our invention, what we claim as new is—

1. The improved lock herein described in which is combined with the case, a bolt head pivoted upon said case and adapted to turn into said case when engaged by the strike plate or when operated by the electro-magnet, an electro-magnet and its armature arranged in said lock case, said armature being connected to said pivoted bolt head to turn the same when the magnet is energized, substantially as set forth.

2. The improved lock herein described in which is combined with the case, a bolt head pivoted inside the case and projecting outward therefrom, an armature lever, linked to said pivoted bolt head to turn the same inward when the magnet is energized, and an electro-magnet arranged within the case, all said parts being arranged and operating, substantially as set forth.

3. The combination with the lock case, of a pivotal bolt head, independent latches adapted each to operate said bolt head, and an electro-magnet, its armature and connections also adapted to operate said bolt head when said magnet is energized, substantially as set forth.

4. The combination with the lock case, latches having projections, *k*, *l*, and knob and

key mechanisms for operating said latches, of a pivotal bolt head having an inclined side, *i*, a segmental side 17, and an arm, *j*, for engaging said projections of the latches for repressing or drawing said bolt head back into the lock case, and a lock strike having a roller bearing engaging the segmental side of the said lock strike, substantially as set forth.

5. The combination with the pivotal bolt-head, in a lock, of an electro-magnet, an armature-lever and a link pivoted upon said bolt-head and armature lever, substantially as and for the purposes set forth.

6. The electrically and mechanically operable lock, herein described in which is combined with the lock case, a bolt head pivoted to said case, and having an arm, *j*, a latch having a projection engaging said arm, an electro-magnet, its armature and means transmitting power from said armature to the pivoted bolt head, whereby the latter is turned into said case, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 9th day of February, 1895.

PHILIP MEYER.
JULIUS A. MEYER.

Witnesses:
CHARLES H. PELL,
BEATRICE CHARLES.