

(No Model.)

L. W. MILLER.
CUT-OUT FOR ELECTRIC SIGNAL BOXES.

No. 592,427.

Patented Oct. 26, 1897.

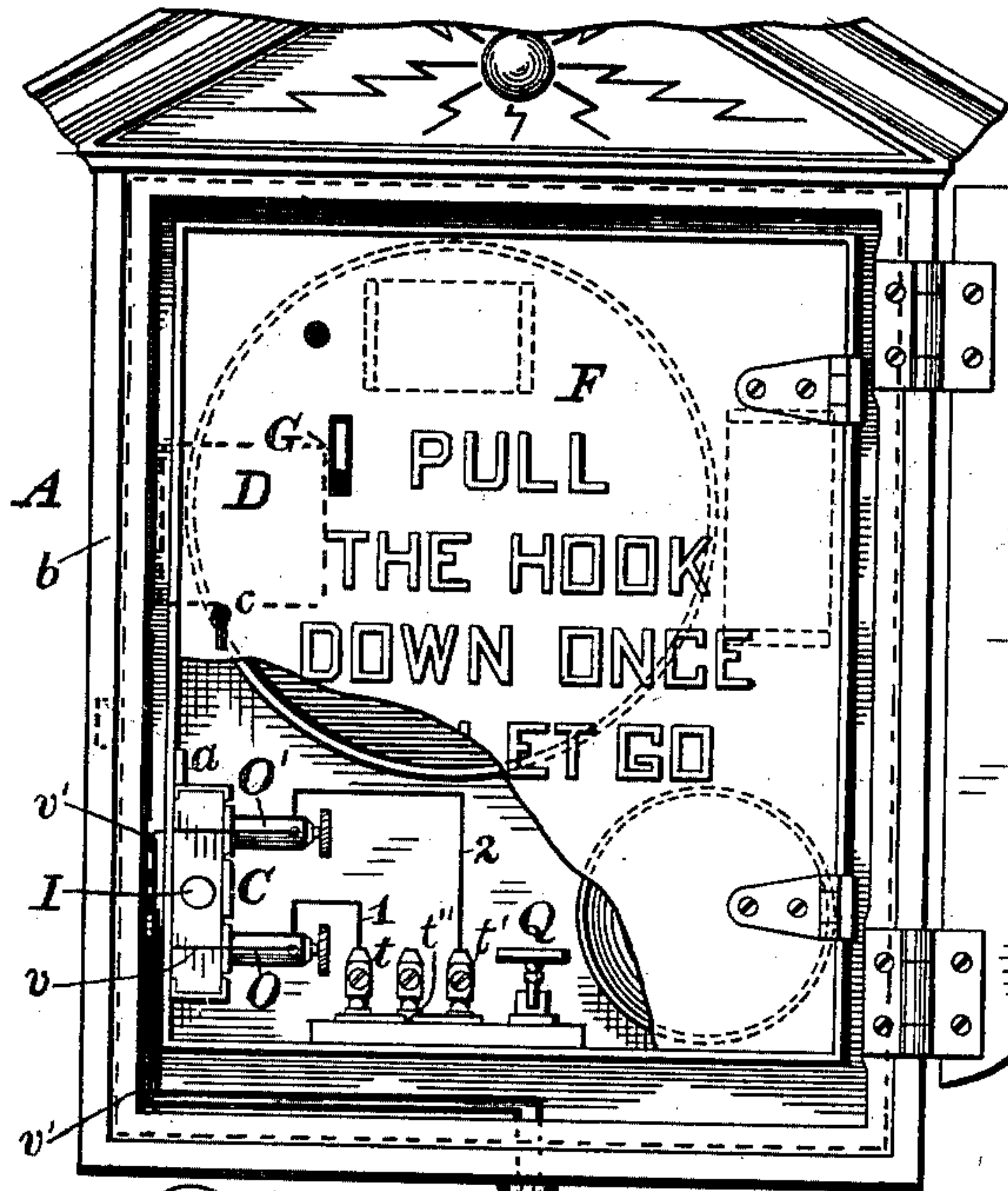


Fig. 1.

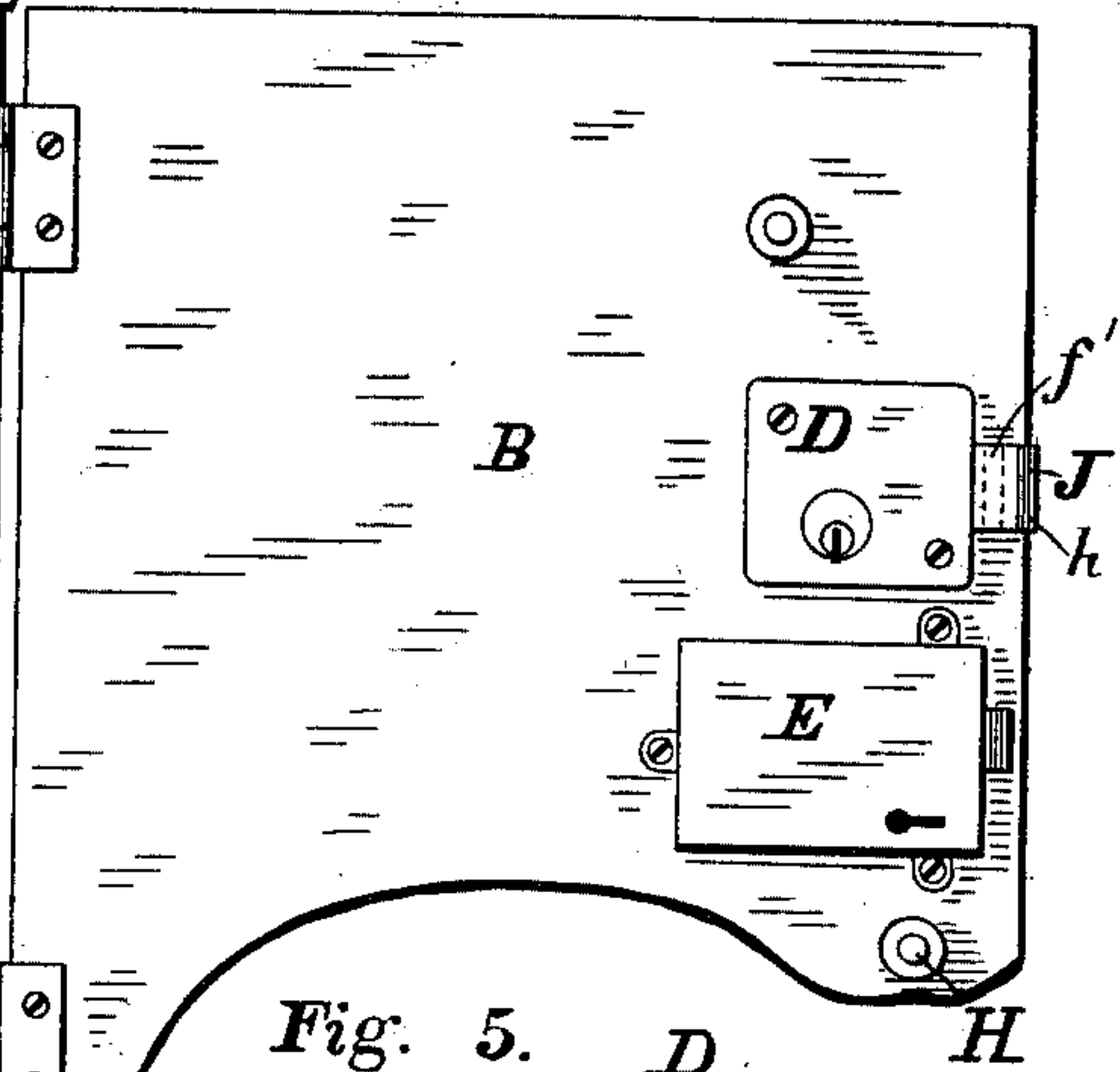


Fig. 2.

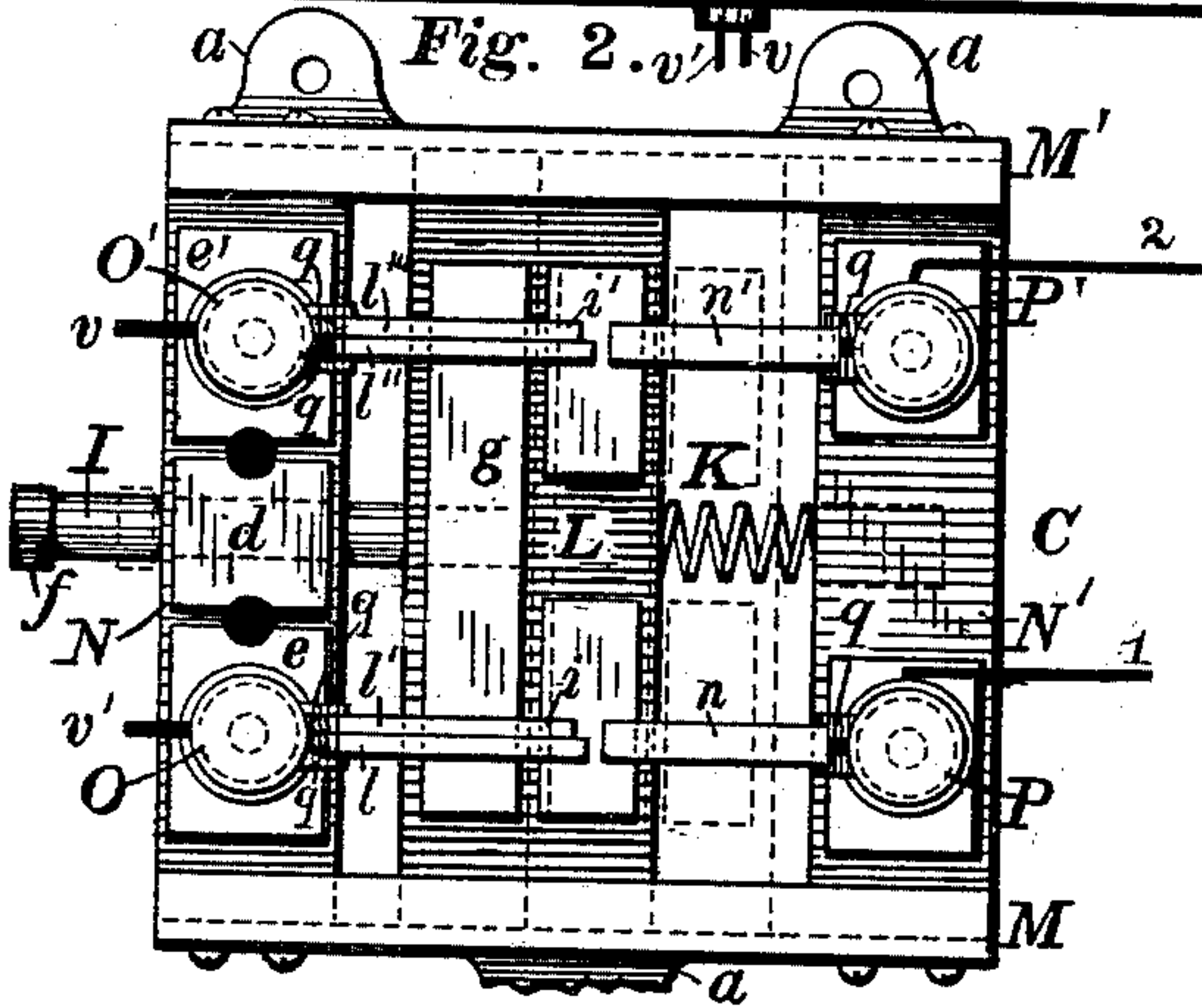


Fig. 3.

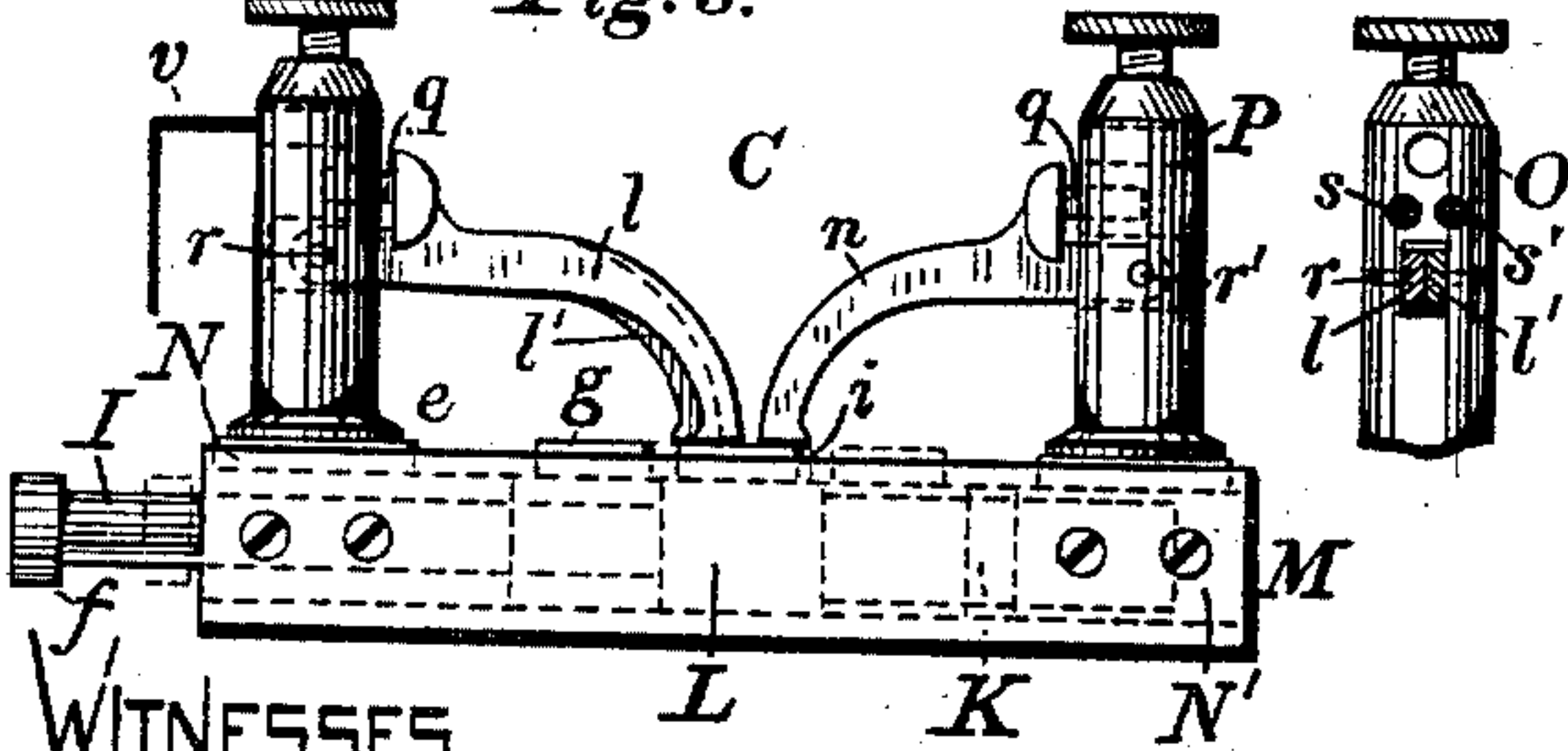


Fig. 4.

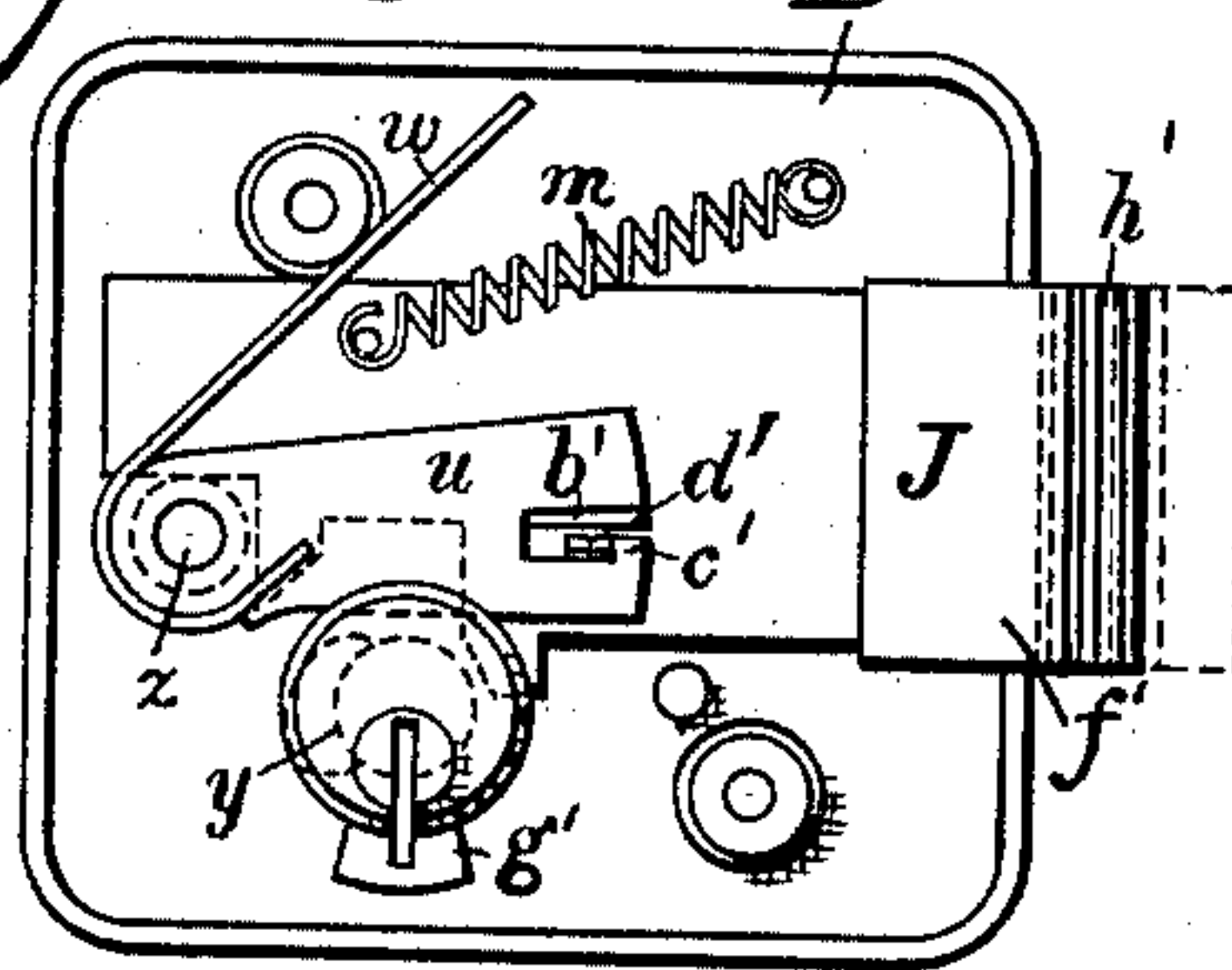


Fig. 5.

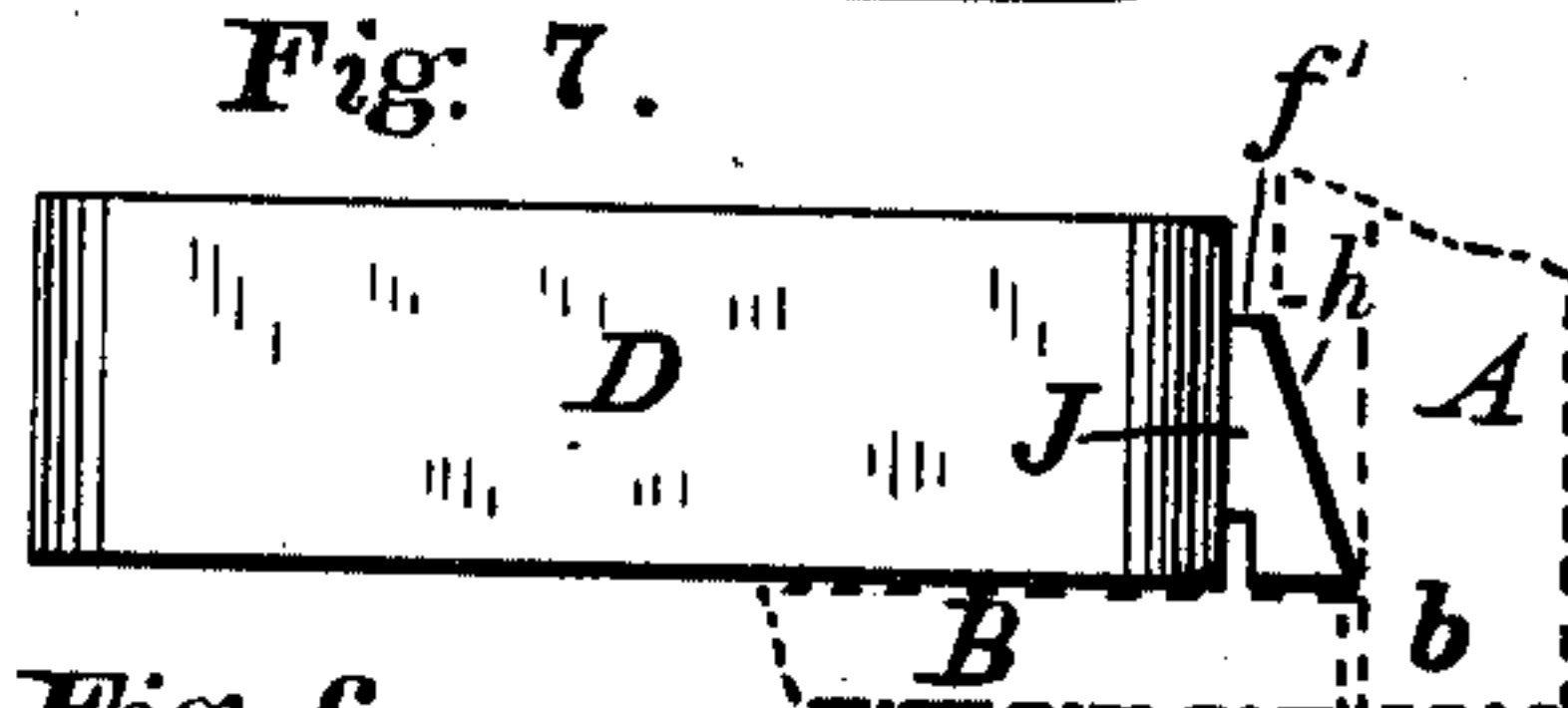


Fig. 6.

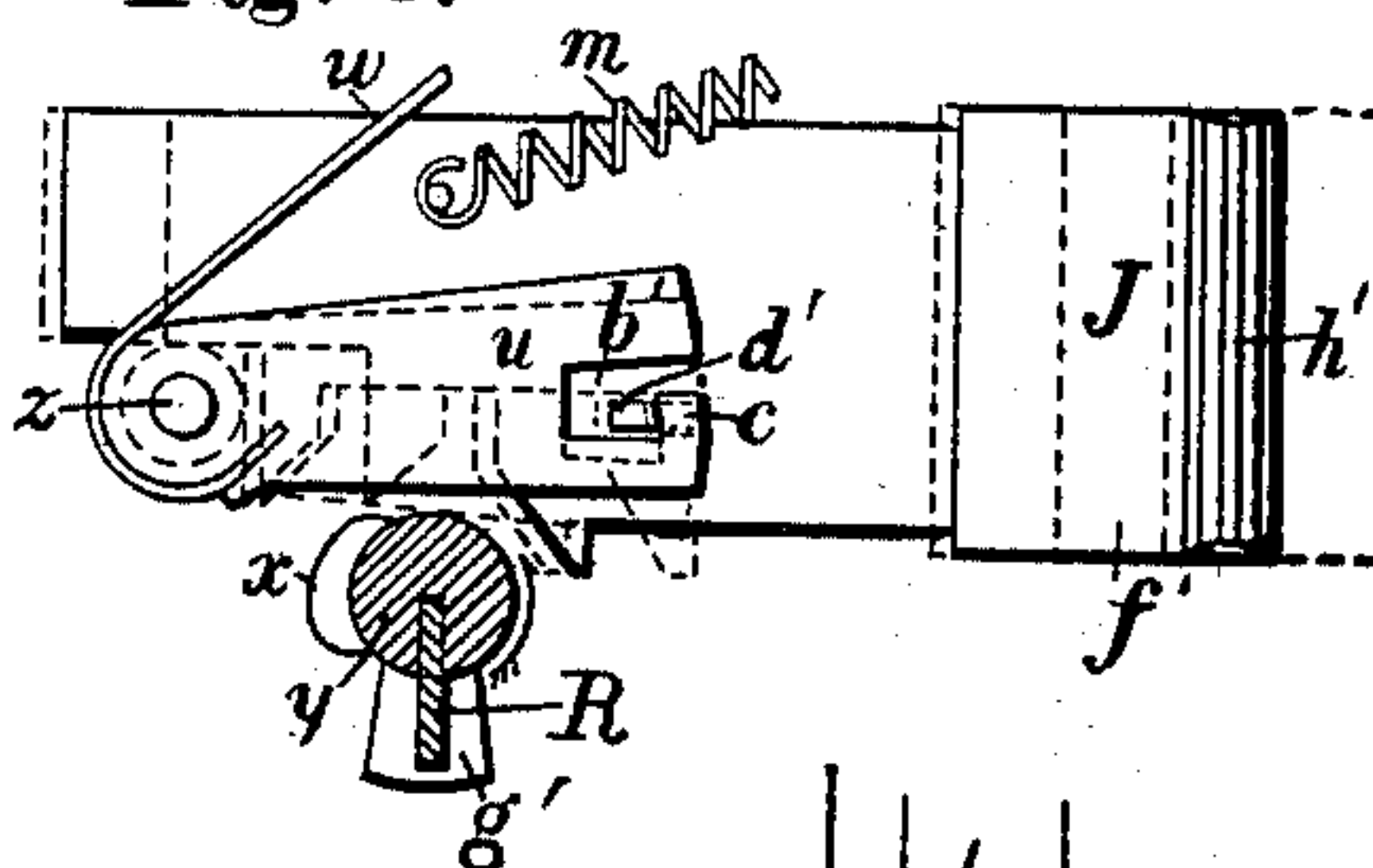


Fig. 7.

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CUT-OUT FOR ELECTRIC-SIGNAL BOXES.

SPECIFICATION forming part of Letters Patent No. 592,427, dated October 26, 1897.

Application filed September 29, 1896. Serial No. 607,313. (No model.)

To all whom it may concern:

Be it known that I, LOUIS W. MILLER, a citizen of the United States, residing at Rochester, in the county of Monroe, in the State of New York, have invented certain Improvements in Cut-Outs for Electric-Signal Boxes, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to certain improvements in cut-outs for electric-signal boxes designed to prevent the closing of the door and the cutting the instrument out of circuit by means of a supplemental lock arranged to automatically eject its bolt when the door is opened, so as to keep the door open until such lock is operated by a person provided with the proper key, which improvements are fully described in the following specification and the accompanying drawings, the novel features thereof being specified in the claims annexed to the said specification.

In the accompanying drawings, representing my present improvements, Figure 1 is a front elevation of an electric-signal box with the outer door open. Fig. 2 is an elevation of my improved cut-out. Fig. 3 is a side view of the same. Fig. 4 represents one of the posts detached. Fig. 5 represents the interior of the lock which prevents the outer door of the electric-signal box from being shut, which would interfere with the alarm sent in. Fig. 6 represents the bolt and tumbler of the same detached. Fig. 7 is a side view of the lock.

In the accompanying drawings, A represents the case of an electric-signal box; B, the door; C, the cut-out, and D the supplemental lock, which prevents the closing of the door. The door is also provided with the usual lock E, arranged to unlock the door from the outside.

F is an inner door to the box which protects the mechanism behind it and which in Fig. 1 is shown partially broken away to display the cut-out.

The mechanism inside the box may be of any ordinary or preferred construction for fire-alarm, police, or other purposes and adapted to transmitting a suitable electric

signal by the manipulation of a handle or other movable part G.

My improved cut-out prevents an electric current of any kind from entering the box when the outer door B is closed, and the supplemental lock D prevents the accidental or intentional closing of the door, so as to operate the cut-out, which would prevent the transmission of signals from the box. The door B is provided on the inside with a stud H, which when the door is closed makes contact with the pin I and forces it inward, thereby operating the cut-out and breaking the connection between the mechanism of the box and the line-wires. The bolt J of the lock D is forced outward by a spring *m*, Figs. 5 and 6, when door B is opened, and it remains in such position, preventing the shutting of the door by contact with the case at *b*, Fig. 1, so that the door cannot be closed until the bolt is drawn inward by the use of a suitable key, which operates the tumbler or tumblers of the lock and draws the bolt J inward into the lock. The box then once opened remains opened, and the cut-out forms an electrical connection with the line-wires until the lock D is operated so as to retract the bolt J, after which the door can be fully closed. The inner door F is provided with a lock *c* of any usual construction. When the outer door B is opened, the stud H thereon is withdrawn from contact with the pin I of the cut-out, and the spring K, Fig. 2, then moves the slide L so as to close the electric circuit.

The cut-out C consists, essentially, of the parallel ways or guides M M', the transverse end blocks N N', of insulating material, the slide L, which is also of insulating material, and the posts, contact-arms, and plates, which effect the electrical connection. The ways M M' are preferably channeled to receive the ends of the insulating end blocks N N', which are secured by screws, as shown. One or both of the ways may be provided with perforated ears *a*, Fig. 2, by which the cut-out is fastened to the interior of the signal-box. The slide L is arranged to move freely in the ways M M', being constantly pressed outward or toward the left in Figs. 2 and 3 by the spring K, which bears against the slide and

is partially seated in the end block N'. The posts O O' are attached to the end block N either directly or by means of the plates *e e'*, which are fastened to the end bar by screws inserted from the back and which permit electrical connection to be made between the posts by inserting pins in the holes between the plates *e e'* and the plate *d*. The pin I is securely attached to the slide L and passes freely through an opening in the end block N. It is preferably provided on its outer end with an insulating-block *f*, Figs. 2 and 3, which makes contact with the stud H on the door B. The posts P P' are attached to the end block N' in any suitable manner. The slide L is provided with the contact-plates *g* and *i i'*, which are held in place in any suitable manner, as by screws passing through from the rear side of the slide. The posts O O' are provided with the pivoted contact-arms *l l' l'' l'''* and the posts P P' with the contact-arms *n n'*. These contact-arms extend inward and downward, so that their ends make contact with the plates *g* and *i i'*. The plates *g* and *i i'* are separated from each other by a suitable interval. In the position shown in the full lines in Figs. 2 and 3 the contact-arms all bear upon the plates *i i'*; but when the slide L is moved inward by the closing of the door B, as indicated by the dotted lines in the said figures, the arms *n n'* are in contact with the plates *i i'* and the arms *l l' l'' l'''* in contact with the plate *g* only. The upper ends of the contact-arms are inserted in slots in the posts, being pivoted therein by the pins *r r'*. The contact-arms are pressed downward against the plates by the springs *q*, inserted in holes *s s'*, Fig. 4, in the posts, a separate spring being used for each of the pairs of arms *l l' l'' l'''*.

It will be noticed that the arms *l' l'''* are shorter than the arms *l l''*, the result of which is that the plate *g* will make contact with the shorter arm before the longer arms leave the plates *i i'*, whereby the opening of the circuit is prevented. If the circuit were opened, it would cause the mechanism to strike a false blow or give a false signal in the engine-houses, &c., the same as if one of the line-wires were broken.

The connection is made with the line-wires by the conductors *v v'*, which enter the bottom of the box A and pass through the side of the inner case in such fashion as to reach the posts *o o'*. The posts P P' are connected with the binding-screws *t t'*, Fig. 1, by the wires 1 and 2, and these binding-screws are connected with the signal mechanism in the inner case in any suitable manner. A lightning-arrester *t''* may be employed and also the signal-key Q.

The construction of the supplemental lock D on the door B will be understood from Figs. 5, 6, and 7. In Fig. 5 the side of the case next the observer is omitted. The case is of any ordinary construction, the bolt J being arranged to slide to and fro therein. The

bolt J is given a constant tendency to move outward by the spring *m*.

u, Figs. 5 and 6, represents a tumbler or series of tumblers, which are pivoted at *z* and pressed downward by the spring or springs *w*. R, Fig. 6, is the key by which the key-center *y* is turned and the lock operated. The arrangement is such that when the door B is opened the bolt J is caused to slide in the case outward by the springs *m*, Figs. 5 and 6, as indicated by the full and dotted lines in the drawings, so that the flat surface *f'*, Fig. 1, on the bolt will contact with the edge *b* of the case and prevent the complete closing of the door and consequently the cutting off of the current by the cut-out C by the contact of the stud H with the pin I. When the bolt J is in its outermost position, the bevel *h'* on its end projects beyond the inner edge of the case, and the closing of the door is prevented by the flat surface *f'* striking against the flat surface *b* of the edge of the case. The outer tumbler *u* is provided with a slot *b'*, having a hook *c'*, with which the pin *d'* on the bolt J engages.

Supposing the bolt J to be all the way out, as indicated in Fig. 1, the pin *d'* is outside of the tumblers, and the key-center being turned by the key in the direction indicated by the arrow in Fig. 6 the tumblers are raised by the key, so that the pin *d'* is brought into line with the slots *b'*, and the arm *g'*, engaging with a notch in the bolt J, moves it to the left, the pin *d'* passes into the slots *b'* in the tumblers, and the outer tumbler is then given a further upward movement by the cam *x* on the key-center, so as to engage the pin *d'* with the hook *c'*, by which the bolt is prevented from moving outward. The inner edge of the hook *c'* is beveled, as indicated in Figs. 5 and 6, and the pin *d'* is given a corresponding shape, so that the parts remain engaged with the bolt drawn in until the beveled surface *h'* on the bolt, striking against the edge *b* of the case, moves the bolt inward slightly, and this movement disengages the pin *d'* from the hook *c'* and allows the spring *w* to swing the tumbler *u* down, so that the pin *d'* can move out of the slot *b'* and the bolt J can resume its outermost position as soon as the door B is opened. The end of the bolt J bears against the inside of the case at *b* until the door is opened, when the spring *m* forces the bolt J outward into such position that the door cannot be shut, owing to the contact of the surfaces *f'* and *b*. The door B is locked when closed by the lock E. The supplemental lock D does not secure the door B in its closed position, but simply prevents the door from being closed when once open until the person who carries the key to it withdraws the bolt and engages the parts in the position represented by Fig. 5. The door can now be closed, the bevel *h'* pressing the bolt inward slightly and releasing the pin *d'* from hook *c'*, as before described. The tumblers prevent the

bolt from being pushed inward when the door is open either by accident or design.

My invention is applicable to both fire-alarm and police signal-boxes, or it may be used for other purposes.

I claim—

1. The combination with the mechanism of an electric-signal box, of suitable ways connected together at their ends by bars of insulating material, a slide of insulating material arranged to travel on the ways and provided with contact-plates *g, i i'*, the posts *O O'* and *P P'*, the contact-arms *n n', l l'* and *l'' l'''*, pivoted to the posts, the springs *q*, and suitable electric connections, substantially as described.

2. The combination with an electric-signal box provided with a door and lock, of a cut-out arranged to be operated by the closure of the door, and a supplemental spring-actuated

lock attached to the door and having a movable bolt adapted to prevent the closing of the door until retracted by the key, substantially as described.

3. The combination with an electric-signal box provided with a door and lock, of a cut-out arranged to be operated by the closure of the door, the supplemental lock *D* attached to the door and having bolt *J* provided with spring *m* and pin *d'*, the tumbler *u* having hook *c'*, and the key *R*, whereby the bolt is automatically projected on opening the door to prevent the closing of the door until the bolt is retracted by the key, substantially as described.

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