(No Model.)

R. HUDIE.

LIGHTNING ARRESTER FOR FIRE ALARM BOXES.

No. 437,397. Patented Sept. 30, 1890.

Fig. 1.

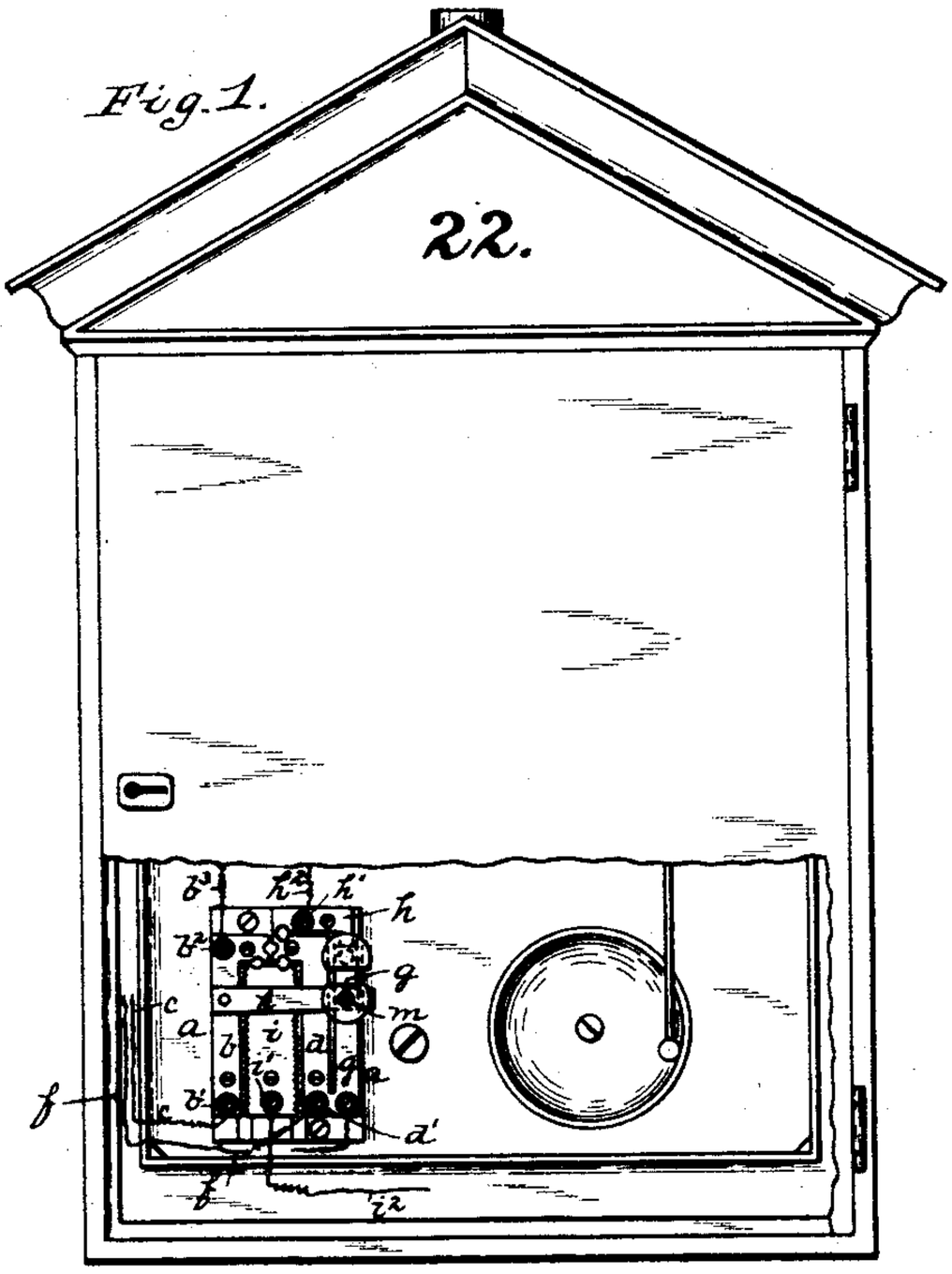
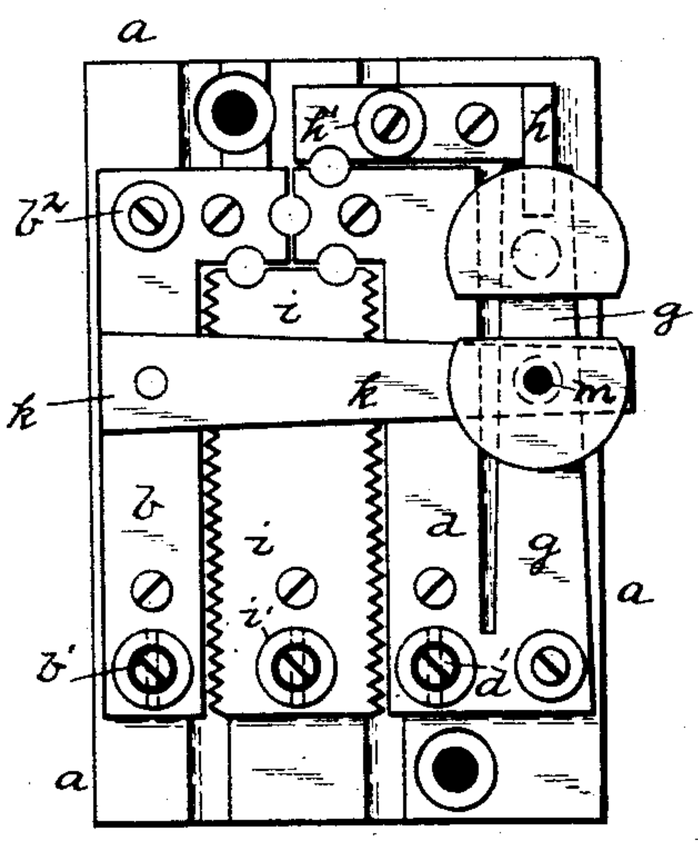


Fig 2.



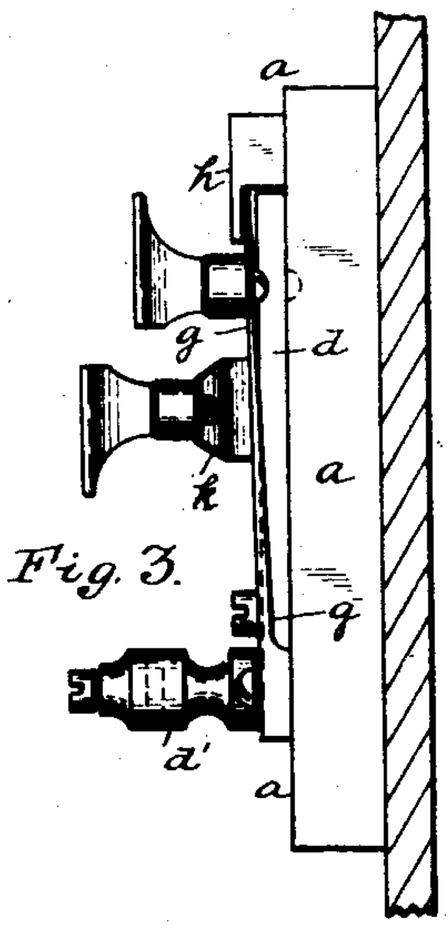


Fig. 3.

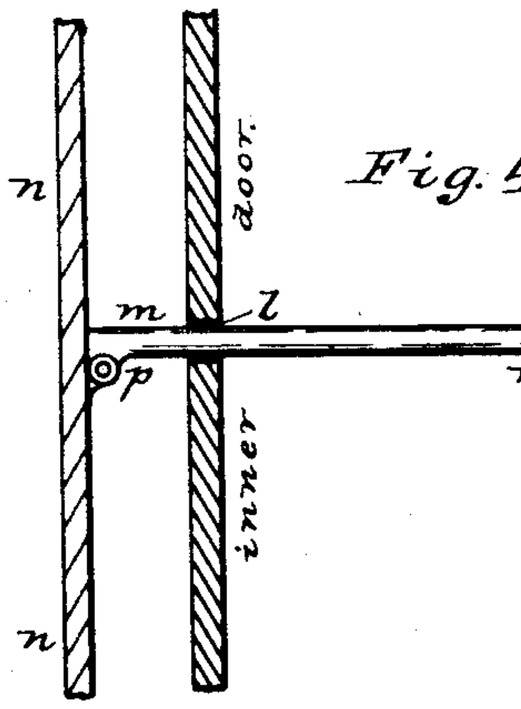
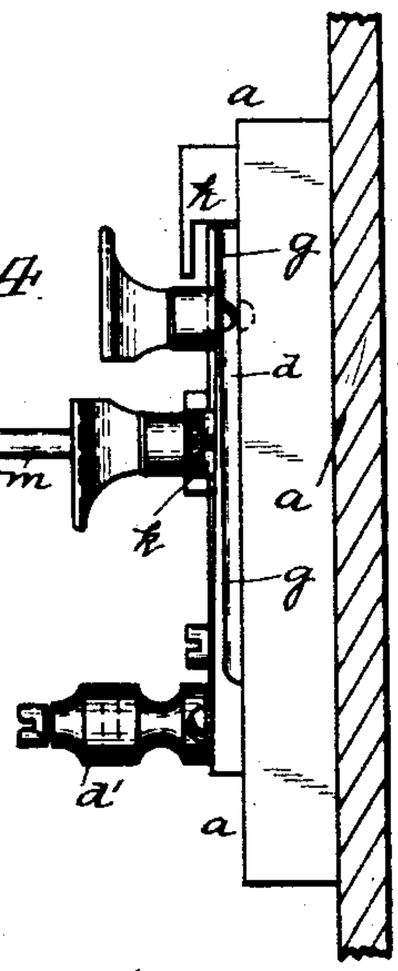


Fig. 4.



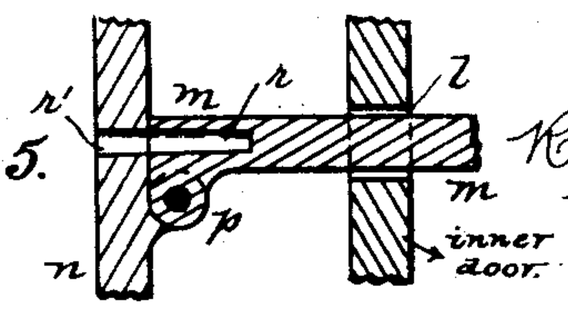


Fig. 5.

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ROBERT HUDIE, OF ALLEGHENY, PENNSYLVANIA.

LIGHTNING-ARRESTER FOR FIRE-ALARM BOXES.

SPECIFICATION forming part of Letters Patent No. 437,397, dated September 30, 1890.

Application filed June 11, 1890. Serial No. 355,045. (No model.)

To all whom it may concern:

Be it known that I, ROBERT HUDIE, a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Lightning-Arresters for Fire-Alarm Boxes; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to fire-alarm-telegraph boxes, its object being to provide for cutting off the electric connection of the wires leading to the box from the coils operating the mechanism therein, so that such operative mechanism is only brought into electric connection when it is utilized to give the necessary signal, this being the only time when it is required to be in circuit. In the ordinary construction of these boxes and in the ordinary fire-alarm systems the line-wire leads from signal-box to signal-box, the electric connection being carried through the mechanism of the box, and as a consequence in case of any heavy current in the wire—such as from lightning or from accidental electric connection with electric-light or electric-motor wires—the high current is carried through the coils of the automatic-alarm apparatus within the fire-alarm boxes and acts to burn them out, so destroying the coils and necessitating the replacing thereof. As such accidents are liable to occur at any time and may render the signal apparatus useless, and as the boxes are only employed in cases of emergency, it is thus seen to be of great importance to prevent the passing of any such currents through the coils of the apparatus and the destroying of the same; and the object of my invention is to overcome this difficulty.

To these ends my invention consists, generally stated, in combining with the ordinary switch-board a fire-alarm apparatus provided with a spring-key normally in circuit, a cross-key extending from one pole to the other of the apparatus and adapted when pressed down to cut the coils of that particular signaling apparatus out of circuit, this "cross-cut-key," as I have termed it, by connecting the two poles of the battery, forming a circuit through the same, and so in no way interfering with the regular circuit through the box in which that particular signaling apparatus is located.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a face view of the fire-alarm switch-board having my invention applied thereto. Fig. 2 is an enlarged face view of the same. Fig. 3 is a side view of the same. Fig. 4 is an enlarged sectional view of a part of the signaling-box when closed, showing the means employed to operate the crosscut-key; and Fig. 5 is a detail view showing the connection of the operating-pin with the door and the manner of operating the same.

Like letters of reference indicate like parts in each figure.

As the operative mechanism of the signaling apparatus forms no part of the present invention, I will not describe the same, but will simply describe the ordinary switch-board and the application of my improvements in connection therewith. The switch-board *a* has the pole-plate *b*, provided with the binding-post *b'*, to which the line-wire *c* connects, and with the post b^2, from which the wire b^3 extends to the coils of the signaling apparatus.

For convenience of description the plate *b* will be called the "positive" plate. On the other side of the switch-board is the plate *d*, which may be termed the "negative" plate, that plate having the binding-post *d'*, to which the line-wire *f* is connected. The negative plate *d* has formed thereon the spring-key *g*, which is held normally in contact with the plate *h*, having the binding-post *h'* thereon, to which the wire h^2 leads from the coils of the signaling apparatus. As so constructed it is evident that the current through the entire system passes through the coils of the signaling apparatus in each particular box, the spring-key *g* being simply employed in the box for signaling purposes in case any person connected with the fire-department desires to signal to the central office. Between the plates *b* and *d* is the lightning-arrester *i*, from the binding-post *i'* of which the ground-wire i^2 extends. Extending across from the plate *b* to the key *g* is what I have termed the "crosscut-key" *k*, this key being a spring-key, which is normally raised out of circuit, but can be depressed so as to be forced into contact with the spring-key *g* and force said

spring-key out of contact with the plate *h*, so cutting out from the circuit the coils of the fire-alarm apparatus in that particular box. When the crosscut-key *k* is depressed, while it cuts out the coils of the signaling apparatus in that box it also forms a cross-cut from the pole-plate *b* over to the pole-plate *d*, so that the regular circuit through the line-wire will be maintained through this cross-cut key.

For the purpose of operating the crosscut-key and causing it to depress the spring-key *g* when the box is closed I preferably employ a pin *m*, which is secured to the outer door of the box and extends through an opening *l* in the inner door thereof, said opening being in line with the crosscut-key *k*, so that when the outer door is closed the pin *m* by pressing upon the key will force it into contact with the spring-key *g* and force that key out of contact with the plate *h*. This pin *m* is preferably hinged to the outer door *n*, as at *p*, and when the outer door is opened, in order to obtain access to the signaling lever or button which extends through the inner door, the pin *m* is withdrawn and the crosscut-key springs back out of contact with the spring-key *g* and permits that key to form contact with the plate *h*, so establishing the circuit through the coils of the signaling apparatus in that box, the coils of the signaling apparatus being thus automatically brought into circuit. The apparatus thus acts to cut out the coils of the signaling apparatus, except when signaling from that particular box; and it therefore follows that in case of severe current upon the line-wire instead of this being permitted to pass through the signaling apparatus of one or more boxes and to burn them out its only action is to pass through to the pole-plates and thence out of the box, being finally disseminated through the lightning-arresters in the different boxes and carried to the ground, no harm being done thereby.

In order to render it easy to enter the pin *m* through the inner door, I generally form in the end thereof a keyway *r* and in the outer door *n* a like keyway *r'*, through which keyways a suitable key may be inserted by which the pin can be held in its raised position, and as soon as the pin enters the hole *l* in the inner door it will be directed thereby into such position as to bear upon the crosscut-key *k*, bringing it into contact with the spring-key and forcing the spring-key out of contact with the plate *h*, as above described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a fire-alarm switch-board having a spring-key thereon normally in circuit, of a spring-operated crosscut-key extending from one pole-plate above the spring-key to the other pole-plate, whereby when the crosscut-key is pressed down the line is closed between the pole-plates through the crosscut-key and the operating-coils of the alarm-box are cut out of circuit, substantially as and for the purposes set forth.

2. The combination of a fire-alarm switch-board having one pole-plate thereof provided with a spring-key normally in circuit, a spring-operated crosscut-key extending from the other pole-plate above said spring-key, whereby when the crosscut-key is pressed down the line is closed, and a pin secured to the door of the apparatus and adapted to press down the crosscut-key, substantially as and for the purposes set forth.

3. The combination of a fire-alarm switch-board having one pole-plate thereof provided with a spring-key normally in circuit, a spring-operated crosscut-key extending from the other pole-plate above and adapted when pressed down to cut out said spring-key, and a pin secured to the door of the apparatus and adapted to press down the crosscut-key, said pin being hinged to the outer door and adapted to pass through the inner door, substantially as and for the purposes set forth.

4. A combination of a fire-alarm switch-board having one pole-plate thereof provided with a spring-key normally in circuit, a spring-operated crosscut-key extending from the other pole-plate above and adapted when pressed down to cut out said spring-key, and a pin secured to the door of the apparatus and adapted to press down the crosscut-key, said pin being hinged to the outer door and adapted to pass through the inner door and provided with a keyway in the end thereof and said door having a keyway in line with the keyway of the pin, substantially as and for the purposes set forth.

In testimony whereof I, the said ROBERT HUDIE, have hereunto set my hand.

ROBERT HUDIE.

Witnesses:
J. N. COOKE,
ROBT. D. TOTTEN.