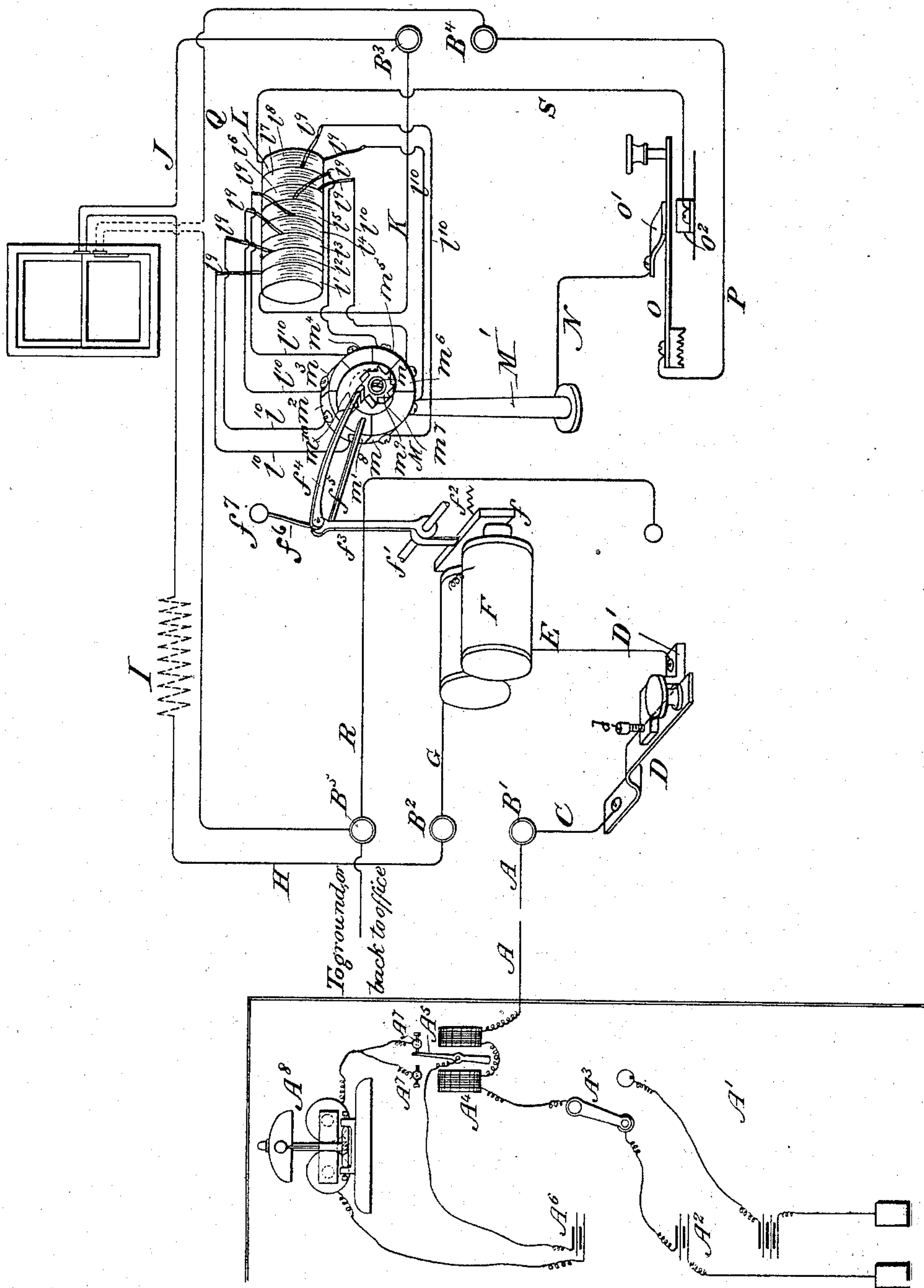


J. TOMNEY.
ELECTRIC BURGLAR ALARM.

Patented June 4, 1895.



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James Tomney
by Edwin H. Brown
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UNITED STATES PATENT OFFICE.

JAMES TOMNEY, OF NEW YORK, N. Y.

ELECTRIC BURGLAR-ALARM.

SPECIFICATION forming part of Letters Patent No. 540,341, dated June 4, 1895.

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To all whom it may concern:

Be it known that I, JAMES TOMNEY, of New York, in the county and State of New York, have invented a certain new and useful Improvement in Electric Burglar-Alarms, of which the following is a specification.

My improvement relates to that class of electric burglar alarms which comprise circuits extending to an office where watchmen are kept. These electric burglar alarms have a resistance device or resistance devices placed in that part of the circuit which extends through the premises to be guarded. In Patent No. 289,471, granted to me December 4, 1883, such a burglar alarm is set forth. It is common in devices of this kind to employ a visual indicator, commonly consisting of a galvanometer, in the office where watch is kept, as illustrated in my said patent.

My present improvement consists in the combination with a signaling instrument, a commutator or equivalent contrivance and resistance devices, of a circuit changer for bringing into circuit temporarily a predetermined resistance at the time of closing up the guarded premises, all these parts being located in the guarded premises. The advantage of having a predetermined resistance in the circuit at the guarded premises at the time of closing the latter, is due to the fact that it relieves the watchman at the office of all doubt as to the proper closing of the guarded premises at the time the occupants signal to the office that they are about to leave, because it enables him to distinguish by a resistance indicator the act of closing.

I will describe an electric burglar alarm embodying my improvement and then point out the novel features in claims.

The accompanying drawing represents a diagrammatic view of a burglar alarm embodying my improvement.

A' designates the office where watch is kept.

A² designates the main battery in such office one pole of said battery being connected with the ground and the other pole to the contact piece of the switch A³.

A⁴ designates a galvanometer, one end of the coils of which is connected to a contact plate forming part of the switch A³. To the other end of the coils is connected the conductor A which extends thence to the guarded

structure. If desired, the office may be provided with another battery of greater electromotive force than the battery A² one pole of this battery running to the ground and the other to a contact plate forming part of the switch A³. As is obvious, either of these batteries may by proper manipulation of the switch arm, be connected with the alarm.

A⁵ designates the needle of a galvanometer to the pivot of which is connected a conductor, running to one pole of the local battery A⁶, the other pole of which is connected by means of a suitable conductor, to two contact pieces, A⁷ which are adjustable relatively to each other. In this circuit is comprised the electro-magnetic bell A⁸, which is operated upon the closing of the circuit.

The wire A extending to the guarded premises is shown as being there connected with a binding post B'. From the binding post B', a wire C extends to a circuit breaker D, here shown as made in the form of a key. The key consists of a strip of metal fastened at one end to a suitable support having the wire C electrically connected to it. With this key is combined a contact piece or keeper D'. Normally the key D by its resilience rises so as to impinge against the contact piece D', and then the circuit will be continued.

The keeper or contact piece D' is shown as comprising an adjustable part consisting of a screw d working through its upper portion and projecting in a position to be reached by the key D on the rising of the latter. From the keeper or contact piece D' a wire E extends to one end of the coils of an electro-magnet F. The other end of the coils of this electro-magnet is connected by a wire G to a binding post B². From this binding post a wire H extends. This wire is intended to form part of the local circuit which is to be continued through windows, doors, partitions, skylights, &c., in the guarded premises. An arbitrary representation of partition wiring is represented at I. A well-known method of window wiring is also illustrated in the drawings in which the wires are connected with contact plates secured to the jamb and a similar although larger contact plate is secured to the sash, the raising of the sash causing its plate to connect the contact plates upon the jamb whereby a short circuit ensues. A wire

J extends from the window to a binding post B³. From the binding post B³ a wire K extends to a resistance device L. This resistance device is represented as comprising a number of coils l¹ l² l³ l⁴ l⁵ l⁶ l⁷ l⁸ of insulated wire having loops l⁹ extending from their adjacent ends, and leading wires l¹⁰ extending from the loops to plates m¹ m² m³ m⁴ m⁵ m⁶ m⁷ m⁸ of a commutator M. Of course the plates of this commutator are insulated from each other. It is not intended that the commutator shall have any movement. I have shown it as supported upon a stud m extending from a post M'. Both the post and the stud are made of metal so as to form part of the circuit. On the stud m a ratchet wheel m⁹ is loosely mounted. It has attached to it a contact piece m¹⁰. Hence when the ratchet wheel rotates relatively to the commutator, this contact piece will be carried around the commutator. Preferably the contact piece will be resilient and so constituted as to have a side bearing against the plates of the commutator. Manifestly, when the ratchet wheel is rotated and the contact piece carried around the plates of the commutator, it will establish electrical connections between different plates of the commutator and consequently cut out or introduce coils of the resistance device L.

It will have been understood from what has already been said that the circuit is continued through the ratchet wheel to the stud m and thence to the post M'. From the post M' a wire N extends to a contact piece O'. Opposite the contact piece O' is a similar contact piece O². Between these two contact pieces a circuit changer O, here shown as made in the form of a key, is arranged. This key is shown as made of a strip of resilient metal so constituted that normally it will impinge against the contact piece O'. Obviously, it may be depressed so as to sever it from the contact piece O' and press it against the contact piece O². From the key O a wire P extends to a binding post B⁴. A wire Q extends from the latter to a contact piece of the window and from thence to a binding post B⁵, and from this binding post a wire R extends to the ground or back to the office. From the contact piece O² a wire S extends to one end of the last coil l⁸ of the resistance device L.

Combined with the electro-magnets F is an armature f hung from a shaft f' and retracted by springs f² from the electro-magnet when the latter is de-energized. An arm f³ extends upwardly from the shaft f'. To the upper end of this arm is pivotally connected a pawl f⁴ which engages with the teeth of the ratchet wheel m⁹. There also extends from the arm f³ a stop pawl f⁵. This is not pivotally connected to the arm f³, but is rigidly clamped thereto by means of a screw and nut or otherwise. Whenever the electro-magnet F attracts its armature f, the arm f³ being above the shaft f' whereby said armature is supported is of course moved in the reverse direction. Thus it is enabled to force the pawl

f⁴ forward in the direction to move the ratchet wheel m⁹ onward one tooth. At the proper time, the extremity of the arm f⁵ reaches the peripheral portion of one of the teeth, arresting the ratchet wheel, so that the contact piece m¹⁰ will have no further movement. From the shaft f' an arm f⁶ extends upwardly and is provided at its upper extremity with a clapper f⁷ for a bell. Not shown. Each time the ratchet wheel is moved one tooth, the bell will be sounded, and conversely the bell cannot be sounded without moving the ratchet wheel one tooth. It follows, therefore, that each time the bell is used for signaling, the resistance will be changed because the contact piece m¹⁰ will be connected with a different plate of the commutator. Manifestly, the watchman at the office can at any time by energizing the electro-magnet F cause a change of resistance in the guarded premises.

The circuit changer O and the circuit breaker D, constitute a signaling apparatus, and it is intended that the person whose duty it is to close the guarded premises shall, before leaving manipulate this apparatus, so as to apprise the watchman at the office of the fact that he is about to leave. After he has closed the windows and doors guarded by the alarm, he should press down the circuit changer O. This will break connection with the contact piece O' and consequently the contact piece m¹⁰ of the commutator, and make connection with the contact piece O² and the conductor S leading therefrom to the resistance which it is desired to have in the circuit at the time of closing. The circuit now passes from the resistance to the binding post B³ by way of wire K and from thence to and through the galvanometer coils A⁴ and back to binding post B⁴, the circuit being completed through the depressed circuit changer O. He should now while holding key O depressed, signal the office by depressing the circuit breaker D, which breaks the circuit including the galvanometer coils at the office, and the galvanometer is thereby actuated. He should now release the circuit breaker D to restore the continuity of the circuit, but should continue the holding down of the circuit changer O until he receives a return signal from the office, which may be given by means of the bell, the watchman at the office switching in the battery of greater electromotive force to actuate the armature f. After receiving the signal, the person at the guarded premises, may release the circuit changer O, so as to re-establish electrical contact with the commutator.

By this improvement, I provide for always having in the circuit at the time of closing a predetermined resistance known to the watchman at the office, and this regardless of whether the instrument represented shall have been used in signaling during the day and have thereby caused changes of resistance.

Perhaps I ought to add by way of explana-

tion that it is a common thing to provide in such a burglar alarm as that in which I have illustrated my improvement a switch or other device for shunting out during the day the resistance device L and the various devices employed for protecting doors, windows, &c., but leaving said instrument in circuit, as well as the means for protecting partitions, skylights and like devices.

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

1. In an electric burglar alarm wherein the circuit extends through premises to be guarded and to an office where watch is kept, 15 the combination with a signaling instrument, a commutator or equivalent contrivance and resistance devices, of a circuit changer separate from the commutator for bringing into circuit temporarily a predetermined resistance at the time of closing up the guarded 20 premises, all these parts being located in

the guarded premises, substantially as specified.

2. In an electric burglar alarm wherein the circuit extends through premises to be guarded and to an office where watch is kept, 25 the combination with an electro-magnet, a commutator or equivalent device whose operation may be caused by said electro-magnet and resistance devices, of a circuit changer separate from the commutator for bringing 30 into circuit temporarily a predetermined resistance at the time of closing up the guarded premises, all these parts being located in the guarded premises, substantially as specified. 35

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES TOMNEY.

Witnesses:

ANTHONY GREF,
C. R. FERGUSON.