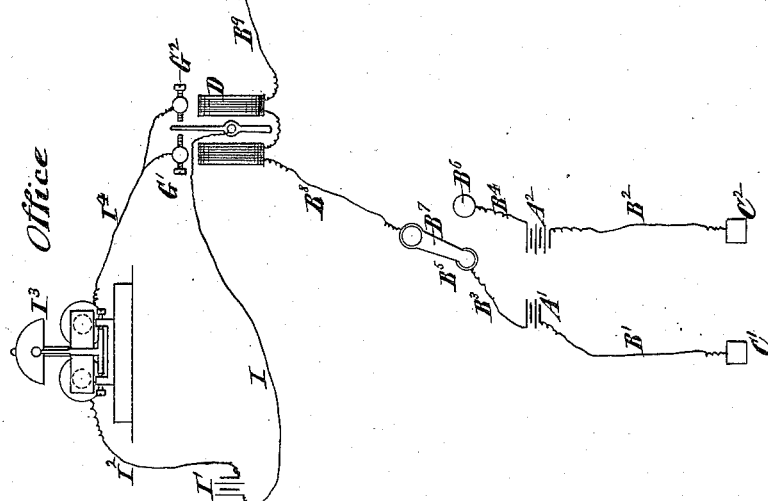


J. TOMNEY.  
BURGLAR ALARM.

Patented June 15, 1886.



Witnesses  
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# UNITED STATES PATENT OFFICE.

JAMES TOMNEY, OF NEW YORK, N. Y.

## BURGLAR-ALARM.

SPECIFICATION forming part of Letters Patent No. 343,868, dated June 15, 1886.

Application filed December 3, 1885. Serial No. 184,600. (No model.)

*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 new and useful Improvement in Burglar-Alarms, of which the following is a specification.

According to an improvement in electrical burglar alarms which I have previously made and patented, the resistance in the circuit is from time to time varied to frustrate the efforts of burglars who may have obtained knowledge of the amount of resistance existing in the circuit at any particular time.

The object of my present improvement is to cause a burglar-alarm to record the number of changes which are made in the resistance of its circuit.

I will describe a burglar-alarm embodying my present improvement, and then point out the features of the improvement the claims.

In the accompanying drawings, Figure 1 is a diagrammatic view of a burglar-alarm embodying the improvement. The burglar-alarm is one of the kind which comprises a circuit extending through the house or place of business or safe to be guarded, and extends thence to an office, where devices are employed to indicate to watchmen stationed there any effort which may be made toward effecting an entrance to the guarded premises. I have indicated that portion of Fig. 1 which is intended to illustrate the house or place of business guarded by marking it with the words "Guarded Structure," and the portion which is designed to represent the office where watchmen are kept by marking the same with the word "Office." Fig. 2 of the drawings is a side view of a resistance-changing device.

A<sup>1</sup> A<sup>2</sup> designate electric batteries located in the office where watchmen are kept. Wires B<sup>1</sup> B<sup>2</sup> connect them with earth-plates C<sup>1</sup> C<sup>2</sup>, and other wires, B<sup>3</sup> B<sup>4</sup>, connect them with metallic contact-pieces B<sup>5</sup> B<sup>6</sup>, with which a metallic switch-arm, B<sup>7</sup>, operates. A wire, B<sup>8</sup>, extends from the switch-arm B<sup>7</sup> to one of two coils comprised in a galvanometer, D. These two coils are connected together by an intermediate wire. A wire, B<sup>9</sup>, extends from the other coil of the galvanometer and from the office to the guarded structure. In the guarded structure this wire B<sup>9</sup> is connected

with the coils of an electro-magnet, E, of a recording device. A wire, B<sup>10</sup>, extends from the electro-magnet E to an electro-magnet, F, of a resistance-changing device. This resistance-changing device is in electrical communication with the ground, as I shall hereinafter describe more in detail.

The recording device, of which the electro-magnet E forms a part, comprises a time-piece, E<sup>1</sup>, operated in any suitable manner—as, for instance, by a spring or weight, and having a revolving dial-plate. The dial-plate has detachably secured to it a dial made, preferably, of paper or other cheap material, and marked with numbers indicative of hours of the day. The armature E<sup>2</sup> of the electro-magnet E is free to vibrate, as usual. It will normally be held away from the electro-magnet by a spring in a well-known manner. It carries a stylus, pencil, or other marker, E<sup>3</sup>, which extends over the dial of the time-piece E<sup>1</sup>, without, however, acting on the latter while the armature occupies its normal position. When the electro-magnet is energized sufficiently to attract its armature, the marker will be caused to impinge upon the dial of the time-piece, and the proximity of the mark made by the marker to one of the numbers indicative of hours upon the dial will indicate and record the hour at which the mark was made.

The electro-magnet F of the resistance-changing device has a vibratory armature, F<sup>1</sup>, which is normally held away from the electro-magnet by a spring. This armature is mounted upon a lever having a section of insulating material, provided with a pawl, F<sup>2</sup>, that operates in conjunction with a metallic ratchet-wheel, F<sup>3</sup>, affixed to a spool, F<sup>4</sup>. The spool F<sup>4</sup> is supported by metal journals so as to be free to rotate. The spool F<sup>4</sup> has several convolutions or layers of wire wound upon it. One end of this wire is in electrical communication with the ratchet-wheel F<sup>3</sup>, and consequently with the adjacent metallic journal of the spool. The wire wound upon the spool is looped at the end of these several layers or convolutions, and these loops are connected to metal plates f, that are affixed to a wheel, F<sup>5</sup>, of insulating material, that is secured to the spool. The outer end of the wire on the spool is also

connected to a plate, *f*, on the wheel *F*<sup>5</sup>. A spring-finger, *F*<sup>6</sup>, impinges upon the wheel *F*<sup>5</sup> and makes electrical contact with the plates *f* thereof, one at a time. The spring-finger *F*<sup>6</sup> is connected with the electro-magnet *F* by a wire, *B*<sup>11</sup>. The metallic journal of the spool *F*<sup>4</sup>, which is adjacent to the ratchet-wheel *F*<sup>3</sup>, is connected by a wire, *B*<sup>12</sup>, to a binding-post, and this binding-post is connected by a wire, *B*<sup>13</sup>, with an earth-plate, *C*<sup>3</sup>.

Whenever the switch-arm *B*<sup>7</sup> is in contact with the contact-piece *B*<sup>5</sup>, the battery *A*<sup>1</sup> supplies an electric current to the burglar-alarm circuit. The current from this battery is not sufficiently powerful to cause the electro-magnet *E* of the recording device to attract its armature, or to cause the electro-magnet *F* of the resistance device to attract its armature. Whenever the watchman or attendant at the office desires to effect a change of the resistance in the burglar-alarm circuit at the guarded structure, he moves the switch-arm *B*<sup>7</sup> over the contact-piece *B*<sup>6</sup>. Then the battery *A*<sup>2</sup> is put into communication with the burglar-alarm circuit. This battery *A*<sup>2</sup> supplies a current which energizes the electro-magnet *E* of the recording device and the electro-magnet *F* of the resistance-changing device sufficiently to cause them to attract their armatures. Thereupon the stylus will make a mark upon the dial of the time-piece *E*<sup>7</sup>, and the pawl *F*<sup>2</sup> will rotate the ratchet-wheel *F*<sup>3</sup>, spool *F*<sup>4</sup>, and wheel *F*<sup>5</sup> so that a different contact piece or plate *f* of the latter will be shifted into contact with the spring-finger *F*<sup>6</sup>. As before explained, this will vary the amount of resistance-wire of the spool *F*<sup>4</sup> which is introduced into the burglar-alarm circuit. The switch-

arm *B*<sup>7</sup> is only left upon the contact-piece *B*<sup>6</sup> momentarily. It will be understood that from time to time the resistance is thus changed. A record will be made to that effect upon the dial. The needle of the galvanometer *B* is free to vibrate between two adjustable contact-pieces, *G*<sup>1</sup> *G*<sup>2</sup>. A wire, *I*, extends from the needle to a battery, *I*<sup>1</sup>, a wire, *I*<sup>2</sup>, extends from the battery *I*<sup>1</sup> to the electro-magnet of an electric magnetic bell, *I*<sup>3</sup>, and a wire, *I*<sup>4</sup>, extends from the latter and has branch connections with the adjustable contact-pieces *G*<sup>1</sup> *G*<sup>2</sup>.

When the resistance is changed by the rotation of the spool *F*<sup>4</sup> and wheel *F*<sup>5</sup>, the attendant or watchman at the office will need to readjust the contact-pieces *G*<sup>1</sup> *G*<sup>2</sup>.

Whenever the needle of the galvanometer touches either of the contact-pieces *G*<sup>1</sup> *G*<sup>2</sup>, the electro-magnetic bell will ring an alarm.

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

1. In an electric burglar-alarm, the combination, with a main circuit, of a resistance-changing device, and a recording device for permanently recording changes in resistance, substantially as specified.

2. In an electric burglar-alarm, the combination of a main circuit, two batteries of different potentials, a switch whereby either battery may be connected with the circuit, an electro-magnetic resistance-changing device in the circuit, and an electro-magnetic recording device also in the circuit, substantially as specified.

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