

## Burglar Alarm.

Patented Oct. 11, 1859.



Witnesses  
William Martin.  
Thomas A. Davin

Inventor  
Geo. F. Milliken



# UNITED STATES PATENT OFFICE.

GEORGE F. MILLIKEN, OF SOMERVILLE, MASSACHUSETTS.

## IMPROVED ELECTRO-MAGNETIC BURGLAR-ALARM.

Specification forming part of Letters Patent No. 25,753, dated October 11, 1859.

*To all whom it may concern:*

Be it known that I, GEORGE F. MILLIKEN, of Somerville, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Burglar-Alarms; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

Figure I is a perspective view of the apparatus. Fig. II shows the construction of the circuit-breaker as applied to a door.

The apparatus I am about to describe is intended to prevent the entry of burglars to houses or stores, by giving notice of the raising or closing of windows or doors by means of conducting-wires, electric currents, electromagnets, and alarm-bells, and at the same time indicating the locality of an attempt to make an entry, or the apartment to which entry has been made.

I am aware that various instruments are in use called "burglar-alarms," and I will proceed to describe the construction of my improvement and in what particulars it differs from those heretofore known and used.

In Fig. I, A represents a window, and B the door, of an apartment to which the wires are connected, and from which they lead to any one room or sleeping-apartment in which the remainder of the apparatus is placed, with the exception of the battery or generator of electricity, which may be placed in a closet or upon any convenient shelf. The wires leading from the positive and negative poles of the battery are shown at C and D attached to the screw-cups E and F. The parts that are placed in the sleeping-room are the alarm-bell, which stands upon the base-board G, and the indicating-instrument, which stands upon the base-board H, and consists, mainly, of the following parts:

The electro-magnet is represented at I, having an armature, J, the latter being provided with an adjusting-spring, K, and a windlass-screw, L, by which the armature is drawn into contact with the set-screw M of the connecting-stud N whenever the circuit through the magnet I is broken. The armature-lever O is affixed to the rocker-shaft P, placed a little above the magnet, and upon the same shaft the verge or pallet Q Q' is secured, which, at every movement of the armature back and forth, al-

lows the escapement-wheel R to move forward one tooth.

The escapement-wheel turns with the horizontal shaft S, which carries at one of its ends the index T, which traverses in front of the circular index plate or face U, upon which letters, figures, or words are inscribed at suitable intervals near its outer edge. The index T starts and stops as many times as there are teeth in the escapement-wheel while making one revolution.

Upon the base-board G there is placed a common electric alarm-bell, which is rung, whenever the current passes through its magnet, by the alternate action and reaction of its vibrating armature.

The sash of each window is provided with a sliding contact-spring, W, bearing upon the vertical metallic bar X affixed to the frame of the window. To the spring W a wire, *f*, is soldered, leading around the sash to the opposite side, where it is soldered to another spring, Y, also attached to the sash, and having at its lower end a knob or finger, Z, of such form as to allow of its sliding both upward and downward upon the notched circuit-breaker *a b a' b'*, which consists of alternate plates of conducting and non-conducting substance. The several rooms of the house to be protected are numbered, and the number of notches in the circuit-breakers correspond to the number of the room. Thus the window A is supposed to be in room No. 4, and when the sash is raised the knob Z comes in contact with the metal plates *a* four times in succession.

These plates are connected with each other by short wires *c c*, so placed that the knob Z does not touch them in its passage over the non-conducting part of the notches. A wire, *d*, is soldered to the lowest of these plates, leading thence to the screw-cup *e*; thence the current passes by the wire *n* to the magnet I, thence by the wire *o* to the screw-cup *g*, thence by the wire *v* to the screw-cup E, thence by the wire C to the battery, thence from the battery by the wire D to the screw-cup F, thence by the wire *r* to the screw-cup *i*, thence by the wire *s* to the screw-cup *m*, thence by the wire *u* to the plate X, thence by the spring W to the wire *f*, thence by the spring Y to the knob Z, which, when the window is down, is in contact with the metal plate *a*. In this condition of the apparatus the armature J is drawn into



contact with the magnet I, and a tooth of the escapement-wheel R rests upon the face of the pallet Q. If, now, the window be raised until the knob Z rests upon an insulated part, *b*, of the notched circuit-breaker, the main circuit will be broken at this place, the spring K will retract the armature J, bringing it into contact with the screw N M, allowing a locked tooth of the wheel to escape from the pallet Q, while another tooth will be arrested by the pallet Q', and thus the index T advances one division and repeats this movement for each successive notch *a' b' a'' b''*, as before mentioned. The main current being broken at the insulated part *d*, it takes a new path from the screw-cup *i*, through the alarm apparatus to the screw-cup *h*, thence by the wire *t* to the screw-cup *k*, thence by the wire *g* to the post N and screw M, thence to the armature-lever O, with which it is in contact, thence by the axis P and wire *p* to the screw-cup *g*, thus causing the alarm apparatus on the base-board G to continue ringing while the armature-lever O is in contact with the screw M, it being understood that the terminal wires of the alarm apparatus upon the base-board G enter respectively the screw-cups *i* and *h*.

When applied to a door the metallic plates 6 7 8 9 of the circuit-breaker are placed horizontally, as in Fig. II, upon a projecting arm near the top of the door-frame, so that the knob 10 of the contact-bar 11 may touch in succession the metallic and the intermediate insulating-plates, the connection of the wires being the same as in the window attachment hereinbefore described.

In order to prevent the downward motion of the window from moving the pointer T still farther I make use of a circuit-breaker or switch. (Shown in Fig. I, the several parts being numbered from 1 to 5.) The metallic arm 3 turns upon the center 5, this arm being moved by the pins 1 and 2, inserted in the sash, so

that when the window is closed by sliding the sash down the pin 2 strikes upon the top of the arm 3 and turns it down into contact with the screw 4 just before the sash reaches the bottom, the screw 4 being connected with one part of the wire *d*, while the pivot 5 of the arm 3 is connected with another portion of the wire *d*, so that the circuit through the wire *d* is open whenever the arm 3 is turned upward out of contact with the screw 4. This occurs whenever the sash is raised far enough to allow the pin 1 to come in contact with and turn up the arm, as above mentioned.

The pin 1 and the arm 3 should be so placed that the arm shall be turned up immediately after the knob Z, in its upward motion, has left the last contact-plate *a'''* of the break-circuit.

In the description above given I have referred to an electro-magnetic-alarm bell placed upon the base-board G; but it is to be understood that instead of this apparatus a mechanical alarm-bell may be used, driven by a weight or springs, the detent or trigger of the same being controlled by the action of an electro-magnet.

I claim—

1. The combination of a galvanic battery, an electric circuit, a circuit-breaker operated by a window or door, with a step-by-step indicator, substantially as herein described.

2. Causing a window or door automatically to prevent any alteration upon the circuit during the closing of the window or door until it is nearly closed, in any manner, substantially as herein described.

3. The use of the armature J for the double purpose of regulating the movements of the pointer and setting in motion the alarm apparatus.

GEO. F. MILLIKEN. [L. S.]

In presence of—

WILLIAM MARTIN,  
THOMAS A. DAVIN.