(No Model.) 2 Sheets—Sheet 1.

H. M. DUMAS.

ELECTRIC BURGLAR ALARM.

No. 588,695. Patented Aug. 24, 1897.

Fig. 1

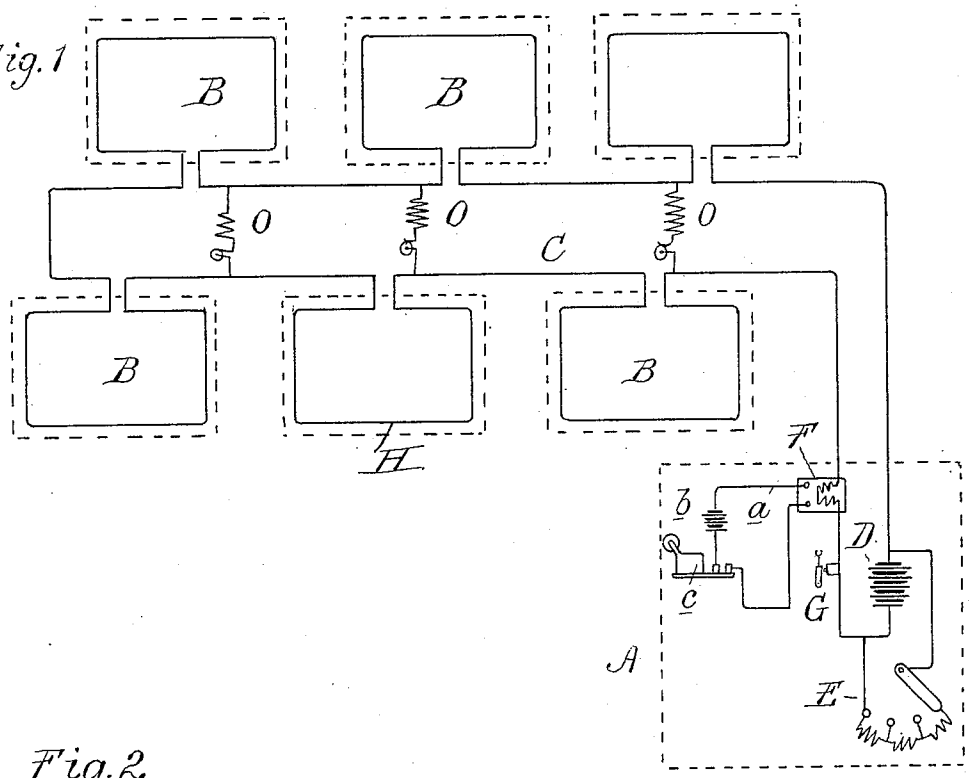
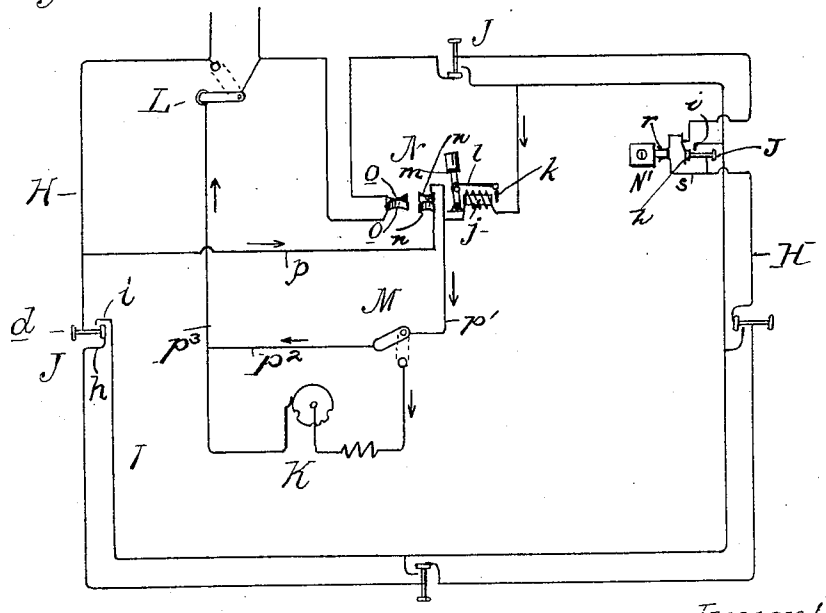


Fig. 2



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

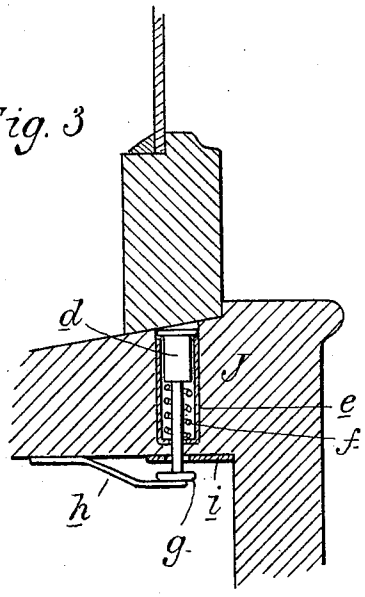


Fig. 4

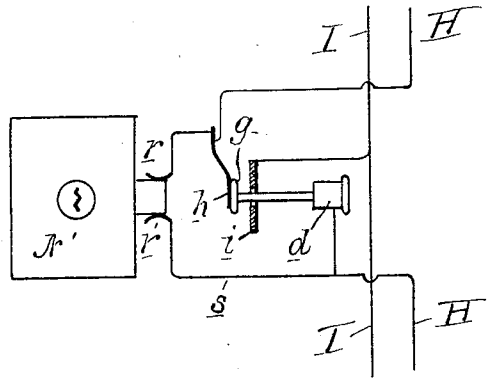
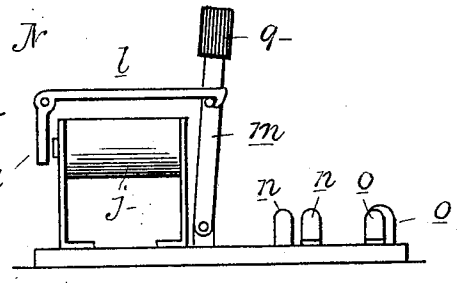


Fig. 5



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UNITED STATES PATENT OFFICE.

HARRY M. DUMAS, OF DETROIT, MICHIGAN.

ELECTRIC BURGLAR-ALARM.

SPECIFICATION forming part of Letters Patent No. 588,695, dated August 24, 1897.

Application filed August 24, 1896. Serial No. 603,773. (No model.)

To all whom it may concern:

Be it known that I, HARRY M. DUMAS, a subject of the Queen of Great Britain, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Electric Burglar-Alarms, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to that class of burglar-alarms in which the guarded buildings are connected with a central office by a normally-closed electric circuit, each building being provided with a signaling instrument and suitable guard-switches controlled by the various doors and windows of the building, whereby the opening of any one of said doors or windows will send the alarm to the central office.

My invention has for its object, first, to enable the occupant of the guarded building to pass in and out of the same when the alarm is set without throwing it into operation; further, to prevent the possibility of checking the alarm when once set in operation by returning the operated switch to its normal position, and, further, to provide means for determining from the central office the location of a break in the main circuit and for rendering that part of the system between said break and the central office still operative.

In the drawings, Figure 1 is a diagram of the complete system indicating the guarded buildings and the central office. Fig. 2 is a diagram showing the arrangement of the circuit in one of the guarded buildings. Fig. 3 is a detail view of one of the guard-switches as applied to a window. Fig. 4 is a diagram of a similar switch for guarding the door, showing the device for permitting the ingress or egress of the occupant of the guarded house without operating the alarm. Fig. 5 is an elevation of the automatic switch.

A is the central office, and B B are the guarded buildings, which are indicated by the dotted rectangles in Fig. 1 of the drawings.

C is a normally-closed main circuit passing from the central office around through each of the guarded buildings.

D is the battery or electrical generator for the main circuit, preferably located in the central office. In the central office are also preferably arranged a rheostat E and a relay F.

a is a local circuit connected with the relay and including the battery *b* and register *c*.

G is a signal-bell, preferably included in the main circuit.

H is a local circuit on that portion of the main circuit contained in each of the guarded buildings, which circuit passes around to the various doors and windows to be guarded.

I is a normally open shunt-circuit which also passes around to each of the doors and windows.

J are guard-switches adapted to open the local circuit H and close the main circuit through the shunt I. These switches may be of any suitable construction adapted to be operated by the opening of the doors or windows which they guard.

In Figs. 3, 4, and 5 of the drawings I have shown a construction comprising the pin *d*, slidingly secured in a socket *e* in the door or window casing, having the spring *f* for projecting the end of the pin from the socket. The pin is pressed into the socket by the closing of the door or window, in which position its inner end *g* contacts with the spring *h*.

When the door or window is opened, the spring *f* will withdraw the contact *g* from the spring *h* and press it against the contact *i*. The circuit H is provided with breaks, the opposite terminals being connected, respectively, to the pins *d* and springs *h* when window or door is closed. The contacts *i* are connected with the shunt-circuit I.

K is an automatic signaling device placed in the shunt-circuit I. For this may be employed any of the well-known constructions which are adapted to be set into operation by the passage of a current through the shunt and to then telegraph a signal to the central office, which will indicate the house from which the alarm is sent.

L is a house-switch for shunting out the circuit H, and M is a testing-switch cutting out the instrument K.

N is an automatic switch (shown in detail in Fig. 5 of the drawings) which is of the following construction:

j is an electric magnet included in the shunt-circuit I. *k* is an armature therefor carrying the hooked arm *l*.

m is a switch-lever which is normally held in its raised position by the engagement therewith of the hooked arm l and is adapted when released by said hook to drop by its gravity.

n n and o o are two sets of contacts, the former forming a normally open break in a connection p, connecting the circuit H with a shunt I, and the latter forming a normally-closed break in the circuit H.

The lever m is provided with an insulating-sleeve q, which, when the lever is released from the hook l, will separate the contact o o and open the break in the circuit H, while at the same time the metallic part of the lever will contact with the contacts n n and close the break in the connection p.

In practice when the alarm is not set the switch L is in the position to cut out the house-circuit H. To set the alarm, the occupant of the building first closes all of the outside doors and windows, which will set the guard-switches J in the position where the circuit H is closed and the shunt I is open, and then turns the switch L. When the alarm is thus set, if an attempt is made to open any one of the doors or windows the guard-switch J controlled thereby will be thrown into the position where the circuit H is broken, and the main circuit is closed through the shunt I. This will set the instrument K in operation, telegraphing the signal to the central office, where it will sound the alarm-bell G and record the message on the register c. Whenever one of the guard-switches J is thus operated, the current passing through the magnet j will release the gravity switch-arm m by tripping its retaining-hook l, which in dropping between the contacts n n and o o will permanently open the circuit H through insulated sleeve q and close the shunt I through the lever m, thereby causing the current to pass, as indicated by the arrows, from the main circuit H through the connection p, contacts n n, connections p', connection p^2, (or signaling device K, according to the position of the switch M,) and out through connection p^3 to main circuit. In this position of parts (with the current circulating as indicated) it will be impossible to check the alarm by restoring the operated switch J to its normal position.

In order to enable the occupant of the guarded house to pass out or in while the alarm is set without throwing it into operation, I preferably provide one of the doors of the building with the device shown in Fig. 4 and in the upper right-hand corner of Fig. 2 of the drawings, in which N′ is a lock set in the door-casing or any other convenient place outside the door and adapted to have its bolt thrown by a key from the outside. It will be borne in mind that the lock N′ is not the ordinary lock carried by the door, but an additional lock, or, more properly, a key-operated switch. The bolt of this lock or switch is adapted in one position to press against the contacts r r, connected into a shunt-circuit s around the switch J which guards the door. In the other position of the bolt it is withdrawn from the contact r r and opens the shunt s.

When the occupant wishes to leave the house and to leave the alarm set, he first temporarily incapacitates the guard-switch or burglar-alarm circuit-closer operated by his door, so that the act of opening or closing the door may not set off the alarm. To do this, he therefore passes out through the door and closes the shunt about the guard-switch on the door by operating the lock N′. He then returns and throws the alarm system into operation by turning the switch L onto its contact-button. The system now being in action, but the guard-switch of his door being incapacitated, he may obviously open and close his door without sounding the alarm. He therefore leaves the room, closes the door after him, and finally unlocks the lock N′ to throw the guard-switch of his door into action by breaking the shunt about it. Should his door thereafter be opened by an unauthorized person, it is manifest that the guard-switch of the door will sound the alarm.

In order to prevent the possibility of rendering the system inoperative by cutting the wires of the main circuit before the attempt is made to enter the guarded building, I preferably provide my system at various points with the high-resistance shunts O. These shunts are of progressively higher resistance from the one farthest from the central office to the one nearest thereto. Whenever a break occurs at any point in the system, it is at once detected by the increased resistance of the circuit, and by means of the rheostat E the operator at the central office may accurately locate the point at which it has occurred. At the same time all that part of the system between the break and the central office is still rendered operative, it being only necessary to increase the tension of the current correspondingly to the increased resistance of the circuit, which may be accomplished by switching in additional batteries or in any other suitable way. In order to make the location of the break even more certain, I preferably place an automatic signaling device similar to the instrument K in each of the shunts O. Thus when the main current passes through any particular shunt it will operate the signal instrument therein and send the indicating-signal to the office.

The object of the switch M is to enable the occupant of the house to test the operativeness of the system without sending in the alarm. To do this, he turns the switch M so as to cut out the instrument K, and then by opening a window or door the circuit H is opened and the shunt I closed, which, if all is in good working order, will throw the automatic switch N, but will not sent in the alarm.

What I claim as my invention is—

1. In a burglar-alarm the combination with

the normally closed main circuit passing from the central office to the guarded building, a normally open shunt-circuit in the guarded building, guard-switches adapted when operated to close the main circuit through the shunt and an automatic signaling instrument in the shunt, of an automatic switch in said shunt adapted to be operated by the closing of said shunt and adapted after being so operated to maintain the shunt permanently closed.

2. In a burglar-alarm, the combination of a normally closed main circuit, normally open shunt in the guarded building, a door guard-switch in the main circuit adapted to close the shunt, a branch of the main circuit around said guard-switch, and a lock or switch outside the door for opening and closing said branch, substantially as described.

3. The combination with the normally closed main circuit passing through the central office and the guarded building, and an electric signaling instrument included in said circuit in the guarded building, of shunts connecting with different points in said main circuit of progressively higher resistance from the one farthest from the central office to the one nearest thereto, an automatic signaling instrument in each of said shunts, a rheostat in the central office in shunt with the main circuit, and means for increasing the tension of the electric current for the purpose described.

4. In a burglar-alarm the combination with normally closed main circuit passing from the central office to the guarded building, a normally open shunt-circuit in the guarded building and guard-switches adapted to close the main circuit through the shunt, and an automatic signaling instrument K in the shunt, of the automatic switch N in the shunt adapted to be operated by the closing of the shunt and adapted after being so operated to maintain the shunt permanently closed and the switch M for cutting out the instrument K for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY M. DUMAS.

Witnesses:

CHARLES E. GARDNER,

M. B. O'DOGHERTY.