

(No Model.)

W. A. BROWNELL & J. B. SEAGER.
ELECTRIC BURGLAR ALARM.

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No. 528,589.

Patented Nov. 6, 1894.

Fig. 1

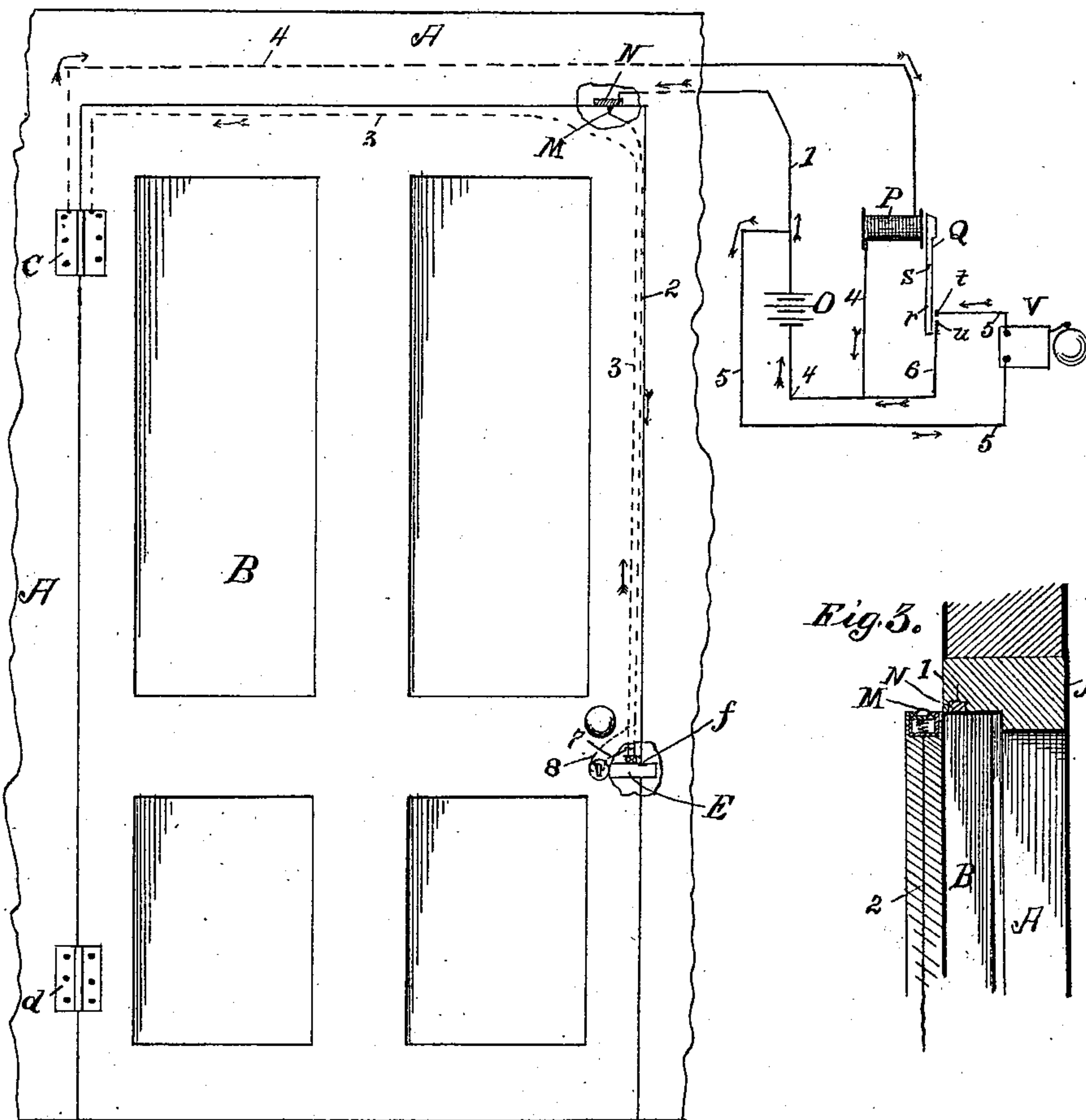


Fig. 3.

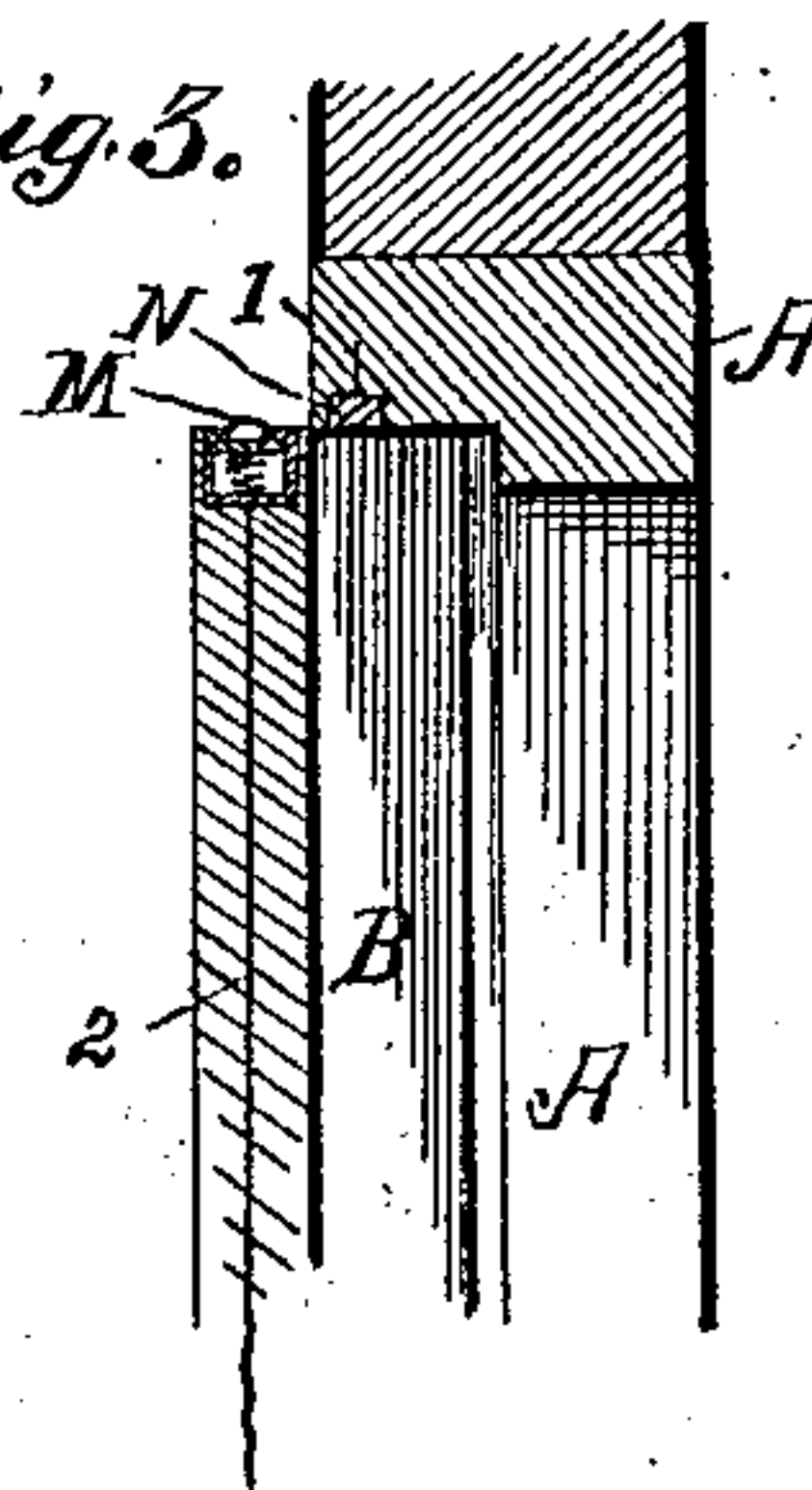


Fig. 4.

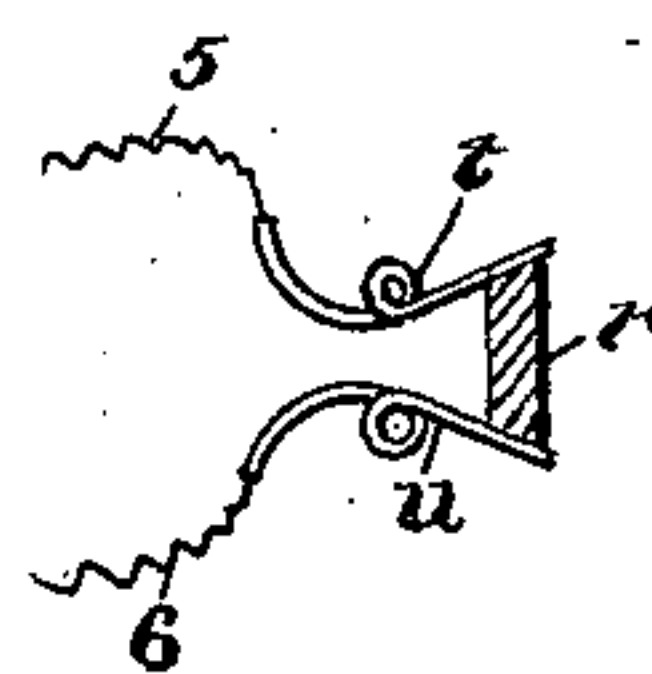
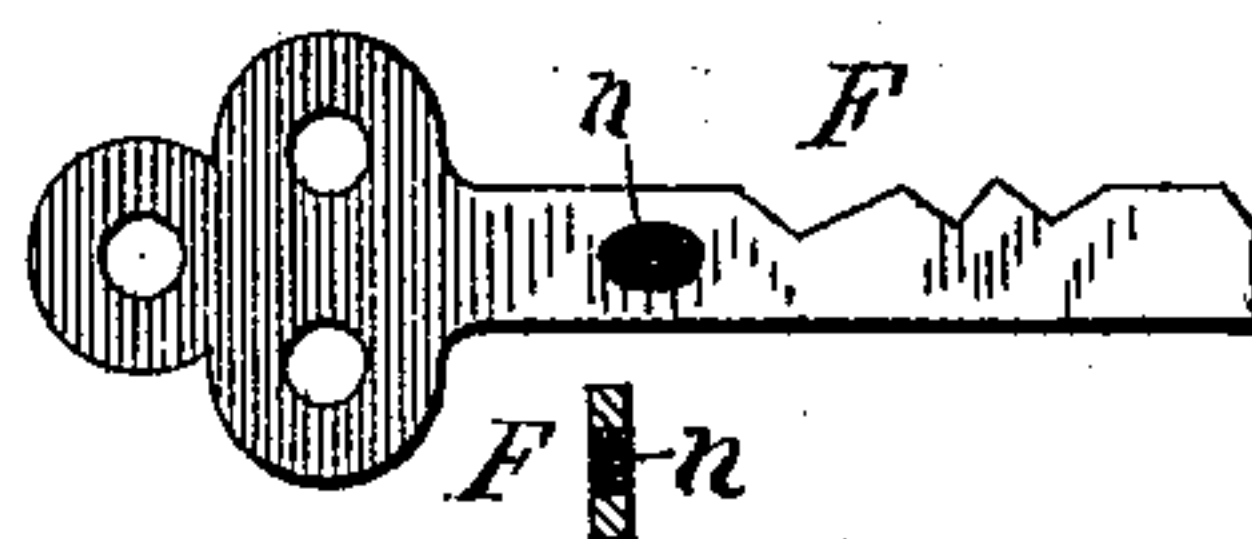


Fig. 5



WITNESSES.

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UNITED STATES PATENT OFFICE.

WILMOT ATHERTON BROWNELL, OF BOSTON, MASSACHUSETTS, AND JAMES BENJAMIN SEAGER, OF HANCOCK, MICHIGAN.

ELECTRIC BURGLAR-ALARM.

SPECIFICATION forming part of Letters Patent No. 528,589, dated November 6, 1894.

Application filed January 31, 1894. Serial No. 498,636. (No model.)

To all whom it may concern:

Be it known that we, WILMOT ATHERTON BROWNELL, residing at Boston, in the county of Suffolk, State of Massachusetts, and JAMES BENJAMIN SEAGER, residing at Hancock, in the county of Houghton, State of Michigan, citizens of the United States, have invented certain new and useful Improvements in Electric Burglar-Alarms, of which the following is a specification.

The object of our invention is to furnish an electric burglar-alarm that will need no setting to make it operate, and that will sound either on the opening of the door by being forced or otherwise when the lock bolt is out or extended, and also upon the opening of the door after having been unlocked by a false key.

The electric burglar alarms now in general use require to be set before they will operate, or are of such character that the ordinary use of the door in opening and closing, will operate the alarm. The former construction requires that sufficient attention should be given to it so that it should always be set at the proper times, and if the setting be forgotten, which is very liable to happen, the alarm loses its efficiency. When the alarm is such that it will operate whenever the door is opened or closed, it will be of constant annoyance to the occupants of the house, and besides they would become accustomed to the noise and this would somewhat destroy the efficiency of the alarm.

Burglars have usually two ways of effecting an entrance to a house or room; one being to wedge the door and jamb apart and to force the door open with the lock bolt out, or to cut out the jamb around the bolt, allowing the door to be readily opened with the bolt extended or in its locked position. The other way of their effecting an entrance is to unlock the door by a false or skeleton key. It is therefore the object of our invention to provide an alarm that will sound when such entries are effected, and also one that will require no care or setting.

From the above it will be seen that in our invention the alarm will always be in opera-

tive condition when the door is shut and locked, and the alarm will so remain until the door is unlocked by the appropriate key, which will be by the ordinary use of the door by the occupants of the house.

Our invention is particularly adapted to doors having spring locks, as the use of a key will not be necessary to put the alarm in operative condition, the mere closing of the door with the spring lock bolt out serving to do so.

In the accompanying drawings—Figure 1 shows our invention as applied to a door. Fig. 2 is a detail enlarged showing the manner of making electric connection between the bolt and adjacent contacts. Fig. 3 is a detail enlarged showing the manner of making electric connection by the opening of the door. Fig. 4 is a detail enlarged of the short circuit contacts. Fig. 5 is a side view and cross section enlarged of the insulated key.

A is the door frame, and B is the door hinged upon the frame A in the ordinary manner by the hinges *c* and *d*.

E is the lock bolt on the door B, and which is shown in its locked or extended position in Figs. 1 and 2. A strip of insulation *f* is inserted in the upper portion of the bolt E, so that its upper surface will be flush with the upper surface of the bolt.

g is an insulated plate or block supporting two downwardly extending contacts *h* and *i*, which are pressed and held down upon the upper surface of the bolt E by a tension spring *k*, which is inclosed within the lock casing between its upper side and the insulation *g*. Vertical rods *l l* secured at their upper ends to the upper portion of the lock casing pass loosely through holes in the insulation *g*, and serve as guides and supports to the yielding insulation *g* with its contacts *h* and *i*.

On each side of the key hole C, and in front of the lock mechanism, are two spring contact buttons *a* and *a'*, having flanges *b*, which are inclosed within boxes or thimbles D. The conducting springs *e e'*, of the contacts *a a'* being also inclosed within said thimbles, press said buttons toward each other, but the

flanges *b* coming in contact with the shoulders *m* of the thimbles, serving to limit the movement of the buttons toward each other, and to prevent their coming in contact.

7 is a short conducting line, connecting the spring *e* with the line 2, and 8 is a similar line connecting the spring *e'* with the line 3.

F is a key having a piece of insulation *n* inserted in a hole in said key, and the opposite surfaces of said insulation being adapted to come in contact with the buttons *a a'* when said key is inserted far enough to lock and unlock the door.

M is a metal spring in the form of a contact button (see Fig. 3) set into the upper edge of the door B, and N is a metal contact plate set into the under surface of the upper side of the door frame A, and over the course of the top of the door and button M during the swinging movement of the door B, so that when the latter is opened or shut, the button M will for an instant bear upon and make contact with the plate N. When the alarm is used with a spring lock the positions of the button M and plate N should be such that they will make contact with each other at the time the spring lock bolt is being forced in against the resistance of its spring.

O is a battery or other electric generator, one pole of which is connected by the line 1 with the plate N. A conducting line 2 connects the button M with the contact *h* over the bolt E, and another line 3 connects the contact *i* with the hinge *c*. A line 4 connects said hinge *c* with an electro-magnet P, and passing through said magnet terminates at the pole of the generator O opposite to that of the line 1.

The armature Q is provided with an arm *r* of conducting material extending in a direction from its fulcrum *s* opposite to the armature Q proper, and *t u* are two springing contacts with which the arm *r* is adapted to make connection by wedging itself between said contacts when the armature Q is attracted by its magnet P, said contacts acting to retain the arm between them even after the magnet P is unenergized. Said contacts are shown diagrammatically in Fig. 1, and in detail in Fig. 4. These contacts *t* and *u* may, if desired, be part of the same wire as the lines 5 and 6.

V is an electric bell, which is included in a line 5 passing from the contact *t* to the line 1 or to the pole of the generator with which said line is connected. A short line 6 connects the contact *u* with the line 4 or the pole of the generator with which said line is connected.

When the door is locked, that is when the bolt is extended as shown in Figs. 1 and 2, both the contacts *h* and *i* will rest upon the metal bolt E, and if the door be opened by any means, with the parts in the above stated positions, then as soon as the contact M touches the plate N, the circuit will be made

from the generator O, through the line 1, plate N, button M, line 2, contact *h*, bolt E, contact *i*, line 3, hinge *c*, line 4 and magnet P back to the generator O; but the bringing of the magnet P into the circuit will cause its armature Q to be attracted, and the arm *r* to come in contact with the contacts *t*, *u*, and to remain in connection with the same by reason of their springing quality, which will cause the main current to shunt and to be short circuited through the line 5, bell V, contact *t*, arm *r*, contact *u*, and line 6 and 4 to the generator O, and causing the bell to ring and to continue ringing even after the door with its button M has passed the plate N, until the mechanism of the alarm V has run down. When the bolt is extended, the electric connection is made in one part of the line, that is, where the bolt E connects the two contacts *h*, *i*, but said line or circuit is broken or incomplete at the upper portion of the door, when the latter is shut, for the contact M and plate N are not touching. When the door is open however, with the bolt E out, the upper connection is made and the circuit completed to strike the alarm as above stated. Whenever the door is unlocked, that is with the bolt E drawn, the circuit can never be completed through the bolt E, even if the opening and closing of the door bring the button M and plate N in contact, for one or both of the contacts *h* and *i* will rest upon the insulation *f* of the bolt E, and said insulation will break this circuit; but the connection of an electric conductor with the two contacts *a*, *a'*, when the door is open, even if the bolt be drawn, will complete the circuit between the lines 5 and 3, through lines 7, spring *e*, contact *a*, inserted conductor, contact *a'*, spring *e'*, and line 8. A false or uninsulated key that will unlock the door will be all that is necessary for such conductor. The insertion of and unlocking of the door by the proper insulated key F, even if the door be open, will not cause the circuit to be completed as the contacts *a*, *a'* will be separated by the insulation *n* of the key.

From the above it will be seen that contact must be made at two points before the alarm can be sounded, and this is done by extending or locking the bolt and opening the door or opening the door when unlocked with an uninsulated or false key in the lock, the locking of the door being all that is necessary to set the alarm.

The positions of the contact M, and plate N, may be reversed, that is the former may be attached to the door frame and the latter to the door.

It will be evident that our invention can as readily be applied to windows, drawers, gates, and lids, as well as to doors.

We are aware that it is not new to have an electric alarm which is sounded by the drawing of a latch or bolt or by opening a door; but such a construction has the disadvan-

tage of causing the alarm to sound whenever the knob is turned, or the door unlocked or opened.

5 What we claim as new, and desire to secure by Letters Patent, is—

10 1. The combination with a door, lid, or drawer, of an electric circuit, an alarm, and two pairs or sets of circuit closers or contacts, all being in series in said circuit when in connection, one pair of contacts being in the lock and adapted to be connected by the bolt when extended or by a separate conductor, and the contacts of the other pair being respectively on the door and door frame, and
15 adapted to be connected when the door is open or ajar, all as set forth.

20 2. The combination with a door, lid, or drawer, of an electric circuit, an alarm, and two pairs or sets of circuit closers or contacts, all being in series in said circuit when in connection, the contacts of one pair being adapted to rest upon the metal bolt or fastener when the latter is extended, and separated by insulation when the bolt is drawn

or unextended, and the contacts of the other 25 pair being respectively on the door and door frame, and adapted to be connected when the door is open or ajar, all as set forth.

3. The combination with a door, lid, or drawer, of an electric circuit, an alarm forming part of the same, a contact on the door and another on the frame, said contact forming part of the circuit when in connection, and being only in connection when the door is open or ajar, the contact on the door being 35 connected with one of two contacts on each side of the key hole, the other of said two contacts being connected with the main line, and said two key hole contacts being normally disconnected, and adapted to be connected 40 by an uninsulated key or other conductor, all as and for the purposes described.

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Witnesses:

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