

No. 627,006.

Patented June 13, 1899.

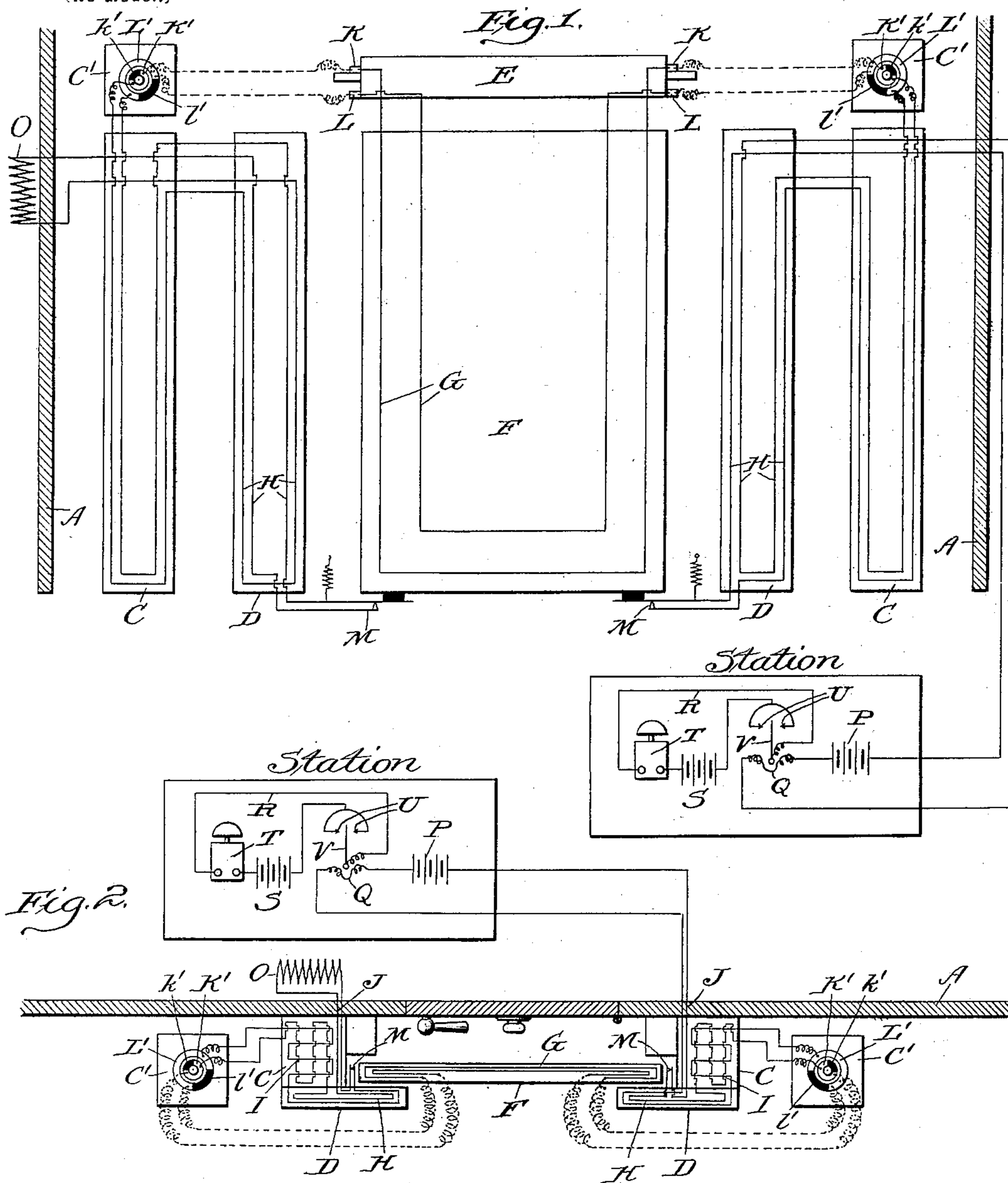
H. O. MEGAARD.

ELECTRICAL BURGLAR ALARM SYSTEM.

(Application filed Feb. 1, 1897. Renewed Nov. 28, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 3.

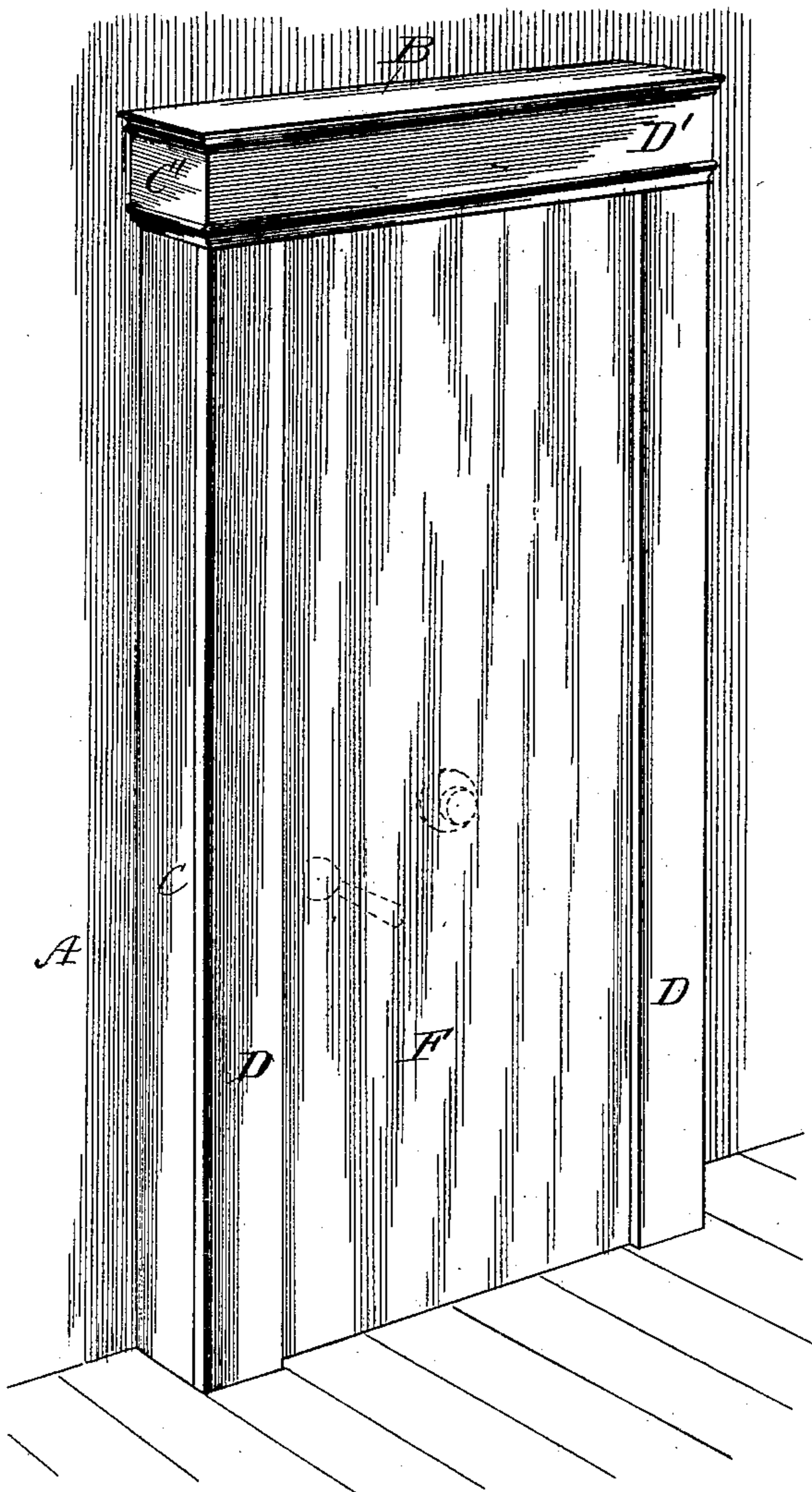


Fig. 4.

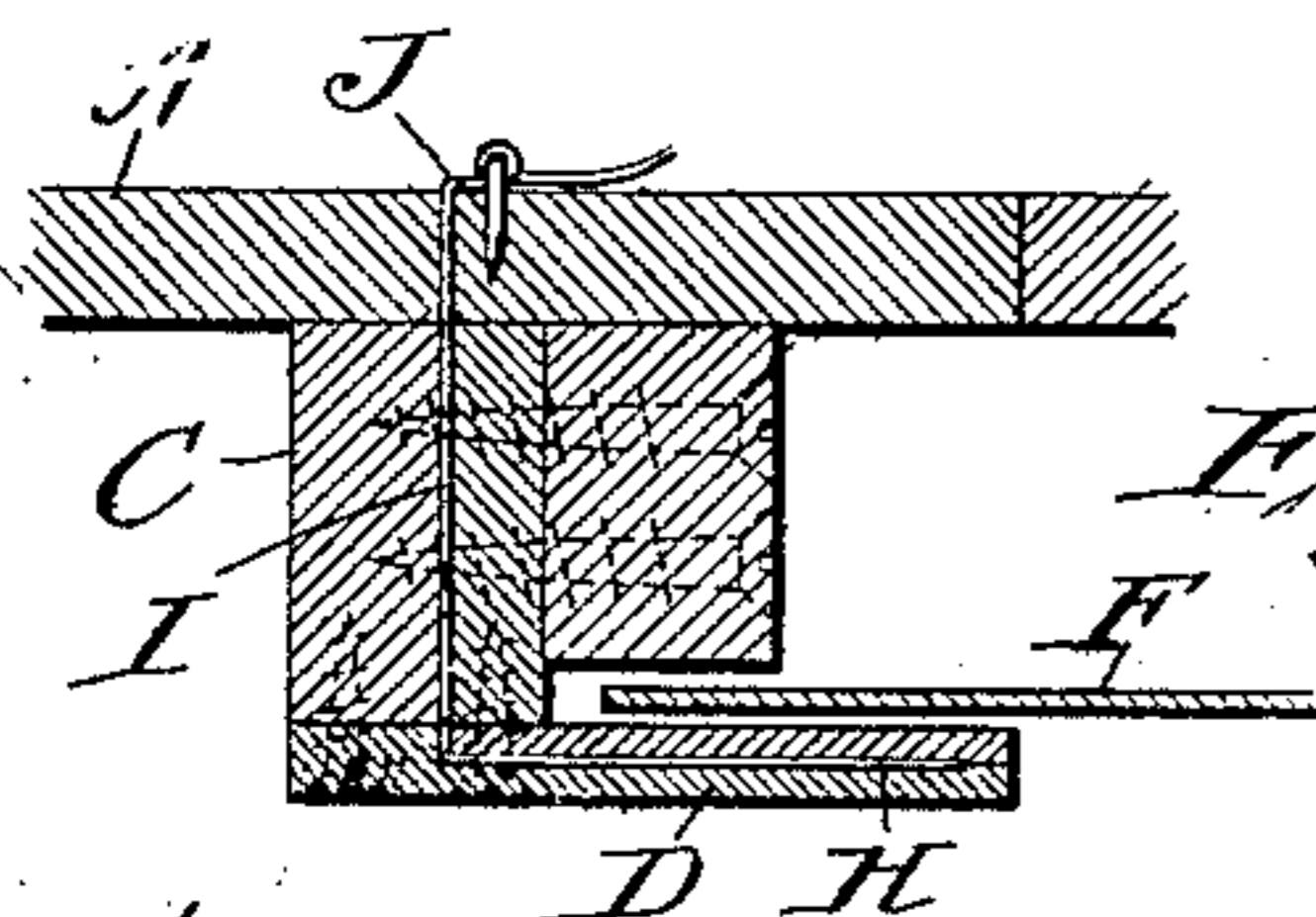
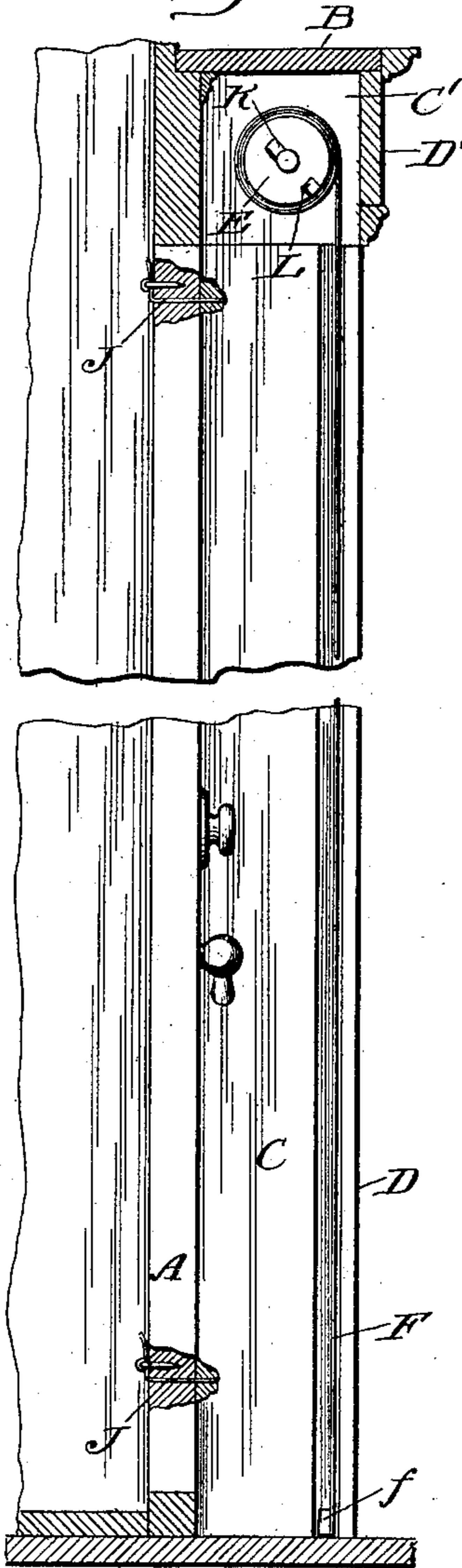


Fig. 5.

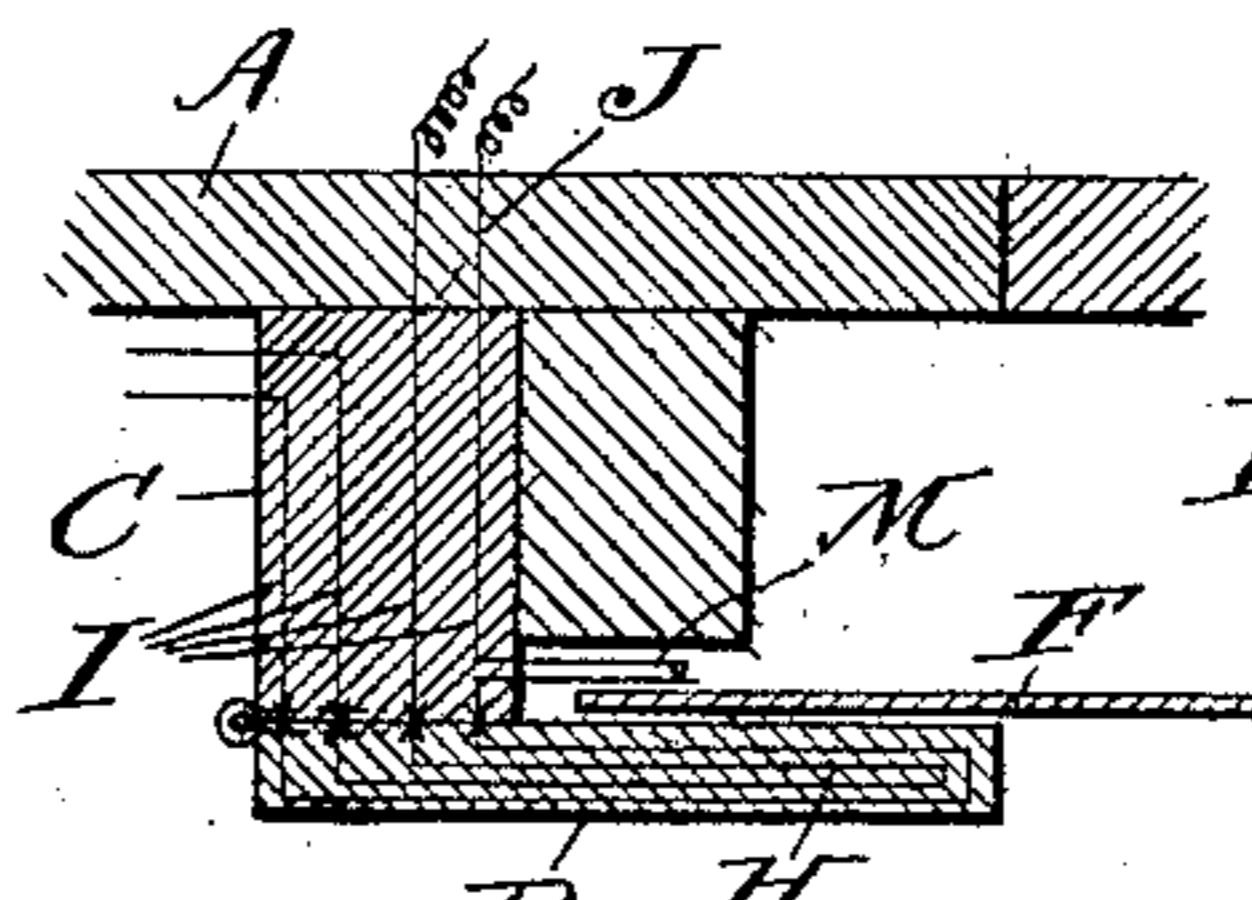


Fig. 6.

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UNITED STATES PATENT OFFICE.

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ELECTRICAL BURGLAR-ALARM SYSTEM.

SPECIFICATION forming part of Letters Patent No. 627,006, dated June 13, 1899.

Application filed February 1, 1897. Renewed November 28, 1898. Serial No. 697,710. (No model.)

To all whom it may concern:

Be it known that I, HENNING O. MEGAARD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electrical Burglar-Alarm Systems, of which the following is a specification.

The present invention relates to that class of electrical burglar-alarm systems in which the opening through which access is had to the interior of the guarded structure is, when the alarm is "on," closed by a curtain, upon which is disposed an electrical barrier, said barrier being so constructed and electrically included in the system that if the curtain be penetrated or lifted or in any other manner disturbed so as to disturb the status of the system an alarm will be given. The guarded structure in connection with which systems of this class are used usually takes the form of a cabinet, which is placed over a safe, so as to completely conceal it, or a shallow housing built against the wall of a vault and surrounding the vault-door. In either of these cases the edges of the curtain are overlapped by the front of the guarded structure. Usually this "front" takes the form of a pair of vertical facing-strips only a few inches in width, one disposed at each side of the curtain, so that when the curtain is drawn down its edges are behind them. These facing-strips are sometimes hinged, so that they may be swung outward during business hours when the structure is open and sometimes permanently secured in place, and both arrangements are included in the present invention, one feature of which relates to the manner of electrically protecting these strips, so that they cannot be removed. Heretofore they have been left entirely unprotected, so that in order to gain access to the structure it was simply necessary to saw them in two upon vertical lines a little outside of the edges of the curtain, after which the curtain might be moved outward without giving an alarm. The object of this part of the present invention is to prevent this, and this object is accomplished by disposing upon each of them an electrical barrier of such construction that it is impossible to sever them in the

manner described without causing an alarm to be given. The invention is not limited to a barrier of any particular construction; but, on the contrary, a barrier of any desired construction may be used. It is not necessary to herein describe any of these barriers in detail, for the reason that their construction is already well known to those skilled in the art. This feature of my invention is applicable to a guarded structure of any character the opening to which is protected by a curtain such as described.

Heretofore, also, the front or vertical facing-strips of the guarded structure did not overlap the electrical barrier disposed upon the curtain—that is to say, the portions of the curtain adjacent to the edges thereof which were overlapped by the front or facing strips of the guarded structure were without an electrical barrier, so that the curtain might be severed along lines between the extreme outer edges of the electrical barrier disposed thereon and the edges of the facing-strips. Another object of the invention is to prevent this, and to this end the front or facing strips of the guarded structure are made to project over the curtain far enough to overlap the electrical barrier disposed thereon.

Another feature of my invention has particular reference to the manner of securing in place against the wall of the vault a guarded structure, such as already referred to, which takes the form of a shallow housing of only sufficient depth to provide behind the curtain sufficient room for the fixtures on the vault-door. It is apparent that unless means be provided whereby the complete or partial removal of such a structure will cause an alarm to be given as a protecting device its efficiency will be represented by the strength of the means employed for securing it in place. Another object of the invention is therefore to provide means whereby an alarm will be given if this structure or any part of it be wholly or partly removed from its place against the wall, and to this end I prefer to so lay the circuit at one or more points that it passes directly from the wall of the vault to the housing and is secured to both, so that if the housing be removed the circuit will be broken at these points.

Another feature of the invention has reference to the means for causing an alarm to be given by the act of winding the curtain upon its roller. Heretofore the giving of an alarm upon the winding up of the curtain has depended upon a single operation of a pair of contacts, which are so constructed and disposed with relation to the curtain that when the curtain is moved they are conditioned to either open or close, and thereby cause an alarm to be given. With such an arrangement if from any cause the contacts should fail to operate no alarm will be given. Another object of the present invention is therefore to provide means for causing an alarm to be given by the act of winding up the curtain, which will operate with greater certainty, and to this end I prefer to provide co-operating contacts so disposed that they will alternately open and close the circuit a number of times during the process of winding up the curtain. Preferably one set of these contacts is disposed upon the end of the roller and the other set upon a fixed part of the structure.

To these ends the invention consists in the features of novelty that are fully described with reference to the accompanying drawings, which are made a part of this specification, and in which—

Figure 1 is a diagram showing a burglar-alarm system embodying the invention. In this figure those parts of the guarded structure upon which the circuit is laid are displayed side by side and as if viewed in elevation, though not all from the same point of view. Fig. 2 is a diagram of a burglar-alarm system embodying the invention. In this figure as far as it is possible to do so and at the same time diagrammatically represent the entire system the parts of the guarded structure upon which the circuit is laid are shown in horizontal section and in their proper relative positions. Fig. 3 is a perspective view of a guarded structure which takes the form of a shallow housing secured to the wall of a vault. Fig. 4 is a vertical section thereof. Figs. 5 and 6 are horizontal sections of portions thereof. In Fig. 5 the facing-strips forming the front of the structure are shown as being permanently secured in place and in Fig. 6 as being hinged.

A represents a wall which is in fact the front wall of the vault and which at the same time constitutes the back wall of the guarded structure. The top of this structure is shown at B, its sides at C C', and its front at D D'. The parts B, C', and D', in connection with the part A, constitute a casing, in which is disposed a roller E, journaled to the parts C' C' or to brackets carried by them. Upon this roller is mounted a curtain F, which when drawn down covers the opening bounded by the vertical facing-strips D, the strip D', and the floor-line, its edges being behind and overlapped by the facing-strips. This curtain may be of any desired construction. Where

it is to be wound upon a roller, it is preferably constructed of a cloth of some sort and is provided at bottom and at other points, if desired, with a rigid strip *f* for preventing its edges from being drawn toward each other far enough to enable them to pass the edges of the facing-strips. Upon it is mounted an electrical barrier G, which may be of any desired construction and which is overlapped by the facing-strips, or, in other words, the facing-strips project inward over the curtain beyond the outer edges of the barrier. This feature of the apparatus is shown only diagrammatically, for the reason that the construction of electrical barriers is well known in the art, and the invention is not limited to a barrier of any particular construction.

Upon each of the facing-strips D is mounted an electrical barrier H, so disposed that an alarm will be given if an attempt be made to sever the strip vertically upon a line a little outside of the edge of the curtain. Upon each of the sides C an electrical barrier I is so disposed that an attempt to penetrate it will cause an alarm to be given.

In order to cause an alarm to be given if the housing be removed from the wall of the vault, at a suitable number of points I lay the circuit directly from the wall of the vault to the housing, as shown, for example, at J, and I so secure it to both of them that the housing cannot be removed without breaking the circuit.

In order to lead the circuit into and out of the barrier on the curtain, I secure to the roller E, at each end thereof, a pair of brushes K and L, which are disposed at different distances from the axis of the roller, so that they travel in different paths, and I dispose upon the part of the housing in which the roller is journaled a pair of contact-plates K' and L', located in the paths of the brushes K and L, respectively, said contact-plates being interrupted at *k'* and *l'*, respectively, and there preferably provided with insulating blocks or plates, so that as the brushes reach these insulating blocks or plates during the rotation of the roller the circuit will be broken. In this way the circuit is established and broken a number of times during the process of raising or lowering the curtain. A transposition of the parts K K' L L' is of course within the scope of my invention. In Fig. 1 dotted lines are placed between the brushes and contact-plates for the purpose of indicating the course of the circuit; but it will be understood that in practice the brushes and contact-plates have direct contact with each other.

In order to prevent the curtain from being raised at the bottom without rolling it upon the roller, I place in the circuit one or more contacts M, which are controlled by the curtain when down and which are so constructed that when the bottom of the curtain is disturbed they will cause an alarm to be given. In the drawings I have shown contacts which

will open when the curtain is disturbed, but contacts which will close are of course within the scope of the invention, since the system is so constructed that any alteration in the circuit will cause an alarm to be given.

Where the facing-strips D are hinged, as shown in Fig. 6, I prefer to place upon the meeting faces of the strips and sides C contacts, as shown diagrammatically by the crosses, which contacts are included in the circuit and when the facing-strips are in place complete the circuit through the barriers H and I. With this arrangement when the strips are swung outward upon their hinges the circuit will be opened at these contacts.

The invention is not limited to a system of any particular character, and in Figs. 1 and 2 I have shown diagrammatically a system of well-known construction, which includes a resistance O, disposed within the guarded structure and with one-half of each of the barriers on each side of it, a battery P, a galvanometer, balanced relay or other suitable instrument Q, which will respond to any variation in the current reaching it, and a local-alarm circuit R, including a battery S, a bell T, contacts U, and the needle V of the instrument Q, all of the parts lettered from P to V, inclusive, being located at the station.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination with the structure to be guarded, and a curtain for closing the opening thereto, of an electrical burglar-alarm system having an electrical barrier disposed upon the curtain, the structure to be guarded being provided with portions which project in front of the curtain so as to overlap and conceal its edges and which project beyond the edges of and overlap the electrical barrier on the curtain, substantially as set forth.

2. In an electrical burglar-alarm system, the combination with a curtain for closing the opening to a guarded structure, said guarded structure having facing-strips overlapping the edges of the curtain, of an electrical barrier disposed upon the curtain and an electrical barrier so disposed upon the facing-strips that an attempt to sever them will cause an alarm to be given, substantially as set forth.

3. In an electrical burglar-alarm system, the combination with the wall of a vault or other structure having an opening, of a housing secured to said wall and surrounding said opening, said housing having an opening, a curtain closing the opening in the housing and having its edges overlapped by portions of the housing, an electrical barrier arranged upon the curtain, an electrical barrier arranged

and an electrical barrier arranged upon the sides of the housing, substantially as set forth.

4. In an electrical burglar-alarm system, the combination with a structure to be guarded having an opening and a curtain closing said opening, said structure having portions overlapping the edges of the curtain, of an electrical barrier arranged upon the curtain, an electrical barrier arranged upon the portions of the structure which overlap the edges of the curtain, and electrical barriers arranged upon the sides of the structure adjacent to the portions thereof which overlap the edges of the curtain, all of said barriers being included in the same circuit, substantially as set forth.

5. The combination with the wall of a vault or other structure having an opening and a housing secured to said wall and surrounding said opening, of an electrical burglar-alarm system having an electrical barrier disposed upon said housing a part of the circuit consisting of a wire being laid directly from the wall to the housing and secured to both, so that an attempt to remove the housing from its place against the wall will break the circuit, substantially as set forth.

6. The combination with a curtain and a roller upon which it is mounted, of an electrical alarm system including cooperating contacts disposed upon the roller and some relatively-fixed part, respectively, said contacts being so constructed that during the successive revolutions of the roller in winding up or unwinding the curtain the circuit will be repeatedly established and broken, substantially as set forth.

7. The combination with a curtain and a roller upon which it is mounted, of an electrical alarm system having an electrical barrier disposed upon the curtain and contacts disposed upon the roller and upon some relatively-fixed part for leading the current into and out of the said barrier, said contacts being so constructed and arranged that during the successive revolutions of the roller the circuit is repeatedly established and broken, substantially as set forth.

8. The combination with a curtain and a roller upon which it is mounted, of an electrical alarm system having an electrical barrier disposed upon the curtain, and cooperating contacts for leading the current into and out of said barrier said contacts consisting of brushes carried by the roller, and contact-plates disposed in the paths traveled by the brushes, said contact-plates being interrupted, substantially as set forth.

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