

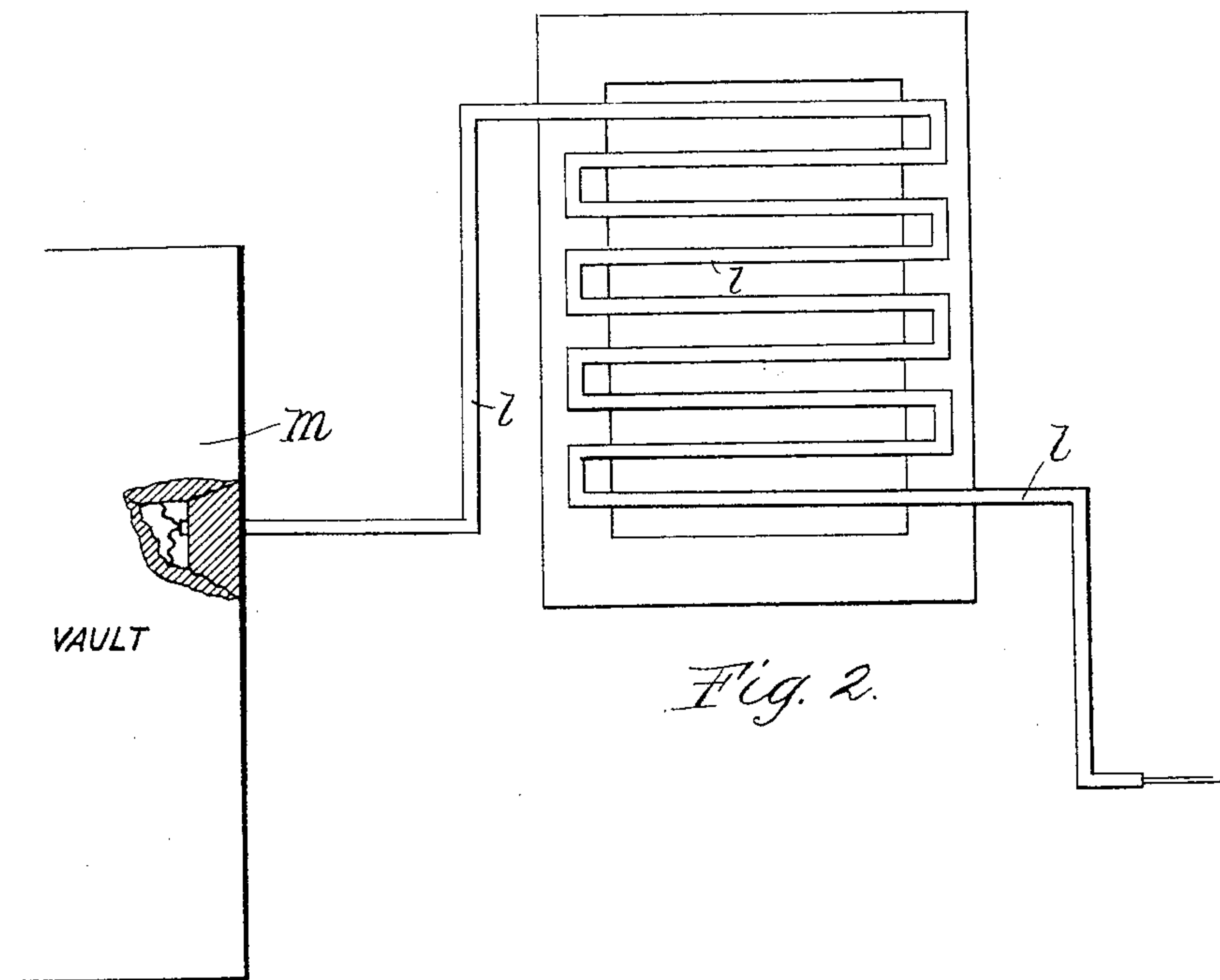
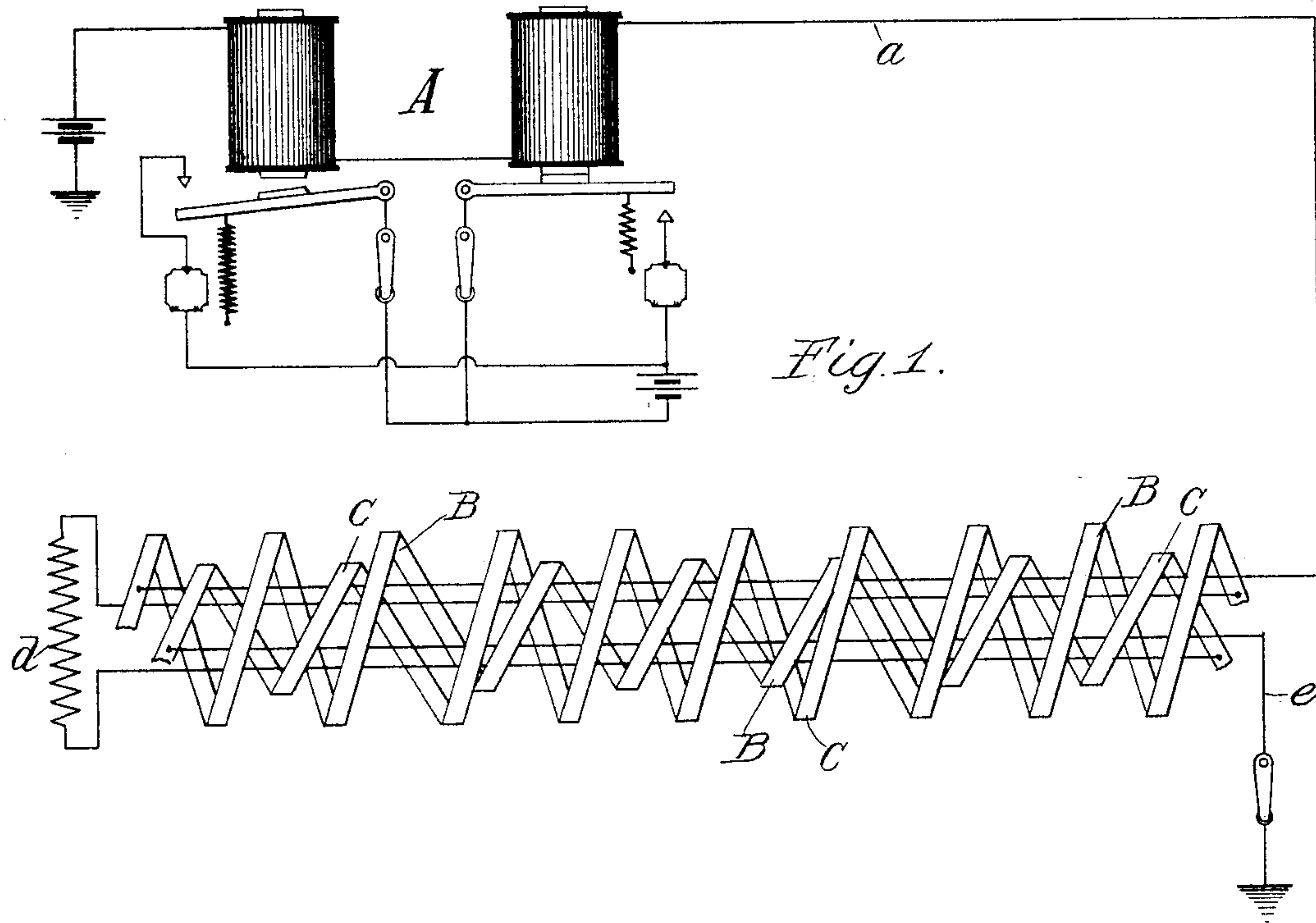
(No Model.)

2 Sheets—Sheet 1.

W. T. ARNOLD.
BURGLAR ALARM SYSTEM.

No. 584,202.

Patented June 8, 1897.



Witnesses:
A. M. C. Pannet,
George L. Bragg

Inventor:
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Attorneys.

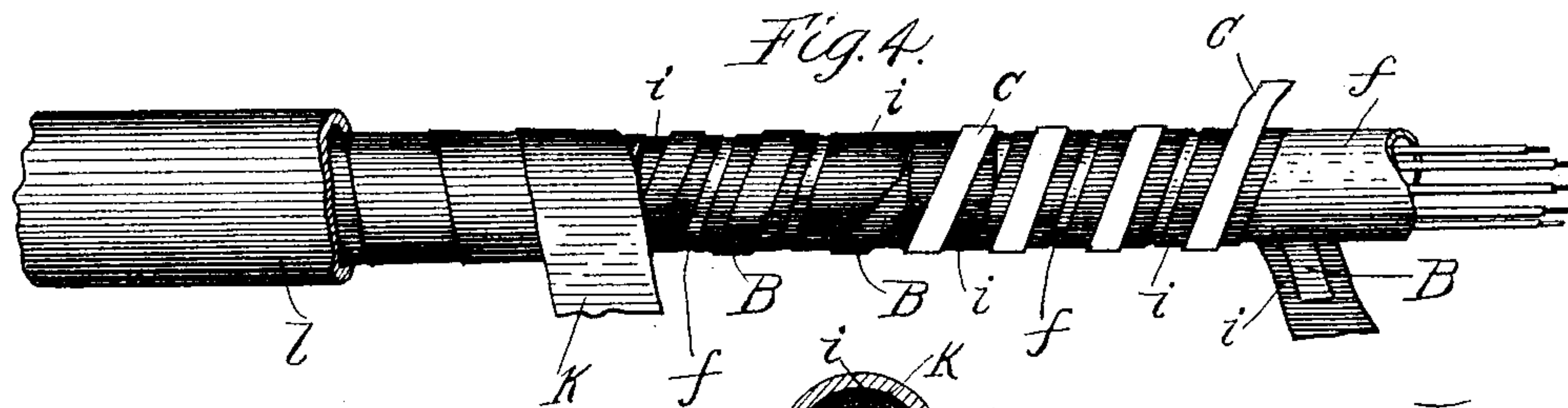
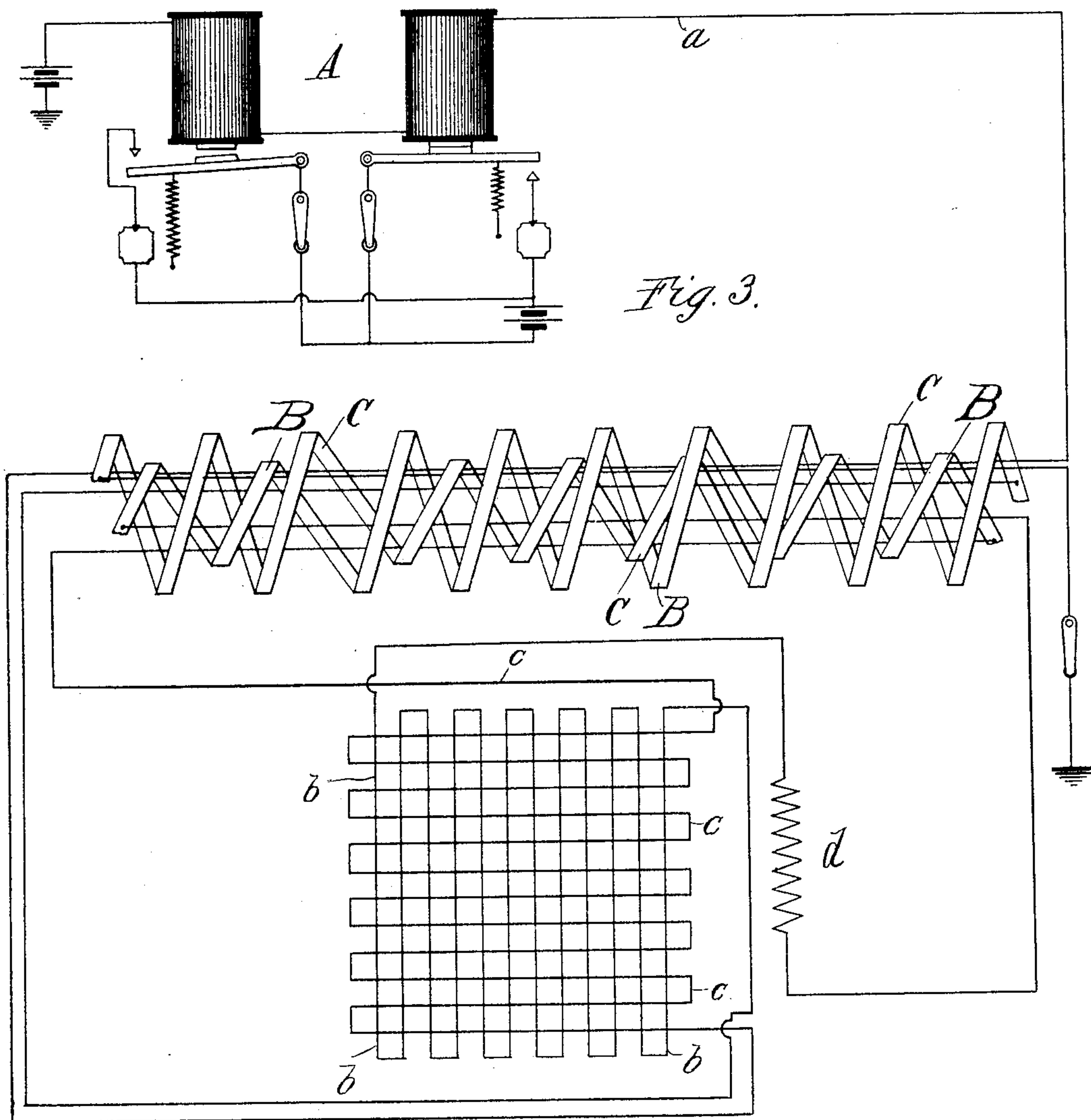
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2 Sheets—Sheet 2.

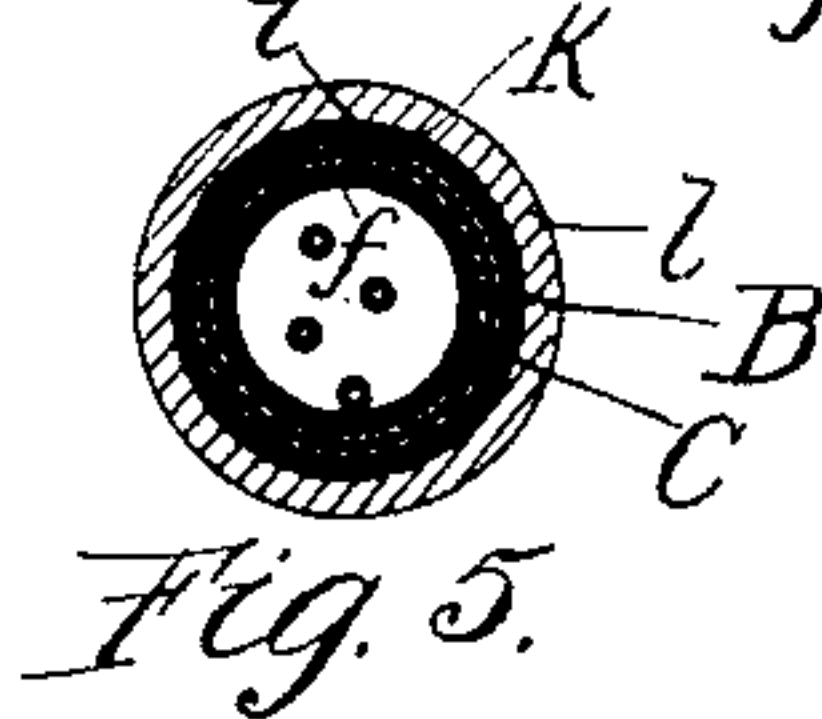
W. T. ARNOLD.
BURGLAR ALARM SYSTEM.

No. 584,202.

Patented June 8, 1897.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM T. ARNOLD, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE CHICAGO
ELECTRIC PROTECTIVE COMPANY, OF SAME PLACE.

BURGLAR-ALARM SYSTEM.

SPECIFICATION forming part of Letters Patent No. 584,202, dated June 8, 1897.

Application filed December 15, 1896. Serial No. 615,814. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. ARNOLD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Burglar - Alarm Systems, (Case No. 2,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to burglar-alarm systems, and particularly to that class of burglar-alarm systems in which districts located in various places are connected with signal devices at a central office to furnish an alarm when the circuits of the protected district are opened or crossed. In Patent No. 483,728, of October 4, 1892, issued to Alfred Stromberg, is shown and described a burglar-alarm system in which the subscribers' districts are protected by suitable conductors, as wire or tin-foil, covering the opening or exposed portion or object to be protected, included in circuit with the indicating apparatus at the central office, and normally in series with artificial resistance at the subscribers' stations, this resistance being included between two portions of said protecting-conductors. By means of said system if this resistance be shunted by electrically connecting the portions of the protecting-circuit united thereby or if the circuit be grounded or opened the altered condition of the protected district will be evidenced at the central office. The conductors which cover the opening or exposed portion to be protected are of low resistance in themselves. By connecting shunt-conductors of low resistance about each of the portions of the protecting-circuit (the artificial resistances being still maintained in series with the lines extending from the central office) the protecting-conductors may be broken and removed without causing the transmission of a signal. This may be done by selecting from among the wires entering the protected district those that lead to the portions of the protecting-conductors and extending electrical connections from these wires to points between the artificial resistance and the portions of the protecting-conductors between which said resistance is interposed.

It is the object of my present invention to provide means for preventing the selection of the proper conductors with any degree of certainty for the purpose of effecting unlawful entry within a district protected by an electric burglar-alarm system.

One feature of my invention consists in interweaving or interwinding at the subscriber's station the conductors associated with the protected opening or portion to prevent the selection of the proper conductors, except by the mere element of chance, for the purpose of making the required changes in the circuit to effect an unlawful entrance.

A second feature of my invention consists in fastening at the subscriber's station a covering upon the conductors at or extending to and from the protected opening or portion in such a manner that the removal of the covering to secure access to the conductors will rupture the conductor fastened to that portion of the covering being removed, thereby opening the circuit and causing the transmission of a signal to the central office.

The way in which I prefer to practice the above features of my invention consists in including protecting-ribbons of tin-foil in circuit with the wires extending to and from the protected district, wrapping these ribbons in a way to present first one and then the other to the exterior, insulation being provided between said ribbons, and gluing a cloth wrapping about the whole upon said ribbons.

Other features of my invention will be described in connection with the accompanying drawings, illustrating one application of my invention, in which—

Figure 1 illustrates diagrammatically a protected district equipped in accordance with my invention. Fig. 2 shows an opening and vault protected by the device of my invention. Fig. 3 illustrates diagrammatically the circuits of the protected district shown in Fig. 2 and a central office connected therewith. Fig. 4 is a detail view of the tin-foil-protected conduit inclosing the conductors. Fig. 5 is a cross-section thereof.

Like letters refer to like parts throughout the different figures.

Referring to Fig. 1, a main conductor *a* includes alarm apparatus A, which may be simi-

lar to that shown and described in said Patent No. 483,728, and extends to the protected districts and includes in circuit therewith the conductors B C, of tin-foil or other suitable material, covering an opening, object, or portion to be protected, and an artificial resistance d , included in series between said conductors B C. A return-conductor e is provided to complete the circuit through the central office. The conductors B and C are preferably interwound or interwoven, as shown most clearly in Fig. 1, portions of each of said conductors being concealed within the interior of the combined winding, while other portions of each are brought to the exterior of the combined winding. The wires extending from and to the conductors B C are preferably surrounded thereby, as shown.

My invention is especially adapted for the protection of windows or other openings, as shown in Fig. 2, and in practicing my invention for this purpose the various conductors shown in Fig. 1 are preferably assembled as shown in Figs. 4 and 5. The conductors are inclosed by a tube f , of insulating material. The tin-foil ribbons B C are then placed about the insulation, as before described, these ribbons being separated by insulating material i . Upon the outer exposed portions of the ribbons is glued a strip or tape of cloth k . About the whole is placed a protecting sheath or tube l , constructed, preferably, of metal, which may be formed in convolutions, as shown in Fig. 2, to thoroughly protect the opening. To gain access to the conductors B C for the purpose of shunting them, the metal sheath has to be removed and the cloth torn away. The cloth, being glued or otherwise fastened to the tin-foil, will carry a portion of said foil with it when being removed, thereby opening the protecting-circuit and causing a signal at the central office. If by any possibility the cloth should be removed without rupturing the tin-foil, it will be impossible to select with certainty the necessary conductors to effect an entry within the guarded structure without causing an alarm, since by interwinding or interweaving the conductors, as herein set forth, the identity of the conductors within the tube l is lost. The tube l may have one of its ends extending within the interior of a safe, vault, or cabinet m to be protected, the arrangements of circuits being shown diagrammatically in Fig. 3, in which a network of protecting-conductors within the vault, composed of sets of strips of tin-foil $b c$, is included in series with the conductors B C, as shown. The conductors leading to the protected locality are passed through the tube l , extending to the protected locality.

It is clear that the details of this system may be modified without departing from the principles involved.

Having thus described my invention, I claim and desire to secure by these Letters Patent, together with all such modifications as may be made by mere skill and only the limitations expressed or by law implied in view of the state of the related arts, the following:

1. In a burglar-alarm system, the combination with protecting-conductors $b c$, of line conductors leading thereto and therefrom, alarm apparatus included or adapted to be included in circuit therewith, an extraneous resistance d interposed between conductors $b c$, conductors, as B, C, which are interwound or interwoven and which surround the conductors leading from conductors $b c$ to the extraneous resistance and the line conductors, said conductors B, C, forming continuations or parts of the line conductors, substantially as described.

2. In a burglar-alarm system, the combination with protecting conductors or apparatus located at an opening, district or object to be protected, with an alarm apparatus included or adapted to be included in circuit therewith, conductors extending between said protecting-conductors and alarm apparatus, and conducting-ribbons B, C, of suitable material, as tin-foil, formed in interwound helices, portions of each of the conductors B, C, being disposed upon the interior of the combined winding and completely surrounded by other portions of each conductor disposed upon the exterior of the combined winding, said conductors B, C, forming part of the conductors leading to and from the protecting conductors or apparatus, substantially as described.

3. In a burglar-alarm system, the combination with protecting conductors or apparatus, of line conductors leading thereto and therefrom, alarm apparatus included or adapted to be included in circuit therewith, conductors, as B, C, forming part of said conductors, the line conductors being completely surrounded by the conductors B, C, which are interwound or interwoven about the same, whereby the identity of the portions of said line conductors leading from the conductors B, C, to the protecting-conductors is completely destroyed, substantially as described.

In witness whereof I hereunto subscribe my name this 10th day of December, A. D. 1896.

WILLIAM T. ARNOLD.

Witnesses:

A. L. LAWRENCE,
GEORGE L. CRAGG.