No. 732,813. PATENTED JULY 7, 1903.

W. E. ARNOLD.

ELECTRICAL SIGNAL FOR ADDING SECURITY TO SAFES.

APPLICATION FILED MAY 1, 1902.

NO MODEL.

Fig. 1.

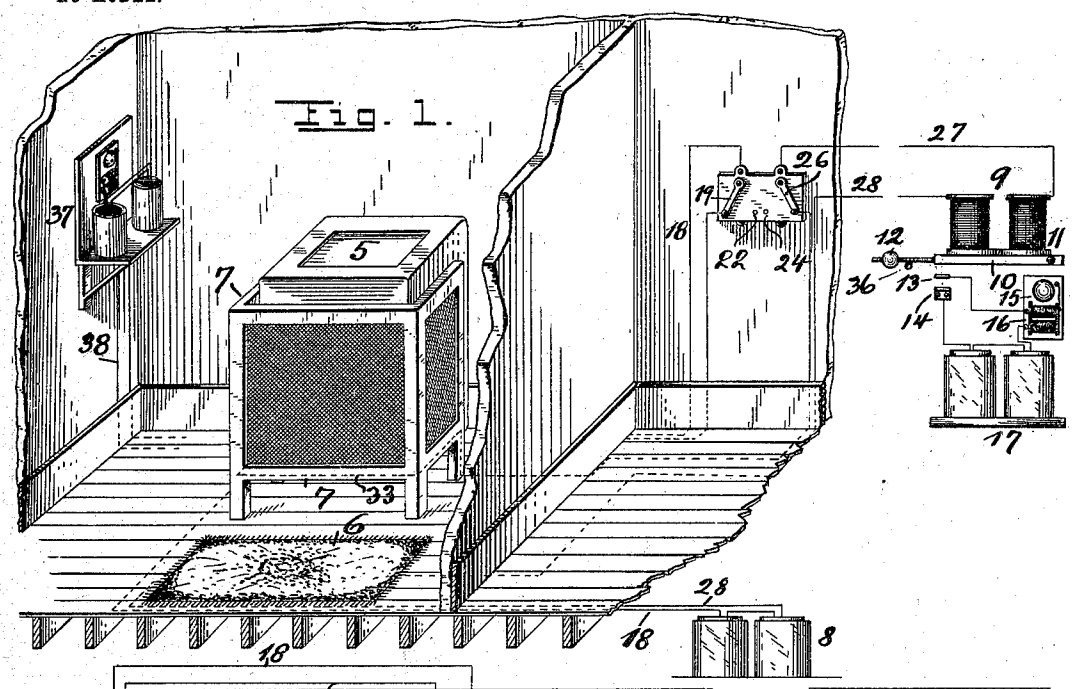


Fig. 2.

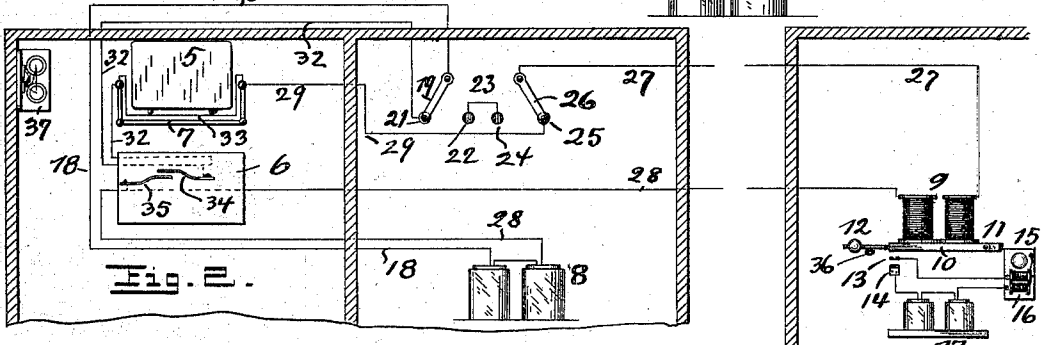
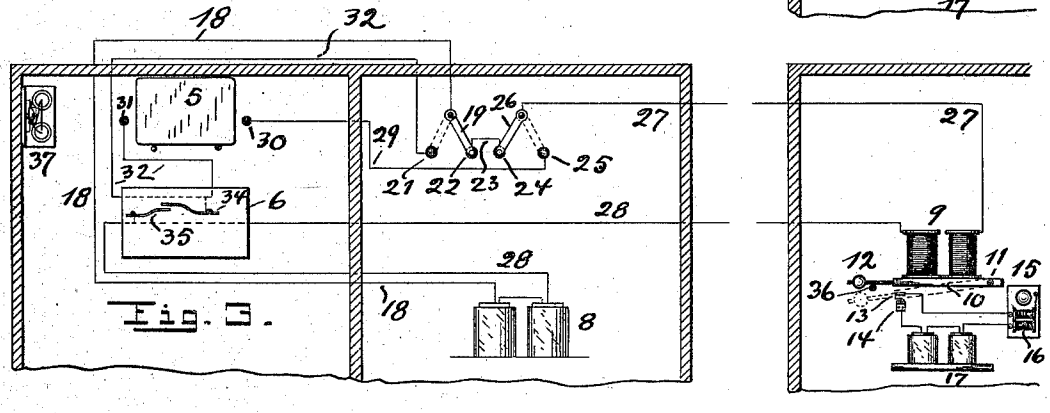


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILBER E. ARNOLD, OF MADISONVILLE, OHIO.

ELECTRICAL SIGNAL FOR ADDING SECURITY TO SAFES.

SPECIFICATION forming part of Letters Patent No. 732,813, dated July 7, 1903.

Application filed May 1, 1902. Serial No. 105,440. (No model.)

To all whom it may concern:

Be it known that I, WILBER E. ARNOLD, a citizen of the United States, and a resident of Madisonville, in the county of Hamilton and State of Ohio, have invented a certain new and useful Electrical Signal to Add Security to Safes; and I do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying drawings, with the reference-numerals marked thereon, which form also a part of this specification.

This invention relates in general to means for adding security to safes to guard them more effectually against depredations by burglars; and it consists, essentially, of certain devices and of an electric-alarm system, whereby any attempt to tamper with the safe is indicated electrically by giving an alarm-signal at one or more different places, so as to be perceived by the owner, by a watchman, or at a police-station.

The invention consists, further, of the particular means so interposed that efforts to reach the safe will require them to be disturbed or otherwise acted upon in a manner to cause the genuine burglar-alarm to operate.

The invention consists, finally, of the general and electrical arrangement of these devices in combination with the alarm-signal system.

In the following specification, and particularly pointed out in the claims, is found a full description of the invention, together with its arrangement, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 shows in perspective view the means of my system as to arrangement and location of parts. Figs. 2 and 3 are diagrammatic plan views of the same, the latter view showing it inoperative—as, for instance, during day-time.

5 indicates in all the views the object to be protected in the manner as here understood and which might be the door leading to a room, compartment, or it might be a safe, as is presumed in this case. To indicate approach to it, I provide two devices, which may be used either simultaneously or only one may be used. One is the ordinary burglar-alarm mat 6, not of itself new. The other is a screen 7 of any suitable construction—as, for instance, the ordinary folding screen—which during the day is put aside. The burglar-alarm system operates on a closed circuit, of which circuit during the night the screen forms a part, so that disturbance of it in its position or removal of it in order to gain access to the safe behind it causes this circuit to be broken and operate an alarm-signal. The mat, which may be used in combination with it or alone, operates on the usual principle, whereby two or more normally separated contact-pieces are caused to come together if stepped upon. Nothing new is claimed for this particular part except its specific use and arrangement, whereby it is caused to operate in conjunction with a normally closed circuit.

Referring now more particularly to the diagrammatic views, 8 is the battery of the closed circuit of any approved pattern—as, for instance, the usual gravity-battery. In circuit with this battery is a magnet 9, which when the circuit is closed holds elevated by magnetic attraction an armature 10, pivoted at 11 and adjustable as to its action by a weight 12. If the circuit is broken by reason of any tampering with the wires or devices in front of the safe, this armature is released and drops first upon a contact-piece 13, projecting out below it and of yielding material, like spring metal, so that it recedes under the weight of the dropping armature until it comes in touch with another contact-piece 14. This closes the open circuit of a local bell-signal alarm, of which 15 is the bell, 16 the magnet, and 17 the battery. In case of a bank there might be more than one of these bell-signals and at various places—as, for instance, there might be one at the bank, outside or in another room or floor of the building, one in an officer's (cashier's) residence, and one at a watchman's or central call or police station. In such case these additional bell-signals are in series with the general circuit, and the parts described from numerals 9 to 17 are simply as many times repeated.

The wiring is as follows: One wire 18 leads from the battery to switch 19, by which it may be connected to either one of two contact-points 21 or 22. A wire 23 leads to one of two contact-points 24 and 26, either one of

which may be connected, by means of a switch 26, to a wire 27, which leads to the magnet 9 of the alarm-signal apparatus. From contact-point 25 there leads a wire 29 to a contact-point 30 (see Fig. 3) on the floor close to one side of the safe. 31 is another contact-point on the floor and on the other side of the safe, from which a wire 32 leads to contact-point 21.

With the switches in position, as shown in Fig. 2, it will be seen that a closed circuit is established as soon as the gap (see Fig. 3) between contact-points 30 and 31 on the floor is closed. This is done at night by placing screen 7 in front of the safe, as shown in Figs. 1 and 2. Two of the legs of the former have also contact-points at their lower ends adapted to meet contact-points 30 and 31 and which contact-points are connected to each other by means of a wire 33, passing from one leg to the other of the screen and concealed behind the woodwork or other parts of the latter. It is clear now that access to the door of the safe cannot be had without moving the screen, which, however, causes a break in the circuit as soon as either or both of the legs of the former move off of either of contact-points 30 31. The power of magnet 9 to further hold up armature 10 ceases, and the same dropping onto contact-piece 13 and pressing the same against contact-piece 14 closes the local bell-circuit and sounds bell-signal 15. The contact-points on the under side of the legs of the screen and those, 30 31, on the floor should be such that the necessary metallic contact to obtain electrical communication is readily established when the screen is placed in position. Those on the floor should be, further, of such a nature as to escape notice during the day, when the screen is not in position. The wires leading from them are of course entirely concealed below the floor, as are all other wires, batteries, and switches.

In connection with this service there may be used a mat or rug 6 in front of the safe of the usual electric matting and consisting, substantially, of a number of sets or pairs of normally separated contact-pieces, which yield and close under the weight of a person stepping upon the mat. The same—that is, corresponding pieces of like complementary parts of each set—are all electrically connected with each other by wiring, so that each group so connected forms a continuous part of electrical conduit. In place of showing all these many pairs of contact-pieces I have for reasons of clearness shown only one representative set, and of which 34 indicates all the connected pieces complementary to the other pieces 35, also all connected. These two groups so connected are now inserted into the general circuit in this manner—that one group 34, for instance, is in electrical connection with wire 32 and the other group 35 is in electrical connection with wire 28. In case now this mat 6 is stepped upon and contact established between any of its members the electric current is short-circuited, traveling (see Fig. 2) from battery 8 through wire 18, switch 19, contact-piece 21, wire 32, contact-pieces 34 and 35 of the mat, (now touching,) and back to the battery on the shortest route, which is through that part of wire 28 which passes from the mat to the battery. The current, should any be left to reach magnet 9, is thus weakened to a degree to be insufficient to further attract and hold up armature 10, which dropping in consequence closes the local bell-circuit by causing contact-pieces 13 and 14 to come together. This sets the alarm-signal in operation the same as the latter would be operated by disturbance of screen 7, as has been described before. No material change is required in this system in case mat 6 is omitted, except the wiring may be somewhat simplified to the effect that the wires may run more direct. In case the mat only is used it is merely necessary to provide a permanent piece of wire as the equivalent for wire 33, carried by the screen, or, in other words, wires 29 and 32 would be connected and continuous and contact-pieces 30 and 31 are so changed in location and arranged as to permit connection to be made with the mat.

During the hours of use and in day-time it is of course not desirable that the alarm-signals sound while screen 7 is removed or whenever mat 6 is stepped upon. To prevent such, a closed current is also maintained at that time, so as to prevent armature 10 from dropping. This is accomplished by setting switches 19 and 26, as shown in Fig. 3, after which the current will travel from battery 8 through wire 18, switch 19, wire 23, switch 26, wire 27, magnet 9, and wire 28 back again to the battery. This object—that is, to prevent the alarm-signals from operating when not wanted—could also be attained by other means in place of the switches shown—as, for instance, by the use of a stop so interposed as to prevent contact-pieces 13 and 14 from coming together, or it might be inserted into a socket-hole 36 below armature 10, thereby preventing the same from dropping. This is objectionable, however, in case of several signals being used in different places, requiring, therefore, individual attention in each place, while with the switches all devices can be controlled from one place and by one person. By preference this person should be also the one who places and removes the screen. As before stated, none of these electrical devices are visible in the room where the safe is located, which also includes the setting-switches, which may, however, be in the same building, but are concealed or in a different room. To allay, however, any apprehension of a hidden burgular-alarm and to prevent the intruder from searching for it, I propose to place in the same room or otherwise in a conspicuous position dummy electrical devices indicating the presence of an electrical alarm system, but without any operative connection

whatsoever. These may consist of a dummy battery 37, with or without attached bell-signal, and may also have a set of blind wires 38, which lead therefrom and disappear behind the footboard or below the flooring, where they terminate without any electrical connection whatsoever. The battery is by preference an imitation of an open-circuit battery, thereby more readily serving as a decoy, which induces cutting of the wires. Safety being thus apparently assured, after destroying the supposedly genuine circuit-wires any further attempt by stepping upon mat 6 or removal of screen 7 will of course lead at once to detection. The dummy battery may be constructed in any suitable way—as, for instance, the elements may be of wood and painted accordingly and water may be used in place of acid.

Having described my invention, I claim as new—

1. In an electric-alarm signal system to add security to safes, the combination of a normally closed circuit, parts of which are so arranged as to pass in close proximity to the safe to be guarded, a battery for the same, one or more electromagnets forming part of the circuit, alarm-signals adapted to be operated by them in case of interference with the normal condition of the current and an open-circuit mat adapted to be placed on the floor in front of the safe and with its complementary normally separated elements in connection with the normally closed circuit whereby any action upon said mat causes the current to be short-circuited between the battery and the electromagnets intended to operate the alarm-signals.

2. In an electric-alarm signal system to add security to safes, the combination of a normally closed circuit, parts of which are so arranged as to pass in close proximity to the safe to be protected, a battery for the same, one or more electromagnets forming part of the circuit, alarm-signals adapted to be operated by them in case of interference with the normal condition of the current, a removable screen constituting part of this circuit, contact-points on it and similar ones on the floor complementary thereto whereby when all are in contacting position, the circuit is closed, the contact-points on the floor being in front of the safe and an open-circuit mat adapted to be placed on the floor in front of the safe and with its complementary normally separated elements in connection with the normally closed circuit whereby any action upon said mat causes the closed current traveling through the parts described to be short-circuited between the battery and the electromagnets intended to operate the alarm-signals.

In testimony whereof I hereunto set my signature in the presence of two witnesses.

WILBER E. ARNOLD.

Witnesses:
C. SPENGEL,
ARTHUR KLINE.