No. 751,193. PATENTED FEB. 2, 1904.

B. MENKIN.

ELECTRICAL ALARM DEVICE.

APPLICATION FILED JULY 30, 1901.

NO MODEL.

Fig. 1.

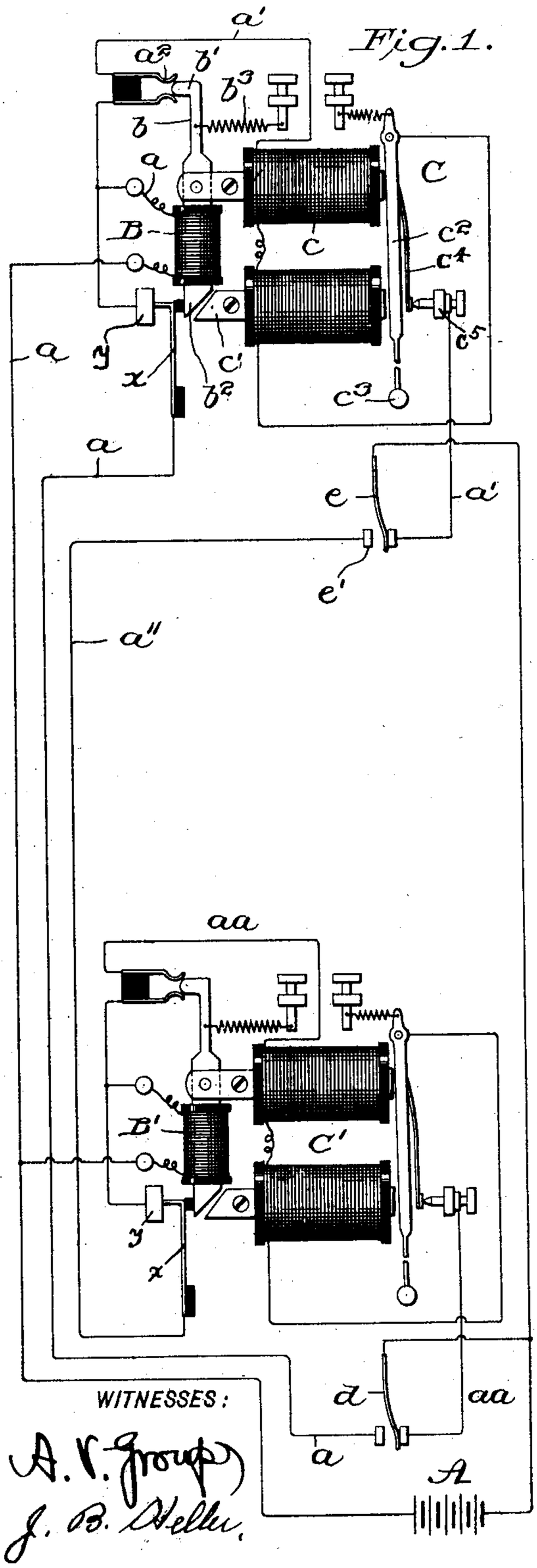


Fig. 2.

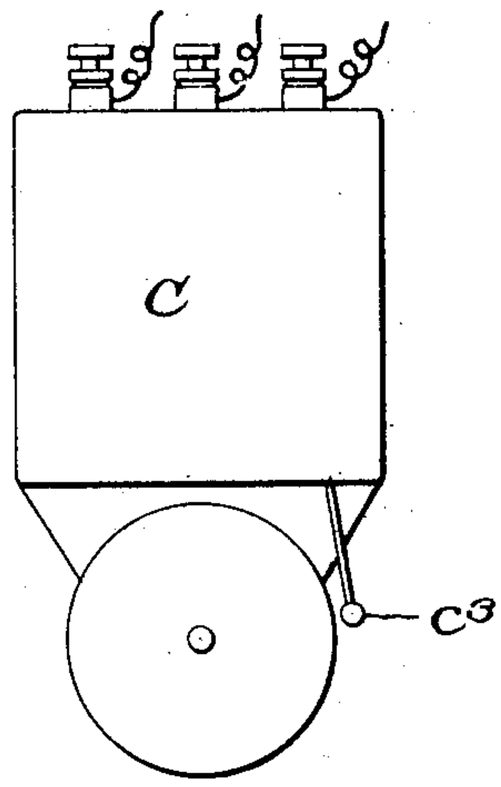
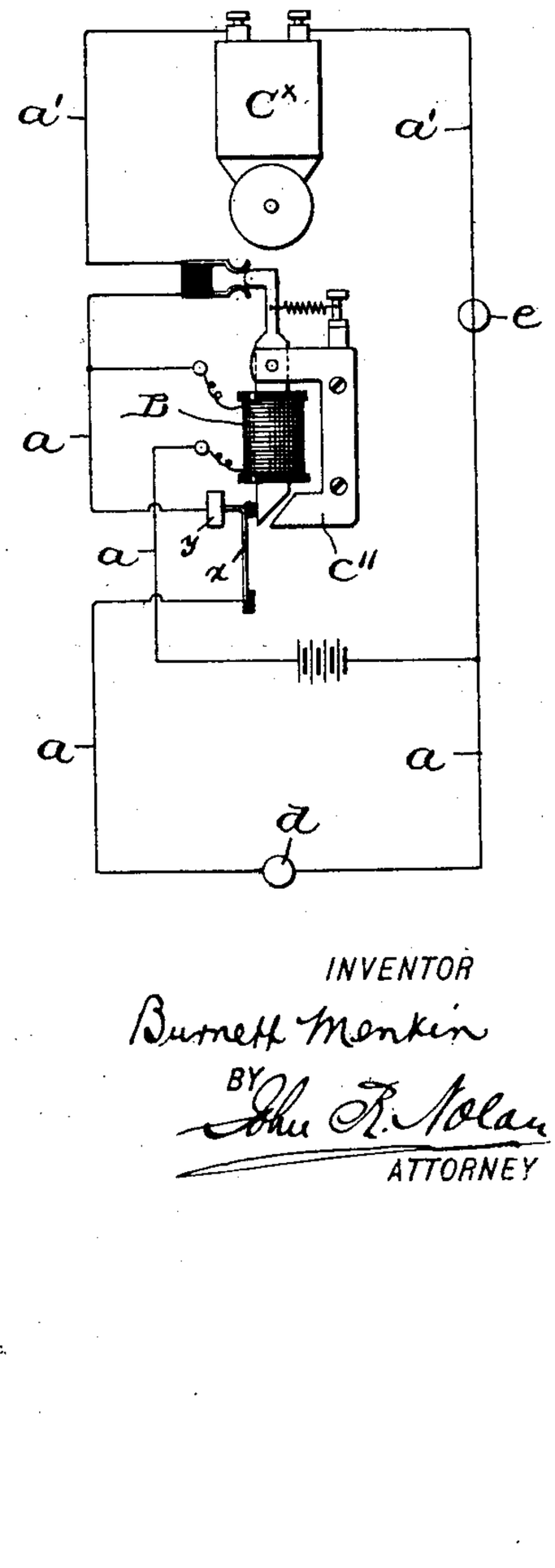


Fig. 3.



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UNITED STATES PATENT OFFICE.

BURNETT MENKIN, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRICAL ALARM DEVICE.

SPECIFICATION forming part of Letters Patent No. 751,193, dated February 2, 1904.

Application filed July 30, 1901. Serial No. 70,267. (No model.)

To all whom it may concern:

Be it known that I, BURNETT MENKIN, a citizen of the United States, residing in the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electrical Alarm Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

The object of this invention is to provide an electric alarm system having normally open first and second circuits, in the latter of which an alarm device is included, and having also provisions whereby the first circuit when completed shall effect the closure of the second circuit and the sounding of the alarm device and which first circuit will itself be automatically broken and the second circuit will remain thus closed until it (the second circuit) is manually broken. Thus if the first circuit be once completed the alarm will be continually sounded until the second circuit is broken.

The invention is applicable for use in connection with burglar-alarms, hotel-annunciators, clocks, and other appliances in which continuous electrical connections are desired; and, as stated generally, the invention comprises normally open first and second circuits, in the latter of which the alarm or other translating device is included, in combination with means for making and breaking the first circuit, a movable contact device for closing the second circuit and automatically breaking the first circuit, and a suitable switch for breaking the second circuit, as will hereinafter be particularly described and claimed.

In the drawings, Figure 1 is a diagram of an alarm system embodying my invention. Fig. 2 is an elevation of the alarm device thereof. Fig. 3 is a diagram of a modification of the invention as applied to an ordinary electric bell.

A represents a battery, B an oscillating contact making and breaking device, and C an electromagnetic alarm or sounder, the said device being included in the first circuit *a* and the alarm or sounder in the second circuit *a'*, which circuit will be presently more fully described. In the first circuit is included an interrupter comprising a spring-arm *x* and a contact-piece *y*, the spring-arm tending normally to break the electrical connection. The arm *x* is closed by means of the device B, as will be presently explained. The first circuit is normally broken at a predetermined station, a suitable contact, such as *d*, under the control of a mat, door, or other object, being provided to effect by movement or displacement the completion of the circuit when the interrupter, to be presently referred to, is in closed position. The oscillatory device B comprises an electromagnet the core of which includes a lever *b*, fulcrumed to a suitable bracket or support, whereby when said first circuit is completed the magnet will be energized. The upper and lower extremities of the lever constitute contact-pieces b' b^2, respectively. The electromagnet *c* of the sounder or alarm C is arranged adjacent to the oscillatory lever and is provided with a contact-piece c', which extends into the path of the opposing contact b^2 of said lever, whereby when the magnet B is energized, as just stated, such contact b^2 will be drawn toward the contact-piece c', and thus swing laterally outward the upper contact portion b' of the lever. This lever is maintained in a normal or non-contacting position by a suitably-disposed retracting-spring b^3. The lower end of the lever is in contact with but electrically insulated from the spring-arm *x* of the interrupter. When the lever is in its normal position, it presses said arm against the contact-piece *y;* but when the lever is swung laterally, as just stated, the arm moves away from the said contact-piece, and thus interrupts the first circuit.

The electromagnet *c* is included in the second circuit a', which is normally broken adjacent to the upper contact b' of the lever, the terminals of said circuit being provided with clips a^2, between and from which such contact b' may be oscillated. When the lever is engaged with the contact c', as above stated, the contact b' engages the clips and closes the second circuit. Thus the electromagnet *c* is energized and the spring-controlled armature c^2 thereof is continuously vibrated to effect the operation of the bell-hammer c^3 or other device actuated thereby. It will be here ob-

served that the armature c^2 forms a part of the second circuit a', said armature carrying the usual yielding contact c^4, which coacts with a stationary contact c^5, included in the second circuit a'. It will also be seen that once the second circuit is closed the alarm will continue even though the first circuit be broken. This follows from the fact that the initial energization of the electromagnet c causes the same to maintain in close contact therewith the depending contact b^2 irrespective of the condition of the first circuit.

In order that the second circuit may be interrupted at will, the return-wire thereof is provided with a closed-circuit switch or push-button e, by the manipulation of which such circuit may be manually broken and the alarm stopped, in which case the device B will resume its normal position and the parts will be automatically reset in readiness for a succeeding operation.

From the foregoing it will be seen that the first circuit a comprises the battery A, the conductor leading therefrom, the electromagnet B, the contact y, the spring-arm x, the conductor leading from the latter, the contact device d, and the return-conductor therefrom to the battery A. The second circuit a' includes the clips a^2, connected with the electromagnet B, the electromagnet c of the alarm device C, the armature c^2, the spring-contact c^4 carried thereby, the stationary contact c^5, the switch e, and the return-conductor therefrom to the battery A. In fact, the second circuit a' when the apparatus is set is practically a prolongation of one leg of the first circuit a, the other leg of which, which includes the contact y, the spring-arm x, and the contact d, is cut out during the operation of the device.

The operation of the herein-described apparatus is as follows: The first circuit a is closed at the switch d, whereupon current will flow from the positive pole of the battery A to the electromagnet B, thereby energizing the latter, from which the current will flow through the contact y, the spring-arm x, through the switch d, and back to the battery A. With the energizing of the magnet B the lower end of the lever b, which forms the core of said magnet, will be drawn to the contact c', whereupon the arm x will move away from the contact y, thereby breaking the first circuit automatically. However, the upper end b' of the lever b will have been carried between the clips a^2 at the movement of the lever b, and consequently the second circuit will be closed at said clips. This closing of the second circuit throws the magnets B and c in series, and the current therefore flows from said magnet B to the magnet c through the armature c^2 of the latter and through the spring-contact c^4 and stationary contact c^5, whence the current returns to battery A by way of the switch e, which is normally closed. The alarm C therefore continuously rings until the switch e is opened, when the magnet c becomes demagnetized and the alarm ceases to ring. The demagnetization of the magnet c releases the lever b, and the spring b^3 shifts the latter to its original position, in which the lever again closes the first circuit at the contacts x and y and opens the second circuit at the clips a^2. The parts are thus reset for a new operation.

During the operation of the apparatus the second circuit a' will of course be broken at the contacts c^4 and c^5; but this will not open the second circuit at any other point, inasmuch as the residual magnetism of the cores of the magnets B and c will hold said magnet B in the position to which it is moved when the first circuit is primarily closed, and not until the second circuit is opened at the switch or push-button e will the magnet B be moved to close the first circuit at the contacts x and y.

If desired, an additional alarm device C′ at another station may be employed, the same being so arranged that if the switch or push-button e be moved to connect the same with the terminals e' the first circuit a'' of the second alarm will be included in the battery-circuit and the oscillating contact B′ of such device will be operated to effect the completion of the second circuit a a of the latter and, perforce, the sounding of the electromagnetic alarm therein. By the manipulation of the switch or push-button, such as indicated at d, in such circuit the second alarm may be stopped.

Numerous suitably-located station-alarms of the character described may be similarly operated and controlled.

If desired, the invention may be employed as an attachment for an ordinary electric bell, as illustrated in Fig. 3. In that case the bell $C^{\times}$ is included in the second electric circuit a' and such circuit is made and broken by the operation of the oscillatory contact-lever B, the armature or pole-piece for which is a stationary bracket c'', to which the contact-lever is pivoted. The first circuit a, in which such lever is included, is made and broken by a contact d similar to the first-described construction, and the second circuit is likewise provided with a closed-circuit switch or push-button e, by means of which the closed second circuit may be broken at will to discontinue the operation of the bell.

I claim—

1. The combination with normally open first and second circuits, and means for making and breaking the first circuit, of an electromagnetic contact device included in and controlled by said first circuit and adapted automatically to make and break the first circuit and also to make and break the second circuit, and a translating device in the latter circuit.

2. The combination with normally open first and second circuits, and means for making and breaking the first circuit, of an electromag-

netic contact device included in and controlled by said first circuit and adapted automatically to break and make the first circuit and also to make and break the second circuit, a translating device in the latter circuit, and a manually-operated device for making and breaking said second circuit.

3. The combination with normally open first and second circuits, and means for making and breaking the first circuit, of an electromagnetic device in the second circuit, and an electromagnetic contact device included in and controlled by said first circuit and adapted automatically to break and make the first circuit and also to make and break the second circuit.

4. The combination with normally open first and second circuits, and means for making and breaking the first circuit, of an electromagnetic device in the second circuit, an electromagnetic contact device included in and controlled by said first circuit and adapted automatically to break and make the first circuit and also to make and break the second circuit, and a manually-operated device for making and breaking said second circuit.

5. The combination with normally open first and second circuits, and means for making and breaking the first circuit, of an oscillatory electromagnetic contact device included in and controlled by the first circuit and adapted automatically to break and make the first circuit and also to make and break the second circuit, and an electromagnet in said latter circuit having one of its poles in proximity to the contact device.

6. The combination with normally open first and second circuits, and means for making and breaking the first circuit, of an oscillatory electromagnetic contact device included in and controlled by the first circuit and adapted automatically to break and make the first circuit and also to make and break the second circuit, an electromagnet in said latter circuit having one of its poles in proximity to the said contact device, and a manually-operated device for making and breaking said second circuit.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

BURNETT MENKIN.

Witnesses:

ANDREW V. GROUPE,

JOHN R. NOLAN.