No. 875,091. PATENTED DEC. 31, 1907.

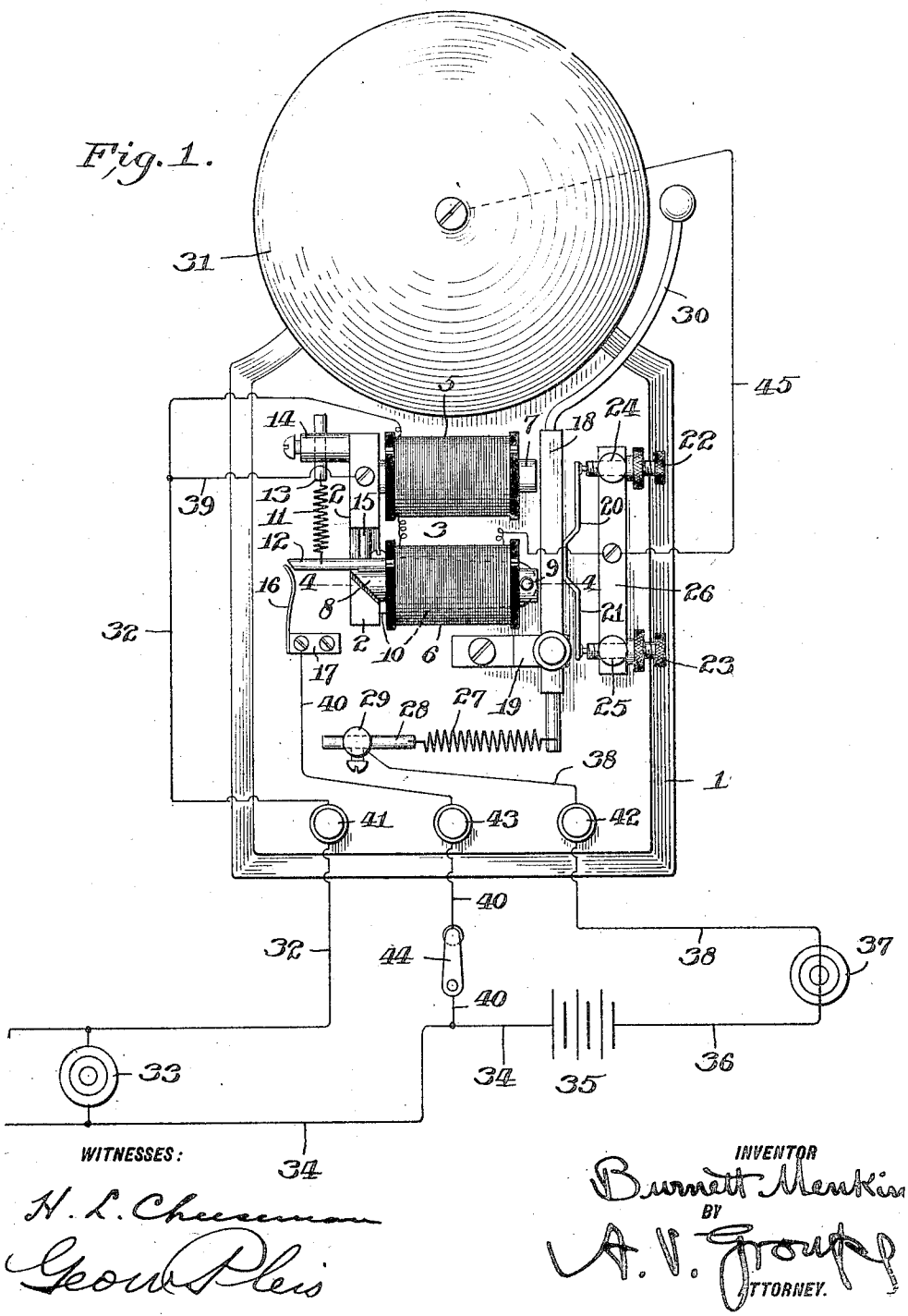
B. MENKIN.

ELECTRICAL ALARM DEVICE.

APPLICATION FILED JULY 18, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 3.

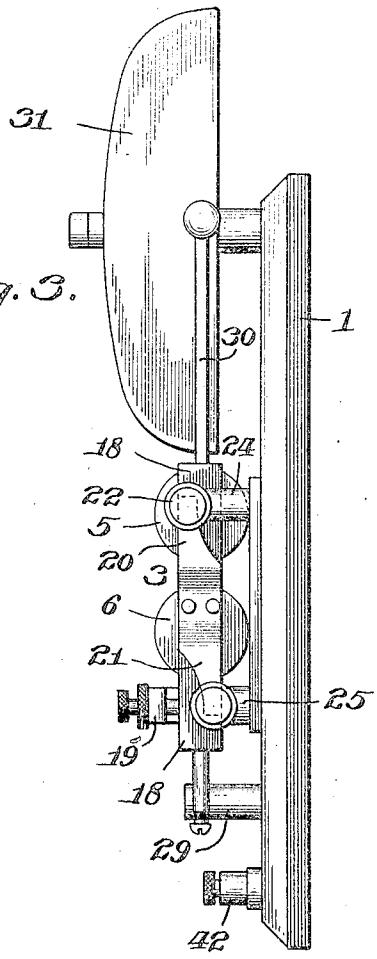


Fig. 2.

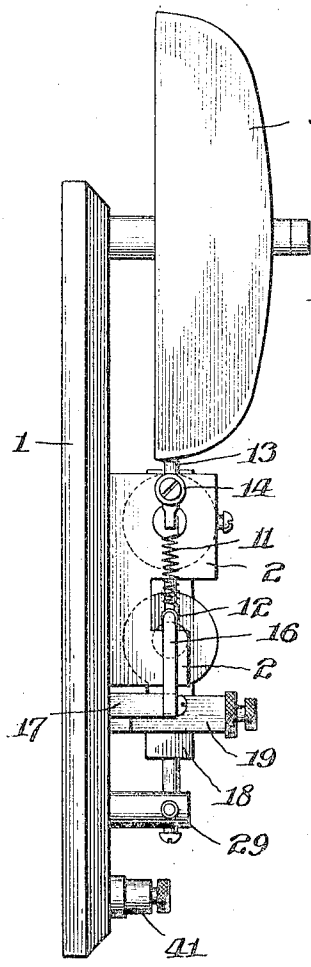
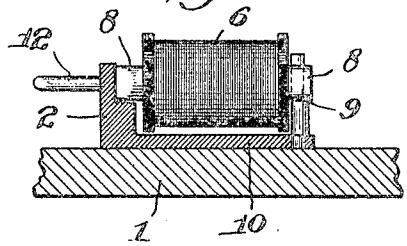


Fig. 4.



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BURNETT MENKIN, OF NEW HAVEN, CONNECTICUT.

ELECTRICAL ALARM DEVICE.

No. 875,091. Specification of Letters Patent. Patented Dec. 31, 1907.

Application filed July 18, 1905. Serial No. 270,244.

To all whom it may concern:

Be it known that I, BURNETT MENKIN, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Electrical Alarm Devices, of which the following is a specification.

This invention relates to electrical alarm devices, my object being, as generally stated, to provide, in combination with two normally open electric circuits and an alarm device included in each of said circuits, a simple and efficient means whereby the closing of the first circuit will automatically effect the closing of the second circuit and cause the alarm device to be continuously actuated, until the second circuit is manually broken, even though the first circuit is broken after the closing of the second circuit.

The invention is especially adapted for use in connection with burglar alarms, hotel annunciators, high and low water gage apparatus, day or night calls and similar appliances.

Included in the invention is a switch whereby the second circuit may be cut out so as not to be automatically closed by the closing of the first circuit, whereby when the second circuit is thus cut out the bell or other alarm device will be actuated only while the first circuit is closed, thus providing a means whereby an electric bell or other device may be continuously actuated after an open-circuit push-button has been closed and immediately opened, or whereby the bell may be actuated only while the open-circuit push-button is closed in the ordinary manner.

The invention also includes a novel means for regulating the sound of the alarm device, all of which will be hereinafter fully described and claimed.

In the drawings:—Figure 1 is an elevation of an alarm device and electrical connections embodying my invention. Fig. 2 is a view of the alarm device, as seen from the right of Fig. 1. Fig. 3 is a view of the alarm device, as seen from the left of Fig. 1. Fig. 4 is a sectional detail, as on the line 4—4 of Fig. 1.

1 designates a base board on which is mounted the bridge piece 2 of an electro-magnet 3 comprising the coils 5 and 6 and their cores 7 and 8, respectively. The core 8 is pivoted at one end, as at 9, to an extension 10 of the bridge piece 2, and the other end of the core 8 is beveled and arranged adjacent to a similarly beveled portion of the bridge piece. The beveled end of the core 8 is held normally away from the beveled portion of the bridge piece 2 by the action of a spring 11 extending between a projecting pin 12 on the core 8 and an adjustable pin 13 on a post 14 projecting from the bridge piece 2, a suitable stop 15 being employed to take against the bridge piece 2 to limit the movement of the core 8.

The free end of the pin 12 is arranged adjacent to the free end of a contact spring 16 projecting from a block 17 which is mounted on the base board 1, whereby when the electro-magnet 3 is energized, the beveled end of the core 8 will be drawn into engagement with the beveled portion of the bridge piece 2 and thus move the pin 12 into contact with the contact spring 16 against the action of the spring 11.

Adjacent to the cores 7 and 8 is arranged an armature 18 which is pivoted to a bracket 19 on the board 1. The armature 18 is provided with two spring contact arms 20 and 21 adapted to take against adjustable contact screws 22 and 23 screwed into posts 24 and 25, respectively, rising from a bar 26 on the base board 1, suitable set nuts being provided to lock the screws 22 and 23 in their positions of adjustment. One contact screw 23 is arranged adjacent to the pivotal connection of the armature 18 with the bracket 19 and the other screw 22 is arranged away from said pivotal connection for a purpose hereinafter explained. The contact arms 20 and 21 are maintained normally against the screws 22 and 23 by the action of a spring 27 extending between a projection on the armature 18 and an adjustable pin 28 secured to a post 29 on the base board 1. The armature 18 carries a hammer 30 adapted to strike a gong 31 on the base board 1 when the armature is vibrated.

The electro-magnet 3 is included in two normally open electric circuits termed first and second circuits. The first circuit comprises the electro-magnet 3, its armature 18 and connected parts, a conductor 32 leading from the electro-magnet 3 to an open circuit switch, or push button 33, by means of which the first circuit may be closed when desired, a wire 34 leading from the switch or push-button 33 to a battery 35, a wire 36 leading from the battery 35 to a closed circuit switch, or push-button 37, and a wire 38 leading from the switch 37 to the post 29 connected with the armature 18. The second circuit

comprises the electro-magnet 3, the armature 18 and connected parts, the wire 32 leading from the electro-magnet, the wire 39 leading from the wire 32, the bridge piece 2, the core 8, the pin 12, the spring 16, the block 17, a wire 40 leading from the block 17, the wire 34 leading to the battery 35, the wire leading from the battery to the closed circuit push button or switch 37 by means of which the second circuit may be opened as desired, and the wire 38 leading from the switch 37 to the post 29 connected with the armature. Thus it will be seen that the first circuit is normally open at the switch 33 and the second circuit is normally open between the pin 12 and spring 16 and that when either circuit is closed the electro-magnet 3 will be energized. The wires 32, 38 and 40 are interrupted by suitable binding posts 41, 42 and 43, respectively, for convenience of wiring, and the wire 40 is interrupted by a switch 44 for a purpose hereinafter explained.

The operation may be briefly described as follows:—When the switch 33 is operated to close the first circuit, the electro-magnet 3 is energized and the armature 18 is vibrated, as is common and well known in electric bells. With the first impulse of current passing through the electro-magnet 3, the beveled end of the core 8 is drawn into contact with the beveled portion of the bridge piece 2 thereby moving the pin 12 into contact with the spring 16 and closing the second circuit against the action of the spring 11. The second circuit now being closed, the armature 18 will continue to vibrate and sound the gong 31 even though the first circuit be immediately opened after the armature 18 starts to vibrate. During the operation of the device by the second circuit, the pin 12 and spring 16 are held in contact with each other and the beveled end of the core 8 in engagement with the bridge piece 2, due to the residual magnetism of the core 8 and the rapid vibrations of the armature 18 making and breaking the circuit at the contact points of the screws 22 and 23 with the arm 20 and 21, respectively. Thus the alarm will continue to sound under the influence of and until the second circuit is manually broken by the push-button switch 37, whereupon, the core 8 being demagnetized, the spring 11 will move the pin 12 from engagement with the spring 16 to open the second circuit and leave the parts in their original position for a succeeding operation. It will, of course, be understood that the extension 10 of the bridge piece 2 provides a second magnetic circuit for the electro-magnet 6 which serves more effectually to retain the beveled end of the core 8 in engagement with the beveled portion of the bridge piece 2.

By opening the switch 44 the second circuit may be cut out and the alarm may be used as an ordinary electric bell, ringing while the button is pressed to close the switch 33 and ceasing to ring when the button is released to open said switch.

By adjusting the screws 22 and 23 differently, the operation of the armature 18 may be varied to cause the hammer 30 to produce a greater variation of sound than if a single contact screw were employed, due to the different positions of the contact screws 22 and 23 with relation to the pivot point of the armature.

I preferably employ a wire 45 leading from the bar 26 to the gong 31 which completes the second circuit when the hammer 30 strikes the gong 31 and the arms 20, 21 are out of contact with the screws 22, 23, thus reducing the otherwise longer period of time that the electric circuit would be broken during the vibrations of the armature 18, and causing the more effectual engagement of the beveled end of the core 8 with the bridge bar 2 to maintain the second circuit closed.

I claim:—

1. The combination with normally open first and second circuits, of an electro-magnet included in and common to each of said circuits, means to close the first circuit, means to open the second circuit, a contact device to open and close the second circuit, means under the control of the electro-magnet to automatically close said contact device upon the closing of the first circuit and to automatically open said contact device upon the opening of the second circuit by the second named means.

2. The combination with normally open first and second circuits of an electric bell including an electro-magnet and a hammer operated thereby, said electro-magnet being included in and common to each of said circuits, means to close the first circuit, means to open the second circuit, a contact device to open and close the second circuit, means under the control of the electro-magnet to automatically close said contact device upon the closing of the first circuit and to automatically open said contact device upon the opening of the second circuit by the second named means.

3. The combination with normally open first and second circuits, of an electro-magnet included in and common to each of said circuits, means to close the first circuit, means to open the second circuit, a contact device to open and close the second circuit, means under the control of the electro-magnet to automatically close said contact device upon the closing of the first circuit and to automatically open said contact device upon the opening of the second circuit by the second named means, and means to be set to prevent the closing of the second circuit by the closing of the first circuit.

4. The combination with normally open first and second circuits of an electric bell in-

cluding an electro-magnet and a hammer operated thereby, said electro-magnet being included in and common to each of said circuits, means to close the first circuit, means to open the second circuit, a contact device to open and close the second circuit, means under the control of the electro-magnet to automatically close said contact device upon the closing of the first circuit and to automatically open said contact device upon the opening of the second circuit by the second named means, and means to be set to prevent the closing of the second circuit by the closing of the first circuit.

5. The combination with the pivoted hammer-carrying armature of an electric bell, of two spring contact arms carried by the armature, an adjustable contact screw to contact with one of said arms, the axis of said screw being arranged on a line extending from the pivot point of said armature, an adjustable contact screw to contact with the other of said arms away from the pivot point of the armature, and an electric circuit including said screws and arms for operating the bell.

6. The combination with normally open first and second circuits, of an electro-magnet included in each of said circuits, said magnet comprising a bridge piece having an extension, and two coils with their cores, one of said cores projecting fixedly from the bridge piece and the other of said cores being pivotally mounted on the extension and being movable toward and away from a portion of the bridge piece; means to close the first circuit, a contact device under the control of the movable core of the electro-magnet to automatically close the second circuit upon the closing of the first circuit, and an alarm device actuated by the electro-magnet.

In testimony whereof I affix my signature in presence of two witnesses.

BURNETT MENKIN.

Witnesses:

BARNET CARMAN,

JACOB WEINER.