

No. 675,685.

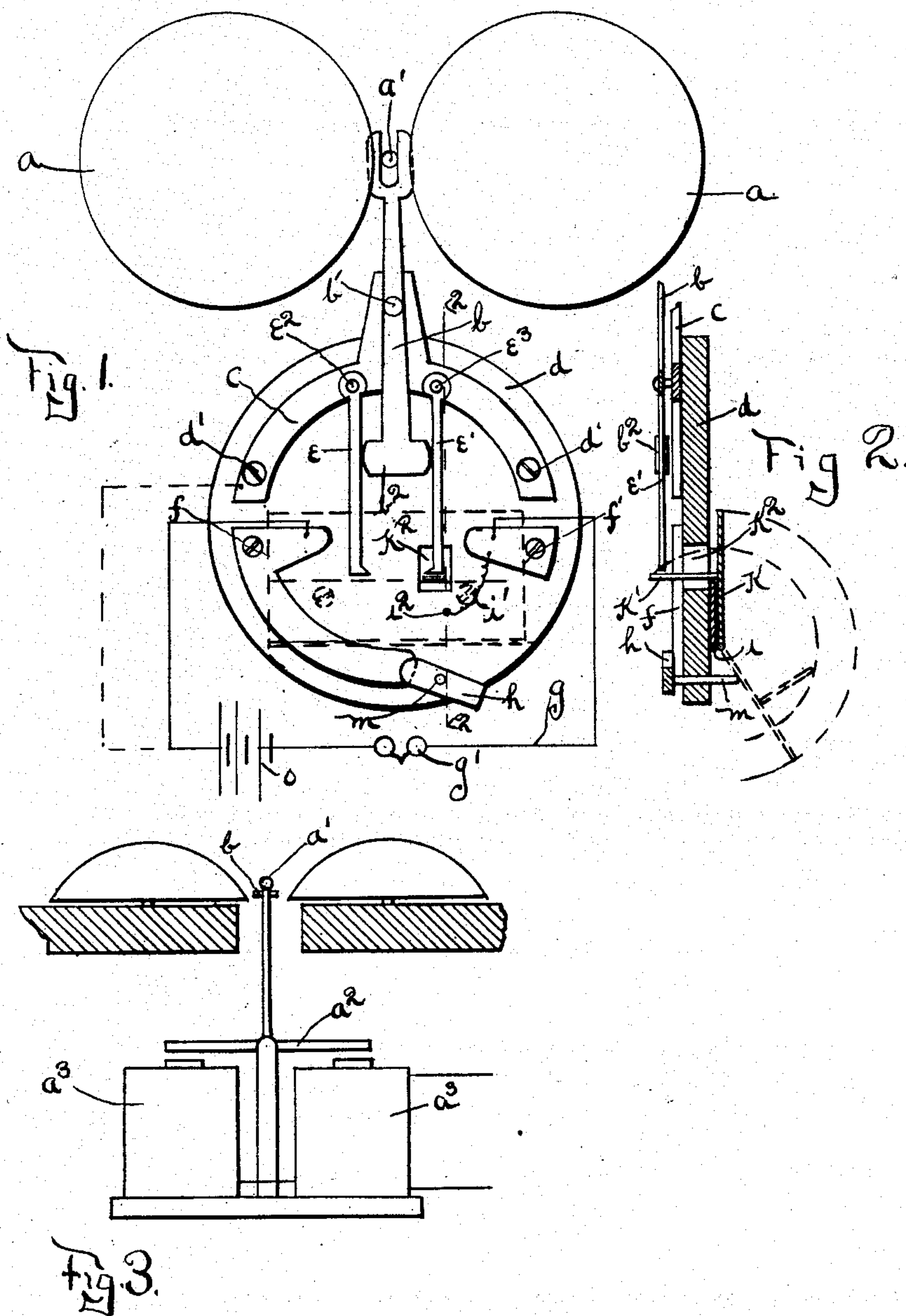
Patented June 4, 1901.

V. J. VAN HORN.
EXTENSION BELL FOR TELEPHONES.

(Application filed Apr. 12, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:
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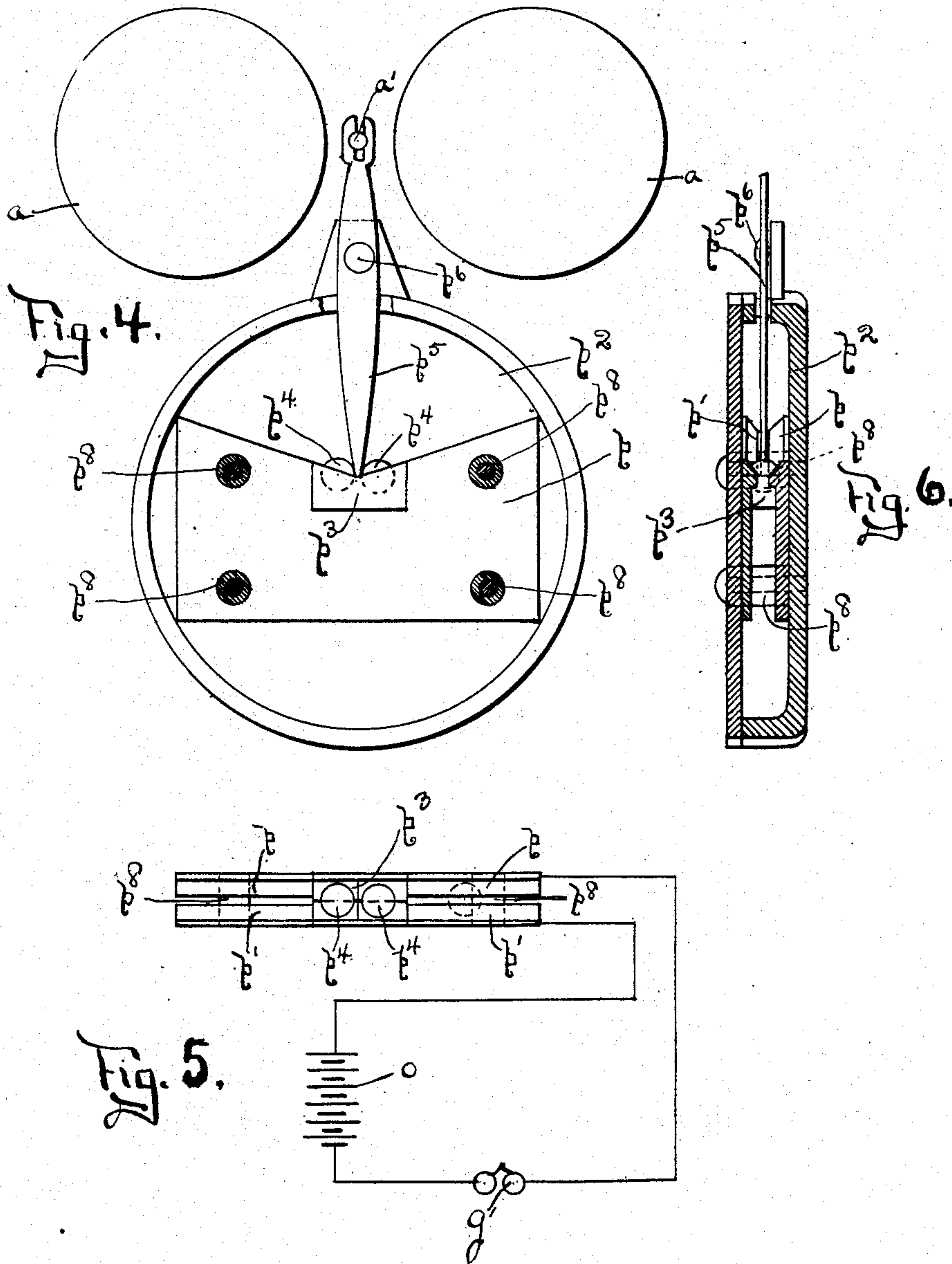
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UNITED STATES PATENT OFFICE.

VANDIVER J. VAN HORN, OF KEOKUK, IOWA.

EXTENSION-BELL FOR TELEPHONES.

SPECIFICATION forming part of Letters Patent No. 675,685, dated June 4, 1901.

Application filed April 12, 1900. Serial No. 12,510. (No model.)

To all whom it may concern:

Be it known that I, VANDIVER J. VAN HORN, a citizen of the United States, residing at Keokuk, in the county of Lee and State of Iowa, have invented a certain new and useful Improvement in Extension-Bells for Telephones, 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 an extension-bell or signaling device for telephone and similar circuits, my purpose being to provide means whereby when a telephone or other bell is rung an auxiliary signal will be actuated to attract the attention of the party who is called.

My invention is useful where, for instance, it is desired to ring a bell at considerable distance from the telephone. In such cases it has been the usual practice heretofore to insert in the telephone-circuit a magnet or relay which serves to close the circuit through the auxiliary bell.

It is the object of the present invention to provide an extension device which will not necessitate the interference with the main signaling-circuit, the extension-circuit being closed wholly through mechanical means actuated by energy derived from the operating-electromagnet of the bell or other signaling device employed.

In accordance with my invention, in the preferred form thereof, I associate with the bell, usually with the hammer or clapper thereof, a lever which is adapted to be rocked or oscillated to effect the closing of the extension-circuit. The lever may operate when rocked to release a contact-arm, which will permanently close the extension-circuit until manually opened, or the lever may serve to actuate parts which will temporarily close the extension-circuit, opening the same again as soon as the main bell ceases to operate.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a view of the device of my invention. Fig. 2 is a sectional view thereof on line 2 2, Fig. 1. Fig. 3 is a view showing the bell-magnets. Fig. 4 is a view of a modified form of my invention, in which the circuit is closed by means of rolling balls. Fig.

5 is a view showing the tracks upon which the balls travel. Fig. 6 is a sectional view of one of the devices shown in Fig. 4.

Like letters refer to like parts in the several figures.

The hammer or clapper is adapted to vibrate in the usual manner between the gongs a a and is mounted to move with the armature a^2 , which is oscillated by means of the magnets a^3 a^3 , adapted to be traversed by the ringing-current. A lever b , pivoted at b' to the plate or frame c , has a bifurcated end adapted to engage the hammer or clapper a' and carries at the opposite end an enlarged portion or hammer b^2 , adapted to vibrate between the pendulum-rods e e' , pivoted, respectively, at e^2 and e^3 to the plate c . Metal contact-strips f and f' are secured to the insulating-base d , and the battery o and the extension-bell g' are connected between the contact-plates f and f' . At the lower end of the base d is a switch h , mounted to rotate about a pin m , which extends through said base. On the back of the base d is mounted the plate i , connected with the contact-plate f' by means of a wire i' , passing through the hole i^2 in the base d , and to the plate i is hinged the drop or shutter k , having a lateral arm k' , adapted to extend through the opening k^2 in the base d .

The operation of the device of my invention is as follows: When a ringing-current is sent over the magnets a^3 a^3 of the bell, the clapper a' is vibrated between the gongs a a to ring the bell. This movement of the clapper causes the arm b to oscillate upon its pivot, whereby the hammer b^2 by a repeated succession of blows holds the pendulum-arms e e' in contact, respectively, with the contact-plates f and f' . The circuit of battery o is thus closed over contact-plate f , lever e , plate c , lever e' , contact-plate f' , and through bell g' to the battery. The extension-bell is thus caused to ring and the circuit there-through is maintained closed so long as the main bell continues to operate. When the main bell ceases operating, the pendulum-levers e e' return to the vertical position, thus opening the circuit.

When it is desired to produce a continuous ringing of the bell until the circuit is manually opened, the switch h is moved into the

position shown in Fig. 1, and when the main bell is operated and the lever e' is moved to the right the lateral arm k' is disengaged and permits the drop k to fall into contact with the pin m , thus closing the circuit of battery o through plate f , switch h , pin m , shutter k , plate i , conductor i' , and bell g' back to the battery.

Instead of employing two pendulum-levers I may employ a single pendulum-lever—as, for instance, the lever e' —the lever e being omitted. In this case the pole of battery o instead of being connected with plate f would be connected with plate c and the circuit would be closed from battery o over plate c , lever e' , plate f' , and bell g' back to the battery.

In Figs. 4, 5, and 6 I have illustrated a modification of my invention in which a pair of plates p p' , of conducting material, are mounted upon an insulating-base p^2 , said plates being separated by insulation p^8 p^8 . The upper edges of the plates are inclined and a block of insulation p^3 is inserted at the middle of the plates, upon which the balls p^4 p^4 , of conducting material, are adapted to normally rest. A lever p^5 , pivoted at p^6 , is adapted to engage the clapper of the bell, and the lower end thereof is arranged to rest between the balls p^4 p^4 . One of the plates p is connected with one side of the battery o , and the other plate p' is connected with the opposite side of the battery, the bell g' being in the battery-circuit. When the bell is rung, the lever p^5 is oscillated and the end thereof, striking the balls p^4 p^4 , moves the same outward and causes the same to roll upon the edges of the plates p p' , thereby closing the circuit between the same. As the lever p^5 continues to oscillate the balls are repeatedly struck to maintain the circuit closed between the plates during the operation of the bell. The circuit of battery o may be traced over plate p' through the balls p^4 p^4 , plate p , and bell g' back to the battery.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with an electric bell included in an electric signaling-circuit, of an independent supplemental signaling-circuit, and a circuit-closing device associated with a moving part of said bell and adapted to automatically close said supplemental circuit

when said bell is actuated and to automatically open said supplemental circuit when said bell ceases to operate, whereby the supplemental signaling-circuit is both automatically closed and automatically opened by said bell, substantially as described.

2. The combination with an electric bell included in an electric signaling-circuit, of an independent supplemental signaling-circuit, a circuit-closing device therefor and an oscillating lever associated with the clapper of said bell and adapted to follow the reciprocating movement of said clapper in both directions, the said lever being adapted to automatically close said supplemental signaling-circuit upon the vibration of said clapper and to automatically open said supplemental signaling-circuit when said clapper ceases to vibrate, whereby the supplemental signaling-circuit is automatically closed and opened by the movement of said clapper, substantially as described.

3. The combination with a bell, or other signaling device, of an independent signaling-circuit, a lever associated with the hammer or clapper of said bell and adapted to partake of the vibration thereof, and one or more elements adapted to receive repeated blows from said lever during the operation of said bell to close said circuit and to automatically open said circuit when said bell ceases to be actuated, substantially as described.

4. The combination with a bell or other signaling device, of a movable part receiving motion therefrom, a circuit-closing element adapted to be moved into circuit-closing position and to be maintained in such position by said moving part so long as the bell continues in operation, substantially as described.

5. The combination with a bell or other signaling device, of a movable part receiving motion therefrom, a circuit-closing element adapted to receive repeated blows from said moving part during the operation of said bell to close the circuit, substantially as described.

In witness whereof I have hereunto subscribed my name in the presence of two witnesses.

VANDIVER J. VAN HORN.

Witnesses:

HILLHOUSE BUEL,
JOSEPH R. ANDERSON..