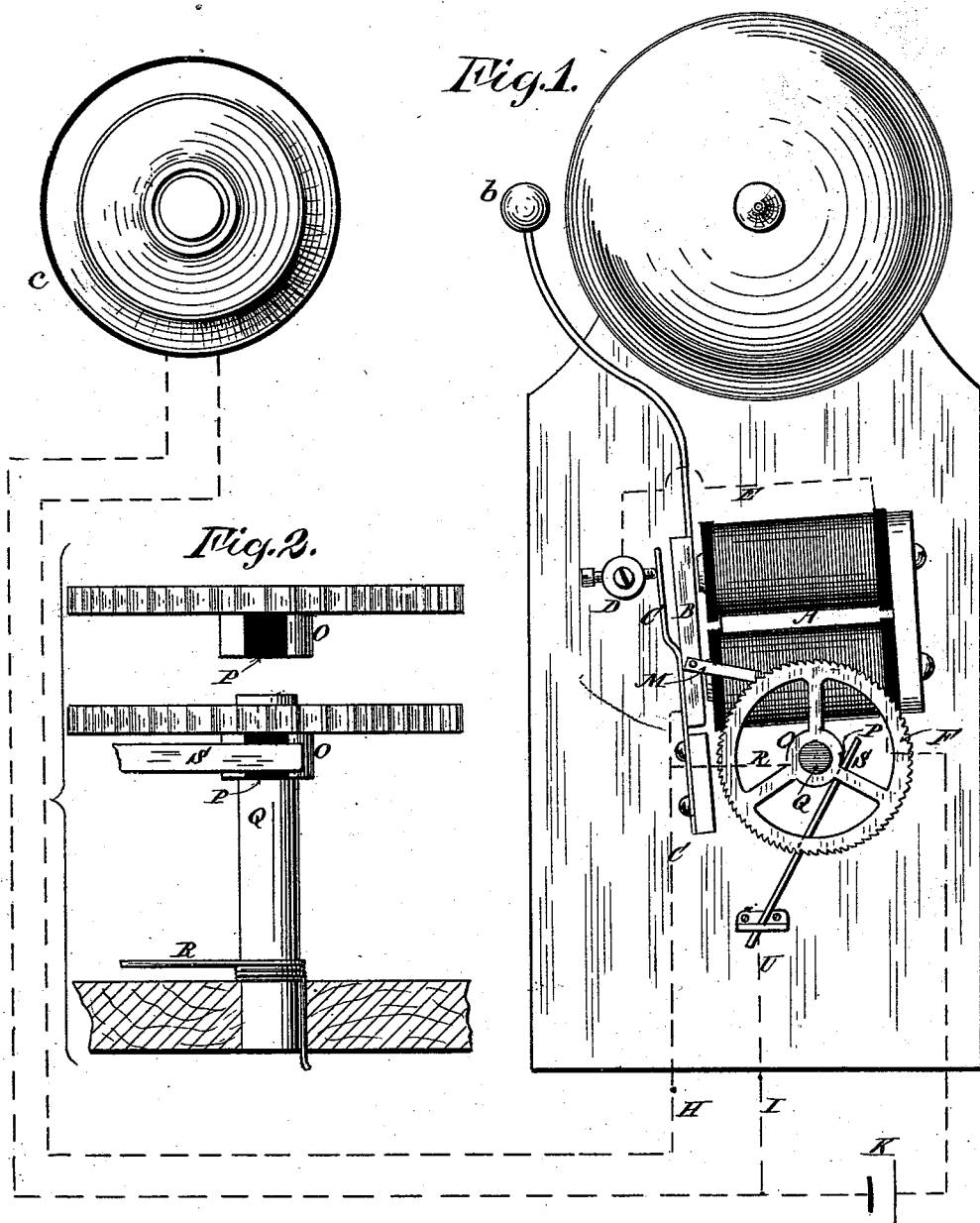


(No Model.)

L. M. PINOLET.
BELL,

No. 423,697.

Patented Mar. 18, 1890.



Witnesses:

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UNITED STATES PATENT OFFICE.

LOUIS M. PINOLET, OF NEW YORK, N. Y.

BELL.

SPECIFICATION forming part of Letters Patent No. 423,697, dated March 18, 1890.

Application filed July 15, 1889. Serial No. 317,553. (No model.)

To all whom it may concern:

Be it known that I, LOUIS M. PINOLET, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric Bells, of which the following is a specification.

My present invention relates to an electric bell which will continue to ring for a predetermined length of time after the signal push-button or thermostat has operated. When the push-button has been released, the bell continues to ring.

The object of my invention is to so construct the bell and so connect the circuits that the continued ringing of the bell may be effected in a sure manner and with a very simple construction.

The accompanying drawings set forth the details of my invention.

Figure 1 is a plan view of the bell and of the push-button, showing also the electric circuits in dotted lines and a suitable cell in circuit with the bell and push-button.

In order to prevent confusion and thereby set forth the details of the invention some of the details of the device not belonging to my invention are omitted—as, for instance, the binding-posts, the frame-work of the bell ordinarily employed to mechanically join the bell itself to the electro-magnets, and the conductors usually passing underneath the base-plate of the device.

Fig. 2 shows in its upper part a view in elevation of a part of Fig. 1, and in its lower part the same, with also a view of the standard which supports the portion shown in the upper part of Fig. 2.

The device in so far as my invention is concerned consists of the combination of an electro-magnet A, provided with the usual vibrating armature B, to which is attached the clapper *b* in the ordinary manner, a ratchet-wheel F, provided with a hub O, cylindrical in form and having a piece of insulation P on one side thereof, against which presses a contact-spring S in the normal condition of the device, a pawl M, engaging said ratchet-wheel, resting on the periphery of the wheel by the force of gravitation, and pivoted upon the said armature in such a manner that the vi-

bratory motion of the armature will rotate the wheel to the right, and a pillar or standard Q, upon which the wheel is adapted to rotate.

The electric circuits are as follows: a battery-cell K is provided at any convenient point in the neighborhood of the bell, and its poles terminate in a distant push-button, the circuit of the cell and button including the magnet A. A local circuit is from the cell K, through the wire I, through the spring S, to the insulation P, where of course the circuit is broken; then through the wire R, the spring C, the post D, the wire E, the magnet A, and then back to the opposite pole of the cell from which the circuit started. This circuit is an open circuit as long as the spring S is on the insulation P. It may also be said to be open when the spring C does not touch the post D, also when both of these conditions exist. When the spring C is in metallic contact with the post D, and when the spring S is in metallic contact with the hub O, then is the said local circuit closed, so that a current passes intermittently through the magnet A, as in the ordinary electric bell. The intermittent current is caused by the spring C alternately touching and leaving the post D, as in the ordinary bell.

The *modus operandi* of the whole device and system of electric circuits is described as follows: When the push-button is operated so as to close the circuit of the cell, the armature of the electro-magnet vibrates and the bell is caused to ring, because then the current can and does pass through the push-button and the electro-magnet A from both poles of the cell K. It being admitted that the push-button is kept closed by the finger or otherwise for an appreciable time, yet only for a second or two, it is evident to those versed in the art that the pawl M vibrating with the armature will at each vibration catch in the teeth of the ratchet-wheel and rotate the wheel intermittently and as long as the circuit is completed through the push-button *c*. By this time the insulation P has rotated with the wheel and has broken its contact with the spring S, so that the spring S bears upon the hub O at its metallic portion, and thereby makes an electric contact with the

said hub. The insulation need not be very wide, its width being easily determined by experiment in the construction of the bell. It need be only so wide that in one position of the hub no electric contact may be made between the metallic part of the hub and the spring S. I have shown but one piece of insulation P, as this is the number I prefer to have, as then the bell will ring as long as it occupies the wheel to rotate. As soon as the insulation P leaves the spring S by rotation of the wheel, and as soon as the spring comes in contact with the metallic portion of the hub, a local circuit is completed from the cell K through the hub and through the magnet A, and this being the case the armature B vibrates, or, rather, continues to vibrate as long as the spring is in contact with the metallic part of the hub O. When the wheel has rotated so far—as, for instance, the distance of a complete circle—the insulation comes in contact with the spring S, and the spring S leaves contact with the metallic portion of the said hub. The system by this time is in such a condition that the push-button is open, for it is assumed that the operator touched the button only for an instant, or for only one, two, or three seconds. When the push-button is a second time closed, the same operation is repeated.

I prefer to have it understood that the bell device is to be so fastened to the wall or other object that the tendency of the weight is to cause the pawl to rest upon the teeth of the wheel.

I do not claim, broadly, the combination of a vibrating armature and means for continuing its vibration after a circuit-closer in circuit with the armature's magnet has been opened; but

What I do claim is as follows:

1. In an electric-bell system, the combination of an electric generator, an electric bell in circuit therewith and with a push-button or circuit-closer, a rotary ratchet-wheel engaging with a pawl which is pivoted to the vibratory armature of the magnet of the electric bell, a hub for the wheel provided upon one side with insulation which is in normal contact with a contact-spring or electric ter-

minal of the said generator, the support of the wheel being connected electrically with the said hub and with the vibratory armature and with one pole of the generator, the other pole being connected with the magnet and the electric terminal D, which normally presses upon the spring C of the armature.

2. In an electric bell, the combination of a ratchet-wheel, a vibratory armature provided with a pawl engaging with the said ratchet-wheel, insulation covering a portion of the surface of the hub of the wheel, and a spring normally pressing upon the insulation, the vibratory armature being within inductive relation of the magnet of the electric bell and being provided with a spring, and an electric generator having one pole electrically connected to the first-named spring, and the remaining pole being connected through the magnet to an electric terminal, which is normally in contact with the second-named spring.

3. In an electric bell, the combination, with the vibratory armature thereof, of means of rotating a wheel, and a spring electric terminal pressing normally upon insulation attached to the said wheel, the other terminal being in contact with said armature.

4. In an electric-bell system, the combination of two circuits, the one main and containing a push-button, and the other local and including a circuit-breaker, and both containing an electric-bell magnet, which is provided with a vibratory armature, the said circuit-breaker consisting of a rotary wheel provided with a hub, upon which is mounted insulation, a spring-terminal pressing upon the said hub and means for rotating said hub, consisting of a pawl pivoted to the said armature and engaging with teeth which are provided upon the periphery of said wheel.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 11th day of July, 1889.

LOUIS M. PINOLET.

Witnesses:

EDWARD P. THOMPSON,
GEO. H. GUY.