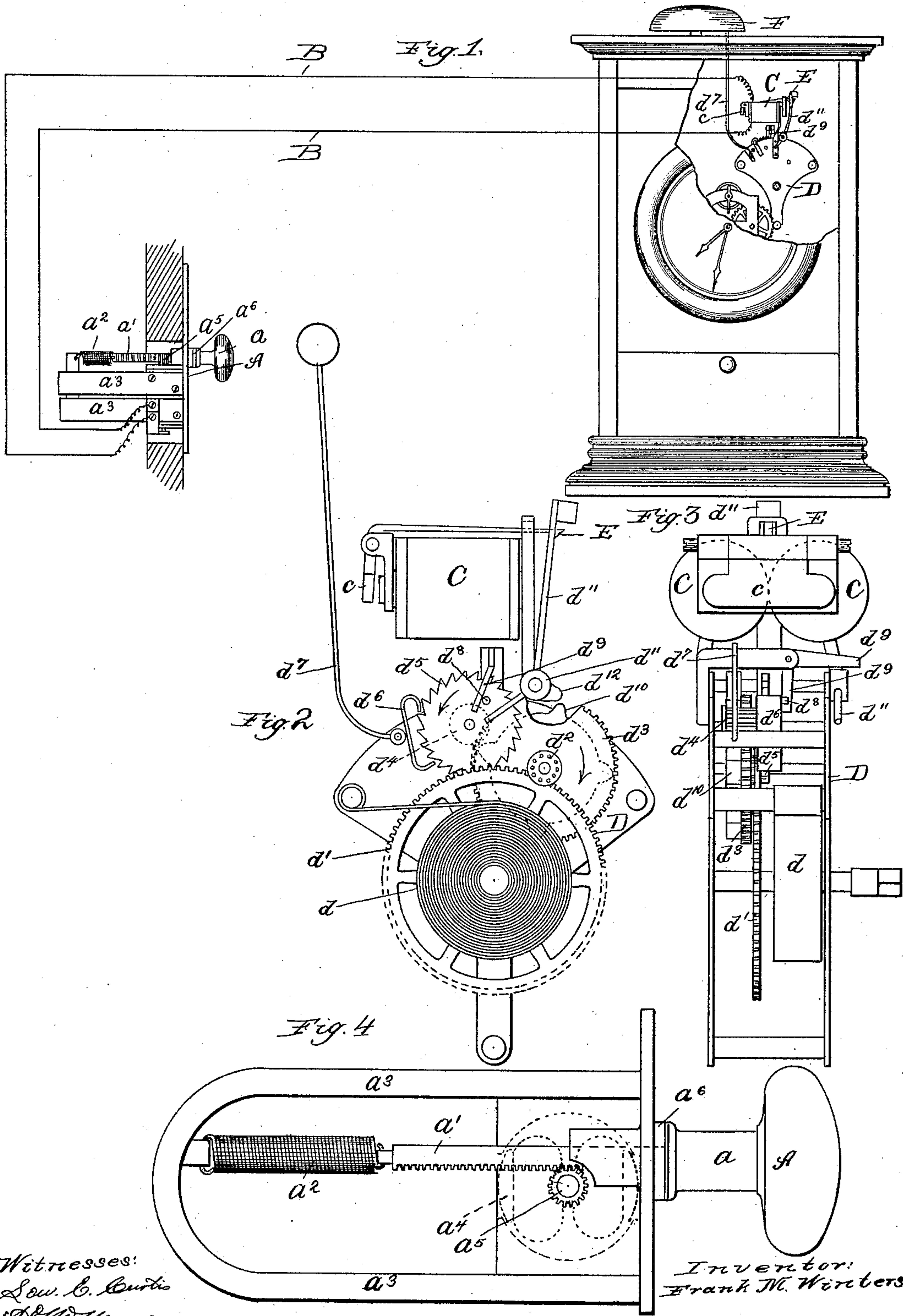


(No Model.)

F. M. WINTERS.
DOOR BELL.

No. 465,909.

Patented Dec. 29, 1891.



Witnesses:
Law. C. Curtis
J. W. Munday,

Inventor:
Frank M. Winters

By Munday, Evans & Adeock
Fess Attorneys.

UNITED STATES PATENT OFFICE.

FRANK M. WINTERS, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
ALBERT H. BALDWIN, OF SAME PLACE.

DOOR-BELL.

SPECIFICATION forming part of Letters Patent No. 465,909, dated December 29, 1891.

Application filed June 1, 1891. Serial No. 394,698. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. WINTERS, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Door or Call Bells, of which the following is a specification.

This invention relates to improvements in door-bells for dwelling-houses. The "electric door-bell," so called, has been considered an advance or improvement upon the old-fashioned bell pulled by a wire, because of the simplicity of the mechanism, which in the case of the electric bell may consist only of a contact key or button located conveniently at the door, a circuit-wire, a battery, and the electric gong or bell. Experience, however, has developed defects in this device of a somewhat unexpected character. In addition to the difficulty of keeping the contact-points in proper condition to do their work and the liability of the circuit-wires becoming slowly corroded until the passage of the current causes sufficient resistance to set fire to dry dust, fragments of wood, and inflammable material, there is the further serious difficulty that the battery, though kept on an open circuit, is liable to constant change and at times becomes wholly inoperative. The consequences of the door-bell getting out of order are very annoying indeed, as the fact will probably remain equally unknown to visitors and to the occupants of the house for at least some period of time. Indeed the fact that the bell is out of order is usually only discovered by accident and after it has already failed to operate. In the present invention I seek to overcome some of these defects, to obviate the danger of fire, to dispense with the battery, and yet to retain the simplicity of construction of the electric door-bell.

To this end I place at the door a small magneto-electric machine to be operated by an ordinary bell-pull or suitable handle, crank, or push-button, the same being combined and connected with a bell to be operated by stored power—as, for example, by spring clock-work—which power is automatically set in operation by means of the current generated by the magneto-electric machine. In other

words, I have a clock-work bell, an electro-magnet for releasing the clock-work placed in the circuit of a small magneto-electric machine, which latter is located at the front door and operated by the physical force of the visitor. Only a small amount of current will be necessary to sufficiently energize the electro-magnet to cause it to release the clock-work and start the bell ringing by the power of the clock-work, which will automatically stop in position to be released again. As only a small amount of power is consumed in ringing a bell at any one time, the clock-work does not need to be wound up, except at long intervals. Unlike a battery, it does not deteriorate, is not subject to sudden changes, and may be kept in open view instead of in a dark corner or in a damp basement, and, finally, is no expense. This circuit, unlike the battery-circuit, is a constantly closed one, has no contact-points to get out of order, and at no time carries anything but an exceedingly feeble magneto-current, so that there is no possibility of producing fire.

The nature of the invention will be understood from the subjoined description.

In the accompanying drawings, which form a part of this specification, Figure 1 is an electrical diagram of the apparatus. Fig. 2 is a front view of the clock-work bell with its releasing-magnet. Fig. 3 is a side elevation of the same, and Fig. 4 is a side elevation of the magneto-electric bell-pull.

Like letters of reference indicate like parts in all the figures.

In said drawings, A is the electro-magnetic bell-pull, consisting of the pull or handle *a*, the shank of which *a'* is formed into a rack-bar and furnished with the retractile spring *a*². The permanent magnet or magnets are indicated by *a*³ and the rotating armature in dotted lines at *a*⁴. On the armature-shaft is a pinion *a*⁵, meshing with the rack-bar *a'*. By pulling on the handle or "pull" *a* the armature is rotated first in one direction and then by the retraction of the spring in the other direction, generating in the wire coiled on the armature a slight current of electricity after the manner of magneto-electric machines. To guard against the hammering effect of a

sudden release of the bell-pulley, I interpose a rubber washer or cushion a^6 . The armature is connected at each of its poles to the circuit-wire B. This wire is run through the house to any desired point in a closed circuit, and this circuit contains an electro-magnet C, placed in juxtaposition to a wound-up bell-ringing clock-work D, having a release-catch device E operated by the armature of the magnet C, so that when the pull at the door is operated the magnet C will be energized, the catch E released, the clock-work D started, and the bell F made to ring for a certain brief period of time and then to automatically stop by the resetting of the catch.

The clock-work mechanism (designated, generally, by the letter D) does not materially differ from the ordinary alarm attachment to a clock, except that it is constructed to ring for a shorter period of time. Said clock-work mechanism consists, as illustrated, of the spring d , gearing d' d^2 d^3 d^4 , escapement-wheel d^5 , the escapement d^6 , connected to the bell-hammer d^7 , a stop-pin d^8 on the escapement-wheel, a bell-crank stop-lever d^9 , the cam-wheel d^{10} , and the bell-crank weighted catch-lever d^{11} . The armature c of the magnet C is extended to form the catch E, which passes through an aperture in the upright portion of the weighted lever d^{11} and holds the same normally in the position indicated at Fig. 2. Now when the magnet C is energized and its armature operated the catch E is lifted, the weighted lever d^{11} released, and said lever falling its shorter arm strikes against the horizontal arm of the bell-crank d^9 , lifting the same and moving its vertical arm out of contact with the stop-pin d^8 , whereupon the train is released, the bell-hammer set to vibrating by the operation of the escapement, and the bell thereby caused to ring, which it continues to do until the train has so far revolved as to bring one of the cams d^{10} into contact

with the projection d^{12} on the lever d^{11} , which raises said lever until it is caught again by the catch E, whereupon the lever d^9 drops into position to again engage the stop-pin d^8 in its revolution, whereby the train is automatically stopped and the apparatus automatically set in position to be again started in like manner.

In order that the clock-work train thus described may be conveniently housed or incased, and also that it may be so situated as to be conveniently wound up on occasion, I prefer to locate this mechanism in the case of an ordinary time-clock. I use for this purpose a common eight-day kitchen-clock, and usually provide that the key for winding the clock will also wind and fit the bell mechanism. The advantage of this arrangement is that the person or servant who has charge of the clock may be instructed to wind up the bell mechanism at the same time that the clock is wound up, and will be warned that the mechanism is run down by the stopping of the clock. By this simple device it is insured that the bell mechanism will be kept constantly wound. However, such a device is not by any means a necessity, for the demand on the bell mechanism is usually so small that when once wound it will run for months without rewinding.

I claim—

In door-bell pull apparatus of the kind herein shown, the combination, with clock-work for ringing the bell and having cam-wheel d^{10} , of an electro-magnet, a catch E, operated by the armature of the magnet, the weighted bell-crank lever d^{11} , bell-crank stop-lever d^9 , and stop-pin d^8 , substantially as specified.

FRANK M. WINTERS.

Witnesses:

H. M. MUNDAY,
EDW. S. EVARTS.