

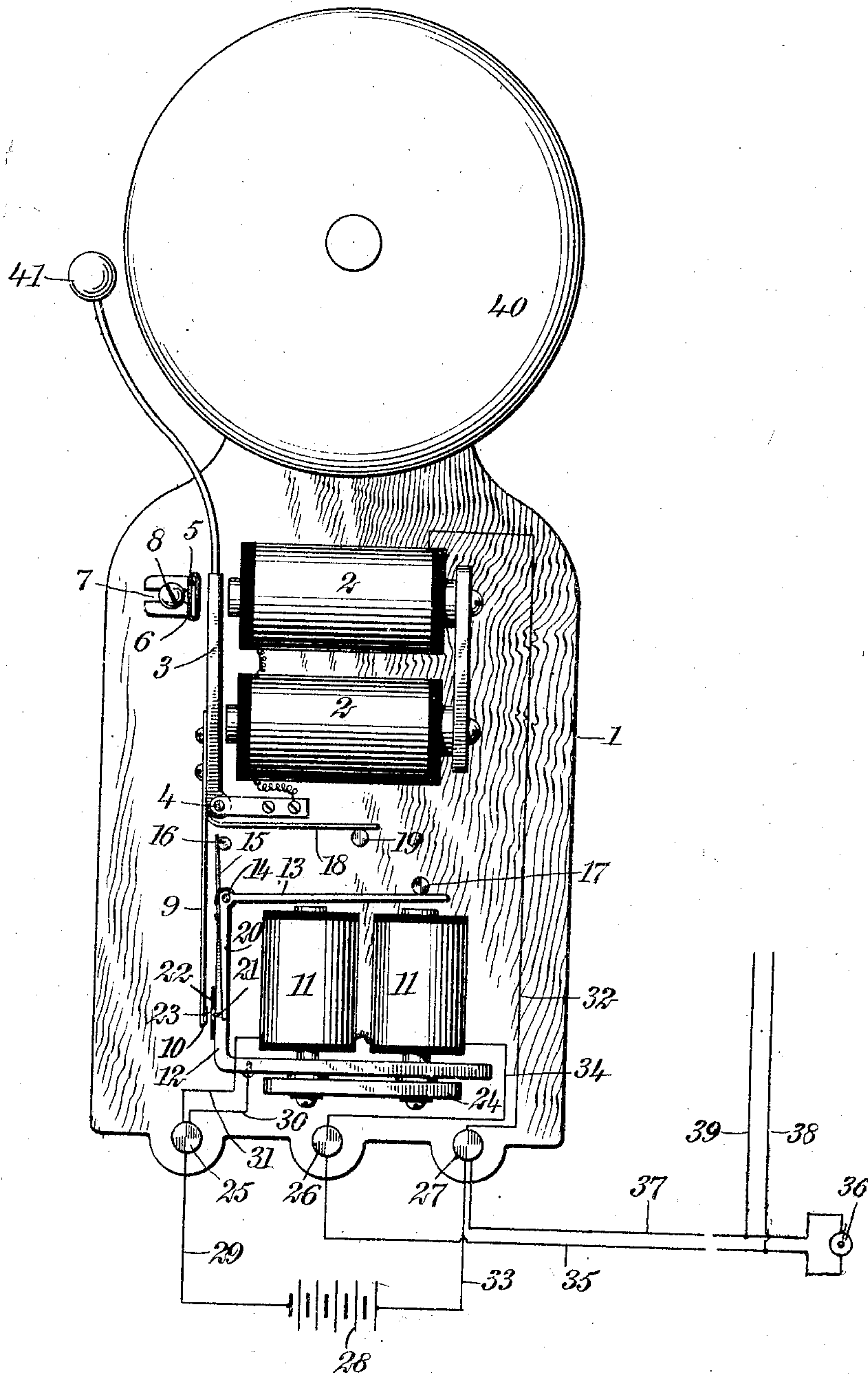
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E. LIONAIS & W. T. SUTTON.

ELECTRIC SIGNAL.

APPLICATION FILED MAY 5, 1906.



WITNESSES

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EMILE LIONAIS AND WILLIAM T. SUTTON, OF MONTREAL, QUEBEC, CANADA.

ELECTRIC SIGNAL.

No. 850,766.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed May 5, 1906. Serial No. 315,413.

To all whom it may concern:

Be it known that we, EMILE LIONAIS, a citizen of Canada, and WILLIAM T. SUTTON, a citizen of Canada, and both residents of Montreal, in the Province of Quebec and Dominion of Canada, have invented a new and Improved Electric Signal, of which the following is a full, clear, and exact description.

Our invention relates to electric signals, and more particularly to a system for ringing one or more electric bells from a distance.

Our invention further relates to a system in which a relay is employed for controlling a bell and in which a single battery is used for energizing the relay and for operating the bell.

Among the several advantages presented by our invention are the following: First, the battery is comparatively near the bell and its current is virtually shifted for the purpose of ringing the bell; second, the relay-magnet and the bell-magnet are of proper resistance to so apportion the current as to economize the battery energy; third, the bell-circuit is open while the relay is being energized, and after the relay is energized the greater part of the current is shunted off and passes through the bell-magnet; fourth, our details of construction and our particular arrangement of the wiring increase the general efficiency of the system as a whole.

Reference is to be had to the accompanying drawing, forming a part of this specification, in which the figure shows a front elevation of the bell made in accordance with our invention, and also shows diagrammatically the wiring connected with the bell for operating the same from a distance.

Mounted upon a wooden base 1 is a bell-magnet 2, provided with an armature 3, the latter being journaled at 4 and free to swing. A buffer 5, having the form of an L-shaped piece of metal, is encircled by a sleeve 6 of felt or rubber and is provided with a slot 7, through which passes a screw 8. The buffer is thus rendered adjustable toward and from the magnet 2 and is used for limiting the throw of the armature 3. Mounted upon the armature 3 is a spring 9 of metal, provided with a platinum tip 10. A relay-magnet 11 is mounted upon a frame 12, and journaled upon this frame at 14 is an armature 13. A leaf-spring 15 serves to retract the armature 13 and engages a stationary pin 16. Another stationary pin 17 serves as a limiting-stop for the upstroke of the armature 13.

The spring 15 thus tensions the armature 13 and normally sustains it in the position indicated.

A leaf-spring 18 is connected with the armature and rests upon a pin 19. The tendency of the spring 18 is to maintain the armature 3 normally in engagement with the buffer 5, or, in other words, is to retract the armature 3 after the same has been drawn to the right of the bell-magnet 2. Rigidly connected with the armature 13 and depending downwardly therefrom is an arm 20, the lower end of which is provided with a contact-boss 21 of platinum. This contact-boss projects into an aperture 23 in a fiber plate 22, secured upon the frame 12. Whenever the armature 13 is attracted by the magnet 11, the arm 20 swings to the left, according to the view shown, so that the boss 21 projects for a certain distance to the left of the plate 22. In this position the boss 21 is engaged by the contact-point 10, provided the armature 3 is in its normal position, but not otherwise—that is to say, if the armature is held down continuously the contact-point 10 engages the contact-boss 21 and disengages the same, according to the position and movement of the armature 3. The back plate 24 of the relay-magnet 11 is secured directly upon the frame 12, and thus serves to support the magnet thereupon. Binding-posts 25 26 27 are mounted upon the base 1. A battery is shown at 28 and is connected by a wire 29 with the binding-post 25. This binding-post is connected by a wire 31 with the magnet 11 and by a wire 30 with the frame 12. A wire 32 extends from the bell-magnet 2 to the binding-post 27, the latter being connected by a wire 33 with the battery 28. The binding-post 26 is connected by a wire 34 with the relay-magnet 11. From the binding-post 26 a wire 35 leads to the push-button 36, which is normally open. From this push-button a wire 37 leads back to the binding-post 27. Wires 38 39 are connected with the wires 35 37 and may be used for adding either additional bells or additional push-buttons to the system. The bell-gong is shown at 40 and is struck by the clapper 41, which is mounted upon the upper portion of the armature 3.

The operation of our device is as follows: We will suppose that the push-button 36 is located at some distance from the bell. The battery 28, however, is comparatively near the latter. The parts being in normal posi-

tion, as indicated in the figure, the operator closes the push-button 36. The following circuit is thereby completed, as follows: battery 28, wire 33, binding-post 27, wire 37, push-button 36, wire 35, binding-post 26, wire 34, relay-magnet 11, wire 31, binding-post 25, wire 29, back to battery 28. This energizes the relay-magnet 11 and causes it to draw the armature 13. The armature 13, being in normal position by virtue of the tension of the spring 18, the boss 21 is pressed into engagement with the contact-point 10, the following circuit being thereby completed: battery 28, wire 33, binding-post 27, wire 32, bell-magnet 2, journal 4, spring 9, contact-point 10, contact-boss 21, arm 20, frame 12, wire 30, binding-post 25, wire 29, back to battery 28. It will be noted that this circuit is to some extent in parallel with the circuit first described—that is to say, the battery 28 energizes a circuit through the push-button 36 and the relay-magnet 11, and at moments when the boss 21 and the contact-point 10 are in engagement there is a shunt-circuit through the bell-magnet 2. It will also be noted that when the push-button 36 is closed the entire energy of the current operates upon the relay-magnet 11 and that after this magnet draws its armature comparatively near to its poles the current is thus shunted off to operate the bell. This arrangement is quite important, for the reason that if the armature 13 approaches comparatively near the poles of the magnet 11 comparatively little energy is now required to hold this armature, and all of the excess of energy can be employed for ringing the bell. By making the magnet 11 of comparatively high resistance it need not absorb any considerable portion of the energy, so that nearly all of the battery-current may be thrown upon the bell-magnet 2. The arma-

ture 13 being held firmly down, the contact-point 10 and the boss 21 serve as an interrupter and cause the current to flow intermittently through the magnet 2, so that the armature 13 is caused to vibrate substantially in the manner well known in this art. The bell-gong 40 is thus struck intermittently by the clapper 41.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A device of the class described, comprising a relay-magnet and an armature therefor, a bell, a magnet for the bell, and an armature for the magnet provided with a hammer for the bell, a battery, an electric circuit between the terminals of the battery and the relay-magnet, a shunt-circuit in connection with said first-named circuit and including the bell-magnet, and means whereby the closing of the main circuit will close the shunt-circuit and whereby the opening of the main circuit will positively open the shunt-circuit.

2. The combination of a relay provided with a magnet and with an armature, an electric bell provided with a magnet and with an armature, a battery common to said relay and to said electric bell, and mechanism controllable by movements of the armature of said relay for the purpose of energizing and deenergizing said magnet of said bell.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

EMILE LIONAIS.
WILLIAM T. SUTTON.

Witnesses:

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