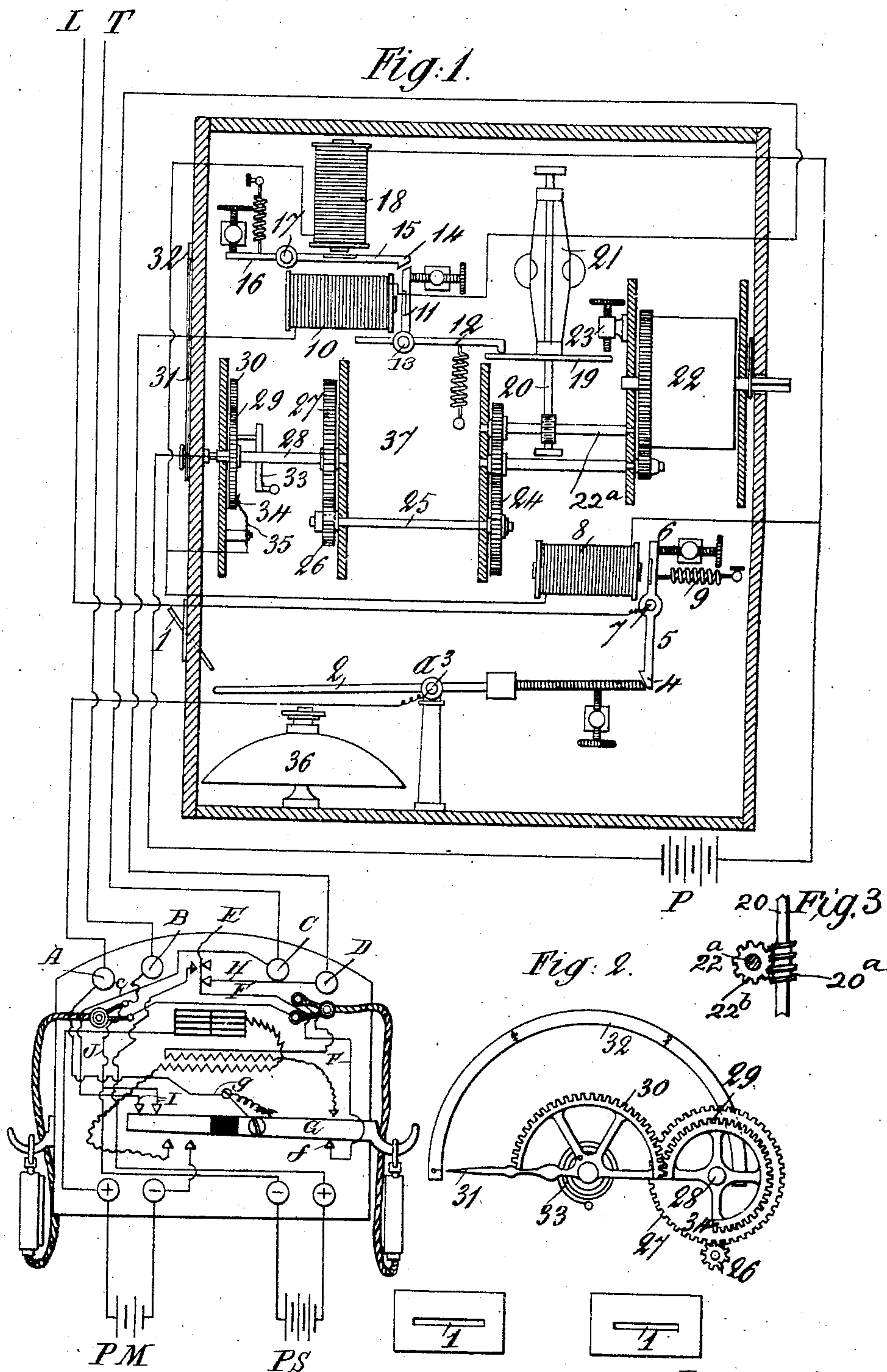


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R. DE LAMPRECHT.
APPARATUS FOR CLOSING ELECTRIC CIRCUITS.

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APPARATUS FOR CLOSING ELECTRIC CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 786,038, dated March 28, 1905.

Application filed August 22, 1900. Serial No. 27,705.

To all whom it may concern:

Be it known that I, RODOLPHE DE LAMPRECHT, engineer, a subject of the King of Italy, residing in Paris, France, have invented a certain new and useful Apparatus for Closing Electric Circuits, of which the following is a full, clear, and exact specification.

This invention relates to an apparatus for effecting upon the introduction of one or more coins the closing of an electrical circuit for a predetermined period.

The invention may be used in connection with any apparatus which through the insertion of one or more pieces of money is opened for use to the public for a certain time specified in advance—as, for example, self-collecting telephones, auxiliary illuminating devices for railway-trams, &c.—but is particularly suited to effect telephonic communications, for example, by means of the prepayment of a specified amount.

In the following description I refer to the annexed drawings, which illustrate more particularly an arrangement for telephonic communication. The general working of the same is carried out in the following manner: Upon introducing one or more coins into slots situated upon one side of the apparatus I set up communication with the electric supply, the line of the two stations, and the earth, and communication being established its exact duration is indicated by means of an indicating-dial placed upon the front of the apparatus.

In the accompanying drawings, Figure 1 is an elevation of the improved apparatus with parts in section. Fig. 2 is a diagrammatic view of a portion of the apparatus, and Fig. 3 is a detail view illustrating the connection between the regulator-shaft and the motor.

As shown in the drawings, the apparatus is contained within a casing having slots 1 1 in one side thereof for the introduction of one or more coins. Within the casing is arranged a balanced lever 2, mounted to oscillate upon the axis 3 and adapted to be engaged by the inserted coin. The end of the lever when the latter is oscillated engages or connects with a hook 4, forming the extremity of a lever 5 6, mounted upon an axis 7. The lever forms at

its end 6 the armature of an electromagnet 8, and it is normally separated from the poles of the electromagnet by a spring 9. The lever 5 6 is connected with the line, and a wire in the circuit connects with the lever 2, the circuit connections being indicated in Fig. 1. When the lever 2 contacts with the lever 5 6, it closes the circuit with the central, which at the time of non-communication is interrupted between these parts.

In Fig. 1 the letters L and T indicate the conductors leading from a subscriber to the central telephone-station. The line may be composed of two line-wires or conductors, or one of said conductors may be grounded in the usual manner.

The conductor L is connected with the binding-post A of the telephone instrument through the axis 7, the lever 5, the lever 2, and axis 3, and the return conductor T is connected with the binding-post B.

An electromagnet 10 is arranged in the casing, the ends of the wire leading therefrom being connected with the binding-posts C and D of the telephone instrument.

PM represents the microphone-battery, and PS indicates the calling-battery, for the telephone apparatus.

P is a battery for actuating the electromagnets 8 and 18, as will be hereinafter explained. This battery may, however, be joined in circuit with the other two batteries, if desired. The telephone instrument shown in connection with my invention is of a well-known type.

The electrical connections are indicated in Fig. 1, and the courses of the circuits will be hereinafter described.

The electromagnet 10 has its armature formed by the arm 11 of a bell-crank lever 11 12, pivoted at 13. This arm 11 when attracted engages a hook 14, forming the end of a lever 15 16, pivoted at 17, the arm 15 of said lever forming the armature of an electromagnet 18.

A disk 19 is arranged within the casing and is rigidly connected with the shaft 20 of the regulator 21 of a clockwork-movement 22. The arm 12 of the lever 11 12 is normally held

in engagement with said disk by a spring, but is disengaged therefrom when the electromagnet 10 attracts the arm 11. A screw 23 is adapted to engage the disk 19 and serves
 5 as a brake to regulate the speed of the regulator, and consequently the length of the communication.

As shown in Fig. 3, the shaft 20 of the regulator is provided with a worm 20^a in mesh
 10 with a worm-wheel 22^b on the shaft 22^a of the clockwork-movement. The last wheel 24 of the train of gear-wheels of the clockwork-movement is mounted upon a shaft 25, which
 15 by means of the pinion 26 controls the gear-wheel 27 on the shaft 28, upon which is keyed a wheel 29, toothed for only a portion of its periphery. This partially-toothed wheel en-
 20 engages a wheel 30, also only partly toothed, and which is rigidly connected with the pointer or needle 31, which moves over the dial 32 to visibly indicate the duration of the communi-
 cation.

The dial may be divided into seconds, minutes, or any other fraction of time.

25 The apparatus is arranged to run a predetermined time—that is to say, three, five, or ten minutes, for instance. Then the pointer after having marked the time during which the communication is to last returns to the
 30 position of rest, and communication is automatically interrupted, as hereinafter described.

Upon the axis of the wheel 30 is arranged the spring 33, intended to return the pointer
 35 or needle to its zero-point or point of departure after the lapse of the predetermined period allowed for the communication, at which time the wheel 29 is released from engagement with the wheel 30, carrying the pointer.

40 The wheel 29 is provided with a contact 34, adapted to engage a spring plate or strip 35 to close the circuit through the battery P and electromagnets 8 and 18.

A gong 36 is arranged in the casing, upon
 45 which the coins fall after oscillating the lever 2, and a note is thus struck which is heard in the telephone.

The operation of the apparatus is as follows: Upon introducing one or more coins
 50 into the slots 1 the lever 2 engages the lever 5 6 and closes the electric circuit previously interrupted at this point. The telephonic apparatus is then put in circuit on the line, and the call is made, as usual, by means of switch-
 55 ing-knob E, a push-button, or other device, so as to send on the line the current of battery PS. The — pole of battery PS is connected to binding-post B and line-wire T, and from the + pole the circuit runs to the call-
 60 ing-switch E, which is then in engagement with the contact-point at the left-hand side, and passes through wire F, contact f, lever G, wire g, binding-post A, and levers 2 and 5 to line-wire L. Central puts the subscriber
 65 in communication with the person to whom he

wishes to speak and sends back an electric impulse for actuating the electromagnet 10. The current for actuating the electromagnet 10 passes from the line-wire L through levers 5
 70 and 2, binding-post A, wire g, lever G, contact f, wire F to switching-knob E, (which has returned to the position of rest shown in the drawings,) thence through wire H, bind-
 75 ing-post D, electromagnet 10, binding-post C, wire c, contacts I, (connected by lever G,) wire J, and binding-post B to line-wire T. The electromagnet 10 when excited attracts its armature, thus disengaging the arm 12 from the
 80 disk 19, setting the clockwork in operation. When the armature 11 is attracted, the hook 14 on the armature of electromagnet 18 engages the armature 11 and holds the arm 12 out of engagement with disk 19 until the
 85 armature 11 is released, as hereinafter described. The apparatus which has been brought into circuit on the line through the engagement of levers 5 and 2 remains in circuit. The central office after having sent its
 90 current emission or flow to actuate the electromagnet 10 and having put the apparatus-line in communication with that of the subscriber called does not pay any more attention to it, as the communication will continue
 95 as long as the clockwork-movement is running. The wheel 29 having performed its revolution allows by reason of its non-toothed portion the wheel 30 to escape, and the contact-
 100 point 34 engages with the spring plate or strip 35, closing the circuit through the battery P and electromagnets 8 and 18. The closure of the circuit through the electromagnets 8 and 18 causes the levers 5 6 and 15 16 to be attracted, which effects the release of the levers
 105 2 and 11 12, respectively, and thereby breaks the communication between the line and the telephonic apparatus and stops the clockwork-movement.

In case the charge for a call is fixed for a determined distance and if the communication should exceed such distance the person
 110 at the central will require the insertion of as many supplementary coins as the scale of charges shows for the distance, and he will be certain of the introduction of the coins from the sounds resulting from the fall thereof
 115 against the gong.

For example, if a charge of fifteen centimes is fixed for an intramural call it will suffice to introduce a coin of ten centimes into the large
 120 slot and one of five centimes into the smaller slot to obtain three minutes' communication; but if it is wished to ring up another town and the charge is thirty centimes for three minutes it will be necessary before the central af-
 125 fords communication to insert fifteen centimes supplement, and the central is warned that the coins have been introduced by the sound of the two notes from the gong, which are exactly reproduced in the telephone.

The gong or ringing apparatus may be an 130

ordinary bell, which does not sound unless the lever 2 has been engaged at 4; but the bell corresponding to a second slot adapted to receive a coin of a different denomination is of a different nature and gives a different sound from the first. By this means the employee of the central office knows if the necessary sum of money has been introduced into the apparatus.

It is understood that the coin first placed in the apparatus and which places the telephone in communication with central is sufficient for an ordinary call. For establishing the communication the employee at central must first ask the number desired, and, second, if the amount already inserted is not sufficient ask to insert the money, and, third, to establish the communication.

It is to be understood that the telephone apparatus connected with my device is intended only to explain the working of the device, which may be equally as well applied to any desired apparatus intended for public use in this manner.

I may add to the apparatus a counter or recorder of the number of calls.

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

1. A coin-controlled electrical apparatus, comprising a movable coin-actuated part, a contact member arranged to be engaged by said part to establish a contact for an electric circuit, an electromagnet in said circuit, a motor, a stop mechanism for normally keeping the motor inactive, said mechanism being under the influence of the said electromagnet to release the motor when the electromagnet is energized, a latch for locking the stop mechanism after it has been thrown off, a circuit-closer operated by the motor, and electromagnetic means, included in the circuit of said circuit-closer, for allowing the coin-actuated part to return to its first position, and for actuating the latch so as to allow the stop mechanism to again render the motor inactive.

2. A coin-controlled electrical apparatus, comprising a movable coin-actuated part, a motor, a stop mechanism for normally keeping the motor inactive, a circuit controlled by

the movement of the said coin-actuated part, an electromagnet included in said circuit and arranged, when excited, to release the motor from the stop mechanism, a latch for locking the stop mechanism after it has been thrown off, a circuit-closer operated by the motor, and electromagnetic means, included in the circuit of said circuit-closer, for allowing the coin-actuated part to return to its first position, and for actuating the latch so as to allow the stop mechanism to again render the motor inactive.

3. A coin-controlled electrical apparatus, comprising a movable coin-actuated part, a motor, a stop mechanism for normally keeping the motor inactive, a circuit controlled by the movement of the said coin-actuated part, an electromagnet included in said circuit and arranged, when excited, to release the motor from the stop mechanism, a latch for locking the stop mechanism after it has been thrown off, a mutilated gear operated by the motor and carrying a circuit-closer, a pivoted spring-pressed pointer or indicator having a gear-wheel engaging the mutilated gear and arranged to spring back when the blank portion of the mutilated gear comes in registry with the pointer gear-wheel, and electromagnetic means, included in the circuit of said circuit-closer, for allowing the coin-actuated part to return to its first position, and for actuating the latch so as to allow the stop mechanism to again render the motor inactive.

4. A coin-controlled electrical apparatus, comprising a movable coin-actuated part, a latch arranged to lock said part when it is operated by a coin, and to close a call-circuit thereby, a motor controlled electrically, and electric-actuating devices, operated by said motor, for releasing the coin-actuated part from its latch and for effecting a stoppage of the mechanism.

In testimony whereof I have signed my name to this specification in the presence of the two subscribing witnesses.

RODOLPHE DE LAMPRECHT.

Witnesses:

GUSTAVE DUMONT,
EDWARD P. MACLEAN.