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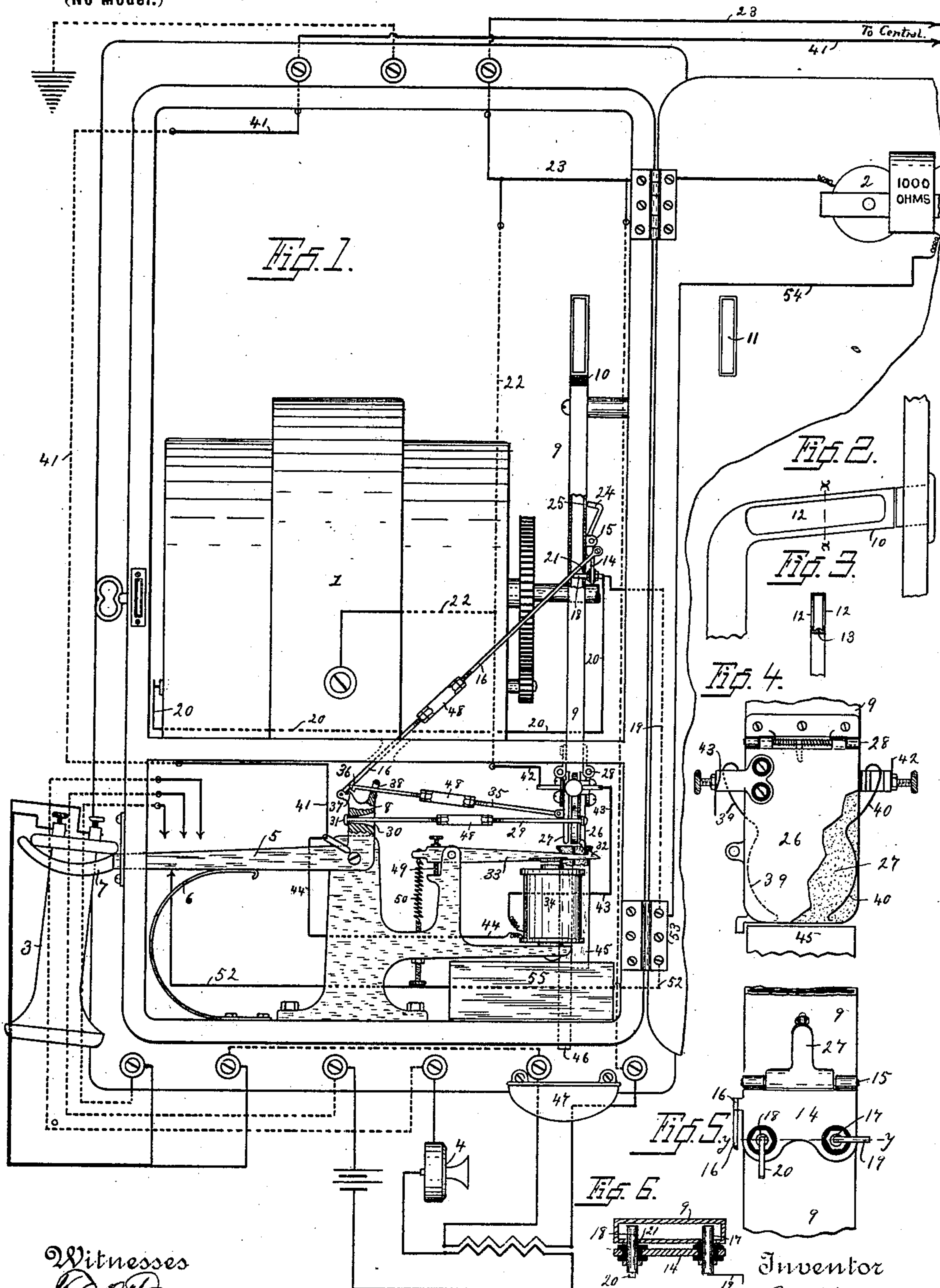
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H. R. MASON.

COIN OPERATED MAGNETO BELL FOR TELEPHONES.

(Application filed June 16, 1899.)

(No Model.)



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COIN-OPERATED MAGNETO-BELL FOR TELEPHONES.

SPECIFICATION forming part of Letters Patent No. 665,834, dated January 8, 1901.

Application filed June 16, 1899. Serial No. 720,757. (No model.)

To all whom it may concern:

Be it known that I, HEBER R. MASON, a citizen of the United States, residing at Ludington, in the county of Mason and State of Michigan, have invented new and useful Improvements in Coin-Operated Magneto-Bells for Telephones, of which the following is a specification.

My invention relates to improvements in coin-operated magneto-bells for telephones, with especial reference to that class of telephones in which a uniform fee is required for each call.

The object of my invention is to provide for a prepaid call service which may be attended to by the operator at the central office without loss of time other than that required to make the desired connection and in which the coin will be returned to the user in case such connection cannot be made, regard being had for accuracy and certainty in the performance of the desired functions, whereby mistakes will be avoided and fraud prevented in connection with the use of the device.

My invention includes the provision of means whereby the deposit of the coin is required to enable the user to ring up the central office, together with means for indicating the presence of the coin to the central operator, means controlled by such operator for accepting the coin by permitting the same to enter the till, and means for returning the coin to the user when the desired connection cannot be secured.

In the following description reference is had to the accompanying drawings, in which—

Figure 1 is a front view of an ordinary form of bridging magneto-bell with my invention applied thereto, the door of the generator-casing being open. Fig. 2 is a detail side view of the upper end of the coin-chute. Fig. 3 is a cross-sectional view of the same, drawn on line *xx* of Fig. 2. Fig. 4 is a side view of the lower end of the chute, showing the coin-retaining electrodes and releasing-plates with one of the latter partially broken away. Fig. 5 is a side view of a portion of the chute, showing the swinging lid for supporting the electrodes of the magneto-generator. Fig. 6 is a cross-sectional view drawn on line *yy* of Fig. 5.

Like parts are identified by the same reference characters throughout the several views.

The magneto-generator 1 and bell mechanism 2, together with the receiver 3, transmitter 4, and other parts usually pertaining to a subscriber's telephone, may be of any ordinary construction.

5 is the switch-lever for switching the signaling and talking mechanism into and out of the circuit of the main line in the usual manner, the lever being provided with the actuating-spring 6 and receiver-supporting hook 7; but it will be observed that I have located this lever below the generator 1 and have provided the same at its rear end with an arm 8, which is utilized for actuating the coin-controlling devices of the coin-chute.

9 is the coin-chute, located in the generator-casing and having an angular portion 10, which communicates with a slot 11 in the casing, through which the coins are deposited in the chute. The part 10 is preferably provided with side openings 12 sufficiently large to permit coins of less than the proper size to fall out of the chute, this being facilitated by providing the under side or base of the part 7 with a ridge 13, over which the coins roll and which tends to make them fall laterally through the openings. A lid 14, hinged at 15 to the side of the coin-chute, is connected with the switch-arm 8 by a rod 16, so that when the receiver 3 is removed from the hook and the lever 5 automatically raised by the spring 6 the lid 14 will be swung outwardly from the chute on its supporting-hinge, while the reverse movement of the switch-lever will be communicated to draw the lid downwardly against the side of the chute. The lid 14 is provided with studs 17 and 18, which in the construction shown in the drawings are insulated from the lid and respectively connected with the conductors 19 and 20 of the generator-circuit, so as to constitute the poles of such circuit. It will be observed that the conductors of the generator-circuit are arranged in the customary manner, the conductor 22 being connected with the line 23 and the line 41 being connected with switch-lever 5, which when down is adapted to contact with the conductor 52, the latter being also in electrical communication with the conductor 19 through

the hinge 53. The ringers of the bell mechanism 2 have the usual resistance of an ordinary bridging-bell and are connected, as usual, through the conductors 54 23 and the other electrical connections above mentioned. When the lid is down, the electrodes 17 and 18 project through an opening 21 in the side of the chute in a position to intercept and stop a coin in its passage through the same, the two electrodes being arranged to cooperate in supporting the coin. The coin is thus utilized as a switch to bridge the intervening space, close the generator-circuit, and permit the user to signal the central office. After signaling the central office the receiver 3 is taken from the hook 7 in the usual manner, when the lever 5 is automatically lifted by the spring 6 and its motion communicated to the lid 14 and electrodes 17 and 18 through the medium of the switch-arm 8 and rod 16 to swing the lid outwardly and withdraw the electrodes from the chute, when the coin is released and permitted to drop to the bottom of the chute. The generator-circuit is thus automatically opened by the release of the coin simultaneously with the movement of the lever 5, switching the talking mechanism into the circuit of the main line and cutting out the ringing-circuit. At the same time an arm 24, carried by the lid 14, is moved inwardly through an aperture 25 in the chute and serves as a stop to prevent the passage of any additional coins until the switch-lever 5 is restored to its original position, in which it is normally held by the receiver 3.

The lower end of the chute is provided with swinging end plates 26 and 27, hinged thereto and forming a continuation of the chute when in their closed positions. A spring 28, located on the hinge-pin of the plate 26, tends to swing the latter outwardly; but it will be observed that the plate is secured to a rod 29, which projects loosely through an opening 30 in the arm 8 of the switch-lever and is provided with a head 31 larger than the opening. This rod 29 is of such length that when the lever 5 is depressed the plate 26 is drawn to its closed position in the plane of the side of the chute. On the other hand, when the lever 5 is raised the rod is free to slide through the opening 30 in the arm 8 without actuating the plate, which when in its closed position is adapted to be engaged and held in such position by a latch 32, carried by a spring-actuated armature-lever 33 of an electromagnet 34. A rod 35 is secured to the plate 27 and provided with a latch 36, adapted to engage a catch 37, carried by the arm 8 of the switch-lever when the lever is in its raised position. When the lever is depressed, the arm 8 first draws upon this rod 35 to swing the plate 27 outwardly, when a stirrup 38, carried by the arm 8 and through which the rod 35 passes, lifts the rod and releases the latch 36 from the catch 37 and allows the plate 27 to swing downwardly by gravity to

its normal position. The hinge of this plate may, however, be provided with a closing-spring similar to the spring which tends to open the plate 26.

It will be observed that the plates 26 and 27 are provided, respectively, with spring-electrodes 39 and 40, between which the coin is adapted to become wedged on dropping from the electrodes 17 and 18 of the ringing-circuit. When in contact with the electrodes 39 and 40, the coin serves as a switch to close a short circuit of the line-wires 23 and 41, through the conductors 22 and 42, electrode 40, coin, electrode 39, conductor 43, electromagnet 34, and conductor 44. The resistance of the electromagnet 34 is such that the currents of the talking-circuits are not entirely shunted through it. Hence the subscriber or user can be heard at the central office in calling for the desired connection, and the faint character of the transmitted sounds will indicate to the exchange operator the presence of the coin. By pressing upon the ringing-key of the central-office switchboard the central operator can, when ready to make the desired connection, switch the generators of the central office into circuit with the line in the same manner as when calling the subscriber, and thus energize the electromagnet 34 sufficiently to cause the depression of the armature 33, when the plate 26 is released from the latch 32, and as the lever 5 is then in its raised position the plate is swung outwardly by the spring 28 and the coin discharged from between the electrodes 39 and 40, when it drops to the till 55 through a chute 45. It will of course be understood that any means under the control of the central operator for sending currents through the line to energize the electromagnet 34 will accomplish my purpose in this regard. The release of the coin breaks the shunt-circuit through the electromagnet 34 and leaves the telephone in condition for use in the ordinary manner. When the receiver 3 is again hung upon the hook 7 of the switch-lever 5, the downward movement of the latter is communicated to the plate 26 through the arm 8 and rod 29 to close the plate against the tension of its actuating-spring, when the armature-latch 32 reengages the lower end of the plate. If, however, the central operator should fail to make the desired connection or if for any reason the user should hang up the receiver before the connection is made, (or before the coin is released by energizing the electromagnet 34,) the coin will then be returned to the user by the action of the rod 35 in retracting the plate 27 to release the coin from between the electrodes 39 and 40 on the opposite side of the chute, for a coin so released is permitted to drop through a chute 46 into an exterior cup 47.

It will be observed that the rods 16, 29, and 35 are provided with link-nuts 48 and the armature 33 with an adjusting-screw 49, cooperative with the spring 50 for holding the

armature in the proper position. With these devices an exact adjustment of the apparatus is possible.

The resistance of the electromagnet 34 is indicated at eighty ohms. With the ordinary telephonic apparatus now in use this will be found sufficient to prevent the entire current from short-circuiting through the coin and magnet; but the current of the line will be so reduced as to indicate clearly from the character of the sounds transmitted that the coin is in place, while still permitting conversation between the user and the central operator. I do not, however, limit the scope of my invention to include the specific form of resistance afforded by the electromagnet, for it is obvious that any means for providing a resistance in the short-circuit conductors sufficient to prevent cutting out the talking-circuits to an extent which would preclude conversation between the user and the central operator might be substituted for or used as an auxiliary to the electromagnet, if desired; but as the electromagnet affords a convenient means for operating the latch which holds the plate 26 it may also be conveniently utilized for producing the required degree of resistance in the short circuit.

It will of course be understood that calls originating in the central office are unaffected by my apparatus, the circuit of the line through the bells of the local station being completed through the conductor 23, bell mechanism 2, conductors 54 and 52, switch 5, and conductor 41 in the usual manner.

Briefly reviewing the operation of my device and assuming that a call is to be made from a station equipped therewith, the coin is first dropped into the chute to establish the ringing-circuit of the generator, when the bell is rung and the receiver lifted from the hook in the customary manner. The talking-circuits of the telephone are then automatically switched into the circuit of the main line by the spring-actuating switch-lever 5, and the lid 14 actuated therefrom to release the coin by retracting the studs 17 and 18, when the coin is permitted to drop to the lower end of the chute, cutting out the ringing-circuit and closing the shunt-circuit through the electromagnet 34. The subscriber then informs the operator at the central office of the connection desired, the character of the transmitted sounds indicating the presence of the coin. The central operator when ready to make the desired connection first momentarily actuates the switchboard ringing-key, and thereby energizes the electromagnet 34 to depress the armature 33, when the spring-actuated plate 26 swings outwardly and discharges the coin into the till. The connection desired by the subscriber is then made. If the desired connection cannot be made, the central operator does not operate the ringing-key, and the coin is therefore not discharged into the till. The subscriber may then depress the lever 5 either by returning the receiver in

the hook or otherwise, when the plate 27 is actuated to discharge the coin through the chute 46 into the cup 47.

While I have shown and described my invention as applied to a magneto bridging-bell of ordinary construction, it is obvious that the same may with slight modifications be used in connection with any ordinary form of electrical telephone, when either the weight of the coin or the material composing the same may be utilized to complete the ringing-circuit of the generator.

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

1. The combination with the magneto-generator of a subscriber's or user's telephone, means, subject to the control of the user, for utilizing a coin to bridge the ringing-circuit of the generator; means for subsequently utilizing such coin to partially short-circuit the telephone mechanism from the conductors of the main line; and an electromagnetic device, controlled by the central operator for discharging the coin from said last-mentioned position to the till.
2. The combination with the magneto-generator, bells and other ordinary telephonic apparatus of a subscriber's or user's telephone; of means for receiving and supporting a coin in a position to partially short-circuit the telephone mechanism from the conductors of the main line; and means for releasing the coin from such position.
3. The combination, with the magneto-generator, bells and other ordinary telephonic apparatus of a subscriber's or user's telephone; of means for receiving and supporting a coin in a position to short-circuit the telephone mechanism from the conductors of the main line; a resistance included in said short circuit; and means for releasing the coin from such position.
4. The combination with the magneto-generator, bells and other ordinary telephonic apparatus of a subscriber's or user's telephone; of means for receiving and supporting the coin in a position to partially short-circuit the telephone mechanism from the conductors of the main line; means adapted to be controlled by the operator at the central office, for discharging the coin from such position to the till; and alternative means adapted to be controlled by the subscriber for regaining the coin if not discharged into the till.
5. The combination, with the magneto-generator, bells and other ordinary telephonic apparatus of a subscriber's or user's telephone; of a coin-chute; mechanism arranged in connection therewith for utilizing a coin in the chute to switch the magneto-generator into and out of the ringing-circuit; means for receiving and supporting the coin in a position to partially short-circuit the telephone mechanism from the conductors of the main line; and means for releasing the coin from such position.

6. The combination, with the magneto-generator, bells and other ordinary telephonic apparatus of a subscriber's or user's telephone; of a coin-chute; mechanism arranged
5 in connection therewith for utilizing a coin in the chute to switch the magneto-generator into and out of the ringing-circuits; means for receiving and supporting the coin in a position to partially short-circuit the telephone mechanism from the conductors of the main line;
10 and alternative means for discharging the coin into the till or to the exterior.

7. The combination with the magneto-generator, bells, and other ordinary telephonic
15 apparatus of a subscriber's or user's telephone; of movable coin-supporting electrodes included in the ringing-circuit of the generator, and adapted to receive and support a coin in a position to close said circuit; a switch
20 controlling the talking-circuits of the telephone; connections adapted to be actuated by said switch for temporarily retracting said electrodes and releasing the coin; electrodes adapted to receive and temporarily hold a
25 coin released from the electrodes of the ringing-circuit, in a position to short-circuit the telephone mechanism from the conductors of the main line; a magnet included in said short circuit; an armature therefor, provided
30 with a latch adapted to temporarily hold one of the electrodes in position to receive the coin; and connections adapted to actuate both of said last-mentioned electrodes from the switch of the talking-circuits.

35 8. In a coin-operated magneto-bell mechanism, the combination with a coin-chute; of electrodes included in the ringing-circuit of the magneto-generator, and removably interposed in the path of a coin passing through
40 the chute; a lever connected with said electrodes and adapted to actuate the same; conductors adapted to form a short circuit to partially cut out the telephone mechanism from the conductors of the main line, with
45 poles in the path of a coin released from the ringing-circuit electrodes, and means, adapted to be controlled by the operator at the central station, for discharging the coin from contact with said poles into the till.

50 9. In a coin-operated magneto-bell mechanism; the combination with a coin-chute; of electrodes included in the ringing-circuit of the magneto-generator, and removably interposed in the path of a coin passing through
55 the chute; a lever connected with said electrodes and adapted to actuate the same; conductors adapted to form a short circuit to partially cut out the telephone mechanism from the conductors of the main line, with
60 poles in the path of a coin released from the ringing-circuit electrodes; means adapted to be controlled by the operator at the central station, for discharging the coin from contact with said poles into the till; and alternative
65 means, controlled by the user, for regaining the coin when not discharged into the till.

10. In a coin-operated magneto-bell mechanism, the combination with a coin-chute; of electrodes included in the ringing-circuit of the magneto-generator, and removably interposed in the path of a coin passing through
70 the chute; a switch controlling the talking-circuits of the telephone, connected with said electrodes and adapted to actuate the same; end plates hinged to the lower end of the chute
75 and provided with electrodes included in a short circuit of the line, and adapted to receive and hold the coin when released from the electrodes of the ringing-circuit, in a position to partially cut out the telephone mechanism from the conductors of the main line;
80 a spring adapted to actuate one of said plates to release the coin; an electromagnet included in said short circuit; an armature therefor, adapted to hold said end plate against the
85 tension of the actuating-spring; and rods connected with both of said end plates, and adapted to be actuated by the switch of the talking-circuits.

11. In a coin-operated magneto-bell mechanism, the combination with a coin-chute; of electrodes included in the ringing-circuit of the magneto-generator, and removably interposed in the path of a coin passing through
90 the chute; a switch, controlling the talking-circuits of the telephone, and connected with said electrodes and adapted to actuate the same; end plates hinged to the lower end of the chute and provided with electrodes included in a normally open short circuit of the
95 line, and adapted to receive and hold the coin when released from the electrodes of the ringing-circuit, in a position to close said short circuit and partially cut out the telephone mechanism from the conductors of the main
100 line; a spring adapted to actuate one of said plates to release the coin; an electromagnet included in said short circuit; an armature therefor adapted to hold said end plate against the tension of the actuating-spring; and a rod
105 connected with the spring-actuated plate, and adapted to be actuated by the switch of the talking-circuits to close said end plate against the tension of its actuating-spring.

12. In a coin-operated magneto-bell mechanism; the combination with a coin-chute, of electrodes included in a short circuit of the telephone-line wires, and adapted to receive and temporarily support a coin dropped into
115 the chute; means adapted to be controlled by the operator at the central office for retracting one of said electrodes, to deliver the coin into the till; and alternative means controlled by the subscriber, for retracting the other of
120 said electrodes to deliver the coin to the exterior.

In testimony whereof I have hereunto set my hand this 8th day of June, 1899.

HEBER R. MASON.

Witnesses:

HOMER S. PACE,
R. R. WHEELER.