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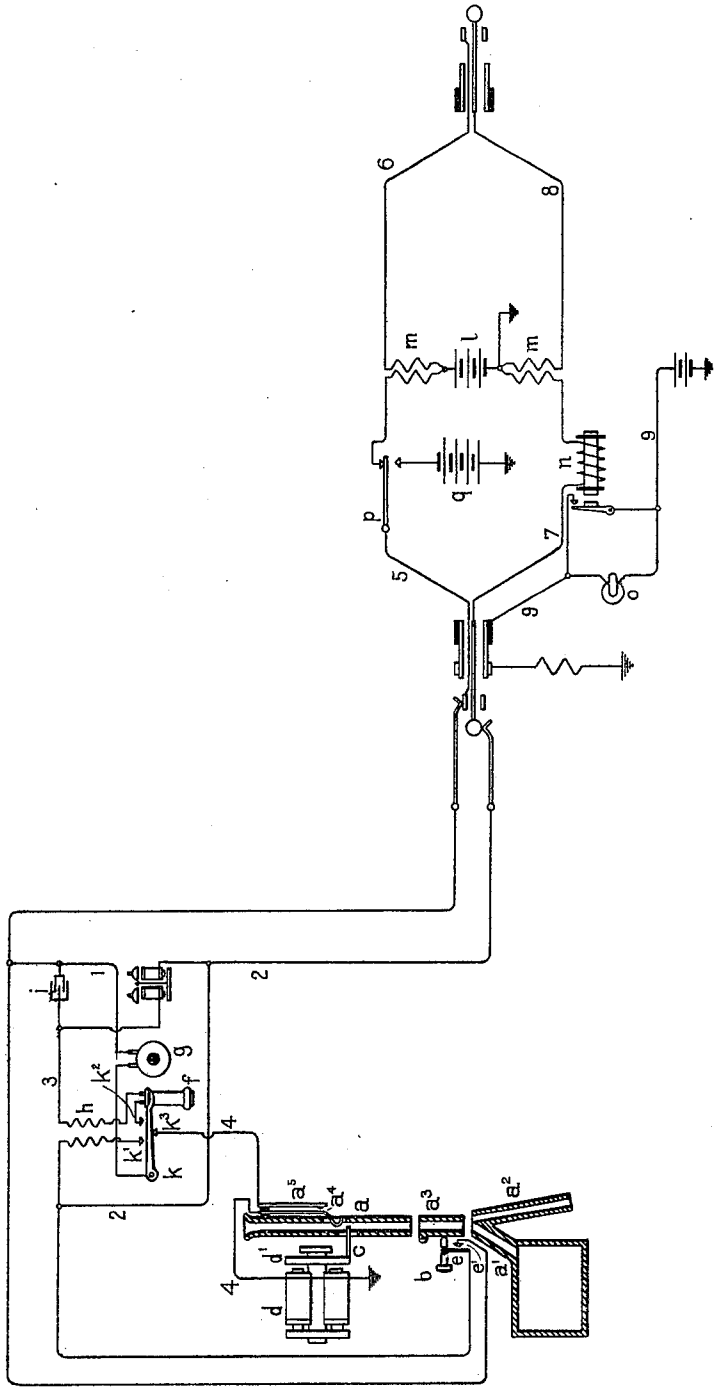
C. E. SCRIBNER.

TOLL COLLECTING APPARATUS FOR TELEPHONE PAY STATIONS.

(Application filed Jan. 26, 1899.)

(No Model.)



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES E. SCRIBNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

TOLL-COLLECTING APPARATUS FOR TELEPHONE PAY-STATIONS.

SPECIFICATION forming part of Letters Patent No. 642,881, dated February 6, 1900.

Application filed January 26, 1899. Serial No. 703,457. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SCRIBNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Toll-Collecting Appliances for Telephone Pay-Stations, (Case No. 474,) of which the following is a full, clear, concise, and exact description.

This invention applies to coin-collecting or toll boxes for pay-stations of telephone-lines provided with means controlled from the central office for returning the deposited toll to the user of the telephone in the event of failure to obtain the required connection; and it consists in the combination, with coin-releasing mechanism controlled by the operator and a device controlled by the user of the telephone for diverting the coin into the return-chute, of means for producing a signal before the supervising operator to indicate the position of the coin-diverting mechanism.

The invention may be adapted to various schemes of circuits and modes of operation; but the device hereinafter described is typical with respect to the essential features of the improvement.

The toll-box may contain a fixed coin-chute, a movable stop in the coin-chute, and a magnet actuating the stop adapted for control from the central station of the telephone-line through the agency of any suitable circuits, a normal continuation of the coin-chute leading to a cash-box, a branch of the coin-chute leading to an external opening of the toll-box, where the coin is accessible to the user of the telephone, a movable portion of the coin-chute adapted to direct the coin into one or the other of the channels, and means for shifting the said portion, a signaling instrument at the central office associated with the circuits of the line, adapted to produce a signal visible or audible to the supervising operator, and a switch controlled automatically in the shifting of the movable portion of the coin-chute which operates the signal. Through the agency of the signal and the controlling-switch associated with the movable section of the coin-chute the operator is apprised of the movements of the user of the telephone in his effort to obtain the deposited coin and may control the passage of the coin to the cash-box or to the refunding-channel in accordance with such information.

The invention is illustrated in the attached drawing, which is a diagram representing the electrical circuits and the apparatus in simplified form, the signal for indicating to the operator the position of the movable section of the coin-chute being a supervisory lamp associated with the line.

The coin-chute a divides at its lower end into two branches a' and a^2, of which the former leads to a closed cash-box within the case of the toll-box, and the latter a^2 leads to a receptacle on the face of the toll-box, where the coin is accessible to the user of the telephone. The portion a^3 of the chute above the branches a' and a^2 is pivoted, so as to be movable to deflect the coin either into the channel a' or into the channel a^2 and is operated upon by a push-button b. The movable portion preferably lies normally in position to direct the falling coin into the cash-box, the function of the push-button b being to direct the coin into the return-channel.

In the fixed portion of the channel a a stop c is provided, which is fixed to and controlled by the armature d' of an electomagnet d, preferably polarized. A spring a^4 projects into the chute a in the path of a coin resting on the stop c. This spring has a contact-anvil a^5, against which it is pressed by a coin in the chute. A switch-spring e, provided with a contact-anvil e', is associated with the push-button b, so that a spring is closed upon its contact when the push-button is operated.

The telephone of a pay-station may be of any usual and well-known character. Thus the station may be provided with a receiving-telephone f and a transmitting-telephone g, an induction-coil h and a condenser i, and a telephone-switch k, whose function is to close the circuit through the telephones while the telephones are in use. The line-wires 1 and 2 are connected with the lever of the telephone-switch and with the switch-contact k' of the switch, respectively, the transmitting-telephone g being interposed in the former conductor and one winding of induction-coil h being included in the latter conductor. The other winding of coil h is interposed in a

branch 3 from line-wire 1, which terminates in another contact-point k^2 of the telephone-switch and which includes also the receiving-telephone f and the condenser i. This arrangement of connections constitutes the well-known circuit for operating the transmitting-telephone from a central source of supply, the transmitting-telephone and one winding of the induction-coil being in a bridge of the line when the switch is relieved from the weight of the receiving-telephone, and the receiving-telephone, together with a condenser and the other winding of the induction-coil, being in shunt about the transmitting instrument. The switch k is provided, further, with a lower contact k^3, upon which it rests when supporting the telephone. This contact-piece forms the terminal of a grounded conductor 4, which is normally interrupted at switch-contacts a^4 a^5 in the coin-chute a and which includes the helices of magnet d. The springs e e' control a bridge of the line-circuit 1 2.

At the central station the line-conductors are represented in association with plugs and a plug-circuit, such as is ordinarily used in a switchboard adapted for automatic current-supply to the station-transmitters. Conductor 5 of the plug-circuit leads from line-wire 1 to the free pole of a grounded battery l, one helix of a repeating-coil m being interposed in the conductor. Another winding of the same coil is included in a conductor 6, leading from the same battery to the corresponding contact portion of the other terminal plug of the pair. Conductors 7 and 8 likewise unite the remaining contact-pieces of the two plugs through interposed windings of the repeating coil, the point of junction of the repeating-coil windings being connected to earth directly. The conductor 7 of the plug-circuit includes the magnet-winding of a relay n, which controls a shunt about a supervisory signal-lamp o, associated with the plug, and included in a local battery-circuit 9, closed in registering contact-pieces of the plug and spring-jack forming the terminal of the line. The conductor 5 of the plug-circuit traverses the switch-contacts of a key p, which in its normal position maintains the continuity of the conductor, but which in its alternate position connects with the conductor a grounded source q of current of polarity opposite to that of the battery l.

In the operation of this appliance the user of the telephone may be required, as a preliminary to the use of the instrument, to deposit the required toll or coin in the coin-chute, where it will fall to rest upon the stop c in the channel. The deposit of the coin may be insured by any of the well-known methods of working, such as producing a signal audible or visible to the operator or providing circuit-closing agencies involved in the act of initiating the call controlled by the coin. Numerous forms of such devices are familiar to those acquainted with the art of telephony and are in general use. Having deposited the required toll, the subscriber may give his order to the operator, who will, if possible, make connection with the line of the required correspondent. While the telephone is in use, the circuit between line-wires 1 and 2 is closed through the telephones, whereby current from battery l is permitted to flow to earth through the signal-controlling relay n to maintain the extinction of the signal-lamp o. When the user of the telephone, having finished his conversation, replaces the telephone on its switch, the circuit at the substation is broken and the signal lamp o becomes lighted through the opening of the shunt about it. When the desired connection is attained, the operator, after perceiving through the display of the supervisory signal o that conversation is finished, depresses the key p, thereby applying the battery q to the line conductor 1, transmitting a current through the line conductor and through the wire 4 at the substation, including the winding of magnet d. The armature of the magnet is thereby moved and caused to release the coin, which falls through the movable portion a^3 of the channel into the chute a' leading to the cash-box. When, on the other hand, the operator is unable to make the required connection, she instructs the user of the telephone to replace his telephone on its switch-hook and to press inward the button b. The user's act of placing the telephone on its support breaks the circuit between line-wires 1 and 2, at the same time connecting the polarized magnet d with the line conductor 1. The act is therefore indicated to the operator by the display of the supervisory signal o. Subsequently the user presses the button b, whereby the switch-contacts e and e' are closed together, completing a bridge of the line and bringing about the disappearance of the supervisory signal. This act is thus also signaled to the operator. While the key is in this position, the operator depresses the coin-releasing key p, whereby the coin is released and is permitted to fall through the movable section a^3 of the chute into the return-channel a^2, and is thus delivered to the user of the instrument.

I claim as my invention—

1. The combination with a telephone-line and the telephones at the station thereof, of a coin-chute leading to a cash-box, and a manually-operated deflector therein for diverting the deposited coin from the cash-box, a movable stop in the chute and an electromagnet actuating the stop, and means for controlling the magnet from the central office, a signal-indicating appliance at the central office, a circuit thereof to the station, and a switch associated with the deflector and moved therewith controlling the said circuit; whereby the movement of the deflector is signaled to the supervising operator, as described.

2. The combination with a telephone-line and the telephone instruments at the station

thereof, a coin-chute at the substation, and a movable stop therein adapted to arrest the coin, a magnet controlling the stop, and means for exciting the magnet from the central office to release the coin, of a manually-movable deflector in the coin-chute adapted to effect the return of the coin to the user of the telephone, a switch associated with the deflector to be moved therewith, a supervisory signal in the central office, and a circuit including the said signal and controlled by the said switch, as described.

3. The combination with a telephone-line and the telephones at the stations thereof, a source of current and a supervisory signal associated with the line in the central office, and a telephone-switch at the station controlling the circuit of said supervisory signal, to display the signal when the telephone is not in use, of a coin-chute at the substation, and a movable stop therein, a magnet controlling the stop and means for exciting the magnet from the central office, the circuit of said magnet being controlled by the telephone-switch to be closed when the switch supports the telephone, a movable deflector in the coin-chute beneath the said stop adapted to permit the coin to fall into the cash-box or to divert it therefrom to return it to the user, and switch-contacts associated with the deflector to be closed when the said deflector is moved to divert the coin, said switch-contacts controlling a circuit of the line adapted to render the supervisory signal operative, as described.

In witness whereof I hereunto subscribe my name this 23d day of December, A. D. 1898.

CHARLES E. SCRIBNER.

Witnesses:
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