

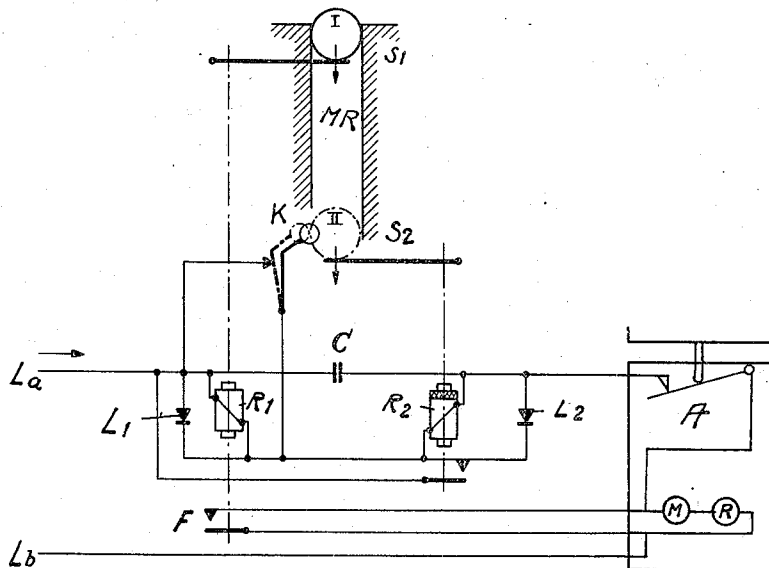
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SWITCHING ARRANGEMENT IN COIN COLLECTORS FOR TELEPHONE SYSTEMS

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SWITCHING ARRANGEMENT IN COIN COLLECTORS FOR TELEPHONE SYSTEMS

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The present invention relates to switching arrangements in coin collectors for telephone systems and more particularly to such coin collectors in which the payment of the amount required is effected in advance, i. e., previous to the conversation. From the point of view of the person using the telephone such apparatus is preferred to apparatus in which the payment is effected after the talking connection has been completed, i. e., when the called subscriber answers, but apparatus of the former kind have hitherto been very complicated through the means required in the apparatus proper or in the exchange for effecting refunding of the coin in case the call does not mature.

According to the present invention said inconveniences are avoided by blocking the coin after insertion in the coin chute in such a position that it can be removed from the chute by the hand if the conversation does not mature but is collected automatically without any manipulation whatever from the side of the calling party when the called subscriber answers. In order to render this possible the coin collector apparatus is provided with a relay arrangement arranged in such a manner that upon a change of current in the conductor loop the speaking device of the apparatus is put out of function while at the same time a stop member in the coin chute is released permitting a coin to drop through the chute and it is also provided with a contact arrangement which, provided that a coin has been inserted, is actuated during the passage of the coin through the chute and directly or indirectly puts the speaking arrangement into function again.

The accompanying drawing shows an embodiment of the invention. La and Lb represent the two wires of the subscriber's line extending from the coin collector telephone station to the exchange. The coin collector telephone station is shown to consist of an ordinary subscriber's telephone A the speaking arrangement of which consists of the microphone M and the telephone receiver R, and of the coin collector proper containing the coin chute MR, the relay arrangement R1, R2, and a coin box not shown.

In the coin chute there are provided two stop elements S1 and S2 which block the coin or coins in two positions I and II. The first mentioned position is such that the coin projects from the slot so that it can be recovered by hand. The stop S1 is controlled by a relay R1 shunted with a rectifier L1 in such a manner, that the relay operates for a definite direction of current there-

by releasing the stop member so that the coin can drop down. Upon operation, the relay R1 puts the speaking arrangement out of function by short-circuiting the same at its contact F.

The relay R2 is included in series with the relay R1 in the subscriber's loop and shunted with a rectifier L2 in a direction opposite that of L1. R2 is slow-acting in order not to be actuated by the dialled impulses or other impulses from the apparatus. The relay R2 controls a stop member S2 in the coin chute against which the coin stops after it has been released from the stop member S1. In said position the coin actuates the coin contact K which short-circuits the relay R1. The relay R1 is also short-circuited through a closing contact on R2 when said relay is attracted. Both relays are shunted through a condenser C for letting through the speaking currents.

The switching arrangement operates in the following manner. The person about to use the telephone inserts a coin in the coin chute preferably before the call to the exchange is made. The coin is retained in position I and can as long as it remains in this position be recovered by the hand. When the micro-telephone is lifted the line is energized in such a direction that relay R2 operates whereas relay R1 is shunted by the rectifier L1 so that it does not receive sufficient current to be able to attract its armature. Upon operation relay R2 short-circuits relay R1. The speaking device can now be used and the calling party can in ordinary manner dial the wanted subscriber's number or speak to an operator. Upon operation of the relay R2 the stop member S2 is actuated whereby a coin possibly remaining in the coin chute in position II is released and drops into the coin box.

In the coin collecting apparatus nothing else takes place until the called subscriber answers, when the direction of the current in the line extending from the exchange to the coin collector telephone station is reversed. For the new direction of current the relay R2 is shunted to such an extent by the rectifier L2 that said relay releases whereby the short-circuit for relay R1 ceases and said relay receives sufficient current to cause the same to operate. The speaking device is then short-circuited so that the calling party can neither speak to nor hear the called subscriber, while at the same time the stop member S1 permits the coin to drop through the coin chute to position II. In said position the coin contact K is closed and short-circuits the relay R1 whereby said relay releases and inter-

rupts the short-circuit of the speaking device so that the latter is put into function again.

If there had been no coin in the coin slot the coin contact K would not have been actuated, and relay R1 would have remained operated and the speaking device short-circuited.

The coin is retained on the lower stop member and remains there as long as the conversation lasts. During the conversation none of the relays is energized whereby a reduction of the microphone current is avoided. In addition the advantage is obtained that an interruption of the current in the line loop, for instance through the actuation of the switch hook, does not cause any changed connections in the apparatus. Furthermore, the stop member S1 blocks the coin slot so that a coin inserted by mistake does not drop into the coin chute. If the release in the exchange is delayed after the micro-telephone has been replaced, for instance in connection with a trunk connection, a coin inserted by another telephoning party can not be lost but is blocked until the new call has matured. When the new call is made or when a call is received at the coin collector telephone station the relay R2 is actuated, and a coin occupying position II is let down into the coin box. An incoming call can be received directly, at an outgoing call the relay R1 is actuated in the above described manner when the called party answers.

The above described coin collector telephone station constitutes only an embodiment of the invention which can be varied in different ways.

Furthermore, it is evident that the coin collector apparatus can be designed for one or more coins and for coins of different values. If only one coin is to be used the coin contact is closed by said coin, as is indicated in the shown embodiment. If two coins have to be inserted the coin contact is placed so that it is actuated continuously by the upper coin first when both coins lie on top of one another. When the first coin passes a momentary short-circuiting of the relay R1 is obtained but said short-circuit is of no importance since the relay operates immediately thereafter and short-circuits the speaking device anew. If the stipulated charge can be paid either through one coin of a high value or through several coins of lower value two parallel-connected coin contacts are provided which are actuated in the different coin chutes. If the charge consists of one coin of a certain value and one coin of another value two series-connected coin contacts are provided so that both coins must be inserted to cause the desired short-circuiting of the relay R1.

Furthermore, the speaking apparatus and the coin collecting apparatus proper can either be separate, as shown, or built together into a common apparatus in a manner known per se.

We claim:—

1. A telephone pay station connected to a line loop leading to the exchange, a speaking device and a relay set at the said telephone station, means to operate the said relay set through a reversal of the direction of the current in the line loop in order to put the said speaking device out of function when a called subscriber answers, and coin operated contact means adapted at operation to nullify the influence produced by the current reversal upon the relay set.

2. A telephone pay station connected to a line loop leading to the exchange, a speaking device and a relay set at the said telephone station, a current rectifier allowing the operation of the

said relay set through a reversal of the direction of the current in the line loop in order to put the said speaking device out of function when a called subscriber answers, and coin operated contact means adapted at operation to nullify the influence produced by the current reversal upon the relay set.

3. A telephone pay station connected to a line loop leading to the exchange, a speaking device and a relay at the said telephone station, a contact at the said relay for short-circuiting the speaking device, means to operate the said relay through a reversal of the direction of the current in the line loop in order to put the said speaking device out of function when the called subscriber answers, and coin operated contact means adapted at operation to nullify the influence produced by the current reversal upon the relay set.

4. A telephone pay station connected to a line loop leading to the exchange, a speaking device and a relay at the said telephone station, a contact at the said relay for short-circuiting the speaking device, a coin chute and a blocking member actuated by the armature of the said relay and adapted to control the dropping of the coin into the said chute, means to operate the said relay through a reversal of the direction of the current in the line loop in order to put the said speaking device out of function when the called subscriber answers, and coin operated contact means adapted at operation to nullify the influence produced by the current reversal upon the relay set.

5. A telephone pay station connected to a line loop leading to the exchange, a speaking device and a relay at the said station, a contact at the said relay for short-circuiting the speaking device, means to operate the said relay through a reversal of the direction of the current in the line loop in order to put the said speaking device out of function when the called subscriber answers, coin operated contact means adapted at operation to nullify the influence produced by the current reversal upon the relay set, a further relay connected in series with the said first relay, and a blocking member at the collecting end of the chute controlled by said latter relay.

6. A telephone pay station connected to a line loop leading to the exchange, a speaking device and a relay at the said station, a contact at the said relay for short-circuiting the speaking device, means to operate the said relay through a reversal of the direction of the current in the line loop in order to put the said speaking device out of function when the called subscriber answers, coin operated contact means adapted at operation to nullify the influence produced by the current reversal upon the relay set, a further relay connected in series with the said first relay, a blocking member at the collecting end of the chute controlled by said latter relay the said blocking member being arranged so as to allow one or more coins resting on the same to actuate the coin contact.

7. A telephone pay station connected to a line loop leading to the exchange, a speaking device and a relay at the said station, a contact at the said relay for short-circuiting the speaking device, means to operate the said relay through a reversal of the direction of the current in the line loop in order to put the said speaking device out of function when the called subscriber answers, coin operated contact means adapted at operation to nullify the influence produced by the current reversal upon the relay set, and a

further slow-acting relay adapted in energized condition to prevent the operation of the said first relay.

8. A telephone pay station connected to a line
5 loop leading to the exchange, a speaking device
and a relay at the said station, a contact at the
said relay for short-circuiting the speaking de-
vice, means to operate the said relay through a
10 reversal of the direction of the current in the
line loop in order to put the said speaking device
out of function when the called subscriber an-
swers, coin operated contact means adapted at
operation to nullify the influence produced by
15 the current reversal upon the relay set, a further
relay connected in series with the said first relay,
and a rectifier connected in parallel with the said
latter relay in such a manner that the said relay
operates for the direction of current prevailing

in the loop when a call is effected from the tele-
phone pay station.

9. A telephone pay station connected to a line
loop leading to the exchange, a speaking device
and a relay at the said station, a contact at the
said relay for short-circuiting the speaking de- 5
vice, means to operate the said relay through a
reversal of the direction of the current in the
line loop in order to put the said speaking device
out of function when the called subscriber an- 10
swers, coin operated contact means adapted at
operation to nullify the influence produced by the
current reversal upon the relay set, a further re-
lay connected in series with the said first relay,
and means to shunt the said first relay by means 15
of the coin contact when the same is in home
position.

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