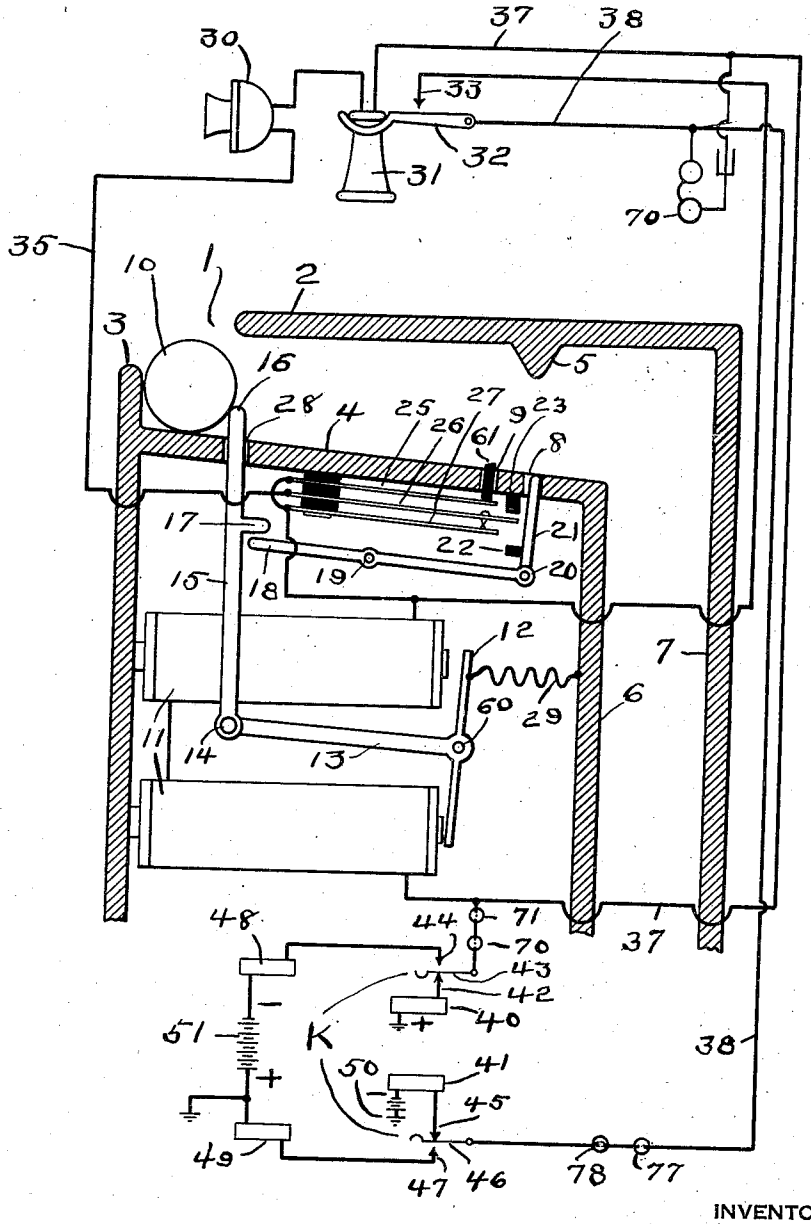
Oct. 25, 1938. J. L. WRIGHT 2,134,168

PAY STATION

Filed April 14, 1933



INVENTOR

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Patented Oct. 25, 1938 2,134,168

UNITED STATES PATENT OFFICE

2,134,168

PAY STATION

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Application April 14, 1933, Serial No. 666,134

8 Claims. (Cl. 179—6.3)

My invention relates to improvements in telephone pay stations or coin collecting devices.

It is the standard practice with telephone pay stations for the party originating a call to deposit a coin, or coins, which in case the connection is completed is under control of the operator at the exchange and is caused to enter the coin-box portion of the pay station.

In case the connection is not completed, the operator causes the coin to be returned to an exit compartment where it may be taken by the party originating the call.

In the standard form of pay station in use, the party originating a call must deposit a coin even before conversing with the operator. In my invention, the party desiring to originate a call may converse with the operator before depositing a coin, or before the coin is collected. The party calling, however, cannot converse with the called party unless he has actually deposited a coin.

The coin when deposited remains in view of the calling party and may be removed by him in case the called party does not answer, without being returned to an exit department by the operator.

In case the connection is completed, the coin is automatically collected when the called party answers, or under the control of the operator. After the conversation is completed, the coin automatically passes to the coin box.

In case of manually controlled pay stations, where the connections and depositing of the coin, or coins, is controlled by the operator, the pay station is provided with the usual bells, or gongs, to indicate the value and number of the coins deposited. The coins are collected under the control of the operator by the manipulation of a suitable switching device which determines which polarity or source of current is to be connected to the calling line. The current so connected to the calling line controls the operation of a magnet at the pay station, which in turn controls the collection of the coin or coins. After the coins are collected and before they enter the coin box, suitable gongs are operated to indicate the value of the coin so collected, as disclosed in United States Patent No. 1,043,219 granted to O. F. Forsberg, November 5, 1912.

From the foregoing, it is seen that the pay station is designed to automatically collect a coin for local or single calls without the supervision of an operator and for manual collection of coins under control of an operator for toll or extra service charges.

With my invention, in automatic telephone systems the coin is not collected until the called party answers, and under manual control the coins are collected under the supervision of the operator. In either event it is not necessary to provide an exit compartment for the return of the coins.

In pay stations provided with a return or exit coin compartment it is possible to stop up the exit portion by inserting paper, or other substances, to prevent the return of the coins. This practice is carried on to a large extent by thieving persons who at certain intervals make the rounds of pay stations so stopped up and obtain the coins intended to be returned to the proper parties, by removing the obstruction.

My invention is illustrated in the accompanying drawing which shows the essential features of the pay station and controlling circuits. The framework of the pay station is shown in section in order to give a clear understanding of the working of the mechanism.

In the present instance, I have shown a slot or runway for but a single coin.

In case the pay station is to be operated by coins of three denominations—such as a dime, a nickel, and a quarter—there will be three runways each provided with a standard form of gong mechanism.

As shown in the drawing, an electromagnet 11 is attached to the framework in any suitable manner. The electromagnet is provided with an armature 12 pivoted at 60. An arm 13 is provided with a bearing 14 about which the arm 15 moves. The arm 15 extends through an opening 28 in the frame portion 4. The arm 15 is provided with an ear 17 which engages the arm 18 pivoted at 19.

The arm 18 is provided with a bearing 20, upon which is mounted an arm 21 arranged to pass through an opening 8 in the frame portion 4, and is provided with an insulated pin 22.

A set of insulated contact springs 25, 26, and 27, are fastened to the frame portion 4 in any suitable manner. The spring 25 is provided with an insulated pin 61 which passes through an opening 9 in the frame portion 4. Another insulated pin 23 is attached to the frame, as shown.

As previously stated, in case a three coin pay station is to be provided, there will be three slots or runways. Each runway will be provided with openings to admit an arm 15 which will be mounted upon the bearing 14 of arm 13, as the electromagnet 11 is common to and operates the three arms 15. Each runway will also be provided with an opening 8 for the reception of an arm 21, as the three arms 21 will be mounted upon the bearing 20 of the common arm 18. Each runway will also be provided with an opening 9 for the reception of a pin 61. The front end of the contact spring 25 is broad enough to extend far enough to be engaged by three pins 61 of the three runways.

If preferred, the end of the spring 26 can be extended in the shape of a T so all three pins

can engage it. With this arrangement the one set of contact springs 25, 26, and 27, can be common to and operated by the three pins.

The pay station is provided with the usual transmitter 30, receiver 31, switch-hook 32, and ringer 70. The electromagnet is preferably of the polarized type and its armature held in a biased position by the spring 29.

In the present instance, I have shown the conductors 37 and 38 from the pay-station terminating in terminals 70—71 and 77—78, respectively, which extend to a connecting circuit embracing two battery supply coils or windings 40 and 41, and two battery supply windings 48 and 49, which are connected when the magnet windings 11 of the pay station are to be operated.

A switching key K is provided for shifting each of the two sets of windings into connection with the conductors 37 and 38 at the proper time.

I have but shown the essential features of the connecting circuit which may be applied to standard forms of circuits well known in the art.

The connecting circuit may be a cord circuit in manual systems or a selector or connector circuit in automatic systems.

The two conductors 37 and 38 extend from the pay station to the exchange or central office which may be of the manual, semi-automatic, or full automatic type.

One type of manual system to which my invention is applicable is shown and described in United States Patent No. 1,128,646, granted February 16, 1915, to J. L Wright.

In the present application the conductors 37 and 38 shown terminating in the terminals 70—71 and 77—78, respectively, for simplicity, would terminate in the answering jack J of the United States Patent 1,128,646 to which reference is made. The coils 40 and 41 would correspond to the windings H and I of the cord circuit which would be disconnected from conductors 3 and 4 by the switch key contacts and replaced by the windings 48 and 49 of the coils of the present application.

The operator in answering a call places plug P into the jack J of the calling line and places the calling plug P^1 into the jack J^1 of the called line and connects ringing current to that line. When the called party or subscriber answers, the operator manipulates the key or switching device which reverses the current to the calling line by disconnecting the battery 50 from the calling line and by connecting battery 51 through the windings of coils 48 and 49. The coil 48 would be equipped with contacts as shown on relay H of the Patent 1,128,646 in question. The battery 51, as shown, is of greater voltage than that of 50 connected to windings of coils 40 and 41 to cause the operation of the polarized magnet coils 11 of the pay station. It is to be noted that the battery supply in addition is also reversed when the switching key is operated.

The negative pole of battery is normally connected to conductor 38 through contacts 45 and 46 of the switching key.

When the switching key is operated, then the positive pole of battery 51 is connected to conductor 38 through contacts 47 and 46. The polarity of current is also reversed through the contacts 42, 43, and 44, to conductor 37.

The operation of the pay station in a manual system for local calls, for which the charge is a nickel, is as follows:

The subscriber in making a local call places a nickel 10 in the opening 1, removes the receiver and gives the operator the number of the called party. Upon removal of the receiver, the talking circuit extends to the central office over conductors 37 and 38 as follows: Ground, winding 40, contacts 42, 43, terminals 70, 71, conductor 37, receiver 31, transmitter 30, conductor 35, contact 26, contact 27, contact 33, switch-hook 32, conductor 38, winding 41. Windings of coils 40 and 41, connected to battery 50, supply talking current to the calling subscriber at this time.

The operator manipulates her listening key and ascertains the number of the called party. When the called party answers, the operator who has supervision over the connection, operates the switch-key K, which disconnects the windings 40 and 41, and in their place connects windings 48 and 49 connected to battery 51 which supplies talking current to the calling party during connection between the calling and called party.

The effect is to reverse current on the line conductors 37 and 38 and cause the energization of the magnet windings 11 and cause the armature 12 to overcome the tension of spring 29 and draw down the arm 15. The nickel 10 then passes over the end 16 of arm 15 and rolls down until it is stopped by arm 21, which at this time is lifted in an upward position.

The lifting of arm 21 causes pin 22 to engage contact spring 26, thus lifting it from engagement with contact spring 27 and opening the talking circuit.

When the nickel reaches the arm 21, which serves as a stop, it engages the pin 61 and forces contact spring 25 into engagement with contact spring 26, thus reclosing the talking circuit. At the termination of the conversation, the operator restores the switch-key to normal, which causes the arm 15 to assume its normal position and also arm 21. Arm 21 in restoring allows the nickel to continue its movement and enter the vertical slot enclosed by sides 6 and 7 and to enter the coin-box. In dropping down through the vertical slot, it engages a gong or signal in the manner disclosed in the Forsberg patent. It will be noted that the calling party cannot converse with the called party unless the nickel has been deposited and engages the pin 61 to close the talking circuit.

Instead of providing two pairs of coils in the connecting circuit at the exchange, a single pair as 48 and 49 may be provided. In this instance, one terminal of coil 48 would be connected to terminal 70 and one terminal of 49 would be connected to terminal 78. The switching key K would serve to connect either battery 50 or 51 to the remaining terminals of coils 48 and 49 to cause the reversal of current to the line.

By using a single pair of coils and reversing the polarity of current therethrough, it follows that the same pair of coils are used for supplying current for talking and signalling purposes regardless of the position of the switching key K.

For local calls, the operation of which has been described, the key K would be in its operated or non-normal position utilizing battery 51 for supplying current for talking and signalling purposes.

The operation of the pay station for local calls in an automatic telephone system is the same as in the manual system as described. The reversal of current for operating the magnet 11 is automatically controlled when the called party removes his receiver instead of by the operator manipulating the key K.

In automatic control, a relay is provided with

contacts connected as are the contacts of key K. When the called party answers, the relay is operated as in standard practice and reverses the connection of the source of current supply to the calling line.

For sake of simplicity, I have preferred to show a manual operation for local calls as the operation of the pay station itself is the same by either manual or automatic method.

The reversal of current to the calling line under control of the called subscriber in automatic telephone systems is disclosed in various United States patents and it has not been thought necessary to illustrate such a system.

In case of extra or toll service charges in a manual system the operation is as follows:

The subscriber makes a call as for a local or single charge call and gives the operator the name of the desired party and the location of the station. If the charge is, say, eighty cents, the operator will request that amount be deposited after the called party or station responds. We will assume the calling subscriber has two quarters, two dimes and two nickels in change, which amounts to the charge of eighty cents. A quarter may be deposited in the quarter-opening, a dime in the dime-opening, and a nickel in the nickel-opening, or one coin can be deposited at a time and in any order.

The collection of the coins is under control of the operator, who by operating the key K a sufficient number of times causes a plurality of reversals of current on the calling line. These reversals of current cause a corresponding number of operations of the magnet 11 and consequent operations of the arms 15 and 21, thus allowing the coins as they are deposited to enter the slots, engage the stop arms, and then be released to enter the vertical portion of the slots provided with the end walls 6 and 7. In dropping down the vertical portions, the coins engage the gongs which indicates to the operator the value of the coins collected, after which they enter the coin-box. After the operator receives the indication that the proper amount has been collected—namely, eighty cents—the key K is left in its normal position as shown in the drawing. In this position the current from source 50 is connected to the calling line, thus allowing the armature of magnet 11 to assume the position shown in the drawing and causing the talking circuit to be closed for conversational purposes.

From the foregoing description, it will be noted that the talking circuit at the pay station may be opened or closed at will under control of the operator at the exchange.

It will also be noted that for local calls or automatic calls the talking circuit is closed by a coin or coins engaging the pins 61, and that for supervised toll or extra charge calls the talking circuit is under control of the operator at the exchange. This arrangement avoids the use of a return or exit coin compartment, for in local or automatic calls the coin remains in the aperture where it may be removed in case the called for party does not answer. In case of supervised calls, the coins are collected under control of the operator when the called party answers and cannot be collected until that time.

Having thus described my invention, what I desire to procure by Letters Patent is:

1. A telephone station provided with a coin-collecting device, an operator's position, an aperture in said coin-collecting device for the insertion of a coin and wherein it is held displayed for ready removal, means controlled at said operator's position for causing said coin to advance a certain position within said aperture to prevent its removal, and additional means controlled from said operator's position for causing said coin to advance still further within said aperture.

2. A telephone provided with a talking circuit and a coin-collecting device, means for holding a coin displayed for ready removal in said device, an exchange, means controlled from said exchange for operating said coin collecting device for opening and closing said talking circuit at will and for preventing the removal of the coin.

3. A telephone provided with a talking circuit and a coin-collecting device, said coin-collecting device provided with an aperture for receiving a deposited coin and wherein it is held for ready removal, an exchange, means controlled from said exchange for opening said talking circuit and for causing the coin to travel a predetermined distance in said aperture to prevent its removal, and means controlled by the deposited coin for closing said talking circuit after it travels said predetermined distance.

4. A telephone provided with a talking circuit and a device for the reception of a deposited coin wherein it is held in position for ready removal, an exchange, means controlled from said exhange for opening said talking circuit and for preventing the removal of the coin, and means thereafter controlled by the deposited coin for closing said talking circuit.

5. A telephone provided with a talking circuit and a device for the reception of a deposited coin wherein it is held in position for a ready removal, an exchange, means controlled from said exchange for either opening or closing said talking circuit and for preventing the removal of the coin, and means controlled by the deposited coin for closing said talking circuit when it is opened by the means controlled from the exchange.

6. Coin controlled apparatus provided with a coin chute having an aperture for the reception of a coin, an electro-magnet, a stop for holding a deposited coin displayed at said aperture where it may be readily removed, means for operating said electro-magnet, means responsive to operation of said electro-magnet to cause the said stop to release the deposited coin and permit the same to enter said chute for a predetermined distance sufficient to prevent removal of the coin, and additional means responsive to operation of said electro-magnet for preventing movement of the coin beyond said predetermined distance.

7. In a coin controlled device, the combination of a sloping passageway in which a coin is adapted to advance by gravity, said passageway having an opening at one end for reception of a deposited coin, a normally effective stop for holding a coin at said opening where it can be retrieved, a normally ineffective stop for holding a coin further along in said passageway where it cannot be retrieved, an electro-magnet, and means controlled by operation of said magnet for rendering the first stop ineffective and the second stop effective.

8. A coin controlled device as claimed in claim 7, in which the second stop is rendered ineffective responsive to an additional operation of said magnet.

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