

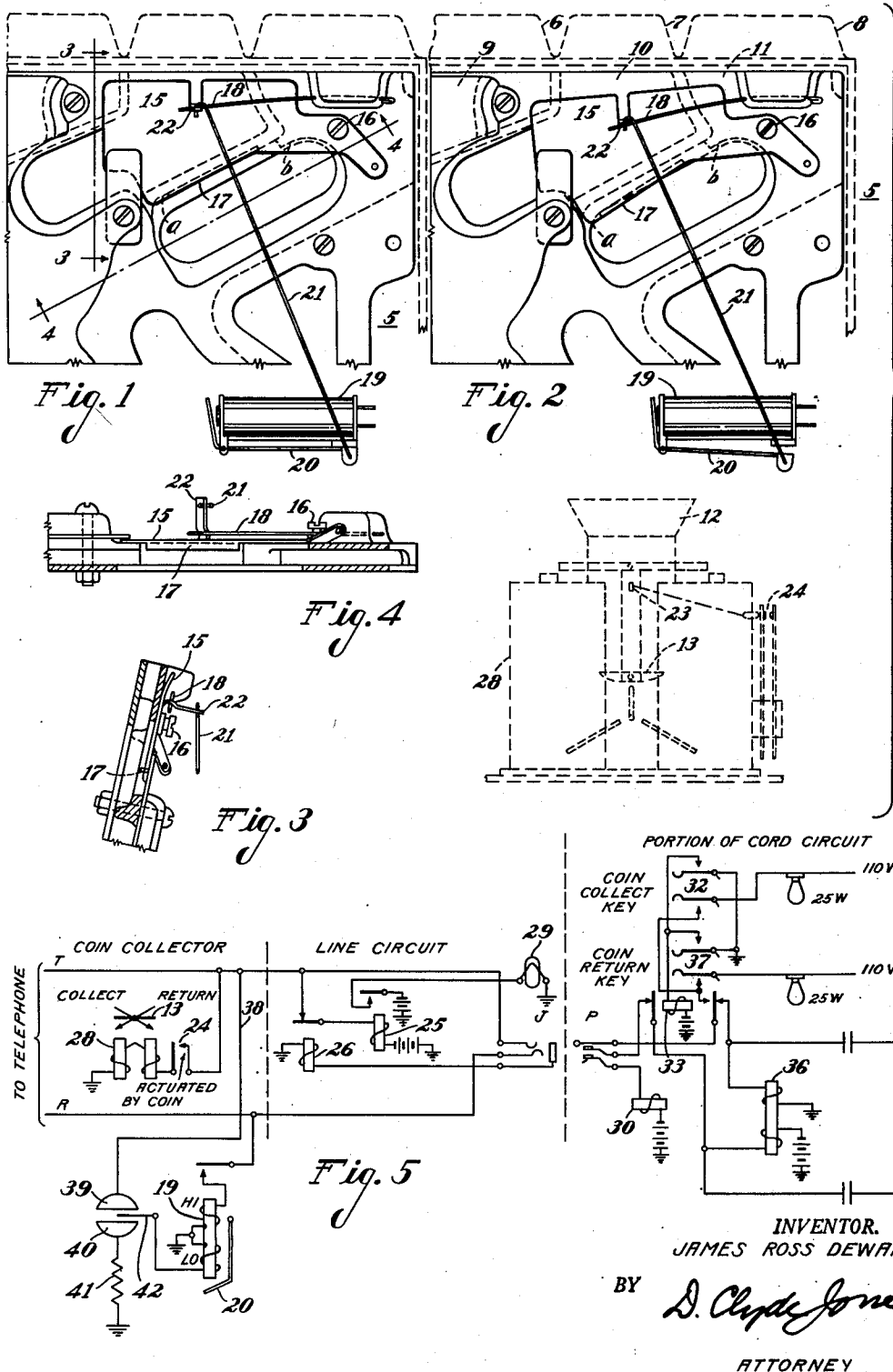
June 16, 1953

J. R. DEWAR

2,642,496

TELEPHONE PAY STATION COIN BOX SYSTEM

Filed Feb. 16, 1950



INVENTOR.
JAMES ROSS DEWAR

BY

D. Clyde Jones

ATTORNEY

UNITED STATES PATENT OFFICE

2,642,496

TELEPHONE PAY STATION COIN BOX
SYSTEM

James Ross Dewar, Rochester, N. Y.

Application February 16, 1950, Serial No. 144,540

9 Claims. (Cl. 179—6.5)

1

This invention relates to a telephone pay station together with means controlled from a remote point, for collecting or refunding coins.

In telephone pay stations, it is customary to provide a coin box having a quarter dollar coin slot, a dime coin slot and a five cent coin slot. These coin slots open into coin chutes which lead to mechanism whereby the coins can be collected or refunded under control from a distant point. It has long been the practice for a person desiring to initiate a call from a telephone pay station, to drop a coin into one of the slots in the pay station coin box, in order to signal the telephone operator or to obtain access to automatic switching equipment whereby a call can be extended. A five cent coin has frequently been used for this purpose because the usual charge for a local pay station call, has been five cents. However, because of rising costs, many telephone companies have been forced to increase the charge for such local calls, to ten cents. Under this changed economic condition, it becomes necessary to use a ten cent coin or the equivalent, to signal the telephone operator or to gain access to the automatic switching equipment. However, the five cent coin slot cannot be permanently closed because five cent coins must be collected together with twenty-five cent coins and ten cent coins in paying the toll charges on telephone calls other than local calls.

In accordance with a main feature of the present invention, provision is made for rejecting five cent coins until the toll operator or automatic means has selectively actuated mechanism at the pay station in order to collect five cent coins along with other coins which are necessary to pay for the telephone call.

A further feature of the invention relates to a simple modification in present apparatus whereby the thousands of pay stations now in use can be modified with a minimum change in the existing equipment to comply with the new charges so that the expense of modifying existing pay stations can be kept at a minimum and new pay station coin boxes can be manufactured without a substantial increase in cost.

The various other features and advantages of this invention will appear from the detailed description and claims when taken with the drawings in which:

Fig. 1 shows a portion of a pay station coin box with one of the coin chutes thereof modified in accordance with this invention together with added apparatus shown in its normal condition wherein five cent coins will be rejected;

2

Fig. 2 is a view similar to that of Fig. 1 except that the apparatus is in its operated condition to accept five cent coins and the coin hopper and related mechanism have been indicated in dotted lines;

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a sectional view of a fragment of the coin chute structure taken on the line 4—4 of Fig. 1; and

Fig. 5 is a diagrammatic view illustrating certain portions of a manual telephone line and a related pay station together with a portion of an operator's cord circuit including means for selectively operating the pay station mechanism.

The apparatus of the present invention comprises a coin box generally designated 5. This box is provided at its top with coin guides or slots 6, 7 and 8 in which twenty-five cent coins, ten cent coins and five cent coins, respectively, can be inserted. Each of these coin slots opens into an individual chute for its respective coin. The general arrangement of these coin chutes 9, 10 and 11, is more fully disclosed in the patent to Long, 1,206,507, granted November 28, 1916. These coin chutes lead to a hopper 12 to fall on a coin abeyance trap 13 (Fig. 2), it being understood that this trap can be operated electrically from a remote point in keeping with conventional telephone practice.

In accordance with the present invention, provision is made so that a five cent coin will be automatically rejected when a coin of higher denomination is necessary to initiate a call. It will be understood that conventional coin boxes have their respective coin chutes tilted at such an angle to the vertical (Fig. 3) that slugs or coins of improper size will fall sideways out of the respective coin chutes, into a return chute (not shown) so that they will be automatically rejected. In the preferred embodiment of the invention, a portion from *a* to *b* (Figs. 1 and 2) of the wall of a conventional five cent coin chute 11 is removed so that a five cent coin can tip sidewise therethrough and fall into the mentioned return chute. In order that a five cent coin can be accepted when it is necessary to complete a given toll charge, there is provided a gate 15 pivoted at 16 on a wall of the chute. This gate is provided with a flange 17 which in its operated position, completes the five cent coin chute, so that a coin will be guided along this chute rather than to fall outside thereof, to the return chute. The gate 15 is normally held by a spring 18 in its upper or coin-rejecting po-

sition (Fig. 1). However when it is desired to accept a five cent coin, the gate 15 is drawn to its lower or coin-accepting position as shown in Fig. 2. The gate 15 is moved to this lower position by the energization of the magnet 19, the armature 20 of which is connected by a link 21 to a lug 22 on the gate.

Although the coin box of the present invention is equally well adapted for use with the pay station of a manual telephone line or with the pay station of an automatic telephone line, it is herein illustrated in connection with a manual telephone line although the invention is not so limited.

The operation of the present invention will best be understood by reference to Fig. 5, wherein there is diagrammatically illustrated a portion of a manual telephone system. Let it be assumed that the party at the pay station desires to make a call. He drops a dime into the slot 7, from which the coin rolls into the hopper 12 and on to the coin trap 13. After depositing the coin, the party removes the telephone receiver (not shown) and listens. The coin in traveling to the trap, trips the trip vane 23 which normally extends across the hopper. When the vane 23 is tripped, it closes the contacts 24 to complete an energizing circuit for the line relay 25. This circuit extends from grounded battery winding of the line relay, armature and back contact of cut-off relay 26, over the tip side of the line, contacts 24 and through the impedance of the winding of the polarized relay 28, to ground. The line relay is thus operated and at its armature and front contact, closes a lighting circuit for the line lamp 29 at the operator's position. The operator then inserts the plug P of her cord circuit into the jack J of the calling line. The sleeve relay 30 of the cord circuit and the cut-off relay 26 of the line are energized in series, the cut-off relay serving to release the line relay 25 which extinguishes the line lamp. The operator's head-set (not shown) is connected to the cord circuit in use and she inquires for the number of the wanted line. If the call is a local call, the calling line is extended in the usual way and at the end of the conversation the coin is collected in the conventional manner by well-known means (not shown).

If on answering the call, the operator learns that the call is a toll call, she actuates the coin return key 37. This operates the money relay 33, and applies -110 volt current from key 37, front contact and armature of relay 33, over the tip sides of the cord and of the line, winding of the polarized relay 28, to ground. Relay 28 now operates to tilt the coin trap 13 in a direction to return the deposited coin. Also when the coin return key 37 is operated, the -110 volt current is applied over a portion of the circuit already described, thence through conductor 38, cathode 39 and starter anode 40 of the unidirectional cold cathode tube, resistor 41, to ground. This tube breaks down and through its main anode 42, conducts current through the low resistance winding of magnet 19, to ground. This magnet is then energized and at its upper armature and contact, locks itself operated over the ring side of the telephone line. Also when the magnet 19, is energized it attracts its armature 20 which acts through link 21 to pull the gate 15 into its lower position shown in Fig. 2. The operator now instructs the calling party as to the amount of money to deposit for the toll charge. If this

charge requires a five cent coin, this coin with others will be deposited in the proper slots of the coin box. With the gate 15 operated, the deposited five cent coin cannot fall into the return chute, but instead will pass on to the coin trap 13. At the close of the conversation, the toll operator actuates the coin collect key 32. The actuation of key 32 completes a circuit for relay 33, which extends +110 volt current from this key, through the armature and front contact of relay 33, through the tip sides of the cord circuit and of the telephone line, through the contacts 24, winding of the polarized relay 28, to ground. The polarized relay attracts the coin trap 13 in a direction to collect the coin. It should be pointed out that when +110 volt current is applied through the cord circuit, to the calling telephone line, the unidirectional tube does not pass enough current to release the magnet 19. Consequently the gate 15 will be retained in the position to accept additional five cent coins.

When the calling party hangs up, the answering supervisory and battery feed relay 36, which has been energized during conversation, releases. This lights a disconnect lamp (not shown). The operator on noting this lamp, disconnects the plug P from the jack J, which restores all of the equipment to its normal condition.

What I claim is:

1. In a telephone pay station, a coin box having slots of different sizes respectively to receive coins of different denominations including a five cent coin, a support selectively operable to collect or to refund coins thereon, means for selectively operating said support, a coin chute leading from each slot to said support, mechanism associated with the five cent coin chute for normally diverting five cent coins therefrom before their arrival at said support, and means selectively actuated from a remote point for operating said mechanism to accept five cent coins.

2. In a telephone pay station, a coin box having slots of different sizes respectively to receive coins of different denominations including a five cent coin, a support selectively operable to collect or refund coins thereon, means for selectively operating said support, a coin chute leading from each slot to said support, mechanism associated with the five cent coin chute for normally rejecting five cent coins before their arrival at said support, and means selectively actuated from a remote point for operating said mechanism to accept five cent coins.

3. In a telephone pay station, a coin box having slots of different sizes respectively to receive coins of different denominations including a five cent coin, a support selectively operable to collect or to refund coins thereon, means for selectively operating said support, a guide from each slot leading to said support, the guide for a five cent coin being inclined laterally with respect to the vertical and having an incomplete portion in its under lateral wall whereby a five cent coin will tip therethrough to a reject location, and mechanism normally ineffective but movable to a position to complete said lateral wall whereby a five cent coin will be accepted and will advance to said support, and means selectively operated from a remote point for moving said mechanism to a position to complete said lateral wall of the guide.

4. In a telephone pay station, a coin box having slots of different sizes respectively to receive coins of different denominations including a five cent coin, a coin chute from each slot leading to

5

a place from which the coins can be selectively collected or refunded at will, the chute for a five cent coin being inclined laterally with respect to the vertical and having a portion of the under lateral wall thereof incomplete whereby a five cent coin can tip therethrough to a reject location, a normally retracted gate movable in a path generally parallel to said lateral wall to a position to complete said wall whereby a five cent coin will not be rejected but will move to said place, and means selectively operated from a remote point for moving said gate to a position to complete said lateral wall of the chute.

5. In a telephone pay station system, a coin box having slots of different sizes respectively to receive coins of different denominations including a five cent coin, a coin chute from each slot leading to a place from which the coins can be selectively collected or refunded at will, the chute for a five cent coin being inclined laterally with respect to the vertical and having a portion of the under lateral wall thereof incomplete whereby a five cent coin can tip therethrough to a reject location, a gate normally ineffective but movable to a position to complete said lateral wall whereby a five cent coin will be accepted and will move to said place, means including a magnet for moving said gate to a position to complete said lateral wall, and means including a source of current of a given polarity at a remote point for operating said magnet at will.

6. In a telephone pay station system, a coin box having slots of different sizes respectively to receive coins of different denominations including a five cent coin, a coin chute from each slot leading to a place from which the coins can be selectively collected or refunded at will, the chute for a five cent coin being inclined laterally with respect to the vertical and having a portion of the under lateral wall thereof incomplete whereby a five cent coin can tip therethrough to a reject location, a gate normally retracted but movable to a position to complete said lateral wall whereby a five cent coin will be accepted and will move to said place, means including a magnet for moving said gate to a position to complete said lateral wall, a circuit including a uni-directional current device for controlling the operation of the magnet, a source of current of a given polarity at a remote point, and means at the remote point and operated under predetermined conditions for connecting said source in said circuit.

7. In a telephone system, a telephone line provided with a pay station having a coin box equipped with slots of different sizes respectively to receive coins of different denominations including a five cent coin, a coin chute from each slot leading to a place from which the coins can be selectively collected or refunded at will, means including the five cent coin chute for normally diverting a five cent coin to a reject location, mechanism including a magnet for conditioning

6

said means to allow a five cent coin to proceed to said place, a circuit including a uni-directional current device for controlling the operation of the magnet, said uni-directional device including a cathode, a starter anode and a main anode, a source of current of a given polarity at a remote point, means at the remote point selectively operated for connecting said source in said circuit, and a locking circuit for said magnet including at least a portion of said telephone line.

8. In a telephone system, a telephone line provided with a pay station having a coin box equipped with slots of different sizes respectively to receive coins of different denominations including a five cent coin, a coin chute from each slot leading to a place from which the coins can be selectively collected or refunded at will, the chute for a five cent coin being inclined laterally with respect to the vertical and having a portion of the under lateral wall thereof incomplete whereby a five cent coin can tip therethrough to a reject location, a gate movable to a position to complete said lateral wall whereby a five cent coin will be accepted and will move to said place, means including a magnet for moving said gate to a position to complete said lateral wall, a circuit including a uni-directional current device for controlling the operation of the magnet, said uni-directional device including a cathode, a starter anode and a main anode, a source of current of a given polarity at a remote point, means at the remote point selectively operated at will for connecting said source in said circuit, and a locking circuit for said magnet including a portion of said telephone line.

9. In a telephone pay station, a coin box having slots of different sizes respectively to receive coins of different denominations including a five cent coin, a coin chute leading downward from each slot, a coin hopper into which said chutes discharge their coins, a selectively operable coin abeyance trap to which coins are delivered by said hopper, means for operating said trap, mechanism associated with the five cent coin chute for normally diverting a five cent coin therefrom prior to its arrival at said hopper, and means actuated from a remote point for operating said mechanism to enable a five cent coin to travel along the five cent coin chute to said coin hopper.

JAMES ROSS DEWAR.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,312,680	Stone	Mar. 2, 1943
2,327,154	Osborne	Aug. 17, 1943
2,370,239	Friend	Feb. 27, 1945
2,375,066	Avery	Aug. 1, 1945
2,509,477	Carson	May 30, 1950
2,555,486	Harris	June 5, 1951