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2,750,447

PAYSTATION TELEPHONE SYSTEM

Filed May 31, 1951

2 Sheets-Sheet 1

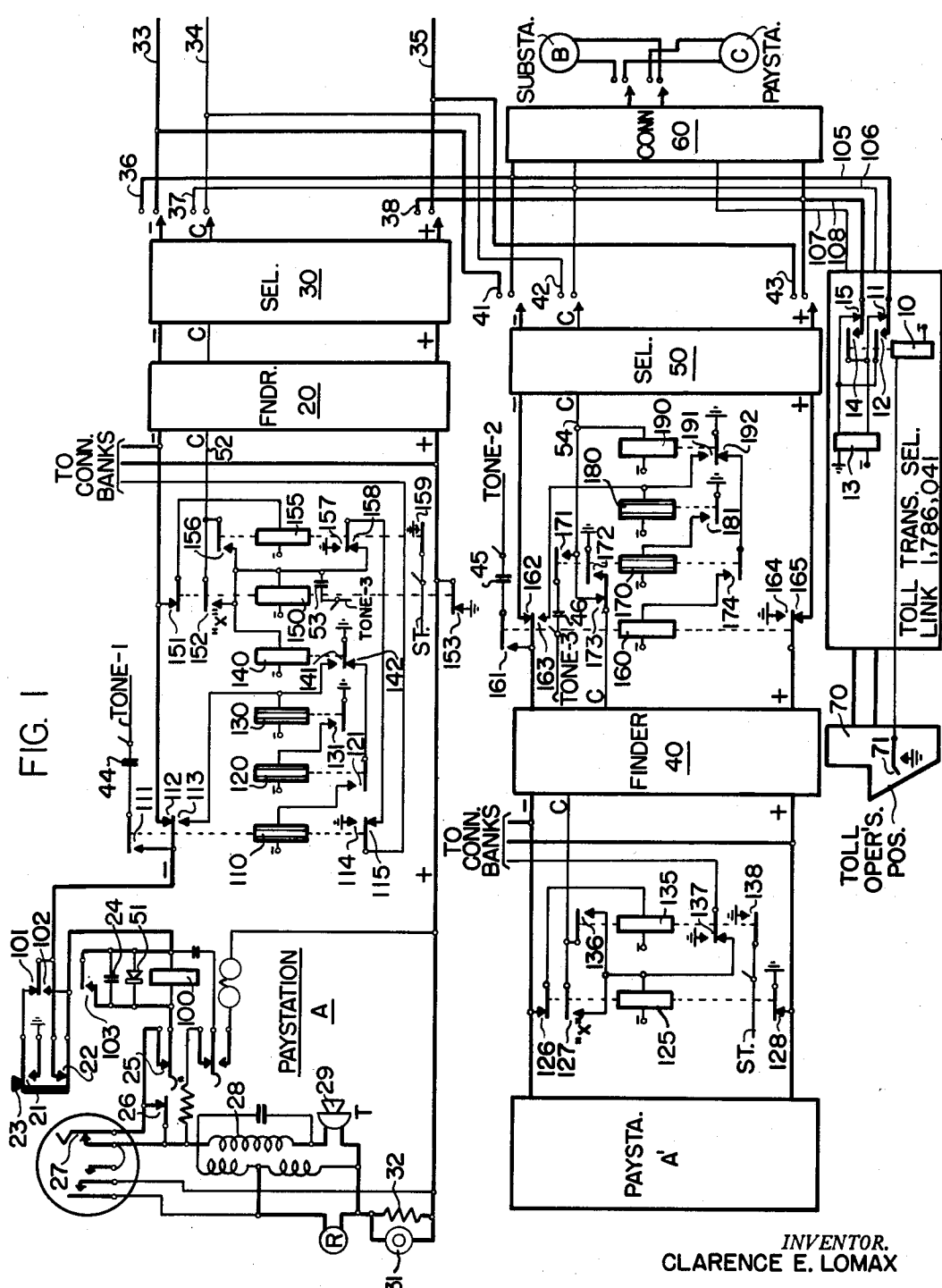


FIG. 1

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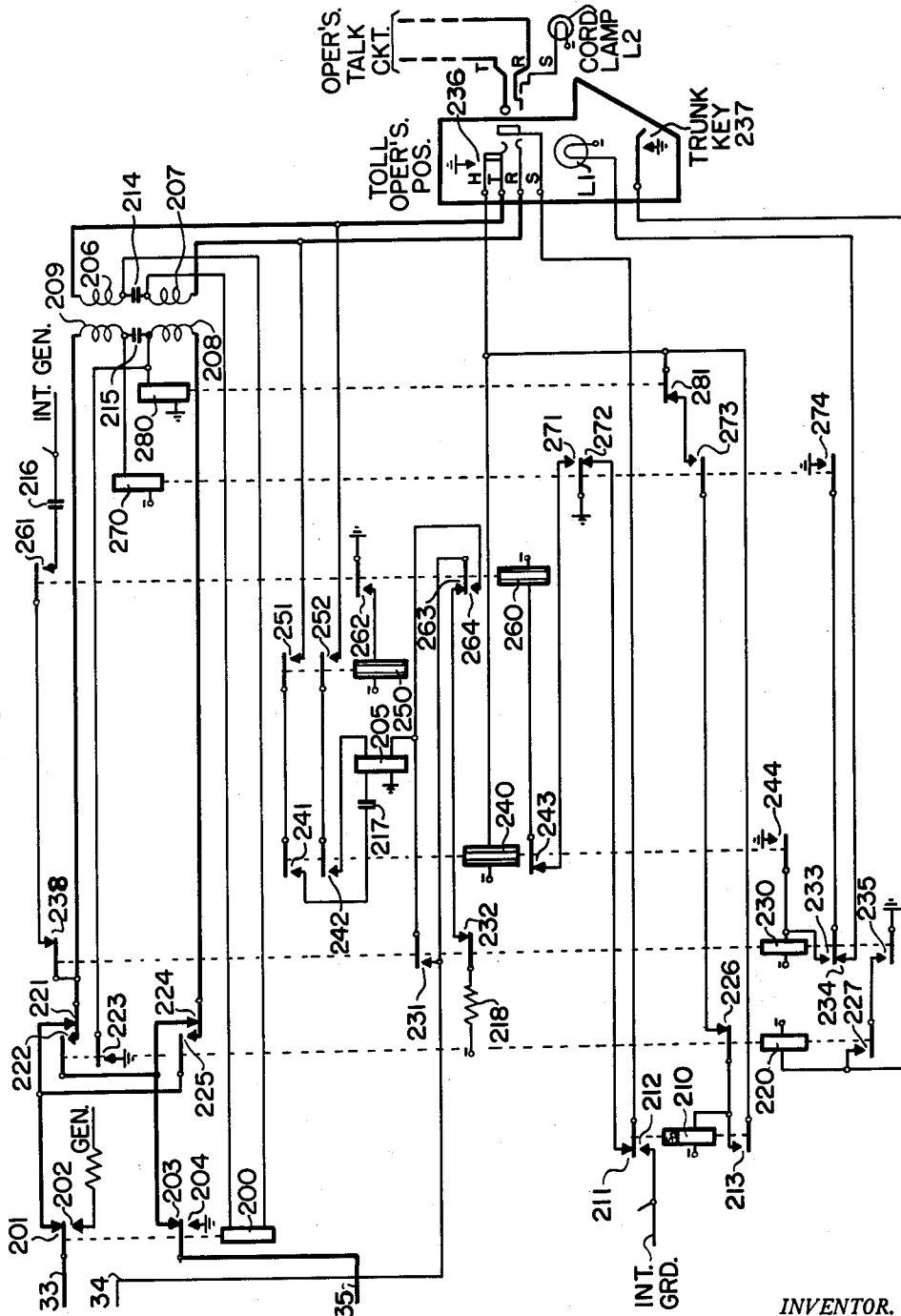
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2 Sheets-Sheet 2

FIG. 2



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2,750,447

PAYSTATION TELEPHONE SYSTEM

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Application May 31, 1951, Serial No. 229,051

10 Claims. (Cl. 179—6.3)

The present invention relates in general to telephone paystation systems and in particular to an improved system employing a new and novel coin disposal mechanism.

Accordingly, an object of the invention is to provide a telephone system adapted to facilitate the operation of a new and novel coin mechanism.

An object of the invention is to provide a paystation circuit wherein the coin magnet operates responsive only to a completed call for positioning the mechanism, whereby the subsequent operation of the hook-switch will cause the deposited coin to be collected.

Another object is to provide, in such an improved paystation circuit, means for rendering the dial thereat ineffective for pulsing until an acceptable coin has been deposited.

Another object of the present invention is to provide means for opening the loop circuit, and thus to release the switch train, when a calling party operates the push key and causes the deposited coin to be refunded before the local called party answers.

Another object is to provide a circuit for preventing the calling party from establishing a free call by operating the hook-switch or push key momentarily to release a switch train, and then restoring the hook-switch or push key before the dial pulsing contacts have been re-shunted.

An additional object is to provide means for preventing the release of the switch train if the push key is operated after the called party has answered.

A still further object of the present invention is to provide a means for signalling the toll operator when the calling party operates the push key and refunds the coins before the paystation is conditioned for collection.

A still further object is to provide in such a telephone system a means controlled by the toll operator for positioning the coin mechanism when a toll call is extended to a paystation.

A feature of the invention is the connection of the coin magnet in series with the loop circuit and in connecting a rectifier thereacross so that said magnet only operates when battery is reversed on the line.

Other objects and features will be evident and a complete understanding of the operation may be had from a perusal of the description in conjunction with the accompanying drawings, in which:

Fig. 1 discloses the new and novel paystation circuit in detail and two finder-selector links for accessing a connector; and a toll transmission selector link for also accessing said connector.

Fig. 2 discloses a Combined Line Recording (herein after referred to as CLR) trunk and a toll operator's position.

Briefly, the telephone system herein described has been designed to function with a new type coin mechanism disclosed in co-pending application, Serial No. 259,961 filed December 5, 1951, invented by Hans Sengebusch. The hopper assembly is very similar to the well known type, in which deposited coins, after striking the coin signal bells and trigger, are arrested on a coin trap. The coin

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disposal mechanism therein disclosed is normally positioned so that the operation of a push key, mounted on the front of the paystation, causes the deposited coin or coins to be refunded; namely, causes the coin trap to rotate in such a direction that the coins fall into the refund chamber. A magnet, when operated, mechanically locks itself and conditions the coin mechanism for subsequent collection of the coins when the hook-switch is operated. The push key is ineffective once the magnet operates and locks. The operation of the hook-switch, with the resulting collection of coins, unlocks the magnet in order to return same to normal. It should thus be seen that this new and novel paystation mechanism does not require the conventional 110 volt potential utilized heretofore for collecting and refunding. When a coin is deposited for a local call the coin trigger is actuated and the normally closed contacts shunting the dial pulsing contacts are opened. The dial is thus effective for operating the various switches in the switch train. The coin magnet, polarized due to the effect of a shunting rectifier, does not operate when current initially flows over the line from battery at the line circuit. Responsive to answering of the called party, battery is reversed in well known manner and the coin magnet therefore operates and locks. The coin mechanism is now conditioned so that responsive to the subsequent replacing of the receiver, at the completion of the conversation, the operation of the hook-switch will cause the mechanism to collect the coin. Had the party not answered the coin would have been refunded by the operation of the push key. If the calling party operates the push key to refund the deposited coin while the connector is still ringing the called party (namely, before battery is reversed to operate the coin magnet) in an attempt to establish a free call, the loop circuit will be opened long enough to cause the switch train to release. When the toll operator is called, battery is not reversed until the toll connection has been established. The mechanism thus remains in its normal refunding position so the push key may be operated to refund the coins any time until the operator has manually caused battery to be reversed. The operator could then have the calling party refund the initially deposited coin and then deposit the necessary toll charge. Each time the push key is operated, ground is applied to the negative line conductor for signalling the operator so that if the party refunds the coins after deposit, but before battery is reversed, the toll operator will be so informed. Provision is made for reversing the toll charges on a call to a paystation if acceptable to the called party thereat. The toll connection is established over a toll transmission selector link to a connector and thence to a paystation; and if the charges are to be borne by the called party the toll operator may manually cause battery to be reversed to the paystation so that the coin mechanism may be conditioned for collection of coins.

Having briefly described the invention, a detailed description thereof follows. Assume that a calling party at paystation A desires to make a call to a party at a local substation, such as B, and removes the receiver and deposits an acceptable coin. It may be stated at the outset that this paystation system was not designed to operate with any one particular denomination coin for initiating local calls; it would function equally well if a dime, two nickels, or any combination of coins were required, depending on the arrangement of the coin chute itself and/or a modification of the circuit. The initially deposited coin passes through the coin chute and strikes the coin trigger, thereby causing contacts 26 to open. Line relay 155 in the line circuit is operated over the following circuit: ground at contacts 153, positive line conductor, coin transmitter 31 and shunting resistor 32, talking transmitter 29, induction coil winding 28, dial

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pulsing contacts 27, hook-switch contacts 25, coin magnet 100 and by-pass rectifier 51, push key contacts 22, negative line conductor, contacts 112, 151, through relay 155 to battery. Coin magnet 100 does not operate at this time as practically all of the loop current is flowing through by-pass rectifier 51. Line relay 155, in operating and in therefore closing contacts 156, prepares an operating circuit for cut-off relay 150; in closing contacts 157, connects ground via contacts 115 to the "C" terminal on its connector bank to busy that paystation to incoming calls; and in closing contacts 159, connects ground to the common start lead to initiate a finder to search for the calling paystation line. Finder 20 seizes the line and returns ground over the "C" conductor in well known manner to operate cut-off relay 150, via contacts 156. Cut-off relay 150, in operating and in therefore opening contacts 151 and 153, opens the previously traced operating circuit for line relay 155 causing it to restore; and in closing contacts 152 locks itself operated and also completes an operating circuit for relay 140 from ground on the "C" conductor. Relay 140, in operating and in therefore closing contacts 141, closes an obvious circuit for relay 130; and relay 130, in closing contacts 131, in turn closes an obvious operating circuit for relay 120. Relay 120, in operating and in therefore closing contacts 121, prepares an operating circuit for relay 110. The utility of these last four mentioned relays will become apparent hereinafter.

Responsive to seizure by finder 20, dial tone is transmitted back to the paystation A in well known manner. The calling party thereat dials the appropriate number individual to substation B and as the dial shunting contacts 26 are now open, dialing will be effective. Selector 30 and connector 60 therefore operate in well known manner and complete a connection between paystation A and substation B via conductors 36, 37 and 38. Ringing now takes place at substation B, and assuming the party thereat answers, the connections from paystation A to the line relay (not shown) in connector 60 will be reversed in well known manner, thereby reversing the potential on the calling line. The direct loop current will therefore reverse its direction and as rectifier 51 at paystation A can only successfully pass current in one direction, this reversal will cause substantially all of the loop current to pass through coin magnet 100. Coin magnet 100 operates and as will be seen in the co-pending Sengebusch application, the mechanism will be so positioned that the subsequent operation of the hook-switch at the conclusion of the conversation will cause the coins to be collected. Coin magnet 100 also mechanically locks so that the mechanism will be in the collect position until after the operation of the hookswitch. Contacts 102 close at this time, thereby rendering push key 23 electrically ineffective; and contacts 103 also close to shunt out magnet 100 for better transmission. It will be noted that condenser 24 also shunts coin magnet 100 so that a better talking circuit is provided when a free service, or emergency call is made and battery is not reversed over the line for operation of contacts 103. At the completion of the conversion and when the calling party at paystation A replaces the receiver, the operation of the hook-switch mechanically causes the coins to be collected.

If the call is not answered by the party at substation B, battery is not reversed over the line and magnet 100 does not operate. The coin mechanism therefore remains in its normally refunding condition so that the party thereat may refund the coin at any time by the operation of push key 23. If the calling party pushes push key 23 just before the called party answers, namely, after the switch train is completed, the coin will be refunded but contacts 22 will open and cause said switch train to release. The push button as disclosed in the co-pending application has a long stroke and must be pressed the entire distance before a refund can be made. Contacts 22 open after only a short travel of the push key and as said key re-

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stores rather slowly, the contacts remain open for an appreciable period. This period being sufficiently long to open contacts 22, to thus open the loop circuit and cause the switches to release in well known manner. The purpose of the ground at contacts 21 will be hereinafter explained. It will be noted in the co-pending application, that dial shunting contacts 26 will be closed responsive to the operation of the hook-switch, when the mechanism is conditioned for collection, or to the operation of the push key, when the mechanism is in its normally refunding condition.

As described in the co-pending Sengebusch coin mechanism application, there is no delay in the re-shunting of the dial pulsing contacts when the hook-switch or push key has been operated to dispose of the coin. However, if there is, the possibility arises that a calling party may dispose of his coin at the completion of a call and release the switch train, but will immediately release the hook-switch or the push key before the dial pulsing contacts have been shunted again. This would result in the dial being effective for a subsequent free call. To guard against this very slight possibility, relays 110, 120, 130 and 140 have been incorporated into the line circuit. At this point the utility of the link circuit connected to paystation A' will be considered. Relays 160, 170, 180 and 190 have been interposed between finder 40 and selector 50 for the same reason that relays 110—140 were added to the line circuit in the link above. Small exchanges use very few paystations and for that reason any special central office equipment should be in the line circuit rather than in the primary trunk. Thus, it will be more economical for a small exchange with a small number of paystations to utilize the improved line circuit as shown in the upper part of Fig. 1; and by the same token it will be more economical for an exchange having a fairly large number of paystations to place the special equipment in a primary trunk, such as described in the lower portion of Fig. 1.

While a call is established, relays 120, 130 and 140 are operated as hereinbefore explained. Responsive to replacing the receiver or operating push key 23, the loop circuit will be opened, resulting in a releasing of the switch train. Ground will thus be removed from the "C" conductor 52 at finder 20 in well known manner causing relays 140 and 150 to release. Relay 140, in restoring and in therefore closing contacts 142, causes relay 110 to operate via contacts 121. Because of the slow-to-release nature of relays 130 and 120, contacts 121 will remain closed to complete the circuit to relay 110 for a pre-determined period. Thus, if the party at paystation A only momentarily operates the push key or the hook-switch to dispose of the coin, the loop circuit will be closed once again and relay 130 will remain operated from ground on contacts 153 over the loop circuit via contacts 113. Relay 130, in remaining operated, maintains relay 120 operated, which in turn maintains relay 110 operated. Relay 110, in closing contacts 111, places a warning tone, via condenser 44, onto the calling line informing the party thereat to replace the receiver for an appreciable period; in opening contacts 112, opens the circuit to line relay 155 so that it will be impossible for another switch train to be connected thereto; and in closing contacts 114, places a ground at the "C" bank terminal of the connector to busy this line to any incoming calls. The party must then replace the receiver a sufficient period to allow slow-to-release relays 130 and 120 to restore for opening the circuit to relay 110, allowing it to also restore. This period would be ample time for contacts 26 to operate and re-shunt the dial pulsing contacts so that a subsequent call could not be made without depositing a coin.

In an exchange employing the embodiment disclosed in the lower section of Fig. 1, a calling party at paystation A' removing the receiver would cause line relay 135 to operate from ground at contacts 123, via the loop circuit and contacts 126. Responsive to the operation of line

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relay 135, a finder is started to search for the line from the effect of ground on the start lead at contacts 138. After finder 40 and its associated selector 50 have seized the calling paystation line, ground is returned back over "C" conductor 54 in well known manner. This ground operates relay 190 which in turn closes an obvious operating circuit to relay 180, via contacts 191. Relay 180 therefore operates and, in closing contacts 181, causes relay 170 to operate. Relay 170, in closing contacts 171, applies a paystation identifying tone (hereinafter explained) to "C" conductor 54; in closing contacts 172, connects ground to the "C" conductor to hold the preceding finder; and in closing contacts 174, prepares an operating circuit for relay 160. Assuming that the calling party at paystation A' dials the number individual to substation B, selector 50 and connector 60 operate in well known manner to complete the connection. Responsive to answering of the called party at substation B, the coin mechanism at paystation A' will be conditioned for subsequent collection. The circuit and mechanism of paystation A' are assumed to be exactly similar to that shown in detail for paystation A. Relays 170, 180 and 190 will remain operated during the conversational period as did relays 120, 130 and 140 in the previous explanation for the other circuit embodiment. At the completion of the call, and when the party at substation B replaces the receiver thereat, connector 60 and selector 50 restore in a well known manner. Ground will thus be removed from "C" conductor 54 and relay 190 restores and, in closing contacts 192, causes relay 160 to operate for a pre-determined period, via contacts 174. Relays 180 and 170 eventually restore as their operating circuits will be opened at contacts 191 and 181, respectively, but as they are of the slow-to-release type, contacts 174 remain closed for an appreciable period. Thus relay 160, in operating and in closing contacts 163 and 164, completes another circuit to relay 180 over the loop circuit at paystation A' if the party thereat does not also replace its receiver for an appreciable period.

Assuming that the calling party had attempted to momentarily operate the hook-switch or push key to dispose of the coin, but not to re-shunt the dial pulsing contacts, in an attempt to make a free call, said calling party would be prevented from so doing at open contacts 162 and 165. Relay 180 would remain operated from ground at contacts 164 over this loop circuit indefinitely until the party at paystation A' replaces the receiver for a time sufficient to cause the dial shunting contacts to re-close. Relay 180 remaining operated, maintains relay 170 operated; which in turn maintains relay 160 operated. The operation of relay 160, in addition to permanently opening the circuit to selector 50, at contacts 161, causes a tone 2 to be connected to the positive talking conductor for informing the calling party that the receiver must be replaced for a longer period—this period being sufficient to replace the shunting contacts around the dial pulsing contacts.

Assume now that the party at paystation A desires to make a toll call. The system will function as hereinbefore explained except that this time the number dialed will be peculiar to the toll operator's position. A calling loop will thus be extended from paystation A over finder 20 and selector 30 to the CLR trunk. Relays 280 and 270 will therefore operate over the following circuit: ground, through relay 280, repeating coil winding 208, contacts 224, 203, positive talking conductor 35, over the calling loop, negative talking conductor 33, contacts 201, 221, repeating coil winding 209, through relay 270 to battery. Relay 280, in operating and in therefore opening contacts 281, opens another point in the operating circuit of relay 210. Relay 270, in operating and in therefore closing contacts 271, completes an obvious operating circuit for relay 260, via contacts 243; in closing contacts 273, closes a point in the operating circuit of relay 210; and in closing contacts 274, completes a circuit for lamp L1 at the toll operator's position, via contacts 234. Lamp L1 is thus

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lighted for informing the toll operator thereat that a call is waiting service on that particular trunk. Relay 260, in operating and in therefore closing contacts 261, connects ring-back tone to the calling line, via condenser 216, contacts 236, 221 and 202; in closing contacts 262, completes an obvious operating circuit for relay 250; and in closing contacts 264, connects ground, through the lower winding of transformer 205, to "C" conductor 34 in order to hold the preceding switches. Relay 250, in operating and in therefore closing contacts 251 and 252, prepares a transmission circuit for the paystation identifying tone.

The toll operator inserts a plug, associated with a cord circuit, into the jack individual to this particular trunk. Contacts 236 close and complete an obvious operating circuit for relay 240. Relay 240, in operating and in therefore closing contacts 241 and 242, completes the transmission circuit for the paystation identifying tone; in opening contacts 243, opens the previously traced operating circuit for relay 260; and in closing contacts 244, completes an obvious operating circuit for relay 230. This paystation identifying tone informs the operator that a paystation is on the line and is transmitted to the toll operator over the following path: tone 3 in the line circuit, condenser 53, contacts 152, "C" conductor 52 over the "C" conductor of finder 20 and selector 30, "C" conductor 34, contacts 264, through the lower winding of transformer 205 to ground, and thence by transformer action from the upper winding of transformer 205, through condenser 217, contacts 241 and 242, 251 and 252, the tip T and ring R conductors, to the operator's talk circuit. It will be noted that the same relay that connected this tone to the tip and ring conductors also causes relay 260 to release. Relay 260, in releasing and in therefore opening contacts 261, opens the previously traced ring-back tone circuit from the line; in opening contacts 262, opens the operating circuit of relay 250; and in opening contacts 264, removes the previously connected ground from "C" conductor 34. Relay 250, in restoring and in therefore opening contacts 251 and 252, opens the tone identifying transmission circuit to the tip and ring conductors. However, due to the slow-to-release nature of relays 260 and 250, contacts 251 and 252 will remain closed momentarily in order to allow the toll operator to make the identification. In the meantime, relay 230 has operated and, in closing contacts 231, connects ground from the lower winding of transformer 205 to the "C" conductor 34 to hold the preceding equipment. Due to the slow-to-release nature of relay 260, contacts 231 will close before contacts 264 open, thereby maintaining a continuous holding ground on "C" conductor 34. Relay 230, in opening contacts 238, opens another point in the ring-back tone circuit; in opening contacts 232, removes battery from the "C" conductor; in closing contacts 233, completes another operating circuit for itself; in opening contacts 234 opens the operating circuit for lamp L1, thereby extinguishing same; and in closing contacts 235, prepares an operating circuit for relay 220.

The toll operator may now converse with the calling party at paystation A in order to ascertain the desired distance station, over the following path: calling loop circuit, over finder 20 and selector 30, talking conductors 33 and 35, contacts 201 and 203, contacts 221 and 224, repeating coil windings 209 and 208, and thence by transformer action from repeating coil windings 206 and 207 to the tip and ring conductors and to the operator's talk circuit. The normal procedure will be for the operator to ask the calling party to press the push key in order to refund his initially deposited coin. As previously explained, the operation of push key 23 opens the loop circuit at contacts 22 but at this time the switch train will not release as it will be held from ground on the lower winding of transformer 205. The toll operator then sets up the toll connection and when it is completed asks the calling party for a deposit of the correct toll charge. When the toll charges are deposited, the operator reverses the battery feed to paystation A by the operation of the

trunk key individual to that particular trunk. Relay 220 therefore operates from ground at contacts 237 and, in closing contacts 222 and 225, and in opening contacts 221 and 224, reverses the battery on the calling line in a well known manner. As previously explained, a reversal of battery, namely, connecting negative potential to the positive line and ground to the negative line, causes the polarized coin magnet 100 to operate in paystation A. The paystation coin mechanism is now conditioned for subsequent collection.

The toll operator can now connect the distant stations together and conversation may thereafter ensue. At the completion of the toll call, the party at paystation A replaces the receiver and causes the coins to be collected and also opens the calling loop, causing the previously traced operating circuit for relays 280 and 270 to open. Relays 270 and 290 therefore restore and in closing contacts 272 causes cord lamp L2 to illuminate, via contacts 211, to inform the operator that the parties on that trunk have terminated their conversation. The cord circuit may now be removed from the jack, resulting in the opening of contacts 235. The circuit to relay 240 is thus opened, causing it to restore. Relay 240, in opening contacts 244, causes relay 230 to restore; and relay 230, in opening contacts 231, removes ground from "C" conductor 34, thereby causing the preceding switch train to release in well known manner.

If the calling party attempts to defraud the telephone company by pressing the push key 23 and refunding the deposited coins just before the toll operator has caused battery reversal by the operation of the trunk key, the operator will be so informed. As previously mentioned, the push key has a long stroke and in order to successfully refund the coins, contacts 21 will be closed and contacts 22 will be opened. The loop circuit will thus be momentarily opened at contacts 22 causing relays 280 and 270 to restore, circuits therefore having been traced hereinbefore. However, the closing of contacts 21 connects ground to the negative line conductor via contacts 101, thereby causing relay 270 to operate. Thus, with the momentary restoration of relay 280 coupled with the operation of relay 270, relay 210 will operate, over the following path: ground at contacts 236, contacts 281, 273, 226, through relay 210 to battery. Relay 210 operates and locks itself from ground at contacts 236 via contacts 213; and in closing contacts 212 connects an interrupted ground over the sleeve S conductor to cord lamp L2. The intermittent illumination of lamp L2 thereby informs the toll operator that the push key has been operated. She may then ask the calling party to make another deposit before the toll connection is completed and battery is reversed.

If a party at some distant station wishes to converse with somebody at a paystation and desires that the called party pay the toll charges, a circuit is embodied to accomplish this. The call would be handled by the toll operator at position 70 and would be connected to the paystation line over the toll transmission selector link. A typical link is disclosed in U. S. Patent 1,786,041, issued to V. S. Tharp et al., December 23, 1930. The only modification made is the addition of a manually controlled relay for controlling the polarity of the battery feed to the called line. The toll operator at position 70 could complete the connection over this toll transmission selector link to connector 60 and thence to paystation C. Conductors 107, 108, 106, 105 and relay 13 are all similarly numbered in the hereinbefore cited Tharp patent. Relay 13 supplies talking battery for the called station, therefore, by the addition of manually controlled relay 10, provision is therein established for reversing battery to the called line. Paystation C is identical to the paystation A so that reversal of battery thereto causes the coin mechanism to be conditioned for subsequent collection. Thus, if the incoming toll call to paystation C is to be paid for by the party thereat the toll operator at position 70, after obtain-

ing permission from that calling party, operates a key to close contacts 71, thereby operating relay 10. Relay 10 reverses the connections to relay 13 in well known manner to effect a battery reversal on the line.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

Having described my invention in detail, what I claim and desire to have protected by issuance of Letters Patent of the United States is:

1. In a paystation telephone system, a paystation including a coin disposal mechanism operable responsive to the operation of the hook-switch for collecting a deposited coin at one time and operable responsive to the operation of a push key for refunding a deposited coin at other times, an impulse sending device in said paystation, shunting means normally rendering said device ineffective for pulsing, means for removing said shunting means responsive to the depositing of an acceptable coin, connecting means for connecting said paystation to a called station, means responsive to the subsequent operation of the hook-switch for replacing said shunting means, blocking means in said connecting means for preventing the calling party at said paystation from momentarily operating said hook-switch to thereby release said connecting means but not to replace said shunting means in an attempt to establish a free call, and signalling means operable responsive to said last mentioned means for informing the calling party that said hook-switch must be operated an appreciable period before another outgoing call may be established, said period being sufficient to replace said shunting means thereby requiring the deposit of another acceptable coin before a subsequent call is permitted.

2. In a paystation telephone system, a paystation including hook-switch contacts, a line circuit associated with said paystation, connecting means connecting said paystation to a called station; relay blocking means in said line circuit operable responsive to the release of a called station, at the termination of a call, for preventing a calling party at said paystation from establishing another subsequent call until said hook-switch contacts have been operated for a pre-determined period; said relay blocking means also preventing the extension of any incoming calls to said paystation until said hook-switch contacts have been operated for said pre-determined period, and a signalling tone connected to said paystation responsive to the operation of said relay blocking means for informing a calling party at said paystation to replace the receiver and operate said hook-switch contacts for an appreciable period before a subsequent call may be initiated.

3. In a paystation telephone system, a paystation including a manually operated push key for refunding a deposited coin, contacts controlled by said push key for opening the loop circuit of said paystation, a line circuit associated with said paystation, connecting means connecting said paystation to a called station; relay blocking means in said line circuit operable responsive to the release of a called station, at the termination of a call, for preventing a calling party at said paystation from establishing another subsequent call until said contacts have been operated for a pre-determined period; said relay blocking means also preventing the extension of any incoming calls to said paystation until said contacts have been operated for said pre-determined period, and a signalling tone connected to said paystation responsive to the operation of said relay blocking means for informing a calling party at said paystation to operate said push key for an appreciable period before a subsequent call may be initiated.

4. In a paystation telephone system, a paystation including hook-switch contacts, connecting means connecting said paystation to a called station; relay blocking means in said connecting means operable responsive to the

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release of a called station, at the termination of a call, for preventing a calling party at said paystation from establishing another subsequent call until said hook-switch contacts have been operated for a pre-determined period; said relay blocking means also preventing the extension of any incoming calls to said paystation until said hook-switch contacts have been operated for said pre-determined period, and a signalling tone connected to said paystation responsive to the operation of said relay blocking means for informing the calling party thereat to replace the receiver and operate said hook-switch contacts for an appreciable period before a subsequent call may be initiated.

5. In a paystation telephone system, a calling paystation including a coin disposal mechanism operable responsive to the operation of the hook-switch for collecting a deposited coin at one time and operable responsive to the operation of a push key for refunding a deposited coin at other times, an impulse sending device in said paystation, shunting means normally rendering said device ineffective for pulsing, means for removing said shunting means responsive to the depositing of an acceptable coin, a line circuit associated with said paystation, a called station, connecting means for connecting said calling paystation to said called station; means responsive to the subsequent operation of said hook-switch, for a pre-determined period, for replacing said shunting means; relay blocking means in said line circuit operable responsive to the release of said called station, at the termination of a call, for preventing a calling party at said paystation from establishing another subsequent call by momentarily operating said hook-switch to release said connecting means, but not to replace said shunting means, in an attempt to establish a free call; said relay blocking means also preventing the extension of any incoming calls to said paystation until said hook-switch has been operated for said pre-determined period, and a signalling tone connected to said paystation responsive to the operation of said relay blocking means for informing a calling party thereat to replace the receiver and operate said hook-switch for an appreciable period before a subsequent call may be initiated; said pre-determined period being sufficient to replace said shunting means, thereby requiring the deposit of another acceptable coin before a subsequent call is permitted.

6. In a paystation telephone system as claimed in claim 5, push key contacts controlled by said push key for opening the loop circuit of said paystation; and means responsive to the operation of said push key, for a pre-determined period, for replacing said shunting means; said relay blocking means also operated for preventing a calling party at said paystation from establishing another subsequent call by momentarily operating said push key to open said push key contacts and release said connecting means, but not to replace said shunting means, in an attempt to establish a free call.

7. In a paystation telephone system, a calling paystation including a coin disposal mechanism operable responsive to the operation of the hook-switch for collecting a deposited coin at one time and operable responsive to the operation of a push key for refunding a deposited coin at other times, an impulse sending device in said paystation, shunting means normally rendering said device ineffective for pulsing, means for removing said shunting means responsive to the depositing of an acceptable coin, a called station, connecting means for connecting said calling paystation to said called station; means responsive to the subsequent operation of said hook-switch, for a pre-determined period, for replacing said shunting means; relay blocking means in said connecting means operable responsive to the release of said called station, at the termination of a call, for preventing a calling party at said paystation from establishing another subsequent call by momentarily operating said hook-switch to release said connecting means, but not to replace said

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shunting means, in an attempt to establish a free call; said relay blocking means also preventing the extension of any incoming calls to said paystation until said hook-switch has been operated for said predetermined period, and a signalling tone connected to said paystation responsive to the operation of said relay blocking means for informing a calling party thereat to replace the receiver and operate said hook-switch for an appreciable period before a subsequent call may be initiated; said predetermined period being sufficient to replace said shunting means, thereby requiring the deposit of another acceptable coin before a subsequent call is permitted.

8. In a paystation telephone system as claimed in claim 7, push key contacts controlled by said push key for opening the loop circuit of said paystation; and means responsive to the operation of said push key, for a predetermined period, for replacing said shunting means; said relay blocking means also operated for preventing a calling party at said paystation from establishing another subsequent call by momentarily operating said push key to open said push key contacts and release said connecting means, but not to replace said shunting means, in an attempt to establish a free call.

9. In a telephone system, a paystation having a hook-switch and a push key thereat and having a coin disposal mechanism operable responsive to the operation of said hook-switch for collecting deposited coins in one case and operable responsive to the operation of said push key for refunding deposited coins in another case, a polarized magnet connected in series with the loop circuit of said paystation for positioning said coin disposal mechanism to a collect position and operated only in response to a reversal of battery over said loop circuit, a paystation trunk, a toll operator's position, means for connecting said paystation, when calling, to said trunk for initiating a toll call thereover, a call indicating means at said operator's position, means for operating said call indicating means responsive to said initiated call over said trunk for informing said operator's position of a call waiting for service, a cord circuit controlled from said operator's position for accessing said trunk to further extend said initiated call to the desired called station, a special indicating means at said operator's position, a source of interrupted current, means operated in one instance when said push key is operated for connecting said intermittent current to said special indicating means, said special indicating means being thereafter intermittently operated for informing the toll operator at said position that the calling paystation has operated said push key and refunded the deposited coin, means in said trunk for reversing battery over said connection to said loop circuit, and means operated at said toll operator's position in a different instance for operating said last mentioned means, said magnet thereafter operated responsive to said battery reversal for positioning said coin collect mechanism to said collect position, whereby operations of said push key are rendered ineffective for subsequent operations of said special indicating means and the said coin refunding operations and subsequent operations of said hook-switch by said subscriber being rendered effective for coin collect operations.

10. In a telephone system, a paystation having a hook-switch and a push key thereat and having a coin disposal mechanism operable responsive to the operation of said hook-switch for collecting deposited coins in one case and operable responsive to the operation of said push key for refunding deposited coins in another case, a normally incomplete paystation loop circuit, means for completing said loop circuit responsive to the operation of said hook-switch when said paystation is calling, a magnet connected in series with said loop circuit, a rectifier connected in shunt of said magnet for shunting the current flow around said magnet when said current is flowing through said loop circuit in a certain direction, an impulse sending device at said paystation for pulsing out over said

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loop circuit, means normally rendering said device ineffective for pulsing, and operated responsive to the deposit of an acceptable coin for rendering said device effective, a called station, connecting means operated responsive to the operation of said impulsing device for extending a desired connection between said calling paystation and said called station, said magnet operated only responsive to a reversal of said loop circuit current flow caused by the answering of said connection by said called station, for conditioning said coin disposal mechanism to a collect position, means operated responsive to said operation of said magnet for shunting said loop circuit current flow around both said magnet and said rectifier for increasing the current flow in said connection, said coin disposal mechanism operated responsive to the operation of said hook-switch at the conclusion of conversation over said connection for performing a successful collection of the deposited coin, said coin disposal mechanism operated responsive to the operation of said push key in case there is no said reversal of current and in case said

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push key operation takes place before said connection is answered, for refunding the deposited coin, and means included in said loop circuit operated by said above-mentioned push key operations for opening said loop circuit to thereby initiate the restoration of said connecting means and the subsequent release of said connection, whereby attempts of fraud are prevented.

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