STEP BY STEP SYSTEMS
NO. 1, 350A, 355A, 360A OR 35E97
COIN TRUNK CIRCUIT
FOR USE PRECEDING A FIRST SELECTOR
SERVING PREPAYMENT COIN LINES
ARRANGED FOR DELAYED CHARGING
AND OVERTIME CHARGING

CHANGES

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE CAUSED BY CHANGES IN APPARATUS

C.1 Circuit requirement Note 3, Page 1 and circuit requirement Note 7, Page 4 are removed and replaced by a new note. The removed note read: When operating on lead "A", relay DD should remain normal. If it tends to operate, stiffen relay D within present limits.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 2363-CEH-RJJ

STEP-BY-STEP SYSTEMS
NO. 1, 350A, 355A, 360A OR 35E97
COIN TRUNK CIRCUIT
FOR USE PRECEDING A FIRST SELECTOR
SERVING PREPAYMENT COIN LINES
ARRANGED FOR DELAYED CHARGING
AND OVERTIME CHARGING

CHANGES

D. DESCRIPTION OF CHANGES

D.1 In Fig. A and B at leads "S", "R", and "T", "or to trunk circuit" is added to the connecting information. In Fig. E and F at leads "A", "S", "R", and "T", "or to trunk circuit" is added to the connecting information.

F. CHANGES IN CD SECTIONS

F.1 Change 3.02 to read, "to provide for transmitting dial tone from the selector, TOUCH-TONE Converter or Originating Register Circuit to the calling subscriber."

F.2 Under 4., Connecting Circuits, add:

4.11 Converter Trunk - TOUCH-TONE Calling - SD-32326-01.

4.12 Register Trunk and Link - SD-32353-01 (Trunk Portion).

F.3 In 5., second subparagraph, add the following after the fifth sentence: "When this circuit is connected to a TOUCH-TONE converter or Common Control originating register, the return of dial tone is under control of these circuits."

F.4 Change the heading of 7. to read "PULSING" and number the present subparagraph:

7.1 Rotary Dial Calling

F.5 Add:

7.2 TOUCH-TONE Calling

On TOUCH-TONE calls, the R relay remains operated during transmission of tones and does not operate and release as in the case of rotary dialing. The TOUCH-TONE signals are translated into dial pulses by the converter or originating register and then transmitted to the selector.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 2363-RJJ-GO

STEP BY STEP SYSTEMS
NO. 1, 350A, 355A, 360A OR 35E97
COIN TRUNK CIRCUIT
FOR USE PRECEDING A FIRST SELECTOR
SERVING PREPAYMENT COIN LINES
ARRANGED FOR DELAYED CHARGING
AND OVERTIME CHARGING

CHANGES

B. CHANGES IN APPARATUS

B.1 Superseded	Superseded by
111A - 60-ohm Resistor, "ZO" Option	227C - 59-ohm Resistor, "ZP" Option

D. DESCRIPTION OF CHANGES

D.1 The Mfr Disc. 111A 60-ohm resistor ("ZO" option) is superseded by the 227C 59-ohm resistor ("ZP" option).

D.2 Circuit Note 103 and the Options Used Table are revised to reflect this change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 6261-PJH-AFB

STEP-BY-STEP SYSTEMS
NO. 1, 350A, 355A, 360A or 35E97
COIN TRUNK CIRCUIT
FOR USE PRECEDING A FIRST SELECTOR
SERVING PREPAYMENT COIN LINES
ARRANGED FOR DELAYED CHARGING
AND OVERTIME CHARGING

CHANGES

B. CHANGES IN APPARATUS

B.1 Added

Figure 4
U114 (LL) Relay

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Figure 4 is added to facilitate the use of this circuit with a Subscribers Rotary Line Ckt. equipped with a Dial Long Line Ckt.

1. PURPOSE OF CIRCUIT

1.1 This circuit is used to provide dial servide to prepayment coin stations. It is arranged to automatically collect or return the coin deposited as required, after each call. When Fig. B is used, it is arranged to delay setting up the charge condition until 2 to 5 seconds after the called party answers. It functions with circuits arranged to time the call and collect the coin for each five minute interval of conversation.

2. WORKING LIMITS

2.1 Maximum external circuit loop resistance for subscriber's pulsing and supervision - See Range Chart.

2.2 Earth Potential Limits:

Relay (P)

Neg. Limit — Maximum 10V

	Min. Conduc. Lp.	Max. Pos. E.P.
Positive Limits	0 Ohms	9.5 V
	105 "	10 "
	220 "	10.5 "
	320 "	11 "
	425 "	11.5 "
	530 "	12 "

2.3 Minimum Insulation Resistance - 20,000 Ohms.

3. FUNCTIONS

3.01 To provide for connecting a prepayment coin station to a first selector or selector repeater.

3.02 To provide for transmitting dial tone from the selector circuit to the calling subscriber.

3.03 To test for the presence of a coin in the coin box.

3.04 To repeat dial pulses after the coin is deposited.

3.05 To automatically return the coin on all uncompleted calls and on completed calls on which there is no charge.

3.06 To automatically collect the coin on completed calls to stations on which a charge is to be made.

3.07 To automatically collect the coin on completed calls to the special service operator unless the operator otherwise disposes of the coin before disconnecting.

3.08 To cut out the coin test and pulse repeating equipment when preceded by a long line circuit.

3.09 With Fig. B, to defer setting up the charge condition until 2 to 5 seconds after answer by the called party.

3.10 To indicate a trunk which has failed to dispose of a coin.

3.11 To start the associate timer when the called party answers on local charge calls.

3.12 To extend the talking circuit to the associated coin collect and monitor circuit.

3.13 To provide direct ground to the A lead in Fig. 2 in offices equipped with CAMA trunk.

4. CONNECTING CIRCUITS

When this circuit is shown on a keysheet, the connecting information thereon shall be followed.

		No. 1 or 350A	360A	No. 355A	35E97
4.01	Line Finder Circuit	SD-31530-01*	SD-31530-01	SD-32000-01*	SD-32000-01
4.02	Selector Circuit	SD-30200-01*	SD-30200-02*	SD-31735-01*	SD-30910-01*
4.03	Interrupter and Alarm Circuit for Prepay Coin Trunks	SD-30852-01*	SD-31975-01	SD-31975-01	SD-31975-01
4.04	Coin Trunk Timed Release Circuit	SD-31861-01	SD-31861-01	SD-31861-01	SD-31861-01
4.05	Subline Circuit Equipped with Rotary Line Switch	SD-31259-01	SD-31259-01	SD-31259-01	
4.06	Miscellaneous Alarm Circuit for Prepayment Coin Box Trunks		SD-31978-01	SD-31978-01	SD-31978-01
4.07	Selector Repeater	SD-31914-01*		SD-31914-01*	
4.08	Pulsing Test Set	SD-90469-02	SD-90469-02	SD-31858-01	SD-31858-01
4.09	Timing Circuit for Coin Trunks	SD-31893-01 or Special SD-32115-01		SD-31893-01 or Special SD-32115-01	
4.10	Interrupter and Alarm Circuit to Provide a Delay Interval for Use with 804C Ringing Power Plant	SD-32180-01		SD-32180-01	

*Typical Circuit

DESCRIPTION OF OPERATION

5. ORIGINATING A CALL

The following description applies to "S" wiring or to "T" wiring on calls not originating on lines equipped with long line circuits. When "T" wiring is used, leads "E" and "F" are normally connected through normal post springs of the line finder or if Figure 4 is used, springs 2 and 3T(LL), except on levels on which long line circuits are used.

When a prepayment coin station is connected to this circuit by a preceeding circuit relay (L) operates over the subscriber's loop, in turn operating (N) and (DD). (N) operated operates (NN), which closes the circuit to the associated first selector operating relay (P1), provides a holding circuit for (DD); and changes from battery to the ring through the noninductive winding of (RT) to battery through the operating winding of (RT) and the primary winding of (BT). It also removes ground from relay (L), secondary winding, which then holds in series with the 6000 ohm winding of (BT), but (BT) does not operate at this time. Relay (DD) operated connects ground to the sleeve lead to hold the line finder. When the (C) retardation coil is connected across the tip and ring leads by the operation of (DD), the (A) relay in the first selector operates and an associated common shelf relay completes the dial tone path to the line through a winding of the (A) relay of the selector. The dial tone path is closed to the calling subscriber through resistances (B) and (C) when "Z" option is used. Otherwise, it is not closed until the coin is deposited, as described in Paragraph 6.

6. COIN DEPOSITED

When the coin is deposited by the calling subscriber, (RT) operates, operating (S), which locks to battery through its front contacts, operates (H) and (HH), supplies dial tone to the calling subscriber, if not already supplied through "Z" option, connects (R) to the ring of the line and removes battery from (RT) which releases and from the 29 ohm winding of relay (L), which, however is held operated by the 800 ohm winding for a time. (R) operated operates (D) and closes a path for holding the (A) relay of the first selector when (NN) releases. (D) operated holds (DD) operated (H) operated takes over the control of (HH) from (S). (HH) operated, releases (N) and (NN), separates the sleeves of the line

finder and first selector and supplements the ground on the sleeve from (DD) to the line finder, and with "F" option connects coin return battery to relay (C). (N) released short-circuits (L), releasing it. (N) and (NN) are slow in releasing in order to insure that (R) is fully operated before (NN) releases and opens the bridge to the first selector, in case (L) releases when the coin is deposited.

The purpose of the (ET) relay is to block the operation of the coin trunk in case of an irregular condition on the line. The operation is as follows: (BT) operated locks to the sleeve, through its tertiary winding and resistance J (the function of which is to prevent (ET) from overheating on its tertiary winding) and opens the circuit to (S) preventing its operation and preventing dialing. It is necessary for the calling subscriber to hang up his receiver after the irregular condition ceases before a further attempt can be made on the call.

7. DIALING

Relay (R) functions to repeat pulses from the subscriber's dial to the first selector. (D) is slow in operating and releases on the first dial pulse, and remains released during the pulsing of each digit. This causes (DD) to remain normal during the pulsing of each digit to aid the pulsing condition.

8. CALL CHARGED

8.1 No Delayed or Overtime Charging - Fig. A

If the call is one on which a charge should be made, the line current is reversed when the called party answers, operating (P) and releasing (P1) which was previously operated. With (P1) released and (P) operated, (J) and (C) operate and lock. The (J) relay operated operates (K), reverses the tip and ring leads from the first selector and short-circuits (P) which releases. The reversal of the tip and ring leads causes (P1) to operate. (K) operates (K1) through the front contact of (P1). (K1) operated locks and removes the short circuit from (P). If due to an irregular operation at the called station battery and ground again reverse before (K1) operates, (P1) will release, but (K1) will operate through the back contact of (P).

Relay (C) operated locks and operates (A) and also sets the circuit so as to collect the coin when the calling subscriber disconnects. Relay (A) operated disconnects the tip and ring of the calling line from the (T) retardation coil and (R) relay, releasing (R), and connects the tip and ring through (P) and (P1) to the first selector. (R) released releases (D) and in turn (DD). (DD) released performs no useful function at this time. The reversal of the line by the operation of (J) is necessary to keep the tip side of the line, which is grounded at the station as long as a coin is in the box, always connected through relay (P) to the ground side of the connection.

8.2 With Delayed Charging and No Overtime - Fig. B

With Fig. B the operation is as described in Par. 8.1 except that the operation of (C), instead of connecting positive coin battery to relay (I) connects that relay to the 2B spring of (T1), and the relays of Fig. B function as follows:

When the called subscriber answers (P2) operates, in turn closing the circuit of (T) to lead "PKU" or "A". This lead is grounded for 1/2 second once every 3 seconds (except that when the interrupter circuit is not in use, lead "PKU" is grounded). When (T) operates, it grounds lead "ST" (when "J" option is used, to start the interrupter or to keep it operating). When "H" option is used, (T) operates to close contacts 5/6T and 3/4B only, operating fully when lead "A" is opened. (T) locks to (P2) thru (T1). 2-1/2 seconds after ground is removed from lead "A", this lead is again grounded or 2 seconds after lead "PKU" is opened, ground is connected to lead "INT". Either of these thru a make contact of (T), operates (T1).

(T1) operated locks to off normal ground, releases (T), and connects positive coin battery to relay (I) instead of negative. If (P2) releases before (T) operates, (T1) is released and the above sequence of operation will be repeated when (P2) again operates. Fig. B thus insures against false charging when busy flashes or other transient conditions operate (P2).

8.3 Overtime Charging With No Delay Charging - Fig. E

With Fig. E the operation is as described in Par. 8.1 except that the operation of relay (C) grounds the "C" and "B" leads for the purpose of starting the associated timer. Relay (C) locks under control of the timing circuit "F" lead, operates relay (A) and also sets the circuit so as to collect the coin when the calling subscriber disconnects. The start relay in the timing circuit locks to lead "B". During the interval from the time that the coin is collected by the associated coin collect and monitor circuit after 4-1/2 minutes of conversation until the 5 minutes period is reached, battery is removed from the "F" leak allowing relay (C) to release so that if the subscriber disconnects during this interval, any coin deposited will be returned by this circuit. Relay (A) operated disconnects the tip and ring of the calling line from the (T) retard coil and

(R) relay thus releasing (R), and connects the tip and ring thru (P) and (P1) relays to the first selector. Relay (R) released releases (D) and (DD).

8.4 Overtime Charging With Delayed Charging - Fig. F

With Fig. F the operation is the same as described in Par. 8.2 except that the operation of relay (C), instead of connecting positive coin battery to relay (I), connects that relay to the 2B spring of relay (T1), and the relays in Fig. F function as follows:

When the called subscriber answers (P2) relay operates, in turn closing the circuit of (T) to lead "PKU" or "A". This lead is grounded for 1/2 second once every 3 seconds, (except that when the interrupter circuit is not in use; leak "PKU" is grounded). When (T) operates, it grounds lead "ST" (when "ZE" option is used, to start the interrupter or keep it operating). When "ZD" option is used, relay (T) operates to close contacts 5/6T and 3/4B only, operating fully when lead "A" is opened. Relay (T) locks to (P2) thru relay (T). 2-1/2 seconds after ground is removed from lead "A", the "A" lead is again grounded or 2 seconds after lead "PKU" is opened, ground is connected to lead "INT". Either of these leads thru a make contact of (T), operates (T1).

Relay (T1) operated, locks to off normal ground, releases (T) and connects positive coin battery to relay (I) instead of negative. If (P2) releases before (T) operates, (T1) is released and the above sequence of operation will be repeated when (P2) again operates. Fig. F thus insures against false charging when busy flashes or other transients conditions operate (P2). During the interval from the time that the coin is collected by the associated coin collect and monitor circuit after 4-1/2 minutes of conversation until the 5 minutes period is reached, battery is removed from the (T1) relay allowing it to release so that if the subscriber disconnects during this interval, any coin deposited will be returned by this circuit.

9. CALL NOT CHARGED

If the line current is not reversed (P), (K) and (K1) will not operate and the circuit remains in a condition to return the coin when the calling party disconnects. On this type of call, (A) does not operate and the (A) and (B) condensers placed in the tip and ring leads provide the talking circuit, and relay (R) and retardation coil (T) provide the talking battery and ground supply.

10. DISCONNECT

10.1 Call Charged ((C) Relay Operated)

When the calling subscriber disconnects, the line finder is still held operated by ground at the contacts of (HH). (S) and (A) release when ground is removed from the selector sleeve and cause (X) to operate under control of a ground interruption on lead "D", lighting the green alarm lamp (A). Ground is intermittently and alternately connected to leads "P" and "I" for an interval of 1/2 second duration each. This feature is used to cause the coin control battery of this circuit, as described later, to be connected to the subscriber's line for 1/2 second duration and thereby insure sufficient time for proper operation of the coin box magnet. (Y) operated locks under control of (HH) and connects battery to the winding of (B) which operates when ground is received on the "I" lead. If the called subscriber should hang up before the calling subscriber, the line current is reversed when the called station disconnects, operating (P) and releasing (P1). (P) operated with (P1) released short-circuit the winding of (J) causing it to release. (J) released releases (K) and short-circuits (P). (P1) operated and (K) released release (K1). (J) released places the (P) relay again on the ground side of the line. If the calling party disconnects first, (J), (K) and (K1) and with Fig. B or F, (T) release when (HH) releases (see 11.2).

10.2 Noncharge Call ((C) Relay Normal)

When the calling station disconnects (R) releases, releasing (D) and (DD), and opens the loop to the succeeding switches. After an interval ground is removed from the sleeve of the selector. From this point on, the circuit functions as described in the preceding paragraph, except the (J), (K) and (K1) will not have been operated.

11. COIN CONTROL

11.1 The operation of (B) connects positive or negative coin battery to the line to dispose of the coin. If the coin is to be collected, positive battery is connected to the winding of (I) through the front contact of (C) and with Fig. B or Fig. F through front contact of (T1). The operation of a relay in the timing circuit, after extending the talking circuit through the trunk finder and associated coin collect circuit grounds the "G" lead through contacts 4/5B of relay (T1), holds relay (S) operated and grounds the sleeve to prevent the connection from releasing until the coin collect circuit has collected the coin. If the coin is to be

returned, the negative battery is connected to the line through the front contact of (B) or (HH) and the back contact of relay (T1) and front contact of (C) with Fig. B or F, through the winding of (I). (I) now operates in series with the coin magnet and remains operated during the time that the battery is connected to the line. Battery through the coin magnet should cause disposal of the coin, but the magnet will hold ground on the tip of the line as long as it is operated. The operation of (I) connects battery to hold (H) operated since the operating circuit for this relay is opened when (B) operates. When the "I" lead ground is removed (B) releases, removing the coin collect or return current, releasing (I) and holding (H) operated. At the next closure of ground to the "I" lead (B) reoperates, connecting coin disposal current to the line. The coin should have been disposed of on the first application of the potential, which upon the removal of the potential, restores the coin magnet to normal, and no current should flow through (I) on the subsequent application of the coin potential.

11.2 Release of Circuit - "A" or "G" Option

With (B) operated and (1) normal (H) releases, releasing (HH) which (a) removes ground from the line finder sleeve, (b) releases (B), (Y), and also (C), (K), (K1) and (T1) if operated, (C) connects battery to "RB1" of (RT), (d) opens leads "CT" and "CT1", and (e) removes battery from lead "A". The release of (B) connects the incoming tip and ring to relay (L) thus restoring the circuit to normal.

11.3 Release of Circuit - "F" Option

The circuit functions as described in the preceding paragraph except that when (HH) releases (B) remains locked to lead "I", and (HH) removes the coin return battery from 5B(C) with Figs. A, B or E furnished or 3(C) with Fig. F. Thus (B) remains operated for approximately 1/2 second until ground is removed from lead "I". This insures sufficient time for the line finder cut through relay to release before the incoming tip and ring are connected to relay (L).

12. STUCK COIN

12.1 "X" Wiring

If for any reason the coin is not properly disposed of, (B) continues to function under control of the "I" lead ground. After an interval of time the associated alarm circuit will indicate a trouble condition by audible and visual alarms.

12.2 "Y" Wiring

"Y" wiring provides a connection to battery on the "IB" lead in the associated "Coin Trunk Timed Release Circuit". When this circuit is used the continued attempts of the Coin Trunk Circuit to dispose of the coin are limited by the timing of the Release Circuit. At the end of the time perio battery is removed from the "IR" lead and the circuit functions as though the coin had been disposed of, restoring to normal as described in Paragraph 11.

13. CALLS TO SPECIAL SERVICE OPERATOR

On calls to a special service operator, the selector level trunk is so arranged that battery and ground are reversed immediately when the operator answers. This causes the circuit to function as described in Paragraph 8. If coin collect current is supplied to the line from the trunk, (P) remains released and (P1) releases. If coin return current is applied to the line from the trunk, (P) operates and (P1) remains operated. Neither relay performs a useful function at this time.

On a rering by the special service operator, (P) may operate on ringing current. If (P) remains operated due to earth potential with (P1) released it shunts down (J). (J) releases releases (K) and short-circuits (P). The earth potential which may have held (P) will not operate if after the short-circuit is removed. The release of (J) also reverses the tip and ring operating (P1) which shunts down (K1).

14. CONTACT PROTECTION

Resistances (D) and (F) at relay (DD) are connected to the "A" and "B" condensers during the application of coin battery to the line and in this connection are used to protect the contacts which control the application of thhs battery to the coin magnet. Condenser (D) and resistance (E) are used to protect the pulsing contacts of relay (R).

15. OPERATION WHEN "T" WIRING OK WITH A LINE FINDER

The "T" wiring is used only when the lines on certain levels in the associated line finder group are equipped with long line circuits. The line finders are then equipped with normal post springs that operate on the multiple bank levels on which all the working lines are provided with long line circuits. When the normal post springs on the line finder operate, leads "E" and "F", (which are connected together when the finder is normal for the purpose of making the finder busy by grounding the sleeve at the associated first selectors) are opened and lead "F" is connected to lead "A". When a call is originated the long line circuit closes a bridge across the tip and ring which operates (L). (L) operates (N) and (DD). (N) operates (NN). (NN) closes a bridge across the tip and ring toward the first selector. The only useful function

of (DD) at this time is that it grounds the sleeve so as to hold the line finder until (HH) operates. The bridge across the tip and ring causes the operation of relays in the first selector that supply a holding ground over the "S" lead. When ground is returned over the "S" lead from the first selector (A) and (S) operate (relay (A) operating over the "A" and "F" leads in turn operating (S) which locks to the sleeve). The operation of (A) closes the tip and ring through from the long line circuit to the first selector, operates (P1) and allows (L), (N), (NN) and (DD), to release. The operation of (S) operates (H) and (HH). (H) locks under control of (B). The test for presence of the coin at the substation is made in the long line circuit and therefore (RT) and (BT) do not enter into the circuit operation on this call; similarly, the dial pulses are repeated in the long line circuit so that (R) is not used. When the call is answered (P) operates, (P1) releases, and circuit functions are described in the first paragraph of Section 8. However the only useful function in the operation of (P) and release of (P1) is to operate (C) from a ground on (HH) and sets the circuit in a position to collect the coin when the subscriber disconnects. When the calling subscriber disconnects the circuit functions as described under Section 10. If the call is answered (C) is operated causing coin collect current to be applied to the line and if the call is not answered (C) is normal and coin return current is then applied to the line. On calls to the special service operator (P) operates and (P1) releases which operates (C) and sets the circuit in a position to collect the coin when the subscriber disconnects. The operation of (J), (K) and (K1) serves no useful function on this type of call because the repeating coil in the long line circuit prevents the coin ground from grounding the tip conductor in this circuit.

16. OPERATION WHEN FIGURE 4, AND "T" WIRING ARE USED WITH A ROTARY SWITCH

Figure 4 and "T" wiring are used when this circuit is associated with a subscribers rotary line circuit, which in turn is associated with a long line circuit. When this circuit is seized by the subscribers rotary line circuit ground is advanced on lead "A" which operates (LL) of Figure 4, Leads "E" and "F" (which are connected together through 2 and 3 break of (LL) are opened and lead "F" is connected to lead "A or D". When a call is originated the long line circuit closes a bridge across the tip and ring which operates (L). (L) operates (N) and (DD). (N) operates (NN). (NN) closes a bridge across the tip and ring toward the first selector. The only useful function of (DD) at this time is that it grounds the sleeve so as to hold the subscribers rotary line circuit until (HH) operates. The bridge across the tip and ring causes the operation of relays in the first selector that supply a holding ground over the "S" lead. When ground is returned over the "S" lead from the first selector (A) operates over the "A" and "F" leads in turn operating (S) which locks to the sleeve. The operation of (A) closes the tip and ring through from the long line circuit to the first selector, operates (P1) and releases (L), the slow release (N), (NN), and (DD). The operation of (S) operates (H) and (HH). (H) locks under control of (B). (HH) separates the "S" lead between the subscribers rotary line circuit and first selector, and grounds the "S" lead to the subscribers rotary line circuit. The test for presence of the coin at the substation is made in the long line circuit and therefore (RT) and (BT) do not enter into the circuit operation on this call; similarly, the dial pulses are repeated in the long line circuit so that (R) is not used. When the call is answered (P) operates, (P1) releases, and circuit functions as described in the first paragraph of Section 8. However the only useful function in the operation of (P) and release of (P1) is to operate (C) from a ground on (HH) and sets the circuit in a position to collect the coin when the subscriber disconnects. When the calling subscriber disconnects the circuit functions as described under Section 10, except instead of a line finder circuit a subscribers rotary line circuit is used. When the line circuit disconnects ground is removed from lead "A", thereby releasing (LL) and reconnecting leads "E" and "F" together.

If the call is answered (C) is operated causing coin collect current to be applied to the line and if the call is not answered (C) is normal and coin return current is then applied to the line. On calls to the special service operator (P) operates and (P1) releases which operates (C) and sets the circuit in a position to collect the coin when the subscriber disconnects. The operation of (J), (K) and (K1) serves no useful function on this type of call because the repeating coil in the long line circuit prevents the coin ground from grounding the tip conductor in this circuit.

17. TEST JACKS

17.1 (T) Jack

Insertion of a plug in jack (T) grounds the "S" lead toward the line finder, making that circuit busy.

17.2 (TT) Jack

Pulse Repeating tests of relay (R) are made by connecting the pulsing test set to jacks (T) and (TT). (TT) cuts off the associated selector and provides locking ground for relay (S). Momentary operation of key (SC) in all but the earliest pulse repeating test sets operates (RT) and in turn

(S). Where the pulse repeating test set is not so arranged, (RT) must be momentarily operated manually.

17,3 (OT) Jack

The (OT) jack is provided for the purpose of controlling the operation of the coin collect and monitor circuit when testing without waiting for the timer to time-out the 4-1/2 minute and 5 minute intervals. The (OT) jack may also be used to check the accuracy of the timer.

18. CLASS OF SERVICE TONE-LINE NO. METHOD OF COIN CONTROL - FIG. 2

Where the line number method of coin control is used, a class of service tone is required. This is provided by Fig. 2.

19. CUT-OFF KEYS FOR A, I AND P LEADS FIG. 3

If the A lead becomes accidentally grounded, no alarm will be sounded, and the interrupter circuit will not start. If the P lead is grounded, the first coin pulse may be short, resulting in a stuck coin condition at the coin box. If the P lead is grounded, the coin trunk will not release at the end of the call.

To aid in locating such troubles, the A, I, and P leads are carried thru the key of Fig. 3, which will isolate the trunks in groups of 10. To guard against leaving the key inadvertently operated, a guard lamp is associated with the key.

20. USE IN OFFICES EQUIPPED WITH CAMA TRUNKS - FIG. 2 ("ZH" OPTION)

Direct ground is required on "A" lead to restrict coin lines from CAMA trunks.

21. CLASS OF SERVICE TONE 35-E97 ONLY (ZN OPTION)

The (CL) retard coil and (CL) capacitor are arranged to permit a number checking tone which may be connected to the sleeve of the subscriber's line to be transmitted to the operator to indicate the class of service.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2363-WF-FBB-EP