

0 33982

PANEL SYSTEM
ANNOUNCEMENT TRUNK CIRCUIT
FOR USE ON MULTIPLE OF
DISTRICT OR 3 WIRE OFFICE SELECTORS

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

- D.1 Note 112 formerly read as follows:
"Provide Fig. D where an announcement interval of minimum one minute is required and the associated district junctions or selectors are equipped for a timed release interval of 14 to 29 seconds; otherwise provide Fig. C. Prior to Issue 8-D Fig. D was not shown and Fig. C was part of Fig. 1."
- D.2 The rating of this circuit is changed from "A.T.&T.Co. Standard" to "A & M Only"

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3320-AMW-RCD-SY

Fig. 1, B, C
(N) wiring

PANEL SYSTEM
ANNOUNCEMENT TRUNK CIRCUIT
FOR USE ON MULTIPLE OF
DISTRICT OR 3 WIRE OFFICE SELECTORS

CHANGES

B. CHANGES IN APPARATUS

B.1 Superseded Superseded By
 R79 Relay R94 Relay

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The use of "M" option is rated
Mfr. Disc. to alleviate an ex-
cessive noise condition during the
silent interval of the audible ringing
cycle. Option "M" was formerly not
designated.

D.2 The use of the R79 relay is rated
Mfr. Disc. to show realistic rat-
ings for obsolescent apparatus.

D.3 Notes 117 and 118 are added.

D.4 Option "M" is added to the options
used table.

D.5 Cross connection Fig. 1K and 1M
changed to cover "M" option.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3360-JFM-CGM-W2

PANEL SYSTEMS
ANNOUNCEMENT TRUNK CIRCUIT
FOR USE ON MULTIPLE OF
DISTRICT OR 3 WIRE OFFICE SELECTORS

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 "Q" option formerly a part of circuit is designated and rated "MFR. DISC."

D.2 "N" option is added to replace "Q" option.

D.3 Part of "Z" option is designated "R" option and rated "MFR.DISC."

D.4 Ckt. notes 115 and 116 are added and reference to note 116 is added at ckt. note 102.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3310-DR-RL-ES

TO BE USED AS AN ORIGINAL
BY THE HAWTHORNE PRINT SHOP

PANEL SYSTEM
ANNOUNCEMENT TRUNK CIRCUIT
FOR USE ON MULTIPLE OF
DISTRICT OR 3 WIRE OFFICE SELECTORS

CHANGES

B. CHANGES IN APPARATUS

B.1 Superseded Superseded By

"V" option	"U" option
206AC relay	280EK relay
"T" option	"S" option
206AD relay	280F relay

C. CHANGES IN CIRCUIT REQUIREMENTS
OTHER THAN THOSE APPLYING TO ADDED
OR REMOVED APPARATUS

C.1 Removed test note 1 which read:-
"A negative sign (-) preceding
a current value indicates that this
current shall flow in a direction op-
posite to the direction of the circuit
operating current.

C.2 Removed test note 4 which read:-
"The electrical test and readjust
for the (P) rel. shall be applied in
the following order.

A. Soak in direction opposite to
operating current.

B. Operate

C. Non-operate

D. Soak in same direction as operating
current.

E. Release

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Optional designations are assigned
and shown at the (P) relays.

D.2 Circuit note 114 added.

D.3 The use of the 239FH relay is rated
Manufacture Discontinued and is
superseded by the 280AA relay to pro-
vide a polarized relay that has im-
proved adjustment stability.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3330-AJB-CEM-WN

PANEL SYSTEM
ANNOUNCEMENT TRUNK CIRCUIT
FOR USE ON MULTIPLE OF
DISTRICT OR THREE-WIRE OFFICE SELECTORS

CHANGES

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER
THAN THOSE APPLYING TO ADDED OR RE-
MOVED APPARATUS

C.1 In the "Block or Insulate" column
for the (P), (TO), and (TO1) relays
insulating information is added to avoid
circuit interference and parallel cir-
cuit.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 In order to provide announcement
supervision when this circuit is
furnished with Fig. D and "Y" wiring,
the following changes are made to pro-
vide that the hold circuit to (M) and
(M1) relays in Fig. A or (M1) relay in
Fig. B be under control of (1-2B) con-
tacts of the (CT) relay. In Fig. 1 the
connecting lead from (4LB) terminal of

(LK) relay to leads (V) and (4) is re-
moved. The following leads are added:
Lead (3) to (4LB) terminal of the (LK)
relay; a lead between (1B) contact of
(CT) relay and leads (V) and (4); and
a lead between (2B) contact of (CT)
relay and (1T) contact of (LK) relay,
(4B) contact (R) relay, etc. The
numbering of the leads between Fig. 1
and Figs. C and D has been rearranged.

D.2 In note 103 the (ST) interrupter
back contact closure is changed
from 0.08 to 0.09 sec. and the open
interval changed from 0.250 to 0.240
sec. in order to show correct values
for this interrupter as now manu-
factured. No equipment change is
involved.

All other headings, No change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3340-AM-FAK-FV

PANEL SYSTEM
ANNOUNCEMENT TRUNK CIRCUIT
FOR USE ON MULTIPLE OF
DISTRICT OR THREE-WIRE OFFICE SELECTORS

CHANGES

A. CHANGED AND ADDED FUNCTIONS

A.1 The circuit is changed by the introduction of Fig. D to provide a minimum of one minute of time announcement before the called party disconnect time out is started in the junctor.

B. CHANGES IN APPARATUS

Added

B.1 1 - Relay (TO) R983

B.2 1 - Relay (TO1) R983

B.3 1 - Interrupter (TO) 60 second per cycle.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Figure D is added to provide a means of insuring a minimum of 60 seconds of time announcement before the timed disconnect of the associated junctor is started.

D.2 Figure C is added to provide the previous announcement period of one complete announcement before the timed release of the junctor is started.

D.3 Circuit Note 112 is added to explain when to use Figures C and D.

D.4 Circuit Note 113 is added to give the contact and break intervals of the (TO) interrupter Fig. D.

All other headings under Changes,
No change.

1. PURPOSE OF CIRCUIT

1.1 This trunk circuit provides the subscriber with access through the district or office multiple to a transmission network over which announcements, such as time of day, etc. are broadcast from a central announcement bureau. (See Sec. 5 below).

2. WORKING LIMITS

2.1 None.

3. FUNCTIONS

3.01 Provides battery and ground for the "trunk guard" test in the sender.

3.02 Supplies start ground to the Announcement Supply Incoming Distributing and Alarm Circuit, in order to give a starting signal to the central announcement operator.

3.03 Removes the battery and ground supply shortly after seizure, so as to signal the sender when to start P.C.I. pulsing.

3.04 Recognizes the finish of P.C.I. pulsing and prepares to close through the talking path at the beginning of the next announcement interval. Announcement intervals alternate with silent or preparation intervals, each interval lasting 7.5 sec. in an overall period of 15 sec. Fig. C.

3.05 Gives ringing tone to the calling subscriber during the waiting interval between pulsing and cut-through.

3.06 Removes the ringing tone and cuts through the talking path to the announcing network, at the beginning of the first announcement interval following the preparation interval. (See 3.04 above).

3.07 When arranged to recognize final heavy (+) P.C.I. impulse (Fig.A), awaits district trunk closure before making the preparation for cut-through outlined under 3.04 above. By this means the subscriber is prevented from getting a partial pronouncement, in case the district advance is delayed.

3.08 Having prepared for cut-through, the circuit applies the charging condition and maintains it to the end of the first announcement interval only Fig. C. Thus, if the subscriber fails to hang up, the district time alarm is operated and overcharging is prevented.

3.09 After charging, replace battery and ground on the trunk in the non-charge direction, so as to avoid the transmission loss usually attending a "dry" trunk condition.

3.10 Provides a barrier in the talking path which will as nearly as possible eliminate crosstalk or other disturbances between the telephones connected to the network.

3.11 Provides a group peg count record of each call.

B-3548X

3.12 Restores to normal whenever sleeve ground is removed by the release of the district or office selector.

3.13 The circuit is arranged Fig. D after cut-through to apply the charging condition to the associated junctor for a minimum of sixty seconds to provide an adequate announcement interval before the timed disconnect is started.

4. CONNECTING CIRCUITS

4.1 Standard district selector - SD-25620-01.

4.2 Standard local office selector.

4.3 Announcement supply incoming distributing and alarm circuit, for terminating office.

4.4 Miscellaneous register circuit - SD-25317-01.

4.5 Interrupter Frame Circuit - SD-25062-01.

DESCRIPTION OF OPERATION

5. OUTLINE OF ANNOUNCEMENT SYSTEM

The system of which this trunk is a part comprises a central announcement bureau and a distributing network for carrying the announcements to various local offices throughout a wide area. A single pair of conductors serves to connect the local office directly to the central bureau or to some intermediate point acting as a subcenter.

At each local office a voice repeater is provided, and the subscribers wanting announcement service are connected to the repeater in multiple by means of trunk circuits of the kind described below. At the central bureau the operator broadcasts the announcements at regular intervals, continuing thus while any one or more subscribers in the entire area are connected on.

6. SEIZURE

Immediately after this trunk is seized by the district or office selector, the sender applies a bridge across tip and ring to make "trunk guard" test. Relay (BG) operates over this loop and connects sleeve ground to the common holding path. Relay (SL) now operates from the back contact of interrupter (ST), locks to the sleeve, grounds lead ST to bring in a starting signal at the central announcement bureau, grounds the common holding path, and closes an operating circuit for the group peg count register. After an interval sufficient to cover the sender "trunk guard" test, as well as to permit the peg count circuit to function interrupter (ST) closes its "F" contact and operates relay (LK). This relay

locks to the common holding path, opens the register circuit, removes battery relay (BG) from across the trunk, and substitutes a dry bridge through the winding of relay (P).

Relay (BG) releases without affecting the circuit. The reason for feeding sleeve ground to the contacts of relay (BG) is to prevent false operation of the peg count register in case relay (BG) is accidentally operated when the trunk is otherwise normal.

Meanwhile, relay (T) of Fig. B (if furnished) may be operated through the "B" contact of interrupter (PT) and locked to ground supplied by relay (LK). However, relay (T) produces no effect in the circuit at this time.

7. P.C.I. PULSING, WITH FINAL HEAVY (+) IMPULSE (FIGS. 1 & A)

Announcement connections will be obtained by calling a full number code, and in the panel system the call will be routed on a P.C.I. basis. The sender will spill the call indicator impulses immediately after relay (LK) of this circuit has operated and removed battery and ground from across the trunk. The talking path will not be closed through until after the pulsing has been finished, as will be explained below.

Fig. A is furnished with Fig. 1 in cases where the sender is arranged to send a final heavy (+) impulse. Relay (P) of Fig. A operates on this impulse and energizes relay (M). Relay (M) prepares a locking circuit for its companion counting relay (M1) and prepares a path for operating relay (R) from the contacts of relay (BG). Relay (M1) remains shunted until the termination of the heavy (+) impulse, whereupon relay (P) releases and allows relay (M1) to operate in series with relay (M). Relay (M1) switches the tip and ring taps from the winding of relay (P) to the winding of relay (BG), and the last named relay tests for district trunk closure. Any delay in sender or district advance is therefore attended by a corresponding delay in the announcement trunk, with the result that the latter is prevented from cutting through prematurely and the subscriber is saved the annoyance of missing part of the announcement. It will be noted that during this time relay (BG) is bridged across the trunk with the battery and ground connections in the non-charge direction.

The operation of relay (BG) following district trunk closure energizes relay (R). (See Sect. 9 below).

8. P.C.I. PULSING WITHOUT FINAL HEAVY (+) IMPULSE (FIGS. 1 & B)

For conditions where a final heavy (+) impulse is not provided by the

sender the circuit will be equipped per Figs. 1 & B. The P.C.I. pulsing is started in the manner described in Sect. 7. Relay (T) of Fig. B may have operated as previously described in Section 6 above, but relay (P) of Fig. B comes up on each negative impulse and shunts relay (T) to normal. Consequently, relay (T) cannot cause the operation of relay (R) while P.C.I. pulsing is in progress. Afterwards, however, relay (P) remains normal throughout the full period covered by interrupter (PT), which means that relay (T) will be permitted to reoperate and thereby prepare a path for operating relay (R) or (Ml) on ground supplied from the "F" contact of interrupter (PT). With "X" wiring, relay (R) operates thru the contacts of relay (T). With "Y" wiring, relay (Ml) operates, in turn operating relay (R).

9. PICK-UP

Relay (R) operates as explained in Sections 7 and 8 and locks under control of relay (LK), closes ringing tone to the trunk, extends lead CT to the winding of relay (LK), and connects pick-up lead RV to the winding of relay (RV). This pick-up lead is open during the announcement interval and grounded throughout the preparation interval. Relay (RV) therefore operates and locks at some instant within the preparation interval, connects battery to the operating winding of relay (CT), and restores relays (M) and (Ml) of Fig. A ("X" wiring), or relay (T) of Fig. B, whichever is furnished. Relay (RV) also opens the bridge path through relay (P), and, when "X" wiring is furnished, applies charging battery and ground to the trunk through the windings of relay (BG).

10. ANNOUNCEMENT

When lead (CT) becomes grounded, relay (CT) operates and connects the talking path through resistances and condensers to the transmission network, thus bridging the subscriber in parallel with any other subscribers who are receiving service at the moment. The subscriber can now hear the announcement, but disturbances or crosstalk between his line and the network are prevented by the condensers and resistances just mentioned.

When "Y" wiring is furnished with Fig. A, relay (CT) operating, also releases relays (M) and (Ml), and relay (Ml) releasing, applies charging battery and ground to the trunk thru the windings of relay (BG), at the beginning of the announcement interval.

When "Y" wiring and apparatus are furnished with Fig. B, relay (CT) operating, also releases relay (Ml), and relay (Ml) releasing, applies charging battery and ground to the trunk.

It should be noted also that the subscriber is prevented from receiving a partial announcement, inasmuch as relay (CT) can operate only at the beginning of the announcement interval. Leads RV and CT are grounded alternately, during the preparation and the announcement intervals respectively, and since relay (RV) must operate during the preparation interval in order to prepare the operating path for relay (CT), it follows that the operation of relay (CT) always coincides with the beginning of the announcement interval.

10.1 Fig. C - Operation

Relay (CT) locks to the common holding path and opens the locking circuit of relay (LK), but inasmuch as (LK) has a holding winding in series with lead CT it continues to hold throughout the first announcement interval. At the end of that time relay (LK) releases followed by relay (R) which has been under control of relay (LK). The release of relay (LK) again reverses battery on the trunk, leaving the polarity thereafter in the non-charging direction. In this manner the subscriber is protected against the possibility of overcharging in case he fails to hang up, and the district is enabled to operate the selector time alarm so as to give notice of this condition. This battery also serves to prevent the transmission loss resulting from a "dry" condition of the talking path.

10.2 Operation - Fig. D

Relay (LK) operates and locks on its secondary winding thru relay (TO1) normal Fig. D when the (ST) interrupter "F" contact is closed. When the "CT" lead is closed thru by the (RV) relay operated relay (CT) operates on its primary winding in series with the primary of the (LK) relay. Relay (CT) locks on its secondary winding to the sleeve ground and closes this ground to the (TO) interrupter Fig. D. When the (TO) interrupter closes its "F" contact relay (TO) Fig. D operates and locks to the "S" lead ground. After approximately 60 seconds the "B" contact of interrupter (TO) is closed thru relay (TO) operated to operate relay (TO1). Relay (TO1) also locks to the "S" lead and opens the locking circuit of relay (LK) causing it to release. (If the "CT" lead is grounded the (LK) will hold on its primary until

the "CT" ground is removed. The release of relay (LK) opens the charge bridge to the district junctor causing it to start its timed release. The release of the district opens the "S" lead to release the (SL) (CT) (OT) and (OT1) relays. Relay (SL) releases relay (RV) etc.

Relay (LK) cannot reoperate, because relay (CT) has opened one of its operating paths and relay (R) the other.

11. DISCONNECTION

The release of the district or office selector following disconnect by the subscriber, removes ground from the sleeve of the trunk and releases relay (SL). The release of this relay removes ground from start lead ST and also from the common holding path, and by releasing relays (RV) and (CT) causes the trunk to restore to normal. The release of relay (SL) may be momentarily delayed by interrupter (ST), but during this time the sleeve is held busy.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3340-ELV-FAK-WT

PANEL SYSTEM
ANNOUNCEMENT TRUNK CIRCUIT
FOR USE ON MULTIPLE OF
DISTRICT OR 3 WIRE OFFICE SELECTORS

CHANGES

B. CHANGES IN APPARATUS

B.1	Superseded	Superseded By
	R79 Relay	R94 Relay

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The use of "M" option is rated
Mfr. Disc. to alleviate an ex-
cessive noise condition during the
silent interval of the audible ringing
cycle. Option "M" was formerly not
designated.

D.2 The use of the R79 relay is rated
Mfr. Disc. to show realistic rat-
ings for obsolescent apparatus.

D.3 Notes 117 and 118 are added.

D.4 Option "M" is added to the options
used table.

D.5 Cross connection Fig. 1K and 1M
changed to cover "M" option.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3360-JFM-CGM-W2

PANEL SYSTEMS
ANNOUNCEMENT TRUNK CIRCUIT
FOR USE ON MULTIPLE OF
DISTRICT OR 3 WIRE OFFICE SELECTORS

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 "Q" option formerly a part of circuit is designated and rated "MFR. DISC.".

D.2 "N" option is added to replace "Q" option.

D.3 Part of "Z" option is designated "R" option and rated "MFR.DISC.".

D.4 Ckt. notes 115 and 116 are added and reference to note 116 is added at ckt. note 102.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3310-DR-RLL-ES

PANEL SYSTEM
ANNOUNCEMENT TRUNK CIRCUIT
FOR USE ON MULTIPLE OF
DISTRICT OR 3 WIRE OFFICE SELECTORS

CHANGES

B. CHANGES IN APPARATUS

B.1 Superseded Superseded By

"V" option	"U" option
206AC relay	280HK relay
"T" option	"S" option
206AD relay	280F relay

C. CHANGES IN CIRCUIT REQUIREMENTS
OTHER THAN THOSE APPLYING TO ADDED
OR REMOVED APPARATUS

C.1 Removed test note 1 which read:-
"A negative sign (-) preceding
a current value indicates that this
current shall flow in a direction op-
posite to the direction of the circuit
operating current.

C.2 Removed test note 4 which read:-
"The electrical test and readjust
for the (P) rel. shall be applied in
the following order.

A. Soak in direction opposite to
operating current.

B. Operate

C. Non-operate

D. Soak in same direction as operating
current.

E. Release

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Optional designations are assigned
and shown at the (P) relays.

D.2 Circuit note 114 added.

D.3 The use of the 239FH relay is rated
Manufacture Discontinued and is
superseded by the 280AA relay to pro-
vide a polarized relay that has im-
proved adjustment stability.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3330-AJB-CEM-WN

PANEL SYSTEM
ANNOUNCEMENT TRUNK CIRCUIT
FOR USE ON MULTIPLE OF
DISTRICT OR THREE-WIRE OFFICE SELECTORS

CHANGES

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER
THAN THOSE APPLYING TO ADDED OR RE-
MOVED APPARATUS

C.1 In the "Block or Insulate" column
for the (P), (TO), and (TO1) relays
insulating information is added to avoid
circuit interference and parallel cir-
cuit.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 In order to provide announcement
supervision when this circuit is
furnished with Fig. D and "y" wiring,
the following changes are made to pro-
vide that the hold circuit to (M) and
(M1) relays in Fig. A or (M1) relay in
Fig. B be under control of (1-2B) con-
tacts of the (CT) relay. In Fig. 1 the
connecting lead from (4LB) terminal of

(LK) relay to leads (V) and (4) is re-
moved. The following leads are added:
Lead (3) to (4LB) terminal of the (LK)
relay; a lead between (1B) contact of
(CT) relay and leads (V) and (4); and
a lead between (2B) contact of (CT)
relay and (1T) contact of (LK) relay,
(4B) contact (R) relay, etc. The
numbering of the leads between Fig. 1
and Figs. C and D has been rearranged.

D.2 In note 103 the (ST) interrupter
back contact closure is changed
from 0.08 to 0.09 sec. and the open
interval changed from 0.250 to 0.240
sec. in order to show correct values
for this interrupter as now manu-
factured. No equipment change is
involved.

All other headings, No change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3340-AM-PAK-FV

PANEL SYSTEM
ANNOUNCEMENT TRUNK CIRCUIT
FOR USE ON MULTIPLE OF
DISTRICT OR THREE-WIRE OFFICE SELECTORS

CHANGES

A. CHANGED AND ADDED FUNCTIONS

A.1 The circuit is changed by the introduction of Fig. D to provide a minimum of one minute of time announcement before the called party disconnect time out is started in the junctor.

B. CHANGES IN APPARATUS

Added

- B.1 1 - Relay (TO) R983
- B.2 1 - Relay (TO1) R983
- B.3 1 - Interrupter (TO) 60 second per cycle.

D. DESCRIPTION OF CIRCUIT CHANGES

- D.1 Figure D is added to provide a means of insuring a minimum of 60 seconds of time announcement before the timed disconnect of the associated junctor is started.
- D.2 Figure C is added to provide the previous announcement period of one complete announcement before the timed release of the junctor is started.
- D.3 Circuit Note 112 is added to explain when to use Figures C and D.
- D.4 Circuit Note 113 is added to give the contact and break intervals of the (TO) interrupter Fig. D.

All other headings under Changes,
No change.

1. PURPOSE OF CIRCUIT

1.1 This trunk circuit provides the subscriber with access through the district or office multiple to a transmission network over which announcements, such as time of day, etc. are broadcast from a central announcement bureau. (See Sec. 5 below).

2. WORKING LIMITS

2.1 None.

3. FUNCTIONS

3.01 Provides battery and ground for the "trunk guard" test in the sender.

3.02 Supplies start ground to the Announcement Supply Incoming Distributing and Alarm Circuit, in order to give a starting signal to the central announcement operator.

3.03 Removes the battery and ground supply shortly after seizure, so as to signal the sender when to start P.C.I. pulsing.

3.04 Recognizes the finish of P.C.I. pulsing and prepares to close through the talking path at the beginning of the next announcement interval. Announcement intervals alternate with silent or preparation intervals, each interval lasting 7.5 sec. in an overall period of 15 sec. Fig. C.

3.05 Gives ringing tone to the calling subscriber during the waiting interval between pulsing and cut-through.

3.06 Removes the ringing tone and cuts through the talking path to the announcing network, at the beginning of the first announcement interval following the preparation interval. (See 3.04 above).

3.07 When arranged to recognize final heavy (+) P.C.I. impulse (Fig.A), awaits district trunk closure before making the preparation for cut-through outlined under 3.04 above. By this means the subscriber is prevented from getting a partial pronouncement, in case the district advance is delayed.

3.08 Having prepared for cut-through, the circuit applies the charging condition and maintains it to the end of the first announcement interval only Fig. C. Thus, if the subscriber fails to hang up, the district time alarm is operated and overcharging is prevented.

3.09 After charging, replace battery and ground on the trunk in the non-charge direction, so as to avoid the transmission loss usually attending a "dry" trunk condition.

3.10 Provides a barrier in the talking path which will as nearly as possible eliminate crosstalk or other disturbances between the telephones connected to the network.

3.11 Provides a group peg count record of each call.

3.12 Restores to normal whenever sleeve ground is removed by the release of the district or office selector.

3.13 The circuit is arranged Fig. D after cut-through to apply the charging condition to the associated junctor for a minimum of sixty seconds to provide an adequate announcement interval before the timed disconnect is started.

4. CONNECTING CIRCUITS

4.1 Standard district selector - SD-25620-01.

4.2 Standard local office selector.

4.3 Announcement supply incoming distributing and alarm circuit, for terminating office.

4.4 Miscellaneous register circuit - SD-25317-01.

4.5 Interrupter Frame Circuit - SD-25062-01.

DESCRIPTION OF OPERATION

5. OUTLINE OF ANNOUNCEMENT SYSTEM

The system of which this trunk is a part comprises a central announcement bureau and a distributing network for carrying the announcements to various local offices throughout a wide area. A single pair of conductors serves to connect the local office directly to the central bureau or to some intermediate point acting as a subcenter.

At each local office a voice repeater is provided, and the subscribers wanting announcement service are connected to the repeater in multiple by means of trunk circuits of the kind described below. At the central bureau the operator broadcasts the announcements at regular intervals, continuing thus while any one or more subscribers in the entire area are connected on.

6. SEIZURE

Immediately after this trunk is seized by the district or office selector, the sender applies a bridge across tip and ring to make "trunk guard" test. Relay (BG) operates over this loop and connects sleeve ground to the common holding path. Relay (SL) now operates from the back contact of interrupter (ST), locks to the sleeve, grounds lead ST to bring in a starting signal at the central announcement bureau, grounds the common holding path, and closes an operating circuit for the group peg count register. After an interval sufficient to cover the sender "trunk guard" test, as well as to permit the peg count circuit to function interrupter (ST) closes its "F" contact and operates relay (LK). This relay

locks to the common holding path, opens the register circuit, removes battery relay (BG) from across the trunk, and substitutes a dry bridge through the winding of relay (P).

Relay (BG) releases without affecting the circuit. The reason for feeding sleeve ground to the contacts of relay (BG) is to prevent false operation of the peg count register in case relay (BG) is accidentally operated when the trunk is otherwise normal.

Meanwhile, relay (T) of Fig. B (if furnished) may be operated through the "B" contact of interrupter (PT) and locked to ground supplied by relay (LK). However, relay (T) produces no effect in the circuit at this time.

7. P.C.I. PULSING, WITH FINAL HEAVY (+) IMPULSE (FIGS. 1 & A)

Announcement connections will be obtained by calling a full number code, and in the panel system the call will be routed on a P.C.I. basis. The sender will spill the call indicator impulses immediately after relay (LK) of this circuit has operated and removed battery and ground from across the trunk. The talking path will not be closed through until after the pulsing has been finished, as will be explained below.

Fig. A is furnished with Fig. 1 in cases where the sender is arranged to send a final heavy (+) impulse. Relay (P) of Fig. A operates on this impulse and energizes relay (M). Relay (M) prepares a locking circuit for its companion counting relay (ML) and prepares a path for operating relay (R) from the contacts of relay (BG). Relay (ML) remains shunted until the termination of the heavy (+) impulse, whereupon relay (P) releases and allows relay (ML) to operate in series with relay (M). Relay (ML) switches the tip and ring taps from the winding of relay (P) to the winding of relay (BG), and the last named relay tests for district trunk closure. Any delay in sender or district advance is therefore attended by a corresponding delay in the announcement trunk, with the result that the latter is prevented from cutting through prematurely and the subscriber is saved the annoyance of missing part of the announcement. It will be noted that during this time relay (BG) is bridged across the trunk with the battery and ground connections in the non-charge direction.

The operation of relay (BG) following district trunk closure energizes relay (R). (See Sect. 9 below).

8. P.C.I. PULSING WITHOUT FINAL HEAVY (+) IMPULSE (FIGS. 1 & B)

For conditions where a final heavy (+) impulse is not provided by the

sender the circuit will be equipped per Figs. 1 & B. The P.C.I. pulsing is started in the manner described in Sect. 7. Relay (T) of Fig. B may have operated as previously described in Section 6 above, but relay (P) of Fig. B comes up on each negative impulse and shunts relay (T) to normal. Consequently, relay (T) cannot cause the operation of relay (R) while P.C.I. pulsing is in progress. Afterwards, however, relay (P) remains normal throughout the full period covered by interrupter (PT), which means that relay (T) will be permitted to reoperate and thereby prepare a path for operating relay (R) or (ML) on ground supplied from the "F" contact of interrupter (PT). With "X" wiring, relay (R) operates thru the contacts of relay (T). With "Y" wiring, relay (ML) operates, in turn operating relay (R).

9. PICK-UP

Relay (R) operates as explained in Sections 7 and 8 and locks under control of relay (LK), closes ringing tone to the trunk, extends lead CT to the winding of relay (LK), and connects pick-up lead RV to the winding of relay (RV). This pick-up lead is open during the announcement interval and grounded throughout the preparation interval. Relay (RV) therefore operates and locks at some instant within the preparation interval, connects battery to the operating winding of relay (CT), and restores relays (M) and (ML) of Fig. A ("X" wiring), or relay (T) of Fig. B, whichever is furnished. Relay (RV) also opens the bridge path through relay (P), and, when "X" wiring is furnished, applies charging battery and ground to the trunk through the windings of relay (BG).

10. ANNOUNCEMENT

When lead (CT) becomes grounded, relay (CT) operates and connects the talking path through resistances and condensers to the transmission network, thus bridging the subscriber in parallel with any other subscribers who are receiving service at the moment. The subscriber can now hear the announcement, but disturbances or crosstalk between his line and the network are prevented by the condensers and resistances just mentioned.

When "Y" wiring is furnished with Fig. A, relay (CT) operating, also releases relays (M) and (ML), and relay (ML) releasing, applies charging battery and ground to the trunk thru the windings of relay (BG), at the beginning of the announcement interval.

When "Y" wiring and apparatus are furnished with Fig. B, relay (CT) operating, also releases relay (ML), and relay (ML) releasing, applies charging battery and ground to the trunk.

It should be noted also that the subscriber is prevented from receiving a partial announcement, inasmuch as relay (CT) can operate only at the beginning of the announcement interval. Leads RV and CT are grounded alternately, during the preparation and the announcement intervals respectively, and since relay (RV) must operate during the preparation interval in order to prepare the operating path for relay (CT), it follows that the operation of relay (CT) always coincides with the beginning of the announcement interval.

10.1 Fig. C - Operation

Relay (CT) locks to the common holding path and opens the locking circuit of relay (LK), but inasmuch as (LK) has a holding winding in series with lead CT it continues to hold throughout the first announcement interval. At the end of that time relay (LK) releases followed by relay (R) which has been under control of relay (LK). The release of relay (LK) again reverses battery on the trunk, leaving the polarity thereafter in the non-charging direction. In this manner the subscriber is protected against the possibility of overcharging in case he fails to hang up, and the district is enabled to operate the selector time alarm so as to give notice of this condition. This battery also serves to prevent the transmission loss resulting from a "dry" condition of the talking path.

10.2 Operation - Fig. D

Relay (LK) operates and locks on its secondary winding thru relay (TOL) normal Fig. D when the (ST) interrupter "F" contact is closed. When the "CT" lead is closed thru by the (RV) relay operated relay (CT) operates on its primary winding in series with the primary of the (LK) relay. Relay (CT) locks on its secondary winding to the sleeve ground and closes this ground to the (TO) interrupter Fig. D. When the (TO) interrupter closes its "F" contact relay (TO) Fig. D operates and locks to the "S" lead ground. After approximately 60 seconds the "B" contact of interrupter (TO) is closed thru relay (TO) operated to operate relay (TOL). Relay (TOL) also locks to the "S" lead and opens the locking circuit of relay (LK) causing it to release. (If the "CT" lead is grounded the (LK) will hold on its primary until

the "CT" ground is removed. The release of relay (LK) opens the charge bridge to the district junctor causing it to start its timed release. The release of the district opens the "S" lead to release the (SL) (CT) (OT) and (OT1) relays. Relay (SL) releases relay (RV) etc.

Relay (LK) cannot reoperate, because relay (CT) has opened one of its operating paths and relay (R) the other.

11. DISCONNECTION

The release of the district or office selector following disconnect by the subscriber, removes ground from the sleeve of the trunk and releases relay (SL). The release of this relay removes ground from start lead ST and also from the common holding path, and by releasing relays (RV) and (CT) causes the trunk to restore to normal. The release of relay (SL) may be momentarily delayed by interrupter (ST), but during this time the sleeve is held busy.

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