FORM NO. 728
ISSUE NO. 1
4-8-24
CO-74853-2
Revised
Issue #2

CIRCUIT EXPLANATION
of
2 WIRE REPEATER CIRCUIT 28318-A ONEWAY TRUNK WITH OR WITHOUT OUTGOING SECONDARIES - TO CALL INDICATOR BOARDS

DEVELOPMENT

1. PURPOSE OF CIRCUIT

1.1 This circuit is for repeating pulses from a machine switching office to a call indicator office.

1.2 When the call indicator office is converted to full mechanical, the repeater can be used as indicated by notes on the drawing.

OPERATION

3. PRINCIPAL FUNCTIONS

3.1 To hold the switches of the calling station in their operated position.

3.2 To repeat pulses to the call indicator position or mechanical apparatus beyond.

3.3 To reverse battery on the calling line when the called party answers.

3.4 To prevent intrusion from other calling stations.

3.5 To supply current to the calling line.

3.6 To close a chain contact for operating on all trunks busy register.

3.7 To allow the calling party to disconnect, (that is release the switches proceeding this trunk) with the trunk made busy by the operation of the make-busy key at the call indicator position, and then replace a guarding potential on the trunk to prevent future calls from seizing this trunk.

3.8 To allow the calling party to disconnect under normal operating conditions, that is, trunk not make busy at the call indicator position.

3.9 To furnish an impulse for swinging the master switch, associated with this trunk, upon the disconnection of the calling party from a call indicator position made busy by the operation of the make-busy key at the call indicator position.

4. CONNECTING CIRCUITS

4.1 This circuit is arranged to connect to either an out-

going secondary lineswitch or a selector switch on the originating end, and to a call indicator, at the outgoing end. Connections can also be made to standard step by step switches or to senders capable of receiving pulses from a dial at the outgoing end of this trunk.

DETAILED DESCRIPTION

5. SEIZURE When this circuit is seized by an outgoing secondary lineswitch or a selector, relay A operates over the subscriber's loop, which in turn operates relay B which places a guarding potential on the release trunk. A circuit is prepared through contacts of relays A and B, windings of relays E and F and contacts of relay C for energizing the pulsing relay in the call indicator trunk or other apparatus to which this trunk may be connected. Under this condition relay E will operate to close the chain relay contacts. Relay F does not operate because its two windings are opposing each other at this time.

6. SENDING PULSES When the subscriber operates his dial, relay A will respond to the pulses sent out by the dial and thus interrupt the circuit above described for operating the pulsing relay in the call indicator trunk. The first impulse of each digit sent out by the dial, causes relay A to close its back contact and operate relay C which, being slow to release, will remain operated during the series of pulses, thus shunting out the windings of relays E and F during the period of sending the remaining pulses. Relay B is also slow to release and remains operated during the period of sending the series of pulses for each digit dialed.

7. ANSWER OF CALLED PARTY When the called party answers, the current in the 100 ohm winding of relay F will be reversed, thus allowing it to operate since the two windings are now aiding each other. The operation of relay F closes the path for operating relay D which reverses the current to the calling station.

FORM NO. 795
ISSUE NO. 1
4-8-24
CO-74853-E
Revised Issue #2

8. DISCONNECT OF CALLING PARTY

(a) When trunk is not made busy by operating the key at the call indicator position.

When the calling party hangs up his receiver, relay A will release, and after an interval, the slow release relay B will release and remove the ground from the release trunk lead, thus allowing the switch or switches back of this trunk to release. This ground, which was placed upon the release trunk lead by relay B, acts as a guarding potential against intrusion by other calling stations in addition to the function of holding the switches in their operated positions.

(b) When the trunk is made busy by the key at the call indicator position. If the calling station hangs up his receiver after the trunk has been made busy by the operation of the key at the call indicator position to which this trunk is connected, it will be necessary to remove the ground placed upon the K lead by the make-busy circuit long enough to allow the switches, back of this trunk, to release the holding relays. This is accomplished by the operation of relay C upon the release of relay A, which will remain operated until relay B releases, thus removing the ground from the released trunk lead and holding the ground on the K lead open at the contacts of relay C.

9. SWINGING THE MASTER SWITCH Under the condition above described f releasing the switches when the trunk is made busy at the call in-

dicator position, the operation of relay C causes the ground on lead K to be connected to lead L. This ground is then removed at the end of the time required for relays B and C to release, thus sending a pulse of ground current into the master switch over the L lead, which causes the master switch to swing for a sufficient length of time to pick up the line switch thus made idle.

10. MAKING THE TRUNK BUSY FROM THE CALL INDICATOR POSITION

The operation of the key at the call indicator position by means of the make-busy circuit places ground on the K lead which will operate relay E of this trunk over its 4,000 ohm winding and close its chain relay contacts. This ground also places a guarding potential on the released trunk lead so that incoming calls will not seize this trunk. It is this ground which had to be removed at the time the calling station was releasing, as was described under 8 (b) above, and which is again placed upon the released trunk lead at the time of the release of relay C.

11. USE OF TEST JACKS Springs 3 and 4 of the test jacks may be used for making this trunk busy in case it is out of order, or they may be used in conjunction with springs 1 and 2 when it is desired to make a test on this circuit.

12. REVERSED BATTERY SUPERVISION The function of relay D of reversing the battery to the calling station may be used in two ways.

12.1 For operating a meter, associated with the calling station, by reversal of battery on the calling line.

12.2 Since relay F will follow the switchhook of the called station, it is also possible to give

reversed battery supervision to an operator originating a call over this trunk.

W.E. Co. C.D. 241650-Issue E-A Modified
JHV:PD