

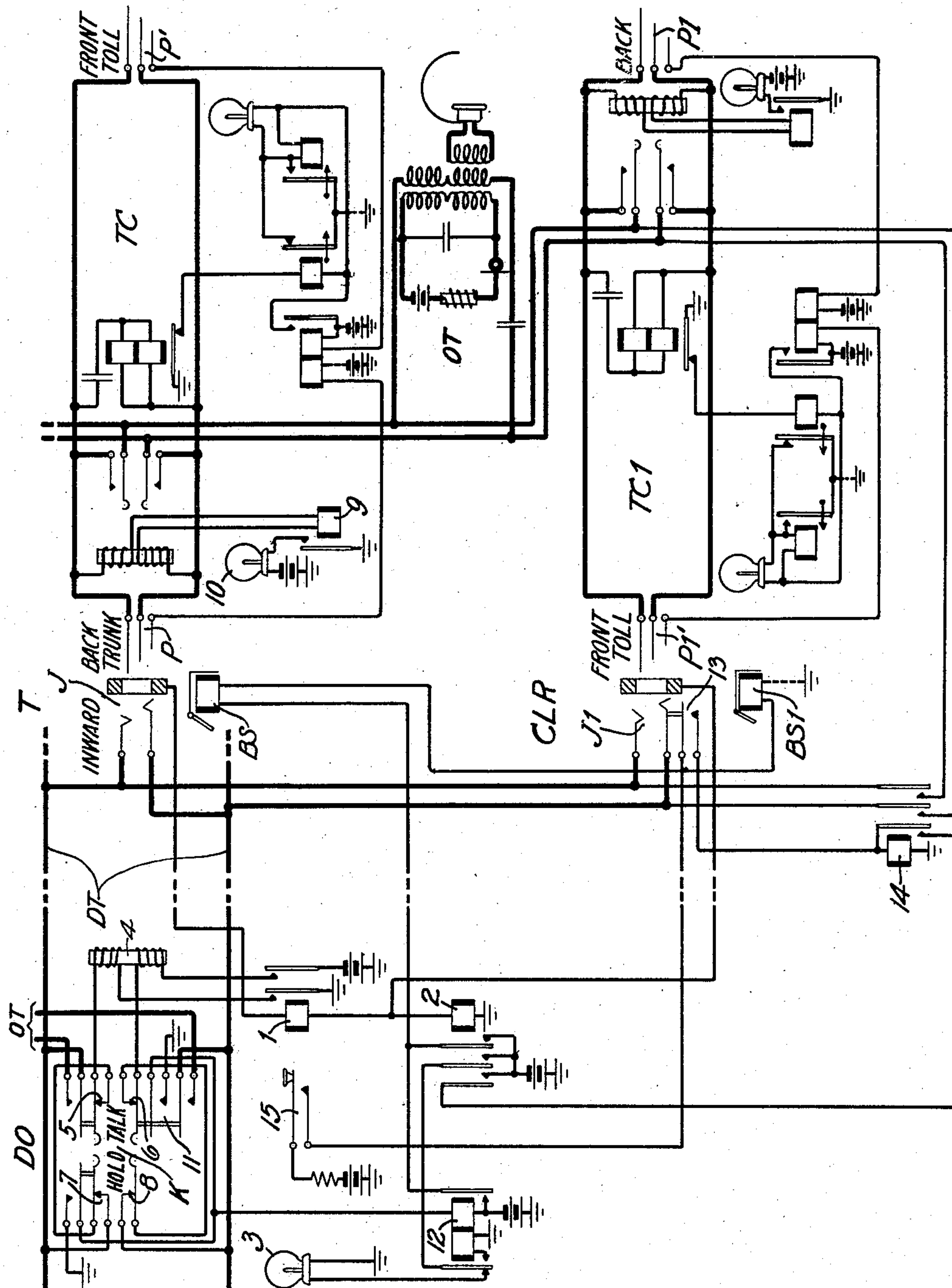
Jan. 28, 1930.

H. E. PHELPS ET AL

1,744,918

TELEPHONE SYSTEM

Filed April 4, 1928



INVENTORS

BY

HENRY E. PHELPS
JOHN DAVIDSON JR.

gr 409c
ATTORNEY

UNITED STATES PATENT OFFICE

HENRY E. PHELPS, OF TUCKAHOE, NEW YORK, AND JOHN DAVIDSON, JR., OF MONTCLAIR, NEW JERSEY, ASSIGNORS TO AMERICAN TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION OF NEW YORK

TELEPHONE SYSTEM

Application filed April 4, 1928. Serial No. 267,336.

This invention relates to telephone systems and more particularly to what are known as desk trunks between toll operators' positions and directory operators' desks.

5 An object of the invention is to expedite and facilitate connections to such desks over a common trunk circuit from either combined line and recording (CLR) toll operators' positions or regular inward toll positions, whereby faster and more efficient toll service
10 may be rendered.

More specifically, the object of the invention is to enable a desk operator to recall either an inward operator, who may have the
15 trunk end of her cord pair plugged into the jack of the desk circuit, or a CLR operator at whose position the toll end of the pair is in the desk trunk jack.

In this connection, CLR operation may be
20 briefly described as a method of toll operating, whereby a single toll operator, referred to as a CLR operator, receives a call over a trunk circuit and records the details, holds the calling subscriber at the telephone if it
25 appears likely that the connection can be established within a short time, calls over an outgoing toll line, and gets into communication with the called subscriber and finally connects the calling and called sub-
30 scribers.

In attaining the foregoing object one feature of the invention resides in an arrangement for a desk trunk appearing at regular inward toll positions whereby supervisory
35 current is connected to the trunk at the desk end thereof, under control of the desk operator's talking and holding keys, when the trunk is plugged up at an inward toll position, which causes a display of the toll cord
40 supervisory signal in case the trunk end of the cord pair is connected to the desk trunk. Actuation of either of the keys at the desk opens this supervisory circuit and retires the signal which can be redisplayed at will by
45 releasing the operated key thereby recalling the operator.

Another feature resides in a further arrangement for the aforementioned trunk, when it is terminated at a CLR position and
50 plugged up thereat, whereby connection of

the CLR operator's telephone set to the trunk is controlled from the desk over a path independent of the trunk and the regular cord listening key.

An understanding of the invention will be
55 gained from the following description when read in connection with the accompanying drawing, in which a directory trunk circuit DT extends from a directory operator's desk DO to a toll switchboard T and terminates
60 in jacks such as J at inward positions T and jacks such as J¹ at combined line and recording positions CLR.

Identical toll cords TC and TC¹ are shown
65 at positions T and CLR, respectively, the only difference being that they are in reversed position with respect to each other.

Let it be first assumed that a call over a toll line, not shown, is received at the inward
70 position T, which would be answered by the inward operator inserting the front or toll plug P' in the toll line jack. In this connection it will be understood that the other end of the cord, terminating in plug P is
75 arranged for connection to common battery trunk circuits and will not function with ringdown toll lines.

If the distant calling operator requires directory information the inward toll operator will insert the plug P of the toll cord
80 into jack J of the directory trunk, whereupon relays 1 and 2 at the desk end of the trunk are operated in an obvious circuit. Relay 2 in operating closes at its inner left contacts an obvious circuit for operating the busy
85 signals BS, BS¹, etc. at all positioned appearances of the trunk and, at its middle contacts, closes an obvious circuit for lighting the trunk lamp 3 at the directory operator's desk.

Relay 1 in operating connects battery and
90 ground to the trunk conductors through the impedance coil 4 and contacts 5, 6, 7 and 8 of the key K, thereby causing the supervisory relay 9 of the trunk end of the toll cord to operate and close the circuit of supervisory
95 lamp 10.

Noting the lighted lamp 3, the directory operator operates the key K to the right or talking position to connect her telephone set,
100 not shown, across the trunk conductors there-

by placing herself in communication with the calling operator at the distant end of the toll line. Operation of key K also opens its contacts 5 and 6, thereby breaking the circuit for supervisory relay 9, which releases and extinguishes the lamp 10 to indicate to the operator at position T that the desk operator has answered.

When key K was operated it also closed its contacts 11, thereby completing an energizing circuit for relay 12, which in operating opened the circuit of lamp 3 and locked itself operated through its left-hand winding to battery at the middle contacts of relay 2.

In case the directory operator desires to hold the trunk while she looks up the desired information or talks on another trunk, she may operate the key K to the left or hold busy any position which holds open, at contacts 7 and 8, the circuit for supervisory relay 9.

When the directory operator is ready to give the desired information it is usually advisable for the inward toll operator to listen in if for no other reason than to disconnect from the directory trunk as soon as the information has been given and, therefore, in order that the toll operator may be signaled to come in on the connection the desk operator flashes the cord supervisory lamp 10 by alternately releasing and operating the key K, which in turn closes and opens the circuit previously traced for relay 9 and causes the lamp 10 to flash. As soon as the toll operator hears the information passed she may release the directory trunk, whereupon the apparatus associated therewith restores to normal.

We will now assume that a call is received over a trunk circuit, not shown, at a combined line and recording position CLR, which will be answered by the CLR operator by inserting the back or trunk plug P¹ of the toll cord into the calling trunk, thus leaving only the front or toll end of the cord available for connection to the directory trunk, should the calling subscriber lack certain information required by the toll operator in passing the call to a distant exchange. If this is the case, the CLR operator will place the plug P¹ in the jack J¹ of the directory trunk, whereupon relay 2 will operate in an obvious circuit from battery on the sleeve of the toll cord, it being noted that in this case relay 1 is not operated as in the case of the connection at the inward toll position T. Relay 1 in operating lights the trunk lamp 3 as before and sets the busy signal BS, BS¹, etc.

When the desk operator answers, by throwing key K into the talking position, relay 12 is operated as before which locks itself up to battery at the contacts of relay 2 and extinguishes lamp 3. The directory operator

then talks to the calling subscriber and ascertains the information desired.

When the directory operator is ready to give the requested information, it being understood that she is aware that the connection to the desk trunk was made at a CLR position from the fact that the information was requested by a subscriber and not by an operator, she will depress the CLR recall key 15 which completes a circuit to operate relay 14, which circuit was prepared when the plug was inserted in jack J¹. In this connection it will be noted that this jack has a pair of auxiliary contacts 13, which are closed when the ring spring of the jack is moved downward by the plug. Relay 14 operates and locks itself up at its inner contacts to battery at the left hand contacts of relay 2 and by closing its middle and right hand contacts connects the talking conductors of the directory trunk DT across the conductors leading to the toll operator's telephone OT, thereby establishing what is, in effect, an order wire circuit between the directory operator and the toll operator, independent of the toll cord conductors.

What is claimed is:

1. First and second operators' positions, a line interconnecting them, switching means for connecting the first operator's telephone set to said line, and means controlled from said second position independent of said switching means and line to connect said first operator's set to said line.
2. First and second operators' positions, a line interconnecting them, a cord circuit and an operator's set at the first position adapted to be associated with the line, means for connecting the operator's set to the line through the cord circuit, and means controlled from the second position, when the cord circuit is associated with the line, for connecting the operator's set to the line independent of the first means.
3. First and second operators' positions, a line interconnecting them, a cord circuit and an operator's set at the first position adapted to be associated with the line, means for connecting the operator's set to the line through the cord circuit, and means controlled from the second position when the cord circuit is associated with the line for connecting the operator's set to the line over a path excluding the cord circuit.
4. First and second operators' positions, a line interconnecting them, a cord circuit including a supervisory signal at the first position, a source of current, means responsive to connection of said cord circuit to said line to connect said current source to said line at the second position to thereby energize said signal.
5. First and second operators' positions, a trunk line extending therebetween, a cord circuit including a supervisory signal at said

first position adapted to be connected to said line, an operator's telephone at said second position also adapted to be connected to said line, a source of current, means responsive to connection of said cord circuit to said line for connecting said current source to said line at said second position, whereby said supervisory signal is energized, and means at said second position responsive to connection of said operator's telephone to said line to disconnect said current source.

6. First and second operators' positions, a trunk line extending therebetween, a cord circuit including a supervisory signal at said first position adapted to be connected to said line, an operator's telephone at said second position also adapted to be connected to said line, a source of current, means responsive to connection of said cord circuit to said line for connecting said current source to said line at said second position, whereby said supervisory signal is energized, and means at said second position responsive to connection of said operator's telephone to said line to disable said signal.

In testimony whereof, we have signed our names to this specification this 3rd day of April, 1928.

HENRY E. PHELPS.
JOHN DAVIDSON, JR.