

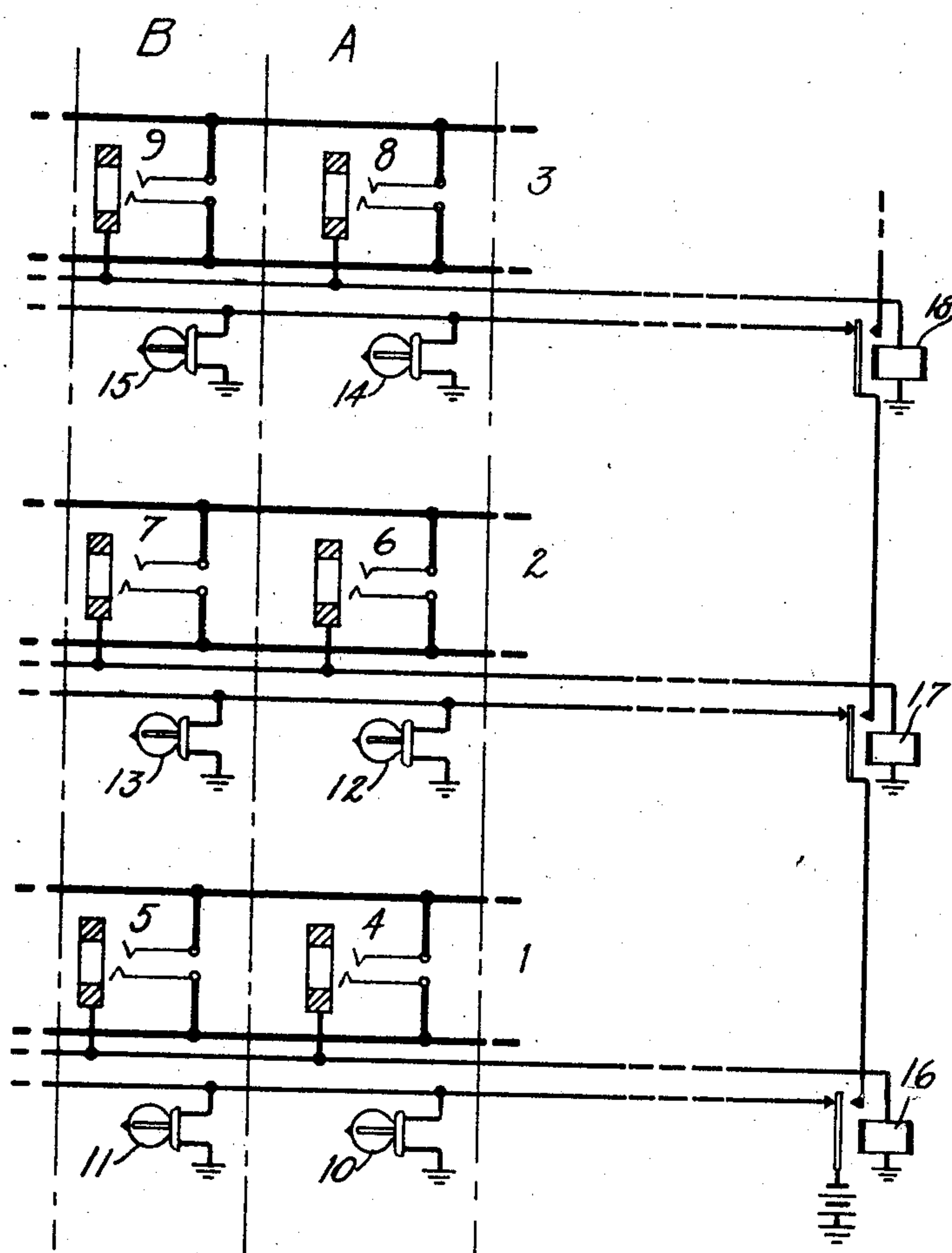
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TRUNK SIGNALING SYSTEM

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UNITED STATES PATENT OFFICE.

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TRUNK SIGNALING SYSTEM.

Application filed October 30, 1925. Serial No. 65,876.

This invention relates to trunking systems and more particularly to improvements in the means for indicating the idle or busy condition at the outgoing ends of a group of trunks.

In trunking systems of the so-called straightforward type to which this invention is particularly applicable, the outgoing ends of trunks are usually represented by multiple jacks at a plurality of operators' positions in an exchange. To these jacks the operators may connect directly in extending trunk connections to distant exchanges. Ordinarily, if a trunk is engaged through one of the multiple jacks a busy condition is established on the sleeve of the other multiple jacks thereof, in a manner well known in the art, and the operators at the various positions are therefore required, before extending a connection through a multiple jack, to test with the tip of a plug for the idle or busy condition of the associated trunk.

Another common arrangement is to have the operators instructed to test the multiple jack of a particular one of the group of trunks terminating at her position. If this jack gives a certain tone she will know that all of the trunks in the group are engaged, but if it gives the ordinary busy test indication she will know that that particular trunk is busy and she will then proceed to test succeeding jacks in the group until an idle trunk is found. By these methods, however, considerable time is consumed in ascertaining the idle or busy condition of a group of trunks.

It is an object of this invention to provide means for expediting the method of identifying the availability of trunks in a group terminating in multiple jacks at a plurality of operators' positions.

To attain this object there is provided in accordance with one feature of this invention, a signal at each multiple jack of all the trunks in a group and means whereby the signals of the multiple jacks of a certain trunk are normally lighted to indicate its idle condition and if this trunk is engaged the corresponding signals will be extinguished and the signals of the next idle trunk in the group will be lighted. That is the signals of a succeeding trunk in the group will be lighted and the signals of a preceding trunk will be extinguished in response to the seizing of the preceding trunk. It will be seen,

therefore, that as the last trunk in the group becomes engaged all the signals will be extinguished. The operator at any position will consequently know at a glance whether or not a trunk is available and if a signal is lighted indicating that the corresponding trunk is idle she may seize this trunk by insertion of a plug in the corresponding jack without performing any of the usual testing operations heretofore required.

Referring to the drawing, there is shown an arrangement of three trunk lines 1, 2 and 3 and the associated multiple jacks 4 and 5, 6 and 7, and 8 and 9 at two operators' positions A and B with the idle trunk indicating signals 10 and 11, 12 and 13, and 14 and 15 and the relays 16, 17 and 18 and their associated circuits arranged in accordance with this invention and applied to said group of trunks.

Although other arrangements of the invention as applied to different groups of trunks may be made without departing from the spirit of the invention, this particular arrangement may serve for the purpose of description of the invention. In accordance with this disclosure, therefore, the signal lamps 10 and 11 are normally lighted in a circuit from battery through the armature and back contact of relay 16, lamps 10 and 11 in parallel to ground. These signals are as noted associated with jacks 4 and 5, respectively, of trunk 1 in the group so that if the operator at either position A or B desires to extend a trunk connection, she will pick the trunk jack having its signal normally lighted, that is, the operator at A would pick jack 4 and the operator at B would pick jack 5. If this trunk 1 becomes engaged it will be noted that lamps 10 and 11 will be extinguished, and lamps 12 and 13 associated with jacks 6 and 7, respectively, of trunk 2 will be lighted as follows: When a jack, such as 4 or 5 of trunk 1 becomes associated with an ordinary cord circuit, it is well known in the art that a circuit will be established from battery, through the sleeve terminal of the calling plug to the sleeve terminal of the jack and in this case this circuit will extend as shown through the winding of relay 16 to ground. Relay 16 will therefore operate when either of jacks 4 or 5 is seized and thus cause the circuit for lamps 10 and 11 to be broken at the armature and back contact of relay 16 and a cir-

cuit for lighting of lamps 12 and 13 established through the armature and front contact of relay 16, the armature and back contact of relay 17, through lamps 12 and 13 in parallel to ground. Similarly, if trunk 2 becomes engaged through either jack 6 or 7, a circuit will be established for the operation of relay 17 and the lamps 12 and 13 will thereby be extinguished through the operation of the armature of relay 17 and a circuit established for the lighting of lamps 14 and 15 through a circuit extending from battery, the armatures and front contacts of relays 16 and 17 and the armature and back contact of relay 18, through lamps 14 and 15 in parallel to ground.

Although only three trunks have been shown, it is understood that this arrangement of the invention may be applied to a large number of trunks as it is only necessary to connect the sleeve terminals of the multiple jacks of the various trunks to relays such as 16, 17 and 18 and thus establish a series connection through the armatures of these relays to the battery at the armature of relay 16.

If trunk 1 should become idle before trunk 2 is engaged, relay 16 will release and consequently the circuit for lamps 12 and 13 broken and the circuit for lamps 10 and 11 established so that lamps 12 and 13 would be extinguished and lamps 10 and 11 relighted. Similarly, if trunk 2 should become idle before trunk 3 is engaged, the lamps 14 and 15 will be extinguished and lamps 12 and 13 relighted.

What is claimed is:

1. In a telephone system, a plurality of outgoing trunks arranged in a certain series relation, a signal for each trunk, means for maintaining the signal of one of said trunks actuated in response to the seizure of all of the preceding trunks in the series and means responsive to the release of any one of the preceding trunks for disabling said signal and actuating the signal of the released preceding trunk.

2. In a telephone system, a group of outgoing trunks arranged in a certain order, a plurality of operators' positions, each trunk represented at each position by a multiple jack connected to said trunk, a signal associated with each jack at each position, a relay for each trunk, a circuit arrangement associated with said relays, the sleeve terminals of the jacks and the signals for controlling the extinguishing and lighting of the signals on the seizure and release of the trunks in such a manner that the signals associated with a preceding trunk in the group will be extinguished and the signal of a succeeding trunk will be lighted in response to the seizure of the preceding trunk and so that the signals of a succeeding trunk will be extinguished when the signals of a preceding trunk will be lighted in response to the release of said preceding trunk.

In testimony whereof, I have signed my name to this specification this 29th day of October 1925.

LLOYD L. EAGON.