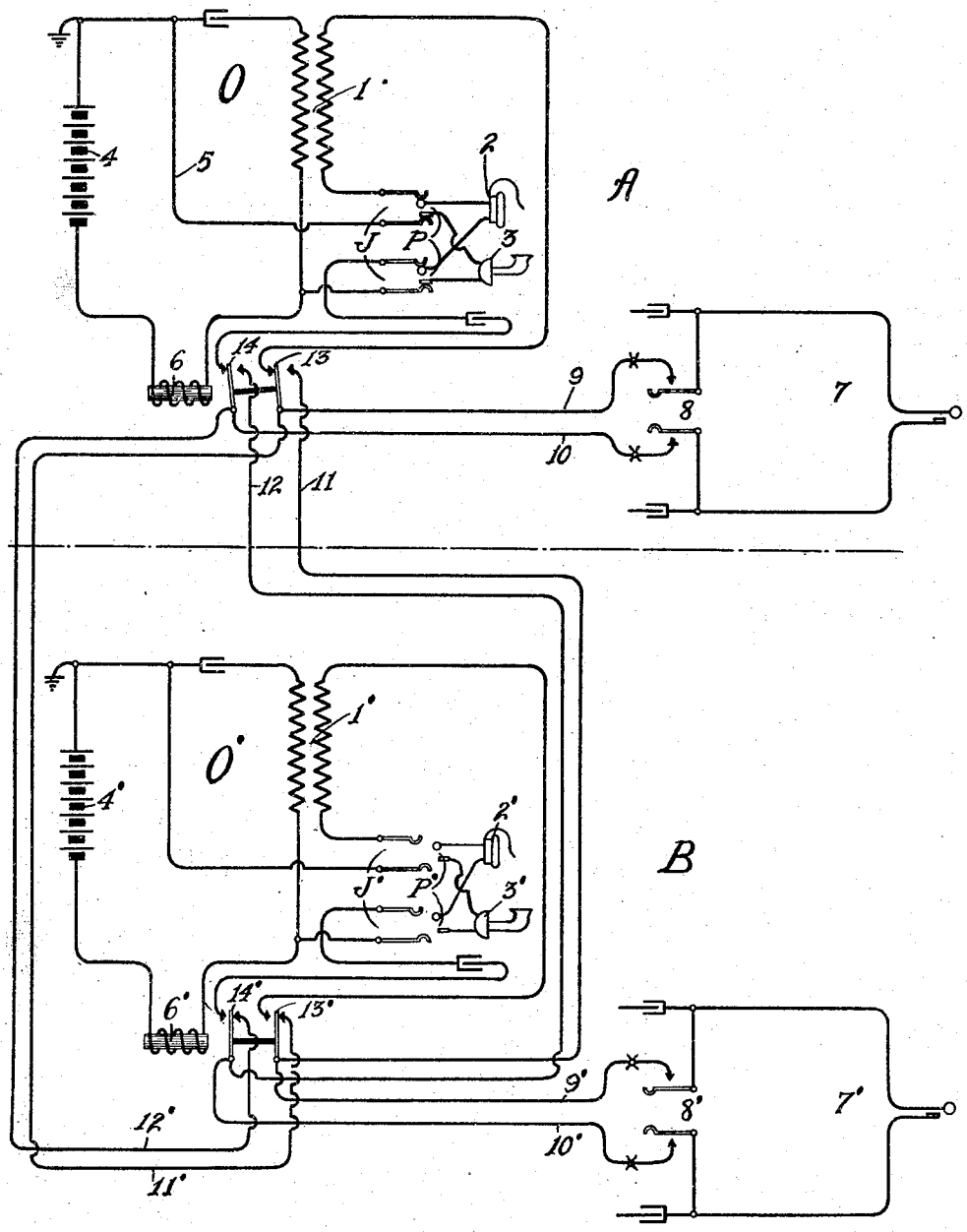
R. I. UTTER.

AUTOMATIC SWITCHING OPERATOR'S TELEPHONE.

APPLICATION FILED OCT. 1, 1913.

1,200,277. Patented Oct. 3, 1916.



Witnesses:

Geo. E. Mueller

Wm. Bergholm.

Inventor:

Richard I. Utter.

By Curtis B. Camp

Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

RICHARD I. UTTER, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD AND SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

AUTOMATIC-SWITCHING OPERATOR'S TELEPHONE.

1,200,277. Specification of Letters Patent. Patented Oct. 3, 1916.

Application filed October 1, 1913. Serial No. 792,716.

To all whom it may concern:

Be it known that I, RICHARD I. UTTER, a citizen of the United States of America, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Automatic-Switching Operators' Telephones, of which the following is a specification.

My invention relates to automatic switching circuits associated with operators' positions and whereby when an operator disconnects her telephone set from the switchboard the cord circuits at her position are automatically switched into association with another operator's telephone, an object of my invention being to provide a system of this character having a simplified circuit arrangement which is positive in its operation.

In connection with telephone switchboards employing more than a single operator, there are times when one operator may handle the connections at her own and an adjacent position so that when an operator leaves her position it is necessary to switch the cord circuits of the retiring operator into association with the operator's telephone at an adjacent position. Manually operable switching keys have been provided for this purpose but this means that one of the operators must actuate such key before switching the cords. It sometimes occurs that an operator will fail to actuate such a switching key which results in confusion when connections are attempted. To obviate these disadvantages I have provided an automatic switching circuit so arranged that when an operator disconnects her telephone from the cord circuits at her position, said cord circuits are automatically associated with an adjacent or other operator's telephone.

In the accompanying drawing I have illustrated a preferred embodiment of my invention in which I have shown operator's positions A and B. Referring now more particularly to the position A, an operator's telephone O is provided comprising the usual induction coil 1, receiver 2, transmitter 3, operator's jack J, and plug P, and source of talking battery 4. An impedance coil 6, which also serves as a switching relay, is adapted to be placed in series with the transmitter and the supply of talking battery, in the usual manner. A portion of a cord circuit 7 is shown having the usual listening contacts 8, there being a plurality of such cord circuits 7 associated with the common conductors 9, 10, which extend to the operator's telephone, O.

An equipment similar to the equipment of position A is shown at position B, the corresponding parts being indicated by like reference characters with the addition of the suffix prime at position B. The common talking conductors 9, 10 of each position are also adapted to extend to the outgoing switching conductors 11, 12, which conductors extend to another operator's position. Thus when an operator has the plug P of her set 2—3 in the associated jack J, the associated switching relay 6 is operated to disconnect the conductors 11, 12 leading to the other operator's position, this operation of the switching relay also connecting the common conductors 9, 10 of her cord circuits to her telephone O. Should the operator disconnect her set 2—3 from the operator's jack J, the associated switching relay 6 is restored whereby her telephone O is disconnected from the conductors 9, 10, of the cord circuits at her position, and said conductors 9, 10 are connected to the outgoing switching conductors 11, 12, which lead to another operator's position, who by maintaining her telephone O^1 connected also maintains the cord circuits of the retiring operator's position in association therewith.

Referring now more particularly to the operation of the switching circuit, assuming that the operator at position A has her apparatus 2, 3 operatively associated by the plug P, in the operator's jack J, a circuit for the switching relay 6 is established from grounded battery 4, conductor 5, transmitter 3, the winding of the combined impedance coil and switching relay 6, to battery causing the energization of said relay 6 and closing alternate contacts 13, 14. The closing of said contacts connects the common talking conductors 9, 10 in circuit with the receiver 2 and induction coil 1, so that the operator by actuating any of her listening keys 8 may connect her telephone in circuit with one of her cord circuits 7. The operation of relay 6 also disconnects the outgoing switching conductors 11, 12 by the interruption of normal contacts 13, 14. Should the operator at the associated position B be employed at this time, the plug P^1 would be in the jack J^1 so that the switching relay 6^1 would be energized and her outgoing switch-

ing conductors 11^1, 12^1, disconnected. Thus, it will be seen that with the operators at both positions A and B employed, the telephones O and O^1 are not connected.

Assuming now that the operator at position B withdraws the plug P^1 from the jack J^1 as indicated in the drawing, the circuit for switching relay 6^1 is interrupted, interrupting the alternate contacts 13^1, 14^1 to disconnect the operator's telephone O^1 and closing normal contacts 13^1, 14^1, to connect the outgoing switching conductors 11^1, 12^1 to the operator's telephone at position A, whereby the cord circuits 7^1 at position B may be connected in circuit with operator's telephone O by the actuation of a key 8^1. As soon as the operator at position B again inserts the plug P^1 into the jack J^1, the associated switching relay 6^1 is energized to connect her telephone O^1 in circuit with her cords B and to disconnect the outgoing switching conductors 11^1, 12^1.

Assuming now that both of the operators are employed and that the operator at position A withdraws her plug P from its jack J, the associated switching relay 6 is deënergized whereby the telephone O is disconnected at alternate contacts 13, 14 and the outgoing switching conductors 11, 12 connected to her cord circuit conductors 9, 10, through normal contacts 13, 14 whereby the operator's telephone O^1 at position B may be connected with any of the cords at position A. It will be apparent from the above that upon an operator disconnecting a plug and jack the cord circuits at her position are automatically switched into association with the operator's telephone at a second position.

In illustrating my invention I have chosen standard apparatus such as the operator's plugs and jacks P and J, and also a standard form of operator's telephone O but I contemplate applying my invention in other ways than that shown, as my invention is not limited to the particular arrangement disclosed.

Having described my invention what I now claim as new and desire to secure by United States Letters Patent is:

1. A switching system comprising operators' link circuits divided into groups, an operator's telephone for each of said groups, a source of current adapted to be included in circuit with said operator's telephones, an operator's switch individual to each telephone for connecting or disconnecting its associated telephone and said source of current, and means controlled by an actuation of one of said switches for operatively connecting the link circuits of one of said groups with the operator's telephone of another of said groups.

2. A switching system comprising operators' telephones, link circuits associated with each of said telephones, a source of current adapted to be connected in circuit with said telephones, a plug switch individual to each telephone for connecting and disconnecting its associated telephone and said source of current, and means operative according to the connecting or disconnecting position of one of said plug switches for automatically connecting its associated link circuits and its associated operator's telephone or for connecting its associated link circuits and the operator's telephone associated with another of said groups of link circuits.

3. A switching system comprising operators' positions, an operator's telephone and associated link circuits at each position, a source of current provided with circuit connections extending to each position, an operator's switch individual to each telephone for connecting and disconnecting its associated telephone and said source of current via said circuit connections, and means controlled by an actuation of one of said switches for operatively connecting the link circuits at two of said positions with one of said operator's telephones.

4. A switching system comprising a plurality of operators' positions, an operator's telephone and associated link circuits at each of said positions, a plug switch individual to each telephone for connecting and disconnecting its associated telephone with a current supply source, and means operative according to the connecting or disconnecting position of one of said plug switches for automatically connecting or disconnecting the link circuits of one of said groups with the operator's telephone associated with said plug switch.

5. A switching system comprising operators' positions, an operator's telephone and associated link circuits at each position, talking conductors connecting each telephone and its associated link circuits, an operator's switch individual to each telephone for connecting and disconnecting its associated telephone with said talking conductors, and means operative according to the connecting or disconnecting position of one of said switches for automatically connecting and disconnecting its associated telephone and talking conductors and disconnecting and connecting said conductors and another of said operator's telephones.

6. A switching system comprising operators' link circuits divided into groups, an operator's telephone associated with each group of link circuits, talking conductors for connecting each telephone and its associated link circuits, outgoing switching conductors between said telephones, and operator's switch individual to each telephone for connecting and disconnecting its associated telephone with a source of current

supply, means responsive to a connecting operation of one of said switches to connect its associated telephone and talking conductors, and means responsive to a disconnecting operation of said switch for disconnecting said telephone from said talking conductors and connecting said talking conductors to the outgoing switching conductors.

7. A telephone system comprising a plurality of operators' link circuits divided into groups, an operator's telephone associated with each group of link circuits and adapted to be connected to the link circuits of its groups, means for operatively associating or disassociating an operator's telephone with its group of link circuits, and means responsive to the disassociation of an operator's telephone from its group of link circuits for operatively associating said link circuits with a second one of said operator's telephones.

8. A telephone system comprising a plurality of operators' link circuits divided into groups, an operator's telephone associated with each group of link circuits and adapted to be connected to the link circuits of its groups, means for operatively disassociating one of said operator's telephones from its group of link circuits whereby said group of link circuits is operatively associated with a second one of said operator's telephones.

9. A switching system comprising operators' link circuits divided into groups, an operator's telephone for each group of link circuits, an operator's switch individual to each telephone for connecting and disconnecting its associated telephone and its associated group of link circuits, and a switching relay individual to each telephone and controllable by one of said switches for automatically connecting and disconnecting the link circuits of another of said groups with its associated link circuits.

10. A switching system comprising operators' positions at a switchboard, a group of operator's link circuits at each position, an operator's telephone for each group of link circuits, an operator's switch individual to each telephone for connecting and disconnecting an operator's telephone and its associated group of link circuits, and a switching relay operative according to the connecting or disconnecting position of one of said switches for automatically connecting and disconnecting its associated operator's telephone and the link circuits at another of said positions.

11. A telephone system including a group of operators' link circuits, an operator's telephone associated with said link circuits, an operator's switch for associating and disassociating the said link circuits and said operator's telephone, a second group of link circuits, and means responsive to an operation of said switch for also associating the said second group of link circuits with the said operator's telephone.

12. A telephone system including a group of link circuits and an operator's telephone associated therewith, an operator's switch for connecting and disconnecting said operator's telephone and said link circuits, a second group of link circuits and an operator's telephone associated therewith, and means operative according to the connecting and disconnecting position of said switch for associating and disassociating the said second group of link circuits and the said first operator's telephone.

13. A telephone system including an operator's position provided with a group of link circuits, an operator's telephone associated therewith, a plug switch for connecting and disconnecting said operator's telephone and said link circuits, a second group of link circuits at a second operator's position, and means responsive to an operation of said switch for associating and disassociating the link circuits at one operator's position with the link circuits at the other operator's positions.

14. A telephone system including a plurality of operators' positions, an operator's telephone individual to each operator's position, a coil individual to each operator's position, a switch for disconnecting the telephone from said coil, a plurality of link circuits associated with each of said operator's telephones, and means responsive to the operation of one of said switches for associating the link circuits associated with said switch with a second one of said operator's telephones.

15. A telephone system including an operator's position provided with an operator's telephone, an induction coil and a retard coil, a switch for disconnecting the operator's telephone from the said induction coil and retard coil, link circuits associated with said operator's telephone, means responsive to the opening of the circuit of the retard coil for associating the link circuits associated with said operator's telephone with a second operator's telephone.

16. A telephone system including an operator's position provided with a group of link circuits, an operator's telephone adapted to be connected or disconnected to said link circuits, and means responsive to the disconnection of said operator's telephone for associating the said link circuits with the operator's telephone at a second operator's position.

17. A telephone system comprising a plurality of link circuits, an operator's telephone associated with said link circuits, means for disassociating said operator's telephone and said link circuits, a second group

of link circuits provided with an operator's telephone, means for disassociating said second group of link circuits and its telephone, and means controlled by the disassociation of either of the operator's telephones from its associated link circuits for operatively associating its link circuits with the other of said operators' telephones.

18. A switching system comprising operators' link circuits divided into groups, an operator's telephone associated with each group of link circuits, an operator's switch individual to each telephone for connecting and disconnecting the microphone of the telephone set, and means controlled by an actuation of one of said switches for automatically connecting other than its associated link circuits with its associated operator's telephone.

Signed by me at Chicago, county of Cook and State of Illinois, in the presence of two witnesses.

RICHARD I. UTTER.

Witnesses:
GEORGE E. MUELLER,
M. R. ROCHFORD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."