

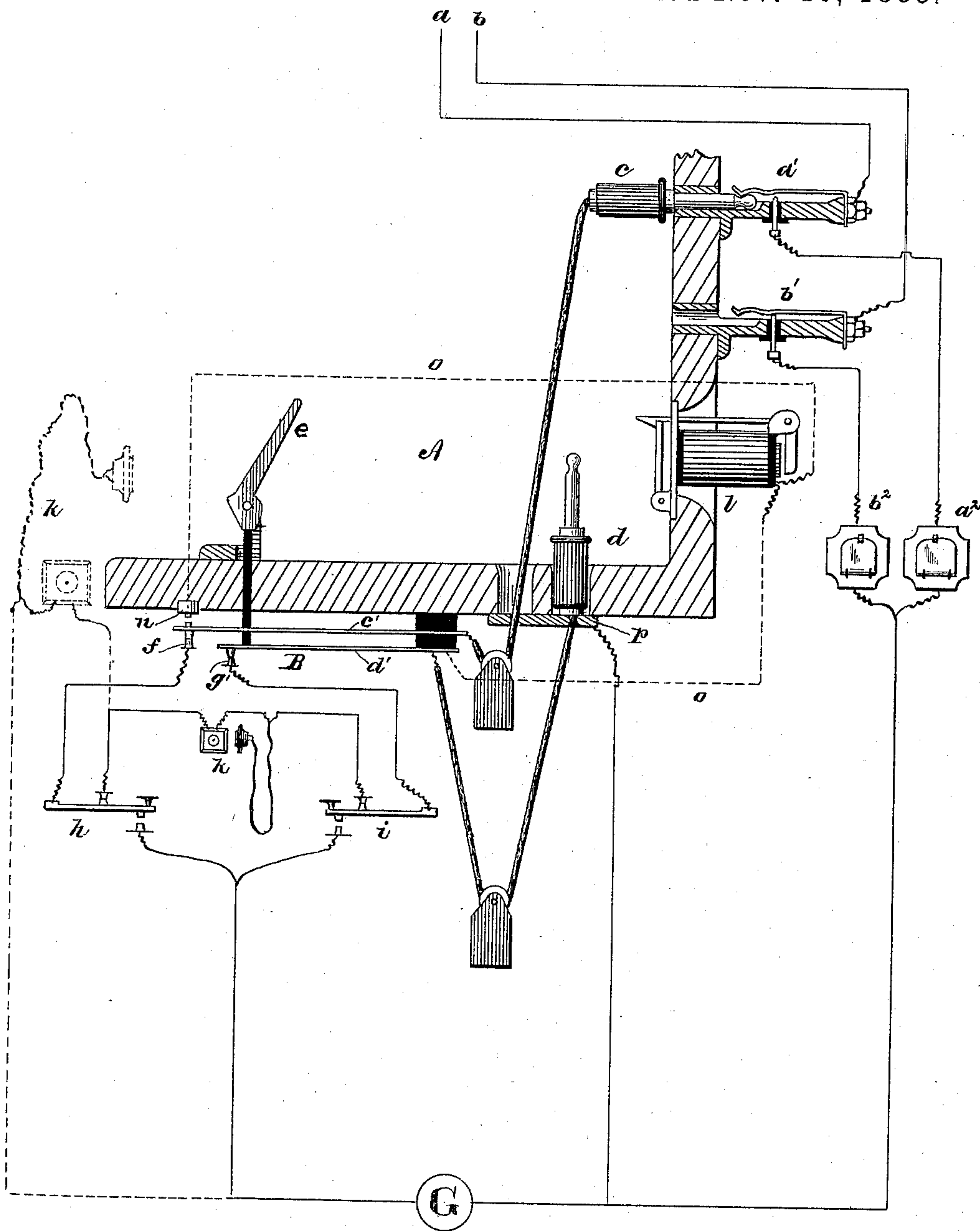
(No Model.)

C. E. SCRIBNER.

OPERATOR'S APPARATUS FOR TELEPHONE SWITCH BOARDS.

No. 330,063.

Patented Nov. 10, 1885.



Attest

Paul A. Staley  
Frank Foster

Inventor

Charles E. Scribner

By his Attorney

may  
George Barton



# UNITED STATES PATENT OFFICE.

CHARLES E. SCRIBNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

## OPERATOR'S APPARATUS FOR TELEPHONE SWITCH-BOARDS.

SPECIFICATION forming part of Letters Patent No. 330,063, dated November 10, 1885.

Application filed November 20, 1883. Serial No. 112,307. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. SCRIBNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Operator's Apparatus for Telephone Switch-Boards, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to switch-boards for telephone-exchanges; and it consists in the circuits and apparatus hereinafter described, and pointed out in the claims.

In telephone-exchanges it has become common to use conducting-cords with terminal plugs for making connections between the subscribers, each subscriber being provided with a switch or terminal bolt on the switch-board, into which the said plugs are inserted to make the connections. In order that the operator may answer the calls and receive communications from the subscribers, means have been provided for introducing the operator's calling device and telephone-outfit into the circuit with the terminal plugs and cords. A clearing-out annunciator has also been used connected in circuit between the terminal plugs of a pair, so that when a connection is established between two subscribers said annunciator is in the circuit thus formed, thereby providing means for signaling the operator when the subscribers are through with the connected lines.

Prior to this invention it has been common to provide means whereby the operator's telephone or calling device may be connected into circuit with the cords and plugs at the will of the operator; but the clearing-out annunciator has been used connected permanently in circuit with said plugs and cords. By this arrangement the resistance of at least one coil of the clearing-out annunciator is always in circuit with the operator's telephone or calling apparatus when talking with a subscriber or when sending a call, and in case the operator's telephone-outfit is looped into the circuit of two connected subscribers the combined resistance of the telephone-outfit and clearing-out annunciator is brought into the circuit of the talking subscribers.

By the invention herein described the clearing-out annunciator is disconnected from the circuit by the same act which connects the operator's telephone into circuit, and vice versa. The circuit therefore contains the resistance of only one of the instruments at a time, and by making the resistance of the annunciator-coils equal to the resistance of the telephone-outfit, or nearly so, the said telephone-outfit may be looped into the circuit of two connected subscribers without perceptibly changing the resistance of said circuit.

In the accompanying drawings I have shown a diagram view of circuits and apparatus for carrying out my invention.

A represents a switch-board, to which may be connected any suitable number of subscriber's lines, *a b*. These lines may be connected to the switch-board in any well-known way, but are preferably connected through suitable switches, *a' b'*, and calling-annunciators *a² b²* to ground, as shown. The connections between the subscribers may be made in the usual way by the terminal plugs *c d*, connected in pairs by the usual conducting-cords. The plugs of each pair are connected, respectively, to the respective bars, *c' d'*, of a loop-switch, B. This loop-switch B is provided with a cam-lever, *e*, adapted, when thrown up, as shown, to bring the bars *c' d'* in contact with the contact-points *f g*, and thus include the calling-keys *h i* and the operator's telephone-outfit *k* in circuit between the plugs *c d*. The clearing-out annunciator *l* is connected on one side to one of the bars *d'* of the loop-switch B, and on the other side to a contact-point, *n*, as shown by dotted line *o o*. When the cam-lever *e* is thrown down, the bars *c' d'* break contact with points *f g*, and the bar *c'* comes in contact with the contact-point *n*, thus connecting the clearing-out annunciator *l* in circuit between the plugs *c d*, and at the same time disconnecting the operator's telephone-outfit *k*.

I have shown the plugs *c d* adapted to normally rest in electrical contact with a grounded metallic strip, *p*, so that by the insertion of a plug in a switch, the loop-switch B being in the position shown, the operator's outfit is brought into direct connection with the subscriber connected to said switch. For exam-



ple, suppose plug *c* is inserted in switch *a'*. The circuit may be traced from ground at the subscriber's station by line *a* and switch *a'* to plug *c*, thence through the conducting-cord to bar *c'* of loop-switch B, thence through point *f* and calling-key *h* to the operator's telephone-outfit *k*, and thence through calling-key *i*, contact-point *g*, bar *d'*, and conducting-cord to plug *d*, and thence to ground through the metallic strip *p*. When the connection between two subscribers is established by inserting the other plug of the pair in the switch of the subscriber wanted, the lever *e* of the loop-switch B is thrown down, and the circuit of the connected subscribers may then be traced from one subscriber through plug *c* to bar *c'*, contact-point *n*, and line *o*, through clearing-out annunciator *l*, thence through bar *d'* and plug *d* to the other subscriber. Two subscribers being thus connected together, the operator's telephone-outfit may be connected in circuit between them at any time, for listening out or otherwise, by means of the loop-switch B, as above described. The clearing-out drop will be at the same time disconnected from the circuit. Thus the annunciator is never in circuit with the operator's outfit, and in case the resistance of the two devices are equal, as above mentioned, the change from one to the other will not be perceptible to the subscribers.

It is evident that my invention admits of many modifications—for example, instead of having the operator's telephone-outfit looped in circuit between the contact-points *f g* of the loop-switch B it may be brought in on a third leg, as indicated in dotted lines. In this case the metallic strip *p* would be dispensed with.

Other means for making the connections between the subscribers than the devices shown may also be used with good results. I do not therefore confine myself to the specific devices set forth, but claim, broadly, as my invention—

1. The combination, with conducting-cords and plugs for connecting two subscribers of a telephone-exchange, of an operator's telephone, and a clearing-out annunciator, and a switching device whereby the telephone may be connected in circuit between said plugs by the same act which disconnects the clearing-out annunciator, substantially as set forth.

2. The combination, with telephone-lines radiating from a central station and a loop provided with means for temporarily connecting it at opposite ends with any two telephone-lines, of a signal device, a telephone, and a switch, said switch being adapted, when placed in one position, to connect the telephone with said loop, and to simultaneously disconnect the signal device therefrom, substantially as set forth.

3. The combination, with two connected telephone-lines, of a telephone, a clearing-out annunciator and switch at the central office, and contact-points with which the said switch may be connected and disconnected to bring the operator's telephone and the clearing-out shutter alternately into circuit.

4. The combination, with the terminal plugs *c d* and their conducting cords, of a clearing-out annunciator, *l*, a telephone outfit, *k*, calling-keys *h i*, and a loop-switch, B, said loop-switch being adapted to connect the telephone and calling-keys in circuit between the plugs and at the same time to disconnect the clearing-out annunciator from said circuit and adapted to connect said clearing-out annunciator into said circuit at the same time the telephone and calling-keys are disconnected, substantially as set forth.

In witness whereof I hereunto subscribe my name this 17th day of November, A. D. 1883.

CHARLES E. SCRIBNER.

Witnesses:

PAUL A. STALEY,  
CHAS. A. WARREN.