

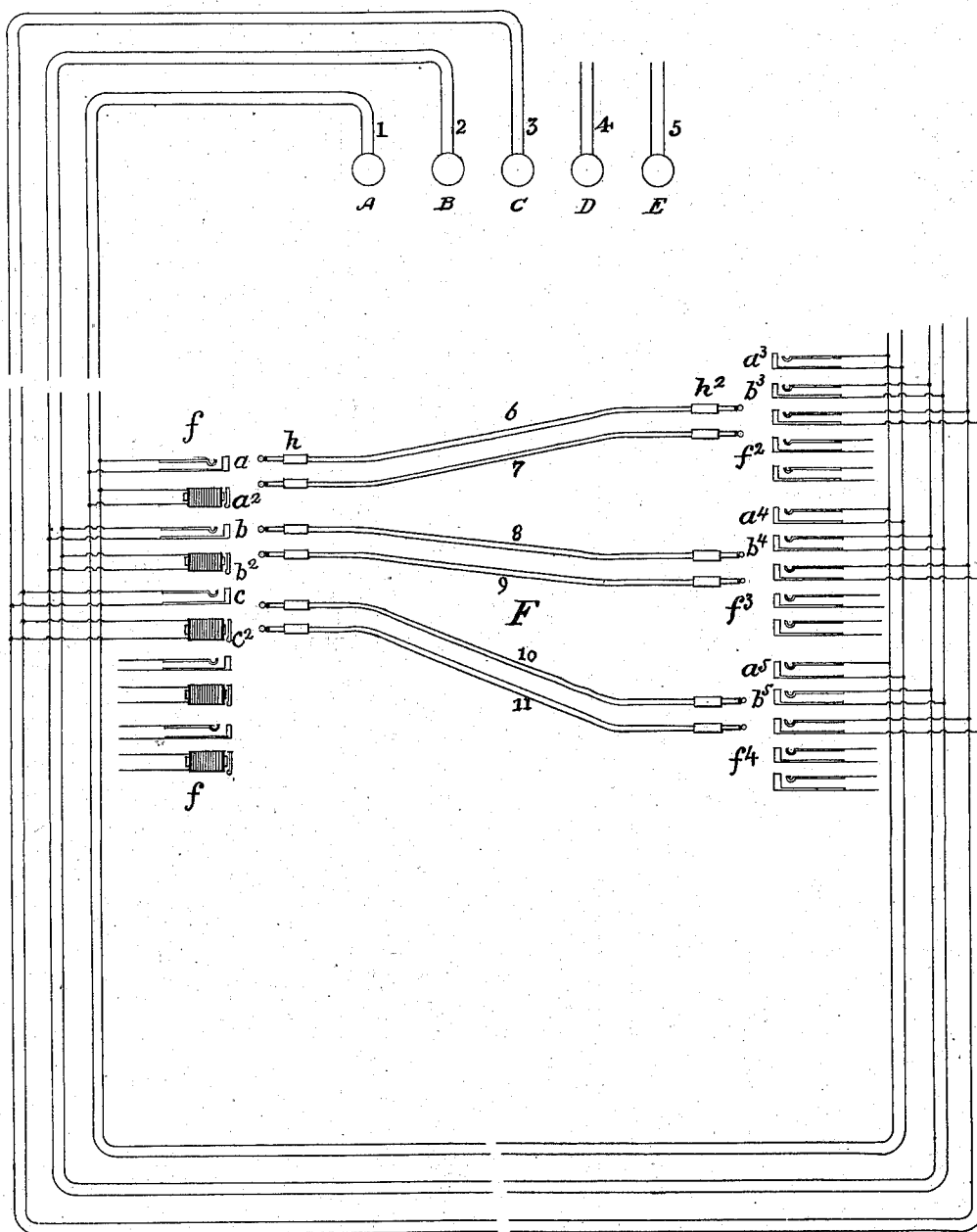
(No Model.)

J. P. DAVIS.

SWITCHBOARD FOR TELEPHONE EXCHANGES.

No. 559,366.

Patented May 5, 1896.



*Attest.*

*Frank C. Lockwood*  
*Geo. Willis Pierce*

*Inventor.*

*J. P. Davis*

# UNITED STATES PATENT OFFICE.

JOSEPH P. DAVIS, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN BELL TELEPHONE COMPANY, OF BOSTON, MASSACHUSETTS.

## SWITCHBOARD FOR TELEPHONE-EXCHANGES.

SPECIFICATION forming part of Letters Patent No. 559,366, dated May 5, 1896.

Application filed August 10, 1895. Serial No. 558,820. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH P. DAVIS, residing at New York, in the county of New York and State of New York, have invented certain Improvements in Switchboards for Telephone-Exchanges, of which the following is a specification.

My invention is a new organization of switchboards for telephone-exchanges, whose object is to permit the distribution of subscribers' incoming calls among the different operators with the purpose of economizing in the operating force by keeping the operators uniformly and continually busy.

It consists in the combination, with a multiple switchboard of substantially the ordinary character, of a call-receiving or annunciator board at which all the subscribers' calls are received and from which they are distributed in a uniform manner to the different operators at the multiple board for the completion of the connection with correspondent lines. Each telephone-line is brought to a spring-jack or similar switch connection and to a suitable signal-indicating instrument at the call-receiving or annunciator board, and also to a line spring-jack or plug-socket on each section of the multiple switchboard; and a system of office trunk-lines is provided extending from the annunciator-board to each of the sections of the multiple board, whereby calls received at the annunciator-board may be transferred to operators at the several sections of the multiple board and distributed equitably between them, so that the work at the several sections may be equalized, the desired connections being in each case completed by operators at the multiple boards in the usual way.

By observation or by information derived from suitable mechanism, the annunciator-board operator (who for distinction may be termed the "switchman") is kept informed as to the amount of work which the several operators have on hand and is therefore able to distribute incoming calls among the different operators in an equalized or uniform manner, giving to each a fair share of the work.

The apparatus in my invention for permitting this mode of operation comprises, then, an annunciator-board whereon are located an

annunciator and a switch connection for each line; a multiple switchboard of several sections, each of which is provided with a line switch-socket for each line; several office trunk-lines extending from the annunciator-board to each section of the multiple board, and means for making connection between each terminal of the office trunk-line and any of the line switch-sockets on the boards at both ends of the office trunks. This apparatus is illustrated in the accompanying drawing. Five substations A, B, C, D, and E are represented, each connected by a telephone-line, the lines being designated 1, 2, 3, 4, and 5 respectively, with the switching apparatus at a central station F. Line 1, for example, is connected with a spring-jack or connection-socket  $a$  and with an annunciator  $a^3$  on the annunciator-board  $f$  and with spring-jacks  $a^3$ ,  $a^4$ , and  $a^5$  upon the three sections  $f^2$ ,  $f^3$ , and  $f^4$  of the multiple board. Trunk-lines 6 and 7 extend from the annunciator-board  $f$  to the section  $f^2$  of the multiple board, terminating in plugs  $h$  and  $h^2$ , by means of which they may be placed in connection with the spring-jacks. Other trunk-lines 8 and 9 extend from annunciator-board  $f$  to the multiple section  $f^3$  and still others 10 and 11 from the board  $f$  to the multiple section  $f^4$ .

A call-signal from station A will be indicated by annunciator  $a^2$  at the annunciator-board  $f$ . The switchman stationed at that board, observing this signal, will insert plug  $h$  of trunk-circuit 6 into the spring-jack  $a$  of that line, and then in any suitable manner will inform the operator at section  $f^2$  that connection has been made with trunk-line 6. The operator at that board is supposed to be equipped with the usual telephone and with keys for connecting it with the trunk-line, and by means of this she will obtain from subscriber at station A the order for the required connection—say with station B. She will then complete the connection by inserting terminal plug  $h^2$  of trunk-line 6 into the spring-jack  $b^3$  of line 2. Immediately succeeding the call from station A a call from station C may be received at annunciator-board  $f$ . The switchman at that board is aware that operator at section  $f^2$  is in the act of completing a connection, and accordingly

will use the terminal plug  $h$  of trunk-line 8 to effect connection with spring-jack  $c$ . This connection will then be transferred to the operator at section  $f^3$  and will be completed there. Another call received at annunciator-board  $f$  may be transferred to an operator at section  $f^4$  by means of trunk-line 10. Still another would be sent to the first operator at section  $f^2$  after sufficient time had been given for the completion of the first connection by that operator. By thus switching different calls for answering and attendance to the operators at the different sections of the multiple-board, having constantly in mind the business on hand for each of the operators, the switchman is enabled to equalize the work of the different operators. They may all thus be kept continuously and uniformly busy, in which condition, as is well known, they perform their work most efficiently and quickly.

It is to be understood that the office trunk-lines may be equipped with any of the well-known devices for automatically transmitting signals between the terminal stations of the trunk-lines—for example, that shown in Patent No. 507,983 of November 7, 1893, to Oro. A. Bell—and that suitable means for testing at any of the boards to determine whether the line called for be already occupied should be furnished, as the test system illustrated in Patent No. 308,315 of November 18, 1884, to Milo G. Kellogg.

The insertion of plug  $h$  in a connection-socket at board  $f$  will thus be signalized at the terminal of the corresponding trunk-line at one of the multiple switchboards, so that oral communication between the switchman and the operators may be avoided. Likewise the removal of the plug  $h^2$  from a socket of

a multiple switchboard in response to a signal for disconnection will be indicated to the switchman so that he may remove the corresponding plug  $h$  from the socket into which it is inserted.

I am aware that various organizations of switchboards have been constructed involving annunciator-boards for receiving connections, switchboards equipped with apparatus for completing the connection, and office trunk-lines between the annunciator-board and the switchboards for transferring calls, as shown in Patent No. 392,403 of November 6, 1888, to Francis Blake; but I believe myself to be the first to provide apparatus for the specific purpose of permitting all incoming calls to be received by one operator and by him distributed among different operators, each of whom may complete the connection with any line of the exchange system.

I claim as new and desire to secure by Letters Patent—

In combination, an annunciator-switchboard containing a connection-socket and an annunciator for each telephone-line of the exchange, a multiple switchboard of several sections each having in it a terminal connection-socket of each line of the exchange, and trunk-lines extending from the said annunciator-board to each section of the said multiple board, as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 5th day of August, 1895.

JOS. P. DAVIS.

Witnesses:

GEO. WILLIS PIERCE,  
FRANK C. LOCKWOOD.