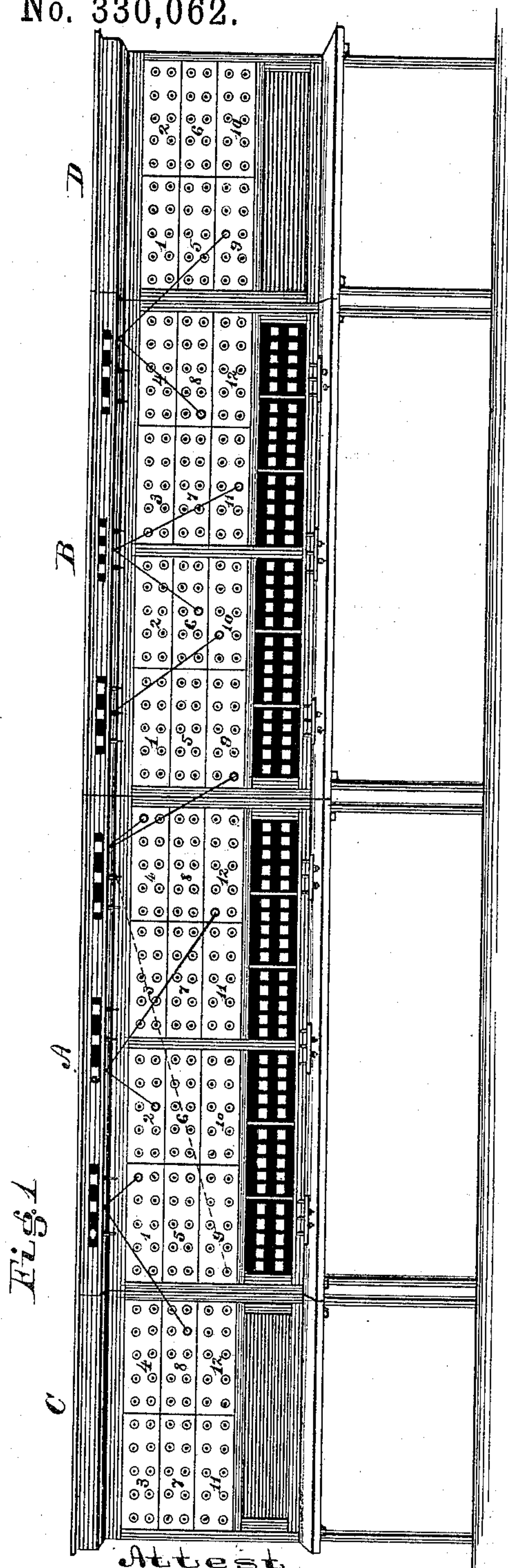


(No Model.)

C. E. SCRIBNER.  
MULTIPLE SWITCH BOARD.

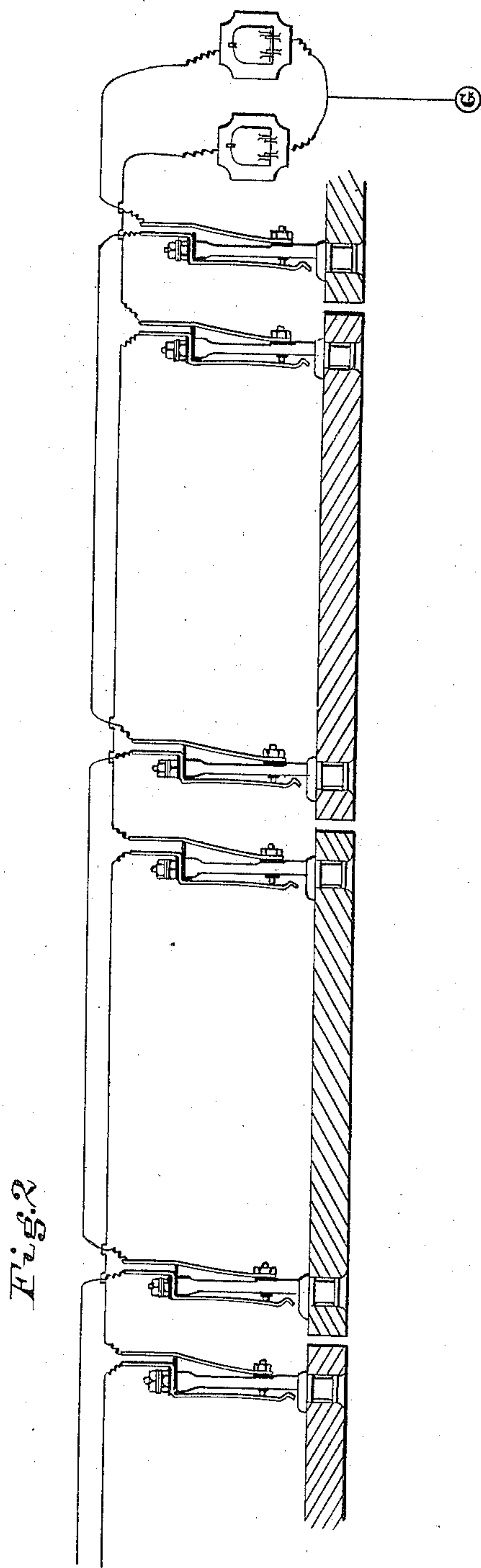
No. 330,062.

Patented Nov. 10, 1885.



Attest  
*Paul A. Staley*  
*Eugene P. Truessey*

By his Attorney



Inventor  
*Charles E. Scribner*  
*George R. Barton*



# UNITED STATES PATENT OFFICE.

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

## MULTIPLE SWITCH-BOARD.

SPECIFICATION forming part of Letters Patent No. 330,062, dated November 10, 1885.

Application filed November 10, 1883. Serial No. 111,476. (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 Multiple Switch-Boards, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to multiple switch-boards of a telephone exchange. The different boards have heretofore been worked independently, the operator at a given board always having been obliged to connect the spring-jack of a calling subscriber with the spring-jack of a called subscriber upon the same board. The boards may be, say, nine feet in length, in which case it is quite inconvenient to connect spring-jacks at different ends of the same board; and where two operators are placed at the same board they must reach by each other in order that each may work independently.

My invention is designed to avoid the necessity of thus connecting spring-jacks that are widely separated upon a given board; and it consists in placing the boards contiguous, so that an operator may be enabled to connect from the spring-jack of a calling subscriber upon her board to the spring-jack of the called subscriber upon an adjoining board when more convenient, so that in no case will the operator necessarily be compelled to reach horizontally a distance equal to more than one-half the length of her board to connect the spring-jacks of any two lines.

For an exchange of forty-nine hundred subscribers I prefer to place the spring-jacks upon sections of board each five by fifteen inches. One hundred spring-jack switches may be placed upon each section. Each board may thus be provided with forty-nine sections, making the face of the switch-board proper about nine feet long and three feet high. Twenty-four such boards and two half-boards placed contiguous, as herein described, I have found sufficient to afford room for the operators necessary to work the exchange. I place the individual annunciators below the spring-jacks and distribute them upon the dif-

ferent boards. Thus the annunciators of the first two hundred lines may be on the first board and those of the second two hundred lines on the second board, and so on. For convenience I place the drops upon sections of twenty-five each, so that when all the boards are full each board will have eight sections of drops, and the last half-board four sections of drops.

I have found that two switchmen at each board can answer the calls and do the signaling and switching for two hundred subscribers of a large exchange, and therefore I prefer to assign the calls of two hundred subscribers to each board.

My invention is illustrated in the accompanying drawings, in which Figure 1 represents two multiple switch-boards, A B, and two half-sections of switch-boards, C D. Fig. 2 is a detail of the circuits of two telephone-lines connected with their spring-jack switches and annunciator-drops.

For clearness I have shown but one hundred and twenty spring-jack switches upon each board, though it is evident that multiple boards are necessary only in exchanges having so large a number of subscribers that they cannot be conveniently handled upon a single board.

It should be observed that the boards A B are placed contiguous to each other, and the half-sections C D are placed at the extremities thereof on either side, so that we have a system of multiple switch-boards upon each of which all the telephone-lines may be connected, arranged contiguous to one another, so that when more convenient a connection may be made from one board to another. An operator may always find a switch of any called subscriber within a distance not greater horizontally than one-half the length of a single multiple board.

Suppose two operators be placed at each of the boards A B. Each operator will therefore answer thirty subscribers and make their necessary calls and connections. Suppose the operator in charge of section 4 of board A receives a call from the subscriber connected with the upper switch at the right of said section, which we will designate as "No. 45," for connection with the line of the lower switch



at the left of section 9, which we will designate as "No. 96." It will be seen that section 9 is at the extreme left of board A, while the corresponding section, 9, of board B is in close proximity at the right. The operator therefore, instead of connecting across board A, as indicated by the dotted line, connects directly to spring-jack No. 96 of the line on section 9 of board B, as shown. In like manner a line of section 1 is connected with a line of section, 8 from board A to half-board C, and in like manner a line of section 8 is shown connected with a line of section 9 between board B and half-board D. A line of section 2 is shown connected with a line of section 12 on board A, and a line of section 6 with a line of section 11 upon board B in the usual manner. It will thus be seen that any two lines may be connected without necessarily reaching a distance horizontally equal to more than one-half the length of a switch-board.

Any well-known apparatus may be used at the central office for receiving the calls and signaling the subscribers.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with multiple switch-boards placed one after the other, of telephone-lines each connected with its switch upon each of the boards, the switches of the different lines, respectively, being placed in the same order upon each of the boards, half-sections of switch-boards placed at the extremities of the switch-boards, and connecting apparatus,

whereby an operator at any given board may connect the switch of the line of a calling subscriber with the switch of the called subscriber upon an adjacent switch-board.

2. The combination, with the telephone-lines, of switches and contiguous multiple switch-boards, each line being provided with a switch upon each board, and the switches belonging to a given line being indicated by the same numbers and placed each relatively in the same position on the board to which it belongs, and flexible cords and plugs at each board, whereby an operator at either end of a board may connect the lines at her end of the board with the switches upon the adjoining end of the contiguous board.

3. At a telephone-exchange, a continuous switch-board consisting of several adjoining multiple switch-boards and a half-section of a multiple board placed at either end, in combination with flexible connecting-cords and switching apparatus at each board, whereby two operators may work at each board, making the connections between the two switches of any calling and called subscribers without necessarily, in any instance, reaching horizontally more than one-half as far as the whole length of a multiple board.

In witness whereof I hereunto subscribe my name this 1st day of November, A. D. 1883.

CHARLES E. SCRIBNER.

Witnesses:

PAUL A. STALEY,  
ERNEST P. WARNER.