(No Model.)

A. STROMBERG & A. CARLSON.

TELEPHONE SWITCHBOARD.

No. 565,046. Patented Aug. 4, 1896.

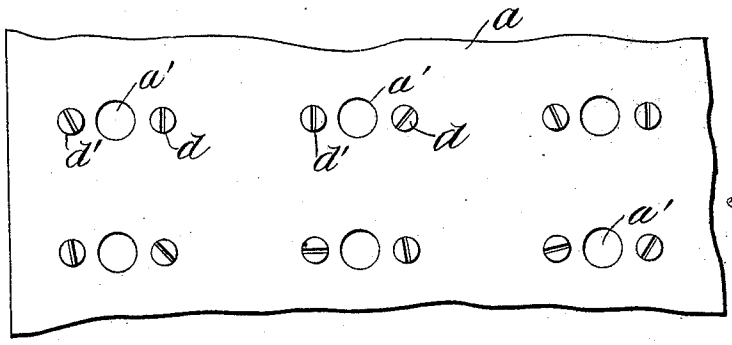


Fig. 1

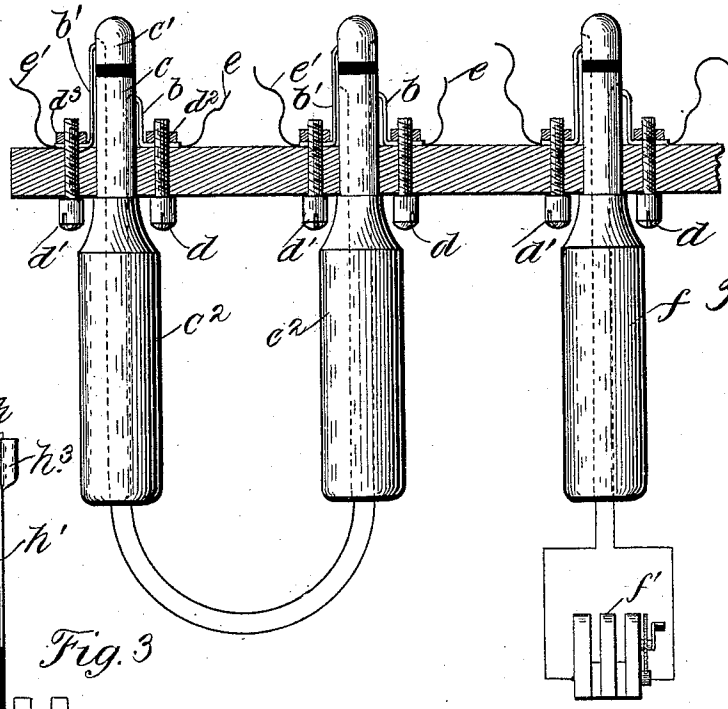


Fig. 2.

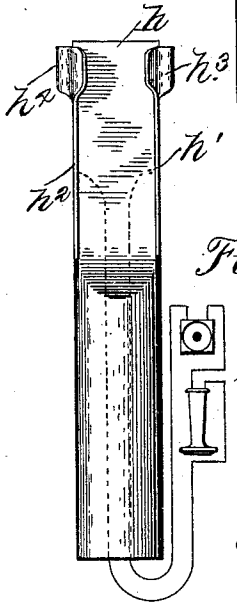


Fig. 3

Fig. 4

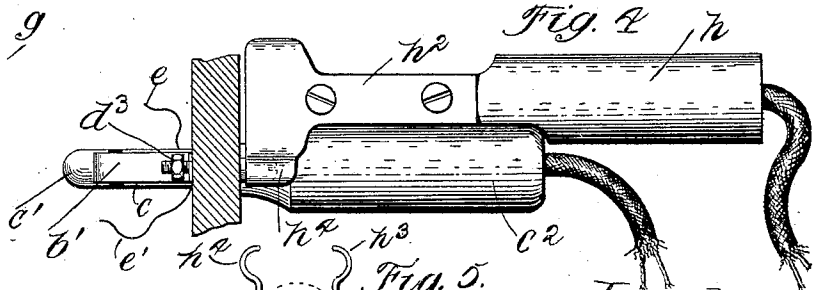
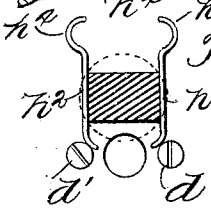


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALFRED STROMBERG AND ANDROV CARLSON, OF CHICAGO, ILLINOIS.

TELEPHONE-SWITCHBOARD.

SPECIFICATION forming part of Letters Patent No. 565,046, dated August 4, 1896.

Application filed October 29, 1895. Serial No. 567,238. (No model.)

To all whom it may concern:

Be it known that we, ALFRED STROMBERG and ANDROV CARLSON, citizens 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 Telephone-Switchboards, (Case No. 23,) 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.

Our invention relates to a telephone-switchboard, its object being to provide switchboard apparatus of simple and economical construction, and, furthermore, to provide improved means for connecting the operator's telephone set in circuit with a subscriber's line and for bridging into the talking-circuit when two subscribers are in conversation.

The switchboard of our invention comprises a board or standard, preferably of insulating material, as fiber, provided with openings at intervals to constitute the sockets for the insertion of the connecting-plugs. Upon the rear of the board are mounted contact pieces or springs connected with the opposite sides of the telephone-line and adapted to make contact with the terminals of the plug when the plug is inserted in the socket. The plug is provided with relatively-insulated collars adapted to make contact one with each of the springs carried upon the board, the springs being of different lengths, whereby they engage the respective collars of the plug. Each of the telephone-lines terminates in a pair of springs upon the switchboard, whereby any two lines may be looped together for conversation by the insertion of a member of a connected pair of plugs in each of the sockets. A similar plug is provided, the terminals of which are connected with the generator, whereby the generator may be connected in circuit with any line to send a calling-current to the substation. At each of the sockets a pair of contacts upon the front of the board is provided, the contacts being preferably in the form of screws extending through the board and electrically engaging the springs upon the rear of the board, the screws serving at the same time to maintain the springs in position. The heads of the screws thus provided form contacts upon the front of the board connected with the opposite sides of the telephone-line, so that the operator, by means of a plug carrying a pair of contacts connected with the opposite sides of a telephone set, may connect the telephone set in circuit with the telephone-line by touching the contacts of the plug against the heads of the screws provided upon the board. The contacts carried upon the listening-plug are so arranged that when two lines are connected for conversation and the connecting-plug is inserted in the socket the listening-plug may rest upon the top of the connecting-plug and engage the heads of the screws to thus bridge the telephone set into the talking-circuit.

We will describe our invention more in particular by reference to the accompanying drawings, in which—

Figure 1 is a partial front view of the switchboard of our invention. Fig. 2 is a sectional view thereof, showing the connecting-plugs and the generator-plug in position. Fig. 3 is a view of the listening-plug, the telephone set being indicated in diagram. Fig. 4 is a view illustrating the manner of connecting the listening-plug in circuit when a connecting-plug is inserted in the socket of a telephone-line. Fig. 5 is a view illustrating the listening-plug in engagement with the terminals upon the front of the board when the connecting-plug is not inserted in the socket of the line.

Like letters refer to like parts in the several figures.

The board a may be made of any desired material, preferably an insulating material, and is provided at intervals with holes or sockets a' a'. Upon the rear of the board are provided contact-springs b b', the ends of the springs being adapted to rest in position to engage the collars c c' of the connecting-plug c^2 when the same is inserted into the socket, the collars c c' being relatively insulated. The springs b and b' are bent at right angles at the end, and screws d d' pass through the board from the front and through holes provided in the upturned ends of the springs. Nuts d^2 d^3 are adapted to be screwed upon the ends of the screws d d', respectively, and against the ends of the springs to clamp the same against the board. The springs b b' are connected with the opposite limbs e e' of the telephone-line, the screws d d' being in electrical con-

tact with the springs b b' or otherwise connected with the opposite sides or limbs of the telephone-line.

For connecting two subscribers together for conversation a plug c^2 is inserted in the socket of each of the telephone-lines to be connected, the corresponding collars of the two plugs being joined together, and the two lines are thus looped together for conversation. A similar plug f is provided, the collars or terminals of which are connected with a generator f', and when the plug is inserted into the socket of any line the generator is connected in circuit and calling-current may be sent over the particular line. The operator's telephone set g is connected with the terminals or contact-plates h' h^2 of the listening-plug h, the contact-plates being preferably mounted upon opposite sides of an insulating support or handle. The plates at one edge are slightly turned in, so that if a connecting-plug be not inserted in the socket of a line the contact-plates h' and h^2 of the plug may be brought into engagement with the terminals d d', as illustrated in Fig. 5, to thus connect the operator's telephone set in circuit with the subscriber. When a subscriber initiates a call, the operator may thus connect her telephone set in circuit with the subscriber and receive from him the number of the called subscriber.

It is often desirable while two subscribers are connected for conversation to bridge the operator's telephone into circuit to determine whether or not the subscribers have completed their conversation, and for this purpose curved extensions h^3 h^4 are provided upon the edge of the contact-plates h h^2, respectively, said contacts being adapted to engage the heads of the screws constituting the terminals d d', as illustrated in Fig. 4, the listening-plug being preferably fashioned so that it may rest upon the top of the connecting-plug.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a telephone-switchboard, the combination with the board or standard provided with holes for the insertion of the connecting-plugs, of the springs b b' of different lengths and extending perpendicular to the rear face of the board, said springs being provided with right-angled extensions, screws d d' extending from the front of the board through said extensions, and nuts d^2 d^3 screwing upon the ends of said screws and against the extensions of the springs, substantially as described.

2. In a telephone-switchboard, the combination with a board or standard provided with holes or sockets for the insertion of the connecting-plugs, of a pair of springs or contacts on the rear of said board in connection with each of said sockets, a pair of contacts mounted upon the front of the board and electrically connected one with each of said springs, an operator's telephone set, and means for connecting said telephone set in circuit with the contacts upon the front of the board; substantially as described.

3. In a telephone-switchboard, the combination with the board or standard provided with holes or sockets, of connecting-plugs adapted to be inserted in said sockets, and a listening-plug having contacts connected with the operator's telephone set and adapted to make contact with the contact-terminals upon the front of the board when the listening-plug rests upon the top of a connecting-plug inserted in any socket; substantially as described.

4. In a telephone-switchboard, the combination with the terminals d d' mounted upon the front of the board, of listening-plug h carrying contact-plates h' h^2 connected with the operator's telephone set and carrying the extensions h^3 h^4; substantially as described.

In witness whereof we hereunto subscribe our names this 22d day of October, A. D. 1895.

ALFRED STROMBERG.
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Witnesses:
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