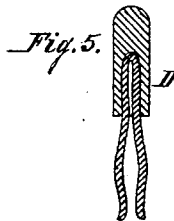
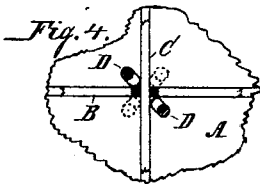
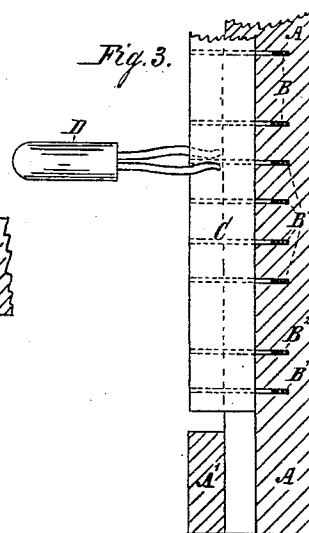
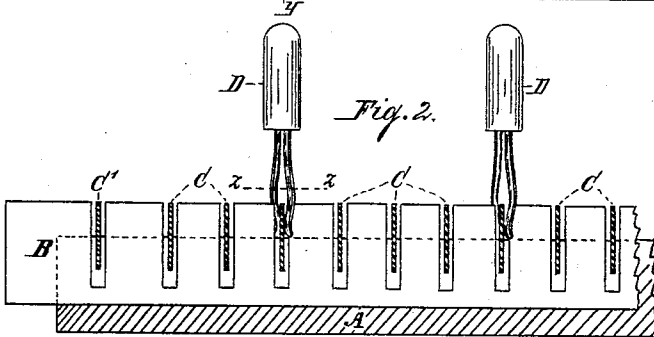
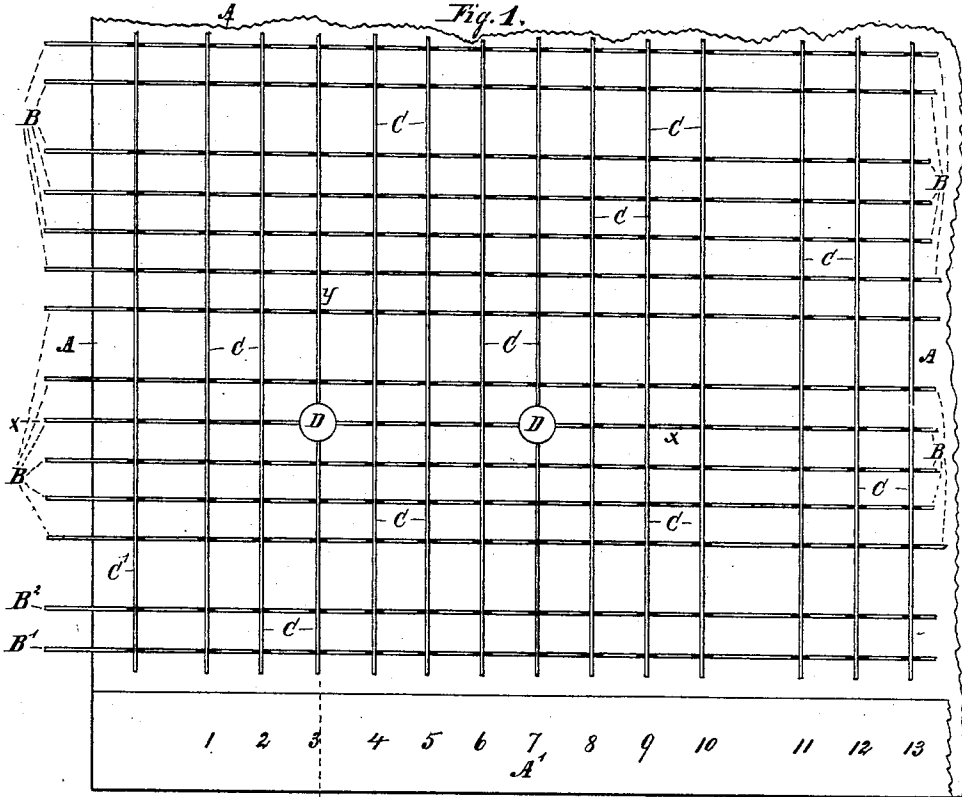


(No Model.)

J. F. GILLILAND.
Electrical Switch Board.

No. 231,708.

Patented Aug. 31, 1880.



WITNESSES.

James B. Liguus.
R. P. Daggett.

INVENTOR.

James F. Gilliland,
PER
C. Bradford
ATTORNEY.

UNITED STATES PATENT OFFICE.

JAMES F. GILLILAND, OF INDIANAPOLIS, INDIANA.

ELECTRICAL SWITCH-BOARD.

SPECIFICATION forming part of Letters Patent No. 231,708, dated August 31, 1880.

Application filed June 4, 1880. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. GILLILAND, of the city of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Electrical Switch-Boards, of which the following is a specification.

The object of my invention is to produce a switch-board for telephonic and telegraphic purposes which shall be of simple, compact, and inexpensive construction, and at the same time durable, efficient, and easily operated. This object I accomplish by taking two series of metal strips (brass being the metal preferred) and mounting them in grooves in a non-conducting base, in the manner hereinafter more particularly set forth.

Referring to the drawings, which are made a part hereof, Figure 1 is a face view of a portion of a switch-board constructed in accordance with my improved plan. Fig. 2 is a sectional view thereof on the dotted line *xx*. Fig. 3 is a sectional view on the dotted line *yy*. Fig. 4 is a transverse section of the switch-key, looking downwardly from the dotted line *zz*; and Fig. 5 is a longitudinal section of said key.

In said drawings, the portion marked A is the base, constructed preferably of wood, and provided with two series of grooves which cross each other at about right angles, one of which should be deeper than the other; B, strips of brass or other suitable metal, notched out, as shown most clearly in Fig. 2, and which form the connection or loop strips of my improved board; C, similar strips, except that they should be narrower and not notched, which cross the strips B, passing through the notches therein, as also most clearly shown in Fig. 2, and which form the line-strips used in my invention; and D, the switch-key or plug which is used to make the metal contact between a strip each of the two series, and which is constructed of a non-conducting handle and a wire or wires inserted therein, as shown most clearly in Fig. 5.

To enable others to more readily construct my improved switch-board, I will now more particularly describe its construction, giving the various sizes and measurements which I

have found preferable, though, of course, not intending to confine myself in such matters.

An ordinary size of board contains fifty line-strips and one hundred connection-strips. For such a board the base should be about twenty inches wide and thirty-one inches long, with one of the shorter sides arranged to be nearest the operator. It should have one hundred and two transverse grooves one-half of an inch deep and one-fourth of an inch apart, generally, with a double-width space at intervals of five, thus dividing them into groups; and fifty-one longitudinal grooves one-fourth of an inch deep and three-eighths of an inch apart, generally, with a double-width space at intervals of ten. This arrangement gives five groups of ten strips each and one extra strip of the line-strips, and twenty groups of five strips each and two extra strips of the connection-strips. The offices of the extra strips will be explained hereinafter.

The strips B should be about three-fourths of an inch wide, having notches about double the width of the thickness of the metal and five-eighths of an inch deep cut at intervals corresponding with the distances between the longitudinal grooves in the base. These strips are then inserted in the transverse grooves, care being taken to have the notches come in proper relation to the longitudinal grooves, and are driven into the bottom of said transverse grooves, which allows them (the said strips B) to project upwardly about one-fourth of an inch above the top of the base. The strips C are then inserted in the longitudinal grooves, and, being driven down, come within about one-eighth of an inch of the bottom of the notches in the strips B, while the tops of the strips of both series are all substantially on the same level, and while, by reason of the arrangement of notches described, there is no contact between any of them.

The connection is made between any strip of one series and any strip of the other series by setting the switch-key thereon with its legs diagonally astride the two strips where they cross.

Upon the edge of the board next to the operator is a plate or strip, A', upon which are numbers or other distinguishing matter to indicate

the subscriber whose line is attached to the strip which is in range therewith. The single strip C', which is shown with no number opposite, is the one connected to the operator's telephone. The strip B' next to the plate A' is the medium through which the line-strips may be connected to the central-office ground-wire. The strip B² is connected to the central-office call-signaling apparatus, one set of which is usually attached to each switch-board. The use of these three strips, as well as the regular series, will be understood by those acquainted with telephonic apparatus without further explanation.

The object in having so large a number (one hundred) of the connection or loop strips is to accommodate the business of a large central office. The first group of five will usually suffice for making all required connections between the lines represented by the line-strips on the board to which they are attached, and each of the other groups of five is connected to another board in the same office, so that a series of twenty boards may be operated practically as one board by having a sufficient number of operators, and it is practical, where required, to largely increase even this capacity; but the number specified is usually entirely adequate.

A distinguishing feature of my invention is, that all the strips are set in edgewise relation to the base which supports them, and therefore the board may contain many more lines within the convenient control of a single operator, or have the number of strips brought within a much smaller area than any board not possessing this peculiarity.

The strips may, if desired, be set even closer together than hereinbefore specified; but I expect that the distances given will enable the board to meet all usual requirements.

The manner of mounting the strips is simple in the extreme. The grooves are cut in the base of such width as to fit the strips closely, and the latter are then driven into the former, where they remain securely held without the use of other fastenings.

The switch-key is made by inserting a wire bent over upon itself, or two separate wires, in a solid non-conducting handle, thus producing a bifurcated form, and setting them with some suitable adhesive substance. The projecting ends are then bent in the form shown, so as to be capable of being conveniently placed astride the strips, which is the position they occupy when the key is in use. They may be placed diagonally astride the strips in either of two

positions, as shown in Fig. 4, at each point of connection, and thus double wear may be obtained from the strips, and the durability of the board thereby increased.

The upper ends (or those farthest from the operator) of the line-strips are usually provided with the ordinary binding-post as a means of connecting the wires to said line-strips. Where several tables are used in the same office a similar arrangement may be employed for connecting the connection or loop strips of the several tables, or they or a part of them may be so arranged that a small metal clasp will serve to make the connection.

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

1. An electrical switch-board having two series of strips in which all the strips shall be set in edgewise relation to the base and the individual strips of the two series shall be adapted to be electrically connected by means of a switch-key, substantially as set forth.

2. An electrical switch-board having two series of strips crossing each other, one of which shall be notched out to allow the other to pass through without raising one series above the other, substantially as set forth.

3. An electrical switch-board having two series of strips crossing each other, one of which shall be enough wider than the other to allow of its being notched out to a depth which will allow the other to pass through the notch without projecting above the first or coming in contact therewith, substantially as set forth.

4. An electrical switch-board in which the conducting-strips are set in grooves cut in the base and are held in position thereby, substantially as set forth.

5. In combination with an electrical switch-board, a bifurcated switch-key consisting of an appropriate handle and wires inserted therein, the ends of said wires being turned outwardly from each other, as shown, and thus adapted to be placed astride the strips of the board in making the electrical connection, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 1st day of June, A. D. 1880.

JAMES F. GILLILAND. [L. s.]

In presence of—

C. BRADFORD,
A. B. GILLET.