(No Model.)

T. W. LANE.

ELECTRIC SWITCH BOARD.

No. 259,558. Patented June 13, 1882.

Fig. 1.

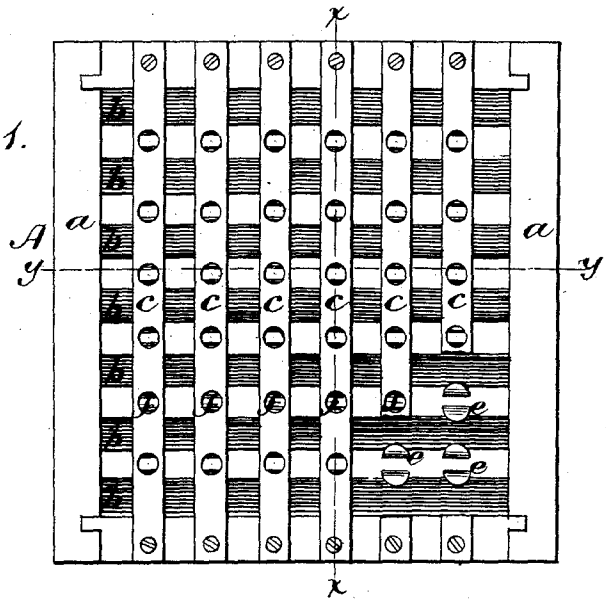


Fig. 2.

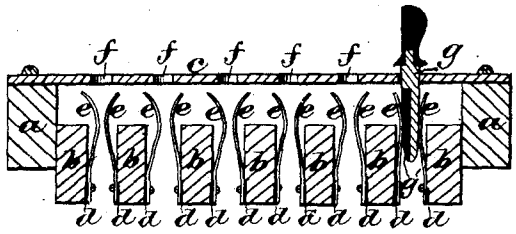
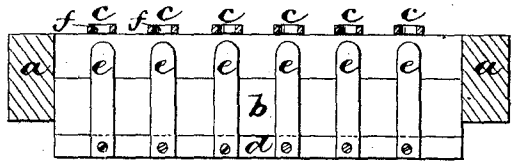


Fig. 3.



Witnesses:
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Jno. A. Curtin

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UNITED STATES PATENT OFFICE.

THOMAS W. LANE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO CHARLES WILLIAMS, JR., OF SAME PLACE.

ELECTRIC SWITCH-BOARD.

SPECIFICATION forming part of Letters Patent No. 259,558, dated June 13, 1882.

Application filed April 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS W. LANE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Electrical Switch-Boards, of which the following is a specification.

This invention relates to electrical switch-boards for telephone-exchanges, having parallel strips connected with the line-circuits, connecting-strips extending at right angles to the line-circuit strips, and movable plugs adapted to connect the line-circuit strips with the connecting-strips.

The invention has for its object to provide an improved construction in a switch-board of this class, whereby the capacity of a board of a given area can be considerably increased and its operation improved.

To these ends my invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a front elevation of a switch-board embodying my invention. Fig. 2 represents a section on line *x x*, Fig. 1. Fig. 3 represents a section on line *y y*, Fig. 1.

The same letters of reference indicate the same parts in all the figures.

In the drawings, A represents my improved switch-board, which is composed of a marginal non-metallic frame, *a*, transverse parallel non-metallic strips or supports, *b*, set back from the front surface of the frame *a*, line circuit strips *c c*, attached to the front surface of the frame *a*, connecting-strips *d*, attached to the sides of the supports *b*, and springs *e e*, attached to the sides of the supports *b*, in metallic connection with the connecting-strips, and projecting outwardly toward but not in contact with the line-circuit strips.

The springs *e e* are arranged in pairs, each pair coinciding with one of the holes *f* in a line-circuit strip, so that when a plug, *g*, is inserted in such hole it will project between and press outwardly the springs of the pair coinciding with the hole, as shown in Fig. 2. Each connecting-strip is insulated from the others, and the springs *e* of each strip project at their outer ends toward but do not touch the springs on the proximate surface of the next support *b*.

The metallic plug *g* which I employ is so formed that when properly inserted in a hole in any connecting-strip it will make metallic contact only with one of the springs coinciding with said hole. To this end the plug is preferably cut away at one side, and the recess thus formed is filled with insulating material *g'*, as shown in Fig. 2, the insulating material bearing against one spring of the pair between which the plug is inserted and the metallic portion against the other spring of the same pair.

The insulating material may be omitted and the plug may be simply recessed at one side or offset, so that it will touch only one spring; but I prefer the above-described construction, because it enables both springs to bear upon the plug, and therefore insures a better contact between the metal part of the plug and the spring against which it bears.

When it is desired to connect any two of the line-circuits the operator so inserts two plugs into the holes of the line-circuit strips with which said circuits are connected that said plugs will make contact with two springs, *e*, of a single connecting-strip, *d*, thereby connecting the two line-circuit strips through the plugs, the springs in contact therewith, and the connecting-strip.

It will be seen that the described arrangement of connecting-strips and their springs with reference to the holes in the line-circuit strips enables two line-circuit strips to be connected by plugs inserted in the same row of holes that contain the plugs, whereby two other line-circuit strips are connected. In other words, the connecting-strips are virtually brought so close together that when a plug is inserted in a hole with its metallic surface at one side it will connect with a given connecting-strip, and when semi-rotated or inserted in the same hole with its metallic surface at the opposite side it will connect with the next connecting-strip. It is obvious, therefore, that a greater number of connections can be made on a board of a given area than in boards of this class as heretofore made, in which the connecting-strips come directly in

contact with the plugs. I am enabled, also, to locate the line-circuit strips sufficiently far apart to avoid induction between the strips to a great extent.

The open construction of the board enables the connecting-strips and their springs to be readily examined and kept in order.

It will be seen that the connecting-strips are placed edgewise to the line-circuit strips, their sides being in different planes. This arrangement enables a given number of strips in a given space to be separated by wider spaces than would be the case if they were placed with all their sides in the same plane. Liability of induction from one connecting-strip to another is thus largely avoided.

I claim—

1. An electric switch-board of the class described, having line-circuit strips perforated to receive plugs, and connecting-strips provided with springs, which are arranged in pairs, as described, said pairs coinciding with the holes in the line-circuit strips, the springs of each pair projecting from two independent connecting-strips, so that by semi-rotating a plug inserted in a perforation of a line-circuit strip the connection of said strip will be changed from one connecting-strip to the other, as set forth.

2. An electric switch-board of the class described, composed of the frame *a*, parallel supports *b*, perforated line-circuit strips *c*, connecting-strips *d*, and springs *e*, projecting from the connecting-strips, and arranged to coincide in pairs with the perforations of the line-circuit strips, as set forth.

3. The combination of the perforated line-circuit strips, the springs projecting from the connecting-strips and arranged to coincide in pairs with the perforations of the line-circuit strips, and plugs, each having an insulating-surface on one side, whereby the plug is adapted to make mechanical but not electrical contact with one of the springs of each pair, as set forth.

4. An electric switch-board having perforated line-circuit strips and connecting-strips provided with springs projecting toward and coinciding with the perforations of the line-circuit strips, said connecting-strips being placed edgewise to the line-circuit strips, and thereby adapted to be arranged comparatively close together without liability of interference with each other by induction, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 5th day of April, A. D. 1882.

THOMAS W. LANE.

Witnesses:
A. L. WHITE,
F. F. BROWN.