

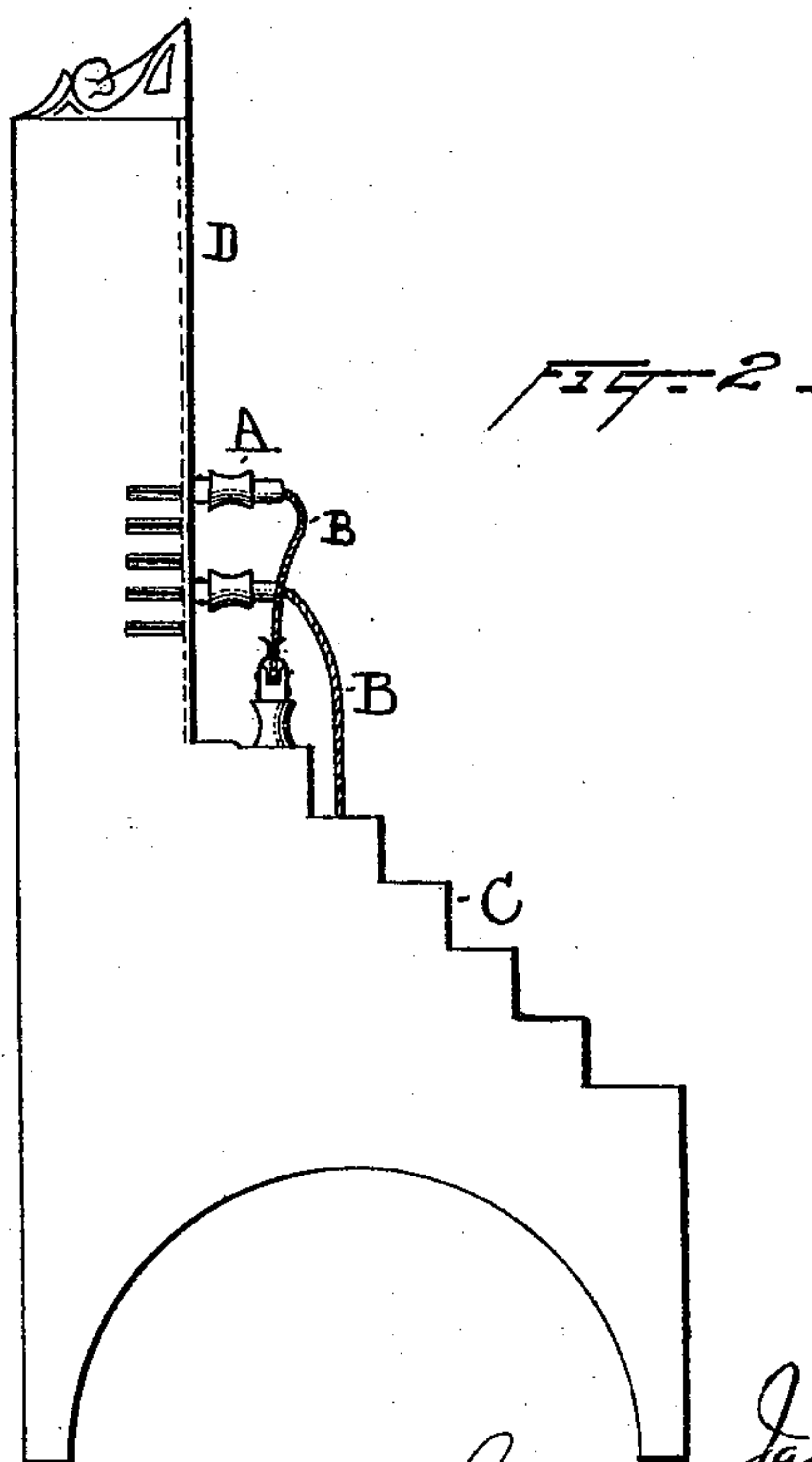
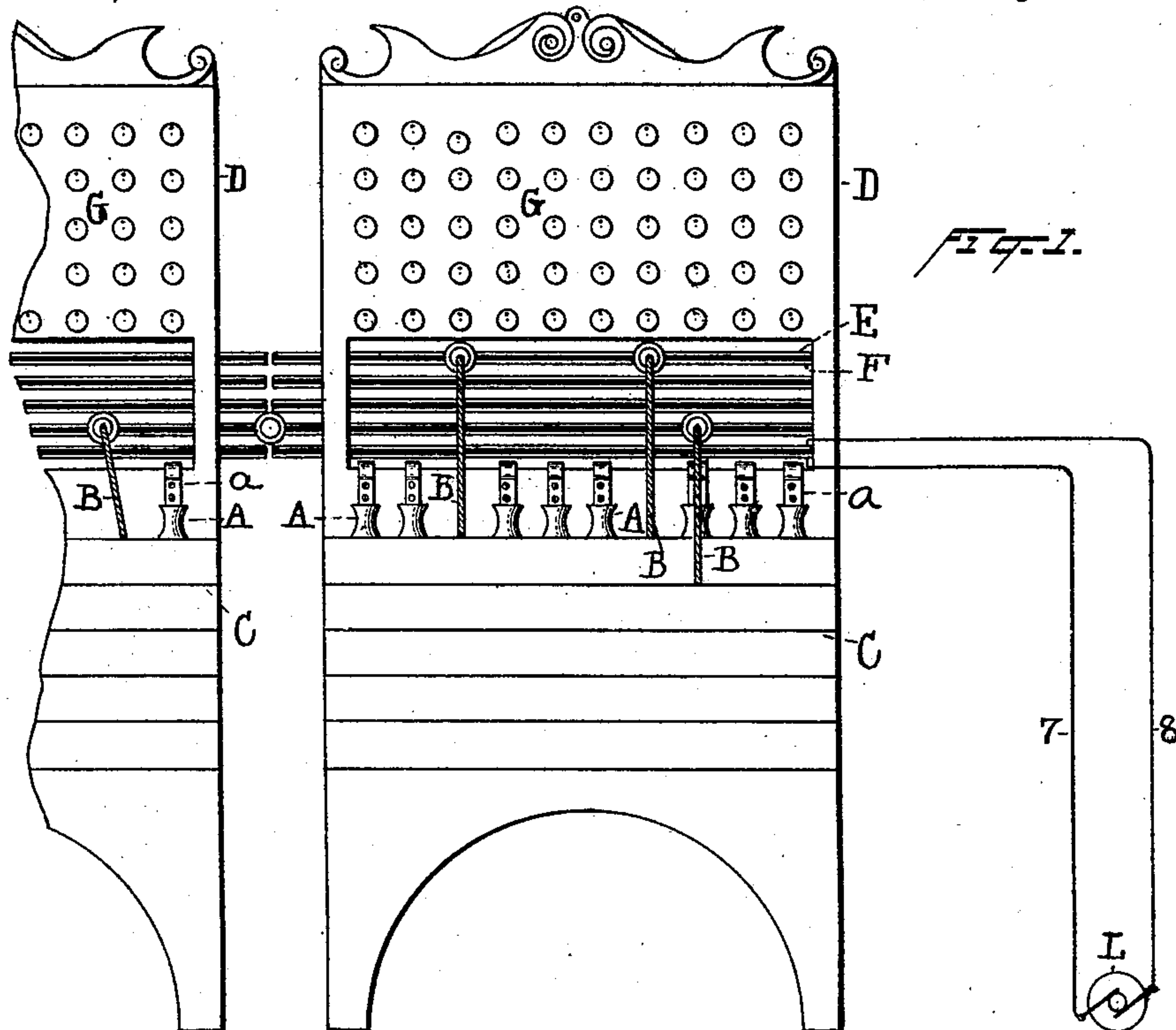
(No Model.)

2 Sheets—Sheet 1.

J. F. GILLILAND.
TELEPHONE SWITCHBOARD.

No. 542,249.

Patented July 9, 1895.



Witnesses
Konris A. Clark
John R. Taylor

Inventor
James F. Gilliland
By his Attorneys
Dyer & Seely

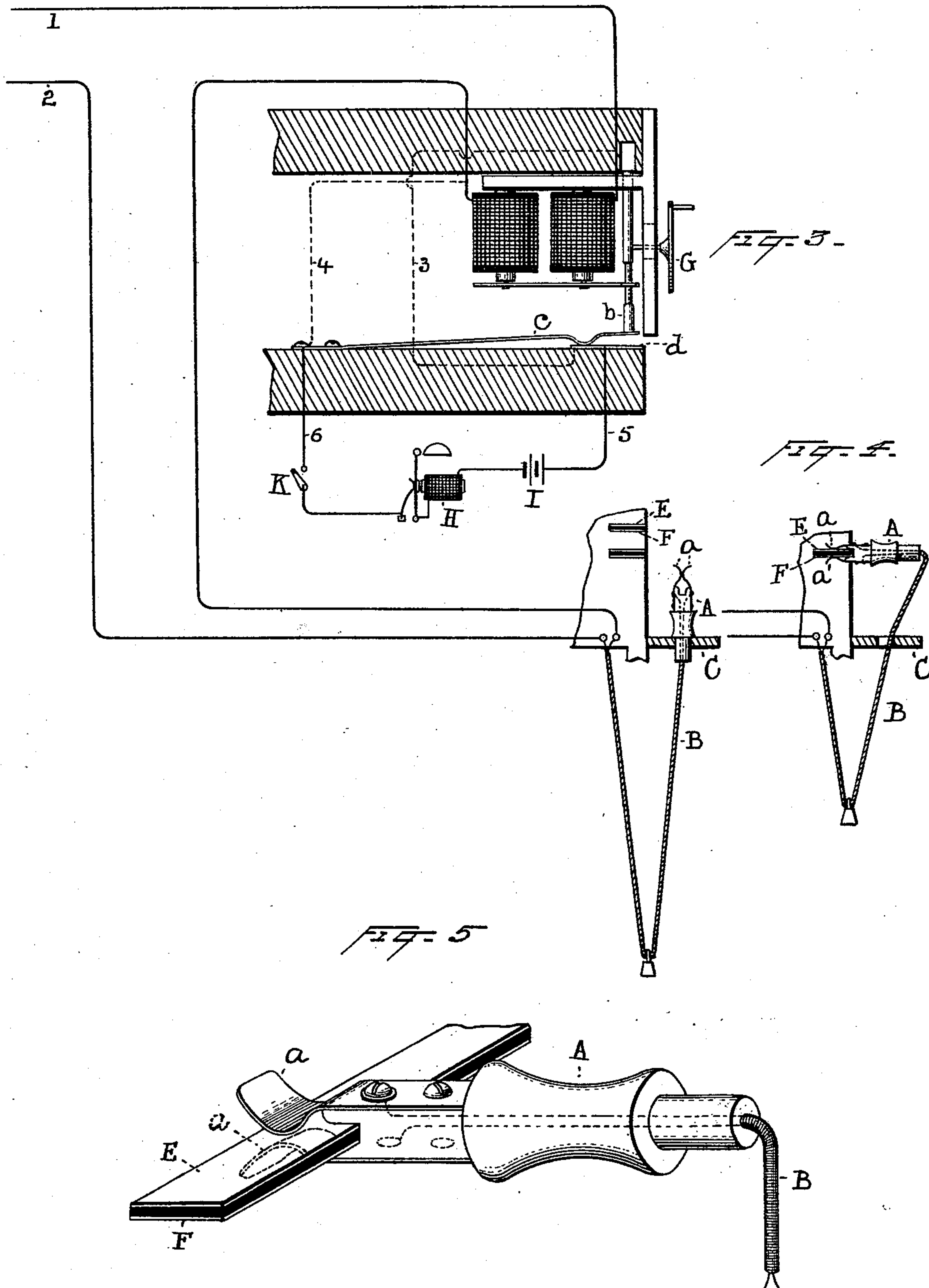
(No Model.)

2 Sheets—Sheet 2.

J. F. GILLILAND.
TELEPHONE SWITCHBOARD.

No. 542,249.

Patented July 9, 1895.



Witnesses
Norris A. Clark.
John R. Taylor

Inventor
James F. Gilliland
By his Attorneys Dyer & Seely

UNITED STATES PATENT OFFICE.

JAMES F. GILLILAND, OF ADRIAN, MICHIGAN, ASSIGNOR TO THE GILLILAND ELECTRIC COMPANY, OF SAME PLACE.

TELEPHONE-SWITCHBOARD.

SPECIFICATION forming part of Letters Patent No. 542,249, dated July 9, 1895.

Application filed October 26, 1894. Serial No. 527,008. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. GILLILAND, a citizen of the United States, residing at Adrian, in the county of Lenawee and State of Michigan, have invented a certain new and useful Improvement in Telephone-Switchboards, of which the following is a specification.

The object I have in view is to produce a telephone-switchboard especially designed for metallic circuits, which will be simple and cheap in construction and efficient in operation.

In carrying out my invention I terminate the telephone-lines at the exchange in movable plugs, at which the lines are normally closed. The switchboard is provided with a number of pairs of plates running parallel to each other and insulated from each other and unprovided with any circuit-connections, the connections between two telephone-lines being produced by pushing the plugs of the lines over the plates of the same pair. This operation opens the lines at the plugs and connects them together.

The invention also involves a provision for cutting out the annunciator-drops by the movement of the annunciator-shields themselves, and for utilizing this same device to ring a night-bell, in the case of small exchanges.

In the accompanying drawings, forming a part hereof, Figure 1 is a front elevation of one section of the switchboard, showing broken away the edge of an adjoining section. Fig. 2 is a side elevation of the switchboard. Fig. 3 is a sectional view showing the circuit-connections with one drop and one plug. Fig. 4 is a sectional view showing one plug pushed over a pair of connector-plates; and Fig. 5 is a perspective view, on a larger scale, of one of the plugs and a pair of connector-plates.

In my improved switchboard the metallic telephone-lines terminate each in a plug A, having closed spring-jaws *a a*, at which the telephone-line is normally closed. These plugs are connected with flexible cords B, carrying each a pair of conductors running to binding-screws, at which the telephone-line for the particular plug terminates. The plugs

normally rest in openings formed in the top of a rack C, which is preferably constructed in steps, as shown, for convenience in handling the plugs. Beneath the rack the slack of the flexible cords is taken up by weights or otherwise. Rising above the rack C is a frame D, the side uprights of which are connected by a number of pairs of insulated plates E F, and above these plates the top of the frame is occupied by the annunciator-drops G.

As illustrated in the drawings, a switchboard or section for fifty telephone-lines and having, consequently, fifty drops will also be provided with five of the pairs of plates E F; but this number may be of course increased. A line-wire 1-2 for each telephone passes through the annunciator-magnets for the particular line, and also through the plug A for that line, as illustrated in Fig. 3. The shield of each annunciator has its rod *b* arranged to drop in falling upon a spring *c*, depressing the same and causing it to make contact with the plate *d*. The spring *c* and plate *d* are connected by wires 3 4 with the wires 1 2 of the telephone-line outside of the annunciator-drop, so as to shunt the drop when the annunciator-shield falls. When the annunciator-shield is raised, so that its weight does not rest on the spring *c*, that spring rises and, leaving the plate *d*, breaks the shunt. The plates *c d* are also connected with a local circuit 5 6, in which are located a vibrating bell H, operated by a local battery I and provided with a switch K, by means of which the local circuit can be opened. If the switch K is closed, the dropping of the annunciator will not only shunt the annunciator-magnet, but will start the bell H ringing, thus calling attention to the fact that a call has been received. This device will be used as a night-bell in small offices. The local circuit may be kept permanently open during the daytime by means of the switch K.

The pairs of plates E F have no circuit connections whatever, except that I design to connect the plates of the lowermost pair with the usual generator L, supplying an alternating current for calling subscribers. This connection is indicated by the wires 7 8. If the exchange is provided with more than one sec-

tion of this switchboard, the pairs of plates of the different sections may be connected together by plugs, as shown in Fig. 1. The plugs for this purpose will be precisely like the plugs A, except they will not have any flexible cord connected with them, the springs *a a* being wide enough to overlap the adjoining ends of the pairs of plates.

If a subscriber calls, the shield of the corresponding annunciator will drop, shunting out the annunciator-magnet and ringing the bell if the latter is connected. The operator then takes the plug of the particular subscriber's line and pushes it over one pair of plates, at the same time taking the plug of his own telephone and pushing it over the same pair of plates. After ascertaining the number of the telephone with which the subscriber calling wishes to be connected, the operator will take the plug of the second line and push it over the connector-plates of the first pair, which are connected with the generator for calling. This calls up the person wanted, and when the operator thinks the call has been continued a sufficient length of time he removes the plug of the second line from the first pair of connector-plates and pushes it over the pair of plates with which the first line is already connected. Having put the parties into communication, the operator may disconnect his own telephone by pulling the plug from the strip, or he may leave his plug connected with the same strip. If the operator removes his plug from the connector-strips he can raise one of the drops connected with the two lines in communication, so that if either or both persons talking rings off at the end of the conversation the annunciator will drop and notify the exchange. In case a long line is in use and it is desirable to have both drops out of circuit, the shields can be left down, so as to shunt the magnets, and the operator will have to depend upon his own telephone to find out when the parties are through talking. The instant the plug is removed from the pair of

connector-strips the springs *a a* come together and close the particular line.

If it is desired to use the same pair of connector-strips on two boards for making different connections the plug connecting the ends of the strips between the boards may be removed.

It is obvious that many changes in the details of the construction of the parts may be made without departing from the spirit of my invention.

What I claim is—

1. In a telephone switch-board, the combination of lines terminating in movable plugs at which they are normally closed, of a pair or pairs of insulated connector plates, having no circuit connections, and adapted to engage with the plugs and connect the lines together, substantially as set forth.

2. In a telephone switch-board, the combination with telephone lines, of movable plugs having normally closed spring contacts connected with the telephone lines, of a series of pairs of flat connector plates, insulated from each other and adapted to have the spring contacts of the plugs pushed over them, substantially as set forth.

3. In a telephone switch-board, the combination with telephone lines terminating at movable plugs at which the lines are normally closed, of a pair of connector plates, insulated from each other, and connected with the calling generator, and other similar pairs of plates, without any circuit connections, such plates being adapted to engage with the plug contacts so as to open them and connect them with any other circuit connected with the same pair of plates, substantially as set forth.

This specification signed and witnessed this 22d day of October, 1894.

JAMES F. GILLILAND.

Witnesses:

HENRY C. SMITH,
CLARK E. BALDWIN.