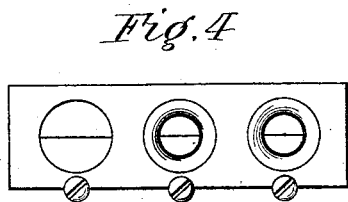
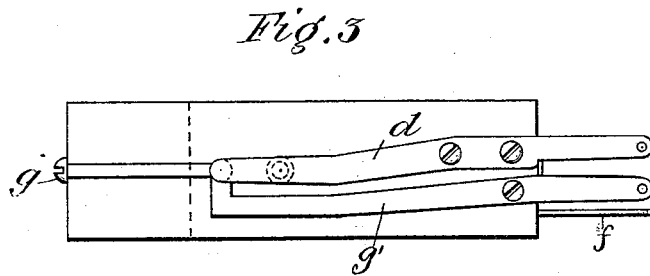
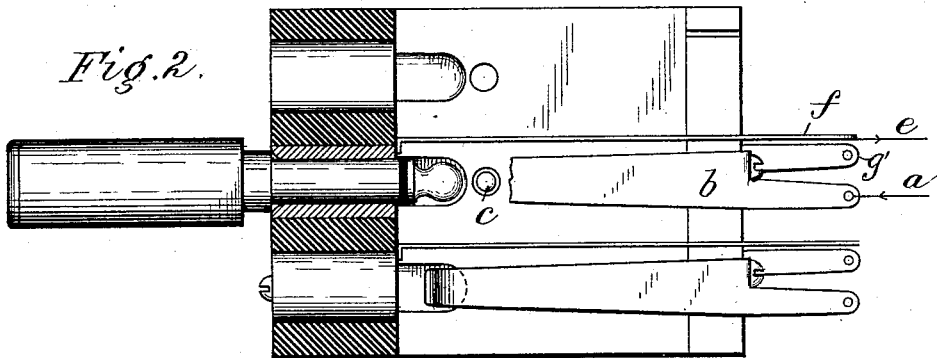
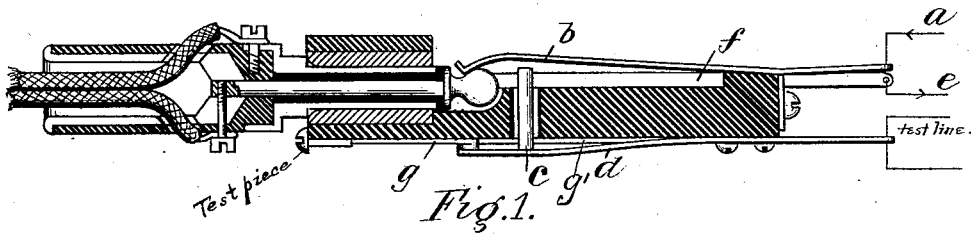


(No Model.)

C. E. SCRIBNER.
SPRING JACK SWITCH.

No. 489,570.

Patented Jan. 10, 1893.



Witnesses:
Saml. B. Dover.
Wm. M. Giller.

Inventor.
Charles E. Scribner.
By Frank M. Barton
attorney.

UNITED STATES PATENT OFFICE.

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

SPRING-JACK SWITCH.

SPECIFICATION forming part of Letters Patent No. 489,570, dated January 10, 1893.

Application filed December 27, 1880. Renewed February 24, 1890. Serial No. 341,402. (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 Spring-Jack Switches, (Case No. 121,) 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.

In multiple switch board systems of telephone exchange a different switch or spring jack is provided for each line for each board. In large exchanges the wires are bunched together in cables and great trouble frequently arises on account of the induction between the different lines. In order to reduce the induction or cross talk, metallic circuits are desirable, the different limbs or sides of each telephone line being placed near together in the same cable. When metallic circuits are thus employed all the points of my spring jack switch shown in Patent No. 305,021 of September 9, 1884, are employed for the connections of the telephone lines, there being no points or connections for the test wires. I find it necessary, therefore, in metallic circuit multiple systems, to provide additional points and connections upon the spring jack switches for the test wires, so that it may be determined at one board whether any given line is in use or connected at any other board. The number of switches and the contact points of each switch being thus necessarily increased in large exchanges, it becomes of the greatest importance to construct the switch so that it may occupy the smallest possible space or area upon the switch board.

My invention herein is designed to provide the necessary contact pieces and connections upon the spring jack switch for metallic circuits and for the test wires, and to arrange the several parts of the spring jacks in such manner that they will be efficient and strong and occupy as little area as possible upon the switch board. The spring jacks may be built up in sections each containing, say, twenty spring jacks. The main body or frame of each section is preferably of hard rubber and each spring jack is provided with a terminal for

each branch of the metallic circuit and a terminal with the necessary contact points. When a loop plug is inserted in one of the switches, the different terminals of the metallic circuit are connected respectively with different points of the plug, and hence with different strands of the flexible cord, and the connection or terminal of the test wire is closed to the portion of the metallic circuit which was cutoff by the insertion of the plug.

My invention consists in two springs, one of which carries the contact point against which the main lever of the switch normally rests, the main switch lever having greater strength or resiliency than the spring which carries the contact point. These springs of each switch are placed on opposite sides of the rubber strip, the contact point projecting upward through a hole provided in the rubber strip. When the main lever of the switch is in its normal position against the contact point, the spring carrying the contact point is carried away from the test point of the switch. On inserting a plug so as to lift the main spring or lever, the spring carrying the contact point closes again upon the test point, the amplitude of its motion being limited by said test contact point so that the point will not be carried as far as the main lever is lifted by the plug. The ring or metallic socket of the spring jack is permanently insulated from all the other parts of the switch and is provided with a connection which is carried back of the switch board.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a transverse vertical sectional view of my spring jack with a loop plug inserted therein. Fig. 2 is a top view showing the main springs of two switches in detail and the connections of the metallic sockets to the rear. Fig. 3 is a view from below showing the spring carrying contact point and the test piece with its connection to the rear. Fig. 4 is a front elevation of a section showing the test points below the sockets.

Like parts are indicated by similar letters of reference throughout the different figures.

One branch *a* of the metallic circuit may be connected with the main spring *b* and

thence normally to contact *c* which is carried upon spring *d*. The other branch *e* is connected with the connection *f* to the insulated ring or socket. A test piece *g* is provided under each spring jack upon the face of the board and is provided with a connection *g'* to the rear, so that the test pieces upon the different boards of any given line may be permanently connected together by the test wire of the line. The spring *d* is of less strength or resiliency than spring *b* and hence when spring *b* rests against contact point *c*, spring *d* will be separated from test piece *g*. On inserting a plug, however, to lift the spring or lever *b* from contact *c*, spring *d* closes upon said test piece *g* as shown in Fig. 1. This connection between the test piece *g* and the portion of branch *a*, which is cut off on inserting the plug, is necessary in order that the test piece *g* may have a connection to ground.

The contact *c* and the spring *d* together form a yielding connection for the main lever *b* and the resiliency or force of the auxiliary spring *d* being less than that of the main lever or spring *b* the yielding contact will be moved away from its stop *g* when the main lever rests upon this connection. When the main lever is lifted the yielding connection will follow the lever a short distance, its movement, however, toward the main lever being limited by the stop *g*.

As the test circuits proper form another part of my invention herein, I have not shown the connections between spring jacks on different multiple switch boards. These circuits are referred to simply for the purpose of showing the utility of my invention.

It is evident that my switch may be used for any purpose to which it may be adapted,

and I do not, therefore, limit my invention to any particular circuits or system of circuits.

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

1. The combination with a spring jack switch of a loop plug inserted therein, the main lever of said switch being lifted by said plug from its normal contact point, a spring carrying said contact point which closes upon a test piece of the switch when the main spring is lifted and the insulated ring or terminal which is closed to the other point of the loop plug, whereby the two line terminals of the switch are connected with different points of the plug and the test piece of the switch connected with the normal contact point of the main spring or lever, substantially as shown and described.

2. The combination in a spring jack switch of the main spring *b* and the contact *c* carried upon an auxiliary spring *d* having less force than the main spring and the test piece *g* accessible at the front of the spring jack with which test piece the spring *d* is adapted to close when the main spring is lifted, substantially as and for the purpose specified.

3. In a spring jack switch, the combination with the main spring or lever, of a yielding contact or connection against which said spring is adjusted to normally press, and a stop for limiting the movement of said yielding contact toward said spring, substantially as and for the purpose specified.

In witness whereof I hereunto subscribe my name this 16th day of November, A. D. 1886.

CHARLES E. SCRIBNER.

Witnesses:

GEORGE P. BARTON,
WM. M. GILLER.