(No Model.) 2 Sheets—Sheet 1.

C. E. SCRIBNER & E. P. WARNER.

SPRING JACK SWITCH.

No. 488,033. Patented Dec. 13, 1892.

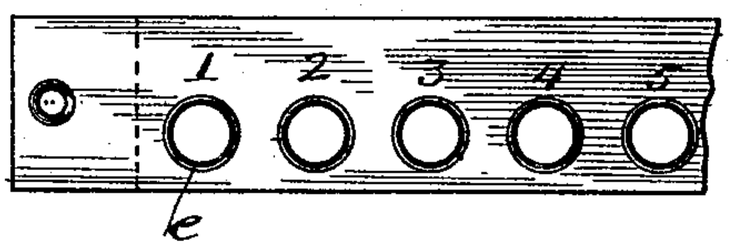

Fig. 1.

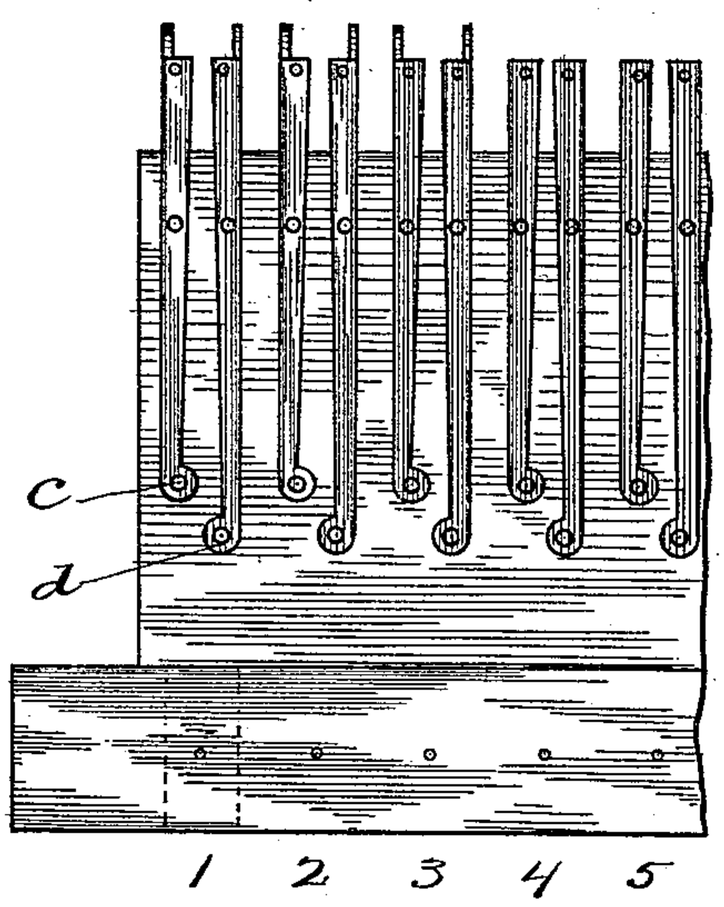

Fig. 2.

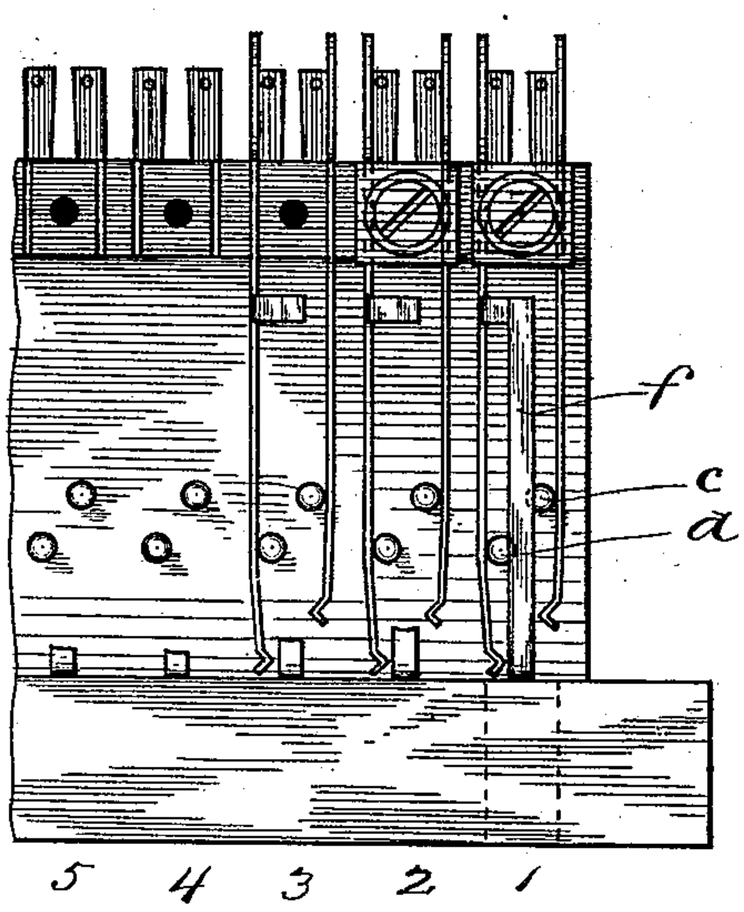

Fig. 3.

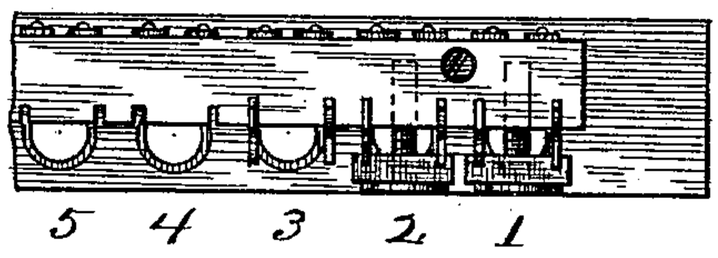

Fig. 4.

Fig. 6.

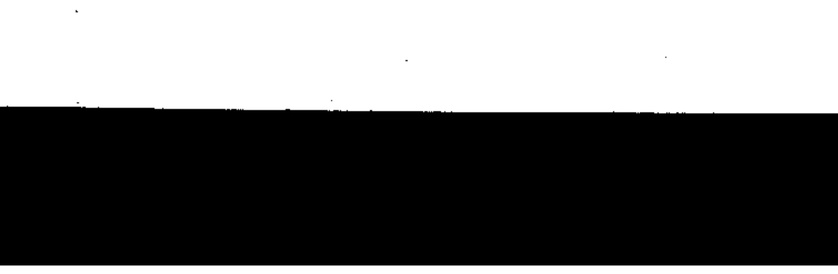

Fig 5.

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Chas. C. Woodworth

Inventors:
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(No Model.) 2 Sheets—Sheet 2.

C. E. SCRIBNER & E. P. WARNER.

SPRING JACK SWITCH.

No. 488,033. Patented Dec. 13, 1892.

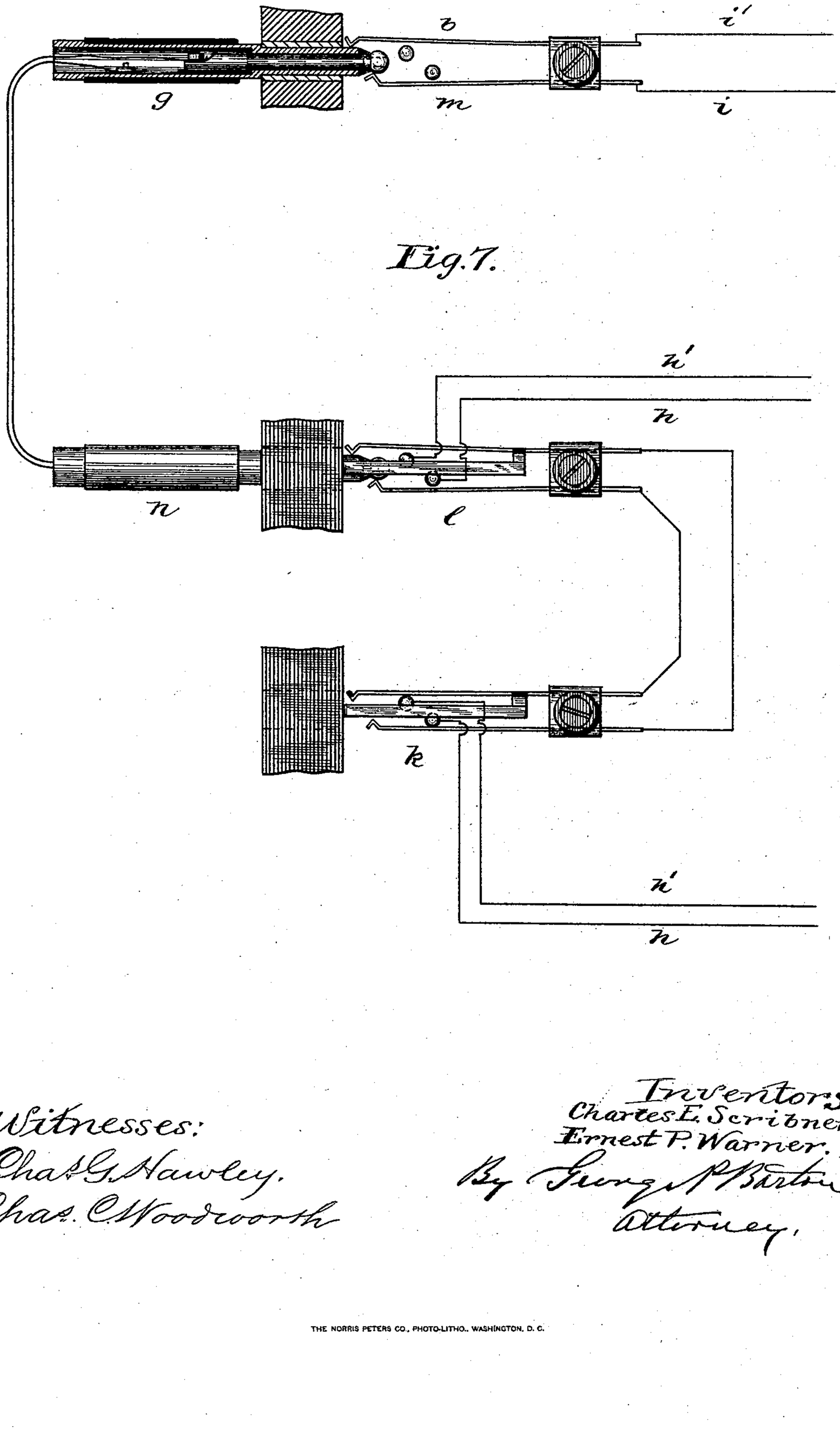

Fig. 7.

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UNITED STATES PATENT OFFICE.

CHARLES E. SCRIBNER AND ERNEST P. WARNER, OF CHICAGO, ILLINOIS, ASSIGNORS TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

SPRING-JACK SWITCH.

SPECIFICATION forming part of Letters Patent No. 488,033, dated December 13, 1892.

Application filed July 3, 1888. Serial No. 278,905. (No model.)

To all whom it may concern:

Be it known that we, CHARLES E. SCRIBNER and ERNEST P. WARNER, 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 Spring-Jack Switches, (Case No. 169,) 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 circuit-changing devices; and its object is to provide ready means of looping or connecting together metallic circuits.

Heretofore it has been common to mount the springs and contacts of several switches upon a strip of rubber. Spring-jack switches thus built up in strips—say twenty in each strip—have been largely used on telephone-exchange switchboards, especially upon multiple switchboards, where it is of the greatest importance to bring a large number of line-terminals within reach of a single operator.

In carrying out our invention we preferably construct our circuit-changers upon the same general plan—that is to say, we mount the springs and contacts of several circuit-changers upon the same piece or frame or insulating material. One of these pieces, embracing several switches, is usually spoken of as a "strip of switches" or a "strip of spring-jacks."

Our invention consists in two springs, preferably of different lengths, adjusted to press normally toward each other upon different contact points or connections, and a tube or guide placed in front of the free ends of said springs, in connection with a loop-plug adapted to be inserted in said tube or plug hole, and to spread the springs or line-terminals apart to separate them from their normal contacts while each is closed to a different terminal of the loop-plug.

In order to make the contact between the sleeve of the loop-plug and one of the springs more certain and to adapt the plug for use in multiple-switchboard systems in which the tube or frame of the spring-jack is used as a test-piece, we preferably permanently connect the longer spring with the tube or frame, as hereinafter described.

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

Figure 1 is a front elevation showing a portion of a strip of spring-jacks. Fig. 2 is a top view of the same. Fig. 3 is a view from below thereof. Fig. 4 is a rear elevation thereof. Fig 5 is a sectional view. Fig. 6 is a similar sectional view, the shorter of the two springs being removed. Fig. 7 is a diagram illustrating the manner of using our circuit-changer in connection with detailed views of loop-plugs connected therewith.

In the different figures like parts are indicated by similar letters and numeral of reference.

In Figs. 1 to 6, inclusive, our invention is illustrated in detail, the different parts being shown of the preferable size and shape for use in telephone-exchanges. The different spring-jack switches illustrated in Figs. 1 to 6 are indicated, respectively, by the numerals 1 2 3 4 5. Each switch or circuit changer consists of two springs *a* and *b*, insulated from one another and adjusted to close by their own resiliency upon contact-pins *c d*, respectively. The guide or test piece *e* is placed in front of the springs in such position that when a plug is inserted of the proper shape the springs *a b* will be lifted from contacts *c d*, respectively. A connection *f* is preferably provided between spring *b* and the test-piece *e*.

In Fig. 7 the loop-plug *g* is shown in section. The tip of this plug is shown somewhat smaller than the metallic sleeve of the shank thereof, in order that the spring *b* may be so adjusted as not to form contact with said tip.

We will suppose the wires *h h'* two branches or limbs of a metallic toll-line station passing through a way-station having an exchange, and we will consider wires *i i'* as the two limbs of a subscriber's circuit of a local exchange of the way-station. In the wires *h h'* are placed two of our spring-jack switches *k* and *l*. The subscriber's line *i i'* is connected through a spring-jack switch *m*. By means

of a pair of loop-plugs *n g* the subscriber's wire *i i'* may be looped onto the circuit *h h'* in either direction. Thus when plug *n* is inserted in switch *l* the connection will be made in one direction. On inserting plug *n* into the spring jack *k* the connection with the toll-line will be in the other direction.

We have thus shown one of the obvious uses to which our circuit-changer may be applied. We do not, however, wish to be understood as limiting our invention to any particular circuit or circuits nor to the particular form or construction shown, since it is evident that the circuit connections and the form of the devices may be changed in various ways without departing from our invention.

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

1. A circuit-changing device consisting of two springs or line-terminals, each spring adjusted to normally press against a different contact-piece, and a tube or guide placed in front of said springs, in combination with a loop-plug having a tip smaller than the metallic sleeve of the shank thereof, said loop-plug being adapted to be inserted in said guide to separate said springs from their contacts, respectively, while each spring is at the same time closed to a different terminal of the loop-plug.

2. The combination, with the springs of a circuit-changer adjusted to press normally each against a different contact-piece placed between the springs, of a metallic tube or test-piece placed in front of the free ends of said springs, said tube being permanently connected with one of said springs by piece *f*, substantially as and for the purpose specified.

3. In a circuit-changing device, the combination, with two insulated springs of different lengths, having their free ends in the same direction, of a guide in front of said springs and a plug provided with two terminals, one terminal upon the tip and the other upon the shank thereof, whereby on inserting the plug into the guide the springs are respectively closed to different terminals of said loop-plug, the shorter spring being closed upon the tip and the longer spring upon the sleeve, substantially as and for the purpose specified.

In witness whereof we hereunto subscribe our names.

CHARLES E. SCRIBNER.
ERNEST P. WARNER.

Witnesses:
GEORGE P. BARTON,
CHAS. C. WOODWORTH.