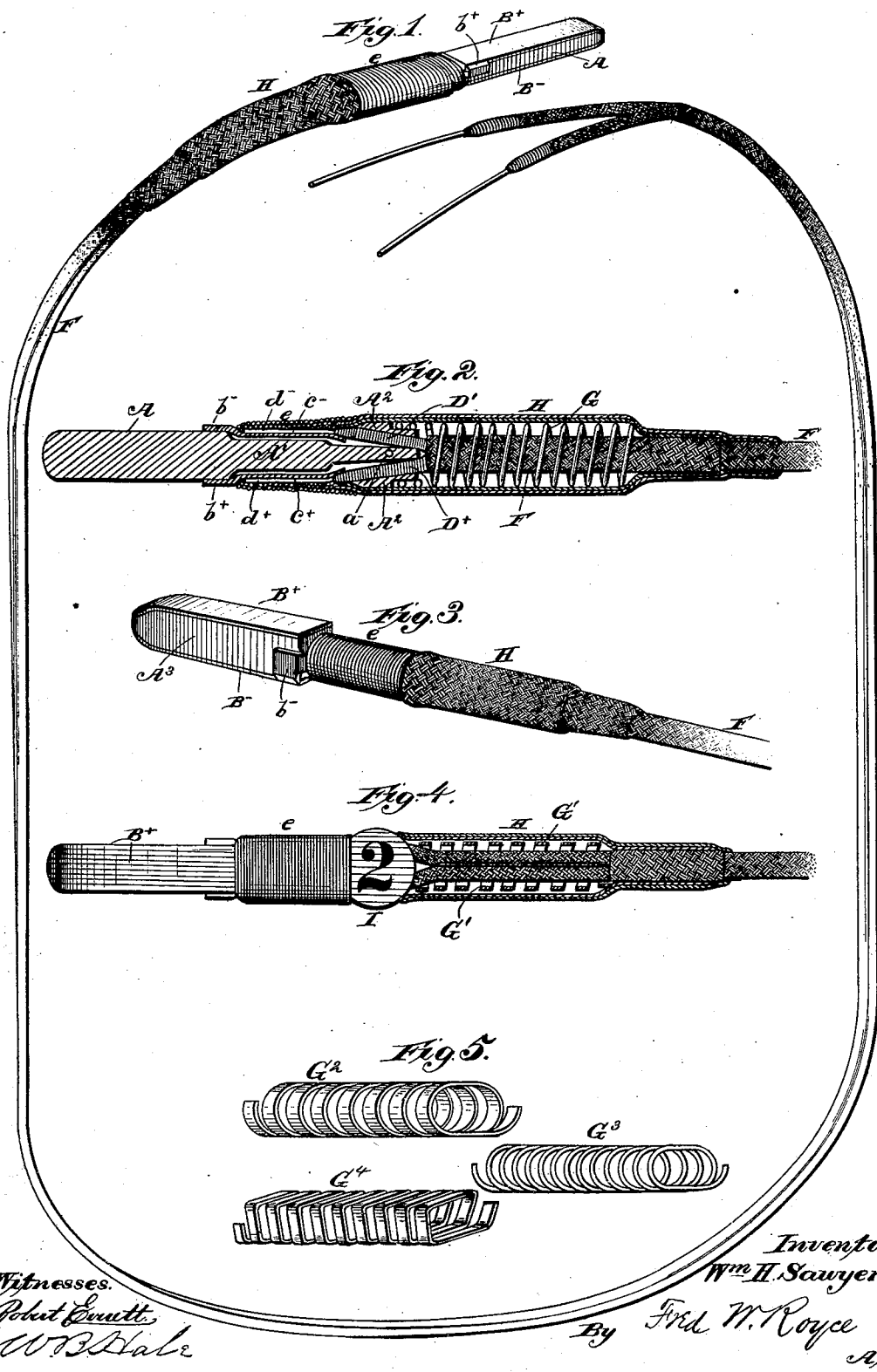


W. H. SAWYER.
Electrical Switch Cord.

Patented June 21, 1881.



UNITED STATES PATENT OFFICE.

WILLIAM H. SAWYER, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO
EUGENE F. PHILLIPS, OF SAME PLACE.

ELECTRICAL SWITCH-CORD.

SPECIFICATION forming part of Letters Patent No. 243,162, dated June 21, 1881.

Application filed May 4, 1881. (No model.)

To all whom it may concern :

Be it known that I, WILLIAM H. SAWYER, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Electrical Switch Cords or Connecting-Wires; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to the wires for connecting electrical instruments of various kinds with electrical circuits or lines terminating at telegraphic or telephonic switch-boards, and has for its object to connect said wires with their plugs or wedges in such manner that they will not be liable to become easily detached or broken away therefrom, and also to enable the handy manipulation of the wires, and the insertion of the plugs or wedges into the spring-jacks or other circuit-closing devices without the switchman's hand coming in contact with the conducting portions of said plugs or wedges.

Heretofore the connecting or circuit-closing wires used in telegraph and telephone offices have been covered with cotton threads braided or wound on, and said wires inclosed in pairs in braided tubes of such threads, an end of each wire being uncovered and projecting from one end of the tubular braiding, for the purpose of insertion into the sockets of binding-posts, while the other ends are connected to a circuit-closing plug or wedge by being inserted into apertures therein and secured to the contact-plates, and sometimes the wedges have been provided with short rigid handles, through which the wires pass. In the continual handling of the wires they are bent to and fro at the points where they enter the wedges or handles, and are soon uncovered by the wearing off of the braid and broken, the uncovering and breakage being promoted by the grasping of the wires, as it is impracticable to use rigid handles of sufficient length to afford any real convenience or protection of

the hand from contact with the conducting or contact plates.

In my invention I discard the rigid handle, and provide for the wedge and wires a flexible handle and guard by surrounding the wires at their portions adjacent to the wedge with a helical spring, securing said spring at one end to the wedge, and inclosing it in a suitable envelope to render it convenient for handling.

In the accompanying drawings, Figure 1 is a view of a connecting-cord and plug or wedge provided with a flexible handle according to my invention. Fig. 2 is a partial longitudinal section of the same, taken in a plane passing through the wedge between the contact-plates and to one side of the helical spring of the handle. Fig. 3 is a perspective view of a portion of a switch-cord provided with a modified form of wedge. Fig. 4 is a partially-sectional view, showing a modified form of spring in the handle, the wedge being provided with a face or tablet to receive a designating number or mark. In Fig. 5 are shown detached views of several forms of springs which may be used in the flexible handle.

Referring to Figs. 1 and 2, the letter A denotes a wedge or block of hard rubber, upon opposite surfaces of which are secured metallic contact-plates B—B⁺, which the wedge insulates from each other. Near their inner ends the plates are extended laterally and bent to lie partially across opposite edges of the wedge, respectively, as shown at b— and b⁺, and from these extensions project narrow metallic springs c—c⁺, alongside, but separated by a little space from, a narrow shank, A', of the wedge, the end portion of which is widened, as shown at A², and provided with longitudinal passages, through which are passed the separated covered end portions of the wires, the naked tips d—d⁺ of which lie against the springs c—c⁺, and are secured thereto and to the wedge by being bound with stout thread or twine, as shown at e.

The letter F indicates the tubular braiding which incloses the covered wires D—D⁺ to the point where they fork to enter the wedge, and G designates a helical spring, which surrounds said tubular braiding and inclosed

wires at their junction with the wedge, and for a suitable distance therefrom, to form a handle of convenient length. The end of the spring next the plug sets over a shouldered portion, *a*, thereof, and the end of the wire of which the spring is formed is passed through a hole in the wedge, as shown at *a'*, in order to hold the spring snugly to said wedge.

The letter H denotes the inclosing-covering of the spring, this covering being preferably a two or three ply braided tube, which extends beyond the ends of the spring in both directions, one end passing over a part of the wedge, as shown, and caught by the binding-cord *e*, and the other end being narrowed to snugly embrace the tube which incloses the wires beyond the spring.

I do not confine myself to any particular covering for the spring, but prefer to slip it over the wires and the inclosing-tube as formed in the braiding-machine, and braid back over the spring without cutting the braiding-threads.

In Fig. 3 the arrangement and connection of the parts are precisely as shown in Fig. 2, the only difference being that the portion *A*³ of the wedge between the contact-plates has a thickness greater than the diameter of the shank and binding-thread, this being for the purpose of allowing several wedges to be inserted in the same spring-jack or other circuit-closing device on a switch-board, with their flat surfaces in close contact throughout their lengths, which cannot be the case with the form shown in Figs. 1 and 2, as the bound shanks would keep the inner ends of the contact-plates of two wedges apart.

In Fig. 4 the difference from the form shown in Figs. 1 and 2 is, that a widened portion, *I*, at the end of the wedge is left exposed to receive a designating number or mark, as shown, and the helical spring is formed from a flat strip of metal.

Various forms of springs may be used in the handle—such, for instance, as shown in Fig. 5, where *F*² is a spring made of a flat strip and in oval coils, *F*³ is a spring made of wire in oval coils, and *F*⁴ has the flat strip bent at right angles to form the coils.

I may also use a piece of india-rubber tubing in lieu of the helical spring, covering it with the braiding, as described.

What I claim is—

1. The electrical connecting or circuit-closing wires and connected wedge provided with a tubular flexible elastic handle surrounding the portions of the wires adjacent to the wedge, and surrounded by a suitable covering, substantially as described.

2. The electrical connecting or circuit-closing wires and connected wedge provided with a flexible elastic handle, composed of a helical spring surrounding the portions of the wires adjacent to the wedge, connected to said wedge, and inclosed in a suitable covering, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

W. H. SAWYER.

Witnesses:

JOHN C. PURKIS,
GILMAN E. JOPP.