

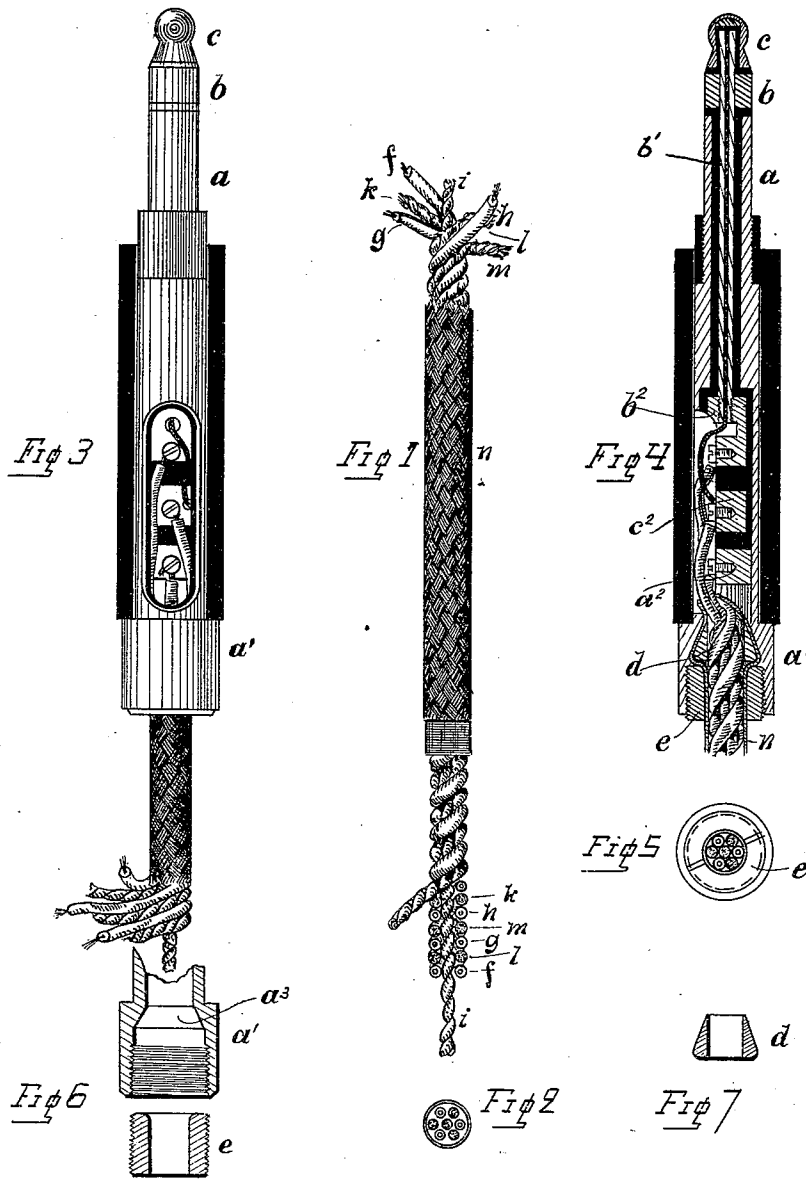
(No Model.)

F. R. McBERTY.

PLUG AND CORD FOR TELEPHONE SWITCHBOARDS.

No. 544,369.

Patented Aug. 13, 1895.



Witnesses
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UNITED STATES PATENT OFFICE.

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PLUG AND CORD FOR TELEPHONE-SWITCHBOARDS.

SPECIFICATION forming part of Letters Patent No. 544,369, dated August 13, 1895.

Application filed September 18, 1894. Serial No. 523,315. (No model.)

To all whom it may concern:

Be it known that I, FRANK R. MCBERTY, a citizen of the United States, residing at Downer's Grove, in the county of Du Page and State of Illinois, have invented a certain new and useful Improvement in Plugs and Cords for Telephone-Switchboards, (Case No. 19,) 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.

My invention relates to connecting-plugs and their attached flexible conductors for telephone-switchboards. Its object is to produce an improved form of flexible conductor and a device for securely attaching the same to the connecting-plug.

Hitherto the switchboard-cord or flexible conductor has been constructed with two or more insulated flexible strands of conducting material laid side by side and incased or inclosed in a covering of textile material, and this cord has been secured to the connecting-plug by screwing the cord into a threaded opening in the rear of the plug, the different conducting-strands being attached to the corresponding contact-sections of the plug within the body of the plug. This device formed a very insecure attachment for the cord, however. The tension on the cord acted to tear away not only the covering of the cord, but the conductors themselves, from their points of attachment within the plug.

My invention consists, primarily, in a device for securing the braided or textile covering of the cord to the connecting-plug, leaving the conductors free to move longitudinally within the covering; and it consists, secondly, in constructing the conductors so as to be capable of longitudinal extension to compensate for the stretching of the covering of the cord.

The connecting-plug of my invention may be constructed in any usual way. In the rear portion of the body of the plug—that part commonly known as the “heel” of the plug—I form a tapering opening adapted to be closed by a screw cap or plug, through which the cord may pass. Within the covering of the cord I place a conically-shaped bushing

or sleeve corresponding in taper to that of the opening in the heel of the plug and loosely encircling the conductors. The insulated strands of conducting material which make up the cord I wind in close spirals, preferably about a central core or cord of twine and separated from each other by similar strands of twine or other insulating material. In attaching the cord to the plug the former is inserted into the heel of the plug and the screw cap or plug is screwed into place, compressing the covering of the cord between the interior bushing and the tapered wall of the heel of the plug, the conductors being left free. The latter are then attached to the corresponding contact-pieces within the body of the plug in the usual way. During the use of the plug the covering stretches, but this does not permit the conductors to become broken by tension applied to the cord, since the spirals of the conductors open a little and permit of sufficient longitudinal extension of the conductors to make up for the stretching of the covering.

My invention is illustrated in the accompanying drawings.

Of the drawings, Figure 1 represents a portion of the cord, the conducting-strands being unwound for a short distance. Fig. 2 is a cross-section of the cord. Fig. 3 shows a side elevation of a plug with its attached cord, the shell of the plug being shown in section. Fig. 4 is a longitudinal section of a plug, showing the mode of attachment of the cord. Fig. 5 is a view of the plug from beneath. Fig. 6 is an enlarged sectional view of the heel of the plug with its screw-cap. Fig. 7 is a view of the tapering bushing which is placed within the envelope or covering of the cord.

The plug is constructed with three contact portions *a*, *b*, and *c*.

The body *a'* of the plug is formed of metal, and a prolongation of it constitutes the contact-surface *a*, which registers with a corresponding part of the spring-jack. Within this tubular prolongation extends an insulated tube *b'*, which terminates into an enlarged portion which constitutes contact *b*, and within this latter tube *b'* extends an insulated wire, which is connected with a spheri-

cal tip *c*. The different contact-pieces *b* and *c* are represented within the plug by blocks *b*² and *c*², which are designed to receive the corresponding conductors of the cord.

- 5 In the lower portion of the body *a'* of the plug a tapered opening *a*³ is formed, having its outer portion threaded and opening into the tubular chamber containing the binding posts or blocks *a*² *b*² *c*². The bushing or sleeve
10 *d* is formed with a taper corresponding to that of the aperture *a*³. The plug *e* is designed to be screwed into place in opening *a*³ behind the sleeve *d* to force the latter into the tapered portion of the opening.
- 15 The cord comprises three insulated conducting-strands *f*, *g*, and *h*. These are laid in a close spiral about a central cord *i*, being separated from each other by interposed strands *k l m* of twine or other flexible insulating material. The sleeve *d* is placed over
20 these twisted strands or conductors, fitting them loosely, and the covering *n* is braided over the whole. The cord is then inserted into the opening *a*³, the conductors *f*, *g*, and *h*
25 are secured to their respective contact-pieces *a*² *b*² *c*² in the plug, and the plug *e* is finally placed over the cord and screwed firmly into place in opening *a*³, compressing the sleeve *d* strongly into the tapered portion of the opening, and thus securely holding the covering *n*
30 of the cord.

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

- 35 1. The combination with a conducting cord having a suitable covering, of a sleeve within the covering, and means for clamping upon the covering outside of the sleeve, substantially as described.
- 40 2. The combination with a connecting plug, of a cord having a covering, a sleeve within the covering, and a device in the body of the plug adapted to grasp the covering outside

the sleeve to compress the same against the sleeve, substantially as described. 45

3. The combination with a connecting plug, of a cord having a braided covering, a sleeve within the covering, a tapered opening in the plug, means for forcing the sleeve together with the surrounding covering into the tapered opening, and means for attaching the conductors within the plug, substantially as described. 50

4. The combination with a connecting plug, of a conducting cord having a suitable covering, means for attaching the covering of the cord to the plug independently of the inclosed conductors, and means for attaching the conductors of the cord within the plug, the conducting strands being wound in spiral form to permit of longitudinal extension of the conductors, substantially as described. 55 60

5. The combination with a central cord, of several conducting strands wound in a close spiral about the cord, the turns of the different conductors being separated by interposed cords of insulating material. 65

6. In combination, in a switchboard cord, a central cord of insulating material, several flexible conducting strands, and interposed cords of insulating material, separating the conducting strands from one another, the different strands being wound in a close spiral about said central core, as described. 70

7. The combination in a switchboard cord, of several strands of conducting material, strands of insulating material interposed between said conducting strands, said strands being wound in close spirals, and a flexible envelope of insulating material, as described. 75 80

In witness whereof I hereunto subscribe my name this 29th day of August, A. D. 1894.

FRANK R. MCBERTY.

Witnesses:

ELLA EDLER,
DUNCAN E. WILLETT.