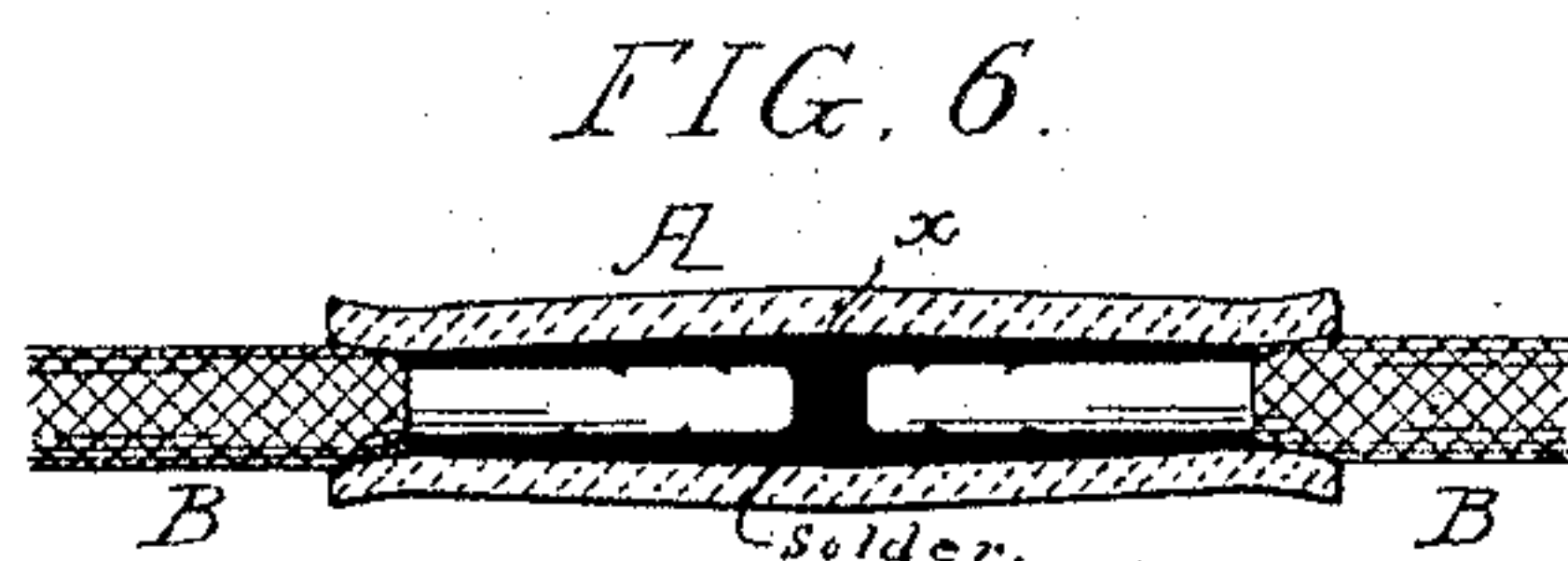
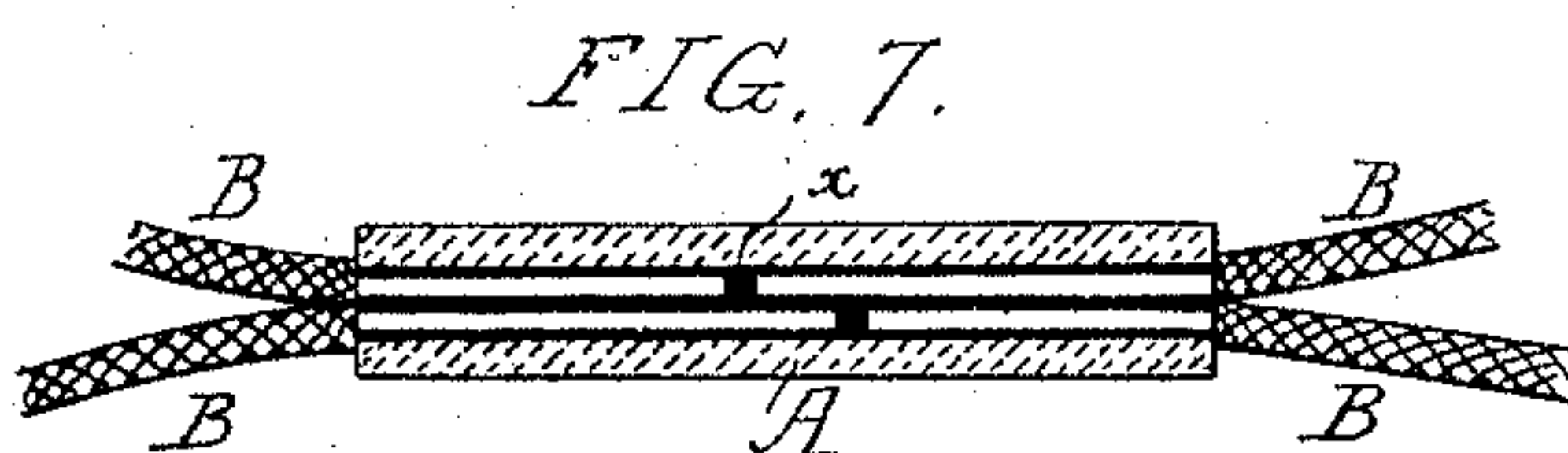
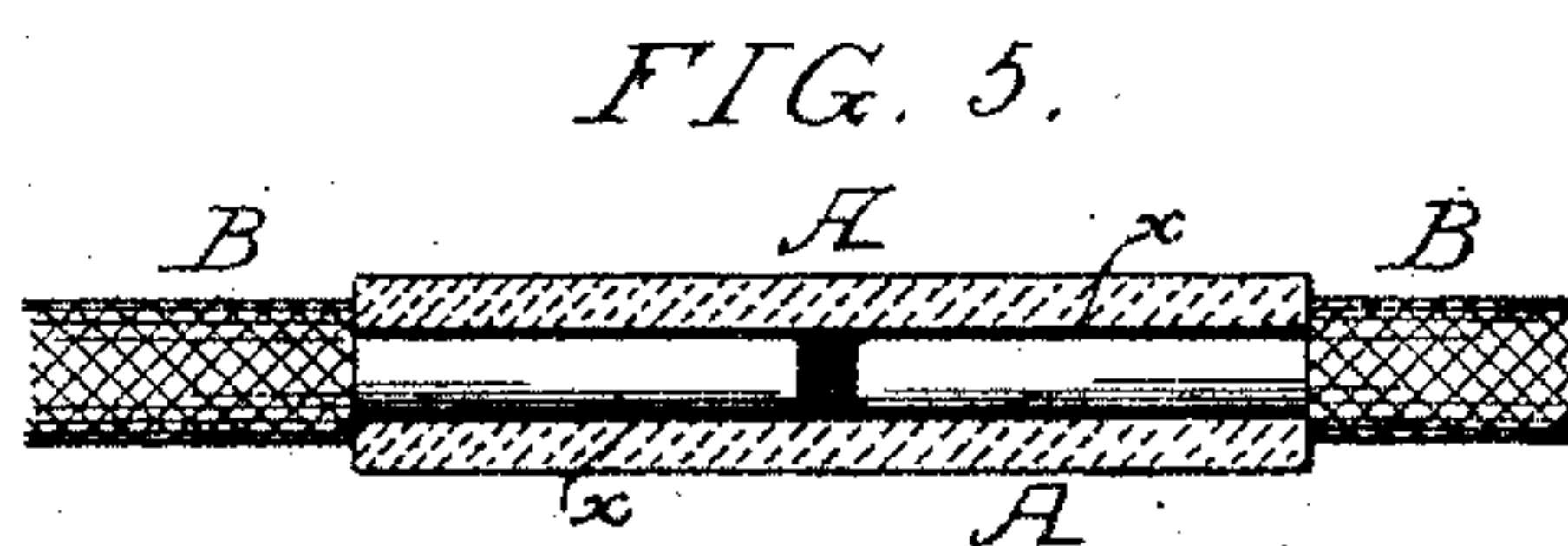
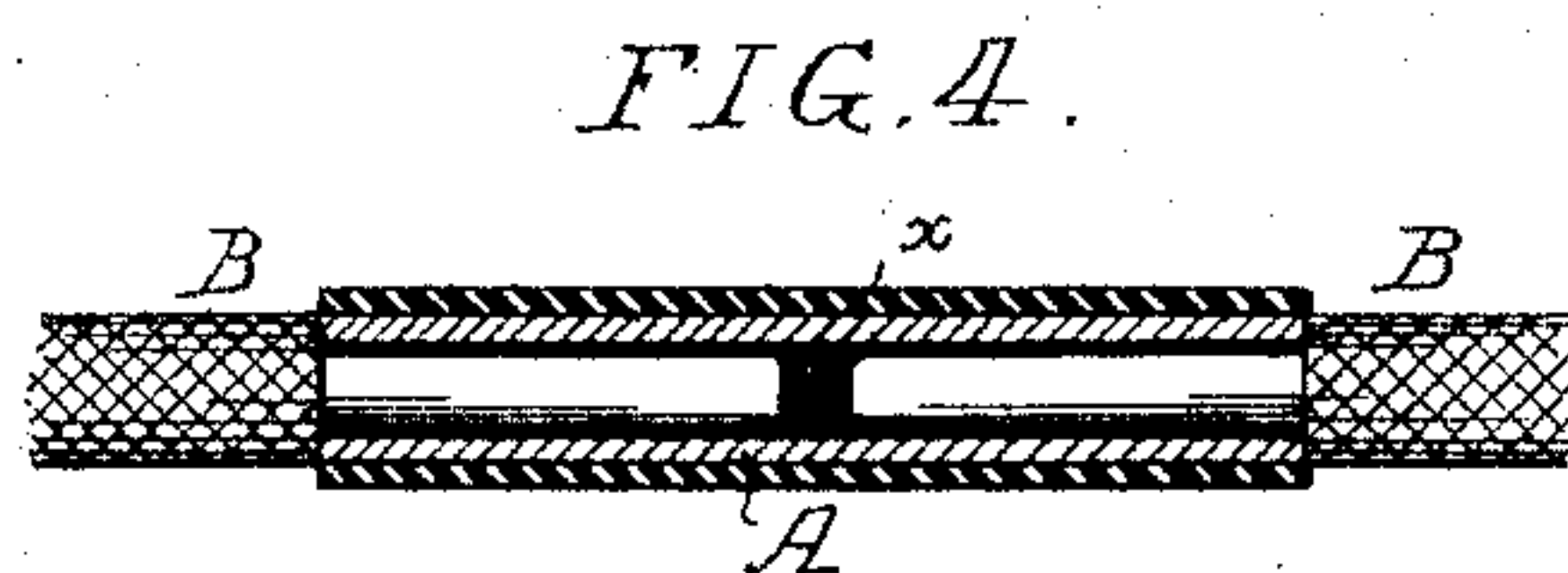
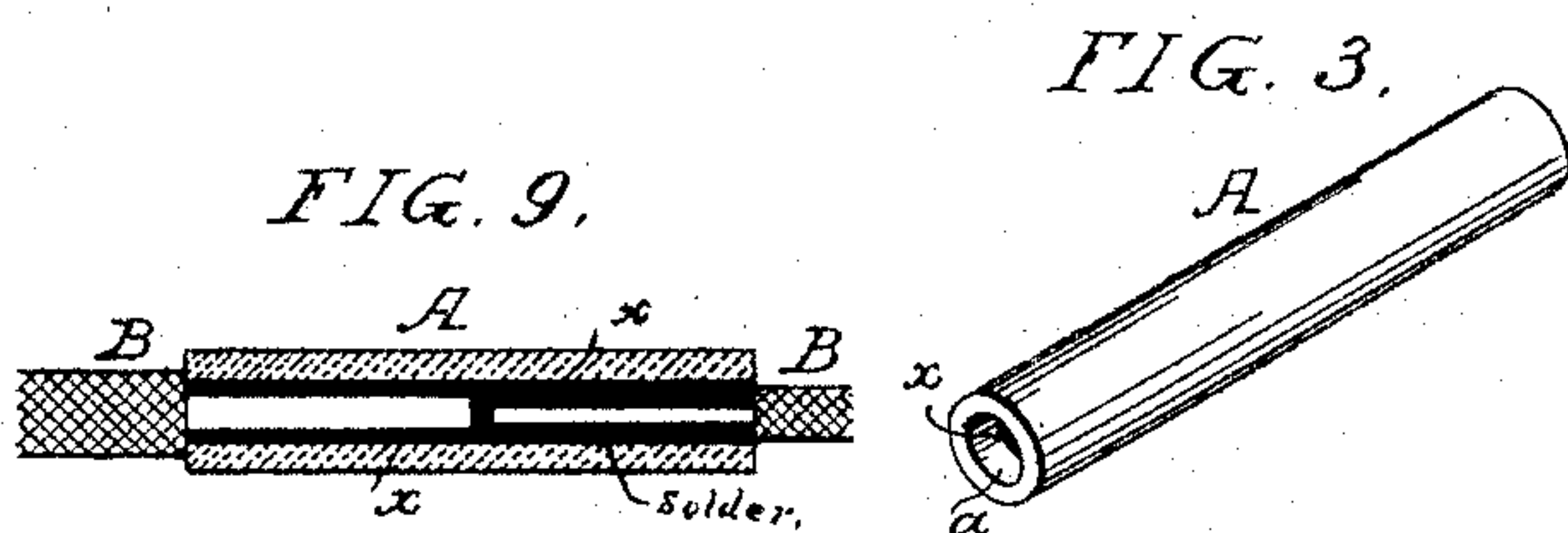
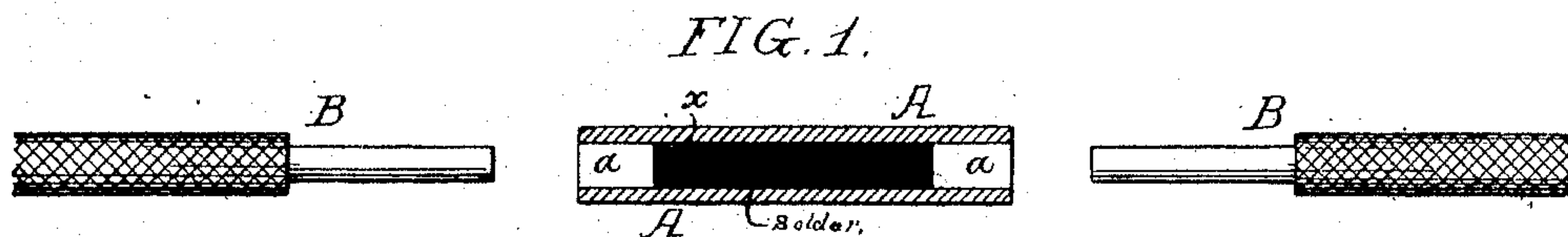


(No Model.)

H. HOWSON.  
COUPLING FOR ELECTRIC WIRES.

No. 355,611.

Patented Jan. 4, 1887.



Witnesses:  
John E. Paver  
William D. Bonner.

Inventor:  
Henry Howson  
by his Attorneys  
Howson & Ship



# UNITED STATES PATENT OFFICE.

HENRY HOWSON, OF PHILADELPHIA, PENNSYLVANIA.

## COUPLING FOR ELECTRIC WIRES.

SPECIFICATION forming part of Letters Patent No. 355,611, dated January 4, 1887.

Application filed October 26, 1886. Serial No. 217,224. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY HOWSON, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Couplings for Electric Wires, of which the following is a specification.

The object of my invention is to so construct a coupling for conductors of electricity that said coupling can be readily applied, and will provide a neat, compact, and effective means of uniting said conductors.

In the accompanying drawings, Figure 1 is a sectional view of my improved coupling in its simplest form, showing at each side wires deprived for a short distance of their insulating covering and ready to be inserted into the coupling. Fig. 2 is a sectional view showing the wires joined by the coupling. Fig. 3 is a perspective view of the coupling; Figs. 4, 5, and 6, views of different forms of coupling made in accordance with my invention; and Figs. 7, 8, and 9, views illustrating different forms of joint.

In Figs. 1, 2, and 3 A represents a metallic sleeve, of sufficient length to form a good connection, and having an internal diameter somewhat greater than the diameter of the wires B B, which are to be coupled. In the sleeve A is a mass,  $x$ , of solder, a space,  $a$ , being preferably left at each end of the sleeve to permit the ready insertion of the ends of the wires B B.

By the term "solder" I imply any metal or material having a lower melting-point than that of the material of which the coupling-sleeve or conductors is composed.

In order to couple two wires, a portion of the insulating material is first removed from the end of each wire, as shown in Fig. 1, and after the wires are, by preference, scraped to clean the same they are inserted into the opposite ends of the sleeve and caused to press upon the mass of solder  $x$ . Heat being applied to the sleeve, the solder in the same is melted, and the ends of the wires approach each other, as shown in Fig. 2, displacing the molten solder which fills the space between the wires and the interior of the sleeve,

so that when the coupling is cool a secure union of the wires is effected, said wires being soldered together and to the sleeve. It will be seen that wires of any diameter less than the internal diameter of the coupling-sleeve A can be readily and securely united in this way.

In Fig. 4 I have shown the metallic sleeve A incased with insulating material, which may be glass or other material suitable for the purpose, and which may be applied either before or after the coupling is made, the latter plan being preferred when the insulating material is such as to be injuriously affected by heat. When an insulating coupling is desired, however, I prefer to make the sleeve A of glass or potter's ware, as shown in Fig. 5, and I prefer to roughen the inner surface of the sleeve in order that the solder may take proper hold thereon, or the sleeve may be expanded in the center, as shown in Fig. 6, to prevent the solder from being drawn longitudinally therefrom, and the ends of the sleeve may be flared, as shown in said figure, so as to permit the insulating coverings of the wires to enter the sleeve for a short distance.

Fig. 7 illustrates four wires coupled together by a sleeve. The wires may be bent within the coupling-sleeve, or nicked or roughened, in order to insure the proper hold of the solder thereon, to prevent the wires from being drawn apart, and, if desired, the opposite end of the coupling-sleeve can be compressed upon the wires by pinching each end of the sleeve while it is hot.

Where the wires are much smaller in diameter than the interior of the coupling-sleeve, I prefer to lap the ends of the wires as shown in Fig. 8.

One of the advantages of my improved coupling is that it is available for coupling wires of different diameters, as shown in Fig. 9, as well as wires of the same size.

I claim as my invention—

1. A coupling for electrical conductors, consisting of a sleeve containing solder, and having an outer face of insulating material, all substantially as specified.

2. A coupling for electrical conductors, con-

sisting of a sleeve of glass or equivalent insulating material containing solder, all substantially as specified.

- 5 3. A coupling for electrical conductors, consisting of a sleeve containing a mass of solder, which is discontinued some distance from each end of the sleeve, all substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY HOWSON.

Witnesses:

JOSEPH H. KLEIN,  
HARRY SMITH.