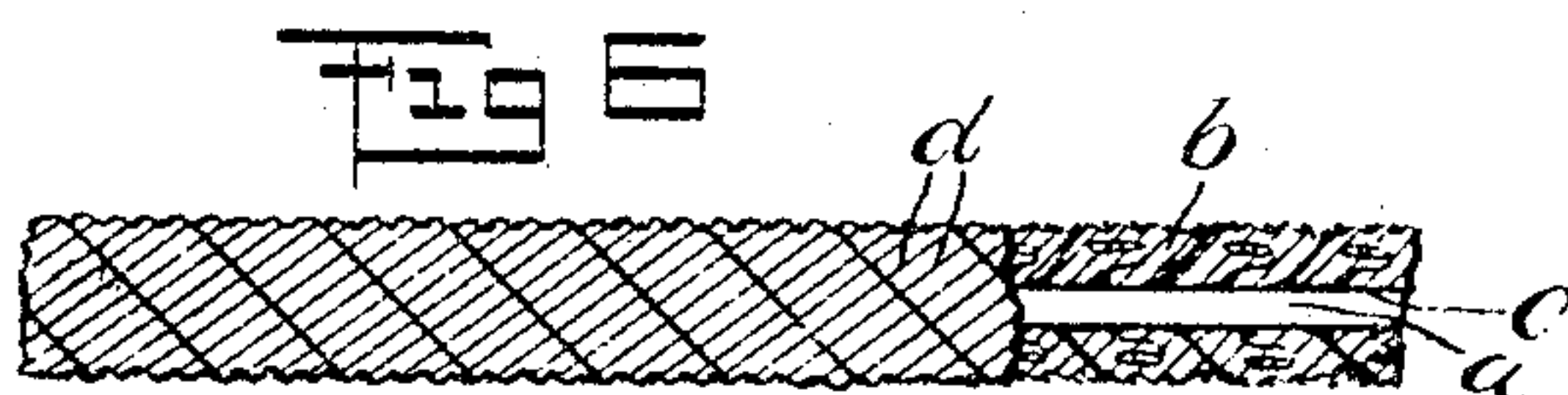
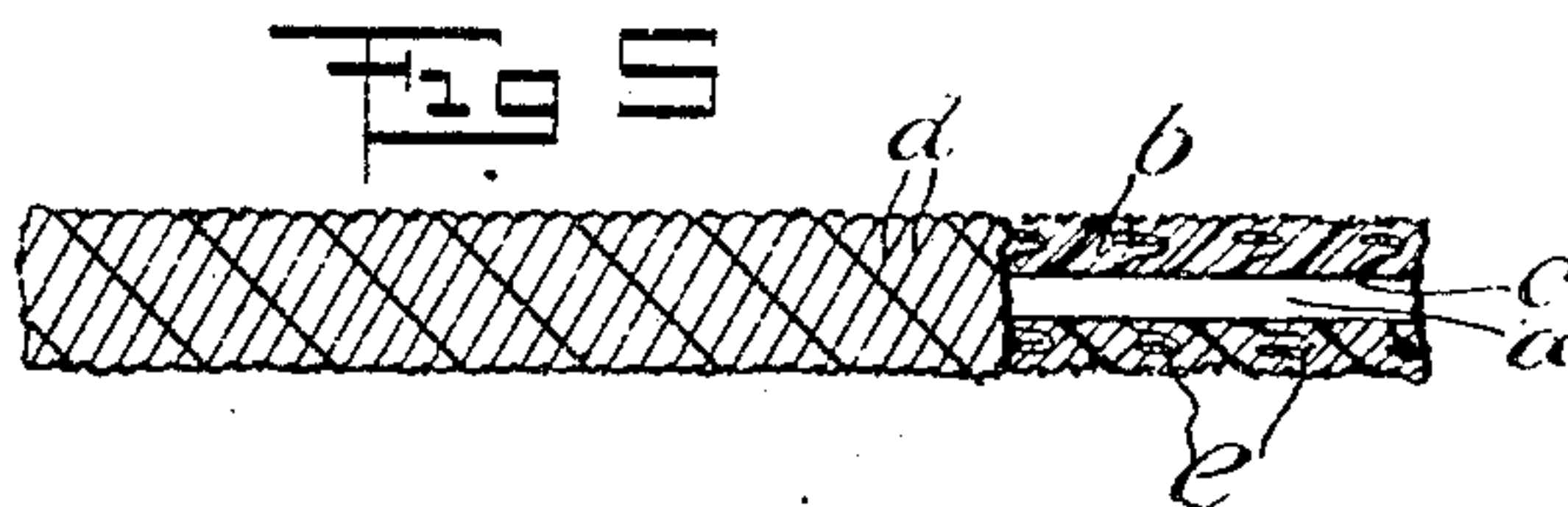
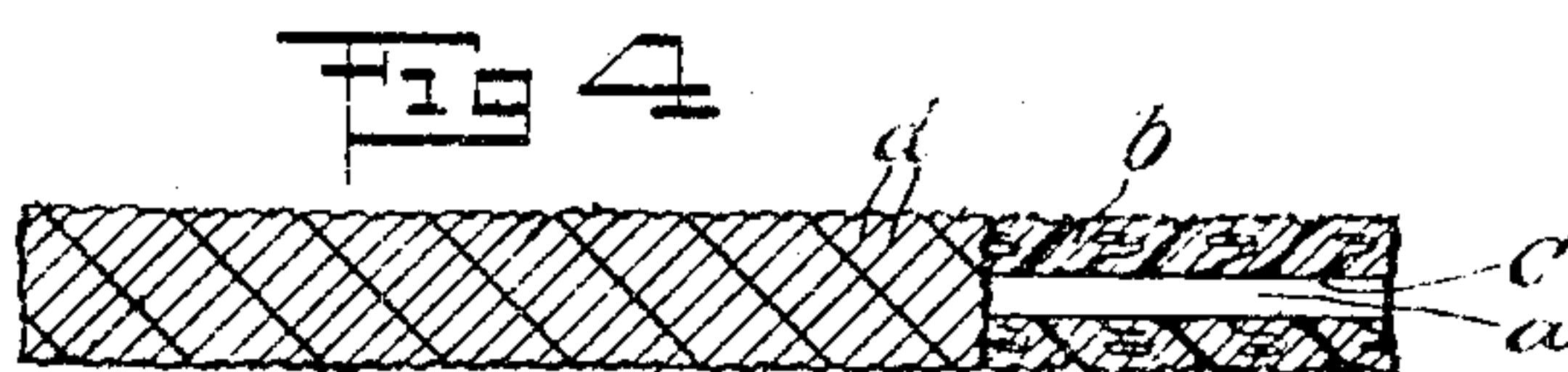
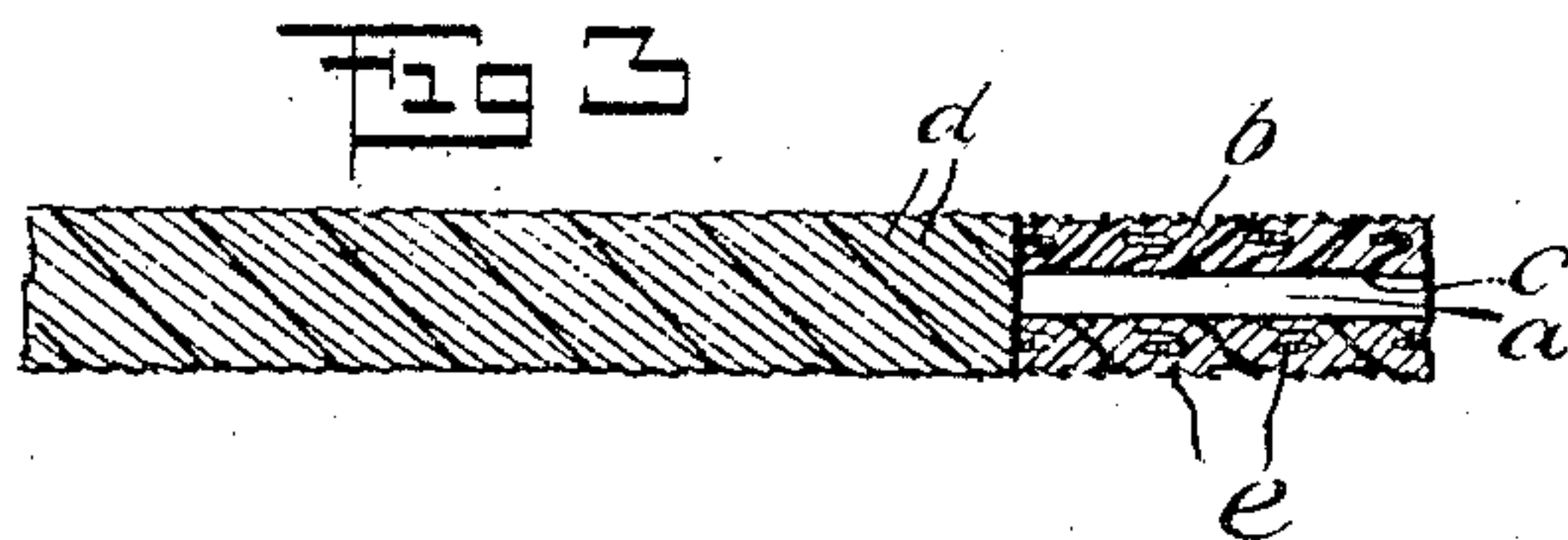
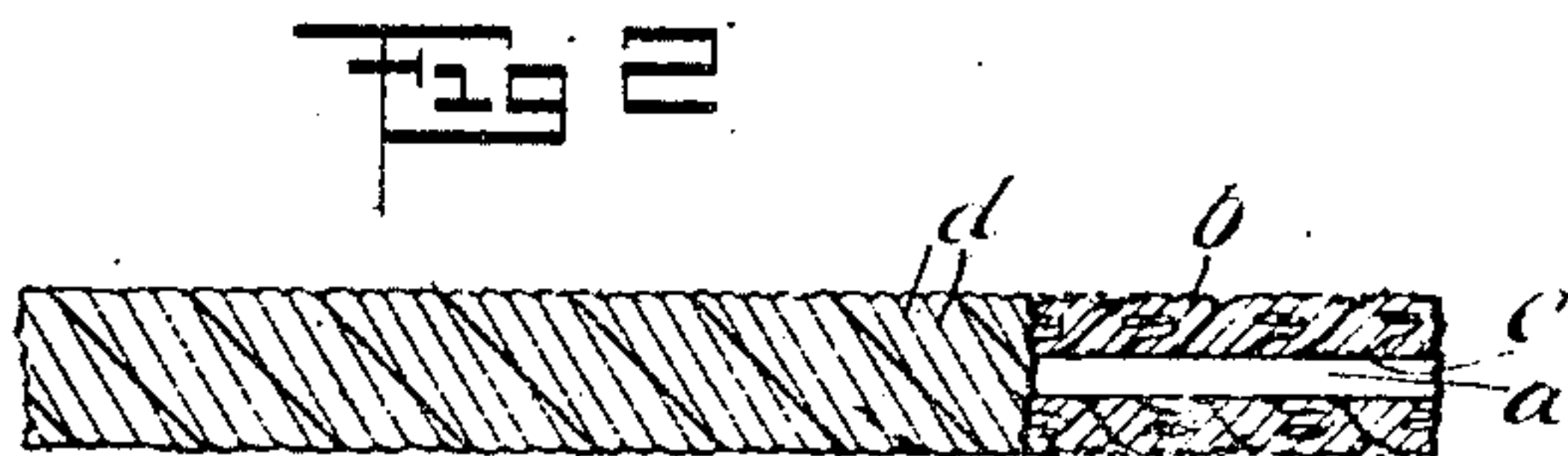
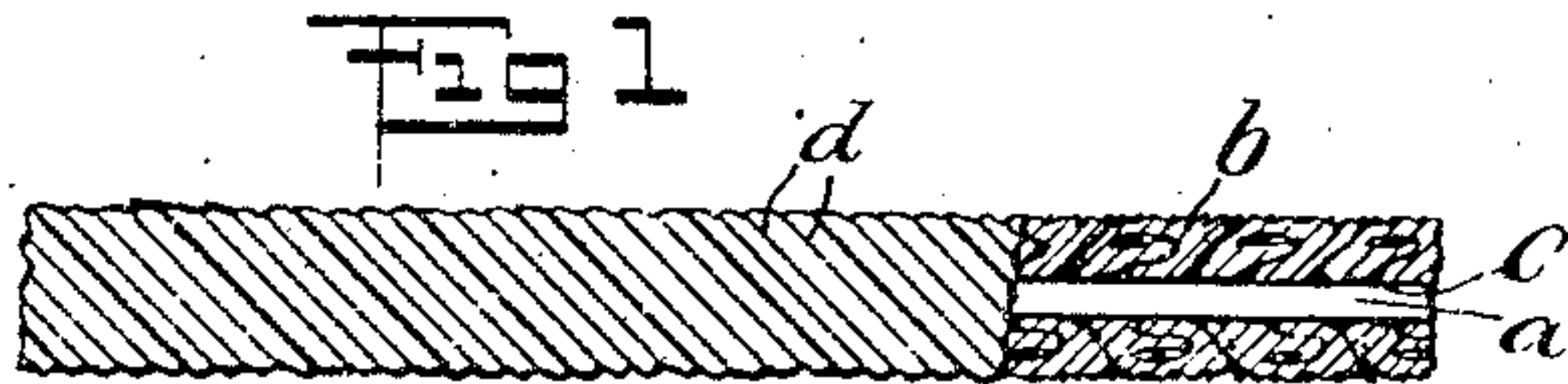


W. E. COOK.  
INSULATED WIRE.  
APPLICATION FILED APR. 24, 1917.

1,298,297.

Patented Mar. 25, 1919.



William E. Cook INVENTOR

Grand P. Winterboth  
his ATTORNEYS.



# UNITED STATES PATENT OFFICE.

WILLIAM E. COOK, OF NEW YORK, N. Y., ASSIGNOR TO INSULATION DEVELOPMENT CORPORATION, A CORPORATION OF NEW YORK.

## INSULATED WIRE.

1,298,297.

Specification of Letters Patent.

Patented Mar. 25, 1919.

Application filed April 24, 1917. Serial No. 164,309.

*To all whom it may concern:*

Be it known that I, WILLIAM E. COOK, a subject of the King of the United Kingdom of Great Britain and Ireland, residing at St. George, in the borough of Richmond, city of New York, county of Richmond, and State of New York, have invented certain new and useful Improvements in Insulated Wire, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to insulated wire and more particularly to such wire wherein the coating for the wire is composed of a fibrous material saturated or impregnated with asphaltum or a similar viscous composition.

Heretofore insulated wires have been produced which have been composed of a conductor wire having a covering formed of a cotton sliver secured in place upon the wire by means of an exterior braid, said cotton sliver and said braid being applied to the wire by entirely independent operations and in entirely different machines, the covering for the wire being saturated or impregnated by a distinct operation after the braid has been applied.

The object of my present invention is to provide an insulated wire in which the outside braid will be entirely dispensed with, the covering for the wire being held in place thereon partly by means of an adhesive forming a bond between the cotton sliver and the wire, and partly by a continuous strand of a fibrous, absorbent material, such as cotton thread or cord, wound spirally about the cotton sliver and embedded therein sufficiently deeply to be practically indiscernible in the completed product. In addition to the binding strand about the cotton sliver, I also preferably employ a similar strand incorporated in, and bonded to, the body of the sliver before application to the wire. I also preferably use a plurality of parallel binding strands about the sliver and such strand or strands may either be wound spirally in the same direction as the sliver is wound, at the same or different angles, or in a direction reverse to that at which the sliver is wound, at the same or different angles.

The essential characteristic of my invention is an insulated wire having no cover braid, a construction which admits of a

more thorough saturation or impregnation of the insulating material, and permits the production of the covered wire preparatory to the application of asphaltum or other similar composition, by a single, or continuous operation in one and the same machine.

The invention consists primarily in an insulated wire embodying therein a conductor wire having a cotton sliver wound spirally about same with the edges of succeeding convolutions overlapped, and an outside binder therefor consisting of a continuous strand of absorbent material wound spirally about and embedded in said cotton sliver, said sliver and said strand being saturated or impregnated with a viscous material forming a bond between the fibers of said sliver and between said sliver and said binding strands; and in such other novel features of construction and combination of parts, as are hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings,

Figure 1 shows a short section of a wire embodying one form of my invention partly in elevation and partly in section, the binding strand being wound at the same pitch as the sliver;

Fig. 2 is a similar view of another form of the invention; in which the binding strand is wound at a lower pitch than the sliver;

Fig. 3 is a similar view of still another form of the invention, in which the binding strand is wound at a higher pitch than the sliver;

Fig. 4 is a similar view of still another form of the invention, in which the binding strand is wound at the same pitch as the sliver but in the reverse direction;

Fig. 5 is a similar view of still another form of the invention, in which the binding strand is wound at a lower pitch than the sliver, but in the reverse direction; and

Fig. 6 is a similar view of still another form of the invention, in which the binding strand is wound at a higher pitch than the sliver, but in the reverse direction.

Like letters refer to like parts throughout the several views.

An insulated wire made in accordance with my invention embodies therein a conductor wire *a* having wound spirally about same a compacted strip of cotton sliver *b*



which is bonded to the wire by a stratum of adhesive material *c*. The edges of succeeding convolutions of said cotton sliver overlap each other so as to present, in the finished article, a continuous covering of substantially the same thickness throughout.

The winding of cotton sliver is held upon the wire by being bonded thereto, as described, and in addition thereto by means of a binding strand *d* of flexible, absorbent material consisting of a cotton thread, or cord wound spirally about the compacted mass of cotton sliver and embedded therein in a manner to be within the plane of the outside of the completed wire.

Preferably, I use a plurality of such binding strands, lying in parallel planes, and spaced apart sufficiently to permit each strand to be fairly deeply embedded in the compacted cotton sliver, while exposing said sliver between the different strands.

The strands *d* may be wound about the cotton sliver at the same pitch as the sliver is wound as shown in Fig. 1; at a lower pitch as shown in Fig. 2; at a higher pitch as shown in Fig. 3; in the reverse direction and at the same pitch as shown in Fig. 4; in the reverse direction at a lower pitch as shown in Fig. 5; or in the reverse direction at a higher pitch, as shown in Fig. 6.

In the form of the invention shown in Fig. 1, the binding strands will not cross the lap between succeeding convolutions of the cotton sliver at any point, while in each of the other forms of the invention, the binding strands will cross this lap in a manner to minimize any tendency of the sliver to unwind from the wire in the event of exhaustion of the adhesive bond between the wire and the sliver, or between the fibers of the sliver.

In actual use, there is however, but little tendency of the insulating covering to unwind in this manner. However, it is preferable to guard against this by having the binding strands cross the lap between succeeding convolutions of the sliver.

In addition to the outside strand, or strands, above referred to, I preferably use a similar strand *e* inclosed by, and bonded to, the body of the cotton sliver, the sliver being folded over this strand *e*, and being of a sufficient width to insure the desired rapid covering of the wire.

The fibers of the cotton sliver are matted when the sliver is compacted upon the wire, and the sliver *c* and the binding strands *d—e* are cemented together, or set in relation to each other, by an insulating medium, such as an asphaltum or other composition, with which such sliver and said binding strands are saturated or impregnated.

A wire made in accordance with my invention, possesses the advantage of a substantially homogeneous covering of insulating

material for the wire, which is thoroughly saturated or impregnated with the asphaltum or other composition and wherein the various parts are firmly bonded to each other and to the wire. Furthermore, a wire made in accordance with my invention may be rapidly and cheaply produced and the binding strands will be so protected by and incorporated in the cotton sliver as to minimize likelihood of the cutting of the binder as a result of abrasion or other conditions of use.

A wire made in accordance with my invention takes a smooth finish, the binding strands not being conspicuous in the finished article.

Having described the invention what I claim as new and desire to have protected by Letters Patent is:—

1. Insulated wire embodying therein a conductor wire having a cotton sliver wound spirally about and compacted upon same with the edges of succeeding convolutions overlapped, and an outside binder therefor consisting of a continuous strand of absorbent material wound spirally about, and embedded in, said cotton sliver, said sliver and said strand being saturated or impregnated with a viscous material forming a bond between the fibers of said sliver and between said sliver and said binding strands.

2. Insulated wire embodying therein a conductor wire having a cotton sliver wound spirally about and compacted upon same with the edges of succeeding convolutions overlapped, and an outside binder therefor consisting of a plurality of parallel continuous strands of absorbent material wound spirally about, and embedded in, said cotton sliver, said sliver and said strands being saturated or impregnated with a viscous material forming a bond between the fibers of said sliver and between the sliver and said binding strands.

3. Insulated wire embodying therein a conductor wire having a cotton sliver wound spirally about and compacted upon same with the edges of succeeding convolutions overlapped, and an outside binder therefor consisting of a continuous strand of absorbent material wound spirally about, and embedded in, said cotton sliver, and a binding medium between said conductor wire and said sliver, said sliver and said strand being saturated or impregnated with a viscous material forming a bond between the fibers of said sliver and between said sliver and said binding strands.

4. Insulated wire embodying therein a conductor wire having a cotton sliver wound spirally about and compacted upon same with the edges of succeeding convolutions overlapped, and an outside binder therefor consisting of a plurality of parallel continuous strands of absorbent material wound



spirally about, and embedded in, said cotton sliver, a binding medium between said conductor wire and said sliver, said sliver and said strands being saturated or impregnated with a viscous material forming a bond between the fibers of said sliver and said binding strands.

5. An insulated wire embodying therein a conductor wire having a strip or ribbon consisting of cotton sliver folded upon, and bonded to, a flexible, absorbent strand wound spirally about same with the edges of succeeding convolutions overlapped, and an outside binder therefor consisting of a continuous strand of absorbent material wound spirally about, and embedded in, said cotton sliver, said sliver and said strand being saturated or impregnated with a viscous material forming a bond between the fibers of said sliver and between said sliver and said binding strands.

6. An insulated wire embodying therein a conductor wire having a strip or ribbon consisting of cotton sliver folded upon and bonded to a flexible, absorbent strand wound spirally about same with the edges of succeeding convolutions overlapped, and an outside binder therefor consisting of a plurality of parallel continuous strands of ab-

sorbent material wound spirally about, and embedded in, said cotton sliver, said sliver and said strand being saturated or impregnated with a viscous material forming a bond between the fibers of said sliver and between said sliver and said binding strands.

7. An insulated wire embodying therein a conductor wire having a strip of ribbon consisting of cotton sliver folded upon and bonded to a flexible, absorbent strand wound spirally about same with the edges of succeeding convolutions overlapped, and an outside binder therefor consisting of a plurality of parallel, continuous strands of absorbent material, wound spirally about, and embedded in, said cotton sliver, and a binding medium between said conductor wire and said sliver, said sliver and said strands being saturated or impregnated with a viscous material forming a bond between the fibers of said sliver and between said sliver and said binding strands.

In witness whereof I hereunto affix my signature, in the presence of two subscribing witnesses, this 9th day of April, 1917.

WILLIAM E. COOK.

Witnesses:

BERTHA MUELLER,  
CLARICE FRANCK.