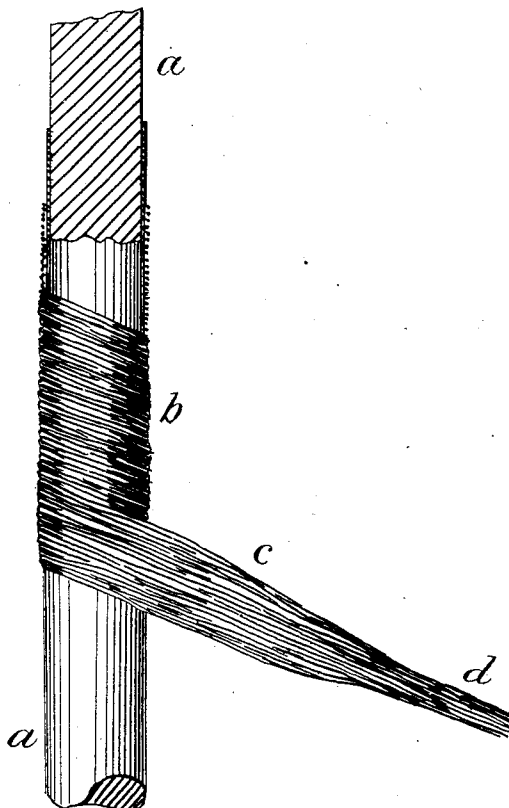


(No Model.)

H. SPLITDORF.
Insulated Electrical Conductor.

No. 239,070.

Patented March 22, 1881.



Witnesses:

John G. Theobald
A. D. Williams.

Henry Splitdorf,
Inventor,

per Alfred Theobald, atty

UNITED STATES PATENT OFFICE.

HENRY SPLITDORF, OF NEW YORK, N. Y.

INSULATED ELECTRICAL CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 239,070, dated March 22, 1881.

Application filed June 19, 1880. (No model.)

To all whom it may concern:

Be it known that I, HENRY SPLITDORF, of New York, county and State of New York, have invented a certain new and useful Improvement in Covering Wire, of which the following is a specification.

Wire as heretofore covered for electrical and other purposes has been done by winding it spirally with one or more layers of cotton or silk thread. Silk thread is used in electrical wire where a perfect insulation is required with the least thickness of covering, the finest wires generally only being so covered on account of the great expense of the silk.

Now, this invention has for its object to form a perfect insulating covering for wire which shall be of the least possible thickness, and at the same time of much less cost than the silk-thread covering, and also less expensive than the ordinary cotton-thread covering; and it consists in employing for this purpose cotton fibers before they are twisted to form threads, or using them when in the form of what is known as "slivers"—that is, after the cotton has been carded and all its fibers placed parallel and collected into a condition to be twisted and drawn into threads. The cotton when in this condition of sliver is as soft as or softer than silk in the thread form, and to apply it to the wire I first spread out the sliver so that it is approximately only one fiber in thickness, and then wind it spirally on the wire by means of suitable mechanical devices, the wire being, by preference, prepared by a coating of shellac before applying the cotton fiber and the fibers made to adhere thereto by heat in accordance with the method of insulating wire patented to me by Letters Patent of the United States bearing date December 14, 1875, and numbered 171,185.

In place of winding the cotton fibers on the varnished wire, then heating the whole to cause the cotton to adhere to the wire, the wire may be caused to pass through a heating device just before the cotton fibers are applied thereto, so that the fibers will immediately adhere to the wire. By this arrangement, under some circumstances, the fibers will be less liable to be disturbed by handling, as the varnish will again set as soon as the wire has become cooled; or the fibers may be simply wound on the wire, or wound on and then the

covered wire passed through a suitable insulating-varnish, or the wire first coated with a suitable varnish and the cotton fibers applied thereto before the varnish dries or sets.

The great advantages of this method of covering wire for electrical purposes are, first, obtaining perfect insulation without greatly increasing the size of the wire, thus allowing helices of electro-magnets to be constructed of given sizes with much greater length of wire than has heretofore been done or a given length of wire formed into smaller helices; second, in permitting helices to be better and more evenly formed on account of the soft nature of the covering; and, thirdly, in the great reduction of the first cost of the material, the difference between the cost of the cotton in the sliver and of the finest cotton thread used for insulating purposes being about as one is to six, whereas the difference between it and the silk would be many times more. Besides this difference in the first cost, a further saving is had, as much less cotton is required to give perfect insulation.

The accompanying drawing represents a wire covered with the cotton fiber in the condition before described, enlarged many times, to more clearly illustrate the nature of my invention, *a* being the wire; *b*, the cotton fibers wrapped around it, and *c* the cotton fibers as they are spread out from the sliver *d*, all the fibers, as shown, being virtually parallel. The speed at which the fibers in this condition can be wound around the wire is necessarily somewhat less than the speed the ordinary cotton thread can be wound; but this loss of speed is more than compensated by the width of the layer of fibers applied at one time.

Instead of using the cotton in the sliver form, it may be used in any stage of its manufacture after the fibers are straightened and before they are twisted.

For ladies' wear, as for bonnets, &c., wire covered in this manner will be very useful on account of its softness and small size, and for artificial flowers it is particularly adapted by reason of its softness and its appearance approaching silk-covered wire, the fibers of cotton being of a glossy nature. In fact, it can be advantageously used for all purposes for which covered wire is now used.

It is evident that other fiber than cotton

fibers may be employed to cover wire by this method; also, that the fibers may be wound on the wire more than one fiber in thickness, and that two or more layers of fibers may be wound
5 on the wire in the two directions—that is, right and left.

I have refrained from any description of the mechanical devices devised by me for the carrying out of this invention, as such will form
10 the subject of another application for Letters Patent; but,

Having fully described the nature of my invention, what I claim, and desire to secure by Letters Patent, is—

15 1. As an improvement in the art of insulating or covering wire, the within-described method, consisting in winding spirally thereon the fibers of cotton in their natural but straightened condition, as and for the purposes here-
20 inbefore set forth.

2. The improved method of insulating or covering wire, by first coating it with a suitable varnish, allowing it to dry, then passing the coated wire through a heater to melt or

soften the varnish, and then winding spirally 25 thereon, before the varnish again sets, the fibers of cotton in their natural but straightened condition, substantially as hereinbefore set forth.

3. As an improvement in the art of insulating or covering wire, the within-described 30 method, consisting in winding spirally thereon the fibers of cotton in their natural but straightened condition, and then passing the same through a suitable insulating-varnish, substantially as and for the purpose hereinbefore 35 set forth.

4. As a new and improved article of manufacture, a wire covered with the fibers of cotton in their natural but straightened condition, wound spirally thereon, as hereinbefore set 40 forth.

In testimony whereof I have hereunto set my hand this 17th day of June, 1880.

HENRY SPLITDORF.

Witnesses:

ALFRED SHEDLOCK,
JOHN D. SHEDLOCK.