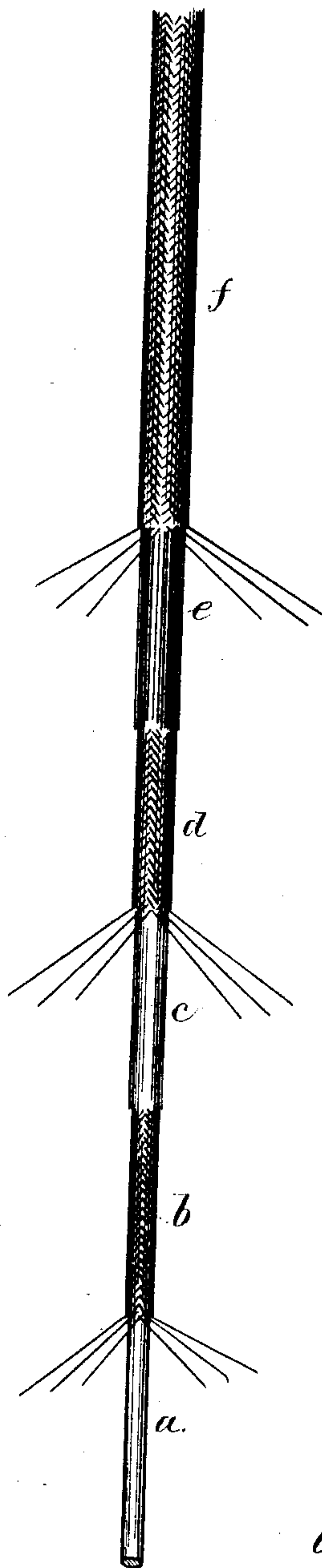


(No Model.)

A. A. COWLES.  
INSULATED ELECTRIC CONDUCTOR.

No. 272,659.

Patented Feb. 20, 1883.



Witnesses

Chas. H. Smith  
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Inventor

Alfred A. Cowles  
per Lemuel W. Serrell  
att'y

# UNITED STATES PATENT OFFICE.

ALFRED A. COWLES, OF NEW YORK, N. Y.

## INSULATED ELECTRIC CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 272,659, dated February 20, 1883.

Application filed November 10, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED A. COWLES, of the city and State of New York, have invented an Improvement in Insulated Electric Conductors, of which the following is a specification.

Copper and other conductors have been covered with braided cords and asphalt, and bituminous materials have been used for insulating such conductors and rendering the same water-proof, and such bituminous materials have been applied to the wire itself and to the cords or strips of fibrous materials.

I have heretofore manufactured insulated electric conductors with braided coverings having an intervening layer of paint, such paint being composed of white lead or zinc-white ground in linseed-oil, the object being to render the covering non-combustible, so that the same will not be ignited in case the metallic conductor becomes heated by the electric current passing through the same. I do not herein claim this means for insulating and rendering fire-proof the covered wire, as the same forms the subject of a separate application.

My present invention is an addition or improvement to the aforesaid insulated and fire-proof electric conductor, whereby the risk of injury from moisture is still further guarded against.

I manufacture the said insulated conductor in the following manner: The copper or other wire is passed up through a braiding-machine, the head of which machine lays upon the wire a braided covering of cords. This passes up through a funnel or vessel with an opening in the bottom, having a packing through which the braided wire passes. This vessel holds paint, which adheres to the covering as the wire rises. A second covering of braided threads is now applied, and the paint is forced into the first layer and oozes through the second layer, and the covering is preferably compressed. This mode of manufacture has heretofore been employed by me, and the covered wire is very durable and perfect in its insulation. It, however, sometimes happens that the workman, through careless handling and short bends made in the heavy wire, produces small pores or cracks in the paint, which may admit moisture.

My present invention is for more fully pro-

tecting the aforesaid fire-proof insulating-covering from the action of moisture when exposed to the same. I add to the insulated conductor aforesaid a coating of water-proof and slightly elastic material to lessen the risk of the insulating-covering being injured. I prefer and use a water-proof covering made of india-rubber, asphalt, and japan varnish, as the same is more or less elastic; but asphalt varnish or india-rubber varnish may be substituted. I prefer to apply this water-proof coating to the conductor outside the fire-proof coating and inside a coating of fibrous material that is braided upon the bituminous or similar waterproofing substance before it dries, so that the outer covering may be saturated and the intervening material forced into the pores of the inner coverings.

In the drawing, *a* represents the metallic wire; *b*, the first braiding; *c*, the layer of paint; *d*, the second layer of braid, applied to the paint, preferably before it hardens; and *e* is the layer of elastic water-proof material, such as rubber, asphalt, and japan; and *f* is the outer covering, braided upon the coating *e*, so as to form a perfectly water-proof exterior to the fire-proof coating of the conductor, substantially as set forth.

I am aware that asbestos has been used as a covering upon electric conductors; but as the fiber is very short and weak there is constant difficulty in applying the braided or twisted covering. Besides, this it is liable to be stripped off or abraded in use.

I am also aware that india-rubber, asphaltum, and similar materials have been applied as a coating to conductors. I do not therefore lay claim herein to either of the separate portions of the covering.

I claim as my invention—

The combination, with the metallic conductor, of two or more coverings of fibrous material, with paint intervening between them, and a coating of water-proof material—such as asphalt, rubber, or japan—outside the same, substantially as set forth.

Signed by me this 6th day of November, A. D. 1882.

ALFRED A. COWLES.

Witnesses:

GEO. T. PINCKNEY,  
WILLIAM G. MOTT.