(No Model.)

W. R. PATTERSON.

Conductor for Oil Cables.

No. 239,538. **Patented March 29, 1881.**

Fig. 1.

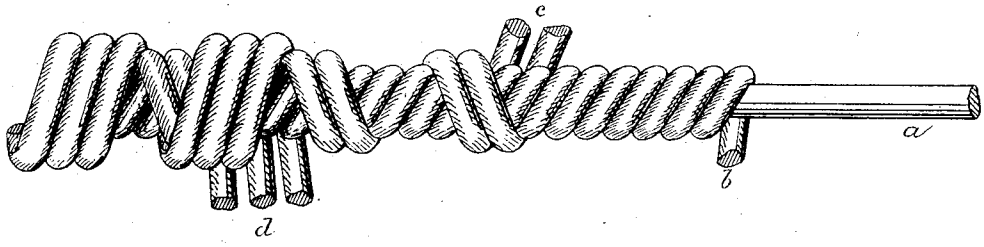
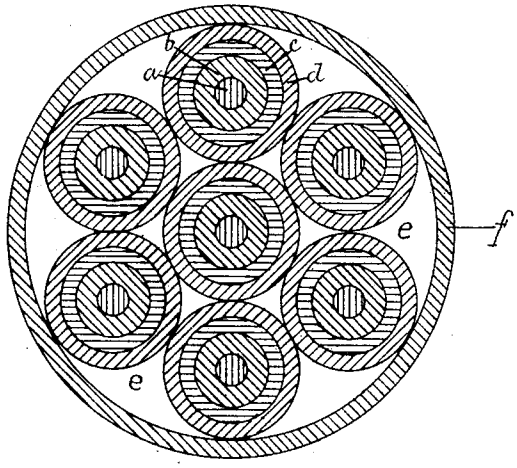


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM R. PATTERSON, OF EVANSTON, ASSIGNOR TO WESTERN ELECTRIC MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS.

CONDUCTOR FOR OIL-CABLES.

SPECIFICATION forming part of Letters Patent No. 239,538, dated March 29, 1881.

Application filed June 23, 1880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. PATTERSON, of Evanston, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Conductor for Oil-Cables, 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, and in which like letters of reference in the different figures indicate similar parts.

My invention consists in so winding the ordinary fibrous material about the wires that the surface of the wires will be wholly covered, while the outer portion of the fibrous coating will be open or honeycombed. Thus the oil is permitted to circulate freely among the conductors, whereby injurious chemical action is avoided, while the wires are maintained at an even and uniform distance apart. The object of the fibrous covering as applied to annunciator and office wire is to protect and insulate the copper wire; but in an oil-cable the function of the covering is simply to keep the wires at a uniform distance apart. The iron pipe of the cable protects the conductors against positive or external injury, while the oil acts as a non-conductive medium, and at the same time wards off inherent dangers, such as corrosion. If the wires could be kept apart by other means the fibrous covering would be of no use whatever, and could therefore with great advantage be wholly dispensed with. My invention approximates toward this, since the least amount of covering is used consistent with keeping the conductors in proper position, and the oil circulates nearly as freely as if there were no covering wound upon the wires. By preference I use jute yarn for the fibrous covering, and I have found that three layers or coatings produce the best results when applied in the manner next hereinafter set forth.

In the drawings, Figure 1 shows a single conductor on a scale larger than I have seen in use. Fig. 2 is a transverse vertical section of an oil-cable, also on an enlarged scale.

a is the wire; *b*, the first coating; *c*, the second coating, and *d* the third coating.

When the cable is laid all the spaces *e* among the conductors are kept full of oil under hydrostatic pressure.

f shows the iron pipe.

The first coating, *b*, is applied in the usual manner and should cover the wire, otherwise any scales of iron or filings or anything of the sort that may be in the pipe would get in among the wires and cause a cross. The second coating, *c*, is wound in the opposite direction in the form of a spiral, leaving one-half or more of the first coating exposed; next, the third and last coating, *d*, is wound about the two coatings in the same direction as the first, but after the manner of the second coating, in the form of a spiral, as shown. Thus the covering of the wires is made open or honeycombed, as shown in Fig. 1, and while the oil is allowed to circulate freely among the conductors, as shown in Fig. 2, the wires are always maintained at a uniform distance apart, and any loose particles of iron or other conductive substances kept away from the metallic surfaces of the wires. I have found three coatings sufficient, yet it may be convenient to apply a fourth or fifth open spiral winding when it is desired to have the wires in the cable farther apart. I prefer, however, to increase the size of the yarn rather than to unnecessarily multiply the number of open spiral windings.

A saving is effected in the material in addition to the advantage derived from the freer circulation of the oil, since much less is consumed when applied as above described for a given thickness of covering.

Prior to my invention the fibrous material had been applied so as to leave the coating open, but the surface of the wire was not wholly covered by the first winding.

I claim—

In an oil-cable, conductors consisting of wires covered with three several coatings of fibrous material, applied so as to form an open or honeycombed covering, the first of said coatings wholly covering the surface of the wires, substantially as and for the purpose specified.

WILLIAM R. PATTERSON.

Witnesses:
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