(No Model.)

L. L. SMITH.

MANUFACTURE OF COMPOUND ELECTRICAL WIRE.

No. 293,532. Patented Feb. 12, 1884.

Fig. 1

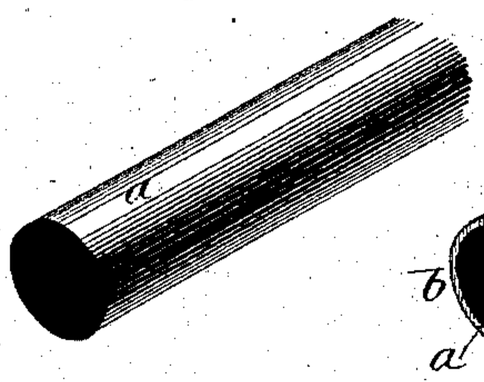


Fig. 2

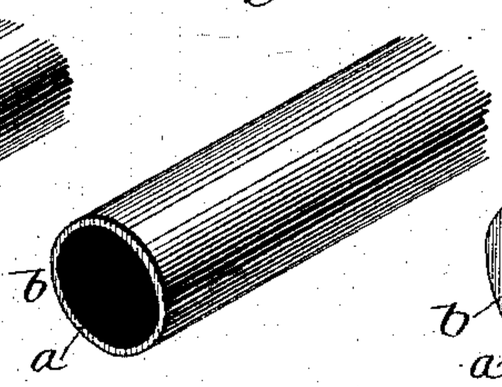
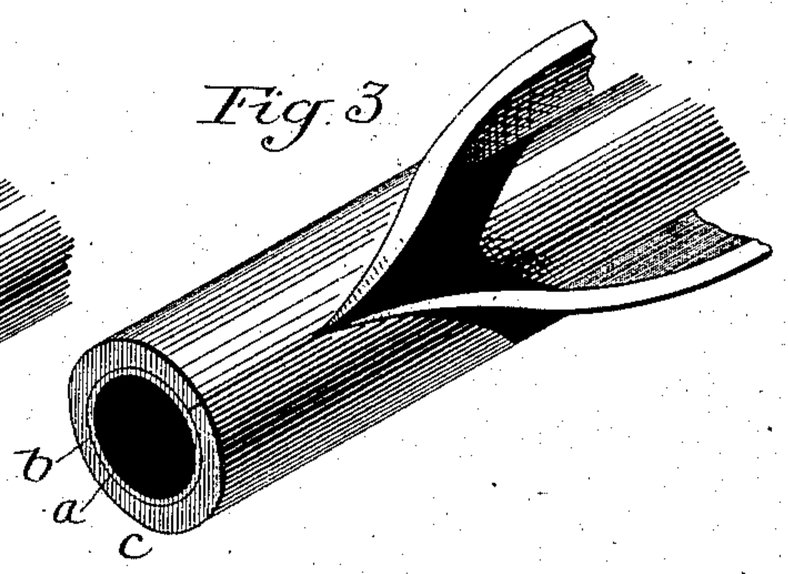


Fig. 3



Witnesses.
J. H. Thurray
Jos. C. Earle

Luther L. Smith,
Inventor.
By atty.
Jos. C. Earle.

UNITED STATES PATENT OFFICE.

LUTHER L. SMITH, OF ANSONIA, CONNECTICUT, ASSIGNOR TO THE POSTAL TELEGRAPH COMPANY, OF NEW YORK, N. Y.

MANUFACTURE OF COMPOUND ELECTRICAL WIRE.

SPECIFICATION forming part of Letters Patent No. 293,532, dated February 12, 1884.

Application filed October 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, LUTHER L. SMITH, of Ansonia, in the county of New Haven and State of Connecticut, have invented new Improvements in the Manufacture of Compound Electrical Wire; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of the core; Fig. 2, a perspective view of the core, showing the electro-deposit; Fig. 3, a perspective view of the covered wire, showing the covering as in the process of being folded around the coated core, all the figures enlarged for convenience of illustration.

This invention relates to an improvement in the manufacture of what is commonly known in trade as "compound wire"—that is to say, wire for electrical purposes in which a steel or iron center or core is covered with copper.

Heretofore copper covering has been applied to a steel or iron body by taking a strip of copper of such width that folded around the core the edges would just meet and form an envelope for the core. This ribbon of copper is folded or closed upon the core by a funnel-shaped die, through which the core and strip of copper are drawn, the contracting shape of the die causing the copper to bend around the core, and the smaller diameter or discharge end of the die of the diameter of the finished wire, so that as the covered wire passes from the die the envelope is brought into perfect cylindrical shape, with its edges close; but under the most careful manipulation it is impossible to make a continuous tight joint where the edges of the covering meet, and because of this impossibility moisture enters through the joint and attacks the core, producing oxidation, and eventually destroying the core. To obviate this difficulty, the steel wire or core has been drawn through melted tin or solder, and then the copper covering applied as before, and after the cover was applied, the whole submitted to heat sufficient to fuse the coating on the core and cause it to unite with the copper. This operation is expensive, and does not fully accomplish the object, owing to the fact that the heating process will in many places entirely remove the coating from the core, so that the surface of the core will be exposed to moisture entering through the joint.

The object of my invention is to construct such a compound wire whereby there can be no liability of external atmosphere attacking the core; and it consists in first making a thin electro-deposit of copper upon the core, and then inclosing this electro-coated wire with a covering of copper folded around it, all as more fully hereinafter described.

I first make the core *a* from steel or iron wire, in the usual manner of drawing such wire. I then make an electro-deposit of copper upon this wire, preferring for such operation the apparatus for which Letters Patent of the United States have been granted to me, No. 241,742, *b* in the illustration representing this thin electro-deposit of copper. This done, I apply the copper covering, which consists of a ribbon, *c*, of copper of the required thickness, and in width so as to just surround the coated wire, and bring the edges substantially together, as seen in Fig. 3. This completes the wire.

The closing of the copper covering upon the electro-deposited copper surface makes so firm a connection between the external covering and the deposited coat that separation is substantially impossible. The electro-deposited covering protects the core from any contact by the external atmosphere entering through the joint between the two edges of the covering, and so that, should there at any part be a considerable space between the two edges, no injury to the core can arise therefrom.

The electro-depositing of a thin coating of copper upon the wire adds very little, if anything, to the expense of the wire, as a correspondingly thinner covering may be employed.

I claim—

The herein-described compound wire, consisting of the steel or iron core *a*, coated with an electro-deposit of copper, *b*, and then covered with a strip of copper folded around the electro-coated wire, and so as to bring the two edges of the covering substantially together, and substantially as specified.

LUTHER L. SMITH.

Witnesses:

A. B. GIBSON,

H. A. WILLARD.