E. WHEELER.

Electrical Conductor.

No. 221,133. Patented Oct. 28, 1879.

Fig. 1

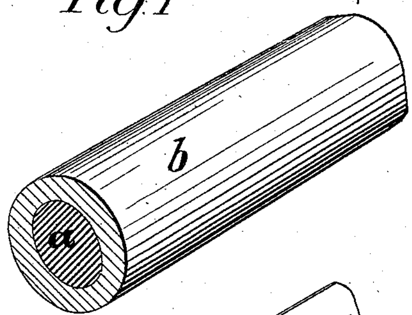


Fig. 2

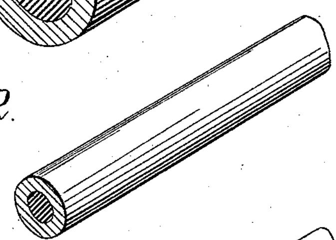
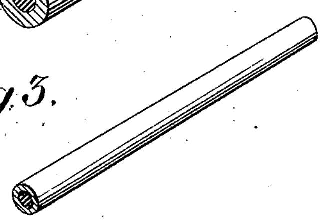


Fig. 3



Witnesses
[illegible]
Harry Smith

Inventor
Elbridge Wheeler
by his Attorneys
Howson and Son

UNITED STATES PATENT OFFICE.

ELBRIDGE WHEELER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ELECTRICAL CONDUCTORS.

Specification forming part of Letters Patent No. **221,133**, dated October 28, 1879; application filed July 28, 1879.

To all whom it may concern:

Be it known that I, ELBRIDGE WHEELER, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Telegraph-Wires, of which the following is a specification.

My invention consists of a telegraph-wire composed of a core of steel, Bessemer steel or homogeneous iron, and a clothing of wrought-iron welded to the steel, the advantages of my improved wire being its great strength and cheapness compared with wires in common use.

Heretofore ordinary exposed telegraph-wires have been made of the best charcoal-iron, steel and homogeneous iron having been discarded for the reason that their conductivity is much inferior to that of wrought-iron, although the tensile strength is much greater.

In order to produce a telegraph-wire having the same conductivity as ordinary wires, but cheaper than the latter, and at the same time possessing much greater strength, I make a bar composed of a core, *a*, of steel, Bessemer steel or homogeneous iron, and an envelope, *b*, of cheap wrought-iron, as shown in Fig. 1, of the accompanying drawings, the core and clothing, which are about the same in bulk, being welded together, so that there shall be a perfect metallic union of one with the other.

In preparing this bar there must not, after the first welding, be such rolling and rerolling at a high temperature that one metal shall merge into or become amalgamated with the other, the identity of the two metals and their relative positions being retained throughout. After the bar has been reduced by rolling while at a comparatively low temperature to a rod, Fig. 2, of proper dimensions, the latter is converted into the wire, Fig. 3, of the desired size, and this wire will have a core of steel and clothing of iron, bearing the same proportionate relation to each other as in the original bar.

The wire may be galvanized or coated with copper in the same manner as ordinary wires.

The improved telegraph-wire should be of the same diameter as ordinary wires to have the same conductivity as the latter, but it can be made at a less price, because both the core and clothing are of a cheaper metal than the charcoal-iron; at the same time the wire is much stronger than ordinary wires, and, consequently, can be suspended to poles arranged at a greater distance apart than usual.

Telegraph-conductors have been made of combined copper and iron, the copper being first cast around the iron and then reducing by rolling and drawing; but in this case there is no metallic union of the copper with the iron, and the rolling and drawing affect the copper only, as it is much softer than the iron. The product, moreover, is not a solid wire, for the film of copper will easily separate from the iron core where the wire is bent. When the core is of copper and the clothing of iron there can be no assurance of the continuity of the copper after rolling and drawing. Both of these wires of combined iron and copper, moreover, necessarily lack the strength possessed by my improved wire.

The iron and steel of which this wire is composed are so nearly alike as regards ductility that both will yield alike under the influences of the rolling and drawing processes. Hence the product is a solid wire having a definite strengthening-core of steel and an envelope of iron having the same conductivity as a charcoal-iron wire of the same size.

I claim as my invention—

A telegraph-wire consisting of a core of steel or homogeneous iron and a clothing of wrought-iron welded to and metallically united with the steel, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELBRIDGE WHEELER.

Witnesses:

ALEXANDER PATTERSON,

HENRY HOWSON, Jr.