

M. G. FARMER & G. F. MILLIKEN.
TELEGRAPH WIRE.

No. 47,940

Patented May 30, 1865.

Fig. 1.



Fig. 3.



Fig. 2.



Fig. 4.



Witnesses,

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Inventors,

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By their Atty
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UNITED STATES PATENT OFFICE.

MOSES G. FARMER, OF SALEM, AND GEO. F. MILLIKEN, OF BOSTON, MASS.

IMPROVEMENT IN LINE-WIRES FOR TELEGRAPHS.

Specification forming part of Letters Patent No. 47,940, dated May 30, 1865.

To all whom it may concern:

Be it known that we, MOSES G. FARMER, of Salem, Essex county, and GEORGE F. MILLIKEN, of Boston, Suffolk county, both of the State of Massachusetts, have invented Improved Telegraph-Wire; and we do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of our invention sufficient to enable those skilled in the art to practice it.

In the construction of aerial telegraph-lines the general practice, as is well known, is to use iron wire for transmission of the electric current, this wire being galvanized or covered with a thin coating of zinc to prevent oxidation. In the earlier constructions of lines it was sometimes attempted to use copper wire, but for want of tensile strength in such wire its use had to be abandoned. Yet the employment of copper wire is a desideratum on account of its great superiority over iron as a conductor, and could its tensile strength be made equal to that of iron it would, to a great extent, supersede the iron wire.

The object of our invention has been to obtain a copper wire possessing the requisite degree of strength for aerial telegraph-lines, and we accomplish this by coring a copper wire with iron or steel, or by covering copper wire with iron or steel, the copper serving mainly for the purpose of conduction and the iron imparting the necessary condition of strength.

Our invention, therefore, consists in a copper telegraph-wire cored or covered, for the purpose of strength, with iron or steel.

In carrying out the invention or constructing this compound wire we prefer to core the copper with iron, first casting the copper around an iron bar and then by the processes of rolling and drawing attenuating the same into wire by the well-known methods of wire-drawing. It will be obvious, however, that the iron can be placed around the copper and the

resultant bar drawn out into a wire, leaving the copper in the center; but the first-named construction we consider preferable, as the iron is protected from oxidation, and the manufacture of this wire is the more practicable.

Figures 1 and 2 of the drawings represent, respectively, longitudinal and cross-sections of a copper wire cored with iron or steel, Figs. 3 and 4 being similar representations of a copper wire covered with iron or steel.

The relative values of iron wire of Nos. 8 and 9, (Birmingham gage,) the sizes usually employed for telegraph-lines, and of copper wire of about the same sizes strengthened under our invention, as to weight, tensile strength, and conductivity, will be understood from the following table:

	Weight (per mile.)	Tensile strength.	Conductiv- ity.
	Pounds.	Pounds.	
No. 8 iron wire.....	381	1,838	.0003436
No. 9 iron wire.....	307	1,479	.0002765
No. 11 iron wire covered with cop- per to enlarge it to No. 9.....	321	1,326	.00075
No. 11 steel wire enlarged to No. 9 with copper.....	322	2,049	.000794
No. 12 steel wire enlarged to No. 10 with copper.....	264	1,686	.000563

We claim—

As a new article of manufacture, a telegraph-wire re-enforced, for the purpose of strength, with a core or cover of iron or steel, the wire being made by drawing a compound bar of the two metals.

In witness whereof we have hereunto set our hands this 31st day of January, A. D. 1865.

MOSES G. FARMER.
GEO. F. MILLIKEN.

Witnesses:

J. B. CROSBY,
FRANCIS GOULD.