

(No Model.)

T. J. MAYALL.
COMPOUND TELEGRAPH WIRE.

No. 243,934.

Patented July 5, 1881.

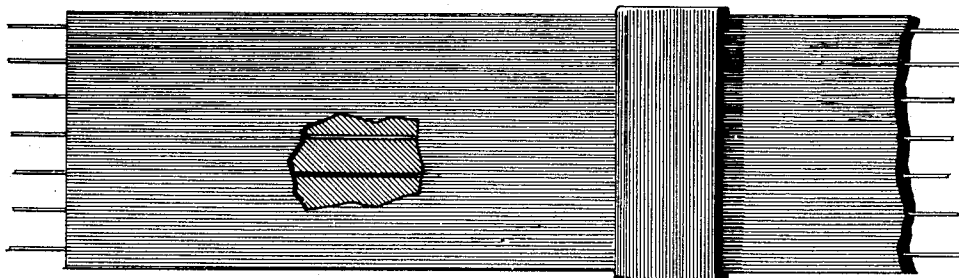


Fig. 1.

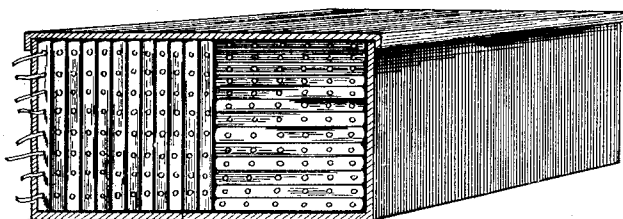


Fig. 2.



Fig. 3.



Fig. 4.

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COMPOUND TELEGRAPH-WIRE.

SPECIFICATION forming part of Letters Patent No. 243,934, dated July 5, 1881.

Application filed March 24, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. MAYALL, of Reading, in the county of Middlesex and Commonwealth of Massachusetts, have invented a new and useful Improvement in the Construction of Lines of Telegraph, of which the following is a specification.

This invention relates to the construction of compound conductors or cables for telegraphic lines by inclosing the separate wires in a mass or between sheets of an insulating and vulcanizable material, such as hereinafter described, while in a plastic state and then vulcanizing.

In the practice of this invention I prefer copper wire, as copper has a greater capacity for conducting the electric current than other metals, and consequently a smaller wire can be used than if made of other metals.

The insulating material preferably employed in the construction of the conductor or cable is composed of a compound of india-rubber and graphite, in the proportion of about two and one-half pounds of graphite to one pound of rubber, by weight, with enough sulphur to aid in the vulcanization. The rubber compound is first run into sheets of proper thickness, then cut into strips of the width required, which are joined end to end to produce the required length. A gang of ten wires may be used in a strap or belt about three inches wide. By any suitable means the wires are laid perfectly straight, parallel with each other and at equal distances apart, and inclosed between two strips of the rubber compound, which are submitted to sufficient pressure by passing between rollers or otherwise to weld the two strips of rubber into one homogeneous whole containing the gang of wires; or single wires surrounded by a covering of the material described may be laid together to form a compound conductor and united by pressure into a homogeneous mass. I then vulcanize the rubber to such a degree as to make it flexible, and it is ready for use. A sufficient number of such pieces to extend the whole length of the telegraph-line are joined together as laid by connecting the wires at the ends and filling the spaces between and around the place where they are joined with plastic rubber compound and protecting it by winding a band of rubber around the junction. As many such gangs of insulated wire as may be re-

quired in a line of telegraph may be laid together in a box of suitable size to contain them, extending the whole length of the line. I prefer to lay the straps or belts edgewise in the box. A box three inches by four inches inside would contain ten of the straps or belts, each inclosing a gang of ten wires—in all one hundred wires. If a single strap or belt is to be used, the box may be dispensed with and the strap buried in the ground or fastened to the side or roof of buildings.

In constructing a line of telegraph by this method it will generally be found desirable to put the box containing the gangs of insulated wires below the surface of the ground deep enough to escape injury from movements on the surface; but where the circumstances are such that it is impossible or undesirable to place the wires in the ground they may be upon or supported at any desirable distance above the surface.

In cities and large towns, where there are a large number of wires required by the present system to be supported on poles or the roofs of buildings, this invention will be found especially convenient and useful, as by it all the wires may be placed under the sidewalks and pavements.

Wires insulated and laid by this method will at all times convey the electric currents with greater certainty and effect than those exposed on poles; but in stormy weather the advantage will be very great, as the insulation will be as perfect as in fine weather, and there will be no breaking of wires by wind or loading them with snow and ice. It is also especially adapted for use under water in the crossing of rivers and other waters by telegraph-lines the rubber and graphite compound having great strength.

In the drawings annexed, Figure 1 shows a gang of wires in a flat strap or belt of insulating material, with the wires projecting at each end and a band of rubber and graphite compound around a joint. Fig. 2 shows an end view of a gang of straps or belts of insulating material inclosed in a box, each strap containing a gang of telegraph-wires. Fig. 3 shows a bundle of single wires insulated and laid together. Fig. 4 represents a round cable or belt of insulating substance having a number of wires embedded therein.

I claim as new and of my invention—

1. The method of forming a compound conductor by embedding the wires separated from each other in insulating and vulcanizable material while in a plastic state, and compacting the whole into a homogeneous mass by pressing and vulcanizing, substantially as described.
2. The method of forming a compound conductor by placing the wires, suitably spaced, between sheets of insulating vulcanizable material, subjecting the whole to pressure, and then vulcanizing, substantially as described.
3. A compound conductor comprising a number of wires embedded in a homogeneous mass of molded insulating material, such as rubber and graphite, said mass forming a belt or band, flat or of other shape, and the wires embedded therein being spaced, substantially as described.

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