

# United States Patent Office.

CROMWELL FLEETWOOD VARLEY, OF NEW YORK, N. Y.

*Letters Patent No. 75,815, dated March 24, 1868.*

## IMPROVEMENT IN INSULATORS FOR TELEGRAPHS.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, CROMWELL FLEETWOOD VARLEY, a British subject, now residing in the city, county, and State of New York, have invented certain new and useful Improvements in Insulators for Electric Telegraphs; and I do hereby declare that the following is a full, clear, and exact description thereof.

Insulators for telegraphic wires are usually made with an iron pin, coated with what is known as vulcanite, or hard vulcanized India rubber, and secured by means of plaster Paris, or other cement, inside of a porcelain or other earthenware cup inverted. As heretofore made, it has been found that the vulcanite covering is liable to be porous, and full of what are known as blow-holes, and that the iron or steel pin is liable to rust, by reason of the presence of the vulcanite covering, and that the accumulation of the rust is liable to crack the vulcanite covering.

And the first part of my said invention relates to a method of preventing the pin from rusting, and consists in coating the iron or steel pin with zinc, and then coating the zinc with tin, or an alloy of tin, preparatory to applying the vulcanite covering. The zinc is applied in the well-known manner of galvanizing iron, and the zinc is coated with tin, or an alloy of tin, by dipping in a bath of molten tin, or alloy of tin, in the same manner as sheets of iron are usually tinned; and after being so tinned, the preparation of India rubber, or other vulcanizable gum, mixed with sulphur, is applied in the green or plastic state, and then subjected to the vulcanizing heat to be hardened, in manner well known to manufacturers of vulcanite. When so made, the vulcanite will be found to be solid and without blow-holes, and the pin will not rust, however much it may be exposed. The cement used for securing the pin inside of the inverted cup is more or less porous, and the presence of such pores renders the insulation imperfect.

And the second part of my said invention, which relates to a method of avoiding such defect, consists in saturating the cement with paraffine wax, to fill up the pores. In practising the second part of my said invention, the iron pin, with its covering of vulcanite, is inserted in the cup, without touching any part of the surface thereof, except the bottom of the inside of the inverted cup, and the intervening space is filled with cement, made, by preference, of one part of plaster Paris and two parts of Portland cement, but other cement may be used, such as plaster, or Roman or Portland cement alone. After the parts have been united by the cement, the whole is put in a bath of melted paraffine wax, at a temperature of about 224° Fahrenheit, and there left until all bubbling ceases, which indicates that all the water has been expelled from the cement, and that the pores have all been filled. In this way all the pores and interstices are filled with paraffine wax, thereby rendering the insulation more perfect, and as there are no pores into which moisture can lodge, there will be no danger of fracturing the parts by the expansion of water in freezing, as heretofore.

The third part of my invention consists in covering the telegraph wire itself, at the point of support, and for a distance of a foot or more on each side, with a covering of hard rubber, similar to that placed on the insulator. This I carry into effect in the following manner, viz: First, pieces of ordinary galvanized telegraph-wire are tinned, and then covered with hard vulcanite, in the same manner that the insulator-pins are covered, as above described. Secondly, these pieces of wire are spliced into the telegraph-wire at each point of support by means of the usual soldered joints. Prior to being used, these pieces are boiled in paraffine wax, and from time to time, when their surface becomes damaged by the solar actinic rays and exposure, they are washed and rubbed with paraffine oil or coal-tar naphtha, which renews the insulating power of the surface.

These insulators are principally useful where the wires are exposed to the spray of the sea, the rain washing them clean. This oil is very useful with all kinds of insulators, for the purpose of renovating the surface.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The method, substantially as described, of preventing the metallic pins of insulators for telegraphic wires from rusting, and the vulcanite covering from being defective and being injured, by coating the said metal pins with zinc, and then with tin, or an alloy of tin, preparatory to and in combination with the outer covering of vulcanite, as set forth.

2. As an improvement on the well-known mode of securing the metallic pins, covered with vulcanite, with the insulating-cups, by means of cement, and as a means of excluding moisture and preventing the evil effects therefrom, filling the pores and interstices with paraffine wax, applied substantially as herein described.

3. Covering pieces of wire with vulcanite, for insertion at the points of support, substantially as described.

C. F. VARLEY.

Witnesses:

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