212,860

# C. M. TESSIE du MOTAY & E. STERN.

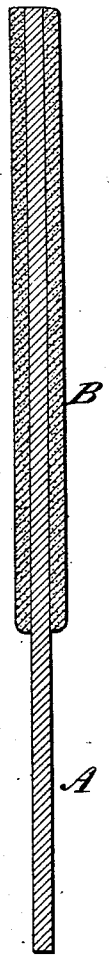
## Electric Lights.

No. 212,860. Patented Mar. 4, 1879.

117-128

*Figure 1.*


*Figure 2.*

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212,860

# UNITED STATES PATENT OFFICE

CYPRIEN M. TESSIÉ DU MOTAY, OF PARIS, FRANCE, AND EDWARD STERN, OF NEW YORK, N. Y.

## IMPROVEMENT IN ELECTRIC LIGHTS.

Specification forming part of Letters Patent No. **212,860**, dated March 4, 1879; application filed December 2, 1878.

*To all whom it may concern:*

Be it known that we, CYPRIEN TESSIÉ DU MOTAY and EDWARD STERN, of the cities of Paris, France, and New York, N. Y., respectively, have invented a new and useful Improvement in Electric Pencils, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

The object of our invention is to produce a pencil or rod of the substances hereinafter named which will replace the carbon pencil in ordinary use, and which will be less expensive, burn longer in the same length of pencil, and give a better light.

Earthy matters—such as the oxides of zirconium, magnesium, calcium, carium, strontium, silicium, aluminium, &c., or a mixture of them—become sufficiently good electrical conductors to produce an electric arc of white light when they are prepared in the manner herein described, and are united either with iron, with nickel, with platinum, or with any of the other metals allied to spongy platinum.

We prepare these pencils, which surround metallic conductors, in the following way: We heat to a red-orange heat the hydrated oxides or the silicates, or a mixture of these so-called oxides, and after allowing them to cool we pulverize them, and, if necessary, sift them. After that we knead them with sticky adherent substances, either organic—such as sirup, sugar, gum-dextrin, resinous materials, binding substances, or fat bodies, or other similar substances—or inorganic—such as silicates, alkalies, oxychlorides of magnesium, zinc, &c. We form in this way a plastic paste, which we form or mold around a metallic conductor, either by hand or by mechanical means. This paste is afterward dried either in the open air, or in a stove, or in a red-hot crucible. When it has become porous it furnishes an electric pencil having the physical properties of carbon pencils, and to be used in the same way.

Our pencil is clearly shown in the accompanying drawings, in which Figures 1 and 2 represent views of our pencil for producing the electric arc.

B represents the pencil in Figs. 1 and 2. A represents the conducting-wire.

This arrangement will maintain an electric arc between separated points in precisely the same manner as carbon pencils have previously done.

By means of the metallic conductor, which is rapidly volatilized by the heat of the flame, we carry up the electric current without appreciable resistance to the initial point of the arc. If sufficient pressure is used in forming the pencils the binding or sticky material may be dispensed with.

We do not claim in this application pencils consisting of powdered carbon attached to a central conductor by some cement, our pencils being composed of different material and being more advantageous than the carbon pencils heretofore used, from the following facts: Being composed of light-colored substances instead of black, they are better suited for reflecting and giving forth the electric light; secondly, they produce a better light by a less expenditure of current; thirdly, they are much less expensive than the ordinary carbon pencils, which are prepared with great difficulty and are liable to considerable variation in the compounds of which they are composed. These pencils are readily prepared of uniform quality throughout, and consequently the flickering of the light, which is due to the presence of foreign material in the carbon pencils, is avoided; and, lastly, our pencils last very much longer than the carbon pencils, which become rapidly disintegrated and consumed.

One of our pencils will burn three to four times as long as a carbon pencil of the same size, which is a matter of the utmost importance in the practical operation of the electric light, because one of the principal difficulties in producing the electric light practically is to adjust properly the ends of the pencils as they are consumed, and the less adjustment which has to be done the more successful is the pencil.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The herein-described electric pencil, which

consists of a rod or pencil formed of powdered earthy matter molded or shaped into a conducting-pencil by means of some combining substance, substantially as and for the purposes described.

2. The herein-described electric pencil, which consists of a metallic conductor surrounded by a coating of pulverized earthy matter united by a combining substance, substantially as described.

3. The herein-described electric pencil, which consists of an earthy oxide formed into a conducting rod or pencil, and capable of maintaining the electric arc, substantially as described.

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