L. R. LONGWORTH.
Electric Candles.

No. 203,844. Patented May 21, 1878.

FIG. 1.

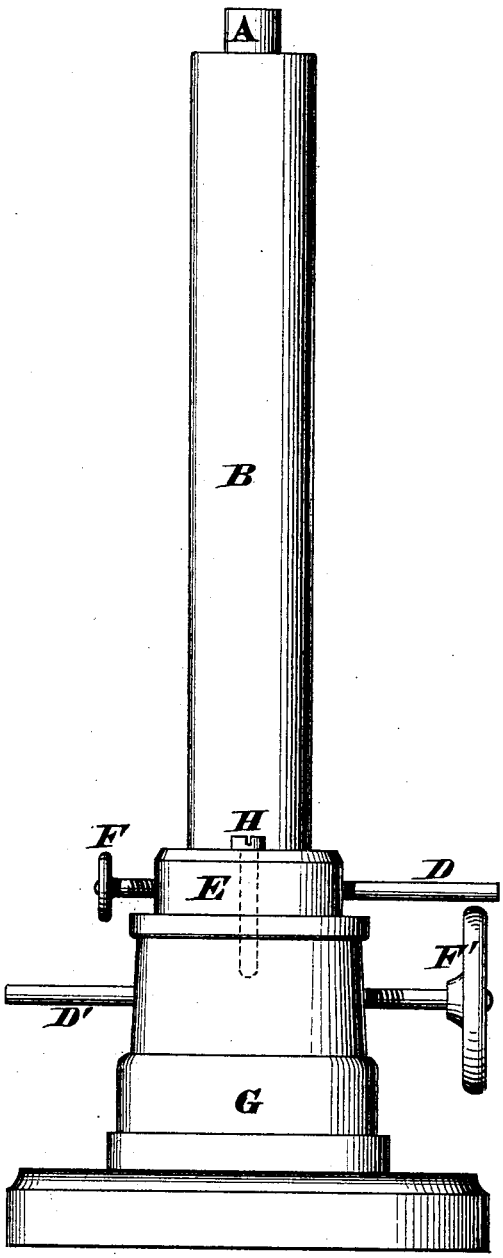
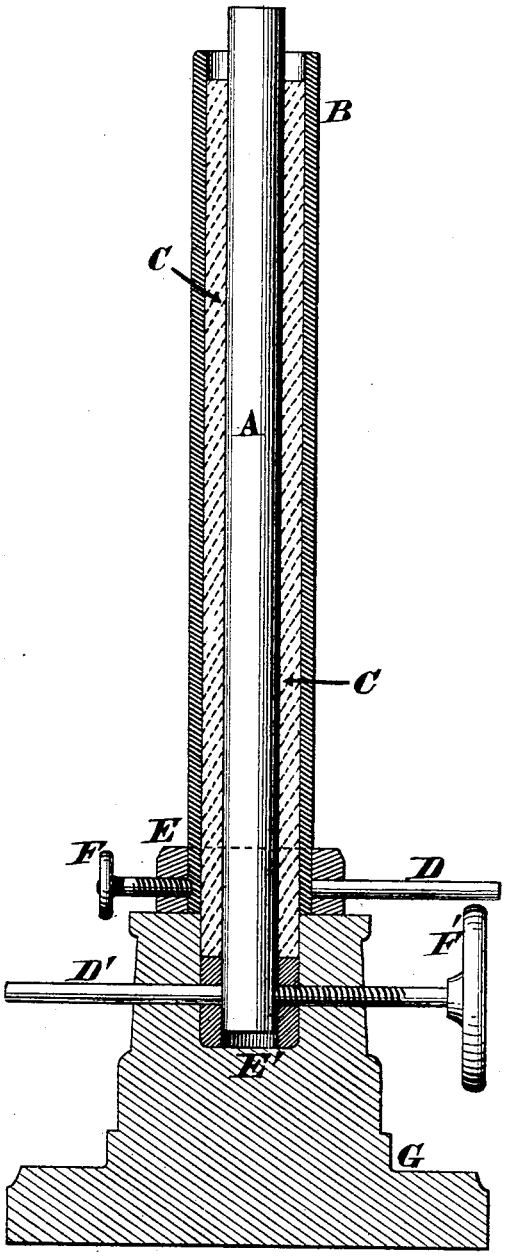


FIG. 2.



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E. S. Rydall
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Inventor.
L. R. Longworth

UNITED STATES PATENT OFFICE.

LANDON R. LONGWORTH, OF CINCINNATI, OHIO.

IMPROVEMENT IN ELECTRIC CANDLES.

Specification forming part of Letters Patent No. **203,844**, dated May 21, 1878; application filed April 29, 1878.

To all whom it may concern:

Be it known that I, LANDON R. LONGWORTH, of the city of Cincinnati, Hamilton county, Ohio, have invented an Improvement in Electric Candles, of which the following is a specification:

This invention relates to an improvement in electric candles, designed to overcome certain practical difficulties that have been found to exist in those heretofore made.

In the drawings, Figure 1 represents a perspective view of a candle made in accordance with my invention, and Fig. 2 represents a view of the same in longitudinal cross-section.

In the electric candles that have recently been introduced abroad the electrical apparatus has been connected with two pieces of carbon, separated by an insulating substance; but these pieces of carbon have been placed side by side, one on either side of the insulating substance. When the carbons are thus placed, this difficulty has been experienced, that they burn from each other, thus gradually increasing the voltaic arc. The arc becoming longer and longer gradually as that part of the carbon nearest the insulating substance burns away or volatilizes, this arc soon becomes so great that the current can no longer pass across it, and the light goes out. Very complicated regulating devices have been arranged for the purpose of regulating the distances between the carbons in an electric light, and these have been more or less successful; but they are generally complicated. The clockwork is liable to get out of order, and they are all expensive.

I have designed to produce a simple and inexpensive electric candle that will give an even and steady light, and that will be self-regulating, so as to entirely dispense with the clockwork or any other regulating devices.

The manner in which I accomplish this will be more readily seen by reference to the drawings, whereon G represents the ordinary base of the candle, into a cavity in which is fitted the socket E′, and at the upper part of which is the socket E, secured to the base by a screw, H. These sockets are designed to hold the carbons in place, and to make the electric connection with the carbon. D and D′ are the poles connected with the electric apparatus, D receiving the positive current and imparting it through the socket E to the outer carbon, D′ receiving the negative current and imparting it through the socket E′ to the inner carbon. F and F′ are set-screws, made to hold the carbons in place. A and B are the carbons, made of the usual material, either by taking ordinary coke, pulverizing it, and mixing it with molasses sufficient to make it adhesive, then forming it into the forms shown in the drawings, and then baking, or by making it from graphite or from any other form of carbon, the design being to make it of the purest carbon possible, and to give it the concentric form shown in the drawings. The inner carbon A is a cylinder of carbon, formed as before stated, and held in its socket E′ by the set-screw F′, while the outer carbon B is a hollow cylinder, formed as before described, and of sufficient size to leave a proper space between it and the inner carbon to receive the insulating substance C. The outer carbon B is held in its socket E by the set-screw F. The insulating substance C is also made in the form of a hollow cylinder of sufficient size to admit within it the inner carbon A, and to fill or partially fill the space between the carbons A and B. For this insulator different substances may be used. I find that, made of porcelain, it produces excellent results, though many other insulating substances may be used.

I have described this candle as made with the positive current connected with the outer carbon and the negative with the inner carbon, though these may be changed if desired. I ordinarily make the positive carbon of about twice the body of material contained in the negative carbon.

The proportions of the amount of carbon in the outer and inner carbons and the thickness of the insulating substance C must be regulated according to the voltaic constance. The proportions would ordinarily be about as shown in the drawing, Fig. 2, which is a very convenient size for ordinary use; but for a very strong current the sizes of the outer and inner carbon and of the insulating material would be each relatively increased. With the carbons made in this concentric form, no great increase of the voltaic arc can be made, and therefore the light will continue as long as the

current exists, or until the whole candle has slowly volatilized.

In the English devices in which a concentric electrode is used, the movement of the solid carbon is regulated by the ordinary complicated regulating devices, and if the movement is not regulated exactly the light goes out. By making my carbons stationary and separating them by the concentric insulator, I dispense with these regulating devices, and insure much better results.

Again, the light is perfectly steady. As soon as the carbon hollows out a little on one side, so that the distance is increased, the current moves to the other side, where the carbon is nearer, thus keeping up a steady, even light, while with a candle in which the distances are fixed by the regulators there is always more or less interruption or a wavy motion of the light.

What I claim is—

1. The within-described concentric electric candle, made with an outer carbon in the form of a hollow cylinder, an inner cylindrical carbon, the two carbons being separated by an insulating substance in the form of a hollow cylinder.

2. The combination, in an electric candle, of the inner carbon A, the outer carbon B, and the insulating substance C, when made substantially in the form herein shown and described.

3. In an electric candle, the negative carbon A, surrounded by the positive carbon B, or vice versa, the two carbons being separated by the insulating substance.

4. The combination, in an electric candle, of base G, outer socket and carbon E B, inner socket and carbon E′ A, and insulator C, substantially as and for the purposes hereinbefore set forth.

L. R. LONGWORTH.

Witnesses:
E. H. RYDALL,
JEREMIAH F. TWOHIG.