(No Model.)

S. WATERS.

ELECTRIC LAMP.

No. 265,475. Patented Oct. 3, 1882.

Fig. 1.

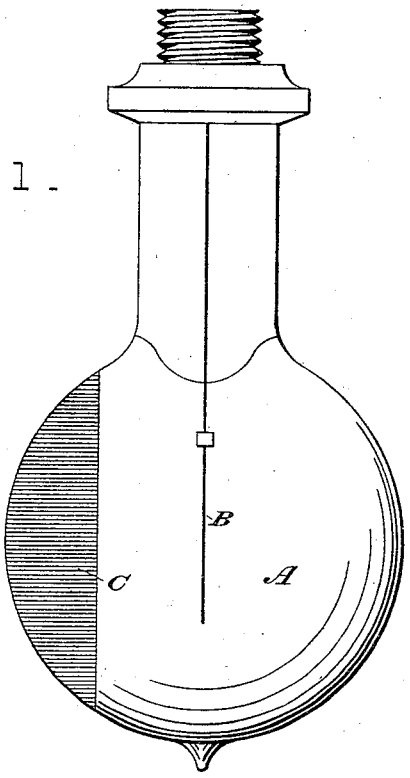
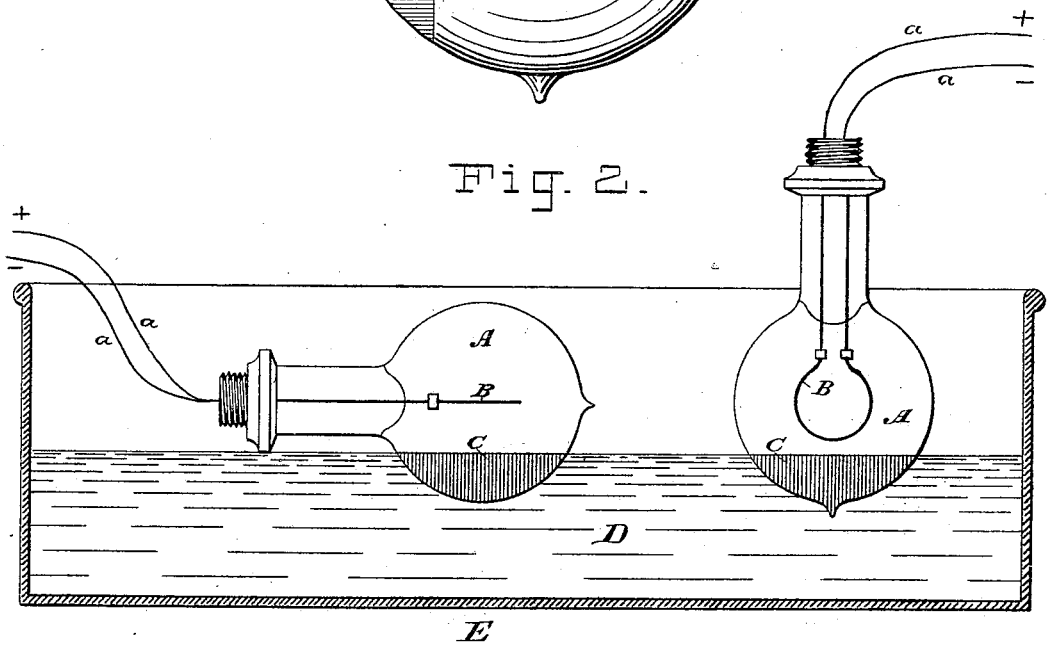


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

SIDNEY WATERS, OF LONDON, ENGLAND.

ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 265,475, dated October 3, 1882.

Application filed May 3, 1882. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY WATERS, of London, England, have invented certain new and useful Improvements in Electric Lamps, of which the following is a specification.

The object of my invention is to increase the illuminating-power of electric lamps, more particularly of incandescent lamps, and at the same time give a more pleasing effect. To this end I form one-half (more or less) of the globe or flask of the lamp into a concave mirror by coating the glass externally with silver by chemical action or deposition.

In carrying out my invention I take a solution of nitrate of silver and precipitate the silver with Rochelle salt, (tartrate of potash and of soda.) After washing the precipitate thus obtained I mix it with an amount of ammonia which is almost, but not quite, sufficient to dissolve it, but will leave it in a milky state. Into this solution or liquor I immerse so much of the lamp globe or flask as it is desired to coat with silver, the globe or flask having been previously fitted with its carbon filament, exhausted, and sealed. I then heat the solution by sending an electric current through the lamp, and the silver is thus caused to be deposited upon the exterior of the immersed portion of the globe. To prevent as much as possible the deposit of silver upon the surface of the vessel containing the solution I sometimes cool it by any suitable means while the electric current is heating the lamp itself. In cases where it is not practicable to obtain the requisite heat by sending a current through the lamp—as, for instance, when the part to be coated is the upper portion where the electric connections would be immersed in the liquid, and in consequence decompose it, I apply the requisite heat to the vessel in which the solution is contained; but I avoid this method when possible, as it causes a deposit of silver upon the vessel as well as upon the lamp-globe.

In the accompanying drawings, Figure 1 is a side elevation of an electric lamp treated according to my invention; and Fig. 2 is a section of the bath, showing in elevation two lamps undergoing treatment.

A is the glass bulb or flask of the lamp. B is the incandescent filament, and the shaded portion C is designed to represent the deposit of silver.

D is the bath of silver, contained in a tank or vessel, E, which is one form that may be used for the purpose.

In Fig. 2 the terminals of the lamp are shown as connected to wires *a a*, which lead to the respective poles of a battery or electric-current generator.

The particular portion of the globe which is formed into a mirror will depend upon the position in which the lamp is intended to be used. For example, if the lamp is to be placed against a wall, the part or half of the globe nearest the wall will be formed into a mirror, as shown in Fig. 1. To apply the mirrored surface to this portion of the lamp, the latter is arranged on its side in the bath, as shown at the left in Fig. 2; or, if the lamp is to be used overhead, the upper portion will be converted into a mirror. This may be done by immersing the lamp, as shown at the right in Fig. 2, if it is to be used in a position inverted relatively to Fig. 1.

In order to prevent a dark shadow being thrown on the wall behind or on the ceiling above the lamp, the deposit of silver is made so thin as to be diaphanous or not quite opaque, so that it will not entirely reflect the light, but will permit a small portion of it to be transmitted.

My invention possesses the advantages over other methods of making a portion of the globe of an electric lamp into a concave mirror that the coating is not liable to become dissipated in course of time, owing to the heat of the lamp when in use, and that, as already stated, it permits the passage through the mirror of sufficient light to avoid throwing a shadow. The process of treating the lamps is also simple and readily effected, and the applied coating does not mar the appearance of the lamp. The coating may be covered with varnish or other suitable protective material.

What I claim is—

The mode or process of coating part of the exterior of the globe of an electric lamp, which consists in immersing the part to be coated in a solution of silver, and then sending an electric current through the carbon filament of the lamp to produce the necessary heat for causing a deposit of silver on the immersed part of the globe, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

SIDNEY WATERS.

Witnesses:

GEORGE C. BACON,

ROBERT JAMES ISHERWOOD.