

(No Model.)

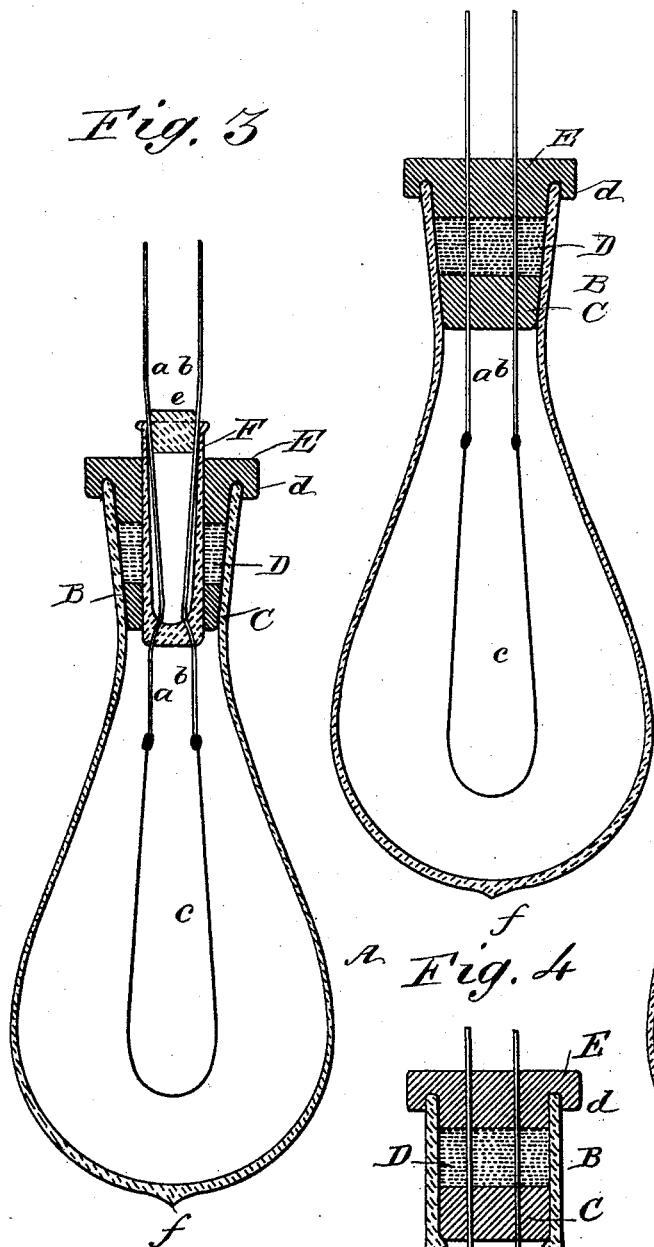
W. E. FOREST.  
INCANDESCENT ELECTRIC LAMP.

No. 523,204.

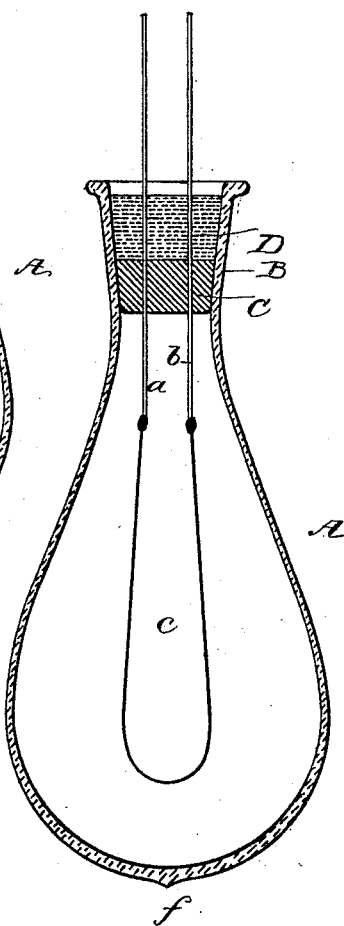
Patented July 17, 1894.

*Fig. 1*

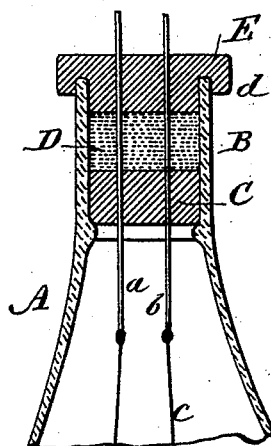
*Fig. 3*



*Fig. 2*



*Fig. 4*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 523,204, dated July 17, 1894.

Application filed August 1, 1893. Serial No. 482,066. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM E. FOREST, of the city, county, and State of New York, have invented a new and Improved Incandescent Electric Lamp, of which the following is a full, clear, and exact description.

My invention consists in a lamp formed of a glass globe having a neck adapted for receiving a stopper, a compound stopper formed of two or more elements and inserted in the neck of the globe, one element of the stopper being for tightly closing the neck and supporting the leading wires, another for hermetically sealing the stopper and the wires, and where a third element is used it is added for the purpose of giving increased stability to the leading wires, for protecting the sealing material and for forming a head for holding the lamp in its socket and for protecting the lamp from breakage; the head acting as a buffer between the glass bulb and socket, and a filament and leading wires, all as hereinafter more fully described.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical transverse section of my improved lamp. Figs. 2 and 3 are similar sections of modifications of the same; and Fig. 4 represents another modification.

The globe A which, in the present case, is the usual pear-shaped form, is furnished with a conical or flaring neck B. In the form shown in Fig. 1, a stopper C is fitted to the narrower portion of the neck B, and in the said stopper, at a suitable distance apart, are inserted the leading wires *a, b*, which support the carbon filament *c*. The leading wires *a, b*, in two of the forms of my invention, may be of any suitable conducting material, such as copper, iron, or brass, as in a lamp of this construction it is not necessary to provide leading wires having the same co-efficient of expansion as glass, inasmuch as they are held in the position of use by elastic supports, and hermetically sealed by the said supports and by a plastic cement, as hereinafter described.

The stopper C is made of any yielding or flexible insulating material, preferably of rubber, and previous to its insertion in the neck

of the lamp globe, it is coated with impervious cement to seal within it any gases or vapors that might be injurious to the leading wires or filament. The said stopper adapts itself to any inequalities of the inner surface of the conical neck B, practically making an airtight joint. In the neck B and upon the outer surface of the stopper C is placed a body D of plastic cement, capable of attaching itself to the stopper C and to the walls of the neck B, and of rendering the joint between the stopper and the neck and between the leading wires and the stopper, airtight.

The lamp as thus far described and illustrated in Fig. 2, may be used without further additions, but I prefer to protect the cement B by means of an additional stopper E, of soft rubber or analogous material fitted to the mouth of the neck B of the lamp and pressed down upon the cement D. The said stopper E is furnished with a flange *d*, on the under side of which is formed an annular groove which receives the edge of the neck of the lamp. The said stopper E not only protects the cement, but also furnishes an additional support for the leading wires *a, b*, protects the neck of the glass globe, and acts as an adapter for fitting the lamp to its socket.

In the modification shown in Fig. 3; instead of running the leading wires through the stoppers C, E, I seal them in a glass tube F and insert the said glass tube in the stoppers C, E, and cement it hermetically with the body D of plastic cement. The wires *a, b*, are prevented from coming into contact with each other in the tube F by a cork *e* inserted in the mouth of the tube F between the said leading wires *a, b*. In this case it is important that the position of the leading wires sealed in the glass should have the same co-efficient of expansion as glass. The lamp as thus constructed is exhausted from the end of the globe and sealed up at *f* in the usual way. Should the vacuum fail or should the carbon burn out and the lamp become inoperative, the leading wires *a, b*, the stoppers C, E, and the cement D, may be readily removed from the neck of the globe and replaced by new leading wires and carbon filament, the stoppers and cement restored and the globe again exhausted and re-sealed.

The cement I prefer to use in the construction of my improved lamp, consists of a solution of pure asphaltum in a suitable solvent such as turpentine, but I do not confine myself to this particular cement, as any insulating cement which attaches itself to the glass, the conducting wires, and the stopper, and makes them air-tight may be used, such as a solution of gutta percha or of rubber.

It is obvious that I may construct a lamp having a globe furnished with a cylindrical neck provided with a fillet for retaining the stopper and preventing it from being forced inwardly by atmospheric pressure, as shown in Fig. 4, therefore I do not limit or confine myself to the construction herein shown and described.

The chief advantage of my lamp over all others is, its cheapness. The stopper closing the neck of the bulb can be put in place by unskilled labor and without the use of heat; when the carbon filament is destroyed the stopper can be removed, another filament put in place and the stopper used again; leading-in-wires need not be sealed in glass, wires whose co-efficient of expansion is the same as glass need not be employed: its cheapest form of glass bulb, *i. e.*, bulbs whose necks do not have to be ground or accurately constructed

to a given model, can be used, as the elastic stopper adapts itself to any inequalities of surface and shape and maintains a continuous closure of the neck.

In my lamp no precautionary measures are necessary. The elastic stopper tightly closes the neck, holds the wires firmly, and adjusts itself to whatever changes may take place in the neck of the bulb from the action of heat and cold on the glass.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In an incandescent lamp, the combination of the globe A provided with the conical neck B, the perforated stopper C fitted to the narrower portion of the conical neck, a perforated stopper E fitted to the wider portion of the conical neck, the glass tube F provided with leading-in wires *a, b*, inserted in the stoppers E, C, and a body D of plastic cement surrounding the glass tube F and filling the space between the glass tube, the inner wall of the conical neck B, and the adjacent surfaces of the conical neck, substantially as specified.

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Witnesses:

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