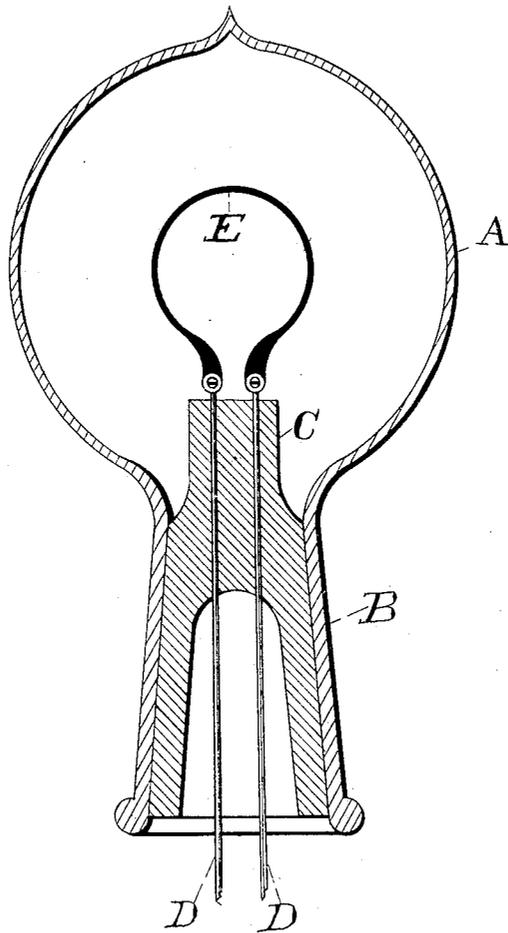


(No Model.)

M. G. FARMER.
ELECTRIC INCANDESCENT LAMP.

No. 258,903.

Patented June 6. 1882.



Witnesses

Geo. W. Thurling
Henry C. Weeks.

Inventor

Moses G. Farmer
per Parker W. Page
atty.

UNITED STATES PATENT OFFICE.

MOSES G. FARMER, OF NEWPORT, RHODE ISLAND, ASSIGNOR TO THE UNITED STATES ELECTRIC LIGHTING COMPANY, OF NEW YORK, N. Y.

ELECTRIC INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 258,903, dated June 6, 1882.

Application filed May 27, 1881. (No model.)

To all whom it may concern:

Be it known that I, MOSES G. FARMER, of Newport, in the county of Newport and State of Rhode Island, have invented certain new and useful Improvements in Electric Incandescent Lamps, of which the following is a specification, reference being had to the drawings accompanying and forming a part thereof.

My invention relates to improvements in that class of electric lamps in which a continuous conductor of carbon inclosed in an exhausted and hermetically-sealed transparent receiver is rendered luminous by the passage of an electric current introduced into the said receiver by metallic wires; and it consists in a method of manufacturing the said lamps in such manner that they may be conveniently reopened and sealed, should it be necessary for any reason—such as for the insertion of new carbons—to gain access to the interior of the globe.

Previously to my invention the usual method of making the lamps was to seal the wires directly into the material forming the globe or to incase them in glass or similar vitreous material and to seal this into the globe. The difficulties encountered in these methods of securing a permanent and perfectly air-tight seal are entirely overcome by my present invention, which involves, first, the employment of an infusible or highly-refractory substance—such as porcelain or earthenware—for the sealing material about the wires; and, secondly, a novel method of forming a plug or stopper containing the conducting wires and of fitting the same to the globe.

The inclosing globe which I employ is formed with an enlarged portion and a narrower stem, something after the pattern of a Florence flask. Into the open mouth of the stem is fitted by a ground joint a stopper containing the metallic conductors, and composed of earthenware, porcelain, or some similar semi-vitrifiable substance which before baking is plastic and capable of being molded. In this stopper, while still in a plastic condition, the conducting-wires are embedded at such a distance apart that the ends of the carbon filament may be conveniently attached to them. The stoppers, when formed about the wires, are placed in a pottery-furnace and baked in the ordinary manner un-

til they have acquired the solidity and impermeability of porcelain or earthenware, and by a vitrification of their fusible constituents have become very dense and hard. The subsequent steps of grinding and fitting into the globe are the same as those pursued in the manufacture of ground-glass bottle-stoppers, the porcelain plugs being ground into the open neck until a perfectly air-tight joint is formed.

In the accompanying drawing, which is referred to for an understanding of my invention, the globe is designated by the letter A, the stem or slightly-conical neck by B, and the stopper by C. This latter is composed of earthenware, porcelain, or other similar substance, and is formed in molds of plaster-of-paris, or by other proper means, and while in the process of formation the wires D D are embedded in it at a convenient distance apart, and to their projecting ends the carbon E is attached when by the action of a high temperature the stopper has been thoroughly hardened and solidified and ground to fit into the open neck B.

When dental porcelain, or a substance requiring a very high temperature in baking, is employed for forming the stoppers, a metal must be used for the conductors capable of withstanding the intense heat, and for this purpose I have made use of nickel, or an alloy containing nickel, which, on account of its highly-infusible nature and its comparative cheapness, presents great advantages over all others. The refractory nature of the stoppers also makes it possible to extend them almost entirely up to the carbon-clamps, by this means securing a longer joint, and by protecting the wires preventing the giving off of the occluded gases from the said wires when they are heated by the incandescent strip.

As stated above, the substances employed in the formation of the stoppers may be any that possess the characteristic qualities of porcelain, or of a dense and homogeneous earthenware, and the more solid the character of the substance employed the more durable and perfect will be the joints which it makes with the glass and the metal conductors. As an alternative method of closing the lamps with the stoppers, I may weld them together by heat, and in this case, as well as in the others, it will

always be found desirable to glaze or enamel the stoppers in order to render them the more impervious to air and other gases.

The steps subsequent to the forming and fitting the stoppers, as they form no part of my present invention, and are now well understood by those skilled in the art, are not set out herein. Such consist in exhausting the globe of oxygen, providing for it suitable electrical connections, and the various processes for preparing the carbons.

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

1. The method of forming a seal for the metallic conductors of an incandescent lamp, which consists in embedding them in a plastic mate-

rial, molding it to the desired shape, solidifying and hardening the same by heat, and then fitting the mass to an opening in the lamp, as set forth.

2. In an incandescent electric lamp, the combination, with a plug or stopper composed of porcelain, earthenware, or a similar material, of conducting-wires of nickel or an alloy containing nickel, embedded in the stopper, as described.

In testimony whereof I have hereunto set my hand this 23d day of May, 1881.

MOSES G. FARMER.

In presence of—

WILLIAM H. HACKETT,
MARTIN P. TOBEY.