(No Model.)

E. WESTON.

ELECTRIC INCANDESCENT LAMP.

No. 269,759. Patented Dec. 26, 1882.

Fig. 1.

Fig. 2.

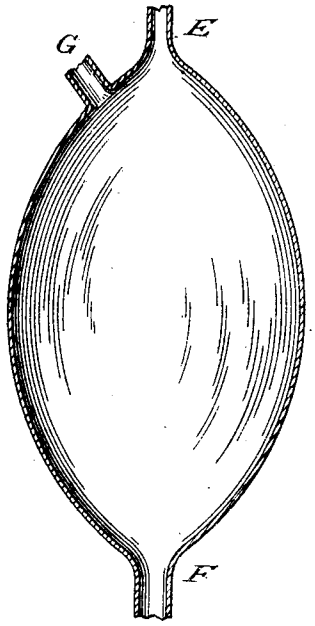


Fig. 3.

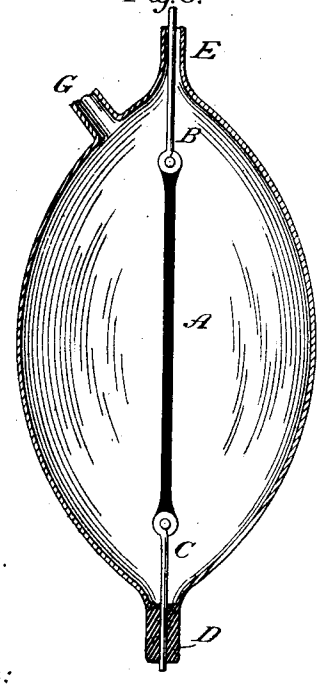
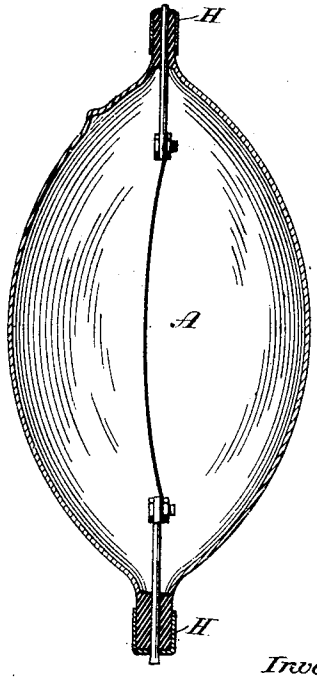


Fig. 4.



Attest:

R. F. Barnes

W. Finley

Inventor:

Edward Weston

by Parker W. Page.

Attorney.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

EDWARD WESTON, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE UNITED STATES ELECTRIC LIGHTING COMPANY, OF NEW YORK, N. Y.

ELECTRIC INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 269,759, dated December 26, 1882.

Application filed December 13, 1881. Renewed September 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WESTON, a subject of the Queen of Great Britain, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Electric Incandescent Lamps, of which the following is a specification, reference being had to the accompanying drawings.

My invention comprises a novel method of manufacturing electric incandescent lamps, the main features of which relate to the character of the carbon employed and the method of sealing the conductors attached thereto into the case or receiver by which it is inclosed. It is desirable, for many reasons, to use straight filaments of carbon in incandescent lamps, partly from the fact that they are more readily and perfectly produced and partly for the reason that the points of highest potential are at the greatest possible distance apart, thus lessening the tendency of an electrical discharge within the lamp-globe. The extreme delicacy of the filaments or conductors and the character of seal required for the perfect exclusion of air from the globe have prevented the use of straight carbons to any extent. By the plan devised by me difficulties heretofore encountered in the employment of straight carbons are overcome and a very simple and effective lamp produced.

The lamps are composed of three essential parts—the carbons, the supporting-conductors, and the globe. The carbons are straight narrow ribbons or strips of any proper material, thoroughly carbonized and otherwise treated, as is now well understood, to render them capable of withstanding a protracted and intense incandescence. The supporting-conductors are made of short lengths of fine platinum or other wire, and are flattened or prepared in other ways for connection with the ends of the carbons. The globes are blown or molded in any proper shape, an oval being preferred, and then short tubes or teats drawn out from them, two of which are diametrically opposite, and are used for the introduction and sealing of the conductors, while the third is utilized for exhausting and sealing the globe. In constructing the lamps from these parts the short lengths of wire are suitably connected to the carbons, a small block or bead of glass containing a large proportion of metal in its composition being first applied to one of the wires. The other wire and the carbon are then carefully introduced into the globe until the bead of metallic glass on the conductor enters one of the tubes above described. By the application of the heat of an ordinary blow-pipe the tube is then welded to the block, and one wire is thus effectually and permanently sealed. The other wire may then be sealed in by turning the tube through which it should project in the flame of a blow-pipe. To facilitate this the tube should be just large enough for the free passage of the wire. Just before cooling, the last-mentioned wire and tube are forced slightly inward, by which means a slight bend is given to the carbon to provide against any accident that might occur from its expansion under the high temperature. The second sealing thus formed may be re-enforced by a coating of metallic glass applied in any proper manner, and the projections which the two sealing-tubes form may then be platinized and electroplated, as explained in another application, to form the terminal contacts of the lamp. The lamps completed to this stage are exhausted and sealed in the usual manner.

The drawings accompanying illustrate by figures drawn on a somewhat enlarged scale the invention.

Figure 1 is a view of the carbon with the metallic conducting-wire attached. Fig. 2 is a central vertical section of the globe; Fig. 3, a section showing the first sealing, and Fig. 4 a section of the complete lamp.

A represents the carbon; C B, the short lengths of wire for supporting the same; D, a bead of metallic vitreous cement applied to one of the wires near its end. F is one of the sealing-tubes, of sufficient diameter to allow the introduction of the carbons, and which is welded to the bead D. E is the opposite tube, made just large enough to contain the conductor B; and G is a tube drawn out from the globe at any convenient point for the purpose of exhausting the same.

In Fig. 4 the lamp is shown complete and sealed, and the projections formed by the tubes

E and F covered with conducting films or coatings H, which, as they adhere to the wires B C as well as to the glass surrounding them, form convenient terminals.

Having now described my invention and the best manner of which I am aware in which the same is or may be carried out, what I claim as new, and desire to secure by Letters Patent, is—

1. The method of sealing the wires of an incandescent lamp containing a straight carbon, which consists in applying to one of the wires a vitreous bead or block and uniting them to the carbon, then passing them through sealing-apertures in a globe and securing them by welding the globe to the vitreous bead on one wire and sealing the other wire directly into the glass, as set forth.

2. The combination, with a globe having diametrically-opposite sealing-apertures, of a straight carbon, conducting-wires, and a bead or block of vitreous material attached to one of said wires and welded to the glass, substantially as set forth.

3. An electric incandescent lamp containing a normally-straight strip of carbon, held by the supporting-conductors in a slightly bowed or bent condition, as and for the purpose set forth.

4. The method of sealing the metallic wires in a lamp, consisting in welding the glass forming the globe to the same and re-enforcing the joint thus formed by a mass of metallic vitreous cement.

EDWARD WESTON.

Witnesses:
PARKER W. PAGE,
W. FRISBY.