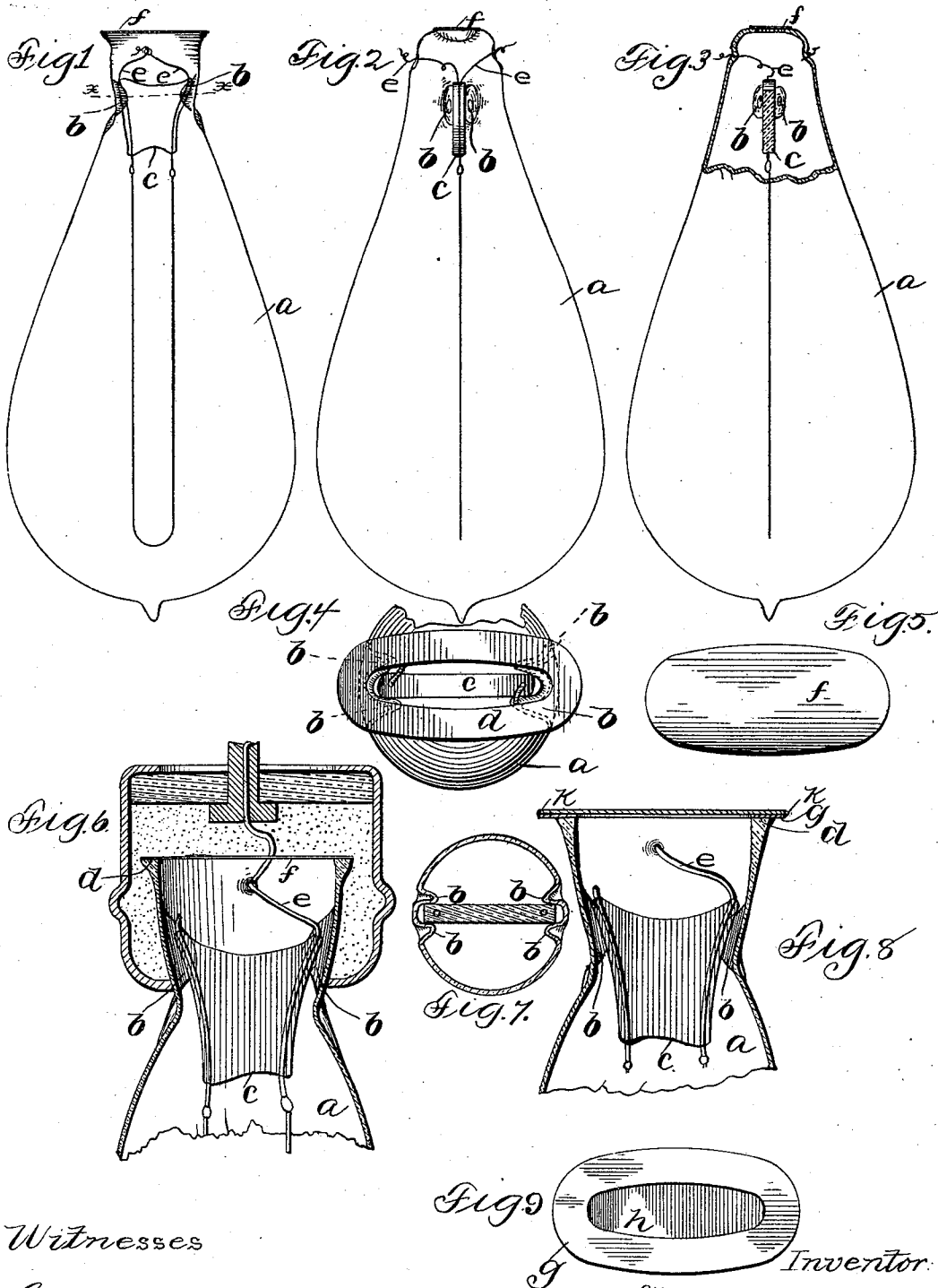


(No Model.)

C. E. SCRIBNER.
INCANDESCENT LAMP.

No. 563,321.

Patented July 7, 1896.



Witnesses

George L. Cragg.

George M. Mahon

Fig. 9

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Inventor:

Charles E. Scribner

By Barton Brown
Attys

UNITED STATES PATENT OFFICE.

CHARLES E. SCRIBNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN
ELECTRIC COMPANY, OF SAME PLACE.

INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 563,321, dated July 7, 1896.

Application filed May 9, 1893. Serial No. 473,586. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SCRIBNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Incandescent Lamps, (Case No. 335,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to incandescent electric lamps, and its object is to provide ready means for hermetically sealing the bulb in such manner that the bulb and the filament may be separated, so that when either the bulb or the filament is destroyed the other may be utilized by simply renewing the part that has been broken.

The bulb is provided with an opening, preferably in the form of a slot, at the small end thereof. The filament is mounted on a removable stem, preferably of glass. The slot or opening in the bulb is of sufficient width to admit the filament and its supporting-stem. The filament and stem, being inserted through the slot into the bulb, may be supported by any suitable means, as by twisting the wires leading from the filament and the wires extending through the bulb or receiver together, in the space in the neck of the bulb below the slot and above the supports formed by indenting the bulb, which supports assist in holding the stem in place. The slot or opening in the receiver is preferably only of sufficient size to permit of the insertion and removal of the filament and its stem. The seal which I preferably employ consists of platinum-foil, which constitutes, so to speak, the cover of the receiver, and which cover of platinum-foil should conform in shape to the flat edges, or plane surface, of the edges of the glass about the slot, which would naturally be oblong or elliptical. The seal of platinum—that is, the cover—is thus made of the least size which will permit of an opening in the glass sufficient for the removal of the filament. I find that platinum-foil is of sufficient strength to withstand the atmospheric pressure when the opening in the glass is narrow. When platinum is fused to the glass, the operation of again separating the seal from the glass

is somewhat difficult. I therefore have used, in place of a seal composed entirely of platinum-foil, a ring of platinum with an opening corresponding to the slot in the neck of the bulb. This ring should be first fused to the glass in the usual way, and then a disk of copper or similar metal is placed over the platinum ring and soldered thereto about the edges. In order to remove the filament, it is then only necessary to unsolder the copper disk from the platinum ring and remove the copper plate, when the stem may be reached through the slot.

My invention is illustrated in the accompanying drawings, in which—

Figures 1 and 2 are front and side elevations, respectively, of the seal, bulb, and filament of an incandescent lamp embodying my invention. Fig. 3 shows the seal and stem in section. Fig. 4 is an enlarged plan illustrating the form of the slot or opening in the bulb and the position of the stem when in place. Fig. 5 is a plan of the platinum seal or plate, which is adapted to be united to the glass above the slot to seal the same. Fig. 6 is a sectional view illustrative of the manner of attaching the plug to the bulb. Fig. 7 is an enlarged sectional view taken on line 1 1 of Fig. 1. Fig. 8 is a sectional view illustrating a modified form of the sealing-plate, the platinum portion thereof being in the form of a ring and the main portion being soldered thereto at the edges. Fig. 9 is a view from below of the sealing-ring of platinum and the cover of other metal united thereto.

Like parts are indicated by similar letters of reference throughout the different figures.

The bulb *a* is of the general form. The neck or smaller portion thereof is, however, provided with the indentations *b b*, which form a support for the stem *c* of the filament. This stem *c* is made wide at the upper portion thereof, so as to rest upon the seat or support formed by indenting the glass at *b b*. The top of the neck is provided with a plane surface *d*, preferably elliptical in form, as shown most clearly in Fig. 4. The slot or opening in this ring is simply large enough to admit the filament and its supporting-stem, so that the stem may be supported upon the lugs formed by the indentations *b b*. The ends

of the filament are connected with platinum wires which pass through the stem, as shown. I preferably seal the leading-in wires *e* in the neck of the bulb at right angles to the indentations therein. They may, however, pass through the glass at any convenient points, but when placed as shown it is found convenient to twist the ends of the wires of the stem to the ends of the leading-in wires, respectively, below the slot or opening in the bulb and above the stem.

The seal for the slot should be of platinum, either in whole or in part, that is, the portion thereof which comes in contact with the glass should be of platinum, since, as is well known, the coefficient of expansion of platinum when heated is practically that of glass, and therefore when the platinum seal is once united with the glass it is not liable to become separated so as to admit air.

In Fig. 5 I have shown the seal or cover *f* as consisting of a single plate of platinum-foil. This cover may be placed upon the plane surface *d* of the elliptical ring forming the top of the neck of the bulb, and fused thereto. Since the slot or opening in the neck is narrow, thin platinum-foil, which may be securely sealed or fused to the glass, is found strong enough to resist the inward pressure of the air when the bulb is exhausted.

When it is desired to open the bulb for the purpose of substituting a new filament for one that has been broken, the platinum seal may be removed in the well-known way. As the operation of removing the seal is somewhat difficult, since portions of the glass may adhere to the platinum, thus making the operation of replacing the seal somewhat more difficult than at first, I have in some instances employed a seal or cover consisting of a ring of platinum conforming to the plane elliptical surface of the top of the neck. This ring *g* of platinum, as shown in Figs. 8 and 9, may be first sealed to the glass, the edge thereof projecting, preferably, about one-sixteenth of an inch outwardly. Over this ring I then place a plate *h* of cheaper metal, as copper, and this plate is soldered to the projecting edge of the platinum ring, as indicated at *k*. In this manner a perfect seal is formed which is readily removable by simply unsoldering the same at the edges. It will thus be seen that in either form of my device the filament and its stem may be easily removed from the bulb.

I do not limit my invention to the particular manner in which the stem is supported upon lugs formed in the small portion of the bulb, or to the manner in which the wires are connected through the stem and through the bulb and twisted together under the slot, except as such special features are specifically called for in certain of the claims presented herewith, since it is evident that the broader features of my invention, that is, a

removable filament in combination with a bulb provided with an opening in the glass through which the filament may be inserted and removed, and a seal for such opening, may be advantageously employed without the special features of construction herein described.

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

1. The combination with the bulb provided with a neck having a slot therein, of a filament and its stem, means for supporting the stem within the neck of the bulb, and a plate separate from the said stem removably sealed over the opening in the neck, substantially as and for the purpose specified.

2. The combination with the bulb provided with a narrow slot or opening in the neck thereof conforming in shape to the filament and its stem, of a seal, in whole or in part of platinum, the platinum portion of said seal being of platinum-foil and united to the plane surface formed about said opening or slot, and a stem with the attached filament supported below said seal, the wires passing through said stem being united with the leading-in wires, substantially as shown and described.

3. As a seal for an incandescent lamp, an elliptical ring of platinum united with the plane surface formed about a slot in the neck of the bulb, said ring of platinum having an outwardly-extending edge, and a cover of cheaper metal, as copper, placed upon said ring and united thereto about the edges thereof, substantially as and for the purpose specified.

4. The combination with the bulb or receiver of glass provided with a neck having an opening therein, of a filament and its stem adapted to be inserted through said opening, means for supporting the stem in position within the bulb, and a plate or cap separate from the said stem removably sealed over the opening, whereby a broken bulb or filament may be renewed, substantially as and for the purpose specified.

5. The combination with the bulb provided with a narrow slot or opening in the neck thereof adapted to receive the filament and its stem, of a metallic seal, said seal having a platinum portion consisting of platinum-foil united to the glass of the bulb about said opening or slot, and the stem with its attached filament supported below said seal, the wires passing through said stem being united with the leading-in wires, substantially as specified.

In witness whereof I hereunto subscribe my name this 5th day of May, A. D. 1893.

CHARLES E. SCRIBNER.

Witnesses:

GEORGE P. BARTON,
ELLA EDLER.