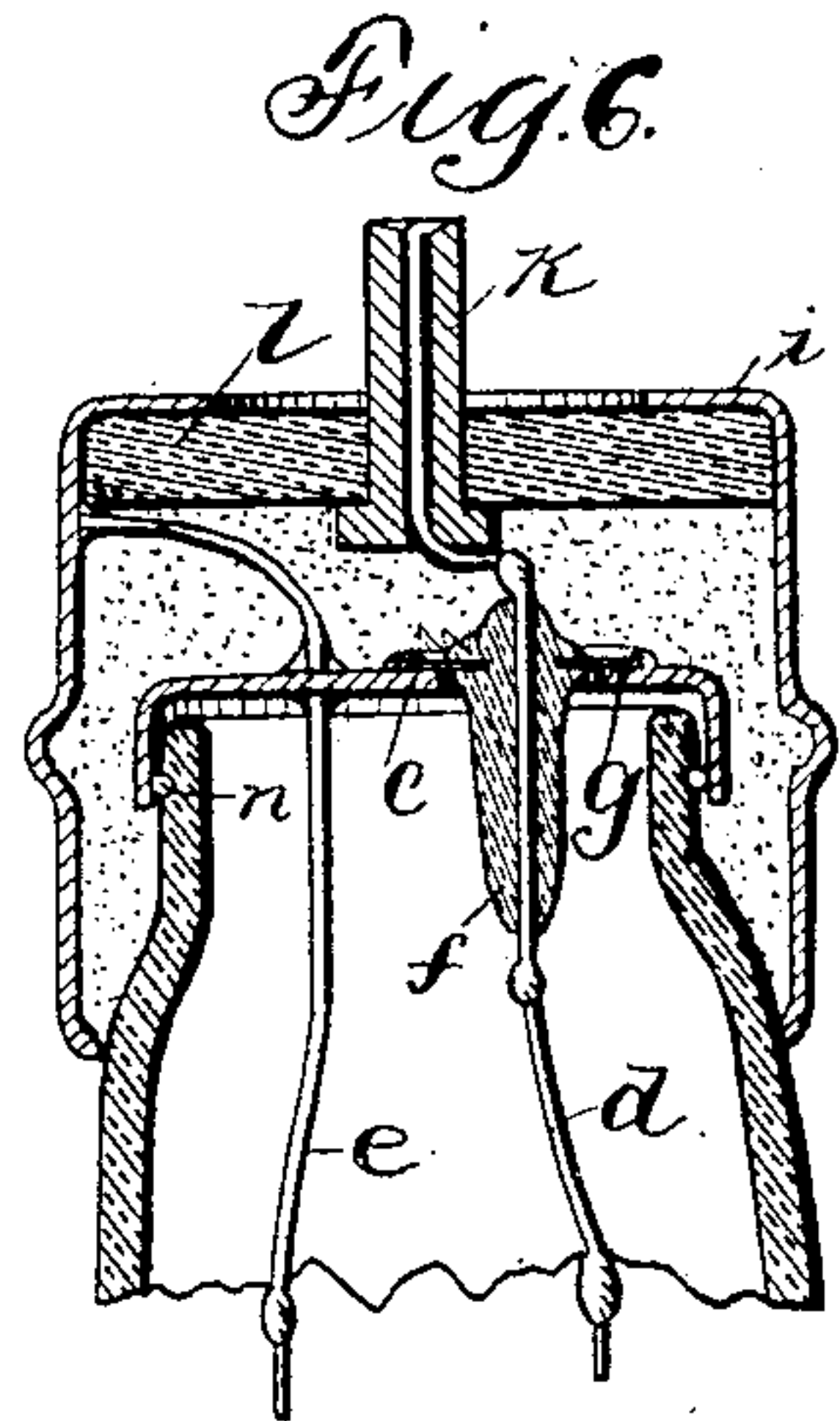
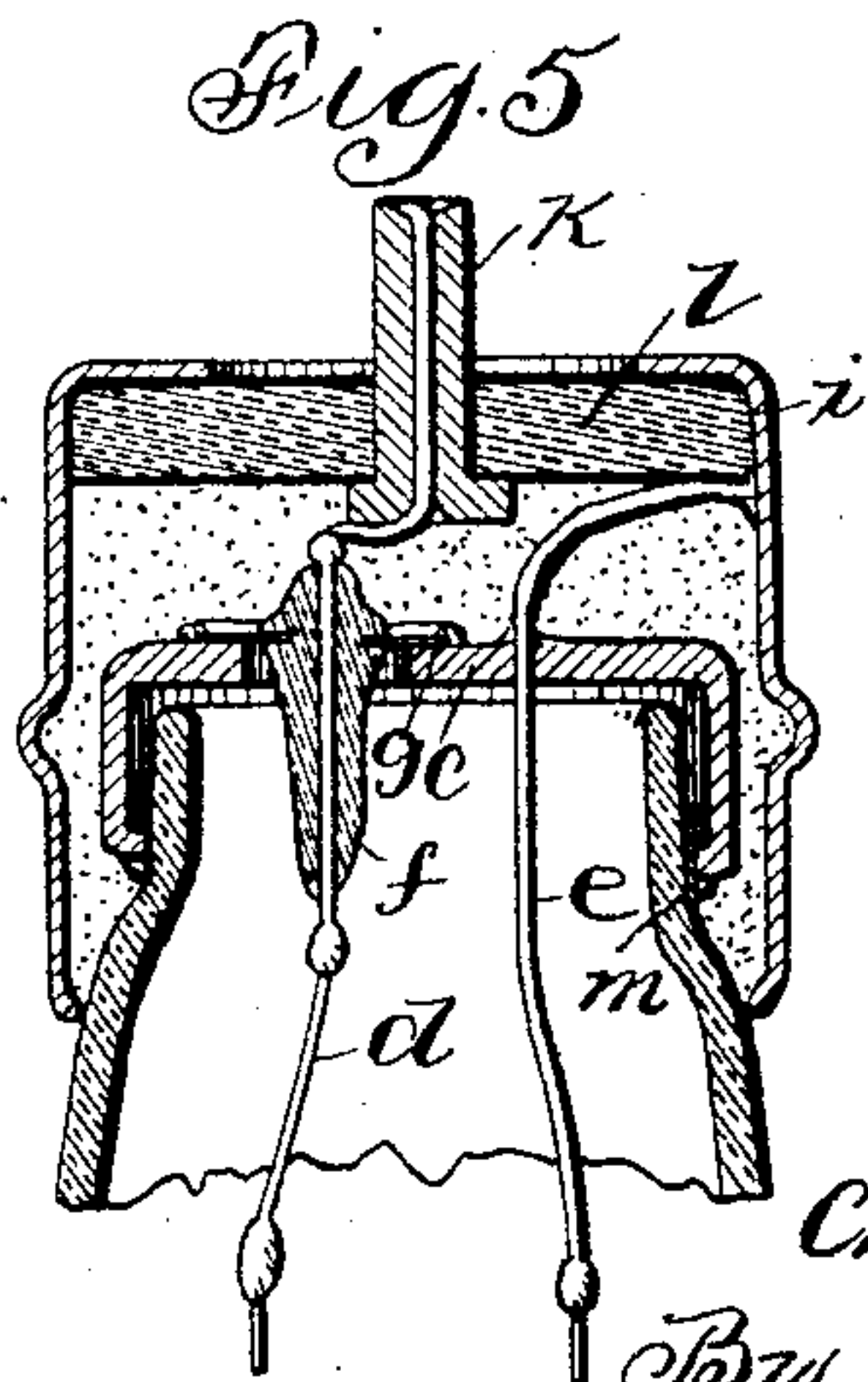
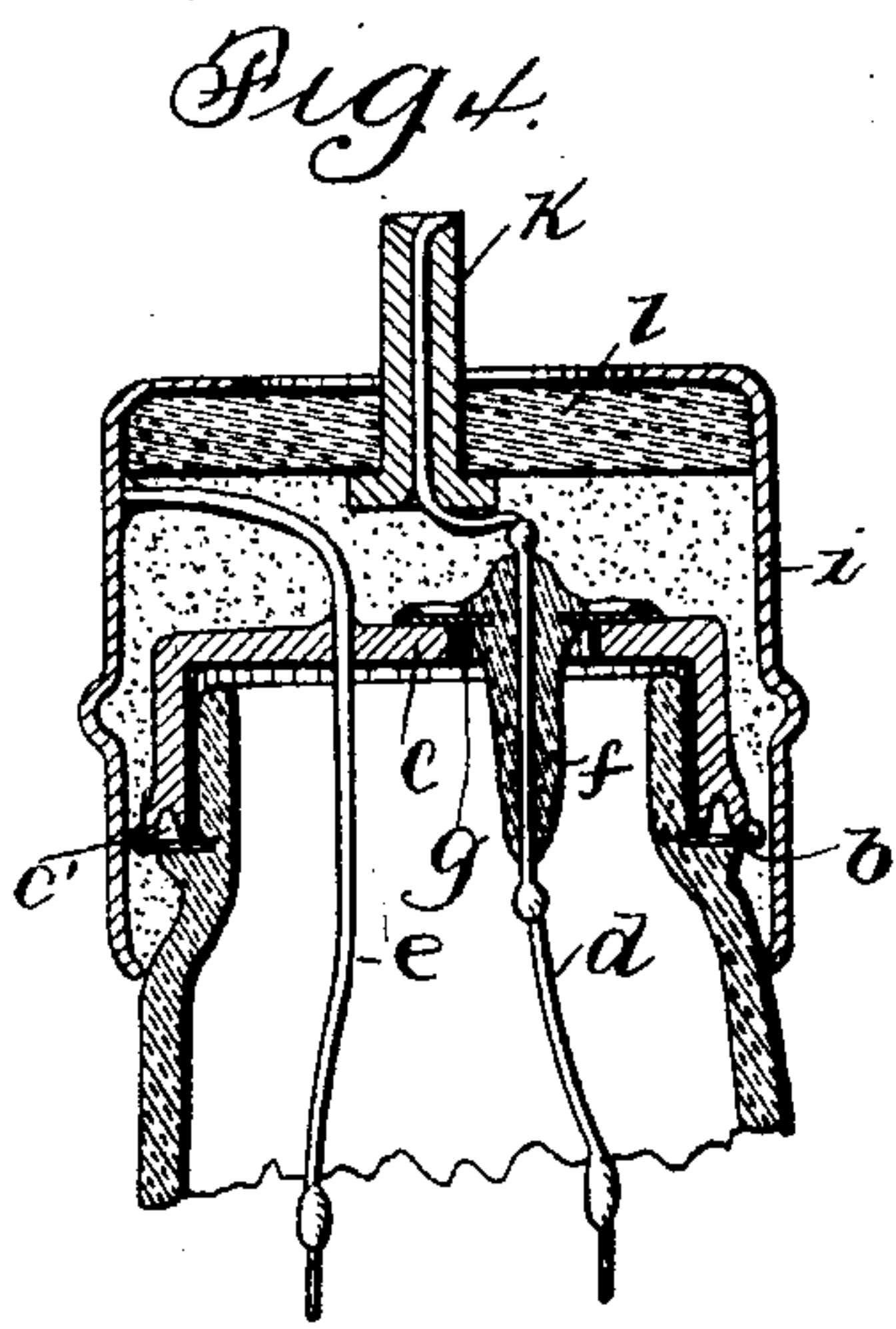
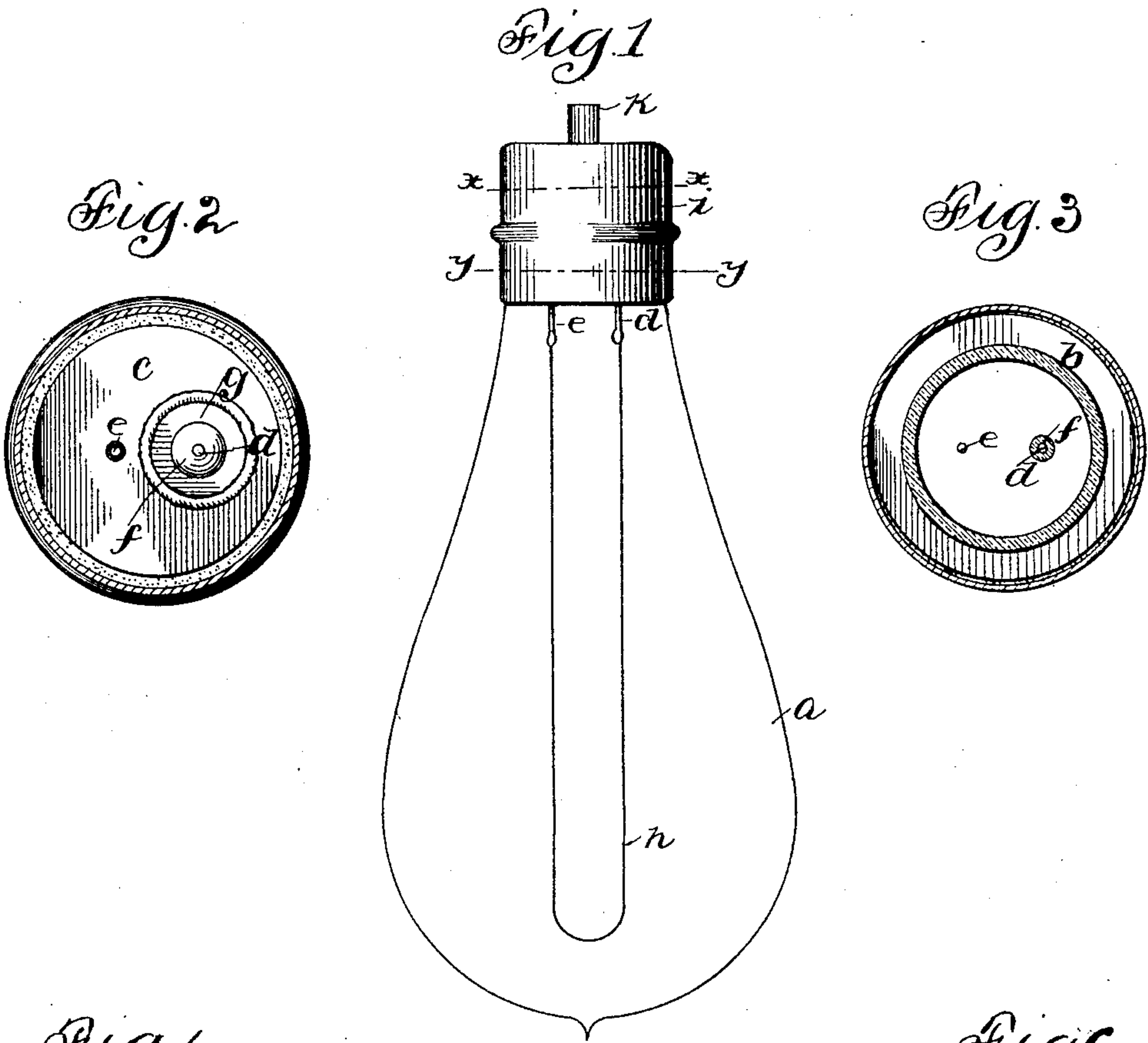


(No Model.)

C. E. SCRIBNER.
INCANDESCENT ELECTRIC LAMP.

No. 584,750.

Patented June 15, 1897.



Witnesses:
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Geo. W. McMahon

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UNITED STATES PATENT OFFICE.

CHARLES E. SCRIBNER, OF CHICAGO, ILLINOIS.

INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 584,750, dated June 15, 1897.

Application filed April 24, 1893. Serial No. 471,615. (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 Electric Lamps, (Case No. 332,) 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 enable a two-part lamp to be so constructed that the two parts may be taken apart when desired and either or both used again.

Briefly stated, my invention consists in providing a receiver for an incandescent lamp constructed in two parts, one of which is of glass having a strip or band of metal having a coefficient of expansion approximately equal to that of the glass sealed into the glass near its opening, the other portion of the receiver being secured to the strip by means of metal or other substance plated, deposited, or flowed over the joint. For instance, in one form I provide a ring of platinum sealed about the neck of a glass bulb, and secured to this platinum ring a metal cap closing the aperture in the neck of the bulb by means of a plating of metal or by flowing solder over the joint between them. The cap need not, however, be of metal, but may be of glass provided with a similar platinum ring, the joint between the two platinum rings being plated or soldered to make it air-tight; or the cap may be composed of some vitreous material, which may be fastened over the aperture in the neck of the bulb by any suitable cement, which will preserve the union between said cap and said neck under varying degrees of heat. The filament may be carried in any suitable manner by either portion of the receiver, and the leading-in wires thereto may extend through either portion of the receiver—that is, the filament may be supported in any suitable manner either by the glass portion of the receiver or the cap closing the aperture thereof, and the leading-in wire may be led through said glass portion or through said cap.

In the form of my invention in which a

metal cap serves to close the opening of the bulb the leading-in wires may preferably extend through the cap, one or both of them being insulated therefrom by suitable means. A desirable way of accomplishing this insulation of a leading-in wire or wires is by sealing a stem of glass about one of the wires and then sealing said glass stem into the opening of a small platinum washer, which may afterward be soldered into an opening in the cap to close the opening.

In incandescent lamps as made and used hitherto when a filament became consumed or broken the glass receiver had to be destroyed in order to remove the platinum leading-in wires, because the leading-in wires pass through glass integral with the glass of which said receiver is made. In case a metal cap is employed to close the opening in the neck of the glass bulb, one of the leading-in wires of my invention is carried to the carbon filament through glass supported upon said cap, while the other side of the circuit is completed through said cap, which is itself a conductor.

I am well aware that two-part receivers have been made heretofore, but none in which the vacuum could be perfectly maintained through all conditions of heat. After the bulb has been shaped, and the cap, before described, which, as said, may be of metal or other substance, is sealed to the neck thereof in accordance with my invention, the air may be exhausted from the bulb in the usual manner. The joint between said cap and the neck of said bulb is made hermetic in such manner that the air cannot have access to the vacuum within the receiver under the varying degrees of heat.

By reference to the accompanying drawings my invention will be more readily understood.

In said drawings, Figure 1 is a front elevation of a lamp embodying my invention. Fig. 2 is an enlarged top sectional view on line *x x* of Fig. 1. Fig. 3 is an enlarged top sectional view on line *y y* of Fig. 1. Fig. 4 is an enlarged vertical sectional view through the upper portion of the lamp. Fig. 5 is a vertical sectional view through the upper portion of the lamp embodying a modification of my in-

vention. Fig. 6 is a vertical sectional view through the upper portion of the lamp embodying another modification of my invention.

Like parts are referred to by similar letters of reference throughout the views.

A glass bulb *a* of the usual form is employed, about the neck of which is placed edgewise a flat ring *b*, which is made of metal which has a coefficient of expansion approximating that of the glass. In securing this ring in position I preferably place it about the neck of the bulb when cool, then, by heating the bulb and blowing into it the glass is pressed out and at the same time sealed to the ring, as shown in Fig. 4. The ring *b* forms a shelf upon which is placed a cap *c*, which may be made of any suitable material, which is hermetically secured to said ring at its outer periphery by plating or soldering or cementing, the joint being made perfectly air-tight. It is necessary that the seal between the cap and the ring *b* be made at some little distance from the point at which the ring is sealed to the glass, in order that expansion of the cap may take place without breaking the seal. Leading-in wires *d e* are passed through and carried by the cap *c*. Leading-in wire *d* is sealed through a plug of glass or other vitreous substance which extends through an aperture in the cap *c*. That portion of the leading-in wire *d* which passes through the plug *f* is made of a metal which has approximately the same coefficient of expansion as that of said plug, so that the joint between said leading-in wire and said plug may be kept perfectly air-tight under the varying degrees of heat. This plug is sealed into the opening of a small platinum washer *g*, which may afterward be soldered upon the cap, the joints between the plug, ring, and cap being perfectly air-tight. The washer *g* is made of metal which has a coefficient of expansion which approximates that of the plug *f*.

Leading-in wire *e* is passed through an aperture in the cap and hermetically soldered or cemented to said cap. This joint between the wire *e* and the cap *c* is made last for convenience in moving the carbon filament longitudinally to bring it into a good position. Leading-in wire *e* is made of metal which has a coefficient of expansion which approximates the coefficient of expansion of the cap *c*. The cap is provided with an annular space *c'* in its base. Greater flexibility is thus afforded to the joint between the cap *c* and ring *b*. The metal which I employ in rings *b* and *g* is platinum or kindred metal.

For that portion of the leading-in wire *d* which is sealed through the plug *f* I employ metal which has a coefficient of expansion which approximates that of the substance of which the plug *f* is made. In connection with a glass plug platinum is preferably used, since it has a coefficient of expansion which approaches closest to that of glass. This leading-in wire *d* may be made in sections,

as shown, for economy, that section passing through plug *f*, which is more expensive, being sealed at its extending ends to the sections made of cheaper metal.

To the ends of the wires *d e*, inclosed by the bulb *a*, is sealed a carbon filament *h*. The lamp is provided with any suitable head. In the drawings I have shown a metallic shell *i*, to which terminal *e* is soldered. Terminal *d* is soldered to a terminal plug *k*, which passes through an insulating-disk of glass *l*. The remaining space between the shell *i* and the base of the lamp is filled with a protecting cement.

For the purpose of renewing a filament, replacing or cleaning the bulb, the head of the lamp is removed, the joint between the bulb *a* and cap *c* is severed, and the bulb removed. It will be observed that the cost of renewing exhausted lamps is slight, since the base of the lamp may be used repeatedly without impairment.

In Fig. 5 I have substituted a band *m*, made of platinum or kindred metal, for the ring *b*, which band is sealed to the neck of the bulb *a*. The cap *c* is hermetically joined by solder or otherwise to the band.

In Fig. 6 I have employed a wire *n* in place of the ring *b*. This wire is made of platinum or kindred metal and is sealed around the neck of the bulb and sealed in the glass thereof of about one-half its diameter. The joint between the cap *c* and the wire *n* may be made by plating. In said figure I have also shown the leading-in wire *e* in two parts, that part outside of the receiver being soldered to the exterior surface of the metal cap *c*, while that part within the receiver is soldered to the interior of the cap.

While I have more particularly described plug *f* as being composed of glass, any vitreous or insulating compound may be employed in the same manner as the glass plug.

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

1. In an incandescent electric lamp, the combination with a bulb *a*, of a metallic ring *b* encircling the neck thereof, a metallic cap *c* hermetically sealed to said ring, said cap provided with an annular space *c'*, leading-in wire *e* soldered to said cap, an insulating-plug *f* passing through and sealed to said cap by a metallic ring *g*, a leading-in wire *d* sealed through said plug, and a carbon filament in circuit with said leading-in wires *d e*, substantially as set forth.

2. In an incandescent electric lamp, the combination with an inclosing bulb, of a platinum ring sealed to the neck thereof, a metallic cap soldered to said ring, a circuit-conductor leading to said cap, an insulating-ring passing through an aperture in said cap, a plug supported upon said cap by means of a ring depressed within said plug and soldered upon said cap, a leading-in conductor passing through said plug, and a carbon filament in

circuit with said cap and leading-in wire, substantially as set forth.

3. In an incandescent lamp, the combination with a glass bulb, of a metallic cap hermetically sealed thereto, said cap carrying an aperture, an insulating-plug within said aperture through which the leading-in wire passes, and a metal ring having its outer edges sealed to the cap, and its inner edges sealed into said plug, said plug and said metal ring being made of material possessing substantially the same coefficient of expansion; substantially as described.

4. The combination with a glass bulb, of a metallic cap sealed thereto, a leading-in wire passing through said cap, a tube or plug of vitreous material surrounding said wire and sealed thereto, and a ring of metal having substantially the same coefficient of expansion

as the vitreous material encircling said tube and sealed thereto, said ring being sealed to the metallic cap; substantially as described.

5. The combination with a plate or cap forming a portion of an incandescent-lamp receiver, having an aperture through it, of a stem of vitreous material inclosing a circuit-wire projecting through the aperture, and a ring or washer of metal having substantially the same coefficient of expansion as the vitreous material encircling said stem and sealed to it and soldered or plated to the said plate, substantially as described.

In witness whereof I hereunto subscribe my name this 11th day of April, A. D. 1893.

CHARLES E. SCRIBNER.

Witnesses:

GEORGE L. CRAGG,
W. CLYDE JONES.