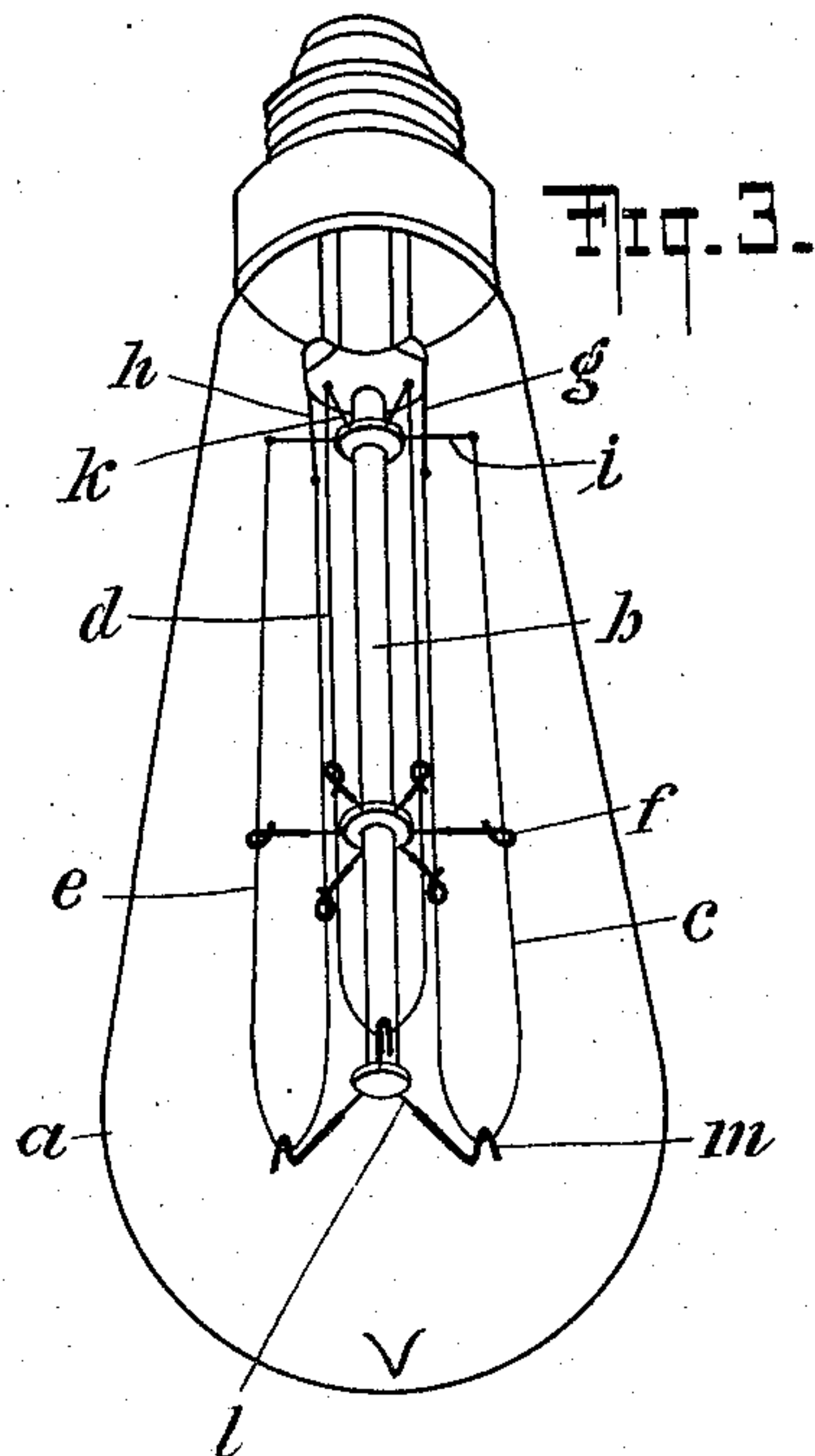
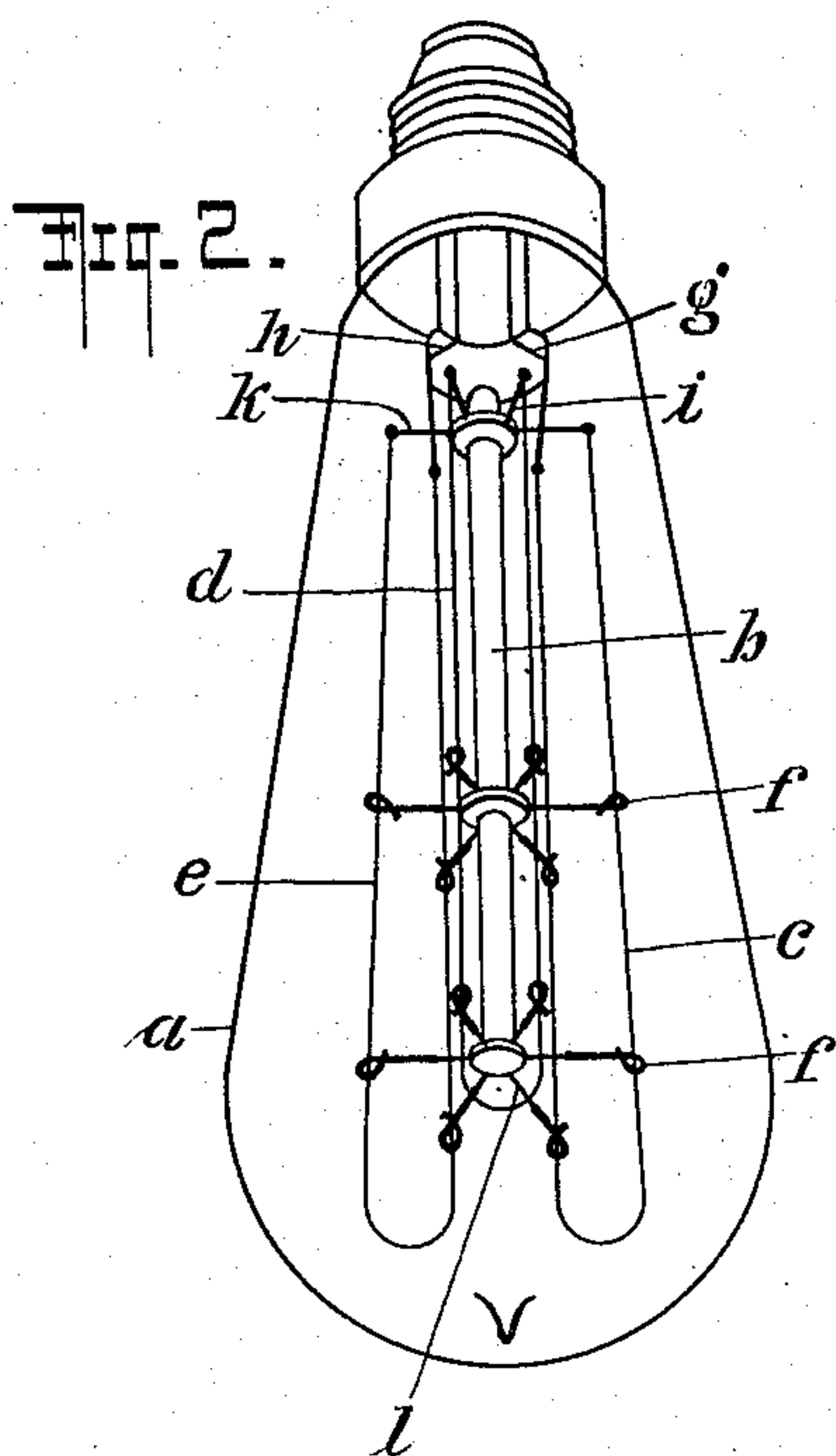
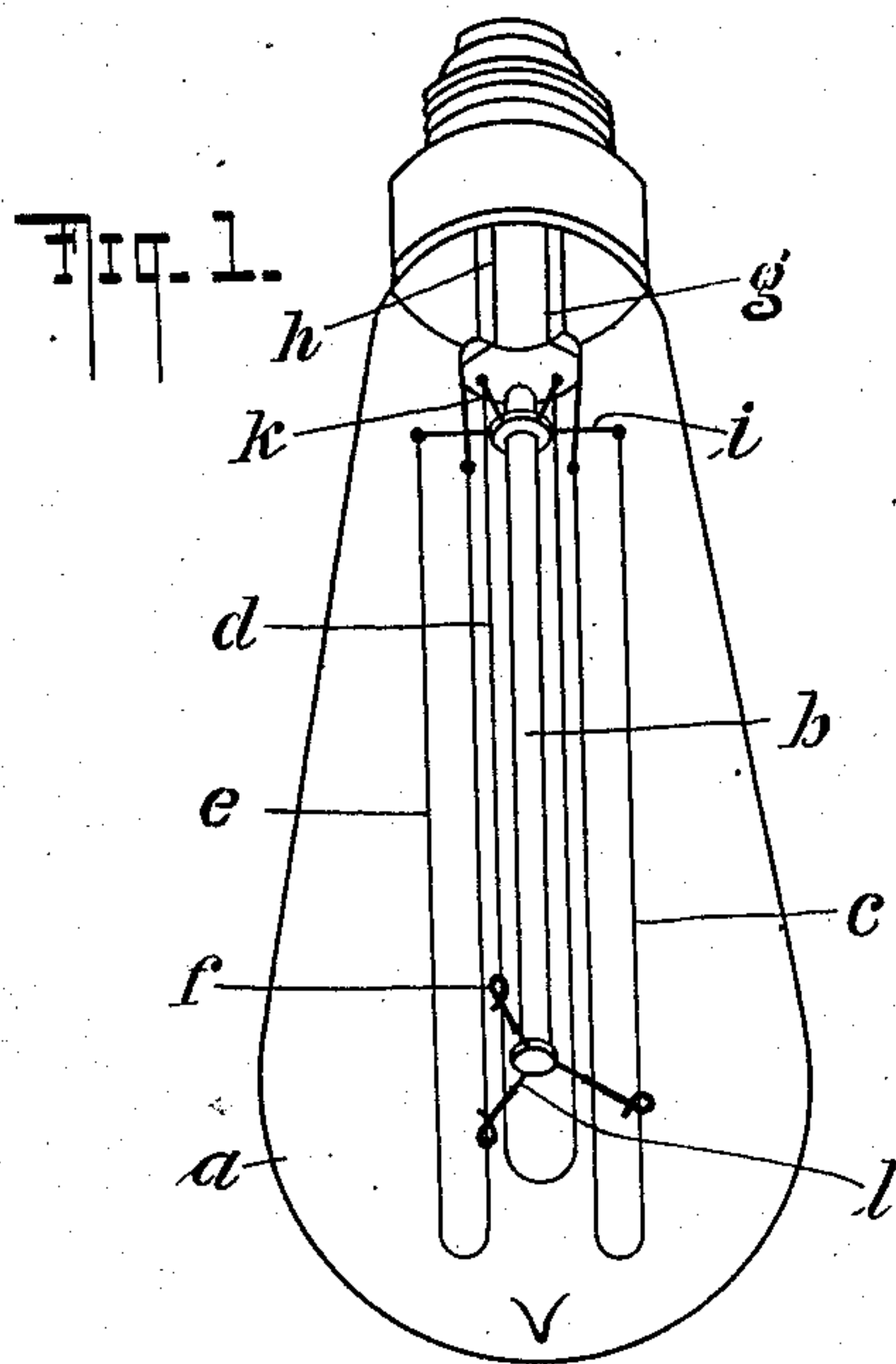


H. REMANÉ.
ELECTRIC INCANDESCENT LAMP.
APPLICATION FILED MAY 8, 1908.

994,690.

Patented June 6, 1911.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HERMANN REMANÉ, OF BERLIN, GERMANY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC INCANDESCENT LAMP.

994,690.

Specification of Letters Patent.

Patented June 6, 1911.

Original application filed June 27, 1906, Serial No. 323,752. Divided and this application filed May 8, 1908.
Serial No. 431,596.

To all whom it may concern:

Be it known that I, HERMANN REMANÉ, a subject of the Emperor of Germany, and resident of Berlin, Germany, have invented certain new and useful Improvements in Electric Incandescent Lamps, of which the following is a specification.

My invention relates to incandescent electric lamps, particularly of the class in which a metallic filament is employed. These being somewhat delicate, they are generally supported at one or more points between their ends, in addition to being attached to the usual terminals. One of the constructions adopted for this purpose comprises a carrier located in the bulb and provided with holders for the filament or filaments, said holders being provided with loops or hooks. In practice it has been found very difficult to insert the filament into the loops or hooks of the holders and my present invention has for its object to facilitate such insertion and to securely hold the filaments in position. In the preferred form of my invention each holder comprises two sections, one of which is a guide piece for the filament and is formed with a hook or loop, said section being made of any suitable material capable of resisting the influence of heat, for instance, thorium oxid; the other section connects said guide piece with the carrier and is preferably made of flexible material so that it may be bent or twisted without injury. Generally a thin wire is employed for this section.

In the accompanying drawings Figures 1, 2 and 3 are perspective views of three different incandescent lamps embodying my invention.

In the example illustrated by Fig. 1, the stem of the bulb *a* is provided with an internal carrier *b* preferably made of glass and on the end of said carrier are mounted the holders *f* for the looped filaments *c, d, e*. The loops *c* and *e* are connected at one end to the wires *g* and *h* respectively which are led through the stem of the lamp in the well known manner and the third loop *d* is connected in series with the other two by means of the wires *i, k* attached to said carrier *b*. The filaments connected at their ends to the current conducting wires *g, h, i, k* are each passed through one of the loops of the holders *f* attached to the free end of

the carrier *b*. The bends of the filaments project somewhat beyond the loops of the holders *f* to avoid the danger of the filaments' breaking when they contract during the use of the lamp. The outer parts of the holders *f* form guide pieces for the filaments and are preferably constructed of metallic oxid, such as thorium oxid, having a very high melting point and great rigidity. These guide pieces are secured to the carrier *b* by means of highly flexible connecting pieces *l*, which may be made of thinner wires than the guide pieces, and of platinum or other suitable material. The purpose of this construction is to allow the outer portions or guide pieces to be readily turned so as to enable the filaments to be secured in the following manner: The loop of the guide piece is first placed parallel to and at the side of the filament, so that the filament may be inserted into the loop. This having been done, the holder is twisted at about a right angle by means of a forceps or other tool, so that the loop of the guide piece stands transversely to the filament and incloses it.

In the construction illustrated by Fig. 2, two rows of holders are mounted on the carrier *b* and are arranged so that each filament passes through four guide pieces.

In Fig. 3 the outer guide pieces are formed with hooks *m*, the inner guide pieces being of the same character as described with reference to Figs. 1 and 2. In other respects the construction of the outer holders is exactly the same as before described, that is such outer holders consist of two sections, one of them forming the guide piece and being for this purpose provided with a hook *m*, and the other, *l*, being highly flexible so as to allow the guide piece to be twisted for the purpose of the ready insertion of the filament in the hook.

My present application is a division of one filed by me in the United States Patent Office on June 27th 1906, Ser. No. 323,752.

I claim as my invention;

1. A filament holder comprising an arm terminating in an open loop, said arm being composed of refractory material, said loop when lying in one plane presenting the open part for free entry to the filament and when lying in a different plane presenting an obstruction in every direction to the lateral

path of the filament inclosed within said loop and means consisting of a flexible connecting piece for allowing the plane of the loop to be changed.

5 2. A holder for a filament loop comprising a refractory guide piece engaging therewith, the guide piece extending transversely with reference to the longitudinal direction of the filament loop and comprising on one
10 side an opening by which the filament may be introduced into it, in combination with a flexible connecting piece through which the guide piece is secured to a suitable part of the structure associated with the filament,
15 said connection having sufficient flexibility to permit the guide piece to be adjusted and at the same time being adapted to hold said guide piece in any of its adjusted positions whereby said flexible connection serves to
20 allow the guide piece to be brought into proper engaging relation with the filament.

25 3. A filament holder comprising an open refractory arm for engagement with the filament and a part of flexible material adapted to allow the position of the refractory part to be adjusted from a position in which

the filament may be freely disassociated from the refractory part to one in which it holds the refractory arm in proper operative position with reference to the filament. 30

4. The combination with a filament of a holder arranged adjacent thereto comprising a suitable refractory piece having an open loop for engagement with the filament secured to a suitable part of the structure associated with the filament by a connection adapted to allow said piece to be turned to a position in which it presents an opening by which the filament may be brought into proper relation to it or to a position in which it effectually incloses the filament. 35 40

5. The combination with a filament carrier of a holder for the filament comprising a hook-shaped guide piece of refractory oxid flexibly connected with the carrier. 45

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses this 21st day of April, 1908.

HERMANN REMANÉ.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.