

H. REMANÉ.
METHOD OF ANCHORING FILAMENTS.
APPLICATION FILED JUNE 27, 1906.

994,425.

Patented June 6, 1911.

Fig. 1.

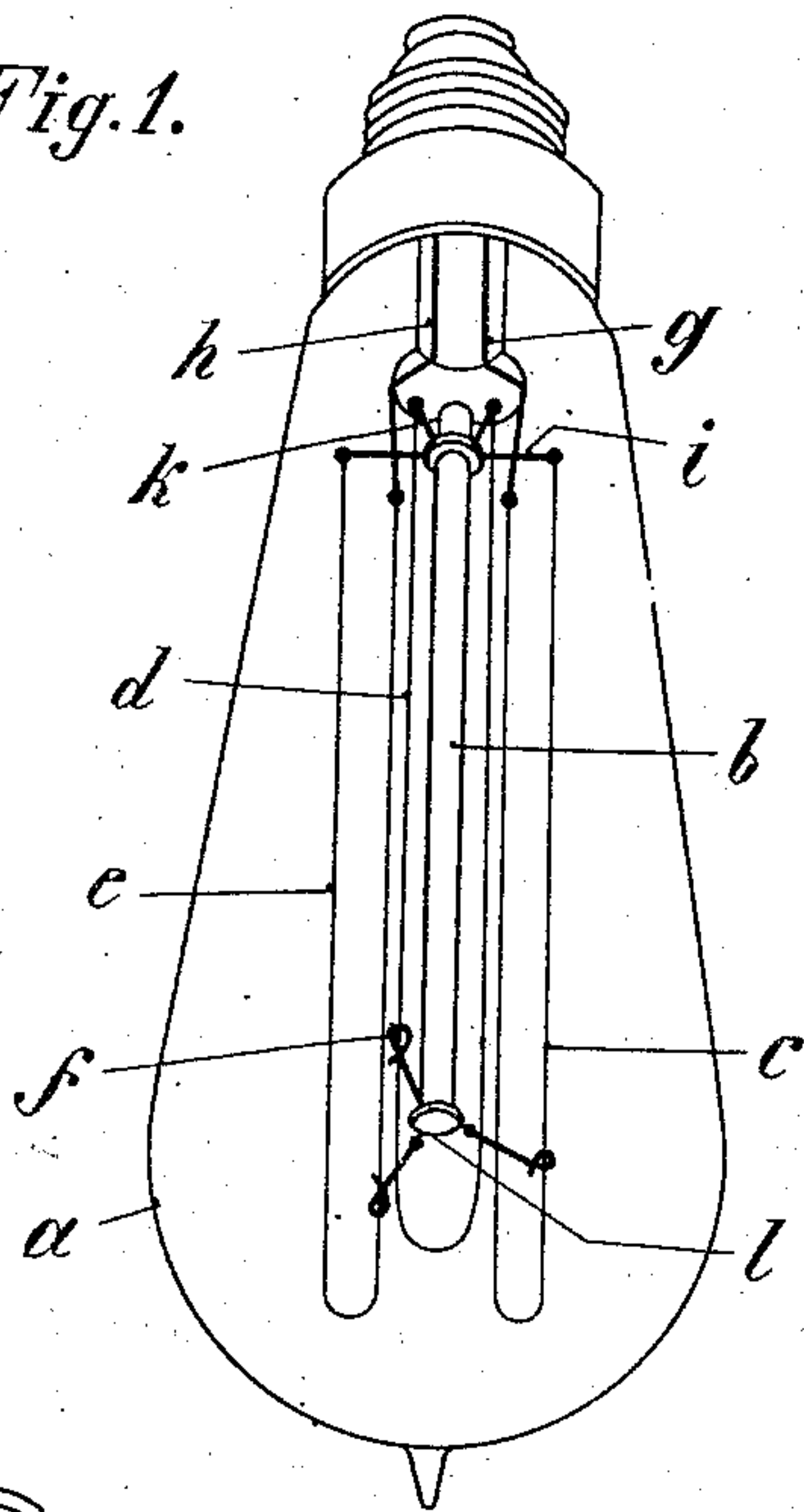


Fig. 2.

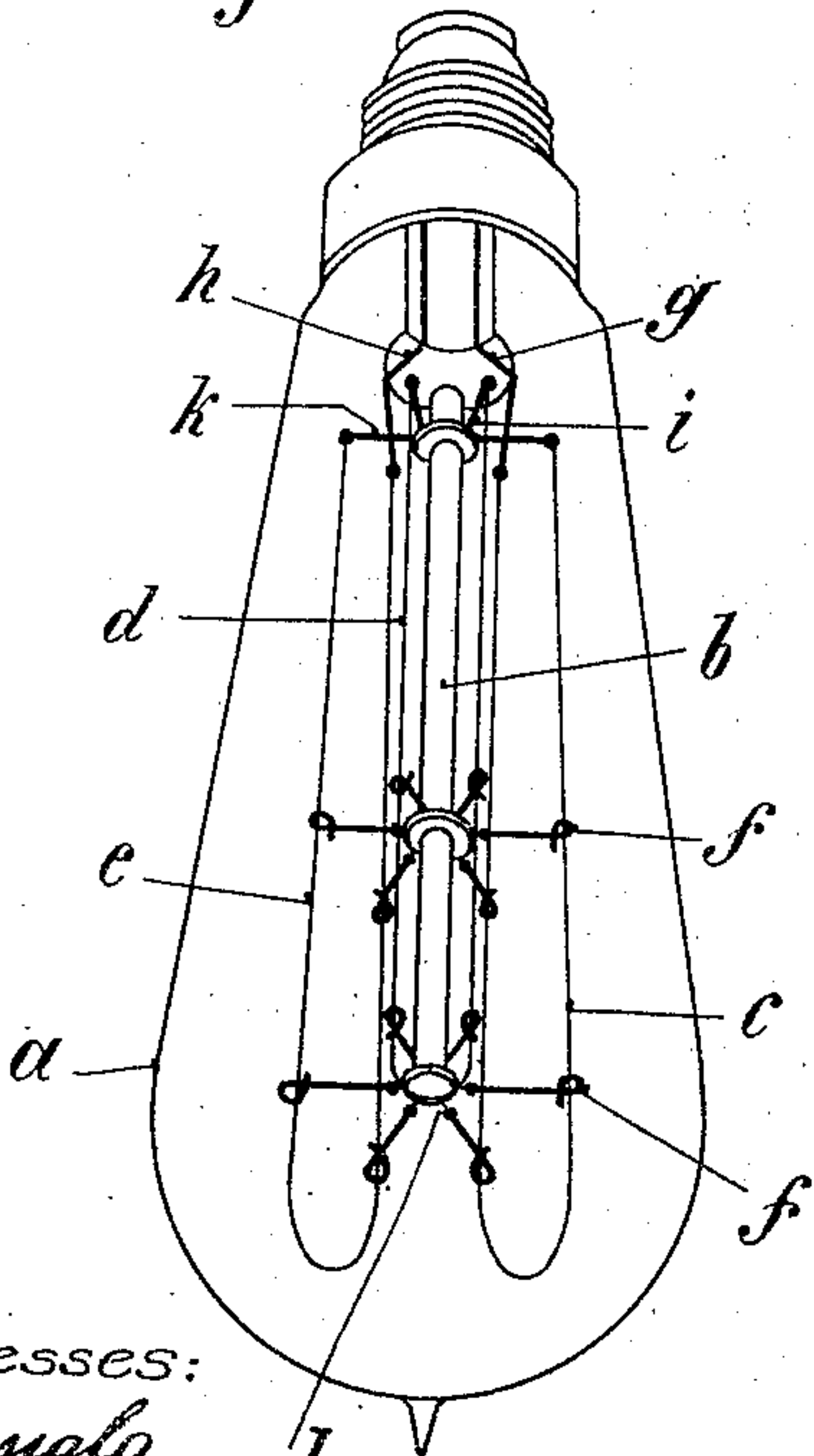
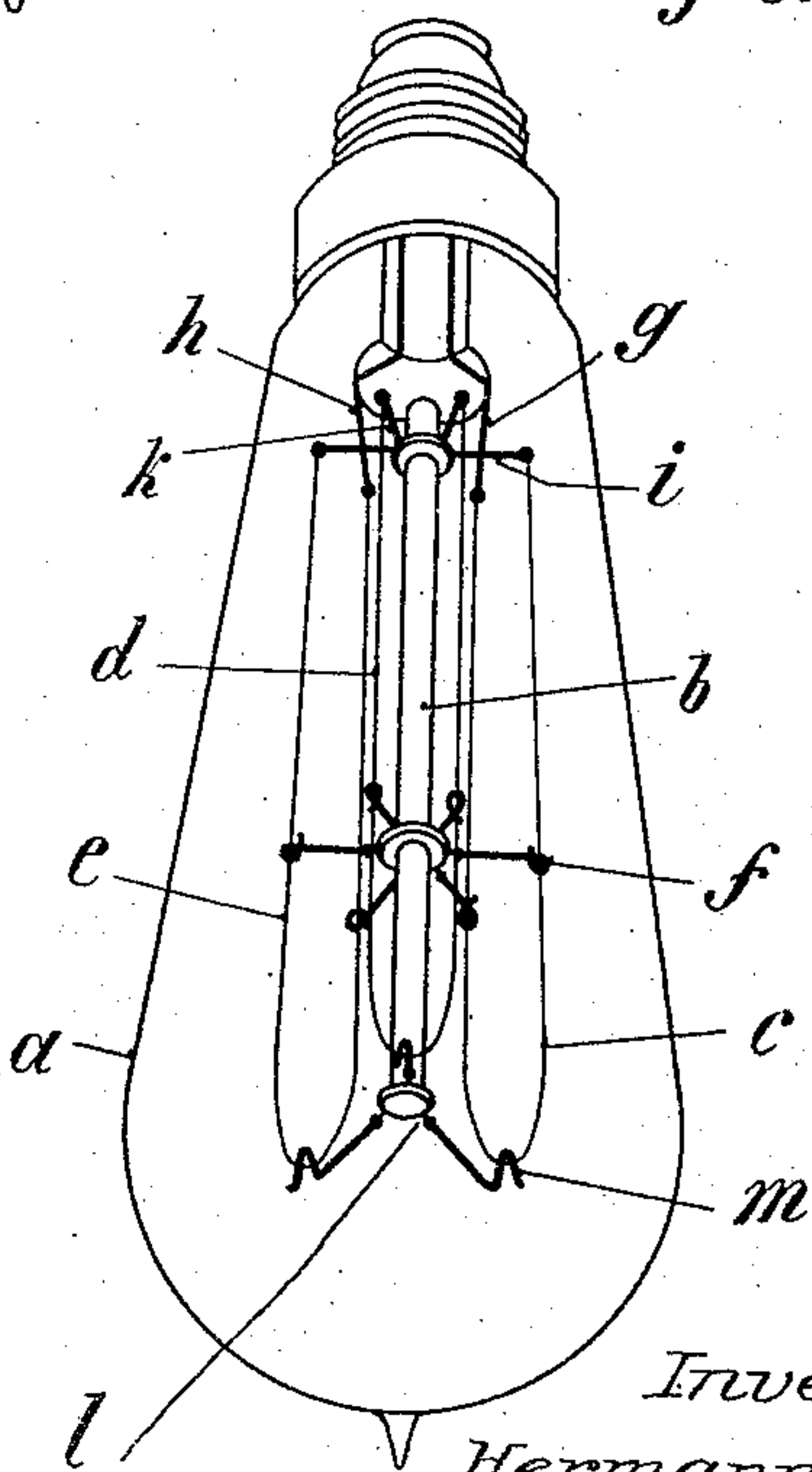


Fig. 3.



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UNITED STATES PATENT OFFICE.

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METHOD OF ANCHORING FILAMENTS.

994,425.

Specification of Letters Patent.

Patented June 6, 1911.

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To all whom it may concern:

Be it known that I, HERMANN REMANÉ, chief engineer, a subject of the Emperor of Germany, residing at Alte Jakobstrasse No. 139, Berlin, Germany, have invented certain new and useful Improvements in the Method of Anchoring Filaments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to electric incandescent lamps with metallic filaments of that type in which the filaments are formed of axially arranged narrow loops. In order to prevent the filaments from being injured, it is necessary to give them some further support in addition to their attachment to the conducting terminals. For this purpose constructions have been designed in which the filaments are supported at different points of their length by means of holders projecting from the bulb. In other constructions such holders have been attached to a carrier axially disposed within the bulb. However, in the manufacture of such lamps, and particularly where filaments are used which, when cold, are brittle, it has been found very difficult to insert the filaments into the loops or hooks of the holders.

Now, my invention consists in a particular novel method for enabling the filaments to easily be inserted into the bent ends of the holders, forming hooks or loops, and in the method of inserting the filaments into the same. For this purpose the holders are so constructed, that their position relatively to the filaments can be changed and the filaments can be secured within their hooks or loops by so changing the relative position of the same. In the preferred form, each holder comprises two sections, one section being the hook or loop shaped guide-piece for the filament, which consists of any preferred, well-known material, for instance thorium oxid, adapted to resist the influence of the heat, and the other section being a joint, whereby said guide-piece is

connected to the carrier, and which preferably consists of a wire of flexible material adapted to be bent and to be twisted by torsion.

In the accompanying drawing several examples of incandescent lamps are illustrated, all of which embody the invention in its preferred form.

Figure 1 shows an incandescent lamp with three filaments which are supported by loops of holders attached to one end of an axial carrier. Fig. 2 shows a modification of the lamp in which two rows of loops are attached to the axial carrier for the purpose of holding the filaments. Fig. 3 shows another modification of the lamp in which loops in the middle of the carrier and hooks at the end thereof are respectively attached for holding the incandescent filaments.

In the example shown in Fig. 1 the stem of the incandescent lamp *a* is provided with an internal carrier *b* made of glass, on the end of which the holders *f* for the looped incandescent filaments *c, d, e*, are mounted. The loops *c* and *e* are connected at one end to the connecting wires *g* and *h* which are led through the stem of the lamp in the well known manner, and they are connected in series with the loop *d* through the wires *i, k* attached to the carrier *b*. The incandescent filaments connected at their ends to the current conducting wires *g, h, i, k* are passed each through one of the loops of the holders *f* attached to the end of the carrier *b*. The bent parts of the incandescent filaments project to a certain degree beyond the loops *f* so that a breakage thereof in consequence of the contraction caused by use of the lamp cannot occur. The outer parts of the holders *f* which form, with their loops, guide-pieces for the filaments and are preferably constructed of difficultly fusible metallic oxids, such as oxid of thorium, which are rigid, are attached to the carrier *b* by means of thinner wires or joints *l* of easily flexible material, for instance platinum, whereby they are movable so as to permit the convenient introduction of the filaments.

The method of inserting the filament into the loop is as follows: The loop is first placed parallel to and at the side of the filament, in which position of the loop the filament can be passed into the latter. After

so inserting the filament into the loop the holder is twisted at a right angle by means of a forceps, which is permitted by its joint *l*, so that it stands transversely to the filament and thus incloses it.

In the example shown in Fig. 2 two rows of holders are mounted on the carrier *b* in such a manner that each filament is passed through four loops. In the example illustrated in Fig. 3 the filaments are secured to hooks *m* attached to the free end of the carrier *b* and also each by means of two loops attached to the body of the carrier.

The construction of the hook shaped holder *m* is substantially the same, as that of the loop shaped holder *f*. It also consists of an outer guide-piece and a joint or connecting piece *l* of flexible material. For the purpose of inserting the filament into its hook the holder is bent into the curved part of the filament and then bent into its normal position in which it holds the filament and prevents the same from slipping out.

Having thus described my invention, what I claim as new therein and desire to secure

by Letters Patent of the United States of America, is:

1. The method of securing filaments in electric incandescent lamps, which consists in placing a flexible looped holder at the side of the filament, with the loop parallel to the filament, then passing the filament into the loop, and thereupon twisting the holder so that it will stand transversely of the filament and inclose it.

2. The method of securing filaments in electric incandescent lamps, which consists in placing a movable open guide-piece at the side of the filament, then passing the filament into said guide-piece, and thereupon twisting the guide-piece so that it will stand transversely of the filament.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

HERMANN REMANÉ.

Witnesses:

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HENRY HASPER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
