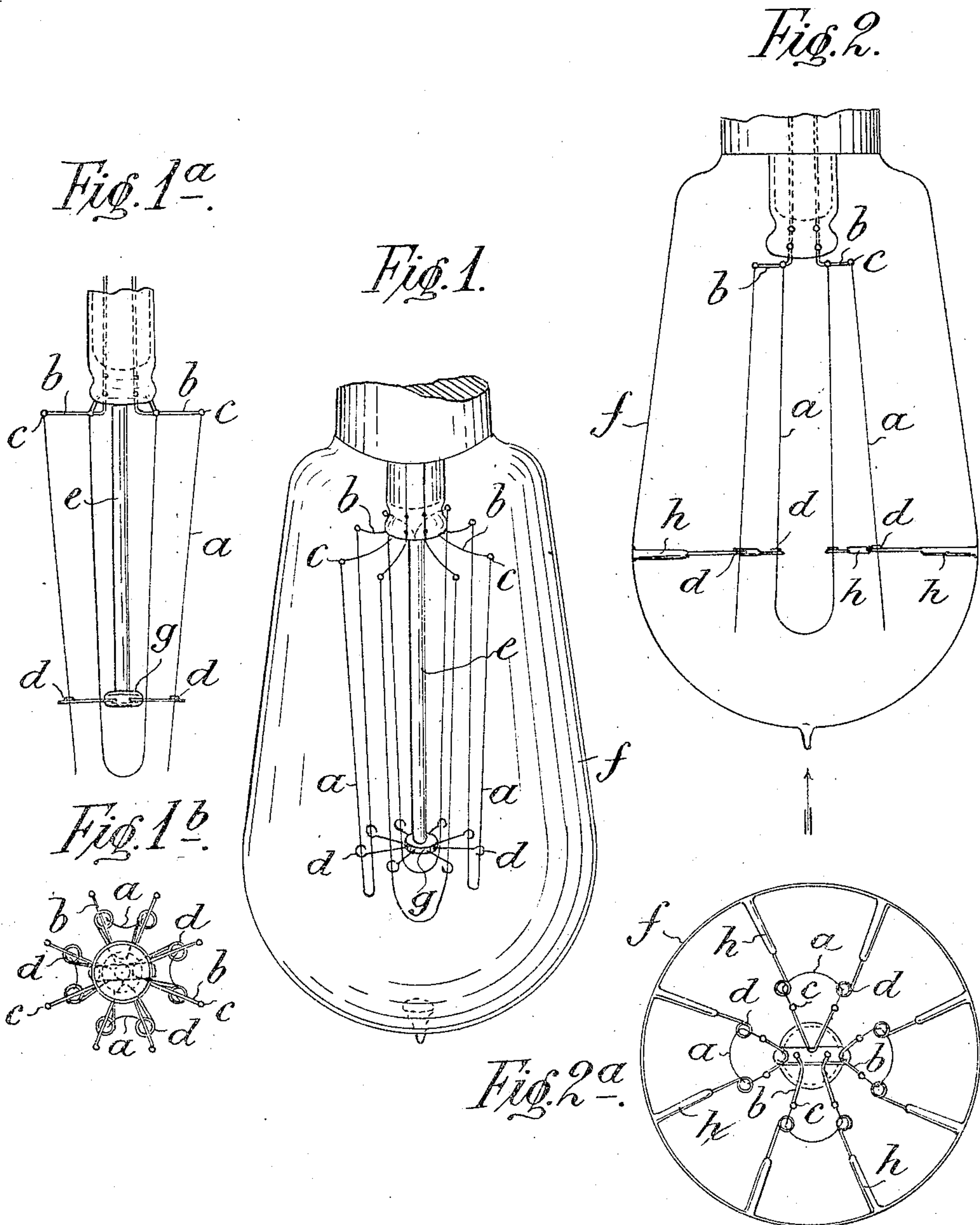


No. 897,110.

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H. KUZEL & R. HOKE.
ELECTRIC INCANDESCENT LAMP.

APPLICATION FILED MAR. 5, 1907.



WITNESSES

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HANS KUZEL, OF BADEN, NEAR VIENNA, AND RICHARD HOKE, OF VIENNA, AUSTRIA-HUNGARY; SAID HOKE ASSIGNOR TO SAID KUZEL.

ELECTRIC INCANDESCENT LAMP.

No. 897,110.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Application filed March 5, 1907. Serial No. 360,795.

To all whom it may concern:

Be it known that we, HANS KUZEL, a subject of the Emperor of Germany, residing at Baden, near Vienna, Empire of Austria-Hungary, and RICHARD HOKE, a subject of the Emperor of Austria-Hungary, residing at Vienna, Empire of Austria-Hungary, have invented certain new and useful Improvements in Electric Incandescence Lamps, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to electric incandescence lamps having horseshoe shaped or U-shaped metallic filaments and has for its object to so construct such lamps as to prevent neighboring legs of such filaments to come into contact with each other while the lamp is burning whereby the filament would be destroyed. As is well known such incandescence lamps are generally used in a hanging position so that the filaments which, when heated to incandescence become rather soft, hang downwards in a vertical position. Heretofore it was the general practice to so arrange the points of connection between the filaments and the supply wires that in the hanging lamp they are in vertical lines above the centers of the usual holding devices such as eyelets hooks or the like serving for supporting the metal filaments and preventing them from coming into contact with the glass bulb or with each other and from becoming entangled with each other during transport or handling. Usually the said holding devices were so constructed and arranged as to hold only one leg of each horse shoe shaped filament. It has also been proposed for enabling metal filament incandescence lamps to be used in an oblique or upright position to fix the filaments directly at the yoke or bend by two hooks. The filament then cannot be displaced and has not the sufficient play that would enable it to contract and expand freely; on the contrary with this arrangement the filament is to some extent under tension so that it is liable to break.

Now the extremely fine and delicate metal filaments of hanging electric incandescence lamps of low candle power even when held in the manner above indicated are subject to distortions more particularly when worked with direct current to such extent that it

happens frequently that two neighboring filament legs come into contact with each other and the lamp is destroyed owing to short circuiting.

Our invention is based on the discovery that the distortions and deformations of the filaments and the liability of the lamp of being destroyed consequent thereon may be avoided or reduced to a minimum by so arranging the points of connection of the filaments to the supply wires and the holding devices of the filaments that the weight of the filaments counteracts the distorting or deforming effects of electricity. This result is obtained according to our invention by so arranging the points of attachment of the horse shoe shaped metal filaments to the supply wires (that is to say the soldering or cementing beads) relatively to the holding devices (that is to say eyelets, hooks or the like) that in a hanging lamp the former are not in vertical lines above the centers of the latter, as heretofore, but that—as contradistinguished from the arrangement heretofore practiced—the radial distance between the said points of attachment from the longitudinal axis of lamp is different from the radial distance of the centers of the holding devices from such axis. For securing the desired result it is necessary that each leg of each filament is provided with a holding device of any known or preferred construction such as an eyelet, hook or the like.

In the accompanying drawings: Figure 1 is a perspective view of one form of execution of our improved lamp before use; Fig. 1^a is a side elevation of a similar lamp before use the bulb being removed; Fig. 1^b is a plan view of Fig. 1^a; Fig. 2 shows a side elevation and Fig. 2^a a plan view of a modification of our improved lamp.

In the drawings *a* are the filaments, *b* the supply wires, *c* the solder or cement beads by which the ends of the filaments are connected to the supply wires and *d* are the holding devices, one such holding device being provided for each leg of each filament.

e Figs. 1, 1^a and 1^b is a central support secured in the bulb *f* and carrying the holding devices *d* which may be of any known or preferred construction, such as hooks eyelets or the like. When the holding devices are made of some conductive material, such as a refractory metal, they must be carefully insulated from each other, for instance by be-

ing sealed into glass nipples *g* projecting from the central support *e* which is preferably made of glass and integral with the nipples.

5 In the construction shown in Figs. 1, 1^a and 1^b the distance between the beads *c* or points of attachment or connection between the free ends of the filaments *a* and the supply wires *b* and the longitudinal axis of the
10 lamp is greater than the distance between the centers of the holding devices *d* and the longitudinal axis of the lamp, the said holding devices being arranged on both sides of the bend or yoke of the filament. The legs
15 of the filaments thus constitute before burning the side edges of a pyramid frustum having its smaller base turned downwards.

In the modification shown in Figs. 2 and 2^a the central support *c* is dispensed with and
20 the holding devices are carried by small glass tubes or rods *h* secured to the bulb *f* and projecting inwards. The distance between the beads *c* and the longitudinal axis of the lamp is in this case smaller than the distance
25 between the holding devices *d* and the same axis so that the legs of the filaments constitute before burning practically the side edges of a pyramid frustum having its larger base turned downwards. In either case the legs
30 of the filaments are inclined to the vertical axis of the hanging lamp and gravity counteracts the distorting or deforming effects of electricity.

Claims—

35 1. In an electric incandescent lamp, the combination of supply wires, a plurality of horse-shoe shaped metal filaments, each such filament having each of its free ends connected to a supply wire, insulated holding de-
40 vices, means for supporting said holding devices in the bulb, the said holding devices be-

ing adapted to engage both legs of each filament at points intermediate between the points of connection of such legs to the supply wires and the bight of such filament, 45 the legs of each filament being inclined to the longitudinal axis of the bulb and the distance between the points of connection between the free ends of the filaments and the supply wires from the longitudinal axis of the
50 lamp being different from the distance of the centers of the holding devices from the said axis, substantially as and for the purpose described.

2. In an electric incandescent lamp, the 55 combination of supply wires, a plurality of horse-shoe shaped metal filaments, each such filament having each of its free ends connected to a supply wire, a central support within the bulb of the lamp, insulated holding de- 60 vices attached to the central support and adapted to engage both legs of each filament at points intermediate between the points of connection of such legs to the supply wires and the bight of such filament, the legs of 65 each filament being inclined to the longitudinal axis and the distance between the points of connection between the free ends of the filaments and supply wires from the longitudinal axis of the lamp being different 70 from the distance of the centers of the holding devices from the said axis, substantially as and for the purpose described.

In testimony whereof we have signed our names to this specification, in the presence of 75 two subscribing witnesses.

HANS KUZEL.
RICHARD HOKE.

Witnesses:

ALVESTO S. HOGUE,
AUGUST FUGGER.