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INCANDESCENT LAMP

Filed March 26, 1935

FIG. 1

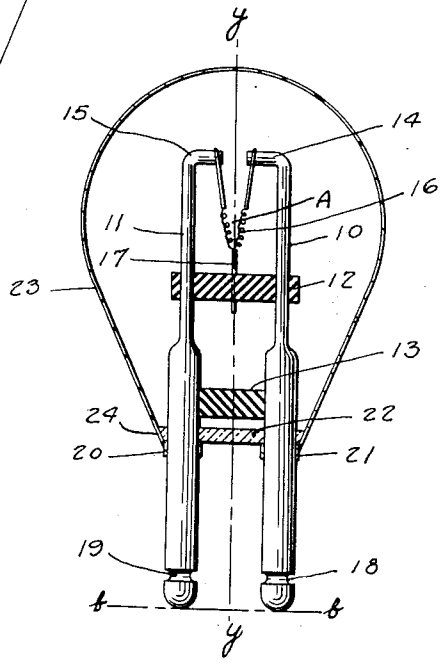


FIG. 3

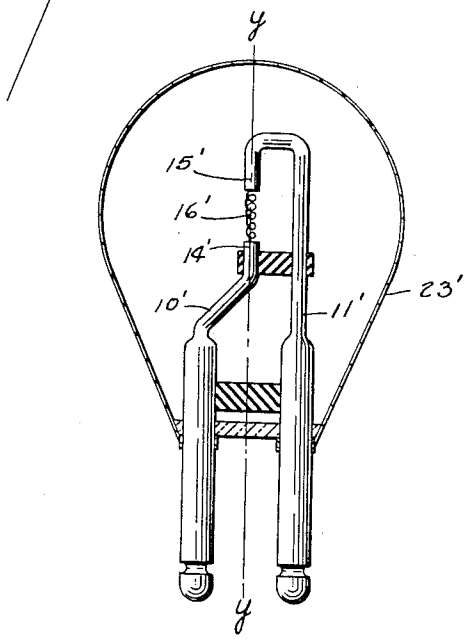
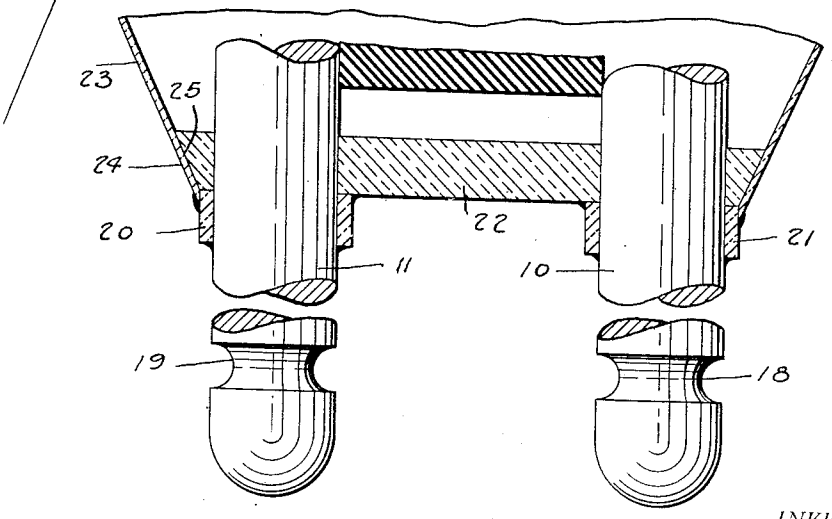


FIG. 2



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INCANDESCENT LAMP

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8 Claims. (Cl. 176—35)

The present invention relates generally to electrical devices and more particularly to incandescent lamps and the process of making the same.

In manufacturing prior art devices of this character, it has been common practice to provide a lamp bulb within which was mounted a glass stem carrying a filament and a base member or socket portion having suitable electrical connection with the filament supported within the lamp bulb. In most instances the filament carrying stem has been fused with the glass of the bulb so as to seal the stem within the bulb, the neck of the bulb thereafter being seated within and cemented in proper relationship on the base member or socket portion. In actual practice, however, it is found that it is not possible to obtain an accurately positioned center of illumination with bases of the established type with the result that considerable loss in candle power is obtained.

The present invention is directed toward obtaining this accuracy by a novel type of mounting for the filament, which when applied to lamp bulbs enables them to be readily interchanged without variations in the location of the source of illumination.

The novel mounting made in accordance with the present invention is particularly applicable to incandescent lamps of the so called "concentrated filament" type which are used in search lights, flood lights and other similar devices incorporating a reflector or lens in which the filament must be accurately and positively positioned with respect to the optical axis of the lens or reflector in order that a concentrated beam of light of great intensity may be obtained.

The primary object of the present invention is to provide in an incandescent lamp, a novel means of support for a filament wherein a pre-focussed setting and accurate alignment of the filament with respect to the optical axis of a reflector or lens is obtained. A further object of the present invention is to provide in an incandescent lamp, improved mounting means for the support of a filament arranged in a manner such that the filament may be predeterminately accurately positioned both laterally and vertically with respect to a datum point on the mounting prior to and independently of the mounting of the bulb of said lamp thereon.

A further object of the present invention is to provide in an incandescent lamp, an improved base and filament construction which permits of the assembly of said base and filament into a single unitary structure having predetermined relative dimensional characteristics prior to the assembly of the bulb of said lamp on the base.

A still further object of the present invention is to provide in an incandescent lamp of this character, a unitary construction of a filament and support therefor, the bulb of said lamp being fusibly united to said support subsequent to the mounting of said filament on said support.

Other objects and advantages of the invention will be more fully understood by reference to the accompanying drawing in which:

Fig. 1 illustrates a longitudinal sectional view through an incandescent lamp embodying the supporting structure of our invention.

Fig. 2 is an enlarged detail sectional view of the base portion of the lamp illustrated in Fig. 1, and

Fig. 3 is a modification of the invention illustrated in Fig. 1.

Referring more particularly to the drawing wherein corresponding parts are designated by like numerals of reference, the electrical device in the embodiment of our invention generally illustrated in Fig. 1 comprises, a pair of prong-type leads 10 and 11 having their longitudinal axes disposed laterally and in parallel relation with respect to the longitudinal center line Y—Y of the device. These leads are supported in spaced relationship by means of spacing members 12 and 13 of suitable insulation material. As shown in Fig. 1, the upper ends 14 and 15 respectively of said leads are bent inwardly and toward one another to provide suitable anchoring portions to which the ends of a filament 16 of the concentrated type may be suitably secured. The filament shown in Fig. 1 is V-shaped with the closed or lower end of the V secured to a central anchoring pin 17 supported on the upper spacer member 12. In making the mounting for the filament, we contemplate the use of a suitable jig within which the leads 10 and 11 may be properly positioned so that the filament 16 may be mounted in proper relationship therewith, that is to say with its center of incandescence, generally illustrated by the point A, coincident with the center line Y—Y and at a predetermined point distant from the reference or datum line B—B formed by the lower or prong ends of said leads.

It is to be further understood that the socket of the device is so located in the flood light that when a properly adjusted lamp is placed therein the filament will occupy a desired position with respect to the optical action of the reflecting surface of the flood light within certain limits.

It is readily conceivable that the socket of

the flood light can be accurately positioned in the flood light or other electrical device by optical or any other conventional means so that the distance from the optical axis to a point of reference in the socket is the same for each lamp of the same type. If, then, a lamp equipped with the prong-type leads is placed within the socket, the filament will be definitely located in space, provided the lower ends of the prongs coincide with the reference surface defined by the point of electrical contact between the leads and the terminals of the receiving socket.

In order to insure that the filament will always assume a certain definite position with respect to the optical axis of its reflector, the prongs 10 and 11 are provided with necked in portions 18 and 19 respectively which are positioned adjacent the lower extremities of the leads and adapted for locking engagement in suitable locking members (not shown) of the type to be found in conventional prong type sockets. Thus the lamp will be securely held in its predetermined position within the socket even though the mounting be of such a character that the center line Y—Y be disposed in a horizontal rather than a vertical plane.

As shown in Fig. 1, each electrode has sealed therein in suitable position along the length thereof annular rings 20 and 21, preferably of vitreous material, so as to obtain an efficient fusing of the materials of said rings with the materials of the leads. Immediately above said annular rings, we provide a base forming disc 22 of vitreous material which is fusibly united to the materials of the annular rings 20 and 21 by the application of heat. Thereafter the bulb 23 is mounted upon the base forming disc 22 so as to enclose the filament 16. This bulb is formed with the usual neck portion, the mouth 24 of which is concentrically positioned with respect to and in contact with the peripheral edge 25 of the base forming disc. By locally heating the bulb by suitable means (not shown) the mouth of the bulb may be fusibly united with the materials of the base forming disc along the peripheral edge of said disc. After the bulb has been fused with the materials of the base forming disc, the bulb may be exhausted of air in the usual manner or through the base forming disc 22.

A slightly modified form of the invention is illustrated in Fig. 3. In this embodiment of the invention, the filament 16' is positioned longitudinally within the bulb 23' with its longitudinal axis coincident with the center line Y—Y. The anchoring portion 14' and 15' of the leads 10' and 11' respectively are suitably bent inwardly and in opposing relationship with respect to one another so as to properly support the filament 16' in fixed predetermined position with respect to the center line Y—Y.

By reason of the present invention, a simple, efficient, and effective method of producing an article such as an incandescent lamp is attained and considerable advantage derived from the fact that an improved mount for a filament and support for a bulb is obtained which permits the filament to be not only accurately positioned in a predetermined manner with respect to a given datum line or point of reference and maintained in such position with great precision and accuracy but also affords a novel manner of supporting a bulb without sacrificing accuracy of filament position.

Although a present preferred embodiment of the invention is shown and described herein, it is to be understood that modifications may be made therein without departing from the spirit and scope of the invention as set forth in the appended claims.

What we claim is:

1. The method of making an electrical device which comprises, uniting a plurality of prong-type leads in insulated and predetermined spaced relationship, bonding a filament to the upper ends of said leads with its center of incandescence in given position with respect to a line of reference formed by the prong-ends of said leads, applying a separate base forming disc of vitreous material to said leads, enclosing said filament in a bulb and in spaced relationship to the perimeter thereof, and uniting the mouth of said bulb to the peripheral edge of said disc.

2. The method of making an electrical device which comprises, uniting a pair of prong-type leads in insulated and spaced relationship with their longitudinal axes disposed parallel and equi-distant from a given center line, bonding a filament to the upper ends of said leads with its center of incandescence coincident with said given center line and at a predetermined point distant from a line of reference formed by the prong ends of said leads, applying a separate base forming disc of vitreous material to said leads, enclosing said filament in a bulb with the perimeter of its mouth in contact with the peripheral edge of said base forming disc, and in applying heat to unite the disc and bulb by fusion.

3. The method of making a support for a filament and a bulb which comprises positioning a pair of prong-type leads with their longitudinal axes disposed parallel and equi-distant from a given center line, uniting said leads in spaced relationship by insulation material, bonding a filament to the upper ends of said leads with its center of incandescence coincident with said given center line and at a predetermined point distant from a line of reference formed by the prong ends of said leads and applying a separate base forming disc of vitreous material to said leads at a point adjacent the lower end thereof.

4. The method of making a support for a filament and a bulb which comprises positioning a pair of leads with their longitudinal axes disposed parallel and equi-distant from a given center line, uniting said leads in spaced relationship by insulation materal, bonding a filament to the upper ends of said leads with its center of incandescence coincident with said given center line and at a predetermined point distant from a line of reference formed by the lower ends of said leads, fusing a ring of vitreous material to each of said leads at a point adjacent their lower ends, and uniting a separate base forming disc of vitreous material to said ring by fusion.

5. An incandescent lamp comprising, a plurality of prong-type leads disposed in upright insulated and spaced relationship, a filament carried by said leads at the upper ends thereof, a separate base forming disc of vitreous material positioned adjacent the prong ends of said leads and fusibly united with the materials thereof, and a bulb enclosing said filament and supported by said base forming disc having the open end of its neck portion united with the materials of said disc along its peripheral edge.

6. An incandescent lamp comprising a plurality of prong-type leads united in insulated and predetermined spaced relationship, a filament mounted on said leads having its center of incan-

descence disposed centrally of said leads and at a given point distant from a line of reference formed by the prong ends of said leads, a separate base forming disc of vitreous material positioned adjacent the lower ends of said leads and fusibly united with the materials thereof, and a bulb enclosing said filament supported by said base forming disc having the open end of its neck portion united with the materials of said disc along the peripheral edge thereof.

7. An incandescent lamp comprising, a plurality of prong-type leads united in insulated and spaced relationship with their longitudinal axes disposed parallel and equi-distant from a given center line, a filament supported by and electrically connected to said leads having its center of incandescence coincident with said given center line and at a predetermined point distant from a line of reference formed by the prong ends of said leads, a separate base forming disc of vitreous material positioned intermediate the upper and lower ends of said leads and fusibly joined thereto, and a bulb enclosing said filament having its neck portion supported on said base forming disc and sealed to the peripheral edge thereof.

8. An incandescent lamp as set forth in claim 7, said leads being characterized by including sealing rings of vitreous material to which said base forming disc is fusibly united prior to the mounting of said bulb thereon.

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