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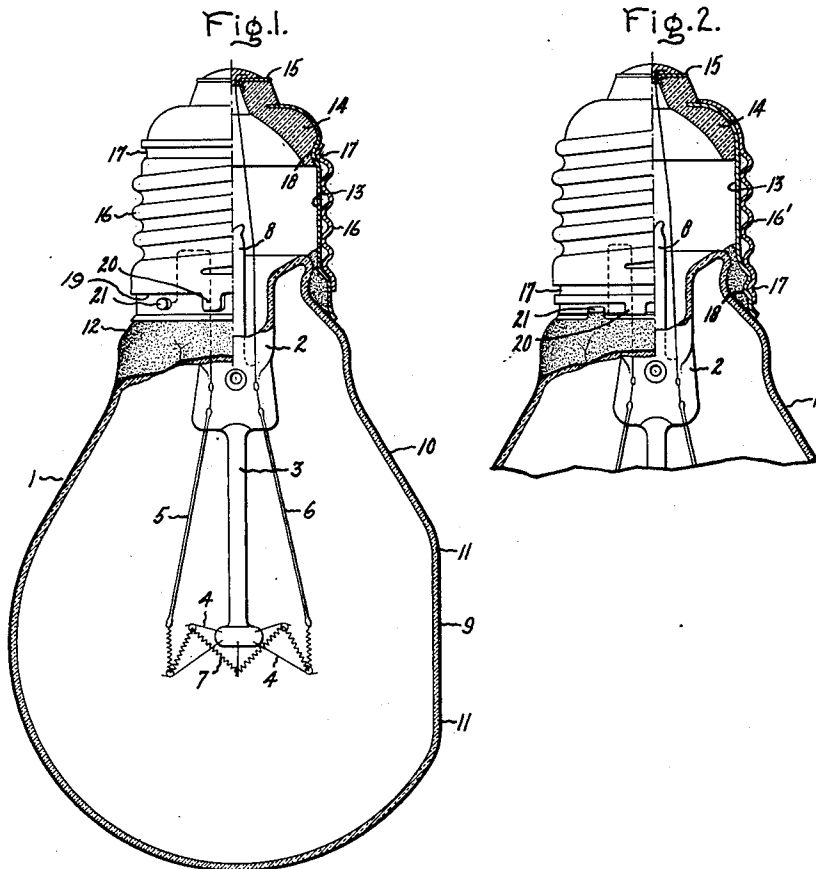
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2,165,987

ELECTRIC LAMP

Filed June 29, 1938

2 Sheets-Sheet 1



Inventors:
Walter Sobczak,
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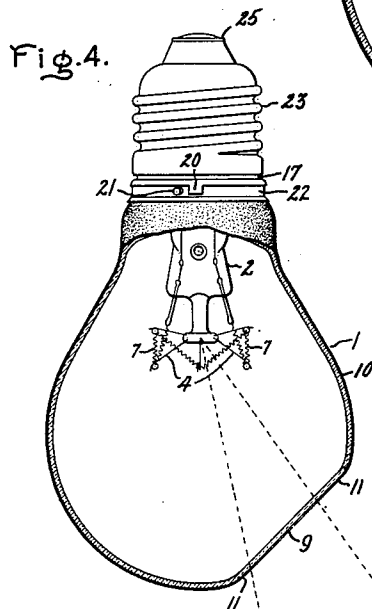
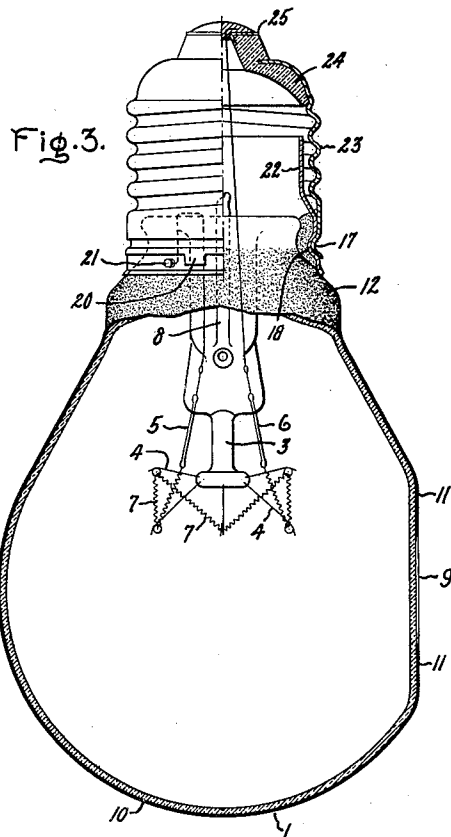
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UNITED STATES PATENT OFFICE

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ELECTRIC LAMP

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Application June 29, 1938, Serial No. 216,590
In Germany July 15, 1937

3 Claims. (Cl. 176—32)

Our invention relates to electric lamps in general and more particularly to lamps which are adapted to project only a narrow beam of light substantially in one direction. Still more particularly, our invention relates to a rotating base construction for such lamps whereby the lamp can be rotated in its socket after having been inserted therein.

In the case of electric lamps which are adapted to radiate light mainly in one direction, such as those used particularly for signaling, projection, reflector and air-raid protection purposes, it is frequently desirable to change the direction of light emission by rotating the lamp in its socket. Accordingly, one object of our invention is to provide such lamps with a novel rotating base construction whereby such a change in the direction of light emission can be quickly and effectively made.

Another object of our invention is to provide an electric lamp with a rotating base simple in construction and which will permit rotation of the lamp in its socket without subjecting the lamp leading-in wires to stresses which might result in their breakage.

Still another object of our invention is to provide an electric lamp with a rotating base structure having stop means for limiting rotation of the lamp proper with respect to its rotatable base element.

According to the invention, the lamp base, in one form of the invention, is cemented to the lamp bulb neck in the customary manner and is enclosed by a rotating threaded sleeve or cap which is locked with said base against axial displacement relative thereto and which is limited in its rotation with respect to said base by suitable stop means. The rotating threaded sleeve or threaded cap makes it possible to rotate the lamp at will to the left or to the right by approximately 360° after the lamp has been screwed into a socket. As a result, the lamp can assume any desired position around its axis without twisting the lamp leading-in wires and consequently without the danger of injury to the said wires. Undesirable rotation of the lamp by vibrations, after the lamp has been rotated into the desired position, cannot take place because of the fact that the base cemented to the lamp bulb neck is subjected to the pressure of the socket contacts in the same manner as a conventional lamp base.

The manufacture and use of the rotative base construction according to the invention is very simple. The base can either be cemented to the lamp bulb in the assembled state, i. e., with the

threaded sleeve or cap in place, in the manner customary with standard bases, or the base proper, without the threaded sleeve or cap thereon, may be cemented to the lamp bulb and the threaded sleeve or cap then slid over the base and rotatably fastened thereto, preferably by rolling one edge of the threaded sleeve or cap into an annular groove formed in the cylindrical sleeve portion of the underlying base. This interengaging annular rib and groove thus permits a rotation of the threaded sleeve or cap with respect to the lamp base proper but prevents axial displacement therebetween.

According to a modified form of the invention, the sleeve portion of a conventional base provided with an Edison screw thread or with protruding bayonet pins, is formed with an annular rib which fits into a corresponding annular groove formed in a threadless sleeve which the said base encloses and which is cemented to the neck of the lamp bulb. As in the first form of the invention, the rotating base makes it possible, after the lamp has been screwed into a socket, to rotate the lamp at will to the left or to the right by approximately 360°. As before, the manufacture and use of this form of base construction is very simple since it is only necessary to slide the base on the threadless sleeve, either before or after it has been cemented to the lamp bulb, and to roll the edge of the base shell into the annular groove formed in the threadless lamp sleeve. The interengaging annular rib and groove thus permits a rotation of the lamp base with respect to the threadless sleeve cemented on the lamp bulb while preventing axial displacement therebetween.

The rotative lamp base construction is further provided, according to the invention, with suitable stop means preferably comprising a longitudinally extending lug on one of the relatively rotatable portions of the base and a co-operating stop pin or projection on the other of the rotatable base portions. When the relatively rotatable portions of the base are rotated with respect to each other, the lug strikes the stop pin, thereby limiting the rotation of the two parts.

Further objects and advantages of our invention will appear from the following detailed description of species thereof and from the accompanying drawings in which:

Fig. 1 is a longitudinal sectional view, partly in elevation, of an electric incandescent lamp for air-raid protection purposes provided with a base comprising our invention; Fig. 2 is a fragmentary view, similar to Fig. 1, of a modification of our invention; Fig. 3 is a longitudinal view,

partly in elevation, of another modification of our invention; and Fig. 4 is an elevation, partly in section, of a modified form of lamp construction according to the invention.

Referring to Fig. 1, the lamp there shown comprises a pear-shaped glass bulb 1 containing a stem tube 2, a supporting rod or arbor 3 and a filament 7 supported by a plurality of support wires 4 extending from said arbor and arranged in the form of a star. The opposite ends of the filament 7 are connected to a pair of leading-in or current supply wires 5, 6. The bulb 1 is evacuated through an exhaust tube 8 which, after evacuation of the bulb, is tipped or closed off as shown in the drawings. The lamp bulb 1 is provided with an opaque coating 10 over its entire outer surface with the exception of a laterally arranged light outlet window 9 which may be circular or of any other desired shape. If desired, the opaque coating 10 may be placed on the inner surface of the lamp bulb instead of on the outer surface. The portion of the lamp bulb in which the window 9 is located is made substantially flat, and the window 9 is made somewhat smaller than the flattened bulb portion, as shown, so that the opaque coating 10 also covers the edge 11 of said flattened portion of the bulb wall. Because of the opaque bulb coating 10 formed with the window 9 therein, the light of the lamp can be emitted only over a very narrowly limited space angle.

Attached to the neck 12 of the bulb, preferably by suitable cement, is a base comprising a threadless shell 13, an insulating body 14, and a bottom contact eyelet 15. A threaded sleeve 16 surrounds, and is so mounted on, the base shell 13 as to rotate thereon about the longitudinal axis of said shell while locked against axial displacement relative thereto. For this purpose, the base shell 13 is formed, adjacent that end secured to the insulation 14, with an annular groove 18 into which fits an annular rib or collar 17 formed in the corresponding end of the threaded sleeve 16. The said annular rib 17 may be conveniently produced by spinning or rolling the metal of the threaded sleeve 16 into the annular groove 18 in the base shell 13.

To limit the rotational movement between the base proper and the threaded sleeve 16, suitable stop means are provided comprising a lug 20 extending longitudinally from the edge 19 of the threaded sleeve 16 and a co-operating stop pin or projection 21 formed on the free or uncovered edge portion of the base shell 13 and extending radially outward therefrom. Thus, after a certain amount of rotation of the sleeve 16 relative to the base proper, the stop lug 20 will strike the pin 21 to thereby limit further rotation. The arcuate extent or width of the lug 20 and of the stop pin 21 is made relatively small so as to permit relative rotation between the sleeve 16 and base proper approximating 360°. The stop pin 21 conveniently serves as the soldering point for one of the leading-in wires 5, the other leading-in wire 6 being soldered to the bottom contact eyelet 15 of the base.

To insert the lamp in a socket, the base end of the lamp is inserted in the socket in the usual manner and the bulb rotated in the proper direction until the stop pin 21 engages the lug 20 on the threaded sleeve 16. Thereafter, further rotation of the lamp bulb in the same proper direction will also rotate the threaded sleeve 16 so that it will screw into the threaded portion of the socket. After the lamp has been screwed into

the socket an amount sufficient to cause engagement of the lamp bottom contact 15 with the corresponding socket contact, it may then be rotated in the opposite direction through an angle approximating 360° to thereby project the narrow beam of light emitted by the lamp in the desired direction without resulting in outward axial movement of the lamp in its socket and consequent breaking of the contact between the lamp bottom contact 15 and its corresponding socket contact. Since the base proper, i. e., the base shell 13, insulation 14, and bottom contact 15, is cemented to the bulb, there is therefore no relative rotation therebetween when the lamp is either screwed into or rotated in its socket. Consequently, there is no twisting of the leading-in or current supply wires 5, 6 which might result in breakage of the same.

Referring now to the modification shown in Fig. 2, the lamp there shown differs from the previous form mainly in the location of the interfitting annular rim and groove 17 and 18 respectively. Thus, in Fig. 2, the annular rim 17 in the threaded sleeve 16' and the annular groove 18 in the base shell 13 are formed adjacent the lower or open end of the base, i. e., that end which is cemented to the bulb neck. In addition, the sleeve 16' is extended at its upper end so as to surround not only the cylindrical portion of the base shell 13 but also the inwardly curved upper portion thereof, the threaded sleeve 16' being correspondingly curved to fit over the said curved portion of the base shell 13. This base construction is of particular advantage where the lamp is to be inserted in a socket of the type in which one of the contacts thereof is adapted to engage the curved or contracted portion of the lamp base shell. With a lamp base of the form shown in Fig. 2, such socket contact will then engage the upper curved or contracted edge of the threaded sleeve or cap 16', and not the curved edge of the threadless shell 13 which lies underneath, as it would with a lamp of the form shown in Fig. 1. As a result, it is considerably easier to rotate the lamp into any desired position in its socket.

If desired, the stop lug 20 may be formed on the upper edge of the threaded sleeve 16 or 16' instead of on the lower edge as shown in the drawings. In such case, the stop pin 21 would also have to be formed on the upper edge of the base shell 13.

In the modification shown in Fig. 3, a threadless sleeve 22 is cemented to the bulb neck 12 and a conventional screw base, comprising a threaded shell 23, an insulating body 24, and a bottom contact eyelet 25, rotatably mounted on the said sleeve 22 by means of the same interfitting annular rib and groove construction disclosed in the preceding forms of the invention. The annular rib 17 is formed in the base shell 23 at the lower or open end thereof and, as before, is produced preferably by spinning or rolling the metal of said shell into the annular groove 18 formed in the threadless sleeve 22. Due to this interfitting annular rib and groove construction, the base proper can be rotated around the inner threadless sleeve 22 but is locked against axial displacement relative thereto. As in the preceding forms of the invention, suitable stop means, comprising a stop lug 20 on the base shell 23 and a co-operating stop pin 21 on the inner threadless sleeve 22, are provided to limit rotation between said parts to an angle approximating 360°.

In the modification shown in Fig. 4, the lamp

there shown differs from that illustrated in Fig. 3 only in the particular arrangement of the window 9 and the filament 7 whereby the beam of light emitted by the lamp is projected in a direction approximating that of the longitudinal axis of the lamp, instead of in a direction transversely thereof, as in the preceding forms of the invention. Referring to Fig. 4, the light outlet window 9 is arranged at an inclination to the bulb axis, such as, for instance, forty-five degrees or thereabouts. The filament 7 is disposed closer to the neck portion of the bulb in such a position that the light emitted by the lamp will form a cone of rays as shown by the dotted lines in the drawings. This cone of rays, when the lamp is rotated in a suitable way, will not strike a wall x located behind the lamp since the limiting rays of the cone leave the bulb approximately parallel to the wall.

While we have shown and described the invention as applied to electric incandescent lamps, it is obvious that it may be applied equally well to electric discharge lamps and discharge tubes.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. In an electric lamp for projecting a relatively small beam of light, a non-transparent bulb provided with a light-emitting window, a light source within said bulb, a base secured to said bulb and including a shell, a threaded sleeve

rotatably mounted on said shell and locked against axial displacement relative thereto, and stop means on said sleeve and said shell for limiting rotation therebetween.

2. In an electric lamp for projecting a relatively small beam of light, a non-transparent bulb provided with a light-emitting window, a light source within said bulb, an inner sleeve secured to said bulb, a base rotatably mounted on said inner sleeve and locked against axial displacement relative thereto, and stop means on said base and inner sleeve for limiting rotation therebetween.

3. In an electric lamp for projecting a relatively small beam of light, a non-transparent bulb provided with a light-emitting window, a light source within said bulb, and a base attached to said bulb, said base comprising an inner cylindrical member provided with an annular groove, and an outer threaded shell surrounding said inner member and formed with an annular rib extending into said annular groove to thereby permit relative rotation between said outer shell and said inner member while preventing axial displacement therebetween, and stop means on said shell and said inner member for limiting rotation therebetween.

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