Oct. 25, 1966 R. K. MILLER 3,281,620

ADJUSTABLY POSITIONABLE REFLECTOR LAMP

Filed May 16, 1962

Fig. 1.

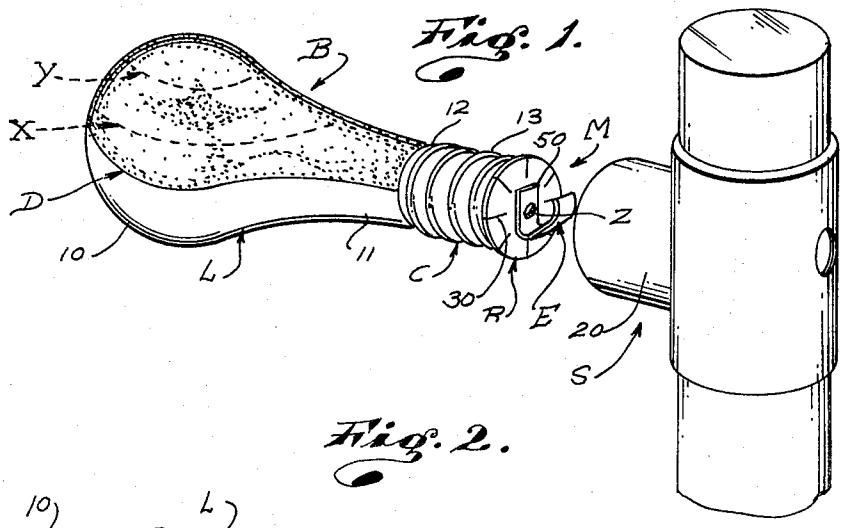


Fig. 2.

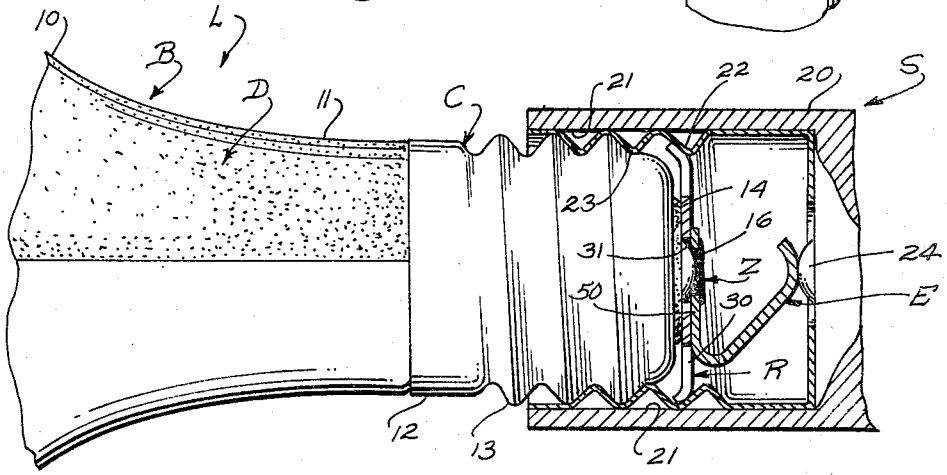


Fig. 3.

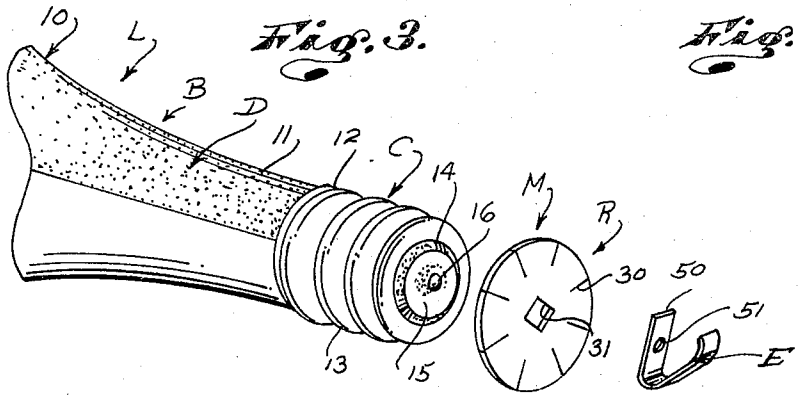


Fig. 5.

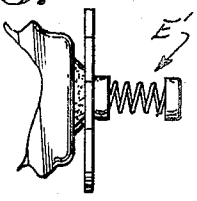
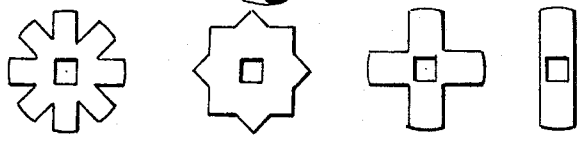


Fig. 4.



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ADJUSTABLY POSITIONABLE REFLECTOR LAMP

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This invention relates to an electric lamp and is more particularly concerned with an improved reflector or spot-type lamp.

For many years reflector and/or spot-type electric lamps have been widely used. These lamps have been characterized by and distinguished from ordinary electric lamps by the provision of reflective coatings on the exterior of the glass bulb portions of the lamps. The reflective coatings on these lamps have been applied about the base and/or neck portions of the bulbs so that they direct light axially of the longitudinal axis of the lamps. By so arranging the reflective coatings, that is, so that they direct light axially of the lamp, the direction in which the light is directed is not affected by the rotative position of the lamp with respect to the socket in which it is engaged. However, with such a relationship it is always necessary that the socket in which the lamp is engaged be arranged and directed in the direction in which it is desired to direct the light. To so arrange a light socket is often a complicated operation, costly of both time and material. Oftentimes it is practically impossible.

Another disadvantage found in the ordinary spot or flood lamp resides in the fact that in order to gain the desired light control, the bulb portion must be established in a special and unusual shape in order to gain the desired parabola or mirror effect. It has long been desired that a spot or reflector type lamp of the general character referred to above, but wherein the light is reflected or directed radially from one side of the bulb, rather than axially, be provided.

Attempts to provide such lamps have proven unsuccessful, due to the fact that it cannot be determined, in advance, in which rotative position the reflective coating will be when such a lamp is threaded into engagement in a light socket. If it is attempted to only partially engage such a lamp in a light socket, so that the reflective coating is disposed in a particular direction, proper electrical contact cannot be assured, and the lamp is loose in the socket and is subject to working out of its set position and out of engagement in the socket, whereupon it will drop and break.

As a result of the above, when it is desired to direct light laterally of an electric lamp, it is common practice to mount a separate, specially-made shield-like reflector on the lamp socket to extend along and about one side of the bulb portion of the lamp. Such reflectors or shields are costly, require a special lamp socket on which they can be mounted, establish an obstacle when it is desired to replace the lamp, and are subject to becoming dirty or oxidized, and as a result, are rendered ineffectual.

An object of my invention is to provide a novel, highly effective and dependable reflector or flood-light lamp.

Another object of this invention is to provide a lamp of the character referred to which serves to direct light laterally and to one side of the longitudinal axis of the lamp.

Still another object of this invention is to provide a lamp of the character referred to which is such that light can be directed in any direction radially of the rotative axis of the lamp.

It is an object of the present invention to provide retaining means on the base portion of a lamp to engage in a lamp socket to releasably hold the lamp in the socket and to normally prevent it from rotating therein and/or working out of engagement therewith.

Still another object of this invention is to provide a retaining means of the character referred to having a novel contact means related thereto, whereby proper electrical contact can be made between the lamp and the socket without fully engaging the base portion of the lamp in the socket.

It is a further object of my invention to provide a structure of the character referred to which is easy and economical to manufacture and such that it can be established by a simple modification of a standard or conventional electric lamp.

The various objects and features of my invention will be fully understood from the following detailed description of a typical preferred form and application of my invention, throughout which description reference is made to the accompanying drawings, in which:

FIG. 1 is a perspective view of a lamp as provided by the present invention and a typical lamp socket, the lamp being arranged preparatory to engagement in the socket;

FIG. 2 is an elevational view of the base portion of my new lamp, showing it engaged in a socket, which socket is in section to better illustrate the invention;

FIG. 3 is an exploded perspective view of the base portion of my new lamp;

FIG. 4 illustrates several modified configurations of retainer members; and

FIG. 5 illustrates another form of spring contact.

The lamp A that I provide is established by modifying a standard or conventional electric lamp. The standard electric lamp, as shown in the drawings, includes an elongate glass bulb portion B having a substantially spherical outer or front end portion **10** and an elongate rearwardly convergent, substantially conical rear portion or neck **11** of diminishing diameter projecting rearwardly from the said front portion; and an elongate cylindrical base C fixed to and projecting rearwardly from the rear end of the neck **11** of the bulb, in axial alignment therewith. The base C includes a cylindrical sheet metal shell **12** with threads **13** rolled therein and serving as a primary contact for one leg of the electrical circuit, a core **14** of ceramic or other suitable non-conducting material within the shell and having a portion projecting axially rearwardly from the shell and a central contact **15** at the rear end of the core and serving as a secondary contact for the other leg of the electrical circuit. The contact **15** is a flat, metal disc arranged in fixed position in the rear end of the core **14**, in axial alignment with the base, and has a central rearwardly-projecting lead or solder bead **16** thereon. In addition to the foregoing, the ordinary electric lamp includes a filament within the bulb and suitable support means and leads therefor. Since the exact nature of the filaments and their leads and supports in no way affects the present invention, I have not shown these parts in the drawings and will not burden this application with further unnecessary description thereof.

The ordinary lamp, as set forth above, is adapted to be threadedly engaged in a standard or conventional lamp socket S, such as is illustrated in FIGS. 1 and 2 of the drawings.

The ordinary or conventional electric lamp socket includes an elongate body **20** of dielectric material having a forwardly opening bore **21**, a forwardly opening sheet metal liner **22** engaged in the bore in fixed position therein and having threads **23** rolled therein to cooperatively engage the threads on the shell of the base of the lamp and a central contact **24** at the bottom of the bore. The liner serves as a primary electrical contact between one leg of the power circuit and the shell of the lamp base and the central contact **24**, which is insulated from the liner, serves to establish a secondary contact member

between the other leg of the power circuit and the central contact 15 on the base of the lamp.

With the above construction, it will be apparent that in order to make contact between the contacts 15 and 24 of the lamp and socket, the base portion B of the lamp must ordinarily be fully engaged in and bottomed in the socket S.

While many makes and styles of lamps sockets are available on the open market, each is basically the same as that shown in the drawings and set forth above, the difference being in the external configuration of the bodies, the mounting means and other structural features which in no way affect the novelty of the present invention.

The lamp A provided by the present invention includes generally a standard or conventional electric lamp L. As set forth above, a reflective coating D on the bulb portion B of the lamp and retaining and contact means M fixed to the base portion C of the lamp. The lamp A is adapted to be cooperatively engaged in a conventional electric lamp socket S such as illustrated in the drawings and described above.

The coating D on the bulb portion B of the lamp can be of any desired extent, circumferentially and axially of the bulb, but preferably does not extend in excess of 18° circumferentially of the bulb. The coating can, as illustrated, be coextensive with the longitudinal axis of the bulb, or can be of lesser longitudinal extent as desired or as circumstances require. It will be apparent that in practice the coating can be of rather limited extent both longitudinally and circumferentially, as indicated in phantom line X, or may consist of a small disc-shaped spot or patch on the outer spherical portion of the bulb, disposed radially, or substantially radially, relative to the longitudinal axis of the lamp, as indicated by phantom line Y in FIG. 1 of the drawings.

In practice the coating D can be silver, aluminum, or any other material having good reflective characteristics, painted, electroplated, or otherwise deposited on the exterior of the bulb. In the event that it is established of a material that readily oxidizes, it can be covered and protected by a suitable paint.

With such a coating, light generated by the lamp and directed towards the coating D is reflected back into the lamp and thence from the other or uncoated side of the bulb, with the end result that a most efficient and effective use of the light generated by the lamp can be obtained.

While the major demand is for lamps with reflective coatings, considerable demand also exists for lamps of the general character referred to wherein one side or portion thereof is simply opaque or is provided with a transparent or translucent portion of a particular color. Accordingly, the coating D need not be a reflective coating, but can, if desired, be an opque coating or a coating of translucent or transparent material in a desired color.

The retaining and contact means M that I provide includes a radially disposed retainer member R of resilient dielectric material, such as fiberboard, fixed to the rear end of the base portion C of the lamp L and adapted to yieldingly, frictionally engage the interior of the threaded liner in the lamp socket S in which the lamp is engaged, and a rearwardly projecting resilient, axially shiftable contact E on the base portion of the lamp, in contact with the central contact 15 of the lamp and adapted to establish contact with the central contact 24 in the socket S when the lamp is entered and advanced into engagement in the said socket S.

The retainer member R is shown as a simple disc of fiberboard having a plurality of circumferentially-spaced radially-disposed slits 30 entering it from its outer periphery and a central opening 31. The member R is slightly greater in diametric extent than the major inside diameter of the socket liner 22. The member R is positioned adjacent the central contact 15 on the base of the bulb with the bead 16 of the said contact 15 projecting through the opening 31. It is to be noted that the bead 16 serves to orient and center the member on the lamp.

The member R is held in fixed position on the lamp by a portion of the contact E which is secured to the contact 15 and its bead 16, as by soldering, as will hereinafter be described.

With the member R thus related to the lamp L, it will be apparent that when the base of the lamp is entered into the socket S, the member leads it and is urged into yielding pressure or frictional engagement with the threaded liner of the socket.

The slits 30 in the plate relieve the plate and permit segments thereof to bend or yield individually, thereby controlling the amount of pressure exerted by the plate on the socket liner, and also allow the plate to split or separate axially along at least one slit or radial line, and so as to readily conform to the pitched thread in the socket liner.

From the foregoing, it will be apparent that the retainer R fixed to the base of the lamp frictionally engages in the socket construction to normally yielding hold the lamp and socket in fixed relationship and against relative rotation and disengagement as might result from vibration and shaking of the assembly and which would result in improper dispositioning of the reflective coating D and eventual dropping of the lamp from engagement in the socket.

The retainer member R is not so rigid or stiff as to prevent easy and convenient manual turning and resulting engagement or disengagement of the lamp in the socket.

In practice, when the lamp is initially engaged in the socket S, the plate is sprung and snaps into engagement with the lead portion of the thread in the socket liner by axial pressure. When thus engaged, the operator need not worry about the lamp dropping when releasing it for the purpose of taking a new grip or purchase on the lamp for the purpose of turning and advancing it into further and deeper engagement in the socket, as the member R holds the lamp in engagement in the socket. To this extent, the member R is of great advantage in installing lamps and is a valuable safety device.

While I have shown the retainer member R as being disc-shaped, it is to be understood that it could, if desired, be a simple, strap-like part of fiber material, star-shaped, or of any other suitable configuration, as illustrated in FIG. 9 of the drawings, without departing from the spirit of the invention.

The contact E of the means M is shown as a substantially V-shaped leaf spring having a flat front leg 50 and rear leg 52. The front leg 50 occurs in a radial plane with respect to the longitudinl axis of the lamp, and is arranged adjacent the rear surface of the member R. The leg 50 is provided with an opening 51 to register with the opening 31 in the plate and to receive the rearmost portion of the bead 16 of the central contact 15 on the lamp. The leg 50 is fixed to the bead and the contact 15 by solder Z, so as to hold the member R in tight clamped engagement with the base.

The other leg 52 of the spring contact E projects rearwardly and radially-inwardly from one end of the leg 50. The free rearmost end of the leg 52 is provided with a curved or rounded end portion 53 establishing a rearwardly disposed convex surface 54, the axis of which occurs in alignment with the central axis of the lamp and engages the central contact 24 of the socket S, when the lamp is engaged in the socket.

With the contact E that I provide, it will be apparent that contact is established between the secondary contacts 15 and 24 of the lamp and the socket when the lamp is initially engaged in the socket and that such contact is maintained at all times, as the lamp is advanced into engagement in the socket.

In addition to establishing electrical contact the spring contact E also serves to normally yieldingly urge the base portion of the lamp axially in the socket and to thereby maintain the threads on the lamp and in the socket in axial pressure engagement with each other. This serves to stabilize the lamp in the socket and also to prevent it from vibrating and rotating in the socket.

The resilient contact E can, if desired, be in the form of a helical compression spring, as indicated at E' in FIG. 5 of the drawings, a rat-trap-type spring, or a spring of any other suitable design, without departing from the spirit of the invention. However, the spring described above and illustrated in the drawings is preferred, as it is the simplest, most economical, and easiest to apply to a conventional lamp.

From the foregoing, it will be apparent that the structure provided by the present invention can be easily, quickly and economically established by simply applying the coating D to the bulb portion of a standard or conventional electric lamp and then fixing the retainer R and the spring contact E of the means M to the base portion of the lamp.

The coating D can be applied to the lamp by a simple dipping operation and the retainer R and contact E, both of which are extremely simple and inexpensive parts, can be held in assembled relationship against the base of the lamp and fixed thereto by a single drop or spot of solder.

With my new lamp construction, the lamp need not be fully engaged in a socket to make electrical contact therewith, can be turned to any desired rotative position to control the direction of the light issuing from the lamp, and when thus positioned is not subject to rotating and/or working out of engagement with the socket as a result of vibrations, shaking of the assembly, and the like.

With my new lamp construction, it is possible to increase the effectiveness of a lamp, where light from but one side thereof is utilized, at least 30%. Accordingly, in such a situation, where an ordinary lamp of 1500 watts is employed, a smaller and less expensive 1000 watt lamp, as provided by the present invention, can be substituted therefor. The cost of modifying a conventional lamp in accordance with the present invention is considerably less than the difference in cost between a 1500 watt lamp and a 1000 watt lamp, and a 1000 watt lamp consumes considerably less electrical energy than a 1500 watt lamp, to the end that by following the above suggested substitution a considerable saving is experienced.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims:

Having described my invention, I claim:

1. A reflector lamp of the character referred to including, an elongate bulb having an elongate substantially cylindrical axially extending rear neck portion and an enlarged, substantially spherical front head portion, a substantially radially inwardly disposed concaved coating of reflective material on the head portion of the bulb at one side of the central axis thereof to direct light generated by the lamp substantially radially relative to the longitudinal axis thereof, an elongate, axially extending base fixed to and projecting rearwardly from the rear end of the neck portion of the bulb and including, an axially extending externally threaded lamp socket-engaging primary contact sleeve, a retainer member of resilient dielectric material fixed to the rear end of the base and projecting radially outwardly therefrom to establish yielding friction engagement in a lamp socket; and a central axially resilient secondary contact fixed to and projecting rearwardly from the base and retainer member.

2. A reflector lamp of the character referred to including an elongate bulb having an elongate substantially cylindrical axially extending rear neck portion and an enlarged, substantially spherical front head portion, a substantially radially inwardly disposed concaved coating of reflective material on the head portion of the bulb at one side of the central axis thereof to direct light generated by the lamp substantially radially relative to the longitudinal axis thereof, an elongate, axially extending base fixed to and projecting rearwardly from the rear end of the neck portion of the bulb and including, an axially extending externally threaded lamp socket-engaging primary contact sleeve, a retainer member of resilient dielectric material fixed to the rear end of the base and projecting radially outwardly therefrom to establish yielding friction engagement in a lamp socket, and a central axially resilient secondary contact fixed to and projecting rearwardly from the base and the retainer member, said retainer member comprising a flat radially disposed plate having circumferentially spaced portions projecting radially outward and beyond the radial extent of the contact sleeve.

3. A reflector lamp of the character referred to including an elongate bulb having an elongate substantially cylindrical axially extending rear neck portion and an enlarged, substantially spherical front head portion, a substantially radially inwardly disposed concaved coating of reflective material on the head portion of the bulb at one side of the central axis thereof to direct light generated by the lamp substantially radially relative to the longitudinal axis thereof, an elongate, axially extending base fixed to and projecting rearwardly from the rear end of the neck portion of the bulb and including, an axially extending externally threaded lamp socket-engaging primary contact sleeve, a retainer member of resilient dielectric material fixed to the rear end of the base and projecting radially outwardly therefrom to establish yielding friction engagement in a lamp socket, and a central axially resilient secondary contact fixed to and projecting rearwardly from the base and the retainer member, said secondary contact comprising a spring metal part having a straight, radially extending base portion fixed to and extending transverse the rear end of the base, an elongate leg portion projecting longitudinally rearwardly and radially inwardly from one end of the base portion to intersect and terminate at the central longitudinal axis of the lamp.

4. A reflector lamp of the character referred to including an elongate bulb having an elongate substantially cylindrical axially extending rear neck portion and an enlarged, substantially spherical front head portion, a substantially radially inwardly disposed concaved coating of reflective material on the head portion of the bulb at one side of the central axis thereof to direct light generated by the lamp substantially radially relative to the longitudinal axis thereof, an elongate, axially extending base fixed to and projecting rearwardly from the rear end of the neck portion of the bulb and including, an axially extending externally threaded lamp socket-engaging primary contact sleeve, a retainer member of resilient dielectric material fixed to the rear end of the base and projecting radially outwardly therefrom to establish yielding friction engagement in a lamp socket, and a central axially resilient secondary contact fixed to and projecting rearwardly from the base and the retainer member, said retainer member comprising a flat radially disposed plate having circumferentially spaced portions projecting radially outward and beyond the radial extent of the contact sleeve, said secondary contact comprising a spring metal part having a straight radially extending base portion fixed to and extending transverse the rear end of the base, an elongate leg portion projecting longitudinally rearwardly and radially inwardly from one of the base portions to intersect and terminate at the central longitudinal axis of the lamp.

5. In combination, an elongate electric lamp including, a base comprising an elongate, axially extending externally threaded primary contact sleeve, a central core of dielectric material within the sleeve and projecting from the rear end thereof, and a rearwardly projecting secondary contact bead central on the rear end of the core, an elongate bulb having a substantially cylindrical axially-extending rear neck portion fixed to and projecting forwardly from the base and an enlarged, substantially spherical head portion at the forward end of the neck portion, a coating of reflective material on the head portion of the bulb at one side thereof to direct light generated by the lamp radially inwardly from said one side, to and from the opposite side thereof, a flat radially disposed retainer member of resilient dielectric material arranged adjacent the rear end of the base and having a polygonal aperture to receive the secondary contact bead and having lamp socket-engaging portions projecting radially beyond the radial extent of the contact sleeve, a V-shaped secondary contact spring having a front, radially disposed leg extending transverse the axis of the lamp adjacent the retainer member and a radially inwardly and longitudinally rearwardly projecting rear leg intersecting and terminating at the central longitudinal axis of the lamp and a body of solder in the aperture in the retainer member fixing the contact button with the contact spring and locking the retainer member against rotation relative to the lamp.

References Cited by the Examiner

UNITED STATES PATENTS

1,794,876	3/1931	Wanamaker	313—318
2,138,780	11/1938	Birdseye	313—113
2,144,438	1/1939	Birdseye	313—113
2,235,656	3/1941	Thal	313—117 X
2,722,668	11/1955	Wellington	339—69

FOREIGN PATENTS

643,887	9/1928	France.

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