

[54] LAMP ASSEMBLY

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[22] Filed: Dec. 8, 1970
[21] Appl. No.: 96,136

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[52] U.S. Cl.....240/122
[51] Int. Cl.....F21v 23/04
[58] Field of Search240/122, 123, 41.55, 7.35,
240/2 S

[57] ABSTRACT

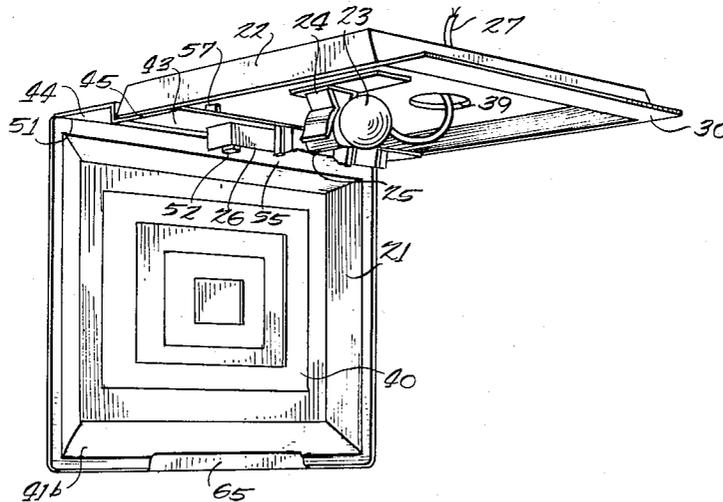
A lamp assembly is provided which is operated by means of the lens or cover. The lens is slidably attached to the metal base, which is electrically grounded, and a light bulb holder is secured to the base and also electrically grounded. A contact connected to a suitable power source is carried by the lens, and sliding movement of the lens with respect to the base brings the contact into and out of electrical engagement with the light bulb.

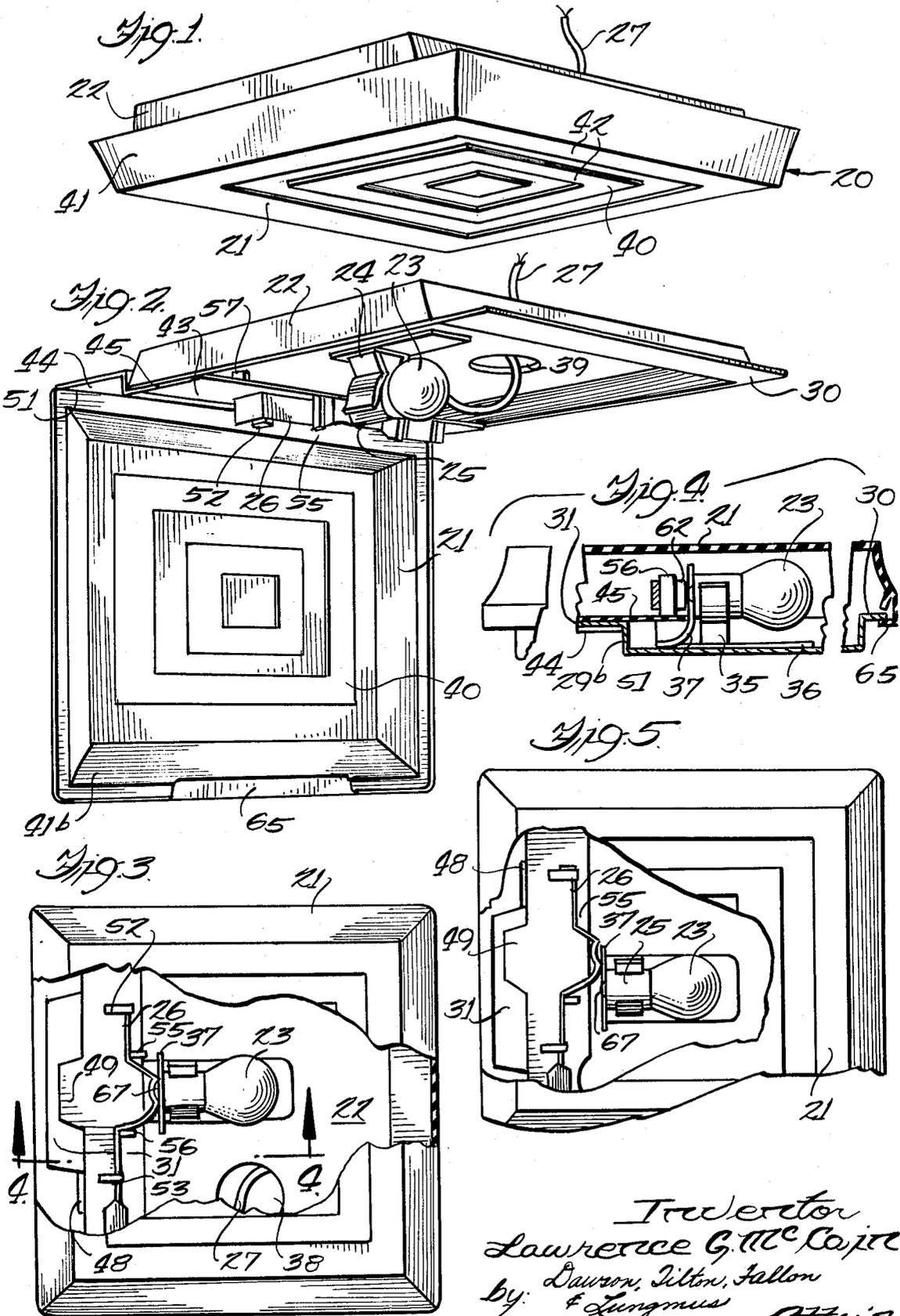
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14 Claims, 14 Drawing Figures





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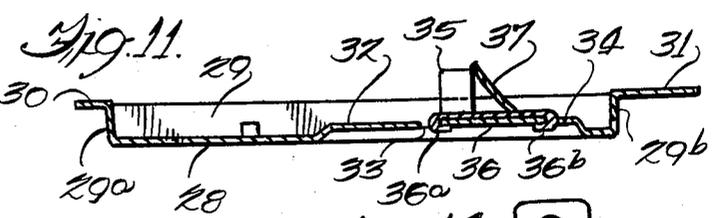
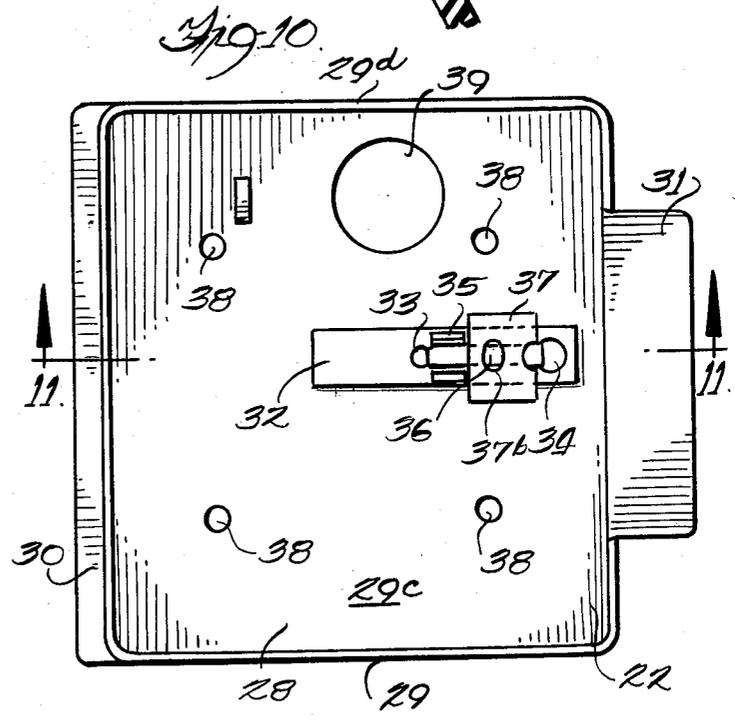
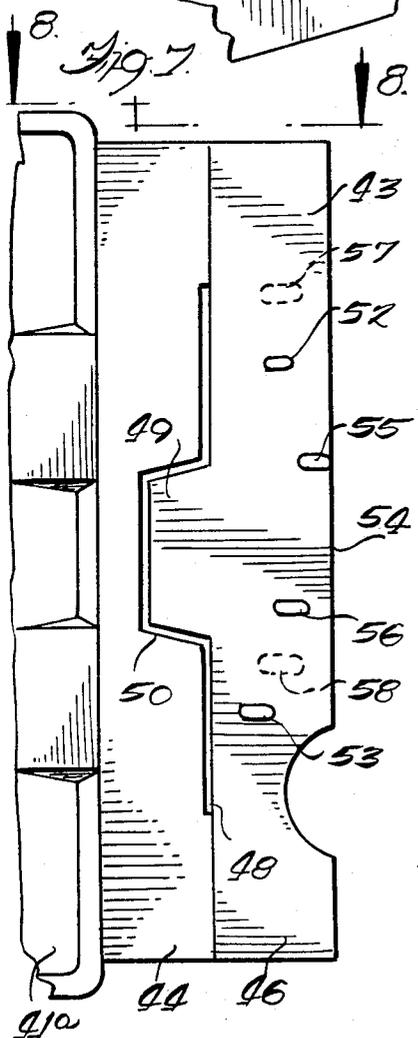
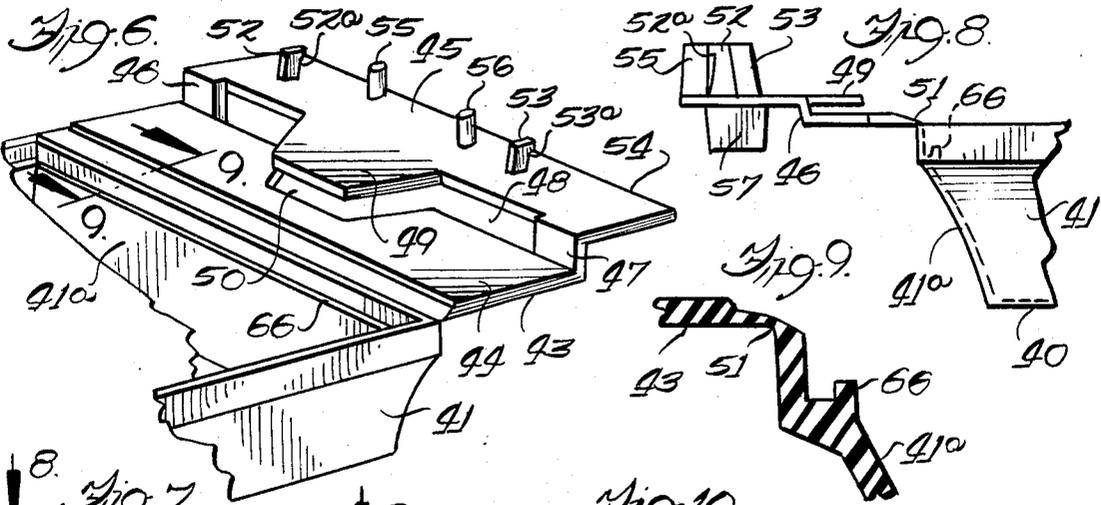
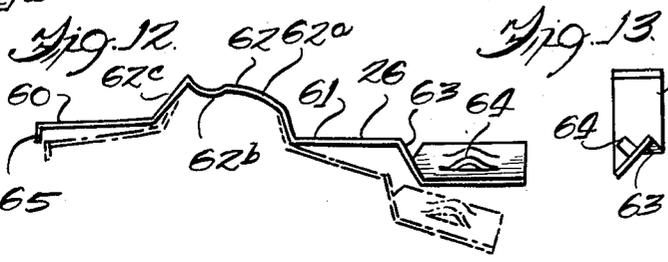


Fig. 14: A detail view of a component, showing internal features and labels 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

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LAMP ASSEMBLY

BACKGROUND

This invention relates to a lamp assembly, and, more particularly, to a lamp assembly which is operated by the lens thereof.

Lamp assemblies or light fixtures are conventionally operated by means of a switch which may be positioned on the wall or at some other location remote from the light. However, it is not always convenient or desirable to use a conventional switch for operating a light fixture. For example, in recreational vehicles such as travel trailers and camping trailers space is relatively limited, and it may be inconvenient to provide a wall switch for operating the interior lights of the vehicle. Further, a person unfamiliar with the vehicle may have difficulty in locating a wall switch which might be located in an out-of-the-way position.

SUMMARY

The inventive lamp assembly can be operated merely by moving the lens or cover for the light, which is slidably connected to the base of the lamp assembly. The lens carries an electrical contact connected to a power source, and the electrical contact is moved into and out of electrical engagement with the light bulb by sliding movement of the lens. The need for a switch is eliminated, and the light can be turned on merely by reaching for the lens and moving the lens slightly with respect to the base. The uniquely shaped electrical contact carried by the lens is formed of spring temper metal and maintains firm positive contact with the light bulb when brought into engagement therewith.

DESCRIPTION OF THE DRAWING

The invention is explained in conjunction with an illustrative embodiment shown in the accompanying drawing, in which

FIG. 1 is a perspective view of the lamp assembly;

FIG. 2 is a view similar to FIG. 1 showing the lens in an unlatched position;

FIG. 3 is a bottom plan view, partially broken away, of the lamp assembly;

FIG. 4 is a fragmentary sectional view taken along the line 4-4 of FIG. 3;

FIG. 5 is a view similar to FIG. 3 showing the electrical contact out of engagement with the light bulb;

FIG. 6 is a fragmentary perspective view of the lens;

FIG. 7 is a top plan view of FIG. 6;

FIG. 8 is a sectional view taken along the line 8-8 of FIG. 7;

FIG. 9 is a fragmentary sectional view taken along the line 9-9 of FIG. 7;

FIG. 10 is a top plan view of the base;

FIG. 11 is a sectional view taken along the line 11-11 of FIG. 10;

FIG. 12 is a top view of the spring contact;

FIG. 13 is a side view of the spring contact of FIG. 12; and

FIG. 14 is a plan view of an insulating insert for the bulb.

DESCRIPTION OF SPECIFIC EMBODIMENTS

Referring now to the drawing, the numeral 20 designates generally a lamp assembly which is seen to include a translucent lens or cover 21 and a metal base 22. The lamp assembly can advantageously be used as a ceiling light fixture as illustrated in FIG. 1 in which the base 22 is secured to the ceiling (not shown) of a vehicle such as a travel trailer, camping trailer, or the like. In the position illustrated in FIG. 1 the lens 21 extends downwardly from the base, but the lamp assembly may also be attached to other surfaces, for example, a wall or the top of a horizontal surface.

As will be explained in detail hereinafter, the lens 21 may pivot downwardly away from the base to reveal a conventional light bulb 23 which is connected to the base by means of a

metal light holder or socket 24. The base 22 is electrically grounded through its connection to the vehicle, and the conventional metal base or sleeve 25 of the light bulb is also grounded by virtue of the engagement of the metal light holder 24 with the metal base 22. An electrical contact spring 26 is carried by the lens and connected to a suitable power source, such as a 12 volt d.c. battery, by means of wire 27 which may extend through an opening provided in the base and through the ceiling of the vehicle. The lens 21 is slidably attached to the base, and sliding movement of the lens may bring the spring contact 26 into electrical engagement with the end terminal of the light bulb to complete the electrical circuit and to light the bulb.

Referring now to FIGS. 10 and 11, the base 22, which is formed of electrically conductive metal, includes a generally rectangular planar central portion 28 and a perimetric side wall 29 which provides the base with a somewhat dish-shaped configuration. A locking flange 30 extends outwardly from the side wall portion 29a which extends along one side of the central base portion, and an attaching flange 31 extends outwardly from a portion of the side wall portion 29b on the opposite side. The central portion 28 of the base is provided with an elongated upstanding impression or embossment 32 having a pair of longitudinally spaced openings 33 and 34. The embossment 32 permits the light holder 24 to be securely clamped to the base without interfering with the secure attachment of the base to the ceiling or wall.

The holder includes a conventional spring clip portion 35 and a flat base portion 36 having a pair of end tabs 36a and 36b. As can be seen best in FIG. 11, the end tabs 36a and 36b extend through the openings 33 and 34, respectively, and securely clamp the holder to the base and provide good electrical engagement therebetween. A flexible sheet 37 of plastic insulating material is also clamped to the base by the holder, the purpose of which will be explained more fully hereinafter.

The base is provided with a plurality of bolt or screw openings 38 to permit the base to be attached to and grounded with the vehicle, and a larger opening 39 is provided for the wire 27.

The lens 21 is also somewhat dish-shaped and includes a generally planar central portion 40 and a perimetric side wall 41. The lens is preferably made of a translucent electrical insulating material such as high density polyethylene, and may be provided with suitable ornamentation such as the raised ribs 42.

An attaching plate 43 is hingedly secured to side wall portion 41a of the lens along the entire length thereof, and the attaching plate 43 contains first and second stepped portions 44 and 45, respectively, which extend generally parallel and are separated by a pair of spaced-apart offset or transverse portions 46 and 47 extending generally perpendicularly therebetween. The transverse portions 46 and 47 define an elongated slot 48 between the stepped portions 44 and 45. The stepped portion 45 includes a tongue 49 extending toward the side wall 41a, and the stepped portion 44 is provided with a similarly shaped notch 50 below the tongue.

Referring to FIGS. 8 and 9, the attaching plate 43 is preferably formed integrally with the lens and is joined to the side wall 41a by a relatively thin connecting portion 51. The plastic material of the lens is relatively flexible, and the narrow connecting portion 51 provides an integral hinge between the attaching plate 43 and the sidewall 41a which permits these parts to rotate relative to each other without fracturing the connecting portion.

The spring contact 26 is positioned and held on the lens by a plurality of studs which extend from the upper surface of stepped portion 45 as viewed in FIGS. 6-7. A pair of end studs 52 and 53 extend upwardly from the stepped portion 45 at a position spaced from the outer or leading edge 54 thereof, and a pair of intermediate studs 55 and 56 extend from the stepped portion adjacent the edge 54. As can be seen best in FIG. 7, the stud 55 is positioned at the edge 54 and the stud 56 is spaced slightly from the edge. Each end stud 52 and 53 is positioned just behind the adjacent intermediate stud.

A pair of locating studs 57 and 58 (FIGS. 7 and 8) extend from the opposite surface of the stepped portion 45 approximately midway between the edge 54 and the slot 48.

Referring now to FIGS. 12 and 13, the electrical contact 26 is formed of a suitable electrically conductive, flexible and resilient metal such as spring temper bronze and includes a pair of straight end portions 60 and 61 and a somewhat arcuately shaped middle portion 62. If desired, the end portion of spring portion 61 can be twisted approximately 45° as at 63 and provided with a punched portion 64 to facilitate the attachment of the wire 27 to the spring contact. The other end portion can be provided with a generally perpendicular end flange 65. The middle portion 62 of the spring contact includes a curved portion 62a extending from the end portion 61, a reversely curved socket-providing portion 62b, and a relatively straight portion 62c extending between the end portion 60 and the socket-providing portion 62b.

The spring contact 26 is shown in its relaxed or unflexed condition in phantom in FIG. 12, and the spring contact is dimensioned so that the central portion 62 can be positioned between the studs 55 and 56 on the attaching plate of the lens with the studs being positioned at the junctures between the central portion and the end portions of the contact. The spring contact is then secured to the attaching plate by flexing the end portions 60 and 61 about the studs 55 and 56 until the end portions can be positioned on the leading side of the studs 52 and 53. The leading sides of the studs 52 and 53 are approximately in line with the trailing sides of the studs 55 and 56, respectively, and the spring will assume the shape illustrated in solid in FIG. 12. The lower edge of the spring contact can be pressed downwardly against the stepped portion 45 approximately the width of the spring contact so that the spring contact is securely held in place. The end portions of the tensioned spring bear against the studs 52 and 53, but the end flange 65 and the angled portion 63 of the spring contact extend along a side of the studs 52 and 53, respectively, and hold the spring contact in the tensioned configuration shown in FIG. 12.

In operation a conventional light bulb 23 is inserted into the light holder 24 by forcing the metal base 25 of the bulb between the spring clip arms 35 of the light holder. The insulating sheet or insert 37 is provided with two openings, 37a and 37b (FIG. 14), and the insulator is secured to the base by the holder, one end of which extends through the lower opening 37a. The flexible sheet curves upwardly from adjacent the attaching 36b, and when the bulb is inserted in the holder, the end terminal 67 thereof extends through the upper opening 37b in the insulator. The lens 21 is then slidably attached to the base 22 by inserting the attaching flange 31 of the base through the slot 48 provided between the stepped planar portions 44 and 45 of the attaching plate of the lens. The studs 57 and 58 prevent the attaching flange 31 from being inserted through the slot parallel to the stepped portions 44 and 45, and the flange must be inserted at an angle. However, the tongue 49 prevents angular insertion of the flange unless the stepped portion 45 and tongue 49 are flexed somewhat away from the stepped portion 44. The flexible material of the lens readily permits this flexing, and the flange can be inserted without difficulty. However, once the flange is properly inserted, the tongue 49 and studs 57 and 58 cooperate to prevent inadvertent removal of the flange. As the attaching flange 31 progresses through the slot 48, the side wall portion 29b of the base will approach the transverse connecting portions 46 and 47 of the attaching plate and will become positioned between the transverse portions 46 and 47 and the locating studs 57 and 58 (FIG. 8). After the wall portion 29b passes the studs 57 and 58, the attaching flange 31 can be brought to a parallel position between the stepped planar portions 44 and 45 of the lens attaching plate.

After the attaching flange 31 has been inserted into the slot 48 parallel to the stepped portions 44 and 45, the lens 41 may be pivoted about its hinged connection 51 to the lens attaching plate 43 toward the locking flange 30 of the base (FIG. 2). Rotation of the lens brings the lens into covering

relation with the light bulb 23, and the lens may be secured in the closed position illustrated in FIG. 1 by means of tab 66 extending inwardly from the side wall portion 41b of the lens opposite side wall portion 41a. The distance between the outer edges of the attaching flange 31 and the locking flange 30 is slightly less than the distance between top edges of the side wall portions 41a and 41b of the lens, the tab 61 and side wall 41b can be flexed outwardly until the tab is pulled around the locking flange 30 of the base. The distance between sidewall portions 29c and 29d of the base is less than the distance between the top edges of side wall portions 41c and 41d of the lens, and the length of the attaching flange 31 is less than the length of the slot 48. The attaching flange may therefore slide longitudinally within the slot.

The upper portion of the dish-shaped lense includes a perimetric rib 66 (FIG. 9) which extends generally parallel to and terminates below the top edge of the outer wall 41 of the lens. The rib is engageable with the locking flange 30 of the base to provide a stop to prevent the lens from being pushed upwardly as seen in FIG. 1 too far with respect to the base. If the assembly is used on the top of a flat surface such as a table or counter the rib will support the base at the locking flange 30. The opposite side of the lens is restrained against excessive up and down movement with respect to the base by the stepped portions 44 and 45 which are located above and below, respectively, the attaching flange 31 of the base as seen in FIG. 2.

Referring to FIGS. 5 and 6, when the attaching flange 31 is positioned adjacent the transverse portion 47 which defines one end of the slot 48, end terminal 67 of the light bulb 23 is out of contact with the spring contact 26. The opening 37b in the insulator 37 is approximately the same diameter as the maximum diameter of the end terminal, and the insulator insures that no portion of the bulb will inadvertently contact the spring contact until the light is turned on. For example, if the metal base of the bulb engaged the spring contact a short circuit might result. As the lens is moved downwardly in FIG. 5 and the flange 31 slides within the slot 48, the light bulb terminal 67 approaches the central portion 62 of the spring contact. As the terminal 67 engages the arcuate portion 62a of the spring contact, the arcuate portion provides a camming action to flex the central portion away from the light bulb until the terminal reaches the socket-providing portion 62b (FIG. 3). The resilient central portion tends to return to its original position and presses firmly against the terminal 67. When the terminal is positioned within the socket-providing portion 62b, the flange 31 is positioned adjacent the transverse portion 46 defining the other end of the slot 48, and the flange thereby prevents excessive sliding movement of the lens which would bring the light bulb out of electrical engagement with the spring as illustrated in FIG. 3.

When the terminal 67 engages the spring contact, the electrical circuit is completed, and the light bulb lights. The central portion of the spring contact is flexed by the light bulb terminal even when the terminal is positioned within the socket-providing portion 62b, and a good electrical connection is thereby maintained between the spring and the light bulb. Further, the spring contact is under tension even when not engaged by the terminal by virtue of the flexing of the end portions of the spring about the studs 55 and 56 as explained previously. The spring is further flexed by the terminal 67, and presses firmly against the terminal.

When it is desired to turn off the light, the lens is merely moved slidably upwardly with respect to the base as viewed in FIG. 3 until the light bulb terminal no longer engages the spring contact.

As can be seen in FIG. 4, the movement of the base relative to the lens in the direction transverse to the direction of sliding movement is limited by the stud 58 on the lens attaching plate 43. The side wall portion 29b of the base can move right and left as viewed in FIG. 4 between the stepped portion 44 of the attaching plate and the stud 58. However, the relative positions of the socket-providing portion of the contact spring and

the end terminal 67 of the light bulb are such that this slight transverse movement of the base relative to the lens does not affect the firm, positive contact between these two parts.

While other types of light holders can be used, the spring clip type illustrated permits the position of the end terminal 67 of the light bulb to be changed by sliding the cylindrical metal base 25 of the light bulb longitudinally between the spring clips of the holder. This permits good electrical contact to be obtained with the spring contact even if the spring eventually becomes deformed or bent out of its original shape during prolonged use.

Inadvertent separation of the lens and base is prevented by the cooperation of various portions of these two parts. The flange is maintained generally parallel to the stepped portions 44 and 45 of the attaching plate by the tongue 49 and the studs 57 and 58 inhibit withdrawal of the attaching flange from the slot 48. The lens and base can be separate easily, however, when desired. Referring to FIG. 4, the base can be rotated downwardly with respect to the lens by flexing the tongue 49 and upper stepped portion 45 upwardly until the side wall portion 29b of the base can be moved to the right below the studs 57 and 58. The flexible plastic material of the lens permits the stepped portion 45 to be flexed without breaking.

The base can be attached to the ceiling or wall either before or after the lens is attached to the base. A suitable opening is provided in the ceiling through which the wire 27 may extend, and the wire is inserted through the opening 39 in the base and connected to the end portion 61 of the spring contact. The end of the wire can be inserted between the raised or punched portion 64 and the remainder of the flat end portion and can be twisted therearound to ensure a good electrical connection. It is desirable that the wire extend from the spring contact to the opening 39 without any sharp turns therein, and for this purpose the wire connecting portion of the spring contact is angled at about 45° (FIG. 13) from the plane of the end portion 61 and the stepped portion 45 of the attaching plate is provided with a generally semi-circular notch 68 adjacent the angled end portion.

While in the foregoing specification a detailed description of a specific embodiment of the invention was set forth for the purpose of illustration, it is to be understood that many of the details hereingiven may be varied considerably by those skilled in the art without departing from the spirit and scope of the invention.

I claim:

1. A lamp assembly comprising a base having a central portion and an attaching flange extending outwardly from the central portion, an electrically conductive light bulb holder secured to the base, a lens, attaching plate means hingedly secured to the lens and provided with an elongated slot therein, the attaching flange of the base extending through the slot and being slidable longitudinally therein, electrically conductive contact means carried by the attaching plate means, said light bulb holder being adapted to position a light bulb adjacent the contact means whereby sliding movement of the lens relative to the base may move the contact means into and out of electrical engagement with the light bulb.

2. The lamp assembly of claim 1 in which said base is metal and is electrically connected to the light holder, the base being adapted to be electrically grounded.

3. The lamp assembly of claim 1 in which the attaching flange is generally planar and said attaching plate includes a first generally planar portion hingedly secured to the lens, a second generally planar portion offset from the first portion and extending generally parallel therewith, said slot being provided between the planar portions, the contact means being carried by the second planar portion and said attaching flange extending through said slot between the first and second planar portions and generally parallel therewith.

4. The lamp assembly of claim 3 in which said second planar portion includes a tongue portion extending toward the hinged connection with the lens for normally maintaining the attaching flange generally parallel with the planar portions.

5. The lamp assembly of claim 1 in which said contact means comprises an elongated strip of relatively flexible and resilient metal having a pair of end portions and a middle portion, the end portions being connected to the attaching plate, the middle portion extending away from the end portions and being adapted to resiliently flex as the contact means engages the light.

6. The lamp assembly of claim 1 in which said attaching means includes two pairs of spaced-apart studs and said contact means comprises an elongated strip of relatively flexible and resilient metal having a pair of relatively straight end portions and a middle portion extending away from the end portions, each end portion engaging a stud of one of the stud pairs and extending toward a stud of the other stud pair, said middle portion extending between the studs of the other stud pair and being adapted to resiliently flex as the contact means engages the light bulb.

7. The lamp assembly of claim 6 in which the contact means and the studs are constructed and arranged so that each end portion is flexed about a stud of the other stud pair and bears against a stud of the first stud pair.

8. The lamp assembly of claim 1 including insulating means secured to the base between the light bulb holder and the contact means, the insulating means having an opening therethrough for receiving the end terminal of a light bulb whereby the end terminal of the light bulb may electrically engage the contact means but the remainder of the light bulb is insulated therefrom.

9. A lamp assembly comprising a base having a side wall and a generally planar attaching flange extending outwardly from the side wall, an electrically conductive light bulb holder secured to the base and adapted to be electrically grounded, a light bulb held by the holder in electrical contact therewith, a lens having a central portion and a side wall, an attaching plate formed of insulating material including a first generally planar portion hingedly secured to the lens and a second generally planar portion offset from the first portion and extending generally parallel therewith, said attaching flange being provided with an elongated slot therethrough between the first and second planar portions, said attaching flange extending through said slot generally parallel with the first and second planar portions and being slidable longitudinally in said slot, and electrically conductive contact means carried by said second planar portion adjacent said light bulb and adapted to be connected to a power source whereby sliding movement of the lens relative to the base brings the contact means into and out of electrical engagement with the light bulb.

10. The lamp assembly of claim 9 in which said contact means comprises an elongated strip of flexible and resilient metal having a pair of relative straight end portions and a middle portion extending away from the end portions, the middle portion including a curved arcuate portion and a reversely curved socket portion, said light bulb including an end terminal, whereby the contact means may be flexed by engagement of the light bulb with the arcuate portion until the end terminal is received by the socket portion.

11. The lamp assembly of claim 9 in which the lens and the attaching plate are formed integrally of flexible insulating material, the hinged connection between the lens and the attaching plate being provided by a relatively narrow integral hinge portion.

12. The lamp assembly of claim 9 including a stud extending generally perpendicularly from the second planar portion of the attaching plate to below the plane of the first planar portion, the side wall of the base being positioned between the first planar portion and the stud, whereby withdrawal of the attaching flange from the slot is restrained.

13. The lamp assembly of claim 12 in which the second planar portion of the attaching plate includes a tongue portion extending toward the hinged connection with the lens for normally maintaining the attaching flange generally parallel with the planar portions, said second planar portion being flexible away from the first planar portion to permit the attaching

flange to be withdrawn from the slot by moving the side wall of the base below the stud.

14. The lamp assembly of claim 9 including a flexible sheet of insulating material secured to the base by the light bulb holder and provided with an opening therethrough, the insulating sheet being positioned between the light bulb and the

contact means, the light bulb having an end terminal extending through the opening in the insulating sheet whereby the end terminal may electrically engage the contact means but the remainder of the light bulb is insulated therefrom.

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