SEALED, SIDEMARKER LAMP ASSEMBLY


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Filed: May 9, 1974

Application Number: 468,580

References Cited

UNITED STATES PATENTS


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ABSTRACT

A vehicle lamp assembly in which an unbased, wedge-type bulb is received by a pair of laterally spaced clips supported on a reflector and connected to a pair of tubular contact terminals projecting through the reflector. The bulb engaging clips are retained in position by a fence above which the bulb projects between caps connected to the fence. The caps project into the terminals and are welded to the reflector to position and seal the terminals therewithin.

15 Claims, 7 Drawing Figures
SEALED, SIDEMARKER LAMP ASSEMBLY

This invention relates to vehicle lamp assemblies and in particular to a sealed, sidemarker type of throw away lamp.

There are many relatively inexpensive, sealed lamp assemblies on the market adapted to be installed on vehicles for visual marking purposes. Some of these lamp assemblies include an unbiased, wedge-type bulb of the type manufactured for example as a miniture lamp-type of instrument indicator by General Electric. In view of the small size of such bulbs, there is a problem in positioning and holding the bulb in proper place within the lamp assembly under adverse conditions. Generally, potting and soldering operations have been utilized for positioning, sealing and establishment of electrical contact. The foregoing operations do of course involve some expense in assembling the lamp and contribute to a variation in the quality of the product produced. It is therefore an important object of the present invention to provide a vehicle lamp assembly which will be less costly to produce and avoid to a greater extent the bulb positioning, contact establishing and sealing problems aforementioned in connection with prior art arrangements. A further object of the present invention is to provide a lamp assembly portions of which may be salvaged for reuse in connection with standard parts that are readily stored.

In accordance with the present invention, a lamp assembly is formed from a specially constructed mounting reflector, a pair of bulb receiving clips having tubular contact terminal pins integrally connected thereto and electrically non-conductive positioning and sealing elements adapted to engage the terminal pins and clips for positioning the same on the reflector. The positioning and sealing element is furthermore ultrasonically welded to the reflector to establish a positive seal for the terminal pins which project through the reflector.

A lens cover secured to the reflector encloses the foregoing assembly with an unbadged, wedge-type bulb received in the clips.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout.

FIG. 1 is a perspective view showing a typical lamp assembly constructed in accordance with the present invention.

FIG. 2 is an enlarged rear elevational view of the lamp assembly shown in FIG. 1.

FIG. 3 is a perspective view showing the novel components of the lamp assembly disassembled.

FIG. 4 is a front elevational view of the lamp assembly.

FIG. 5 is an enlarged partial sectional view taken substantially through a plane indicated by section line 5—5 in FIG. 4.

FIG. 6 is an enlarged side sectional view taken substantially through a plane indicated by section line 6—6 in FIG. 4.

FIG. 7 is a side sectional view showing the components as illustrated in FIG. 6 disassembled.

Referring now to the drawings in detail, a lamp assembly generally referred to by reference numeral 10 in FIG. 1 includes any suitable, light-transmitting lens cover 12 secured to and thereby sealing the lamp assembly on a mounting reflector generally referred to by reference numeral 14. As shown in FIG. 2, the rear face 16 of the reflector is generally planar but includes a central projecting formation 18 from which a pair of laterally spaced tubular projections 20 extend. The tubular projections 20 enclose the projecting open ends of a pair of tubular contact terminal pins 22. Male connecting prongs are adapted to be inserted into the external ends of the pins 22 in order to establish an electrical circuit through the lamp assembly for energizing and illuminating the same. A non-conductive, anticorrosion compound such as a petroleum grease 24 may be inserted into the radial space between the terminal contact pins 22 and the tubular projections 20 as shown in both FIGS. 2 and 5.

Referring now to FIGS. 3 and 7 in particular, the reflector 14 includes a front planar surface 26 parallel to the rear face 16 surrounded by a rim 28 adapted to engage and be secured to the lens cover 12 in any suitable fashion such as welding or by adhesive. The reflector as well as the lens cover are made of an electrically non-conductive material such as synthetic plastic. The front surface 26 of the reflector is formed with a reflective recess 30 bordering a pair of thicker portions 32 of the reflector having openings 34 through which the tubular contact terminal pins 22 extend. A pair of supporting projections 36 extend forwardly from the surface 26 of the reflector in laterally spaced relationship to each other below and in alignment with the openings 34 in order to support a pair of integrally formed, electrically conductive components generally referred to by reference numeral 38. The components 38 are fitted onto the reflector between two pair of guide formations 40 projecting from the reflector between the support projections 36 and the openings 34.

As more clearly seen in FIG. 3, each of the electrically conductive components 38 includes one of the tubular, contact terminal pins 22 aforementioned integrally connected by an electrically conductive strip 42 extending from one open end of the contact pin to a bulb receiving clip generally referred to by reference numeral 44. The strip 42 is formed with a right angle bend and is connected to the resilient clip 44 forming a pair of laterally spaced bulb engaging fingers 46. The entire component 38 may be cut and folded from a thin sheet of electrically conductive metal. Further, by virtue of the symmetrical construction of the components 38, they are all interchangeable as will be apparent.

As more clearly seen in FIG. 5, the bulb holder 44 is seated on one of the supporting projections 36 of the reflector with the connecting strip 42 abutting the front surface 26 of the reflector between the guide formations 40, while the contact terminal pin 22 extends through an opening 34. Both pairs of bulb holders 44 are adapted to be held on the supporting projections 36 by a fence portion 48 of an electrically non-conductive positioning and sealing element generally referred to by reference numeral 50 adapted to be secured by ultrasonic welding to the reflector. The fence portion 48 abuts the supporting projections 36 and may be welded thereto in parallel spaced relation to the surface 26 of the reflector from which it is spaced by a pair of right-angle connecting portions 52 reinforced by bracing portions 54 as more clearly seen in FIGS. 3 and 5. The upper ends of the connecting portions 52 are provided with cap portions 56 that project into the internal ends.
of the tubular contact terminals 22. Thus, the cap portions will also position the tubular contact terminals within the openings 34 and when welded to the reflector will seal the contact terminals within the reflector. The connecting portions 52 of the element 50 will also cover the connecting strip portions 42 of the electrically conductive components 38. A completely sealed assembly is thereby formed so that internal parts are protected from the corrosive affects of weather.

The element 50 also firmly holds the bulb holding clips 44 in laterally spaced relationship to each other for receiving the base portion of a conventional miniature wedge-type bulb 58. One pair of adjacent fingers 46 of each bulb holder 44 will accordingly engage the terminal leads of the bulb 58 thereby establishing electrical connections through the components 38 to any male contact prongs inserted into the terminal pins 22.

It will be apparent from the foregoing description that the electrically conductive components 38 and clip 44 are not only interchangeable but replaceable as in the case of the bulb 58. Further, a good quality product may be produced without use of any potting material or soldering. Still further, the construction and assembly of the lamp hereinbefore described lends itself to the use of automation in production to a greater extent than heretofore possible with prior art arrangements.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. In a lamp assembly, a mounting reflector, a contact terminal extending through the reflector and having internal and external ends, a bulb holder supported on the reflector, an electrically conductive connector interconnecting the bulb holder and the contact terminal, and electrically non-conductive means secured to the reflector in enclosing relation to the internal end of the contact terminal and projecting thereinto for sealing and positioning the terminal with respect to the reflector.

2. The combination of claim 1 wherein said contact terminal comprises a tubular pin open at said internal end to receive the electrically non-conductive means.

3. In a lamp assembly, a mounting reflector, a contact terminal extending through the reflector, a bulb holder supported on the reflector, an electrically conductive connector interconnecting the bulb holder and the contact terminal, and electrically non-conductive means secured to the reflector in engagement with the contact terminal and the bulb holder for respectively sealing and positioning the terminal and the holder with respect to the reflector, said contact terminal comprising a tubular pin having opposite open ends, said non-conductive means including a cap portion projecting into the tubular pin through one of said open ends.

4. The combination of claim 3 wherein said bulb holder includes a resilient clip adapted to receive an unbased, wedge type of bulb in laterally offset relation to said connector.

5. The combination of claim 4 wherein said connector comprises a conductive strip abutting the reflector in underlying relation to the non-conductive means and formed integrally with the contact terminal and the bulb holder.

6. The combination of claim 5 wherein said non-conductive means further includes a fence portion engaging the bulb holder in spaced relation to the reflector and a reinforced spacing portion interconnecting the cap and fence portion in laterally spaced relation to the bulb holder.

7. The combination of claim 6 wherein said reflector includes a planar member having a recessed reflective portion of reduced thickness and an opening extending through the planar member adjacent to the recessed portion within which the contact terminal is positioned, and a supporting projection extending from the planar member in spaced relation to said opening on which the bulb holder is positioned.

8. The combination of claim 3 wherein said connector comprises a conductive strip abutting the reflector in underlying relation to the non-conductive means and formed integrally with the contact terminal and the bulb holder.

9. The combination of claim 3 wherein said non-conductive means further includes a fence portion engaging the bulb holder in spaced relation to the reflector and a reinforced spacing portion interconnecting the cap and fence portion in laterally spaced relation to the bulb holder.

10. In a lamp assembly, a mounting reflector, a contact terminal extending through the reflector, a bulb holder supported on the reflector, an electrically conductive connector interconnecting the bulb holder and the contact terminal, and electrically non-conductive means secured to the reflector in engagement with the contact terminal and the bulb holder for respectively sealing and positioning the terminal and the holder with respect to the reflector, said reflector including a planar member having a recessed reflective portion of reduced thickness and an opening extending through the planar member adjacent to the recessed portion within which the contact terminal is positioned, and a supporting projection extending from the planar member in spaced relation to said opening on which the bulb holder is positioned.

11. In a lamp assembly, a mounting reflector, a pair of contact terminals extending through the reflector, a bulb holder having internal and external ends, a pair of laterally spaced bulb engaging elements supported on the reflector and respectively connected to the terminals electrically, and electrically non-conductive means engageable with the reflector in enclosing relation to said internal ends of the terminals and projecting thereinto for positioning and sealing the terminals within the reflector.

12. In a lamp assembly, a mounting reflector, a pair of contact terminals extending through the reflector, a pair of laterally spaced bulb engaging elements supported on the reflector and respectively connected to the terminals electrically, and electrically non-conductive means engageable with the terminals for positioning and sealing the same within the reflector, said non-conductive means including a pair of cap portions abutting the reflector and projecting into the contact terminals, a fence portion abutting the bulb engaging elements in spaced relation to the reflector, and a pair of spacing portions interconnecting the cap portions with the fence portions in straddling relation to the bulb engaging elements.
13. The combination of claim 12 wherein each of said contact terminals comprises a tubular pin connected to one of the bulb engaging elements into which one of the cap portions project.

14. The combination of claim 13 wherein each of said bulb engaging elements includes a resilient clip connected in laterally offset relation to one of the contact terminals.

15. The combination of claim 12 wherein each of said bulb engaging elements includes a resilient clip connected in laterally offset relation to one of the contact terminals.

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