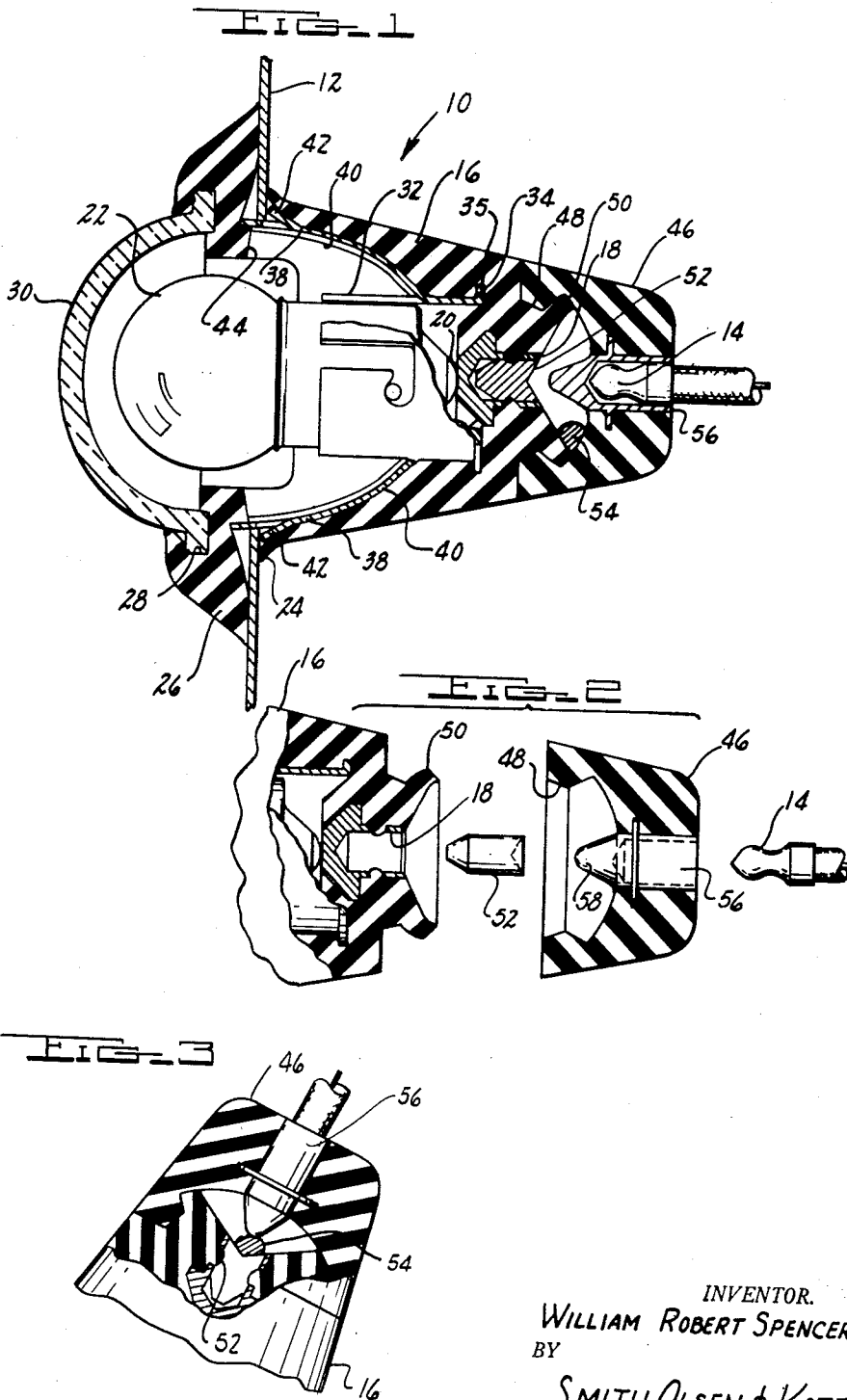


Oct. 8, 1957

W. R. SPENCER
TRUNK COMPARTMENT LAMP

2,809,283

Filed June 16, 1955



1

2,809,283

TRUNK COMPARTMENT LAMP

William Robert Spencer, Bolton, Conn., assignor to Spencer Rubber Products Company, Manchester, Conn.

Application June 16, 1955, Serial No. 515,849

9 Claims. (Cl. 240—7.1)

The present invention relates to a lamp unit for lighting a storage compartment of an automobile, and more particularly to such a unit which can be assembled to operate selectively either by manual or by automatic, gravity actuated means.

The lamp unit of this invention is primarily adapted for use in the rear luggage compartment of an automobile, but it can be adapted for a wide variety of uses in a great many fields. Thus, it can be used also as a lighting means in glove compartments or under the hoods of cars where it is desired to have a lamp lighted when the compartment is opened. Similarly, it can be used in aircraft and marine fields.

There has been a long felt need, particularly in the automobile industry, for an improved lamp assembly which would provide a standardized construction, optionally usable with the lower priced standard model cars as well as with the higher priced deluxe models. It is conventional practice in this industry to provide the deluxe models with added features, such as automatic lighting for the trunk compartment on opening of the trunk hood, whereas, standard models often do not have this automatic lighting feature. Under these circumstances it is necessary to have separate wiring and lamp assemblies for the deluxe and standard models.

This use of separate wiring and lamp assemblies is not conducive to the most efficient operation, and hence, it is not as efficient as where common parts can be used for both arrangements.

Another problem that has long faced the automotive industry has been the need for a more satisfactory gravity actuated lamp assembly for automatically lighting trunk compartments. Heretofore, a great deal of difficulty has been encountered with switches used for this purpose for a number of reasons.

Some of the more significant ones have been the failures due to the repeated operations to which they are subjected during the life of the car, and because of corrosion or oxidation of the contact points resulting from the presence of moisture in the switch unit. Difficulties have also arisen because replacement or repair of many of the prior art units has been both difficult and relatively expensive.

It is the object of the present invention to overcome these faults of the prior art devices and to provide a unique lamp assembly for use in a trunk compartment and the like, which assembly has a body portion usable either with or without automatic switch means for energizing the lamp on opening of the compartment door.

It is another object of the present invention to provide a lamp assembly of the foregoing character which is constructed and arranged so that a gravity switch can be attached directly to the base of the aforesaid body portion in a simple and effective manner thereby providing a relatively inexpensive automatically operable lamp assembly from the same body portion used with a lamp assembly of the non-automatic type.

It is another object of the present invention to provide an automatically operable lamp assembly of the foregoing

2

character which is constructed and arranged to assure a weathertight enclosure for the lamp and gravity switch and for the conventional electric connections which are required by the lamp assembly.

5 It is still another object of the present invention to provide an automatically operable lamp assembly which is characterized by the ease and facility with which it can be assembled and mounted in place in an automobile trunk compartment or the like.

10 It is still another object of the present invention to provide an automatically operable lamp assembly of the foregoing character wherein a resilient rubber-like body portion is provided for housing a lamp socket, and a lens is carried by said body portion, said gravity switch also 15 being housed in a rubber-like member which can be hermetically sealed to the body portion, the sealed elements being constructed and arranged so that they will hold the complete assembly in an apertured plate and at the same time will assure a weathertight seal around all electrical parts.

20 It is another object of the present invention to provide a lamp assembly which is characterized by its simple and effective construction from the standpoint of initial cost, ease of assembly and installation, and durability and long 25 life.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate 30 corresponding parts in the several views.

In the drawings:

Figure 1 is a section through one form of an automatic lamp assembly embodying the present invention;

Figure 2 is an exploded view in section of elements that 35 are illustrated in the embodiment of Figure 1; and

Figure 3 is a fragmentary view partly in section showing the gravity switch portion of the lamp assembly when the latter is tilted so as to be lighted.

Before explaining the present invention in detail, it is 40 to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also, it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Referring now to the drawing, a more detailed description of the invention will be given. The lamp assembly 45 10 is shown mounted in an apertured plate 12, and a bullet type male terminal 14 is shown in Figure 1 plugged into the lamp assembly 10. The latter includes a body portion 16 which is preferably made from any suitable plastic or rubber-like material having di-electric and resilient properties. The body portion 16 will normally be 50 made by a molding operation with the female bullet terminal 18 formed integrally therein during the molding operation. Terminal 18 is open at its outer end for receiving the male terminal 14 when the lamp assembly 10 is to be used without its automatic lighting feature. The inner end of terminal 18 projects into the interior of body portion 16 so that the base 20 of lamp 22 can contact 55 the same. By virtue of this arrangement a hermetically tight joint will always exist between the terminal 18 and the body portion 16 and the latter will also act on the former to urge it into a good electric contact with the lamp 20 as will be described presently.

The body portion 16 has a hollow interior as can be seen and has a peripheral elastic fastening means for 60 attaching the lamp assembly to the panel 12. A relatively small shoulder 24 extends around the entire periphery of the body portion 16, and a second, but larger

3

shoulder or overhanging lip 26 is similarly disposed in axially spaced relation. The lip 26 is inclined outwardly and toward the closed end of the body portion 16 so that when the latter is in an unstressed condition the free end of the lip depends below the plane of the shoulder 24. The upper and inner edge of the lip 26 terminates in a lens receiving rim 28 in which the lens 30 will be securely held.

When the lamp assembly 10 is inserted into the apertured plate 12, the lip 26 having a relatively thick cross section will be urged upwardly by the plate 12 and the latter will be clamped between shoulder 24 and lip 26. The upward pivoting action on the lip 26 will also serve to urge the rim 28 more tightly around the edge of the lens 30 thereby assuring a weather tight joint around the lens 30 as well as around the aperture in plate 12.

The lamp socket 32 is secured in place by means of the outturned flange 34 which is received in the annular recess 35 in the inner wall of body portion 16. This is not the only arrangement that may be used for securing the socket 32 in place, but it is particularly advantageous because it assures that the socket will always be positioned uniformly in the same place, which in turn assures that a good connection will exist between the lamp 22 and the terminal 18.

The ground connection for the lamp assembly 10 is provided by means of the two diametrically opposed resilient fingers 38 in the socket 32 which fit into vertical slots 40 in the inner wall of the body portion 16. The slots 40 are open to the recess formed between the lip 26 and shoulder 24 so that the free ends of fingers 38 can extend thereinto, thereby making contact with the edge of plate 12. The fingers 38 have barbs 42 for engaging and abutting against the under side of plate 12. This arrangement assures a good contact being made, because the resilient characteristics of the body portion 16 will urge the barbs 42 into tight contact with the plate 12, and additionally, the resilient characteristics of the fingers 38 will maintain them in contact with the edge of the aperture in plate 12. In order to assure that the fingers 38 will always remain in contact with the edge of the aperture, the body portion 16 has depending segments 44 which fit against the fingers 38 and urge them against the aperture edge.

From the foregoing it is apparent that the described structure forms a complete lamp assembly, although it does not provide an automatic or gravity switch for lighting the lamp 22. This feature is provided by the addition of the rubber-like cap member 46 which forms a part of the lamp assembly 10. The cap member 46 is attached to the body portion 16 by the interlocking flanges 43 and 50. This joint is made by pressing the two parts together and it is sufficiently tight to produce a mercury tight seal, although a suitable rubber cement may be used, if desired, to produce a tighter joint.

Prior to joining the cap member and the body portion 16, and adaptor 52 is inserted into the female terminal 18. The adaptor 52 can be made from any suitable conductive metal, such as copper or the like. A drop or ball of mercury 54 may be inserted into the interior of cap member 46 prior to the latter being connected to the body portion, or, if desired, it can be injected later into the cavity formed between these parts by means of a syringe or the like.

The cap member 46 is formed from a plastic or rubber-like material by a molding operation, and the female terminal 56 is molded in the cap member 46 in this operation. The terminal 56 includes a projection 58 which extends into the cavity in the cap member 46. When the lamp assembly 10 is tilted to a position shown in Figure 3 an electric connection is provided from the male terminal 14, through the projection 58, the mercury 54, the adaptor 52 and female terminal 18 to the base of the lamp 22. When the lamp is returned to its normal

4

position shown in Figure 1, the mercury 54 will return to the position shown thereby opening the circuit to the lamp.

Thus, it can be seen that the described lamp assembly provides a unique combination of a lamp and gravity switch which can be used solely as a lamp unit merely by eliminating the adaptor 52 and the cap member 46. By virtue of this construction and arrangement standardized parts can be used throughout. Furthermore, all parts can be assembled and will be held together without need of rivets, screws or other fastening devices, and a weather-tight housing is provided for the electrical components, irrespective of whether the lamp assembly 10 is to be used only as a lamp unit or as a lamp and gravity switch combination.

Having thus described my invention, I claim:

1. A lamp assembly comprising a body portion having a chamber open at its one end, the closed end of said body portion containing a female electric terminal with a contact surface projecting into said chamber, a cap member attached to and enclosing the closed end of said body portion so as to form a cavity between the attached parts, said cap member having a female terminal with its closed end forming a part of the wall of said cavity adjacent the first named female terminal and its open end adapted to receive a male terminal, and a globule of mercury in said cavity adapted to effect an electrical connection between said terminals when the lamp assembly is tilted to a preselected position.

2. A lamp assembly comprising a body portion having a chamber open at its one end, the closed end of said body portion containing a female electric terminal with a contact surface projecting into said chamber, a removable adaptor in said terminal closing the open end thereof, a cap member removably attached to and enclosing the closed end of said body portion so as to form a cavity between the attached parts, a second female terminal extending through the wall of said cap member with its closed end extending into said cavity adjacent said adaptor, and a globule of mercury in said cavity adapted to effect an electrical connection between said terminals when the lamp assembly is tilted to a preselected position.

3. A lamp assembly comprising a body portion of resilient rubber-like material having a chamber open at its one end, the closed end of said body portion containing a female electric terminal molded therein with a lamp contacting surface projecting into said chamber, a cup shaped cap member formed from a resilient rubber-like material and having a female terminal molded therein with its closed end projecting into the interior of the cap member, said body portion and cap member having peripherally arranged interlocking flanges for effecting a mercury tight seal when pressed together so that a globule of mercury can be introduced into the cap member and when the lamp assembly is tilted to a selected position an electric connection between said terminals will be effected by the mercury.

4. A lamp assembly formed from a plurality of elements adapted to be held together by self-retaining means of an easy-together, hard-separating type comprising a unitary body portion of resilient rubber-like material having a lamp socket chamber open at its one end with the latter forming an internal resilient lens receiving rim, the closed end of said body portion containing a female terminal with a contact surface extending into said chamber, a cup shaped cap member of resilient rubber-like material containing a female terminal with a contact surface extending into the interior of the cap member, means for attaching the cap member over the closed end of said body portion so as to form a cavity between the attached parts thereby permitting use of a globule of mercury in the cavity to effect an electric connection between said terminals on tilting of the lamp assembly to a preselected position, a lamp socket in said chamber in engagement with the first named contact

5

surface, a lamp in said socket, and a lens in said resilient lens receiving rim.

5. In a lamp assembly having a body portion of resilient rubber-like material with a female terminal in its base and an annular flange coaxially disposed and flaring rearwardly, a cup shaped cap member of resilient rubber-like material having an inwardly directed flange around its lip for interlocking with the flange of said body portion to provide a sealed cavity, said cap member having a female terminal projecting into its interior adjacent to the first named terminal so that such terminals will be bridged by a globule of mercury when the lamp assembly is tilted to a selected position.

6. In an assembly adapted to be mounted in self-retaining position in an apertured plate, a unitary body portion of resilient rubber-like material having a chamber open at its one end with the latter forming a lens receiving rim, a groove extending around the outer side of said chamber and axially inward of said rim for receiving the apertured edge of said plate, a relatively thick lip projecting from said rim radially outwardly and through the plane of said groove when in an unstressed condition so that when the body portion is pressed into the aperture in said plate the lip will press against the plate and by virtue of the internal resilient characteristics of said body portion the plate will be clamped between said lip and the opposite edge of said groove, the closed end of said body portion containing an electric terminal with a contact surface projecting into said chamber, a cap member attached to the closed end of said body portion by resilient interlocking flanges so as to form a cavity between the attached parts, said cap member having a terminal extending through the wall of said cavity with its one end in a position adjacent the first named terminal and its other end positioned to receive an electrical conductor, and a globule of mercury in said cavity to effect an electrical connection between said terminals when the lamp assembly is tilted to a preselected position.

7. In an assembly adapted to be mounted in self-retaining position in an apertured plate, a unitary body portion of resilient rubber-like material having a chamber open at its one end with the latter forming a lens receiving rim, a circumferential recess in the outer surface of the body portion for receiving the edge of the aperture in said plate, the circumferential recess being formed from an annular shoulder and an axially spaced lip, the latter when in an unstressed condition extend-

6

ing through the plane of the former so that when the body portion is inserted into the aperture the edges forming the latter will be clamped between said shoulder and lip, the closed end of said body portion containing an electric terminal with a contact surface projecting into said chamber, a cap member attached to the closed end of said body portion by resilient interlocking flanges so as to form a cavity between the attached parts, said cap member having a terminal extending through the wall of said cavity with its one end in a position adjacent the first named female terminal and its other end positioned to receive an electrical conductor, and a globule of mercury in said cavity to effect an electrical connection between said terminals when the lamp assembly is tilted to a preselected position.

8. A lamp assembly having parts adapted to be used interchangeably in a manual or automatically lighted lamp comprising a housing with a terminal in its base to which an electrical conductor can be connected when the lamp is to be lighted manually, a cup shaped cap member attachable to said housing by resilient interlocking flanges to overlie said terminal and having a second terminal to which the electrical conductor can be connected when the lamp is to be lighted automatically, said terminals being spaced apart but in close proximity so as to be bridged by a globule of mercury contained between said housing and said cap member to automatically light said lamp when said lamp assembly is tilted to a preselected position.

9. A lamp assembly adapted for automatically lighting the lamp when tilted comprising a housing with a terminal in its base, a cup shaped member attached to said housing by resilient interlocking flanges to overlie said terminal and having a second terminal to which an externally positioning electrical conductor can be connected, said terminals being spaced apart but in close proximity so as to be bridged by a globule of mercury contained between said housing and said cap member to light said lamp automatically when said lamp assembly is tilted to a preselected position.

References Cited in the file of this patent

UNITED STATES PATENTS

2,043,499	Vendope	June 9, 1936
2,202,315	Langdon	May 28, 1940
2,208,154	Daehler	July 16, 1940
2,344,129	Clayton	Mar. 14, 1944