Oct. 20, 1970 H. MAGI 3,535,672

BULB-SOCKET ASSEMBLY WITH RESILIENT BODY MEMBER

Filed Feb. 13, 1969

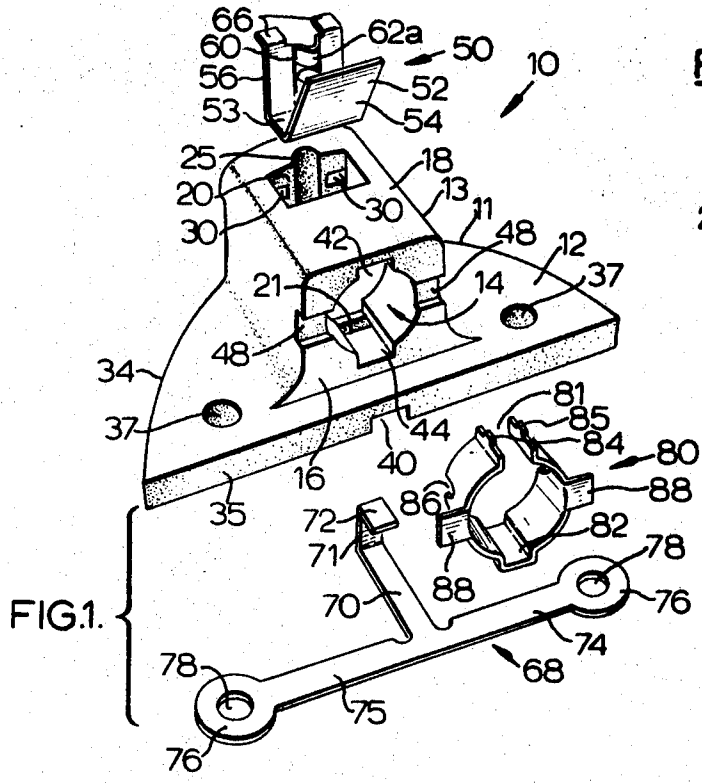
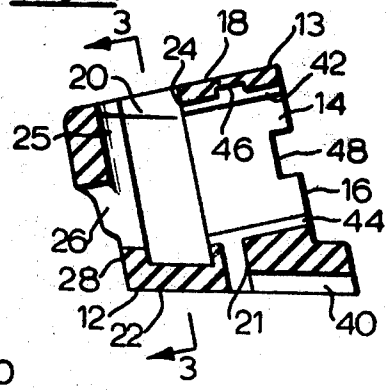


FIG.1.

FIG.2.



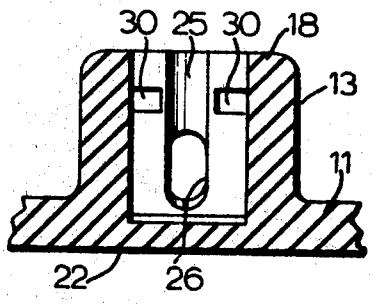


FIG.3.

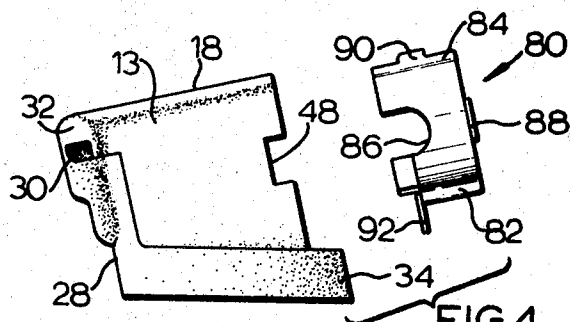


FIG.4.

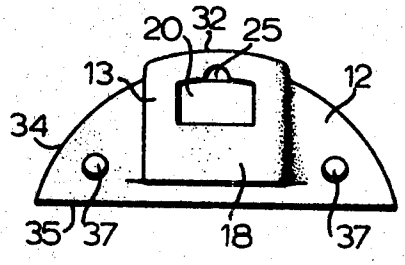


FIG.5.

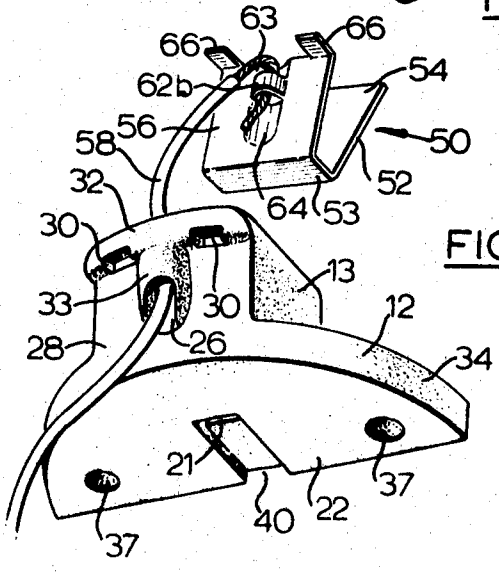


FIG.6.

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United States Patent Office 3,535,672 Patented Oct. 20, 1970

3,535,672

BULB-SOCKET ASSEMBLY WITH RESILIENT BODY MEMBER

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Filed Feb. 13, 1969, Ser. No. 798,990
Int. Cl. H01r 13/48, 33/64
U.S. Cl. 339—59 7 Claims

ABSTRACT OF THE DISCLOSURE

A bulb-socket assembly, including a resilient body defining a socket aperture and two terminal-receiving apertures normal to the socket aperture. An electric terminal in one terminal aperture contacts a bulb socket mounted in the socket aperture, and a U-shaped electric terminal in the other terminal aperture contacts the base of a bulb in the socket. The body resiliently isolates the bulb from shocks received by the vehicle on which the assembly may be mounted.

This invention relates to bulb-socket assemblies of the kind used generally as tail lights or auxiliary lights on automotive products. Many vehicles, such as trucks and other utility vehicles, are intended to be subjected to rough use, which makes it necessary that the bulb-socket mountings in the vehicles' lights be of a construction adapted to withstand and cushion shocks and impacts.

The object of this invention is to provide a bulb-socket assembly of simple construction in which the several parts can be merely pressed or snapped into place, and which is particularly adapted to shield a bulb from damaging shocks and impacts.

Accordingly, this invention provides a bulb-socket assembly, comprising: an integral resilient body member including a portion defining a socket aperture which opens through one wall of said portion, a first terminal-receiving aperture perpendicularly intersecting said socket aperture from a first direction at the end of said socket aperture remote from said one wall, and a second terminal-receiving aperture intersecting said socket aperture from the direction opposite said first direction at an intermediate location along the socket aperture, a first electric terminal inserted in said first terminal-receiving aperture and capable of contacting the centre terminal of a bulb in said socket aperture, said first electric terminal having means for locking engagement with an electric wire, a second electric terminal inserted in said second terminal-receiving aperture and having a first part extending into said socket and a second part which is free of said resilient body member and is capable of being grounded, and an electric socket member inserted into the socket aperture in electric contact with said first part of said second electric terminal, the electric socket member being capable of contacting the peripheral terminal of a bulb in said socket aperture.

One embodiment of this invention is shown in the accompanying drawings, in which like numerals denote like parts throughout the several views, and in which:

FIG. 1 is an exploded, perspective view of the four components of the bulb-socket assembly of this invention;

FIG. 2 is an axial sectional view of one of the components shown in FIG. 1;

FIG. 3 is a sectional view taken at the line 3—3 in FIG. 2;

FIG. 4 is a side elevation of two of the components shown in FIG. 1;

FIG. 5 is a top view, to a smaller scale, of the component shown in FIG. 2; and

FIG. 6 is a perspective view, from the rear, of two of the components shown in FIG. 1.

Referring first to FIG. 1, an exploded bulb-socket assembly shown generally at **10** comprises an integral resilient body member **11**, which includes flange **12** and a portion **13** defining a socket aperture **14** which opens through the front wall **16** of the portion **13**. The portion **13** is generally block-shaped and has a top wall **18** substantially perpendicular to the front wall **16**. Through the top wall **18** opens a first terminal-receiving aperture **20** which perpendicularly intersects the socket aperture **14**. Thus, the socket aperture **14** and the first terminal-receiving aperture **20** approximately define an elbow passageway through the portion **13**, one end of which opens through the top wall **18**, the other end of which opens through the front wall **16**. A second terminal-receiving aperture **21** intersects the socket aperture **14** through the bottom wall **22**, and thus extends to the socket aperture **14** from a direction opposite the direction of the first terminal-receiving aperture **20**. The location of the intersection of the second terminal-receiving aperture **21** is intermediate the socket aperture **14**. This is best seen in FIG. 2, where the second terminal-receiving aperture **21** is shown to intersect the socket aperture **14** at a location between the front wall **16** and the rear end **24** of the socket aperture **14**.

The first terminal-receiving aperture **20** is rectangular in cross-section, as can be seen in FIGS. 1 and 5, and is provided, centrally of its rear wall, with a cylindrical recess **25**, the purpose of which will be made clear later. A wire opening **26** communicates with the first terminal-receiving aperture **20** through the rear wall **28**. As can be seen particularly in FIG. 3, the wire opening **26** is elongated in the direction of the axis of the recess **25**.

The rear wall **28** also has two lock-apertures **30** located above the wire opening **26** and communicating with the first terminal-receiving aperture **20** on either side of the recess **25**.

The portion **13** has an upper ledge **32** which overhangs the rear wall **28**, and a cylindrical protuberance **33** extends downwardly along the rear wall **28** to encase the recess **25**.

As best seen in FIGS. 1, 5 and 6, the flange **12** has the shape of a segment of a circle, and is defined between an arc-edge **34** and a chord-edge **35**. Two attachment apertures **37** are provided in the flange **12** for securing the body member **11** to a housing (not shown). The flange **12** further has a groove **40** which extends along the bottom wall **22** beneath the portion **13** and terminates at the aperture **21**.

The socket aperture **14** has an upper longitudinal groove **42** and a lower longitudinal groove **44**. Both the upper and lower longitudinal grooves **42** and **44** terminate at the first terminal-receiving aperture **20**. In FIG. 1 it can be seen that the aperture **21** communicates with the lower longitudinal groove **44**. This communication can be seen as well in FIG. 2, in which there can also be seen, in cross-section, a recess **46** which is located centrally along the upper longitudinal groove **42**. The recess **46** has the same width as the upper longitudinal groove **42** (in the direction normal to the drawing sheet), and its length can be seen in the figure.

The front face **16** of the portion **13** has two, aligned side-grooves **48** which are radially located with respect to the socket aperture **14**, and which are spaced at 90° from the upper and lower longitudinal grooves **42** and **44**.

A first electric terminal **50** is shown in FIG. 1 to comprise a band **52** of metal bent to have a generally U-shaped cross-section, such as to enable it to be inserted into the first terminal-receiving aperture **20** with the base **53** of the U innermost. One arm **54** of the U is adapted to contact the centre terminal of a bulb inserted into the socket

aperture **14**, while the other arm **56** of the first electric terminal **50** is provided with means for locking engagement with an electric wire **58**, shown in FIG. 6. The locking engagement means involves two parallel slits **60** in the arm **56**, the slits **60** defining two parallel ribbons **62***a* and **62***b* in the arm **56**, the ribbons **62***a* and **62***b* being deflected alternately in opposite directions to define in part a tubular receptacle for the bared end **63** of the electric wire **58**. The tubular receptacle is extended by forming an elongated recess **64** below the ribbons **62***a* and **62***b*.

As can be seen in FIG. 6, the wire **58** is first fed through the aperture **26**, thence up through the first terminal-receiving aperture **20**, and then between the ribbons **62***a* and **62***b* electric terminal **50**. During assembly, the electric terminal **50** is inserted in the first terminal-receiving aperture **20** with the base **53** of the U innermost, while the wire **58** is pulled outwardly through the aperture **26** at the same time. In its final position, the electric terminal **50** is locked into place in the first terminal-receiving aperture **20** by virtue of two tabs **66** on the end of the arm **56**, which lock in the lock-apertures **30**. In this locked position, the lower ribbon **62***b* (the one extending away from the arm **54**) is located above the aperture **26**, and this forces the bared wire **63** to remain bent double around the lower ribbon **62***b* in such a way that (a) good electric contact is established and maintained, and (b) it is impossible to pull the wire **58** out through the aperture **26**.

A second electric terminal **68** comprises a strap **70** which at its free end is bent twice to form portions **71** and **72**. At its other end, the strap **70** is integral with two oppositely extending arms **74** and **75**, each with an enlarged portion **76** at its free end, each enlarged portion **76** having an aperture **78** through which the arms **74** and **75** may be grounded to the body of the vehicle.

During assembly, the portion **72** at the end of the strap **70** is intended to be inserted into the aperture **21** from beneath the body member **11**, such that the strap **70** lies along the groove **40** (see FIG. 6) while the end portion **72** lies flat along the lower longitudinal groove **44** in the socket aperture **14** (see FIG. 1).

The bulb-socket assembly of this invention further includes an electric socket member **80**, which can be seen in FIGS. 1 and 4. The electric socket member **80** is basically a penannular member which is split at **81**. Opposite the split at **81** is an outwardly extending channel **82** which is adapted to be received in the lower longitudinal groove **44** in the socket aperture **14**. Adjacent the split **80**, the penannular electric socket member **80** has two upstanding tabs **84** and **85**, only tab **84** being visible in FIG. 4. Tab **85** is shorter than tab **84** by virtue of the fact that the electric socket member **80** adjacent the tab **85** is narrower than it is adjacent tab **84**. Those versed in the art to which this invention pertains will recognize that the J-slots **86** and the change in the width of the electric socket member **80** is the standard construction permitting a bulb to be locked into its proper position within the electric socket member **80**. The electric socket member **80** has additional tabs **88** which are adapted to be received in the grooves **48**. The tabs **84** and **85** have upstanding protrusions **90** (see FIG. 4) which are adapted to register in the recess **46** within the upper longitudinal groove **42**. This registration is what maintains the electric socket member **80** in its proper position within the socket aperture **14**.

Lastly, the electric socket member **80** has a downwardly extending tab **92** which is adapted to register in the aperture **21**, thereby establishing contact with both portions **71** and **72** at the end of the strap **70** of the second electric terminal **68**.

While one embodiment of this invention has been shown and described herein, those skilled in the art will appreciate that changes and modifications may be made therein without departing from the spirit and scope of this invention, as defined in the appended claims.

What I claim as my invention is:

1. A bulb-socket assembly, comprising:

an integral resilient body member including a portion defining a socket aperture which opens through one wall of said portion, a first terminal-receiving aperture perpendicularly intersecting said socket aperture from a first direction at the end of said socket aperture remote from said one wall, and a second terminal-receiving aperture intersecting said socket aperture from the direction opposite said first direction at an intermediate location along the socket aperture,

a first electric terminal inserted in said first terminal-receiving aperture and capable of contacting the centre terminal of a bulb in said socket aperture, said first electric terminal having means for locking engagement with an electric wire,

a second electric terminal inserted in said second terminal-receiving aperture and having a first part extending into said socket and a second part which is free of said resilient body member and is capable of being grounded,

and an electric socket member inserted into the socket aperture in electric contact with said first part of said second electric terminal, the electric socket member being capable of contacting the peripheral terminal of a bulb in said socket aperture.

2. A bulb-socket assembly as claimed in claim 1, in which said first terminal-receiving aperture is of rectangular cross-section, the first electric terminal being a band of metal bent to have a generally U-shaped cross-section, and adapted to be inserted into the first terminal-receiving aperture with the base of the U innermost, said centre terminal of the bulb being adapted to contact one arm of the U, the said means for locking engagement with an electric wire comprising a plurality of parallel slits in the other arm of the U, the parallel slits defining parallel ribbons in the band, the ribbons being deflected alternately in opposite directions to define in part a tubular receptacle for the end of an electric wire.

3. A bulb-socket assembly as claimed in claim 2, in which a wire-opening communicates with said first terminal-receiving aperture at right-angles thereto and at a location such that an electric wire can pass through said wire-opening and through said alternately-deflected ribbons in the direction toward the base of the U, the wire being bent double upon itself from the wire-opening to the free end of the wire.

4. A bulb-socket assembly as claimed in claim 1, in which the integral resilient body member further includes a flange, the socket-defining portion lying wholly to one side of said flange, the said socket aperture being substantially cylindrical, and having two, antipodal, longitudinal grooves, the electric socket member being substantially cylindrical but having protuberant portions at diametrically opposed locations, these protuberant portions being adapted to fit complementally within the longitudinal grooves in the socket aperture.

5. A bulb-socket assembly as claimed in claim 4, in which said second terminal-receiving aperture intersects one of the said longitudinal grooves within the socket aperture, the second electric terminal including an end portion bent at right-angles to the adjacent portion, the end portion and the adjacent portion being adapted to pass through the second terminal-receiving aperture such that the end portion lies along said one longitudinal groove and said adjacent portion lies within the second terminal-receiving aperture **21**, the said protuberant portion of the electric socket member which is adapted to lie within said one longitudinal groove having an outwardly extending tab adapted to be received within the

second terminal-receiving aperture, whereby electric contact is created between said electric socket member and both the end portion and the adjacent portion of said second electric terminal.

6. A bulb-socket assembly as claimed in claim 4, in which the electric socket member is penannular in shape. and has two outwardly directed tabs, one at each of the free ends, the said tabs being adapted to lodge within the other of the longitudinal grooves, the tabs thus constituting one of said protuberant portions.

7. A bulb-socket assembly as claimed in claim 6, in which the outwardly extending tabs have protrusions adapted to register within a recess in the bottom of said other longitudinal groove.

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U.S. Cl. X.R.

339—188, 221