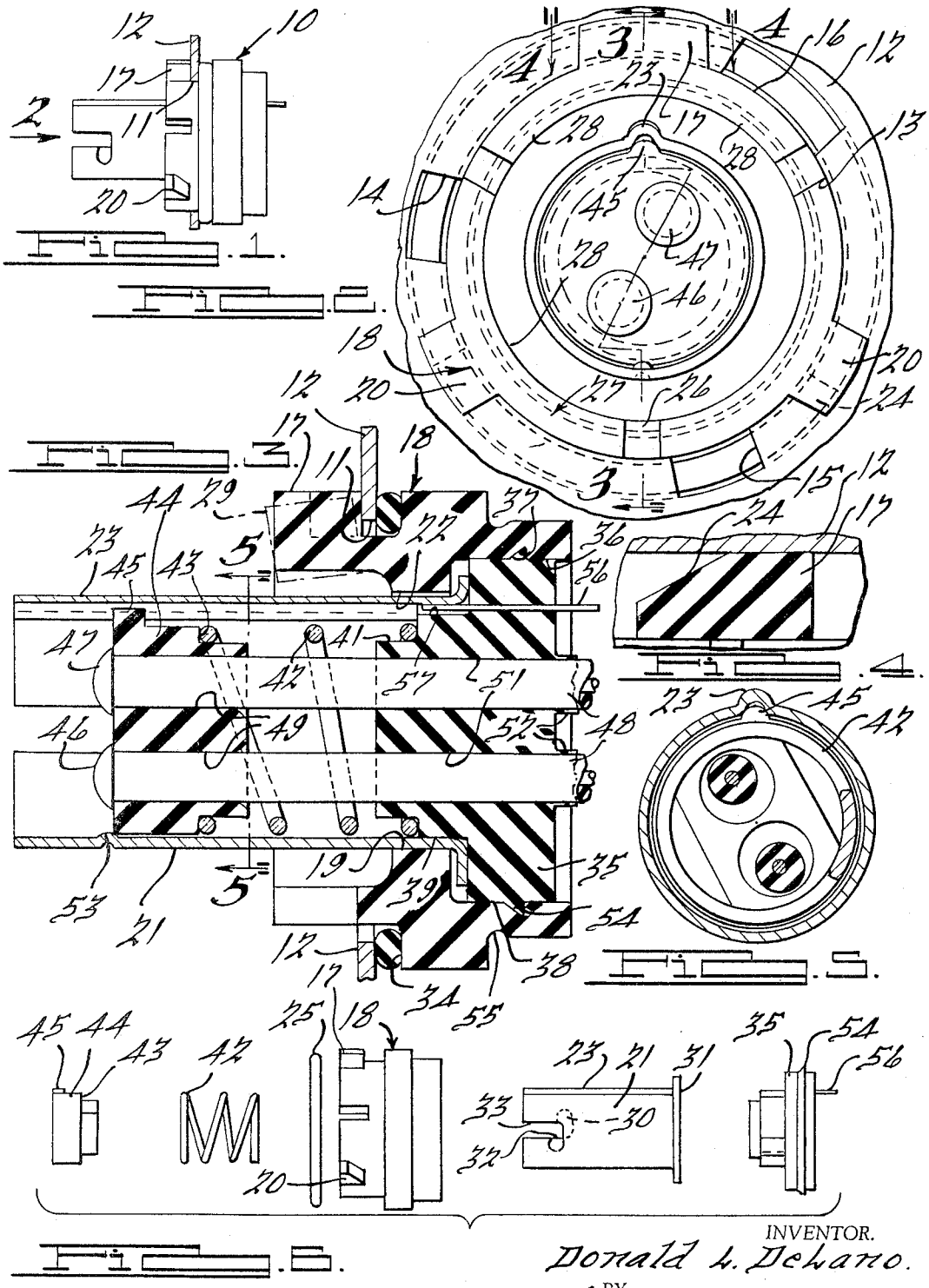
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PLASTIC LAMP SOCKET

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PLASTIC LAMP SOCKET

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ABSTRACT OF THE DISCLOSURE

A vehicle lamp socket comprising a grounded tube which receives a bayonet type lamp base and is removably secured at one end between a conductor-receiving plug and a housing portion. A spring biases a contact-carrying block in the tube to engage the lamp base. The housing portion has resilient fingers adapting it to be secured in an apertured panel, of varying thickness, in bayonet fashion.

The present socket has plastic parts which interlock with each other and with a support to form a seal against moisture, oxidation and deterioration which results therefrom. The socket supports a bulb which has a fixed focus relation with the reflector of the lamp. By so constructing the plastic parts, they may be employed with any length of tube which positions the bulb base to thereby provide a focusing arrangement for the bulb and reflector, and this may be varied for different illuminating bulbs. In the present relation, a supporting body extends through an aperture in a panel on which the socket is to be supported and is turned to provide a lock and a seal for the opening. A bulb-positioning tube is mounted within the supporting body and is locked therein by a plug extending into the end opening opposite from that which receives the bulb to form a locking seal therewith. A spring abuts the plug and engages a terminal element which is limited in outward movement within the tube; the tube and the movable element have a tongue and groove relationship for orienting the bulb relative to the support.

The supporting body, the plug and the terminal element are standard for all sockets having the same tube diameter and are employed for any length of tube thereby changing the focus length relative to the lamp reflector. The parts are so related that certain portions thereof may deflect relative to the other portions to account for the different gauge size of the metal panel having the aperture through which the socket extends and to permit the material to expand to receive the locking plug.

Accordingly, the main objects of the invention are: to provide a socket for a lamp which is self-sealable; to provide a socket for a lamp which can be employed for different focal distances by interchanging the bulb-positioning tubes thereof; to provide a socket for a lamp which has a minimum number of standardized parts all of which are employed with tubes of different length, and to provide a socket for a lamp which is simple in construction, easily installed and economical of manufacture.

Other objects and features of novelty of the invention will be specifically pointed out or will become apparent when referring, for a better understanding of the invention, to the following description taken in conjunction with the accompanying drawing, wherein:

FIGURE 1 is a view in elevation of a lamp socket mounted in a panel embodying features of the present invention;

FIG. 2 is an enlarged view of the structure illustrated in FIG. 1, as viewed from point 2 thereof;

FIG. 3 is a sectional view of the structure illustrated in FIG. 2, taken on the line 3—3 thereof;

FIG. 4 is an enlarged broken sectional view of the structure illustrated in FIG. 2, taken on the line 4—4 thereof;

FIG. 5 is a sectional view of the structure illustrated in FIG. 3, taken on the line 5—5 thereof, and

FIG. 6 is an exploded view of the lamp socket illustrated in FIG. 1.

The unit socket 10, illustrated in FIG. 1, is secured in an aperture 11 in a panel 12. As illustrated in FIG. 2 the panel 12 has a rounded aperture 13 the wall of which having been slotted at 14, 15 and 16. It will be noted that the slot 16 is wider than the slots 14 and 15 and receives a finger 17. The finger 17 is wider than fingers 20 which enter the slots 14 and 15 and in this manner the socket is oriented. The fingers 17 and 20 are carried on the retainer 18 which has a central aperture 19 to receive the socket tube 21. The wall of the aperture 19 has a recess 22 to receive the channel-shaped projection 23 along the side wall of the tube 21. It will be noted in FIG. 4 that each of the lugs 17 and 20 has a sloping face 24 at the forward end which engages the surface of the panel 12 and draws the retainer 18 and the sealing ring 25 against the opposite side thereof. Slots 26 are provided in the wall 27 of the retainer 18 for permitting the three segments to tilt to the position 29, as illustrated by a dashed line in FIG. 3, thus accounting for any variation in panel thickness. It will be noted in reference to the fingers 17 and 20 that after the retainer 18 is moved forwardly through the aperture 11 and is turned counterclockwise as viewed in FIG. 2, that the lugs will pass over the opposite side of the panel 12 and the sloping surface 24 on each of the fingers 17 and 20 will draw the retainer further inward to depress the seal 25 and rotate approximately 35° to securely lock the retainer to the panel.

It will be noted from FIG. 6 that the socket tube 21 has a bottom flange 31 and a pair of bayonet slots 32 and 33. One offset end 30 of the bayonet slots is disposed inwardly from the bulb receiving end of the tube a greater distance than the other. This arrangement orients the bulb in a predetermined position within the tube. A shoulder 34 is spaced from the lugs 17 and 20 against which the sealing ring 25 abuts so that both sides are clamped between the shoulder and the inner face of the panel 12 when the lugs engage the opposite side of the panels thereby providing a water-tight seal between the retainer body and the panel.

A plug 35 seals the bottom opening 36 of the retainer 18, the inner wall of which has an angle-shaped annular notch 37. The plug has a cylindrical portion 38 which engages the wall of the bottom opening 36. The plug also has a cylindrical wall portion 39 that extends within the tube 21. The plug also has a cylindrical portion 41 which forms a shoulder for receiving one end of a spring 42 the end of which abuts a shoulder 43 on a terminal block 44 of the socket. The block has an ear 45 which extends within the channel 23 of the tube 21 and thereby orients the terminals 46 and 47 within the tube.

Leads 48 from the terminal block 44 extend through apertures 49 therein and through the apertures 51 in the plug 35. The leads are sealed by the skin 52 which was molded over the end of the apertures 50 of the plug 35. The block 44 is retained within the tube 21 by the indentation 53 of the wall of the tube 21. The plug 35 is locked to the interior wall of the opening 36 by an angle-shaped annular projection 54 on the wall of the plug portion 38 which retains the plug locked within the retainer 18, the outer wall of the opening 36 is recessed at the point 55 to permit the annular projection 54 to deflect the material of the retainer 18 and enter the slot 37.

The plug 35 is provided with a ground element 56 made of conducting material which is sealed to the engaged material of the element 35 so positioned as to contact the inner wall of the tube 21 from which it may deflect into a

recess 57. In this way a ground lead is provided which does not interfere with the removal of the tube 21 so that a tube of a different length may be substituted for the one shown. Upon substitution of the one tube for the other, a ground contact will be provided due to the engagement of the conductor 56 with the installed tube. By sealing the various parts as pointed out hereinabove, the insulating sleeve normally employed on the lead end of the socket is eliminated. The three plastic parts, the retainer 18, the plug 35 and the terminal block 44 and the seal 25 are standard for different tubes which provide different focal lengths for different lamps. To change to any desired focal length, it is only necessary to interchange the tube 21 for a new tube having the proper length to support the filament of the bulb in relation to the reflector of the lamp.

The present socket is believed to meet a long felt need in the trade wherein the basic plastic elements are the same for all of the lamps having a standard base diameter. Only the socket tube and spring will require changing to meet the focal length requirements of many different types of lamps. The socket is a twist-in type and advantage is taken of the clamping effect on a sealing ring resulting therefrom which seals the retainer of the socket to the panel. A substantial force is obtained by the ramps on the lugs or fingers which produce the axial movement of the socket into sealed position. The material of the socket flexes when the plug is forced therein to produce a locking seal between the annular locking ridge of the plug and the groove in retainer opening. The skin in the apertures of the plug seals the insulation of the leads; and the ground lead is molded into or otherwise disposed in sealed relation to the plug. The design is unique in that it permits the automobile manufacturer to mount the retainer in the lamp aperture and have the plug, spring and terminal block mounted on the harness for the lamp.

What is claimed is:

1. In a socket for a low voltage type bulb such as employed in automotive vehicles, a retainer having supporting means, and a replaceable socket tube supported by said retainer having a central aperture closed by a plug which has a tongue and groove locking and sealing arrangement with the inner wall of the aperture and is shaped to retain said tube against said retainer, a movable lead-terminal block within the socket tube, and a spring abutting the plug and said block.

2. In a socket as recited in claim 1, wherein a plurality of ramped fingers are provided on said retainer, the fingers extending through slots in an aperture in a lamp support for drawing the retainer against the support when rotated, and a sealing element carried by the retainer engaging the opposite side of the support from that engaged by the fingers.

3. In a socket as recited in claim 2, wherein the leads from the terminal block pass through apertures in the plug and are sealed thereto by a skin of material extending over the ends of the apertures through which the leads extend.

4. In a socket as recited in claim 3, wherein a ground conductor is sealed to the plug and located in position to engage the socket tube when assembled in the retainer.

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