

[54] **VEHICLE LAMP**

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[51] Int. Cl. ....**H01r 13/48**

[58] Field of Search .....339/59-61, 75, 339/93, 94, 97, 99, 128, 176, 118, 256

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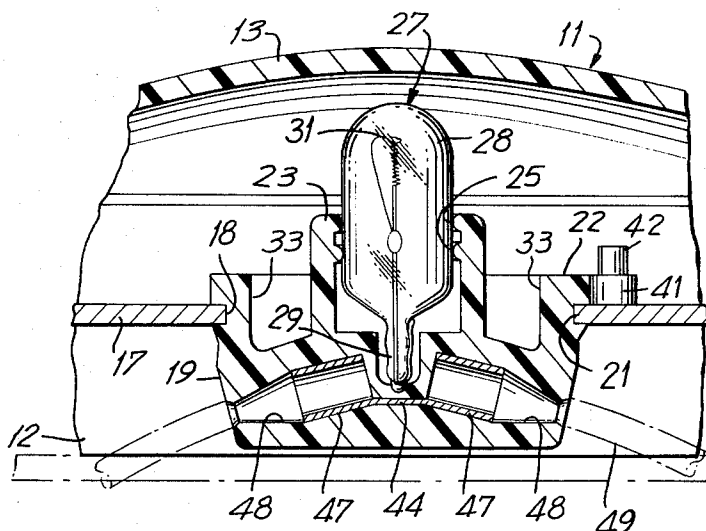
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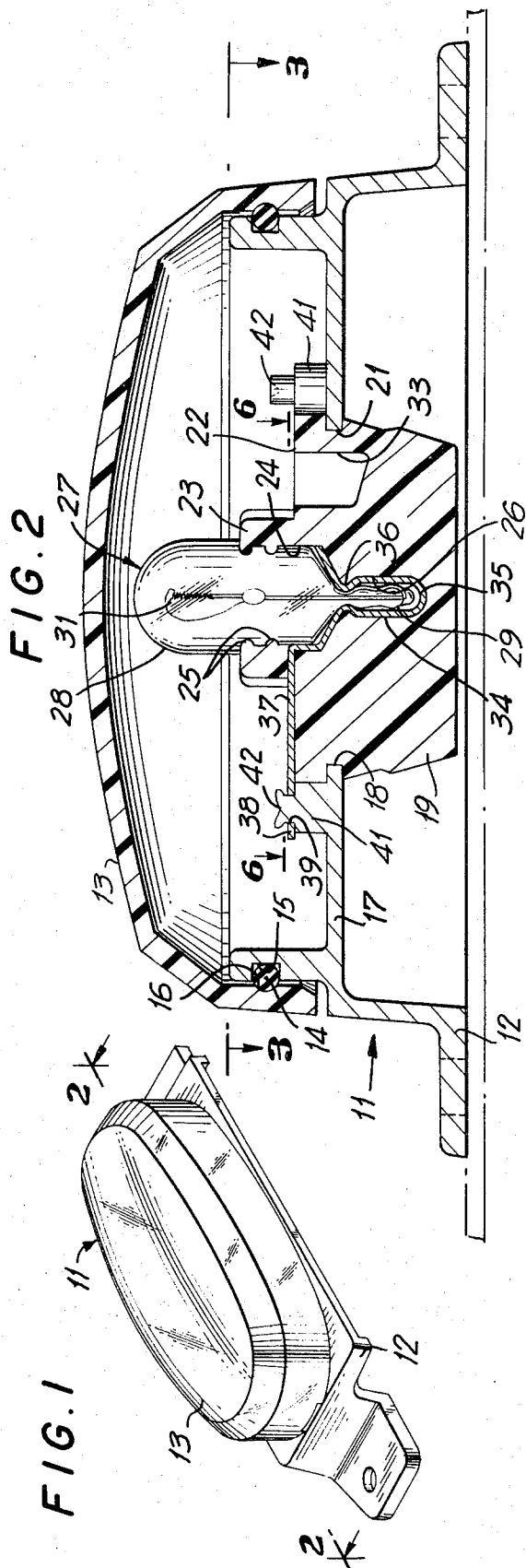
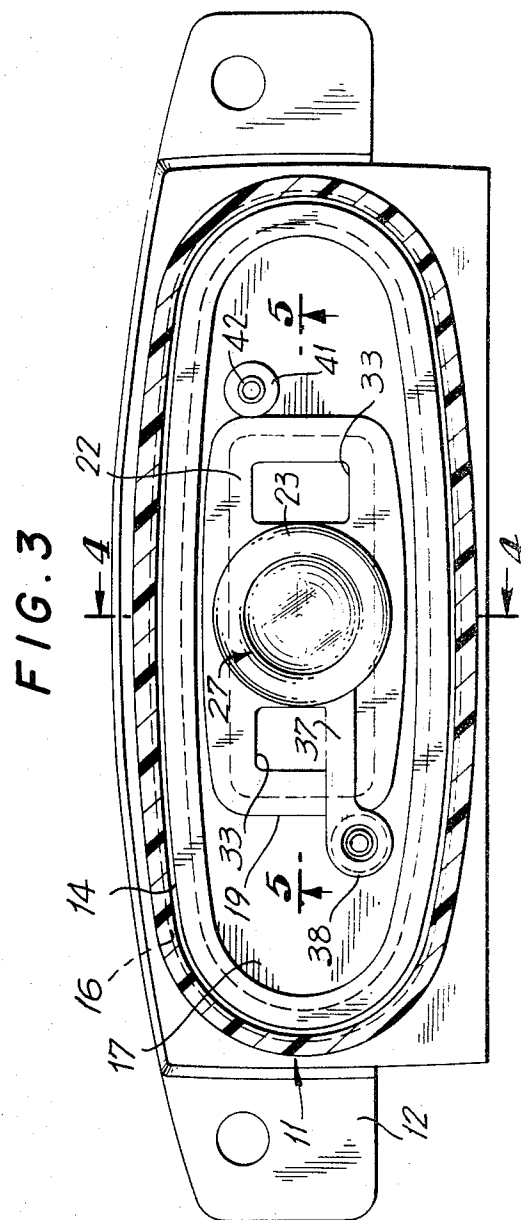
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**ABSTRACT**

A vehicle lamp especially suitable for resiliently mounting and electrically connecting a wedge-type bulb. The rigid lamp base receives a resilient socket having integrally molded contacts and the bulb is gripped above its base on the envelope portion to retain it in the socket and resiliently isolate it from road shocks.

**9 Claims, 6 Drawing Figures**





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FIG. 4

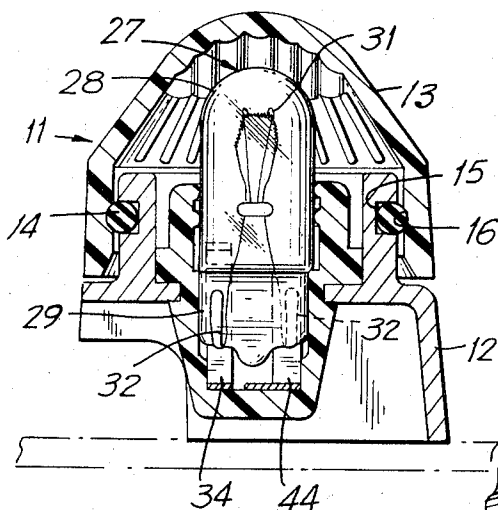


FIG. 5

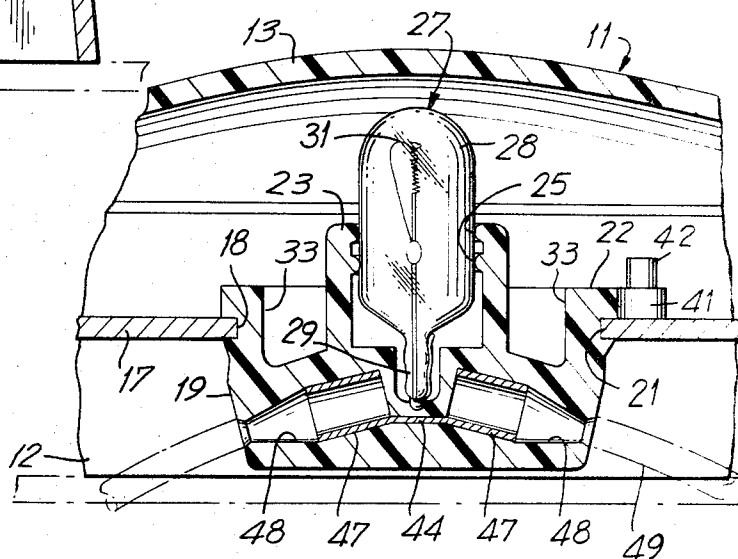
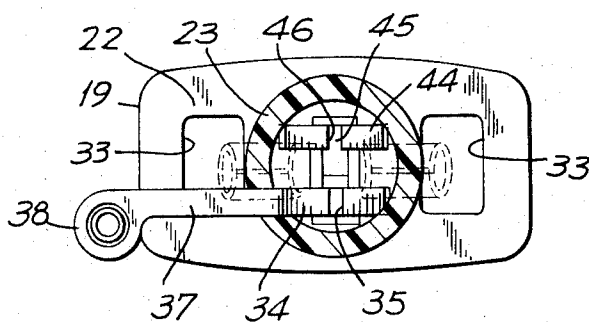


FIG. 6



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# 1

## VEHICLE LAMP

### BACKGROUND OF THE INVENTION

This invention relates generally to a vehicle lamp and more particularly to a lamp base and socket adapted to receive bulbs of the type known as wedge-type bulbs. Sockets for wedge-type bulbs have been known in the art. Bulbs with the wedge-type base do not positively engage and lock-in the socket but, instead, rely on frictional grip of the wedge base to positively retain the bulb in the socket and maintain electrical contact therewith.

In vehicle applications, the vehicle lamps are consciously subjected to road shocks and vibration which can have a damaging effect on filament life of the bulb and, in the case of a wedge-type bulb, can tend to loosen the bulb in its socket even when the socket has resilient and shock-isolating properties.

### SUMMARY OF THE INVENTION

Generally speaking, in accordance with the invention, a lamp socket is provided in cooperation with a lamp base for mounting a wedge-type bulb. The socket resiliently isolates the bulb from the lamp base while the lamp base positively retains the socket and connects the integrally-molded contacts to one side of the electrical circuit. The integrally-molded contacts make electrical connection with the bulb contacts and the bulb is retained in the socket and is resiliently supported by one or more rings formed integrally with the socket and applying a gripping force to the envelope portion of the bulb.

Accordingly, it is an object of this invention to provide a vehicle lamp of improved construction especially suitable for a wedge-type bulb.

Another object of the invention is to provide an improved resilient socket capable of gripping a wedge-type bulb on the envelope portion thereof.

A further object of the invention is to provide an improved vehicle lamp and socket assembly.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the invention will be indicated in the claims.

### BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the invention, reference is had to the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view, at reduced scale, of a typical vehicle lamp constructed in accordance with a preferred embodiment of the instant invention;

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a sectional view taken along line 4—4 of FIG. 3;

FIG. 5 is a partial sectional view taken along line 5—5 of FIG. 3;

FIG. 6 is a partial sectional view taken along line 6—6 of FIG. 2 with the bulb removed for the sake of clarity.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

A vehicle lamp indicated generally at 11 includes a lamp base 12 and a lens 13. The lens is removably mounted on the lamp base and is resiliently retained thereon by means of an O-ring 14 received in a groove 15 in the lamp base and entering a groove 16 in the lens when the lens is snapped on to the lamp base.

Lamp base 12 includes a central wall 17 with a through opening 18 in which is mounted a socket 19. The socket is formed of a resilient material such as vinyl and includes a

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peripheral groove 21 which cooperates with central wall 17 at the periphery of through-opening 18 to retain socket 19 in the mounted position as best seen in FIG. 2.

Socket 19 has a substantially flat top face 22 with an upwardly-extending collar 23. The collar defines a bore 24 with ribs 25 projecting inwardly of the bore. While a single rib 25 is deemed sufficient for the bulb-gripping function to be hereafter described, at least two ribs are preferred, with the upper of the ribs being adjacent the top end of collar 23 and the lower rib being located within the bore at a level above top face 22 of socket 19. Bore 24 extends into socket 19 below top face 22 and communicates with a rectangular bore 26 adapted to receive the wedge-shaped base of the wedge-type bulb adapted to be mounted in the socket.

The wedge-type bulb indicated generally at 27 has a generally cylindrical envelope portion 28 and a wedge-shaped base 29. The filament 31 has leads extending outwardly of the bulb through the wedge-shaped base with the leads overlying the outside surface of the wedge-shaped base. The leads are spaced on opposite sides of the wedge-shaped base and are generally indicated at 32 in FIG. 4. Such wedge-type bulbs are commercially available items with a typical bulb being manufactured by General Electric and identified as GE Lamp No. 194. To retain bulb 27 within socket 19, the inside diameter of each of ribs 25 is less than the outside diameter of the envelope portion 28 of bulb 27. The resilient ribs 25 formed as part of resilient collar 23 expand during insertion of the bulb and tightly grip the bulb through the envelope portion 28 thereof to provide primary means for retaining the bulb in the socket. The resiliency of collar 23, while gripping the bulb, performs a shock-isolating function to isolate the bulb from shocks normally imparted to the lamp base 12 when the lamp 11 is mounted on a vehicle. Collar 23 also effects a seal about the bulb against moisture and corrosion.

Rectangular bore 26 has a cross-sectional dimension greater than the cross-sectional dimension of wedge-shaped base 29 of bulb 27 whereby the rectangular bore within socket 19 does not grip the bulb.

A pair of deep recesses 33 are formed in socket 19 adjacent collar 23 and extending downwardly from top face 22. The recesses increase the effective height of collar 23 in order to increase the resiliency of the portion of the collar gripping bulb 27 for improved shock isolation.

The contacts for external electrical connection to leads 32 are molded integrally with socket 19 during the molding of the socket. A first contact 34 has a generally U-shaped lower portion 35, the lowermost portion of which extends below rectangular bore 26 into the body of socket 19 whereby the first contact is retained in the socket. Each leg of U-shaped lower portion 35 extends upwardly to define a bight 36 with the contact flaring outwardly about the bight. First contact 34 above the lowermost U-shaped lower portion 35 overlies the surface of rectangular bore 26 to expose the first contact for engagement with one of the leads 32 on bulb 27. One leg 37 of first contact 34 overlies or is embedded in socket 19 at the top face 22 thereof with an end 38 of leg 37 extending beyond socket 19 and being provided with an aperture 39.

Lamp base 12 is provided with two upwardly extending posts 41 with each post 41 having an upwardly extending pin portion 42 adapted to be received through aperture 39. Posts 41 are symmetrically disposed with respect to the through opening 18 in the lamp base. The end 38 of leg 37 overfits only one of pin portions 42 but two pin portions are provided so that, during assembly of socket 19 with lamp base 12, assembly can be accomplished regardless of whether leg 37 extends to the left as shown in FIG. 2 or extends to the right. In other words, so long as the longitudinal axes of socket 19 and lamp base 12 are aligned, the socket can be assembled thereon and aperture 39 will overfit with whichever of the pin portions 42 is adjacent thereto. After the socket 19 has been assembled over the pin portion 42, the pin portion is peened over in the manner of a headed rivet. As lamp base 12 is cast of a metal material, first contact 34 will ground one lead 32 of the bulb through lamp base 12.

Referring to FIGS. 4 through 6, a second contact 44 also has a U-shaped lower portion 45, extending into socket 19 below the level of rectangular bore 26 to thereby retain the second contact within the socket. U-shaped portion 45 extends upwardly to a bight 46 and flares outwardly to overlies the surface of rectangular bore 26 communicating with bore 24 to expose a contact for engagement with the other lead 32 of bulb 27.

A pair of tubes 47 are formed as part of second contact 42 and extend outwardly from the U-shaped lower portion joining said U-shaped lower portion at the lower end thereof. Tubes 47 are molded wholly within socket 19 and the socket is provided with tapering bores 48 for receiving therethrough lead wires indicated in phantom at 49 in FIG. 5. The lead wires are provided with bullet-shaped ends (not shown) to plug into tubes 47 to make electrical connection therewith and the tapering bores 48 tightly grip the surfaces of the lead wires to effect a seal around the lead wires and prevent the entry of moisture into the socket from below the level of central wall 17 of the lamp base 12.

Only one tube 47 need be provided for making electrical connection to second contact 44. However, if it is desired to connect several lamps 11 in line, the second tube 47 can be used to electrically connect one lamp to its succeeding lamp.

With the foregoing construction, socket 19 may be molded with first contact 34 and second contact 44 in situ. The socket is pressed into lamp base 12 and retained therein by cooperation between through opening 18 and peripheral groove 21. The leg 37 of the first contact makes electrical engagement with lamp base 12 through one of the posts 41 whose pin portion 42 is peened over. In installing the lamp 11 in a vehicle, it is merely necessary to mount the lamp on the vehicle whereby a grounding connection is made and plug one or two lead wires into the tubes 47 formed as part of second contact 44. To insert a bulb, lens 13 is removed and the bulb inserted. The bulb is retained in the socket by the gripping action of ribs 25 against the envelope portion of the bulb and the first and second contacts make electrical connection to the leads of the bulb along the wedge-shaped base thereof. By gripping the bulb along the envelope portion rather than along the wedge-shaped base, more effective gripping of the bulb results. The shock isolation provided by the collar 23 and the ribs 25 thereon minimizes the deteriorating effect on bulb life of road shocks while damping oscillation of the bulb to further minimize the harmful effects of vibration and shock as compared with sockets that grip the bulb at the wedge-shaped base only.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above construction without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying draw-

ing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is claimed is:

1. A socket for a wedge-type bulb having a substantially cylindrical envelope portion and a wedge-shaped base with leads overlying said wedge-shaped base comprising a resilient body of unitary construction, first means defining a generally circular first bore extending into said body and terminating therein, at least one rib extending inwardly of said generally circular first bore, said rib defining an inside dimension thereacross, said inside dimension being less than the cross-sectional dimension of said substantially cylindrical envelope portion of said bulb, second means defining a second bore extending into said body from the terminal end of said first bore for receiving the wedge-shaped base of said bulb, the cross-sectional dimensions of said second bore being greater than the cross-sectional dimensions of the wedge-shaped bulb base, and contacts within said second bore for electrical engagement with the leads of said bulb, whereby said bulb is gripped by said socket solely by said rib.

2. A socket as claimed in claim 1 wherein said first means defining said first bore includes a collar extending outwardly of said body and said rib is formed as part of said collar.

3. A socket as claimed in claim 2 wherein said collar includes at least two ribs spaced from one another along the longitudinal axis of said first bore.

4. A socket as claimed in claim 2 including recesses in said body adjacent said collar whereby to increase the effective height of said collar with respect to said base.

5. A socket as claimed in claim 1 wherein each of said contacts has a U-shaped portion, a bight and means for electrically connecting a circuit thereto.

6. A socket as claimed in claim 5 wherein said contacts are molded in situ in said body, the base of the U-shaped portion of each said contact being imbedded in said body.

7. A socket as claimed in claim 6 and further including a lamp base having a central wall with a through opening, said body being received in said through opening, and a peripheral groove on said body for engagement with said central wall.

8. A socket as claimed in claim 7 wherein one of said contacts includes a leg extending outwardly of said body, said lamp base having at least one upstanding pin portion for physical and electrical engagement with said leg.

9. A socket as claimed in claim 7 wherein one of said contacts includes at least one tube positioned wholly within said body, said body including a bore axially aligned with said tube for insertion of a lead wire into said tube through said bore.

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