

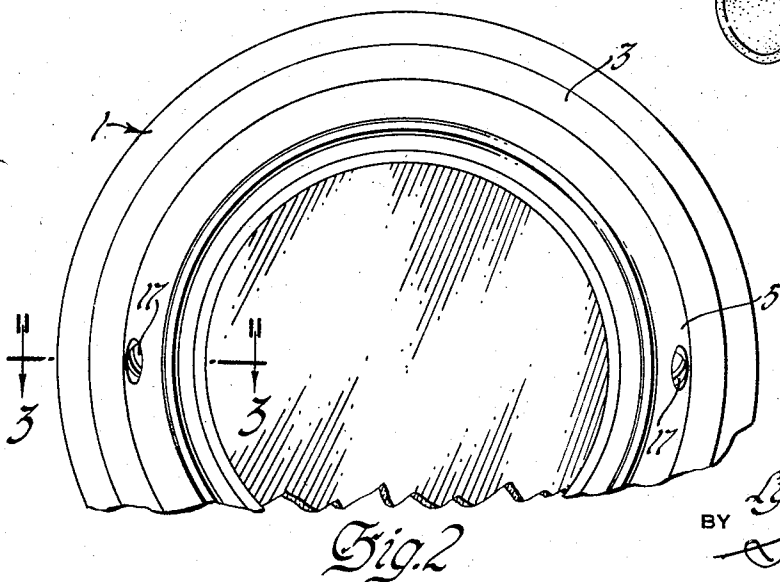
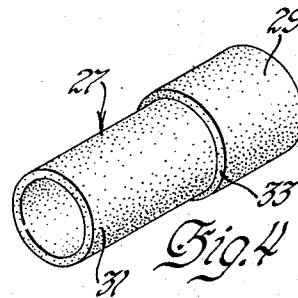
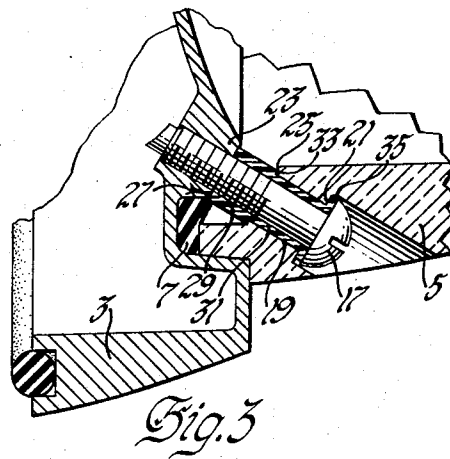
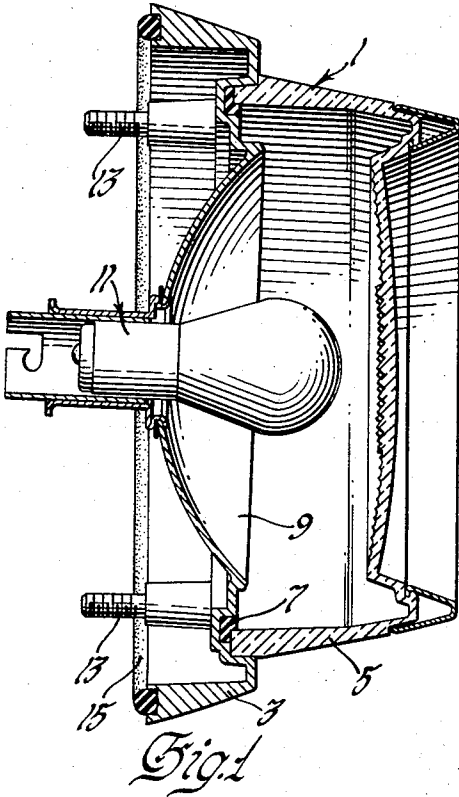
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LAMP ASSEMBLY AND LENS SECURING MEANS

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1

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LAMP ASSEMBLY AND LENS SECURING MEANS 5

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This invention relates to a method and means for securing a member upon a support and more particularly to lamp assemblies of the sealed type.

In the manufacture of lamp assemblies, it is generally required that the lens be assembled on the lamp body in sealed relationship therewith in order that the dust, moisture and other contaminants encountered under normal operating conditions, i. e., road salts in the case of automotive vehicles, be excluded from the interior of the assembly as inexpensively and as effectively as possible. It has heretofore been the practice to position the lens on the lamp body with a sealing gasket interposed between the contacting surfaces, the lens being secured to the lamp body by means of two or more spaced apart fastener bolts passing through the lens and having threaded attachment to the lamp body. A seal was achieved about the lens aperture through which the bolt was passed by providing a metal sleeve about the shank of the bolt and by interposing a plastic washer between the head of the bolt and the shoulder formed on the outer end of the sleeve.

This practice has been found to be inadequate in that it did not provide a seal about the bolt at the point of attachment to the lamp casing. Likewise, the necessity for using a sealing washer and for forming a flange on the metal sleeve added to both the cost of materials and the labor charges. Likewise, since the inner surface of the lens was frequently spaced apart from the lamp body at the point of interconnection between the elements, it was found that the lens was frequently overstrained and broken at the point of interconnection due to the fact that the lens fastener was driven too far into the lamp body during the assembly operation. In accordance with my invention as hereinafter set forth and as shown on the drawing, a simple and inexpensive means is provided for assembling the lens upon the lamp body in sealed relationship therewith and without danger of lens breakage due to overstraining the lens material at the point of interconnection with the lamp body.

It is therefore an object of my invention to provide a simple and inexpensive means for securing a member in sealed relationship upon a support. It is a further object of my invention to provide means for securing a lens upon a lamp body without destroying the seal between the members. It is a further object of my invention to provide spacer means between a lens and a lamp body at the point of interconnection of the elements. It is a further object of my invention to provide unitary spacer and sealing means between the lens and the lamp casing at their point of interconnection.

The objects of my invention are achieved by providing a fastener device adapted to pass through the member and be secured in the support, a sleeve formed of a tough but relatively deformable material being positioned about the shank of the fastening device and having its inner end in contact with the support and its outer end extending beyond the surface of the member defining

2

the aperture therein and being adapted to be flared outwardly by the fastener head to form a sealing flange.

These and other objects of my invention are achieved in the manner more specifically set forth hereinafter and as shown on the accompanying drawing wherein Figure 1 is a vertical sectional view of a lamp assembly embodying the principles of my invention; Figure 2 is a view of the lamp assembly shown in Figure 1 as seen looking head on at the lens; Figure 3 is a partial sectional view on line 3—3 of Figure 2 showing the preferred structural features of my invention; Figure 4 is an enlarged perspective view of the sleeve of my invention.

Having reference now to Figure 1, there is shown a lamp assembly 1 comprising a lamp body 3 on which there is positioned a lens 5. A sealing gasket 7 is interposed between the bottom surface of the lens 5 and the lamp body 3 in order to achieve an air-tight seal of the lamp assembly thus eliminating the deleterious effects of water, moisture, dust and other contaminants normally encountered in service operation. The lamp body 3 is provided with a central reflector-like portion 9 having an aperture provided therein in which there is mounted a conventional light bulb and socket assembly 11. Positioned on the rear surface of the lamp body 3 are two or more lamp securing elements such as stud bolts 13 in order to facilitate the mounting of the lamp assembly on the body of the using vehicle. As is shown on the drawing, a second sealing gasket 15 is positioned on the rear end surface of the lamp body 3 in order that it may be secured on the carrying vehicle in a water-tight manner. The lamp body 3 is shown by way of example only as being formed of a casting, and it should be noted that the body may be formed in any other suitable and well-known manner, as for example, by the assembly of a plurality of sheet metal stampings and/or castings.

As is shown in Figures 2 and 3, the lens 5 is secured on the lamp body 3 by means of a pair of fastener devices, bolts 17, which pass through apertures formed in the lens and are threadedly engaged with the lamp body 3. As is clearly shown in Figure 3, the lens aperture 19 is formed of two interconnecting portions, the inner portion being of smaller diameter than the outer portion thus forming an outwardly directed seating ledge 21 for the purpose hereinafter set forth. Likewise, as is clearly shown in Figure 3, the inner surface of the lens 5 is spaced apart from the lamp body 3 at the point of interconnection between the two with their corresponding surfaces about the interconnecting fastener 17 being substantially parallel and presenting an inner lamp body ledge 23 and an inner lens ledge 25.

In order to achieve the complete seal of the lamp assembly and in order to prevent the fastener bolt 17 from being threaded too far into the lamp casing 3, I have discovered that a sleeve-like member 27 formed of a tough yet relatively deformable material, i. e., nylon (polyamide resins formed of the hexamethylenediamine salt of adipic acid) polyethylene, cellulose acetates, vinylidene chlorides and other suitable plastics, may be positioned about the fastener bolt 17 in such manner as to function as a positive spacer element between the lens and the lamp body while at the same time enabling a positive seal to be attained between the bolt 17 and the lens and lamp body. As is clearly shown in both Figures 3 and 4, the sleeve 27 is formed with a large outside diameter portion 29 at its lower end and a small outside diameter portion 31 at its upper end thus presenting an outwardly directed shoulder 33. The length of the large diameter portion 29 is such as to enable the lens 5 to be secured on the sealing gasket 7 with sufficient pressure to insure an air-tight seal while at the same time limiting the distance between the lamp body ledge 23 and the lens ledge 25. In this manner undue distortion of the lens 5

3

at the point of interconnection with the lamp body 3 is substantially eliminated. At the same time the bottom surface of the sleeve 27 is urged tightly against the lamp body ledge 23 to form an air-tight seal at that point. The length of the small diameter portion 31 is such as to extend a short distance beyond the outer lens ledge 21. Upon threading the fastener bolt 17 into the lamp body 3, the pressure exerted on the outer end of the sleeve 27 by the head of the bolt flares the end of the sleeve outwardly to form a sealing flange 35 about the lens aperture.

In assembling the lamp in accordance with my invention, the sleeve 27 is first positioned in the lens with its shoulder 33 abutting ledge 25 formed on the inner surface of the lens. The lens assembly is then positioned on the lamp body 3 and the fastener bolts 17 are positioned within the sleeves and are threaded into the lamp body. The pressure exerted by the head of the bolt 17 flares the top of the sleeve and forms a sealing flange 35 about the lens aperture at the same time that the bottom surface of the sleeve 27 is pressed against the lamp body ledge 23 and forms an air-tight seal therewith. Overstraining and breakage of the lens at the point of interconnection with the lamp body 3 is precluded by means of the lower portion 29 of the sleeve which acts as a positive spacer between the lens ledge 25 and the lamp body ledge 23.

It is apparent from the foregoing description that I have been able to provide a simple and inexpensive means for attaching in air-tight relationship a lamp body and lens wherein the inner surface of the elements are spaced apart at the point of interconnection. While I have described my invention in terms of its preferred embodiment, a lamp assembly, it should be understood that other variations will be apparent to those skilled in the art, i. e., the application of my attaching means to elements other than a lens and lamp body, and it should be understood that such other variations are within the scope of my invention as set forth in the claims which follow.

I claim:

1. In combination, a lamp body, a lens secured to said lamp body and having an aperture therein, a bolt positioned in said aperture and formed with a head and with a shank portion threadedly secured to said lamp body, a first seating ledge formed on said lamp body about said shank portion, a second seating ledge formed on said lens about the aperture, a plastic sleeve positioned about said bolt and passing through the aperture, the inner end of said sleeve contacting said first seating ledge and forming an air-tight seal therewith, the outer end of said sleeve being flared radially outwardly to form an annular flange clamped between said head and said second seating ledge thus forming an air-tight seal therebetween, and a shoulder formed on the outer surface of said sleeve, said shoulder being in contact with the inner surface of said lens about the aperture to function as a stop for said lens and to space said lens a predetermined distance from said lamp body.

2. In combination, a support, a member secured to said support and having an aperture therein, a bolt posi-

4

tioned in said aperture and formed with a head and with a shank portion threadedly secured to said support, a first seating ledge formed on said support about said shank portion, a second seating ledge formed on said member about the aperture, a plastic sleeve positioned about said bolt and passing through the aperture, the inner end of said sleeve contacting said first seating ledge, the outer end of said sleeve being flared radially outwardly to form an annular flange clamped between said head and said second seating ledge thus forming a seal therebetween, and a shoulder formed on the outer surface of said sleeve, said shoulder being in contact with the inner surface of said member about the aperture to function as a stop for said member and to space said member a predetermined distance from said support.

3. In combination, a lamp body, a frangible lens secured to and in direct contact with said lamp body and having an aperture therein, a bolt positioned in said aperture and formed with a head and with a shank portion threadedly secured to said lamp body, said bolt head being positioned on the outer surface of said lens to clamp said lens on said lamp body, a seating ledge formed on said lamp body about said shank portion, a tough plastic sleeve positioned about said bolt with the inner end of the sleeve contacting said seating ledge, a shoulder formed on the outer surface of said sleeve, the inner surface of said lens about the aperture being seated on said shoulder which serves as a stop for said lens to space said lens a predetermined distance from said lamp body and preclude overstraining and breakage of the lens.

4. In combination, a support, a frangible member secured to and in direct contact with said support and having an aperture therein, a bolt positioned in said aperture and formed with a head and with a shank portion threadedly secured to said support, said bolt head being positioned on the outer surface of said member to clamp said member on said support, a seating ledge formed on said support about said shank portion, a tough plastic sleeve positioned about said bolt with the inner end of the sleeve contacting said seating ledge, a shoulder formed on the outer surface of said sleeve, the inner surface of said member about the aperture being seated on said shoulder which serves as a stop for said member to space said member a predetermined distance from said support and preclude overstraining and breakage of the member.

References Cited in the file of this patent

UNITED STATES PATENTS

2,097,071	Lichten	Oct. 26, 1937
2,129,933	Hueglin	Sept. 13, 1938
2,137,480	Dye	Nov. 22, 1938
2,318,715	Rolph	May 11, 1943
2,606,772	Mead et al.	Aug. 12, 1952
2,640,910	Talley	June 2, 1953

FOREIGN PATENTS

416,828	France	Aug. 16, 1910
129,938	Australia	Nov. 10, 1948