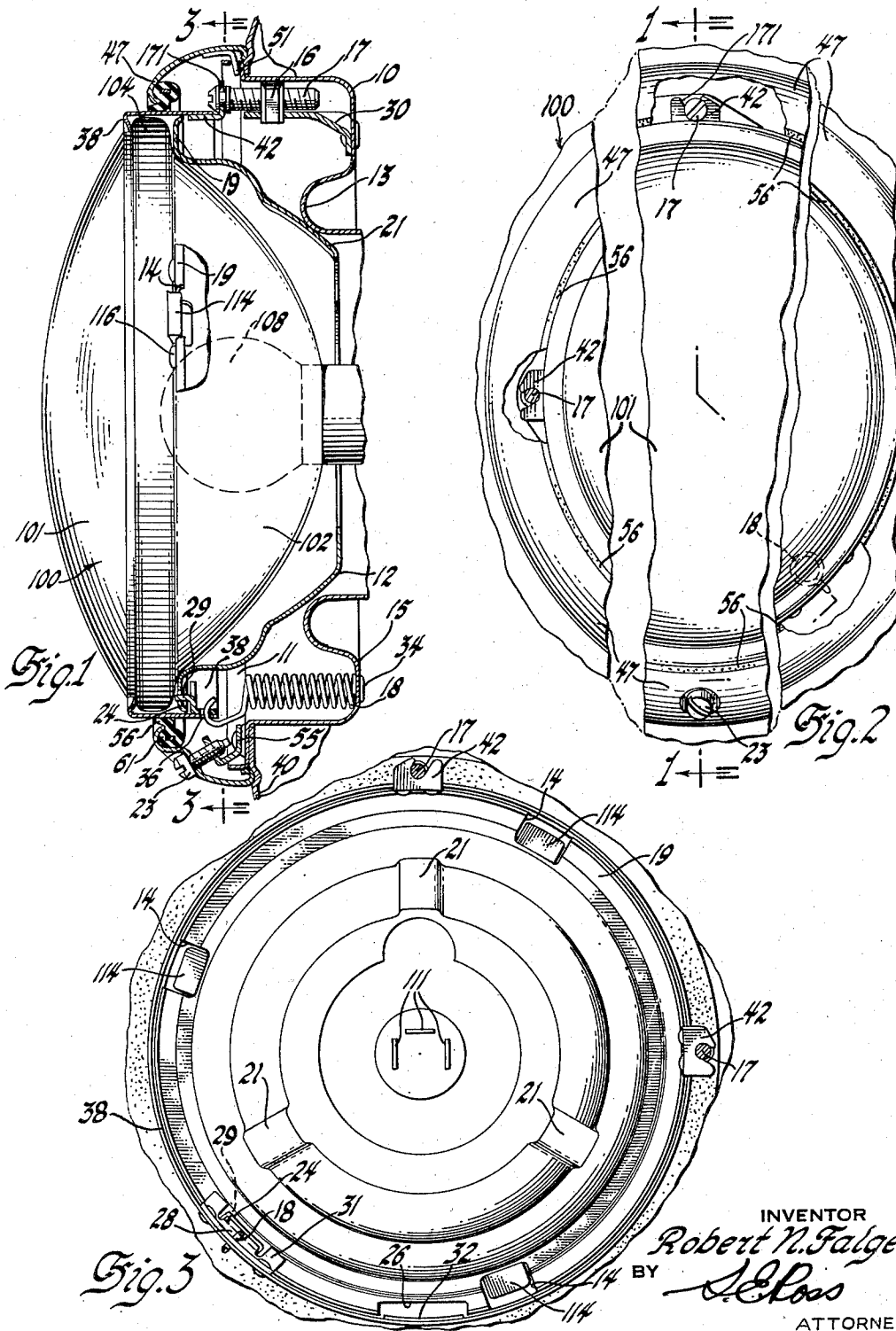


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LAMP MOUNTING

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This invention relates to mountings for lighting units, such as the sealed beam type lighting unit commonly used in automobile headlamps.

It has always been difficult to so mount a lighting unit in an automotive vehicle as to be readily adjustable to enable aiming of the light beam for optimum illumination and still obtain a structure that is both inexpensive and rugged enough to withstand the continued shock to which it is subjected in use. The state of the art was advanced along these lines by the ball and socket type lamp mounting disclosed in the patent to Mead et al., 2,266,329, wherein a sealed beam lighting unit is positioned in a spherically shaped mounting ring by means of a retaining ring seated on the front peripheral edge of the lens and bolted to the mounting ring thus forming a ball type subassembly. The subassembly is adjustably secured in a socket like lamp housing by means of a combination of springs and adjusting screws acting between the lamp housing and the mounting ring.

The necessity for providing a plurality of mounting ears both on the retaining ring and on the mounting ring resulted in a relatively expensive assembly due to cost of materials and the necessity for special fabricating operations. For example, the retaining ring had to be formed from a doughnut or continuous blank. The necessity for assembling the retaining ring to the mounting ring required the use of power drivers and the complete installation of two screws before the third screw could be started, at which point the retaining ring tended to become misaligned making it very difficult to assemble the third screw. Further, in order to compensate for the variations in stack-up of the several components, the present retaining ring has three slits in its side located equally around it above the turned out mounting ears. This not only necessitates further operations in the production cycle but also results in the ring having a tendency to flare out over the adjustment screw heads thus making it difficult to adjust the headlamp.

It is therefore an object of my invention to provide an improved headlamp mounting which is both rugged and inexpensive to manufacture.

It is a further object of my invention to provide an improved headlamp mounting which is both simply adjustable from the front of the unit and simply and easily assembled and disassembled.

To attain these objects, I have provided a headlamp assembly in which the ball type lighting assembly is attached to the socket type lamp housing through adjusting means connecting the retaining ring to the lamp housing.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred form of the present invention is clearly shown.

In the drawing:

Figure 1 is a side view of my lamp assembly with parts broken away and taken in line 1—1 of Fig. 2.

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Figure 2 is a front view of my lamp assembly with parts broken away.

Figure 3 is a rear view of my lamp assembly with parts broken away and taken substantially on line 3—3 of Fig. 1.

Referring now to the drawing and more particularly to Figure 1, there is shown a lighting unit 100 consisting of a lens 101, reflector 102 and bulb 103. The lighting unit shown in my preferred embodiment is of the all glass sealed beam type having a bead 104 formed at the peripheral edge of the lens and reflector at the plane of junction. It should of course be understood that a lighting unit of the sealed beam type having a metallic reflector or any other suitable lighting unit may be used with the mounting of my invention.

The bead 104 is provided with unequally spaced locating lugs 114 which serve to so orient the lighting unit as to properly locate the lamp in its assembled position with respect to the vehicle.

Bulb 103 is provided with terminals 111 to which current is supplied through a suitable connector and wires.

A lamp support 40 is provided which may be either the conventional lamp mounting bracket or the fender or body panel forming the aperture in which the lamp assembly is mounted.

A cup-shaped lamp body 10, formed by casting, stamping or molding, is fitted in the opening in the lamp support and is secured to the support by any suitable means such as by welding, bolting, etc.

The body 10 consists of, as best shown in Figure 1, a central cup-shaped portion having a rolled brim 13 surrounded by an annular channel 15 on the outer periphery of which is formed the flange 11. Brackets 30 are secured within the channel 15 at one side of and at the top of the channel, and are provided with threaded nuts 16 at the outer ends for receiving adjusting screws 17.

Within the body 10 there is seated a mounting ring 12 comprising a stamping having a substantially spherically formed surface which cooperates with the body 10 to provide a universal joint. Mounting ring 12 is provided with spaced outwardly pressed ribs 21 which rest upon the rolled brim 13 of the body 10, thus providing the universal ball and socket joint. It should be noted that the bearing surfaces 21 may be provided by other convenient means such as a plurality of generally spherically contoured lands attached to the outer surface of the mounting ring by such means as welding or brazing. It should be noted that the contacting surface between the ball and socket members is kept to a minimum by the specific structure disclosed.

The mounting ring 12 is provided with an irregular radial peripheral flange 19 which is provided with a plurality of unequally spaced slots 14 for receiving locating lugs 114 provided on the lamp bead 104. Two additional slots 24 and 26 are provided on the lower portion of the flange. Slot 24 cooperates with a supporting bracket 23 attached to retaining ring 33. Slot 26 cooperates with joining plate 32.

Particular attention is here directed to the fact that I am able to accomplish a great saving in material and simplification of forming operation in that by my invention I am able to omit the return axial bend of the flange 19 and the plurality of lateral ears formed at the edge thereof, as is presently used in the art. Thus, I am able to employ a blank of much smaller size for the mounting ring.

Within the channel 15, at the bottom and at the side generally opposite the adjusting screws 17, there is secured a rivet 34 which serves as an anchor for the yieldable attaching means, coil spring 18 or any other suitable resilient member. The other end of the spring is re-

movably hooked in an aperture provided in the retaining ring 38.

The lighting unit 100 is seated within the mounting ring 12 with the lugs 114 seated in the locating slots 14 in the periphery of the ring. Spacer steps 116 provided on the rear surface of the bead 104 adjacent the locating lugs serve to hold the lighting unit spaced from the periphery of the stamping 12 thereby giving three point support and permitting the lighting unit to readily find its seat.

The lighting unit 100 is held in place by means of retaining ring 38 which overlaps the front edge of the unit as is clearly shown on Figure 1. Ring 38 is attached directly to the lamp body 10 by means of adjusting screws 17 and spring 18. A pair of connecting lugs 42 are attached to the top and one side, the inside surface as shown in Figure 1, of ring 38 and are slotted to engage grooves 171 formed on the shank of adjusting screws 17, as is best shown in Figure 1. A hole 36 is provided at the side of the retaining ring opposite lugs 42 to enable spring 18 to be hooked thereto. The pressure exerted by the spring and opposed by the adjusting screws acts to clamp the lighting unit and its ball type mounting ring 12 between the retaining ring 38 and the lamp body 10. It should be noted that the lighting unit, mounting ring and retaining ring constitute a subassembly in the headlamp of my invention as is more particularly described hereinafter.

A supporting bracket 28 is fastened to the inner surface of the retaining ring 38 at the rear edge thereof and in such position as to be aligned with slot 24 in flange 19 of the mounting ring. A forwardly projecting tang 29 is provided on the bracket and projects into slot 24 thus locating the retaining ring with respect to the mounting ring and lighting unit. The radially projecting portions 31 of the bracket 28 serve to support the mounting ring within the retaining ring. In this respect, it should be noted that the inside diameter of the retaining ring is such that a loose sliding friction fit is obtained between the retaining ring and the mounting ring. As is clearly shown in Figure 1, the diameter of the flange 19 is substantially equal to the inside diameter of the ring 38 and the ends of the connecting lugs or bracket 42 and the projecting portions 31 serve as stops to support and removably retain the mounting ring 12 within the retaining ring 38 to form a subassembly with the lighting unit. In this manner, the subassembly above identified may be handled for installation and removal without the separation of the several components.

By reason of the fact that I have eliminated the turned out ears and fastening screws on the retaining ring I am able to make the ring from strip stock with a weld or other suitable joint rather than from the present doughnut blank. In this manner I am able to accomplish a further saving in both material and operation cost.

As best shown in Figure 3, retaining ring 38 is secured with its ends in abutment by spot welding the two ends to a joining plate 32 on the inner surface of the ring. A slot 26 is formed on flange 19 in alignment with plate 32 so as to enable easy assembly of the retaining ring over the mounting ring 12.

Bezel 47 is provided at the top with a tang 51 engaging an aligned aperture in the flange 11 of body 10 and is provided at its lower end with a fastener 23 having threaded engagement with stamping 55 riveted or otherwise fixed to the outer radial flange of the body 10. The outer periphery of the bezel 47 engages support 40 thus making a neat joint.

Bezel 47 has its inner edge in-turned to form a channel in which a rubber sealing gasket 61 is secured. The elongated sealing end 56 of the gasket is in contact with ring 38.

With the parts assembled as shown, it is apparent that adjustment of the aim of the lamp is accomplished by first

removing the bezel 47 by unscrewing fastener 23. Thereafter the vertical aim may be adjusted by turning the top aiming screw 17 and the horizontal aim may be adjusted by turning the side adjusting screw 17. Such adjustment is opposed by the spring 18 which continually urges the ball shaped stamping 12 into its socket member 10.

If it is desired to replace the lighting unit it is merely necessary to unhook spring 18 from ring 38 and slide the lighting unit subassembly downwardly and outwardly from the adjusting screws 17. The lighting unit is then removed from the mounting ring by merely pressing the top of the retaining ring 38 from over the bead 104 and peripheral edge of flange 19. Attention is directed to the simplicity of this procedure in that it is no longer necessary to remove a plurality of screws, presently used to connect the retaining ring to the mounting ring, it being merely necessary to unhook spring 18.

It is apparent that the reverse procedure is used in assembling the headlamp of my invention.

Various other modifications as well as other uses for the invention will occur to those skilled in the art. While the form of the embodiment of the invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted as may come within the scope of the claims which follow.

What is claimed is:

1. In a headlamp, the combination of a lighting unit comprising a reflector, lens and light source within the reflector, a mounting therefor having a spherical surface extending over said reflector and its center substantially on the reflector axis, a ring overlapping the front edge of the unit, a support for said lighting unit and said mounting comprising a cup-shaped member having a rolled brim, connecting means attached to the top and one side of said ring, yieldable attaching means connected at one end to said support and at the other end to said ring for yieldingly urging the lighting unit and mounting into engagement with said rolled brim at one side of said ring, and adjusting means adjustable from the front of the lighting unit and attached at one end to said support and at the other end to said connecting means at the side of said ring generally opposite said yieldable attaching means to resist the pressure of said yieldable attaching means and permit aiming of the lighting unit.

2. The combination of a lighting unit comprising a reflector, lens and light source within the reflector, a mounting therefor having a spherical surface extending over said reflector and its center substantially on the reflector axis, a ring overlapping the front edge of the unit, a support for said lighting unit and said mounting comprising a cup-shaped member having a rolled brim, connecting means attached to the top and inside surface of said ring, yieldable attaching means connected at one end to said support and at the other end to said ring for yieldingly urging the lighting unit and mounting into engagement with said rolled brim at one side of said ring, and adjusting means attached at one end to said support and at the other end to said connecting means at the side of said ring generally opposite said yieldable attaching means to resist the pressure of said yieldable attaching means and permit aiming of the lighting unit, said mounting being retained in said ring to form a lighting unit subassembly by the portion of said connecting means secured to said ring.

3. The combination of a lighting unit comprising a reflector, lens and light source within the reflector, a mounting therefor having a spherical surface extending over said reflector with its center substantially on the reflector axis, a ring overlapping the front edge of the unit, a support for said lighting unit and said mounting comprising a cup-shaped member having a rolled brim, connecting means attached to the top and one side of said ring, supporting means attached to the inner surface

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of said ring and extending radially inward thereof at a position generally opposite said connecting means, said mounting being freely supported in said ring by said supporting means to form a loose readily separable subassembly, yieldable attaching means having one end connected to said support and the other end to said ring for yieldingly urging the lighting unit and mounting into engagement with said rolled brim at one side of said ring, and adjusting means having one end attached to said support and the other end to said connecting means at the side of said ring generally opposite said yieldable attaching means to resist the pressure of said yieldable attaching means and permit aiming of the lighting unit.

4. The combination of a lighting unit comprising a reflector, lens and light source within the reflector, a mounting therefor having a spherical surface extending over said reflector with its center substantially on the reflector axis, a ring overlapping the front edge of the unit, a support for said lighting unit and said mounting comprising a cup-shaped member having a rolled brim surrounded by an annular channel, said ring being formed of a metal strip, a pair of lugs attached to the top and inner surface of said ring, a supporting bracket attached to the inner surface of said ring and extending radially inward thereof at a position generally opposite said lugs, said mounting being freely supported in said ring by said bracket, a spring having one end attached to said support in said annular channel and the other end to said ring for yieldingly urging the lighting unit and mounting into engagement with said rolled brim at one side of said ring and adjusting screws having one end attached to said support in said annular channel and the other end to said lugs at the side of said ring generally opposite said spring to resist the pressure of the spring and permit aiming of the lighting unit.

5. The combination of a lighting unit comprising a reflector, lens and light source within the reflector, a mounting therefor having a spherical surface extending over said reflector with its center substantially on the reflector axis, a ring overlapping the front edge of the unit, a support for said lighting unit and said mounting comprising a cup-shaped member having a rolled brim surrounded by an annular channel, said ring being formed of a metal strip having its ends in abutting relationship and attached to a plate positioned on the inner surface of the ring, a pair of lugs attached to the top and inner surface of said ring, a spring having one end attached to said support in said annular channel and the other end to said ring for yieldingly urging the lighting unit and mounting into engagement with said rolled brim at one side of said ring and adjusting screws having one end attached to said support in said annular channel and the other end to said lugs at the side of said ring generally opposite said spring to resist the pressure of the spring and permit aiming of the lighting unit, said mounting being retained in said ring to form a lighting unit subassembly by the portion of said lugs secured to said ring.

6. In the combination of a lighting unit comprising a reflector, lens and light source within the reflector, a mounting therefor having a spherical surface extending over said reflector and its center substantially on the reflector axis, a flange formed on the rim of said mounting and extending generally radially outward, a ring overlapping the front edge of the unit and a support for said lighting unit and said mounting comprising a cup-shaped member having a rolled brim, the invention comprising connecting means attached to the top and inner surface of said ring, yieldable attaching means having one end connected to said support and the other end to said ring for yieldingly urging the lighting unit and mounting into engagement with said rolled brim at one side of said ring, and adjusting means having one end attached to said support and the other end to said connecting means at the side of said ring generally opposite said yieldable attaching means to resist the pressure of said yieldable

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attaching means and permit aiming of the lighting unit, the diameter of said flange being substantially that of the inside diameter of said ring, said mounting being freely retained within said ring by the end of said connecting means attached to said ring to form a lighting unit subassembly.

7. In the combination of a lighting unit comprising a reflector, lens and light source within the reflector, a mounting therefor having a spherical surface extending over said reflector and its center substantially on the reflector axis, a ring overlapping the front edge of the unit and a support for said lighting unit and said mounting comprising a cup-shaped member having a rolled brim, the invention comprising connecting means attached to the top and inner surface of said ring, locating means on said ring co-acting with said mounting to enable their correct assembly, yieldable attaching means having one end connected to said support and the other end to said ring for yieldingly urging the lighting unit and mounting into engagement with said rolled brim at one side of said ring, and adjusting means having one end attached to said support and the other end to said connecting means at the side of said ring generally opposite said yieldable attaching means to resist the pressure of said yieldable attaching means and permit aiming of the lighting unit, said mounting being retained in said ring by said connecting means to form a lighting unit subassembly.

8. In the combination of a lighting unit comprising a reflector, lens and light source within the reflector, a mounting therefor having a spherical surface extending over said reflector with its center substantially on the reflector axis, a ring overlapping the front edge of the unit and a support for said lighting unit and said mounting comprising a cup-shaped member having a rolled brim, the invention comprising connecting means attached to the top and one side of said ring, supporting means attached to the inner surface of said ring extending substantially radially inward thereof at a position generally opposite said connecting means and having a forward extending portion projecting into an aperture formed in said mounting, said mounting being freely retained in said ring and being oriented with respect thereto by said supporting means, yieldable attaching means having one end connected to said support and the other end to said ring for yieldingly urging the lighting unit and mounting into engagement with said rolled brim at one side of said ring, and adjusting means having one end attached to said support and the other end to said connecting means at the side of said ring generally opposite said yieldable attaching means to resist the pressure of said yieldable attaching means and permit aiming of the lighting unit.

9. In the combination of a lighting unit comprising a reflector, lens and light source within the reflector, a mounting therefor having a spherical surface extending over said reflector with its center substantially on the reflector axis, a ring overlapping the front edge of the unit and a support for said lighting unit and said mounting comprising a cup-shaped member having a rolled brim surrounded by an annular channel, the invention comprising said ring being formed of a metal strip, a pair of lugs attached to the top and inner surface of said ring, a supporting bracket attached to the inner surface of said ring at a position generally opposite said lugs and having a locating tang projecting into an aperture formed in said mounting, said mounting being freely supported in said ring by said bracket and said lugs, a spring having one end attached to said support in said annular channel and the other end to said ring for yieldingly urging the lighting unit and mounting into engagement with said rolled brim at one side of said ring and adjusting screws having one end attached to said support in said annular channel and the other end to said lugs at the side of said ring generally opposite said spring to resist the pressure of the spring and permit aiming of the lighting unit.

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10. In the combination of a lighting unit for a head-lamp comprising a reflector, lens and light source within the reflector, a mounting therefor having a spherical surface extending over said reflector with its center substantially on the reflector axis, a flange formed on said mounting, a ring overlapping the front edge of the unit and a support for said lighting unit and said mounting comprising a cup-shaped member having a rolled brim surrounded by an annular channel, the invention comprising said ring being formed of a metal strip having its ends in abutting relationship and attached to a plate positioned on the inner surface of the ring, a pair of lugs attached to the top and inner surface of said ring, a supporting bracket attached to the inner surface of said ring at a position generally opposite said lugs, and having a locating tang projecting into an aperture formed in said flange, said mounting being freely supported in said ring by said bracket and said lugs to form a lighting unit subassembly, a spring having one end attached to said support in said annular channel and the other end 20

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to said ring for yieldingly urging the lighting unit and mounting into engagement with said rolled brim at one side of said ring and adjusting screws having one end attached to said support in said annular channel and the other end to said lugs at the side of said ring generally opposite said spring to resist the pressure of the spring and permit aiming of the lighting unit, the diameter of said flange being substantially that of the inside diameter of said ring.

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