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SNAP-IN LENS

John H. Diedring, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich., a corporation of Delaware

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1 Claim. (Cl. 240—151)

The present invention relates to lamps and, in particular, to a snap-in lens for use in a lamp assembly.

Lamp assemblies of the type herein contemplated normally include a substantially cylindrical body shell enclosing a light source, and having an open end in which a lens may be mounted by a door usually secured to the body shell by threaded fastening means. It is sought by this invention to provide a lamp assembly into which the lens may be snapped without the use of any threaded fastener means while maintaining the lens securely in position. By eliminating the need for threaded fasteners, the assembly time of such lamps is decreased while also facilitating replacement of the light source of the lamp.

Therefore, it is a principal feature and object of this invention to provide a lamp assembly of the type comprising a body shell having an open end with a mounting structure for a lamp lens which permits the latter to be snapped into place without the use of any threaded fasteners.

More specifically, it is an object and feature of this invention to provide the body shell of the aforementioned lamp assembly with suitable means forming a seat in which a resilient retaining ring may be clamped, a suitable seat being provided within the retaining ring for receiving a lens which is snapped therein.

According to another object and feature of this invention, it is intended to provide a snap-in lens construction of the type aforescribed with means for locating the lens with respect to the light source whereby proper distributional control of the light rays emanating from the latter will be obtained.

These and other features, objects and advantages of this invention will appear more fully hereinafter as the description of the invention proceeds, and in which reference is made to the following drawing in which a preferred embodiment of this invention is shown.

In the drawings:

Figure 1 is a fragmentary vertical cross section of the snap-in lens of this invention;

Figure 2 is a fragmentary perspective view of the lens locating means shown in Figure 1; and

Figure 3 is another cross sectional view similar to that of Figure 1, but particularly showing the configuration of the parts of the assembly to either side of the locating means specifically shown in Figure 2.

In the drawings, a substantially cylindrical body shell 2 which is usually a diecast metal is shown as having an open end surrounded by a forward terminal portion of the wall of the shell comprising inner and outer oppositely disposed circumferentially extending walls 4 and 6, respectively, so shaped as to form therebetween a seat 8 semi-cylindrical in cross section to receive the semi-cylindrical bead 10 of a retaining ring or door 12 which may be made of rubber or other resilient or flexible material. The walls 4 and 6 are diecast with the lamp body with the inner wall 4 being outwardly curled to firmly clinch the bead 10 of the retaining ring in place.

The retaining ring 12 includes an annular wall portion

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14 having a rearwardly disposed shoulder adapted for abutment with the forward face of the outer body shell wall 6 at 16, and a radially inwardly projecting flange 18 at its forward end. An annular groove 20 is formed on the interior surface of the retaining ring wall 14 immediately to the rear of the retaining ring flange 18, and is adapted to receive a radially outwardly projecting flange 22 on the lamp lens 24 preferably molded from plastic. With the lens seated as shown in the drawing, the inner peripheral surface of the ring flange 18 will seat about and on the outer peripheral surface of the lens 24 at 26.

From the construction so far described, it will be readily appreciated that the retaining ring 12 is firmly clamped to the body shell. Thereafter, the flange 22 of the lens will be snapped past the retaining ring flange 18 so as to be seated in the groove 20. In snapping the lens into the retaining ring, the latter due to its inherent resiliency will spread outwardly and against the aforementioned shoulder on the outer wall of the body shell at 16. With the lens in place, the inherent resiliency of the retaining ring may be sufficient to retain the lens in place. However, it may be advisable and probably preferable to utilize the abutment at 16 of the outer wall of the lamp body with the retaining ring so as to at least slightly tension the latter about the radial flange of the lens.

It will be noted that the plastic lens 24 has molded on its inner surface a plurality of fluted or serrated portions 27 and 28 adapted to provide differing distributional control to light rays passing through the lens from the light source 30. Particularly where multiple optical devices of this type are employed for distributional control of the light, it will be necessary to properly locate the lens 24 with respect to the light source. For this purpose, an integral locating lug 32 of limited circumferential and axial extent is formed on the interior surface of the retaining ring 12, and is adapted to be seated in a recess 34 formed in the inner and outer walls of the body shell. Moreover, the groove 20 in the retaining ring is suitably apertured at 36 to receive a locating tang 38 formed as a projection from a portion of the lens flange 22.

It will therefore be seen that the retaining ring can only be mounted to the body shell in one position thereby locating the aperture 36 in the retaining ring in a fixed position with respect to the light source. It follows, therefore, that with the tang 38 projecting through the aperture 36, the lens 24 will also be located in proper position with respect to the light source to achieve the desired distributional control of the light emanating therefrom.

It will also be noted from Figure 1, that the side wall of the body shell 2 may have an aperture formed therein for receiving an outlook lens 40. Only one end of the lens is shown, but it will be appreciated that both ends are identical. The edge 42 of the body shell forming the outlook lens-receiving aperture has a substantially U-shaped gasket 44 seated thereon which has a semi-cylindrical bearing surface 46 adapted to cooperate with a similar surface on the outlook lens. The gasket 44 is resilient whereby the inner wall 50 of the lens, which is of greater width than the outer wall thereof, is adapted to be snapped past the bearing surface 46 of the gasket for seating the outlook lens in the body shell aperture.

From the foregoing description, it may be seen that the snap-in lens construction of this invention provides a relatively simple means for mounting a lens in a lamp assembly. Moreover, by utilizing the resilient retaining ring construction particularly, the lens is not only easily mountable in the assembly, but also readily demountable for the purpose of lamp maintenance or, in general, access to the interior of the assembly for any purpose de-

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sired. Moreover, the locating means specifically disclosed by this invention will insure proper distributional control of light rays emanating from the assembly even though different optical surfaces are employed on the lens for effecting varying distribution of the light rays emanating from the lamp.

It should be readily apparent that various modifications in the construction of this assembly will be apparent to those skilled in the art and that, therefore, the construction shown has been selected merely for illustrative purposes and is not intended to limit the scope of the invention which is defined by the claim which follows.

What is claimed is:

In combination, a lamp having a body shell with an open end, radially oppositely disposed axially extending inner and outer walls at the open end of said body shell and shaped to define therebetween an axially forwardly opening seat semi-cylindrical in cross section, a resilient retaining ring having a bead clinched in said seat between said walls and an axially forwardly extending annular wall portion terminating in a radially inwardly directed

annular flange, an annular groove in the interior surface of said retaining wall immediately to the rear of said flange, an axially rearwardly facing shoulder on the exterior of said retaining ring wall forcibly abutting the forwardly facing edge of said outer wall upon placing a lens in said retaining ring, a locating lug projecting from said retaining ring, a recess in said seat for receiving said lug, a snap-in lens having a peripheral surface portion seated against the inner periphery of said retaining ring flange, a radially outwardly projecting flange on said lens seated in said groove, and a locating tang projecting from said lens flange through an aperture in said groove.

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