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Specification

1. Title of Invention: Vehicle Lamp

2. Utility Model Claim

A vehicle lamp comprising a lamp body B and a lens L curved on one side thereof, on the inside of which a wraparound portion is formed, whereby the vehicle lamp is formed so that light irradiated from a light bulb L' disposed on the lamp body is conducted to the wraparound portion.

3. Detailed Description of the Invention

a. Technical Field of the Invention

The present invention pertains to a vehicle lamp, and in particular to the internal structure of a lamp with a shape in which one side is curved.

b. Conventional Art

In recent years, due to vehicle design and aesthetic considerations, lamps with a curved shape installed on both sides of a vehicle have become widespread.

To describe a conventional model thereof with reference to Fig. 7, L is a lens curved to conform for attachment to the corner portion of a vehicle; B is a lamp which, like lens L, is also formed to conform for attachment to a corner portion; a light bulb L' is provided therein; both ends of lens L are gripped for support, and [the lenses] are affixed to chassis S as shown in the same figure. I.e., this is a shape in which a wraparound portion is formed on one side (the other side is also symmetrically formed).

c. Problems with the Conventional Art

A wraparound portion is formed as an unavoidable consequence of vehicle structural restrictions, but there are of course parts to which directly emitted light from light bulb L is not projected; in the same diagram the x location

the size of the lamp, with an unappealing appearance and poor marketability; not only this, but viewed laterally visibility is degraded when the light emitting portion is small, making [the lamp] undesirable from a traffic safety standpoint; for these reasons, various means have been devised such as attaching a supplemental lamp *l* to illuminate the x location in the figure, or sticking on an electroluminescence [element] EL to the inside surface of the lens in the subject locations, but the former, while favorably achieving lateral illumination, raises the temperature inside the lamp and increases the number of parts, while the latter has a good lateral illumination effect but is expensive particularly for the electroluminescence EL, and both have the defect that lamp cost per unit is raised.

d. Object of the Invention

The present invention seeks to eliminate the aforementioned defects, and has the object of improving lateral visibility as well as increasing product value.

e. Summary of the Invention

The present invention has the feature that projected light from light bulb L is conducted to dark portions occurring in the wraparound portion.

f. Embodiment of the Invention

Fig. 1(a) is a cross section showing an embodiment of the invention; (b) in that figure shows the shape of a photoconducting body seen from below; Fig. 2(a) is a cross section showing an embodiment different from the invention; (b) in that figure is an expanded cross section of the light conducting part; Figs. 3 through 6 are each cross sections respectively showing further differing embodiments of the invention, but to discuss features of the constitution of the invention using the same reference numerals in the same positions as in the above-described conventional model, first, in Fig. 1(a), l_0 is a photoconducting body tapered toward the wraparound portion inside the lamp body, on the front surface of which (the left side in the (b) figure) are countless bumps, and the reverse surface (right side in the figure) of which is affixed to the inside surface of

lens L; as shown by the (b) figure of the shape seen from point a in Fig. (a), photoconducting body l_0 is comprised of multiple pleated vertical walls P.

Next, Fig. 2 is an embodiment of a different photoconducting means; (a) in the figure is a cross section; (b) is an expanded cross section of the photoconducting body; in (b) of the figure, l'_0 is a convex lens; H respectively affixes l'_0 at one end on the inside thereof, and affixes multiple photoconductors f comprised of optical fibers or the like at the other end thereof; the outside thereof [is placed] in a holder attached through packing P' to lamp body B; b's respectively guide the tips of photoconductors f to the inside surface of the lamp body B, and are bushings for respectively affixing these to said lamp bodies.

Fig. 3 is a cross section showing still a further different embodiment; l_1 presents a panel shape, and is a photoconducting body with an opposing L-shaped cross section, extended so as to receive the radiated light from light bulb L'; Fresnel steps or slit steps are formed on the front surface (left side in the figure) thereof, and the top end thereof is affixed with adhesive by insertion into lamp body B.

Fig. 4 is a cross section showing still another embodiment; l_2 is a photoconducting body comprised, for example, of EVA made up of synthetic rubber and ethylene vinyl acetate rubber, or of acrylic rubber, silicon rubber or other transparent material; countless wave-shaped lenses are formed on the front surface thereof, and the reverse surface thereof is affixed by insertion of multiple pins P" integrally formed off lens L.

Fig. 5 is a cross section showing still another embodiment; l_3 is a photoconducting body, on the front surface of which continuous concavities are formed, while the rear surface thereof contacts lens L; the bottom end thereof is formed of a transparent soft resin rubber formed on a surface opposing light bulb L'.

Finally, Fig. 6 is a cross section showing a different embodiment employing the photoconducting body l_1 shown in the above-described Fig. 3; R is a reflecting panel integrally formed with said lamp body on the inside surface of lamp body B, which reflects light from light bulb L' and projects this [light] to the L-shaped portion surface on photoconducting body l_1.

g. Effect of the Invention

The invention is constituted as described above, and its operational effect can be described as follows: in the Fig. 1 device, as shown in (a) thereof, light emitted from light bulb L' is made incident from the light receiving surface below photoconducting body l_0, and is repeatedly reverse reflected within said photoconducting body, then emitted toward the outside surface of lens L from the reverse surface of said photoconducting body as it is diffusely reflected by countless bumps formed on that front surface, finally well illuminating the dark portions which occurred in the past, thereby improving visibility.

In a device constituted as shown in Fig. 2, as indicated by (b) thereof, light from light bulb L' is collected by convex lens l'_0 and irradiated onto the light receiving portion of the multiple photoconductors f; the tips of each photoconductor f are affixed so as to be guided to the outside surface of lamp body B through respective bushings b, therefore no dark portion is formed on the wraparound portion, as in the [device] shown in Fig. 1, and furthermore packing P' is used on holder H, and bushings b are respectively used on the tips of each photoconductor f, therefore absolutely no water penetrates into the lamp body, and [the lamp] can be used with confidence.

In the device constituted as shown in Fig. 3, an L-shaped extended portion formed at the bottom end of photoconducting line l_1 is caused to oppose at close proximity the light emitted from light bulb L'; light is received by said extended portion, then reversed and diffusely reflected multiple times by Fresnel steps or slit steps formed in this front surface (the left side of the figure), therefore as in the embodiment shown in Fig. 1, dark portions are completely eliminated. The device constituted as shown in Fig. 4 acts in the same way as the device constituted as shown in Fig. 3, but the l'_0 material is rubber, and the rear surface (right side in the figure) thereof is tightly affixed by multiple pins P" formed in lens L, therefore good vibration resistance, in particular, is achieved.

The device constituted as shown in Fig. 5 acts in the same way as the device constituted as shown in Fig. 4, but photoconducting body l_3 is made of a soft material, and can therefore be easily used for parts with complex shapes or even narrower parts, and has the further advantage that it can be easily made

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