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(54) **LED LENS**

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(58) **Field of Classification Search**

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See application file for complete search history.

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(57) **ABSTRACT**

A lens for primarily forward distribution of light from a light emitter which has an emitter axis in a front-to-back center-plane. The lens has a base surface which is adjacent the emitter and forms a light-entrance opening, an inner surface which defines a light-receiving cavity and includes front and back regions extending from the light-entrance opening, and an outer surface which has front and back regions adjoined by a middle region. The back region includes a back portion configured for forward total internal reflection (TIR) of rearward light received from the inner surface. The back portion extends transverse to the front-to-back centerplane away from the base surface from positions which are closer to the base surface than the innermost cavity region and terminates with a distal end which is closer to the base surface than outermost positions of the front region. The back portion terminates laterally at positions closer to the front-to-back centerplane than lateral edges of the light-entrance opening and, in the front-to-back centerplane, the emitter axis is no farther from the back portion of the outer surface than from a back edge of the light-entrance opening.

42 Claims, 20 Drawing Sheets

