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(54) **Title:** MICRO-LED DEVICE

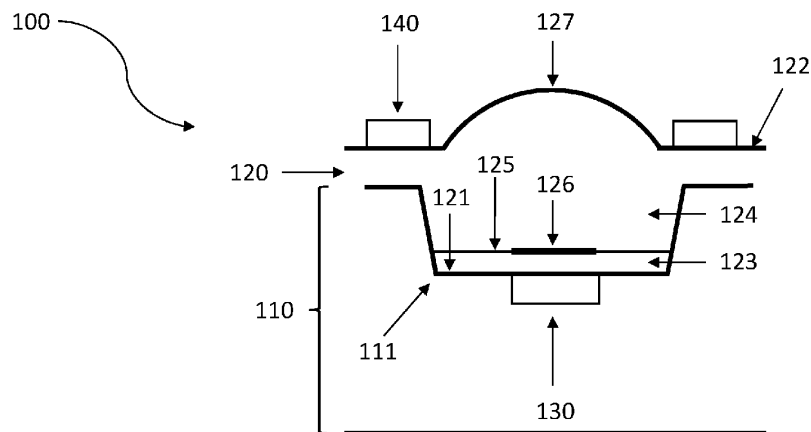


Fig. 1

(57) **Abstract:** A micro-LED of improved emission efficiency and collimation is provided. The micro-LED (100) comprises: a mesa substrate (110) including a recess (111); and a semiconductor material (120) provided on the recess, comprising a first surface (121) adjacent the mesa substrate, a second surface (122) opposite the first surface, and a light emission region (126) configured to emit light in response to application of an electrical current. The second surface comprises a convex surface (127). Light emitted by the light emission region incident on the convex surface is transmitted through the convex surface if an angle of incidence to the normal of the convex surface is smaller than a critical angle, and is refracted upon transmission through the convex surface. The light emission region (126) is located proximate the focal plane of the convex surface (127). An area of the light emission region is smaller than a cross-sectional area of the convex surface in a plane parallel to the light emission region.

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