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(54) **HIGHLY EFFICIENT LUMINAIRE HAVING OPTICAL TRANSFORMER PROVIDING PRECALCULATED ANGULAR INTENSITY DISTRIBUTION AND METHOD THEREFORE**

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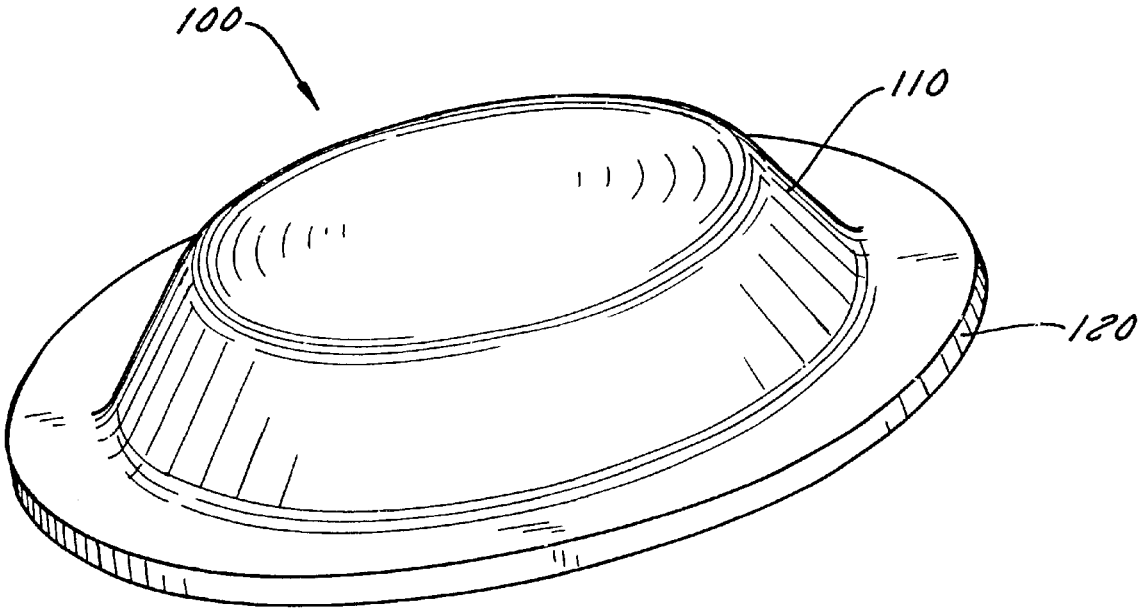
(57) **ABSTRACT**

A highly efficient luminaire. The luminaire includes a light source that emits light. The emitted light is redirected by a light transformer having a curved circular reflective interior surface, the reflective interior surface reflecting the light in a predetermined pattern. A substantial amount of light being may be reflected close to an axis coincident with a radial line defining a radius of the circular reflective interior surface. Additionally, a substantial amount of light may be reflected in a pattern with low divergency or parallel with an axis of the light transformer. The light is transmitted to the exterior of the luminaire by an optical window.

7 Claims, 10 Drawing Sheets