United States Patent [19]

Winthrop

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[54] **PROGRESSIVE POWER OPHTHALMIC LENS HAVING A PLURALITY OF VIEWING ZONES WITH NON-DISCONTINUOUS VARIATIONS THEREBETWEEN**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 389,042, Aug. 16, 1973, abandoned.

[51] **Int. Cl.**[2] **G02C 7/06**

[52] **U.S. Cl.** **351/169**

[58] **Field of Search** 351/168–172, 351/176, 177

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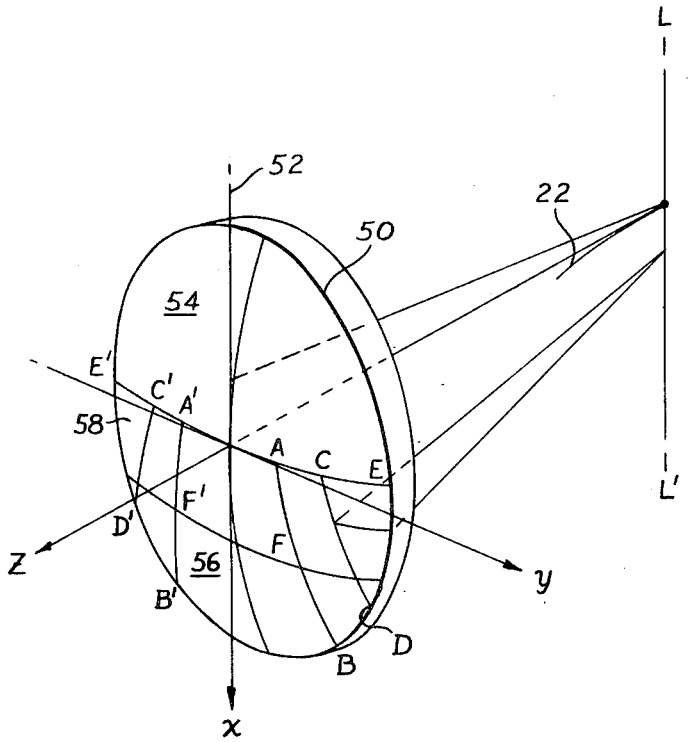
[57] **ABSTRACT**

A progressive power ophthalmic lens is described on which one refractive surface is formed to provide zones at the top and bottom of the refractive surface having constant dioptric focal power. The two zones having constant dioptric focal power are of different radii of curvature such that a near viewing zone is located at the bottom and a distance viewing zone is located at the top of the refractive surface. Between these two constant dioptric focal power zones lies an intermediate zone having progressive dioptric focal power between the dioptric focal powers of the upper and lower zones. The intermediate zone makes a smooth optical connection to each of the other zones so that the refractive surface is continuous over its entire area. Since astigmatism and distortion are necessarily present in the lens particularly at the periphery of the intermediate progressive power zone, the refractive surface areas near the periphery of the lens is formed so that the principal axes of the astigmatism lie in vertical and horizontal planes so that a wearer of the progressive power ophthalmic lens perceives horizontal lines as being horizontal and vertical lines as being vertical. The refractive surface areas near the periphery of the lens are formed from sections of a figure of revolution.

19 Claims, 26 Drawing Figures