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[54] **CONCENTRIC ANNULAR RING LENS DESIGNS FOR ASTIGMATISM**

[75] Inventors: **Jeffrey H. Roffman; Edgar V. Menezes**, both of Jacksonville, Fla.

[73] Assignee: **Johnson & Johnson Vision Products, Inc.**, Jacksonville, Fla.

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[58] Field of Search **351/176, 159, 351/160 R, 160 H, 161, 168; 623/6**

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Primary Examiner—Scott J. Sugarman
Assistant Examiner—Jordan M. Schwartz

[57] **ABSTRACT**

Concentric annular ring lens designs are disclosed for astigmatic patients, particularly lens designs which reduce the sensitivity of the patient to toric axis misalignment, thus reducing the required number of stock keeping units in inventory for a toric product. Several of the concentric annular ring lens designs comprise a multifocal concentric annular ring design on either the front or back surface and a toric curve on the reverse surface to correct for astigmatism. Alternating concentric annular rings divide the optical zone of the contact lens into regions having at least two optical powers, a first optical power corresponding to the refractive spherical component of a patient's basic prescription Rx, and a second optical power corresponding to the cylindrical power of a patient's basic prescription Rx, or a portion thereof, with an optional third intermediate optical power, such that the multifocus toric lens is rotationally desensitized because of the enhanced depth-of-field provided by the plurality of concentric annular rings. Some embodiments of the present invention have a spherical front or back surface wherein the opposite surface has a plurality of toric annular rings. Some embodiments of the present invention eliminate a toric surface, prism ballast and slab-off features, and provide spherical optical powers at the basic prescription Rx spherical power, the cylindrical power prescription Rx, and an intermediate optical power intermediate to the spherical and cylindrical optical powers.

43 Claims, 6 Drawing Sheets

