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[54] INTRAOCULAR LENS WITH INTEGRATED MEANS OF FIXATION

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Related U.S. Application Data

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[52] **U.S. Cl.** **623/6**

[58] **Field of Search** 623/6

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,449,257	5/1984	Koeniger	623/6
4,704,123	11/1987	Smith	623/6
4,808,181	2/1989	Kelman .	
4,846,832	7/1989	Wichterle	623/6
4,865,601	9/1989	Caldwell	623/5
4,932,968	6/1990	Caldwell	623/6
5,011,494	4/1991	von Recum et al.	623/11

OTHER PUBLICATIONS

Apple et al, "Intraocular Lenses: Evolution, Designs, Complications, and Pathology", Chapters 1–2, pp. 1–41.

Green et al, "Fibroblast Response to Microtextured Silicone Surfaces: Texture Orientation into or out of the Surface", Journal of Biomedical Materials Research, vol. 28, pp. 647–653 (1994).

Blomstedt et al, "After-Cataract in the Rabbit Eye Following Extracapsular Cataract Extraction—A Wound Heal Reaction", Ophthalmologica, vol. 65, Suppl. 182, pp. 93–99 (1987).

McDonald et al, "After-Cataract of the Rabbit: Autoradiography and Electron Microscopy", Annals of Ophthalmology, pp. 37–50 (Jan. 1974).

Ishibashi et al, "Fine Structure on Top of Intraocular Lens Surface: A Transmission Electron Microscopic Study", Cells and Materials, vol. 1, No. 4, pp. 301–306 (1991).

Jacob et al, "Cytological Factors Relating to Posterior Capsule Opacification Following Cataract Surgery", British Journal of Ophthalmology, vol. 71, pp. 659–663 (1987).

C. E. Campbell and A. F. von Recum, "Microtopography and Soft Tissue Response", J. Investig. Surg. vol. 2 pp. 51–74 (1989).

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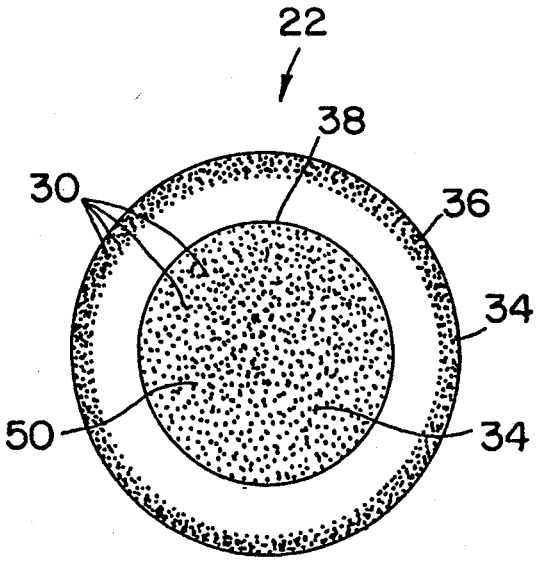
[57] **ABSTRACT**

An intraocular lens has an optic body with at least a posterior surface defining a roughness portion disposed close to the periphery of the optic body wherein the roughness portion further defines an attachment configuration specified by parameters falling within certain specific ranges determined statistically using a profilometer. The parameters measure on the order of micrometers. The attachment configuration holds the lens in place without the use of spiral shaped fibrous arms.

15 Claims, 7 Drawing Sheets