US005089024A

United States Patent [19]

Christie et al.

[11] Patent Number: 5,089,024

[45] Date of Patent: Feb. 18, 1992

[54] MULTI-FOCAL INTRAOCULAR LENS

[75] Inventors: **Bruce A. Christie**, Newport-Richey; **Gary L. Guenthner**, Largo, both of Fla.; **J. Warren Blaker**, Bronx, N.Y.

[73] Assignee: **Storz Instrument Company**, St. Louis, Mo.

[21] Appl. No.: **183,202**

[22] Filed: **Apr. 19, 1988**

[51] **Int. Cl.**[5] **A61F 2/16**

[52] **U.S. Cl.** **623/6**; 351/161; 351/171

[58] **Field of Search** ..... 623/6; 351/160 R, 160 H, 351/161, 168, 171, 172

[56] **References Cited**

U.S. PATENT DOCUMENTS

1,518,405	12/1924	Glancy .
2,878,721	3/1959	Kanolt .
3,034,403	5/1962	Neefe .
3,270,099	8/1966	Camp .
3,339,997	9/1967	Wesley .
3,458,870	8/1969	Stone, Jr. .
3,555,126	1/1971	Gitson .
3,614,217	10/1971	Bronstein .
3,711,870	1/1973	Deitrick .
3,726,587	4/1973	Kendall .
3,794,414	2/1974	Wesley .
3,913,148	10/1975	Potthast .
3,950,082	4/1976	Volk .
4,010,496	3/1977	Neefe .
4,118,853	10/1978	Mignen .
4,172,297	10/1979	Schlegel .
4,174,156	11/1979	Glorieux .
4,206,518	6/1980	Jardon et al. .
4,253,199	3/1981	Banko .
4,254,509	3/1981	Tennant .
4,315,673	2/1982	Guilino et al. .
4,316,293	2/1982	Bayers .
4,338,005	7/1982	Cohen .
4,365,360	12/1982	Ong .
4,377,329	3/1983	Poler .
4,402,579	9/1983	Poler .
4,412,359	11/1983	Myers .
4,418,431	12/1983	Feaster .
4,418,991	12/1983	Breger .
4,435,856	3/1984	L'Esperance .
4,466,705	8/1984	Michelson .
4,477,158	10/1984	Pollock et al. .
4,504,982	3/1985	Burk .
4,512,040	4/1985	McClure .
4,514,061	4/1985	Winthrop .
4,525,043	6/1985	Bronstein .
4,564,484	1/1986	Neefe .
4,573,998	3/1986	Mazzocco .
4,575,373	3/1986	Johnson .
4,580,882	4/1986	Nuchman et al. .
4,593,981	6/1986	Scilipoti .
4,605,409	8/1986	Kelman .
4,619,657	10/1986	Keates et al. .
4,636,211	1/1987	Nielsen et al. .
4,637,697	1/1987	Freeman .
4,640,593	2/1987	Shinohara .
4,642,112	2/1987	Freeman .
4,655,565	4/1987	Freeman .
4,702,573	10/1987	Morstad .
4,710,193	12/1987	Volk .
4,710,197	12/1987	Donn et al. .
4,720,286	1/1988	Bailey et al. .
4,752,123	6/1988	Blaker .
4,795,462	1/1989	Grendahl 623/6
4,813,955	3/1989	Achatz et al. 623/6
4,898,461	2/1990	Portney ..... 351/161 X

FOREIGN PATENT DOCUMENTS

3332313	4/1985	Fed. Rep. of Germany 623/6
1103399	12/1955	France .
WO86/03961	7/1986	PCT Int'l Appl. 623/6
939016	10/1963	United Kingdom .

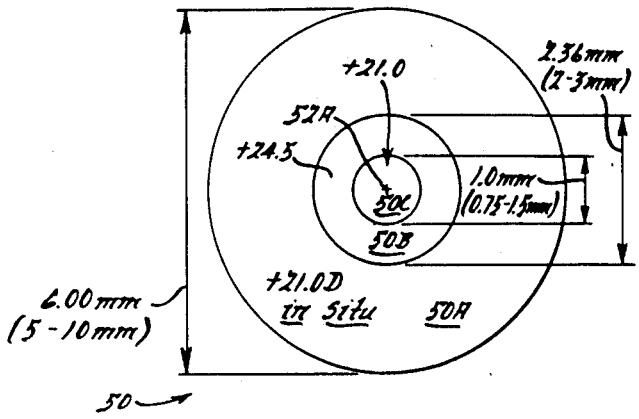
OTHER PUBLICATIONS

J. Warren Blaker, "Modern Lens Design for Today & Tomorrow", break-out session: Amer. Society of Cataract & Refractive Surgery—Seminar, Apr. 9, 1986.

Primary Examiner—Ronald Frinks

Attorney, Agent, or Firm—Brooks & Kushman

[57] **ABSTRACT**

An intraocular lens, for use within the human eye, contains three concentric regions. An innermost region provides far-field vision. A middle region, surrounding the innermost region, provides near-field vision. An outermost region, surrounding the middle region, provides far-field vision. The intermost region is of a size such that, when the pupil constricts in bright light, the innermost region remains exposed to incoming light, and can thus focus distant images in bright light.

2 Claims, 4 Drawing Sheets