US007044597B2

(12) **United States Patent**
Altmann

(10) **Patent No.: US 7,044,597 B2**
(45) **Date of Patent: May 16, 2006**

(54) **MULTIFOCAL CONTACT LENS AND METHOD OF MANUFACTURE THEREOF**

(75) Inventor: **Griffith E. Altmann**, Pittsford, NY (US)

(73) Assignee: **Bausch & Lomb Incorporated**, Rochester, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/736,960**

(22) Filed: **Dec. 16, 2003**

(65) **Prior Publication Data**

US 2005/0128432 A1 Jun. 16, 2005

(51) **Int. Cl.**
G02C 7/04 (2006.01)

(52) **U.S. Cl.** **351/161**; 351/177; 351/168

(58) **Field of Classification Search** ..... 351/159, 351/161, 164, 168, 169, 177, 178, 160 R, 351/160 H; 623/6.11, 6.19, 6.2, 6.21, 6.24, 623/6.25, 6.27, 6.28, 6.3, 6.31
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,623,800	A	11/1971	Volk	351/169
3,950,082	A	4/1976	Volk	351/169
4,002,439	A	1/1977	Volk	451/42
4,427,272	A	1/1984	Gernet	351/173
4,580,883	A	4/1986	Shinohara	351/169
4,636,211	A	1/1987	Nielsen et al.	623/6.28
4,729,651	A	3/1988	Kitani	351/169
4,861,153	A	8/1989	Winthrop	351/169
4,881,805	A	11/1989	Cohen	351/161
4,950,057	A	8/1990	Shirayanagi	351/169
4,971,432	A	11/1990	Koeniger	351/161
4,976,534	A	12/1990	Miege et al.	351/161
4,995,714	A	2/1991	Cohen	351/161
5,106,180	A	4/1992	Marie et al.	351/161
5,112,351	A	5/1992	Christie et al.	623/6.28
5,114,220	A	5/1992	Baude et al.	351/160 R
5,121,980	A	6/1992	Cohen	351/161
5,123,725	A	6/1992	Winthrop	351/169
5,125,729	A	6/1992	Mercure	351/161
5,158,572	A	10/1992	Nielsen	623/6.28
RE34,132	E	11/1992	Kitani	351/169
5,166,711	A	11/1992	Portney	351/161
5,166,712	A	11/1992	Portney	351/161
RE34,251	E	5/1993	Achatz et al.	623/6.17
5,214,453	A	5/1993	Giovanzana	351/161
5,225,858	A	7/1993	Portney	351/161
5,270,744	A	12/1993	Portney	351/161
5,278,592	A	1/1994	Marie et al.	351/160 R
5,517,260	A	5/1996	Glady et al.	351/169
5,574,518	A	11/1996	Mercure	351/161
5,608,471	A	3/1997	Miller	351/161

(Continued)

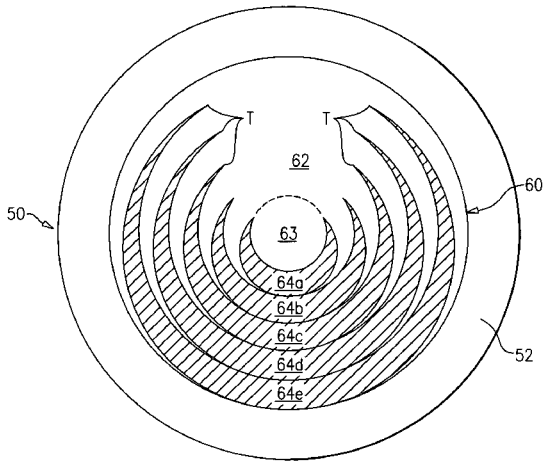
FOREIGN PATENT DOCUMENTS

EP 0982618 A1 3/2000

(Continued)

Primary Examiner—Jordan M. Schwartz
Assistant Examiner—Jessica Stultz
(74) *Attorney, Agent, or Firm*—John E. Thomas

(57) **ABSTRACT**

An optical zone for a lens has a center optical axis. A first region of the optical zone includes a first optical curve having a first optical axis that is collinear with the center optical axis. A plurality of secondary regions is formed within the first region. Each of the secondary regions has a respective secondary optical curve with a corresponding secondary optical axis. Each secondary optical axis is collinear with the first optical axis. Each of the secondary optical curves is decentered relative to the first optical curve.

22 Claims, 3 Drawing Sheets