



US005855074A

United States Patent [19]
Abitbol et al.

[11] **Patent Number:** **5,855,074**
[45] **Date of Patent:** **Jan. 5, 1999**

[54] **METHODS AND APPARATUS FOR MEASURING AND MAPPING OPHTHALMIC ELEMENTS**

FOREIGN PATENT DOCUMENTS

676629 11/1995 European Pat. Off. .
WO 95/34800 12/1995 WIPO .

OTHER PUBLICATIONS

D. and Z. Malacara, "Testing and Centering of Lenses by Means of a Hartmann Test With Four Holes", Published in Optical Engineering, vol. 31, No. 7 Jul. 1992, pp. 1551-1555.

Brochure: Visionix, A Vision of the Future, Visual Contact Lens Mapping, VC-2000.

Brochure: Visionix, A Vision of the Future, Visual Lens Mapping VL-2000.

Primary Examiner—George Manuel

Attorney, Agent, or Firm—Darby & Darby

[57]

ABSTRACT

This invention discloses an apparatus for providing optical information regarding spectacles in which are mounted first and second lenses, the apparatus includes a spectacles mapper operative to compute a map, within a single coordinate system, of at least one optical characteristic over both of the two lenses, and a spectacles analyzer operative to provide an output indication of optical information related to the map.

A method for providing optical information regarding spectacles is also disclosed.

28 Claims, 36 Drawing Sheets

[75] **Inventors:** **Mordechai Abitbol; Emile Tederry; Eli Meimoun**, all of Jerusalem, Israel

[73] **Assignee:** **Visionix Ltd.**, Jerusalem, Israel

[21] **Appl. No.:** **18,360**

[22] **Filed:** **Feb. 4, 1998**

[51] **Int. Cl.⁶** **G01B 11/00**

[52] **U.S. Cl.** **33/507**

[58] **Field of Search** 351/41, 42, 177;
33/507; 356/127; 451/42, 43

References Cited

U.S. PATENT DOCUMENTS

4,098,002 7/1978 Campbell et al. .
4,115,924 9/1978 Kleinkopf 33/507
4,781,452 11/1988 Ace 351/177
5,152,067 10/1992 Kurachi et al. .
5,175,594 12/1992 Campbell .
5,303,022 4/1994 Humphrey et al. .
5,307,141 4/1994 Fujieda .
5,339,151 8/1994 Shinn .
5,469,261 11/1995 Hellmuth et al. .

