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(54) **THREE DIMENSIONAL REAL-TIME IMAGE APPARATUS OF OCULAR RETINA**

(75) Inventors: **Yunsik Yang**, Icksan (KR); **Sungki Lyu**, Jinju (KR)

(73) Assignee: **Research Center for Aircraft Parts Technology**, Kyungsangnam-do (KR)

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(58) **Field of Search** 382/154, 128; 351/210, 221, 240; 356/627

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Primary Examiner—Leo Boudreau
Assistant Examiner—Ryan J. Miller
(74) *Attorney, Agent, or Firm*—Nath & Associates PLLC; Gary M. Nath; Lee C. Heiman

(57) **ABSTRACT**

The disclosed content relates to a three dimensional real-time imaging apparatus of the ocular retina, which is associated with the most frequent ophthalmic diseases. In the present invention, the laser rays are formed into two dimensional ray surface sequentially with the time by using a polygon mirror motor and galvanometer and irradiated on the almost transparent retina through the pupil. The optical system is so arranged that the incident angles, relative to a retina, of the laser beams irradiated on the retina at respective moments may agree with the output angles of imaginary lines of the same laser rays reflected from a retina in both the vertical and horizontal direction. Further, the laser sequential single lines lit on the retina are caused to correspond to the sensors array, so that two dimensional retinal surface elements as many as the sensors of the sensor array are imaged in real time three dimensions. Accordingly, this type of apparatus permits the observation of retinal images in real time three dimensions, which was not possible with conventional apparatuses. In addition, three dimensional inspection of eye-ground, sensitive imaging of various retinal diseases and detailed evaluation of the responses to various treatments are possible, so that an epochal assistance can be given to the understanding of retinal diseases and the development of the therapeutic methods.

3 Claims, 9 Drawing Sheets