



US005800353A

United States Patent [19]
McLaurin, Jr.

[11] **Patent Number:** **5,800,353**
[45] **Date of Patent:** **Sep. 1, 1998**

[54] **AUTOMATIC IMAGE REGISTRATION OF
MAGNETIC RESONANCE IMAGING SCANS
FOR LOCALIZATION, 3-DIMENSIONAL
TREATMENT PLANNING, AND RADIATION
TREATMENT OF ABNORMAL LESIONS**

5,553,112 9/1996 Hardy et al. .
5,682,890 11/1997 Kormos et al. .

OTHER PUBLICATIONS

Grimson et al. "Automation Registration for Enhanced Reality Visualization in Surgery". Sep. 1995.

[76] **Inventor:** **Robert L. McLaurin, Jr.**, 1528 Iredell Dr., Raleigh, N.C. 27608

Primary Examiner—Marvin M. Lateef
Assistant Examiner—Shawna J. Shaw
Attorney, Agent, or Firm—Mills Law Firm PLLC; Clifford F. Rey

[21] **Appl. No.:** **872,103**

[22] **Filed:** **Jun. 10, 1997**

[57] **ABSTRACT**

Related U.S. Application Data

This invention is a method of using the Magnet Center of a magnetic resonance imaging scanner, commonly referred to as MRI, as the common reference point to accurately film image an area of concern for parallel axial, sagittal and coronal parallel slices. The perpendicular axis of each of the parallel slices of film images from all three of the mutually perpendicular slices passes through Magnet Center of the MRI. Upon determination of the number of film image slices in each stack, the position of the first slice with respect to Magnet Center, and the thickness of each slice has been determined, this data is entered into a computer capable of producing three-dimensional images. Using the entered data and positioning lasers, the original position during scanning can be accurately reproduced in the simulator suite or room as well as in the Treatment room.

[63] **Continuation of Ser. No. 599,850, Feb. 12, 1996, abandoned.**

[51] **Int. Cl.⁶** **A61B 5/055**

[52] **U.S. Cl.** **600/407; 600/417; 600/436**

[58] **Field of Search** **600/407, 414, 600/417, 421, 436, 410; 128/920; 606/130; 378/205, 206, 64, 65**

[56] **References Cited**

U.S. PATENT DOCUMENTS

- 4,651,732 3/1987 Frederick .
- 4,923,459 5/1990 Nambu .
- 5,107,839 4/1992 Houdek et al.
- 5,207,223 5/1993 Adler .
- 5,285,787 2/1994 Machida .
- 5,501,218 3/1996 Usui .

7 Claims, 1 Drawing Sheet

