



US005746206A

# United States Patent [19]

[11] Patent Number: **5,746,206**

**Mannheimer**

[45] Date of Patent: **\*May 5, 1998**

[54] **ISOLATED LAYER PULSE OXIMETRY**

4,796,636	1/1989	Branstetter et al.	128/633
5,057,695	10/1991	Hirao et al.	128/633
5,139,025	8/1992	Lewis et al.	128/665
5,188,108	2/1993	Secker	128/633
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5,372,135	12/1994	Mendelson et al.	128/633
5,524,617	6/1996	Mannheimer	128/633

[75] Inventor: **Paul D. Mannheimer**, Belmont, Calif.

[73] Assignee: **Nellcor Incorporated**, Pleasanton, Calif.

[\*] Notice: The term of this patent shall not extend beyond the expiration date of Pat. No. 5,524,617

[21] Appl. No.: **662,439**

[22] Filed: **Jun. 10, 1996**

### FOREIGN PATENT DOCUMENTS

4304693 A1	8/1994	Germany
WO 92/21283	12/1992	WIPO

### Related U.S. Application Data

[63] Continuation of Ser. No. 403,642, Mar. 14, 1995, Pat. No. 5,524,617.

[51] Int. Cl.<sup>6</sup> ..... **A61B 5/00**

[52] U.S. Cl. .... **125/633; 356/39**

[58] Field of Search ..... **128/633, 664, 128/665; 356/41**

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*Assistant Examiner*—Eric F. Winakur  
*Attorney, Agent, or Firm*—Nawrocki, Rooney & Sivertson

### [57] ABSTRACT

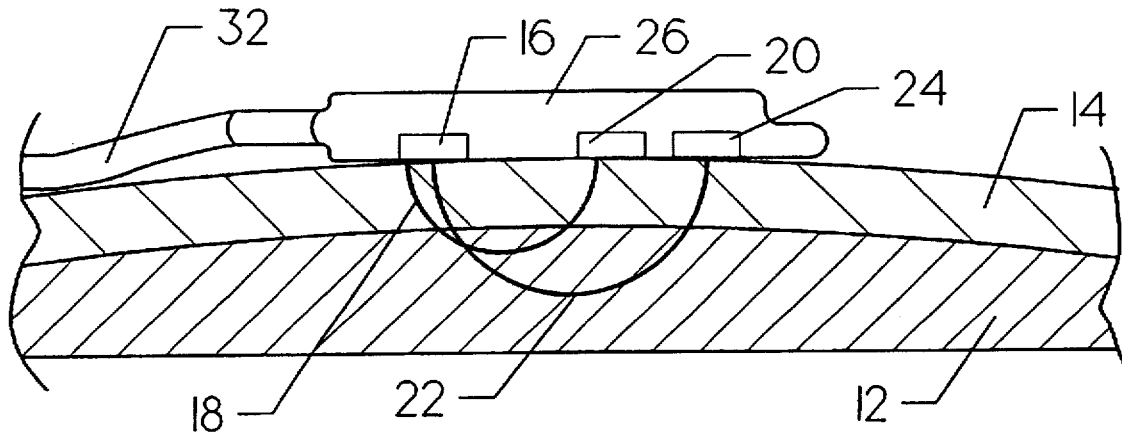
An apparatus of and method for measuring arterial blood oxygen saturation at a particular tissue level of interest. Visible and near infrared radiation is emitted into a patient at the measurement site using two different wavelengths. Detection at two different detection sites permits rejection of oxygen saturation at undesired tissue levels.

### [56] References Cited

#### U.S. PATENT DOCUMENTS

4,700,708 10/1987 New, Jr. et al. .... 128/633

**6 Claims, 8 Drawing Sheets**



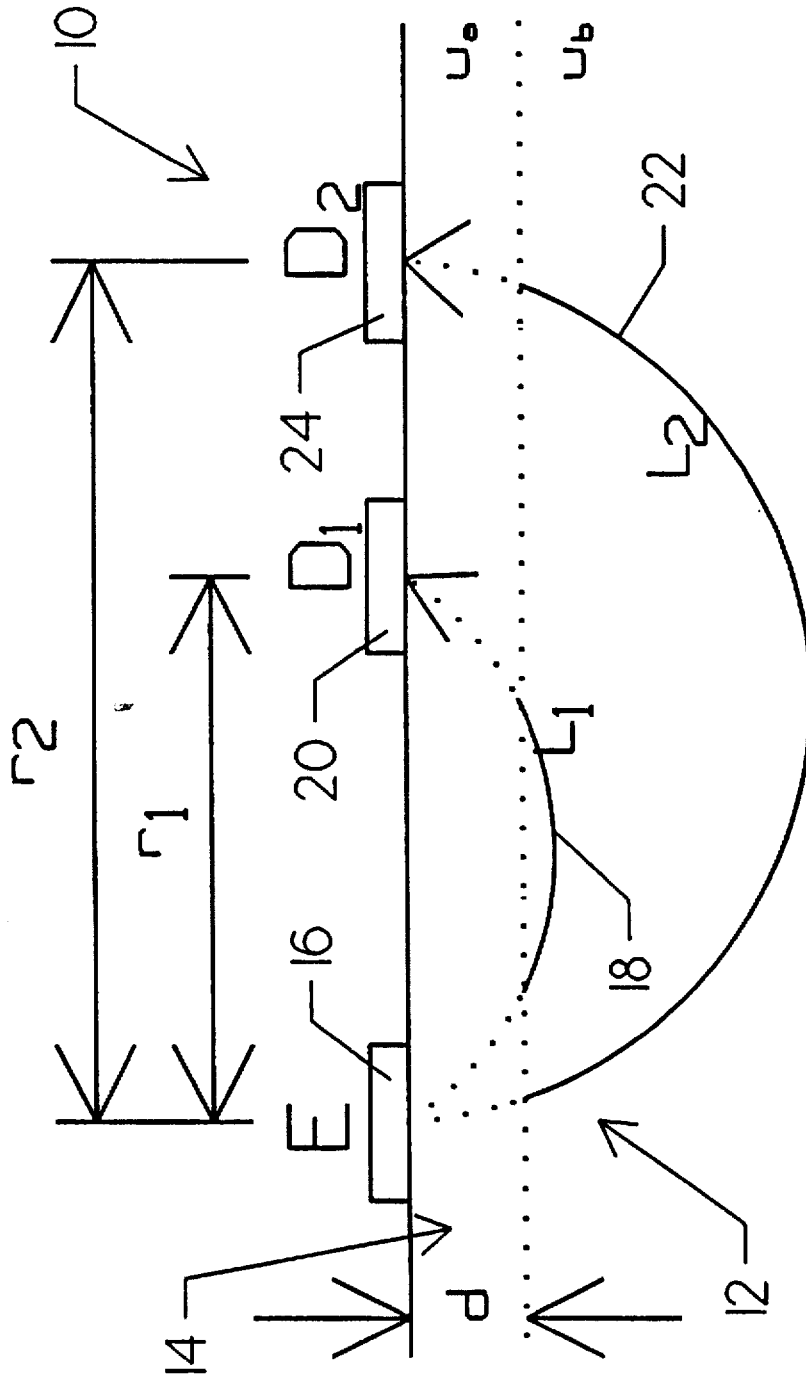


FIG. 1 A

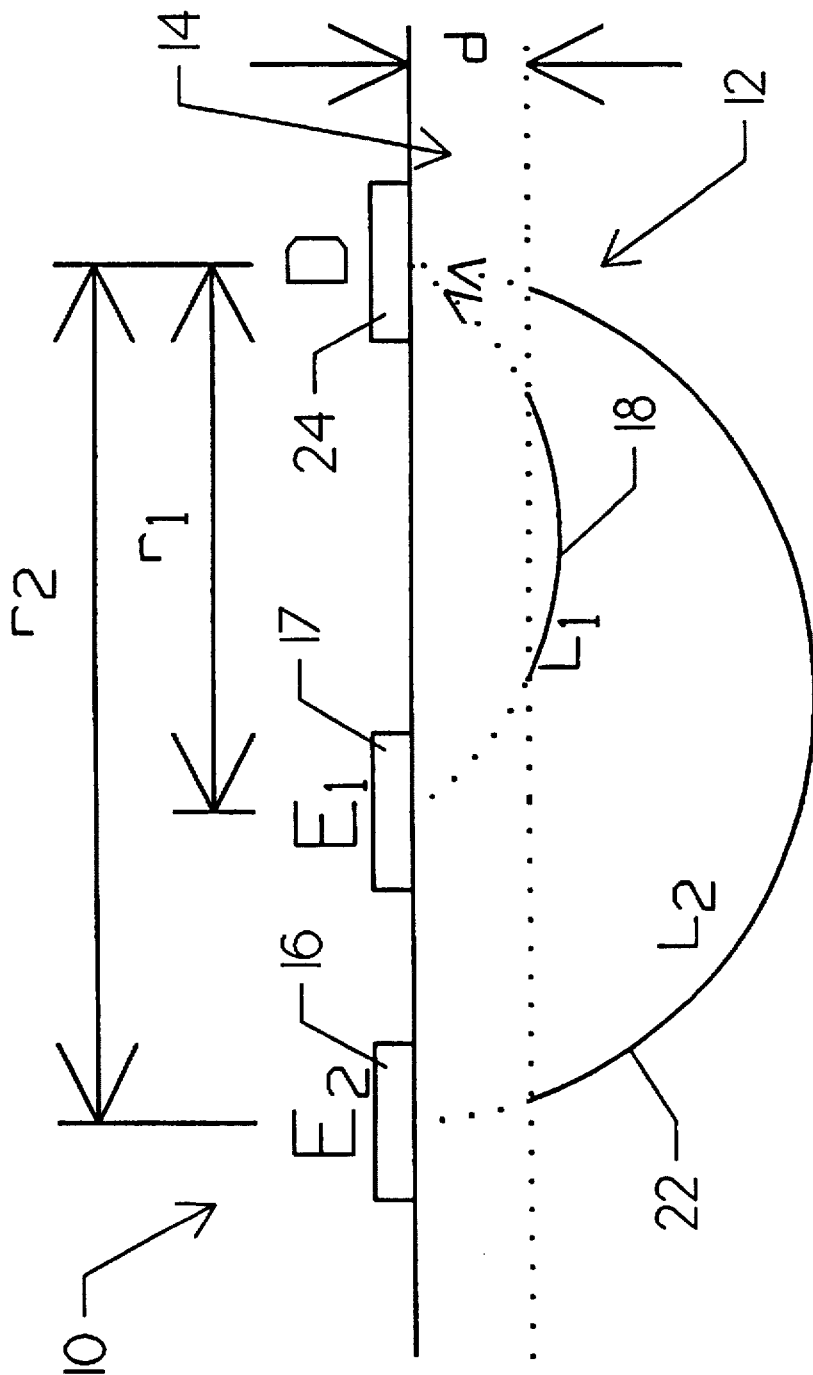


FIG. 1B

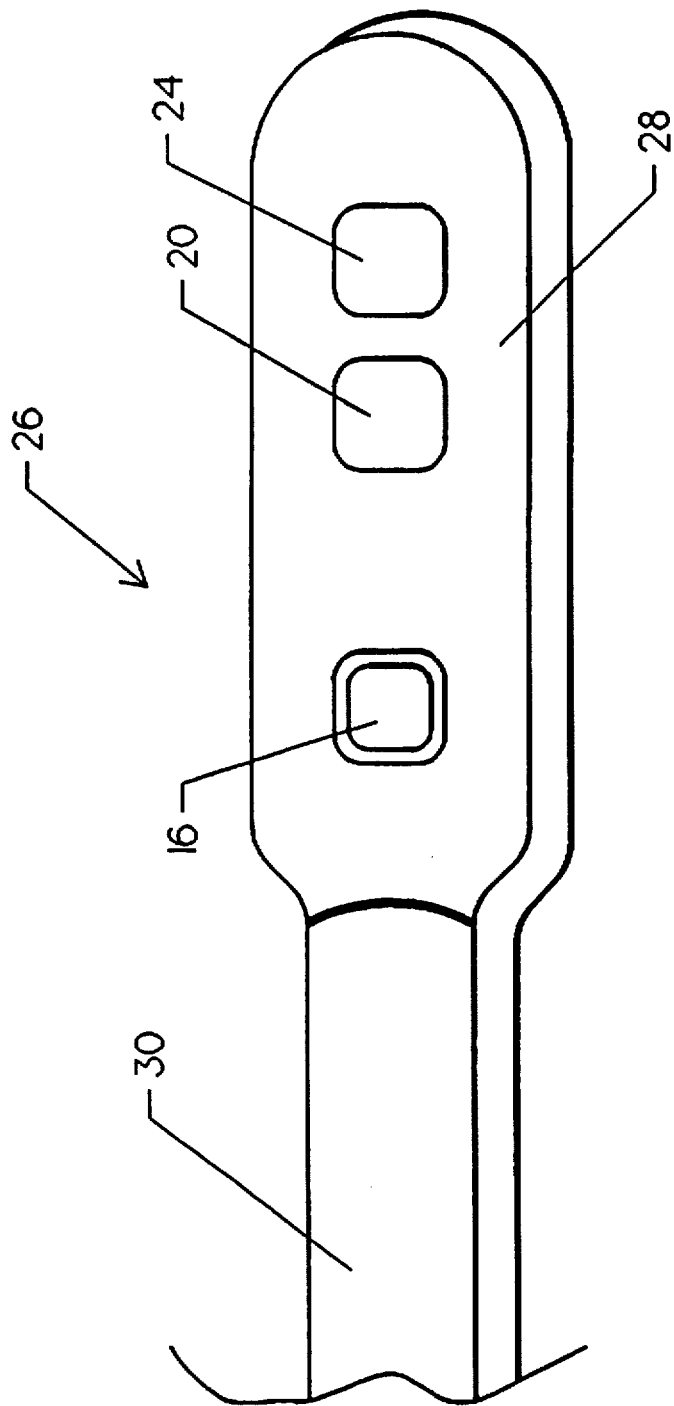


FIG. 2

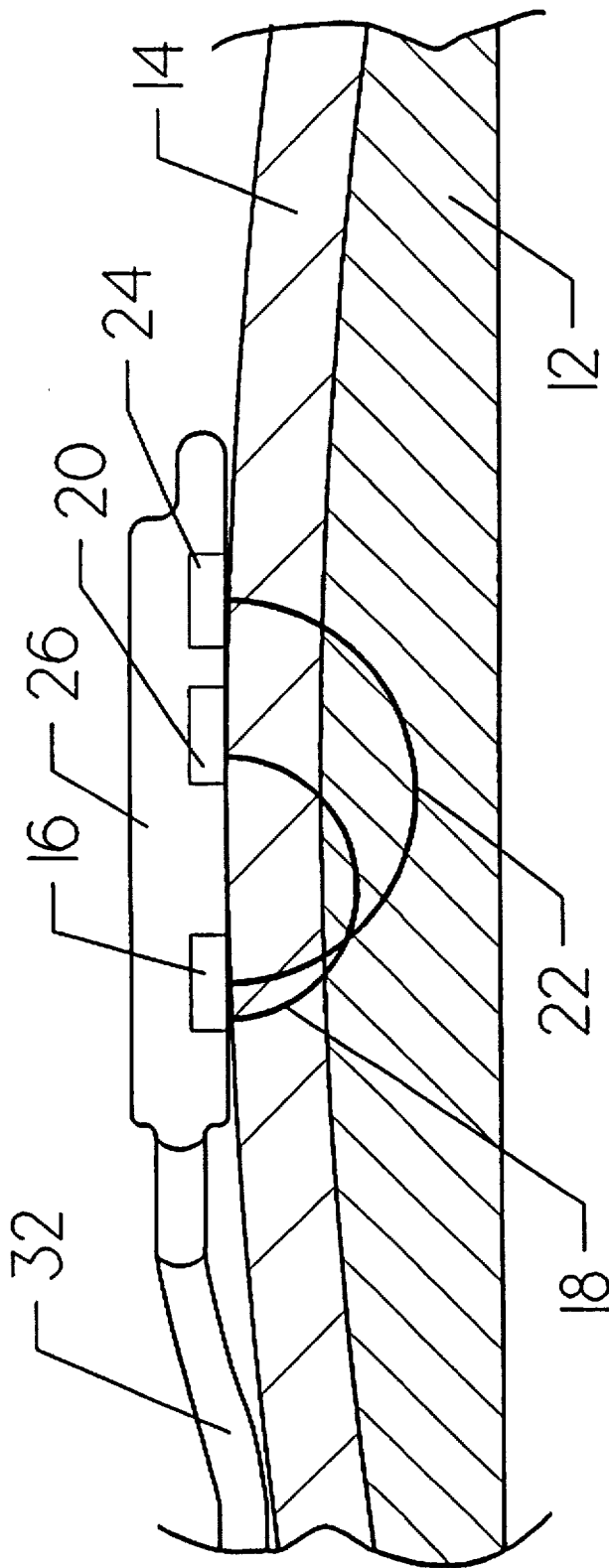


FIG. 3

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