



US005746206A

**United States Patent** [19]  
**Mannheimer**

[11] **Patent Number:** **5,746,206**  
[45] **Date of Patent:** **\*May 5, 1998**

[54] **ISOLATED LAYER PULSE OXIMETRY**  
[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

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
5,218,962	6/1993	Mannheimer et al.	128/633
5,226,417	7/1993	Swedlow et al.	128/633
5,277,181	1/1994	Mendelson et al.	128/633
5,285,783	2/1994	Secker	128/633
5,297,548	3/1994	Pologe	128/633
5,372,135	12/1994	Mendelson et al.	128/633
5,524,617	6/1996	Mannheimer	128/633

[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**

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

[57] **ABSTRACT**

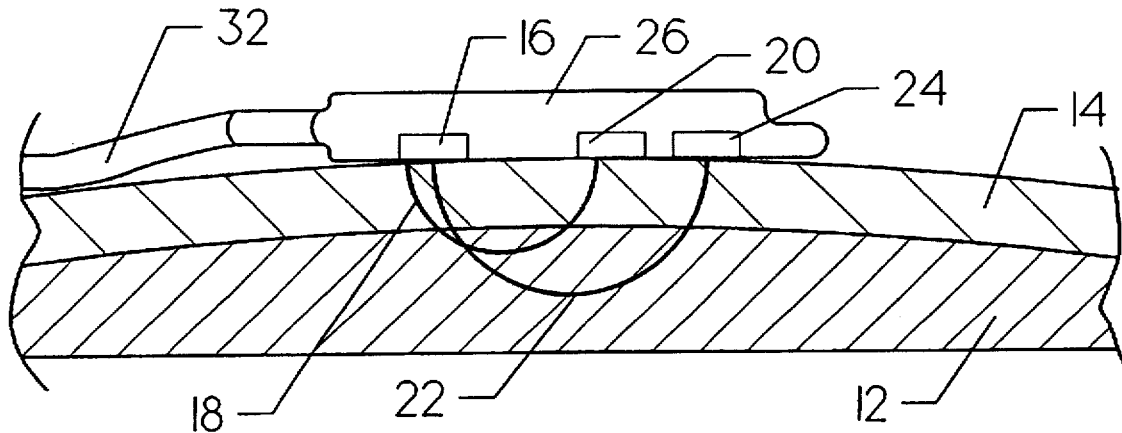
An apparatus of and method for measuring arterial blood oxygen saturation at a particular tissue level of interest. Visible and near infrared radiation is emitted into a patient at the measurement site using two different wavelengths. Detection at two different detection sites permits rejection of oxygen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



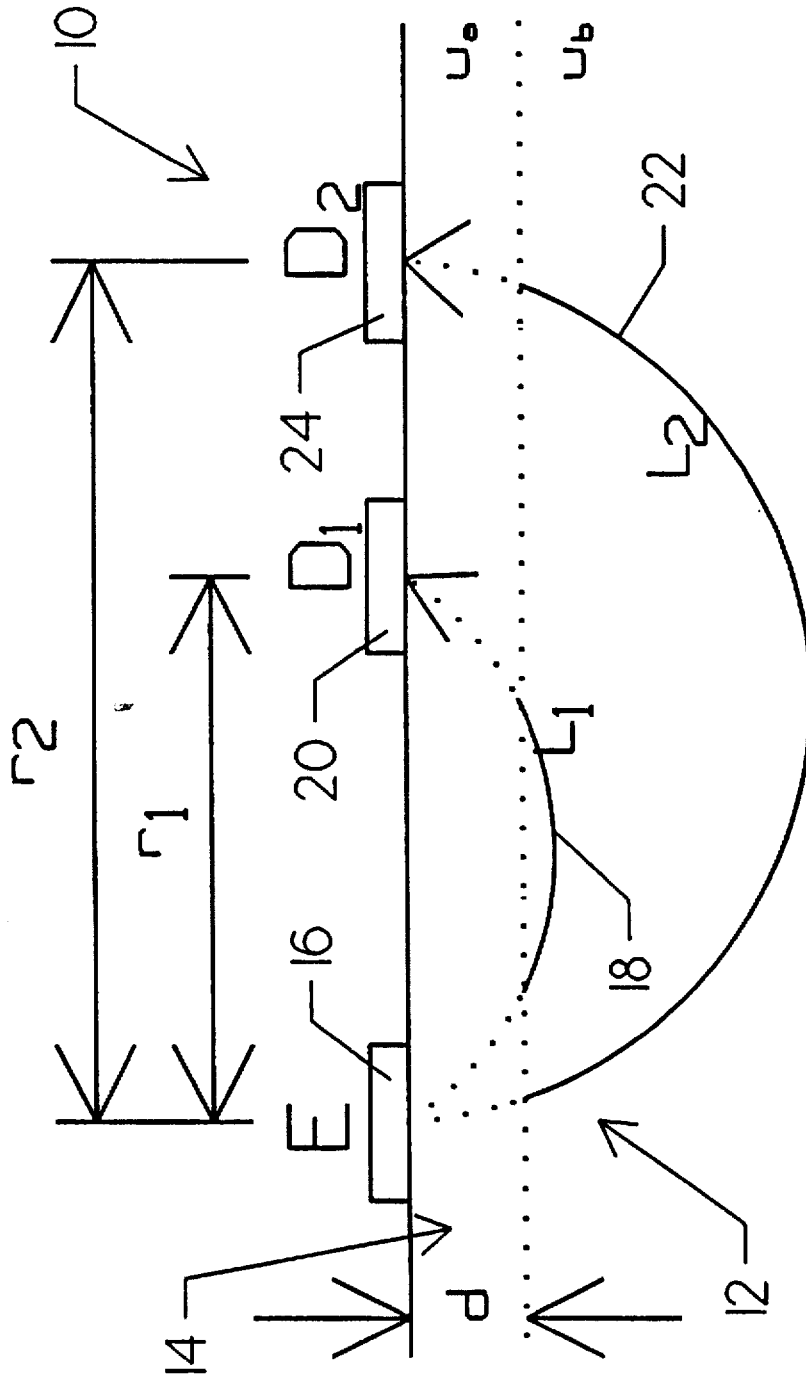


FIG. 1 A

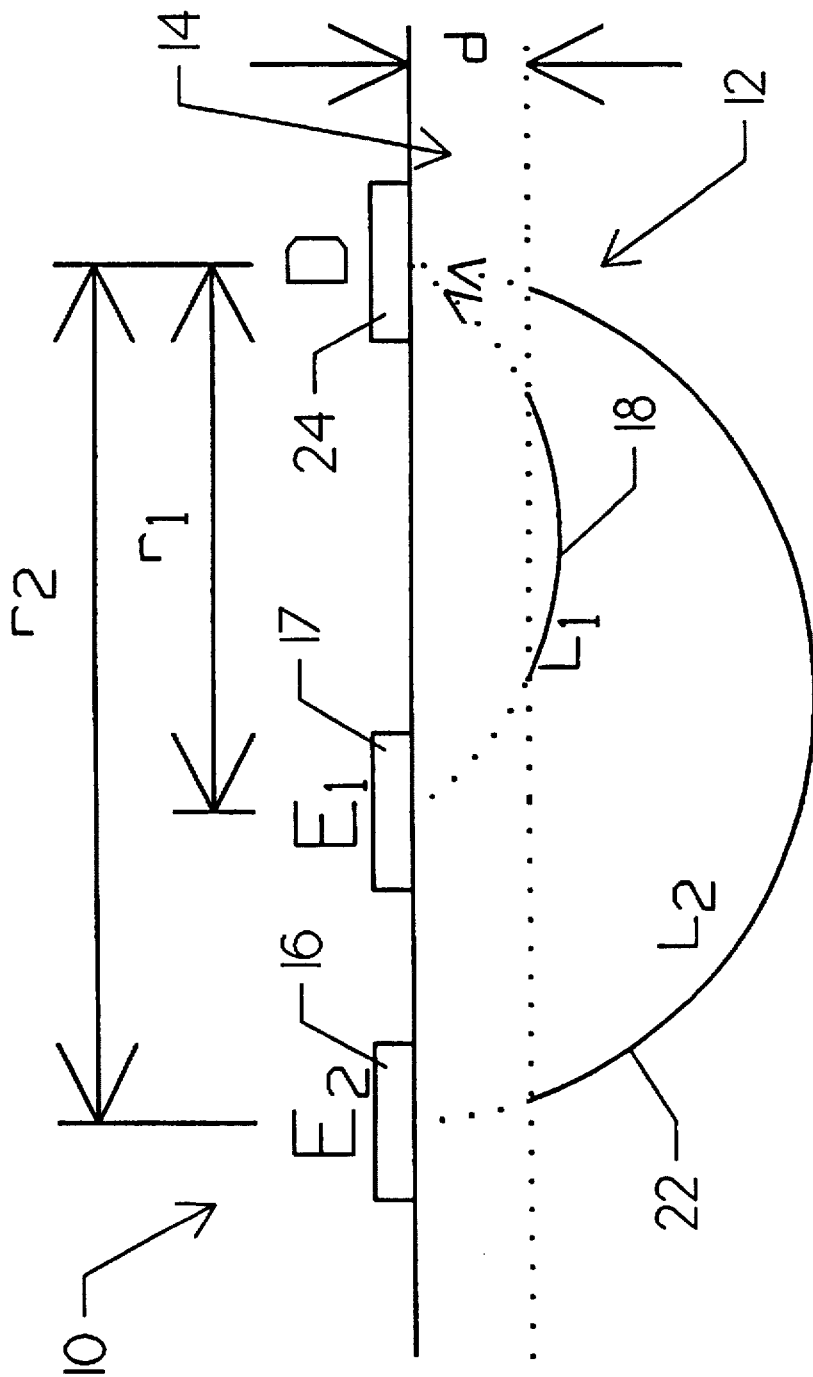


FIG. 1 B

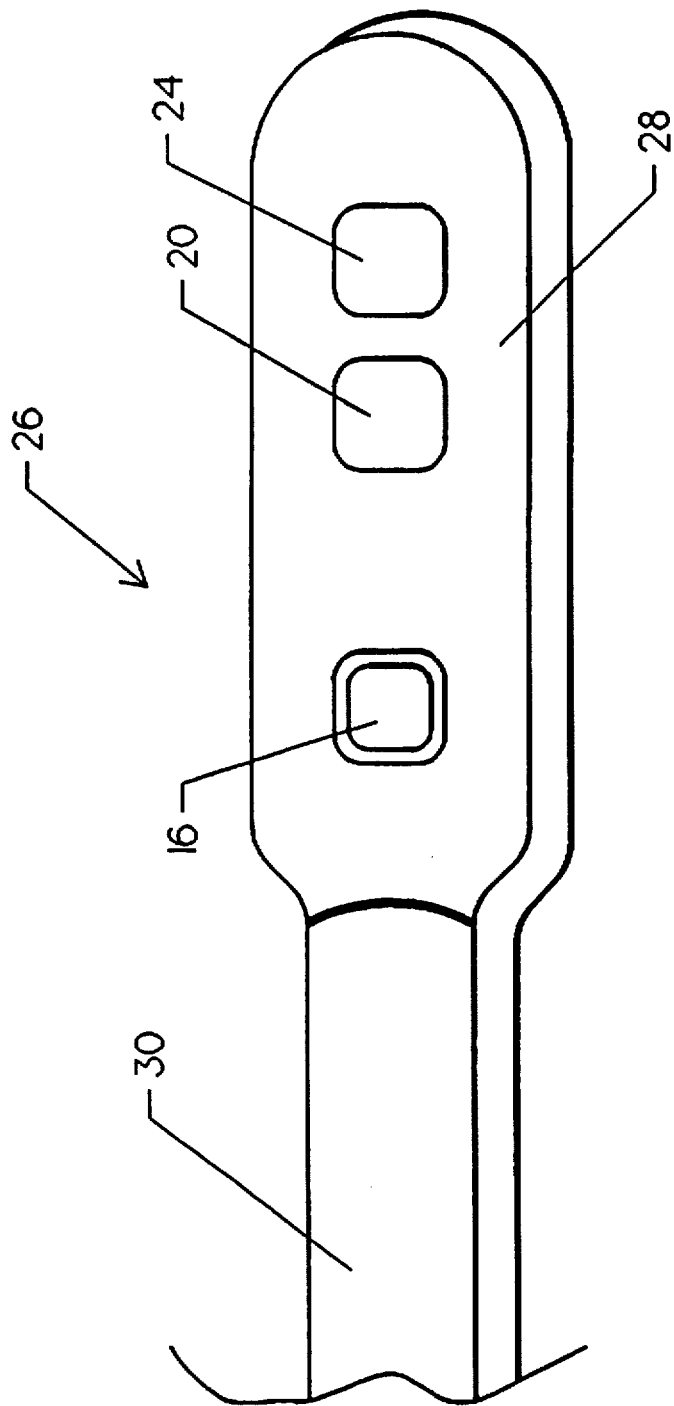


FIG. 2

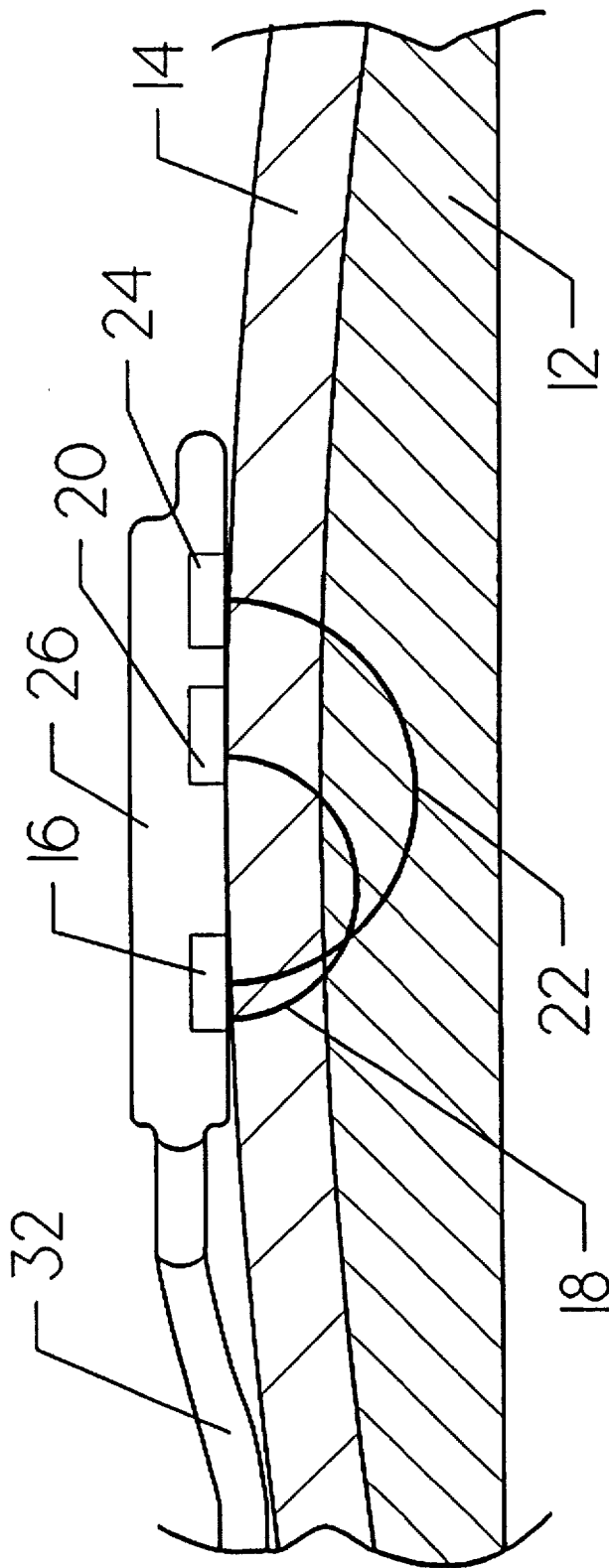


FIG. 3

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.