



US 20050209516A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2005/0209516 A1**

**Fraden**

(43) **Pub. Date: Sep. 22, 2005**

(54) **VITAL SIGNS PROBE**

(57) **ABSTRACT**

(76) Inventor: **Jacob Fraden, Ja Jolla, CA (US)**

Correspondence Address:  
**Jacob Fraden**  
**Suite M**  
**6266 Ferris Sq.**  
**San Diego, CA 92121 (US)**

A combination of a patient core temperature sensor and the dual-wavelength optical sensors in an ear probe or a body surface probe improves performance and allows for accurate computation of various vital signs from the photo-plethysmographic signal, such as arterial blood oxygenation (pulse oximetry), blood pressure, and others. A core body temperature is measured by two sensors, where the first contact sensor positioned on a resilient ear plug and the second sensor is on the external portion of the probe. The ear plug changes it's geometry after being inserted into an ear canal and compress both the first temperature sensor and the optical assembly against ear canal walls. The second temperature sensor provides a reference signal to a heater that is warmed up close to the body core temperature. The heater is connected to a common heat equalizer for the temperature sensor and the pulse oximeter. Temperature of the heat equalizer enhances the tissue perfusion to improve the optical sensors response. A pilot light is conducted to the ear canal via a contact illuminator, while a light transparent ear plug conducts the reflected lights back to the light detector.

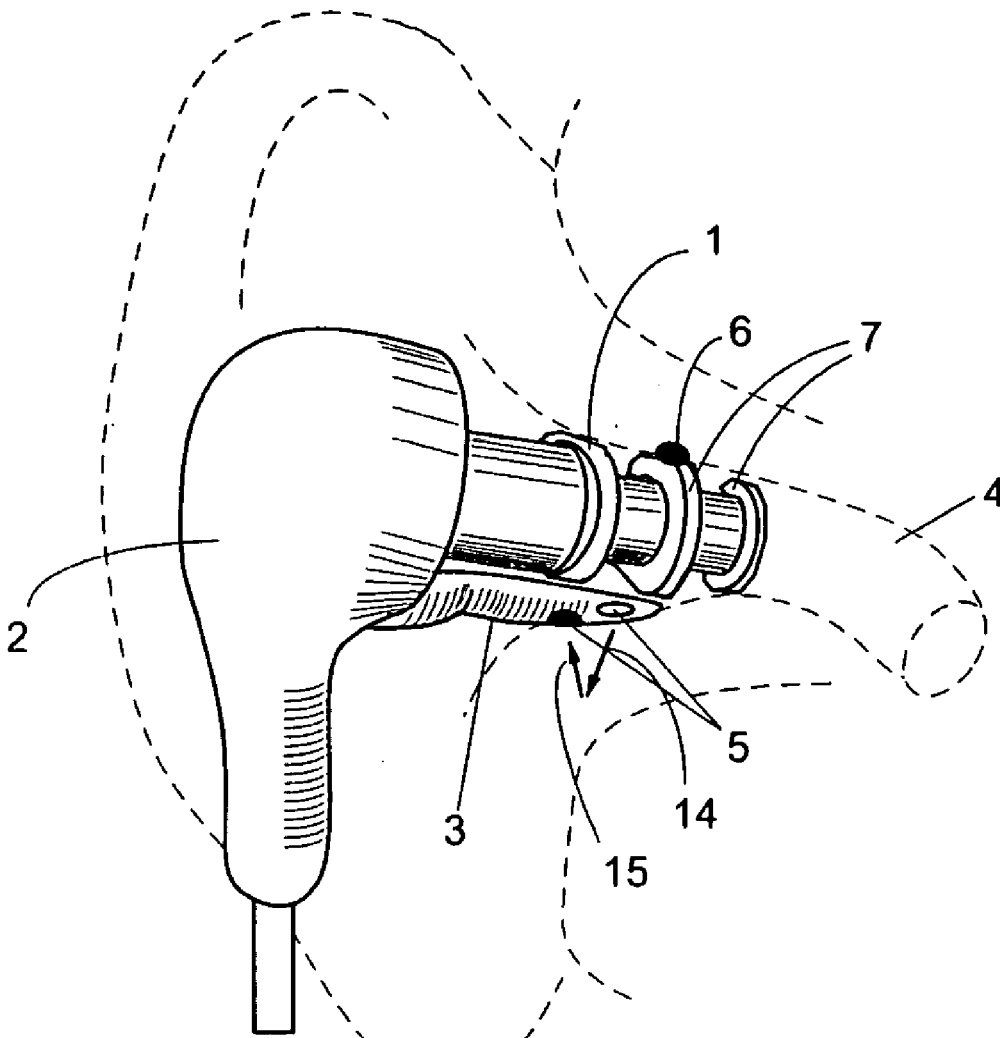
(21) Appl. No.: **10/806,766**

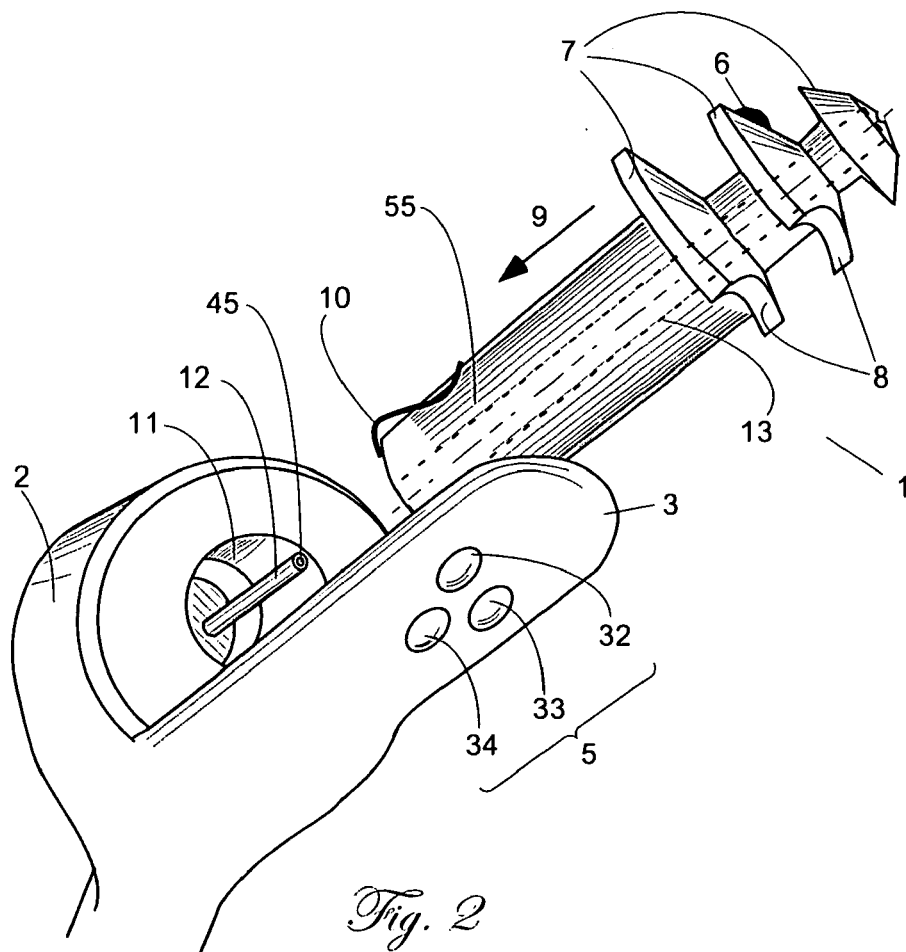
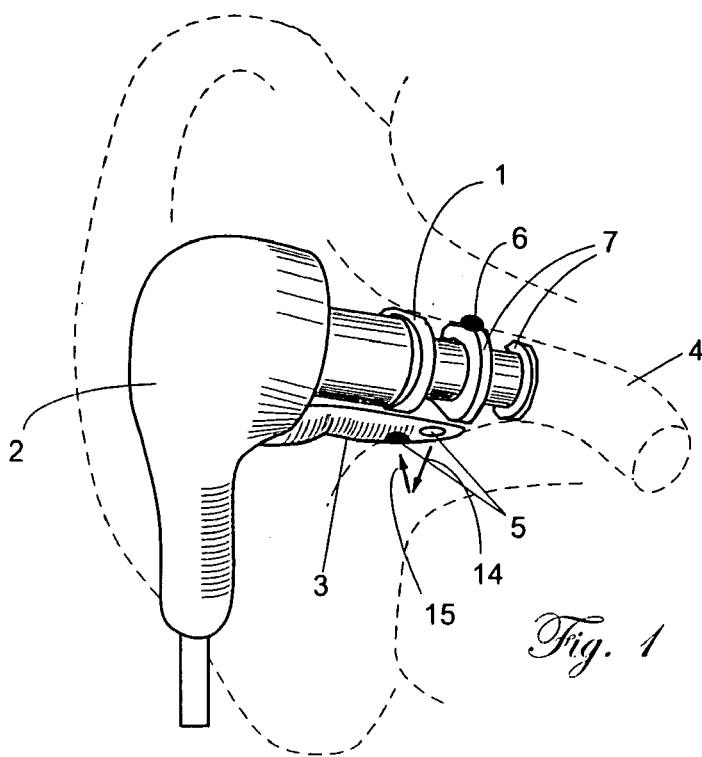
(22) Filed: **Mar. 22, 2004**

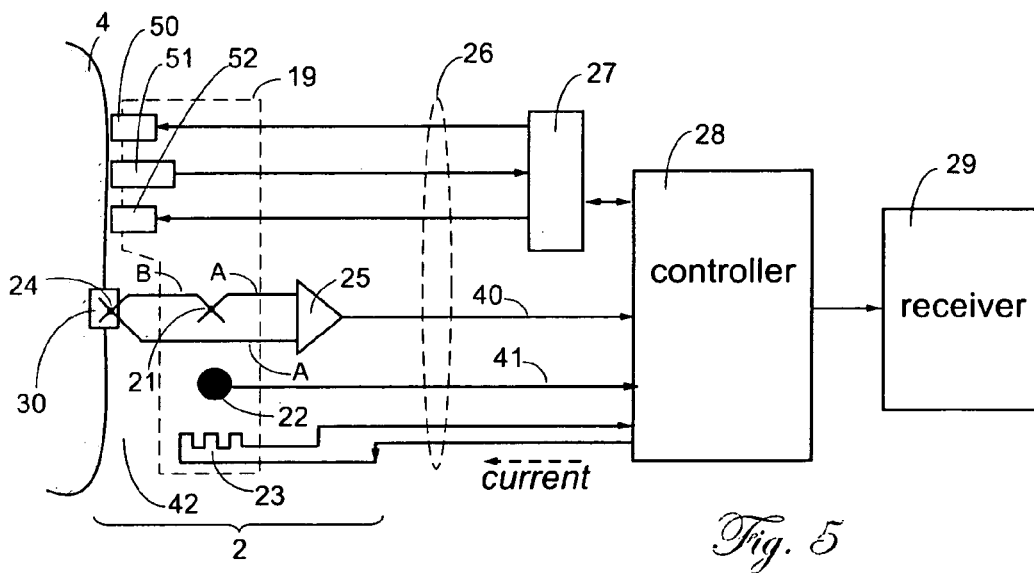
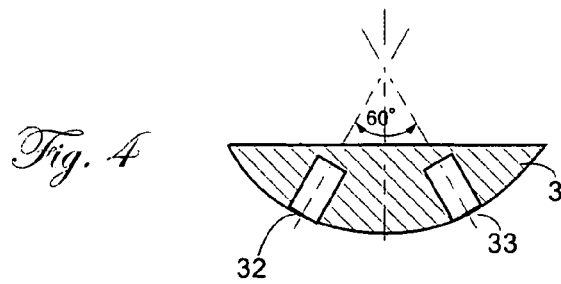
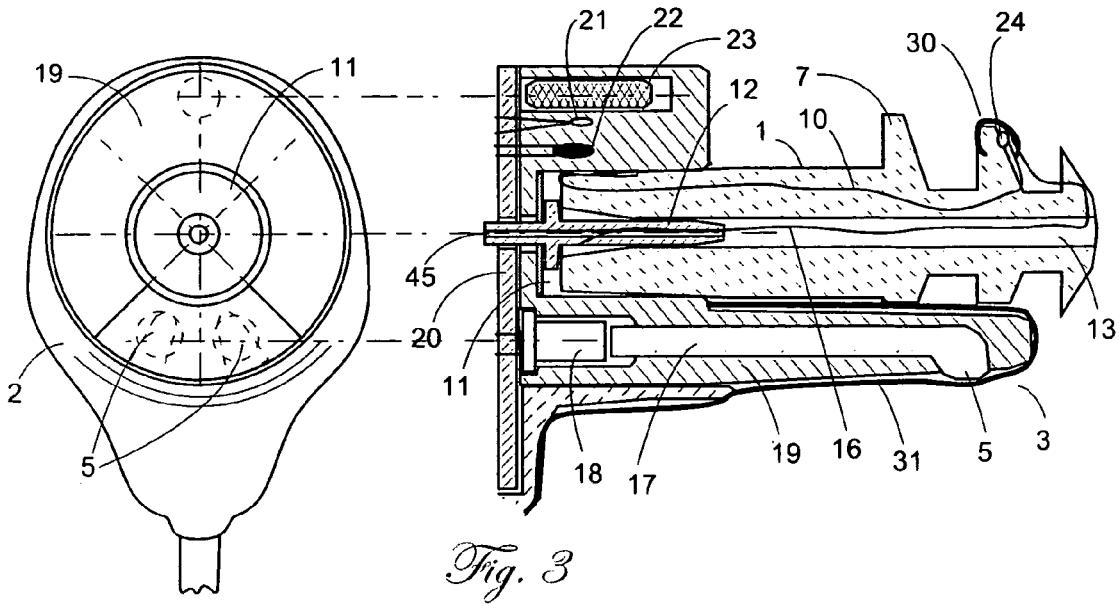
**Publication Classification**

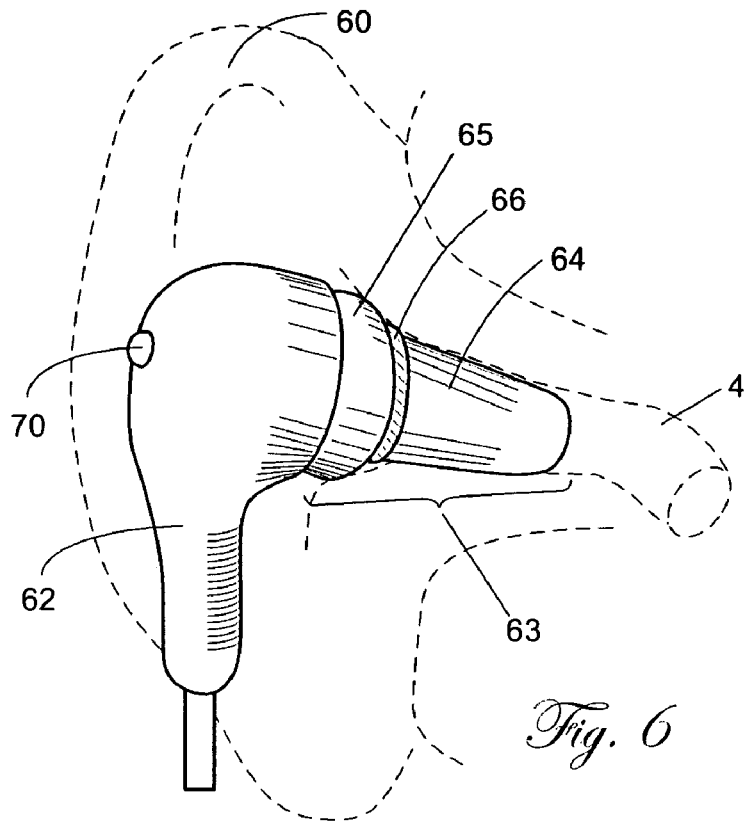
(51) **Int. Cl.<sup>7</sup> ..... A61B 5/00**

(52) **U.S. Cl. .... 600/323; 600/549**

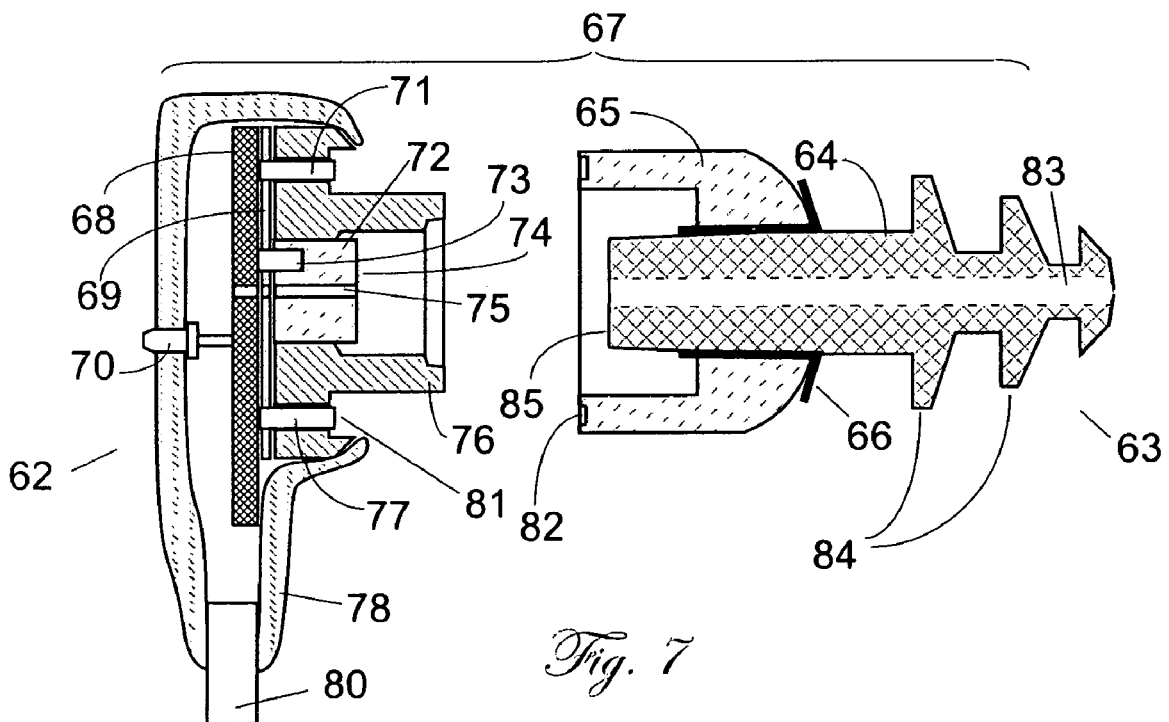




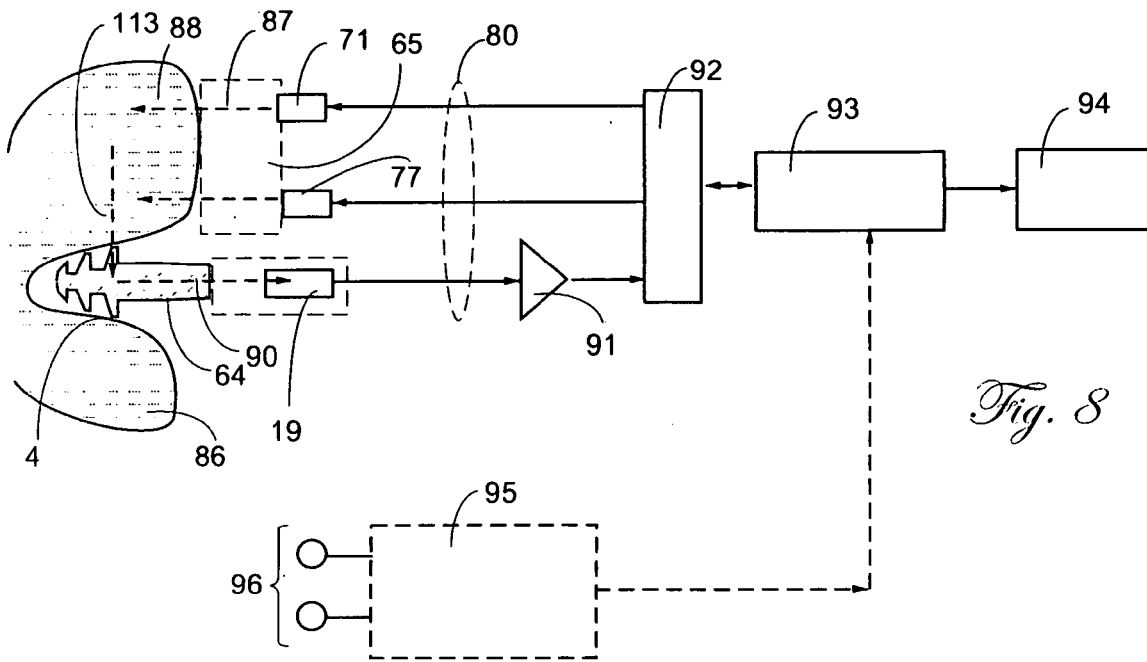




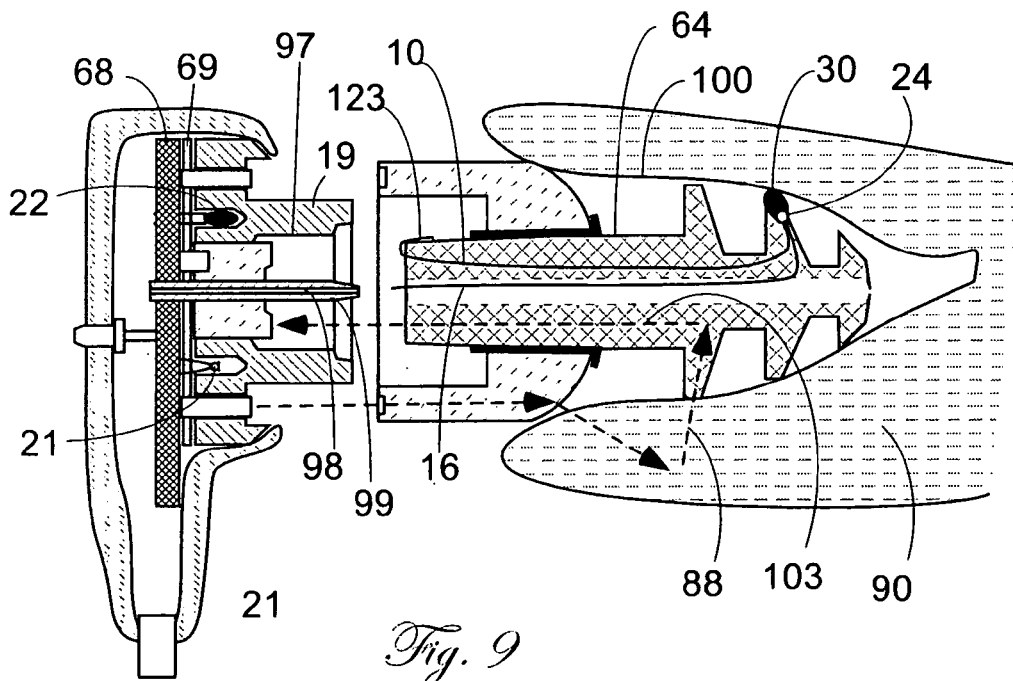
*Fig. 6*



*Fig. 7*



*Fig. 8*



*Fig. 9*

# 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.