

US008670819B2

(12) United States Patent

Iwamiya et al.

(10) Patent No.: US 8,670,819 B2 (45) Date of Patent: Mar. 11, 2014

(54) OPTICAL BIOLOGICAL INFORMATION DETECTING APPARATUS AND OPTICAL BIOLOGICAL INFORMATION DETECTING METHOD

(75) Inventors: **Hiroshi Iwamiya**, Ome (JP); **Shuji**

Nakajima, Kunitachi (JP)

(73) Assignee: Casio Computer Co., Ltd, Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35

U.S.C. 154(b) by 567 days.

(21) Appl. No.: 12/825,601

(22) Filed: **Jun. 29, 2010**

(65) Prior Publication Data

US 2011/0004106 A1 Jan. 6, 2011

(30) Foreign Application Priority Data

Jul. 1, 2009	(JP)	2009-156985
Aug. 18, 2009	(JP)	2009-188987
Dec. 22, 2009	(JP)	2009-291174
Feb. 17, 2010	(JP)	2010-032088

(51) **Int. Cl. A61B 6/00**

(2006.01)

(52) **U.S. Cl.**

(58) Field of Classification Search

(56) References Cited

U.S. PATENT DOCUMENTS

7,733,224	B2 *	6/2010	Tran 340/540
2005/0177140	A1*	8/2005	Jay 606/9
2009/0198173	A1*	8/2009	Samuel et al 604/20
2010/0191125	A1*	7/2010	Foged et al 600/476

FOREIGN PATENT DOCUMENTS

JP	2000-116611	4/2000	
JP	2001-353133	12/2001	
JP	2004-337605	12/2004	
JP	2008-237686	10/2008	
	OTHER PU	OTHER PUBLICATIONS	

Japanese Office Action for Application No. 2010-032088 mailed on Nov. 16, 2011.

* cited by examiner

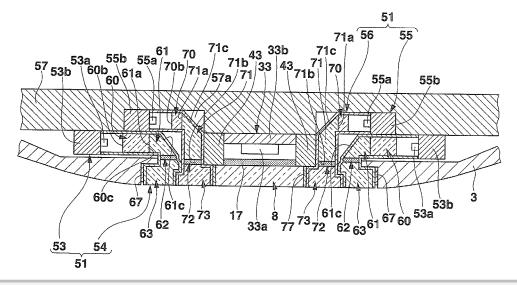
Primary Examiner — Baisakhi Roy

(74) Attorney, Agent, or Firm — Turocy & Watson, LLP

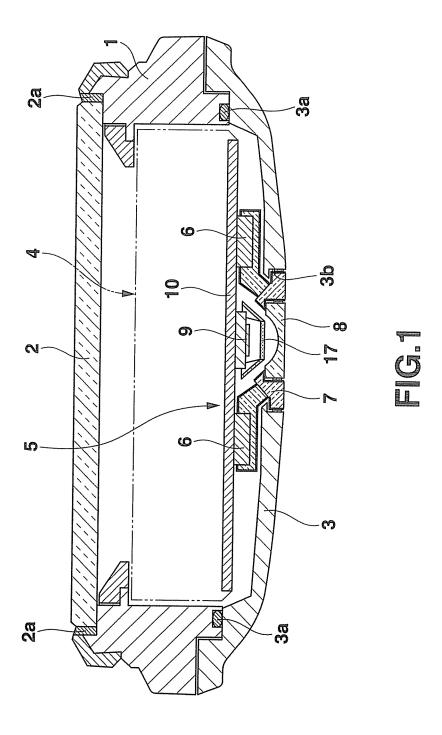
(57) ABSTRACT

An optical biological information detecting apparatus includes a light emitting unit which emits observation light of a specific wavelength band to optically observe a desired portion of a tissue of a skin of a human body, and an annular light guide unit which guides the observation light to a desired area of a surface of the skin corresponding to the desired portion of the tissue of the skin, and which annularly irradiates the observation light onto the desired area of the surface of the skin. The apparatus further includes a light receiving unit which is disposed at a position surrounded by the annular light guide unit, and which receives scattered light scattered by the desired portion of the tissue of the skin after the observation light is annularly irradiated onto the desired area of the surface of the skin by the annular light guide unit.

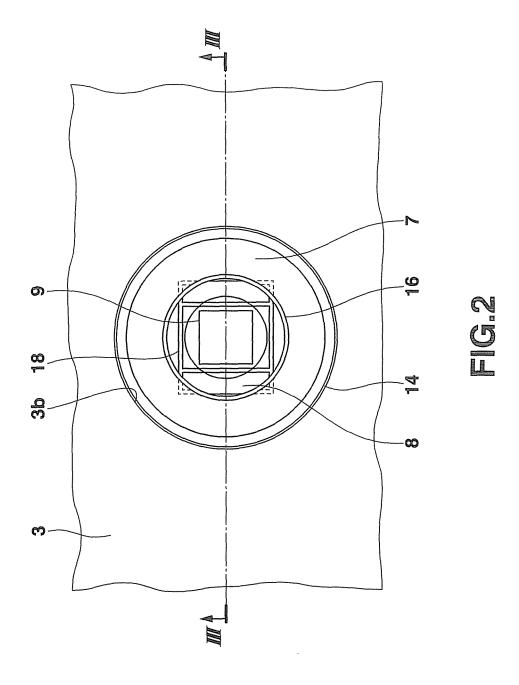
9 Claims, 25 Drawing Sheets



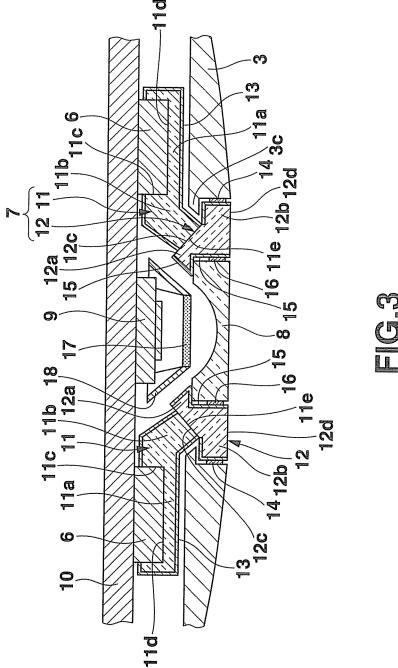




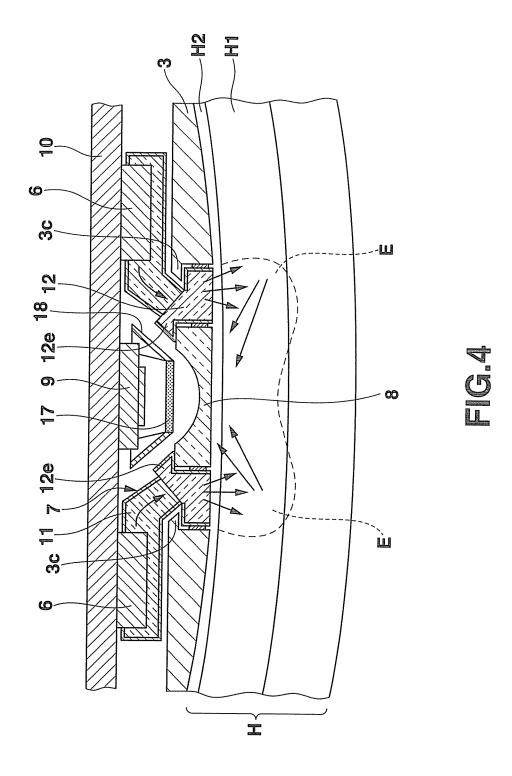














DOCKET

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.

