

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
6 December 2007 (06.12.2007)

PCT

(10) International Publication Number
WO 2007/140210 A3

(51) International Patent Classification:
A61B 5/021 (2006.01)

(21) International Application Number:
PCT/US2007/069545

(22) International Filing Date: 23 May 2007 (23.05.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/802,810 24 May 2006 (24.05.2006) US
60/874,665 13 December 2006 (13.12.2006) US
60/898,269 31 January 2007 (31.01.2007) US

(71) Applicant (for all designated States except US): **TARIL-
IAN LASER TECHNOLOGIES, LIMITED** [GB/GB];
26 Valley View, Barnet Hertfordshire EN5 2NY (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **BORGOS, John**
[US/US]; 425 Dudley Avenue, Shoreview, Minnesota
55126 (US).

(74) Agents: **SHIPSIDES, Geoffrey, P.** et al.; Fish & Richard-
son, P.O. Box 1022, Minneapolis, Minnesota 55440-1022
(US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH,
CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES,
FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN,
IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR,
LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX,
MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO,
RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

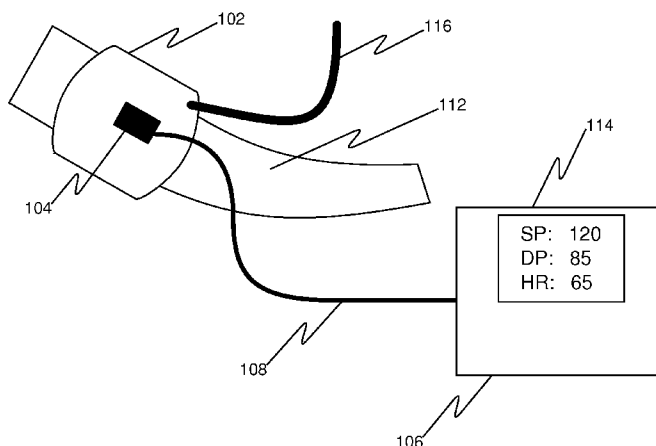
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL,
PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report
— before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
7 February 2008

(54) Title: OPTICAL VITAL SIGN DETECTION METHOD AND MEASUREMENT DEVICE



(57) Abstract: A vital sign measurement device includes a sensor fixation device, an optical sensing system, and an output unit. The sensor fixation device is adapted to be placed against an anatomical location of a subject, within which is an artery. The optical sensing system includes an optical source, an optical refractor, and an optical detector, all of which are held by the sensor fixation device and move with movement of the sensor fixation device. The optical sensing system is positioned with respect to the sensor fixation device to sense movement corresponding to an arterial pulse when the sensor fixation device is placed against the anatomical location of the subject. The optical sensing system can sense an arterial pulse from the movement, bending, or compression of at least one portion of the optical sensing system relative to other portions of the optical sensing system resulting in a change in an optical signal received by the optical detector. The output unit receives, from the optical sensing system, an input indicative of movement corresponding to an arterial pulse and generates, using the input, a measure of the vital sign.



WO 2007/140210 A3