

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
8 March 2007 (08.03.2007)

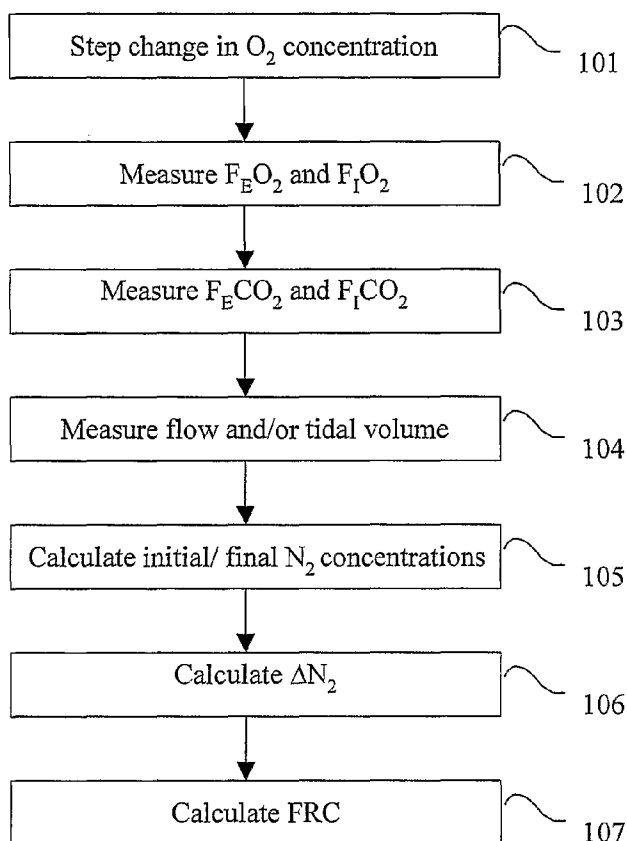
PCT

(10) International Publication Number
WO 2007/026367 A3

- (51) International Patent Classification:
A61B 5/02 (2006.01)
- (21) International Application Number:
PCT/IL2006/001021
- (22) International Filing Date:
3 September 2006 (03.09.2006)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/713,355 2 September 2005 (02.09.2005) US
- (71) Applicant (for all designated States except US): **TECHNION RESEARCH AND DEVELOPMENT FOUNDATION LTD.** [IL/IL]; Senate House, Technion City, 32000 Haifa (IL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **BAR-LAVIE, Yaron** [IL/IL]; 33 Ha-sukkah St., 30909 Zichron Yaakov (IL). **GAVRIELY, Noam** [IL/IL]; 11a Sinai Ave., 34331 Haifa (IL).
- (74) Agent: **FRIEDMAN, Mark**; 7 Jabotinsky St., 52520 Ramat Gan (IL).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, 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, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, 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, 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).

[Continued on next page]

(54) Title: LUNG VOLUME MONITORING METHOD AND DEVICE



(57) Abstract: A method for determining functional residual capacity (FRC) of a patient while ventilating the patient. The system may include a medical ventilator which provides inhalation and exhalation from the patient, a sensor which measures a fraction one or more gas components of the inhalation and a fraction of the same gas components of the exhalation. A step change of oxygen fraction is provided to the inhalation of the patient. Subsequent to the step change, The fractions of the gas components are measured in the inhalation and in the exhalation. The functional residual capacity of the lungs of the patient is measured based on the fraction of the gas components in the inhalation and in the exhalation. The step change is provided manually by a technician, or automatically by programming a programmable device to provide the step change automatically to the patient by the medical ventilator. The step change is either an increase or a decrease in of the oxygen fraction.

WO 2007/026367 A3



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

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) Date of publication of the international search report:

15 November 2007

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL06/01021

A. CLASSIFICATION OF SUBJECT MATTER
 IPC: A61B 5/02(2006.01)

USPC: 600/532;73/23.3;422/84;128/203.24
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 U.S. : 600/532; 73/23.3; 422/84; 128/203.24

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 none

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 none

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- A	US 5957128 A (Hecker et al) 28 September 1999 (28.09.1999), see entire document.	1-6, 26-30 ----- 7-25
A	US 2004/0249301 A1 (Stenqvist) 09 December 2004 (09.12.2004), see entire document.	1-30
A	US 2002/0052560 A1 (Koch et al) 02 May 2002 (02.05.2002) see entire document	1-30
A	US 6306099 B1 (Morris) 23 October 2001 (23.10.2001) see entire document.	1-30

Further documents are listed in the continuation of Box C. See patent family annex.

<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
---	---

Date of the actual completion of the international search: 20 June 2007 (20.06.2007) Date of mailing of the international search report: **20 SEP 2007**

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer: <i>Sharon D. Greene for</i> Robert L. Nasser Telephone No. 571-272-4731
---	---