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- (71) Applicant (for all designated States except US): **CARDIOSENSE LTD.** [IL/IL]; Ben Gurion Airport, Pob 300, 70100 Lod (IL).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **SHANI, Haim** [IL/IL]; 83 Adolam Street, 73142 Shoham (IL).
- (74) Agent: **REINHOLD COHN AND PARTNERS**; P.o. Box 4060, 61040 Tel Aviv (IL).
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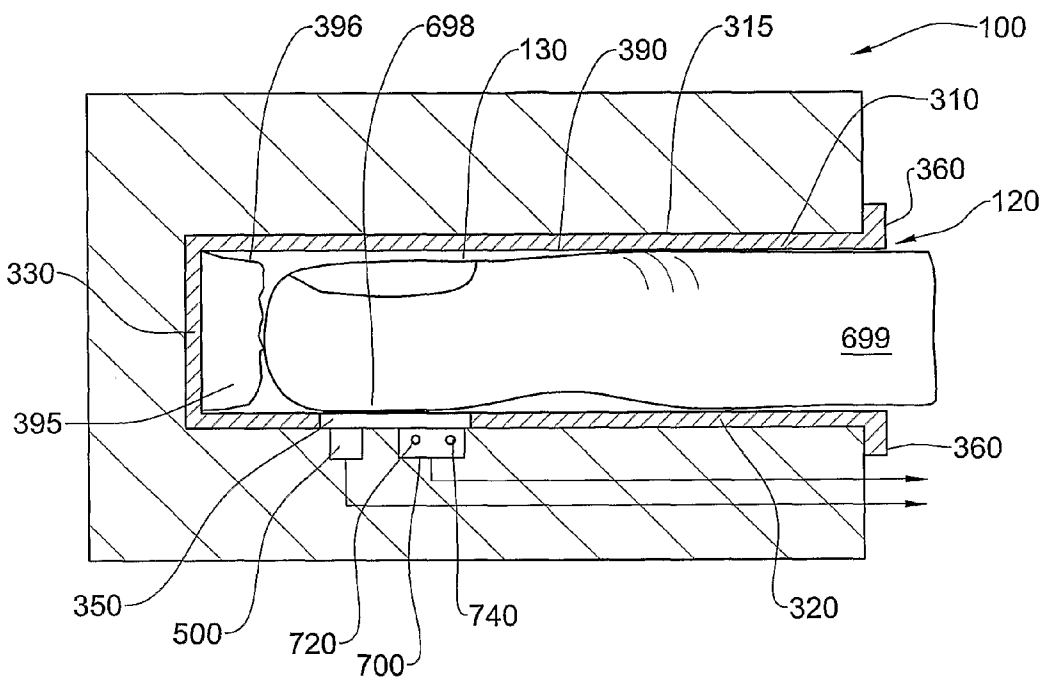
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: APPARATUS, SYSTEM AND METHOD FOR DETERMINING CARDIO-RESPIRATORY STATE



(57) Abstract: An apparatus, system and method provide data indicative of cardio-respiratory state of a patient. Two or more cardio-respiratory parameters of the patient are measured, and optionally monitored over time, the two or more cardio-respiratory parameters being different one from the other and being measured at a same anatomical part of said patient.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/IL2007/000114

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B5/00

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)
A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/197551 A1 (AL-ALI AMMAR [US] ET AL) 8 September 2005 (2005-09-08)	1-9, 17-20, 23-31, 36-40, 43
Y	abstract; figures 1,2,16 paragraphs [0007], [0008], [0038] - [0040], [0042], [0043], [0060], [0062], [0082], [0094] - [0096]	10-16, 21,22, 32-35, 41,42
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Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *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)
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- *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
- *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.
- *&* document member of the same patent family

Date of the actual completion of the international search

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Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Pereda Cubián, David

INTERNATIONAL SEARCH REPORT

International application No

PCT/IL2007/000114

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/07585 A (UNIV VIRGINIA COMMONWEALTH [US]; WARD KEVIN R [US]; BARBEE R WAYNE [US]) 31 January 2002 (2002-01-31) abstract; figure 26 page 2, line 9 - line 12 page 9, line 19 - line 29 page 18, line 14 - line 28 page 21, line 16 - line 26 page 40, line 15 - line 28	1-5,8,9
X	US 6 731 963 B2 (FINAROV ALEXANDER [IL] ET AL) 4 May 2004 (2004-05-04) abstract; figures 3,4,6 column 2, line 1 - line 16 column 2, line 60 - line 67 column 7, line 3 - line 41 column 8, line 58 - column 9, line 7	73-76
Y		32-35
Y	LEFLORE J L ET AL: "Capillary refill time is an unreliable indicator of cardiovascular status in term neonates" ADVANCES IN NEONATAL CARE, W.B. SAUNDERS, vol. 5, no. 3, June 2005 (2005-06), pages 147-154, XP004909874 ISSN: 1536-0903 the whole document	10-16
Y	EP 0 807 402 A (OHMEDA INC [US]) 19 November 1997 (1997-11-19) abstract; figure 6 page 9, line 28 - line 49	21,22
Y	US 6 616 613 B1 (GOODMAN JESSE B [CA]) 9 September 2003 (2003-09-09) abstract; figure 1 column 8, line 53 - line 59	41,42
A,P	WO 2006/086085 A (HYPERMED INC [US]; PANASYUK SVETLANA V [US]; FREEMAN JENNY E [US]; HOP) 17 August 2006 (2006-08-17) the whole document	1-44, 73-76
A	US 6 685 635 B2 (SHANI HAIM [IL] ET AL) 3 February 2004 (2004-02-03) cited in the application the whole document	1-44, 73-76

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2007/000114

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: **44-72**
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Diagnostic method practised on the human or animal body

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IL2007/000114

Patent document cited in search report	Publication date	Publication date	Patent family member(s)	Publication date
US 2005197551	A1	08-09-2005	NONE	
WO 0207585	A	31-01-2002	AU 7200301 A EP 1304955 A2	05-02-2002 02-05-2003
US 6731963	B2	04-05-2004	AU 1176400 A WO 0053080 A1 US 2002077535 A1	28-09-2000 14-09-2000 20-06-2002
EP 0807402	A	19-11-1997	CA 2201577 A1 JP 10052408 A JP 3350521 B2 JP 2001178709 A US 5766127 A	15-10-1997 24-02-1998 25-11-2002 03-07-2001 16-06-1998
US 6616613	B1	09-09-2003	US 2003036685 A1	20-02-2003
WO 2006086085	A	17-08-2006	NONE	
US 6685635	B2	03-02-2004	AU 6178900 A CA 2377098 A1 EP 1211977 A1 WO 0106926 A1 JP 2003505133 T US 2002115935 A1	13-02-2001 01-02-2001 12-06-2002 01-02-2001 12-02-2003 22-08-2002