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(54) Title: MONITORING, PREDICTING AND TREATING CLINICAL EPISODES

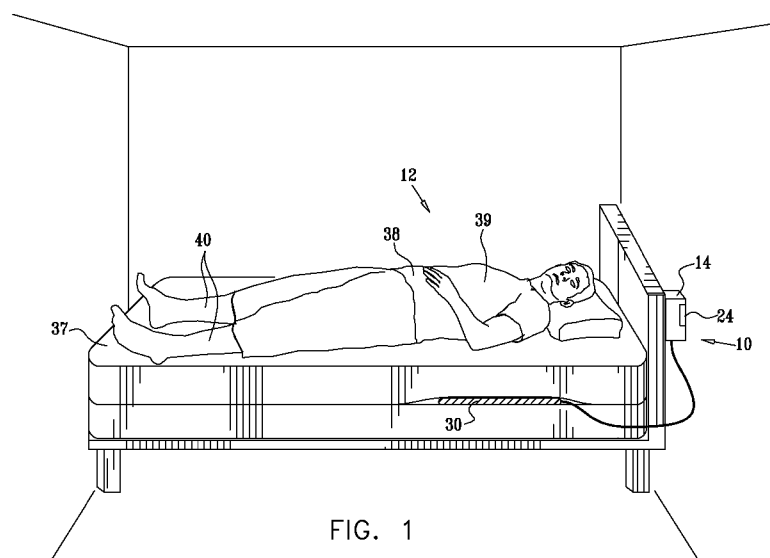


FIG. 1

(57) Abstract: Apparatus and methods are described including a motion sensor (30) that senses motion of a subject and generates a motion signal in response thereto. An oximetry sensor (86) measures oxygen saturation of the subject and generates an oximetry signal in response thereto. A control unit (14) analyzes the sensed motion and the sensed oximetry signal, and filters out false alerts relating to a condition of the subject generated by the oximetry signal, based on correlation between the oximetry signal and an aspect of the motion signal. Other embodiments are also described.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL 11/50045

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61B 5/113 (2012.01)

USPC - 600/534

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)

USPC: 600/534

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

USPC: 600/300, 529, 587, 595

IPC(8): A61B5/00, 5/08, 5/103, 5/11 (keyword limited; terms below)

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

PubWEST(PGPB, USPT, EPAB, JPAB); Google; Search Terms Used: detect\$3, monitor\$3, movement, motion, bed, mattress, filter\$3, remov\$3, motor\$4, generat\$3, sound, audio, inspiration, inhalation, exhalation, expiration, output\$4, alarm, tilt, angle, attach\$3, secur\$3, stretch\$4, cushion, sensor, strap, band, elastic, ballist\$3, cardio, side, people, pe

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008/0275349 A1 (HALPERIN et al) 06 November 2008 (06.11.2008) para [0596], [0599], [0608], [0612], [0614], [0616], [0623], [0628], [0672], [0703], [0726], [0727], [0728], [0732], [0739], [0741], [0743], [0745], [0753], [0795], [0814], [0823], [0825]-[0826], [0855], [0865]-[0866]	1-3, 7-30, 33, 35-43, 50-56
Y		4, 31-32, 34, 44-49, 57-60
Y	US 2008/0004904 A1 (TRAN) 03 January 2008 (03.01.2008) para [0017], [0178]	4
Y	US 2010/0215074 A1 (LOZINSKI et al) 26 August 2010 (26.08.2010) abstract	31
Y	US 2009/0299229 A1 (JOHNSON et al) 03 December 2009 (03.12.2009) para [0003], [0054]	32, 34
Y	US 5,730,140 A (FITCH) 24 March 1998 (24.03.1998) col 6, ln 47-53, col 6, ln 58-col 7, ln 10	44-49
Y	US 2007/0257564 A1 (KITADE et al) 08 November 2007 (08.11.2007) fig 3, para [0046]	57-60
Y	US 2007/0024451 A1 (ALBERT) 01 February 2007 (01.02.2007) para [0096]	59

☐ Further documents are listed in the continuation of Box C.


* 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 application or patent 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)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

04 July 2012 (04.07.2012)

Date of mailing of the international search report

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Name and mailing address of the ISA/US

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL 11/50045

Box No. 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.:
because they relate to subject matter not required to be searched by this Authority, namely:
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 No. 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:

Group I: claims 1-4, 7-60 directed to apparatus

Group II: claim 5-6 directed to apparatus

The groups of inventions above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The special technical feature of the Group I claims is apparatus for monitoring patient motion, which is not present in the claims of Group II.

The special technical feature of the Group II claims is apparatus for monitoring a plurality of patients and assigning color codes, which is not present in the claims of Group I.

Groups I-II share the technical feature of apparatus for monitoring a patient. This generic feature does not avoid the prior art, as evinced by US 2010/0130873 A1 to Yuen et al which notably teaches an example of a patient motion monitoring system (para [0122], [0123]).

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 additional fees, this Authority did not invite payment of additional fees.
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.:
1-4, 7-60

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.