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(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

[Continued on next page]

(54) **Title:** SYSTEMS AND METHODS FOR REDUCING THE IMPACT OF ALARM SOUNDS ON PATIENTS

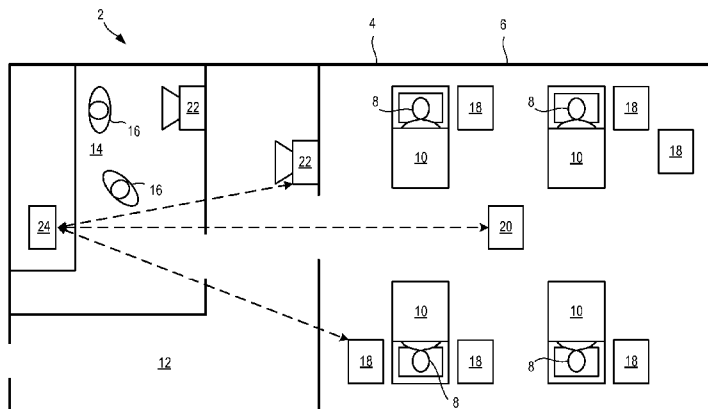


Figure 1

(57) **Abstract:** There is provided a system for use with a patient in a healthcare environment, the system comprising a medical device configured to monitor or treat a patient, the medical device being for use in a room in which the patient is located and comprising an alarm unit configured to issue an audible alarm; a detection unit configured to detect whether a healthcare staff member is in the room in which the patient is located; a remote alarm unit configured to issue an alarm to alert a healthcare staff member located outside the room in which the patient is located; and a control unit that is connected to the medical device, the remote detection unit and the alarm unit, the control unit being configured to: (i) control the alarm unit in the medical device to issue an audible alarm in the event that the medical device detects an alarm condition for the patient or the medical device and the detection unit detects that a healthcare staff member is in the room in which the patient is located; and (ii) control the remote alarm unit to issue an alarm to alert a healthcare staff member located outside the room in which the patient is located in the event that the medical device detects an alarm condition for the patient or the medical device and the detection unit detects that no healthcare staff member is in the room in which the patient is located.





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- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

4 December 2014

INTERNATIONAL SEARCH REPORT

International application No PCT/IB2014/059477

A. CLASSIFICATION OF SUBJECT MATTER INV. G08B3/10 A61B5/11 G08B21/22 ADD.				
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) G08B 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 practicable, 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 7 920 061 B2 (KLEIN KEITH [US] ET AL) 5 April 2011 (2011-04-05)	1-6, 12, 13		
Y	column 1, lines 1-13 column 1, line 60 - column 2, line 10 column 2, lines 21-43, 59-63 column 3, lines 15-47, 57-62 column 4, line 18 - column 5, line 40; figures 1, 2	7-11		
Y	----- US 2011/085680 A1 (CHEN WEN-CHUN [TW] ET AL) 14 April 2011 (2011-04-14) paragraphs [0001], [0005] - [0007], [0017] - [0021]	7-11		
A	----- US 2012/027226 A1 (DESENBERG MILFORD [US]) 2 February 2012 (2012-02-02) paragraphs [0009], [0042] ----- -/--	7-11		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.				
* Special categories of cited documents : <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> "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 </td> <td style="width: 50%; border: none; vertical-align: top;"> "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 </td> </tr> </table>			"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
"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	Date of mailing of the international search report			
25 June 2014	19/09/2014			
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Fagundes-Peters, D			

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2014/059477

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:

see additional sheet

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 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.:

1-13

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.

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2014/059477

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007/177744 A1 (KIRN LARRY [US]) 2 August 2007 (2007-08-02) paragraphs [0002] - [0009] -----	7-11

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2014/059477

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
US 7920061	B2	05-04-2011	DE 102009044569 A1	27-05-2010
			JP 5555479 B2	23-07-2014
			JP 2010134924 A	17-06-2010
			US 2010127866 A1	27-05-2010

US 2011085680	A1	14-04-2011	TW M374628 U	21-02-2010
			US 2011085680 A1	14-04-2011

US 2012027226	A1	02-02-2012	NONE	

US 2007177744	A1	02-08-2007	NONE	

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13

A system for use with a patient in a healthcare environment, the system comprising:- a medical device configured to monitor or treat a patient, the medical device being for use in a room in which the patient is located and comprising an alarm unit configured to issue an audible alarm;- a detection unit configured to detect whether a healthcare staff member is in the room in which the patient is located;- a remote alarm unit configured to issue an alarm to alert a healthcare staff member located outside the room in which the patient is located; and- a control unit that is connected to the medical device, the remote detection unit and the alarm unit, the control unit being configured to:(i) control the alarm unit in the medical device to issue an audible alarm in the event that (a) the medical device detects an alarm condition for the patient or the medical device and (b) the detection unit detects that a healthcare staff member is in the room in which the patient is located; and(ii) control the remote alarm unit to issue an audible alarm to alert a healthcare staff member located outside the room in which the patient is located in the event that (a) the medical device detects an alarm condition for the patient or the medical device and (b) the detection unit detects that no healthcare staff member is in the room in which the patient is located; andwherein the control unit is further configured to set the volume of the audible alarm issued by the remote alarm unit based on the distance of a healthcare staff member from the room in which the patient is located.

Accordingly a method (claim 12) and a computer program to fulfill the method (claim 13).

2. claims: 14, 15

A medical device for use in monitoring or treating a patient in a patient bed, the position and/or configuration of the patient bed being adjustable to the needs of the patient, the medical device being for use in a room in which the patient bed is located, the medical device comprising:a sensor configured to monitor the patient and/or the operation of the medical device;a directional speaker configured to emit an alarm signal in the event that the sensor detects an alarm condition for the patient or the medical device, the directional speaker being configured to emit the alarm signal with spatial directivity such that the alarm signal is emitted substantially away from a patient on the patient bed;a control unit that is configured to determine the position and/or configuration of the patient bed or changes in the position and/or configuration of the patient bed and to adjust the spatial directivity of the

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

directional speaker in response to the position and/or configuration of the patient bed or changes in the position and/or configuration of the patient bed so that the alarm signal is emitted substantially away from a patient on the patient bed.
Accordingly, a method (claim 15)
