



- (51) International Patent Classification:
G06Q 50/00 (2012.01)
- (21) International Application Number:
PCT/US2011/052915
- (22) International Filing Date:
23 September 2011 (23.09.2011)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/385,607 23 September 2010 (23.09.2010) US
- (71) Applicant (for all designated States except US):
STRYKER CORPORATION [US/US]; 2825 Airview
Boulevard, Kalamazoo, Michigan 49002 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): DERENNE,
Richard, A. [US/US]; 219 E. Milham Ave., Portage,
Michigan 49002 (US). DELUCA, Richard, T. [US/US];
1514 Royce Avenue, Kalamazoo, Michigan 49001 (US).

WROBLEWSKI, Jason, J. [US/US]; 6799 Tall Oaks Dr., Kalamazoo, Michigan 49009 (US). DHALL, Sanjay [US/US]; 374 Innsbrook Dr., Canton, Michigan 48188 (US). DUAN, Xiyu [CN/US]; 1861 Shirley Ln, Apt. C4, Ann Arbor, Michigan 48105 (US). LOWALEKAR, Vishal, P. [IN/US]; 6448 Asbury Park, Detroit, Michigan 48228 (US).

(74) Agents: WARNER NORCROSS & JUDD LLP et al.; Matthew L. Goska, 900 Fifth Third Center, 111 Lyon Street, N.W., Grand Rapids, Michigan 49503-2487 (US).

(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, 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, 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, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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.

[Continued on next page]

(54) Title: VIDEO MONITORING SYSTEM

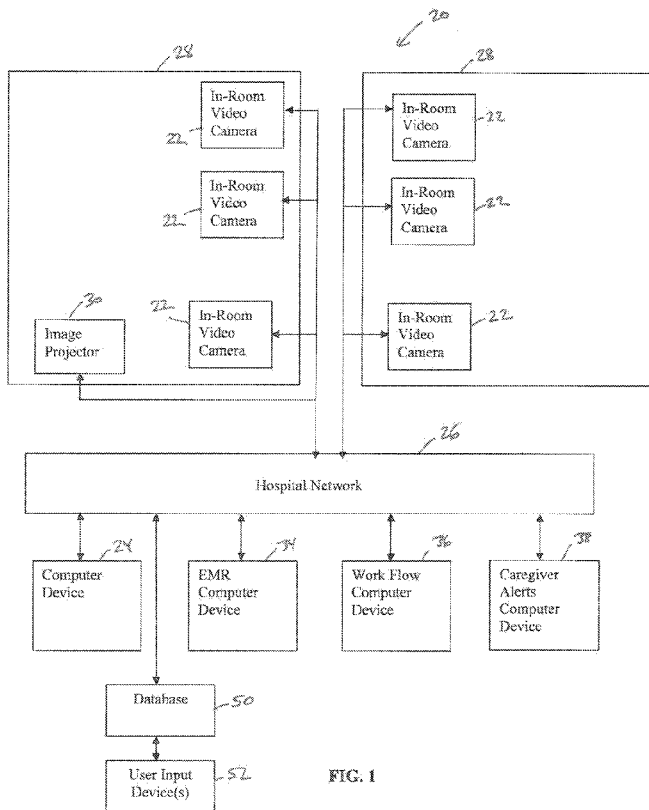


FIG. 1

(57) Abstract: A monitoring system includes a camera adapted to capture images and output signals representative of the images. The camera may include one or more depth sensors that detect distances between the depth sensor and objects positioned within the field of view of the one or more cameras. A computer device processes the image signals and or depth signals from cameras and determines any one or more of the following: (a) whether a patient care protocol has been properly followed; (b) what condition a patient is in; (c) whether an infection control protocol has been properly followed; and (d) whether steps have been taken to reduce the risk of a patient from falling. Alerts may be issued if any conditions of importance are detected.

WO 2012/040554 A3

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- *with international search report (Art. 21(3))*
- *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))*

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

7 June 2012

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/052915**A. CLASSIFICATION OF SUBJECT MATTER****G06Q 50/00(2006.01)i**

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)

G06Q 50/00; A61B 5/021; G06K 9/00; A47B 7/00; H04N 7/14

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

Korean utility models and applications for utility models
Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: patient, camera, monitoring, alert

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	US 2009-0119843 A1 (RODGERS MARK E. et al.) 14 May 2009 See abstract and claims 1-2,9,13,19.	30-31 26-29,32 1-25
Y	KR 10-2000-0076025 A (INFORMEDIX, INC.) 26 December 2000 See abstract and claim 17.	26-29
Y	US 2006-0056655 A1 (HUAFENG WEN et al.) 16 March 2006 See abstract and claim 2.	29,32
A	US 2009-0278934 A1 (ECKER STEPHEN et al.) 12 November 2009 See abstract and claims 1,9,17-18.	1-32

 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 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 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

20 APRIL 2012 (20.04.2012)

Date of mailing of the international search report

25 APRIL 2012 (25.04.2012)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 189 Cheongsu-ro,
Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

LEE, CHUNG KEUN

Telephone No. 82-42-481-5667



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/052915

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009-0119843 A1	14.05.2009	CA 2708682 A1 EP 2227794 A1 US 2009-0044334 A1 US 7987069 B2 WO 2009-064788 A1	22.05.2009 15.09.2010 19.02.2009 26.07.2011 22.05.2009
KR 10-2000-0076025 A	26.12.2000	AU 1998-66735 B2 CA 2283391 A1 EP 1011433 A1 EP 1011433 B1 JP 2001-515620 A US 05954641A A US 06085752A A US 06102855A A WO 98-38909 A1	15.11.2001 11.09.1998 28.06.2000 25.02.2009 18.09.2001 21.09.1999 11.07.2000 15.08.2000 11.09.1998
US 2006-0056655 A1	16.03.2006	US 7502498 B2	10.03.2009
US 2009-0278934 A1	12.11.2009	None	