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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, 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, RO, RS, RU, 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:**

— of inventorship (Rule 4.17(iv))

**Published:**

— with international search report (Art. 21(3))

[Continued on next page]

- (54) **Title:** SYSTEMS AND METHODS FOR IDENTIFYING AND LOCATING AN IMPLANTED DEVICE

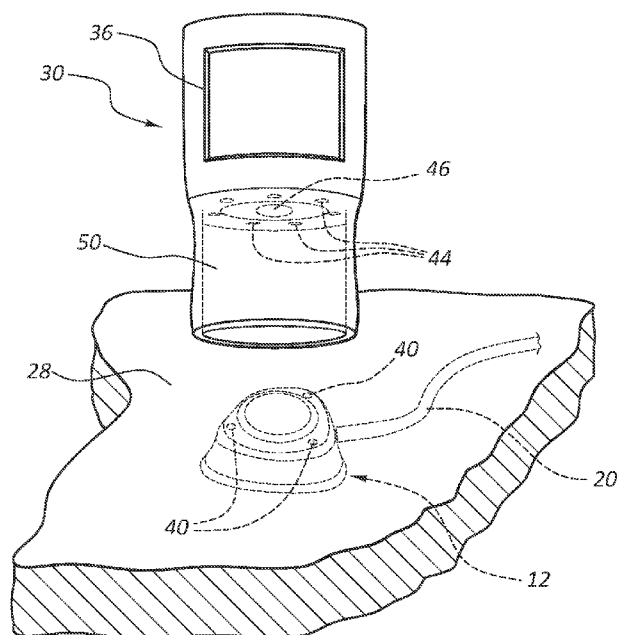


FIG. 5

(57) **Abstract:** A system for identifying an attribute of an implanted medical device, such as an access port is disclosed. In one embodiment, the identification system comprises a marker included with the implanted medical device, wherein the marker relates to an attribute of the implanted medical device. An external detection device is also included, comprising a signal source that emits an incident electromagnetic signal for impingement on the marker of the implanted medical device, a detector that detects a return signal from the marker resulting from impingement of the incident electromagnetic signal, and a user interface for conveying information relating to the attribute based on detection of the return signal. In the case of an implantable access port, for instance, the described system enables information, such as the ability of the port to withstand power injection of fluids therethrough, to be ascertained even after the port has been subcutaneously implanted within the patient.



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20 March 2014

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 11/35406

## A. CLASSIFICATION OF SUBJECT MATTER

**IPC(8) - A61 B 5/06 (201 1.01)****USPC - 600/424**

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)

IPC(8) - A61B 5/06 (201 1.01)

USPC - 600/424

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

IPC(8) - A61B 5/06, 5/00, 6/00, 6/12, 8/00

USPC - 600/424, 300, 407, 437, 550

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

PubWEST (PGPB, USPT, EPAB, JPAB); Google (Patents, Scholar, Web)

Search Terms: Marker, device, port, access, catheter, ultrasound, echogenic, attribute, characteristic, display, size, location, position, power, injection, size, plural, multiple, many, two, three, pattern, transducer, reflect, generate, produce, create, emit, detect, receive

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2009/0227951 A1 (POWERS et al.) 10 September 2009 (10.09.2009) Para [0133]-[0139]	1-5
Y	US 2005/0059884 A1 (KRAG) 17 March 2005 (17.03.2005) Fig. 1; Para [0044], [0110]-[0111]	1-5
Y	US 2008/0021313 A1 (EIDENSCHINK et al.) 24 January 2008 (24.01.2008) Para [0134]	3



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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

30 November 2011 (30.11.2011)

Date of mailing of the international search report

**16 DEC 2011**

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents  
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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 11/35406

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 1-5 directed to an identification system

Group II: claims 6-21 directed to an identification system

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 an ultrasound detection signal, which is not present in the claims of Group II. The special technical feature of the Group II claims is an electromagnetic detection signal, which is not present in the claims of Group I. Groups I-II share the technical feature of a marker on a subcutaneous port and an external device that emits a signal from which a response is received and a parameter determined. This generic feature does not avoid the prior art, as evinced by US 2008/0051722 A1 to Ellsmere et al (hereinafter Ellsmere) which teaches an example of such a device (para [0006]-[0009], port beacon and port locator which generates an excitation signal and receives a response from the beacon from which a proximity signal can be calculated).

Therefore, the listed inventions lack unity of invention under PCT Rule 13 because they do not share a same or corresponding special technical feature.

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.:  
Claim 1-5

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.