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Notes on Codes and Abbreviations" appearing at the beginning  
of each regular issue of the PCT Gazette.

(54) Title: METHOD AND APPARATUS FOR INVASIVE DEVICE TRACKING USING ORGAN TIMING SIGNAL GENERATED FROM MPS SENSORS

(57) Abstract: Apparatus for generating an organ timing signal relating to an inspected organ within the body of a patient, including a medical positioning system, and a processor coupled with the medical positioning system, the medical positioning system including at least one reference electromagnetic transducer placed at a reference location, at least one inner electromagnetic transducer attached to a surgical tool inserted in a blood vessel in the vicinity of the inspected organ, and a medical positioning system processor coupled with the reference electromagnetic transducer and the inner electromagnetic transducer, the medical positioning system processor determining the three-dimensional position of the inner electromagnetic transducer, by processing transmitted electromagnetic signals transmitted from one of the reference electromagnetic transducer and the inner electromagnetic transducer with detected electromagnetic signals detected by the other of the reference electromagnetic transducer and the inner electromagnetic transducer, the medical positioning system processor further generating medical positioning system data sets, each of the medical positioning system data sets including a collection of three-dimensional position coordinate readings demonstrating the motion trajectory of the surgical tool over time, the processor generating the organ timing signal from the medical positioning system data sets by detecting and identifying periodic motion frequencies in the medical positioning system data sets, and filtering the periodic motion frequencies from the medical positioning system data sets.



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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL05/01157

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC: **A61B 5/00( 2006.01)**

USPC: 600/407

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)

U.S. : 600/407

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)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/0049375 A1 (STROMMER et al) 25 April 2002 (25.04.2002), par. 13, 2, 8, 169,	1-38
---	39, fig. 13B, 16A	-----
Y		39-63
Y	US 6,501,981 B1 (SCHWEIKARD et al) 31 December 2002 (31.12.2002), col. 2 lines 34-48,	39-63
	fig. 7, title	
A	US 6,148,095 (PRAUSE et al) 14 November 2000 (14.11.2000), see entire document	1-63
A	US 6,546,271 B1 (REISFELD) 8 April 2003 (08.04.2003), see entire document	1-63

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
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"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		

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL05/01157

## 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.: 64 and 65  
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:

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 any 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.:
- 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.