

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
2 May 2008 (02.05.2008)

PCT

(10) International Publication Number
WO 2008/051841 A3

(51) International Patent Classification:
G06T 3/00 (2006.01)

(21) International Application Number:
PCT/US2007/081942

(22) International Filing Date: 19 October 2007 (19.10.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/862,418 20 October 2006 (20.10.2006) US

(71) Applicant (for all designated States except US):
STEREOTAXIS, INC. [US/US]; A Corporation of the state of Delaware, 4320 Forest Park Avenue, Suite 100, St. Louis, MO 63108 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BLUME, Walter M.** [US/US]; 4320 Forest Park Avenue, Suite 100, St. Louis, MO 63108 (US). **GARIBALDI, Jeffrey M.**

[US/US]; 4320 Forest Park Avenue, Suite 100, St. Louis, MO 63108 (US). **DRURY, Heather** [US/US]; 4320 Forest Park Avenue, Suite 100, St. Louis, MO 63108 (US). **VISWANATHAN, Raju R.** [IN/US]; 4320 Forest Park Avenue, Suite 100, St. Louis, MO 63108 (US).

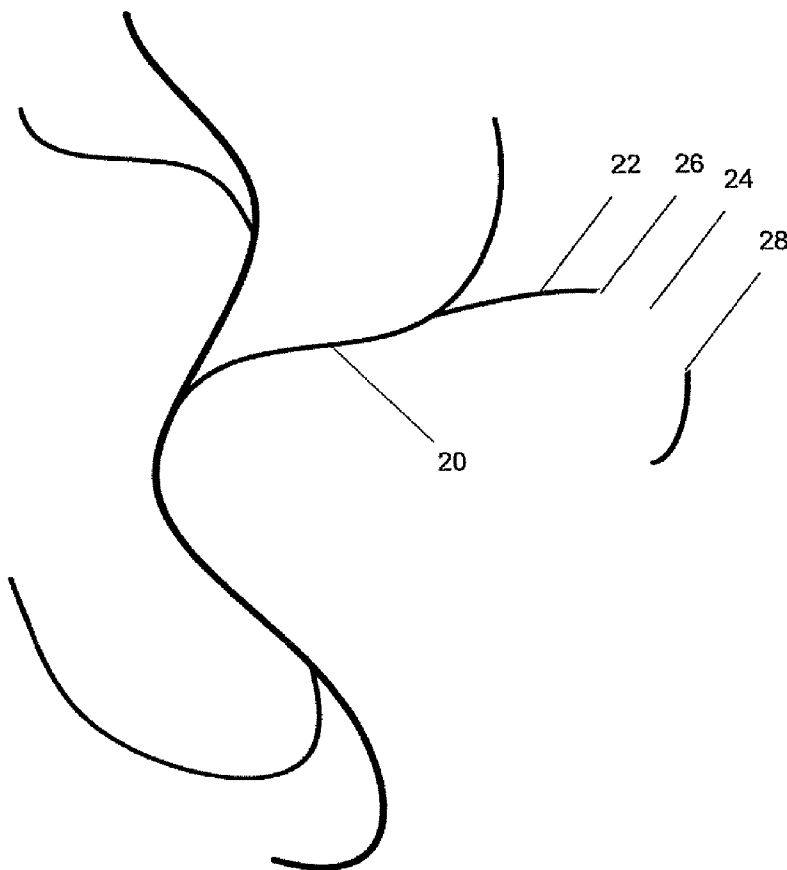
(74) Agent: **WHEELOCK, Bryan K.**; Harness, Dickey & Pierce, P.L.C., 7700 Bonhomme Avenue, Suite 400, St. Louis, Missouri 63105 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: LOCATION AND DISPLAY OF OCCLUDED PORTIONS OF VESSELS ON 3-D ANGIOGRAPHIC IMAGES



(57) Abstract: A method of finding the location of an occluded portion of a blood vessel relative to a three-dimensional angiographic image of a subject's vasculature includes identifying the location of the occluded portion of the blood vessel on each of a series of displayed two dimensional images derived from the three dimensional image data in planes substantially transverse to direction of the occluded portion of the vessel. The identified locations in the occluded portion of the vessel can then be used to determine the path of the occluded portion of the vessel.

WO 2008/051841 A3



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

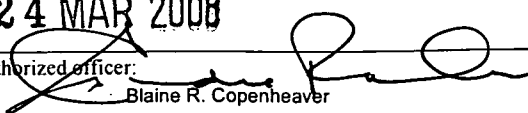
Published:

— *with international search report*

(88) Date of publication of the international search report:
3 July 2008

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/081942

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - G06T 3/00 (2008.01) USPC - 382/131 According to International Patent Classification (IPC) or to both national classification and IPC</p>																				
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols) IPC(8) - G06T 3/00 (2008.01) USPC - 382/131</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PatBase</p>																				
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>US 2004/0223636 A1 (EDIC et al) 11 November 2004 (11.11.2004) entire document</td> <td>1-8, 10-16, 18-25</td> </tr> <tr> <td>Y</td> <td></td> <td>9, 17</td> </tr> <tr> <td>Y</td> <td>US 2006/0098010 A1 (DWYER et al) 11 May 2006 (11.05.2006) entire document</td> <td>9, 17</td> </tr> <tr> <td>A</td> <td>WO 2005/031635 A1 (KLAIMAN et al) 07 April 2005 (07.04.2005) entire document</td> <td>1-25</td> </tr> <tr> <td>A</td> <td>US 2001/0036303 A1 (MAURINCOMME et al) 01 November 2001 (01.11.2001) entire document</td> <td>1-25</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	US 2004/0223636 A1 (EDIC et al) 11 November 2004 (11.11.2004) entire document	1-8, 10-16, 18-25	Y		9, 17	Y	US 2006/0098010 A1 (DWYER et al) 11 May 2006 (11.05.2006) entire document	9, 17	A	WO 2005/031635 A1 (KLAIMAN et al) 07 April 2005 (07.04.2005) entire document	1-25	A	US 2001/0036303 A1 (MAURINCOMME et al) 01 November 2001 (01.11.2001) entire document	1-25
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																		
X	US 2004/0223636 A1 (EDIC et al) 11 November 2004 (11.11.2004) entire document	1-8, 10-16, 18-25																		
Y		9, 17																		
Y	US 2006/0098010 A1 (DWYER et al) 11 May 2006 (11.05.2006) entire document	9, 17																		
A	WO 2005/031635 A1 (KLAIMAN et al) 07 April 2005 (07.04.2005) entire document	1-25																		
A	US 2001/0036303 A1 (MAURINCOMME et al) 01 November 2001 (01.11.2001) entire document	1-25																		
<p><input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/></p>																				
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td style="vertical-align: top;"> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="vertical-align: top;"> <p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p> </td> </tr> </table>			<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p>																
<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p>																			
<p>Date of the actual completion of the international search 12 February 2008</p>		<p>Date of mailing of the international search report 24 MAR 2008</p>																		
<p>Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201</p>		<p>Authorized officer:  Blaine R. Copenhaver</p> <p>PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774</p>																		