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(72) Inventors; and

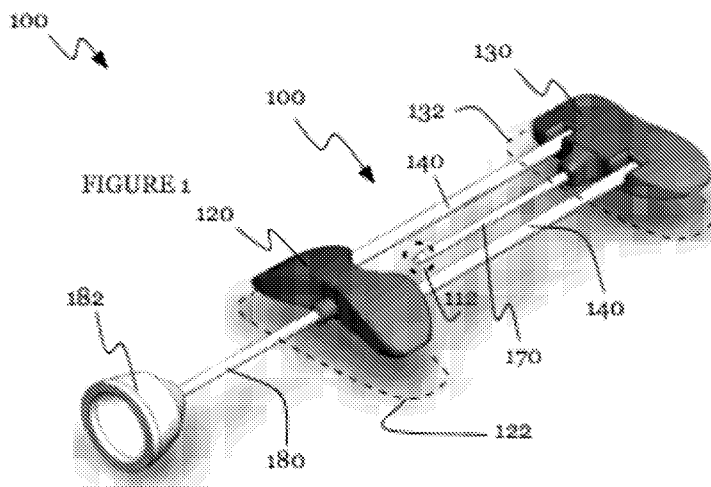
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[Continued on next page]

(54) Title: INTEGRATED VASCULAR DELIVERY SYSTEM



(57) Abstract: An integrated vascular delivery system having a frame configured to receive a catheter insertable in a patient to deliver fluid at an insertion site. The frame includes a first hub, a second hub, and a pair of flexible lateral members extending between the hubs and including a tubular lateral member. The system also includes a fluidic channel that fluidically communicates with the catheter, wherein the fluidic channel passes through the tubular lateral member and at least one of the hubs, and includes a fixed turnabout portion in which fluid flows in a direction different from that within the catheter. The first and second hubs provide anchoring points on the patient distributed around the insertion site and on opposite ends of the catheter, thereby anchoring the frame to the patient and stabilizing the catheter. A method is provided for using an integrated vascular delivery system.

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**A. CLASSIFICATION OF SUBJECT MATTER***A61M 25/06(2006.01)i, A61M 5/158(2006.01)i, A61M 5/162(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)

A61M 25/06; A61N 1/30; A61M 31/00; A61B 1/00; A61B 10/00; A61M 25/00; A01N 65/00; A61M 5/178; A61P 35/04

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) &amp; Keywords:catheter,deliver,channel

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages         | Relevant to claim No. |
|-----------|--|-----------------------|
| A         | US 2008-0195033 A1 (ROY; EAGLESON et al.) 14 August 2008<br>See claims 1-110, figures 1-19 | 1-20                  |
| A         | US 6805860 B1 (ALT; ECKHARD) 19 October 2004<br>See claims 1-19, figures 1-2               | 1-20                  |
| A         | US 5375589 A1 (BHATTA; KRISHNA M.) 27 December 1994<br>See claims 1-10, figures 1-2        | 1-20                  |
| A         | US 2006-0094983 A1 (BURBANK; FRED et al.) 04 May 2006<br>See claims 1-109, figures 1-22    | 1-20                  |

 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

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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

"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

18 APRIL 2011 (18.04.2011)

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**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.: 21-25  
because they relate to subject matter not required to be searched by this Authority, namely:  
Claims 21-25 are the methods comprising the inserting the catheter into a body and delivering a fluid to a patient, which fall into the category of methods for treatment of the human body by surgery or therapy as well as diagnostic methods [Article 17(2)(a)(i), Rule 39.1(iv) PCT].
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:

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 fee, this Authority did not invite payment of any additional fee.
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.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/045426**

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|--|------------------|-------------------------|------------------|
| US 2008-0195033 A1                     | 14.08.2008       | AP200704039D0           | 30.06.2007       |
|  |                  | AU 2005-309275 A1       | 01.06.2006       |
|  |                  | BR P10516897A           | 23.09.2008       |
|  |                  | CA 2588181 A1           | 01.06.2006       |
|  |                  | CN 101107039 A          | 16.01.2008       |
|  |                  | EP 1827585 A1           | 05.09.2007       |
|  |                  | EP 1827585 A4           | 06.01.2010       |
|  |                  | JP 2008-520592 T        | 19.06.2008       |
|  |                  | MX 2007006190 A         | 22.01.2008       |
|  |                  | US 2008-195033 A1       | 14.08.2008       |
|  |                  | WO 2006-056055 A2       | 01.06.2006       |
| US 6805860 B1                          | 19.10.2004       | US 2004-0048375 A1      | 11.03.2004       |
|  |                  | US 2004-048375 A1       | 11.03.2004       |
|  |                  | US 2005-0079161 A1      | 14.04.2005       |
|  |                  | US 2005-0226855 A1      | 13.10.2005       |
|  |                  | US 2005-079161 A1       | 14.04.2005       |
|  |                  | US 2009-060886 A1       | 05.03.2009       |
|  |                  | US 7452532 B2           | 18.11.2008       |
| US 5375589 A1                          | 27.12.1994       | None                    |                  |
| US 2006-0094983 A1                     | 04.05.2006       | AU 1999-29765 A1        | 20.09.1999       |
|  |                  | AU 1999-55792 A1        | 21.03.2000       |
|  |                  | AU 1999-59266 A1        | 10.04.2000       |
|  |                  | AU 2000-17382 A1        | 13.06.2000       |
|  |                  | AU 2000-26342 A1        | 18.08.2000       |
|  |                  | AU 2000-31147 A1        | 26.06.2000       |
|  |                  | AU 2000-35835 A1        | 25.08.2000       |
|  |                  | AU 2000-57775 A1        | 31.01.2001       |
|  |                  | AU 2000-63518 A1        | 05.02.2001       |
|  |                  | AU 2001-27716 A1        | 16.07.2001       |
|  |                  | AU 2001-77035 A1        | 30.01.2002       |
|  |                  | AU 2002-231094 A8       | 16.07.2002       |
|  |                  | AU 2002-236490 A8       | 11.06.2002       |
|  |                  | AU 2002-239290 A8       | 03.06.2002       |
|  |                  | AU 2002-36490 A1        | 11.06.2002       |
|  |                  | AU 2002-39290 A1        | 03.06.2002       |
|  |                  | AU 2003-225002 A1       | 03.11.2003       |
|  |                  | AU 2003-225002 A8       | 03.11.2003       |
|  |                  | AU 2003-238000 A1       | 06.01.2004       |
|  |                  | AU 2003-259025 A1       | 17.11.2003       |
|  |                  | AU 2003-259025 A8       | 17.11.2003       |
|  |                  | CA 2322804 A1           | 10.09.1999       |
|  |                  | CA 2322804 C            | 15.01.2008       |
|  |                  | CA 2341528 A1           | 09.03.2000       |
|  |                  | CA 2341528 C            | 05.01.2010       |
|  |                  | CA 2344641 A1           | 30.03.2000       |
|  |                  | CA 2348482 A1           | 02.06.2000       |

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/045426**

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---------------------|----------------------------|---------------------|
|   |                     | CA 2349723 A1              | 15.06.2000          |
|   |                     | CA 2360582 A1              | 03.08.2000          |
|   |                     | CA 2361530 A1              | 10.08.2000          |
|   |                     | CA 2361530 C               | 05.10.2010          |
|   |                     | CA 2376146 A1              | 04.01.2001          |
|   |                     | CA 2376146 C               | 29.09.2009          |
|   |                     | CA 2378071 A1              | 25.01.2001          |
|   |                     | CA 2378071 C               | 23.12.2008          |
|   |                     | CA 2395225 A1              | 12.07.2001          |
|   |                     | CA 2445912 A1              | 11.07.2002          |
|   |                     | CA 2446883 A1              | 18.07.2002          |
|   |                     | CA 2446993 A1              | 30.05.2002          |
|   |                     | CA 2446993 C               | 02.06.2009          |
|   |                     | CA 2455769 A1              | 13.02.2003          |
|   |                     | CA 2482305 A1              | 30.10.2003          |
|   |                     | CA 2482305 C               | 15.02.2011          |
|   |                     | CA 2490072 A1              | 31.12.2003          |
|   |                     | CA 2606970 A1              | 10.09.1999          |
|   |                     | CA 2606970 C               | 29.12.2009          |
|   |                     | CA 2659484 A1              | 30.05.2002          |
|   |                     | CA 2659518 A1              | 30.05.2002          |
|   |                     | CA 2673620 A1              | 04.01.2001          |
|   |                     | CN 1258698 C0              | 07.06.2006          |
|   |                     | CN 1337015 A0              | 20.02.2002          |
|   |                     | EP 1059881 A1              | 20.12.2000          |
|   |                     | EP 1109496 A2              | 27.06.2001          |
|   |                     | EP 1115345 A2              | 18.07.2001          |
|   |                     | EP 1130997 A1              | 12.09.2001          |
|   |                     | EP 1130997 A4              | 07.05.2003          |
|   |                     | EP 1139878 A1              | 10.10.2001          |
|   |                     | EP 1139878 B1              | 24.05.2006          |
|   |                     | EP 1143309 A1              | 10.10.2001          |
|   |                     | EP 1146828 A1              | 24.10.2001          |
|   |                     | EP 1146910 A2              | 24.10.2001          |
|   |                     | EP 1146910 B1              | 13.10.2010          |
|   |                     | EP 1189546 A1              | 27.03.2002          |
|   |                     | EP 1189546 B1              | 02.02.2005          |
|   |                     | EP 1196107 A1              | 17.04.2002          |
|   |                     | EP 1196107 B1              | 27.10.2004          |
|   |                     | EP 1255499 A2              | 13.11.2002          |
|   |                     | EP 1351609 A2              | 15.10.2003          |
|   |                     | EP 1411834 A2              | 28.04.2004          |
|   |                     | EP 1494721 A2              | 12.01.2005          |
|   |                     | EP 1515642 A1              | 23.03.2005          |
|   |                     | EP 1525856 A2              | 27.04.2005          |
|   |                     | EP 1525856 A3              | 01.06.2005          |
|   |                     | EP 1525856 B1              | 27.08.2008          |
|   |                     | EP 1733690 A2              | 20.12.2006          |
|   |                     | EP 1919388 A2              | 14.05.2008          |
|   |                     | EP 1974686 A2              | 01.10.2008          |

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/045426**

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---------------------|----------------------------|---------------------|
|   |                     | EP 2025292 A1              | 18.02.2009          |
|   |                     | EP 2033580 A1              | 11.03.2009          |
|   |                     | EP 2277553 A1              | 26.01.2011          |
|   |                     | JP 04-361211 B2            | 21.08.2009          |
|   |                     | JP 2002-505136 A           | 19.02.2002          |
|   |                     | JP 2002-523170 A           | 30.07.2002          |
|   |                     | JP 2002-526191 A           | 20.08.2002          |
|   |                     | JP 2002-530139 A           | 17.09.2002          |
|   |                     | JP 2002-531211 A           | 24.09.2002          |
|   |                     | JP 2002-535069 A           | 22.10.2002          |
|   |                     | JP 2003-503098 A           | 28.01.2003          |
|   |                     | JP 2003-504148 A           | 04.02.2003          |
|   |                     | JP 2003-517453 A           | 27.05.2003          |
|   |                     | JP 2003-518974 A           | 17.06.2003          |
|   |                     | JP 2004-004138 A           | 08.01.2004          |
|   |                     | JP 2004-523273 A           | 05.08.2004          |
|   |                     | JP 2004-533273 A           | 04.11.2004          |
|   |                     | JP 2005-525130 A           | 25.08.2005          |
|   |                     | JP 2005-530554 A           | 13.10.2005          |
|   |                     | JP W001-022175 A1          | 29.03.2001          |
|   |                     | US 06161034A A             | 12.12.2000          |
|   |                     | US 2001-0002250 A1         | 31.05.2001          |
|   |                     | US 2001-0003791 A1         | 14.06.2001          |
|   |                     | US 2001-0014779 A1         | 16.08.2001          |
|   |                     | US 2001-0017137 A1         | 30.08.2001          |
|   |                     | US 2001-0039420 A1         | 08.11.2001          |
|   |                     | US 2002-0007130 A1         | 17.01.2002          |
|   |                     | US 2002-0038087 A1         | 28.03.2002          |
|   |                     | US 2002-0052564 A1         | 02.05.2002          |
|   |                     | US 2002-0058884 A1         | 16.05.2002          |
|   |                     | US 2002-0058885 A1         | 16.05.2002          |
|   |                     | US 2002-0068879 A1         | 06.06.2002          |
|   |                     | US 2002-0068880 A1         | 06.06.2002          |
|   |                     | US 2002-0072688 A1         | 13.06.2002          |
|   |                     | US 2002-0077628 A1         | 20.06.2002          |
|   |                     | US 2002-0087095 A1         | 04.07.2002          |
|   |                     | US 2002-0111564 A1         | 15.08.2002          |
|   |                     | US 2002-0115943 A1         | 22.08.2002          |
|   |                     | US 2002-0120211 A1         | 29.08.2002          |
|   |                     | US 2002-0161298 A1         | 31.10.2002          |
|   |                     | US 2002-0188196 A1         | 12.12.2002          |
|   |                     | US 2002-0193705 A1         | 19.12.2002          |
|   |                     | US 2003-0023239 A1         | 30.01.2003          |
|   |                     | US 2003-0112708 A1         | 19.06.2003          |
|   |                     | US 2003-0144605 A1         | 31.07.2003          |
|   |                     | US 2003-176812 A1          | 18.09.2003          |
|   |                     | US 2004-0101479 A1         | 27.05.2004          |
|   |                     | US 2004-0116806 A1         | 17.06.2004          |
|   |                     | US 2004-0117652 A1         | 17.06.2004          |
|   |                     | US 2004-0153004 A1         | 05.08.2004          |

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/045426**

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---------------------|----------------------------|---------------------|
|   |                     | US 2004-0167431 A1         | 26.08.2004          |
|   |                     | US 2004-0167432 A1         | 26.08.2004          |
|   |                     | US 2004-0171967 A1         | 02.09.2004          |
|   |                     | US 2004-0193044 A1         | 30.09.2004          |
|   |                     | US 2004-0204709 A1         | 14.10.2004          |
|   |                     | US 2004-0215187 A1         | 28.10.2004          |
|   |                     | US 2005-0004492 A1         | 06.01.2005          |
|   |                     | US 2005-0010131 A1         | 13.01.2005          |
|   |                     | US 2005-0038462 A1         | 17.02.2005          |
|   |                     | US 2005-0041533 A1         | 24.02.2005          |
|   |                     | US 2005-0063908 A1         | 24.03.2005          |
|   |                     | US 2005-0090762 A1         | 28.04.2005          |
|   |                     | US 2005-0143656 A1         | 30.06.2005          |
|   |                     | US 2005-0143674 A1         | 30.06.2005          |
|   |                     | US 2005-0187489 A1         | 25.08.2005          |
|   |                     | US 2005-0187490 A1         | 25.08.2005          |
|   |                     | US 2005-0187491 A1         | 25.08.2005          |
|   |                     | US 2005-0197593 A1         | 08.09.2005          |
|   |                     | US 2005-0197594 A1         | 08.09.2005          |
|   |                     | US 2005-0245842 A1         | 03.11.2005          |
|   |                     | US 2006-036165 A1          | 16.02.2006          |
|   |                     | US 2006-084865 A1          | 20.04.2006          |
|   |                     | US 2006-122503 A1          | 08.06.2006          |
|   |                     | US 2006-155190 A1          | 13.07.2006          |
|   |                     | US 2007-232955 A1          | 04.10.2007          |
|   |                     | US 2008-021449 A1          | 24.01.2008          |
|   |                     | US 2008-077045 A1          | 27.03.2008          |
|   |                     | US 6261241 B1              | 17.07.2001          |
|   |                     | US 6312429 B1              | 06.11.2001          |
|   |                     | US 6331166 B1              | 18.12.2001          |
|   |                     | US 6344026 B1              | 05.02.2002          |
|   |                     | US 6347241 B2              | 12.02.2002          |
|   |                     | US 6427081 B1              | 30.07.2002          |
|   |                     | US 6454727 B1              | 24.09.2002          |
|   |                     | US 6471700 B1              | 29.10.2002          |
|   |                     | US 6497706 B1              | 24.12.2002          |
|   |                     | US 6508773 B2              | 21.01.2003          |
|   |                     | US 6517498 B1              | 11.02.2003          |
|   |                     | US 6540693 B2              | 01.04.2003          |
|   |                     | US 6540695 B1              | 01.04.2003          |
|   |                     | US 6567689 B2              | 20.05.2003          |
|   |                     | US 6638234 B2              | 28.10.2003          |
|   |                     | US 6659105 B2              | 09.12.2003          |
|   |                     | US 6662041 B2              | 09.12.2003          |
|   |                     | US 6676658 B2              | 13.01.2004          |
|   |                     | US 6679851 B2              | 20.01.2004          |
|   |                     | US 6689071 B2              | 10.02.2004          |
|   |                     | US 6699206 B2              | 02.03.2004          |
|   |                     | US 6712775 B2              | 30.03.2004          |
|   |                     | US 6716179 B2              | 06.04.2004          |



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/045426**

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---------------------|----------------------------|---------------------|
|   |                     | US 6758848 B2              | 06.07.2004          |
|   |                     | US 6850468 B2              | 01.02.2005          |
|   |                     | US 6862470 B2              | 01.03.2005          |
|   |                     | US 6875182 B2              | 05.04.2005          |
|   |                     | US 6958044 B2              | 25.10.2005          |
|   |                     | US 6993375 B2              | 31.01.2006          |
|   |                     | US 6996433 B2              | 07.02.2006          |
|   |                     | US 6997885 B2              | 14.02.2006          |
|   |                     | US 7047063 B2              | 16.05.2006          |
|   |                     | US 7095679 B2              | 22.08.2006          |
|   |                     | US 7229418 B2              | 12.06.2007          |
|   |                     | US 7229439 B2              | 12.06.2007          |
|   |                     | US 7261712 B2              | 28.08.2007          |
|   |                     | US 7264596 B2              | 04.09.2007          |
|   |                     | US 7282034 B2              | 16.10.2007          |
|   |                     | US 7322938 B2              | 29.01.2008          |
|   |                     | US 7322939 B2              | 29.01.2008          |
|   |                     | US 7322940 B2              | 29.01.2008          |
|   |                     | US 7329228 B2              | 12.02.2008          |
|   |                     | US 7357801 B2              | 15.04.2008          |
|   |                     | US 7377902 B2              | 27.05.2008          |
|   |                     | US 7488295 B2              | 10.02.2009          |
|   |                     | US 7565191 B2              | 21.07.2009          |
|   |                     | US 7625347 B2              | 01.12.2009          |
|   |                     | US 7651467 B2              | 26.01.2010          |
|   |                     | US 7792569 B2              | 07.09.2010          |