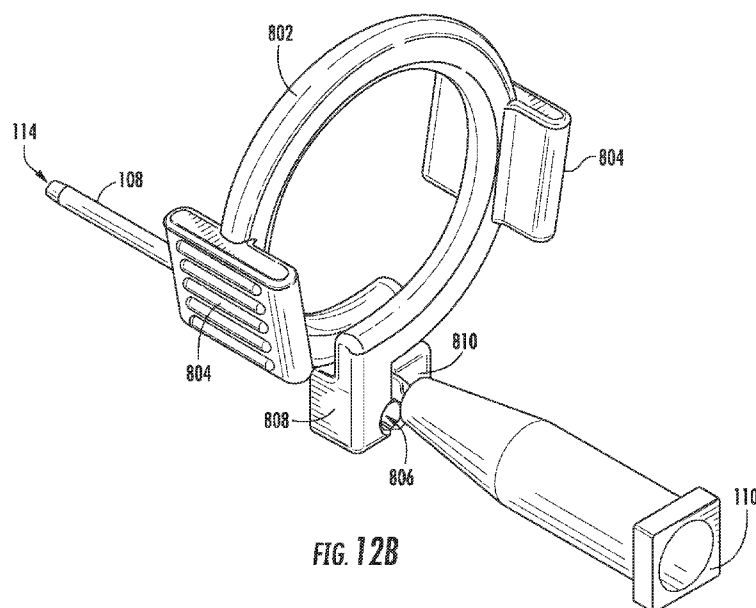




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- (21) **International Application Number:** PCT/US2012/023821
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- (71) **Applicant (for all designated States except US):** **H. LEE MOFFITT CANCER CENTER AND RESEARCH INSTITUTE, INC.** [US/US]; 12902 Magnolia Drive, Tampa, Florida 33612 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **CHAUDHRY, Tariq** [US/US]; 2811 Bay Haven Drive, Tampa, Florida 33611 (US). **HAMPTON, Scott** [US/US]; 3660 Quincy Place, Gainesville, Georgia 30504 (US).
- (74) **Agents:** **HALL, Miles E.** et al.; McKeon, Meunier, Carlin & Curfman, LLC, Suite 900, 817 W. Peachtree Street NW, Atlanta, Georgia 30308 (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.
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, 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).

[Continued on next page]

(54) **Title:** CATHETER CLAMPS AND CATHETERS



(57) **Abstract:** Provided are devices and methods for reducing or preventing fluid flow through a catheter lumen. For example, the devices and methods can be used to reduce blood flow through a catheter. Optionally, the catheter is an intravenous catheter. Also provided are catheters.

**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
- *of inventorship (Rule 4.17(iv))*

**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:**

1 November 2012

**A. CLASSIFICATION OF SUBJECT MATTER***A61M 39/28(2006.01)i, A61M 25/01(2006.01)i, A61M 5/168(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 39/28; A61M 5/142; A61M 5/00; A61M 39/00; F16K 7/04; F16K 7/06

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, tube, fluid, clamp, lumen, flow

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                             | Relevant to claim No.  |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| X<br>A    | US 05401256 A (STONE et al.) 28 March 1995<br>See the abstract; claims 1 and 11; column 4, lines 21-38; and fig. 2.                                                                                            | 1-2, 5-7, 13-15<br>3-4 |
| X         | EP 0415021 A1 (IVAC CORPORATION) 06 March 1991<br>See the abstract; claim 1; column 3, lines 42-59; column 4, lines 25-34;<br>column 6, lines 2-6; column 7, line 56 - column 8, line 2; and<br>figs. 1 and 4. | 1-2, 5-7, 13-15        |
| X         | WO 2004-007015 A1 (SMITHS GROUP PLC.) 22 January 2004<br>See the abstract; claim 1; page 7, lines 1-5; page 8, lines 5-8; and<br>figs. 4 and 6.                                                                | 1, 5, 13               |
| X         | US 05017192 A (DODGE et al.) 21 May 1991<br>See the abstract; claim 1; column 3, lines 29-43; column 4, lines 43-44; and<br>figs. 2 and 4.                                                                     | 1, 5-7, 13             |



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

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

Date of the actual completion of the international search

07 SEPTEMBER 2012 (07.09.2012)

Date of mailing of the international search report

**12 SEPTEMBER 2012 (12.09.2012)**

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189 Cheongsu-ro, Seo-gu, Daejeon Metropolitan  
City, 302-701, Republic of Korea

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Authorized officer

LEE, Cheol Soo

Telephone No. 82-42-481-8525



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2012/023821**

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|-------------------------------------------|---------------------|----------------------------|---------------------|
| US 05401256 A                             | 28.03.1995          | JP 3013537 U               | 18.07.1995          |
| EP 0415021 A1                             | 06.03.1991          | CA 2019022 A1              | 28.02.1991          |
|                                           |                     | CA 2019022 C               | 13.06.1995          |
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|                                           |                     | DE 69023301 T2             | 27.06.1996          |
|                                           |                     | EP 0415021 B1              | 02.11.1995          |
|                                           |                     | JP 2559889 B2              | 04.12.1996          |
|                                           |                     | JP 3133461 A               | 06.06.1991          |
|                                           |                     | US 04944485 A              | 31.07.1990          |
| WO 2004-007015 A1                         | 22.01.2004          | AU 2003-240141 A1          | 02.02.2004          |
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|                                           |                     | CA 2025519 C               | 12.11.2002          |
|                                           |                     | EP 0423978 A2              | 24.04.1991          |
|                                           |                     | EP 0423978 B1              | 25.01.1995          |
|                                           |                     | JP 03-140164 A             | 14.06.1991          |

**INTERNATIONAL SEARCH REPORT**International application No.  
**PCT/US2012/023821****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.: 11-12  
because they relate to subject matter not required to be searched by this Authority, namely:  
Claims 11-12 pertain to a method for treatment of the human body by therapy, and thus relate to a subject matter which this International Searching Authority is not required to search under Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT.
2. ☒ Claims Nos.: 9-10, 17-19, 21  
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:  
The claims 9-10, 17-19 and 21 do not comply with PCT Article 6 because they refer to unsearchable claims 8, 16 and 20, respectively.
3. ☒ Claims Nos.: 8, 16, 20  
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.