

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
7 July 2005 (07.07.2005)

PCT

(10) International Publication Number
WO 2005/060838 A3

(51) International Patent Classification⁷: **A61B 17/122**

(21) International Application Number:
PCT/US2004/040933

(22) International Filing Date: 7 December 2004 (07.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/738,017 17 December 2003 (17.12.2003) US

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(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

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

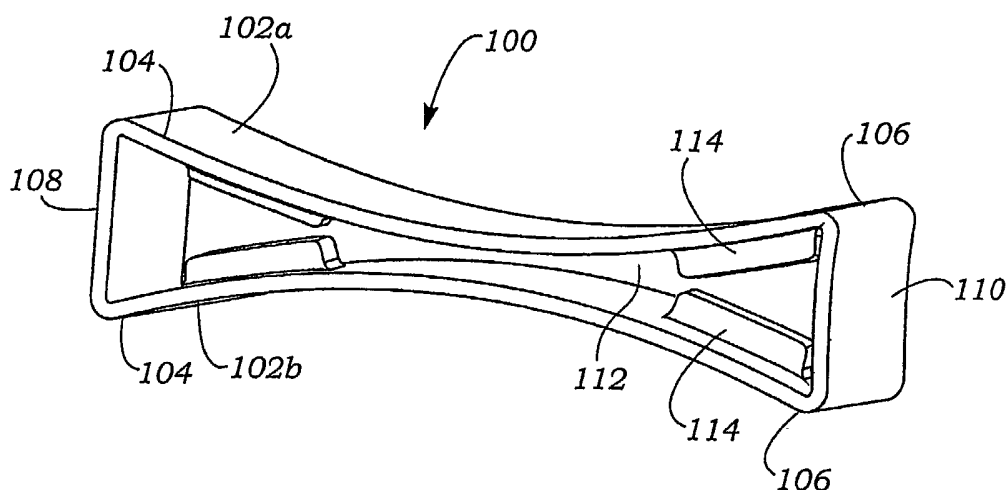
Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
1 September 2005

[Continued on next page]

(54) Title: LEFT ATRIAL APPENDAGE EXCLUSION DEVICE



(57) Abstract: A device for excluding the inner cavity of the left internal appendage (LAA) from the interior of the left atrium LA may include a pair of compression members spaced apart and defining a closed periphery. The closed periphery has a variable-sized opening therein that can be enlarged to surround the LAA and then closed to compress and exclude the LAA. The closed periphery may be generally rectangular or lenticular, and may be a solid, contiguous periphery or separable at a closure. Inner protrusions or ribs may be provided on the compression members to help anchor the exclusion device in place. Needles may also be provided to pierce the LAA tissue and trap blood clots therein. The device may be non-linear in plan view so as to conform to the shape of the external left atrium. Deployment techniques or structures may be provided that squeeze the LAA in a direction starting adjacent the left atrium and then moving away from the left atrium. This squeezing motion helps prevent extrusion of any thrombus deposit within the LAA cavity into the left atrium.



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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
/US2004/040933

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B17/122

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 7 A61B

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 practical, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/97696 A (IMAGE-GUIDED NEUROLOGICS, INC; MAZZOCCHI, RUDY, A; MILLER, THOMAS, I;) 27 December 2001 (2001-12-27)	1-4
Y	page 12, line 19 - line 30; figure 6	6, 7
X	WO 03/096881 A (UNIVERSITY OF PITTSBURGH) 27 November 2003 (2003-11-27) paragraph [0077]	1, 2, 5
Y	US 5 100 416 A (OH ET AL) 31 March 1992 (1992-03-31) column 9, line 61 - column 10, line 7	6, 7

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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 document 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)
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"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.
 "&" document member of the same patent family

Date of the actual completion of the international search

13 April 2005

Date of mailing of the international search report

08.07.2005

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INTERNATIONAL SEARCH REPORT

national application No.
PCT/US2004/040933

Box 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.: 30-46
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
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 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:

see additional sheet

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.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7

A left atrial appendage exclusion device comprising a protrusion

2. claims: claims 8-15

A left atrial appendage exclusion device comprising a pair of elongated compression members hinged together at one end and including a mating structure on the other end to form a closed periphery.

3. claims: 16-21

A left atrial appendage exclusion device comprising a plurality of piercing members.

4. claims: 22-29

A left atrial appendage exclusion device comprising compression members being non-linear in plan view.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

.../US2004/040933

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