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(54) Title: A CLOT RETRIEVAL DEVICE FOR REMOVING OCCLUSIVE CLOT FROM A BLOOD VESSEL

[Continued on next page]

(57) Abstract: A clot retrieval device (9501) for removing occlusive clot from a blood vessel comprises an inner elongate body (9503) and an outer elongate body (9504) at least partially overlying the inner elongate body (9503). The device also comprises an elongate member or shaft (9502) having a proximal end which extends exterior of a patient so that a user can retrieve the stent-basket device and captured clot by retracting the shaft (9502). The outer elongate body (9504) and the inner elongate body (9503) are connected to the distal end of the shaft (9502) and are expandable relative to the shaft (9502) from a collapsed delivery configuration to an expanded deployed configuration. The outer elongate body (9504) is expandable relative to the inner elongate body (9503) to a radial extent which is greater than the radial extent of the inner body (9503) in the deployed configuration. The stent-basket construction of the device creates a reception space (9507) between the inner (9503) and outer (9504) to receive the target clot. The outer body (9504) is configured to allow as much as possible of the clot to migrate through it into the internal reception space (9507). Housing the clot in this reception space rather than pinning it to the wall of the vessel means that the clot is under less compression and can thus be retracted at a lower force. The inner elongate body (9503) and a distal capture net (9505) protect the distal vascular bed from embolisation.
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))

— with international search report (Art. 21(3))
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61B17/221 A61F2/01

ADD.

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)

A61B A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of database and, where practicable, search terms used)

EPO-Internal , WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tr>
<td>X, P</td>
<td>WO 2011/095352 AI (ACANDIS GMBH &amp; CO KG [DE]; CATTANEO GIORGIO [DE]) 11 August 2011 (2011-08-11) page 29, line 17 - page 34, last line; figures 7-9</td>
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<td>X, P</td>
<td>DE 10 2010 014778 AI (ACANDIS GMBH &amp; CO KG [DE]) 13 October 2011 (2011-10-13) paragraphs [0028], [0051], [0052]; figures 1, 2</td>
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<td>X</td>
<td>US 2010/318178 AI (RAPAPORT AVRAHAM [IL] ET AL) 16 December 2010 (2010-12-16) paragraph [0095] - paragraph [0099]; figure 8</td>
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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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  - "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
  - "A" document member of the same patent family

Date of the actual completion of the international search: 15 June 2012

Date of mailing of the international search report: 10/10/2012

Name and mailing address of the ISA:
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NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016

Authorized officer: Stor, Loredana

Form PCT/ISA/210 (second sheet) (April 2005)
**INTERNATIONAL SEARCH REPORT**

**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.:  
   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:

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 fees, this Authority did not invite payment of 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.:

   1-10, 12, 30, 32

**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.
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<td>X</td>
<td>US 5 904 698 A (THOMAS THOMAS P [US] ET AL) 18 May 1999 (1999-05-18)</td>
<td>1,2,5-7, 10,12, 30,32</td>
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<td>WO 2010/010545 A1 (NEURAVI LTD [IE]; BRADY EAMON [IE]; RAZAVI MAHM00D [US]; VALE DAVID [I]) 28 January 2010 (2010-01-28)</td>
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<td>page 87, line 20 - page 88, line 26;</td>
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A clot retrieval device for removing occlusive clot from a blood vessel, the device comprising an inner elongate body; an outer elongate body at least partially overlaying the inner elongate body; the outer elongate body being expandable relative to the inner elongate body to a radial extent which is greater than the radial extent of the inner body in the deployed configuration, the inner elongate body having a non-circular cross-section.

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A clot retrieval device for removing occlusive clot from a blood vessel, the device comprising an inner elongate body; an outer elongate body at least partially overlaying the inner elongate body; the outer elongate body being expandable relative to the inner elongate body to a radial extent which is greater than the radial extent of the inner body in the deployed configuration, the inner elongate body having a greater surface roughness than the outer surface of the outer elongate body.

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A clot retrieval device for removing occlusive clot from a blood vessel, the device comprising an inner elongate body; an outer elongate body at least partially overlaying the inner elongate body; the outer elongate body being expandable relative to the inner elongate body to a radial extent which is greater than the radial extent of the inner body in the deployed configuration, the outer elongate body having at least two spaced-apart segments.

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A clot retrieval device for removing occlusive clot from a blood vessel, the device comprising: an inner elongate body having a collapsed delivery configuration and an expanded deployed configuration; an outer elongate body at least partially overlaying the inner elongate body; the outer elongate body being expandable relative to the inner elongate body to a radial extent which is greater than the radial extent of the inner body in the deployed configuration, the inner elongate body having a non-circular cross-section.

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A clot retrieval device for removing occlusive clot from a blood vessel, the device comprising: an inner elongate body having a collapsed delivery configuration and an expanded deployed configuration; an outer elongate body at least partially overlaying the inner elongate body; the outer elongate body being expandable relative to the inner elongate body to a radial extent which is greater than the radial extent of the inner body in the deployed configuration, the inner elongate body having a non-circular cross-section.
A clot retrieval device for removing occlusive clot from a blood vessel, the device comprising an inner elongate body; an outer elongate body at least partially overlapping the inner elongate body; the outer elongate body being expandable relative to the inner elongate body to a radial extent which is greater than the radial extent of the inner body in the deployed configuration, further comprising an elongate member connected to the inner elongate body, the elongate member comprising an assembly of at least one wire and one tubular member.

6. claims: 29, 35-51

A clot retrieval device for removing occlusive clot from a blood vessel, the device comprising an inner elongate body; an outer elongate body at least partially overlapping the inner elongate body; the outer elongate body being expandable relative to the inner elongate body to a radial extent which is greater than the radial extent of the inner body in the deployed configuration, the inner and/or outer elongate bodies being slidably attached to a distal region of the elongate member, such that movement of the elongate member can be effected without resultant movement of the inner and/or outer elongate bodies.

7. claim: 31

A clot retrieval device for removing occlusive clot from a blood vessel, the device comprising an inner elongate body; an outer elongate body at least partially overlapping the inner elongate body; the outer elongate body being expandable relative to the inner elongate body to a radial extent which is greater than the radial extent of the inner body in the deployed configuration, the inner and/or outer elongate bodies being connected to one another by a compliant element.

8. claims: 33, 34
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<th>Publication date</th>
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