



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

|  |                         |   |                         |    |            |                         |    |            |                         |    |  |
|--|-------------------------|---|-------------------------|----|------------|-------------------------|----|------------|-------------------------|----|--|
| <p>(51) International Patent Classification <sup>6</sup> :<br/><b>A61B 17/11</b></p>   | <p><b>A3</b></p>        | <p>(11) International Publication Number: <b>WO 99/45852</b></p> <p>(43) International Publication Date: 16 September 1999 (16.09.99)</p> |                         |    |            |                         |    |            |                         |    |  |
| <p>(21) International Application Number: PCT/US99/04714</p> <p>(22) International Filing Date: 3 March 1999 (03.03.99)</p> <p>(30) Priority Data:</p> <table border="0"> <tr> <td>09/037,113</td> <td>9 March 1998 (09.03.98)</td> <td>US</td> </tr> <tr> <td>09/037,109</td> <td>9 March 1998 (09.03.98)</td> <td>US</td> </tr> <tr> <td>09/037,216</td> <td>9 March 1998 (09.03.98)</td> <td>US</td> </tr> </table> <p>(71) Applicant (for all designated States except US): CORVASCULAR, INC. [US/US]; 490 San Antonio Road, Palo Alto, CA 94306 (US).</p> <p>(72) Inventors; and</p> <p>(75) Inventors/Applicants (for US only): DUHAYLONGSOD, Francis, G. [US/US]; 1380-A Moanalualani, Honolulu, HI 96819 (US). FRENCH, Fritz [US/US]; 570 Oak Knoll Lane, Menlo Park, CA 94025 (US). CHAPMAN, Troy [US/US]; 7381 E. Hinsdale Court, Englewood, CO 80112 (US). NARCISO, Hugh, L., Jr. [US/US]; 650 Rock Court, Mountain View, CA 94043 (US).</p> <p>(74) Agents: BAGADE, Sanjay, S. et al.; Morrison &amp; Foerster LLP, 755 Page Mill Road, Palo Alto, CA 94304-1018 (US).</p>   |                         | 09/037,113  | 9 March 1998 (09.03.98) | US | 09/037,109 | 9 March 1998 (09.03.98) | US | 09/037,216 | 9 March 1998 (09.03.98) | US | <p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, 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, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b><br/><i>With international search report.</i><br/><i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report:<br/>23 December 1999 (23.12.99)</p> |
| 09/037,113   | 9 March 1998 (09.03.98) | US  |                         |    |            |                         |    |            |                         |    |  |
| 09/037,109   | 9 March 1998 (09.03.98) | US  |                         |    |            |                         |    |            |                         |    |  |
| 09/037,216   | 9 March 1998 (09.03.98) | US  |                         |    |            |                         |    |            |                         |    |  |
| <p>(54) Title: ANASTOMOSIS DEVICE AND METHOD</p>   |                         |   |                         |    |            |                         |    |            |                         |    |  |
|  |                         |   |                         |    |            |                         |    |            |                         |    |  |
| <p>(57) Abstract</p> <p>A method for coupling a first vessel and a second vessel in an anastomosis. The method includes providing a first vessel with a fastener coupled thereto, inserting at least a portion of the device into the second vessel with an end portion of the fastener extending generally longitudinally through the second vessel, and radially expanding at least a portion of the fastener to sealingly secure the first vessel to an inner wall of the second vessel. An anastomosis fastener for use in coupling the first and second vessels together is also disclosed. The second vessel has an opening formed in a side wall thereof for insertion of the device. The device includes a tubular member at least a portion thereof being radially expandable. The tubular member is preformed with a bend along its central longitudinal axis so that a portion of the tubular member extends out from the side wall of the second vessel while an end portion of the tubular member extends generally coaxially with the second vessel when the tubular member is inserted in the second vessel. The tubular member is sufficiently rigid to substantially retain the tubular member in its preformed configuration after the tubular member is expanded.</p> |                         |   |                         |    |            |                         |    |            |                         |    |  |

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Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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|----|--------------------------|----|--|----|--|----|--------------------------|
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| EE | Estonia                  |    |  |    |  |    |                          |

# INTERNATIONAL SEARCH REPORT

|   |
|---|
| International Application No<br>PCT/US 99/04714 |
|---|

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 6 A61B17/11

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 6 A61B A61F

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)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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| Y          | figures 1,4,6-9<br><br>---<br><br>-/--   | 23-25,<br>31, 33,<br>117-124,<br>127-130                                |

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<br>"E" earlier document but published on or after the international filing date<br>"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)<br>"O" document referring to an oral disclosure, use, exhibition or other means<br>"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<br>"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<br>"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.<br>"&" document member of the same patent family |
|---|---|

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| Date of the actual completion of the international search<br><br><b>27 October 1999</b> | Date of mailing of the international search report<br><br><b>08 NOV 1999</b> |
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| Name and mailing address of the ISA<br>European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+31-70) 340-3016 | Authorized officer<br><br><p style="text-align: center; font-size: 1.2em;">Barton, S</p> |
|--|--|

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/04714

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |  |                            |
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INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 99/04714

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |   |                                 |
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| Category   | Citation of document, with indication, where appropriate, of the relevant passages                                      | Relevant to claim No.           |
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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 99/04714

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 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.: 1-18,65-119  
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 II Observations where unity of invention is lacking (Continuation of item 2 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: 19-27,41

Anastomosis device with a preformed bend in tubular member.

2. Claims: 28-33

Anastomosis device with radially extending hooks

3. Claims: 34-40

Anastomosis device with a non-porous intermediate wall with a side opening

4. Claims: 42-63

Anastomosis device with expansion achieved by increasing the wall thickness

5. Claims: 117-131

Anastomosis device with expansion being facilitated by use of a material becoming (reversably) more compliant ("fluent") on addition of energy

6. Claims: 132-138

Anastomosis device with expansion being facilitated by use of a material curable on addition of energy

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/04714

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