

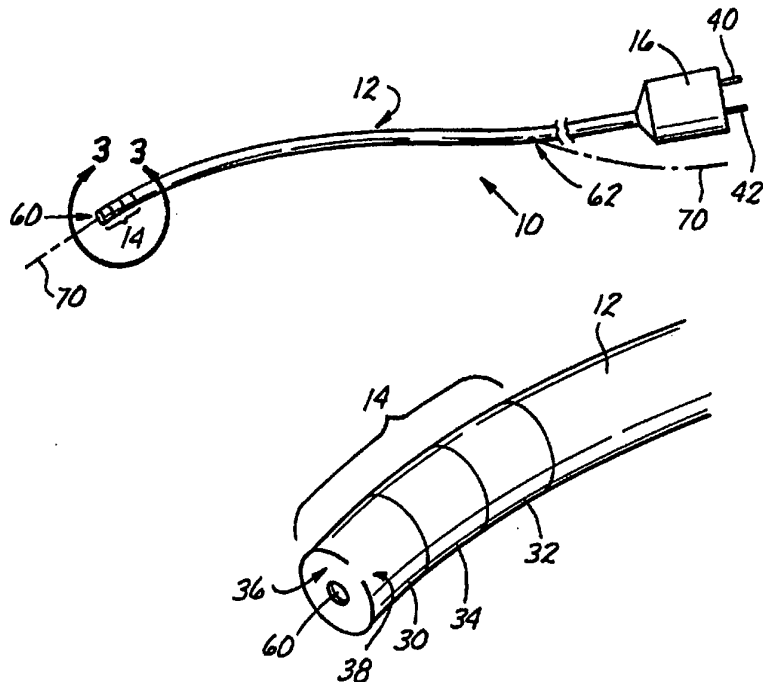


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>A61B 17/00, A61M 25/01</b>	<b>A3</b>	<b>(11) International Publication Number:</b> <b>WO 96/36282</b> <b>(43) International Publication Date:</b> 21 November 1996 (21.11.96)
<b>(21) International Application Number:</b> PCT/US96/06892 <b>(22) International Filing Date:</b> 15 May 1996 (15.05.96) <b>(30) Priority Data:</b> 08/440,624 15 May 1995 (15.05.95) US <b>(71) Applicant:</b> BAXTER INTERNATIONAL INC. [US/US]; One Baxter Parkway, Deerfield, IL 60015 (US). <b>(71)(72) Applicant and Inventor:</b> TAYMOR-LURIA, Howard [US/US]; 11 D Cove Road, Belvedere, CA 94920 (US). <b>(72) Inventors:</b> PECOR, Robert; 318 Veneto, Irvine, CA 92714 (US). MILLS, Timothy, C.; 27 Lagoon Vista, Belvedere Tiburon, CA 94920 (US). CURRIER, Clifford, E.; 9 Sandbridge, Aliso Viejo, CA 92656 (US). KONNO, Mark, A.; 1325 Bounty Way, Laguna Beach, CA 92651 (US). MOONEY, Charles, R.; 1730 Samar Drive, Costa Mesa, CA 92626 (US). EVANS, David, J.; 13541 Esprit Way, Irvine, CA 92720 (US). ROTELIUK, Luchy, D.; 21612 Via Lobo, Lake Forest, CA 92630 (US). <b>(74) Agents:</b> CANTER, Bruce, M. et al.; Baxter Healthcare Corporation, 3015 S. Daimler Street, Santa Ana, CA 92705 (US).		<b>(81) Designated States:</b> CA, JP, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). <b>Published</b> <i>With international search report.</i> <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> <b>(88) Date of publication of the international search report:</b> 9 January 1997 (09.01.97)

**(54) Title:** BIPOLAR VASCULAR SEALING APPARATUS AND METHODS**(57) Abstract**

The method, device and system for electrical sealing of a puncture opening in a blood vessel wall. In a first embodiment, a vascular sealing probe has two bipolar electrodes (e.g., a bipolar electrode tip) formed thereon, is insertable to a position whereat the bipolar tip is positioned adjacent the blood vessel puncture site to effect electrocauterization or electrocoagulation of the puncture site. A guide wire, preferably a non-electrically-conductive guide wire, may be initially inserted through the puncture opening and utilized to guide advancement and positioning of the bipolar probe. In a second embodiment the bipolar vascular sealing probe has a first electrode formed thereon and an electrode-guide wire has the second bipolar electrode formed thereon. The electrode-guide wire is passable through a lumen formed in the probe such that the second electrode on the electrode-guide wire is positioned close enough to the first electrode positioned on the probe to permit electrical current to pass therebetween. In either embodiment, a locator apparatus, such as a notch, may be formed at a predetermined location on the probe to facilitate precise positioning of the probe tip in proximity to the blood vessel wall puncture site. Alternative locator apparatus which are useable to facilitate proper positioning of the probe include a) a blood backflow visualizer, b) a flow meter operative to sense the flow of blood through the blood vessel, c) an impedance measuring apparatus, d) a temperature sensing apparatus operative to sense dissipation of heat resulting from adjacent blood flow through the blood vessel lumen, e) a piezoelectric sensing apparatus, and f) an optical sensing apparatus.



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# INTERNATIONAL SEARCH REPORT

Internat: Application No

PCT/US 96/06892

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 A61B17/00 A61M25/01

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 A61N

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**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 94 24948 A (SCIMED LIFE SYSTEMS INC ;TAY SEW WAH (US); SCHANKERELI KEMAL (US);) 10 November 1994	1,3-8, 10-16, 19,20, 22-24,32
Y	see page 31, line 4 - line 18	2,9,17, 18,21
	see page 32, line 30 - page 33, line 28	
	see page 34, line 1 - line 6	
	see page 39, line 36 - page 40, line 41	
A	---	41
Y	WO 94 08513 A (TAYMOR LURIA HOWARD) 28 April 1994	2,17,18, 21
	cited in the application	
A	see page 20, line 25 - page 21, line 12	6
	see page 22, line 27 - page 23, line 8	
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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)
- "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.
- "&" document member of the same patent family

Date of the actual completion of the international search

10 September 1996

Date of mailing of the international search report

20. 11. 96

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

Internati Application No  
PCT/US 96/06892

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 044 375 A (BACH JR STANLEY M ET AL) 3 September 1991 see column 5, line 47 - line 60 see column 7, line 22 - line 25 -----	9

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 96/06892

**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.: 33-40, 56-59  
because they relate to subject matter not required to be searched by this Authority, namely:  
PCT Rule 39.1 (iv) Surgical treatment of the human body
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:

1. Claims: 1-24, 32, 41-55; bipolar probe apparatus
2. Claims: 25-31; non-electrically-conductive guide wire

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.:

1. Claims: 1-24, 32, 41-55

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

Internat: Application No

PCT/US 96/06892

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		JP-T- 8509147	01-10-96
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		CA-A- 2134071	11-11-93
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WO-A-9408513	28-04-94	US-A- 5415657	16-05-95
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		US-A- 5269319	14-12-93
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