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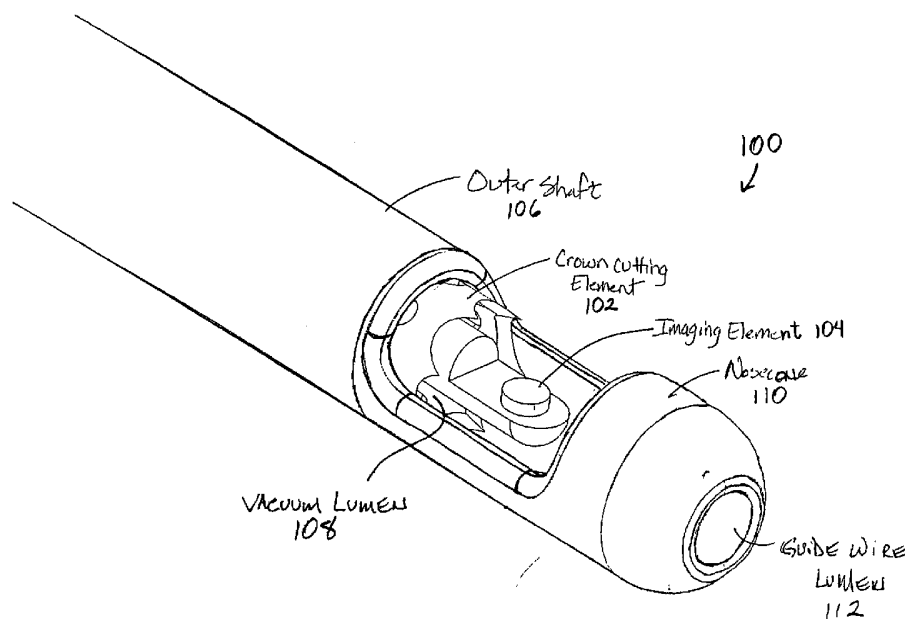
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- (22) International Filing Date: 5 December 2001 (05.12.2001) (72) Inventors; and
- (25) Filing Language: English (75) Inventors/Applicants (for US only): **SPARKS, Kurt, D.** [US/US]; 1618 Sand Hill Road, #406, Palo Alto, CA 94304 (US). **EMERY, Jeffrey, L.** [US/US]; 2104 Meadowview Place, San Mateo, CA 94401 (US). **SEYBOLD, Brent, D.** [US/US]; 2435 Armstrong Avenue, Santa Clara, CA 95050 (US). **KUPIECKI, David, J.** [US/US]; 3276 Market Street, San Francisco, CA 94114 (US). **PINSON, C., Danielle** [US/US]; 711 Eunice Avenue, Mountain View, California 94040 (US). **MADSEN, Allen, W.** [US/US]; 2878 Kilo Avenue, San Jose, CA 95124 (US). **KELEHER, Michael, D.** [US/US]; 34330 Dobson Way, Fremont, CA 94555 (US). **SALINAS, Sergio** [US/US]; 642 Scott Avenue, Redwood City, CA 94063 (US). **CLARK, Benjamin, J.** [US/US]; 3814 East Lake Way, Redwood City, CA 94062 (US). **SELMON, Matthew, R.** [US/US]; 99 Walnut Avenue, Atherton, CA 94027 (US).
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|------------|-------------------------------|----|
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[Continued on next page]

(54) Title: CATHETER SYSTEM FOR VASCULAR RE-ENTRY FROM A SUB-INTIMAL SPACE



(57) Abstract: A catheter system and corresponding methods are provided for accessing a blood vessel true lumen from a sub-intimal plane of the vessel. The catheter system includes visualization elements for determining the orientation of the true lumen with respect to the sub-intimal plane at an identified entry site from a position in the sub-intimal plane. The entry site is distal to a chronic total occlusion (CTO). The catheter system also includes a system for physically securing tissue of the sub-intimal plane at the entry site to the catheter system. The attaching system reduces or eliminates catheter float within the sub-intimal space. The catheter system further includes re-entry devices to establish and maintain a path from the sub-intimal plane back into the vessel true lumen.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/46871

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B17/22

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 35980 A (LUMEND INC ;MILO CHARLES F (US); VETTER JAMES W (US); HINOHARA TOM) 22 July 1999 (1999-07-22) page 15, line 1 - line 5; figures 5,6 page 17, line 29 -page 18, line 17; figure 4	3
Y	---	4
Y	WO 99 35979 A (CO FRED H ;FRENCH RONALD G (US); HILL RICHARD E (US); LUMEND INC () 22 July 1999 (1999-07-22) abstract; figures 3-4D	4
A	---	3
A	US 6 068 638 A (MAKOWER JOSHUA) 30 May 2000 (2000-05-30) column 4, line 6 -column 5, line 8; figure 2 ---	3,4
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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 :

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- *E* earlier document but published on or after the international filing date
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Date of the actual completion of the international search

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23/09/2002

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

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PCT/US 01/46871

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 951 541 A (GERTNER KEVIN ET AL) 14 September 1999 (1999-09-14) column 8, line 8 - line 62; figures 2-4 -----	3,4

INTERNATIONAL SEARCH REPORT

ational application No.
PCT/US 01/46871

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, 2
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:

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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/46871

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INTERNATIONAL SEARCH REPORT

Information on patent family members

Internal Application No.

PCT/US 01/46871

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US 5951541	A	14-09-1999	NONE