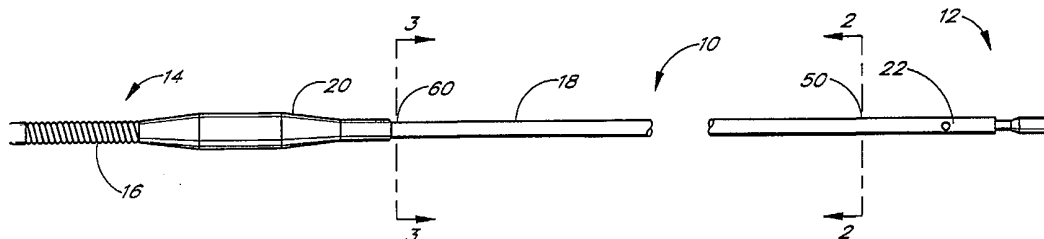




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification⁶ : A61M 25/01, 29/02</p>	<p>A3</p>	<p>(11) International Publication Number: WO 97/44084</p> <p>(43) International Publication Date: 27 November 1997 (27.11.97)</p>
<p>(21) International Application Number: PCT/US97/08468</p> <p>(22) International Filing Date: 19 May 1997 (19.05.97)</p> <p>(30) Priority Data: 08/650,464 20 May 1996 (20.05.96) US 08/813,024 6 March 1997 (06.03.97) US</p> <p>(71) Applicant: PERCUSURGE, INC. [US/US]; 777 N. Pastoria Avenue, Sunnyvale, CA 94086 (US).</p> <p>(72) Inventors: BAGAOISAN, Celso, J.; 4441 Pomponi Street, Union City, CA 94587 (US). MUNI, Ketan, P.; 97 Frontier Trail Drive, San Jose, CA 95136 (US). ZADNO-AZIZI, Gholam-Reza; 8213 Del Monte Avenue, Neward, CA 94560 (US).</p> <p>(74) Agent: ALTMAN, Daniel, E.; Knobbe, Martens, Olson and Bear, 16th floor, 620 Newport Center Drive, Newport Beach, CA 92660 (US).</p>	<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, GE, GH, HU, IL, 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, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report.</i></p> <p>(88) Date of publication of the international search report: 14 May 1998 (14.05.98)</p>	

(54) Title: CATHETER BALLOON CORE WIRE



(57) Abstract

Disclosed herein is a tapering core wire incorporated into the distal end of a catheter. The catheter has a tubular body. Both ends of an inflatable balloon are mounted to the tubular body. The core wire extends from the distal end of the tubular body. In one embodiment, substantially all of the taper of the core wire occurs in the extending portion of the core wire over a length of at least 15 mm but more than 60 mm.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 97/08468

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 A61M25/01 A61M29/02

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 A61M

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	EP 0 442 480 A (ADVANCED CARDIOVASCULAR SYSTEMS) 21 August 1991	1,2,4-7
A	see column 3, line 49 - column 4, line 52; figures	9,12,13

A	WO 92 00775 A (MALLINCKRODT MEDICAL) 23 January 1992 see page 11, line 29 - page 12, line 13; figures	1-8,13

A	US 4 838 268 A (KEITH) 13 June 1989 see column 2, line 43 - column 3, line 44; figures	1,2,4-9, 12

X	WO 96 13295 A (MICRO THERAPEUTICS) 9 May 1996 see page 10, line 1 - line 31; figures 1-3	13

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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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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
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- * & * document member of the same patent family

Date of the actual completion of the international search

3 March 1998

Date of mailing of the international search report

13.03.98

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INTERNATIONAL SEARCH REPORT

Intern: al Application No

PCT/US 97/08468

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 211 636 A (MISCHE) 18 May 1993 see the whole document ---	13
P,X	WO 97 11735 A (INTERVENTIONAL INNOVATIONS) 3 April 1997 see the whole document ---	9-12
A	EP 0 631 792 A (ADVANCED CARDIOVASCULAR SYSTEMS) 4 January 1995 see column 4, line 50 - column 5, line 54; figures ---	9,10,12
A	WO 96 07351 A (CARDIOMETRICS) 14 March 1996 see page 18, line 26 - page 19, line 27; figure 17 ---	9,12
A	US 5 167 239 A (COHEN) 1 December 1992 see abstract; figures -----	9,12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 97/08468

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.:
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 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.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/ US 97/08468

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

MULTIPLE INVENTIONS

1. Claims: 1-8
A catheter, comprising a tubular body and an expandable member mounted on the distal end of the tubular body.
2. Claims: 9-12
A hollow guidewire, comprising a hypotube having first and second wall thickness, an expandable member and a core wire.
3. Claim: 13
A catheter, comprising a tubular body having an irrigation lumen, an irrigation opening on the distal end and a core wire having an extending portion which extends from the distal end of the tubular body, the extending portion being tapered through the length of no more than 60 mm but at least 5mm.

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US 97/08468

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 442480 A	21-08-91	CA 2036285 A JP 5137795 A US 5263931 A	15-08-91 01-06-93 23-11-93

WO 9200775 A	23-01-92	AT 142516 T AU 654821 B AU 8197191 A CA 2084148 A DE 69122102 D DE 69122102 T EP 0537278 A ES 2094230 T JP 5509245 T	15-09-96 24-11-94 04-02-92 04-01-92 17-10-96 23-01-97 21-04-93 16-01-97 22-12-93

US 4838268 A	13-06-89	CA 1336383 A CA 1335874 A DE 68909401 D DE 68909401 T EP 0403555 A JP 3504204 T WO 8908472 A	25-07-95 13-06-95 28-10-93 17-02-94 27-12-90 19-09-91 21-09-89

WO 9613295 A	09-05-96	US 5554114 A CA 2160847 A EP 0787018 A	10-09-96 21-04-96 06-08-97

US 5211636 A	18-05-93	CA 2072580 A DE 69128710 D EP 0509084 A US 5376083 A WO 9207594 A	01-05-92 19-02-98 21-10-92 27-12-94 14-05-92

WO 9711735 A	03-04-97	AU 7167296 A	17-04-97

EP 631792 A	04-01-95	US 4998923 A CA 1320891 A EP 0376132 A JP 2224767 A	12-03-91 03-08-93 04-07-90 06-09-90

WO 9607351 A	14-03-96	AU 3212895 A	27-03-96

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 97/08468

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9607351 A		CA 2198909 A	14-03-96
		EP 0778746 A	18-06-97
		US 5715827 A	10-02-98

US 5167239 A	01-12-92	WO 9221282 A	10-12-92
