

(19) World Intellectual Property  
Organization  
International Bureau



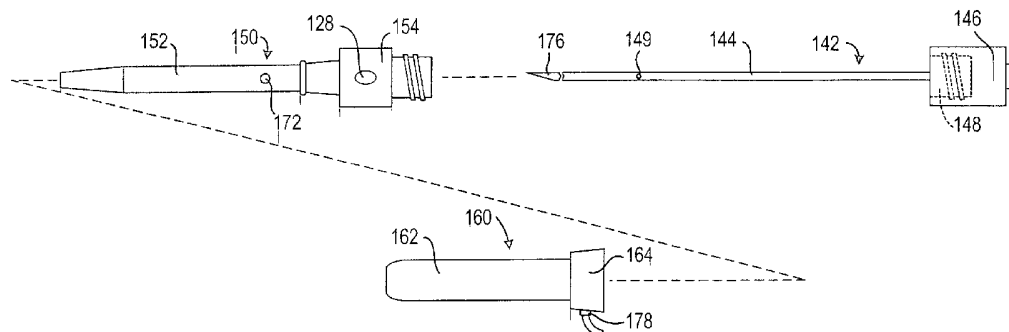
(43) International Publication Date  
17 July 2003 (17.07.2003)

PCT

(10) International Publication Number  
**WO 2003/057272 A3**

- (51) International Patent Classification<sup>7</sup>: **A61M 5/178**
- (21) International Application Number:  
PCT/US2002/041371
- (22) International Filing Date:  
24 December 2002 (24.12.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/343,814 26 December 2001 (26.12.2001) US
- (71) Applicant (for all designated States except US): **YALE UNIVERSITY** [US/US]; Two Whitney Avenue, New Haven, CT 06511 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **TAL, Michael** [US/US]; 1144 Racebrook Road, Woodbridge, CT 06525 (US).
- (74) Agent: **DIPPERT, William, H.**; Reed Smith LLP, 599 Lexington Avenue, New York, NY 10022-7650 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, 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, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**  
— with international search report
- (88) Date of publication of the international search report:  
29 January 2004
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: VASCULAR ACCESS DEVICE



(57) Abstract: A vascular access system comprises a needle (104) having a distal tip and a proximal fitting section and a dilator (114) having a solid distal section connected to a solid proximal section and an annular recess therebetween, the dilator (114) having a passageway so that the dilator (114) is coaxially positioned around the needle (104). The needle (104) has at least one opening positioned proximal to its distal tip so that, when the distal end of the needle (104) enters a blood vessel, blood enters the annular recess to show the operator that access has been achieved. Optionally, a sheath (160) having a distal tip, a proximal fitting section, and a lumen sufficient to coaxially fit over the dilator (114).

WO 2003/057272 A3

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US02/41371

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC(7) : A61M 5/178  
 US CL : 604/164.1  
 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)  
 U.S. : 604/164.1, 110, 523, 164.11, 164.13, 164.02, 168.01, 167.01, 170.01

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 practicable, search terms used)  
 BRS

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 3,565,074 A (FOTI) 23 February 1971, see entire patent.	1-37
Y	US 4,581,019 A (CURELARU et al.) 08 April 1986, see entire patent.	1-37
A	US 4,995,866 A (AMPLATZ et al.) 26 February 1991, see figures.	1-37
Y	US 5,242,410 A (MELKER) 07 September 1993, see drawings and patent.	1-37
A	US 5,704,914 A (STOCKING et al.) 06 January 1998, see drawings.	1-37
A, P	US 6,461,362 B1 (HALSETH et al.) 08 October 2002, see patent.	1-37
A, P	US 6,436,070 B1 (BOTICH et al.) 20 August 2002, see patent.	1-37
A, E	US 6,524,277 B1 (CHANG) 25 February 2003, see drawings.	1-37

Further documents are listed in the continuation of Box C.  See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"&" document member of the same patent family
"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	

Date of the actual completion of the international search 24 August 2003 (24.08.2003)	Date of mailing of the international search report <b>02 OCT 2003</b>
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230	Authorized officer <i>Michael Thompson</i> Telephone/No. (703) 308-0858