

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

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
26 September 2002 (26.09.2002)

PCT

(10) International Publication Number
WO 02/074367 A3

(51) International Patent Classification⁷: **A61M 5/32**

(21) International Application Number: PCT/US02/07455

(22) International Filing Date: 13 March 2002 (13.03.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/809,469 15 March 2001 (15.03.2001) US

(71) Applicant: **BECTON DICKINSON AND COMPANY**
[US/US]; One Becton Drive, Franklin Lakes, NJ 07417-1880 (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, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, 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, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

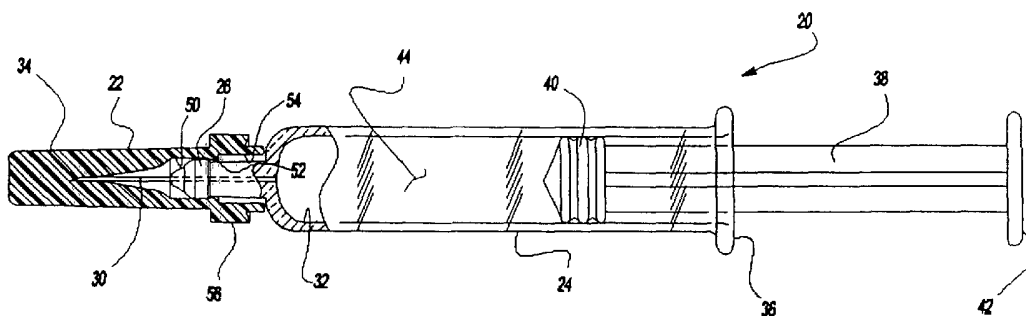
(88) Date of publication of the international search report:
3 April 2003

(72) Inventors: **PRAIS, Wes**; 34 Hillcrest Drive, Hewit, NJ 07421 (US). **KOZIOL, Steven, L.**; 2774 31st Avenue, Columbus, NE 68601 (US). **DOYLE, Judith, L.**; 7 Lake Road, Upper Saddle River, NJ 07458 (US). **PEROT, Fred-eric**; 36, quai de France, F-38000 Grenoble (FR).

(74) Agents: **DEGRAZIA, Gregory, D.** et al.; Howard & Howard Attorneys, P.C., 39400 Woodward Avenue, Suite 101, Bloomfield Hills, MI 48304 (US).

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: SYRINGE AND NEEDLE SHEIDL ASSEMBLY AND METHOD OF STERILIZING SUCH ASSEMBLY



(57) Abstract: A syringe assembly (20) including a needle cannula (30) having a five-beveled point and a needle shield (22) formed of a styrene block poly(ethylene/butylene) thermoplastic elastomer which significantly reduces needle penetration force and may reduce the cycle time for gas sterilization. The multi-beveled needle cannula point includes a primary bevel (130), a pair of tip bevels (134a, 134b) and a pair of middle bevels (132a, 132b) each intermediate the primary bevel and a respective tip bevel, wherein the angles of rotation of the primary bevel and the intermediate bevels are substantially equal resulting in reduced heights of intercepts between the bevels, thereby reducing needle penetration force. The needle shield maintains the sharpness of the needle cannula during application, sterilization and removal of the shield and it is believed that the needle shield will also reduce the cycle time of gas sterilization as compared to rubber needle shields and vulcanizate thermoplastic elastomers.

WO 02/074367 A3

INTERNATIONAL SEARCH REPORT

In International Application No

PCT/US 02/07455

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61M5/32

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 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)

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	EP 0 873 758 A (SCHOTT GLAS ;ZEISS STIFTUNG (DE)) 28 October 1998 (1998-10-28)	1-8, 19-24
Y	column 7, line 36 - line 43 column 9, line 13 - line 24; figures 2,3	9-18
Y	EP 0 819 442 A (BECTON DICKINSON CO) 21 January 1998 (1998-01-21) the whole document	9-18
X	US 4 551 138 A (SHINOHARA SHUICHI) 5 November 1985 (1985-11-05) column 3, line 45 - line 68 column 4, line 58 - line 63; figure 1B	1-8
A	DE 44 38 360 A (SCHOTT GLASWERKE) 9 May 1996 (1996-05-09) column 8, line 33 - line 61	19-24
	--- -/--	

☒ 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.

Z document member of the same patent family

Date of the actual completion of the international search

14 October 2002

Date of mailing of the international search report

23/10/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Valfort, C

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/07455

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 976 415 A (BECTON DICKINSON CO) 2 February 2000 (2000-02-02) column 1, line 16 - line 44 column 3, line 44 -column 4, line 1 -----	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/07455

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0873758	A	28-10-1998	DE 19717033 A1	12-11-1998
			EP 0873758 A2	28-10-1998
			JP 10305098 A	17-11-1998
			US 5980495 A	09-11-1999
EP 0819442	A	21-01-1998	US 5752942 A	19-05-1998
			AU 738278 B2	13-09-2001
			AU 2490497 A	08-01-1998
			BR 9703644 A	11-08-1998
			CA 2207644 A1	20-12-1997
			EP 0819442 A1	21-01-1998
			JP 2956962 B2	04-10-1999
			JP 10057490 A	03-03-1998
			SG 50844 A1	20-07-1998
			US 2001039402 A1	08-11-2001
US 4551138	A	05-11-1985	JP 1056784 B	01-12-1989
			JP 1568916 C	10-07-1990
			JP 58155867 A	16-09-1983
			BE 894744 A1	14-02-1983
			DE 3238834 A1	22-09-1983
			DE 3249823 C2	01-06-1988
			DE 8229419 U1	05-05-1983
			ES 277104 U	01-08-1984
			FR 2522971 A1	16-09-1983
			IT 1152922 B	14-01-1987
			SE 455267 B	04-07-1988
			SE 8205930 A	19-10-1982
DE 4438360	A	09-05-1996	DE 4438360 A1	09-05-1996
			DE 59509908 D1	17-01-2002
			EP 0709105 A1	01-05-1996
			JP 3249035 B2	21-01-2002
			JP 8206201 A	13-08-1996
			US 6331174 B1	18-12-2001
EP 0976415	A	02-02-2000	EP 0976415 A2	02-02-2000
			JP 2000051354 A	22-02-2000
			US 2001044608 A1	22-11-2001