

REVISED VERSION

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
8 January 2009 (08.01.2009)

PCT

(10) International Publication Number
WO 2009/006482 A9

- (51) International Patent Classification:
A61B 17/03 (2006.01)
- (21) International Application Number:
PCT/US2008/068933
- (22) International Filing Date:
1 July 2008 (01.07.2008)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
11/772,718 2 July 2007 (02.07.2007) US
- (71) Applicant (for all designated States except US): **CARDI-VA MEDICAL, INC.** [US/US]; 2585 Leghorn Street, Mountain View, California 94043 (US).

EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **YASSINZADEH, Zia** [US/US]; 11240 Mount Hamilton Road, San Jose, California 95140 (US). **WEITZ, Jeffrey I.** [CA/CA]; 54 Carluke Road East, Ancaster, Ontario L9G3L1 (CA). **STAFFORD, Alan** [CA/CA]; 21 Alexander Street, Hamilton, Ontario L8P2B1 (CA).
- (74) Agents: **HESLIN, James M.** et al.; Townsend And Townsend And Crew LLP, Two Embarcadero Center, 8th Floor, San Francisco, California 94111-3834 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ,

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

Published:

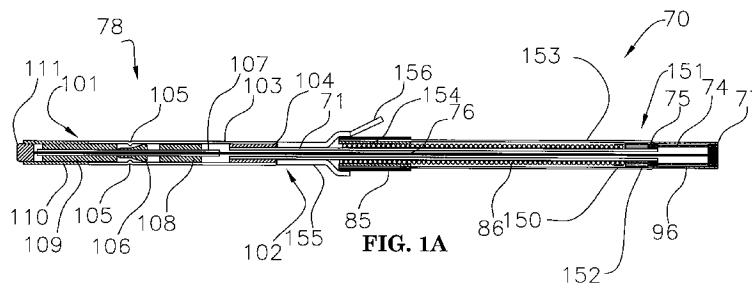
— with international search report (Art. 21(3))

(88) Date of publication of the revised international search report:

30 December 2009

(15) Information about Correction:
see Notice of 30 December 2009

(54) Title: VASCULAR CLOSURE DEVICES AND METHODS PROVIDING HEMOSTATIC ENHANCEMENT



(57) Abstract: Drug eluting vascular closure devices and methods for closing a blood vessel puncture site disposed at a distal end of a tissue tract are described. The devices and methods rely on a combination of the body's own natural mechanism to achieve hemostasis with chemical and/or biological agents to accelerate the hemostatic process. One method includes the steps of introducing a closure device through the tissue tract and deploying an expansible member at a distal end of the device within the blood vessel to occlude the puncture site. A chemical and/or biological sealing member disposed proximal the expansible member is then displaced so as to expose a chemical and/or biological region or release region of the device. At least one chemical and/or biological agent is thereafter released from the device and into the tissue tract to accelerate the occlusion process in the tract.

WO 2009/006482 A9

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/68933

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - A61B 17/03 USPC - 606/213 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) USPC: 606/213 (text search -- see search terms below)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 606/213		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Dialog (Derwent Patent Abstracts); Google Search Terms Used: hemostasis, method, expand, biological, chemical, collapse, remove, blood soluble, insoluble, coagulation, retract, seal, close, thrombin, epinephrine, chitosan, silica, kaolin, negative charge, protamine, sulfate		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	US 2006/0229670 A1, (BATES) 12 October 2006 (12.10.2006), para [0012], [0044], [0052], [0087], [0092], [0107] [0132], part 68, fig 2	1-4, 8-9, 12-15, 20 ----- 5-7, 10-11, 16-19, 21-37
Y	US 2006/0034935 A1 (PRONOVOST et al) 16 February 2006 (16.02.2006), para [0017], [0077]	5-7, 10-11, 31-34
Y	US 2005/0216054 A1 (WIDOMSKI et al) 29 September 2005 (29.09.2005), para [0025]	10-11, 35-37
Y	US 2005/0228444 A1 (WENDLANDT) 13 October 2005 (13.10.2005), para [0006], [0032]	11, 36
Y	US 2005/0228443 A1 (YASSINZADEH) 12 October 2005 (13.10.2005) para [0017], [0020], [022], [0042], part 50, 55, fig 1C	16-18, 21-27, 29-37
Y	US 2007/0038244 A1, (MORRIS et al) 15 February 2007 (15.02.2007) para [0107], part 50, fig 5	19, 26-27
Y	US 2005/0065549 A1, (CATES et al) 24 March 2005 (24.03.2005) para [0008]	28
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* 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 application or patent 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 22 September 2008 (22.09.2008)		Date of mailing of the international search report 26 MAY 2009
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. 571-273-3201		Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774