

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
10 November 2011 (10.11.2011)

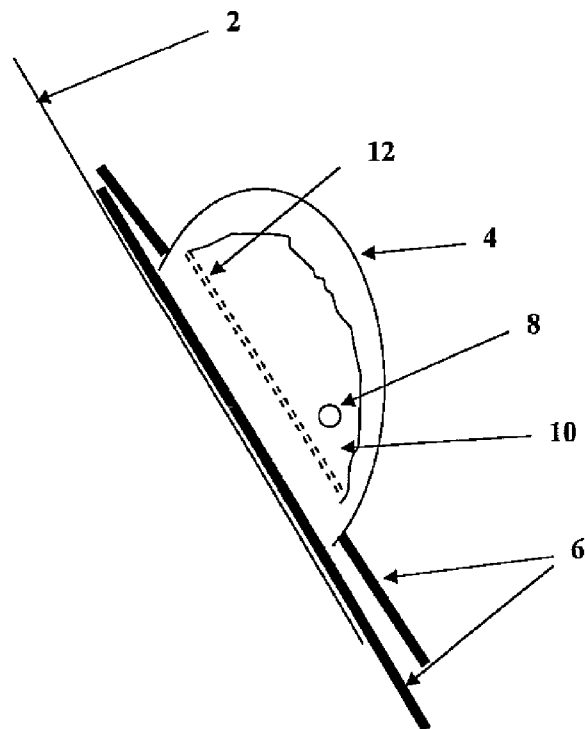
(10) International Publication Number
WO 2011/139781 A3

- (51) International Patent Classification:
A61B 17/22 (2006.01) *A61L 24/10* (2006.01)
A61B 17/08 (2006.01) *A61B 17/3205* (2006.01)
A61B 17/064 (2006.01)
- (21) International Application Number:
PCT/US2011/034157
- (22) International Filing Date:
27 April 2011 (27.04.2011)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/328,359 27 April 2010 (27.04.2010) US
61/356,705 21 June 2010 (21.06.2010) US
- (71) Applicant (for all designated States except US): **COVALENT MEDICAL, INC.** [US/US]; 3260 Homestead Court, Saline, MI 48176 (US).
- (72) Inventor; and
(75) Inventor/Applicant (for US only): **LOWINGER, Bruno** [US/US]; 4750 S. State St., Suite 301, Ann Arbor, MI 48108 (US).
- (74) Agent: **GOULD, Weston, R.**; Gifford, Krass, Sprinkle, Anderson &, Citkowski, P.C., 2701 Troy Center Drive, Suite 330, PO Box 7021, Troy, MI 48007-7021 (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, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, 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, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

[Continued on next page]

(54) Title: METHODS AND COMPOSITIONS FOR REPAIR OF VASCULAR TISSUE

Figure 1



(57) Abstract: Processes for the correction or treatment of a vascular defect or vascularized tumor are provided including introducing an embolus formed of an adhesive to occlude an area of a defect or to prevent blood flow to a tumor. The inventive processes provide simple methods for long-term correction of vascular defects.

WO 2011/139781 A3



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

— of inventorship (Rule 4.17(iv))

Published:

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

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

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

5 April 2012

Declarations under Rule 4.17:

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/034157**A. CLASSIFICATION OF SUBJECT MATTER***A61B 17/22(2006.01)i, A61B 17/08(2006.01)i, A61B 17/064(2006.01)i, A61L 24/10(2006.01)i, A61B 17/3205(2006.01)i*

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)

A61B 17/22; C12N 11/00; A61F 13/00; C12N 5/02; A61K 38/00; A01N 37/18; A61B 17/04

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: ADHERSIVE, BLOCKED, BARRIER, CROSS-LINKABLE PROTAIN and EMBOLI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7129210 B2 (JOHAN LOWINGER et al.) 31 October 2006 See abstract, column 2, line 44 - column 12, line 39	12
A	US 7402320 B2 (MICHAEL STEPHAN MIRIZZI et al.) 22 July 2008 See abstract, column 6, line 30 - column 24, line 22	12
A	US 2003-0104589 A1 (ERWIN R. STEDRONSKY et al.) 5 June 2003 See abstract, paragraphs [0012] - [0252]	12
A	US 6310036 B1 (DAVID A. BROWDIE) 30 October 2001 See abstract, column 5, line 49 - column 7, line 25	12
A	US 6139564 A (CLIFFORD TEOH) 31 October 2000 See abstract, column 4, line 10 - column 6, line 29 and figures 1 - 9	12

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

30 JANUARY 2012 (30.01.2012)

Date of mailing of the international search report

08 FEBRUARY 2012 (08.02.2012)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 189 Cheongsa-ro,
Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Hong, Young Uk

Telephone No. 82-42-481-8465



Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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.: 1-11, 13-21
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 1-11 and 13-21 pertain to methods for treatment of human body by therapy, as well as diagnostic methods and thus relate to a subject matter which this International Searching Authority is not required, under Article 17(2)(a)(i) of PCT and Rule 39.1(iv) of the Regulations under the PCT, to search.
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 No. III Observations where unity of invention is lacking (Continuation of item 3 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 and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/034157

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7129210 B2	31.10.2006	AU 2004-259027 A1	03.02.2005
		AU 2004-259027 B2	16.09.2010
		CA 2533551 A1	03.02.2005
		EP 1651038 A2	03.05.2006
		EP 1651038 A4	17.11.2010
		JP 2006-528518 A	21.12.2006
		JP 2006-528518 T	21.12.2006
		US 2005-0069589 A1	31.03.2005
		US 2007-0025955 A1	01.02.2007
		US 2009-0287313 A1	19.11.2009
		WO 2005-009225 A2	03.02.2005
		WO 2005-009225 A3	03.02.2005
		WO 2005-009225 A3	27.10.2005
		US 7402320 B2	22.07.2008
US 2003-0104589 A1	05.06.2003	CN 1189777 A0	05.08.1998
		EP 0823848 A1	18.02.1998
		EP 0823848 A1	06.11.2002
		EP 0823848 A4	20.12.2000
		EP 1656946 A1	17.05.2006
		JP 11-502537 A	02.03.1999
		JP 4088341 B2	21.05.2008
		KR 10-1999-0008330 A	25.01.1999
		US 2006-0029638 A1	09.02.2006
		US 5817303 A	06.10.1998
		US 6033654 A	07.03.2000
		US 6423333 B1	23.07.2002
		US 7300663 B2	27.11.2007
WO 96-34618 A1	07.11.1996		
US 6310036 B1	30.10.2001	None	
US 6139564 A	31.10.2000	AU 1999-46866 A1	05.01.2000
		EP 1087701 A1	04.04.2001
		EP 1087701 B1	13.10.2004
		EP 1475042 A2	10.11.2004
		EP 1475042 A3	15.02.2006
		WO 99-65397 A1	23.12.1999