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(54) Title: PLASMA DIRECTED ELECTRON BEAM WOUND CARE SYSTEM APPARATUS AND METHOD

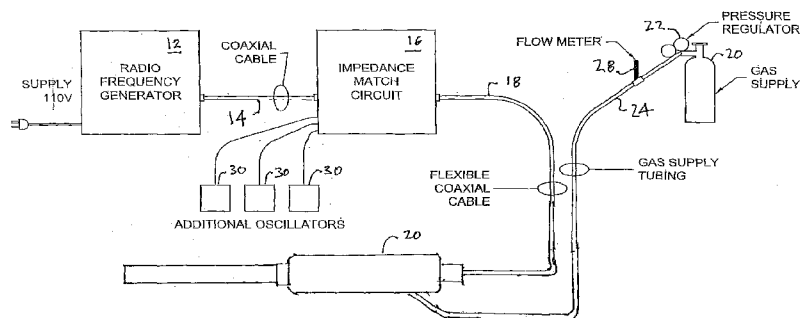


FIG. 1

(57) Abstract: A plasma generating device that utilizes a cold plasma to contain and direct a stream of electrons with a hand held nozzle to enhance healing of wounds and skin surface abnormalities, and to kill pathogens on skin surfaces in humans and animals wounds, abnormalities and pathogens.

A. CLASSIFICATION OF SUBJECT MATTER*A61N 1/44(2006.01)i, A61N 5/10(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)

A61N 1/44; A61N 1/30; A61B 18/14; C12N 13/00; H01J 7/24; A61B 18/18; A61F 7/00

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: wound, skin, derm, plasma, gas, electrode

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006-0189976 A1 (ZIV KARNI et al.) 24 August 2006 See abstract, paragraphs[0116],[0121],[0145],[0159]; claims 1,35 and figures 1A,8.	1-8
A	US 2006-0189976 A1 (ZIV KARNI et al.) 24 August 2006 See abstract, paragraphs[0116],[0121],[0145],[0159]; claims 1,35 and figures 1A,8.	9-10
A	US 2009-0012589 A1 (WATSON GREGORY A.) 08 January 2009 See abstract, paragraphs[0008],[0025]-[0027],[0034]; claim1 and figures 1,2,4,5,10.	1-10
A	US 2004-0186470 A1 (COLIN C. O. GOBLE et al.) 23 September 2004 See abstract, paragraph[0064]; claim1 and figure 1.	1-10
A	US 2010-0130911 A1 (MORFILL GREGOR EUGEN et al.) 27 May 2010 See abstract, paragraphs[0064],[0065],[0069],[0070],[0075],[0077],[0078]; claim 1 and figure 4.	1-10
A	US 2006-0084158 A1 (WOLFGANG VIOL) 20 April 2006 See abstract, paragraph[0030]-[0034]; claim 14 and figure 1-4.	1-10

 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

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"&" document member of the same patent family

Date of the actual completion of the international search

25 JANUARY 2013 (25.01.2013)

Date of mailing of the international search report

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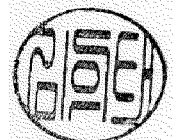
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/037249

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2006-0189974 A1 (KEITH PENNY et al.) 24 August 2006 See abstract, paragraph[0054]-[0059]; claim 49 and figure 1,2.	1-10

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.: 11-18
because they relate to subject matter not required to be searched by this Authority, namely:

Claims 11-18 pertain to methods for treatment of the human body and thus relate to a subject matter which this International Searching Authority is not required, under Article 17(2)(a)(i) of the 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/US2012/037249

Patent document cited in search report	Publication date	Patent family member(s)	Publication date		
US 2006-0189976 A1	24.08.2006	CA 2526671 A1	18.07.2006		
		CA 2573522 A1	18.07.2007		
		CA 2594284 A1	27.07.2006		
		CN 101160103 A0	09.04.2008		
		EP 1715810 B1	09.05.2012		
		EP 1810626 B1	11.01.2012		
		JP 04-979019 B2	27.04.2012		
		JP 2008-526421 A	24.07.2008		
		JP 2008-526423 A	24.07.2008		
		KR 10-0895939 B1	07.05.2009		
		KR 10-2008-0004452 A	09.01.2008		
		US 2007-0106349 A1	10.05.2007		
		US 2009-0326528 A1	31.12.2009		
		US 7630774 B2	08.12.2009		
		US 8150532 B2	03.04.2012		
		WO 2006-077567 A1	27.07.2006		
		WO 2006-077582 A2	27.07.2006		
		US 2009-0012589 A1	08.01.2009	EP 2145514 A4	14.03.2012
				US 2010-0145260 A1	10.06.2010
US 2011-230819 A1	22.09.2011				
US 7633231 B2	15.12.2009				
US 8005548 B2	23.08.2011				
WO 2008-131407 A1	30.10.2008				
US 2004-0186470 A1	23.09.2004	AU 2005-220056 A1	15.09.2005		
		AU 2005-234703 A1	08.06.2006		
		AU 2006-215418 A1	24.08.2006		
		EP 1658817 B1	21.05.2008		
		EP 1720475 B1	12.01.2011		
		EP 2301460 A1	30.03.2011		
		GB 2423254 A	23.08.2006		
		GB 2441970 A	26.03.2008		
		GB 2441971 A	26.03.2008		
		JP 2006-181353 A	13.07.2006		
		JP 2007-526063 A	13.09.2007		
		KR 10-2006-0057516 A	26.05.2006		
		KR 10-2006-0134099 A	27.12.2006		
		US 2001-0034519 A1	25.10.2001		
		US 2002-0161362 A1	31.10.2002		
		US 2005-0149012 A1	07.07.2005		
		US 2005-0256519 A1	17.11.2005		
		US 2006-0009763 A1	12.01.2006		
		US 2006-0116674 A1	01.06.2006		
		US 2006-0189974 A1	24.08.2006		
		US 2007-0027446 A1	01.02.2007		
		US 2007-0073287 A1	29.03.2007		
		US 2011-0121735 A1	26.05.2011		
US 6629974 B2	07.10.2003				

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/037249

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 6723091 B2	20.04.2004
		US 7300436 B2	27.11.2007
		US 7335199 B2	26.02.2008
		US 7785322 B2	31.08.2010
		US 7862564 B2	04.01.2011
		WO 2005-084569 A1	15.09.2005
		WO 2006-087562 A1	24.08.2006
US 2010-0130911 A1	27.05.2010	CN 101731024 A	09.06.2010
		EP 1993329 A1	19.11.2008
		EP 2147582 A1	27.01.2010
		JP 2010-530115 A	02.09.2010
		KR 10-2010-0017374 A	16.02.2010
		WO 2008-138504 A8	17.12.2009
US 2006-0084158 A1	20.04.2006	AT 362773 T	15.06.2007
		DE 10324926 B3	03.02.2005
		DE 502004003889 D1	05.07.2007
		EP 1628688 B8	29.08.2007
		ES 2286638 T3	01.12.2007
		JP 2006-526442 A	24.11.2006
		US 8103340 B2	24.01.2012
		WO 2004-105810 A1	09.12.2004
US 2006-0189974 A1	24.08.2006	AU 2005-220056 A1	15.09.2005
		AU 2005-234703 A1	08.06.2006
		AU 2006-215418 A1	24.08.2006
		EP 1658817 B1	21.05.2008
		EP 1720475 B8	02.03.2011
		EP 2301460 A1	30.03.2011
		GB 2423254 A	23.08.2006
		GB 2441970 A	26.03.2008
		GB 2441971 A	26.03.2008
		JP 2006-181353 A	13.07.2006
		JP 2007-526063 A	13.09.2007
		KR 10-2006-0057516 A	26.05.2006
		KR 10-2006-0134099 A	27.12.2006
		US 2001-0034519 A1	25.10.2001
		US 2002-0161362 A1	31.10.2002
		US 2004-0186470 A1	23.09.2004
		US 2005-0149012 A1	07.07.2005
		US 2005-0256519 A1	17.11.2005
		US 2006-0009763 A1	12.01.2006
		US 2006-0116674 A1	01.06.2006
		US 2007-0027446 A1	01.02.2007
		US 2007-0073287 A1	29.03.2007
		US 2011-0121735 A1	26.05.2011
		US 6629974 B2	07.10.2003
		US 6723091 B2	20.04.2004
		US 7300436 B2	27.11.2007

INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/US2012/037249

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 7335199 B2	26.02.2008
		US 7785322 B2	31.08.2010
		US 7862564 B2	04.01.2011
		WO 2005-084569 A1	15.09.2005
		WO 2006-087562 A1	24.08.2006