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[Continued on next page]

(54) Title: SYSTEMS AND METHODS FOR CONTROLLING OPERATION OF A REDUCED PRESSURE THERAPY SYSTEM

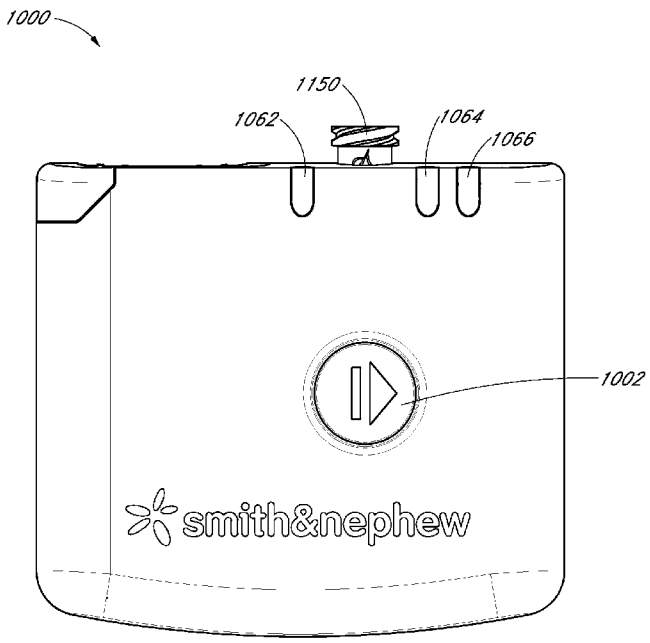

FIG. 21

(57) Abstract: Negative pressure wound therapy apparatuses and dressings, and systems and methods for operating such apparatuses for use with dressings are disclosed. In some embodiments, controlling the delivery of therapy can be based on monitoring and detecting various operating conditions. An apparatus can have a controller configured to monitor the duty cycle of a source of negative pressure and, based on the monitored duty cycle, determine whether a leak is present. The controller can be configured to provide an indication that a leak is present. For example, the controller can be configured to suspend and/or pause the delivery of therapy, and to restart the delivery of therapy due to a timeout, request from a user, etc. In addition, the controller can be configured to pause and/or restart the delivery of therapy upon a request from the user, such as in response to the user operating a switch.

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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))*

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2011/059016

A. CLASSIFICATION OF SUBJECT MATTER
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ADD.

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)
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 practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	WO 2012/038724 A1 (SMITH & NEPHEW; NICOLINI DEREK [GB]) 29 March 2012 (2012-03-29) the whole document page 7, line 9 - page 11, line 30	1-25, 27-55
A	WO 2008/048481 A2 (BLUESKY MEDICAL GROUP INC [US]; WESTON RICHARD SCOTT [US]; XU TIANNING) 24 April 2008 (2008-04-24) the whole document	1-25, 27-55
A	US 2011/077605 A1 (KARPOWICZ JOHN [US] ET AL) 31 March 2011 (2011-03-31) the whole document	1-25, 27-55
A	US 2008/200857 A1 (LAWHORN THOMAS P [US]) 21 August 2008 (2008-08-21) the whole document	1-25, 27-55

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[X] Further documents are listed in the continuation of Box C.

[X] 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 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	Date of mailing of the international search report
10 April 2014	23/04/2014

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Van Veen, Jennifer

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Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/036367 A1 (KROHN KENNETH P [US]) 11 February 2010 (2010-02-11) paragraphs [0022], [0066], [0139]; figure 2A	93-100
A	US 2010/249733 A9 (BLOTT PATRICK LEWIS [GB] ET AL) 30 September 2010 (2010-09-30) paragraph [0515] - paragraph [0520]	95-97
A	US 2002/198504 A1 (RISK JAMES R [US] ET AL RISK JR JAMES R [US] ET AL) 26 December 2002 (2002-12-26) pause button 1026; pause screen 1096; paragraphs [0089], [0141]	98-100

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/059016

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. [X] Claims Nos.: 26, 56-92, 101-113
because they relate to subject matter not required to be searched by this Authority, namely:

see FURTHER INFORMATION sheet PCT/ISA/210

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:

see additional sheet

1. [X] 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 fees, this Authority did not invite payment of additional fees.

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.

[X] No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-25, 27-55

An apparatus for applying negative pressure to a wound, comprising a dressing, a source of negative pressure, and a controller configured to: activate the source of negative pressure; monitor a duty cycle of the source of negative pressure; and provide an indication if the duty cycle exceeds a duty cycle threshold.

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2. claims: 93-100

An apparatus for applying negative pressure to a wound comprising a switch.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 26, 56-92, 101-113

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery The claim 26 relates to a method of using an apparatus for applying negative pressure to a wound. This implicitly entails one or more steps performed on the human body, e.g. positioning a dressing over said wound to create a substantially fluid impermeable seal over said wound, and generating a pressure at a wound site. These steps clearly have a therapeutical effect on the patient. Such a method is considered a method of treatment of the human or animal body by therapy. The subject matter of claim 26 was therefore not searched (Article 17(2)(a)(i)/(ii) and Rule 39.1(iv) PCT) and consequently no opinion will be formulated on the subject matter of those claims (Article 34(4)(a)(i) and Rule 67.1(iv) PCT). A similar reasoning applies to claims 56-77, 78-92, 101-105, 106-112, and 113, which relate to methods comprising at least the step of positioning a dressing over a wound to create a substantially fluid impermeable seal over the wound. Such methods are considered methods of treatment of the human or animal body by therapy. The subject matter of the above-mentioned claims was therefore not searched (Article 17(2)(a)(i)/(ii) and Rule 39.1(iv) PCT) and consequently no opinion will be formulated on the subject matter of those claims (Article 34(4)(a)(i) and Rule 67.1(iv) PCT).

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2011/059016

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