UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/917,865	06/14/2013	Carmeli ADAHAN	ADAHAN16A	7555

191043 7590 10/04/2023

Whitestone Law, PLLC
1850 Towers Crescent Plaza, Suite 550
Tysons, VA 22182

EXAMINER	
TREYGER, ILYA Y	

ART UNIT	PAPER NUMBER
3761	

NOTIFICATION DATE	DELIVERY MODE
10/04/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

astewart@whitestone.law
elund@whitestone.law
info@whitestone.law

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
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Alexandria, VA 22313-1450
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In re Patent No. 8,858,534	:	
Issue Date: October 14, 2014	:	NOTICE
Application No. 13/917,865	:	
Filed: June 14, 2013	:	
Attorney Docket No. ADAHAN16A	:	

This is a Notice regarding the request for acceptance of a fee deficiency submission under 37 CFR 1.28(c) filed July 25, 2023.

The Office no longer investigates or rejects original or reissue applications under 37 CFR 1.56. 1098 Off. Gaz. Pat. Office 502 (January 3, 1989). Therefore, nothing in this Notice is intended to imply that an investigation was done.

The fee deficiency submission under 37 CFR 1.28(c) is **ACCEPTED**. Accordingly, status as a small entity has been removed and any future fee(s) submitted must be paid at the undiscounted rate.

Since the address in the present request differs from the correspondence address of record, a courtesy copy of this Notice is being mailed to the address given in the request. However, applicant should note that a change in the correspondence address will not affect the fee address. Therefore, if applicant desires to receive future correspondence which **may** be mailed, regarding maintenance fees, for the above-identified patent, a "Fee Address Indication" form and/or a "Request for Customer Number" form(s) should be submitted (See USPTO form numbers PTO/SB/47 and/or PTO/SB/125).

Inquiries related to this communication should be directed to Jamice Brantley at (571) 272-3814.

/JAMICE T BRANTLEY/
Jamice T Brantley
Paralegal Specialist, Office of Petitions

Cc: Erik N. Lund
Whitestone Law, PLLC
11718 Bowman Green Dr., Suite 200
Reston, VA 20190

Transmittal Communication on Petition	Application/Control No. 13/917,865	Applicant(s)/Patent Under Reexamination ADAHAN, Carmeli	
	Deciding Official TREYGER, ILYA Y	Office of Petitions OPET	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

(ADDITIONAL PARTY'S CORRESPONDENCE ADDRESS)

Erik N. Lund
Whitestone Law, PLLC
11718 Bowman Green Dr., Suite 200
Reston, VA 20190

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above-identified Application/Patent.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	
Carmeli ADAHAN	Art Unit: 3761
Application No.: 13/917,865	Examiner: Ilya Y. TREYGER
Filing Date: 06/14/2013	Atty. Ref. No.: ADAHAN16A
Title: WOUND CLOSURE AND DRAINAGE SYSTEM	Confirmation No.: 7555

PETITION FOR ACCEPTANCE OF MAINTENANCE FEE BALANCE DUE TO CHANGE IN ENTITY STATUS UNDER 37 C.F.R. § 1.28(c)

Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Assignee/Applicant's assertion that Assignee/Applicant is a large entity via the Private PAIR Administration was accepted on July 6, 2023 for the above referenced patent. Assignee/Applicant asserts that small entity status was previously established in good faith, and the Office was not notified of a loss of entitlement to small entity status through error. See 37 CFR 1.28(c).

Assignee/Applicant respectfully requests acceptance of the payment of $3,080 as a deficiency payment as required by 37 CFR 1.28(c)(2). Assignee/Applicant's **Fee Deficiency Payment Itemization** begins at page 2 of this paper.

Respectfully submitted,
WHITESTONE LAW, PLLC

By: /Erik N. Lund/
Erik N. Lund
Registration No. 77,473

U.S.P.T.O. Customer Number 191043
WHITESTONE LAW, PLLC
11718 Bowman Green Dr, STE 200
Reston, VA 20190
703.261.9084 (direct)
703.261.9101 (main)
Deposit Account 60-4958

Date: July 6, 2023

NOTIFICATION OF LOSS OF ENTITY STATUS

Application or Patent No.: 8,858,534	First Named Inventor: Carmeli ADAHAN
Filing Date: 06/14/2013	Title of Invention: WOUND CLOSURE AND DRAINAGE SYSTEM

Applicant or patentee hereby notifies the Office that micro entity status is no longer appropriate in this application or patent. Applicant or patentee asserts that:

☐ Applicant/patentee is entitled to small entity status for this application or patent. See 37 CFR 1.27.

OR

☑ Applicant/patentee will pay undiscounted fees in this application or patent.

This form must be signed (see bottom of page 2). If you owe a fee deficiency, you must also complete the following "Fee Deficiency Payment" section and enclose payment for the full amount of the deficiency.

FEE DEFICIENCY PAYMENT

(please complete this section if you are correcting prior payments that were erroneously made in the micro entity amount)

☑ Applicant or patentee asserts that micro entity status was previously established in good faith, and that micro entity status either was established in error, or the Office was not notified of a loss of entitlement to micro entity status through error.

Fee Description or Type	Current Fee Amount✧	Amount Previously Paid	Date Previously Paid	Deficiency Owed
3.5 yr. Maintenance Fee	$2,000	$800	04/16/2018	$1,200
7.5 yr. Maintenance Fee	$3,760	$1,880	03/30/2022	$1,880
		Total Deficiency Owed (*sum of all entries in "Deficiency Owed" column*)		$3,080

✧ The "current fee amount" refers to the small entity or undiscounted rate (whichever is applicable) listed on the fee schedule as currently in force at the time this paper is submitted and the deficiency is paid in full. The USPTO fee schedule is available at https://www.uspto.gov/Fees. For more information about submitting fee deficiencies, see MPEP 509.04(f). The MPEP is available at https://www.uspto.gov/MPEP.

NOTIFICATION OF LOSS OF ENTITY STATUS

FEE DEFICIENCY PAYMENT (CONT.)

If you owe a fee deficiency, you must enclose payment for the total fee deficiency amount for prior payments erroneously made in the micro entity amount in this application or patent. Do NOT combine payment for multiple applications or patents. If you owe a fee deficiency in multiple applications or patents, you must submit a separate form and payment for each application or patent.

Please check the applicable box for the form of payment, and follow the corresponding instructions for submitting your form and payment.

☐ A check or U.S. Postal Service money order is enclosed. Please make payable to "Director of the USPTO", and mail this form with the check or money order to:

Mail Stop Petition
Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

☐ Payment by credit card. Do NOT provide credit card information on this form. Instead, enclose a completed Credit Card Payment Form (Form PTO-2038), which is available at https://www.uspto.gov/sites/default/files/documents/PTO-2038.pdf. Submit both forms either by facsimile to (571) 273-8300, or by mail to the address shown above.

☑ The Director is hereby authorized to charge $ 3,080 to USPTO Deposit Account No. 60-4958. If you select this option, this form must be signed by someone who is an authorized user of the deposit account, and who is permitted to sign in accordance with 37 CFR 1.33. If you are paying by deposit account, you may submit this form via the USPTO's patent electronic filing systems (EFS-Web or Patent Center), by facsimile to (571) 273-8300, or by mail to the address shown above.

For more information on accepted payment methods, please see https://www.uspto.gov/learning-and-resources/fees-and-payment/accepted-payment-methods. Payment must be made in U.S. dollars, and if payment is made from a foreign country, the payment must be payable and immediately negotiable in the United States for the full amount of the fee required.

SIGNATURE

This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications.

If applicant or patentee is a juristic entity (e.g., an LLC or corporation), this form must be signed by a registered practitioner. See 37 CFR 1.31.

If applicant or patentee is a person or persons, this form may be signed by either a registered practitioner, or the applicant or patentee. Note that if multiple people together are the applicant or patentee (e.g., there are joint inventors who together are the applicant), then a signature is required from each person who is an applicant or patentee. *Submit multiple forms if more than one signature is required, see below*.*

Signature	Date
/Erik N. Lund/	07-06-23
Name (Print/Typed)	Practitioner Registration Number (if applicable)
Erik N. Lund	77,473

☐ * Total of _____ forms are submitted.

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
13/917,865	**07/25/2023 11:29:34 PM ET**	**ADAHAN16A**

Title of Invention

WOUND CLOSURE AND DRAINAGE SYSTEM

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	8858534
CONFIRMATION #	7555	FILED BY	Erik Lund
PATENT CENTER #	62504492	FILING DATE	06/14/2013
CUSTOMER #	191043	FIRST NAMED INVENTOR	Carmeli ADAHAN
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	-

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
Petition_deficency_payment.pdf	3	Petition for review by the Office of Petitions	258 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
Petition_deficency_payment.pdf	3550262B83A7907504F5F179403FEF03ADC5C3820267DC53E5ECF3615E15B441AE628BD1BF083B53B7F92066C5907E926FB2240D84D96F2DC17DEB7DE9F07D4B

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized

by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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ACKNOWLEDGEMENT OF LOSS OF ENTITLEMENT TO ENTITY STATUS DISCOUNT

APPLICATION #	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET #	REQUEST ID
13/917,865	06/14/2013	Carmeli ADAHAN	ADAHAN16A	91888

The entity status change request below filed through Patent Center on 07/06/2023 has been accepted.

Certifications

APPLICANT CHANGING TO REGULAR UNDISCOUNTED FEE STATUS

Signature

I certify, in accordance with 37 CFR 1.4(d)(4), that I am one of the signatories making the entity status change.

Signature	Name	Registration #
/Erik N. Lund/	Erik Lund	77473

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/917,865	06/14/2013	Carmeli ADAHAN	ADAHAN16A

CONFIRMATION NO. 7555

191043
Whitestone Law, PLLC
11718 Bowman Green Dr., Suite 200
Reston, VA 20190

POA ACCEPTANCE LETTER

OC000000058748617

Date Mailed: 06/28/2023

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/26/2023.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/tawashington/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/917,865	06/14/2013	Carmeli ADAHAN	ADAHAN16A

CONFIRMATION NO. 7555

1444
Browdy and Neimark, PLLC
1625 K Street, N.W.
Suite 550
Washington, DC 20006

POWER OF ATTORNEY NOTICE

OC000000058748577

Date Mailed: 06/28/2023

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/26/2023.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/tawashington/

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
13/917,865	**06/26/2023 01:28:05 PM ET**	**ADAHAN16A**

Title of Invention

WOUND CLOSURE AND DRAINAGE SYSTEM

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	8858534
CONFIRMATION #	7555	FILED BY	Madeline Nguyen
PATENT CENTER #	62335841	FILING DATE	06/14/2013
CUSTOMER #	1444	FIRST NAMED INVENTOR	Carmeli ADAHAN
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Erik Lund

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
MEAC_ENGINEERING_LTD_POA.pdf	1	Power of Attorney	179 KB
Warning: The attached file contains comments or annotations. Comments are not recommended and may cause processing problems with the document.			
Statement_under_37_CFR_373.pdf	3	Assignee showing of ownership per 37 CFR 3.73	301 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)

MEAC_ENGINEERING_LTD_POA.pdf	A64420602ADB9B2ABDD98D7840E5A85CE7B33CDF1DE562D2C4AE2CAFD5EBCE2A9C01873AB255817338BF75E4BD23CFDD04F52AB0580BC05ABA386AB1D5BCDA95
Statement_under_37_CFR_373.pdf	A57365A83A0813014BB6FD2C76424CE7606FCA4FDD52AB3C4C935400DA0BF1B127192C3535788D8E7AE1D74FD39497B41C770C4F843A1A1E37163D21599DFC21

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: M.E.A.C. ENGINEERING LTD.

Application No./Patent No.: 13/917,865 - 8,858,534 Filed/Issue Date: 06/14/2013 - 10/14/2014

Titled: WOUND CLOSURE AND DRAINAGE SYSTEM

M.E.A.C. ENGINEERING LTD., a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: ADAHAN, CARMEL To: M.E.A.C. ENGINEERING LTD.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 040196, Frame 0564, or for which a copy thereof is attached.

2. From: ADAHAN, CARMELI To: M.E.A.C. ENGINEERING LTD.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 040555, Frame 0928, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Erik N. Lund/	06-26-2023
Signature	Date
Erik N. Lund	77,473
Printed or Typed Name	Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in the attached transmittal letter.

I hereby appoint:

☒ Practitioners associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A or equivalent):

191043

Please recognize or change the correspondence address for the application identified in the attached transmittal letter to:

☒ The address associated with the above-mentioned Customer Number.

I am the:

☐ Applicant.

☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign and am authorized to act on behalf of all assignees.

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor.

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (*e.g.*, a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document).

SIGNATURE of Applicant for Patent

Signature: _____ Date: _____

Name (printed): Carmeli Adahan

Telephone: 972-50-6406-000

Title and Company: M.E.A.C. ENGINEERING LTD.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/917,865	10/14/2014	8858534	ADAHAN16A	7555

1444 7590 09/24/2014

Browdy and Neimark, PLLC
1625 K Street, N.W.
Suite 1100
Washington, DC 20006

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Carmeli ADAHAN, Jerusalem, ISRAEL;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Receipt date: 06/14/2013	Application Number	13917865 - GAU: 3761
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Filing Date	2013-06-13
(Not for submission under 37 CFR 1.99)	First Named Inventor	Carmeli ADAHAN
	Art Unit	3761
	Examiner Name	/Ilya Treyger/
	Attorney Docket Number	ADAHAN16A

	31	5645081	A	1997-07-08	ARGENTA. et al.	
	32	5776119	A	1998-07-07	BILBO, et al.	
	33	7229422	B2	2007-06-12	KLOBE	
	34	5941859	A	August 24, 1999 ~~1997-08-17~~	LERMAN	
	35	3516160	A	1970-06-23	LEFFLER	

Change(s) applied to document. /N.W.S./ 8/4/2014

If you wish to add additional U.S. Patent citation information please click the Add button. **Add**

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050148913	A1	2005-07-07	WESTON	
	2	20040015042	A1	2004-01-22	VINCENT, et al.	
	3	20050180868	A1	2005-08-18	MILLER	
	4	20050004534	A1	2005-01-06	LOCKWOOD, et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /I.T./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	
	Filing Date	2013-06-13
	First Named Inventor	Carmeli ADAHAN
	Art Unit	3761
	Examiner Name	/Ilya Treyger/
	Attorney Docket Number	ADAHAN16A

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
Change(s) applied to document, /N.W.S./ 8/4/2014	1	5578006	A	1996-11-26	~~STEVENS~~ Schon	
	2	6817996	B2	2004-11-16	FARD et al.	
	3	4583970		1986-04-22	KIRCHNER	
	4	5947923	A	1999-09-07	UEHARA et al.	
	5	6257847	B1	2001-07-10	SILVER, et al.	
	6	7255681	B1	2007-08-14	SILVER, et al	
	7	4108574		1978-08-22	BARTLEY, et al.	
	8	4208171		1980-06-17	JONSSON	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /I.T./

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

1444 7590 06/18/2014
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Washington, DC 20006

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/917,865	06/14/2013	Carmeli ADAHAN	ADAHAN16A	7555

TITLE OF INVENTION: WOUND CLOSURE AND DRAINAGE SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	09/18/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
TREYGER, ILYA Y	3761	604-540000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Browdy and Neimark, PLLC
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☒ Payment by credit card. ~~Form PTO-2038 is attached~~.
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 02-4035 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /rlb/ Date September 15, 2014
Typed or printed name Roger L. Browdy Registration No. 25,618

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Medela LLC and Medela AG
Exhibit 1009
Page #21

Electronic Patent Application Fee Transmittal

Application Number:	13917865
Filing Date:	14-Jun-2013
Title of Invention:	WOUND CLOSURE AND DRAINAGE SYSTEM
First Named Inventor/Applicant Name:	Carmeli ADAHAN
Filer:	Roger Lowen Browdy/Cheryl Lynn Crandell
Attorney Docket Number:	ADAHAN16A

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480
Publ. Fee- Early, Voluntary, or Normal	1504	1	0	0

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**480**

Electronic Acknowledgement Receipt	
EFS ID:	20135953
Application Number:	13917865
International Application Number:	
Confirmation Number:	7555
Title of Invention:	WOUND CLOSURE AND DRAINAGE SYSTEM
First Named Inventor/Applicant Name:	Carmeli ADAHAN
Customer Number:	1444
Filer:	Roger Lowen Browdy/Cheryl Lynn Crandell
Filer Authorized By:	Roger Lowen Browdy
Attorney Docket Number:	ADAHAN16A
Receipt Date:	15-SEP-2014
Filing Date:	14-JUN-2013
Time Stamp:	12:55:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$480
RAM confirmation Number	9599
Deposit Account	024035
Authorized User	BROWDY, ROGER L.
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	2014-09-15-issuefeetransmittal-Adahan16a.pdf	90336 f6faac1d11fa32b42678e692afaad0cbaa398496	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32283 2e58b73343d89e2059eb07ffbfe0da985ee60515	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	122619		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/917,865	06/14/2013	Carmeli ADAHAN	ADAHAN16A	7555

1444 7590 08/08/2014

Browdy and Neimark, PLLC
1625 K Street, N.W.
Suite 1100
Washington, DC 20006

EXAMINER	
TREYGER, ILYA Y	
ART UNIT	PAPER NUMBER
3761	

MAIL DATE	DELIVERY MODE
08/08/2014	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
13/917,865	14 June, 2013	ADAHAN, CARMELI	ADAHAN16A

Browdy and Neimark, PLLC
1625 K Street, N.W.
Suite 1100
Washington, DC 20006

EXAMINER	
ILYA TREYGER	
ART UNIT	PAPER
3761	20140805

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

Abstract ends with "…disposable elements." - with a period!

/TATYANA ZALUKAEVA/ Supervisory Patent Examiner, Art Unit 3761	/ILYA TREYGER/ Examiner, Art Unit 3761

PTO-90C (Rev.04-03)

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www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

1444 7590 06/18/2014

Browdy and Neimark, PLLC
1625 K Street, N.W.
Suite 1100
Washington, DC 20006

EXAMINER
TREYGER, ILYA Y

ART UNIT	PAPER NUMBER
3761	

DATE MAILED: 06/18/2014

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/917,865	06/14/2013	Carmeli ADAHAN	ADAHAN16A	7555

TITLE OF INVENTION: WOUND CLOSURE AND DRAINAGE SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	09/18/2014

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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Page #28

PART B - FEE(S) TRANSMITTAL

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/917,865	06/14/2013	Carmeli ADAHAN	ADAHAN16A	7555

TITLE OF INVENTION: WOUND CLOSURE AND DRAINAGE SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	09/18/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
TREYGER, ILYA Y	3761	604-540000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Medela LLC and Medela AG
Exhibit 1009
Page #29

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/917,865	06/14/2013	Carmeli ADAHAN	ADAHAN16A	7555

1444 7590 06/18/2014

Browdy and Neimark, PLLC
1625 K Street, N.W.
Suite 1100
Washington, DC 20006

EXAMINER	
TREYGER, ILYA Y	

ART UNIT	PAPER NUMBER
3761	

DATE MAILED: 06/18/2014

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Medela LLC and Medela AG
Exhibit 1009
Page #30

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 13/917,865	Applicant(s) ADAHAN, CARMELI	
	Examiner ILYA TREYGER	Art Unit 3761	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *06/02/2014*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-22*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/ILYA TREYGER/
Examiner, Art Unit 3761

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1. The present application is being examined under the pre-AIA first to invent provisions.

Examiner's Comment

Terminal Disclaimer

2. The terminal disclaimer filed on 06/02/2014 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US 8,506,554 has been reviewed and is accepted. The terminal disclaimer has been recorded.

ALLOWABLE CLAIMS

3. Claims 1-22 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ILYA TREYGER whose telephone number is (571)270-3217. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tatyana Zalukaeva can be reached on 571-272-1115. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ILYA TREYGER/
Examiner, Art Unit 3761
/TATYANA ZALUKAEVA/

Supervisory Patent Examiner, Art Unit 3761

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13917865	ADAHAN, CARMELI
	Examiner	Art Unit
	ILYA TREYGER	3761

CPC- SEARCHED		
Symbol	Date	Examiner
A61M1/00; A61F13/00; A61F13/02; A61M27/00	6/9/2014	I. T.

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
604	540-544	10/5/2010	I. T.

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search attached	3/3/2014	I. T.
Search updated	6/9/2014	I. T.

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
604	540-544	6/9/2014	I. T.
	PGPUB searched	6/9/2014	I. T.

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BIB DATA SHEET

CONFIRMATION NO. 7555

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/917,865	06/14/2013 RULE	604	3761	ADAHAN16A

APPLICANTS

INVENTORS

Carmeli ADAHAN, Jerusalem, ISRAEL;

**** CONTINUING DATA ************************* I.T. 03/03/2014**

This application is a CON of 11/989,297 01/24/2008 PAT 8506554
which is a 371 of PCT/IL2005/000784 07/24/2005

**** FOREIGN APPLICATIONS ************************ I.T. 03/03/2014**

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
07/09/2013

Foreign Priority claimed	35 USC 119(a-d) conditions met	Verified and Acknowledged	Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
☐ Yes ☑ No	☐ Yes ☑ No	/ILYA Y TREYGER/ Examiner's Signature	☐ Initials	ISRAEL	2	22	3

ADDRESS

Browdy and Neimark, PLLC
1625 K Street, N.W.
Suite 1100
Washington, DC 20006
UNITED STATES

TITLE

WOUND CLOSURE AND DRAINAGE SYSTEM

FILING FEE RECEIVED		
810	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13917865	ADAHAN, CARMELI
	Examiner	**Art Unit**
	ILYA TREYGER	3761

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	03/03/2014	06/09/2014							
1	1	✓	=							
2	2	✓	=							
3	3	✓	=							
4	4	✓	=							
5	5	✓	=							
6	6	✓	=							
7	7	✓	=							
8	8	✓	=							
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18	18	✓	=							
19	19	✓	=							
20	20	✓	=							
21	21	✓	=							
22	22	✓	=							

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13917865	ADAHAN, CARMELI
	Examiner	**Art Unit**
	ILYA TREYGER	3761

CPC						
Symbol					**Type**	**Version**
A61M		1	/	0023	F	2013-01-01
A61M		1	/	0031	I	2013-01-01
A61M		1	/	0072	I	2014-02-04
A61M		1	/	0088	I	2013-01-01
A61M		1	/	0066	I	2013-01-01
A61M		1	/	0027	I	2014-02-04
F04B		53	/	22	I	2013-01-01
A61M		1	/	0037	A	2013-01-01
A61M		1	/	0092	I	2014-02-04
F04B		45	/	047	I	2013-01-01
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			/			
			/			
			/			

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

/ILYA TREYGER/ Examiner.Art Unit 3761	06/09/2014	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	22	
/TATYANA ZALUKAEVA/ Supervisory Patent Examiner.Art Unit 3761	06/15/2014	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13917865	ADAHAN, CARMELI
	Examiner	**Art Unit**
	ILYA TREYGER	3761

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
604	540	A	6	1	M	1 / 00 (2006.0)	A	0	1	B	1 / 00 (2006.0)	
							F	0	4	B	45 / 04 (2006.0)	

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
604	35	305	306	307	308
604	313	317	318	319	320
604	321	322	323	541	542
604	543	544			
606	131				

/ILYA TREYGER/ Examiner.Art Unit 3761	06/09/2014	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	22	
/TATYANA ZALUKAEVA/ Supervisory Patent Examiner.Art Unit 3761	06/15/2014	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13917865	ADAHAN, CARMELI
	Examiner	**Art Unit**
	ILYA TREYGER	3761

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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/ILYA TREYGER/ Examiner.Art Unit 3761	06/09/2014	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	22	
/TATYANA ZALUKAEVA/ Supervisory Patent Examiner.Art Unit 3761	06/15/2014	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	("woundand(suctionvacuum)and(enclosuredressing)and((bleedinghole)(vacuumbreaker))").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/06/09 13:10
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L5	9073	(A61F13/02).IPCR.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/06/09 13:11
L6	6328	(A61M27/00).IPCR.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/06/09 13:11
L7	1110	2 and 3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/06/09 13:11
L8	856	2 and 4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/06/09 13:11
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L10	380	2 and 6	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/06/09 13:11
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S4	746	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2010/10/05 16:48
S5	266	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2010/10/05 16:48
S6	1805	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2010/10/05 16:49
S7	1255	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2010/10/05 16:49
S8	250	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2010/10/05 16:49
S9	505	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2010/10/05 16:49
S10	17	S2 and S3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/05 16:49
S11	119	S2 and S4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/05 16:50
S12	126	S2 and S5	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/05 16:50
S13	117	S2 and S6	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/05 16:50
S14	109	S2 and S7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/05 16:50
S15	7	S2 and S8	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/05 16:50
S16	4	S2 and S9	US-PGPUB; USPAT;	OR	OFF	2010/10/05 16:50

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			USOCR; EPO; JPO; DERWENT; IBM_TDB			
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S20	154	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2010/10/05 16:52
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S22	12345	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 11:54
S23	881	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 11:54
S24	784	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 11:54
S25	290	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 11:54
S26	1923	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 11:54
S27	1341	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 11:54
S28	251	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 11:54
S29	521	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 11:54
S30	18	S22 and S23	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 11:54
S31	135	S22 and S24	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 11:54
S32	149	S22 and S25	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 11:54
S33	169	S22 and S26	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 11:54
S34	125	S22 and S27	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 11:54
S35	7	S22 and S28	US-PGPUB;	OR	OFF	2011/04/15

			USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB			11:54
S36	4	S22 and S29	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 11:54
S37	74	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 11:54
S38	114	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 11:54
S39	82	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 11:54
S40	174	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 11:54
S41	54	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 12:53
S42	12345	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S43	881	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S44	784	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S45	290	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S46	1923	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S47	1341	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S48	251	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S49	521	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S50	18	S42 and S43	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S51	135	S42 and S44	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S52	149	S42 and S45	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S53	169	S42 and S46	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53

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S54	125	S42 and S47	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S55	7	S42 and S48	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S56	4	S42 and S49	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S57	74	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 12:53
S58	114	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 12:53
S59	82	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 12:53
S60	174	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 12:53
S61	54	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 12:53
S62	12345	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S63	881	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S64	784	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S65	290	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S66	1923	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S67	1341	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S68	251	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S69	521	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/04/15 12:53
S70	18	S62 and S63	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S71	135	S62 and S64	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S72	149	S62 and S65	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53

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S73	169	S62 and S66	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S74	125	S62 and S67	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S75	7	S62 and S68	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S76	4	S62 and S69	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/04/15 12:53
S77	74	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 12:53
S78	114	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 12:53
S79	82	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 12:53
S80	174	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/04/15 12:53
S84	55	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S85	12846	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S86	902	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S87	815	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S88	308	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S89	2020	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S90	1424	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S91	253	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S92	529	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S93	21	S85 and S86	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S94	150	S85 and S87	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57

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S95	164	S85 and S88	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S96	214	S85 and S89	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S97	137	S85 and S90	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S98	8	S85 and S91	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S99	5	S85 and S92	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S100	88	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S101	133	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S102	94	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S103	200	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S104	55	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S105	12846	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S106	902	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S107	815	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S108	308	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S109	2020	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S110	1424	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S111	253	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S112	529	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S113	21	S105 and S106	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT;	OR	OFF	2011/09/26 13:57

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			IBM_TDB			
S114	150	S105 and S107	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S115	164	S105 and S108	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S116	214	S105 and S109	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S117	137	S105 and S110	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S118	8	S105 and S111	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S119	5	S105 and S112	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S120	88	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S121	133	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S122	94	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S123	200	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S124	55	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S125	12846	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S126	902	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S127	815	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S128	308	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S129	2020	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S130	1424	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S131	253	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57

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S132	529	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S133	21	S125 and S126	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S134	150	S125 and S127	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S135	164	S125 and S128	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S136	214	S125 and S129	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S137	137	S125 and S130	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S138	8	S125 and S131	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S139	5	S125 and S132	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S140	88	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S141	133	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S142	94	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S143	200	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S144	55	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S145	12846	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S146	902	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S147	815	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S148	308	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57

S149	2020	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S150	1424	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S151	253	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S152	529	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2011/09/26 13:57
S153	21	S145 and S146	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S154	150	S145 and S147	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S155	164	S145 and S148	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S156	214	S145 and S149	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S157	137	S145 and S150	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S158	8	S145 and S151	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S159	5	S145 and S152	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 13:57
S160	88	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S161	133	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S162	94	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S163	200	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/09/26 13:57
S164	26	S100 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 14:02
S165	32	S101 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO;	OR	OFF	2011/09/26 14:02

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			DERWENT; IBM_TDB			
S166	15	S102 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 14:02
S167	36	S103 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 14:02
S168	70	"4108574" "4208171"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 14:22
S169	0	S168 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 14:23
S170	5	S168 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 14:23
S171	6	"20040015042" "20050180868"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 14:24
S172	55	"4552552"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 14:24
S173	28	S172 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 14:25
S174	0	S172 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 14:25
S175	18	"5116206" "7503910"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 14:26
S176	3	S175 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2011/09/26 14:27
S178	858	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/05/24 16:07
S179	929	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/05/24 16:07
S180	56	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S181	14131	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S182	959	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S183	879	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S184	371	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25

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S185	2276	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S186	1612	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S187	255	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S188	579	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S189	33	S181 and S182	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S190	172	S181 and S183	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S191	217	S181 and S184	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S192	348	S181 and S185	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S193	176	S181 and S186	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S194	9	S181 and S187	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S195	8	S181 and S188	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S196	119	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S197	210	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S198	147	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S199	288	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S200	56	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S201	14131	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25

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S202	959	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S203	879	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S204	371	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S205	2276	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S206	1612	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S207	255	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S208	579	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S209	33	S201 and S202	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S210	172	S201 and S203	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S211	217	S201 and S204	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S212	348	S201 and S205	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S213	176	S201 and S206	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S214	9	S201 and S207	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S215	8	S201 and S208	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S216	119	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S217	210	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S218	147	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S219	288	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
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S221	14131	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S222	959	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S223	879	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S224	371	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S225	2276	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S226	1612	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S227	255	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S228	579	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S229	33	S221 and S222	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S230	172	S221 and S223	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S231	217	S221 and S224	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S232	348	S221 and S225	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S233	176	S221 and S226	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S234	9	S221 and S227	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S235	8	S221 and S228	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S236	119	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S237	210	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S238	147	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S239	288	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" |	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25

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S240	56	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S241	14131	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S242	959	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S243	879	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S244	371	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S245	2276	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S246	1612	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S247	255	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S248	579	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S249	33	S241 and S242	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S250	172	S241 and S243	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S251	217	S241 and S244	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S252	348	S241 and S245	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S253	176	S241 and S246	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S254	9	S241 and S247	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S255	8	S241 and S248	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S256	119	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S257	210	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S258	147	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25

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S259	288	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S260	56	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S261	14131	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S262	959	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S263	879	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S264	371	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S265	2276	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S266	1612	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S267	255	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S268	579	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S269	33	S261 and S262	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S270	172	S261 and S263	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S271	217	S261 and S264	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S272	348	S261 and S265	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S273	176	S261 and S266	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S274	9	S261 and S267	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S275	8	S261 and S268	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S276	119	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25

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S277	210	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S278	147	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S279	288	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S280	56	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S281	14131	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S282	959	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S283	879	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S284	371	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S285	2276	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S286	1612	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S287	255	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S288	579	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S289	33	S281 and S282	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S290	172	S281 and S283	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S291	217	S281 and S284	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S292	348	S281 and S285	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S293	176	S281 and S286	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S294	9	S281 and S287	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S295	8	S281 and S288	US-PGPUB; USPAT; USOCR;	OR	OFF	2012/09/14 12:25

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			EPO; JPO; DERWENT; IBM_TDB			
S296	119	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S297	210	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S298	147	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S299	288	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S300	56	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S301	14131	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S302	959	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S303	879	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S304	371	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S305	2276	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S306	1612	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S307	255	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S308	579	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S309	33	S301 and S302	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S310	172	S301 and S303	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S311	217	S301 and S304	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S312	348	S301 and S305	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S313	176	S301 and S306	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S314	9	S301 and S307	US-PGPUB; USPAT;	OR	OFF	2012/09/14 12:25

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			USOCR; EPO; JPO; DERWENT; IBM_TDB			
S315	8	S301 and S308	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S316	119	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S317	210	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S318	147	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S319	288	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S320	56	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S321	14131	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S322	959	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S323	879	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S324	371	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S325	2276	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S326	1612	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S327	255	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S328	579	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S329	33	S321 and S322	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S330	172	S321 and S323	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S331	217	S321 and S324	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S332	348	S321 and S325	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S333	176	S321 and S326	US-PGPUB;	OR	OFF	2012/09/14

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			USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB			12:25
S334	9	S321 and S327	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S335	8	S321 and S328	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S336	119	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S337	210	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S338	147	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S339	288	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/09/14 12:25
S340	34	S276 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S341	43	S277 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S342	19	S278 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S343	53	S279 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S344	73	"4108574" "4208171"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S345	0	S344 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S346	6	S344 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S347	6	"20040015042" "20050180868"	US-PGPUB; USPAT; EPO; DERWENT;	OR	OFF	2012/09/14 12:25

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			IBM_TDB			
S348	63	"4552552"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S349	33	S348 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S350	0	S348 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S351	21	"5116206" "7503910"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S352	4	S351 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2012/09/14 12:25
S353	879	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S354	959	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2012/09/14 12:25
S359	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S360	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S361	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S362	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S363	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S364	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S365	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S366	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S367	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S368	39	S360 and S361	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S369	191	S360 and S362	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S370	252	S360 and S363	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S371	415	S360 and S364	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34

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S372	201	S360 and S365	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S373	9	S360 and S366	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S374	9	S360 and S367	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S375	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S376	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S377	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S378	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S379	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S380	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S381	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S382	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S383	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S384	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S385	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S386	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S387	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S388	39	S380 and S381	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S389	191	S380 and S382	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S390	252	S380 and S383	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34

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S391	415	S380 and S384	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S392	201	S380 and S385	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S393	9	S380 and S386	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S394	9	S380 and S387	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S395	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S396	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S397	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S398	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S399	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S400	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S401	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S402	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S403	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S404	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S405	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S406	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S407	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S408	39	S400 and S401	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S409	191	S400 and S402	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34

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S410	252	S400 and S403	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S411	415	S400 and S404	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S412	201	S400 and S405	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S413	9	S400 and S406	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S414	9	S400 and S407	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S415	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S416	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S417	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S418	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S419	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S420	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S421	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S422	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S423	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S424	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S425	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S426	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S427	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S428	39	S420 and S421	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34

S429	191	S420 and S422	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S430	252	S420 and S423	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S431	415	S420 and S424	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S432	201	S420 and S425	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S433	9	S420 and S426	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S434	9	S420 and S427	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S435	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S436	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S437	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S438	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S439	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S440	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S441	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S442	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S443	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S444	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S445	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S446	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S447	596	(606/131).CCLS.	US-PGPUB;	OR	OFF	2013/04/03

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			USPAT			13:34
S448	39	S440 and S441	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S449	191	S440 and S442	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S450	252	S440 and S443	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S451	415	S440 and S444	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S452	201	S440 and S445	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S453	9	S440 and S446	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S454	9	S440 and S447	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S455	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S456	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S457	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S458	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S459	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S460	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S461	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S462	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S463	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S464	2428	(604/317-323).CCLS.	US-PGPUB;	OR	OFF	2013/04/03

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			USPAT			13:34
S465	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S466	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S467	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S468	39	S460 and S461	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S469	191	S460 and S462	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S470	252	S460 and S463	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S471	415	S460 and S464	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S472	201	S460 and S465	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S473	9	S460 and S466	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S474	9	S460 and S467	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S475	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S476	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S477	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S478	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S479	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S480	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S481	990	(604/35).CCLS.	US-PGPUB;	OR	OFF	2013/04/03

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			USPAT			13:34
S482	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S483	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S484	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S485	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S486	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S487	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S488	39	S480 and S481	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S489	191	S480 and S482	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S490	252	S480 and S483	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S491	415	S480 and S484	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S492	201	S480 and S485	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S493	9	S480 and S486	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S494	9	S480 and S487	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S495	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S496	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S497	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S498	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S499	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34

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S500	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S501	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S502	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S503	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S504	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S505	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S506	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S507	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:34
S508	39	S500 and S501	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S509	191	S500 and S502	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S510	252	S500 and S503	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S511	415	S500 and S504	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S512	201	S500 and S505	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S513	9	S500 and S506	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S514	9	S500 and S507	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S515	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S516	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S517	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34
S518	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" |	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:34

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S519	39	S455 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S520	55	S456 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S521	27	S457 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S522	67	S458 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S523	75	"4108574" "4208171"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S524	0	S523 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S525	6	S523 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S526	6	"20040015042" "20050180868"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S527	67	"4552552"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S528	36	S527 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S529	0	S527 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S530	26	"5116206" "7503910"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:34
S531	7	S530 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S532	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S533	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S534	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35

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S535	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S536	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S537	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S538	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S539	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S540	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S541	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S542	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S543	39	S535 and S536	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S544	191	S535 and S537	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S545	252	S535 and S538	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S546	415	S535 and S539	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S547	201	S535 and S540	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S548	9	S535 and S541	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S549	9	S535 and S542	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
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S552	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S553	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" |	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35

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		"4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.				
S554	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S555	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S556	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S557	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S558	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S559	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S560	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S561	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S562	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S563	39	S555 and S556	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S564	191	S555 and S557	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S565	252	S555 and S558	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S566	415	S555 and S559	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S567	201	S555 and S560	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S568	9	S555 and S561	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S569	9	S555 and S562	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S570	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S571	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S572	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT;	OR	OFF	2013/04/03 13:35

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			USOCR			
S573	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
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S575	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S576	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S577	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S578	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S579	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S580	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S581	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S582	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S583	39	S575 and S576	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S584	191	S575 and S577	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S585	252	S575 and S578	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S586	415	S575 and S579	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S587	201	S575 and S580	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S588	9	S575 and S581	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S589	9	S575 and S582	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
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S592	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S593	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
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S596	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S597	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S598	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S599	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S600	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S601	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S602	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S603	39	S595 and S596	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S604	191	S595 and S597	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S605	252	S595 and S598	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S606	415	S595 and S599	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S607	201	S595 and S600	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S608	9	S595 and S601	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S609	9	S595 and S602	US-PGPUB;	OR	OFF	2013/04/03

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			USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB			13:35
S610	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S611	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S612	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S613	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S614	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S615	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S616	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S617	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S618	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S619	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S620	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S621	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S622	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S623	39	S615 and S616	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S624	191	S615 and S617	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S625	252	S615 and S618	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S626	415	S615 and S619	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S627	201	S615 and S620	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35

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S628	9	S615 and S621	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S629	9	S615 and S622	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S630	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S631	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S632	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S633	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S634	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S635	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S636	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S637	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S638	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S639	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S640	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S641	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S642	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S643	39	S635 and S636	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S644	191	S635 and S637	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S645	252	S635 and S638	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S646	415	S635 and S639	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35

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S647	201	S635 and S640	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S648	9	S635 and S641	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S649	9	S635 and S642	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S650	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S651	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S652	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S653	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S654	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S655	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S656	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S657	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S658	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S659	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S660	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S661	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S662	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S663	39	S655 and S656	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S664	191	S655 and S657	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S665	252	S655 and S658	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35

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S666	415	S655 and S659	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S667	201	S655 and S660	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S668	9	S655 and S661	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S669	9	S655 and S662	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S670	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S671	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S672	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S673	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S674	59	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S675	14871	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S676	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S677	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S678	409	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S679	2428	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S680	1726	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S681	256	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S682	596	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S683	39	S675 and S676	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S684	191	S675 and S677	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT;	OR	OFF	2013/04/03 13:35

			IBM_TDB			
S685	252	S675 and S678	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S686	415	S675 and S679	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S687	201	S675 and S680	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S688	9	S675 and S681	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S689	9	S675 and S682	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S690	130	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S691	246	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S692	175	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S693	333	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/04/03 13:35
S694	39	S630 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S695	55	S631 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S696	27	S632 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S697	67	S633 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S698	75	"4108574" "4208171"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35

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S699	0	S698 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S700	6	S698 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S701	6	"20040015042" "20050180868"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S702	67	"4552552"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S703	36	S702 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S704	0	S702 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S705	26	"5116206" "7503910"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S706	7	S705 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2013/04/03 13:35
S707	940	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S708	990	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2013/04/03 13:35
S715	2	("20050148913" | "5578006" | "6817996").PN.	USPAT	OR	OFF	2013/05/08 11:17
S716	2	("20050148913" | "5578006" | "6817996").PN.	USPAT	OR	OFF	2013/05/08 11:19
S717	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S718	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S719	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S720	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S721	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S722	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S723	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S724	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S725	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S726	48	S718 and S719	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23

S727	215	S718 and S720	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S728	305	S718 and S721	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S729	552	S718 and S722	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S730	258	S718 and S723	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S731	14	S718 and S724	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S732	24	S718 and S725	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S733	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S734	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S735	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S736	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S737	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S738	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S739	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S740	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S741	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S742	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S743	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S744	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S745	649	(606/131).CCLS.	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT			14:23
S746	48	S738 and S739	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S747	215	S738 and S740	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S748	305	S738 and S741	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S749	552	S738 and S742	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S750	258	S738 and S743	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S751	14	S738 and S744	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S752	24	S738 and S745	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S753	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S754	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S755	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S756	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S757	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S758	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S759	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S760	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S761	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S762	2706	(604/317-323).CCLS.	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT			14:23
S763	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S764	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S765	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S766	48	S758 and S759	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S767	215	S758 and S760	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S768	305	S758 and S761	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S769	552	S758 and S762	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S770	258	S758 and S763	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S771	14	S758 and S764	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S772	24	S758 and S765	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S773	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S774	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S775	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S776	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S777	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S778	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S779	1036	(604/35).CCLS.	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT			14:23
S780	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S781	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S782	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S783	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S784	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S785	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S786	48	S778 and S779	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S787	215	S778 and S780	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S788	305	S778 and S781	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S789	552	S778 and S782	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S790	258	S778 and S783	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S791	14	S778 and S784	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S792	24	S778 and S785	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S793	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S794	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S795	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S796	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S797	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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S798	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S799	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S800	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S801	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S802	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S803	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S804	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S805	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S806	48	S798 and S799	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S807	215	S798 and S800	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S808	305	S798 and S801	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S809	552	S798 and S802	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S810	258	S798 and S803	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S811	14	S798 and S804	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S812	24	S798 and S805	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S813	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S814	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S815	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S816	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" |	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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		"4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.				
S817	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S818	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S819	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S820	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S821	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S822	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S823	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S824	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S825	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S826	48	S818 and S819	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S827	215	S818 and S820	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S828	305	S818 and S821	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S829	552	S818 and S822	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S830	258	S818 and S823	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S831	14	S818 and S824	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S832	24	S818 and S825	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S833	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S834	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S835	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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S836	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S837	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S838	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S839	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S840	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S841	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S842	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S843	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S844	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S845	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S846	48	S838 and S839	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S847	215	S838 and S840	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S848	305	S838 and S841	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S849	552	S838 and S842	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S850	258	S838 and S843	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S851	14	S838 and S844	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S852	24	S838 and S845	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S853	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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S854	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S855	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S856	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S857	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S858	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S859	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S860	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S861	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S862	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S863	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S864	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S865	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S866	48	S858 and S859	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S867	215	S858 and S860	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S868	305	S858 and S861	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S869	552	S858 and S862	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S870	258	S858 and S863	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S871	14	S858 and S864	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S872	24	S858 and S865	US-PGPUB; USPAT; USOCR;	OR	OFF	2014/03/03 14:23

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			EPO; JPO; DERWENT; IBM_TDB			
S873	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S874	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S875	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S876	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S877	45	S813 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S878	72	S814 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S879	38	S815 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S880	86	S816 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S881	80	"4108574" "4208171"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S882	0	S881 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S883	7	S881 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S884	6	"20040015042" "20050180868"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S885	75	"4552552"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S886	43	S885 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S887	0	S885 and (air adj hole)	US-PGPUB; USPAT; EPO;	OR	OFF	2014/03/03 14:23

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			DERWENT; IBM_TDB			
S888	30	"5116206" "7503910"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S889	10	S888 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S890	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S891	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S892	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S893	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S894	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S895	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S896	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S897	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S898	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S899	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S900	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S901	48	S893 and S894	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S902	215	S893 and S895	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S903	305	S893 and S896	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S904	552	S893 and S897	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S905	258	S893 and S898	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S906	14	S893 and S899	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S907	24	S893 and S900	US-PGPUB; USPAT;	OR	OFF	2014/03/03 14:23

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			USOCR; EPO; JPO; DERWENT; IBM_TDB			
S908	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S909	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S910	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S911	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S912	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S913	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S914	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S915	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S916	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S917	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S918	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S919	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S920	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S921	48	S913 and S914	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S922	215	S913 and S915	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S923	305	S913 and S916	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S924	552	S913 and S917	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S925	258	S913 and S918	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S926	14	S913 and S919	US-PGPUB;	OR	OFF	2014/03/03

			USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB			14:23
S927	24	S913 and S920	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S928	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S929	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S930	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S931	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S932	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S933	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S934	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S935	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S936	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S937	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S938	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S939	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S940	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S941	48	S933 and S934	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S942	215	S933 and S935	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S943	305	S933 and S936	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S944	552	S933 and S937	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23

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S945	258	S933 and S938	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S946	14	S933 and S939	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S947	24	S933 and S940	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S948	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S949	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S950	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S951	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S952	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S953	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S954	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S955	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S956	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S957	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S958	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S959	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S960	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S961	48	S953 and S954	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S962	215	S953 and S955	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S963	305	S953 and S956	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23

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S964	552	S953 and S957	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S965	258	S953 and S958	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S966	14	S953 and S959	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S967	24	S953 and S960	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S968	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S969	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S970	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S971	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S972	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S973	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S974	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S975	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S976	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S977	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S978	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S979	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S980	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S981	48	S973 and S974	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S982	215	S973 and S975	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23

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S983	305	S973 and S976	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S984	552	S973 and S977	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S985	258	S973 and S978	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S986	14	S973 and S979	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S987	24	S973 and S980	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S988	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S989	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S990	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S991	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S992	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S993	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S994	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S995	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S996	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S997	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S998	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S999	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1000	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1001	48	S993 and S994	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT;	OR	OFF	2014/03/03 14:23

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			IBM_TDB			
S1002	215	S993 and S995	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1003	305	S993 and S996	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1004	552	S993 and S997	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1005	258	S993 and S998	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1006	14	S993 and S999	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1007	24	S993 and S1000	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1008	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1009	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1010	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1011	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1012	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1013	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1014	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1015	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1016	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1017	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1018	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1019	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23

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S1020	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1021	48	S1013 and S1014	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1022	215	S1013 and S1015	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1023	305	S1013 and S1016	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1024	552	S1013 and S1017	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1025	258	S1013 and S1018	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1026	14	S1013 and S1019	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1027	24	S1013 and S1020	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1028	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1029	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1030	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1031	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1032	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1033	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1034	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1035	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1036	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23

S1037	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1038	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1039	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1040	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1041	48	S1033 and S1034	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1042	215	S1033 and S1035	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1043	305	S1033 and S1036	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1044	552	S1033 and S1037	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1045	258	S1033 and S1038	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1046	14	S1033 and S1039	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1047	24	S1033 and S1040	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1048	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1049	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1050	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1051	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1052	45	S988 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1053	72	S989 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO;	OR	OFF	2014/03/03 14:23

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			DERWENT; IBM_TDB			
S1054	38	S990 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1055	86	S991 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1056	80	"4108574" "4208171"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1057	0	S1056 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1058	7	S1056 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1059	6	"20040015042" "20050180868"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1060	75	"4552552"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1061	43	S1060 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1062	0	S1060 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1063	30	"5116206" "7503910"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1064	10	S1063 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1065	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1066	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1067	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1068	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1069	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1070	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1071	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23

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S1072	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1073	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1074	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1075	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1076	48	S1068 and S1069	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1077	215	S1068 and S1070	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1078	305	S1068 and S1071	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1079	552	S1068 and S1072	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1080	258	S1068 and S1073	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1081	14	S1068 and S1074	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1082	24	S1068 and S1075	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1083	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1084	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1085	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1086	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1087	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1088	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23

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S1089	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1090	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1091	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1092	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1093	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1094	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1095	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1096	48	S1088 and S1089	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1097	215	S1088 and S1090	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1098	305	S1088 and S1091	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1099	552	S1088 and S1092	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1100	258	S1088 and S1093	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1101	14	S1088 and S1094	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1102	24	S1088 and S1095	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1103	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1104	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1105	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1106	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1107	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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S1108	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1109	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1110	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1111	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1112	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1113	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1114	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1115	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1116	48	S1108 and S1109	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1117	215	S1108 and S1110	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1118	305	S1108 and S1111	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1119	552	S1108 and S1112	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1120	258	S1108 and S1113	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1121	14	S1108 and S1114	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1122	24	S1108 and S1115	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1123	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1124	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1125	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1126	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" |	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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		"4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.				
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S1128	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1129	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1130	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1131	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1132	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1133	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1134	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1135	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1136	48	S1128 and S1129	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1137	215	S1128 and S1130	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1138	305	S1128 and S1131	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1139	552	S1128 and S1132	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1140	258	S1128 and S1133	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1141	14	S1128 and S1134	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1142	24	S1128 and S1135	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1143	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1144	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
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S1146	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
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S1148	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1149	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1150	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1151	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1152	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1153	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1154	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1155	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1156	48	S1148 and S1149	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1157	215	S1148 and S1150	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1158	305	S1148 and S1151	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1159	552	S1148 and S1152	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1160	258	S1148 and S1153	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1161	14	S1148 and S1154	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1162	24	S1148 and S1155	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1163	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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S1170	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
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S1172	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
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S1174	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1175	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1176	48	S1168 and S1169	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1177	215	S1168 and S1170	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1178	305	S1168 and S1171	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1179	552	S1168 and S1172	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1180	258	S1168 and S1173	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1181	14	S1168 and S1174	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1182	24	S1168 and S1175	US-PGPUB; USPAT; USOCR;	OR	OFF	2014/03/03 14:23

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S1184	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1185	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1186	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1187	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1188	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1189	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1190	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1191	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1192	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1193	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1194	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1195	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1196	48	S1188 and S1189	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1197	215	S1188 and S1190	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1198	305	S1188 and S1191	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1199	552	S1188 and S1192	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1200	258	S1188 and S1193	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1201	14	S1188 and S1194	US-PGPUB; USPAT;	OR	OFF	2014/03/03 14:23

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			USOCR; EPO; JPO; DERWENT; IBM_TDB			
S1202	24	S1188 and S1195	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1203	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1204	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1205	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1206	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1207	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1208	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1209	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1210	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1211	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1212	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1213	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1214	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1215	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
S1216	48	S1208 and S1209	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1217	215	S1208 and S1210	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1218	305	S1208 and S1211	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1219	552	S1208 and S1212	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1220	258	S1208 and S1213	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB			14:23
S1221	14	S1208 and S1214	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1222	24	S1208 and S1215	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1223	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1224	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1225	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1226	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
S1227	45	S1163 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1228	72	S1164 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1229	38	S1165 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
S1230	86	S1166 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1231	80	"4108574" "4208171"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1232	0	S1231 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1233	7	S1231 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1234	6	"20040015042" "20050180868"	US-PGPUB; USPAT; EPO; DERWENT;	OR	OFF	2014/03/03 14:24

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			IBM_TDB			
S1235	75	"4552552"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1236	43	S1235 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1237	0	S1235 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1238	30	"5116206" "7503910"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1239	10	S1238 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1240	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1241	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1242	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1243	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1244	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1245	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1246	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1247	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1248	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1249	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1250	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1251	48	S1243 and S1244	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1252	215	S1243 and S1245	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1253	305	S1243 and S1246	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1254	552	S1243 and S1247	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24

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S1255	258	S1243 and S1248	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1256	14	S1243 and S1249	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1257	24	S1243 and S1250	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1258	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1259	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1260	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1261	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1262	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1263	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1264	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1265	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1266	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1267	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1268	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1269	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1270	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1271	48	S1263 and S1264	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1272	215	S1263 and S1265	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1273	305	S1263 and S1266	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24

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S1274	552	S1263 and S1267	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1275	258	S1263 and S1268	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1276	14	S1263 and S1269	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1277	24	S1263 and S1270	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1278	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1279	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1280	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1281	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
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S1283	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1284	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1285	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1286	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1287	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1288	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1289	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1290	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1291	48	S1283 and S1284	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1292	215	S1283 and S1285	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24

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S1293	305	S1283 and S1286	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1294	552	S1283 and S1287	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1295	258	S1283 and S1288	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1296	14	S1283 and S1289	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1297	24	S1283 and S1290	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1298	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1299	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1300	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1301	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1302	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1303	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1304	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1305	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1306	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1307	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1308	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1309	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1310	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1311	48	S1303 and S1304	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24

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S1312	215	S1303 and S1305	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1313	305	S1303 and S1306	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1314	552	S1303 and S1307	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1315	258	S1303 and S1308	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1316	14	S1303 and S1309	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1317	24	S1303 and S1310	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1318	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1319	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1320	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1321	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1322	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1323	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1324	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1325	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1326	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1327	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1328	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1329	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1330	649	(606/131).CCLS.	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT			14:24
S1331	48	S1323 and S1324	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1332	215	S1323 and S1325	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1333	305	S1323 and S1326	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1334	552	S1323 and S1327	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1335	258	S1323 and S1328	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1336	14	S1323 and S1329	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1337	24	S1323 and S1330	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1338	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1339	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1340	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1341	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1342	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1343	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1344	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1345	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1346	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1347	2706	(604/317-323).CCLS.	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT			14:24
S1348	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1349	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1350	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1351	48	S1343 and S1344	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1352	215	S1343 and S1345	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1353	305	S1343 and S1346	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1354	552	S1343 and S1347	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1355	258	S1343 and S1348	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1356	14	S1343 and S1349	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1357	24	S1343 and S1350	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1358	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1359	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1360	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1361	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1362	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1363	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1364	1036	(604/35).CCLS.	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT			14:24
S1365	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1366	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1367	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1368	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1369	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1370	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1371	48	S1363 and S1364	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1372	215	S1363 and S1365	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1373	305	S1363 and S1366	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1374	552	S1363 and S1367	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1375	258	S1363 and S1368	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1376	14	S1363 and S1369	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1377	24	S1363 and S1370	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1378	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1379	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1380	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1381	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1382	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24

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S1383	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1384	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1385	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1386	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1387	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1388	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1389	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1390	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1391	48	S1383 and S1384	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1392	215	S1383 and S1385	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1393	305	S1383 and S1386	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1394	552	S1383 and S1387	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1395	258	S1383 and S1388	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1396	14	S1383 and S1389	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1397	24	S1383 and S1390	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1398	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1399	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1400	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
S1401	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" |	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24

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S1402	45	S1338 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1403	72	S1339 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1404	38	S1340 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1405	86	S1341 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1406	80	"4108574" "4208171"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1407	0	S1406 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1408	7	S1406 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1409	6	"20040015042" "20050180868"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1410	75	"4552552"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1411	43	S1410 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1412	0	S1410 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1413	30	"5116206" "7503910"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1414	10	S1413 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
S1415	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1416	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
S1417	2	("20050148913" | "5578006" | "6817996").PN.	USPAT	OR	OFF	2014/03/03 14:24

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S1418	2	("20050148913" | "5578006" | "6817996").PN.	USPAT	OR	OFF	2014/03/03 14:24

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L15	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2014/06/09 13:16
S81	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2011/04/15 13:00
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S355	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2012/09/14 12:25
S356	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2012/09/14 12:25
S357	0	enclosure and applying and negative and pressure and wound and attachable and circumference and confined and volume and tube and outlet and connectable and vacuum and source and venting and arrangement and calibrated and orifice and restrict and flow and ambient and air.clm.	USPAT; UPAD	OR	OFF	2012/09/14 12:30
S358	1	enclosure and applying and negative and pressure and wound and attachable and circumference and confined and volume and tube and outlet and connectable and vacuum and source and venting and arrangement and calibrated and orifice and restrict and flow and ambient and air.clm.	US-PGPUB	OR	OFF	2012/09/14 12:30
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S712	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2013/04/03 13:35
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S714	1	enclosure and applying and negative and pressure and wound and attachable and circumference and confined and volume and tube and outlet and connectable and vacuum and source and venting and arrangement and calibrated and orifice and restrict and flow and ambient and air.clm.	US-PGPUB	OR	OFF	2013/04/03 13:35
S1419	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2014/03/03 14:23
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S1421	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2014/03/03 14:23
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S1424	2	enclosure and applying and negative and pressure and wound and attachable and circumference and confined and volume and tube and outlet and connectable and vacuum and source and venting and arrangement and calibrated and orifice and restrict and flow and ambient and air.clm.	US-PGPUB	OR	OFF	2014/03/03 14:23
S1425	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2014/03/03 14:24
S1426	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2014/03/03 14:24
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		first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.				
S1428	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2014/03/03 14:24
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6/9/2014 1:16:37 PM
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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/917,865	06/14/2013	Carmeli ADAHAN	ADAHAN

CONFIRMATION NO. 7555

1444
Browdy and Neimark, PLLC
1625 K Street, N.W.
Suite 1100
Washington, DC 20006

POA ACCEPTANCE LETTER

OC000000068754180

Date Mailed: 06/02/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/27/2014.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/mbeyene/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Doc Code: DIST.E.FILE Document Description: Electronic Terminal Disclaimer - Filed	PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	13917865
Filing Date	14-Jun-2013
First Named Inventor	Carmeli ADAHAN
Attorney Docket Number	ADAHAN
Title of Invention	WOUND CLOSURE AND DRAINAGE SYSTEM

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
Carmeli ADAHAN	100%

The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)

8506554

as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

◉ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.

○	I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.

Applicant claims the following fee status:

◉ Small Entity

○ Micro Entity

○ Regular Undiscounted

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application

Registration Number 25618

○ A sole inventor

○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application

○ A joint inventor; all of whom are signing this request

Signature	/rlb/
Name	Roger L Browdy

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	13917865
Filing Date:	14-Jun-2013
Title of Invention:	WOUND CLOSURE AND DRAINAGE SYSTEM
First Named Inventor/Applicant Name:	Carmeli ADAHAN
Filer:	Roger Lowen Browdy
Attorney Docket Number:	ADAHAN

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Statutory or Terminal Disclaimer	1814	1	160	160
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
		Total in USD ($)		**160**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 13917865

Filing Date: 14-Jun-2013

Applicant/Patent under Reexamination: ADAHAN et al.

Electronic Terminal Disclaimer filed on June 2, 2014

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt	
EFS ID:	19180012
Application Number:	13917865
International Application Number:	
Confirmation Number:	7555
Title of Invention:	WOUND CLOSURE AND DRAINAGE SYSTEM
First Named Inventor/Applicant Name:	Carmeli ADAHAN
Customer Number:	1444
Filer:	Roger Lowen Browdy
Filer Authorized By:	
Attorney Docket Number:	ADAHAN
Receipt Date:	02-JUN-2014
Filing Date:	14-JUN-2013
Time Stamp:	10:18:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$160
RAM confirmation Number	9961
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Electronic Terminal Disclaimer-Filed	eTerminal-Disclaimer.pdf	33441 43634c09aa8c9961bbaf9fae29d5867b1f8e6d47	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30276 7248c59eb16233af1fed951f37c4c7128aa3105b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	63717		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Atty. Docket: ADAHAN 16A

In re Application of:	)	Conf. No.: 7555
	)	
Carmeli ADAHAN et al.	)	Examiner: Ilya Y. Treyger
	)	
Filed: June 14, 2013	)	Art Unit: 3761
	)	
U.S. Appl. No.: 13/917,865	)	Washington, D.C.
	)	
For: WOUND CLOSURE AND…	)	June 2, 2014

RESPONSE

U.S. Patent and Trademark Office
Customer Service Window
Randolph Building, Mail Stop Amendment
401 Dulany Street
Alexandria, VA 22314

Sir:

In response to the non-final action mailed March 11, 2014, please enter the following remarks and arguments.

Listing of Claims begins on page 2 of this paper**.**

Remarks begin on page 6 of this paper.

Listing of the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 (Original). A vacuum system for applying negative pressure to a wound, the vacuum system comprising: an enclosure, a venting arrangement, a tube, a vacuum source, and a controller:

the enclosure being attachable to a periphery of the wound so as to define a confined volume;

the enclosure having an enclosure outlet connectable to said vacuum source via said tube so that negative pressure can be selectively created in said volume;

the venting arrangement comprising a flow restrictor to restrict flow through said venting arrangement and to thereby provide a controlled flow of ambient air into said vacuum system upstream of the vacuum source;

the controller configured for controlling operation of the vacuum source while providing venting of the vacuum system via said venting arrangement to provide a desired level of said negative pressure in said confined volume.

2 (Original). The vacuum system according to claim 1, wherein said flow restrictor is provided in any one of the enclosure or the tube.

3 (Original). The vacuum system according to claim 1, further comprising a sensor for enabling determination of a level of said negative pressure in said confined volume.

4 (Original). The vacuum system according to claim 1, further comprising a waste container in fluid communication with said vacuum source.

5 (Original). The vacuum system according to claim 1, wherein said vacuum source comprises a vacuum pump driven by a motor.

6 (Original). The vacuum system according to claim 5, wherein said motor is an electric motor, and said controller controls operation of said motor to thereby provide a desired level of said negative pressure in said confined volume.

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7 (Original). The vacuum system according to claim 6, wherein said controller controls the electric current or the voltage of said motor to control said level of said negative pressure in said confined volume.

8 (Original). The vacuum system according to claim 6, wherein said controller controls the torque of said motor to control said level of said negative pressure in said confined volume.

9 (Original). The vacuum system according to claim 1, wherein ambient pressure may be restored in said confined volume via said venting arrangement when said vacuum pump is not operating.

10 (Original). The vacuum system according to claim 1, wherein said venting arrangement comprises at least one of:

- one or more bleeding holes;
- a porous body;
- an orifice.

11 (Original). A vacuum system for applying negative pressure to a wound, the vacuum system comprising: an enclosure, a venting arrangement, a tube, a vacuum source, and a controller:

the enclosure being attachable to a periphery of the wound so as to define a confined volume;

the enclosure having an enclosure outlet connectable to said vacuum source via said tube so that negative pressure can be selectively created in said volume, said venting arrangement located outside said enclosure and comprising a flow restrictor to restrict flow through said venting arrangement and to thereby provide a controlled flow of ambient air into said tube, said controlled flow of ambient air entering said tube via said venting arrangement without entering said enclosure;

the controller configured for controlling operation of the vacuum source while said tube is being vented via said venting arrangement to provide a desired level of said negative pressure in said confined volume.

12 (Original). The vacuum system according to claim 11, further comprising a sensor for enabling determination of a level of said negative pressure in said confined volume.

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13 (Original). The vacuum system according to claim 11, further comprising a waste container in fluid communication with said vacuum source.

14(Original). The vacuum system according to claim 11, wherein said vacuum source comprises a vacuum pump driven by a motor.

15 (Original). The vacuum system according to claim 14, wherein said motor is an electric motor, and said controller controls operation of said motor to thereby provide a desired level of said negative pressure in said confined volume.

16 (Original). The vacuum system according to claim 15, wherein said controller controls at least one of the electric current of said motor, or the voltage of said motor, or the torque of said motor to control said level of said negative pressure in said confined volume.

17 (Original). The vacuum system according to claim 11, wherein ambient pressure may be restored in said confined volume via said venting arrangement when said vacuum pump is not operating.

18 (Original). The vacuum system according to claim 11, wherein said venting arrangement comprises at least one of:

- one or more bleeding holes;
- a porous body;
- an orifice.

19 (Original). A method for applying negative pressure to a wound, comprising:

(a) providing a vacuum system comprising at least: an enclosure, a venting arrangement, a tube, and a vacuum source:

the enclosure being attachable to a periphery of the wound so as to define a confined volume;

the enclosure having an enclosure outlet connectable to said vacuum source via said tube so that negative pressure can be selectively created in said volume;

the venting arrangement comprising a flow restrictor to restrict flow through said venting arrangement and to thereby provide a controlled flow of ambient air into said system upstream of the vacuum source;

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(b) controlling operation of the vacuum source while the vacuum system is being vented via the venting arrangement to thereby provide a desired level of said negative pressure in said confined volume.

20 (Original). The method according to claim 19, wherein the vacuum source comprises a vacuum pump driven by an electric motor, and wherein step (b) comprises controlling operation of said motor to thereby provide a desired level of said negative pressure in said confined volume.

21 (Original). The method according to claim 20, wherein step (b) comprises controlling at least one of the electric current, or the voltage, or the torque of said motor to control said level of said negative pressure in said confined volume.

22 (Original). The method according to claim 19, wherein said venting arrangement comprises at least one of:

- one or more bleeding holes;
- a porous body;
- an orifice.

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REMARKS

Claims 1-22 presently appear in this case. No claims have been allowed. The Official Action of June 14, 2013, has now been carefully studied. Reconsideration and allowance are hereby respectfully urged.

Briefly, the present invention relates to A vacuum system for applying negative pressure to a wound and a method for applying negative pressure to a wound.

Claims 1-22 have been rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1, 6, 8, 9, 20 and 24 of Adahan (US8,506,554) in view of Argenta. The examiner states that a timely filed terminal disclaimer may be used to overcome this rejection.

A terminal disclaimer with respect to the Adahan patent has been submitted on even date herewith, thereby obviating this rejection. Reconsideration and withdrawal thereof are therefore respectfully urged.

It is submitted that all of the claims now present in the case fully define over the references of record and fully comply with 35 USC 112. Reconsideration and allowance are therefore earnestly solicited.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant(s)

By /rlb/_____
Roger L. Browdy
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Telephone No.: (202) 628-5197
Facsimile No.: (202) 737-3528

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Exhibit 1009
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Electronic Acknowledgement Receipt	
EFS ID:	19183339
Application Number:	13917865
International Application Number:	
Confirmation Number:	7555
Title of Invention:	WOUND CLOSURE AND DRAINAGE SYSTEM
First Named Inventor/Applicant Name:	Carmeli ADAHAN
Customer Number:	1444
Filer:	Roger Lowen Browdy/Jason Williams
Filer Authorized By:	Roger Lowen Browdy
Attorney Docket Number:	ADAHAN
Receipt Date:	02-JUN-2014
Filing Date:	14-JUN-2013
Time Stamp:	14:01:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2014-06-02Response-Adahan16A.pdf	143386 4f0e60c5d08f4cbaee9b45719947a43fac0d8d50	yes	7

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Miscellaneous Incoming Letter	1	1
	Amendment/Req. Reconsideration-After Non-Final Reject	2	2
	Claims	3	6
	Applicant Arguments/Remarks Made in an Amendment	7	7
Warnings:			
Information:			
	Total Files Size (in bytes):	143386	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of: Carmeli ADAHAN et al.

Art Unit: 3761

Application No.: 13/917,865 Confirmation No.: 7555

Examiner: Ilya Y. Treyger

Filing Date: June 14, 2013

Washington, D.C.

For: WOUND CLOSURE AND DRAINAGE SYSTEM

Atty.'s Docket: ADAHAN 16A

Date: June 2, 2014

THE COMMISSIONER OF PATENTS
U.S. Patent and Trademark Office
Randolph Building, **Mail Stop AMENDMENT**
401 Dulany Street
Alexandria, VA 22314

Sir:

Transmitted herewith is a [XX] **Response** in the above-identified application.

[XX] Small Entity Status: Applicant(s) claim small entity status. See 37 C.F.R. §1.27.

[XX] No additional fee is required.

[ ] The fee has been calculated as shown below:

	(Col. 1)		(Col. 2)	(Col. 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NO. PREVIOUSLY PAID FOR	PRESENT EXTRA EQUALS	RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
TOTAL	22	MINUS	** 22		x 40	$		x 80	$
INDEP.	3	MINUS	*** 3		x 210	$		x 420	$
FIRST PRESENTATION OF MULTIPLE DEP. CLAIM					+ 390	$		+ 780	$
					ADDITIONAL FEE TOTAL	$	OR	TOTAL	$

* If the entry in Col. 1 is less than the entry in Col. 2, write "0" in Col. 3.

** If the "Highest Number Previously Paid for" IN THIS SPACE is less than 20, write "20" in this space.

*** If the "Highest Number Previously Paid for" IN THIS SPACE is less than 3, write "3" in this space.

The "Highest Number Previously Paid For" (total or independent) is the highest number found from the equivalent box in Col. 1 of a prior amendment of the number of claims originally filed.

[XX] Conditional Petition for Extension of Time

If any extension of time for a response is required, applicant requests that this be considered a petition therefor.

[ ] It is hereby petitioned for an extension of time in accordance with 37 CFR 1.136(a). The appropriate fee required by 37 CFR 1.17 is calculated as shown below:

Small Entity			Other Than Small Entity		
Response Filed Within			Response Filed Within		
[ ]	First	- $ 100.00	[ ]	First	- $ 200.00
[ ]	Second	- $ 300.00	[ ]	Second	- $ 600.00
[ ]	Third	- $ 700.00	[ ]	Third	- $ 1400.00
[ ]	Fourth	- $1100.00	[ ]	Fourth	- $ 2200.00
Month After Time Period Set			Month After Time Period Set		

[ ] Less fees ($_____) already paid for ___ month(s) extension of time on _____.

[ ] Information Disclosure Statement filed with fee in the amount of $.

[ ] Please charge my Deposit Account No. 02-4035 in the amount of $_____.

[ ] Credit Card Payment online, authorizing payment in the amount of $.

[ ] A check in the amount of $_____ is attached (check no.).

[XX] The Commissioner is hereby authorized and requested to charge any additional fees which may be required in connection with this application or credit any overpayment to Deposit Account No. 02-4035. This authorization and request is not limited to payment of all fees associated with this communication, including any Extension of Time fee, not covered by check or specific authorization, but is also intended to include all fees for the presentation of extra claims under 37 CFR §1.16 and all patent processing fees under 37 CFR §1.17 throughout the prosecution of the case. This blanket authorization does not include patent issue fees under 37 CFR §1.18.

BROWDY AND NEIMARK, P.L.L.C.

Attorneys for Applicant(s)

Facsimile: (202) 737-3528
Telephone: (202) 628-5197

By: /rlb/
Roger L. Browdy
Registration No. 25,618

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/917,865	Filing Date 06/14/2013	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **06/02/2014**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 22	Minus	** 22	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/CHERYL CLARK/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

179704.2

PTO/SB/81 (01-09)
Approved for use through 11/30/2011. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Application Number	11/969,297
Filing Date	2008-01-24
First Named Inventor	C. ADAHAN
Title	WOUND CLOSURE AND DRAINAGE SYSTEM
Art Unit	3761
Examiner Name	TREYGER, ILYA Y
Attorney Docket Number	ADAHAN

I hereby revoke all previous powers of attorney given in the above-identified application.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: 01444

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified application to:

☒ The address associated with the above-mentioned Customer Number.

OR

☐ The address associated with Customer Number:

OR

☐	Firm or Individual Name				
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the:

☒ Applicant/Inventor.

OR

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on _____.

SIGNATURE of Applicant or Assignee of Record

Signature	X Carmel Adahan	Date	X MARCH 8, 13
Name	Carmeli ADAHAN	Telephone	
Title and Company			

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: **Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	19126325
Application Number:	13917865
International Application Number:	
Confirmation Number:	7555
Title of Invention:	WOUND CLOSURE AND DRAINAGE SYSTEM
First Named Inventor/Applicant Name:	Carmeli ADAHAN
Customer Number:	1444
Filer:	Roger Lowen Browdy/Jason Williams
Filer Authorized By:	Roger Lowen Browdy
Attorney Docket Number:	ADAHAN16A
Receipt Date:	27-MAY-2014
Filing Date:	14-JUN-2013
Time Stamp:	11:39:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	2014-05-27_PowerOfAttorney-ADAHAN16A.pdf	852593 8be85f88bf4cc2ff7e676290be8f85af38ad981b	no	1

Warnings:	
Information:	

Total Files Size (in bytes):	852593

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/917,865	06/14/2013	Carmeli ADAHAN	ADAHAN16A	7555

1444 7590 03/11/2014

Browdy and Neimark, PLLC
1625 K Street, N.W.
Suite 1100
Washington, DC 20006

EXAMINER	
TREYGER, ILYA Y	
ART UNIT	PAPER NUMBER
3761	

MAIL DATE	DELIVERY MODE
03/11/2014	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 13/917,865	Applicant(s) ADAHAN, CARMELI	
	Examiner ILYA TREYGER	Art Unit 3761	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06/14/2013*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-22* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-22* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *06/14/2013* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *08/12/2013; 06/14/2013*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

Medela LLC and Medela AG
Exhibit 1009
Page #144

1. The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

2. Claims 1-22 of the US Patent Application No. 13/917865 filed 06/14/2013 are presented for examination.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit http://www.uspto.gov/forms/. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

4. Claims 1-22 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1, 6, 8, 9, 20 and 24 of U.S. Patent No. 8,506,554 in view of Argenta et al. (US 2001/0029956).

5. All the limitations of claims 1 and 11 of the Application are to be found in clam 1 of the Patent. The difference is that claim 1 of the Patent does not comprise the controller configured for controlling operation of the vacuum source.

Argenta teaches a wound treatment apparatus (fig. 1) comprising control device 44 (page 4, [0037], line 3; fig. 1) configured for controlling peration of the vacuum source (page 4, [0037], line 5).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device of the Patent with the controller, as taught by Argenta in order to control the pump, as motivated by Argenta (page 2, [0010], lines 18-19).

6. All the limitations of claim 19 of the Application are to be found in clam 1 of the Patent. The difference is that claim 1 of the Patent does not comprise the step of controlling the vacuum source.

Argenta teaches a method of wound treatment (Abstract, line 1) comprising a step of controlling the vacuum source (page 3, [0028], line 4-5).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the method of the Patent with the step of controlling the vacuum source, as taught by Argenta in order to control the pump, as motivated by Argenta (page 2, [0010], lines 18-19).

7. All the limitations of claim 2 of the Application are to be found in claim 1 of the Patent.

8. All the limitations of claims 4 and 5 of the Application are to be found in claim 8 of the Patent.

9. All the limitations of claims 9 and 17 of the Application are to be found in claim 6 of the Patent.

10. All the limitations of claims 10, 18 and 22 of the Application are to be found in claim 24 of the Patent.

11. All the limitations of claim 13 of the Application are to be found in claim 9 of the Patent.

12. All the limitations of claim 14 of the Application are to be found in claim 20 of the Patent.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ILYA TREYGER whose telephone number is (571)270-3217. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tatyana Zalukaeva can be reached on 571-272-1115. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ILYA TREYGER/
Examiner, Art Unit 3761
/TATYANA ZALUKAEVA/
Supervisory Patent Examiner, Art Unit 3761

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	13917865
	Filing Date	2013-06-14
	First Named Inventor	Carmeli ADAHAN
	Art Unit	3761
	Examiner Name	/Ilya Treyger/
	Attorney Docket Number	ADAHAN16A

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	3026874		1962-03-27	STEVENS, R.C.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2008039314	WO	A2	2008-04-03	Karpowicz et al.		☐
	2	2008039223	WO	A1	2008-04-03	Karpowicz et al.		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /I.T./

Receipt date: 08/12/2013	Application Number	13917865 13917865 - GAU: 3761
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2013-06-14
	First Named Inventor	Carmeli ADAHAN
	Art Unit	3761
	Examiner Name	/Ilya Treyger/
	Attorney Docket Number	ADAHAN16A

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button **Add**

EXAMINER SIGNATURE

Examiner Signature	/Ilya Treyger/	Date Considered	03/03/2014

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Receipt date: 08/12/2013	Application Number	13917865	13917865 - GAU: 3761
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2013-06-14	
	First Named Inventor	Carmeli ADAHAN	
	Art Unit	3761	
	Examiner Name	/Ilya Treyger/	
	Attorney Docket Number	ADAHAN16A	

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

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☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Ronni S. Jillions/	Date (YYYY-MM-DD)	2013-08-12
Name/Print	Ronni S. Jillions	Registration Number	31,979

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13917865	ADAHAN, CARMELI
	Examiner	**Art Unit**
	ILYA TREYGER	3761

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	03/03/2014								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
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	7	✓								
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	19	✓								
	20	✓								
	21	✓								
	22	✓								

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2013-06-13
First Named Inventor	Carmeli ADAHAN
Art Unit	3761
Examiner Name	/Ilya Treyger/
Attorney Docket Number	ADAHAN16A

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5578006	A	1996-11-26	STEVENS	
	2	6817996	B2	2004-11-16	FARD et al.	
	3	4583970		1986-04-22	KIRCHNER	
	4	5947923	A	1999-09-07	UEHARA et al.	
	5	6257847	B1	2001-07-10	SILVER, et al.	
	6	7255681	B1	2007-08-14	SILVER, et al	
	7	4108574		1978-08-22	BARTLEY, et al.	
	8	4208171		1980-06-17	JONSSON	

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Receipt date: 06/14/2013	Application Number	13917865 - GAU: 3761
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)	Filing Date	2013-06-13
	First Named Inventor	Carmeli ADAHAN
	Art Unit	3761
	Examiner Name	/Ilya Treyger/
	Attorney Docket Number	ADAHAN16A

	9	4552552		1958-11-12	POLASCHEGG, et al.	corresponds to DE 32 05 449 C2
	10	5116206	A	1992-05-26	ADAHAN	
	11	7503910	B2	2009-03-17	ADAHAN	
	12	5370610	A	1994-12-06	REYNOLDS	
	13	5662599	A	1997-09-02	REICH, et al.	
	14	6471982	B1	2002-10-29	LYDON, et al.	
	15	5636643	A	1997-06-10	ARGENTA, et al.	
	16	7128735	B2	2006-10-31	WESTON	
	17	6824533	B2	2004-11-30	RISK, JR., et al.	
	18	6562013	B1	2003-05-13	MARASCO, JR.	
	19	4447226		1984-05-08	MAYORAL	

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	Art Unit	3761
	Examiner Name	/Ilya Treyger/
	Attorney Docket Number	ADAHAN16A

	20	4611627		1986-09-16	EIDSVOOG, et al.	
	21	1599899		1926-09-14	KETTERING, et al.	
	22	6071267	A	2000-06-06	ZAMICROWSKI	
	23	0599333		1898-02-22	HULSE	
	24	3416461		1968-12-17	McFARLAND	
	25	5419687	A	1995-05-30	ADAHAN	
	26	6042560	A	2000-03-28	NIEDERBERGER	
	27	6648862	B2	2003-11-18	WATSON	
	28	4739791		1988-04-26	ADAHAN	
	29	4930997		1990-06-05	BENNETT	
	30	4661093		1987-04-28	BECK, et al.	

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	31	5645081	A	1997-07-08	ARGENTA. et al.	
	32	5776119	A	1998-07-07	BILBO, et al.	
	33	7229422	B2	2007-06-12	KLOBE	
	34	5941859	A	1997-03-17	LERMAN	
	35	3516160	A	1970-06-23	LEFFLER	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050148913	A1	2005-07-07	WESTON	
	2	20040015042	A1	2004-01-22	VINCENT, et al.	
	3	20050180868	A1	2005-08-18	MILLER	
	4	20050004534	A1	2005-01-06	LOCKWOOD, et al.	

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	5	20040039243	A1	2004-02-26	BEARNSON, et al.	
	6	20030014022	A1	2003-01-16	LOCKWOOD, et al.	
	7	20010029956	A1	2001-10-18	ARGENTA, et al.	
	8	20040199840	A1	2004-10-07	TAKEOKA, et al.	
	9	20050192548	A1	2005-09-01	DOLLIVER, et al.	
	10	20040064132	A1	2004-04-01	BOCHRINGER, et al.	
	11	20020151826	A1	2002-10-17	RAMEY, et al.	
	12	20040059284	A1	2004-03-25	NASH, et al.	
	13	20030097100	A1	2003-05-22	WATSON	
	14	20030040687	A1	2003-02-27	BOYNTON, et al.	
	15	20030050594	A1	2003-03-13	ZAMICROWSKI	

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	Art Unit	3761
	Examiner Name	/Iliya Treyger/
	Attorney Docket Number	ADAHAN16A

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	1	240188	RU	A1	1947-11-03			☒
	2	9748427	WO	A2	1997-12-24	C.R. BARD INC.		☐
	3	01/34223	WO	A1	2001-05-17	HEATON, Keith Patrick		☐
	4	2005/061025	WO	A1	2005-07-07	LARSSON, Michael		☐
	5	00/21586	WO	A1	2000-04-20	Hunt, Kenneth William et al		☐
	6	3205445	DE	A1	1983-08-25	Fa. Wilheim Schade	English Abstract	☒
	7	3205449	DE	C2	1983-09-01	Fresenius AG	corresponds to US 4,552,552	☒
	8	2002035111	JP	A	2002-02-05	Pigeon Corp	With English Abstract	☒
	9	03/030966	WO	A1	2003-04-17	HILL-ROM SERVICES, INC		☐

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	Art Unit	3761
	Examiner Name	/Ilya Treyger/
	Attorney Docket Number	ADAHAN16A

	10	97/18007	WO	A1	1997-05-22	KCI MEDICAL LIMITED		☐
	11	102 15 896	DE	A1	2003-10-23	LEYBOLD VAKUUM GMBH	ABSTRACT	☒
	12	03/016719	WO	A1	2003-02-27	ADAHAN		☐
	13	24 01 643	DT	A1	1975-07-17	TUCHENHAGEN	ABSTRACT	☒
	14	0156211	EP	A2	1985-10-02	FRESENIUS AG	ABSTRACT	☒
	15	00/02016	WO	A1	2000-01-13	DEKA PRODUCTS LIMITED PARTNERSHIP		☐
	16	96/05873	WO	A1	1996-02-29	MEDISCUS PRODUCTS LIMITED		☐
	17	2 378 734	GB	A	2003-02-19	ADAHAN		☐
	18	2 307 180	GB	A	1997-05-21	KCI MEDICAL LIMITED		☐
	19	03/057070	WO	A2	2003-07-17	HILL-ROM SERVICES INC.		☐
	20	0865304	EP	B1	2001-07-18	KCI Medical Ltd.		☐

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	21	8401904	WO	A1	1984-05-24	Gunnar Swanbeck		☐
	22	2002541978	JP	A	2002-12-10		This corresponds with International Publication No. WO 00/64394	☒
	23	0064394	WO	A1	2000-11-02	KCI Medical Limited		☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Worth et al., "PRELIMINARY REPORT The Effectiveness of Bacterial Filtration In Vented Wound Drains" Journal of Surgical Research 27(6):405-407 (1979)	☐
	2	Levite et al., "POSSIBILITIES FOR DUAL-LUMEN DRAINAGES IN SURGERY" Body of the RSFSR Ministry of Public Health, Monthly Scientific and Practical Journal, pages 39-41. (1987)	☐
	3	Notice of opposition to European patent EP2127690, dated March 20, 2013	☐
	4	Facts and Submissions in Opposition of EP 2127690, dated March 20, 2013	☐
	5	Edlich et al., "Evaluation of a New, Improved Surgical Drainage System" NEW INSTRUMENTS, 149:295-298 (February 1985)	☐
	6	Communication of a notice of opposition of EP 2127690, dated April 8, 2013	☐

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Examiner Signature	/Ilya Treyger/	Date Considered	03/03/2014

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Signature	/rlb/	Date (YYYY-MM-DD)	2013-06-14
Name/Print	Roger L. Browdy	Registration Number	25,618

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Page #164

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CONFIRMATION NO. 7555

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/917,865	06/14/2013 RULE	604	3761	ADAHAN16A

APPLICANTS

INVENTORS

Carmeli ADAHAN, Jerusalem, ISRAEL;

**** CONTINUING DATA ************************* I.T. 03/03/2014**

This application is a CON of 11/989,297 01/24/2008 PAT 8506554
which is a 371 of PCT/IL2005/000784 07/24/2005

**** FOREIGN APPLICATIONS ************************ I.T. 03/03/2014**

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
07/09/2013

Foreign Priority claimed	35 USC 119(a-d) conditions met	Verified and Acknowledged	Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
☐ Yes ☑ No	☐ Yes ☑ No	/ILYA Y TREYGER/ Examiner's Signature	☐ Initials	ISRAEL	2	22	3

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1625 K Street, N.W.
Suite 1100
Washington, DC 20006
UNITED STATES

TITLE

WOUND CLOSURE AND DRAINAGE SYSTEM

FILING FEE RECEIVED		
810	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13917865	ADAHAN, CARMELI
	Examiner	Art Unit
	ILYA TREYGER	3761

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
604	540-544	10/5/2010	I. T.

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search attached	3/3/2014	I. T.

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
604			

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L2	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L3	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L4	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L5	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L6	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L7	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L8	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L9	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
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L13	552	L2 and L6	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L14	258	L2 and L7	US-PGPUB;	OR	OFF	2014/03/03

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L26	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L27	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L28	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L29	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
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L31	215	L22 and L24	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
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L33	552	L22 and L26	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L34	258	L22 and L27	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L35	14	L22 and L28	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
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L44	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
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L46	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L47	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L48	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L49	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L50	48	L42 and L43	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L51	215	L42 and L44	US-PGPUB; USPAT; USOCR;	OR	OFF	2014/03/03 14:23

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L53	552	L42 and L46	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L54	258	L42 and L47	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L55	14	L42 and L48	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L56	24	L42 and L49	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
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L67	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
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L69	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
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L72	305	L62 and L65	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L73	552	L62 and L66	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L74	258	L62 and L67	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
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L85	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
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L87	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23

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L109	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L110	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L111	48	L103 and L104	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L112	215	L103 and L105	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L113	305	L103 and L106	US-PGPUB; USPAT; USOCR; EPO; JPO;	OR	OFF	2014/03/03 14:23

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			DERWENT; IBM_TDB			
L114	552	L103 and L107	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L115	258	L103 and L108	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L116	14	L103 and L109	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L117	24	L103 and L110	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L118	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L119	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L120	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L121	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L122	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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L123	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L124	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L125	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L126	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L127	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L128	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L129	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L130	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L131	48	L123 and L124	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L132	215	L123 and L125	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L133	305	L123 and L126	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L134	552	L123 and L127	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L135	258	L123 and L128	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L136	14	L123 and L129	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L137	24	L123 and L130	US-PGPUB; USPAT; USOCR;	OR	OFF	2014/03/03 14:23

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			EPO; JPO; DERWENT; IBM_TDB			
L138	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L139	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L140	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L141	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L142	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L143	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L144	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L145	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L146	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L147	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L148	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L149	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L150	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L151	48	L143 and L144	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB			14:23
L152	215	L143 and L145	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L153	305	L143 and L146	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L154	552	L143 and L147	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L155	258	L143 and L148	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L156	14	L143 and L149	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L157	24	L143 and L150	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L158	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L159	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L160	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L161	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" |	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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		"4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.				
L162	45	L98 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L163	72	L99 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L164	38	L100 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L165	86	L101 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L166	80	"4108574" "4208171"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L167	0	L166 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L168	7	L166 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L169	6	"20040015042" "20050180868"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L170	75	"4552552"	US-PGPUB; USPAT; EPO; DERWENT;	OR	OFF	2014/03/03 14:23

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			IBM_TDB			
L171	43	L170 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L172	0	L170 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L173	30	"5116206" "7503910"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L174	10	L173 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L176	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L177	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L178	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L179	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L180	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L181	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L182	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L183	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L184	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L185	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L186	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L187	48	L179 and L180	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L188	215	L179 and L181	US-PGPUB; USPAT; USOCR; EPO; JPO;	OR	OFF	2014/03/03 14:23

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			DERWENT; IBM_TDB			
L189	305	L179 and L182	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L190	552	L179 and L183	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L191	258	L179 and L184	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L192	14	L179 and L185	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L193	24	L179 and L186	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L194	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L195	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L196	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L197	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" |	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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		"5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.				
L198	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L199	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L200	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L201	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L202	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L203	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L204	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L205	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L206	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L207	48	L199 and L200	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L208	215	L199 and L201	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L209	305	L199 and L202	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L210	552	L199 and L203	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L211	258	L199 and L204	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L212	14	L199 and L205	US-PGPUB; USPAT;	OR	OFF	2014/03/03 14:23

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			USOCR; EPO; JPO; DERWENT; IBM_TDB			
L213	24	L199 and L206	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L214	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L215	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L216	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L217	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L218	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L219	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L220	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L221	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L222	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L223	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L224	1944	(604/540-544).CCLS.	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT			14:23
L225	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L226	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L227	48	L219 and L220	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L228	215	L219 and L221	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L229	305	L219 and L222	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L230	552	L219 and L223	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L231	258	L219 and L224	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L232	14	L219 and L225	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L233	24	L219 and L226	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L234	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L235	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L236	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L237	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" |	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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		"4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.				
L238	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L239	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L240	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L241	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L242	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L243	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L244	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L245	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L246	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L247	48	L239 and L240	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L248	215	L239 and L241	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L249	305	L239 and L242	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT;	OR	OFF	2014/03/03 14:23

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			IBM_TDB			
L250	552	L239 and L243	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L251	258	L239 and L244	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L252	14	L239 and L245	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L253	24	L239 and L246	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L254	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L255	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L256	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L257	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L258	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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L259	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L260	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L261	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L262	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L263	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L264	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L265	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L266	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L267	48	L259 and L260	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L268	215	L259 and L261	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L269	305	L259 and L262	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L270	552	L259 and L263	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L271	258	L259 and L264	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L272	14	L259 and L265	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L273	24	L259 and L266	US-PGPUB; USPAT; USOCR;	OR	OFF	2014/03/03 14:23

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			EPO; JPO; DERWENT; IBM_TDB			
L274	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L275	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L276	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L277	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L278	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L279	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L280	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L281	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L282	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L283	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L284	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L285	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L286	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L287	48	L279 and L280	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB			14:23
L288	215	L279 and L281	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L289	305	L279 and L282	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L290	552	L279 and L283	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L291	258	L279 and L284	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L292	14	L279 and L285	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L293	24	L279 and L286	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L294	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L295	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L296	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L297	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" |	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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		"4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.				
L298	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L299	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L300	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L301	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L302	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L303	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L304	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L305	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L306	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L307	48	L299 and L300	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L308	215	L299 and L301	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L309	305	L299 and L302	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L310	552	L299 and L303	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT;	OR	OFF	2014/03/03 14:23

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			IBM_TDB			
L311	258	L299 and L304	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L312	14	L299 and L305	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L313	24	L299 and L306	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L314	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L315	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L316	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L317	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L318	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L319	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23

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L320	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L321	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L322	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L323	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L324	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L325	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L326	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L327	48	L319 and L320	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L328	215	L319 and L321	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L329	305	L319 and L322	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L330	552	L319 and L323	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L331	258	L319 and L324	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L332	14	L319 and L325	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L333	24	L319 and L326	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L334	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

L335	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L336	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L337	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L338	45	L274 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L339	72	L275 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L340	38	L276 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L341	86	L277 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L342	80	"4108574" "4208171"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L343	0	L342 and (air adj hole)	US-PGPUB; USPAT; EPO;	OR	OFF	2014/03/03 14:23

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			DERWENT; IBM_TDB			
L344	7	L342 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L345	6	"20040015042" "20050180868"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L346	75	"4552552"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L347	43	L346 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L348	0	L346 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L349	30	"5116206" "7503910"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L350	10	L349 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L351	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L352	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L357	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L358	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L359	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L360	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L361	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L362	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23

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L363	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L364	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L365	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L366	48	L358 and L359	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L367	215	L358 and L360	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L368	305	L358 and L361	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L369	552	L358 and L362	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L370	258	L358 and L363	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L371	14	L358 and L364	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L372	24	L358 and L365	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L373	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L374	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L375	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L376	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" |	US-PGPUB; USPAT;	OR	OFF	2014/03/03 14:23

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		"3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	USOCR			
L377	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L378	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L379	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L380	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L381	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L382	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L383	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L384	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L385	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L386	48	L378 and L379	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L387	215	L378 and L380	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L388	305	L378 and L381	US-PGPUB; USPAT; USOCR; EPO; JPO;	OR	OFF	2014/03/03 14:23

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			DERWENT; IBM_TDB			
L389	552	L378 and L382	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L390	258	L378 and L383	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L391	14	L378 and L384	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L392	24	L378 and L385	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L393	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L394	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L395	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L396	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L397	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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L398	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L399	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L400	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L401	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L402	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L403	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L404	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L405	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L406	48	L398 and L399	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L407	215	L398 and L400	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L408	305	L398 and L401	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L409	552	L398 and L402	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L410	258	L398 and L403	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L411	14	L398 and L404	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L412	24	L398 and L405	US-PGPUB; USPAT; USOCR;	OR	OFF	2014/03/03 14:23

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			EPO; JPO; DERWENT; IBM_TDB			
L413	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L414	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L415	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L416	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L417	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L418	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L419	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L420	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L421	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L422	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L423	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L424	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L425	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L426	48	L418 and L419	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB			14:23
L427	215	L418 and L420	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L428	305	L418 and L421	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L429	552	L418 and L422	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L430	258	L418 and L423	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L431	14	L418 and L424	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L432	24	L418 and L425	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L433	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L434	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L435	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L436	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" |	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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		"4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.				
L437	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L438	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L439	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L440	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L441	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L442	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L443	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L444	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L445	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L446	48	L438 and L439	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L447	215	L438 and L440	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L448	305	L438 and L441	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L449	552	L438 and L442	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT;	OR	OFF	2014/03/03 14:23

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			IBM_TDB			
L450	258	L438 and L443	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L451	14	L438 and L444	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L452	24	L438 and L445	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L453	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L454	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L455	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L456	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L457	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L458	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23

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L459	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L460	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L461	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L462	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L463	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L464	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L465	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L466	48	L458 and L459	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L467	215	L458 and L460	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L468	305	L458 and L461	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L469	552	L458 and L462	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L470	258	L458 and L463	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L471	14	L458 and L464	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L472	24	L458 and L465	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L473	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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L474	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L475	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L476	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L477	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L478	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L479	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L480	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L481	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L482	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L483	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L484	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L485	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L486	48	L478 and L479	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L487	215	L478 and L480	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB			14:23
L488	305	L478 and L481	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L489	552	L478 and L482	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L490	258	L478 and L483	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L491	14	L478 and L484	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L492	24	L478 and L485	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L493	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L494	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L495	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L496	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" |	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23

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		"4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.				
L497	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L498	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L499	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L500	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L501	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L502	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L503	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L504	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L505	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:23
L506	48	L498 and L499	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L507	215	L498 and L500	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L508	305	L498 and L501	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L509	552	L498 and L502	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L510	258	L498 and L503	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23

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L511	14	L498 and L504	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L512	24	L498 and L505	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L513	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L514	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L515	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L516	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:23
L517	45	L453 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L518	72	L454 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:23
L519	38	L455 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT;	OR	OFF	2014/03/03 14:23

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			IBM_TDB			
L520	86	L456 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L521	80	"4108574" "4208171"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L522	0	L521 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L523	7	L521 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L524	6	"20040015042" "20050180868"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L525	75	"4552552"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L526	43	L525 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L527	0	L525 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L528	30	"5116206" "7503910"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L529	10	L528 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L530	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L531	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L532	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24

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L533	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L534	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L535	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L536	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L537	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L538	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L539	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L540	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L541	48	L533 and L534	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L542	215	L533 and L535	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L543	305	L533 and L536	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L544	552	L533 and L537	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L545	258	L533 and L538	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L546	14	L533 and L539	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L547	24	L533 and L540	US-PGPUB; USPAT; USOCR;	OR	OFF	2014/03/03 14:24

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			EPO; JPO; DERWENT; IBM_TDB			
L548	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
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L550	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L551	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L552	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L553	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L554	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L555	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L556	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L557	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L558	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L559	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L560	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L561	48	L553 and L554	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB			14:24
L562	215	L553 and L555	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L563	305	L553 and L556	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L564	552	L553 and L557	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L565	258	L553 and L558	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L566	14	L553 and L559	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L567	24	L553 and L560	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L568	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L569	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L570	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L571	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" |	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24

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		"4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.				
L572	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L573	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L574	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L575	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L576	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L577	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L578	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L579	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L580	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L581	48	L573 and L574	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L582	215	L573 and L575	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L583	305	L573 and L576	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L584	552	L573 and L577	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT;	OR	OFF	2014/03/03 14:24

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			IBM_TDB			
L585	258	L573 and L578	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L586	14	L573 and L579	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L587	24	L573 and L580	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L588	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L589	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L590	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L591	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L592	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L593	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24

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L594	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L595	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L596	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L597	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L598	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L599	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L600	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L601	48	L593 and L594	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L602	215	L593 and L595	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L603	305	L593 and L596	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L604	552	L593 and L597	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L605	258	L593 and L598	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L606	14	L593 and L599	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L607	24	L593 and L600	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L608	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24

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L609	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L610	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L611	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L612	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L613	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L614	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L615	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L616	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L617	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L618	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L619	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L620	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L621	48	L613 and L614	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L622	215	L613 and L615	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB			14:24
L623	305	L613 and L616	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L624	552	L613 and L617	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L625	258	L613 and L618	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L626	14	L613 and L619	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L627	24	L613 and L620	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L628	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L629	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L630	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L631	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" |	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24

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		"4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.				
L632	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L633	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L634	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L635	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L636	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L637	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L638	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L639	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L640	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L641	48	L633 and L634	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L642	215	L633 and L635	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L643	305	L633 and L636	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L644	552	L633 and L637	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L645	258	L633 and L638	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24

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L646	14	L633 and L639	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L647	24	L633 and L640	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L648	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L649	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L650	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L651	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L652	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L653	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L654	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L655	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L656	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L657	2706	(604/317-323).CCLS.	US-PGPUB;	OR	OFF	2014/03/03

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			USPAT			14:24
L658	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L659	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L660	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L661	48	L653 and L654	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L662	215	L653 and L655	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L663	305	L653 and L656	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L664	552	L653 and L657	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L665	258	L653 and L658	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L666	14	L653 and L659	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L667	24	L653 and L660	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L668	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L669	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L670	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L671	411	("1355846" | "2547758" | "2632443" |	US-PGPUB;	OR	OFF	2014/03/03

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		"2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	USPAT; USOCR			14:24
L672	61	((CARMELI) near2 (ADAHAN)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L673	16249	wound and (suction vacuum) and (enclosure dressing) and ((bleeding hole) (vacuum breaker))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L674	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L675	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L676	482	(604/313).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L677	2706	(604/317-323).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L678	1944	(604/540-544).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L679	265	(604/902).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L680	649	(606/131).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L681	48	L673 and L674	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L682	215	L673 and L675	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L683	305	L673 and L676	US-PGPUB; USPAT; USOCR;	OR	OFF	2014/03/03 14:24

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			EPO; JPO; DERWENT; IBM_TDB			
L684	552	L673 and L677	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L685	258	L673 and L678	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L686	14	L673 and L679	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L687	24	L673 and L680	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L688	146	("1251258" | "3171410" | "3486504").PN. OR ("3874387").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L689	309	("3026874" | "3486504" | "4540412" | "4759354" | "4969880").PN. OR ("5149331").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L690	222	("4743232" | "5230350").PN. OR ("5344415").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L691	411	("1355846" | "2547758" | "2632443" | "2682873" | "2969057" | "3367332" | "3648692" | "3682180" | "3826254" | "4080970" | "4096853" | "4139004" | "4165748" | "4245630" | "4261363" | "4275721" | "4297995" | "4333468" | "4373519" | "4382441" | "4392853" | "4392858" | "4419097" | "4475909" | "4480638" | "4525166" | "4525374" | "4540412" | "4543100" | "4551139" | "4569348" | "4605399" | "4608041" | "4640688" | "4655754" | "4733659" | "4743232" | "4787888" | "4826949" | "4838883" | "4840187" | "4863449" | "4872450" | "4878901" | "4897081" | "4906233" | "4906240" | "4919654" | "4941882" | "4953565" | "4969880" | "4985019" | "5037397" | "5100396" | "5149331" | "5167613" | "5176663" | "5261893" | "5298015" | "5344415" | "5358494" | "5556375" | "5607388" | "5636643" | "5645081").PN. OR ("6071267").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/03/03 14:24
L692	45	L628 and (vent venting ventillation)	US-PGPUB; USPAT;	OR	OFF	2014/03/03 14:24

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			USOCR; EPO; JPO; DERWENT; IBM_TDB			
L693	72	L629 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L694	38	L630 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L695	86	L631 and (vent venting ventillation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L696	80	"4108574" "4208171"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L697	0	L696 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L698	7	L696 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L699	6	"20040015042" "20050180868"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L700	75	"4552552"	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L701	43	L700 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L702	0	L700 and (air adj hole)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L703	30	"5116206" "7503910"	US-PGPUB; USPAT; EPO;	OR	OFF	2014/03/03 14:24

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			DERWENT; IBM_TDB			
L704	10	L703 and (vent venting)	US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB	OR	OFF	2014/03/03 14:24
L705	1029	(604/305-308).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L706	1036	(604/35).CCLS.	US-PGPUB; USPAT	OR	OFF	2014/03/03 14:24
L713	2	("20050148913" | "5578006" | "6817996").PN.	USPAT	OR	OFF	2014/03/03 14:24
L714	2	("20050148913" | "5578006" | "6817996").PN.	USPAT	OR	OFF	2014/03/03 14:24

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L81	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2014/03/03 14:23
L175	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2014/03/03 14:23
L353	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2014/03/03 14:23
L354	0	pressure and regulating and device and	US-	OR	OFF	2014/03/03

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		sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	PGPUB			14:23
L355	1	enclosure and applying and negative and pressure and wound and attachable and circumference and confined and volume and tube and outlet and connectable and vacuum and source and venting and arrangement and calibrated and orifice and restrict and flow and ambient and air.clm.	USPAT; UPAD	OR	OFF	2014/03/03 14:23
L356	2	enclosure and applying and negative and pressure and wound and attachable and circumference and confined and volume and tube and outlet and connectable and vacuum and source and venting and arrangement and calibrated and orifice and restrict and flow and ambient and air.clm.	US-PGPUB	OR	OFF	2014/03/03 14:23
L707	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2014/03/03 14:24
L708	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2014/03/03 14:24
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		impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.				
L710	0	pressure and regulating and device and sealed and vial and wheath and cap and connector and positioned and within and bag and interior and surface and outer and adapted and expanded and unfolded and compensat and changes and volume and medical and fluid and move and first and orientation and portion and partially and unexpanded and folded and second and lubricant and layer and impermeable and impeding and passage and between and regulates and withdrawn and equilibrate and opposite and reduces and friction.clm.	US-PGPUB	OR	OFF	2014/03/03 14:24
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L712	2	enclosure and applying and negative and pressure and wound and attachable and circumference and confined and volume and tube and outlet and connectable and vacuum and source and venting and arrangement and calibrated and orifice and restrict and flow and ambient and air.clm.	US-PGPUB	OR	OFF	2014/03/03 14:24

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/917,865	06/14/2013	Carmeli ADAHAN	ADAHAN16A

CONFIRMATION NO. 7555

1444
Browdy and Neimark, PLLC
1625 K Street, N.W.
Suite 1100
Washington, DC 20006

PUBLICATION NOTICE

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Title:WOUND CLOSURE AND DRAINAGE SYSTEM

Publication No.US-2013-0281986-A1
Publication Date:10/24/2013

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PTO/SB/08a (01-10)
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	Application Number	13917865
	Filing Date	2013-06-14
	First Named Inventor	Carmeli ADAHAN
	Art Unit	
	Examiner Name	
	Attorney Docket Number	ADAHAN16A

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	1	2008039314	WO	A2	2008-04-03	Karpowicz et al.		☐
	2	2008039223	WO	A1	2008-04-03	Karpowicz et al.		☐

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	Examiner Name	
	Attorney Docket Number	ADAHAN16A

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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	Application Number	13917865
	Filing Date	2013-06-14
	First Named Inventor	Carmeli ADAHAN
	Art Unit	
	Examiner Name	
	Attorney Docket Number	ADAHAN16A

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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Ronni S. Jillions/	Date (YYYY-MM-DD)	2013-08-12
Name/Print	Ronni S. Jillions	Registration Number	31,979

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

(19) World Intellectual Property Organization
International Bureau

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3 April 2008 (03.04.2008)

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(51) International Patent Classification:
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(25) Filing Language: English

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(30) Priority Data:
60/847,221 26 September 2006 (26.09.2006) US

(71) Applicant *(for all designated States except US)*: **BOEHRINGER LABORATORIES INC.** [US/US]; 500 E. Washington Street, P.o. Box 870, Norristown, PA 19404 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **KARPOWICZ, John, R.** [US/US]; 1435 Yellow Springs Road, Chester Springs, PA 19425 (US). **KLOCEK, Kevin, P.** [US/US]; 401 Parkview Drive, Wynnewood, PA 19096 (US). **RADL, Christopher, L.** [US/US]; 530 Clothier Springs Road, Malvern, PA 19355 (US).

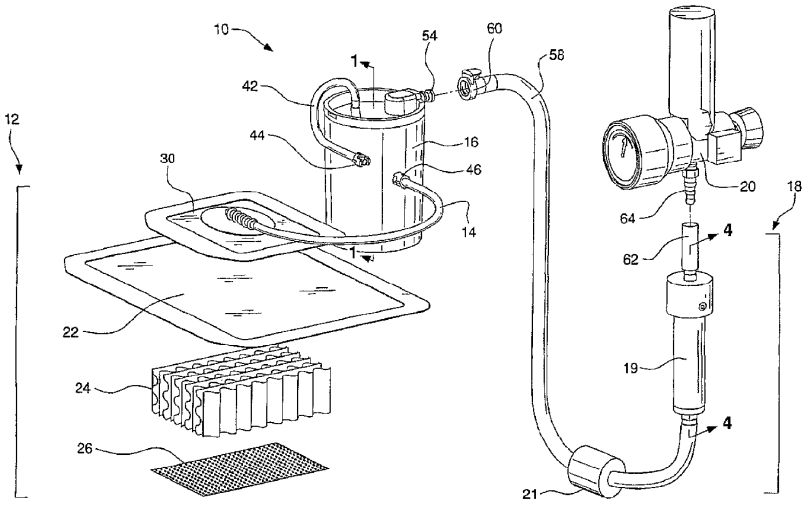
(74) Agents: **MARSHALL, John, J.** et al.; Drinker Biddle & Reath Llp, One Logan Square, 18th and Cherry Streets, Philadelphia, PA 19103-6996 (US).

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Published:
— *with international search report*
— *with amended claims*

(54) **Title:** PUMP SYSTEM FOR NEGATIVE PRESSURE WOUND THERAPY



(57) **Abstract:** A portable suction pump for producing negative pressure in a system for applying suction to a wound, in which the pump has a pressure control circuit for controlling the operation of the pump to maintain the pressure between upper and lower limits around a pre-selected pressure, and a fault detection system to detect deviations in the level of negative pressure applied to the wound; wherein the fault detection system can operate independent of the pressure control circuit. In a preferred embodiment, the fault detection system uses deviation from a reference airflow to detect system faults.

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PUMP SYSTEM FOR NEGATIVE PRESSURE WOUND THERAPY

Reference to Related Application

[0001] This application claims priority of U.S. Provisional Patent Application No. 60/847,221, filed September 26, 2006.

Field of the Invention

[0002] The invention is related to the general field of wound treatment, and to the more specific field of devices for wound drainage and treatment with suction.

Background of the Invention

[0003] It is well known to treat wounds by applying suction under airtight wound covers. The suction can be used to aspirate wound exudate and other liquids from the wound and/or the wound packing materials, and the suction can be applied as a healing modality for its well known antiseptic and tissue regeneration effects.

[0004] A primary concern in using suction assisted wound therapy is maintaining consistent suction pressure at the wound. It is increasingly recognized that once suction wound dressings are applied, the suction should be maintained at certain levels. Loss of suction to the wound can result if leaks or blockages occur in the system.

[0005] Leaks can occur through breach of the airtight seals surrounding the wound. The earliest devices merely ran a tube under the edge of a wound cover and applied an adhesive or paste around the tube and cover to maintain an airtight seal. The other end of the tube was connectable to a waste collection reservoir and suction regulator of a hospital suction system, and the pressure selected at the regulator was assumed to be the approximate pressure communicated to the wound area under the cover. The test for leakage was visual observance of the cover contracting and the absence of whistling noise when negative pressure was applied. See, e.g., M. E. Chariker, et al, "Effective Management of Incisional and Cutaneous Fistulae with Closed Suction Wound Drainage", *Contemporary Surgery,* vol. 34, June 1989, pages 59-63. This initial check for an airtight seal did not, however, provide any warning if the system developed a leak or if blockage occurred in the collection circuit after hours of use.

[0006] The adhesive seal around the suction tube or other tubes which run under the edge of the wound cover in these prior wound dressings is vulnerable to cracking and breaching the airtight seal, creating air leakage into the cover. Improvements have been made to suction wound therapy devices to reduce the likelihood of leakage. For example, U.S. Application No. 11/181,128, filed July 14, 2005 and commonly assigned with this application, discloses a tube attachment patch to allow the suction tube to be terminated outside of the primary cover and thus reduce the risk of breaking the adhesive seal to the skin. While these newer tube attachment devices provide more seal integrity, there is still the potential for breach of the airtight seals, due to patient movement in bed for example.

[0007] Blockage of suction to the wound can occur for several reasons. A waste collector for wound exudate is usually positioned somewhere in the suction line between the wound and the suction source. Waste collectors incorporate shut-off mechanisms that will shut off suction to the wound when the collector is overfilled. Another potential blockage is kinking or crimping of the suction line itself. Blockage due to debris from the wound and clotting is also a concern. The suction source may also be inadvertently turned off, a line may be inadvertently clamped, or the suction regulator may be misadjusted after the dressing is applied. Since suction wound dressings are intended to last for long periods without changing, usually 24 hours or greater, a leak or blockage could develop unnoticed and not be detected for a duration sufficient to negate the beneficial healing effect of suction as well as increase the risk of infection. There are currently devices to sense when a waste collector canister is filled and provide a warning signal to empty it. None of the devices, however, provides a comprehensive and reliable monitoring of system operation, nor cover the full range of fault possibilities with leakage or blockage.

[0008] In their efforts to improve over these prior art devices, the present inventors designed a suction wound dressing monitoring system as described in U.S. Patent Application Serial No. 11/268,212. In so doing, they considered the impracticality of locating expensive pressure transducers in any of the system components that should be single-use disposable items due to contamination by body fluids. The designers considered that the same basic system should preferably be effective in detecting and

indicating both leaks and system blockage, and that the detection of leaks or blockage should preferably be effective regardless of where the leak or blockage occurs in the system. They considered that the system should preferably provide clear visual indication of both normal and abnormal operation, and could usefully provide aural indication and auto-recording of abnormalities. They also considered that the suction monitoring capability should be easily convertible from use with a stationary suction system, as typically found in hospital care rooms, to use with a portable suction pump.

Summary of the Invention

[0009] In the present invention, the inventors further considered that when using a portable pump as the suction source it would be advantageous to use a microprocessor in the pump's flow monitoring system to detect deviation from the reference airflow and provide corresponding indicators and/or alarms. The use of a microprocessor would also enable other useful functions, such as recording and accumulating various parameters in time units and providing reports of such time records.

[0010] For safety and redundancy, however, the inventors considered that it would be advantageous to provide the pump with pressure control circuitry that is independent of the microprocessor controlled airflow monitoring. This would allow the pump to control pressure to an operator selected pressure set-point without needing to rely on signals from the microprocessor. However, the pressure control circuitry could provide to the microprocessor data related to pump operation, such as the detection of an open circuit, a faulty pressure transducer or a run away pump condition. Moreover, the microprocessor could be used to reset the selected pressure for the pump control circuitry, such as for intermittent operation or to create a line clearing pressure pulse if the airflow deviation was beginning to indicate a conduit occlusion.

[0011] The inventors also considered that it would be useful for the airflow monitoring system to be coupled to a display system on the pump for convenient indication of status conditions related to air flow, such as: normal operation, low level leak, high level leak, line occlusion and a filled waste collection canister. They also considered that it would be useful for the pump to have a separate error indicating display for convenient indication of error conditions that are not related to air flow;

such as overpressure detection by the pressure transducer, pressure transducer failure, waste collection canister not attached, low battery voltage, attachment of incorrect power supply, and low operating time remaining.

[0012] Although the waste collection canister could be located anywhere between the wound dressing and the vacuum source, the inventors considered that when using a portable pump vacuum source, it would be advantageous for the pump to provide a docking station for a waste collection canister, such that the canister can be securely attached to the pump housing. In that configuration, the pump may also include a level detector for detecting and indicating the fill status of the canister. For example, the pump may have a level sensor, such as a capacitance sensor, to detect a filled waste collection canister based upon indications other than pressure differential across a hydrophobic membrane in the canister. If so, the level detector signal may be moderated by an algorithm in the microprocessor to reduce the likelihood of false indications of a full canister caused by splashing when the pump/canister is moved.

[0013] Thus, the invention provides a system for applying suction to a wound in which a reference airflow rate is used for monitoring system operation. The basic components of a wound treatment system using suction include an airtight wound dressing, a suction conduit having one end operatively associated with the wound dressing to communicate suction to the wound, and an opposite end operatively connected with a source of suction, The invention provides a reference airflow rate (or "controlled leak") to the suction source when the system is in operation, such that deviation from the reference airflow can be monitored as an indication of a change in operation. In a preferred embodiment of the invention, a portable pump is used as the suction source. The pump has a flow rate monitoring system to monitor airflow through the conduit from a wound dressing to the pump as indicative of the level of negative pressure applied to the wound. Deviation from the reference flow rate can be used as an indication of abnormal condition such as leakage of the wound dressing or occlusion in the conduit. The flow rate monitoring system is controlled by a microprocessor, which also provides additional functions of providing status and error displays and time keeping and reporting. To compensate for variations in the set point

pressure selected at the pump, the microprocessor can have a look up table for flow rates that compensate for different selected negative pressures.

[0014] For safety and redundancy, the pump has pressure control circuitry that uses solid state electronics and a pressure transducer that can operate independently of the microprocessor and flow monitoring. A user operable pressure selector enables a user to select a negative pressure pump output within a range of negative pressure set-points; and the pressure transducer and a pressure control circuit control the operation of the pump to maintain the pressure sensed by the transducer between upper and lower limits around the selected pressure.

[0015] The microprocessor provides signals to an annunciator, preferably a bar meter that is color coded and graduated to provide a visual indication of air flow through the pump. The annunciator indicates when the airflow through the pump is within a range of the reference air flow that is associated with normal system operation and conversely indicates when a deviation from the reference airflow is associated with an abnormal operation.

[0016] The pump also includes an error indicator display for displaying a visual warning of system errors that are not associated with deviation of airflow through the pump from reference airflow, such as overpressure detection by the pressure transducer, pressure transducer failure, waste collection canister not attached, low battery voltage, attachment of incorrect power supply, and low operating time remaining. The error indicator is preferably controlled by the microprocessor.

[0017] Although the pressure control circuitry generally operates independently of the microprocessor to maintain a selected pressure, the microprocessor can be used to take over supervision of the pump in certain conditions. For example, the microprocessor can re-set the selected set point, such as between a higher and lower pressure level when intermittent pressure therapy is desired. In another example, the microprocessor can be programmed to directly turn on the pump or increase the pump speed when the deviation from reference air flow begins to indicate an occlusion to cause a pressure pulse output from the pump to clear the line between the patient and the collection canister.

[0018] The microprocessor also includes timing programming to record and accumulate the time units based upon inputs from other sensors, and a time reporting routine for providing reports of the time units that the pump is running. The reports may include a record of run-time intervals, a record of the date and duration of run-time intervals, a record of total accumulated run-time, a record of accumulated compliant run time, and a record of run time remaining on a pre-set run time period.

[0019] The system includes a waste collector, disposed in the suction line between the wound dressing and the source of suction, for collecting fluids aspirated from the wound. The preferred collector is an upright transparent plastic canister with fill level markings on the outside surface. The collection canister may also have a residual suction capacity to draw fluid through the line when the pump is shut down.

[0020] The canister may be prevented from overfilling by a hydrophobic membrane filter at the top of the canister that shuts off the airflow when the canister is full. The liquids aspirated from the wound may be turned into a gel, for ease of disposal and to prevent spilling, by a gelling agent in the disposable canister. To keep the waste in the canister level, the gelling agent is preferably provided in stacked disks. The canister has an inlet connector for the suction tube from the wound dressing, and an outlet connector for connecting to a portable pump or to a flow monitoring instrument for use with stationary or hospital wall suction. The outlet connector is preferably a proprietary (non-standard) connector that will not connect directly to the standard appliance fitting of a stationary suction system, to prevent anyone from mistakenly connecting directly to the suction system.

[0021] The pump may also provide a docking station for the waste collector, such that the collector can be securely attached to the pump housing. Preferably the waste collector is a transparent plastic canister having right circular cylinder profile and fill-level markings in a band extending along the height of the cylinder, and having a connection fitting with an O-ring seal. The pump has a docking station with a concave profile conforming to a half section of the canister to support the canister, and a releasable latch fitting adapted to receive the connection fitting of the canister.

[0022] The pump may have a sensor proximate to the canister docking station for detecting when the level of waste in the canister exceeds a level which indicates a filled canister condition. A preferred sensor is a capacitance detector. The sensor sends a signal representing a level of waste collected in the canister to the microprocessor, which includes an algorithm to be applied to the signal to reduce the likelihood of an erroneous indication of a full canister caused by liquid sloshing inside the canister.

[0023] The pump may also have an activated charcoal air filter disposed between the releasable latch fitting and the pump's air discharge port for reducing odors from the pump. The pump may also have a desiccant with the filter. The pump may also utilize a controlled backpressure to lessen the noise inherent in the operation of the valves in a positive displacement pump, such as a leaf spring sound damper disposed over the pump outlet.

[0024] In a preferred embodiment, a calibrated vent in the suction conduit near the wound dressing establishes the reference airflow. Preferably the vent is located in the tube just outside of the wound cover. The vent may be an aperture in the tube sealed with a porous material having specific flow rate characteristics. The reference flow rate may be in a preferred range of 50-300 cc per minute. Higher flows such as 1000 cc/min are possible, but practical limitations on the capacity of the suction source as well as the magnitude of a leak in the dressing suggest that is preferable to use a flow below 1000 cc per minute.

[0025] By locating the vent in the conduit close to the wound, the reference airflow also serves to purge the conduit of fluids. The purging effect minimizes the likelihood of reflux of contaminated fluid back into the wound, and the risk of infection attendant to such reflux. Since the fluid does not reside in the conduit for an extended time, the purge effect also reduces the likelihood of blood clotting in the line. The pump system may also provide a pressure pulse generator to clear the collection line of serial slugs of fluid if a reduction in flow is detected.

[0026] The pump is preferably a portable battery-powered positive displacement pump in which flow rate is proportional to motor rpm allowing the airflow rate of the system to be indicated indirectly by the motor speed or pump speed. An algorithm may

be used to correct motor and pump speed to flow for compressibility effect. Thus a motor speed indicator or tachometer may be the preferred monitoring instrument. However, other flow rate monitoring instruments could be used, such as, but not limited to, target meters, rotometers, turbine meters, mass flow meters, differential pressure (Dp) cells and hot wire anemometers.

[0027] Although the term "airflow" is used herein for consistency, it should be apparent that it is not limited to the composition of ambient air. It is common in medical settings to alter the composition of airflow to a wound, such as by increased oxygen or therapeutic aerosols or other beneficial medications. The flow of any of these mixed gases or aerosol suspensions should be considered airflow for purpose of this description.

[0028] These and other advantages and aspects of the invention will become apparent upon reading the detailed description and drawings that follow.

Brief Description of the Drawings

[0029] Figure 1 is an exploded perspective view of a system for suction wound therapy.

[0030] Figure 2 is a view of a suction tube attachment device showing an air vent in the suction tube to create a controlled reference airflow rate to the suction source.

[0031] Fig 3 is a cross-section view of the waste collection canister showing the shut off membrane and gel agents.

[0032] Figure 4 is a cross section view of the wound monitor airflow indicator.

[0033] Figure 5A is an exploded perspective view of a preferred embodiment of a system for suction wound therapy using a portable suction pump.

[0034] Figure 5B is a perspective view from the top front of a portable pump which may be used in the system of Figure 5A.

[0035] Figure 6A is a schematic diagram of positive displacement pump embodiment measuring motor speed as a surrogate of airflow.

[0036] Figure 6B is a schematic diagram of a positive displacement pump embodiment using a microprocessor for flow monitoring and reporting, and for other timing, control and status display functions.

[0037] Figure 7 is a schematic view of a target meter flow indicator alternative.

[0038] Figure 8 is an exploded perspective view of a portion of an alternative embodiment of a system for suction wound therapy according to the invention using a therapeutic fluid delivery to the wound.

Detailed Description of the Invention

[0039] Figure 1 shows an embodiment of a system (10) for suction wound therapy as described in commonly owned U.S. Patent Application Serial No. 11/268,212. The components include a wound dressing subsystem (12), a suction tube (14), a waste collection canister (16), a flow monitor instrument (18) and a wall suction regulator (20) of a stationary suction source.

The Wound Dressing

[0040] The typical wound dressing (12) includes a wound cover (22) and wound packing material (24), and may include a special wound contact layer (26). It will have a suction tube (14) running under the edge of the primary cover or through the cover, or will terminate outside of the cover and communicate with a nozzle or slot in the cover. There is a wide variety of each of these components. The wound dressing (12) shown in the drawings and described herein uses presently preferred components, but the invention is not intended to be limited to these components.

[0041] The primary wound cover (22) is preferably an airtight wound cover that is vapor permeable. It is preferred to use a thin film transparent commercial bandage, such as medical grade Tegaderm™ manufactured by 3M, that is impermeable to liquids but permeable to water vapor and oxygen. The term "airtight" means that the material is sufficiently occlusive to resist airflow through the cover to maintain suction under the cover while suction is being applied. There are many other thin-film commercial bandages that have similar properties. Highly impermeable materials could also be used. However, since it is beneficial in wound therapy to allow water vapor to escape

and oxygen to migrate into the wound, semi-permeable covers of film material such as Tegaderm™ are preferred. In some instances, the primary cover could also be a rigid or semi-rigid enclosure placed over the wound. The primary wound cover is generally sealed to the skin surrounding the wound with an adhesive (not shown) incorporated in the cover, and gap filler paste (not shown) may be used where needed.

[0042] Before the primary cover (22) is applied, the wound is generally packed with a wound packing (24). Simple gauze or foam pads can be used, or other materials commercially sold as wound packings. The presently preferred wound packing, however, is polyester fibers or comparable resilient fibers in a corrugated layer pattern configured to form a resilient compressible structure, as described in U.S. Patent Application No. 10/981,119, commonly assigned with this application.

[0043] The wound packing (24) may also be attached to a wound contact layer (26). The presently preferred wound contact layer (26) has a special construction that provides a wound contact surface, with depressions formed into the surface, to work in conjunction with the suction to encourage more rapid tissue regeneration, as described in U.S. Application No. 10/982,346, commonly assigned with this application. The contact surface is configured such that voids formed by the depressions remain above the wound surface in the presence of moisture, compressive forces and suction, encouraging local tissue deflection.

[0044] The wound dressing includes a suction tube (14) attached to the wound cover. The dressing may have other tubes (28, in Figure 2) for medication supply or wound flushing. The tube(s) may pass under the edge of the cover or through it, but a presently preferred arrangement uses a tube attachment patch (30) to allow the suction tube to be terminated outside of the primary cover and reduce the risk of breaking the adhesive seal to the skin, as described in U.S. Application No. 11/181,128, commonly assigned with this application.

[0045] As shown in Figure 2, the distal end of the suction tube (14) in this embodiment has a vent hole (32) that is sealed with a porous plug (34) that provides a controlled leak, or reference airflow, for the airflow monitoring devices described hereafter. It is preferable to locate the vent (32, 34) as close to the wound cover as

possible. Having the tube attachment outside of the primary cover allows the use of this controlled leak reference airflow without drying out of the wound, as might occur if the vent were under the cover near the wound. While it is feasible to place the controlled leak in the actual wound space, consideration would need to be given to avoid excessive drying of the wound tissue due to the introduced airflow. In addition, it is possible with the type of tube attachment patch (30) shown in Figure 2 and described in U.S. Application No. 11/181,128 to provide the vent as an aperture in the patch (30).

[0046] The reference airflow rate from the calibrated vent is used for monitoring system operation. The controlled leak rate should be low to maintain a proper suction at the wound site and a moist healing environment. Preferably the reference airflow is in the range of 50-300 cubic centimeters per minute. This flow is low enough to minimize drying and does not significantly alter the suction applied at the wound. Additionally, the flow is low enough to minimize the use of battery power where a portable pump is used as the suction source. A flow of this magnitude is readily obtained by providing a vent hole (32) in the suction tube that is sealed sterile with a porous plug (34), as described above. A suitable seal material is a porous plastic manufactured by Porex from sintered high density polyethylene. Such porous materials are routinely employed to admit air into medical fluid lines at a suitable flow while maintaining an efficient sterile filtration barrier against microbes.

[0047] The wound therapist applies the wound dressing (12) to the patient and attaches the system to suction. The therapist remedies leaks in the dressing by smoothing out creases or wrinkles in the wound cover and addressing gaps due to folds in the patient's anatomy. It has at times been useful to address specific areas of difficult anatomy by using a gap filling paste, as is common in ostomy care, such as coloplast. The airflow monitoring instruments described hereafter facilitate the initial dressing set up process by providing active feedback to the therapist on the integrity of the seal around the wound cover and tubes.

The Waste Collector

[0048] Since a primary function of suction therapy is to drain liquids from the wound, the system normally includes a waste collector (16) for collecting fluids aspirated from the wound. As in the embodiment shown in Figure 3, the collector (16) may be an upright plastic canister (36) with a right circular cylinder profile that may have fill level markings in a band extending along the height of the cylinder on the outside of the canister. The markings may be on a paper label adhesively glued to the canister. The canister is preferably a disposable, single-use device. The canister has a lid (38) incorporating a fitting (40) passing through the lid for the attachment of an inlet tube (42). The inlet tube (42) may be an end of the suction tube (14) leading from the wound, or be a short section of tube that terminates with a connector fitting (44) for mating with a matching connector (46) on the end of the suction tube (14).

[0049] Airflow and any blood or other fluid aspirated from the wound passes through the fitting (40) in the lid and into the canister (36). The liquid is retained in the canister, while the air rises and is drawn through a hydrophobic membrane (50) sealed to the inside of the lid. The membrane (50) acts as a bacteria filter, and can be used as a shut off mechanism to prevent the canister from overflowing and to prevent contamination from flowing out of the container toward the suction source.

[0050] The lid defines an air channel from the outlet port (52) to another connector (54) for connecting the canister to a portable pump or to a tube running to a stationary wall suction system. The second connector (54), however, is preferably a proprietary (non-standard) connector that will not connect directly to the standard appliance fitting of a stationary suction system. This is to prevent anyone from mistakenly connecting directly to the suction system without the flow monitoring instrument and pressure release features described hereafter, with the attendant risk of applying too great a suction to the wound. The mating receptacle in the portable pump configuration described hereafter is configured to receive the proprietary connector. The connector (54) includes a sealing element such as an O-ring seal. This arrangement provides that a fresh O-ring is preferably used with each disposable canister, as contrasted with other pump connectors where the sealing element is in the pump and will ultimately wear out and cause the system to fail because of leakage.

[0051] The air passage through the canister thus forms a part of a suction conduit between the wound and the suction source. In one embodiment of the system described herein, the canister (36) is prevented from overfilling by the hydrophobic membrane (50). If the canister (36) is allowed to fill high enough for the contents to contact the membrane, the membrane occludes and blocks airflow from passing through the canister. This blockage prevents suctioning more waste from the wound, and as described hereafter, the blockage of reference airflow is detected as an indication of an abnormal operating condition. In other embodiments described hereafter, the level of waste product in the canister can be detected by a capacitance sensor or other detector on the pump, and the detection used to prevent overfill.

[0052] Preferably the liquid waste sucked from the wound is turned into a gel for ease of disposal and to prevent spilling or splashing. Although the gelling agent could be provided in porous bags, it is preferred to use disks (56) of laminated fiber sheets containing a gelling agent, such as provided by Gelok International. The disks (56) are cut to fit inside of the jar and stacked on top of each other. The stacked disks cause the liquid to turn to a level surface gel in the canister.

[0053] The system may also include a filter/drier unit (21) disposed between the waste collection canister and the wound flow monitor (18). The filter element provides additional protection against contaminated particles entering the suction source, and the drier removes moisture from the air that may effect the calibration of the flow monitoring instrument.

Use of Controlled Reference Airflow to Indicate Normal Operation

[0054] While prior art suction dressing systems either do not monitor system operation at all, or do so less than optimally by trying to sense pressures directly, the system described herein uses a reference airflow, as may be provided by the air vent (32) described above, to indicate when the system is in normal operation, and also to detect deviation from the reference airflow as an indication of abnormal operation. Higher airflow than the reference flow indicates leakage, while lower airflow indicates blockage.

[0055] The range of flows suitable for reference flow are bound by the permeability of the wound cover on the lower end and suction limits on the upper end. When the wound cover is a semi permeable material, there will be a natural low level background airflow from air molecules passing through the cover. This permeation airflow could serve as the reference flow if the flow monitoring instrument were very sensitive. However, the permeation flow is usually too low and too erratic to be a good reference. The area of the cover and the possibility of it being obstructed by surgical drapes and fluid from the wound can cause the permeation flow to be erratic. Thus, the vent provides a larger and more stable flow rate that masks variation in the permeation flow and provides a good reference. For example, Tegaderm® bandage will allow a diffusion of water on the order of 800 grams/square meter/day, which correlates to a flow rate of about 0.5 cc/min over a square meter. Typical wound cover area would be less than a tenth of a square meter, so in approximate terms, the semi permeable material contributes 0.05 cc/min, or less than .1% of a reference flow of 50 cc/min. Thus, any variation in the background permeation flow is masked by the larger reference flow.

[0056] The indicator sub-system may be embodied in two devices as depicted and described below; a wound monitor flow instrument for use with a stationary suction source and a portable pump with a flow sensing system. Other types of flow indicating devices, such as target meters or hot wire anemometers could also be used.

The Flow Monitor

[0057] In the wound suction system of Figure 1, the flow rate monitor is a float meter (19) that includes a suction conduit (58) between the waste collection canister (16) and a stationary suction source. One end of the conduit includes a mating connector (60) to the proprietary connector (54) of the canister. The flow monitor (18) is preferably located at the other end of the conduit (58) and attaches directly to an appliance connection fitting (64) associated with an adjustable suction regulator (20) as commonly found on stationary suction systems.

[0058] The flow monitor (18) is designed to provide a visual indication of the flow rate through the system. Once the flow rate stabilizes at the controlled reference airflow following initial application, the maintenance of this visual indication of

reference flow is an indication of normal operation free of leaks or blockage, and hence an acceptable level of suction at the wound cover. Deviation to a higher airflow indicates leakage, and drop to lower or no airflow indicates blockage in the collection circuit.

[0059] Figure 4 is a cross section of the float meter (19). A standard connector (63) on the top end of the meter attaches to a short conduit (62) connectable to the appliance fitting (64) of the adjustable suction regulator (20). At the bottom end of the flow meter, a standard connector (59) is attached to the suction conduit (58). It is typical to use suction in the range of 25-200 mm Hg in wound therapy. The flow indicator incorporates a flow restrictor (66) having an orifice (67) that is calibrated to restrict suction airflow to be less than 20 liters per minute when a controlled level of suction of 100 mm Hg is applied by the suction regulator (20).

[0060] As shown in Figure 4, the flow indicator has progressive sections (68, 70, 72, 74) with different inside diameters, having the narrowest section (68) at the bottom and progressively larger diameters in the three additional sections (70, 72, 74) progressing to the top. The outside barrel (76) of the clear tube has graduated markings (not shown) to indicate airflow rates. A float (78) serves as an indicator of flow through the system. When there is no airflow, the float will rest in the lowest section (68). This area is color coded red to indicate a blockage condition, such as a full canister or any occlusion in the fluid path. When the flow into the meter is low, preferably between about 50 cubic centimeters per minute to 300 cubic centimeters per minute, the clearance between the float and the bottom section of the indicator is such that the flow around the float will cause the float to rise into the next section (70). Thus, normal reference airflow will cause the float to rise a discernable amount into the next section. This area of normal operation is color coded green, indicating an acceptable condition.

[0061] The mass of the float works in cooperation with the clearance between the outside of the float and the inside of the tube. The float responds to airflow rate and fluid density and will rise to a level where the dynamic forces are in equilibrium. Typical flow indicators for other applications have continuously increasing inner diameters. Slight changes in flow rate cause the float to chatter up and down around a

height indicative of the flow rate. The use of discrete sections of uniform diameters, but increasing in progression, as the four sections (68, 70, 72, 74) in this indicator reduces the chatter and causes the float to move upward in stages. These stages are selected for discrete flows that provide key reference information regarding the suction applied to the wound.

[0062] If flow through the system increases beyond an acceptable level due to a leak in the wound dressing, the clearance around the float in the normal position may no longer be adequate to allow the float to remain in this position, and the increased flow will lift the float to a higher section in the indicator where the internal diameter is stepped up. Graduated labeling (not shown) on the outside of the indicator provides a visual indication of a moderate leak condition. Additional stepped up diameter sections are provided to indicate higher leak conditions. The stepped up diameters require a significant change in flow before the float will jump from one position to a higher one. This eliminates the jumpiness that would be encountered with a continuous taper inner diameter as common in flow meters for other applications. The stepped diameter sections reduce user interpretation, thus enhancing ease of use and safety.

[0063] The wound monitor instrument also incorporates a safety valve (80) that limits maximum suction to guard against the accidental application of excessively high levels of suction. It is typical to use suction in the range of 25-200 mm Hg for wound drainage and therapy. Consequently, the suction limiting feature may be set to limit the suction to approximately 200 mm Hg. A suction pressure relief chamber (84) is formed between the first flow restrictor (66) and a second flow restrictor (82) having an orifice (83) the same size as the first restrictor. A resilient valve mechanism (86) in the relief chamber serves as a release against the application of high levels of suction. The valve mechanism is spring loaded to a predetermined suction setting, such as 200 mm Hg. If the suction pressure in the relief chamber exceeds the predetermined setting, the valve mechanism will open and allow vent air to be drawn from a relief port (69) into the metering orifice to prevent excess suction from being applied to the patient.

[0064] Protrusions (75) may be provided on the top underside of the interior of the float meter adjacent the first flow restriction orifice to prevent the float from completely blocking the orifice entry to the pressure relief chamber, thus allowing air

passage even if a major leak occurs. This allows some suction to communicate through the system even at high airflow rates. Alternatively, the protrusions could be located on the top surface of the float.

[0065] The wound flow monitor instrument is also protected from sources of potential contamination in the form of particulate matter, aerosols and humidity by an air filter/dryer (21) located in the conduit between the instrument and the canister. The filter/dryer unit includes a particle filter for removing airborne dust as may be encountered when the wound monitor is disconnected from the collection canister for periodic changeover. It is also anticipated that a desiccant or other means of humidity control can be placed in the filter/dryer unit as required.

[0066] While this system has been described in the context of a hospital wall suction system, it can also be used with suction pumps. Some medical buildings may use electrical power pumps to provide suction for wound therapy. These can be moved, since the only restriction is the location of electrical outlets and the length of the power cord, but they are not truly portable. A system using portable battery powered pump is described below.

Portable Pump

[0067] In a portable pump embodiment (100) of the suction system as shown in Figures 5A, the suction source is a portable suction pump unit (102) instead of a stationary suction source. The pump connects to the same wound dressing subassembly (12) and waste collection canister (16) as were described above.

[0068] The pump (102) operates with low voltage DC and has an onboard (battery) power source. The pump will also run on wall power with a suitable ac/dc power converter, which may be combined with a battery charger to recharge the battery during use.

[0069] The pump is configured to produce controlled levels of negative pressure. As shown in Fig. 5B, the pump has an On/Off/Intermittent control switch (112) and pressure level selector dial (113) on its top panel. The pump power is turned ON using the control switch (112). A prescribed pressure setting is selected on the pressure selector dial, which allows set-point choices between 30 and 75 mm Hg.

[0070] In the schematic diagram of Figure 6A, the portable pump embodiment includes a positive displacement air pump (103), a variable speed DC motor (104), a tachometer (105), pressure control circuitry (106) and a fault detection/alarm system (108). In this embodiment the pump pressure control circuitry and the fault detection/alarm system may be hard wired solid state electric devices.

[0071] In the schematic diagram of a preferred embodiment in Figure 6B, the fault detection and alarm system includes a microprocessor (200). A suitable processor is a Microchip 16 Series, part number 16F688, although other similar programmable logic devices could be used.

The Independent Pressure Control System

[0072] Regardless of whether the pump uses a microprocessor or not, the pump's pressure control system is independent of the air flow monitoring function. The pressure control system functions similar to a standard compressor circuit. A pressure transducer (not shown) monitors the negative pressure produced at the pump, and is preferably located in the conduit between the waste collection canister (16) and the pump (102). The compressor control circuit (106) includes a solid state logic device. The user selects a pressure setting using the selector dial (113) to change the resistance of a variable resistor and produce an electrical signal representing the selected pressure. The control circuit (106) receives the selected pressure setting as an input, and sets an upper and lower limit of pressure that is related to the selected pressure. This range between upper and lower limits is selected to provide a reasonably stable suction level while minimizing the on-off cycling of the pump motor. A range of approximately 10 mm Hg is preferred for patient comfort and to minimize noise. The control circuit (106) will function to maintain the pressure sensed by the transducer between the two limits. Such control circuits are commonly employed in industrial applications as well as in hospital central suction systems.

[0073] When the pump is initially turned on by the On/Off/Intermittent switch (112), the control circuit (106) starts the pump running until the transducer detects pressure at or exceeding the upper limit of the pressure range set by the control circuit. The pressure control circuit (106) has a comparator (not shown) that is continually comparing the pressure signal from the pressure transducer to the set point limit signals

as chosen by the operator via the pressure selector dial (113). Once the upper limit is reached, the pressure control circuit (106) turns the pump Off. Normal reference air flow in the conduit will cause pressure at the transducer to decay towards the lower limit of the control range. Once the detected pressure has reached the lower control limit, the control circuit (106) will turn the pump back On, and the process is repeated. Thus, the pressure transducer senses the current negative pressure and the control circuit (106) turns the pump On and Off accordingly to maintain negative pressures that are within the selected desired range.

[0074] The motor (104) is preferably a variable speed DC brushless motor, however other styles of DC motors are acceptable, as well as AC motors that can be equipped with variable outputs. With the variable speed motor, the speed is controlled via a pulse width modulation (PWM) feature of the control circuit (106). The variable speed control allows for efficient use of DC power.

[0075] The positive displacement pump (102) in the preferred embodiment uses a DC diaphragm style pump with inlet and outlet check valves. The diaphragm pump crankshaft is operationally connected to the shaft of the variable speed motor. Other positive displacement pumps may be used, such as peristaltic, piston, syringe or rocking piston pumps.

[0076] A tachometer (105) can be used to indicate motor or pump shaft rpm. For example, Hall sensors are commonly employed on DC brushless motors, as well as encoders, to indicate rpm. It is also possible to sense back EMF in brush versions of DC motors to determine motor shaft rotation speed. In an AC pump, an oscillating bar with a magnet mounted to an end is excited by an AC coil, thus driving a diaphragm. In that case a count of the oscillations delivered by the coil can be used as an indicator of pump speed. Each of these and other forms of pump or motor speed sensors is included in the generic term tachometer, and can be used as the flow rate monitoring instrument, where pump speed or displacement is measured as a surrogate for direct airflow measurement with a positive displacement pump.

[0077] As described above, the pressure control circuitry (106) will run the pump as necessary to maintain suction sensed by the transducer within the desired range of

the selected negative pressure set point. The pump's On-time duration is increased or decreased as required by the pump control circuitry (106), at an efficient motor speed as determined by the pulse width modulation feature of the control circuitry, to maintain the negative pressure in the range established by the selected set point. Thus, the pressure control circuit operates on sensed pressure, and not on sensed air flow. This allows the pressure control to be independent of the flow detection and monitoring and flow status display capability of the system.

The Flow Detection System

[0078] As shown in Fig 6A, a fault detection system (108) can be a circuit that is adapted to monitor pump activity as an indicator of the flow rate of air through the wound therapy and waste collection lines, coupled with an annunciator (114) to provide audible and visual indication of status of operation. This fault detection circuit (108) is a separate circuit that is independent of the compressor control (106). Preferably the fault detection system includes sensors of pump motor activity that provide input to a microprocessor which determines a flow rate based upon the motor activity input, identifies deviations from reference flow rate, and provides the annunciator signal identifying abnormal status of operation. In a preferred embodiment as described below, the fault detection circuit can include a microprocessor.

[0079] A preferred embodiment of portable pump unit (200) is depicted in the schematic diagram of Fig 6B. The pump (203) is as described above, a diaphragm style positive displacement pump with inlet and outlet check valves, and is powered by a variable speed brushless DC motor (204). The unit can be powered by wall outlet power with a power cord (205) supplying electrical power through a power converter and battery charger module (207) which also contains a 12 volt battery. The unit can receive DC power either from the converter or from the battery when used un-plugged. The pressure control circuitry (206) operates as described above to maintain pressure selected at the selector dial (213).

[0080] The unit also includes a microprocessor (210) that is involved in the flow monitoring and system status detection functions. In this embodiment, motor or pump revolutions are counted as an indication of the air volume that has passed through the positive displacement pump and provide an input to the microprocessor (210). A

discrimination algorithm in the microprocessor programming takes the count of motor revolutions and determines a flow rate. This flow rate is compared to the known reference flow rate to determine fault conditions. The flow rate is converted into a signal that illuminates a display bar on the flow rate annunciator (214). A flow rate that is less than the reference flow is indicated as abnormal operation on the annunciator as an occlusion in the circuit, most commonly a full canister. A flow rate that is comparable to the reference flow rate produces an annunciator indication of normal operation. Flow rates that are higher than the reference flow rate will produce abnormal annunciator indications that the circuit is leaking to alert the caregiver to address the seal of the wound cover.

[0081] Where the pump is independently turned On and Off by the pressure control circuit to maintain set point pressure, the pressure sensed by the transducer will oscillate between the upper and lower control limits. The period of this oscillation is related to the leakage in the wound dressing. The higher the leakage, the shorter the period. Thus, the time intervals between the pump turning On or Off could be detected by the microprocessor and used as a rough measure of air flow rate. Where the motor speed is also controlled via a pulse width modulation (PWM) control to make the use of DC power more efficient, however, the microprocessor can also correlate the On/Off intervals with pulse rate to determine airflow rate. In normal operation, the positive displacement pump will output a given number of pulses for each revolution of the pump. The pulse signals can be supplied as an input to the microprocessor. These pulse signals are used to determine the number of pumping strokes the pump has output and are a very close approximation of pump volume. The flow monitoring programming in the microprocessor continually counts the pulses being output from the pump to represent volume of air flow. When taken in combination with a time measurement, these pulses per unit time represent airflow rate. In a presently preferred embodiment, the time measurement is based on the Off cycles of the pump motor. From the time the pump turns Off, until the next time the pump turns Off, the microprocessor counts the pulses and divides by the time between each motor OFF condition to determine the flow rate in the conduit.

[0082] It is sometimes desirable to provide suction in an intermittent fashion to benefit the healing process. Prior processes involve allowing the system to vent to atmospheric pressure for a period of time to allow for reperfusion of tissue. Allowing the system to completely vent to atmosphere results in the complete loss of suction on the dressing system and any benefit that suction could play in maintaining an air tight seal around the wound. The present invention solves this problem by varying the suction between two distinct levels; a first level selected by the pressure selection dial (113) and a second level of 20-25 mm Hg. The selected higher level is used to apply the beneficial therapeutic effects of suction. The second reduced level is below capillary bed pressure, so reperfusion of tissues will occur in this lower stage, while the wound dressing maintains at least some level of suction to help keep the dressing seals in place and to maintain the reference airflow and prevent reflux and clotting in the lines. With this type of intermittent pump operation, the reference airflow should be selected such that it is maintained even at the reduced level, or else the alarms associated with low airflow should be disarmed by the microprocessor during reduced suction intervals as well as the ramp-up and ramp-down intervals.

[0083] The microprocessor (210) can rest the selected pressure to cause intermittent suction. When the On/Off/Intermittent switch is set to Intermittent mode, the programming in the microprocesor uses a time interval for switching between normal selected pressure and the lower level. To enter the lower pressure cycle of the intermittent mode, the microcontroller activates a transistor that adds a resistance to the compressor comparator circuit. In effect, the microcontroller has re-set the pressure control circuitry to a lower selected pressure. Thus, while the microprocessor does not directly control the pressure control system, the microprocessor can re-set the selected pressures between the higher and lower levels at timing intervals selected by input to the microprocessor.

[0084] Faults in the suction therapy system are detected as deviations from the expected flow through the system. The flow detection system uses the reference airflow produced by the calibrated vent on the end of the suction tube calibrated to approximately 50 - 100 cc/min to provide a flow signal indicative of normal operation. If the flow detection system determines the pump is not running at a normal duration to

maintain set-point negative pressure, it will alert the caregiver via a visual and audible alarm.

[0085] An increase in the On time of the motor is proportional to increase of air flow in the system. The microprocessor uses an algorithm to correct the airflow based on the actual pressure in the circuit. Any leak in the dressing system will be compensated for by an increase in the On time of the pump. As the On time increases to equate to a flow of approximately 3 liters per minute, an indicator will light on the flow annunciator display (214) of the unit to alert the caregiver to the fact that the dressing system has a leak. If the caregiver is able to correct the leaking dressing, the indicator will turn off. If the fault condition is not addressed (by re-sealing the wound site) within a one-minute timeframe, the microprocessor will activate an audible alert. Even when a leak condition exists, however, the pump will continue to run under the control of the pressure control system, delivering some level of suction until the condition is corrected or the pump is turned off.

[0086] The flow detection system will also sense the loss or drop of the reference airflow. There are a number of fault conditions which will cause the reference air flow to be reduced, including the lines to the waste canister becoming clogged with wound exudates, or being crimped shut by bending or squeezing. These conditions also result in the loss of negative pressure at the wound. This reduced reference air flow results in reduced motor on time that is sensed by the flow detection system and causes a visual indicator to indicate blockage condition.

[0087] The pump may also have an onboard compliance monitor as part of the timing function of the microprocessor. A compliance indication (159) alerts the caregiver to deviations from the normal application of suction to the wound over time and is a useful adjunct to the application of negative pressure wound therapy. The compliance monitor may compute the number of hours that suction has been within ±5 mmHg of a set point. Medical experience has shown that suction should be applied for 22 of any 24 continuous hours to be effective. This readout can be presented a number of ways to show the number or percentage of compliant hours of suction therapy.

Waste Collection Canister and Fill Indicator

[0088] The pump unit (102) also includes a docking station (160) for the waste collector located between the wound dressing and the pump for collecting liquids aspirated from the wound. As presently preferred, the waste collector is a transparent plastic canister (16) having right circular cylinder profile and fill-level markings in a band (170) extending along the height of the cylinder, and having a connection fitting (54) with an O-ring seal. The portable pump docking station (160) supports the canister. The docking station has a concave profile conforming to a half section of the canister and a semi-circular base (162) to support the canister when one is docked. The pump has a releasable latch fitting (164) in the middle of its upper wall that is adapted to receive the connection fitting (54) of the canister. The canister fitting is inserted into the latch fitting (164) and locked in place by the latch. The canister may be released and removed by depressing the canister release button portion (166) of the latch.

[0089] The pump also provides the ability to detect a filled canister without the need to measure differential pressures across a membrane. Differential pressure measurement can be problematic in that partially clogged membranes can lead to erroneous readings and interpretations. In this embodiment, the pump (102) employs positive level detection as a direct indication of the fill status of the canister. The pump may include a level detector sensor (218 in FIG 6B) proximate to the canister docking station for detecting when the level of waste in the canister exceeds a level which indicates a filled canister condition. A level sensor can take many forms, including a capacitance detector such as a Model# BC 10-QF5 sensor manufactured by Turck, Inc. This detector can be positioned in the pump housing at a desired level and has the ability to read a change in capacitance as caused by the presence of an ionic fluid. The detector can sense this changed environment through the pump housing, so there are no exposed elements. Capacitance type detection is also tolerant to conditions such as mist or fogging. Other positive level sensing mechanisms can be used such as optical, ultrasonic, contact wire, float systems and the like.

[0090] Since the patients may be mobile or need to be transported, there is a potential that agitation and motion can create an artifact where fluid may splash and create a false positive indication of a filled canister and subsequently trigger an

unwarranted signal or alarm. A software algorithm may be used by the microprocessor to minimize the likelihood of this false indication. The algorithm incorporates a time delay and a sampling rate. A sampling rate of 10 milliseconds and a delay of 4 seconds is an effective set of parameters that reduces false full indications due to a motion artifact. Preferably the algorithm is programmed into the microprocessor pump control.

[0091] The direct level detector also allows the system to distinguish between a filled canister and an occluded condition caused by other blockage in the conduit that is detected by deviation from reference airflow. The direct level sensor provides a signal that can illuminate a different array of visual and audible alarms than a lower than normal air flow indication. Providing the clinician a distinction between canister filled condition and an occlusion simplifies operation and makes the system easier to use and less prone to user error.

Timing Subsystem

[0092] The pump unit may have a timing subsystem for recording and accumulating time units corresponding to periods of time when the pump is running. Preferably the timing subsystem uses programming in the microprocessor (210) to record and accumulate the time units based upon inputs from other sensors. For example, the timing can be started and stopped by signals from the ON/OFF/Intermittent power switch, or signals that can detect when the pump is running from a tachometer or other sensor. The timing subsystem or programming in the microprocessor preferably also includes a time reporting routine for providing reports of the time units that the pump is running. The time reports may include a record of run-time intervals, a record of the date and duration of run-time intervals, a record of total accumulated run-time, a record of accumulated compliant run time, and a record of run time remaining on a pre-set run time period.

[0093] The timing subsystem may also be tied into alarms which indicate abnormal operating condition due to leak or occlusion. This will allow the timing subsystem to detect and record total pump operation time and compliant operation time. Compliant operation my be defined by therapeutic convention. For example, compliant time is sometimes identified as normal suction application for 22 hrs of a 24 hour period. The

time reporting subsystem may produce reports of complaint operation time in addition to pump run-time.

[0094] The timing subsystem may also be used to indicate time remaining to scheduled maintenance or cleaning, or to indicate time used or remaining on a billing plan where the payments for usage are based upon time units either on return or pre-paid in advance. When the pump is sold or leased in this manner, the timing subsystem has the ability to record and accumulate time units corresponding to periods of time when the pump is running and for providing reports of run-time, including compliant run time when the wound treatment system is operating normally.

Status Indicators and Alarms

[0095] The system status annunciator may be in the form of a bar meter (114) color coded and graduated to provide a visual indication that the flow through the pump is within a range required to maintain the reference airflow when the system is in normal operation; and conversely indicate that the pump is running faster than required to maintain the reference airflow, indicating air leakage in the system, or is running slower than required to maintain the reference airflow, indicating air blockage in the system. The pump may also provide an audible indication of abnormal operation, such as a beeper tone.

Error Detection and Display

[0096] The pump may also have warning or caution lights (116, 118, 120) indicating pump operating parameters, or errors other than those that are detected from reference airflow such as low battery charge. Electronic controls provide the ability to enable numerous combinations of visual and audible indications of flow detection faults and other errors. In the microprocessor embodiment of Fig 6B, a visual error indicator display (216) that is separate from the flow rate annunciator (214) provides additional trouble shooting assistance. These errors are detected by signals from sensors to the microprocessor. The microprocessor in turn sends signals as an alphanumeric display to the error display (214) that correlate to the following errors: overpressure, missing canister, transducer failure, low battery, low operating time remaining, and attachment of incorrect power supply.

[0097] Overpressure is the condition where a runaway pump could cause potentially high pressures to be delivered to the patient. The microprocessor's error detection software continually polls the output of the pressure transducer and compares it to a stored maximum allowable pressure. If the maximum allowable pressure is exceeded for a predetermined time period, then the microprocessor shuts the pump down and an Overpressure error is indicated on the error display.

[0098] A missing canister condition occurs if the pump is activated without a waste collection canister connected to the fitting. This condition can occur at start-up, and is detected by the error detection software as air flow through the system exceeding a certain level without a corresponding minimal increase in pressure. The detection flow rate for missing canister is typically set to be greater than the increased flow that would be expected from a wound dressing that was removed or compromised. When so detected, a Missing Canister error is indicated on the error display.

[0099] A pressure transducer failure can take two forms: an open circuit (no pressure reading) or an excessively high reading indicative of high vacuum. The latter is straightforward since it would be interpreted as an Overpressure (described above) and result in a fail-safe deactivation of the pump. The open circuit failure appears as zero pressure output. Therefore, if the error detection system software detects air flow but zero pressure, a Transducer Failure error is indicated on the error display.

[0100] A low battery charge is determined by the error detection software polling the battery output voltage when the pump is not plugged into an external electrical source. When a threshold low voltage level is crossed, a Low Battery error is indicated on the error display.

[0101] Low operating time remaining is associated with the timing feature of the pump when it is used to indicate time remaining until scheduled maintenance service or time remaining on a pre-paid rental plan. The timing system constantly accumulates run time and time remaining to a target time, such as the number of pre-paid hours. The error detection system can be set to a time remaining threshold, such that when the accumulated time indicates that time remaining has dropped below the threshold, a Low Time error is indicated on the error display.

[0102] Incorrect power supply detection is to guard against providing excessive voltage to the system. This is accomplished by comparing the input voltage to a set maximum level and detecting if voltage exceeds the maximum level. The system software detects the excess voltage and shuts down the pump, and an Incorrect Power error is indicated on the error display.

Collection Line Pulse System

[0103] The collection line pulse feature is intended to ensure that the collection line is maintained as clear as practical to minimize the amount of fluid in the line and ensure accurate delivery of the negative pressure. When the deviation from reference air flow begins to indicate an occlusion, the microprocessor motor controller can re-set the selected pressure to a higher level, which causes the pressure control circuitry to start the pump or increases pump speed. This pump activation causes a pressure pulse of transient high negative pressure output from the pump to clear the line between the patient and the collection canister. The microprocessor is programmed such that the pressure pulse is initiated prior to the illumination of an occlusion indication. The occlusion indication will not illuminate if the pressure pulse is followed by decay in the pressure reading on the pressure transducer. Decay in the pressure reading is indicative of a clearing collection line and therefore eliminates the concern of occlusion.

Safety Elements

[0104] System redundancy and therefore enhanced safety is accomplished by making the pressure control system operate independently of the monitoring and error detecting software. The pressure transducer is employed in a conventional compressor circuit to control the level of applied negative pressure. Should the compressor circuit fail, then the software has the ability to shut down the system and should the software fail, the independent pressure control will provide controlled suction to the patient.

[0105] The pump may have a charcoal filter element for controlling odors that may emanate from the patient through the pump. This element is placed on the outlet of the pump and can be readily changed and replaced. Also, desiccants can be used in conjunction with the filter to minimize moisture in the exhaust from the pump.

[0106] Positive displacement pumps typically employ check valves which make noise. The pump employs a backpressure device in the form of a leaf spring that is placed over the outlet of the pump to reduce the noise emanating from the pump.

Target Meter Alternative

[0107] There are other devices for determining the flow through the system that could be employed as leak detection devices in a wound dressing system operating with a reference airflow. These devices measure airflow directly, and thus can be used with non positive displacement pumps and wall vacuum sources as well as with positive displacement pumps. As shown in Figure 7, a target meter (120) is a reliable device for flow detection that is insensitive to changes in pressure. The target meter (120) employs an inlet orifice (122) and a target (124) typically placed in close proximity to the orifice. The target is attached to a shaft (126) and pivots on points (128) or an armature. A light torsion spring (not shown) may be used to keep the target in close proximity to the orifice. The extension of the shaft is placed outside of the flow path. As airflow enters the orifice, the target is forced away from the orifice. A proximity sensor, such as a reed switch (130) is so placed as to detect the positions of a magnet (132) on the end of the shaft extension and thus the presence or absence of flow in the circuit as well as measuring flow rate. A target meter could be placed between the waste collection canister and the pump or at the outlet of the pump, or between the waste collection canister and a stationary suction source to provide analogous flow rate information as previously described.

Flow Measurement Alternatives

[0108] Other flow detection devices that could be used alone or in conjunction with a suction source include a hot wire anemometer that determines flow as a function of the cooling of a wire in a flowing air stream, a rotameter with an optical detector that senses the position of a float, a turbine meter that rotates when flow is applied. These flow detection systems are generally insensitive to changes in pressure. A hot wire anemometer could be placed between the waste collection canister and the pump or at the inlet of the pump, or between the waste collector and or a stationary suction source. These alternative flow sensors allow the use of other styles of pumps that are not positive displacement, such as vane pumps and scroll pumps. Almost any flow

instrument could be used, including, for example, differential pressure (DP) cells that provide an indirect measure of flow rate.

[0109] When any fault condition is determined within the system, the pump will continue to run, delivering a sub-optimal level of suction, until the condition is corrected or the user powers the system off, since a sub-optimum level of suction applied to the wound is preferable to no suction at all.

Therapeutic Fluid Delivery and Reference Flow

[0110] In the embodiments described above, the reference flow for discerning between normal and abnormal operation has been ambient air supplied to the suction conduit through a vent. A reference airflow could be provided, however, in the form of a therapeutic mixture, such as oxygen enriched air, nitric oxide, heated humidified air or an aerosol containing medication droplets or particles. Such a configuration is shown in Figure 8. A source of therapeutic mixture (115), such as an oxygen regulator or a nebulizer, is connected to a conduit (117) leading to the wound. The mixture is conveyed through the conduit under or through the wound cover (152) and released into the wound packing (154) adjacent the wound contact material (156). Part of this mixture will be absorbed, but enough could be returned through the suction conduit (157) to provide a reference airflow when the flow has settled into equilibrium.

[0111] While the airflow monitor could be associated with a portable pump or in front of the appliance fitting of a suction regulator, as described above, an airflow monitor (119) could be provided between the therapeutic mixture source (115) and the wound cover (122). Since the part of the conduit beneath the cover would be contaminated in use, a detachable disposable tube (121) would be used for the section of conduit from the monitor to the wound packing. Thus, the invention can provide for the maintenance of suction therapy on a wound as well as the ability to monitor the application and removal of therapeutic substances to the wound.

[0112] Although the invention has been described and illustrated with respect to several embodiments described above, it should be understood the invention may be embodied in other forms without departing from its scope or attributes. Hence, the

scope of the invention should be derived from the claims that follow, recognizing that the claim language may literally encompass structure not specifically described.

Claims:

We claim.

1. A portable suction pump for producing negative pressure in a system for applying suction to a wound, the pump comprising;

(a) a flow rate monitoring system to monitor airflow through a conduit from a wound dressing to the pump as indicative of the level of negative pressure applied to the wound and to detect deviation from a reference flow rate, such that the deviation from the reference flow can be used as an indication of abnormal condition such as leakage of the wound dressing or occlusion in the conduit;

(b) a user operable pressure selector to enable a user to select a negative pressure pump output within a range of negative pressures; and

(c) a pressure transducer and a pressure control circuit for controlling the operation of the pump to maintain the pressure sensed by the transducer between upper and lower limits around the selected pressure, wherein the pressure control circuit can operate to control operation of the pump without input from the flow rate monitoring system.

2. A pump as in claim 1, wherein the flow rate monitoring system is controlled by a microprocessor.

3. A pump as in claim 2, wherein the pressure control circuit uses solid state electronic devices that can control the operation of the pump reference without input from the microprocessor.

4. A pump as in claim 2, further comprising:

a waste collector canister located in the conduit between the wound dressing and the pump for collecting liquids aspirated from the wound, the canister having a connection fitting; and

the pump having a docking station to support the canister and a fitting adapted to receive the connection fitting of the canister.

5. A pump as in claim 4, wherein the pump fitting includes a releasable latch.

6. A pump as in claim 4, further including a canister-fill sensor in the pump proximate to the canister docking station for detecting when the level of waste in the canister exceeds a level which indicates a filled canister condition.

7. A pump as in claim 6, wherein the canister-fill sensor is a capacitance detector.

8. A pump as in claim 6, wherein the canister-fill sensor provides to the microprocessor a signal representing a level of waste collected in the canister and the microprocessor includes an algorithm to be applied to the signal to reduce the likelihood of an erroneous indication of a full canister.

9. A pump as in claim 4, wherein the microprocessor provides signals to an annunciator for displaying a visual indication of airflow through the pump.

10. A pump as in claim 9, wherein the annunciator is a bar meter that is color coded and graduated to provide a visual indication of air flow through the pump.

11. A pump as in claim 10, wherein the annunciator indicates when the airflow through the pump is within a range of the reference air flow that is associated with normal system operation and conversely indicates when a deviation from the reference airflow is associated with an abnormal operation.

12. A pump as in claim 11, further including an error indicator display for displaying a visual warning of one or more system errors that are not associated with deviation of airflow through the pump from reference airflow.

13. A pump as in claim 12, wherein the system errors are chosen from the group consisting of: overpressure detection by the pressure transducer, pressure transducer failure, waste collection canister not attached, low battery voltage, attachment of incorrect power supply, and low operating time remaining.

14. A pump as in claim 2, further comprising the microprocessor having programming to reset the selected pressure between a higher and lower pressure level when intermittent pressure therapy is desired.

15. A pump as in claim 14, wherein the microprocessor has programming to increase the selected pressure when the deviation from reference air flow begins to indicate an occlusion to cause the pressure control circuit to start the pump or increases pump speed to cause a pressure pulse output from the pump to clear the line between the patient and the collection canister.

16. A pump as in claim 15, wherein the microprocessor is programmed such that the pressure pulse is initiated prior to the illumination of the occlusion indicator, and the occlusion indicator will not illuminate if the pressure pulse is followed by decay in the pressure reading on the pressure transducer.

17. A pump as in claim 2, wherein the microprocessor includes timing programming to record and accumulate the time units based upon inputs from other sensors.

18. A pump as in claim 17, wherein the timing programming also has a time reporting routine for providing reports of the time units that the pump is running.

19. A pump as in claim 18, wherein the reports include one or more reports chosen from the group consisting of: a record of run-time intervals, a record of the date and duration of run-time intervals, a record of total accumulated run-time, a record of accumulated compliant run time, and a record of run time remaining on a pre-set run time period.

20. A system for applying suction to a wound, comprising;

(a) a wound dressing, including a wound cover that is sealable to skin surrounding a wound;

(b) a conduit having one end operatively associated with the wound dressing to communicate suction to the wound, and an opposite end operatively associated with a suction pump;

(c) a transparent plastic waste collector canister located in the conduit between the wound and the pump for collecting liquids aspirated from the wound, the canister having right circular cylinder profile and fill-level markings in a band extending along the height of the cylinder, and having a connection fitting with an O-ring seal; and

(d) the pump being a portable pump having a docking station to support the canister, wherein the docking station has a concave profile conforming to a half section of the canister and a releasable latch fitting adapted to receive the connection fitting of the canister.

21. A system as in claim 20, further including a sensor in the pump proximate to the canister docking station for detecting when the level of waste in the canister exceeds a level which indicates a filled canister condition.

22. A system as in claim 21, wherein the sensor is a capacitance detector.

23. A system as in claim 21, further including the pump having a microprocessor, and the sensor providing to the microprocessor a signal representing a level of waste collected in the canister, and the microprocessor including an algorithm to be applied to the signal to reduce the likelihood of an erroneous indication of a full canister caused by liquid sloshing inside the canister.

24. A system as in claim 23, further including the pump having a charcoal air filter disposed between the releasable latch fitting and an air discharge port from the pump.

25. A system as in claim 23, further including the pump having a leaf spring sound damper disposed between the releasable latch fitting and an air discharge port from the pump.

26. A portable suction pump for producing negative pressure in a system for applying suction to a wound, the pump comprising;

(a) a pressure control circuit for controlling the operation of the pump to maintain the pressure between upper and lower limits around a pre-selected pressure, and;

(b) a fault detection system to detect deviations in the level of negative pressure applied to the wound; wherein the fault detection system can operate independent of the pressure control circuit.

27. A portable suction pump as in claim 26, wherein the fault detection system includes a flow rate monitoring system to monitor airflow through a conduit from a wound dressing to the pump as indicative of the level of negative pressure applied to the wound and to detect deviation from a reference flow rate, such that the deviation from the reference flow can be used as an indication of abnormal condition such as leakage of the wound dressing or occlusion in the conduit.

28. A portable suction pump as in claim 27, where the degree of abnormality is indicated by a color coded display.

29. A portable suction pump as in claim 26, further including a microprocessor programmed to increase the pump pressure when the deviation from reference air flow begins to indicate an occlusion by starting the pump or increasing pump speed to cause a pressure pulse output from the pump to clear the line between the patient and the collection canister.

30. A portable suction pump as in claim 30, wherein the pump has a visual occlusion indicator and microprocessor is programmed such that the pressure pulse is initiated prior to the illumination of the occlusion indicator, and the occlusion indicator will not illuminate if the pressure pulse is followed by decay in the pressure reading on the pressure transducer.

AMENDED CLAIMS
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CLAIMS

We claim:

1. A portable suction pump for producing negative pressure in a system for applying suction to a wound, the pump comprising;

(a) a flow rate monitoring system to measure airflow through a conduit from a wound dressing to the pump, the flow rate monitoring system detecting whether the airflow is within a reference flow rate range, below the reference flow rate range, or above the reference flow rate range;

(b) a visual indicator to indicate occlusion when the airflow is below the reference flow rate range, normal operation when the airflow is within the reference flow rate range, and leakage when the airflow is above the reference flow rate range; and

(c) a pressure control circuit for controlling the operation of the pump to maintain the pressure sensed by a pressure transducer at the pump inlet between upper and lower limits around a pressure setpoint.

2. A pump as in claim 1, wherein the flow rate monitoring system and the visual indicator are controlled by a microprocessor.

3. A pump as in claim 2, wherein the pressure control circuit uses solid state electronic devices that control the operation of the pump without input from the microprocessor.

4. A pump as in claim 2, further comprising:

a waste collector canister located in the conduit between the wound dressing and the pump for collecting liquids aspirated from the wound, the canister having a connection fitting; and

the pump having a docking station to support the canister and a fitting adapted to receive the connection fitting of the canister.

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5. A pump as in claim 4, wherein the pump fitting includes a releasable latch to mechanically restrain the canister.

6. (Canceled)

7. (Canceled)

8. A pump as in claim 4, wherein the canister-fill sensor provides to the microprocessor a signal representing a level of waste collected in the canister and the microprocessor includes an algorithm incorporating a time delay and sampling rate of the sensor signal to reduce the likelihood of an erroneous indication of a full canister.

9. A pump as in claim 1,

wherein when the airflow is above the reference flow rate range, the flow rate monitoring system further detects whether the airflow is within a first range above the reference flow rate range or within a second range above the reference flow rate range, the second range being a greater deviation than the first range from the reference flow rate; and

wherein the indicator further indicates a first level leak when the airflow is within the first range above the reference flow rate range and a second level leak when the airflow is within the second range above the reference flow rate range.

10. A pump as in claim 9, wherein the indicator comprises a bar meter that is color coded and graduated to provide a graphical visual indication of the status of airflow through the pump.

11. (Canceled)

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12. A pump as in claim 9, further including an error indicator display for displaying a visual warning of one or more system errors that are not associated with deviation of airflow through the pump from reference flow rate range.

13. A pump as in claim 12, wherein the system errors are chosen from the group consisting of: overpressure detection by the pressure transducer, pressure transducer failure, waste collection canister not attached, low battery voltage, attachment of incorrect power supply, and low operating time remaining.

14. A pump as in claim 2, the microprocessor having programming to vary the pressure setpoint on a regular time interval between a user-selected level and a second non-zero pressure level lower than the user-selected level when intermittent pressure therapy is desired.

15. A pump as in claim 14, the microprocessor further having programming to increase the pressure setpoint to a higher suction level when the airflow begins to deviate below the reference air flow causinga suction pressure pulse for the purpose of clearing the line between the patient and the collection canister.

16. A pump as in claim 15, wherein the pressure pulse is initiated prior to the visual indicator indicating occlusion, and wherein the visual indicator will not indicate occlusion if the pressure pulse is followed by decay in the pressure sensed by the pressure transducer.

17. A pump as in claim 2, wherein the microprocessor includes timing programming to record and accumulate time units of compliant run time during which the airflow is within the reference flow rate range, the compliant run time being indicative of the time during which adequate suction is delivered to the wound for medically effective treatment.

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18. A pump as in claim 17, wherein the timing programming also has a time reporting routine for providing reports of the recorded time units.

19. A pump as in claim 18, wherein the reports include a record of accumulated compliant run time.

20. A system for applying suction to a wound, comprising:

(a) a wound dressing, including a wound cover that is sealable to skin surrounding a wound; and

(b) a portable suction pump comprising:

(i) a pressure control circuit to control the pump to maintain a suction pressure setpoint at the pump inlet;

(ii) a flow rate monitor to measure airflow through a conduit, the conduit having one end operatively associated with the wound dressing to communicate suction to the wound and an opposite end operatively associated with the suction pump, the flow rate monitor detecting whether the airflow is below, approximately at, or above a reference flow rate;

(iii) a visual indicator to indicate occlusion when the measured airflow is below the reference flow rate, normal operation when the measured airflow is approximately at the reference flow rate, and leakage when the measured airflow is above the reference flow rate;

(iv) a waste collector canister located in the conduit between the wound and the pump for collecting liquids aspirated from the wound; and

(v) a docking station to support the canister, wherein the docking station has a releasable latch fitting adapted to receive the connection fitting of the canister.

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21. A system as in claim 20, further including a sensor in the pump proximate to the canister docking station for detecting when the level of waste in the canister exceeds a level which indicates a filled canister condition.

22. A system as in claim 21, wherein the sensor is a capacitance detector.

23. A system as in claim 21, further including the pump having a microprocessor, and the sensor providing to the microprocessor a signal representing a level of waste collected in the canister, and the microprocessor including an algorithm to be applied to the signal to reduce the likelihood of an erroneous indication of a full canister caused by liquid sloshing inside the canister.

24. A system as in claim 23, further including the pump having a charcoal air filter disposed between the releasable latch fitting and an air discharge port from the pump.

25. A system as in claim 23, further including the pump having a leaf spring sound damper disposed between the releasable latch fitting and an air discharge port from the pump to increase the pump backpressure.

26. A portable suction pump for producing negative pressure in a system for applying suction to a wound, the pump comprising:

(a) a pressure control circuit for controlling the operation of the pump to maintain the pump inlet pressure between upper and lower limits around a pre-selected pressure; and

(b) a fault detection system to detect deviations in the level of negative pressure applied to the wound by measuring the airflow rate through the pump and determining whether the airflow is below a reference flow rate range, within the reference

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flow rate range, or above the reference flow rate range; wherein the fault detection system operates independently from the pressure control circuit.

27. A portable suction pump as in claim 26, further comprising a graphical visual indicator to indicate the status of the airflow rate.

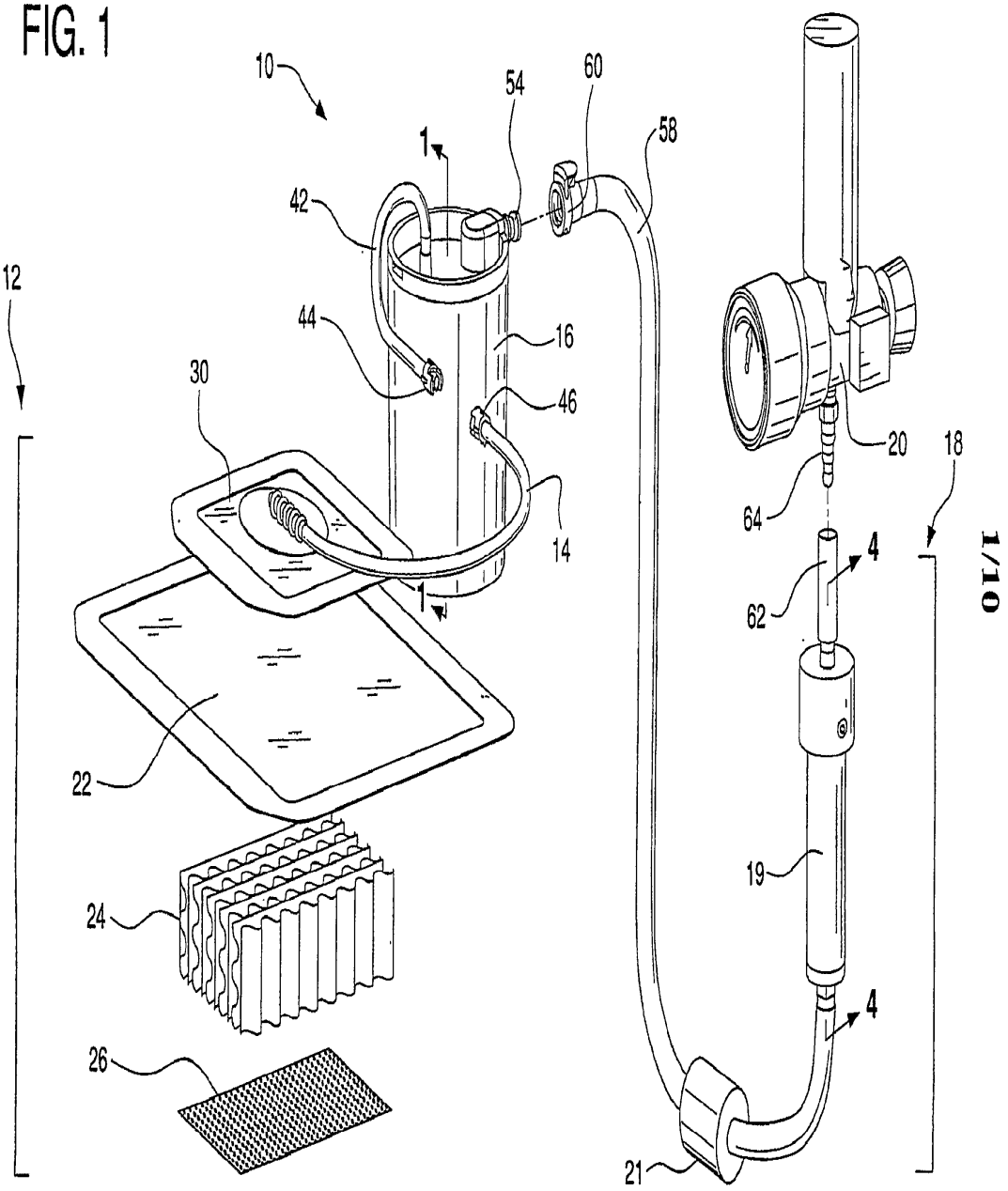
28. A portable suction pump as in claim 27, wherein the visual indicator comprises a color coded display that indicates an occlusion by a first color, normal operation by a second color, and a leak by a third color.

29. A portable suction pump as in claim 26, the pressure controller causing the pump to deliver a suction pressure greater than the pre-selected pressure when the fault detection system detects a flow rate below the reference flow rate range.

30. A portable suction pump as in claim 30, wherein the pump has a visual occlusion indicator and microprocessor is programmed such that the pressure pulse is initiated prior to the illumination of the occlusion indicator, and the occlusion indicator will not illuminate if the pressure pulse is followed by decay in the pump suction pressure.

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FIG. 1



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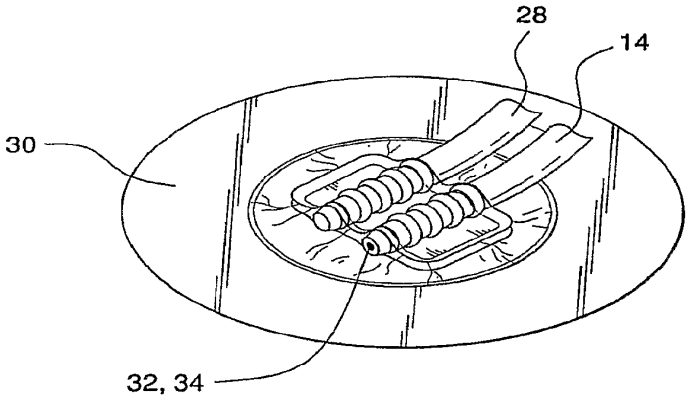


FIG. 2

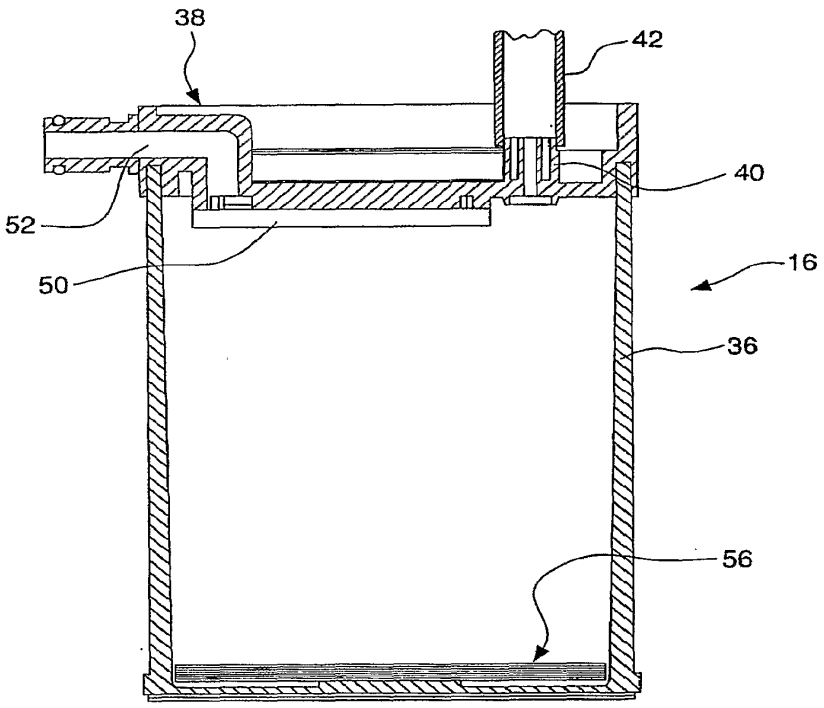


FIG. 3

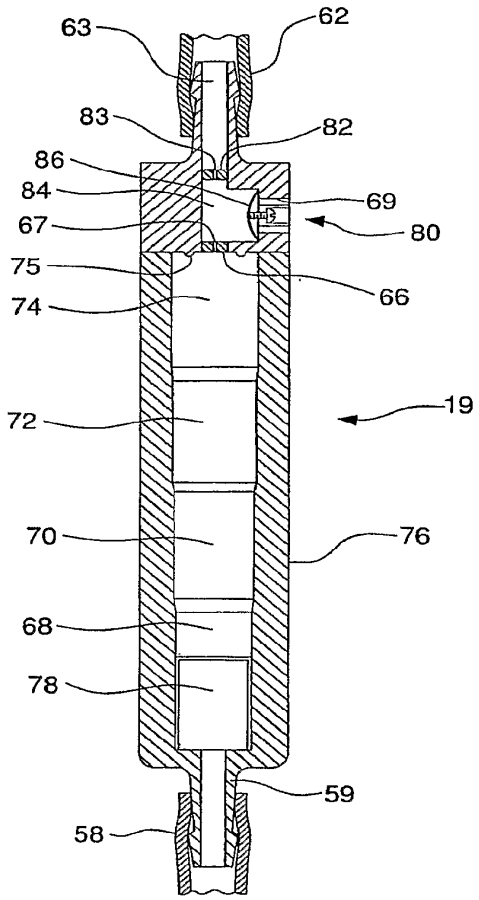


FIG. 4

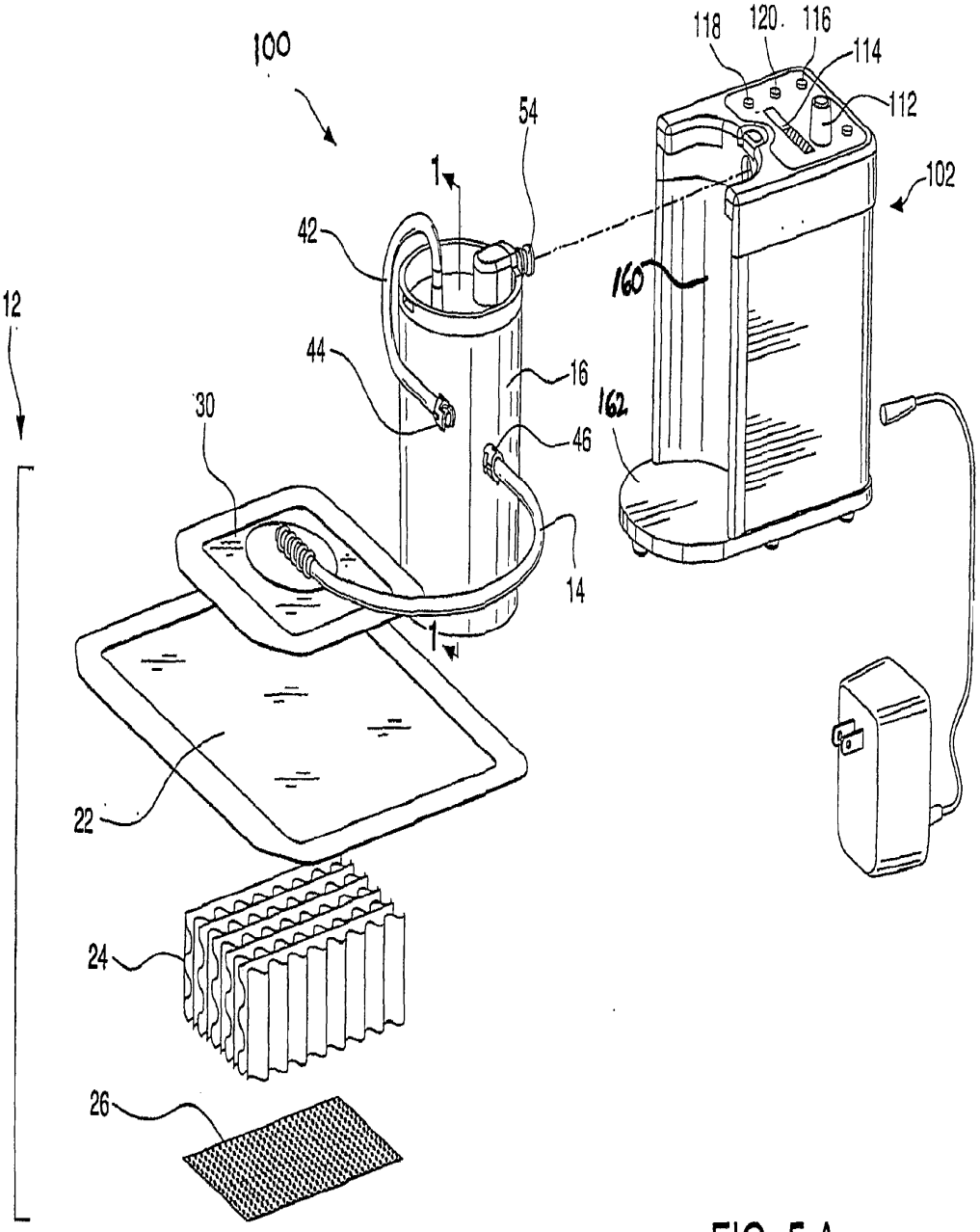

100
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FIG. 5A

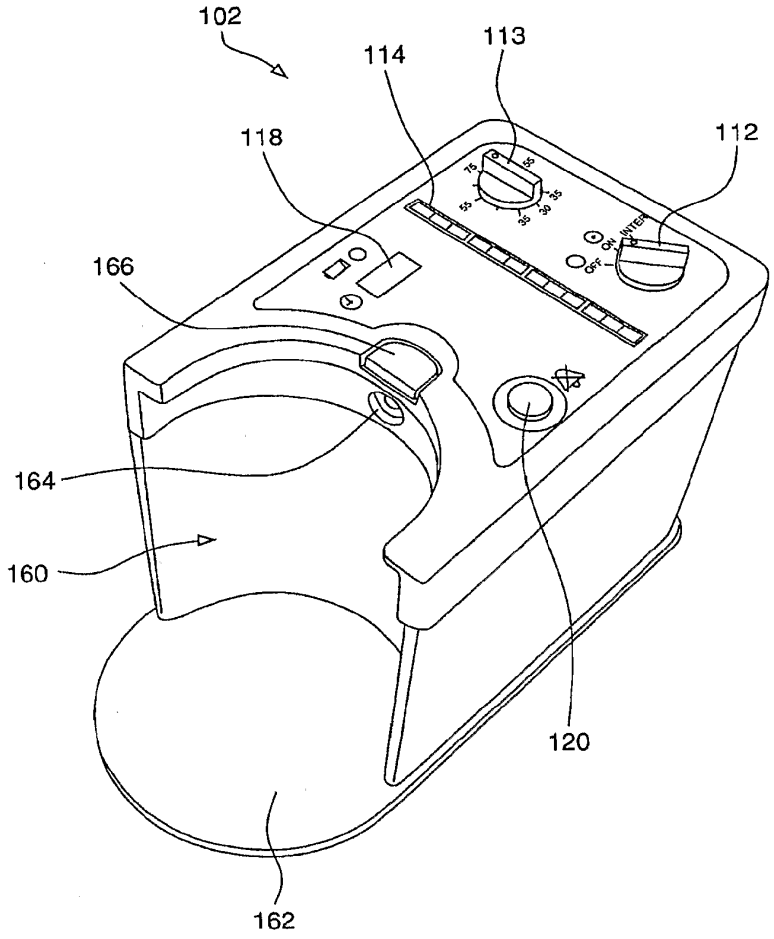


FIG. 5B

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WALL POWER
POWER CIRCUITRY BATTERY
USER INPUTS
COMPRESSOR CONTROL CIRCUIT
104
105
103
106
FAULT DETECTION CIRCUIT
108
114
ANNUNCIATOR
NORMAL OPERATION
ABNORMAL OPERATION
COMPLIANCE
LOW BATTERY
116
118
159
120

FIG. 6A

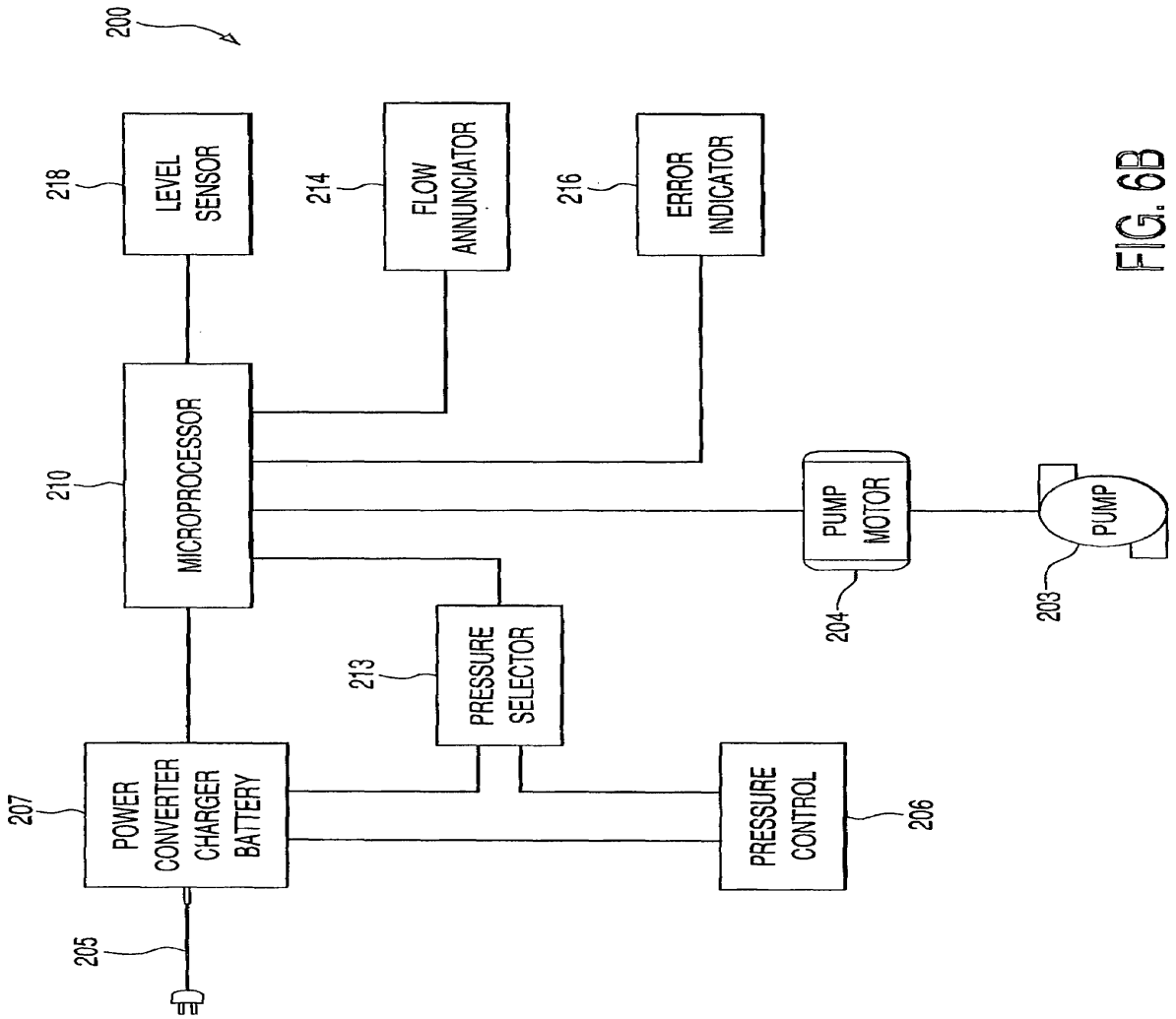


FIG. 6B

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FIG. 7

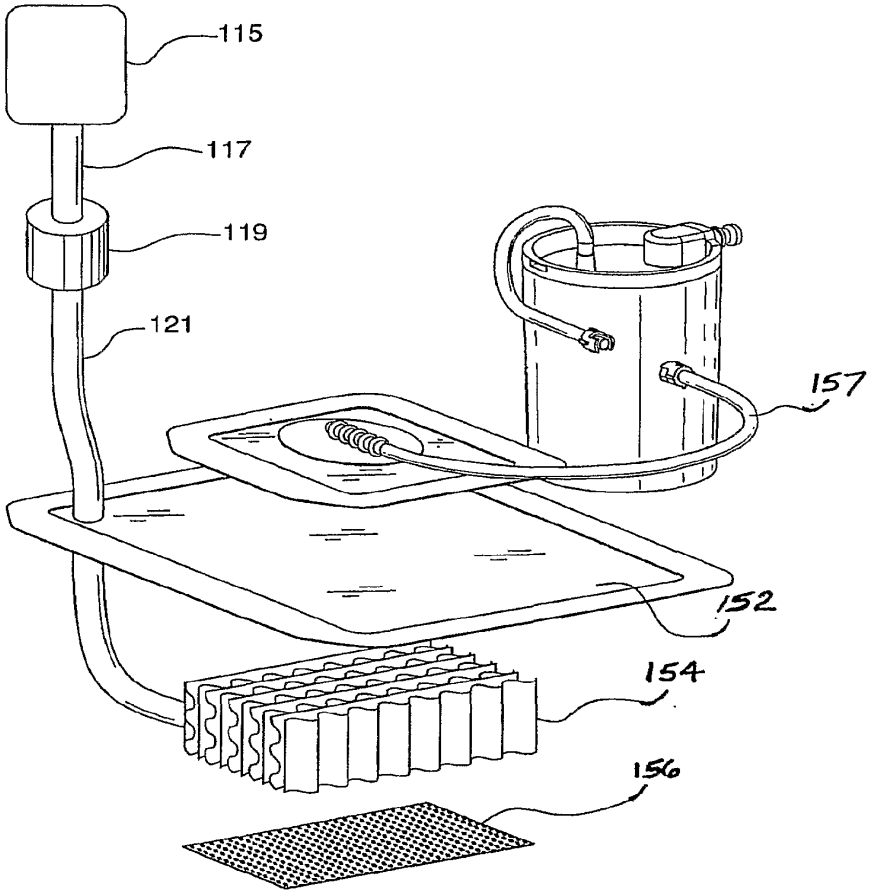


FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US07/00984

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A61M 1/00 (2007.01)
USPC - 604/313,319,326
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(8) - A61M 1/00,27/00; A61F 5/44 (2007.01)
USPC - 604/313,315,319,326,335,543

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)
PatBase

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 2006/0025727 A1 (BOEHRINGER et al) 02 February 2006 (02.02.2006) entire document	26-27, 29 --- 1-25, 28, 30
Y	US 2002/0198504 A1 (RISK JR et al) 26 December 2002 (26.12.2002) entire document	1-25, 28, 30
Y	US 2005/0215961 A1 (ROMANO et al) 29 September 2005 (29.09.2005) para 0015; figure 5	20-25
Y	US 5,047,072 A (WERTZ et al) 10 September 1991 (10.09.1991) column 4; figure 4	24
Y	US 2005/0287007 A1 (LEONHARD) 29 December 2005 (29.12.2005) para 0007; figures	25

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
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"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
31 August 2007	03 OCT 2007
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: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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(54) Title: PUMP SYSTEM FOR NEGATIVE PRESSURE WOUND THERAPY

(57) Abstract: A pump system for applying negative pressure to a wound, including a flow monitor capable of detecting a deviation from a reference airflow rate provided by a controlled leak to determine whether the system is operating normally or abnormally, and a flow status annunciator to indicate a normal operating condition or whether an abnormal condition is a leak or an occluded line in the system. The pump system further includes a pressure controller for regulating operation of a pump to control pressure in the system at a range around a user-selected setpoint. The pump system may also include a waste collector and a level sensor for detecting when the collector is full.

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PUMP SYSTEM FOR NEGATIVE PRESSURE WOUND THERAPY

Reference to Related Applications

[0001] This application is a continuation in part of U.S. Patent Application No. 11/268,212 which was filed on November 7, 2005 and which claims priority of U.S. Provisional Application No. 60/699,218, filed July 14, 2005. This application also claims priority of U.S. Provisional Application No. 60/792,187 filed April 14, 2006, and of U.S. Provisional Application No. 60/847,221, filed September 26, 2006.

Field of the Invention

[0002] The invention relates to the general field of wound treatment, and to the more specific field of devices for wound drainage and treatment with suction.

Background of the Invention

[0003] It is well known to treat wounds by applying suction under airtight wound covers. The suction can be used to aspirate wound exudate and other liquids from the wound and/or the wound packing materials, and the suction can be applied as a healing modality for its well known antiseptic and tissue regeneration effects.

[0004] A primary concern in using suction assisted wound therapy is maintaining consistent suction pressure at the wound. It is increasingly recognized that once suction wound dressings are applied, the suction should be maintained at certain levels. Loss of suction to the wound can result if leaks or blockages occur in the system.

[0005] Leaks can occur through breach of the airtight seals surrounding the wound. The earliest devices merely ran a tube under the edge of a wound cover and applied an adhesive or paste around the tube and cover to maintain an airtight seal. The other end of the tube was connectable to a waste collection reservoir and suction regulator of a hospital suction system, and the pressure selected at the regulator was assumed to be the approximate pressure communicated to the wound area under the cover. The test for leakage was visual observance of the cover contracting and the absence of whistling noise when negative pressure was applied. See, e.g., M. E. Chariker, et al, "Effective Management of Incisional and Cutaneous Fistulae with Closed Suction Wound Drainage", *Contemporary Surgery,*

vol. 34, June 1989, pages 59-63. This initial check for an airtight seal did not, however, provide any warning if the system developed a leak or if blockage occurred in the collection circuit after hours of use.

[0006] The adhesive seal around the suction tube or other tubes which run under the edge of the wound cover in these prior wound dressings is vulnerable to cracking and breaching the airtight seal, creating air leakage into the cover. Improvements have been made to suction wound therapy devices to reduce the likelihood of leakage. For example, U.S. Patent Application No. 11/181,128, filed July 14, 2005 and commonly assigned with this application, discloses a tube attachment patch to allow the suction tube to be terminated outside of the primary cover and thus reduce the risk of breaking the adhesive seal to the skin. While these newer tube attachment devices provide more seal integrity, there is still the potential for breach of the airtight seals due to external causes such as patient movement in bed.

[0007] Blockage of suction to the wound can occur for several reasons. A waste collector for wound exudate is usually positioned somewhere in the suction line between the wound and the suction source. Waste collectors incorporate shut-off mechanisms that will shut off suction to the wound when the collector is overfilled. Another potential blockage is kinking or crimping of the suction line itself. Other potential blockage causes may be debris from the wound, clotting, or drying of wound exudates (particularly where the volume of wound exudates is small relative to the reference airflow). The suction source may also be inadvertently turned off, a line may be inadvertently clamped, or the suction regulator may be misadjusted after the dressing is applied. Since suction wound dressings are intended to last for long periods without changing, usually 24 hours or greater, a leak or blockage could develop unnoticed and not be detected for a duration sufficient to negate the beneficial healing effect of suction as well as increase the risk of infection. There are currently devices to sense when a waste collector canister is filled and provide a warning signal to empty it. None of the devices, however, provides a comprehensive and reliable monitoring of system operation, nor cover the full range of fault possibilities with leakage or blockage.

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[0008] In their efforts to improve over these prior art devices, the present inventors designed a suction wound dressing monitoring system as described in U.S. Patent Application No. 11/268,212. In doing so, they consider the impracticality of locating expensive pressure transducers in any of the system components that should be single-use disposable items due to contamination by body fluids. The designers considered that the same basic system should preferably be effective in detecting and indicating both leaks and system blockage, and that the detection of leaks or blockage should preferably be effective regardless where the leak or blockage occurs in the system. They considered that the system should preferably provide clear visual indication of both normal and abnormal operation, and could usefully provide aural indication and auto-recording of abnormalities. They also considered that the suction monitoring capability should be easily convertible from use with a stationary suction system, as typically found in hospital care rooms, to use with a portable suction pump.

[0009] The inventors considered that particularly when using a stationary suction source, it would be advantageous for the monitoring system to include an air dryer or dehumidifier to remove moisture from the air suctioned from the wound. Often, the air within the system is saturated with moisture (i.e., 100% relative humidity) such that formation of water droplets due to condensation is common and likely. However, such water droplets can potentially interfere with the proper functioning of a flow monitor in the system, and may further increase the likelihood of contamination in the system. Accordingly, a dehumidifier to reduce the humidity of the air would prevent the formation of water droplets and improve the functioning of the system and help to prevent contamination.

[0010] Conversely, the inventors considered that at other times, the system is not saturated and drying of wound exudates may occur in the system conduit, causing or aggravating blockages. Therefore, in some circumstances, it may be advantageous to humidify the air being suctioned from the wound.

[0011] In addition, the inventors have considered that when using a portable pump as the suction source it would be advantageous to use an electronic flow monitor in the monitoring system to detect deviation from a reference airflow and to provide

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corresponding indicators and/or alarms. An embodiment of the electronic flow monitor could be a microprocessor that is further capable of other useful functions, such as recording and accumulating various parameters in time units and providing reports of such time records.

[0012] For safety and redundancy, the inventors considered that it would be advantageous to provide the pump with a pressure controller that is independent of the flow monitor such that the pump can control pressure to a user-selected pressure setpoint without the need to receive or rely on a signal from the flow monitor. However, the pressure controller could provide to the flow monitor data related to pump operation, such as the detection of a faulty pressure transducer or a runaway pump condition. Moreover, a signal from the flow monitor could be used to periodically or temporarily reset the pressure setpoint for the pressure controller to a second pressure lower or higher than the selected pressure, such as for intermittent operation or to create a line clearing pressure pulse if a fluid flow deviation begins to indicate a conduit occlusion.

[0013] The inventors considered that it would be useful for the flow monitor to be coupled to an annunciator on the pump unit, the annunciator including visual and/or auditory indicators, for convenient indication of status conditions related to fluid flow, such as: normal operation, low level leak, high level leak, line occlusion, and filled waste collector, as well as an indication of patient compliant use. They also considered that it would be useful for the pump to have a separate error indicator for convenient indication of error conditions that are not related to fluid flow such as overpressure detection by the pressure transducer, pressure transducer failure, waste collector canister not attached, low battery voltage, attachment of incorrect power supply, low operating time remaining, collection canister full, and pump motor not operational.

[0014] Although the waste collector could be located anywhere between the wound dressing and the vacuum source, the inventors considered that when using a portable pump vacuum source, it would be advantageous for the pump unit to provide a docking station for the waste collector, such that the collector canister can be securely attached to the pump unit. In that configuration, the pump unit may also include a level detector for detecting and indicating the fill status of the waste collector. For example, the pump unit may have a

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level sensor, such as a capacitance sensor, to detect a filled waste collector based upon indications other than pressure differential across a hydrophobic membrane in the collector. If so, the level detector signal may be moderated by an algorithm in the flow monitor to reduce the likelihood of false indications of a full collector caused by sloshing when the pump unit with the waste collector is moved.

Brief Summary of the Invention

[0015] The invention provides a wound treatment system for applying negative pressure or suction therapy to a wound. A reference airflow rate is used for monitoring system operation. The negative pressure wound treatment system includes an airtight wound dressing and a suction conduit having one end operatively associated with the wound dressing to communicate suction to the wound and an opposite end operatively connected with a source of suction. The system preferably includes a waste collector disposed in the suction conduit between the wound dressing and the source of suction for collecting fluids aspirated from the wound. The waste collector may have a residual suction capacity to draw fluid through the conduit when the suction source is shut down. The invention provides a reference airflow rate (or "controlled leak") to the suction source when the system is in operation, such that deviation from the reference airflow can be detected as an indication of a change in operation.

[0016] In a preferred embodiment of the invention, a portable pump unit is used as the suction source. The pump unit has a flow monitor to monitor airflow through the conduit from the wound dressing to the pump as indicative of the level of negative pressure applied to the wound. Deviation from the reference airflow rate can be used as an indication of an abnormal condition such as leakage of the wound dressing or occlusion in the conduit. The flow monitor may be controlled by a microprocessor or by solid state circuitry capable of also providing additional functions including indicating system status and system errors, and further tracking and reporting time histories of system operation. To compensate for variations in the pump volumetric efficiency at a selected setpoint pressure, the flow monitor can have a look-up table to correlate between measured and actual flow rates for a range of negative pressures.

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[0017] For safety and redundancy, the pump unit has a pressure transducer and a pressure controller that can operate independently from the flow monitor. The pressure controller may use solid state circuitry or may be controlled by a microprocessor or may be a simple mechanical-type device. A user-operable pressure selector enables a user to select a negative pressure pump output within a range of negative pressure setpoints. The pressure controller controls the operation of the pump to maintain the pressure sensed by the pressure transducer between upper and lower limits around the selected setpoint pressure.

[0018] The flow monitor provides signals to an annunciator including a flow indicator, preferably a bar meter that is color coded and gradated to provide a visual indication of fluid flow through the pump, and hence through the system conduit. The annunciator indicates when the air flow through the pump is within a range of the reference airflow that is associated with normal system operation, and conversely indicates when a deviation from the reference airflow is associated with an abnormal operation. Compliant time (i.e., the time during which system operation is normal) is accumulated so that the caregiver can make reasonable assessments as to the effectiveness of the therapy.

[0019] The pump also includes an error detector and an error indicator for displaying a visual warning of system errors that are not associated with a deviation of the flow rate through the pump from the reference airflow. Such errors may include overpressure detection by the pressure transducer, pressure transducer failure, waste collector canister not attached, low battery voltage, attachment of incorrect power supply, low operating time remaining, collection canister full, and pump motor not operational. The error detector and error indicator are preferably controlled by a microprocessor or by solid state circuitry, although other mechanisms may be used to control error detection and indication.

[0020] Although the pressure controller may operate independently to maintain the setpoint pressure, a therapy timing controller or the flow monitor can be used to reset the pressure setpoint. For example, the therapy timing controller may periodically reset the pressure setpoint between a higher selected pressure and a second lower pressure when intermittent pressure therapy is desired. For another example, the flow monitor may temporarily increase the setpoint pressure when a deviation from the reference airflow rate begins to indicate an occlusion, such that pressure controller causes the pump to start or to

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increase in speed, creating a vacuum pressure pulse capable of clearing the conduit between the wound dressing and the waste collector.

[0021] The pump may also include a timing subsystem to record and accumulate the time units based upon inputs from other sensors, and to provide reports of the time units that the pump is running. The reports may include a record of runtime intervals, a record of the date and duration of runtime intervals, a record of total accumulated runtime, a record of accumulated compliant runtime, and a record of runtime remaining on a preset runtime period.

[0022] Various waste collectors may be constructed for collecting wound exudates under negative pressure conditions, including, for example, a flexible bag having an internal support. A preferred waste collector is a disposable upright cylindrical transparent plastic canister with fill level markings on an outside surface. The waste collector canister may be prevented from overfilling by a hydrophobic membrane filter at the top of the canister that shuts off the air flow when the canister is full. The liquids aspirated from the wound may be turned into a gel, for ease of disposal and to prevent spilling, by a gelling agent in the disposable canister. To keep the waste in the canister level, the gelling agent is preferably provided in stacked disks. The waste collector has an inlet connector for a suction tube coming from the wound dressing, and an outlet connector for connecting to a portable pump, a dehumidifier, or a flow monitor. The outlet connector is preferably a proprietary (non-standard) connector that will not connect directly to the standard appliance fitting of a stationary suction system, to prevent the wound from being subjected to excessive suction if the conduit were to be mistakenly connecting directly to the suction system without pressure regulation.

[0023] The pump unit may provide a docking station for the waste collector, such that the collector can be securely attached to the pump. The pump unit preferably has a docking station with a profile conforming to an outer surface of the waste collector and a releasable latch fitting adapted to receive the outlet connector of the waste collector.

[0024] The pump unit may have a sensor proximate to the collector docking station for detecting the level of waste in the canister, the level sensor preferably being a capacitance

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detector. The flow monitor is capable of receiving a signal from the level sensor indicating a full collector canister, and the flow monitor may include an algorithm to be applied to the signal to reduce the likelihood of an erroneous indication of a full canister caused by liquid sloshing inside the canister.

[0025] The negative pressure wound therapy system may include a dryer or dehumidifier disposed in the conduit between the waste collector and the suction source, and preferably between the waste collector and the flow monitor, for reducing the tendency of condensate droplets to form in the system.

[0026] Some applications may necessitate adding moisture to the wound for therapeutic purposes, to maintain a clear collection conduit, or to prevent drying of wound exudates within the conduit. Moisture in the form of humidity and/or a liquid may be added to the wound via a separate conduit or directly into a calibrated vent.

[0027] The pump is preferably a portable battery-powered positive displacement pump in which flow rate is approximately proportional to pump speed, such that the flow rate of the system can be detected indirectly by measuring the motor speed or pump speed. A pressure transducer combined with an algorithm or look-up table may be used to correct motor and pump speed to flow for compressibility effect. Thus a motor speed indicator or tachometer may be the preferred monitoring instrument to provide input to the flow monitor. However, other flow rate monitoring instruments could be used, including but not limited to target meters, rotometers, turbine meters, mass flow meters, differential pressure cells, and hot wire anemometers.

[0028] The pump unit may have an activated charcoal air filter disposed at an air discharge port of the pump for reducing odors emanating from the pump. The filter may also include a desiccant. The pump may utilize a controlled backpressure to lessen the noise inherent in the operation of the check valves in a positive displacement pump, such as a leaf spring sound damper disposed over the pump outlet.

[0029] In a preferred embodiment, a calibrated vent in the suction conduit or tube near the wound dressing establishes the reference airflow by effectively providing a controlled leak rate. The calibrated vent may include, but is not limited to, an orifice, a needle valve,

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or a sintered porous element. Preferably the vent is located in the tube just outside of the wound cover. The vent may be an aperture in the tube sealed with a porous material having specific flow rate characteristics. The reference airflow rate may be in a preferred range of 50-300 cubic centimeters per minute (cc/min). Higher flows such as 1000 cc/min are possible, but practical limitations on the capacity of the suction source and line losses inherent in small diameter tubing, as well as the ability to detect the typical magnitude of a leak in the wound dressing, suggest that is preferable to use a flow below 1000 cc/min.

[0030] By locating the vent in the conduit close to the wound dressing, the reference airflow also serves to purge the conduit of fluids and other wound exudates. The purging effect minimizes the likelihood of reflux of contaminated fluid back into the wound, and the risk of infection attendant to such reflux. Since the fluid does not reside in the conduit for an extended time, the purge effect also reduces the likelihood of blood clotting in the line. The pump system may also provide a pressure pulse generator to clear the collection line of serial slugs of fluid if a reduction in flow is detected.

[0031] Although the term "airflow" is used herein for consistency, it should be apparent that it is not limited to the composition of ambient air. It is common in medical settings to alter the composition of airflow to a wound, such as by increased oxygen or therapeutic aerosols or other beneficial medications. It is also understood that in addition to air, the suction source will draw wound exudates and bodily fluids through the suction conduit. The flow of any of these mixed gases or aerosol suspensions, any of which may include wound exudates, should be considered airflow for purpose of this description. The term "fluid flow" is sometimes used interchangeably with "airflow" to more generally indicate a flow of air, possibly including liquid exudates, in the system.

[0032] These and other advantages and aspects of the invention will become apparent upon reading the detailed description and drawings that follow.

Brief Description of the Drawings

[0033] Figure 1 is an exploded prospective view of an embodiment of a system for negative pressure wound therapy.

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[0034] Figure 2 is a perspective view of a suction tube attachment device showing an air vent in the suction tube to create a controlled reference airflow rate to the suction source.

[0035] Figure 3 is a cross-sectional view of a waste collector of Figure 1, taken through section 3-3, showing the shutoff membrane and gel agents.

[0036] Figure 4 is a cross-sectional view of a flow monitor of Figure 1, taken through section 4-4.

[0037] Figure 5A is an enlarged perspective view of a preferred embodiment of a system for negative pressure wound therapy using a portable suction pump.

[0038] Figure 5B is a prospective view of the top front of a portable pump unit that may be used in the system of Figure 5A.

[0039] Figure 6 is a control schematic diagram corresponding to an embodiment of a pump unit.

[0040] Figure 7 is a schematic view of an alternate flow monitor using a target meter.

[0041] Figure 8 is an exploded perspective view of a portion of an alternate embodiment of a system for negative pressure wound therapy including therapeutic fluid delivery to the wound.

[0042] Figure 9 is an exploded perspective view of an embodiment of a system for negative pressure wound therapy including a dehumidifier.

[0043] Figure 10 is a schematic cross-sectional view of the dehumidifier of the system of Figure 9.

[0044] Figure 11A is a front view of the dehumidifier.

[0045] Figure 11B is a cross-sectional view of the dehumidifier of Figure 11A taken through section 11B-11B.

[0046] Figure 11C is a top view of the dehumidifier of Figure 11A.

Detailed Description of the Invention

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[0047] Figure 1 shows an embodiment of a system (10) for negative pressure (suction) wound therapy. The system (10) includes a wound dressing (12), a flow monitoring device (18), and a suction regulator (20) for regulating vacuum from a stationary suction source. Figure 5A shows an alternate embodiment of a system (10) for negative pressure wound therapy where a portable suction pump unit (102) is used in place of the suction regulator (20) and the stationary suction source.

Wound Dressing

[0048] The wound dressing (12) typically includes a primary wound cover (22) and wound packing material (24), and may include a special wound contact layer (26). A suction tube (14) communicates with the wound packing material (24) by running under the edge of the wound cover (22), by extending through the wound cover (22), or by terminating outside of the wound cover (22) and communicating with a nozzle or slot in the wound cover (22). Various wound dressings (12) may be used comprising a wide variety of wound covers (22), wound packing materials (24), optional wound contact layers (26), and means for communicating the suction tube (14) with the packing material (24). The wound dressing (12) shown in the drawings and described herein uses presently preferred components, but the invention is generally applicable to any wound dressing subsystem (12) and is not intended to be limited to any particular components.

[0049] The primary wound cover (22) is preferably an airtight wound cover that is vapor permeable. The term "airtight" means that the material is sufficiently occlusive to resist airflow through the cover to maintain suction under the cover while suction is being applied. It is preferred to use a thin film transparent commercial bandage, such as medical grade Tegaderm™ manufactured by 3M, that is impermeable to liquids but permeable to water vapor and oxygen. There are many other thin-film commercial bandages that have similar properties. Highly impermeable materials could also be used. However, since it is beneficial in wound therapy to allow water vapor to escape and oxygen to migrate into the wound, semi-permeable covers of film material such as Tegaderm™ are preferred. In some instances, the primary wound cover (22) could also be a rigid or semi-rigid enclosure placed over the wound. The primary wound cover (22) is generally sealed to the skin surrounding the wound with an adhesive (not shown) incorporated in the wound cover (22), and gap filler paste (not shown) may be used where needed.

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[0050] Before the wound cover (22) is applied, the wound is generally packed with a wound packing (24). The wound packing (24) may include simple gauze or foam pads or other materials commercially sold as wound packings. The presently preferred wound packing (24) is polyester fibers or comparable resilient fibers in a corrugated layer pattern configured to form a resilient compressible structure, as described in U.S. Patent Application No. 10/981,119, commonly assigned with this application.

[0051] The wound packing (24) may also be attached to a wound contact layer (26). The presently preferred wound contact layer (26) has a special construction that provides a wound contact surface, with depressions formed into the surface, to work in conjunction with the suction to encourage more rapid tissue regeneration, as described in U.S. Patent Application No. 10/982,346, commonly assigned with this application. The contact surface is configured such that voids formed by the depressions remain above the wound surface in the presence of moisture, compressive forces, and suction, thus encouraging local tissue deflection.

[0052] The wound dressing (12) has a suction tube (14) attached to the wound cover (22), as shown in Figure 2. The wound dressing (12) may have one or more other tubes (28) for medication supply or wound flushing. The tube(s) (14, 28) may pass through the wound cover (22) or under the edge thereof, but a presently preferred arrangement uses a tube attachment patch (30) to allow the suction tube (14) to be terminated outside of the primary wound cover (12) to reduce the risk of breaking the adhesive seal to the skin, as described in U.S. Patent Application No. 11/181,128, commonly assigned with this application.

[0053] A distal end of the suction tube (14) in this embodiment has a vent hole (32) that is sealed with a porous plug (34). The porous plug (34) provides a controlled leak, or reference airflow, for flow monitoring devices described hereafter, including the flow monitoring device (18). The vent (32, 34) should be located outside the primary wound cover (22) but is preferably located as close to the wound cover (22) as possible. An advantage of having the suction tube (14) connected to the tube attachment patch (30) outside of the wound cover (22) is that controlled leak reference airflow may be used without drying out the wound, as might occur if the suction tube (14) passed under the

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wound cover (22) near the wound. While it is feasible to route the suction tube (14) under the wound cover (22) while the controlled leak vent (32, 34) is outside of the actual wound space, it would be important to avoid excessive drying of the wound tissue due to the introduced airflow. In addition, it is possible with the type of tube attachment patch (30) shown in Figure 2 and described in U.S. Patent Application No. 11/181,128 to provide the porous vent (32, 34) as an aperture in the patch (30).

[0054] A wound therapist applies the wound dressing (12) to the patient and attaches the system to suction. The therapist remedies leaks in the dressing by smoothing out creases or wrinkles in the wound cover and addressing gaps due to folds in the patient's anatomy. It has at times been useful to address specific areas of difficult anatomy by using a gap filling paste, as is common in ostomy care, such as moldable strip paste from Coloplast. The airflow monitoring instruments described hereafter facilitate the initial dressing set up process by providing active feedback to the therapist on the integrity of the seal around the wound dressing and tubes.

Waste Collector

[0055] Since a primary function of negative pressure or suction therapy is to drain liquids from the wound, a system (10) normally includes a waste collector (16) for collecting fluids aspirated from the wound. As shown in the embodiment of Figure 1, the air passage through the collector or container (16) forms a part of a suction conduit between the wound and the suction source. As shown in cross-section in Figure 3, the collector (16) may be an upright canister (36) with a right circular cylinder profile. The canister (36) is preferably made of a transparent or semi-transparent material such as plastic that enables viewing of the level of liquid contained therein. The canister (36) may have fill level markings in a band extending vertically along the outside of the canister. The markings may be on a paper label adhesively glued to the canister (36) or may be marked, embossed, or etched directly onto the canister (36). The fill level markings may also be created on the pump unit (102). The canister (36) is preferably a disposable, single-use device. The canister (36) has a lid (38) incorporating a fitting (40) passing through the lid (38) for the attachment of an inlet tube (42). The inlet tube (42) may be an end of the suction tube (14) leading from the wound or a short section of tube that terminates with a connector fitting (44) for mating with a matching connector fitting (46) on the end of the suction tube (14).

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[0056] Airflow and any blood or other fluid aspirated from the wound passes through the fitting (40) in the lid and into the canister (36). The liquid is retained in the canister (36), while the air rises and is drawn through a hydrophobic membrane (50) sealed to the inside of the lid (38). The upstream side of the membrane (50) interfaces with the interior of the canister (36) and the downstream side of the membrane (50) interfaces with an outlet air channel (52). The membrane (50) acts as a bacteria filter. Because the membrane (50) is hydrophobic, it can be used as a shut off mechanism to prevent the canister (36) from overflowing and to prevent contamination from flowing out of the collector (16) toward the suction source. If the canister (36) is allowed to fill high enough for the contents to contact the membrane (50), the membrane (50) occludes and blocks airflow from passing through the collector (16). Blockage of the membrane (50) prevents suctioning more waste from the wound, and as described hereafter, the blockage of reference airflow is detected as an indication of an abnormal operating condition. In other embodiments described hereafter, the level of waste product in the canister (36) can be detected by a capacitance sensor or other detector on the pump unit (102), and the detection used to prevent overfill of the canister (36).

[0057] The lid (38) defines the outlet air channel (52) extending from the downstream side of the membrane (50) to a connector (54) for connecting the collector (16) to the portable pump unit (102) or to a tube (58) running to a stationary wall suction system. However, the connector (54) is preferably a proprietary (non-standard) connector that will not connect directly to the standard appliance fitting of a stationary suction system, in order to prevent the collector (16) from being mistakenly connected directly to the suction system without the flow monitoring device (18) and pressure release features described hereafter; connecting the collector (16) directly to a suction system could risk applying too great a suction to the wound. The mating receptacle in the portable pump configuration described hereafter is configured to receive the proprietary connector. The connector (54) includes a sealing element such as an o-ring seal. This arrangement provides that a fresh o-ring is preferably used with each disposable collector (16), as contrasted with other pump connectors where the sealing element is in the pump and will ultimately wear out and cause the system to fail because of leakage.

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[0058] Preferably the liquid waste sucked from the wound is turned into a gel for ease of disposal and to prevent spilling or splashing. Although the gelling agent could be provided in porous bags, it is preferred to use disks (56) of laminated fiber sheets containing a gelling agent, such as provided by Gelok International. The disks (56) are cut to fit inside of the canister (36) and are stacked on top of each other. The stacked disks (56) cause the liquid to turn to a level surface gel in the canister (36).

Controlled Reference Airflow

[0059] Some prior art negative pressure wound therapy systems do not monitor the flow of fluid (air and effluents) being suctioned from the wound dressing (12), while others do so less than optimally by trying to directly sense pressures at the wound. In contrast, the system described herein uses a reference airflow, as may be provided by a calibrated orifice, valve, or filter or by the controlled leak air vent (32, 34), to indicate whether the system is in normal or abnormal operation. The porous plug (34) is calibrated to provide a known reference airflow or controlled leak. A flow rate at or near the reference airflow indicates normal operation, while a flow rate that deviates appreciably (either higher or lower) from the reference airflow indicates abnormal operation. A flow rate higher than the reference airflow indicates leakage, while a flow rate lower than the reference airflow indicates blockage or occlusion or a full waste collector (16).

[0060] The reference airflow rate from the calibrated vent (32, 34) is used for monitoring fluid flow and thus for assessing overall system operation. The controlled leak rate should be low to maintain a proper suction at the wound site and a moist healing environment. Preferably the reference airflow is in the range of 50-300 cubic centimeters per minute (cc/min). More preferably, the reference airflow is approximately 100 cc/min. A flow of 50-300 cc/min is low enough to minimize drying and does not significantly alter the suction applied at the wound. Additionally, the flow is low enough to minimize the use of battery power where a portable pump is used as the suction source. A flow of this magnitude is readily obtained by providing a vent hole (32) in the suction tube that is sealed sterile with a porous plug (34). A suitable seal material for the porous plug (34) is a porous plastic manufactured by Porex from sintered high density polyethylene. Such porous materials are routinely employed to admit air into medical fluid lines at a sufficient flow rate to maintain an efficient sterile filtration barrier against microbes.

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[0061] An advantage of providing the reference airflow is that the tube (14) between the wound packing (12) and the waste collector (16) remains relatively clear of fluids since the continuous flow will encourage rapid movement of a plug of fluid from the wound packing (13) to the collector (16). Liquid aspirated from a wound may contain sufficient blood materials that it could be prone to clotting in a collection tube, lumen, or conduit if allowed to sit in a stationary condition for a period of time, and a clot in a collection line would result in loss of suction being applied to the wound. The reference airflow eliminates this potential problem. Typically, it is expected that the tube (14) could be cleared by the reference airflow in less than ten seconds, depending on the distance.

[0062] The range of flows suitable for a reference airflow rate are bounded at the lower end by the permeability of the wound cover (22) and at the upper end by the suction capacity of the suction source or pump. When the wound cover (22) is a semi-permeable material, there will be a natural low level background airflow from air molecules passing through the wound cover (22). This permeation airflow could serve as the reference airflow if the flow monitoring instrument were very sensitive. However, the permeation flow is usually too low and too erratic to be a good reference. Variations in the area of the cover and the possibility of the cover being obstructed by drapes and fluid from the wound can cause the permeation flow to be erratic. Thus, a calibrated vent, such as the porous vent (32, 34) is a preferred reference because it provides a larger and more stable flow rate that masks variations in the permeation flow. For example, Tegaderm® bandage will allow a diffusion of water on the order of 800 grams per square meter per day, which correlates to a flow rate of about 0.5 cc/min over a square meter. Typical wound cover area would be less than a tenth of a square meter, so in approximate terms, the semi-permeable material contributes 0.05 cc/min, or less than 0.1% of a reference airflow of 50 cc/min. Thus, any variation in the background permeation flow is masked by the larger reference airflow.

Flow Monitoring Device for Use with Stationary Suction Source

[0063] At least two embodiments of the flow monitoring device (18) may be used: a gradated mechanical indicating float meter (19) as shown in detail in Figure 4 and an electronic non-numerical indicator (232) as shown in detail in Figure 5B. The float meter (19) would preferably be used in conjunction with a stationary suction source (20) while the non-numerical indicator (232) would preferably be used with a portable pump unit (102)

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having a flow monitor (206). Other types of flow monitoring and indicating devices, such as target meters or hot wire anemometers could also be used.

[0064] In the system (10) of Figure 1, the flow monitoring device (18) comprises a float flow meter (19) that includes a suction conduit (58) interconnecting between the waste collector (16) and the stationary suction source. One end of the conduit (58) includes a mating connector (60) adapted to receive a proprietary connector (54) on the collector (16). The flow monitoring device (18) is preferably located at the opposed end of the conduit (58) from the collector (16) and attaches directly to an appliance connection fitting (64) associated with the adjustable suction regulator (20) as commonly found on stationary suction systems.

[0065] The flow meter (19) provides a visual indication of the flow rate through the system (10). During normal operation, once the flow rate has stabilized following an initial application of suction, the flow meter (19) provides a visual indication corresponding to the reference airflow rate. As long as the flow meter (19) maintains a visual indication of reference airflow rate, the system (10) is operating normally and is free of leaks or blockage, and hence the wound dressing (12) is subject to an acceptable level of suction. When the flow meter (19) provides a visual indication of a deviation to a higher air flow, the system (10) is operating abnormally because a higher air flow indicates leakage. The flow meter (19) may include one or more gradations of flow rates higher than reference airflow to indicate the magnitude of a leak. When the flow meter (19) provides a visual indication of a deviation to a lower air flow, the system (10) is operating abnormally because a lower air flow indicates occlusion or blockage in the system between the wound dressing (12) and the flow meter (19).

[0066] Figure 4 shows a cross-sectional view of the float meter (19). A standard connector (63) on the top end of the indicator attaches to a short conduit (62) connectable to the appliance fitting (64) of the adjustable suction regulator (20). At the bottom end of the flow indicator a standard connector (59) is attached to the suction conduit (58).

[0067] As shown in Figure 4, the flow meter (19) includes a clear tube (76) gradated into progressive sections (68, 70, 72, 74), each section having a different inside diameter.

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The narrowest section (68) is disposed at the bottom of the flow meter (19) and each successive section (70, 72, 74) moving upwards through the tube (76) is progressively larger in diameter. The gradated markings (not shown) indicate an airflow rate corresponding to various vertical locations along the tube (76). A float (78) is disposed within the tube (76) and serves as an indicator of flow rate through the flow meter (19) and thus through the system (10). Each section (68, 70, 72, 74) indicates a range of flow rates at which the float (78) will reside in that respective section.

[0068] The mass of the float (78) works in cooperation with the density (i.e., the pressure) of the flowing fluid and the clearance between the outside of the float (78) and the inside wall of the tube (76). It is typical to use suction in the range of 25-200 mm Hg in wound therapy. Accordingly, the flow monitoring device (18) incorporates a first flow restrictor (66) having an orifice (67) that is calibrated to restrict suction airflow to be less than 20 liters per minute when a controlled level of suction of 100 mm Hg is applied by the suction regulator (20). The density of the float (78) and the inside dimensions of the tube (76) are preferably calibrated for flow at a pressure of 100 mm Hg, although the indicated flow rates at different pressures are readily calculated. Additionally, the response of the float (78) to various flow rates and pressures through the same tube (76) can be changed by changing the density of the float (78).

[0069] The float (78) responds to airflow rate and will rise to a level where the dynamic forces are in equilibrium, balancing the upward force of the flow against the downward force of gravity. The gradated tube (76) is in contrast to typical flow indicators for other applications which have tubes with continuously increasing inner diameters. In those types of meters, slight changes in flow rate cause the float to chatter up and down around a height indicative of the flow rate. The use of discrete sections of uniform diameters, but increasing in progression, as the four sections (68, 70, 72, 74) in the tube (76) of the preferred flow indicator (19), reduces the chatter and causes the float (78) to move upward in stages. These stages are selected for discrete flows that provide easily interpreted reference information regarding the suction applied to the wound.

[0070] When there is no air flow, or an air flow rate less than the reference airflow, the float (78) rests at the bottom of the tube (76) in the lowest section (68). The lowest section

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(68) is preferably color-coded blue to indicate a blockage condition, such as a full collector (16) or an occlusion in the fluid path such as a blocked vacuum tube (14). When the flow into the flow meter (19) corresponds to the reference airflow, preferably between about 50 cc/min to about 300 cc/min, the clearance between the float (78) and the bottom section (68) of the tube (76) is such that the flow around the float (78) will cause the float (78) to rise into the next progressively wider section (70). Thus, normal reference airflow will cause the float (78) to rise a discernable amount into the next section (70). The section (70) of normal operation is color-coded green, indicating an acceptable condition.

[0071] When flow through the system (10) increases beyond an acceptable level due to a leak in the wound dressing (12), the clearance around the float in the normal position (70) may no longer be adequate to allow the float (70) to remain in this position, and the increased flow will lift the float (78) to a higher section in the tube (76) where the internal diameter is stepped up. The gradated labeling on the outside of the tube (76) provides a visual indication of the extent of the leak condition. The tube (76) includes at least one section (72) of increased diameter to indicate a leak condition and preferably includes two sections (72, 74) to indicate two levels of leak conditions, wherein the lower level leak condition section (72) is disposed immediately above the normal operation section (70), the section (72) having a larger diameter than the section (70), and the higher level leak condition section (74) is disposed immediately above the lower level leak condition section (72), the section (74) having a larger diameter than the section (72). The lower level leak condition section (72) is color-coded yellow, indicating a minor leak requiring repair. The higher level leak condition section (74) is color-coded red, indicating a major leak requiring immediate repair. The stepped up diameters require a significant change in flow before the float (78) will jump from one position to a higher one, thus eliminating the jumpiness that would be encountered with a continuous taper inner diameter as common in flow meters for other applications. Further, the stepped diameter sections (68, 70, 72, 74) reduce user interpretation, thus enhancing ease of use and safety. Additional stepped up diameter sections may be provided to indicate higher leak conditions or finer gradations in the level of leak.

[0072] The flow monitoring device (18) also incorporates a safety valve (80) that limits the maximum suction that may be applied through the system (10), guarding against the

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accidental application of excessively high levels of suction to the wound. It is typical to use suction in the range of 25-200 mm Hg for wound drainage and therapy. Accordingly, the suction limiting feature may preferably be set to limit the suction to no more than approximately 200 mm Hg. The safety valve (80) includes a suction pressure relief chamber (84) formed between the first flow restrictor (66) and a second flow restrictor (82) having an orifice (83). The orifice (83) is preferably about the same size as the orifice (67) in the first flow restrictor (66) to prevent the flow capability of the suction regulator (20) or the pump (103) from overpowering the relief capability of the safety valve (80). A resilient valve mechanism (86) in the relief chamber (84) serves as a release against the application of high levels of suction. The valve mechanism (86) is spring loaded to a predetermined suction setting, such as 200 mm Hg. If the suction pressure in the relief chamber (84) exceeds the predetermined setting, the valve mechanism (86) will open and allow vent air to be drawn into the system (10) from a relief port (69) to prevent excess suction from being applied to the patient's wound.

[0073] Protrusions (75) may be provided on the top underside of the interior of the float meter (19) adjacent to the first flow restriction orifice (67) to prevent the float (78) from completely blocking the orifice entry (67) to the pressure relief chamber (84), thus allowing the continued flow of fluid through the system (10) even if a major leak occurs. This allows continued communication of some suction to the wound even at high airflow rates. Alternatively, the protrusions could be located on the top surface of the float (78).

[0074] While the flow monitoring device (18) using a float meter (19) has been described in the context of a hospital wall suction system, it can also be used with suction pumps such as the portable pump unit (102), as is described below.

Dehumidifier

[0075] The negative pressure wound therapy system may include an air filter/dryer or dehumidifier (21) to protect the downstream components, and in particular the suction source, from potential contamination in the form of particulate matter, aerosols, and humidity. The dehumidifier (21) is preferably disposed in a system conduit between the waste collector (16) and the flow meter (19). Figure 9 illustrates an embodiment of the

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negative pressure wound therapy system including the air dryer or dehumidifier (21) conveniently integrated into a mount for the waste collector (16).

[0076] The dehumidifier (21) may include a particle filter (68) for removing airborne dust as may be encountered when the flow meter (19) is disconnected from the collector (16) for periodic changeover. Humid air exits the waste collector (16) after any liquids have been substantially removed from the wound exudates, but sufficient moisture may remain in the air such that the relative humidity is at or near 100%. At such a high relative humidity, any drop in temperature or pressure may cause condensate to drop out of the air. Accordingly, the dehumidifier (21) removes moisture from the humid air that could otherwise effect the calibration of the flow meter (19). A desiccant or other means of humidity control can be placed in the dehumidifier (21), as required.

[0077] The dehumidifier (21) may also operate by removing moisture from the humid air exiting the waste collector (16) by causing the humid air to pass across one side of a membrane (260) that is impermeable to air but is permeable to water vapor, and concomitantly causing ambient room air, at a relative humidity level much less than 100%, to pass across an opposite side of the membrane (260). Figure 10 schematically illustrates operation of the dehumidifier (21). Due to the properties of the air-impermeable, water vapor-permeable membrane (260), moisture from the higher humidity system air is transferred to the lower humidity room air. The lowered humidity of the system air exiting the dehumidifier (21), at a relative humidity below 100%, prevents the formation of condensation droplets in downstream components such as the flow meter (19) or the suction source.

[0078] The dryer or dehumidifier (21) includes two separate airflow paths (A) and (B) separated by the generally air-impermeable, water vapor-permeable membrane (260). Because the flow meter (19) is a precise device that indicates the quantity of system fluid flow, the dehumidifier is constructed so that the membrane (260) is air tight and air-impermeable such that air from the room side (B) cannot mix with air on the system side (A). At the same time, the membrane (260) should have good water transport properties to remove water from the system air. The membrane (260) is ideally a Dupont Nafion membrane with known water vapor transport properties, although other similar or

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equivalent membrane materials may be used. System air (a), having high humidity, flows from the waste collector (16) into a dehumidifier inlet (262). System air (a) flows across a surface (264) of the membrane (260) and then out a dehumidifier outlet (266) after passing through a particulate filter (268). System air then flows to the flow meter (19). Ambient air (b) enters the a dehumidifier inlet (270) and flows across a surface (272) of the membrane (260). Ambient air (b) exits a dehumidifier outlet (274) and is drawn into the suction source via a conduit (61).

[0079] System air (a) exiting the waste collector (16) is generally very humid (up to 100% relative humidity) due to the liquids that are being collected from the wound. Ambient air (b) is generally less humid; most hospital environments may have relative humidity in the 50% range, depending of course upon the prevailing outside temperature and weather conditions. The resultant moisture gradient across the membrane (260) causes water vapor (c) to be transported through the membrane (260) from the system air flowpath (A) to the ambient air flowpath (B), thus removing water vapor from the system air. As a result, the relative humidity of the system air is reduced to less than 100%, preventing condensation droplets from forming in the flow meter (19) and minimizing the chance that the flow meter (19) will malfunction due to water droplet formation.

[0080] Figures 11A, 11B, and 11C illustrate the dehumidifier (21) in more detail. In a preferred embodiment, as shown, the dehumidifier (21) also serves as a mount for the waste collector (16). The system air inlet (262) serves to accept the outlet connection fitting (54) of the collector (16), which may be secured to the dehumidifier (21) by a spring-loaded latch (280). A set of extending nubs (282) support the membrane (260) inside the dehumidifier (21) and provide flow channels for the system air to pass on the (A) side and position the membrane (260) to provide a flow passage for ambient air to pass on the (B) side.

Portable Pump Unit for Use as the Suction Source

[0081] The system (10) described herein may be used in conjunction with a stationary suction source as provided in most medical buildings, or may be used in conjunction with electrical power pumps to provide suction for wound therapy. However stationary suction sources, and even electric power pumps that may be moved from outlet to outlet, have

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limited portability. Accordingly, an embodiment of the system (100) provides a truly portable battery powered pump unit (102). In a portable pump embodiment (100) of the suction system, as shown in Figure 5A, the suction source is a portable suction pump unit (102) instead of a stationary suction source. Additionally, the use of an electronically controlled suction pump, for example by using a pump unit controller (200) as illustrated in Figure 6, provides the ability to incorporate further advanced control, monitoring, and alerting features into the negative pressure wound treatment system (100).

[0082] The pump unit (102) connects to the same patient circuit, including the wound dressing (12) and the waste collector (16), as described in regard to the negative pressure wound therapy system (10). The pump unit (102) preferably operates on low voltage DC power and has an onboard power source (222) such as a 12 volt battery. The pump unit (102) may also be adapted to be powered through a power cord from a standard AC power socket using a suitable AC/DC power converter (220), which may be combined with a battery charger to recharge the battery (222) during use. The pump unit (102) can receive DC power either from the converter (220), when plugged in, or from the battery (222), when used un-plugged.

[0083] The pump unit (102) is configured to produce controlled levels negative pressure. As shown in detail in Figure 5B and schematically in Figure 6, the pump unit (102) has a Mode Selector switch (204) to select between On, Off, and Intermittent control modes, and a pressure selector dial (206). A prescribed pressure setting is selected using the pressure selector dial (206). The available range of setpoints is preferably between about 30 mm Hg and 100 mm Hg, and is more preferably between about 30 mm Hg and 75 mm Hg. In one embodiment, discrete pressure setpoints of 20, 30, 40, 50, 60, 70, and 75 mm Hg are offered. Additionally, setpoint choices of 100, 125, 150, 175, and 200 mm Hg may be offered. The pump power may be placed into a On state, an Off state, or an Intermittent state using the Mode Selector switch (204). In the Off state, the pump unit (102) will not operate. In the On state, the pump unit (102) will operate based on the selected pressure setpoint. In the Intermittent state, the pump unit (102) will operate cyclically between a higher pressure setpoint selected by the selector dial (206) and a prescribed lower pressure setpoint, as will described in greater detail below.

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[0084] Referring to the schematic diagram of Figure 6, the portable pump unit (102) preferably includes a positive displacement air pump (103), a variable speed DC motor (104), a tachometer (212), a pressure transducer (208), a level sensor (214), a pump unit controller (200), and an annunciator (230). The pump unit controller (200) comprises a pressure controller (202), a flow monitor (210), an error detector (216), a therapy timing controller (224), and a timing subsystem (218). The annunciator (230) comprises a flow status indicator (232), an error indicator (234), a compliance indicator (236), and an audible alarm (238). The flow status indicator (232) is capable of indicating normal or abnormal flow conditions, and the error indicator (234) is capable of indicating other status, fault, or alarm conditions. In the depicted embodiment, the pump unit controller (200) may include one or more of a microprocessor, solid state electronic device, electromechanical devices, mechanical or pneumatic devices, or other equivalent control elements. If a microprocessor is used for performing functions including pressure control, flow monitoring, error detection, and status and alarm annunciation, a suitable processor is a Microchip 16 Series, part number 16F688, it being understood that other similar programmable logic devices could be used.

Vacuum Pressure Control

[0085] Referring to the embodiment schematically illustrated Figure 6, the pump unit controller (200) includes a vacuum or suction pressure controller (202) for maintaining a negative pressure in the wound. The pressure controller (202) is independent of the flow monitor (210), regardless whether the pressure controller (202) and/or flow monitor (210) use a microprocessor or an alternative means such as solid state control circuit. The pressure controller (202) regulates operation of the pump unit (102) based on a signal from a pressure transducer (208) that monitors the negative pressure produced at the suction side of pump (103). The pressure transducer (208) is preferably located in a conduit between the waste collector (16) and the pump (103). Alternatively, a low-cost pressure transducer (208) may be placed directly within the wound cavity and the signal from the transducer (208) conducted via wires to the pressure controller (202).

[0086] The pressure controller (202) receives a setpoint from the user positionable pressure selector dial (206). In an embodiment, the pressure controller (202) includes a solid state logic device and the selector dial (206) changes the resistance of a variable

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resistor to produce an electrical signal representing the selected pressure setpoint. The pressure controller (202) receives the selected pressure setting as an input, and sets an upper limit and a lower limit in a range above and below the selected pressure setpoint. The range between upper limit and the lower limit is selected to provide a reasonably stable suction level while minimizing the on-off cycling of the pump motor (104). A range of approximately 10 mm Hg is preferred to optimize patient comfort and to minimize noise. The pressure controller (202) will function to maintain the pressure sensed by the transducer (208) between the two limits defining the range about the pressure setpoint. Such control circuits are commonly employed in industrial applications as well as in hospital central suction systems.

[0087] When the pump unit (102) is initially turned On by the Mode Selector switch (204), the pressure controller (202) causes the pump motor (104) to start running, driving the positive displacement pump (103). The pump motor (104) continues to run until the pressure transducer (208) detects pressure at or exceeding the upper vacuum limit of the pressure range set by the pressure controller (202) in response to the pressure setpoint on the selector dial (206). The pressure controller (202) continually compares the pressure signal from the pressure transducer (208) to the setpoint limits bounding the range about the operator-selected pressure setpoint. Once the upper control limit is reached, the pressure controller (202) turns off the pump (103). Normal reference airflow in the system (10) will cause pressure at the transducer (208) to decay towards the lower limit of the control range. Once the detected pressure has reached the lower control limit, the pressure controller (202) will turn the pump (103) back on, and the process is repeated cyclically. Thus, the pressure transducer (208) senses the current negative pressure in the system (10) and the pressure controller (202) turns the pump (103) on and off accordingly to maintain negative pressures that are within the selected desired range.

[0088] The motor (104) is preferably a variable speed DC brushless motor. However other styles of DC motors are acceptable, as well as AC motors that can be equipped with variable outputs. When a variable speed motor is used, the speed is controlled via a pulse width modulation (PWM) feature of the pressure controller (202). Variable speed control allows for efficient use of DC power. When a constant speed motor is employed, the on/off time is varied such that the motor is cycled on and off at the most efficient operating speed.

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[0089] The positive displacement pump (103) preferably uses a diaphragm style pump with inlet and outlet check valves. The diaphragm pump crankshaft is operationally connected to the shaft of the variable speed motor (104). Other positive displacement pumps may be used, such as peristaltic, piston, lobe, syringe or rocking piston pumps.

[0090] The tachometer (212) can be used to indicate the rotational speed of the motor (104) or pump shaft. Within the generic term "tachometer" various forms of motor or pump speed sensors may be used. For example, Hall sensors and encoders are commonly employed on DC brushless motors to indicate motor RPM (revolutions per minute). It is also possible to sense back-EMF in brush versions of DC motors to determine motor shaft rotation speed. In an AC motor driven pump, an oscillating bar with a magnet mounted to an end may be excited by an AC coil, thus driving a diaphragm, and a count of the oscillations delivered by the coil can be used as an indicator of pump speed. Regardless the type of tachometer, such a tachometer can be used to infer or determine the flow rate of fluid displaced by the pump unit (102). Because there is a direct correlation between the speed of the positive displacement pump (103) and the actual volume of fluid displaced at a given operating pressure, a measurement of the pump speed combined with a measurement of pressure at inlet of the pump (103), as measured by the pressure transducer (208), can be used to calculate flow rate. Thus, measuring the speed of the positive displacement pump (103) is a surrogate for direct airflow measurement.

[0091] As described above, the pressure controller (202) will cause the pump (103) to run as necessary to maintain the level of vacuum pressure sensed by the transducer (208) within the desired range of the selected negative pressure setpoint. The pressure controller (202) may modulate the on-time duration of the pump (103) to maintain the negative pressure in the desired range. The on-time duration of the pump (103) can be increased or decreased as required by the pump controller (202) to achieve greater or lesser suction, respectively. When a variable speed motor (104) is used, the motor speed can also be adjusted by pulse width modulation, separately from or in combination with the on-time duration, to operate the motor (104) at an efficient speed. Accordingly, the pressure controller (202) can adjust either or both the on-time duration and pump speed to maintain the negative pressure in the range established by the selected pressure setpoint. Thus, the pressure controller (202) operates based on sensed pressure, and not on sensed air flow.

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This allows the pressure controller (202) to function independently from the mechanisms for detecting, monitoring, and displaying the status of flow in the system (10) that are embodied in the flow monitor (210) and the error detector (216).

Flow Monitor and Flow Status Indicator

[0092] As shown in Figure 6, the flow monitor (210) can be adapted to monitor pump activity (i.e., on-time duration and speed) as an indicator of the flow rate of air through the negative pressure wound therapy system (10). The flow monitor (210) is coupled with the flow status indicator (232) in the annunciator (230) to provide audible and visual indication of the status of operation of the system (10) by comparing the fluid flow rate to the reference airflow rate and annunciating indicators of normal or abnormal operation. The flow monitor (210) functions independently from the pressure controller (202). Preferably the flow monitor (210) receives input from sensors that detect pump motor activity, determines a flow rate based upon the motor activity sensor inputs, identifies deviations from the reference airflow rate, and provides a signal to the flow status indicator (232) identifying either a normal state of operation or one of at least two abnormal states of operation.

[0093] The flow monitor (210) is capable of performing flow monitoring functions necessary to compare the fluid flow rate to the reference airflow rate and determine normal or abnormal operational status. To monitor flow rate, revolutions of the motor (104) or positive displacement pump (103) are counted over a period of time, and the count, along with the pressure transducer (208) measurement, is provided as input to the flow monitor (210). An algorithm in the flow monitor (210) correlates the rate of motor revolutions (i.e., count per time), adjusted for pressure, to determine the volumetric flow rate of air passing through the pump (103). The flow monitor (210) compares the calculated flow rate to the known reference airflow rate to determine fault conditions.

[0094] The flow rate detected by the flow monitor (210) is converted into a signal that illuminates a display bar on the flow status indicator (232). A flow rate that is less than the reference airflow rate is displayed as abnormal operation on the flow status indicator (232), indicating an occlusion in the negative pressure system (10). Most commonly, a low flow rate condition is caused by a full waste collector (16), but other causes may include a

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pinched or blocked tube (14) or blockage of the controlled vent (32, 34). A user can distinguish between a full collector (16) condition and a blocked tube (14) condition by viewing the flow status indicator (232) in combination with the error indicator (234) to determine if the level sensor (214) has indicated a full collector (16), as will be discussed below. A flow rate that is comparable to the reference airflow rate is displayed as normal operation on the flow status indicator (232), indicating an acceptable flow rate. For purposes of determining normal operation, a range is established about the reference airflow rate, such that a flow within that range is deemed normal and a deviation upward or downward outside that range is deemed abnormal. A flow rate that is higher than the reference airflow rate is displayed as abnormal operation on the flow status indicator (232), indicating a leak in the negative pressure system (10). Preferably, two levels of leak condition are indicated, a low level leak and a high level leak, to provide a gradated alert to the caregiver indicating the urgency with which the seal of the wound cover (22) must be addressed.

[0095] Referring particularly to Figure 5B, a preferred flow status indicator (232) for use in conjunction with the flow monitor (210) comprises a color-coded bar display having four differently colored regions to indicate four different status conditions. In particular, the bar display preferably includes regions to indicate low flow, normal reference airflow, low-level leak, and high-level leak. In the depicted embodiment, the bar display includes a region of blue LEDs (240) to indicate a flow rate lower than the reference airflow rate range, a region of green LEDs (242) to indicate a flow rate within the reference airflow rate range, a region of yellow LEDs (244) to indicate a flow rate at a low level above the reference airflow rate range, and a region of red LEDs (246) to indicate a flow rate at a high level above the reference airflow rate range. It is readily apparent that a wide variety of non-numerical indicators may be used to display three, four, or more status conditions, including but not limited to an arrow translating up and down a linear scale with demarcated regions, an arrow rotating around a circular scale with demarcated regions, a series of lights such that the number of illuminated lights indicates the status condition, one or more blinking lights such that the frequency of blinking indicates the status condition, and illuminated symbols representative of said flow ranges. Additionally, an audible indicator or alarm (238) may be used to indicate an abnormal operating condition, separately from or

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in combination with a visual indicator. For example, a beeping or continuous tone may be used to indicate abnormal operation, with a different tone pitch, tone duration, or beeping frequency used to indicate each different abnormal condition, while a normal condition would be indicated by the absence of an alarm tone. An alarm silencer or alarm acknowledge button (239) is provided to silence the audible alarm (238) until the abnormal condition has been corrected.

[0096] The gradation of ranges of the flow status indicator (232) may be linear or non-linear and may be adjusted depending on the particular conditions in which the negative pressure wound treatment system is applied. In one embodiment, the reference airflow rate range is preferably defined as a ±10% band about the reference airflow rate, a low flow rate is defined as less than 90% of the reference airflow rate, a low-level leak flow rate is preferably defined as between 110% and 125% of the reference airflow rate, and a high-level leak flow rate is preferably defined as greater than 125% of the reference airflow rate. In another embodiment, where tighter flow rate control is desirable and possible, the reference airflow rate range is defined as a ±5% band about the reference airflow rate, a low flow rate is defined as less than 95% of the reference airflow rate, a low-level leak flow rate is defined as between 105% and 115% of the reference airflow rate, and a high-level leak flow rate is defined as greater than 115% of the reference airflow rate. Tighter flow control may be required, for example, where the wound being treated is smaller such that a low-level leak would be more likely to compromise the vacuum being applied to the wound dressing (12). In yet another embodiment, where less tight flow rate control is desirable and possible, the reference airflow rate range is defined as a ±15% band about the reference airflow rate, a low flow rate is defined as less than 85% of the reference airflow rate, a low-level leak flow rate is defined as between 115% and 130% of the reference airflow rate, and a high-level leak flow rate is defined as greater than 130% of the reference airflow rate. Less tight flow control may be desired, for example, where the wound being treated is larger such that a low-level leak would be less likely to compromise the vacuum being applied to the wound dressing (12). It is readily appreciated that each of the status condition ranges may be adjusted independently to optimize the characteristics of the flow status indicator (232) for a particular application.

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[0097] In the embodiment shown in Figure 6, when the pump (103) is independently turned on and off by the pressure controller (202) to maintain setpoint pressure, the pressure sensed by the transducer (208) will oscillate between the upper control limit and the lower control limit. The period of this oscillation is related to the reference airflow rate, the normal rate of permeation through the wound cover (22), and any leakage in the wound dressing (12). Because the reference airflow rate and the normal rate of permeation through the wound cover (22) should be relatively constant, the higher the leakage in the wound dressing (12), the shorter the period of oscillation will be. Thus, the time intervals between the pump turning on or off can be detected by the flow monitor (210) and used as a rough measure of fluid flow rate through the system.

[0098] Where the pump motor speed is also controlled via a pulse width modulation (PWM) control to make the use of DC power more efficient, the flow monitor (210) can also correlate the on/off intervals with pulse rate to determine flow rate. In normal operation, the positive displacement pump (103) will output a given number of pulses for each revolution of the pump. The pulse signals can be supplied as an input to the flow monitor (210). These pulse signals can be used to determine the number of pumping strokes the pump (103) has performed over a period of time, and combined with the known volume of each pump stroke, can provide very close approximation of the pumped volume per time (i.e., volumetric flow rate). The flow monitor (210) continually counts the pulses being output from the pump (103), combined with the pressure measured by the transducer (208), to calculate the volume of air flow. When taken in combination with a time measurement, pump pulses per unit time represent the airflow rate. In a presently preferred embodiment, the time measurement is based on the off cycles of the pump motor: from the time the pump (103) turns off, until the next time the pump turns off, the flow monitor (210) counts the pulses and divides by the time between each motor off condition to determine the flow rate through the negative pressure system (10).

[0099] As discussed previously, abnormal conditions in the suction therapy system are detected as deviations from the expected flow (i.e., the reference airflow rate) through the system. In yet another embodiment, the reference airflow rate range is calibrated to a tolerance within approximately 50-100 cc/min higher or lower than the airflow produced by the calibrated vent (32, 34) on the end of the suction tube (14). A flow rate within this

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range is denoted as normal operation. If the flow monitor (210) determines that the pump is not running at a normal duration to maintain the setpoint negative pressure, the flow status indicator (232) of the annunciator (230) provides a visual indicator and audible alarm to alert the caregiver. For a PWM controlled pump (103), an increase in the on-time of the motor (104) is proportional to increase of air flow in the system (10). The flow monitor (210) uses an algorithm to correct the air flow rate based on the actual pressure in the system (10). Any leak in the wound dressing (12) will require more flow to maintain the require suction level, such that the leak will be compensated for by an increase in the on-time of the pump (103). When the on-time increases to equate to a flow of approximately 3 liters per minute, the flow status indicator (232) provides a visual indicator to alert the caregiver to inspect and repair the leak in the wound dressing (12). If the caregiver is able to correct the leak, the visual indicator will turn off. If the fault condition is not addressed (by resealing the wound site) within a prescribed timeframe, preferably about one minute, the flow monitor (210) will cause the flow status indicator (232) to activate the audible alarm (238). Nevertheless, even when a leak condition exists, the pump (103) will continue to run as directed by the pressure controller (202), delivering some level of suction until the condition is corrected or the pump unit (102) is turned off.

[0100] The flow monitor (210) can also sense the loss or drop of flow below the reference airflow range. A drop in flow may be caused by various fault conditions, including the tubing (14) to the waste collector (16) becoming clogged with wound exudates, the tubing (14) being crimped shut by bending or squeezing, the waste collector (16) becoming full, and the filter (50) becoming occluded. These conditions also result in the loss of negative pressure at the wound. When a reduction in flow below the reference airflow range is sensed, and the flow status indicator (232) activates a visual indicator to alert the caregiver of a blockage condition.

Intermittent Suction Regime

[0101] It is sometimes desirable to provide suction in an intermittent fashion to benefit the healing process. Prior processes involve allowing the negative pressure system to vent to atmospheric pressure for a period of time to allow for reperfusion of tissue. However, allowing the system to completely vent to atmosphere results in a complete loss of suction on the wound dressing (12) and the resultant loss of any benefit that suction could play in

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maintaining an airtight seal around the wound. The present invention solves this problem by varying the suction between two distinct levels: a first higher vacuum level selected by the pressure selector dial (206) and a second reduced vacuum level of 20-25 mm Hg. The selected higher level is used to apply the beneficial therapeutic effects of suction. The second reduced level is below capillary bed pressure, so reperfusion of tissues will occur in this lower setting, while the wound dressing (12) maintains at least some level of suction to help keep the dressing seals in place and to maintain the reference airflow, thus preventing reflux (by ensuring continuous one-way flow) and clotting in the system tubing. With this type of intermittent pump operation, the reference airflow should be selected such that it is maintained even at the reduced level, or else any annunciator (230) outputs associated with low airflow should be disarmed by the flow monitor (210) during reduced suction intervals as well as the ramp-up and ramp-down intervals.

[0102] To effect intermittent suction, the pressure controller (202) can cyclically reset the pressure setpoint between the selected pressure and the second reduced pressure. When the Mode Selector switch (204) is set to Intermittent mode, the programming in the therapy timing controller (224) uses a time interval for switching the pressure setpoint provided to the pressure controller (202) back and forth between the selected pressure and the second reduced pressure. In an embodiment, to enter the reduced pressure cycle of the intermittent mode, the therapy timing controller (224) activates a transistor that adds a resistance to the pressure controller circuitry, effectively resetting the pressure setpoint to the second reduced pressure.

Waste Collector Docking Station and Fill Indicator

[0103] As illustrated in the embodiment of Figures 5A and 5B, the pump unit (102) includes a docking station (160) for supporting the waste collector (16) which collects liquids aspirated from the wound. The waste collector (16) is disposed in the system between the wound dressing (12) and the pump (103). The waste collector (16) preferably comprises a transparent plastic canister (36) having right circular cylinder profile and fill-level markings along the height of the cylinder. The inlet connection (40) of the waste collector (16) is interconnected to the tubing (14) extending from the wound dressing (12), and the outlet fitting (54) of the waste collector (16) has an o-ring seal. The portable pump docking station (160) supports the waste collector (16). The docking station (160) has a

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concave profile conforming to an external section of the collector (16) and a generally circular base (162) to support the waste collector (16) when docked. The pump unit (102) includes a releasable latch fitting (164) in an upper wall of the docking station (160) that is adapted to receive the connection fitting (54) of the waste collector (16). The fitting (54) is inserted into the latch fitting (164) and latched in place. The waste collector (16) may be released and removed from the docking station (160) by depressing the release button (166) to release the fitting (54) from the latch fitting (164).

[0104] The pump unit (102) provides the ability to detect a filled waste collector (16) without the need to measure differential pressures across the membrane (50), as is required in existing systems. Differential pressure measurement can be problematic because partially clogged membranes can lead to erroneous readings and interpretations. In a preferred embodiment, the pump unit (102) employs positive level detection as a direct indication of the fill status of the waste collector (16). In particular, the pump unit (102) may include a level sensor (214) proximate to the docking station (160) for detecting when the level of waste in the collector (16) equals or exceeds a level which indicates a filled collector condition. The level sensor (214) can take many forms, such as capacitance, optical, ultrasonic, contact wire, float, and others similar sensing mechanisms. A preferred level sensor (214) is a capacitance detector such as a Model# BC 10-QF5 sensor manufactured by Turck, Inc. The level sensor (214) can be positioned in the pump unit (102) at a desired level proximate to the docking station (160) and has the ability to read a change in capacitance as caused by the presence of an ionic fluid. A capacitance level sensor is capable of sensing capacitance through surfaces such as the wall of the canister (36), so no elements of the sensor (214) are exposed to the wound exudate. Capacitance type detection is also tolerant to conditions such as mist or fogging.

[0105] Direct level detection by the level sensor (214) also allows differentiation between a filled waste collector (16) and an occluded condition such as blockage in the tubing (14) that may result in a deviation from the reference airflow range. Based on a signal provided by the direct level sensor (214) to the error detector (216), the error indicator (234) of the annunciator (230) can illuminate a visual indicator and/or an audible alarm distinct from the flow status indicator (232) used to display normal or abnormal flow

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conditions. Providing the clinician a distinction between filled waste collector condition and an occlusion makes the system easier to use and less prone to user error.

[0106] Since the patients may be mobile or need to be transported, there is a potential that agitation and motion can create artifact where fluid may splash and cause a false positive indication of a filled waste collector (16) and subsequently trigger an unwarranted signal or alarm. An algorithm may be used by the error detector (216) to minimize the likelihood of this false indication. The algorithm incorporates a time delay and a sampling rate. For example, a sampling rate of 10 milliseconds and a delay of 4 seconds has been shown to be an effective set of parameters for reducing false full indications due to the motion artifact. Preferably the algorithm is programmed into the error detector (216) of the pump unit controller (200).

Timing Subsystem and Compliance Monitor

[0107] The pump unit controller (200) may have a timing subsystem (218) for recording and accumulating time units corresponding to periods of time when the pump (103) is running. Preferably the timing subsystem (218) records and accumulates the pump operating time units based upon inputs from various sensors. For example, the timing can be started and stopped by signals from the Mode Selector switch (204), or signals that can detect when the pump is running from the tachometer (212) or other sensor. The timing subsystem (218) preferably is capable of providing time reports of the time history of operation of the pump (103). The time reports may include a record of runtime intervals, a record of the date and duration of runtime intervals, a record of total accumulated runtime, a record of accumulated compliant runtime, and a record of runtime remaining on a preset runtime period.

[0108] The timing subsystem (218) of the pump unit controller (200) may include an onboard compliance monitor as part of the timing function. A compliance indicator (236) alerts the caregiver to deviations from the normal application of suction to the wound over time and is a useful adjunct to the application of negative pressure wound therapy. The compliance monitor may compute the number of hours that suction has been within ±5 mm Hg of a pressure setpoint. Medical experience has shown that suction is preferably applied for 22 of any 24 continuous hours to be effective. The compliance indicator (236) can show

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and record in numerous ways the number or percentage of compliant hours of suction therapy for a given therapy period.

[0109] The timing subsystem (218) may be connected to alarms which indicate abnormal operating conditions due to leak or occlusion. The timing subsystem (218) may also be used to indicate time remaining until scheduled maintenance or cleaning, or to indicate time used or remaining on a billing plan where the payments for usage are based upon time units either on return or pre-paid in advance. When the pump unit (102) is sold or leased in this manner, the timing subsystem (218) has the ability to record and accumulate time units corresponding to periods of time when the pump (103) is running and for providing reports of runtime, including compliant runtime when the wound treatment system (10) is operating normally.

Error Detection and Display

[0110] The pump unit (102) may include warning or caution lights indicating pump operating parameters, or errors other than those that are detected by deviations from the reference airflow rate. Numerous combinations of visual and audible indicators may be sued to display such status, fault, or error conditions. In the schematic embodiment of Figure 6, a visual error indicator (234), separate from the flow status indicator (232), provides additional trouble shooting assistance. Various errors may be detected based on sensor signals received by the error detector (216). The error indicator (234) preferably includes an alphanumeric error display, and the error detector (216) can cause the error display to provide indications that correlate to at least following errors: overpressure (i.e., suction exceeding a prescribed limit), missing waste collector, pressure transducer failure, low battery, low operating time remaining, and attachment of incorrect power supply.

[0111] Overpressure is the condition where a runaway pump (103) could cause potentially high negative pressures to be delivered to the patient. The error detector (216) continually polls the output of the pressure transducer (208) and compares it to a stored maximum allowable pressure. If the maximum allowable pressure is exceeded for a predetermined time period, then the pressure controller (202) causes the pump (103) to stop operating and an overpressure error is indicated on the error indicator (234).

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[0112] A missing waste collector condition occurs if the pump (103) is activated without a waste collector (16) installed in the docking station (160) and connected to the latch fitting (164). This condition can occur at startup or during operation, and is detected by the error detector (216) as flow through the system exceeding a certain level without a corresponding minimal increase in pressure. The threshold flow rate for detecting a missing waste collector is typically set to be greater than the increased flow that would be expected from a wound dressing that was removed or compromised. When so detected, a missing waste collector error is indicated on the error indicator (234).

[0113] A pressure transducer failure can take two forms: an excessively high reading indicative of high vacuum or an open circuit (no pressure reading). A high vacuum reading would be interpreted as an overpressure condition, as described above, and would result in a fail-safe deactivation of the pump (103). An open circuit failure appears as zero pressure output, so if the error detector (216) detects air flow but zero pressure, a transducer failure error is indicated on the error indicator (234).

[0114] A low battery charge is determined by the error detector (216) polling the battery output voltage when the pump unit (102) is not plugged into an external electrical power source. When a threshold low voltage level is crossed, a low battery error is indicated on the error indicator (234).

[0115] Low operating time remaining is associated with the timing feature of the pump unit controller (200) when it is used to indicate time remaining until scheduled maintenance service or time remaining on a pre-paid rental plan. The timing system (218) constantly accumulates runtime and time remaining to a target time, such as the number of pre-paid hours. The error detector (216) can be set to a time remaining threshold, such that when the accumulated time indicates that time remaining has dropped below the threshold, a low time error is indicated on the error indicator (234).

[0116] Incorrect power supply detection is to guard against providing excessive voltage to the system. This is accomplished by comparing the input voltage to a set maximum level and detecting if voltage exceeds the maximum level. The error detector (216) detects the

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excess voltage and shuts down the pump (103), and an incorrect power error is indicated on the error indicator (234).

Collection Line Pulse System

[0117] The pump unit (102) may include a collection line pulse feature to ensure that the collection line is maintained as clear as practical to minimize the amount of fluid in the line and ensure accurate delivery of the negative pressure. When the flow monitor (210) begins to detect a deviation from the reference airflow rate so as to indicate an occlusion, the pressure controller (202) can temporarily reset the pressure setpoint temporarily to a pressure higher than the selected pressure, causing the pump (103) to start or to increase in speed. This pump activation or acceleration causes a pressure pulse of transient high negative pressure in the system conduit to clear the tube (14) between the wound dressing (12) and the waste collector (16). The pressure pulse is initiated prior to the illumination of an occlusion indication on the flow status indicator (232). An occlusion indication will not occur if the pressure pulse is followed by decay in the pressure measured by the pressure transducer (208), because a decay in pressure would indicate a cleared collection line and the absence of an occlusion. Once the flow monitor (210) again detects a normal fluid flow rate, the pressure controller (202) resets the pressure setpoint to the selected pressure.

Additional Features

[0118] In order to enhance safety of the negative pressure wound therapy system (10), the pressure controller (202) can operate independently of the flow monitor (210) and error detector (216) in the pump unit controller (200). This provides a measure of system redundancy in the event that one or the other function should fail. Should the pressure controller (202) fail, the flow monitor (210) and/or error detector (216) are capable of shutting down the pump unit (102), and should the flow monitor (210) fail, the pressure controller (202) will continue to provide suction to the wound.

[0119] The pump unit (102) may have a charcoal filter element (not shown) for controlling odors that may emanate from the patient through the pump (103). This element is placed on the outlet of the pump (103) and can be readily changed and replaced. Also, desiccants can be used in conjunction with the filter to minimize moisture in the exhaust from the pump (103).

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[0120] Positive displacement pumps typically employ check valves which make noise. Accordingly, the pump unit (102) may employ a backpressure device in the form of a leaf spring (not shown) that is placed over the outlet of the pump (103) to reduce the noise emanating from the pump check valves.

Flow Measurement Alternatives

[0121] There are other devices for determining the flow through the system that could be employed as leak detection devices in a wound dressing system operating with a reference airflow. These devices measure flow directly, and thus can be used with non-positive displacement pumps and wall vacuum sources as well as with positive displacement pumps. As shown in Figure 7, a target meter (120) is a reliable device for flow detection that is insensitive to changes in pressure. The target meter (120) employs an inlet orifice (122) and a target (124) typically placed in close proximity to the orifice. The target is attached to a shaft (126) and pivots on points (128) or an armature. A light torsion spring (not shown) may be used to keep the target in close proximity to the orifice. The extension of the shaft is placed outside of the flow path. As flow enters the orifice, the target is forced away from the orifice. A proximity sensor, such as a reed switch (130) is so placed as to detect the positions of a magnet (132) on the end of the shaft extension and thus the presence or absence of flow in the circuit as well as measuring flow rate. A target meter could be placed between the waste collection canister and the pump or at the outlet of the pump, or between the waste collection canister and a stationary suction source to provide analogous flow rate information as previously described.

[0122] Other flow detection devices that could be used alone or in conjunction with a suction source include a hot wire anemometer that determines flow as a function of the cooling of a wire in a flowing air stream, a rotameter with an optical detector that senses the position of a float, a turbine meter that rotates when flow is applied. These flow detection systems are generally insensitive to changes in pressure. A hot wire anemometer could be placed between the waste collector (16) and the pump (103) or at the inlet of the pump (103), or between the waste collector (16) and or a stationary suction source. These alternative flow sensors allow the use of other styles of pumps that are not positive displacement, such as vane pumps and scroll pumps. Almost any flow instrument could be

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used, including, for example, differential pressure (DP) cells that provide an indirect measure of flow rate.

[0123] When any fault condition is determined within the system, the pump (103) will continue to run, delivering a sub-optimal level of suction, until the condition is corrected or the user powers the system off, since a sub-optimum level of suction applied to the wound is preferable to no suction at all.

Therapeutic Fluid Delivery and Reference Airflow

[0124] In the embodiments described above, the reference airflow for discerning between normal and abnormal operation has been ambient air supplied to the suction conduit through a vent. A reference airflow could be provided, however, in the form of a therapeutic mixture, such as oxygen enriched air, nitric oxide, heated humidified air or an aerosol containing medication droplets or particles. Such a configuration is shown in Figure 8. A source of therapeutic mixture (150), such as an oxygen regulator or a nebulizer, is connected to a conduit (152) leading to the wound. The mixture is conveyed through the conduit under or through the wound cover (122) and released into the wound packing (124) adjacent the wound contact material (126). Part of this mixture will be absorbed, but enough could be returned through the suction conduit (114) to provide a reference airflow when the flow has settled into equilibrium.

[0125] While a flow monitor (210) could be associated with a portable pump unit (102) or in front of the appliance fitting of a suction regulator (20), as described above, an airflow monitor (154) could be provided between the therapeutic mixture source (150) and the wound cover (122). Since the part of the conduit beneath the cover would be contaminated in use, a detachable disposable tube (156) would be used for the section of conduit from the monitor (154) to the wound packing (112). Thus, the invention can provide for the maintenance of suction therapy on a wound as well as the ability to monitor the application and removal of therapeutic substances to the wound.

[0126] Although the invention has been described and illustrated with respect to several embodiments described above, it should be understood the invention may be embodied in other forms without departing from its scope or attributes. Hence, the scope of the

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invention should be derived from the claims that follow, recognizing that the claim language may literally encompass structure not specifically described.

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Claims

We claim:

1. A pump for applying suction to a wound in a negative pressure wound therapy system, the pump comprising a flow monitor to monitor fluid flow rate in a system conduit from a wound dressing to the pump as indicative of a level of negative pressure applied to a wound, the flow monitor detecting whether or not the flow rate deviates from a reference airflow rate, the flow monitor comprising a gradated non-numerical visual annunciator to indicate flow conditions including that the flow rate is below the reference airflow rate range so as to indicate an occlusion in the system, that the flow rate is within the reference airflow rate range so as to indicate normal operation, that the flow rate is at a first level above the reference airflow rate range so as to indicate a first level of leakage in the system, or that the flow rate is at a second level above the reference airflow rate range so as to indicate a second higher level of leakage in the system, the second level being a greater deviation from the reference airflow than the first level.

2. A pump as in claim 1, wherein the gradated annunciator comprises a color-coded bar meter for displaying a different color corresponding to each flow condition.

3. A pump as in claim 1, wherein the pump is a positive displacement pump.

4. A pump as in claim 1, further including:

an error detector for detecting one or more system errors that are not associated with a deviation of flow rate from the reference airflow; and

an error indicator for displaying a visual warning of system errors detected by the error detector.

5. A pump as in claim 1, further comprising:

a pressure transducer for sensing pressure in the system; and

a pressure controller for controlling the pump to maintain the system pressure between an upper limit and a lower limit around a pressure setpoint, wherein the pressure controller can control the pump without input from the flow monitor.

6. A pump as in claim 5, the pressure controller further comprising a timer for periodically resetting the pressure setpoint between a user-selected pressure and a second

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pressure lower than the user-selected pressure for providing intermittent negative pressure therapy to the wound.

7. A pump as in claim 5, wherein the pressure controller further receives an input from the flow monitor when the flow monitor begins to detect a deviation of the flow rate below the reference airflow rate that indicates an occlusion in the system, such that the pressure controller causes the pressure setpoint to temporarily increase above the user-selected pressure, causing the pump to start or to increase in speed to create a negative pressure pulse capable of clearing the system conduit between the wound dressing and the waste collector.

8. A pump as in claim 7, wherein the pressure pulse is initiated prior to the gradated indicator providing indication of an occlusion, and wherein the gradated indicator will not provide an indication of an occlusion if the negative pressure pulse is followed by a decay in the pressure.

9. A pump as in claim 1, further comprising:

a waste collector located in the system between the wound dressing and the flow monitor for collecting liquids aspirated from the wound;

a docking station for releasably supporting the collector; and

a level sensor proximate to the docking station for detecting the level of waste in the collector.

10. A pump as in claim 9, wherein the level sensor is a capacitance detector.

11. A pump as in claim 9, wherein the level sensor is an optical detector.

12. A pump as in claim 9, wherein the level sensor provides a signal representing a level of waste in the collector and an algorithm is applied to the signal to reduce the likelihood of an erroneous indication of a full collector when the collected waste is sloshed.

13. A pump as in claim 9, wherein the gradated annunciator is further capable of providing visual indication of a full collector.

14. A pump as in claim 1, further comprising a timing subsystem to record and accumulate time units based upon inputs from various sensors.

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15. A pump as in claim 14, wherein the timing subsystem is further capable of providing reports of time histories of pump operation including one or more reports chosen from the group consisting of: a record of runtime intervals, a record of the date and duration of runtime intervals, a record of total accumulated runtime, a record of accumulated compliant runtime, and a record of runtime remaining on a preset runtime period.

16. A system for applying negative pressure therapy to a wound, comprising:

a wound dressing including a wound cover that is sealable to skin surrounding a wound;

a portable suction pump powered by a battery or by an alternating current electrical power supply, the pump comprising a flow monitor to detect the flow rate in the conduit;

a conduit having an end operatively associated with the wound dressing and an opposite end operatively associated with the suction pump, to communicate suction to the wound; and

a waste collector disposed in the conduit between the wound dressing and the suction pump for collecting liquids aspirated from the wound, the waste collector being releasably supported by a docking station on the pump;

wherein the pump includes a sensor proximate to the docking station for detecting the level of waste in the collector; and

wherein the flow monitor comprises a non-numerical annunciator capable of providing visual indications of flow conditions including that the flow rate is below the reference airflow rate range so as to indicate an occlusion in the system, that the flow rate is within the reference airflow rate range so as to indicate normal operation, that the flow rate is at a first level above the reference airflow rate range so as to indicate a first level of leakage in the system, that the flow rate is at a second level above the reference airflow rate range so as to indicate a second higher level of leakage in the system, the second level being a greater deviation from the reference airflow rate than the first level, or that the waste collector is full.

17. A system as in claim 16, further comprising:

a pressure transducer for sensing pressure in the system; and

a pressure controller for controlling the pump to maintain the system pressure between an upper limit and a lower limit around a pressure setpoint.

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18. A system as in claim 16, further including an error indicator for displaying a visual warning of one or more system errors that are not associated with a deviation of flow rate through the pump from the reference airflow rate, wherein the system errors are chosen from the group consisting of: overpressure detected by the pressure transducer, pressure transducer failure, waste collection canister not attached, low battery voltage, attachment of incorrect power supply, low operating time remaining, collection canister full, and pump motor not operational.

19. A method for applying suction to a wound in a negative pressure wound therapy system comprising:

providing a suction pump;

providing a pressure transducer for sensing pressure in the system;

controlling the pump to maintain the system pressure between an upper limit and a lower limit around a pressure setpoint;

providing a flow monitor to monitor fluid flow rate in the system and to detect whether the flow rate deviates from a reference airflow rate; and

providing a gradated non-numerical visual annunciator to indicate flow conditions including that the flow rate is below the reference airflow rate range so as to indicate an occlusion in the system, that the flow rate is within the reference airflow rate range so as to indicate normal operation, that the flow rate is at a first level above the reference airflow rate range so as to indicate a first level of leakage in the system, or that the flow rate is at a second level above the reference airflow rate range so as to indicate a second higher level of leakage in the system, the second level being a greater deviation from the reference airflow than the first level.

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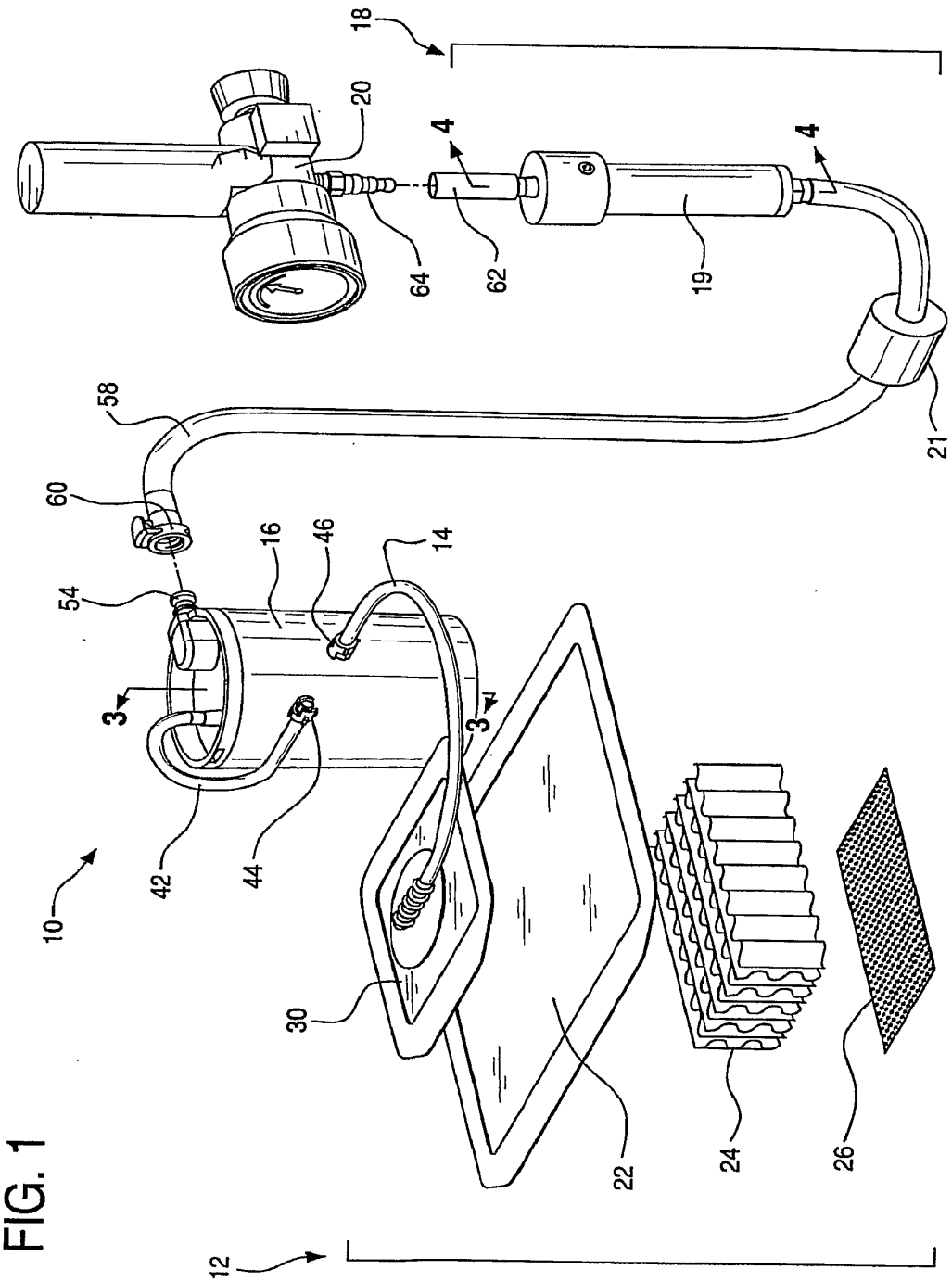


FIG. 1

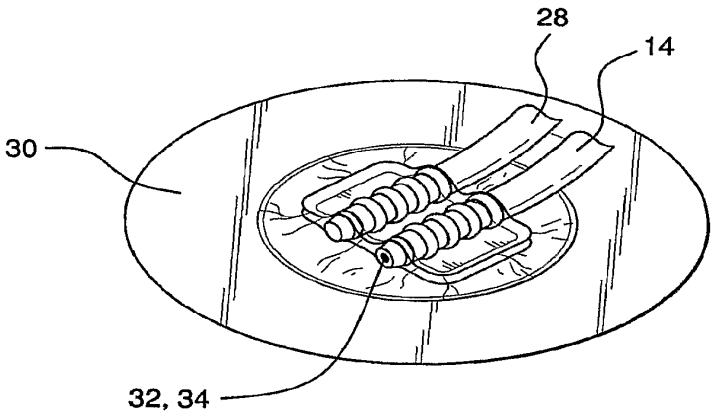


FIG. 2

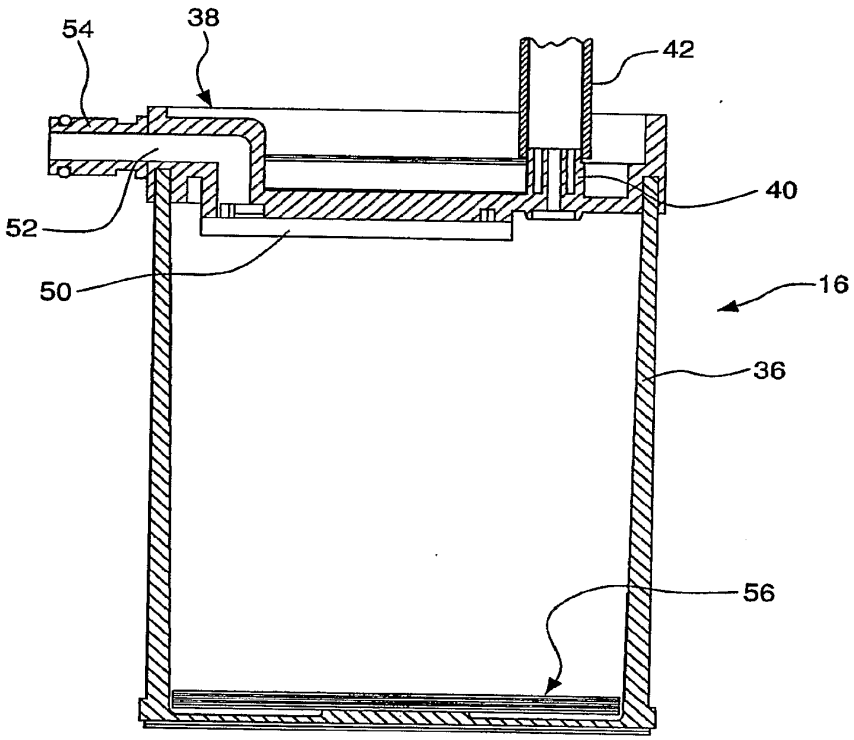


FIG. 3

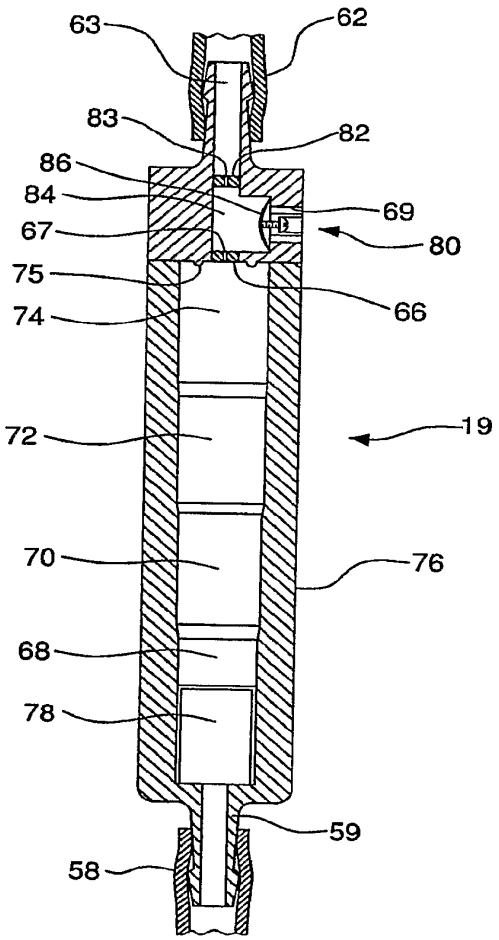


FIG. 4

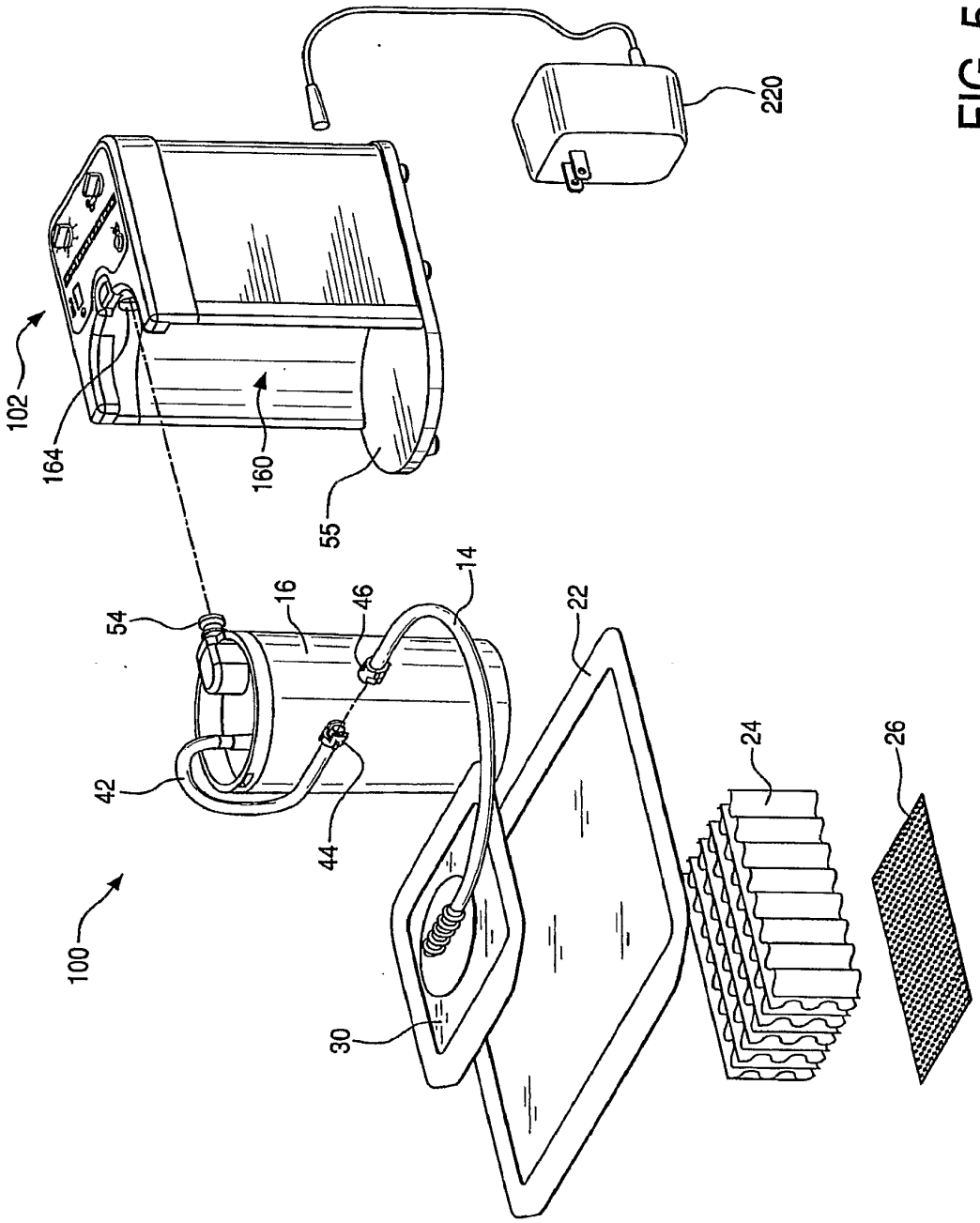


FIG. 5A

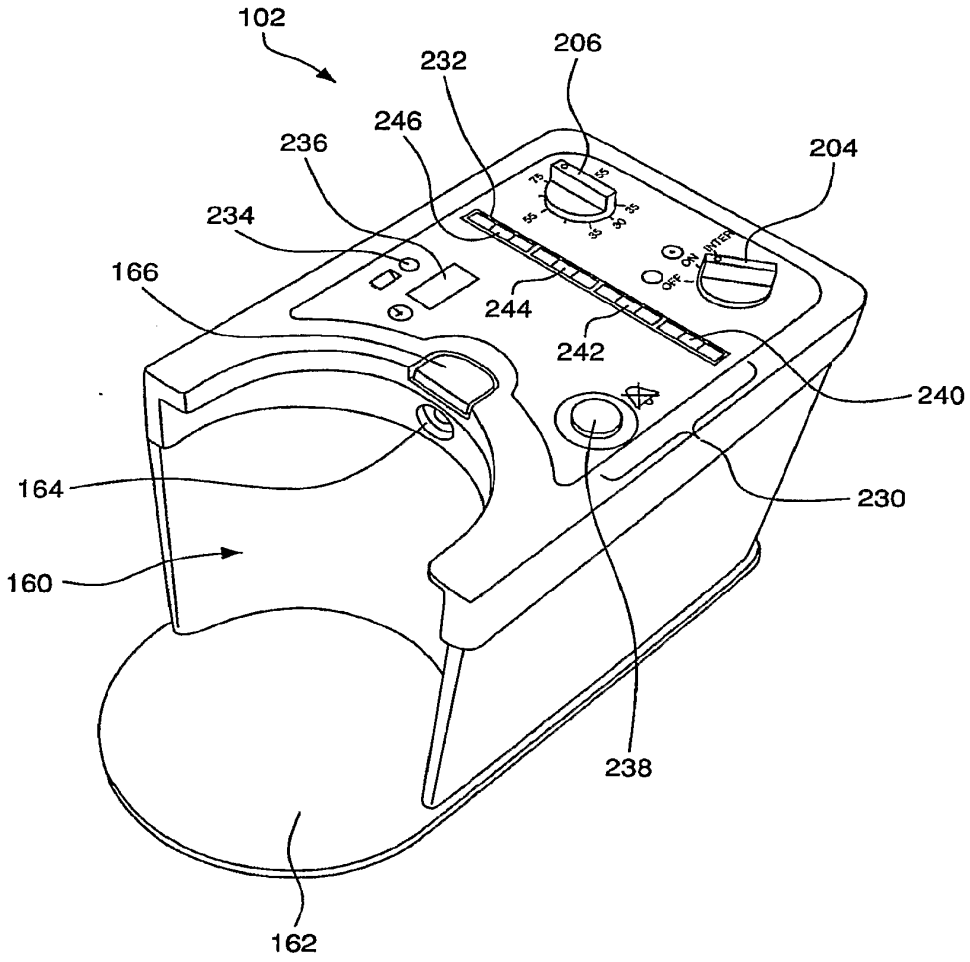


FIG. 5B

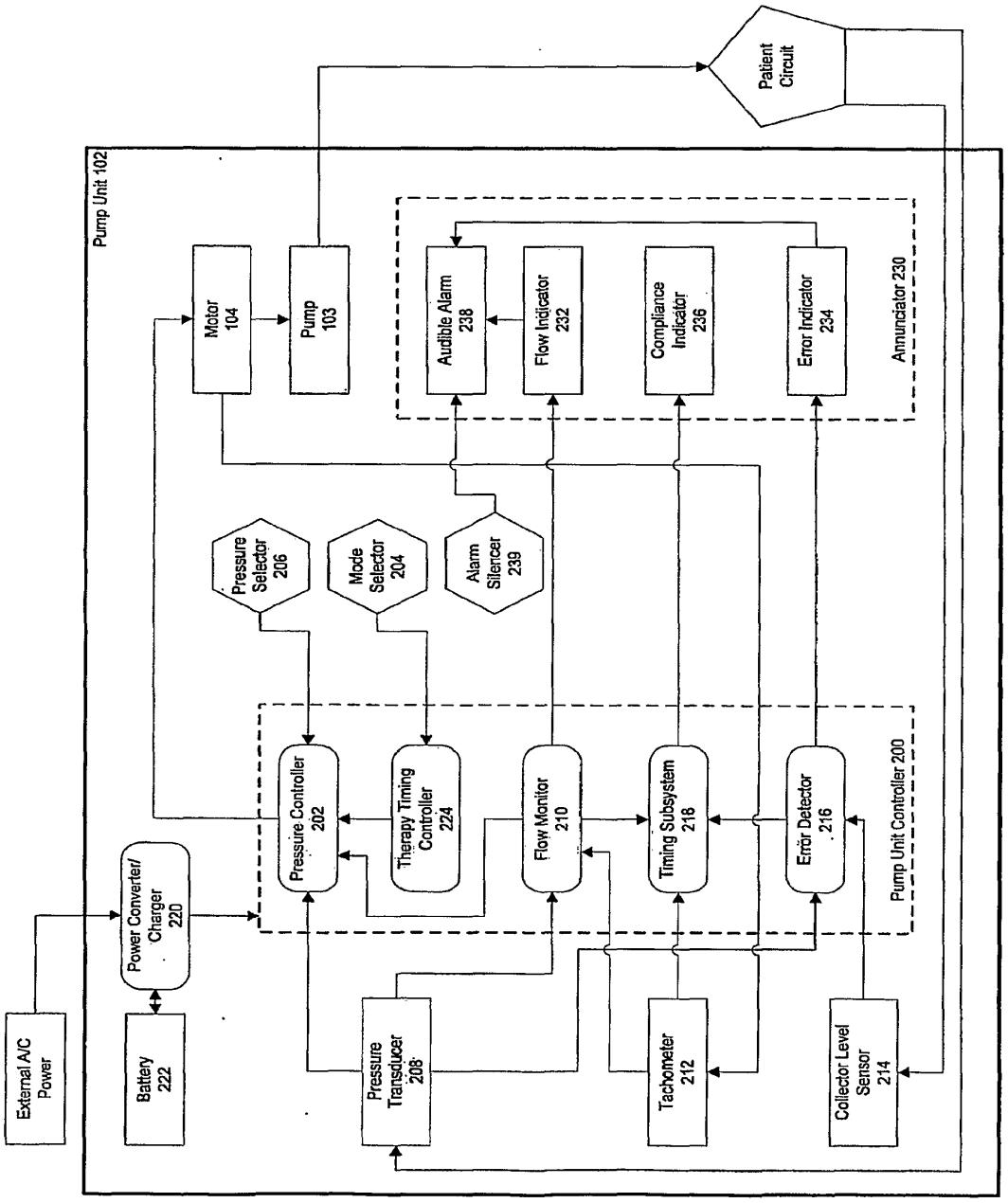

Patient Circuit
Pump Unit 102
Motor 104
Pump 103
Audible Alarm 238
Flow Indicator 232
Compliance Indicator 236
Error Indicator 234
Annunciator 230
Pressure Selector 206
Mode Selector 204
Alarm Silencer 239
Pressure Controller 202
Therapy Timing Controller 224
Flow Monitor 210
Timing Subsystem 218
Error Detector 216
Pump Unit Controller 200
Power Converter/ Charger 220
External A/C Power
Battery 222
Pressure Transducer 208
Tachometer 212
Collector Level Sensor 214

FIG. 6

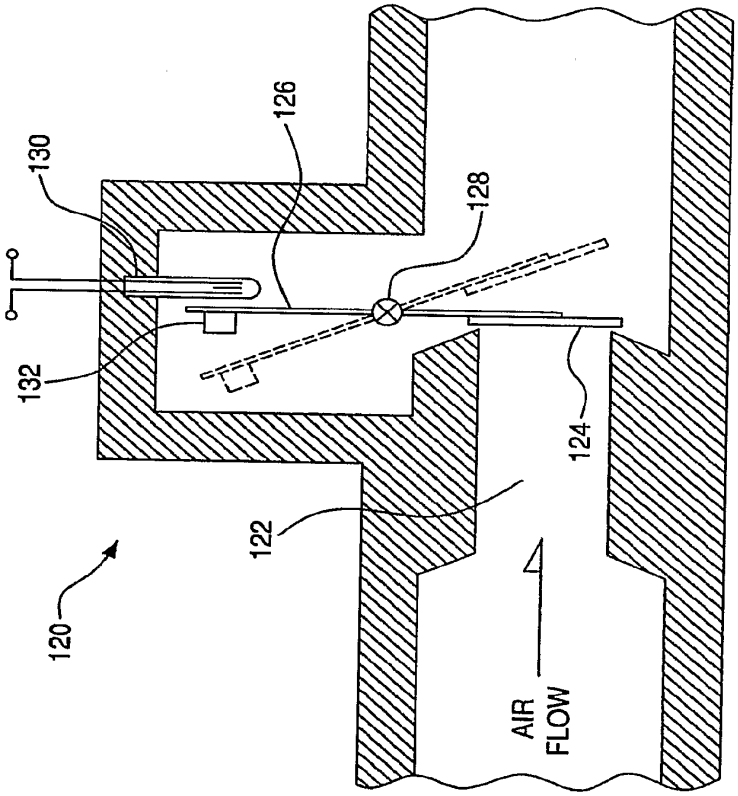


FIG. 7

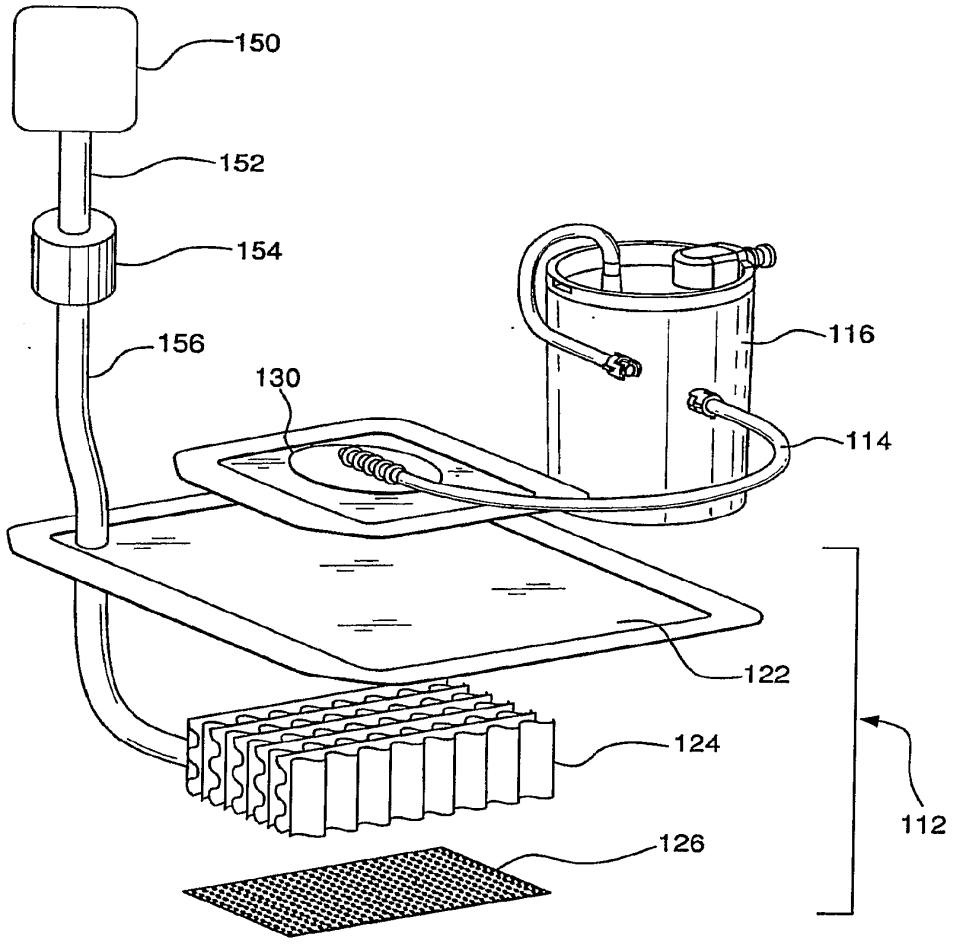


FIG. 8

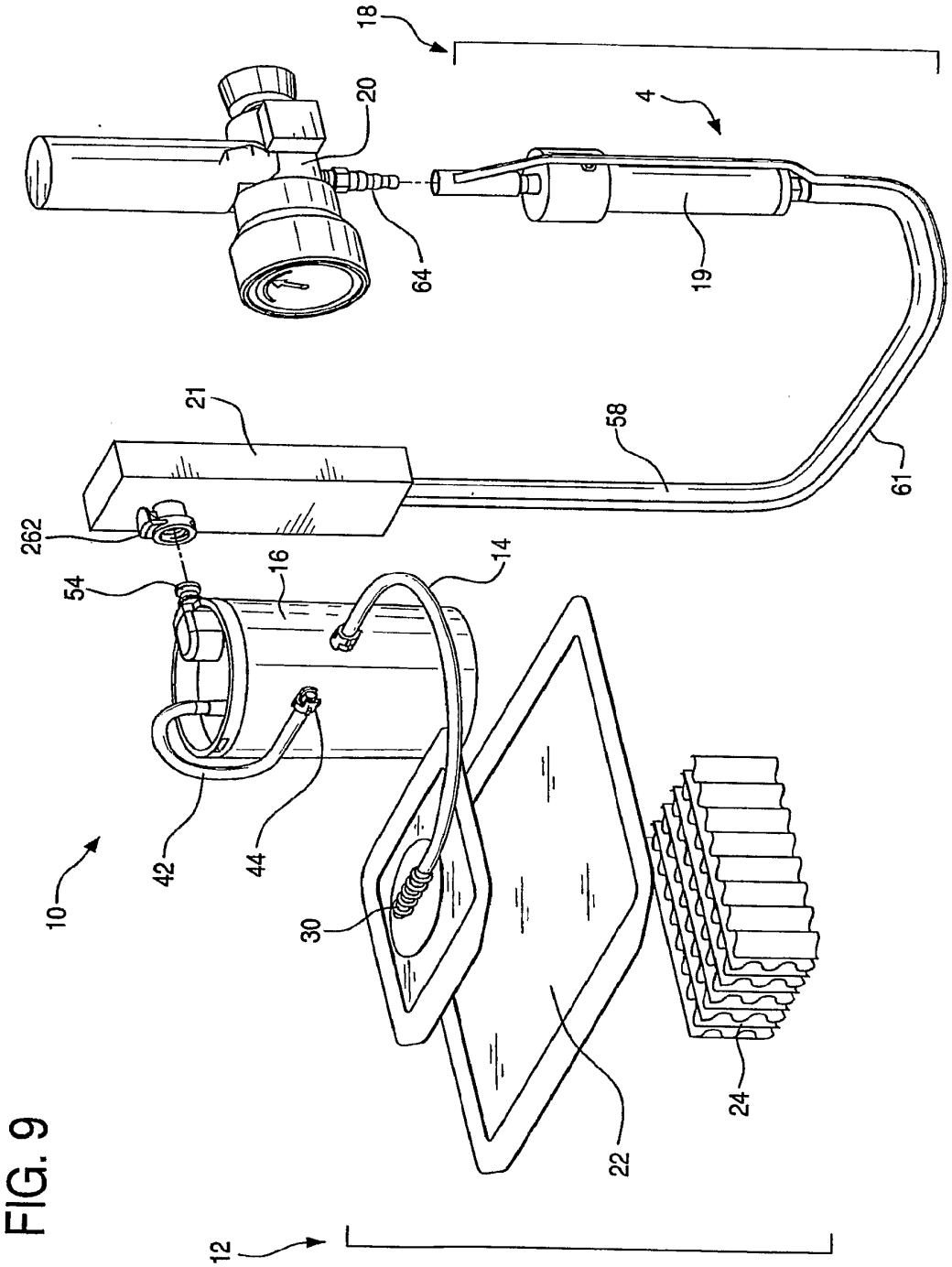


FIG. 9

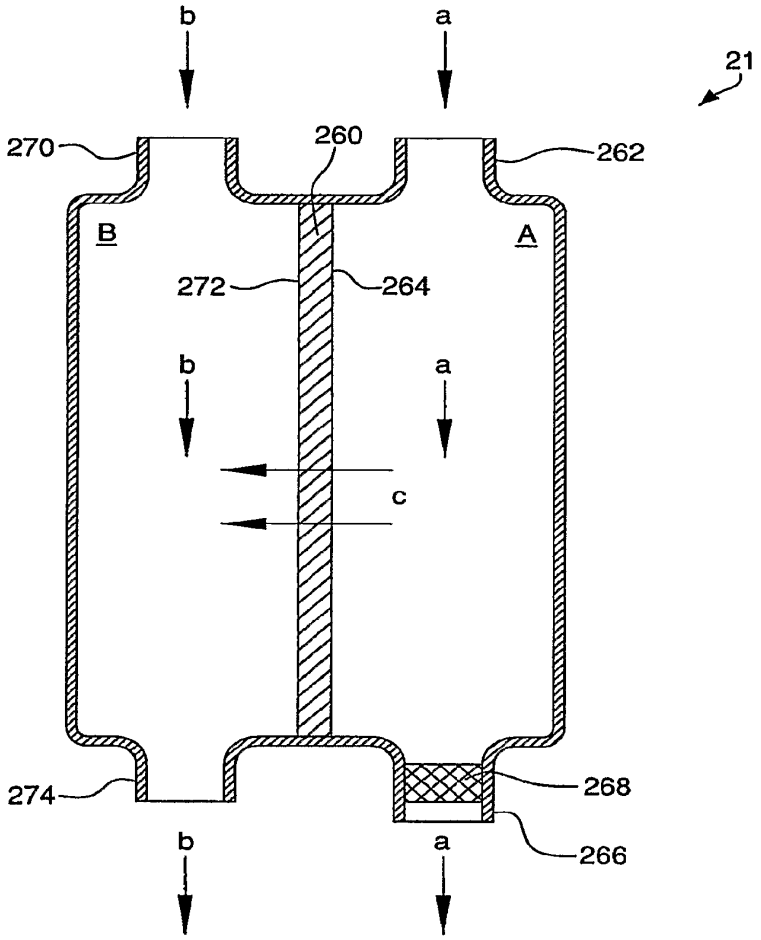


FIG. 10

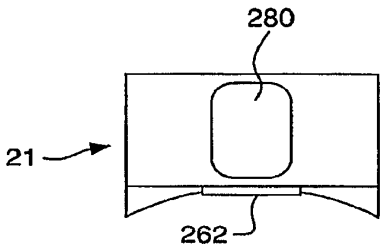
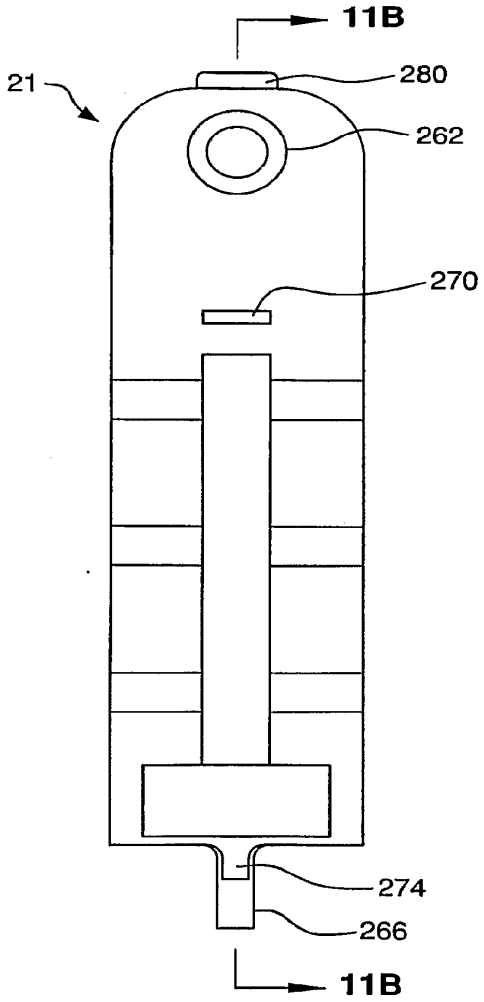


FIG. 11C



IG. 11A

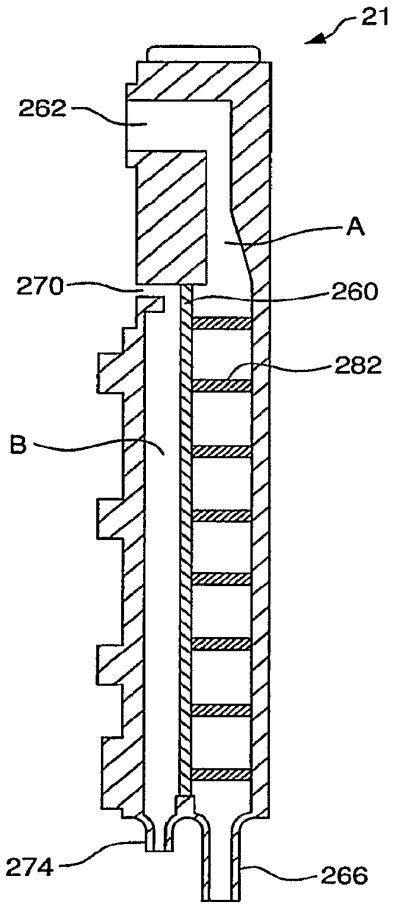


FIG. 11B

Electronic Acknowledgement Receipt

EFS ID:	16563172
Application Number:	13917865
International Application Number:	
Confirmation Number:	7555
Title of Invention:	WOUND CLOSURE AND DRAINAGE SYSTEM
First Named Inventor/Applicant Name:	Carmeli ADAHAN
Customer Number:	1444
Filer:	Roger Lowen Browdy/Michael Stanwyck
Filer Authorized By:	Roger Lowen Browdy
Attorney Docket Number:	ADAHAN16A
Receipt Date:	12-AUG-2013
Filing Date:	14-JUN-2013
Time Stamp:	15:09:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	2013-08-12IDSForm.pdf	612217 de1e5f74edba38c7a6359aecaae39001f3e84794	no	4
Warnings:					
Information:					

2	Foreign Reference	WO2008039223A1.pdf	2516655 0dcbb6a3718a5e4c37db7ceb19cd1082f8b4a871	no	54
Warnings:					
Information:					
3	Foreign Reference	WO2008039314A2.pdf	2702115 b8b67eafebbc83f3ca5cdd7a95d70236390737dc	no	57
Warnings:					
Information:					
			Total Files Size (in bytes):	5830987	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/917,865

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	22 minus 20 =	* 2	x 40 =	80	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 210 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	810		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

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UNITED STATES PATENT AND TRADEMARK OFFICE

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www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/917,865	06/14/2013	3761	810	ADAHAN16A	22	3

CONFIRMATION NO. 7555

1444
Browdy and Neimark, PLLC
1625 K Street, N.W.
Suite 1100
Washington, DC 20006

FILING RECEIPT

OC000000062440502

Date Mailed: 07/15/2013

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Carmeli ADAHAN, Jerusalem, ISRAEL;

Applicant(s)

Carmeli ADAHAN, Jerusalem, ISRAEL;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 11/989,297 01/24/2008
which is a 371 of PCT/IL2005/000784 07/24/2005

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 07/09/2013
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/917,865**
Projected Publication Date: 10/24/2013
Non-Publication Request: No
Early Publication Request: No
**** SMALL ENTITY ****

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Page #346

Title

WOUND CLOSURE AND DRAINAGE SYSTEM

Preliminary Class

604

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Page #347

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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E-MAIL
mail@browdyneimark.com

June 14, 2013

U.S. Patent and Trademark Office
Customer Service Window
Randolph Building, Mail Stop Patent Application
401 Dulany Street
Alexandria, VA 22314

Re: New Patent Application in U.S.
Applicant(s): Carmeli ADAHAN
Title: WOUND CLOSURE AND DRAINAGE SYSTEM
Atty's Docket: ADAHAN16A

Sir:

Attached herewith is the above-identified application for Letters Patent including:

[X] Application Data Sheet

[X] Specification (8 pages), claims (4 pages) and abstract (1 page)

[X] Two (2) Sheets of Drawings (Figures 1-2)
[X] FORMAL [ ] Informal

[ ] Sequence listing
[ ] Paper copy (__ pages) [ ] Computer –readable copy
[ ] A computer-readable text file containing a sequence listing in compliance with PCT Rule 13ter.2 and 37 CFR 1.821-1.825. This text file is intended to be used as the paper copy in accordance with 37 CFR 1.821(c) and the CRF of 37 CRF 1.821(e). Any sequence listing submitted as part of the application as filed is not intended to be considered as the paper copy submitted to comply with 37 CFR 1.821(c).

[X] Declaration
[X] Newly executed [ ] Copy from prior application no.

[ ] Preliminary Amendment

[ ] Information Disclosure Statement with SB/08A-B.

[X] Applicant claims small entity status. See 37 C.F.R. §1.27.

[X] Electronic payment in the amount of $810.00 is being made by credit card to cover:
[X] The filing fee calculated as follows (including any preliminary amendment for entry prior to calculation of the filing fee):

APPLICATION AS FILED					FEE
[xx] Search Fee					$ 600.00
[xx] Examination Fee					$ 720.00
[ ] Late Declaration Filing Fee					$ 0.00
Total Sheets	Extra Sheets	No. of each additional 50 or fraction thereof (round up to a whole number)		Rate	
15-100	0/50	-		x **$400.00**	-
CLAIMS		NUMBER FILED	NUMBER EXTRA	RATE	
TOTAL CLAIMS		22 -20	= 2	x 80	$160.00
INDEPENDENT CLAIMS		3 - 3	= 0	x 420	--
[ ] Multiple Dependent Claim Presented				+ 780	--
TOTAL OF ABOVE CALCULATIONS					$1,480.00
[xx] Reduction of 1/2 for Small Entity					<$740.00>
SUB-TOTAL					$740.00
[ ] Plus Basic Fee (Large Entity ONLY) - $280.00					$
[xx] Plus Basic Fee (Small Entity ONLY) - $ 70.00					$ 70.00
TOTAL FILING FEE DUE					$810.00

[ ] Other Fees: _____.

[ ] Early Publication fee - $300.00

[ ] Other Attachments: _____.

[ ] Return Receipt Postcard (in duplicate)

The following statements are applicable:

[ ] Applicant hereby requests that this application **not** be published pursuant to 35 U.S.C. §122(a). It is certified on behalf of applicant that the invention disclosed in the application has not been and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing.

[ ] Applicant hereby requests early publication pursuant to 37 CFR 1.219. The publication fee in accordance with 37 CFR 1.18(d) is being paid herewith. The accompanying application is being submitted in full accordance with the Office electronic filing requirements. Please publish as quickly as possible.

[ ] The benefit under 35 USC §119 is claimed of the filing date of:
Application No. ____ in _____ on _____, which is hereby incorporated by reference (See MPEP §201.13, pg 200-73, of revision 2, May 2004). Applicant requests that a certified copy be procured by the PTO from the JPO according to the priority document exchange program.

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[ ] The benefit under 35 USC §119 is claimed of the filing date of:
Application No.___ in___ on___, which is hereby incorporated by reference (See MPEP §201.13, pg 200-73, of revision 2, May 2004). A certified copy of said priority document will follow.

[ ] The present application claims the benefit of U.S. Provisional Appln. No. 60/, filed_____, the entire contents of which are hereby incorporated by reference.

[ ] A corresponding Appl. No. ___was filed in _____on _____.

[X] The present application is a [X] Continuation of prior Application No.: **see Application Data Sheet**

[ ] The present application is intended to be filed with color drawings. A petition for acceptance of color drawings and three copies of the drawings in color, along with the petition fee, are being filed on even date herewith by being hand-carried to the mailroom at the Patent and Trademark Office, identifying this application by the application number, filing date and confirmation number that are received upon electronic filing of the present application. It is intended that the color drawings and petition filed on even date herewith be considered as part of the present application as filed.

[ ] The application is (or will be) assigned to:

[X] Certain documents were previously cited or submitted to the Patent and Trademark Office in the following prior application 11/989,297, which is relied upon under 35 U.S.C. §120. Applicants identify these documents by attaching hereto a form PTO-08A-B listing these documents, and request that they be considered and made of record in accordance with 37 CFR §1.98(d). Per Section 1.98(d), copies of these documents need not be filed in the application.

[ ] Incorporation By Reference. The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied herewith, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

[X] As in the parent application 11/989,297, please associate the present application with **Customer No. 001444** and recognize only the practitioners associated therewith.

[X] Direct all correspondence to the address associated with **Customer Number 001444**, which is presently:

BROWDY AND NEIMARK, P.L.L.C.
1625 K Street, N.W., Suite 1100
Washington, D.C. 20006-1604
(202) 628-5197

Please direct all telephone calls to Browdy and Neimark at (202) 628-5197.

[X] The Commissioner is hereby authorized to charge payment of the following additional fees associated with this communication or credit any overpayments to Deposit Account No. 02-4035:
[X] Any additional filing fees required under 37 CFR §1.16.
[X] Any patent application processing fees under 37 CFR §1.17.

[X] The Commissioner is hereby authorized to charge payment of the following fees, based on any paper filed during the pendency of this application or any CPA thereof, to effect any amendment, petition, or other action requested in said paper or credit any overpayments to Deposit Account No. 02-4035:
[X] Any patent application processing fees under 37 CFR §1.17.
[ ] The issue fee set in 37 CFR §1.18 at or before mailing the Notice of Allowance, pursuant to 37 CFR §1.311(b).
[X] Any filing fees under 37 CFR §1.16 for presentation of extra claims.

[X] If a paper is untimely filed in this or any CPA thereof by Applicant(s), the Commissioner is hereby petitioned under 37 CFR. §1.136(a) for the minimum extension of time required to

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make said paper timely. In the event a petition for extension of time is made under the provisions of this paragraph, the Commissioner is hereby requested to charge any fee required under 37 CFR §1.17 to Deposit Account 02-4035.

[X] The Commissioner is hereby authorized to credit any overpayment of fees accompanying this paper to Deposit Account No. 02-4035.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.

By: /rlb/
Roger L. Browdy
Registration No. 25,618

RLB:jhw/mcs

PTO/AIA/14 (03-13)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	ADAHAN16A
	Application Number	
Title of Invention	WOUND CLOSURE AND DRAINAGE SYSTEM	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Carmeli		ADAHAN	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Jerusalem	Country of Residence i	IL

Mailing Address of Inventor:

Address 1	11 Netivei Am, Ramot		
Address 2			
City	Jerusalem	**State/Province**	
Postal Code	97552	**Country** i	IL

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	01444		
Email Address	mail@browdyneimark.com	Add Email	Remove Email

Application Information:

Title of the Invention	WOUND CLOSURE AND DRAINAGE SYSTEM		
Attorney Docket Number	ADAHAN16A	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	2	**Suggested Figure for Publication (if any)**	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	ADAHAN16A
	Application Number	
Title of Invention	WOUND CLOSURE AND DRAINAGE SYSTEM	

Publication Information:

☐	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐	**Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	01444		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	11989297	2008-01-24
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
11989297	a 371 of international	PCT/IL2005/000784	2005-07-24

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	ADAHAN16A
	Application Number	
Title of Invention	WOUND CLOSURE AND DRAINAGE SYSTEM	

Application Number	Country [i]	Filing Date (YYYY-MM-DD)	Access Code [i] (if applicable)

Remove

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	ADAHAN16A
	Application Number	
Title of Invention	WOUND CLOSURE AND DRAINAGE SYSTEM	

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◯ Assignee	◯ Legal Representative under 35 U.S.C. 117	◯ Joint Inventor
◯ Person to whom the inventor is obligated to assign.	◯ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information:

Address 1			
Address 2			
City		**State/Province**	
Country [i]		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Non-Applicant Assignee Information:

Providing assignment information in this section does not subsitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section only if non-applicant assignee information is desired to be included on the patent application publication in accordance with 37 CFR 1.215(b). Do not include in this section an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest), as the patent application publication will include the name of the applicant(s).

Remove

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Exhibit 1009
Page #356

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	ADAHAN16A
	Application Number	
Title of Invention	WOUND CLOSURE AND DRAINAGE SYSTEM	

If the Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information:

Address 1	
Address 2	

City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications

Signature	/rlb/			Date (YYYY-MM-DD)	2013-06-14
First Name	Roger	Last Name	Browdy	Registration Number	25618

Additional Signature may be generated within this form by selecting the Add button. Add

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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Page #358

BROWDY AND NEIMARK, P.L.L.C.
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mail@browdyneimark.com

June 14, 2013

U.S. Patent and Trademark Office
Customer Service Window
Randolph Building, Mail Stop Patent Application
401 Dulany Street
Alexandria, VA 22314

Re: New Patent Application in U.S.
Applicant(s): Carmeli ADAHAN
Title: WOUND CLOSURE AND DRAINAGE SYSTEM
Atty's Docket: ADAHAN16A

Sir:

Attached herewith is the above-identified application for Letters Patent including:

[X] Application Data Sheet

[X] Specification (8 pages), claims (4 pages) and abstract (1 page)

[X] Two (2) Sheets of Drawings (Figures 1-2)
[X] FORMAL [ ] Informal

[ ] Sequence listing
[ ] Paper copy (__ pages) [ ] Computer –readable copy
[ ] A computer-readable text file containing a sequence listing in compliance with PCT Rule 13ter.2 and 37 CFR 1.821-1.825. This text file is intended to be used as the paper copy in accordance with 37 CFR 1.821(c) and the CRF of 37 CRF 1.821(e). Any sequence listing submitted as part of the application as filed is not intended to be considered as the paper copy submitted to comply with 37 CFR 1.821(c).

[X] Declaration
[X] Newly executed [ ] Copy from prior application no.

[ ] Preliminary Amendment

[ ] Information Disclosure Statement with SB/08A-B.

[X] Applicant claims small entity status. See 37 C.F.R. §1.27.

[X] Electronic payment in the amount of $810.00 is being made by credit card to cover:
[X] The filing fee calculated as follows (including any preliminary amendment for entry prior to calculation of the filing fee):

APPLICATION AS FILED					FEE
[xx] Search Fee					$ 600.00
[xx] Examination Fee					$ 720.00
[ ] Late Declaration Filing Fee					$ 0.00
Total Sheets	Extra Sheets	No. of each additional 50 or fraction thereof (round up to a whole number)		Rate	
15-100	0/50	-		x **$400.00**	-
CLAIMS		NUMBER FILED	NUMBER EXTRA	RATE	
TOTAL CLAIMS		22 -20	= 2	x 80	$160.00
INDEPENDENT CLAIMS		3 - 3	= 0	x 420	--
[ ] Multiple Dependent Claim Presented				+ 780	--
TOTAL OF ABOVE CALCULATIONS					$1,480.00
[xx] Reduction of 1/2 for Small Entity					<$740.00>
SUB-TOTAL					$740.00
[ ] Plus Basic Fee (Large Entity ONLY) - $280.00					$
[xx] Plus Basic Fee (Small Entity ONLY) - $ 70.00					$ 70.00
TOTAL FILING FEE DUE					$810.00

[ ] Other Fees: _____.

[ ] Early Publication fee - $300.00

[ ] Other Attachments: _____.

[ ] Return Receipt Postcard (in duplicate)

The following statements are applicable:

[ ] Applicant hereby requests that this application **not** be published pursuant to 35 U.S.C. §122(a). It is certified on behalf of applicant that the invention disclosed in the application has not been and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing.

[ ] Applicant hereby requests early publication pursuant to 37 CFR 1.219. The publication fee in accordance with 37 CFR 1.18(d) is being paid herewith. The accompanying application is being submitted in full accordance with the Office electronic filing requirements. Please publish as quickly as possible.

[ ] The benefit under 35 USC §119 is claimed of the filing date of:
Application No. ____ in _____ on _____, which is hereby incorporated by reference (See MPEP §201.13, pg 200-73, of revision 2, May 2004). Applicant requests that a certified copy be procured by the PTO from the JPO according to the priority document exchange program.

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Page #360

[ ] The benefit under 35 USC §119 is claimed of the filing date of:
Application No.___ in___ on___, which is hereby incorporated by reference (See MPEP §201.13, pg 200-73, of revision 2, May 2004). A certified copy of said priority document will follow.

[ ] The present application claims the benefit of U.S. Provisional Appln. No. 60/, filed_____, the entire contents of which are hereby incorporated by reference.

[ ] A corresponding Appl. No. ___was filed in _____on _____.

[X] The present application is a [X] Continuation of prior Application No.: **see Application Data Sheet**

[ ] The present application is intended to be filed with color drawings. A petition for acceptance of color drawings and three copies of the drawings in color, along with the petition fee, are being filed on even date herewith by being hand-carried to the mailroom at the Patent and Trademark Office, identifying this application by the application number, filing date and confirmation number that are received upon electronic filing of the present application. It is intended that the color drawings and petition filed on even date herewith be considered as part of the present application as filed.

[ ] The application is (or will be) assigned to:

[X] Certain documents were previously cited or submitted to the Patent and Trademark Office in the following prior application 11/989,297, which is relied upon under 35 U.S.C. §120. Applicants identify these documents by attaching hereto a form PTO-08A-B listing these documents, and request that they be considered and made of record in accordance with 37 CFR §1.98(d). Per Section 1.98(d), copies of these documents need not be filed in the application.

[ ] Incorporation By Reference. The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied herewith, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

[X] As in the parent application 11/989,297, please associate the present application with **Customer No. 001444** and recognize only the practitioners associated therewith.

[X] Direct all correspondence to the address associated with **Customer Number 001444**, which is presently:

BROWDY AND NEIMARK, P.L.L.C.
1625 K Street, N.W., Suite 1100
Washington, D.C. 20006-1604
(202) 628-5197

Please direct all telephone calls to Browdy and Neimark at (202) 628-5197.

[X] The Commissioner is hereby authorized to charge payment of the following additional fees associated with this communication or credit any overpayments to Deposit Account No. 02-4035:
[X] Any additional filing fees required under 37 CFR §1.16.
[X] Any patent application processing fees under 37 CFR §1.17.

[X] The Commissioner is hereby authorized to charge payment of the following fees, based on any paper filed during the pendency of this application or any CPA thereof, to effect any amendment, petition, or other action requested in said paper or credit any overpayments to Deposit Account No. 02-4035:
[X] Any patent application processing fees under 37 CFR §1.17.
[ ] The issue fee set in 37 CFR §1.18 at or before mailing the Notice of Allowance, pursuant to 37 CFR §1.311(b).
[X] Any filing fees under 37 CFR §1.16 for presentation of extra claims.

[X] If a paper is untimely filed in this or any CPA thereof by Applicant(s), the Commissioner is hereby petitioned under 37 CFR. §1.136(a) for the minimum extension of time required to

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Page #361

make said paper timely. In the event a petition for extension of time is made under the provisions of this paragraph, the Commissioner is hereby requested to charge any fee required under 37 CFR §1.17 to Deposit Account 02-4035.

[X] The Commissioner is hereby authorized to credit any overpayment of fees accompanying this paper to Deposit Account No. 02-4035.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.

By: /rlb/
Roger L. Browdy
Registration No. 25,618

RLB:jhw/mcs

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	
	Filing Date	2013-06-13
	First Named Inventor	Carmeli ADAHAN
	Art Unit	
	Examiner Name	
	Attorney Docket Number	ADAHAN16A

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5578006	A	1996-11-26	STEVENS	
	2	6817996	B2	2004-11-16	FARD et al.	
	3	4583970		1986-04-22	KIRCHNER	
	4	5947923	A	1999-09-07	UEHARA et al.	
	5	6257847	B1	2001-07-10	SILVER, et al.	
	6	7255681	B1	2007-08-14	SILVER, et al	
	7	4108574		1978-08-22	BARTLEY, et al.	
	8	4208171		1980-06-17	JONSSON	

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	Examiner Name	
	Attorney Docket Number	ADAHAN16A

	9	4552552		1958-11-12	POLASCHEGG, et al.	corresponds to DE 32 05 449 C2
	10	5116206	A	1992-05-26	ADAHAN	
	11	7503910	B2	2009-03-17	ADAHAN	
	12	5370610	A	1994-12-06	REYNOLDS	
	13	5662599	A	1997-09-02	REICH, et al.	
	14	6471982	B1	2002-10-29	LYDON, et al.	
	15	5636643	A	1997-06-10	ARGENTA, et al.	
	16	7128735	B2	2006-10-31	WESTON	
	17	6824533	B2	2004-11-30	RISK, JR., et al.	
	18	6562013	B1	2003-05-13	MARASCO, JR.	
	19	4447226		1984-05-08	MAYORAL	

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	Examiner Name	
	Attorney Docket Number	ADAHAN16A

	20	4611627		1986-09-16	EIDSVOOG, et al.	
	21	1599899		1926-09-14	KETTERING, et al.	
	22	6071267	A	2000-06-06	ZAMICROWSKI	
	23	0599333		1898-02-22	HULSE	
	24	3416461		1968-12-17	McFARLAND	
	25	5419687	A	1995-05-30	ADAHAN	
	26	6042560	A	2000-03-28	NIEDERBERGER	
	27	6648862	B2	2003-11-18	WATSON	
	28	4739791		1988-04-26	ADAHAN	
	29	4930997		1990-06-05	BENNETT	
	30	4661093		1987-04-28	BECK, et al.	

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	31	5645081	A	1997-07-08	ARGENTA. et al.	
	32	5776119	A	1998-07-07	BILBO, et al.	
	33	7229422	B2	2007-06-12	KLOBE	
	34	5941859	A	1997-03-17	LERMAN	
	35	3516160	A	1970-06-23	LEFFLER	

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	1	20050148913	A1	2005-07-07	WESTON	
	2	20040015042	A1	2004-01-22	VINCENT, et al.	
	3	20050180868	A1	2005-08-18	MILLER	
	4	20050004534	A1	2005-01-06	LOCKWOOD, et al.	

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	Art Unit	
	Examiner Name	
	Attorney Docket Number	ADAHAN16A

	5	20040039243	A1	2004-02-26	BEARNSON, et al.	
	6	20030014022	A1	2003-01-16	LOCKWOOD, et al.	
	7	20010029956	A1	2001-10-18	ARGENTA, et al.	
	8	20040199840	A1	2004-10-07	TAKEOKA, et al.	
	9	20050192548	A1	2005-09-01	DOLLIVER, et al.	
	10	20040064132	A1	2004-04-01	BOCHRINGER, et al.	
	11	20020151826	A1	2002-10-17	RAMEY, et al.	
	12	20040059284	A1	2004-03-25	NASH, et al.	
	13	20030097100	A1	2003-05-22	WATSON	
	14	20030040687	A1	2003-02-27	BOYNTON, et al.	
	15	20030050594	A1	2003-03-13	ZAMICROWSKI	

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	1	240188	RU	A1	1947-11-03			☒
	2	9748427	WO	A2	1997-12-24	C.R. BARD INC.		☐
	3	01/34223	WO	A1	2001-05-17	HEATON, Keith Patrick		☐
	4	2005/061025	WO	A1	2005-07-07	LARSSON, Michael		☐
	5	00/21586	WO	A1	2000-04-20	Hunt, Kenneth William et al		☐
	6	3205445	DE	A1	1983-08-25	Fa. Wilheim Schade	English Abstract	☒
	7	3205449	DE	C2	1983-09-01	Fresenius AG	corresponds to US 4,552,552	☒
	8	2002035111	JP	A	2002-02-05	Pigeon Corp	With English Abstract	☒
	9	03/030966	WO	A1	2003-04-17	HILL-ROM SERVICES, INC		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2013-06-13
	First Named Inventor	Carmeli ADAHAN
	Art Unit	
	Examiner Name	
	Attorney Docket Number	ADAHAN16A

	10	97/18007	WO	A1	1997-05-22	KCI MEDICAL LIMITED		☐
	11	102 15 896	DE	A1	2003-10-23	LEYBOLD VAKUUM GMBH	ABSTRACT	☒
	12	03/016719	WO	A1	2003-02-27	ADAHAN		☐
	13	24 01 643	DT	A1	1975-07-17	TUCHENHAGEN	ABSTRACT	☒
	14	0156211	EP	A2	1985-10-02	FRESENIUS AG	ABSTRACT	☒
	15	00/02016	WO	A1	2000-01-13	DEKA PRODUCTS LIMITED PARTNERSHIP		☐
	16	96/05873	WO	A1	1996-02-29	MEDISCUS PRODUCTS LIMITED		☐
	17	2 378 734	GB	A	2003-02-19	ADAHAN		☐
	18	2 307 180	GB	A	1997-05-21	KCI MEDICAL LIMITED		☐
	19	03/057070	WO	A2	2003-07-17	HILL-ROM SERVICES INC.		☐
	20	0865304	EP	B1	2001-07-18	KCI Medical Ltd.		☐

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	Attorney Docket Number	ADAHAN16A

	21	8401904	WO	A1	1984-05-24	Gunnar Swanbeck		☐
	22	2002541978	JP	A	2002-12-10		This corresponds with International Publication No. WO 00/64394	☒
	23	0064394	WO	A1	2000-11-02	KCI Medical Limited		☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5
	1	Worth et al., "PRELIMINARY REPORT The Effectiveness of Bacterial Filtration In Vented Wound Drains" Journal of Surgical Research 27(6):405-407 (1979)	☐
	2	Levite et al., "POSSIBILITIES FOR DUAL-LUMEN DRAINAGES IN SURGERY" Body of the RSFSR Ministry of Public Health, Monthly Scientific and Practical Journal, pages 39-41. (1987)	☐
	3	Notice of opposition to European patent EP2127690, dated March 20, 2013	☐
	4	Facts and Submissions in Opposition of EP 2127690, dated March 20, 2013	☐
	5	Edlich et al., "Evaluation of a New, Improved Surgical Drainage System" NEW INSTRUMENTS, 149:295-298 (February 1985)	☐
	6	Communication of a notice of opposition of EP 2127690, dated April 8, 2013	☐

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Page #370

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
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	Filing Date	2013-06-13
	First Named Inventor	Carmeli ADAHAN
	Art Unit	
	Examiner Name	
	Attorney Docket Number	ADAHAN16A

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	
	Filing Date	2013-06-13
	First Named Inventor	Carmeli ADAHAN
	Art Unit	
	Examiner Name	
	Attorney Docket Number	ADAHAN16A

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/rlb/	Date (YYYY-MM-DD)	2013-06-14
Name/Print	Roger L. Browdy	Registration Number	25,618

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention: WOUND CLOSURE AND DRAINAGE SYSTEM

As a below named inventor, I hereby declare that:

This declaration is directed to the application

☒ attached hereto, or

☐ United States application or PCT International Application No._____ filed on _____

The above-identified application was made by me or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the above-identified application, including the claims.

I acknowledge the duty to disclose information which is material to the patentability of this application as defined in 37 CFR § 1.56.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

Legal Name of Inventor

Inventor: **Carmeli ADAHAN** Date: May 8, 2013

Signature: _____

WOUND CLOSURE AND DRAINAGE SYSTEM

FIELD OF THE INVENTION

This invention relates generally to wound healing, and more specifically to healing of wounds by negative pressure drainage.

BACKGROUND OF THE INVENTION

Negative pressure applied to a wound enhances drainage of fluids or exudate from the wound and promotes tissue growth and wound healing. This method of healing (known as "cupping") was exercised since the times of ancient Greek physicians until the 19th century.

WO 96/05873 describes a therapeutic apparatus for stimulating healing of wounds. The apparatus comprises a porous foamed pad which is sealed on the wound and connected by a tube to an inlet of a canister. A vacuum pump is connected to an outlet of the canister. A bacterial filter positioned over the outlet of the canister protects the vacuum pump from contamination by wound drainage fluids sucked into the canister. The pump, the canister and control circuitry are disposed in a case.

WO 97/18007 discloses a portable wound treatment apparatus using a similar arrangement of a porous pad, canister and vacuum pump. The canister and the pump are in one housing which accommodates also the control circuitry and is wearable on a harness or a belt.

US 6,648,862 describes a portable vacuum desiccator using a similar arrangement as above, the canister being formed as a cartridge containing a trapping agent (desiccator). The vacuum pump and the canister may be integrated and detachable from the pump motor and circuitry.

Current negative pressure wound drainage systems such as the ones described above suffer from the following deficiencies:

- Since the negative pressure applied to the wound area is created by pump suction, the flow into the pump is likely to contaminate the pump, or conversely, to

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require costly and complex methods of isolating the pump from the wound exudate such as antibacterial filters.

- The wound exudate is collected in a rigid canister, which must be large enough to prevent it from overflowing, and thus it is bulky and an inconvenient burden for ambulatory patients, who carry a portable system with them.

- Conventional wound drainage systems utilize an air tight seal of the wound, which is helpful in obtaining and maintaining negative pressure, but requires a pressure relief or bleed valve to produce the pressure cycling desirable to obtain accelerated wound closure, as described in WO 96/05873.

- A sealed wound dressing or enclosure, when under negative pressure, will promote migration of the exudate toward the negative pressure source, through the connecting tube, which may occlude, should the exudate coagulate.

- The need to monitor and control the negative pressure level in conventional systems requires the use of a vacuum transducer, gage or relief valve, which must be connected to the suction tube, which is subject to contamination. Cleaning, disinfecting or isolating the negative pressure monitoring or controlling device are complex, costly and un-reliable.

SUMMARY OF THE INVENTION

It is the purpose of this invention to alleviate all the above listed deficiencies, by providing a wound drainage enclosure and vacuum system, which are impervious to contamination and easy to use.

In accordance with a first aspect of the present invention, there is provided an enclosure for draining an open wound from liquids exuded therefrom. The enclosure is attachable to the wound circumference so as to define a confined volume, and has an outlet, for example formed as a nipple, connectable by means of a tube to an inlet of a vacuum pump so that negative pressure may be created in said confined volume. One or more bleeding holes are provided in the enclosure or adjacent to its outlet such that ambient air can enter the tube and flow together with the exuded liquids when negative pressure is present. Ambient pressure may be restored in the confined volume when the vacuum pump is not operating.

The bleeding hole in the enclosure may be a calibrated orifice or other flow restrictors providing for controlled flow of ambient air into the enclosure or into its

outlet. For instance, a hole plugged with open cell foam or an open pore sintered metal plug, which restrict the flow, but are not susceptible to plugging as is a small orifice.

The bleeding hole renders the wound closure vented or non-airtight, as distinguishable from conventional wound closures. The flow of air from the bleeding hole in the wound closure, in response to the negative pressure created by the vacuum pump, facilitates the removal of exudate, which might otherwise coagulate, dry-up and occlude the tubing.

According to another aspect of the present invention, there is provided a method for draining an open wound from liquids exuded therefrom. The method includes:

- providing an enclosure and sealing it to the wound circumference so as to define a confined volume,

- connecting the confined volume to a vacuum pump,

- connecting a waste container for collection of drained liquids to the vacuum pump, and

- operating said vacuum pump to draw the exuded liquids from the wound.

The method is characterized in that the confined volume is connected to an inlet of the vacuum pump and the waste container is connected to an outlet of the vacuum pump such that the drained liquids flow through said vacuum pump.

The method may include employment of an enclosure with bleeding orifices so that ambient air is allowed to enter the tube and flow together with the drained exuded liquids.

Preferably, gases are separated and released from the drained exuded liquids.

According to a further aspect of the present invention, there is provided a vacuum system for practicing the above method. The vacuum system may use a totally disposable vacuum pump, together with a waste collection bag, as disclosed in WO03016719. The vacuum pump is a two-chambered diaphragm pump adapted for pumping gases and liquids and/or any combination thereof. The vacuum pump is capable of pumping air and fluid which enter its inlet port, to a waste bag attached to its outlet port. The waste bag is vented to the atmosphere, such that it collects only the fluids which enter it.

The vacuum system may be adapted to be carried by an ambulatory patient.

According with a next aspect of the present invention, there is provided a disposable assembly for draining an open wound from liquids exuded therefrom. The

assembly comprises an enclosure attachable to the wound circumference so as to define a confined volume, a vacuum pump unit connected to the enclosure so that negative pressure may be created in the confined volume, and a waste container connected to the vacuum pump unit. The vacuum pump unit has means for detachably attaching to a drive unit for operating the pump unit. The enclosure is connected to an inlet of the vacuum pump unit and the waste container is connected to an outlet of the vacuum pump unit, such that when the vacuum pump unit is operated the drained liquids flow therethrough.

Preferably, the pump unit and the drive unit are adapted for attaching and detaching by simple hand manipulations.

The enclosure may have bleeding holes as described above.

The vacuum pump unit is preferably a two-chambered diaphragm pump adapted for pumping gases and liquids and/or any combination thereof.

The waste container may contain a porous media adapted to soak up the drained liquids and may be in the form of a collapsible or foldable bag.

The drained liquids and air contact only the parts of the disposable assembly. The drained exuded liquids may then be disposed of together with the disposable assembly. More specifically, the pump unit is disposed of after use, together with the tubing connected to it, as well as the waste bag connected, with its content, and with the wound closure which may be connected to the pump unit via the tube.

In accordance with yet another aspect of the present invention, there is provided a vacuum system as described above where the vacuum pump has a drive unit and a control block adapted to power the drive unit so that a predetermined level of negative pressure is maintained in the confined volume. The control block has a sensor for sensing working parameters of the drive unit and means for deriving the level of negative pressure in the confined volume from these working parameters, in order to maintain said predetermined level. The sensor has no fluid connection with the confined volume.

For example, the drive unit may comprise a direct current electric motor and the sensor may sense the electric current driving the motor. The same function of negative pressure control may be accomplished by an adjustable torque limiting clutch, placed between the motor output shaft and the pump.

The control block may be provided with alarm means to warn the user if the predetermined level of negative pressure is not maintained.

If the vacuum pump comprises a disposable pump unit and the drive unit is detachably attachable to the pump unit, the control block with monitoring means is preferably associated with the drive unit which is non-disposable.

Thus, indirect means are provided for controlling or monitoring the level of negative pressure applied to the wound, without making any direct connection to a vacuum sensor, transducer or gage to any portion of the system, which has the negative pressure applied to it. The indirect negative pressure monitoring and control result from the need to dispose of any portion of the system, which may come in contact with the pumped media, which is likely to be contaminated or infectious. Accordingly, all the disposable components in the system may be relatively low in cost, to promote discarding them after use. Pressure transducers, vacuum gages or sensors, are relatively costly, and thus not considered disposable.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to understand the invention and to see how it may be applied, a preferred embodiment will now be described, by way of non-limiting example only, with reference to the accompanying drawings, in which:

Fig. 1 is a schematic sectional view of the vacuum system of the present invention applied on a wound.

Fig. 2 shows the disposable portion of the system of Fig. 1.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

The present invention provides a system and a method of treating and healing of a body wound, by applying a negative pressure to the wound, over an area sufficient to promote migration of epithelial and subcutaneous tissue toward the wound.

It is appreciated that the detailed description that follows is intended only to illustrate certain preferred embodiments of the present invention. It is in no way intended to limit the scope of the invention, as set out in the claims.

With reference to Fig. 1, in accordance with the present invention, a vacuum system 10 for draining an open wound from liquids exuded therefrom comprises a wound enclosure 12, a vacuum pump 14, and waste collection bag 31. The wound

enclosure 12 is connected by a suction tube 16 to an inlet 11 of the vacuum pump. The waste collection bag 31 is connected to an outlet 22 of the vacuum pump. Thereby, when the vacuum pump 14 is operated, the drained liquids flow through the pump into the waste bag 31.

Suction tube 16 is connected to nipple 38 of the enclosure 12 which covers wound area of the body 34 such that suction of air through tube 16 creates negative pressure in the volume above the wound area of the body 34. A bleeding orifice 35 is provided within the enclosure 12, or adjacent to it as a tube orifice 37, allowing ambient air to flow into and through suction tube 16, rendering enclosure 12 non-air tight, or vented. This feature, unlike conventional sealed closures, provides for quick movement of exudate entering suction tube 16, toward the vacuum pump 14, and into the waste bag 31, before it dries up or coagulates and occludes the tube. This feature also provides for introduction of ambient pressure to the wound area of the body 34 whenever the vacuum pump stops pumping, allowing cyclic negative pressure application to the wound, by cycling the vacuum pump on and off alternately.

Instead of the bleeding orifice 35 in the enclosure, other flow restrictors may be used to provide for controlled flow of ambient air into the enclosure or into the outlet. For instance, a hole plugged with open cell foam or an open pore sintered metal plug, which restrict the flow, but are not susceptible to plugging as is a small orifice.

The vacuum pump 14 comprises a pump unit 18 and a drive unit 40 which are detachably attachable to each other, as explained below. The pump unit 18 includes a two-chambered housing 17 and a diaphragm 24 secured to the underside of the two-chambered housing 17 so as to form a working chamber 29.

The two-chambered housing 17 has a first chamber 13 with the inlet 11 and a second chamber 21 with an outlet 22. The suction tube 16 is connected to the inlet 11. Two one-way valves 19 and 20 are present at the bottom of the first chamber 13 and the second chamber 21, respectively. To the bottom of the two-chambered housing 17 there is attached a mounting base 23, used to mount the housing 17 to the drive unit 40 by means of a bayonet lock.

The diaphragm 24 has an integral rod-shaped drive member 25, which is used for engagement with the drive unit 40.

The drive unit 40 includes an electric motor 39, batteries 41 and a control block 50 described below. The shaft of the motor 39 has a crank 27 coupled to a reciprocating

rod 26. The rod 26 has a receptacle with a cavity adapted to receive and lock therein the drive member 25.

When the pump unit 18 is attached to the drive unit 40 by means of the bayonet lock in the base 23, the drive member 25 is received in the receptacle cavity of the reciprocating rod 26 and then locked therein.

Upon activation of the motor 39, the crank 27 is rotated and reciprocates the receptacle rod 26, causing the diaphragm 24 to expand and contract the working chamber 29. Thus the pump unit 18 pumps air or liquid that passes through the one-way valves 19 and 20.

Air and liquids enter the two-chambered housing 17 through the inlet 11 and suction tube 16 which is connected to the patient's wound enclosure 12, for the removal of exudate. Liquids and air enter the first chamber 13, which is under negative pressure when diaphragm 24 reciprocates, driving them past one-way valve 20, into the second chamber 21. The air and liquid which are pumped through outlet 22, enter waste bag 31.

The pump's ability to pump air and liquid, unlike conventional pumps, which are efficient in pumping only one type of matter, is enhanced by the flexibility of the diaphragm 24 which allows the diaphragm to yield when encountering heavy loads, such as those present when pumping liquid. This diaphragm flexibility also provides an additional substantial advantage: when the negative pressure in working chamber 29 is high, the diaphragm 24 stretches to allow the reciprocation of the receptacle rod 26 to occur, at minimal burden to the electric motor 39.

The waste bag 31 has a vent 15, through which air and gas are discharged to the atmosphere. Accordingly, waste bag 31 will retain only the waste fluids which are pumped into it. The waste bag may contain a porous media 47 adapted to soak up the drained liquids.

It is important to note that waste bag 31 is made of thin plastic sheet, which allow it to be folded or collapsed when not full, providing the convenience of having minimal bulk and minimal inconvenience to the patient using or carrying it.

The drive unit 40 also includes a control block 50 with control circuits such as cycle control 42, which turns the motor pump on and off alternately, motor voltage and current monitoring and control 43, which controls the negative pressure level produced by the pump unit 18, by controlling the voltage and current which drive motor 39. At any given voltage which drives motor 39, the current draw of the motor is directly

related to the negative pressure generated by the pump 18. Accordingly, monitoring of the current which the motor 39 draws allows for indirect monitoring of the negative pressure attained by pump 18. The ability to monitor the negative pressure developed by pump 18, indirectly, precludes the need of making an infectious negative pressure line connection to a pressure transducer or vacuum gage.

For example, if the motor 39 is a direct current electric motor, a sensor may sense the electric current driving the motor. Since the direct current motor output torque is directly related to the current driving the motor, and since the motor output torque is directly related to the negative pressure the pump 18 produces, monitoring the motor current or controlling it, provide for monitoring and controlling the negative pressure produced by the vacuum pump. Motor current monitoring is only one of the available methods of indirect negative pressure monitoring and controlling. The same function of negative pressure control may be accomplished by an adjustable torque limiting clutch placed between the motor output shaft and the crank 27.

The control block 50 also has a negative pressure comparator 44, which compares the desired set negative pressure level obtained by pump 18, and the actual monitored negative pressure level as obtained indirectly from motor voltage and current monitoring and control 43. Comparator 44 will activate audible alarm 45, whenever pump 18 fails to reach the desired pre-set negative pressure level.

Fig. 2 shows the disposable portion of the system as an assembly 60, which includes the pump unit 18, the waste bag 31, the connecting tube 16 and the wound enclosure 12, all separated from the drive unit and from the wound area of the body 34. The assembly 60 may be disposed of in its totality after use, and replaced by a new assembly, thus keeping the costly drive unit 40 free from any contamination. It would be obvious to those skilled in the art, that the present invention alleviates the need for cleaning or disinfecting any portion of drive unit 40 after use, or providing protective means, such as filters, to keep contaminants from reaching the costly drive 40.

CLAIMS:

1. A vacuum system for applying negative pressure to a wound, the vacuum system comprising: an enclosure, a venting arrangement, a tube, a vacuum source, and a controller:

the enclosure being attachable to a periphery of the wound so as to define a confined volume;

the enclosure having an enclosure outlet connectable to said vacuum source via said tube so that negative pressure can be selectively created in said volume;

the venting arrangement comprising a flow restrictor to restrict flow through said venting arrangement and to thereby provide a controlled flow of ambient air into said vacuum system upstream of the vacuum source;

the controller configured for controlling operation of the vacuum source while providing venting of the vacuum system via said venting arrangement to provide a desired level of said negative pressure in said confined volume.

2. The vacuum system according to claim 1, wherein said flow restrictor is provided in any one of the enclosure or the tube.

3. The vacuum system according to claim 1, further comprising a sensor for enabling determination of a level of said negative pressure in said confined volume.

4. The vacuum system according to claim 1, further comprising a waste container in fluid communication with said vacuum source.

5. The vacuum system according to claim 1, wherein said vacuum source comprises a vacuum pump driven by a motor.

6. The vacuum system according to claim 5, wherein said motor is an electric motor, and said controller controls operation of said motor to thereby provide a desired level of said negative pressure in said confined volume.

7. The vacuum system according to claim 6, wherein said controller controls the electric current or the voltage of said motor to control said level of said negative pressure in said confined volume.

8. The vacuum system according to claim 6, wherein said controller controls the torque of said motor to control said level of said negative pressure in said confined volume.

9. The vacuum system according to claim 1, wherein ambient pressure may be restored in said confined volume via said venting arrangement when said vacuum pump is not operating.

10. The vacuum system according to claim 1, wherein said venting arrangement comprises at least one of:

- one or more bleeding holes;
- a porous body;
- an orifice.

11. A vacuum system for applying negative pressure to a wound, the vacuum system comprising: an enclosure, a venting arrangement, a tube, a vacuum source, and a controller:

the enclosure being attachable to a periphery of the wound so as to define a confined volume;

the enclosure having an enclosure outlet connectable to said vacuum source via said tube so that negative pressure can be selectively created in said volume, said venting arrangement located outside said enclosure and comprising a flow restrictor to restrict flow through said venting arrangement and to thereby provide a controlled flow of ambient air into said tube, said controlled flow of ambient air entering said tube via said venting arrangement without entering said enclosure;

the controller configured for controlling operation of the vacuum source while said tube is being vented via said venting arrangement to provide a desired level of said negative pressure in said confined volume.

12. The vacuum system according to claim 11, further comprising a sensor for enabling determination of a level of said negative pressure in said confined volume.

13. The vacuum system according to claim 11, further comprising a waste container in fluid communication with said vacuum source.

14. The vacuum system according to claim 11, wherein said vacuum source comprises a vacuum pump driven by a motor.

15. The vacuum system according to claim 14, wherein said motor is an electric motor, and said controller controls operation of said motor to thereby provide a desired level of said negative pressure in said confined volume.

16. The vacuum system according to claim 15, wherein said controller controls at least one of the electric current of said motor, or the voltage of said motor, or the torque of said motor to control said level of said negative pressure in said confined volume.

17. The vacuum system according to claim 11, wherein ambient pressure may be restored in said confined volume via said venting arrangement when said vacuum pump is not operating.

18. The vacuum system according to claim 11, wherein said venting arrangement comprises at least one of:

- one or more bleeding holes;
- a porous body;
- an orifice.

19. A method for applying negative pressure to a wound, comprising:

(a) providing a vacuum system comprising at least: an enclosure, a venting arrangement, a tube, and a vacuum source:

the enclosure being attachable to a periphery of the wound so as to define a confined volume;

the enclosure having an enclosure outlet connectable to said vacuum source via said tube so that negative pressure can be selectively created in said volume;

the venting arrangement comprising a flow restrictor to restrict flow through said venting arrangement and to thereby provide a controlled flow of ambient air into said system upstream of the vacuum source;

(b) controlling operation of the vacuum source while the vacuum system is being vented via the venting arrangement to thereby provide a desired level of said negative pressure in said confined volume.

20. The method according to claim 19, wherein the vacuum source comprises a vacuum pump driven by an electric motor, and wherein step (b) comprises controlling operation of said motor to thereby provide a desired level of said negative pressure in said confined volume.

21. The method according to claim 20, wherein step (b) comprises controlling at least one of the electric current, or the voltage, or the torque of said motor to control said level of said negative pressure in said confined volume.

22. The method according to claim 19, wherein said venting arrangement comprises at least one of:

- one or more bleeding holes;
- a porous body;
- an orifice.

Abstract

A vacuum system for draining an open wound from liquids exuded therefrom, comprising an enclosure sealable to the wound circumference, a vacuum pump including a disposable pump unit detachably attachable to a non-disposable drive unit, and a waste container for collection of drained liquids. The enclosure has an outlet connected by means of a tube to an inlet of the pump unit and the waste container is connected to an outlet of the pump unit, such that when the vacuum pump is operated the drained liquids flow through the vacuum pump. The enclosure has one or more bleeding holes provided therethrough or adjacent to its outlet so that ambient air may enter the tube and flow together with the drained liquids. The enclosure and the waste container are disposable so that the drained liquids contact only disposable elements and may be disposed of together with all disposable elements

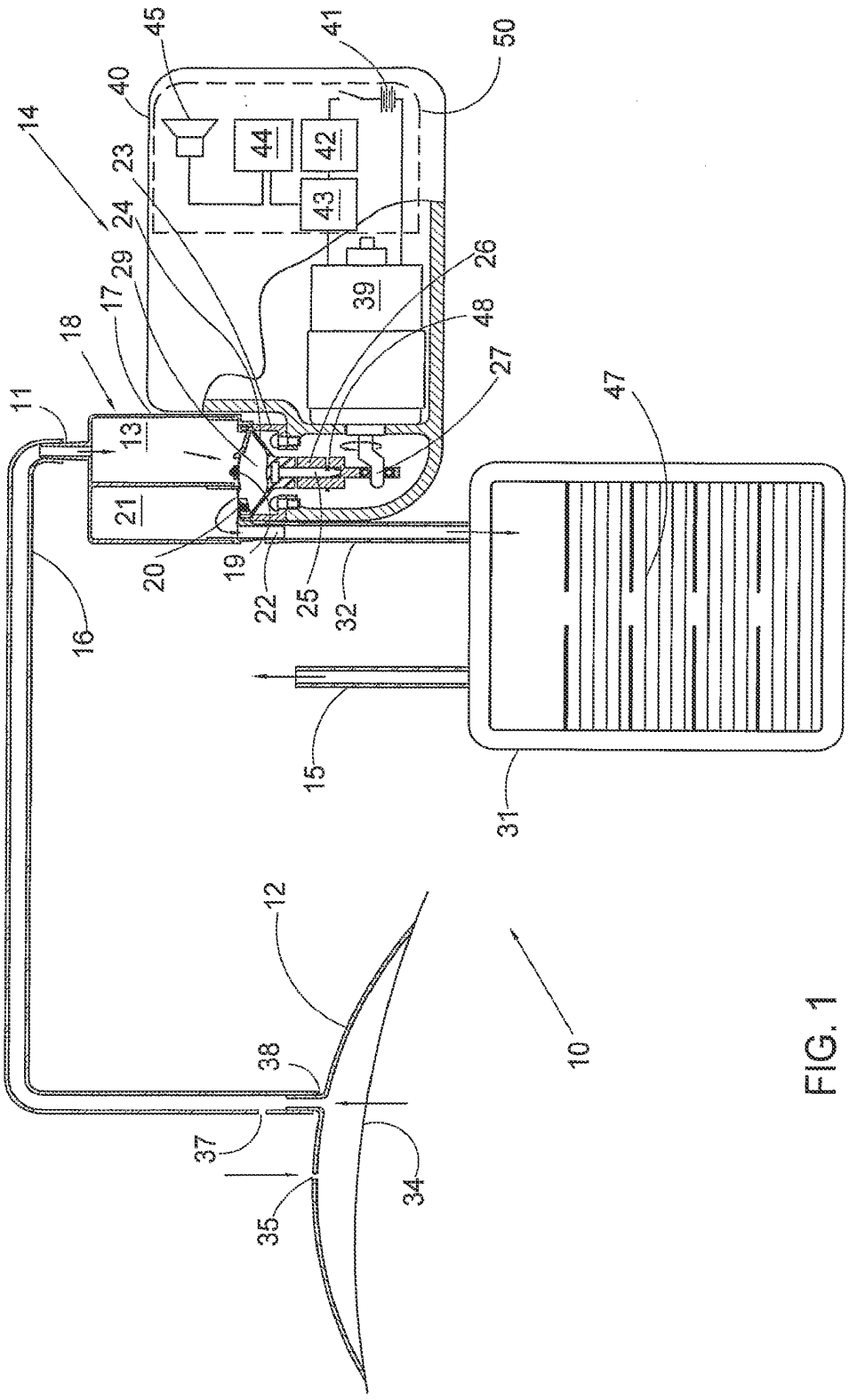

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FIG. 1

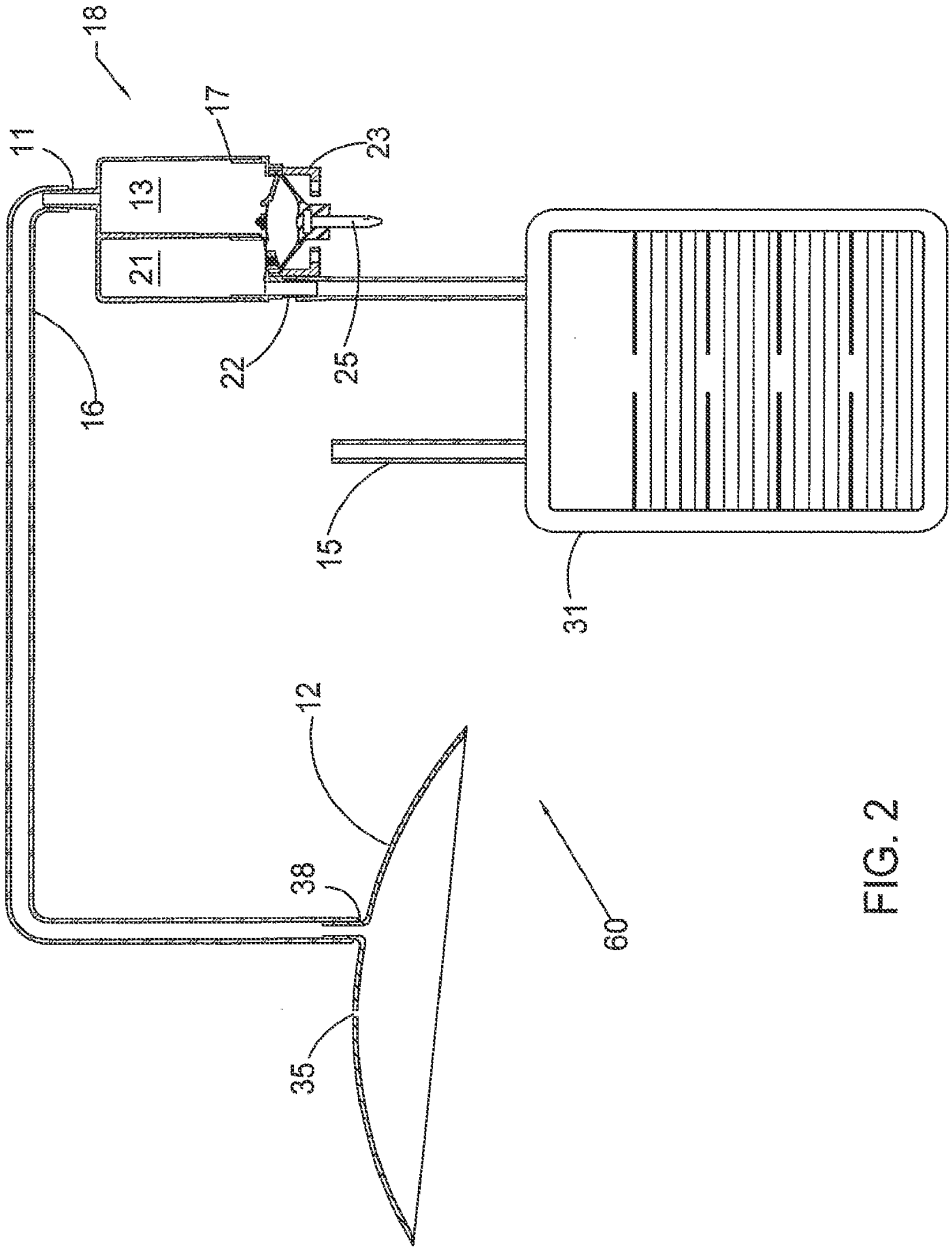


FIG. 2

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	WOUND CLOSURE AND DRAINAGE SYSTEM
First Named Inventor/Applicant Name:	Carmeli ADAHAN
Filer:	Roger Lowen Browdy/Michael Stanwyck
Attorney Docket Number:	ADAHAN16A

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Pages:				
Claims:				
Claims in excess of 20	2202	2	40	80
Miscellaneous-Filing:				
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**810**

Electronic Acknowledgement Receipt

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Application Number:	13917865
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Confirmation Number:	7555
Title of Invention:	WOUND CLOSURE AND DRAINAGE SYSTEM
First Named Inventor/Applicant Name:	Carmeli ADAHAN
Customer Number:	1444
Filer:	Roger Lowen Browdy/Michael Stanwyck
Filer Authorized By:	Roger Lowen Browdy
Attorney Docket Number:	ADAHAN16A
Receipt Date:	14-JUN-2013
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Transmittal of New Application	2013-06-14e-filingapplicationtransmittal.pdf	256903 893366f3170c48d535b2121dfadc1b0c5f3dac8f	no	4
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Information:					
2	Application Data Sheet	2013-06-14ADS.pdf	1503368 e6f9580ab3ee862df2abc0196090f23d2b3e43a8	no	6
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	2013-06-14IDSForm.pdf	615284 e66d72fd6a8cb64c61333bf9907758e963f4ab90	no	11
Warnings:					
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4	Oath or Declaration filed	2013-06-14Declaration.pdf	41548 667be2e83f33a49cc69a01516c8eafd235a7ff5d	no	1
Warnings:					
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5		2013-06-14Application.pdf	10823259 2c221fcf09de60d53b3093c5396e2c235ae028b1	yes	15

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	8
	Claims	9	12
	Abstract	13	13
	Drawings-only black and white line drawings	14	15

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6	Fee Worksheet (SB06)	fee-info.pdf	36556 28cf82c10300fe9106b30fd037365fb991e66ef9	no	2
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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.