

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
6 March 2003 (06.03.2003)

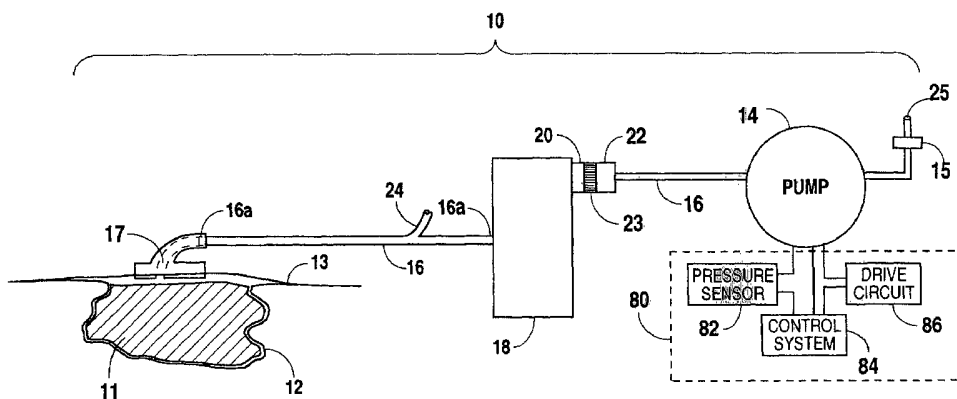
PCT

(10) International Publication Number  
WO 03/018098 A3

- (51) International Patent Classification<sup>7</sup>: A61M 1/00, 27/00
  - (74) Agents: BRIDI, Nadeem et al.; Kinetic Concepts, Inc., P.O. Box 659508, San Antonio, TX 78265-9508 (US).
  - (21) International Application Number: PCT/US02/27070
  - (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW.
  - (22) International Filing Date: 23 August 2002 (23.08.2002)
  - (25) Filing Language: English
  - (26) Publication Language: English
  - (30) Priority Data: 09/939,166 24 August 2001 (24.08.2001) US
  - (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
  - (71) Applicant: KCI LICENSING, INC. [US/US]; 8023 Vantage Drive, San Antonio, TX 78230-4726 (US).
  - (72) Inventors: BOYNTON, Thomas; 205 Country Road 403, Floresville, TX 78114 (US). SANDERS, Teryl, Blane; 702 Stoneway, San Antonio, TX 78258 (US). HEATON, Keith; 33 Hermitage Road, Poole, Dorset BH14 OQG (GB). HUNT, Kenneth; 18 Egdon Road, Merley, Wimbourne BH21 1TY (GB). BEARD, Mark; 4 Monks Close, West Moors, Wimborne, Dorset BH22 OHE (GB). TUMEY, David; 5018 New Castle Lane, San Antonio, TX 78246 (US). RANDOLFPH, Larry, Tab; 27917 Bonn Mountain, San Antonio, TX 78260 (US).
- Declaration under Rule 4.17:**  
 — as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations
- Published:**  
 — with international search report

[Continued on next page]

(54) Title: VACUUM ASSISTED TISSUE TREATMENT SYSTEM



(57) Abstract: A system (10) for stimulating the healing of tissue comprises a porous pad (11) positioned within a wound cavity (12), and an airtight dressing (13) secured over the pad, so as to provide an airtight seal to the wound cavity (12). A proximal end (16a) of a conduit (16) is connectable to the dressing (13). A distal end (16b) of the conduit (16) is connectable to a negative pressure source (14), which may be an electric pump housed within a portable housing (32), or wall suction. A canister (18) is positioned along the conduit (16) to retain exudates suctioned from the wound site (12) during the application of negative pressure. A first hydrophobic filter (20) is positioned at an opening of the canister (18) to detect a canister full condition. A second hydrophobic filter (22) is positioned between the first filter (20) and the negative pressure source (14) to prevent contamination of the non-disposable portion of the system by exudates being drawn from the wound. An odor filter (23) is positioned between the first and second hydrophobic filters (20, 22) to aid in the reduction of malodorous vapors. A securing means (34) is supplied to allow the portable housing (32) to be secured to a stationary object, such as a bed rail or intravenous fluid support pole. A means for automated oscillation of pressure over time is provided to further enhance and stimulate the healing of an open wound. A means for varying pump drive frequency and a means for managing a portable power supply are provided to increase battery life and improve patient mobility.



WO 03/018098 A3



---

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

2 October 2003

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**INTERNATIONAL SEARCH REPORT**

International Application No  
PCT/US 02/27070

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 A61M1/00 A61M27/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC 7 A61M		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 61206 A (HEATON KEITH ;KCI LICENSING INC (US); JOHNSON ROYCE (US); LINA CES) 19 October 2000 (2000-10-19) page 12, line 11 - line 34 , sentence 19 - sentence 23 page 11, line 13 - line 24 figures 6-10	1
Y	---	2
Y	US 6 093 230 A (HORICK JR ROBERT A ET AL) 25 July 2000 (2000-07-25) column 6, line 36 - line 43; figures 2,3 ---	2
A	US 5 636 643 A (ARGENTA LOUIS C ET AL) 10 June 1997 (1997-06-10) cited in the application column 8, line 65 -column 9, line 19; figure 8 ---	1
-/--		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.		
<input checked="" type="checkbox"/> Patent family members are listed in annex.		
° Special categories of cited documents :		
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed		
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family		
Date of the actual completion of the international search	Date of mailing of the international search report	
26 November 2002	07. 03. 2003	
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  Lakkis, A	

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 02/27070

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 645 081 A (ARGENTA LOUIS C ET AL) 8 July 1997 (1997-07-08) cited in the application column 5, line 23 - line 36; figure 1 ---	1
A	US 6 142 982 A (HEATON KEITH PATRICK ET AL) 7 November 2000 (2000-11-07) cited in the application column 4, line 1 - line 16; figure 1 -----	I

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 02/27070

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1,2,5,7

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. Claims: 1,2,5,7

A system for stimulating healing of tissue comprising a porous pad, an airtight dressing and further comprising a first and a second filter, wherein said first filter and said second filter are incorporated into an opening of a canister

2. Claims: 3,12

A system for stimulating healing of tissue comprising a porous pad, an airtight dressing and further comprising a first and a second filter, further comprising means for sampling fluids

3. Claims: 4,19-27,29,30

A system for stimulating healing of tissue comprising a porous pad, an airtight dressing and further comprising a canister, a housing and means for securing said housing to a stationary object

4. Claims: 6,8,9,13-15

A system for stimulating healing of tissue comprising a porous pad, an airtight dressing and further comprising a pumping mechanism and means for managing a power supply thereto

5. Claims: 10,11,16-18,28

A system for stimulating healing of tissue comprising a porous pad, an airtight dressing and further comprising a first and a second filter; further comprising a conduit having a partition forming a pressure detection conduit

6. Claims: 31-33

A system for stimulating healing of tissue comprising a porous pad, an airtight dressing and further comprising means for applying negative pressure and means for varying said negative pressure over a time interval

7. Claims: 34-36

A system for stimulating healing of tissue comprising a

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

porous pad, an airtight dressing and further comprising an oscillating pump for applying negative pressure and means for maximizing pump flow rate over a pressure range

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/27070

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0061206	A	19-10-2000	AU 4078500 A	14-11-2000
			EP 1169071 A1	09-01-2002
			WO 0061206 A1	19-10-2000
-----				
US 6093230	A	25-07-2000	NONE	
-----				
US 5636643	A	10-06-1997	US 5645081 A	08-07-1997
			AT 196235 T	15-09-2000
			AU 696031 B2	27-08-1998
			AU 6360894 A	26-09-1994
			CA 2157772 A1	15-09-1994
			DE 69425881 D1	19-10-2000
			DE 69425881 T2	22-03-2001
			DK 688189 T3	27-12-2000
			EP 0688189 A1	27-12-1995
			ES 2151925 T3	16-01-2001
			GR 3034817 T3	28-02-2001
			JP 9503923 T	22-04-1997
			PT 688189 T	28-02-2001
			WO 9420041 A1	15-09-1994
			US 2001029956 A1	18-10-2001
			AT 164055 T	15-04-1998
			AU 674837 B2	16-01-1997
			AU 3130393 A	15-06-1993
			CA 2121688 A1	27-05-1993
			DE 9219136 U1	18-06-1998
			DE 69224847 D1	23-04-1998
			DE 69224847 T2	20-08-1998
			DK 620720 T3	28-09-1998
			EP 0620720 A1	26-10-1994
			ES 2114956 T3	16-06-1998
			JP 7501958 T	02-03-1995
			WO 9309727 A1	27-05-1993
			US 2001029956 A1	18-10-2001
-----				
US 5645081	A	08-07-1997	AT 164055 T	15-04-1998
			AU 674837 B2	16-01-1997
			AU 3130393 A	15-06-1993
			CA 2121688 A1	27-05-1993
			DE 9219136 U1	18-06-1998
			DE 69224847 D1	23-04-1998
			DE 69224847 T2	20-08-1998
			DK 620720 T3	28-09-1998
			EP 0620720 A1	26-10-1994
			ES 2114956 T3	16-06-1998
			JP 7501958 T	02-03-1995
			US 5636643 A	10-06-1997
			WO 9309727 A1	27-05-1993
			US 2001029956 A1	18-10-2001
-----				
US 6142982	A	07-11-2000	AT 203174 T	15-08-2001
			CA 2237606 A1	22-05-1997
			DE 19681649 T0	03-12-1998
			DE 29623482 U1	23-07-1998
			DE 69613997 D1	23-08-2001
			DE 69613997 T2	31-10-2001
			DK 865304 T3	24-09-2001
			EP 1088569 A2	04-04-2001
			EP 0865304 A1	23-09-1998



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/US 02/27070

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6142982	A	ES 2159050 T3	16-09-2001
		GB 2344531 A ,B	14-06-2000
		WO 9718007 A1	22-05-1997
		GB 2307180 A ,B	21-05-1997
		GB 2336546 A ,B	27-10-1999
		GR 3036872 T3	31-01-2002
		HK 1029536 A1	14-12-2001
		HK 1012589 A1	02-03-2001
		JP 2000500992 T	02-02-2000
		PT 865304 T	30-01-2002
-----			