

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
12 July 2007 (12.07.2007)

PCT

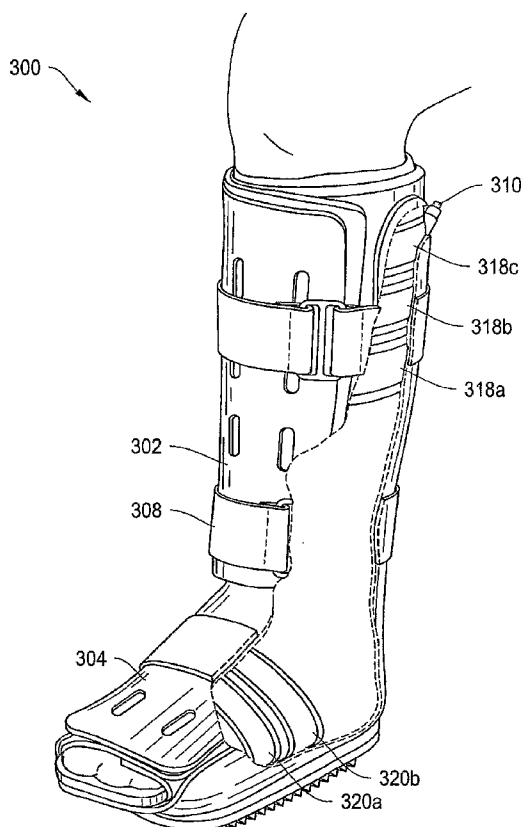
(10) International Publication Number  
**WO 2007/078845 A3**

- (51) International Patent Classification:  
A61F 5/01 (2006.01) A61F 5/058 (2006.01)
- (21) International Application Number:  
PCT/US2006/047744
- (22) International Filing Date:  
15 December 2006 (15.12.2006)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/751,091 15 December 2005 (15.12.2005) US
- (71) Applicant (for all designated States except US):  
DJO, LLC [US/US]; 1430 Decision Street, Vista,  
CA 92081-8553 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): VALDERRA-  
BANO, Victor [CA/CA]; Human Performance Lab.  
& Orthopaedic Dept., University Of Calgary, 2500

- University Drive NW, Calgary, AB T2N1N4 (CA). HAR-  
GRAVE, David, C. [US/US]; 30 East Lane, Madison, NJ  
07940-2651 (US).
- (74) Agent: KELLY, Edward, J.; Fish & Neave IP Group,  
Ropes & Gray LLP, One International Place, Boston, MA  
02110-2624 (US).
- (81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS,  
JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS,  
LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY,  
MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS,  
RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN,  
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

[Continued on next page]

(54) Title: SYSTEMS AND METHODS APPLYING REVERSED SEQUENCE PRESSURE TO CONTROL EDEMA FLOW



(57) Abstract: The systems and methods described herein, include, among other things, orthopedic appliances and methods of applying therapy to limb of a patient for the purpose of reducing edema. In one aspect, the invention provides a therapy system that may be fitted over a patient's limb about a joint for the purposes of treating limb injury by reducing or milking edema. In other aspects, the invention provides for systems and methods that may be adapted to provide intermittent massaging of lymph fluid through the lymphatic vessels in a direction toward the heart, which is toward the center of a patient's torso and away from the patient's affected limb.

WO 2007/078845 A3



FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,  
RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**(88) Date of publication of the international search report:**  
22 November 2007

**Published:**

— *with international search report*

*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/US2006/047744

A. CLASSIFICATION OF SUBJECT MATTER  
INV. A61F5/01 A61F5/058

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)  
A61F

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	WO 92/04880 A (HABERMEYER PETER [DE]) 2 April 1992 (1992-04-02) page 3, line 31 - page 11, line 27; figure 2	1-8, 10, 12-21 9, 11
X	----- EP 0 770 368 A1 (JOHNSON & JOHNSON PROFESSIONAL [US] DJ ORTHOPEDICS LLC [US]) 2 May 1997 (1997-05-02) column 3, line 26 - column 5, line 52; figures 2,4,5	1-8, 10, 12-16
X A	----- US 2004/111048 A1 (JENSEN JEFFREY L [US] ET AL) 10 June 2004 (2004-06-10) paragraphs [0043] - [0053]; figures 1,2,6	17  1-16, 18-21
	----- -/--	

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier 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

19 July 2007

02/08/2007

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

Cuiper, Ralf

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2006/047744

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 5 527 268 A (GILDERSLEEVE RICHARD E [US] ET AL) 18 June 1996 (1996-06-18) figures 3,4 -----	6
A	US 5 761 834 A (GRIM TRACY E [US] ET AL) 9 June 1998 (1998-06-09) column 5, line 51 - column 7, line 25; figure 2 -----	1-21
A	US 5 976 099 A (KELLOGG DONALD L [US]) 2 November 1999 (1999-11-02) cited in the application the whole document -----	1-21
A	DE 27 10 677 A1 (SWOBODA WALTER) 14 September 1978 (1978-09-14) the whole document -----	1-21

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2006/047744

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

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

1.  Claims Nos.: 22-43  
because they relate to subject matter not required to be searched by this Authority, namely:  
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapyAs stated in the very beginning of claim 22, the method is a treatment by therapy.
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 III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

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

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

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No

PCT/US2006/047744

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9204880	A	02-04-1992	AT 125141 T	15-08-1995
			DE 4029120 A1	19-03-1992
			DK 505527 T3	11-09-1995
			EP 0505527 A1	30-09-1992
			ES 2075463 T3	01-10-1995
			JP 2750952 B2	18-05-1998
			JP 5503653 T	17-06-1993
			US 5399152 A	21-03-1995
			<hr/>	
EP 0770368	A1	02-05-1997	AU 704267 B2	15-04-1999
			AU 7034796 A	01-05-1997
			CN 1158243 A	03-09-1997
			DE 69629343 D1	11-09-2003
			DE 69629343 T2	24-06-2004
			JP 9201378 A	05-08-1997
			US 5833639 A	10-11-1998
<hr/>				
US 2004111048	A1	10-06-2004	NONE	
<hr/>				
US 5527268	A	18-06-1996	NONE	
<hr/>				
US 5761834	A	09-06-1998	AU 6245194 A	14-09-1994
			CA 2155346 A1	01-09-1994
			DE 69430733 D1	11-07-2002
			DE 69430733 T2	27-03-2003
			EP 0686005 A1	13-12-1995
			ES 2177576 T3	16-12-2002
			US 5329705 A	19-07-1994
			WO 9418863 A1	01-09-1994
			<hr/>	
US 5976099	A	02-11-1999	AU 2306199 A	05-07-1999
			CA 2315779 A1	24-06-1999
			EP 1054615 A1	29-11-2000
			WO 9930607 A2	24-06-1999
<hr/>				
DE 2710677	A1	14-09-1978	NONE	
<hr/>				