

(19) World Intellectual Property Organization  
International Bureau



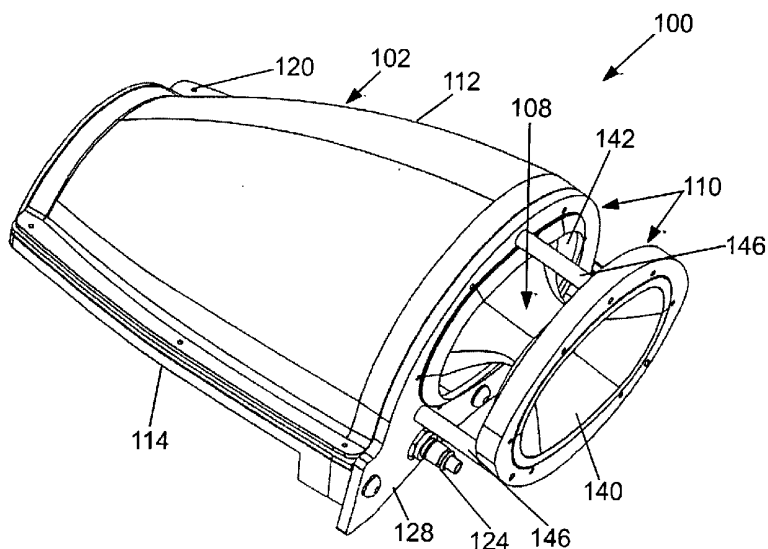
(43) International Publication Date  
13 December 2001 (13.12.2001)

PCT

(10) International Publication Number  
WO 01/093749 A3

- (51) International Patent Classification<sup>7</sup>: A61F 7/00
- (21) International Application Number: PCT/US01/18681
- (22) International Filing Date: 7 June 2001 (07.06.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/210,659 9 June 2000 (09.06.2000) US
- (71) Applicant: **THE BOARD OF TRUSTEES OF THE LE-  
LAND STANFORD JUNIOR UNIVERSITY** [US/US];  
900 Welch Road, Suite 350, Palo Alto, CA 94304 (US).
- (72) Inventors: **GRAHN, Dennis, A.**; 1153 Stanford Avenue,  
Palo Alto, CA 94306 (US). **HELLER, H., Craig**; 648 Ju-  
nipero Serra Boulevard, Stanford, CA 94025 (US).
- (74) Agent: **FIELD, Bret, E.**; Bozicevic, Field & Francis LLP,  
Suite 200, 200 Middlefield Road, Menlo Park, CA 94025  
(US).
- (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, PL, PT, RO, RU, SD, SE, SG, SI, SK,  
SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian  
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European  
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,  
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,  
CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:**  
— with international search report
- (88) Date of publication of the international search report:  
8 August 2002
- 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.*

(54) Title: METHODS AND DEVICES FOR MANIPULATING THERMOREGULATORY STATUS



(57) **Abstract:** Methods and devices for manipulating the thermoregulatory status of a mammal are provided. In the subject methods, thermal energy is transferred between the environment and both of the thoracic/abdominal core body and head of the mammal under negative pressure conditions. The subject methods and devices can be used to increase or decrease the thoracic/abdominal core body temperature of a mammal, in which case thermal energy is introduced or removed into the thoracic/abdominal core body and removed or introduced from the head, respectively. The subject devices include at least the following components: a means for causing a transfer of thermal energy with the thoracic/abdominal core body under negative pressure conditions (100); and a means for causing a transfer of thermal energy with the head. The subject methods and devices find use in a variety of applications, particularly for causing the temperature of one or more regions of the core body and/or temperature gradients to deviate from normal.



WO 01/093749 A3

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US01/18681

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
IPC(7) : A61F 7/00 US CL : 607/108		
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) U.S. : 607/108, 111, 104, 107; 128/898		
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)		
<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, P	US 6,228,106 B1 (SIMBRUNER et al.) 08 May 2001 (08.05.2001), column 6, lines 6-16.	1, 3-6
X	US 4,987,896 A (NAKAMATSU) 29 January 1991 (29.01.1991).	1, 3, 4, 6
A	US 4,691,762 A (ELKINS et al.) 08 September 1987 (08.09.1987).	1-31
A	US 5,683,438 A (GRAHN) 04 November 1997 (04.11.97).	1-31
A, P	US 6,165,208 A (REYES et al.) 26 December 2000 (26.12.00).	1-31
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> 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	"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
"E"	earlier application or patent published on or after the international filing date	"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
"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)	"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
"O"	document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed	
Date of the actual completion of the international search	Date of mailing of the international search report	
13 December 2001 (13.12.2001)	13 FEB 2002	
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Linda Dvorak Telephone No. (703) 308-0858	

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US01/18681

**Continuation of Item 4 of the first sheet:**

The title is too long. It is suggested that title be changed to: **Methods and Devices for Manipulating Thermoregulatory Status**