

(19)



(11)

**EP 2 510 816 A3**

(12)

**EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**22.04.2015 Bulletin 2015/17**

(51) Int Cl.:  
**A41D 13/005 (2006.01)**

(43) Date of publication A2:  
**17.10.2012 Bulletin 2012/42**

(21) Application number: **12164308.4**

(22) Date of filing: **16.04.2012**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**  
Designated Extension States:  
**BA ME**

(72) Inventor: **Stapleton, Thomas J.**  
**Southwick, MA Massachusetts 01077 (US)**

(74) Representative: **Leckey, David Herbert**  
**Dehns**  
**St Bride's House**  
**10 Salisbury Square**  
**London**  
**EC4Y 8JD (GB)**

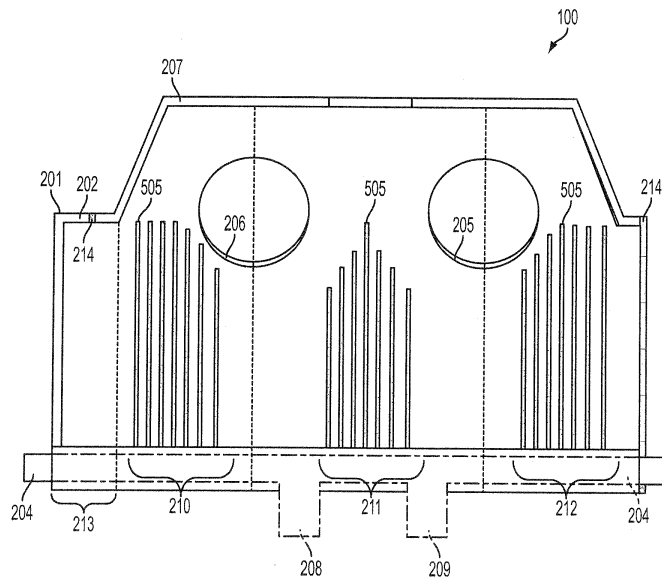
(30) Priority: **14.04.2011 US 201113087160**

(71) Applicant: **Hamilton Sundstrand Space Systems International, Inc.**  
**Windsor Locks, CT 06096 (US)**

**(54) Personal cooling apparatus**

(57) A wearable personal cooling apparatus includes an outer layer (201), which comprises fabric proportioned and configured to closely envelop a human torso, a primary air plenum (204) proximate the outer layer (201), and an inner layer (202) proximate the outer layer (201) and in communication with the primary air plenum (204). The inner layer is configured to distribute air from the

primary air plenum (204) throughout an inner surface of the inner layer. A secondary air plenum (210) is arranged within the inner layer and in communication with the primary air plenum (204). The secondary air plenum (210) comprises a first end proximate the primary air plenum (204) and a second end, and is configured to direct air from the first end to the second end.



**FIG. 4**

**EP 2 510 816 A3**



EUROPEAN SEARCH REPORT

Application Number  
EP 12 16 4308

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2010/242147 A1 (POHR SEBASTIAN HEINZ [DE] ET AL) 30 September 2010 (2010-09-30) * paragraphs [0028] - [0034]; figures 1,3,6 *	1-15	INV. A41D13/005
X	US 2001/000849 A1 (SIMAN-TOV MOSHE [US] ET AL) 10 May 2001 (2001-05-10) * paragraphs [0025], [0026], [0028]; figures 1,3,4b *	1-15	
X	US 2006/174392 A1 (FARNWORTH BRIAN [CA] ET AL) 10 August 2006 (2006-08-10) * paragraphs [0036] - [0038]; figure 1 *	1-15	
X	US 2005/172655 A1 (NAAMAN CHIBBI [IL]) 11 August 2005 (2005-08-11) * paragraphs [0016], [0035], [0036]; figures 1,2 *	1,2	
A	EP 0 490 347 A1 (FIMAC SPA [IT]) 17 June 1992 (1992-06-17) * column 2, line 32 - column 3, line 41; figures 2-4 *	1-15	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			A41D
Place of search		Date of completion of the search	Examiner
The Hague		17 March 2015	D'Souza, Jennifer
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

EPO FORM 1503 03/82 (P04/C01)

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 12 16 4308

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

17-03-2015

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010242147 A1	30-09-2010	DE 102006060990 A1	03-07-2008
		GB 2458604 A	30-09-2009
		US 2010242147 A1	30-09-2010
		WO 2008074440 A2	26-06-2008
US 2001000849 A1	10-05-2001	US 6257011 B1	10-07-2001
		US 2001000849 A1	10-05-2001
		US 2001003907 A1	21-06-2001
US 2006174392 A1	10-08-2006	AU 2007210884 A1	09-08-2007
		CA 2636433 A1	09-08-2007
		EP 1981364 A1	22-10-2008
		EP 2236047 A1	06-10-2010
		JP 2009525412 A	09-07-2009
		US 2006174392 A1	10-08-2006
		WO 2007088431 A1	09-08-2007
US 2005172655 A1	11-08-2005	AU 2002321800 A1	10-03-2003
		US 2005172655 A1	11-08-2005
		US 2007157651 A1	12-07-2007
		WO 03017790 A2	06-03-2003
EP 0490347 A1	17-06-1992	EP 0490347 A1	17-06-1992
		IL 100305 A	30-05-1994
		IT 1246506 B	19-11-1994
		ZA 9109709 A	31-03-1993

15

20

25

30

35

40

45

50

55

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82