



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
01.11.2017 Bulletin 2017/44

(51) Int Cl.:
F23R 3/00 (2006.01) F23R 3/04 (2006.01)

(43) Date of publication A2:
02.01.2013 Bulletin 2013/01

(21) Application number: **12174426.2**

(22) Date of filing: **29.06.2012**

(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

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(30) Priority: **30.06.2011 US 201113174166**

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(54) **System and method for adaptive impingement cooling**

(57) An adaptive cooling structure comprises a mounting support 44, a liner 42, and a spacer 66. The mounting support 44 has a coolant aperture 62 for directing cooling air A_C through the support 44. The liner 42 has a first surface 52 facing away from the mounting support 44 and a second surface 54 facing towards the support 44. The liner 42 is coupled to the mounting support 44, and the spacer 66 is positioned between the support

44 and the liner 42. The positioning of the spacer 66 creates a chamber 70 between the mounting support 44 and the liner 42, thus allowing the cooling air A_C to impinge on the second surface 54 of the liner 42. The liner wall 48 is configured to deflect away from the mounting support 44 to expand the chamber 70, thus allowing the cooling air A_C to further impinge on the second surface 54 of the liner 42.

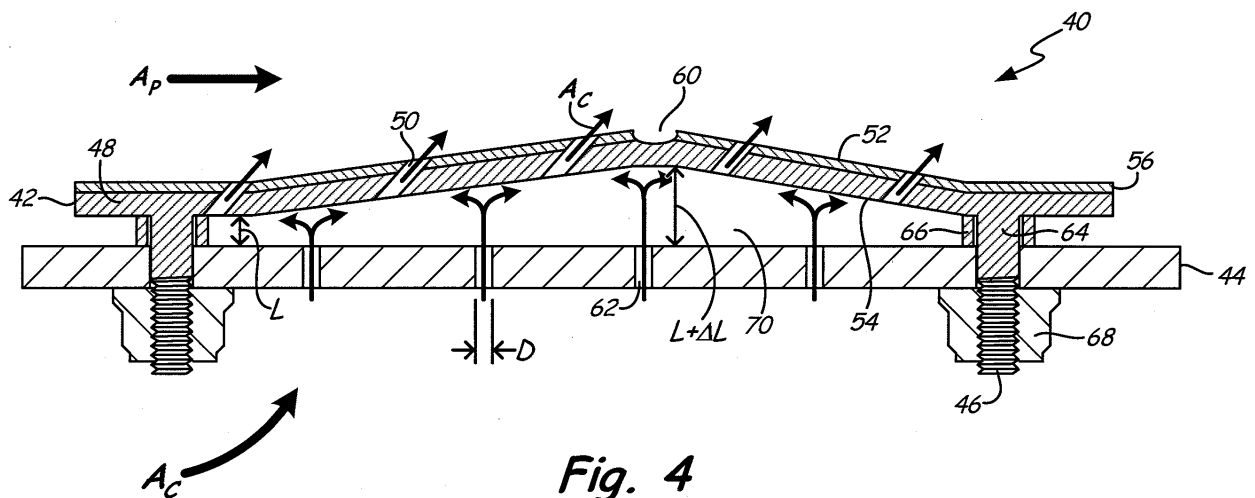


Fig. 4



EUROPEAN SEARCH REPORT

 Application Number
 EP 12 17 4426

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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 5 131 222 A (AUXIER THOMAS A [US] ET AL) 21 July 1992 (1992-07-21)	1,2,5-8, 13-15	INV. F23R3/00
Y	* column 1, line 55 - column 2, line 27; claims; figures *	1-15	F23R3/04
Y	US 2010/077764 A1 (DIERBERGER JAMES A [US]) 1 April 2010 (2010-04-01) * paragraphs [0016] - [0020]; figures *	1-15	
Y	US 2004/211188 A1 (ALKABIE HISHAM [CA]) 28 October 2004 (2004-10-28) * paragraph [0027]; figures *	3,9-12	
Y	US 2011/011095 A1 (LADD SCOTT A [US] ET AL) 20 January 2011 (2011-01-20) * abstract; figures *	1-15	
A	US 5 209 059 A (WARD ERIC [US]) 11 May 1993 (1993-05-11) * column 2, line 31 - line 63; figures *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			F23R F02K
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 22 September 2017	Examiner Oliveira, Casimiro
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			

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 EPO FORM 1503 03.82 (P04C01)

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

EP 12 17 4426

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
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22-09-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5131222 A	21-07-1992	NONE	
US 2010077764 A1	01-04-2010	EP 2172708 A2 US 2010077764 A1	07-04-2010 01-04-2010
US 2004211188 A1	28-10-2004	CA 2519382 A1 EP 1629234 A1 JP 2006524791 A US 2004211188 A1 WO 2004097300 A1	11-11-2004 01-03-2006 02-11-2006 28-10-2004 11-11-2004
US 2011011095 A1	20-01-2011	NONE	
US 5209059 A	11-05-1993	NONE	