



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
17.01.2007 Bulletin 2007/03

(51) Int Cl.:
F28D 1/03 (2006.01) F28F 3/04 (2006.01)

(43) Date of publication A2:
30.07.2003 Bulletin 2003/31

(21) Application number: **03250318.7**

(22) Date of filing: **17.01.2003**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT SE SI SK TR
 Designated Extension States:
AL LT LV MK RO

(72) Inventor: **Smith, John Llanelli, Carmarthenshire SA15 1SN (GB)**

(30) Priority: **22.01.2002 GB 0201309**

(74) Representative: **Davies, Gregory Mark et al Urquhart-Dykes & Lord LLP Three Trinity Court, 21-27 Newport Road Cardiff CF24 0AA (GB)**

(71) Applicant: **Calsonic Kansei UK Limited Llanelli, Carmarthenshire SA14 8HU (GB)**

(54) **Automotive heat exchanger**

(57) An automotive heat exchanger (1) has respective flowpath arrays (2,3) for a first fluid medium and a second fluid medium (air). A series of tubes (2) for the first fluid medium are formed of joined mating plates (4,5), the tubes (2) having open ends and a flowpath extending

between the open ends, adjacent tubes (2) having spaced external surface portions defining the flowpath array (3) for the air fluid medium. The tubes (2) advantageously have relatively wide open mouth portions (4a) leading to a narrower tube width (h) extending between the open ends.

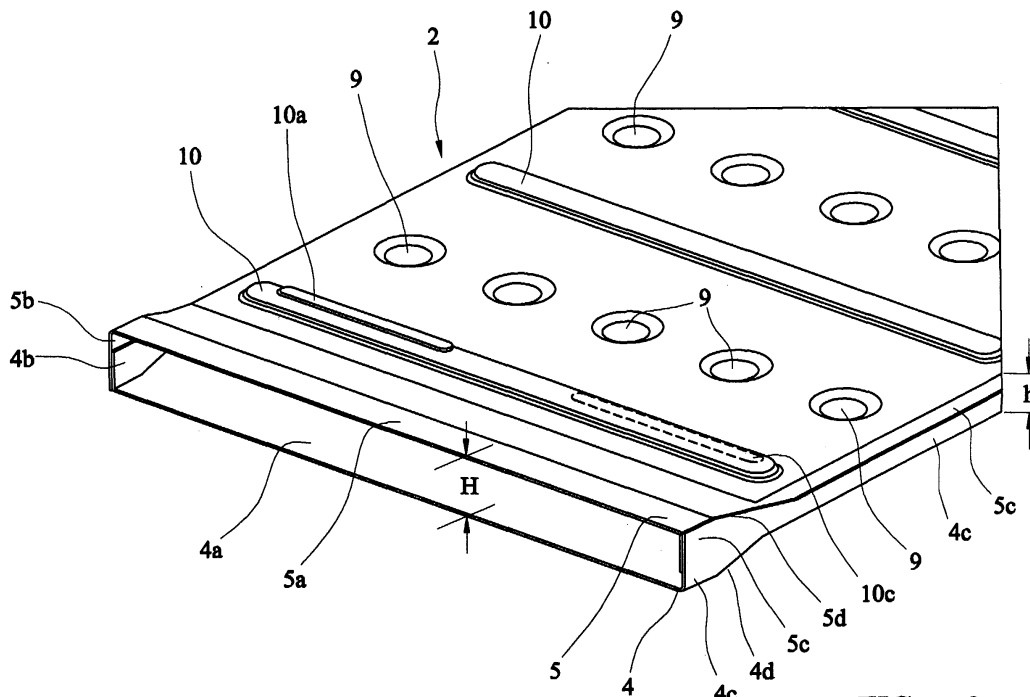


FIG. 2



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 4 183 402 A (COTTER RAY W [US]) 15 January 1980 (1980-01-15) * claims; figures *	1-4,9-11	INV. F28D1/03 F28F3/04
X	FR 682 988 A (AMEDE-LOUIS JANCEL) 4 June 1930 (1930-06-04) * the whole document *	1-5,11	
X	US 3 757 855 A (KUN L ET AL) 11 September 1973 (1973-09-11) * column 10, line 67 - column 11, line 5; claim 4; figures *	1,5-7, 10,11	
X	JP 09 178385 A (DENSO CORP) 11 July 1997 (1997-07-11) * abstract; figures 2,5,7c *	1,5-8, 10,11	
X	EP 1 136 667 A2 (ZEUNA STAERKER KG [DE]) 26 September 2001 (2001-09-26) * abstract; figures *	1,7,8,10	
X	FR 339 401 A (GOTTFRIED EGLOFF) 9 June 1904 (1904-06-09) * page 2, line 3 - line 11; figures 4,5 *	1,2,4,11	
			TECHNICAL FIELDS SEARCHED (IPC)
			F28F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		11 December 2006	Mootz, Frank
CATEGORY OF CITED DOCUMENTS		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	
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			

5
EPO FORM 1503 03.82 (F04C01)

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

EP 03 25 0318

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.

11-12-2006

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4183402	A	15-01-1980	NONE	

FR 682988	A	04-06-1930	NONE	

US 3757855	A	11-09-1973	AU 465923 B2	09-10-1975
			AU 4772872 A	26-04-1974
			CA 969533 A1	17-06-1975
			DE 2250222 A1	19-04-1973
			ES 407585 A1	16-11-1975
			FR 2156359 A1	25-05-1973
			GB 1403063 A	13-08-1975
			IT 966339 B	11-02-1974
			JP 48047643 A	06-07-1973
			JP 966917 C	26-07-1979
			JP 52089853 A	28-07-1977
			JP 53046502 B	14-12-1978
			SE 377826 B	28-07-1975

JP 9178385	A	11-07-1997	NONE	

EP 1136667	A2	26-09-2001	DE 10014266 A1	27-09-2001

FR 339401	A		NONE	
