# (11) **EP 2 056 057 A3**

(12)

### **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3: 23.01.2013 Bulletin 2013/04

(51) Int Cl.: F28F 3/12 (2006.01)

F28F 3/04 (2006.01)

(43) Date of publication A2: 06.05.2009 Bulletin 2009/19

(21) Application number: 08253579.0

(22) Date of filing: 31.10.2008

(84) Designated Contracting States:

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR

**Designated Extension States:** 

**AL BA MK RS** 

(30) Priority: **02.11.2007** JP 2007285807

05.03.2008 JP 2008054179

(71) Applicant: Calsonic Kansei Corporation Saitama 331-0823 (JP)

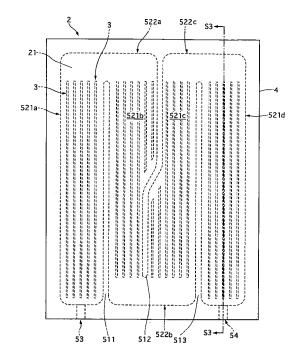
(72) Inventors:

- Sawaguchi, Masaru c/o Calsonic Kansei Corporation Saitama-ken 331-8501 (JP)
- Araki, Shinji c/o Calsonic Kansei Corporation Saitama-ken 331-8501 (JP)
- (74) Representative: Oxley, Robin John George Marks & Clerk LLP 90 Long Acre London WC2E 9RA (GB)

## (54) Heat exchanger

(57) A heat exchanger (2) includes a first member (4) and a second member (5). The first member (4) is provided with a main body (4a) and a heat transfer accelerating portion (3) formed on the main body (4a) as one unit. The second member (5) is formed with a recess (5a) dented from a reference surface (51) and functioning as a flow channel (21). The first member (4) and the second member (5) are joined with each other at the reference surface (51) in a state where a part, which deviates from the recess (5a) when the first and second members (4, 5) are joined, of the heat transfer accelerating portion (3) of the first member (4) is cut off and the rest of the heat transfer accelerating portion (3) is inserted into the recess of the second member (5).

FIG. 1



EP 2 056 057 A3



### **EUROPEAN SEARCH REPORT**

**Application Number** EP 08 25 3579

Category	Citation of document with inc		Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Х	US 2004/035555 A1 (N AL) 26 February 2004	IARA KENICHI [JP] ET	1-3,5,6, 15-17, 19-21	INV. F28F3/12 F28F3/04
Υ	* paragraphs [0227], figures 25,27,28,30	[0228]; claim 55;	7-14,18	F20F3/04
Υ	US 2007/227697 A1 (1 [JP]) 4 October 2007 * paragraph [0040] - figure 5 *	' (2007-10-04)	7	
Υ	US 2004/238162 A1 (S AL) 2 December 2004 * paragraph [0044];	EILER THOMAS F [CA] ET (2004-12-02) figure 6 *	8-14,18	
Х	US 2007/163749 A1 (M 19 July 2007 (2007-6 * paragraph [0065] - figures 1-3 *	IIYAHARA HIDEYUKI [JP]) 07-19) · paragraph [0071];	1,5,6, 15,16,19	
X	DE 10 2005 058204 A1 14 June 2007 (2007-0	1,2,4-6, 15,16, 19,21	TECHNICAL FIELDS SEARCHED (IPC)	
	* paragraphs [0017], figures 1-5 *	[0036], [0037];	19,21	F28F H01L
	The present search report has be	een drawn up for all claims	-	
	Place of search	Date of completion of the search	·	Examiner
	The Hague	19 December 2012	Moo	tz, Frank
CATEGORY OF CITED DOCUMENTS  X: particularly relevant if taken alone Y: particularly relevant if combined with anot document of the same category A: technological background		L : document cited fo	sument, but publis e n the application or other reasons	
O : non	-written disclosure rmediate document	& : member of the sa document		

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

EP 08 25 3579

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.

19-12-2012

	Patent document ed in search report		Publication date		Patent family member(s)		Publication date
US	2004035555	A1	26-02-2004	CN DE FR KR US US	1483988 10336066 2843450 20040014278 2004035555 2006237177 2009014162	A1 A1 A A1 A1	24-03-200 01-04-200 13-02-200 14-02-200 26-02-200 26-10-200 15-01-200
US	2007227697	A1	04-10-2007	DE JP US	102007015293 2007294891 2007227697	Α	25-10-200 08-11-200 04-10-200
US	2004238162	A1	02-12-2004	CA CN EP JP US WO	2425233 1771420 1613913 2006522910 2004238162 2004090452	A A2 A A1	11-10-200 10-05-200 11-01-200 05-10-200 02-12-200 21-10-200
US	2007163749	A1	19-07-2007	NON	IE		
DE	102005058204	A1	14-06-2007	DE EP EP JP US WO	102005058204 1955001 2413080 2009517625 2009050302 2007062939	A1 A2 A A1	14-06-200 13-08-200 01-02-201 30-04-200 26-02-200 07-06-200

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

FORM P0459