



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
28.09.2011 Bulletin 2011/39

(51) Int Cl.:
F28F 1/28 (2006.01) F28D 1/053 (2006.01)

(43) Date of publication A2:
15.02.2006 Bulletin 2006/07

(21) Application number: **05016252.8**

(22) Date of filing: **27.07.2005**

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

(72) Inventor: **Krupa, Andrzej Adam**
63-400 Ostrow Wielokopolski (PL)

(74) Representative: **Robert, Vincent et al**
Delphi France SAS
64, avenue de la Plaine de France
Zac Paris Nord 2
BP 65059
95972 Tremblay-en-France (FR)

(30) Priority: **09.08.2004 PL 36948704**

(71) Applicant: **Delphi Technologies, Inc.**
Troy, MI 48007 (US)

(54) **A motor vehicle heat exchanger**

(57) The invention relates to a motor vehicle heat exchanger (1) comprising a cooling core (4) and two header tanks fluidly connected with the core. The cooling core comprises a plurality of rectangular plates (5) provided with an array of equidistantly spaced stamped collars (6) and inclined louvers (7) between them, where each collar (6) is formed of a base cylindrical portion and a conical portion provided with a circumferential bead at the end

thereof. The face (13) of the first header tank (2) is provided with stamped projections (14) and the face (15) of the second header tank (3) is provided with stamped openings (16) corresponding to the collars (6). The plates (5) are stacked on one another, so as the conical portions of the collars (6) of each plate are inserted into cylindrical base portions of the collars (6) of the surrounding plate (5) and each group of stacked collars (6) forms a flow duct for a fluid medium.

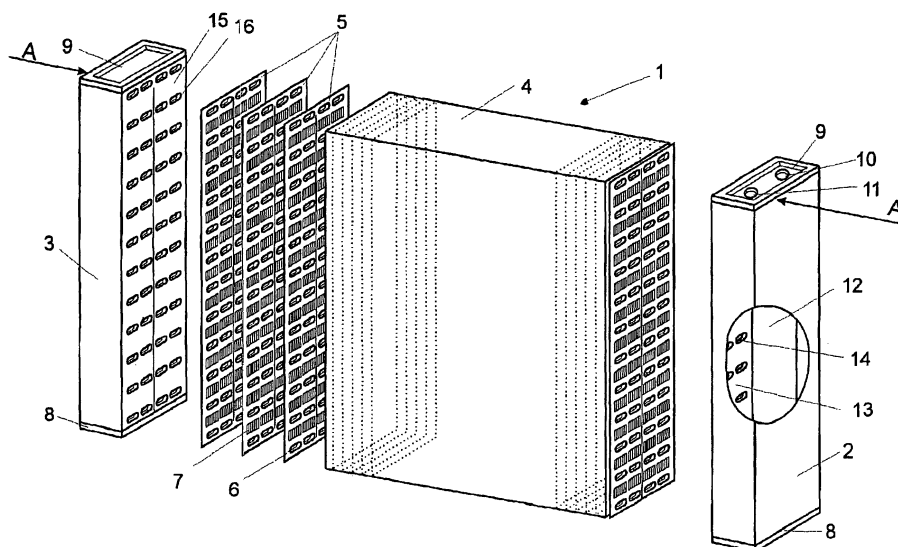


Fig 1



EUROPEAN SEARCH REPORT

Application Number
EP 05 01 6252

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 1 761 395 A (JOHN KARMAZIN) 3 June 1930 (1930-06-03) * page 1, lines 1-3 * * page 1, lines 84-94 * * page 1, line 100 * * page 2, lines 1-10 * * page 2, lines 16-19 * * page 2, lines 33-36 * * figures 1,2,3,4,6,7,8 * * claims 1,3 *	1-6	INV. F28F1/28 F28D1/053
A	JP 2004 020174 A (UNION METALS CO LTD) 22 January 2004 (2004-01-22) * figures 4,5,8,9 *	1	
Y	US 3 703 925 A (IRELAND ROBERT G ET AL) 28 November 1972 (1972-11-28) * column 1, lines 1-5 * * column 2, lines 13-16 * * column 3, lines 42-47 * * figure 6 *	1-6	
A	WO 01/56782 A2 (CORUS LP [CA]) 9 August 2001 (2001-08-09) * abstract *	4	TECHNICAL FIELDS SEARCHED (IPC) F28F F28D
A	WO 2004/044512 A1 (VALEO THERMIQUE MOTEUR SA [FR]; GUERRERO PASCAL [FR]; MARTINS CARLOS []) 27 May 2004 (2004-05-27) * claim 1 * * figures 1,23 *	6	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 24 August 2011	Examiner Fernandez Ambres, A
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			

 2
EPO FORM 1503 03.82 (P04C01)

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

EP 05 01 6252

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.

24-08-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 1761395	A	03-06-1930	NONE
JP 2004020174	A	22-01-2004	NONE
US 3703925	A	28-11-1972	NONE
WO 0156782	A2	09-08-2001	AT 491568 T 15-01-2011
		AU 771487 B2 25-03-2004	
		AU 3401501 A 14-08-2001	
		BR 0107965 A 29-10-2002	
		CA 2399228 A1 09-08-2001	
		CN 1398223 A 19-02-2003	
		CZ 20022517 A3 14-05-2003	
		EP 1268190 A2 02-01-2003	
		JP 2003528280 A 24-09-2003	
		MX PA02007497 A 23-08-2004	
		US 6329075 B1 11-12-2001	
WO 2004044512	A1	27-05-2004	AT 514912 T 15-07-2011
		AU 2003260548 A1 03-06-2004	
		EP 1558886 A1 03-08-2005	
		JP 4657723 B2 23-03-2011	
		JP 2006505760 A 16-02-2006	