(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
3 September 2015 (03.09.2015)

WIPO | PCT

(10) International Publication Number
WO 2015/128807 A3

(51) International Patent Classification:
F25B 39/04 (2006.01)

(21) International Application Number:
PCT/IB2015/051391

(22) International Filing Date:
25 February 2015 (25.02.2015)

(25) Filing Language: Italian

(26) Publication Language: English

(30) Priority Data:
TO2014A000157 26 February 2014 (26.02.2014) IT

(71) Applicant: **DENSO THERMAL SYSTEMS S.P.A.** [IT/IT]; Frazione Masio 24, I-10046 POIRINO (Torino) (IT).

(72) Inventors: **NAPOLI, Pasquale**; Frazione Masio 24, I-10046 POIRINO (Torino) (IT). **PEROCCHIO, Davide**; Frazione Masio 24, I-10046 POIRINO (Torino) (IT). **TOSCANO RIVALTA, Giovanni**; Frazione Masio 24, I-10046 POIRINO (Torino) (IT). **DI TONNO, Massimo**; Frazione Masio 24, I-10046 POIRINO (Torino) (IT).

(74) Agents: **VANZINI, Christian** et al.; c/o JACOBACCI & PARTNERS S.p.A., Corso Emilia 8, I-10152 Torino (IT).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*

(88) Date of publication of the international search report:
10 December 2015

(54) Title: HORIZONTAL CONDENSER WITH COOLANT ACCUMULATOR

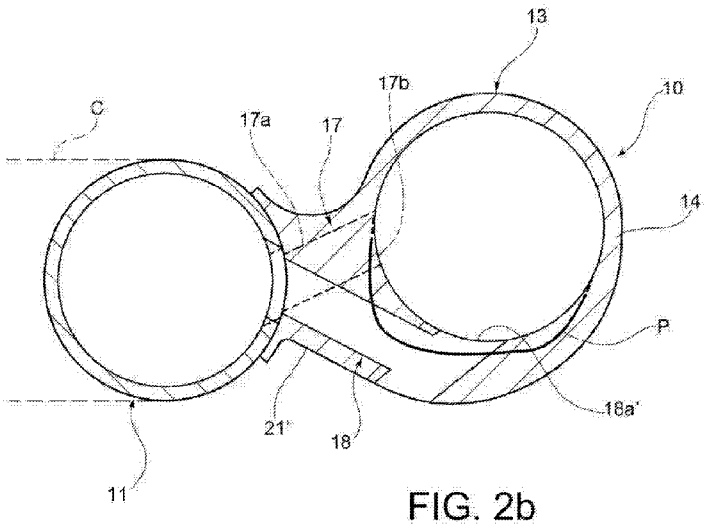


FIG. 2b

(57) Abstract: A vehicle condenser including an accumulator (10) and a header tank (11) to which the accumulator (10) is connected in parallelism relationship therewith, wherein said accumulator comprises a tubular container (13; 113, 213; 313) with a fluid inlet (17) and a fluid outlet (18) which are disposed on the side wall (14; 114; 314) thereof and can be connected to a condensing section (SC) and a sub-cooling section (SSR) of the condenser, respectively. The condenser in use is disposed in a horizontal arrangement in which the fluid inlet (17) comprises an inlet port (17b) formed at the side wall (14; 114; 314) of the container (13; 113, 213; 313) of the accumulator, and the fluid outlet (18) comprises an outlet port (18a) disposed at or close to the side wall (14; 1 14; 314), at the lower part of the container (13; 113, 213; 313).

WO 2015/128807 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2015/051391

A. CLASSIFICATION OF SUBJECT MATTER
INV. F25B39/04
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F25B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2005/108896 A1 (BEHR GMBH & CO KG [DE]; FELDHAUS GEORG [DE]; FOERSTER UWE [DE]; KASPAR) 17 November 2005 (2005-11-17) page 4, line 32 - page 7, line 28; figures 1-3	1-13
X	EP 1 464 901 A2 (BEHR GMBH & CO KG [DE]) 6 October 2004 (2004-10-06) paragraph [0033] - paragraph [0054]; figures 1-5	1-13
X	JP H11 257799 A (SANDEN CORP) 24 September 1999 (1999-09-24) abstract; figure 1	1-5

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 August 2015	02/09/2015

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Szilagyi, Barnabas

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2015/051391

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2005108896 A1	17-11-2005	AT 543063 T	15-02-2012
		DE 102004022714 A1	15-12-2005
		EP 1745255 A1	24-01-2007
		US 2008156012 A1	03-07-2008
		WO 2005108896 A1	17-11-2005
EP 1464901 A2	06-10-2004	DE 102004017002 A1	04-11-2004
		EP 1464901 A2	06-10-2004
		JP 2004309127 A	04-11-2004
JP H11257799 A	24-09-1999	NONE	