



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
06.07.2011 Bulletin 2011/27

(51) Int Cl.:
F28D 1/047 ^(2006.01) **F28D 7/04** ^(2006.01)
F28D 7/00 ^(2006.01) **F28F 1/30** ^(2006.01)
F28F 1/32 ^(2006.01) **F28F 13/10** ^(2006.01)

(43) Date of publication A2:
27.04.2011 Bulletin 2011/17

(21) Application number: **10187809.8**

(22) Date of filing: **15.10.2010**

(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

(72) Inventor: **Yang, Tai-Her**
Si-Hu Town
Dzan-Hwa (TW)

(74) Representative: **Wright, Howard Hugh Burnby**
Withers & Rogers LLP
Goldings House
2 Hays Lane
London
SE1 2HW (GB)

(30) Priority: **22.10.2009 US 588635**

(71) Applicant: **Yang, Tai-Her**
Si-Hu Town
Dzan-Hwa (TW)

(54) **Heat absorbing or dissipating device with double-scroll piping transmitting temperature difference fluid**

(57) The present invention relates to a device, which is composed of one or more parallel or quasi-parallel installed fluid piping by series or parallel connection, each

piping is specifically distributed by one or more double-scroll arrangement for transmitting thermal conductive fluid, and the double-scroll fluid piping constitutes fluid flow uniformly distributed by temperature difference.

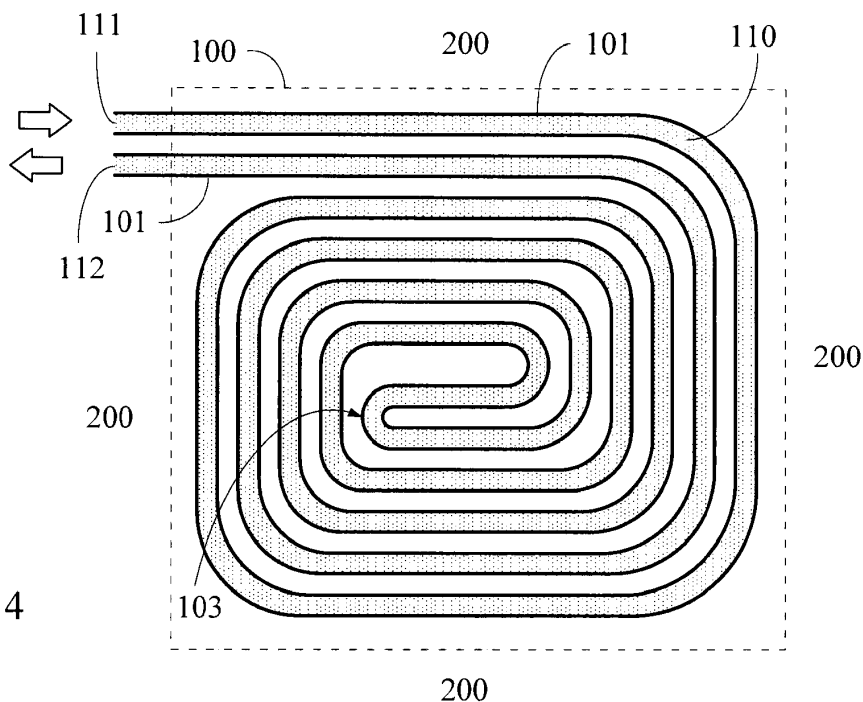


Fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 10 18 7809

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	DE 81 07 402 U1 (JOHN & CO.) 18 November 1982 (1982-11-18)	1,2,5,7, 9-18	INV. F28D1/047
Y	* page 5, line 2 - page 6, line 29 * * page 10, line 9 - page 13, line 12; figures 4,7 *	3	F28D7/04 F28D7/00 F28F1/30 F28F1/32 F28F13/10
Y	EP 0 345 698 A2 (PVG PATENTVERWERTUNG [DE]) 13 December 1989 (1989-12-13) * the whole document *	3	
X	US 2 074 700 A (LIMPERT ALEXANDER S) 23 March 1937 (1937-03-23) * figure 7 *	4,5,9-18	
X	US 4 697 427 A (NIGGEMANN RICHARD E [US] ET AL) 6 October 1987 (1987-10-06)	1,2,5-7, 9-18	
Y	* column 4, line 1 - column 8, line 30; figures 1-11 *	8	
X	US 4 883 117 A (DOBBS BRADLEY A [US] ET AL) 28 November 1989 (1989-11-28) * abstract; figures 1-9 *	1,2,5-7, 9-18	TECHNICAL FIELDS SEARCHED (IPC)
X	US 4 310 605 A (EARLY JACK ET AL) 12 January 1982 (1982-01-12) * column 2, line 28 - column 4, line 40; figures 1-5 *	1,2,5-7, 9-18	F28D F28F F24D
X	EP 0 750 871 A1 (FASTING CORIAN R VERWERKING [NL]) 2 January 1997 (1997-01-02) * figures 1-3 *	1,2,5,7, 9-18	
X	JP 9 072679 A (MIURA KOGYO KK) 18 March 1997 (1997-03-18) * abstract; figures 1,2 *	1,2,5,6, 9-18	
-/--			
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 26 May 2011	Examiner Leclaire, Thomas
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

2

EPO FORM 1503 03.82 (P04C01)



EUROPEAN SEARCH REPORT

Application Number
EP 10 18 7809

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 6 684 941 B1 (CAO YIDING [US] ET AL) 3 February 2004 (2004-02-03) * the whole document *	8	
A	US 2005/230080 A1 (PAUL PHILLIP H [US] ET AL) 20 October 2005 (2005-10-20) * the whole document *	8	
A,P	EP 2 202 469 A2 (TAI-HER YANG [TW]) 30 June 2010 (2010-06-30) * the whole document *	8	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 26 May 2011	Examiner Leclaire, Thomas
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

 2
EPO FORM 1503 03.02 (P04C01)



Application Number

EP 10 18 7809

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 10 18 7809

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-7, 9-18

structure of double-scroll piping heat exchanger

2. claim: 8

bidirectionally fluid pumping device for periodic
forward/reverse pumping operation

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

EP 10 18 7809

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.

26-05-2011

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 8107402	U1	18-11-1982	NONE	
EP 0345698	A2	13-12-1989	DE 3819548 A1	14-12-1989
US 2074700	A	23-03-1937	NONE	
US 4697427	A	06-10-1987	NONE	
US 4883117	A	28-11-1989	NONE	
US 4310605	A	12-01-1982	AU 7424481 A	01-04-1982
			CA 1164524 A1	27-03-1984
			DE 3137677 A1	19-05-1982
			FR 2490882 A1	26-03-1982
			GB 2084387 A	07-04-1982
			IT 1171540 B	10-06-1987
			JP 1362785 C	09-02-1987
			JP 57080677 A	20-05-1982
			JP 61030386 B	12-07-1986
EP 0750871	A1	02-01-1997	NL 1001064 C1	15-11-1995
JP 9072679	A	18-03-1997	NONE	
US 6684941	B1	03-02-2004	NONE	
US 2005230080	A1	20-10-2005	EP 1738115 A2	03-01-2007
			JP 2007533170 T	15-11-2007
			WO 2005114061 A2	01-12-2005
EP 2202469	A2	30-06-2010	CA 2688788 A1	23-06-2010
			JP 2010151439 A	08-07-2010
			SG 162702 A1	29-07-2010
			US 2010155044 A1	24-06-2010