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- (71) **Applicant (for all designated States except US):** **Equitec Holding B.V.** [NL/NL]; 50, Nieuwgraaf, NL-6921 RK Duiven (NL).
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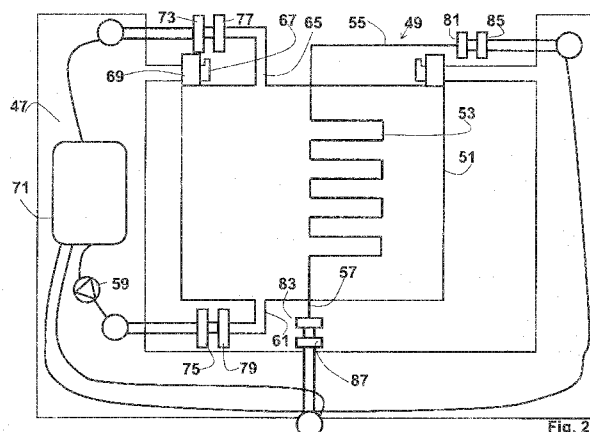
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Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) **Date of publication of the international search report:**
21 March 2013

(54) **Title:** A METHOD FOR EXCHANGING HEAT BETWEEN A HEAT EXCHANGE FLUID AND A PERISHABLE PRODUCT FLUID, A REMOVABLE HEAT EXCHANGE CARTRIDGE AND A HEAT EXCHANGE SYSTEM



(57) **Abstract:** A method for exchanging heat between a heat exchange fluid and a perishable product fluid. The method comprises providing the heat exchange fluid to an enclosure 5 of a heat exchanger and providing the perishable product fluid to a tube 53 comprising a flexible portion in the enclosure 51. The method comprises exchanging heat between the heat exchange fluid in the enclosure and the perishable product fluid in the tube 53 and interrupting providing the perishable product fluid to the tube 53. The method further comprises compressing the flexible portion of the tube 53 to decrease a volume of the tube 3 and to press a substantial part of the perishable product fluid out of the tube 53. The method may comprise changing the heat exchange fluid at a first temperature to a heat exchange fluid at a second temperature different than the first temperature.

INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2012/050344

A. CLASSIFICATION OF SUBJECT MATTER
INV. F28G5/00 A47J31/54
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)
F28G A47J

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	DE 606 028 C (JOACHIM SCHADE) 23 November 1934 (1934-11-23)	1-7,9,10
A	sentence 13 - sentence 30; figure 2 -----	8
A	US 4 693 302 A (DODDS DIEGO E F [AR]) 15 September 1987 (1987-09-15)	1-10
	sentence 12 - sentence 32 -----	
A	DD 273 496 A1 (BAUAKADEMIE DDR [DD]) 15 November 1989 (1989-11-15)	1-10
	figure 1 -----	
A	DE 20 2009 010578 U1 (FP SENSOR SYSTEMS GMBH [DE]) 9 December 2010 (2010-12-09)	1-10
	claim 1 -----	
	-/--	



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

8 January 2013

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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/NL2012/050344

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
1-27
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2012/050344

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 874 080 A1 (SPIREC SA [FR]) 10 February 2006 (2006-02-10)	11-18, 20-27
A	the whole document	19
A	----- WO 2008/139205 A2 (OTTER CONTROLS LTD [GB]; COLLINSON MICHAEL [GB]; GAETA ANTONIO MARTIN) 20 November 2008 (2008-11-20)	1-27
A	the whole document	
A	----- WO 2010/034097 A1 (9167 4234 QUEBEC INC [CA]; DUBE RENE [CA]) 1 April 2010 (2010-04-01)	1-27
A	the whole document	
A	----- FR 2 544 184 A1 (PERJES RAYMOND [FR]) 19 October 1984 (1984-10-19)	1-27
A	the whole document	
A	----- US 5 816 135 A (FERRI JOHN G [US]) 6 October 1998 (1998-10-06)	1-27
	the whole document	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/NL2012/050344

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 606028	C	23-11-1934	NONE
US 4693302	A	15-09-1987	US 4693302 A 15-09-1987
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DD 273496	A1	15-11-1989	NONE
DE 202009010578	U1	09-12-2010	NONE
FR 2874080	A1	10-02-2006	AT 464523 T 15-04-2010
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		FR 2874080 A1	10-02-2006
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		WO 2006021674 A1	02-03-2006
WO 2008139205	A2	20-11-2008	CN 101743438 A 16-06-2010
		EP 2162676 A2	17-03-2010
		EP 2481329 A1	01-08-2012
		WO 2008139205 A2	20-11-2008
WO 2010034097	A1	01-04-2010	NONE
FR 2544184	A1	19-10-1984	NONE
US 5816135	A	06-10-1998	NONE

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10

A method for exchanging heat

2. claims: 11-27

A removable heat exchange cartridge

3. claims: 28-34

Another method of exchanging heat
