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(54) **Stacked type multi-flow heat exchanger**

(57) A stacked type multi-flow heat exchanger (1) includes a plurality of heat transfer tubes (2) and fins (3) stacked alternately, and upper front (31a) and an upper rear tank (31b), a lower front (32a) and a lower rear tank (32b). The heat exchanger (1) includes partitions (33,34) provided at the lower front and rear tanks (32a, b), respectively, and a communication path (36) communicating between the same side ends of the lower

front and rear tanks (32a,b). A communication header (38) forming the communication path (36) is formed integrally with the outermost heat transfer tube (2b). Liquid refrigerant flows at a greater amount through the central portion of the heat exchanger core (1a), whereas high temperature refrigerant flows through the edge portions of the heat exchanger core (1a). A uniform temperature distribution of air having passed through the heat exchanger (1) may be achieved.

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EUROPEAN SEARCH REPORT

Application Number
EP 99 30 8314

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
D,A	EP 0 769 665 A (DENSO CORP) 23 April 1997 (1997-04-23) * abstract; figures *	1,2	F28D1/03
A	DE 198 14 051 A (ZEXEL CORP) 1 October 1998 (1998-10-01) * column 7, line 63 - column 8, line 31; figure 9B *	1,2	
A	US 4 621 685 A (NOZAWA KAZUO) 11 November 1986 (1986-11-11) * column 2, line 65 - column 3, line 14; figures 2,3 *	1,2	
A	FR 2 248 482 A (EQUIP AUTOMOBILE CIE FSE) 16 May 1975 (1975-05-16) * page 3, line 19 - page 4, line 33; figure 3 *	1,2	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			F28D F28F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 7 February 2000	Examiner Mootz, F
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			

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims 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 the first ten claims.

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:

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**LACK OF UNITY OF INVENTION
SHEET B**

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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

Stacked type multi-flow heat exchanger with particular
refrigerant flow path

2. Claims: 8-12

Integrally formed communication header for stacked-type heat
exchanger

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

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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
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07-02-2000

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