

Title (en)  
Heat exchanger

Title (de)  
Wärmetauscher

Title (fr)  
Echangeur de chaleur

Publication  
**EP 1132706 A2 20010912 (EN)**

Application  
**EP 01105273 A 20010305**

Priority  
JP 2000060914 A 20000306

Abstract (en)  
A heat exchanger comprises: a pair of headers (10, 10) which are provided in parallel facing each other through a predetermined distance and a pathway of the fluid is respectively provided therein; and a plurality of flat heat-exchange tubes (20,20...) which are provided between the headers in parallel, both ends thereof are fastened to the headers, and a pathway of the refrigerant for connecting the pathways of both headers is respectively provided therein. In this heat exchanger, the heat-exchange tubes and the headers are air-tightly and liquid-tightly fastened by inserting end portions (21,21...) of the heat-exchange tubes into insertion holes (11,11...) which are bored on the headers. Furthermore, in the vicinity of opening ends (29) of both end portions of the flat heat-exchange tubes, shape-holding portions (41) for preventing deformation of the opening ends are provided.  
<IMAGE>

IPC 1-7  
**F28D 1/03**; **F28F 9/18**; **F28F 3/04**

IPC 8 full level  
**F28F 1/02** (2006.01); **F25B 39/00** (2006.01); **F28D 1/03** (2006.01); **F28D 1/053** (2006.01); **F28F 3/04** (2006.01); **F28F 9/18** (2006.01)

CPC (source: EP US)  
**F28D 1/0316** (2013.01 - EP US); **F28D 1/0391** (2013.01 - EP US); **F28F 3/044** (2013.01 - EP US); **F28F 9/182** (2013.01 - EP US)

Citation (examination)  
• DE 4340378 A1 19940601 - ZEXEL CORP [JP]  
• JP H0335830 A 19910215 - CALSONIC CORP  
• GB 2299037 A 19960925 - BEHR GMBH & CO [DE]

Cited by  
FR2989766A1; EP1596149A3; FR2980839A1; CN103975215A; FR2841641A1; CN103502761A; WO2013050393A1

Designated contracting state (EPC)  
DE FR IT

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