

Title (en)  
Heat exchanger

Title (de)  
Wärmetauscher

Title (fr)  
Echangeur de chaleur

Publication  
**EP 0694747 B1 19990317 (EN)**

Application  
**EP 95305169 A 19950724**

Priority  
JP 17284794 A 19940725

Abstract (en)  
[origin: EP0694747A2] A heat exchanger, such as a condenser (10) or an evaporator (20) for an automotive air conditioning refrigerant circuit includes a plurality of tube elements (11,21) each having a first planar portion and a second planar portion opposing the first planar portion. A plurality of projections (501,214) are formed at an interior surface of the first and second planar portions. At least one hole (501c,214c) is formed on a flat projecting end surface of the projection by piercing. The projections of the first and second planar portions are aligned with and face each other, and are fixedly connected to each other at their flat projecting end surfaces so that the at least one hole of the first and second projections face each other. This construction effectively increases the internal pressure resistance characteristics of the heat exchanger without causing an increase in a manufacturing cost thereof.

IPC 1-7  
**F28D 1/03**; **F28F 3/04**; B21D 53/06

IPC 8 full level  
**F28D 1/03** (2006.01); **F28F 3/04** (2006.01)

CPC (source: EP)  
**F28D 1/035** (2013.01); **F28D 1/0391** (2013.01); **F28F 3/044** (2013.01); **F28F 2001/027** (2013.01)

Cited by  
EP0787967A1; EP2626921A4; EP1111321A3; EP0822381A3; DE102012111928A1; EP1179719A3; FR2933015A1; EP0859209A4; US6012511A; CN112371839A; US7383687B2

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