

Title (en)  
Heat exchanger

Title (de)  
Wärmetauscher

Title (fr)  
Echangeur de chaleur

Publication  
**EP 1557631 A3 20120104 (EN)**

Application  
**EP 05001033 A 20050119**

Priority  
• JP 2004011689 A 20040120  
• JP 2004015959 A 20040123  
• JP 2004021566 A 20040129

Abstract (en)  
[origin: EP1557631A2] A heat exchanger (1) comprises outer fins (3); a plurality of tubes (5) arranged alternately with the outer fins (3); and header tanks (7) receiving open ends of the tubes for communication with the tubes. The header tanks (7) each comprise a first member (21) and a second member (23) which are combined to each other. The first member (21) has tube insertion slots (33) into which the open ends of the tubes (5) are inserted, the second member (23) does not have the tube insertion slots. The first member (21) is either a core material having no brazing material layers on outer and inner peripheral surfaces thereof, or a core material having a brazing material layer on an outer peripheral surface thereof but having no brazing material layer on an inner peripheral surface thereof. The second member (23) is brazed to the outer or inner peripheral surface of the first member (21) having no brazing material layer thereon.

IPC 8 full level  
**F28F 9/02** (2006.01); **F28F 21/08** (2006.01)

CPC (source: EP US)  
**F28F 9/0224** (2013.01 - EP US); **F28F 21/084** (2013.01 - EP US); **F28F 2275/04** (2013.01 - EP US)

Citation (search report)  
• [XY] EP 1359384 A1 20031105 - ZEXEL VALEO CLIMATE CONTR CORP [JP]  
• [Y] US 5327959 A 19940712 - SAPERSTEIN Z PHILIP [US], et al  
• [X] US 6234238 B1 20010522 - KOYAMA SACHIO [JP], et al  
• [X] US 2001054496 A1 20011227 - KAJIKAWA YOSHIHARU [JP], et al  
• [A] US 5251374 A 19931012 - HALSTEAD GARY A [US], et al  
• [A] US 2003217838 A1 20031127 - DEY LAVOYCE [US], et al

Cited by  
FR2892806A1; WO2007051798A1

Designated contracting state (EPC)  
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR

Designated extension state (EPC)  
AL BA HR LV MK YU

DOCDB simple family (publication)  
**EP 1557631 A2 20050727**; **EP 1557631 A3 20120104**; **EP 1557631 B1 20141203**; CN 100523705 C 20090805; CN 1645029 A 20050727; US 2005173100 A1 20050811; US 2008283229 A1 20081120

DOCDB simple family (application)  
**EP 05001033 A 20050119**; CN 200510002442 A 20050120; US 17670408 A 20080721; US 3746705 A 20050119