

Title (en)
HEAT EXCHANGER

Title (de)
WÄRMETAUSCHER

Title (fr)
ECHANGEUR DE CHALEUR

Publication
EP 2233874 A4 20131218 (EN)

Application
EP 08792152 A 20080804

Priority
• JP 2008063948 W 20080804
• JP 2007286394 A 20071102

Abstract (en)
[origin: EP2233874A1] In a parallel-flow-type heat exchanger, heat efficiency performance is improved and smooth drainage of defrost water and condensed water is achieved. A heat exchanger (1) has horizontal header pipes (2) and (3) arranged parallel at an interval from one another in the vertical direction, vertical flat tubes (4) arranged at an interval from one another in the horizontal direction between the header pipes (2) and (3), with vertical refrigerant passages (5) provided inside the flat tubes communicating with the insides of the header pipes, and corrugated fins (6) arranged between the flat tubes (4). The corrugated fins (6) include upwind-side corrugated fins (6U) whose fin surface has a downward slope toward the downwind side and downwind-side corrugated fins (6D) whose fin surface has an upward slope toward the downwind side. On the side faces of the flat tubes (4), vertical ribs (12) are formed with which the downwind-side ends of the upwind-side corrugated fins (6U) and the upwind-side ends of the downwind-side corrugated fins (6D) are kept in contact.

IPC 8 full level
F28F 1/30 (2006.01); **F25B 39/02** (2006.01); **F28F 1/12** (2006.01); **F28F 17/00** (2006.01); **F28D 1/053** (2006.01)

CPC (source: EP)
F28D 1/05383 (2013.01); **F28F 1/126** (2013.01); **F28F 17/005** (2013.01)

Citation (search report)
• [Y] US 2006162376 A1 20060727 - HIGASHIYAMA NAOHISA [JP], et al
• [Y] JP S58217195 A 19831217 - MITSUBISHI ELECTRIC CORP
• [Y] JP H09196583 A 19970731 - CALSONIC CORP
• [A] WO 2005003671 A1 20050113 - SHOWA DENKO KK [JP], et al
• [A] JP 2004317002 A 20041111 - MATSUSHITA ELECTRIC IND CO LTD
• [A] DE 20118511 U1 20020214 - AUTOKUEHLER GMBH & CO KG [DE]
• [A] EP 1215461 A2 20020619 - MODINE MFG CO [US]
• See references of WO 2009057364A1

Cited by
EP2196758A4; US2012291476A1; US10539374B2

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR

DOCDB simple family (publication)
EP 2233874 A1 20100929; EP 2233874 A4 20131218; EP 2233874 B1 20170705; CN 101809400 A 20100818; CN 101809400 B 20111102; JP 2009115339 A 20090528; JP 4275182 B2 20090610; WO 2009057364 A1 20090507

DOCDB simple family (application)
EP 08792152 A 20080804; CN 200880109444 A 20080804; JP 2007286394 A 20071102; JP 2008063948 W 20080804