

Title (en)  
HEAT EXCHANGER AND AIR CONDITIONER

Title (de)  
WÄRMETAUSCHER UND KLIMAAANLAGE

Title (fr)  
ÉCHANGEUR DE CHALEUR ET CLIMATISEUR

Publication  
**EP 2657637 A1 20131030 (EN)**

Application  
**EP 12737182 A 20120123**

Priority  
• JP 2011011248 A 20110121  
• JP 2012000401 W 20120123

Abstract (en)  
A heat exchanger (30) includes flat tubes (33) and fins (36). The plate-like fins (36) are spaced from one another by a predetermined distance in the direction in which the flat tubes (33) extend. The flat tubes (33) are inserted in pipe insertion portions (46) of the fins (36). In the fins (36), parts of the fins (36) between vertically adjacent ones of the flat tubes (33) are heat transfer parts (70). Each of the heat transfer parts (70) includes protrusions (81-83) and louvers (50, 60). The protrusions (81-83) are located at a windward region of the heat transfer part (70) and formed by making the heat transfer part (70) protrude in an inverted V shape. The louvers (50, 60) are located in a leeward region of the heat transfer part (70) and bend out from the heat transfer part (70).

IPC 8 full level  
**F28F 1/32** (2006.01)

CPC (source: EP KR US)  
**F25B 39/00** (2013.01 - EP US); **F28D 1/05366** (2013.01 - US); **F28D 1/05383** (2013.01 - EP US); **F28F 1/128** (2013.01 - EP US); **F28F 1/30** (2013.01 - KR); **F28F 1/32** (2013.01 - KR); **F28F 1/325** (2013.01 - EP US); **F28F 17/005** (2013.01 - EP US); **F28D 2021/0068** (2013.01 - EP US); **F28F 2215/04** (2013.01 - EP US); **F28F 2215/12** (2013.01 - EP US)

Cited by  
EP3128277A1; EP2869015A1; US10393452B2; CN107614998A; EP3306251A4; AU2015396674B2

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

DOCDB simple family (publication)  
**EP 2657637 A1 20131030; EP 2657637 A4 20140709**; AU 2012208125 A1 20130808; CN 103299150 A 20130911; CN 103299150 B 20150916; JP 2012163320 A 20120830; JP 5141840 B2 20130213; KR 101451056 B1 20141016; KR 20130129428 A 20131128; US 2013299141 A1 20131114; WO 2012098919 A1 20120726

DOCDB simple family (application)  
**EP 12737182 A 20120123**; AU 2012208125 A 20120123; CN 201280005048 A 20120123; JP 2012000401 W 20120123; JP 2012010821 A 20120123; KR 20137021962 A 20120123; US 201213980644 A 20120123