

Title (en)  
HEAT EXCHANGER AND REFRIGERATION CYCLE AIR CONDITIONER USING SAME

Title (de)  
WÄRMETAUSCHER UND KÄLTEKREISLAUF-KLIMAANLAGE DAMIT

Title (fr)  
ÉCHANGEUR DE CHALEUR ET CONDITIONNEUR D'AIR À CYCLE DE RÉFRIGÉRATION L'UTILISANT

Publication  
**EP 2980516 A4 20161207 (EN)**

Application  
**EP 13880586 A 20130327**

Priority  
JP 2013058995 W 20130327

Abstract (en)  
[origin: EP2980516A1] Provided is a heat exchanger (1), including: a parallel-flow-type heat exchange unit (3) including a plurality of heat exchange pipes (11, 13) each extending in an up-and-down direction, the parallel-flow-type heat exchange unit including at least a front row portion (7) and a back row portion (9), the front row portion and the back row portion each including the plurality of heat exchange pipes each extending in the up-and-down direction; and a plate fin-and-tube-type heat exchange unit (5) including a plurality of plate fins (25) each extending in the up-and-down direction, the plate fin-and-tube-type heat exchange unit being arranged in front of a lower portion of a front surface of the parallel-flow-type heat exchange unit. An outlet end of the plate fin-and-tube-type heat exchange unit and an inlet end of the parallel-flow-type heat exchange unit are connected to each other by a pipe.

IPC 8 full level  
**F28D 1/053** (2006.01); **F25B 39/02** (2006.01); **F28D 1/04** (2006.01); **F28D 1/047** (2006.01); **F28F 1/12** (2006.01); **F28F 1/32** (2006.01); **F28F 9/26** (2006.01)

CPC (source: EP)  
**F28D 1/0435** (2013.01); **F28D 1/0461** (2013.01); **F28D 1/0477** (2013.01); **F28D 1/05383** (2013.01); **F28F 1/126** (2013.01); **F28F 1/32** (2013.01)

Citation (search report)

- [Y] JP 2010002102 A 20100107 - SHARP KK
- [Y] JP 2002013840 A 20020118 - TOYO RADIATOR CO LTD
- [A] JP 2000329486 A 20001130 - MATSUSHITA ELECTRIC IND CO LTD
- [A] JP S6422509 U 19890206
- [A] JP S5296046 U 19770718
- [A] WO 2012009460 A2 20120119 - KEISLING EARL [US], et al
- See references of WO 2014155560A1

Cited by  
US2022128245A1; EP3644002A4; US11175053B2; US11573056B2

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 2980516 A1 20160203**; **EP 2980516 A4 20161207**; **EP 2980516 B1 20180131**; CN 203798027 U 20140827; JP 6157593 B2 20170705; JP WO2014155560 A1 20170216; WO 2014155560 A1 20141002

DOCDB simple family (application)  
**EP 13880586 A 20130327**; CN 201420141694 U 20140327; JP 2013058995 W 20130327; JP 2015507767 A 20130327