

Title (en)  
HEAT EXCHANGER AND AIR CONDITIONER COMPRISING SAID HEAT EXCHANGER

Title (de)  
WÄRMETAUSCHER UND KLIMAAANLAGE MIT DEM WÄRMETAUSCHER

Title (fr)  
ÉCHANGEUR DE CHALEUR ET CLIMATISEUR COMPRENANT LEDIT ÉCHANGEUR DE CHALEUR

Publication  
**EP 4155645 A4 20230621 (EN)**

Application  
**EP 20936401 A 20200522**

Priority  
JP 2020020350 W 20200522

Abstract (en)  
[origin: EP4155645A1] A heat exchanger includes: a plurality of flat tubes each of which has a refrigerant flow passage through which refrigerant flows in an up-down direction, the plurality of flat tubes being arranged parallel to each other at intervals; a plurality of fins each of which is provided between adjacent flat tubes of the plurality of flat tubes; an upper header to which an upper end portion of each of the plurality of flat tubes is connected; and a lower header to which an upper end portion of each of the plurality of flat tubes is connected. Lower end portions of the plurality of fins are not joined to the lower header, and a lower gap is formed between the lower end portions of the plurality of fins and the lower header.

IPC 8 full level  
**F28D 1/053** (2006.01); **F28F 1/12** (2006.01); **F28F 1/30** (2006.01); **F28F 9/02** (2006.01); **F28F 21/08** (2006.01)

CPC (source: EP US)  
**F28D 1/05366** (2013.01 - EP); **F28D 1/05383** (2013.01 - US); **F28F 1/126** (2013.01 - EP US); **F28F 9/02** (2013.01 - US); **F28F 21/084** (2013.01 - EP); **F28F 2215/04** (2013.01 - EP); **F28F 2270/00** (2013.01 - EP); **F28F 2275/04** (2013.01 - EP)

Citation (search report)

- [A] WO 2009104659 A1 20090827 - CALSONIC KANSEI CORP [JP], et al
- [A] JP 6191493 B2 20170906
- [A] DE 102018214912 A1 20200305 - HANON SYSTEMS [KR]
- [A] JP 2009228970 A 20091008 - DENSO CORP
- See also references of WO 2021234957A1

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

Designated extension state (EPC)  
BA ME

Designated validation state (EPC)  
KH MA MD TN

DOCDB simple family (publication)  
**EP 4155645 A1 20230329; EP 4155645 A4 20230621**; JP 7353483 B2 20230929; JP WO2021234957 A1 20211125; US 2023095279 A1 20230330; WO 2021234957 A1 20211125

DOCDB simple family (application)  
**EP 20936401 A 20200522**; JP 2020020350 W 20200522; JP 2022524845 A 20200522; US 202017911490 A 20200522