

Title (en)

HEAT EXCHANGER WITH REDUCED SPACE REQUIREMENT, IN PARTICULAR FOR MOTOR VEHICLE

Title (de)

RAUMSPARENDER WÄRMETAUSCHER, INSBESONDERE FÜR KRAFTFAHRZEUG

Title (fr)

ENCHANGEUR DE CHALEUR D'ENCOMBREMENT REDUIT, EN PARTICULIER POUR VEHICULE AUTOMOBILE

Publication

**EP 1034410 B1 20021023 (FR)**

Application

**EP 99946234 A 19990924**

Priority

- FR 9902285 W 19990924
- FR 9812031 A 19980925

Abstract (en)

[origin: FR2783907A1] The invention concerns a heat exchanger, in particular for a motor vehicle, comprising an array (10) of tubes (12) and fins (14), whereof the ends (16) of the tubes (16) are inserted in holes (22) of a collector plate (18). The latter is generally planar and an inserting plate (46) is arranged, directly mounted on the collector plate (18) and provided with openings (48) for allowing through the ends (16) of the tubes (12) and delimited by a peripheral edge (52) forming a lateral stop for a rim (42) of a manifold (40) maintained by crimping means (26).

IPC 1-7

**F28F 9/02**

IPC 8 full level

**F28F 9/02** (2006.01); **F28F 21/06** (2006.01)

CPC (source: EP US)

**F28F 9/0226** (2013.01 - EP US); **F28F 21/067** (2013.01 - EP US); **F28F 2225/08** (2013.01 - EP US); **F28F 2265/32** (2013.01 - EP US); **F28F 2275/122** (2013.01 - EP US)

Cited by

FR3037643A1; CN106716037A; FR3059090A1; FR3056731A1; WO2016207177A1; WO2018060650A1

Designated contracting state (EPC)

DE ES GB IT

DOCDB simple family (publication)

**FR 2783907 A1 20000331**; **FR 2783907 B1 20001222**; BR 9909371 A 20001121; DE 69903608 D1 20021128; DE 69903608 T2 20030703; EP 1034410 A1 20000913; EP 1034410 B1 20021023; US 6296051 B1 20011002; WO 0019163 A1 20000406

DOCDB simple family (application)

**FR 9812031 A 19980925**; BR 9909371 A 19990924; DE 69903608 T 19990924; EP 99946234 A 19990924; FR 9902285 W 19990924; US 55523200 A 20000525