

## Title (en)

Heat exchanger, more particularly for exhaust gases

## Title (de)

Wärmeübertrager, insbesondere Abgaswärmeübertrager

## Title (fr)

Echangeur de chaleur, en particulier pour gaz d'échappement

## Publication

**EP 0851197 A2 19980701 (DE)**

## Application

**EP 97120667 A 19971126**

## Priority

DE 19654368 A 19961224

## Abstract (en)

The heat-exchanger has a bundle of rectangular-section tubes, through which gas flows, enclosed in a casing. The latter forms a guide with an inlet and an outlet for liquid coolant. External protrusions (22) on the tubes determine their distance from each other and also from the inside surface of the casing (11). Each tube may be formed by two U-section half-shells, with bottoms in which the protrusions are embossed, these typically being situated in a central row. They may have oval bottom surfaces whose greatest dimension extends in the flow direction. At right angles to this direction their cross-section may be approximately semi-cylindrical.

## Abstract (de)

Bei einem Wärmeübertrager, insbesondere einem Abgaswärmeübertrager, mit einem zur Gasführung dienenden Rohrbündel (10) aus Rechteckrohren (19) und mit einem das Rohrbündel umgebenden, zur Führung eines flüssigen Kühlmittels dienenden Außenmantel, der mit einem Kühlmiteleintritt (17) und einem Kühlmittelaustritt (18) versehen ist, wird vorgesehen, daß die Rechteckrohre des Rohrbündels (10) mit nach außen gerichteten Vorsprüngen (22) versehen ist, die den Abstand benachbarter Rechteckrohre zueinander und zu der Innenwand des Außenmantels (11) bestimmen. <IMAGE>

## IPC 1-7

**F28D 7/00**; **F28F 1/04**; **F28F 3/04**

## IPC 8 full level

**F28D 7/00** (2006.01); **F28D 7/16** (2006.01); **F28F 1/04** (2006.01); **F28F 1/42** (2006.01); **F28F 3/04** (2006.01); **F28F 9/013** (2006.01); **F28F 9/02** (2006.01)

## CPC (source: EP US)

**F28D 7/0041** (2013.01 - EP US); **F28D 7/1684** (2013.01 - EP US); **F28F 1/045** (2013.01 - EP US); **F28F 1/42** (2013.01 - EP US); **F28F 1/422** (2013.01 - EP US); **F28F 3/042** (2013.01 - EP US); **F28F 9/013** (2013.01 - EP US); **F28F 9/0221** (2013.01 - EP US); **F28D 21/0003** (2013.01 - EP US); **F28F 2001/027** (2013.01 - EP US); **F28F 2240/00** (2013.01 - EP US)

## Citation (applicant)

DE 19540683 A1 19970507 - BEHR GMBH & CO [DE]

## Cited by

EP2886999A1; FR2827372A1; FR2831252A1; FR2831253A1; DE102005058204A1; DE102005058204B4; US9919281B2; WO2015091442A1; EP2171386B1

## Designated contracting state (EPC)

DE FR GB

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**DE 19654368 A1 19980625**; **DE 19654368 B4 20060105**; DE 59706551 D1 20020411; EP 0851197 A2 19980701; EP 0851197 A3 19990519; EP 0851197 B1 20020306; US 6321835 B1 20011127

## DOCDB simple family (application)

**DE 19654368 A 19961224**; DE 59706551 T 19971126; EP 97120667 A 19971126; US 99672497 A 19971223