

Title (en)  
Heat exchanger

Title (de)  
Wärmetauscher

Title (fr)  
Echangeur de chaleur

Publication  
**EP 1128148 A3 20020320 (EN)**

Application  
**EP 01103635 A 20010222**

Priority  
JP 2000054428 A 20000225

Abstract (en)  
[origin: EP1128148A2] A heat exchanger, in which the space (110a) in each of a plurality of tubes (110) is segmented by a partitioning wall (111), and dimples (protrusions) (112) are formed on the inner wall of the tubes (110), is disclosed. The substantial sectional area of the flow path, which has a large effect on the flow velocity in the tubes (110), can thus be reduced without increasing the total number of the tubes (110). Even in the case where the radiation area is enlarged by increasing the long diameter of the tube (110), therefore, a turbulent flow of the cooling water can be obtained in collaboration with the agitating action of the dimples (112). In this way, the reduction in heat transfer coefficient between the cooling water and the tubes (110) can be prevented. As a result, the radiation capacity of the radiator (100) can be improved while suppressing the increase in the number of the parts and the production cost of the radiator (100), thereby producing a radiator suitable for large automotive vehicles.  
<IMAGE>

IPC 1-7  
**F28D 1/03; B21C 37/15**

IPC 8 full level  
**F28D 1/03** (2006.01)

CPC (source: EP)  
**F28D 1/0391** (2013.01)

Citation (search report)

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- [X] DE 19548495 A1 19970626 - VALEO KLIMATECH GMBH & CO KG [DE]
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- [XA] PATENT ABSTRACTS OF JAPAN vol. 018, no. 538 (M - 1686) 13 October 1994 (1994-10-13)
- [X] PATENT ABSTRACTS OF JAPAN vol. 1995, no. 04 31 May 1995 (1995-05-31)
- [X] PATENT ABSTRACTS OF JAPAN vol. 1998, no. 11 30 September 1998 (1998-09-30)
- [X] PATENT ABSTRACTS OF JAPAN vol. 1996, no. 11 29 November 1996 (1996-11-29)
- [X] PATENT ABSTRACTS OF JAPAN vol. 013, no. 473 (M - 884) 26 October 1989 (1989-10-26)
- [A] PATENT ABSTRACTS OF JAPAN vol. 1998, no. 06 30 April 1998 (1998-04-30)

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