

Title (en)  
HEAT EXCHANGER

Publication  
**EP 0448991 A3 19920506 (DE)**

Application  
**EP 91103179 A 19910302**

Priority  
DE 4009556 A 19900324

Abstract (en)  
[origin: EP0448991A2] The invention relates to a heat exchanger 1 consisting of at least one heat exchanger module which is characterised by improved efficiency and a high permissible pressure difference between the two flowing media. Improvement in efficiency is achieved by means of profile elements 2 which are welded in a zig-zag fashion and have side walls 18 and intermediate elements 3 having cambers 4, 8 in each case. Furthermore, the heat exchanger 1 is characterised in that the profile elements 2 and intermediate elements 3 are welded to one another at their respective lines of contact 16, so that a high pressure difference is permitted. <IMAGE>

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IPC 8 full level  
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**F28D 9/0062** (2013.01); **F28F 3/005** (2013.01); **F28F 3/025** (2013.01); **F28F 2215/10** (2013.01)

Citation (search report)

- [Y] DE 3003573 A1 19811008 - SCHMIDT GEB WAGNER VERA
- [Y] US 3372743 A 19680312 - PALL DAVID B, et al
- [A] DE 3017082 A1 19811105 - GEA AHLBORN GMBH & CO KG [DE]
- [A] US 2640194 A 19530526 - LARSSON HYTTE ROBERT PONTUS
- [A] US 3513907 A 19700526 - HUGHES PAUL R
- [A] US 3633661 A 19720111 - DUNCAN FRANKLIN D, et al
- [A] GB 1395013 A 19750521 - APV CO LTD
- [A] US 2170484 A 19390822 - EMILE PRAT
- [A] DE 1805208 A1 19691016 - MASCHF AUGSBURG NUERNBERG AG
- [A] FR 2566306 A1 19851227 - BRUN MICHEL [FR]
- [A] FR 2085173 A1 19711224 - NORD AVIAT
- [XP] SU 1575063 A1 19900630 - SIMONENKO NIKOLAJ A [SU]
- [A] PATENT ABSTRACTS OF JAPAN vol. 13, no. 65 (M-797)(3413) 14. Februar 1989 & JP-A-63 267 889 ( NIPPON OIL CO LTD ) 4. November 1988

Cited by  
EP1398593A3; FR2780772A1; CN109891177A; CN108662927A; EP4306891A1; US10634392B2; US10302317B2; EP3098554A4; EP3644006A1; FR3087880A1; EP1239252A1; DE19933426A1; DE19933426C2; EP3644007A1; FR3087881A1; US10712024B2; US11231241B2; US10808951B2; EP2972046A4; EP3730892A1; US9816760B2; US11035618B2; US11732972B2; US9920960B2; US10962252B2; US11408681B2; EP1398593A2; US10584884B2; US11598534B2; US11892193B2; US9909768B2; US10352628B2; US10480801B2; US11300364B2; US9810439B2; US10928082B2; US10953455B2; US11761645B2; US10782045B2; US11092349B2; US11143430B2; US11815283B2; EP1398593B1

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