

Title (en)  
Cooler for vehicles and method of manufacture

Title (de)  
Kühler für Kraftfahrzeuge sowie Herstellungsverfahren

Title (fr)  
Refroidisseur pour véhicules et procédé de fabrication

Publication  
**EP 1139052 A3 20050119 (DE)**

Application  
**EP 01103729 A 20010215**

Priority  
• DE 10016113 A 20000331  
• DE 10033070 A 20000707

Abstract (en)  
[origin: EP1139052A2] The radiator (1) for a motor vehicle comprises a block of flat tubes (2), between which are ribs. The ends of the tubes are bent around to issue into opposing collection boxes (5). The ends (4) of the flat tubes are in contact with the connecting edges (7) of the collection boxes and are connected by soldering. The flat tubes comprise two halves, at least one of which at its ends is bent crossways to the longitudinal direction, the bend forming a long side of the flat tube. The collection boxes with their connecting edges extend over the bend and are connected with the longitudinal edges (10) of the pipe halves.

IPC 1-7  
**F28D 1/03**; **F28F 9/02**

IPC 8 full level  
**B21D 53/08** (2006.01); **F28D 1/03** (2006.01); **F28F 9/02** (2006.01); **F28F 9/18** (2006.01)

CPC (source: EP US)  
**B21D 53/085** (2013.01 - EP US); **F28D 1/0316** (2013.01 - EP US); **F28F 9/0221** (2013.01 - EP US); **F28F 9/182** (2013.01 - EP US); **F28F 2225/04** (2013.01 - EP US); **Y10T 29/49389** (2015.01 - EP US); **Y10T 29/49391** (2015.01 - EP US)

Citation (search report)  
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• [A] US 5186250 A 19930216 - OUCHI WATARU [JP], et al  
• [A] EP 0283937 A1 19880928 - NIHON RADIATOR CO [JP]  
• [A] EP 0907062 A1 19990407 - SANDEN CORP [JP]  
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