

Title (en)

Apparatus for controlling heat transfer with heat medium for cooling internal combustion engine

Title (de)

Gerät zur Wärmeübertragungssteuerung mit Kühlmittel zur Kühlung eines Verbrennungsmotors

Title (fr)

Appareil pour le contrôle du transfert thermique avec un fluide thermique pour refroidir un moteur à combustion interne

Publication

EP 1930564 A1 20080611 (EN)

Application

EP 07022397 A 20071119

Priority

JP 2006315415 A 20061122

Abstract (en)

An apparatus (2) controls heat transfer between a cooling heat medium for cooling an internal combustion engine and an inner wall (18) of a cylinder block (14). The heat medium flows through the groove-like flow passage provided between the inner wall (18) and an outer wall (20). The apparatus (2) includes a lower side cover (4) and a guiding member (6, 8). An upper side of the inner wall (18) is uncovered with the cover (4) and exposed directly to the heat medium so that the upper side of the inner wall (18) is cooled easier than the lower side. Therefore, the difference in temperature in a vertical direction of each of the bores (18a-18d) can be reduced. The guiding member (6, 8) guides the heat medium having a lower temperature from the lower side to the upper side of the inner wall (18) in the direction of arrangement of the cylinders at a plurality of points. Thus, the upper portion of the bores 18a-18d can be sufficiently cooled even at down stream of the water jacket (16) and differences in temperature among the bores (18-18d) of the cylinders #1-4 can be reduced. Thus, not only differences in temperature in the up-and-down direction of each of the cylinder bores (18a-18d) but also differences in temperature among the cylinders (#1-4) can be reduced without partitioning the heat medium among the cylinders (#1-4).

IPC 8 full level

F01P 3/02 (2006.01); **F02F 1/10** (2006.01); **F02F 1/14** (2006.01)

CPC (source: EP)

F02F 1/14 (2013.01); **F01P 2003/021** (2013.01); **F02F 2001/104** (2013.01)

Citation (applicant)

- JP 2000345838 A 20001212 - NISSAN MOTOR
- JP 2005315118 A 20051110 - TOYOTA MOTOR CORP, et al

Citation (search report)

- [LE] WO 2008010584 A1 20080124 - TOYOTA MOTOR CO LTD [JP], et al
- [LE] WO 2008016127 A1 20080207 - TOYOTA MOTOR CO LTD [JP], et al
- [X] US 2005235930 A1 20051027 - XIN JUN [US]
- [XD] JP 2005315118 A 20051110 - TOYOTA MOTOR CORP, et al
- [A] EP 0182324 A2 19860528 - KLOECKNER HUMBOLDT DEUTZ AG [DE]

Cited by

CN112594081A; AT15665U1; AT521945A1; AT521945B1; US11802521B1; US2023366362A1; US11149679B2; WO2020107052A1; US10030571B2; EP3219971A1; CN107201963A; US2020072157A1; US10876493B2; EP2325469B1

Designated contracting state (EPC)

DE FR GB

Designated extension state (EPC)

AL BA HR MK RS

DOCDB simple family (publication)

EP 1930564 A1 20080611; JP 2008128133 A 20080605

DOCDB simple family (application)

EP 07022397 A 20071119; JP 2006315415 A 20061122