

Title (en)  
INTERNAL COMBUSTION ENGINE

Title (de)  
BRENNKRAFTMASCHINE

Title (fr)  
MOTEUR À COMBUSTION INTERNE

Publication  
**EP 4187063 A1 20230531 (EN)**

Application  
**EP 22203963 A 20221026**

Priority  
JP 2021191880 A 20211126

Abstract (en)  
[Object]To provide an internal combustion engine capable of improving rigidity of a portion in the vicinity of a first solenoid valve attachment portion and a second solenoid valve attachment portion provided between adjacent cylinder head fastening portions of an oil pump accommodation portion of a chain casing and suppressing a load caused by a vibration of the oil pump accommodation portion from acting on a first solenoid valve and a second solenoid valve.[Solution]An axis 23R of an accommodation hole 23A of a first solenoid valve attachment portion 23 and an axis 24R of an accommodation hole 24A of a second solenoid valve attachment portion 24 are arranged at different positions in an EF direction. At least a part of the first solenoid valve attachment portion 23 and the second solenoid valve attachment portion 24 overlaps in an AB direction. Fastening holes 41A and 42A of cylinder head fastening portions 41 and 42 are formed outside a projection area obtained by projecting the accommodation hole 23A of the first solenoid valve attachment portion 23 toward the fastening holes 41A and 42A and outside a projection area obtained by projecting the accommodation hole 24A of the second solenoid valve attachment portion 24 toward the fastening holes 41A and 42A.

IPC 8 full level  
**F01L 1/02** (2006.01); **F01L 1/344** (2006.01)

CPC (source: EP)  
**F01L 1/022** (2013.01); **F01L 1/344** (2013.01); **F01L 2001/34426** (2013.01); **F01L 2001/34433** (2013.01); **F01L 2001/34436** (2013.01); **F01L 2001/3444** (2013.01)

Citation (applicant)  
JP 4613760 B2 20110119

Citation (search report)

- [Y] US 2008216783 A1 20080911 - ANDO SATOSHI [JP]
- [Y] US 2013068191 A1 20130321 - TAKEUCHI KENSUKE [JP], et al
- [A] US 8511268 B2 20130820 - HOSHITO KATSUNI [JP]
- [A] JP 2000199409 A 20000718 - SUZUKI MOTOR CO
- [A] JP 2001355415 A 20011226 - YAMAHA MOTOR CO LTD

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA

Designated validation state (EPC)  
KH MA MD TN

DOCDB simple family (publication)  
**EP 4187063 A1 20230531**; JP 2023078649 A 20230607

DOCDB simple family (application)  
**EP 22203963 A 20221026**; JP 2021191880 A 20211126