

Title (en)  
FUEL INJECTION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Title (de)  
KRAFTSTOFFEINSPRITZEINRICHTUNG FÜR EINE BRENNKRAFTMASCHINE

Title (fr)  
SYST ME D'INJECTION DE CARBURANT POUR MOTEUR COMBUSTION INTERNE

Publication  
**EP 1423599 B1 20080806 (DE)**

Application  
**EP 02758168 A 20020823**

Priority  
• DE 0203140 W 20020823  
• DE 10141679 A 20010825

Abstract (en)  
[origin: WO03018991A1] The fuel injection device is provided - for each cylinder of the internal combustion engine with a high-pressure fuel pump (10) with a working pumping chamber (22) and a fuel injection valve (12) connected thereto. The fuel injection valve (12) comprises a first injection valve member (28) which is used to control at least one first injection opening (32) and which on account of the pressure produced in the working pumping chamber (22) can be moved counter to a closing force in a direction of opening (29). A second injection valve member (128) is displaceably guided in the first hollow injection valve member (28) and used to control at least one second injection opening (132); whereby the pressure prevailing in the pressure chamber (40) enables it to be moved counter to a closing force in a direction of opening (29), whereby the second injection valve member (128) can be impinged upon by the pressure prevailing in a control chamber (50) filled with fuel, said pressure being able to be controlled according to operational parameters of the combustion engine in such a way that the second injection valve (128) can be blocked in a position closing the at least one second injection opening (132) as a result of the pressure prevailing in the control chamber (50) independently of an opening movement of the first injection valve member (28).

IPC 8 full level  
**F02B 1/00** (2006.01); **F02M 45/08** (2006.01); **F02M 45/00** (2006.01); **F02M 47/02** (2006.01); **F02M 57/02** (2006.01); **F02M 59/10** (2006.01); **F02M 59/30** (2006.01); **F02M 61/10** (2006.01); **F02M 61/16** (2006.01); **F02M 61/18** (2006.01); **F02M 61/20** (2006.01); **F02M 59/36** (2006.01); **F02M 59/46** (2006.01); **F02M 63/00** (2006.01)

CPC (source: EP KR US)  
**F02M 45/08** (2013.01 - KR); **F02M 45/086** (2013.01 - EP US); **F02M 47/02** (2013.01 - EP US); **F02M 57/023** (2013.01 - EP US); **F02M 59/102** (2013.01 - EP US); **F02M 59/30** (2013.01 - EP US); **F02M 61/205** (2013.01 - EP US); **F02M 59/366** (2013.01 - EP US); **F02M 59/466** (2013.01 - EP US); **F02M 59/468** (2013.01 - EP US); **F02M 61/1806** (2013.01 - EP US); **F02M 63/0026** (2013.01 - EP US); **F02M 2200/46** (2013.01 - EP US)

Designated contracting state (EPC)  
DE FR IT

DOCDB simple family (publication)  
**WO 03018991 A1 20030306**; BR 0205941 A 20030805; CN 1466655 A 20040107; DE 10141679 A1 20030306; DE 50212607 D1 20080918; EP 1423599 A1 20040602; EP 1423599 B1 20080806; JP 2005500468 A 20050106; KR 20040028663 A 20040403; PL 360296 A1 20040906; RU 2003113559 A 20050120; US 2004232256 A1 20041125; US 6901915 B2 20050607

DOCDB simple family (application)  
**DE 0203140 W 20020823**; BR 0205941 A 20020823; CN 02802734 A 20020823; DE 10141679 A 20010825; DE 50212607 T 20020823; EP 02758168 A 20020823; JP 2003523819 A 20020823; KR 20037005676 A 20030424; PL 36029602 A 20020823; RU 2003113559 A 20020823; US 41508704 A 20040426