

Title (en)
FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Publication
EP 0444053 B1 19930303 (DE)

Application
EP 89911536 A 19891019

Priority
DE 3839038 A 19881118

Abstract (en)
[origin: WO9005844A1] A fuel injection nozzle for internal combustion engines has a nozzle body (10) fastened to a nozzle holder (13) by an intermediate disk (11) and a valve needle (14) which slides axially in the nozzle body. When the fuel is injected, the fuel pressure raises said valve needle from a valve seat against a closing spring arrangement consisting of two helical springs (21, 22) arranged one behind the other. The total stroke of the valve needle (14) is thereby divided into a clearance stroke and a residual stroke. To obtain an injection nozzle of minimal outer diameter, the two closing springs (21, 22) are structurally identical. The first closing spring (21), which acts during the clearance stroke, rests against the base (30) of a spring chamber (19) and against a pressure pin (23) which presses on the valve needle (14). The second closing spring (22), which acts during the residual stroke, rests against a transverse bolt (34) which traverses the spring chamber (19) and against an intermediate bushing (24) which slides axially in the intermediate disk (11) and is adjacent to the nozzle body (10). The stages of the stroke and the total stroke of the valve needle (14) are determined by limit stops (25, 28) and counter limit stops (26, 27) on the intermediate bushing (24), the intermediate disk (11) and the valve needle (14).

IPC 1-7
F02M 45/08; F02M 61/20

IPC 8 full level
F02M 45/08 (2006.01); **F02M 61/10** (2006.01); **F02M 61/20** (2006.01)

CPC (source: EP)
F02M 45/083 (2013.01)

Designated contracting state (EPC)
DE FR GB IT

DOCDB simple family (publication)
WO 9005844 A1 19900531; DE 3839038 A1 19900523; DE 58903686 D1 19930408; EP 0444053 A1 19910904; EP 0444053 B1 19930303; JP H04501752 A 19920326

DOCDB simple family (application)
DE 8900667 W 19891019; DE 3839038 A 19881118; DE 58903686 T 19891019; EP 89911536 A 19891019; JP 51076089 A 19891019