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(11)

**EP 1 164 283 A3**

(12)

## EUROPEAN PATENT APPLICATION

(88) Date of publication A3:  
**05.11.2003 Bulletin 2003/45**

(51) Int Cl.7: **F02M 47/02, F02M 59/46**

(43) Date of publication A2:  
**19.12.2001 Bulletin 2001/51**

(21) Application number: **01114379.9**

(22) Date of filing: **13.06.2001**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE TR**  
Designated Extension States:  
**AL LT LV MK RO SI**

(72) Inventors:  
• **Watanabe, Yoshimasa, c/o Toyota Jidosha K. K.  
Toyota-shi, Aichi-ken 471-8571 (JP)**  
• **Omae, Kazuhiro, c/o Toyota Jidosha K. K.  
Toyota-shi, Aichi-ken 471-8571 (JP)**

(30) Priority: **15.06.2000 JP 2000184584**

(74) Representative:  
**Leson, Thomas Johannes Alois, Dipl.-Ing.  
Tiedtke-Bühling-Kinne & Partner GbR,  
TBK-Patent,  
Bavariaring 4  
80336 München (DE)**

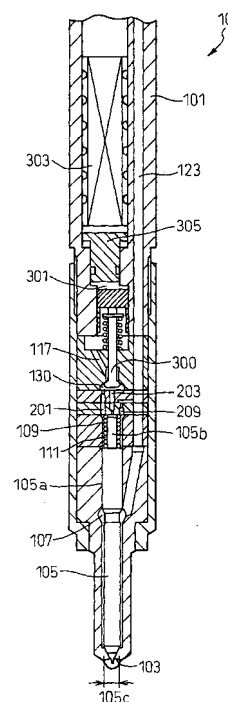
(71) Applicant: **TOYOTA JIDOSHA KABUSHIKI  
KAISHA  
Aichi-ken 471-8571 (JP)**

### (54) A fuel injection valve

(57) A fuel injection valve (10) is provided with a valve needle (105) which is urged by the pressure of fuel in a control chamber (109) to a closed position where the valve needle (105) closes the fuel injection hole (103). A supply passage (209) with a throttled portion connects a high pressure fuel passage (123) to the control chamber (109). The control chamber (109) is connected to a leak chamber (130) by two return passages (201,203). The leak chamber (130) has a leak passage (117) for spilling fuel in the leak chamber (130) to the outside of the fuel injection valve (10). A control valve (300) is provided in the leak chamber (130). The control valve (300) is capable of taking any of a closed position where the leak passage (117) is closed, a medium lift position where the leak passage (117) and two return passages (201,203) are opened, and a full lift position where the leak passage (117) and only one return passage (201) are opened. In the closing position of the control valve (300), the pressure in the control chamber (109) is high and the valve needle (105) is kept at the closing position. In the medium lift position and the full lift position, fuel in the control chamber (109) is spilled through the leak passage (117) via return passages (201,203) and the leak chamber (130). This causes the valve needle (105) to move to the position where the fuel injection hole (103) is opened. However, at the full lift position, since only one return passage (201) is opened, the rate of the pressure drop in the control chamber (109) is smaller and the speed of the lift of the

valve needle (105) is lower. Therefore, the fuel injection characteristics can be changed by switching the position of the control valve (300) between the medium lift position and the full lift position during fuel injection.

Fig.2



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# EUROPEAN SEARCH REPORT

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EP 01 11 4379

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Place of search THE HAGUE		Date of completion of the search 16 September 2003	Examiner Nobre, S
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