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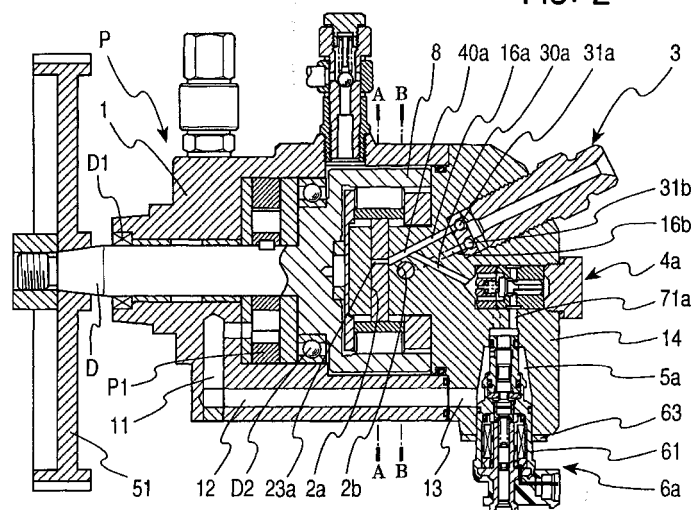
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(54) **Control method and apparatus for variable discharge-type high pressure pumps**

(57) A control valve (6a) and a check valve (4a) are provided from the upstream side in the middle of a flow passage leading from a low pressure pump (P1) to a pressure chamber (23a) which sucks low pressure fuel and pressure-feed it by its expansion and contraction of displacement. A variable discharge-type high pressure pump sucks fuel into the pressure chamber (23a) during a period until the control valve (6a) and the check valve (4a) are closed, when the displacement of the pressure chamber (23a) expands. The opening of the control

valve (6a) is disabled if the pressure in an accumulation chamber is higher than a target pressure by more than a tolerance, so that air admixed in fuel from the low pressure pump (P1) is not allowed to flow into the upstream side of the check valve (4a). Thus, fuel excess condition in the pressure chamber (23a) which will be caused when the air expands due to lowering of pressure from a feed pressure after closing of the control valve (6a) and forces out fuel into the pressure chamber 23a is avoided, so that excessive pressure-feeding of fuel is prevented.

**FIG. 2**





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# EUROPEAN SEARCH REPORT

Application Number  
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			F02D F02M
Place of search		Date of completion of the search	Examiner
MUNICH		17 March 2003	Godrie, P
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>&amp; : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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