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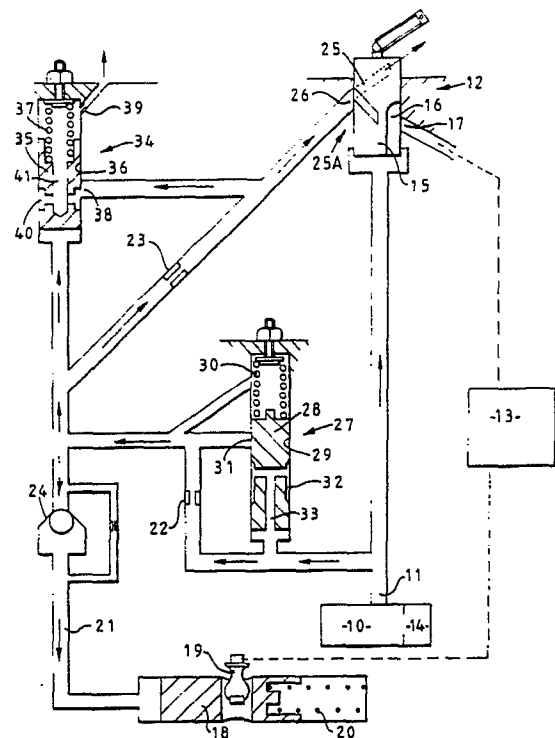
(11) Publication number:

0 400 887 A3

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **90305614.1**(51) Int. Cl.⁵: **F02M 59/20, F02D 1/02**(22) Date of filing: **23.05.90**(30) Priority: **02.06.89 GB 8912649**(43) Date of publication of application:
05.12.90 Bulletin 90/49(84) Designated Contracting States:
DE ES FR GB IT(88) Date of deferred publication of the search report:
30.01.91 Bulletin 91/05(71) Applicant: **LUCAS INDUSTRIES public limited company**
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MARKS & CLERK Alpha Tower Suffolk Street
Queenswayway
Birmingham B1 1TT(GB)(54) **Fuel injection pumping apparatus.**

(57) A fuel injection pumping apparatus for supplying fuel to a compression ignition engine has a low pressure pump (10) which supplies fuel to a high pressure pump (13) by way of a throttle (12). The high pressure pump has a piston (18) for varying the timing of delivery of fuel. A first fixed orifice (22) connects the outlet (11) of the low pressure pump to the cylinder containing the piston (18) and a second fixed orifice (23) connects the cylinder with a drain by way of a variable orifice (25A). In parallel with the second fixed orifice (23) is a bypass valve 34 including a valve member (35) responsive to the pressure applied to the piston (18) and which with increasing pressure opens to allow fuel to escape through a further fixed orifice (39) from downstream of the second fixed orifice (23).

**EP 0 400 887 A3**



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EUROPEAN SEARCH REPORT

Application Number

DOCUMENTS CONSIDERED TO BE RELEVANT			EP 90305614.1
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	<u>US - A - 4 138 981</u> (GREEN) * Fig. 1 *	1	F 02 M 59/20 F 02 D 1/02
D, A	<u>GB - A - 2 174 515</u> (LUCAS INDUSTRIES) * Totality *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			F 02 M 41/00 F 02 M 59/00 F 02 D 1/00
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 15-11-1990	Examiner PIPPAN
CATEGORY OF CITED DOCUMENTS			
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		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 & : member of the same patent family, corresponding document	