



(11) Publication number : **0 496 170 A3**

(12) **EUROPEAN PATENT APPLICATION**

(21) Application number : **91312034.1**

(51) Int. Cl.⁵ : **F04C 2/16, F04C 15/00,
F04C 15/04, F04C 2/08**

(22) Date of filing : **24.12.91**

(30) Priority : **24.12.90 US 633455**

(43) Date of publication of application :
29.07.92 Bulletin 92/31

(84) Designated Contracting States :
**AT BE CH DE DK ES FR GB GR IT LI LU MC NL
SE**

(88) Date of deferred publication of search report :
28.10.92 Bulletin 92/44

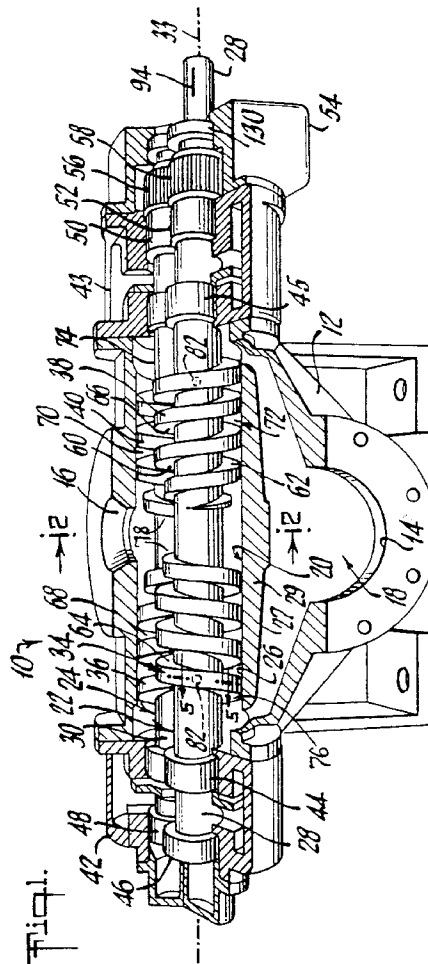
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(54) **Positive displacement pumps.**

(57) A positive displacement pump having single or twin crews (2) is disclosed in which the screw flights (34,36,38,40) are formed in the outer surfaces thereof with balancing holes (82) which can be filled with material less dense than that of the screw flights which can each be closed by a cap (84) having an outer surface which is flush with the outer surface of the adjoining flight. Also disclosed for the or each screw flight is a wear measuring port (86) in which a measuring device can be inserted to measure relative wear between the corresponding screw flight and the pump casing. Alternatively a proximity sensor (98) can be located in the measuring port so that wear of the corresponding flight can be dynamically sensed during pump operation. Additionally, the provision of wear strips (122) on the outer surface of and of less than half the width of the screw flight are disclosed as is a fluid pressure feedback control system (119) for the or each screw flight which reduces the pressure differential over a part of the discharge end of each flight.





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EUROPEAN SEARCH REPORT

Application Number

EP 91 31 2034

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	EP-A-0 183 380 (STOTHERT & PITT PLC) * Whole document *	1-3	F 04 C 2/16 F 04 C 15/00
Y	US-A-4 721 445 (HOFFMANN) * Whole document *	1-3	F 04 C 15/04 F 04 C 2/08
A	-----	5	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			F 04 C F 01 C
<p>The present search report has been drawn up for all claims.</p>			
Place of search		Date of completion of the search	Examiner
THE HAGUE		18-03-1992	DIMITROULAS 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 & : member of the same patent family, corresponding document</p>			

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

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- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims: 1-7, 26-29



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LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1-7,26-29: Reducing imbalance by forming holes in the screw flight.
2. Claims 8-12,24,25: Measuring relative wear of screw and bore.
3. Claims 13-17: Hardened wear strip for screw flight.
4. Claims 18-23: Fluid pressure feedback system.