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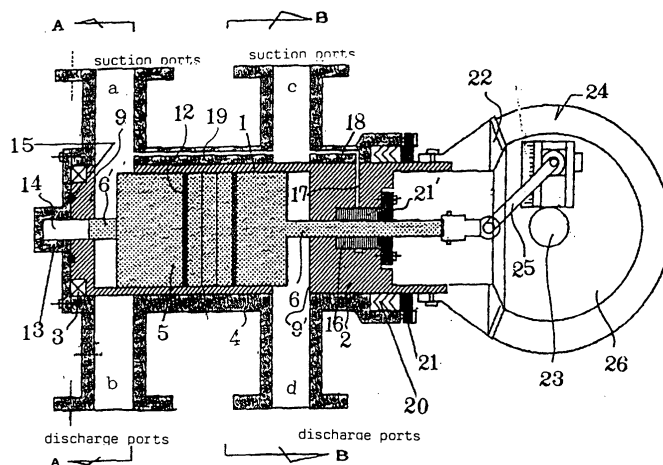
(54) **Fluid pump**

(57) It is an object of the present invention to provide a fluid suction and discharge device capable of continuously discharging fluid with a predetermined flow rate and pressure continuously sucking the fluid without substantially giving rise to pulsation.

The invention comprises an inner tube (1) rotatably fitted in a fitting hole of the device body, a cylinder (5) slidably fitted into the inner tube (1), and a plurality of

through-holes formed in the inner tube (1), wherein when the cylinder (5) is reciprocated in association with rotation of the inner tube (1), and when one of the through-holes of the inner tube (1) is communicated with a suction hole of the device body, the other through-hole of the inner tube is communicated with a discharge hole of the device body, and when fluid is sucked from a communication suction hole thus communicated, fluid is discharged from the discharge hole thus communicated.

**Fig. 1**



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# EUROPEAN SEARCH REPORT

Application Number  
EP 01 12 7080

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.7)
X	DE 348 247 C (HANS KEITEL DIPL ING) 4 February 1922 (1922-02-04) * the whole document * *, sentences 12-54; figures 1-3 *	1,6-8, 12,13	F04B7/00 F04B7/06
A	GB 1 256 583 A (GUNTER REINECKE) 8 December 1971 (1971-12-08) * the whole document *	1-15	
A	DE 11 20 724 B (WILHELM HAUSER) 28 December 1961 (1961-12-28) * the whole document *	1-15	
A	US 2 516 388 A (HUMPHREYS HANNA R) 25 July 1950 (1950-07-25) * the whole document *	1-15	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			F04B
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 3 September 2003	Examiner Olona Laglera, C
<p><b>CATEGORY OF CITED DOCUMENTS</b></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 &amp; : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 12 7080

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The members are as contained in the European Patent Office EDP file on  
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03-09-2003

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 348247	C	04-02-1922	NONE	
-----				
GB 1256583	A	08-12-1971	DE 1761082 A1	25-03-1971
			CH 487023 A	15-03-1970
			FR 2005288 A5	12-12-1969
-----				
DE 1120724	B	28-12-1961	NONE	
-----				
US 2516388	A	25-07-1950	NONE	
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