



(11) **EP 1 724 470 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
05.11.2008 Bulletin 2008/45

(51) Int Cl.: **F04D 29/12** (2006.01) **F04D 29/10** (2006.01)
F04D 29/14 (2006.01)

(43) Date of publication A2:
22.11.2006 Bulletin 2006/47

(21) Application number: **06405187.3**

(22) Date of filing: **28.04.2006**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
 HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
 SK TR**
 Designated Extension States:
AL BA HR MK YU

(71) Applicant: **SULZER PUMPEN AG**
8401 Winterthur (CH)

(72) Inventor: **Manninen, Heikki**
35700 Vilppula (FI)

(74) Representative: **Sulzer Management AG**
Patentabteilung / 0067
Zürcherstrasse 12
8401 Winterthur (CH)

(30) Priority: 16.05.2005 FI 20050518

(54) **Centrifugal pump and a static seal thereof**

(57) The present invention relates to a centrifugal pump and a static seal of the dynamic sealing thereof. The invention especially relates to modifying the attachment of said static seal and a seal cover acting as a counter ring thereof in such a way that, for example, when the static seal wears, the clearance thereof can be adjusted without a need to stop the pump. A characteristic feature of a centrifugal pump in accordance with the invention, comprising, among other things, a pump housing (72), a shaft (12), an impeller arranged on the shaft and a dynamic seal (30, 32) arranged in connection with the shaft (12), and a static seal arranged in connection with the shaft (12) behind the dynamic seal as seen from the impeller, said static seal comprising a flexible seal means (50) on the shaft (12) and a stationary counter ring thereof, is that a seal cover (62) including a stationary counter ring (60) is adjustable in the axial direction of the pump.

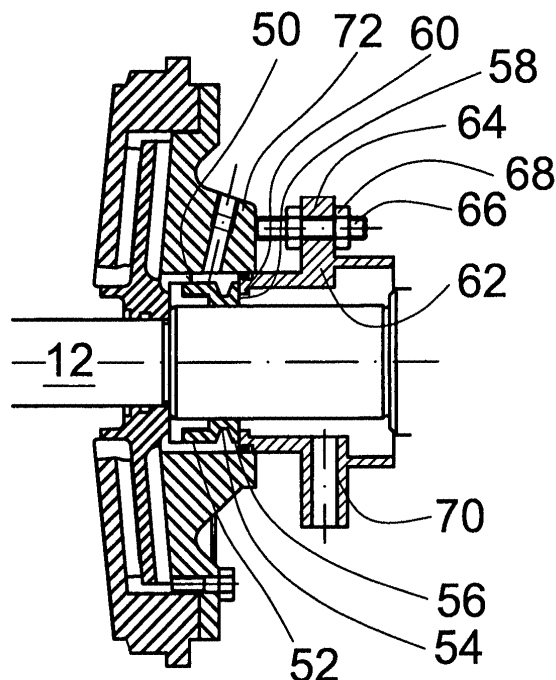


Fig. 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 40 5187

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
P,X	EP 1 596 070 A (VOITH PAPER PATENT GMBH [DE]) 16 November 2005 (2005-11-16) * the whole document * * paragraph [0022]; figures 4,9 *	1-16	INV. F04D29/12 F04D29/10 F04D29/14
Y	DD 82 645 A (STEINGRÜBER H.) 12 June 1971 (1971-06-12) * the whole document *	1-16	
Y	GB 1 096 816 A (TRIST MOULDINGS & SEALS LTD) 29 December 1967 (1967-12-29) * the whole document * * figure 1 *	1-16	
A	US 2 258 527 A (HAROLD WARMAN CHARLES) 7 October 1941 (1941-10-07) * the whole document *	1-16	
A	DE 40 02 245 A1 (ARNSWALD WERNER DIPL ING [DE]) 22 August 1991 (1991-08-22) * figures 1-6 *	1-16	
			TECHNICAL FIELDS SEARCHED (IPC)
			F04D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		26 September 2008	Ingelbrecht, Peter
<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>			

1
EPO FORM 1503 03.82 (P04C01)

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

EP 06 40 5187

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

26-09-2008

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1596070	A	16-11-2005	DE 202004007505 U1	22-09-2005
DD 82645	A		NONE	
GB 1096816	A	29-12-1967	NONE	
US 2258527	A	07-10-1941	NONE	
DE 4002245	A1	22-08-1991	NONE	