(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
3 February 2005 (03.02.2005)

PCT

(10) International Publication Number
WO 2005/010361 A3

(51) International Patent Classification[7]: F04B 17/00, F16D 3/04

(21) International Application Number: PCT/IL2004/000693

(22) International Filing Date: 28 July 2004 (28.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
157160 29 July 2003 (29.07.2003) IL

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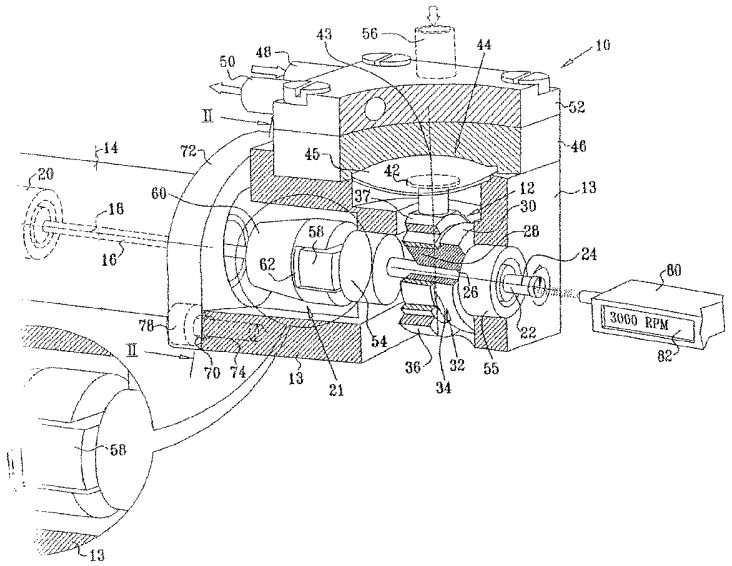
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**
— *with international search report*

*[Continued on next page]*

(54) Title: DIAPHRAGM PUMP




(57) Abstract: A diaphragm pump and a method for aligning thereof, the pump including an electric motor, a motor shaft, driven by the electric motor for rotation about an electric motor shaft axis, an eccentric drive, driven by the electric motor, via the motor shaft, to provide reciprocal driving along a pump driving axis, the eccentric drive including an eccentric drive shaft rotating about an eccentric drive shaft axis, the eccentric drive shaft axis being coaxial with the electric motor shaft axis, a non-rigid coupling interconnecting the motor shaft and the eccentric drive shaft and a diaphragm pumping assembly having a fluid inlet and a fluid outlet communicating with a pumping chamber, the pumping chamber having a diaphragm arranged to be reciprocally driven about the pump driving axis.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

**(88) Date of publication of the international search report:**
14 April 2005

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# INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL04/00693

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : F04B 17/00; F16D 3/04
US CL : 417/413.1; 464/23, 205
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 417/413.1; 464/23, 205

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 5,044,891 A (OZAWA) 03 September 1991 (03.09.1991), see entire document | 1-3, 6-11, 16, 17 and 20-22 |
| X<br>---<br>Y | US 3,801,232 A (KILAYKO) 02 April 1974 (02.04.1974), see figures 2 and 3. | 1, 8, 9, 11, 12, 16, 17, 20 and 22<br>---<br>18 |
| A | US 5,508,609 A (PARKINSON et al) 16 April 1996 (16.04.1996), see abstract. | 23-26 |
| A | US 6,227,826 B1 (LO) 08 May 2001 (08.05.2001), see entire document. | 1, 6 and 8 |
| A | US 5,074,757 A (HORN) 24 December 1991 (24.12.1991), note Fig. 1. | 1, 6 and 8 |

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 17 February 2005 (17.02.2005) | 10 MAR 2005 |
| Name and mailing address of the ISA/US<br>Mail Stop PCT, Attn: ISA/US<br>Commissioner for Patents<br>P.O. Box 1450<br>Alexandria, Virginia 22313-1450<br>Facsimile No. (703) 305-3230 | Authorized officer<br>Charles G Freay<br>Telephone No. 571-272-3750 |

Form PCT/ISA/210 (second sheet) (January 2004)

Continuation of B. FIELDS SEARCHED Item 3:
EAST
search terms: shaft, coupling, tachometer, rpm, alignment, misalignment

# INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL04/00693

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 4, 5, 13-15 and 19
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.