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[Continued on next page]

(54) Title: ESP WITH OFFSET Laterally Loaded BEARINGS

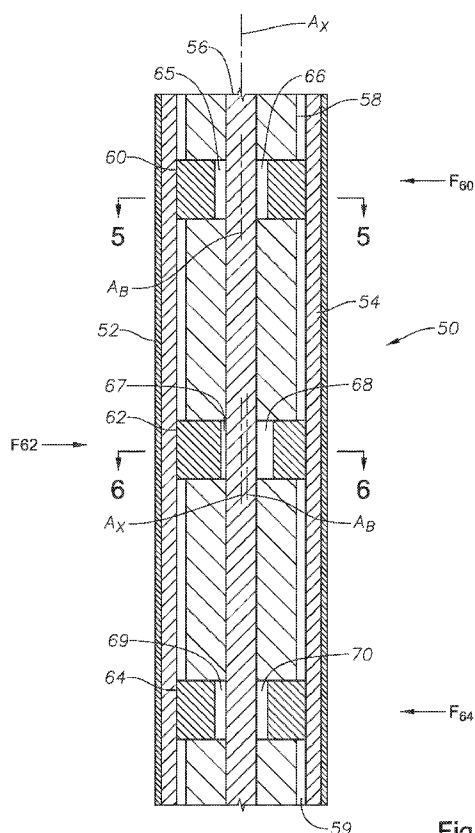


Fig. 4

(57) Abstract: A submersible pumping system for use downhole, wherein the system includes a pump, a pump motor, a seal section, a shaft coupling the pump motor to the pump, and bearing assemblies for radially retaining the shaft in place that are offset with respect to an axis of the shaft. The offset bearing assemblies produce side loads in the shaft that reduce shaft vibration during use. The bearing assemblies can be a combination of symmetric and asymmetric assemblies set in an alternating pattern along the length of the shaft.



DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT,
LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE,
SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *as to the applicant's entitlement to claim the priority of
the earlier application (Rule 4.17(iii))*

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— *with international search report (Art. 21(3))*

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— *as to applicant's entitlement to apply for and be granted
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A. CLASSIFICATION OF SUBJECT MATTER***E21B 43/12(2006.01)i, E21B 33/03(2006.01)i***

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)

E21B 43/12; F16C 19/02; E21B 4/00; E21B 43/00; F16C 19/12; E21B 43/16; E21B 43/38; E21B 17/00

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: bearing, symmetric, asymmetric, shaft

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 04240683A A (CRASE; GARY M.) 23 December 1980 See abstract, columns 2-6,8 and figures 2b,2c	1-3,7-13,15-20
A	See abstract and claims 1-25	4-6,14,21
A	US 7066248 B2 (HOWELL, ALAN) 27 June 2006 See abstract and claims 1-9	1-21
A	US 2004-0144534 A1 (WOON Y. LEE) 29 July 2004 See abstract, paragraph 19 and figure 4	1-21
A	US 05074681A A (TURNER; WILLIAM E. et al.) 24 December 1991 See abstract and claims 1-30	1-21



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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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"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

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 04240683A A	23.12.1980	None	
US 7066248 B2	27.06.2006	US 2004-0251019 A1 US 7624795 B1	16.12.2004 01.12.2009
US 2004-0144534 A1	29.07.2004	None	
US 05074681A A	24.12.1991	None	