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[US/US]; 1560 Randol Mill Ave., Roanoke, TX 76262 (US).

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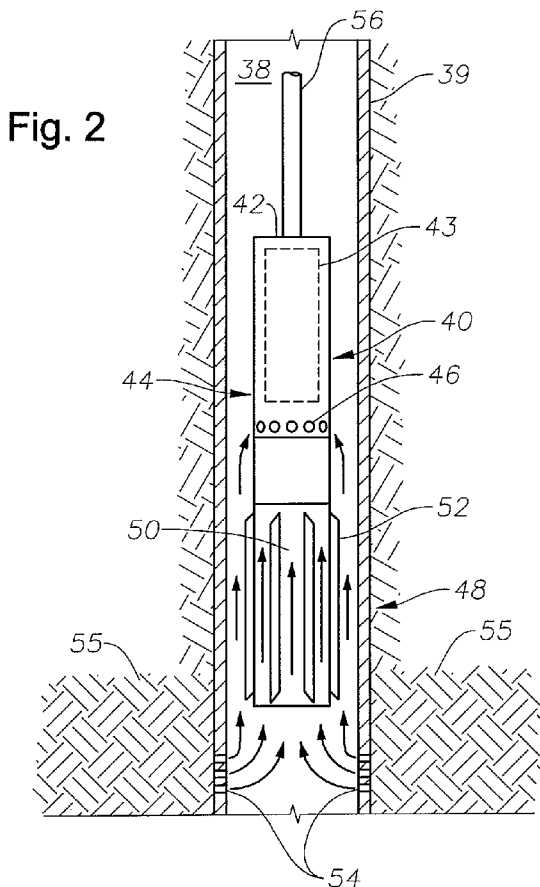
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[Continued on next page]

(54) Title: ENHANCED COOLING FOR DOWNHOLE MOTORS

(57) Abstract: A submersible pumping system for use downhole, wherein the system includes a pump, an inlet section for receiving fluid, a pump motor, and heat transfer fins on the motor housing. The fins increase the heat transfer area of the motor thereby providing enhanced cooling of the motor.



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**A. CLASSIFICATION OF SUBJECT MATTER***E21B 43/00(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)

IPC: E21B

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 since 1975

Japanese Utility models and applications for Utility models since 1975

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

eKIPASS (KIPO internal), "Keywords: pump, seal, heat, fin, transfer, wellbore"

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005-0217859 A1 (MICHAEL G HARTMAN et al.) 6 October 2005 see abstract; paragraphs [0006]-[0008], [0035], [0037], [0088]-[0094]; claims 18-20; figures 1, 1A, 3	1-26
A	US 06397945 B1 (GREGORY H. MANKE et al.) 4 June 2001 see abstract; column 2 lines 44-67, column 3 lines 1-36; claim 1; figure 1	1-26
A	US 06588500 B2 (KEN LEWIS) 8 July 2003 see abstract; column 5 lines 26-67, column 6 lines 1-25; claims 1-16; figure 2	1-26

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

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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 2005-0217859 A1	06.10.2005	US 7299873 B2	27.11.2007
<hr/>			
US 06397945 B1	04.06.2002	BR 0101434 A CA 2343902 A1 CA 2343902 C GB 0108987 D0 GB 2361352 A MI 20010805 A1	13.11.2001 14.10.2001 25.03.2003 30.05.2001 17.10.2001 14.10.2002
<hr/>			
US 06588500 B2	08.07.2003	US 2002-100587 A1	01.08.2002