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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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[Continued on next page]

(54) Title: DOWNHOLE WASHOUT DETECTION SYSTEM AND METHOD

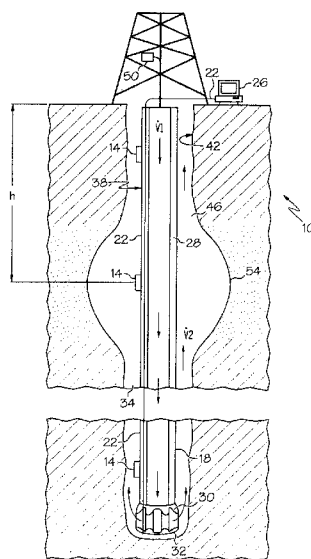


FIG. 1

(57) Abstract: Disclosed herein is a method of detecting a downhole washout. The method includes, positioning a plurality of sensors along a downhole drillstring, communicatively coupling the plurality of sensors to a processor, and analyzing data sensed by the plurality of sensors with the processor for relationships indicative of a washout.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

E21B 21/08(2006.01)i, G01N 11/04(2006.01)i, E21B 47/12(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)

IPC8: E21B 21/08, 47/06 47/12, G01N 11/04

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)

eKOMPASS(KIPO internal) & keywords: wellbore, drillstring, downhole, washout, sensor, processor

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4941951 A (SHEPPARD et al.) 17 JULY 1990 See the Abstract, Fig. 1 and Columns 2, 3, 5	1, 2, 11, 12, 14, 15, 17, 18-23
X	US 6176323 B1 (WEIRICH et al.) 23 JANUARY 2001 See the Abstract, Figs. 1, 2A, 2B and Columns 4, 9, 10, 11	1, 2, 11, 12, 14, 17, 18-23
A	US 7044239 B2 (PINCKARD et al.) 16 MAY 2006 See the Abstract, Fig. 1 and Column 6	1-24
A	EP 0572055 A1 (SEDCO FOREX TECHNOLOGY INC.) 1 DECEMBER 1993 See the Abstract and Column 2	1-24

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

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"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

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"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

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INTERNATIONAL SEARCH REPORT

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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