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[Continued on next page]

(54) Title: REMOTE HYDRAULIC CONTROL OF DOWNHOLE TOOLS

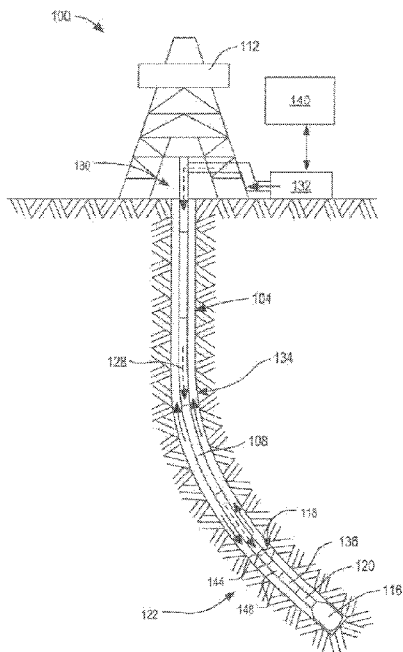


FIG. 1

(57) Abstract: A well tool apparatus comprises a control arrangement configured to control response of the downhole tool by varying a bore-annulus pressure difference. The control arrangement includes a valve piston longitudinally slidable in a generally tubular controller housing that is in operation substantially co-axial with the wellbore, to open or close a valve port to a fluid flow connection between the drill string's interior and the tool. A latch mechanism is configured to latch the valve piston against movement in one axial direction, keeping the valve piston in an open or a closed condition. Unlatching of the valve piston requires displacement thereof in the other axial direction to a mode change position. A stay member is automatically displaceable under hydraulic actuation responsive to bore-annulus pressure differences above a trigger threshold value, to obstruct movement of the latched valve piston under hydraulic actuation to the mode change position.



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A. CLASSIFICATION OF SUBJECT MATTER**E21B 4/02(2006.01)i, E21B 34/16(2006.01)i, E21B 44/00(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)

E21B 4/02; E21B 7/00; E21B 33/10; E21B 10/32; E21B 10/34; E21B 34/12; E21B 41/00; E21B 34/10; E21B 34/16; E21B 44/00

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 : well tool apparatus, tubular housing, control arrangement, valve port, valve piston, latch mechanism, and stay member

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2004-0222022 A1 (NEVLUD et al.) 11 November 2004 See paragraphs [0049],[0055],[0069],[0071] and figures 1,6-7A.	1-19
A	EP 0220401 A2 (SMITH INTERNATIONAL, INC.) 06 May 1987 See column 3, line 1 - column 6, line 19 and figures 1-4.	1-19
A	US 2009-0032308 A1 (EDDISON, ALAN MARTYN) 05 February 2009 See paragraphs [0057]-[0060] and figures 1-3.	1-19
A	US 2009-0126936 A1 (BEGLEY et al.) 21 May 2009 See paragraphs [0116],[0118] and figures 1-3.	1-19
A	US 6161632 A (HOVDEN, MAGNE) 19 December 2000 See column 9, lines 20-55 and figures 3,9.	1-19

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

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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