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(54) Title: MULTI-CYCLE SINGLE LINE SWITCH

(57) Abstract: Systems and methods for selectively operating multiple hydraulic pressure controlled devices (PCDs) within a borehole using a common inflow and outflow line and a common cycling line. A control system is used wherein each of the PCDs is operationally associated with a separate sleeve controller. The sleeve controller for each PCD controls whether the individual PCD can be actuated by hydraulic pressure variations in the common inflow and outflow lines.

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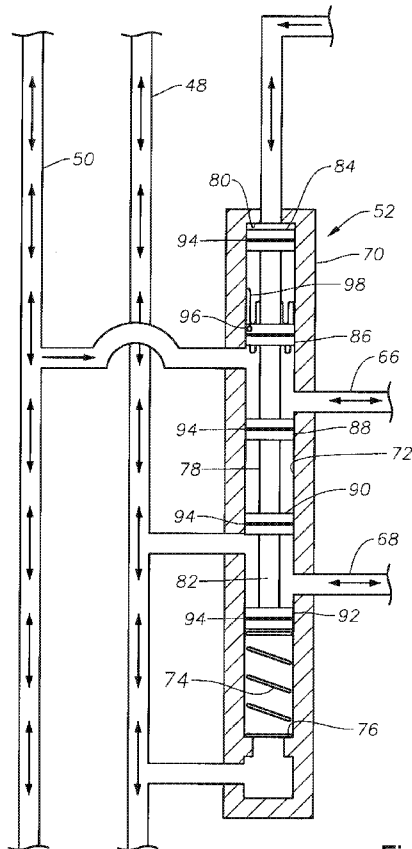


Fig. 4

EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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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 23/00, 33/127, 33/1295, 34/10, 34/16

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: hydraulic control line, sleeve controller, pressure controlled device, sleeve controller, hydraulic line, single line

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2007/0163774 A1 (HOSATTE et al.) 19 JULY 2007 See the Abstract, Fig. 10 and Paragraphs 24 to 28, 32 to 34, 46	1, 4-9, 12, 13
A	US 2006/0278399 A1 (DWIVEDI et al.) 14 DECEMBER 2006 See the Abstract, Fig. 1 and Paragraphs 23 to 28	1-20
A	US 7306043 B2 (TOEKJE et al.) 11 DECEMBER 2007 See the Abstract, Fig. 1 and Column 2	1-20
A	US 6575237 B2 (PURKIS et al.) 10 JUNE 2003 See the Abstract and Claim 1	1-20
A	US 6536530 B2 (SCHULTZ et al.) 25 MARCH 2003 See the Abstract and Claim 1	1-20

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

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