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(54) Title: DRILL STRING ADAPTER AND METHOD FOR INGROUND SIGNAL COUPLING

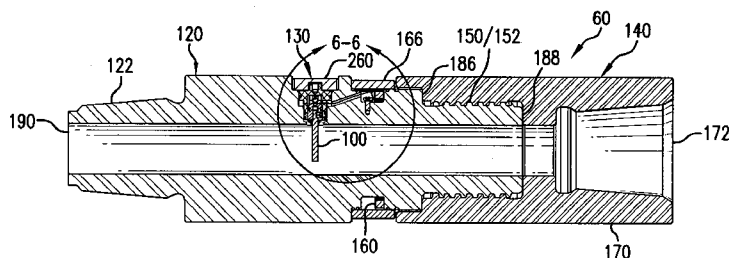


FIG. 5

(57) Abstract: A coupling adapter is insertable in at least one joint of a drill string as the drill string is extended from a drill rig. The coupling adapter includes an arrangement for receiving a data signal that is generated by an inground tool and for electromagnetically coupling the data signal onto at least a portion of the drill string that extends from the adapter to the drill rig such that at least some of the drill pipe sections cooperate as an electrical conductor for carrying the data signal to the drill rig. In another feature, a current transformer is resiliently supported to isolate the current transformer from mechanical shock and vibration that is produced by an inground operation that is performed using the drill string. In another feature, a drill string repeater is described.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/24257

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - E21B 19/16 (2012.01)

USPC - 340/854.4

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)

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

USPC: 175/40, 325.1, 325.2, 325.4; 340/853.1, 853.7, 854.3, 854.5, 854.6; 166/65.1, 66; 166/8; 175/8

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

Thomson Innovation; Google/Patents; Google/Scholar; EPO Espacenet

Search terms: Wellbore, borehole, drill, string, tubing, casing, connector, coupling, coupler, join, segment, section, data, transformer, conduct, box, thread, split, tape, potted, potting, vibration, shock, isolate, impact, dampen, attenuate, absorb, foam, signal, etc.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 7,150,329 B2 (CHAU) 19 December 2006 (19.12.2006), col 5, lns 17-33, 46-63; col 15, lns 39-43; col 17, lns 10-21, 34-37; Figs. 5, 7	1-45
Y	US 4,578,675 A (MACLEOD) 25 March 1986 (25.03.1986), col 1, lns 7-11; col 10, lns 7-9; col 16, lns 18-35; Claim 14; Figs. 10-12	1-45
Y	US 6,899,178 B2 (TUBEL) 31 May 2005 (31.05.2005), col 1, lns 14-18; col 5, lns 6-8	5
Y	US 2010/0224356 A1 (MOORE) 09 September 2010 (09.09.2010), para [0002], [0044]	6
Y	US 7,525,315 B2 (FREDETTE et al.) 28 April 2009 (28.04.2009), Fig. 5; col 6, lns 58-61; col 7, lns 66-67; col 8, lns 1-3	7-11
Y	US 7,490,428 B2 (MORYS) 17 February 2009 (17.02.2009), col 1, lns 6-11; col 7, lns 65-67; Figs. 2, 3	18, 27-41
Y	US 7,012,432 B2 (ALLAN) 14 March 2006 (14.03.2006), col 1, lns 55-57, 59-67; col 2, lns 1-3	11, 33-41

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