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(54) Title: PASSIVE AND ACTIVE UP-DRILL FEATURES ON FIXED CUTTER EARTH-BORING TOOLS AND RELATED METHODS

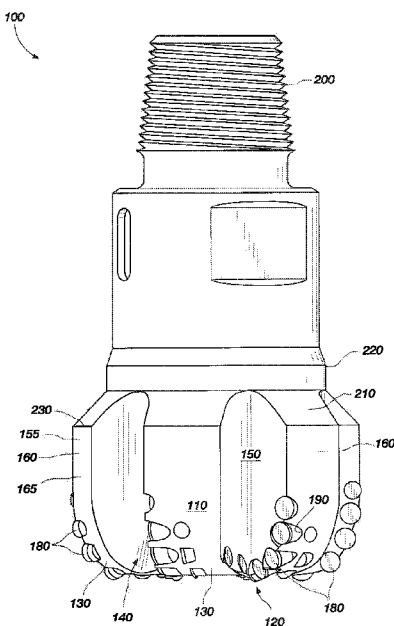


FIG. 1

(57) Abstract: Earth-boring tools include at least one up-drill feature disposed on a transition surface so as to be passive during down drilling and active during up drilling and/or back reaming operations. Systems for down drilling and up drilling with drill bits comprising one or more up-drill features are also disclosed. Furthermore, methods for forming a borehole with an earth-boring tool including such up-drill features and for forming an earth-boring tool comprising such up-drill features are also disclosed.

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INTERNATIONAL SEARCH REPORT

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PCT/US2009/046110**A. CLASSIFICATION OF SUBJECT MATTER****E21B 10/46(2006.01)i, E21B 10/42(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 10/46; E21B 10/08; E21B 10/16; E21B 10/18; E21B 10/22; E21B 10/52

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

eKOMPASS(KIPO internal) & Keywords: "up drill", "bore", "shank"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5415243 A1 (LYON; RICHARD C. et al.) 16 May 1995 See column 3, lines 15-58.	1-23
Y	US 4512425 A1 (BROCK; KENNETH A.) 23 April 1985 See column 3, line 36 - column 4, line 20.	1-23
Y A	US 6772849 B2 (OLDHAM; THOMAS W. et al.) 10 August 2004 See column 3, line 48 - column 4, line 16.	11-23 1-10
A	US 6116357 A1 (WAGONER; ROBERT et al.) 12 September 2000 See the abstract and claim 1.	1-23

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

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5415243 A1	16.05.1995	None	
US 4512425 A1	23.04.1985	None	
US 6772849 B2	10.08.2004	CA 2409554-A1 EP 1318268 B1	25.04.2003 04.01.2006
US 6116357 A1	12.09.2000	None	