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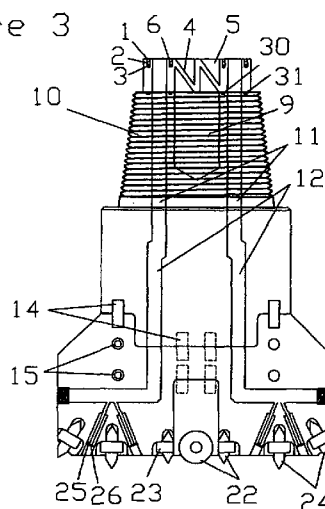
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Figure 3



(57) Abstract: A drill bit and turbine unit apparatus for drilling a bore which can accept one or more pressures of drilling fluid and/or one or more types of drilling fluid wherein it has two or more distinct and separate fluid paths through said bit which provides the intersection of some paired fluid expulsion points and has a rotating turbine unit for the pulsing of fluid at some of its expulsion points for enhanced hole advancement by increased drilling fluid velocity and cutting force to the material to be cut and has replaceable blades which interlock with each other and have retention means on more than one axis whereby the blades can be easily removed, refurbished and/or replaced.



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - E21B 10/60, 10/61, 4/02, 10/62, 10/627, 10/633 (2014.01) CPC - E21B 10/60, 10/61 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) IPC(8) - E21B 10/60, 10/61, 4/02, 10/62, 10/627, 10/633 (2014.01) CPC - E21B 10/60, 10/61 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched CPC - E21B 4/02, 10/18, 10/607, 10/622, 10/624, 10/627, 10/633 Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Patbase; Google Patents; Google Scholar; Google Web; Espacenet; Search Terms: adjust*, align*, angl*, bearing*, bit*, blade*, bore*, channel*, conduit*, cooperat*, cut*, deliver*, detachab*, distinct, distribut*, drill*, feed*, fluid*, groov*, horizontal*, intersect*, jet*, lateral*, multi*, nozzle*, passag*, piston*, plural*, port*, puls*, replace		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y --- A	US 2010/0307833 A1 (Kolle et al.) 09 December 2010 (09.12.2010), entire document, especially Figs. 1, 7B, para [0026]-[0028], para [0035]	1, 3-4, 7, 9, 11-12, 15, 17, 19-20, 23 ----- 2, 5-6, 8, 10, 13-14, 16, 18, 21-22, 24
Y --- A	US 2009/0308664 A1 (Nackerud) 17 December 2009 (17.12.2009), entire document, especially Figs. 1-2, 6-7, para [0009], [0058]-[0059]	1, 3-4, 7, 9, 11-12, 15, 17, 19-20, 23 ----- 2, 5-6, 8, 10, 13-14, 16, 18, 21-22, 24
Y --- A	US 2004/0089450 A1 (Slade et al.) 13 May 2004 (13.05.2004), Fig. 4c, para [0059]	4, 7, 12, 15, 20, 23 ----- 6, 8, 14, 16, 22, 24
A	WO 2010/142038 A1 (Strydom) 16 December 2010 (16.12.2010), Fig. 2a, pg. 9, ln. 30-35	2, 6, 10, 14, 18, 22
A	US 2011/0000716 A1 (Comeau et al.) 06 January 2011 (06.01.2011), Figs. 1-2, para [0028]	1-24
A	US 2008/0135295 A1 (Hall) 12 June 2008 (12.06.2008), Figs. 2-3b, para [0023]-[0024]	1-24
A	US 2007/0221409 A1 (Hall et al.) 27 September 2007 (27.09.2007), Figs. 3, 6, para [0022]	1-24
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