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(72) Inventor: **Fuller, John Michael**
Nailsworth, Gloucestershire (GB)

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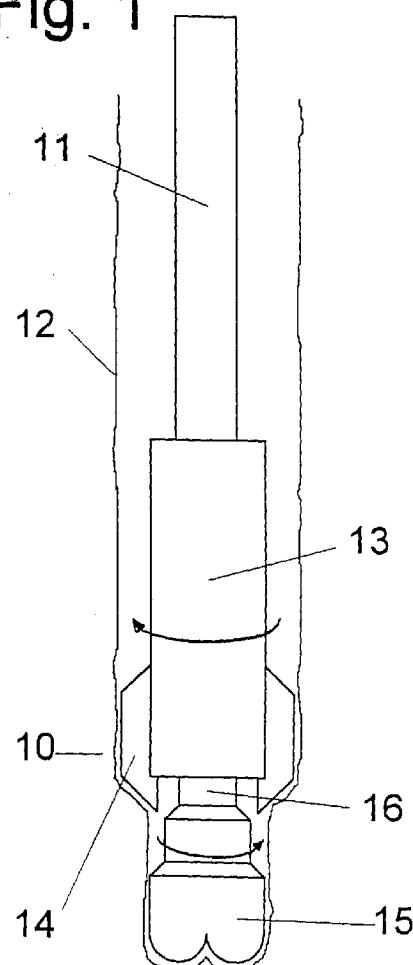
(74) Representative: **Carter, Gerald**
Arthur R. Davies & Co.
27 Imperial Square
Cheltenham, Gloucestershire GL50 1RQ (GB)

(71) Applicant: **CAMCO DRILLING GROUP LIMITED**
Stonehouse, Gloucestershire GL10 3RQ (GB)

(54) **A drilling assembly for use in drilling holes in subsurface formations**

(57) A drilling assembly for connection to a drill string, for use in drilling holes in subsurface formations, comprises a drill bit (15) carrying cutters located and orientated to perform cutting action on the formation as the drill bit rotates anti-clockwise relative thereto. A drive unit (13), such as an hydraulically driven positive displacement motor or turbine, or an electric motor, is operatively coupled to the drill bit (15) to rotate the drill bit anti-clockwise relative to the drive unit, and a hole opener (14) is coupled to the drive unit for rotation therewith. There may be provided two drive units in series, comprising a first drive unit (20) operatively coupled to the drill bit to rotate the drill bit in one direction relative to the first drive unit, and a second drive unit (23) operatively coupled to the first drive unit to rotate the first drive unit in the opposite direction relative to the second drive unit. A hole opener is coupled to at least one of the drive units for rotation therewith.

Fig. 1



EP 0 770 759 A3



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EUROPEAN SEARCH REPORT

Application Number
EP 96 30 7429

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	DATABASE WPI Section Ch, Week 9031 Derwent Publications Ltd., London, GB; Class H01, AN 90-236933 XP002024335 & SU 1 514 895 A (DRILLING TECHN RES) , 15 October 1989 * abstract *	1-6,18	E21B4/20 E21B4/16
X	DE 881 484 C (SALZGITTER) * the whole document *	1,2,5,19	
A		3	
Y,D	EP 0 400 921 A (WEIR PUMPS) * the whole document *	1,5-16	
A		3	
Y	US 4 646 855 A (T.B. DELLINGER) * the whole document *	1,5-16	
A,D	US 4 862 974 A (T.M. WARREN) * abstract; figures *	1,3	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	US 4 227 584 A (W.B. DRIVER)		E21B
A	US 5 417 292 A (P. POLAKOFF)		
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		31 January 1997	LEITNER, J
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet -B-

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respects of which search fees have been paid, namely claims:
- ☒ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, 1-16, 18, 19
- namely claims:



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EP 96 30 7429 - B -

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions, or groups of inventions, namely:

1. Claims 1-16,18,19 : Drilling assembly for rotating a drill bit anti-clockwise.
2. Claim 17 : Drilling fluid venting means.
2. Claims 20,21 : Motors with anti-clockwise rotating rotors.