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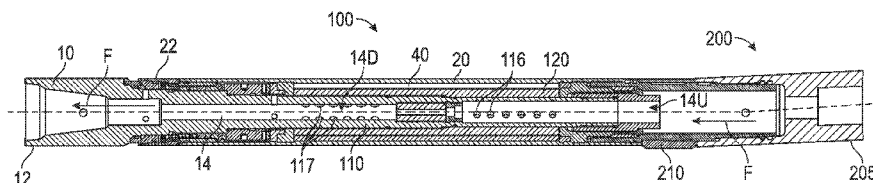


FIG. 1

(57) Abstract: A downhole motor includes a bearing assembly having a mandrel rotatable within a cylindrical housing, with the mandrel co-rotatably engaging the rotor of a concentric rotary drive system incorporating an arrangement of housing-mounted gates pivotably deflectable by rotor lobes as the rotor rotates in response to fluid flow through an annular space between the rotor and the housing, building up pressure in longitudinal chambers formed between adjacent gates and lobes and thus inducing rotation of the mandrel. Preferably, the drive system is coupled directly to the bearing assembly, without need for a connecting driveshaft, and with the housing incorporating a bent sub positioned above the drive section. Alternatively, a bent sub may be positioned below the drive system in conjunction with the use of a driveshaft to connect the drive system to the bearing section, in order to position the bend as close as possible to the bit.



INTERNATIONAL SEARCH REPORT

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ADD.

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 F01C F04C

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

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 939 117 B2 (WHEELER DARYL [AU] ET AL) 6 September 2005 (2005-09-06) cited in the application the whole document -----	1



Further documents are listed in the continuation of Box C.



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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6939117	B2	06-09-2005	
		AR 027026 A1	12-03-2003
		BR 0016615 A	03-09-2002
		CA 2394825 A1	28-06-2001
		EP 1240409 A1	18-09-2002
		ES 2394615 T3	04-02-2013
		US 2002192100 A1	19-12-2002
		WO 0146561 A1	28-06-2001
