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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : E21B 10/22		A1	(11) International Publication Number: WO 99/49174
			(43) International Publication Date: 30 September 1999 (30.09.99)
(21) International Application Number: PCT/US99/06876		(81) Designated States: CN, ID, MX, SG, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).	
(22) International Filing Date: 25 March 1999 (25.03.99)			
(30) Priority Data: 60/079,554 26 March 1998 (26.03.98) US		Published With international search report.	
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(54) Title: ROTARY CONE DRILL BIT WITH IMPROVED BEARING SYSTEM

(57) Abstract

A rotary cone drill bit for forming a borehole having a bit body with an upper portion adapted for connection to a drill string. A number of support arms extending from the bit body with each support arm having an exterior surface with an opening extending therethrough. A number of cutter cone assemblies equal to the number of support arms with each cutter cone assembly rotatably mounted on a respective spindle projecting generally downwardly and inwardly from each support arm. A ball retainer passageway extending from the opening in the exterior surface of each support arm to allow installing ball bearings through the opening and the ball retainer passageway to rotatably mount each cutter cone assembly on its respective spindle. A ball race formed in the exterior of each spindle between a first outside diameter portion and a second outside diameter portion. The ball retainer passageway intersecting the ball race. The first outside diameter portion and the second outside diameter portion providing portions of radial bearing for rotatably mounting each cutter cone assembly on its respective spindle. The first outside diameter portion and the second outside diameter portion having approximately the same diameter relative to an axis extending through the spindle.

