

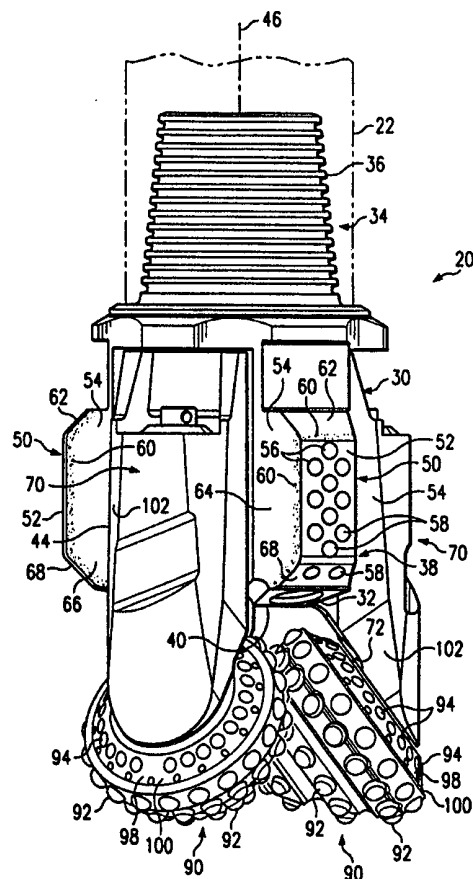


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : E21B 10/08, 17/10	A3	(11) International Publication Number: WO 00/29709 (43) International Publication Date: 25 May 2000 (25.05.00)
(21) International Application Number: PCT/US99/26491 (22) International Filing Date: 10 November 1999 (10.11.99) (30) Priority Data: 60/109,073 18 November 1998 (18.11.98) US (71) Applicant (for all designated States except US): DRESSER INDUSTRIES, INC. [US/US]; 2601 Belt Line Road, Carrollton, TX 75006 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): DAHLEM, James, S. [US/US]; 6257 Montgomery Road, Midlothian, TX 76065 (US). KNECHT, Karl, Don [US/US]; 1107 Lynda Lane, Arlington, TX 76013 (US). (74) Agent: GROOVER & ASSOCIATES, P.C.; Groover, Robert, Formby, Betty, 17000 Preston Road #230, Dallas, TX 75248 (US).	(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, RU, SE, SG, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report. (88) Date of publication of the international search report: 31 August 2000 (31.08.00)	

(54) Title: ROTARY CONE DRILL BIT HAVING A BIT BODY WITH INTEGRAL STABILIZERS**(57) Abstract**

A rotary cone drill bit for forming a borehole having a bit body with a plurality of stabilizer pads formed as integral components thereof. The bit body includes an upper portion adapted for connection to a drill string. A number of support arms preferably extend from a lower portion of the bit body. A number of cutter cone assemblies equal to the number of support arms are rotatably mounted on respective support arms and project generally downwardly and inwardly from each support arm. The stabilizer pads project radially outward from the bit body and are disposed intermediate adjacent support arms. Both the stabilizer pads and the support arms preferably have surfaces that form a fluid flow channel therebetween to direct drilling fluids and cuttings to flow upward in the borehole. Layer of hardfacing may be disposed on selected portions of each stabilizer pad. One or more inserts may be installed in selected portions of each stabilizer pad.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 99/26491

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: E21B 10/08, E21B 17/10

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)

IPC7: E21B

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)

WPI, EPODOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5586612 A (M.R. ISBELL ET AL), 24 December 1996 (24.12.96), column 3, line 8 - line 58 --	1-2,7,15,20
X	US 5147000 A (O. KAALSTAD), 15 Sept 1992 (15.09.92), figures 4-11 --	1-7,12,15, 18-20,22-24
A	US 5755297 A (J. YOUNG ET AL), 26 May 1998 (26.05.98) --	1-24
A	US 4067406 A (L.L. GARNER ET AL), 10 January 1978 (10.01.78) -- -----	1-24

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

23 March 2000

Date of mailing of the international search report

13. 06. 2000

Name and mailing address of the International Searching Authority
European Patent Office P B 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel(+31-70)340-2040, Tx 31 651 epo nl
Fax(+31-70)340-3016

Authorized officer

Christer Bäcknert / MR
Telephone No.

INTERNATIONAL SEARCH REPORT

Information on patent family members

02/12/99

International application No.

PCT/US 99/26491

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5586612 A	24/12/96	GB 2297338 A,B GB 9601563 D IT 1284340 B IT T0960042 A	31/07/96 00/00/00 18/05/98 25/07/97
US 5147000 A	15/09/92	US 5064007 A AT 166947 T AU 641569 B AU 8793691 A CA 2055291 A CN 1030512 B CN 1071223 A DE 69129538 D EG 19598 A EP 0534037 A,B FI 94279 B,C FI 915544 A IE 69333 B IL 100122 A JP 5239982 A LT 1767 A LT 3831 B MX 174011 B MX 9102711 A NO 304198 B NO 914578 D OA 9405 A PL 167198 B PT 99574 A RU 2054117 C SK 358891 A TR 25810 A ZW 17491 A	12/11/91 15/06/98 23/09/93 06/05/93 28/03/93 13/12/95 21/04/93 00/00/00 27/07/95 31/03/93 28/04/95 28/03/93 04/09/96 31/07/94 17/09/93 25/07/95 25/04/96 13/04/94 01/03/93 09/11/98 00/00/00 15/09/91 31/08/95 31/12/93 10/02/96 11/07/95 01/09/93 17/06/92
US 5755297 A	26/05/98	GB 2331313 A GB 9828702 D IT 1292469 B IT MI971581 A WO 9802633 A AU 4376596 A CN 1168709 A EP 0795073 A US 5547033 A WO 9618019 A AU 4417396 A CN 1168710 A EP 0796385 A US 5553681 A WO 9618020 A	19/05/99 00/00/00 08/02/99 05/01/98 22/01/98 26/06/96 24/12/97 17/09/97 20/08/96 13/06/96 26/06/96 24/12/97 24/09/97 10/09/96 13/06/96

Information on patent family members

PCT/US 99/26491

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4067406 A	10/01/78	CA 1067065 A	27/11/79
		FR 2366437 A,B	28/04/78
		IT 1077226 B	04/05/85
		MX 142995 A	03/02/81
