



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification⁶:

E21B 10/00, 10/60, 7/18

A1

(11) International Publication Number:

WO 98/59147

(43) International Publication Date:

30 December 1998 (30.12.98)

(21) International Application Number: PCT/US98/12623

(22) International Filing Date: 19 June 1998 (19.06.98)

(30) Priority Data:

08/879,401

20 June 1997 (20.06.97)

US

(71) Applicant (for all designated States except US): DRESSER INDUSTRIES, INC. [US/US]; 2001 Ross Avenue, Dallas, TX 75201 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): ARFELE, Robert, W. [US/US]; 155 Evanston Street, Houston, TX 77015 (US).

(74) Agent: TORRES, Carlos, A.; Browning Bushman, Suite 1800, 5718 Westheimer Road, Houston, TX 77057 (US).

(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published

With international search report.

Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: DRILL BIT DIRECTIONAL NOZZLE

(57) Abstract

A nozzle assembly (11) is externally threaded (25) for threaded engagement within an internally threaded (27) receptacle (14) formed in the drill bit (10). The nozzle assembly (11) includes a nozzle body (15) which is angularly indexable within a threaded sleeve structure (21, 22) to permit directional flow passage (16) to extend through the nozzle body (15) to be selectively oriented relative to the bit (10) when the nozzle assembly (11) is fully seated within the threaded (27) receptacle (14). Seating of the nozzle assembly (11) within the receptacle (14) anchors the nozzle body (15) against rotational and axial movement. The nozzle body (15) and the sleeve (21, 22) mechanically interlock to permit the nozzle body (15) to be positioned at selected different angular positions within the sleeve (21, 22) before seating the sleeve structure (21, 22) in the receptacle (14). The flow passage exit end (18) is surrounded by a drive area (32) that extends axially from the nozzle body (15). A drive tool engages the drive area (32) to rotate the nozzle assembly (11) into or out of the threaded (27) receptacle (14).

