



(51) International Patent Classification:

E21B 10/42 (2006.01) *E21B 10/62* (2006.01)
E21B 10/43 (2006.01)

(21) International Application Number:

PCT/US2015/055944

(22) International Filing Date:

16 October 2015 (16.10.2015)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

14/516,340 16 October 2014 (16.10.2014) US
14/864,436 24 September 2015 (24.09.2015) US

(71) Applicant: **BAKER HUGHES INCORPORATED**
[US/US]; P.O. Box 4740, Houston, TX 77210-4740 (US).(72) Inventors: **JAIN, Jayesh, R.**; 51 South Lace Arbor Drive,
The Woodlands, TX 77382 (US). **BAXTER, Benjamin**;
35 Llama Ct., Reno, NV 89511 (US). **VEMPATI, Chaitanya, K.**; 130 Autumn Forest Ln., Conroe, TX 77384
(US). **RADFORD, Steven, R.**; 187 N. Millport Circle, The

Woodlands, TX 77382 (US). **PETERS, Volker**; Knochen-
riehe 14, 29342 Wienhausen (DE). **RICKS, Gregory, L.**;
31319 Brighton Brook Lane, Spring, TX 77386 (US). **BI-
LEN, Juan, Miguel**; 27 Willow Point Place, The Wood-
lands, TX 77382 (US). **STIBBE, Holger**; 8231 Shore
Grove Drive, Humble, TX 77346 (US). **CURRY, David,
A.**; Appletrees, Askett, Princes Risborough Buckingham
HP27PLT (GB).

(74) Agents: **WELBORN, Brian, S.** et al.; Baker Hughes In-
corporated, Intellectual Property Counsel, P.O. Box 4740,
Houston, TX 77210-4740 (US).(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG,
MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM,
PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC,
SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

[Continued on next page]

(54) Title: DRILL BIT WITH SELF-ADJUSTING PADS

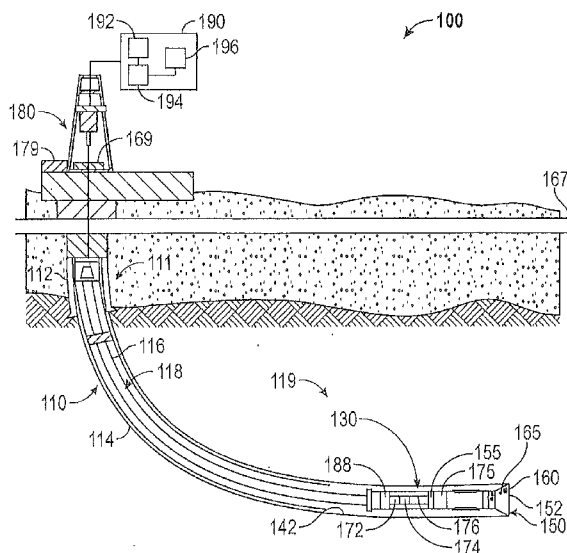


FIG. 1

(57) Abstract: In one aspect, a drill bit is disclosed, includ-
ing: a bit body; a pad associated with the bit body; a rate
control device coupled to the pad that extends from a bit sur-
face at a first rate and retracts from an extended position to a
retracted position at a second rate in response to external
force applied onto the pad, the rate control device including:
a piston for applying a force on the pad; a biasing member
that applies a force on the piston to extend the pad at the
first rate; a fluid chamber associated with the piston; and a
pressure management device for controlling a fluid pressure
within the fluid chamber.



(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:

— *with international search report (Art. 21(3))*