

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
10 February 2005 (10.02.2005)

PCT

(10) International Publication Number
WO 2005/011904 A1

(51) International Patent Classification⁷: **B23B 47/24,**
45/00

(21) International Application Number:
PCT/JP2004/011098

(22) International Filing Date: 28 July 2004 (28.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2003-284837 1 August 2003 (01.08.2003) JP
2003-307743 29 August 2003 (29.08.2003) JP

(71) Applicant (for all designated States except US): **NITTO KOHKI CO., LTD.** [JP/JP]; 9-4, Nakaikegami 2-chome, Ohta-ku, Tokyo 1468555 (JP).

(72) Inventors: **MIKIYA, Toshio**; 28-8, Denenchofu 3-chome, Ohta-ku, Tokyo 1450071 (JP). **SHIMADA, Keisuke**; c/o NITTO KOHKI CO., Ltd., 9-4, Nakaikegami 2-chome, Ohta-ku, Tokyo 1468555 (JP). **CHIBA, Takashi**; c/o NITTO KOHKI CO., Ltd., 9-4, Nakaikegami 2-chome, Ohta-ku, Tokyo 1468555 (JP). **YAMAGUCHI, Munenori**;

c/o NITTO KOHKI CO., Ltd., 9-4, Nakaikegami 2-chome, Ohta-ku, Tokyo 1468555 (JP). **OHTSUKA, Kenji**; c/o NITTO KOHKI CO., Ltd., 9-4, Nakaikegami 2-chome, Ohta-ku, Tokyo 1468555 (JP).

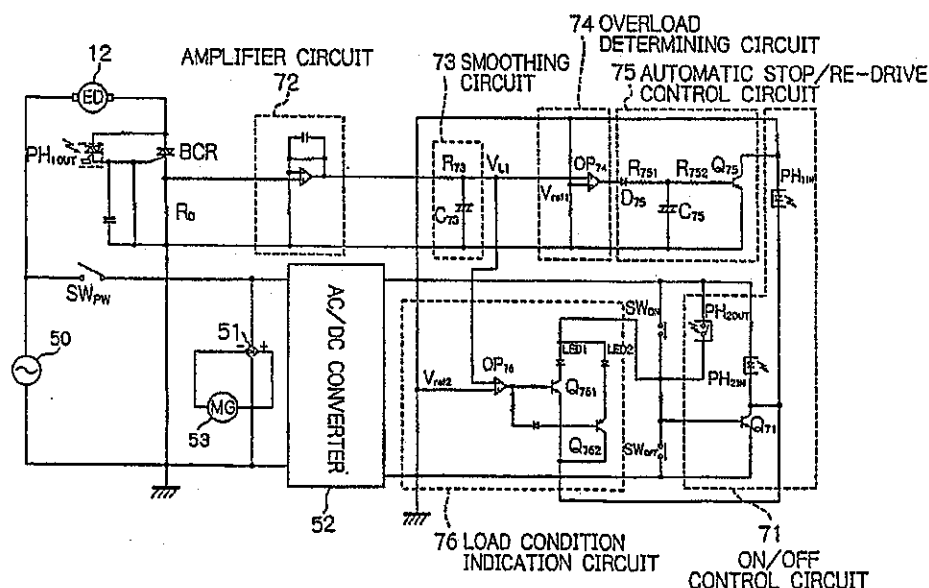
(74) Agent: **ITOH, Shigeru**; 3F, Akasaka BT Bldg., 4-8, Akasaka 1-chome, Minato-ku, Tokyo 1070052 (JP).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

[Continued on next page]

(54) Title: ELECTRIC DRILL APPARATUS



(57) Abstract: An electric drill apparatus having a low profile is provided which comprises an annular cutter, a motor for rotating the annular cutter, an arbor for rotating the annular cutter attached to its leading end about a rotating, an speed reduction mechanism disposed between the motor and arbor for transmitting a driving force of the motor to the annular cutter through the arbor, a feed mechanism responsive to an operation of a manual handle, for moving the arbor along with a straight line to advance or retract the annular cutter attached to the arbor with respect to a workpiece, and an adhesion base for securing the electric drill apparatus to the workpiece. The annular cutter has a plurality of cutting teeth comprised of cemented carbide tips fixed to its lower end, thereby it is capable of rotating at a high speed. The arbor has a rotating shaft which rotates in a direction different from that of a rotating shaft of the motor, thereby the drill apparatus has a low profile.

WO 2005/011904 A1



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *with international search report*