(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
31 October 2002 (31.10.2002)

PCT

(10) International Publication Number
WO 02/087034 A1

(51) International Patent Classification[7]: H01T 23/00

(21) International Application Number: PCT/JP02/03969

(22) International Filing Date: 19 April 2002 (19.04.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2001-123230 20 April 2001 (20.04.2001) JP
2001-287786 20 September 2001 (20.09.2001) JP

(71) Applicant *(for all designated States except US)*: **SHARP KABUSHIKI KAISHA** [JP/JP]; 22-22, Nagaike-cho, Abeno-ku, Osaka-shi, Osaka 545-8522 (JP).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **SEKOGUCHI, Yoshinori** [JP/JP]; c/o SHARP KABUSHIKI KAISHA, 22-22, Nagaike-cho, Abeno-ku, Osaka-shi, Osaka 545-8522 (JP). **FURUHASHI, Kenji** [JP/JP]; c/o SHARP KABUSHIKI KAISHA, 22-22, Nagaike-cho, Abeno-ku, Osaka-shi, Osaka 545-8522 (JP). **MORIKAWA, Mamoru** [JP/JP]; c/o SHARP KABUSHIKI KAISHA, 22-22, Nagaike-cho, Abeno-ku, Osaka-shi, Osaka 545-8522 (JP).

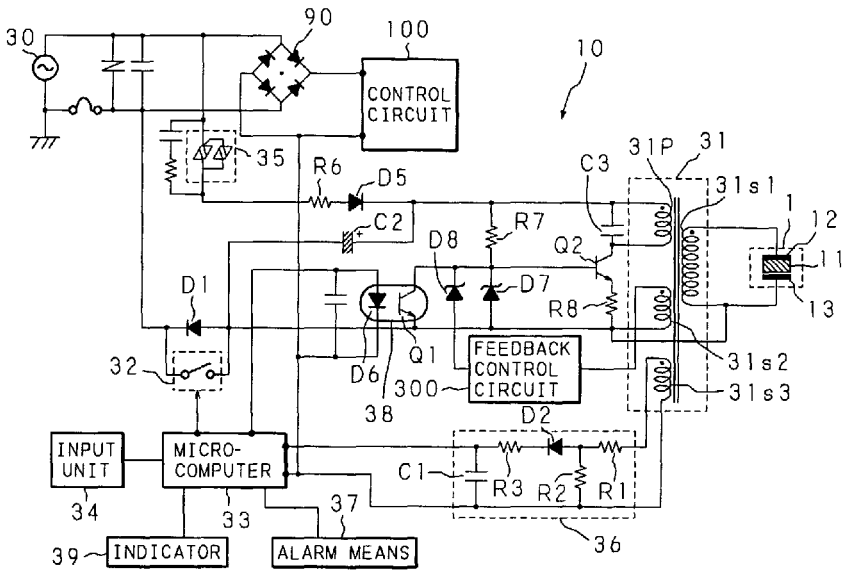
(74) Agent: **KOHNO, Takao**; C/O KOHNO PATENT OFFICE, 4-3, Tsuriganecho 2-chome, Chuo-ku, Osaka-shi, Osaka 540-0035 (JP).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, 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, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, 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, TR), OAPI patent

[Continued on next page]

(54) Title: ION GENERATOR AND AIR CONDITIONING APPARATUS



(57) Abstract: A switching transformer applies an alternating high voltage across an internal electrode and an external electrode which face each other with a glass tube as a dielectric body between them. The anode side of a diode is connected to the external electrode which is not a voltage supply side electrode, while the cathode side is grounded. When a relay connected to both the terminals of the diode is turned on, substantially equal amounts of positive ions and negative ions are generated, and a bacteria removal/disinfection effect can be obtained by emitting these positive ions and negative ions into the air. When the relay is turned off, a relatively small amount of positive ions and a relatively large amount of negative ions are generated, and a relaxation effect given by negative ions can be obtained by emitting these positive ions and negative ions into the air.

WO 02/087034 A1

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

Published:

— *with international search report*

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.