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(71) Applicant (for all designated States except US): **ELECTRIC POWER RESEARCH INSTITUTE** [US/US];
3412 Hillview Avenue, Palo Alto, CA 94304 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ALTMAN, Ralph, F.** [US/US]; 9008 Pontiac Drive, Chattanooga, TN 37421 (US). **GUENTHER, Robert, N.** [US/US]; 312 Rising Sun Road, Bordentown, NJ 08505 (US). **NICHOLS, Grady, B.** [US/US]; 400 Kiowa Street, Montevallo, AL 35115 (US).

(74) Agents: **CURATOLO, Joseph, G.** et al.; Curatolo Sidoti Co., LPA, 24500 Center Ridge Road, Suite 280, Cleveland, OH 44145 (US).

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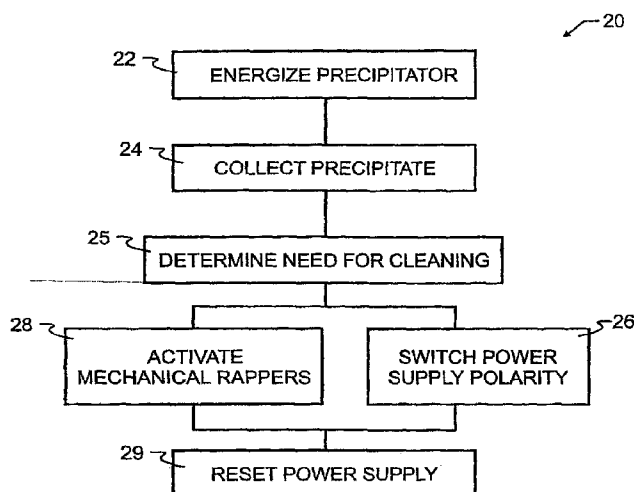
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(54) Title: POLARITY REVERSING CIRCUIT FOR ELECTROSTATIC PRECIPITATOR SYSTEMS



(57) Abstract: A gas separation apparatus using electrostatic precipitators and mechanical rappers is enhanced by the addition of an opposite polarity refreshing power supply and a switching arrangement. The switching components selectively disconnect the primary power supply and connect the refreshing power supply to the electrostatic precipitator, causing an electrical impulse in the precipitator sufficient to dislodge precipitate from the collector plates. In one embodiment, an RC filter is further provided to control the impulse and reduce the burden that would otherwise be placed upon the refreshing power supply. In a second embodiment, a pair of SCR strings serve as the switches. Cleaning power is delivered from the capacitor through one of the SCR strings using a resonant circuit, the resonance which causes the SCR to commutate off after the impulse has been delivered. The capacitor is charged to a pre-calculated potential, dependent upon a measured potential just prior to delivery of the cleaning power, to ensure the cleaning voltage stays below a corona onset voltage.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/01449

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B03C 3/66 (2008.04)

USPC - 363/21.02; 323/237; 95/7

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)

USPC - 363/21.02; 323/237; 95/7

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

USPC - 363/21.02, 86; 323/237, 903; 95/7; 96/24, 80

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWEST(USPT,PGPB,EPAB,JPAB); Google Patents; Google

Search Terms Used: electrostatic precipitate thyristor switch collector plate reversing reverse polarity cleaning clean rapping coal burning SCR fly ash resonant inductor capacitor oscillation oscillate

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2,490,979 A (PALMER) 13 December 1949 (13.12.1949) entire document especially col 1, ln 5-20, col 1, ln 50-55, col 2, ln 1-5, col 2, ln 10-16, col 3, ln 37-42, col 3, ln 42-68	1-26
Y	US 4,074,101 A (KIUCHI et al.) 14 February 1978 (14.02.1978) entire document especially col 3, ln 1-5, col 3, ln 30-45, col 5, ln 33-40, col 6, ln 20-25, col 9, ln 60-69	1-24
Y	US 2004/0109800 A1 (PAHLMAN et al.) 10 June 2004 (10.06.2004); para [0208]	10, 11 and 22-26
Y	US 2005/0160906 A1 (REEVES et al.) 28 July 2005 (28.07.2005); para [0061]	3, 5-8, 13 and 14

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"&" document member of the same patent family

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Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
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Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774