

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
8 September 2000 (08.09.2000)

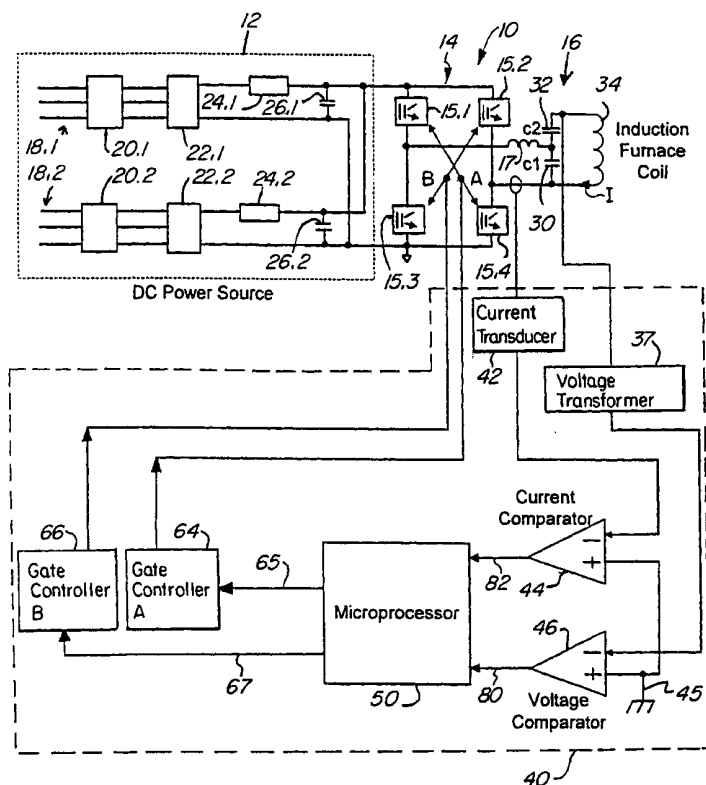
PCT

(10) International Publication Number
WO 00/51410 A3

- (51) International Patent Classification⁷: **H05B 6/04**, (74) Agents: **WHITMYER, Wesley, W., Jr.** et al.; St. Onge Steward Johnston & Reens LLC, 986 Bedford Street, Stamford, CT 06905-5619 (US).
H02M 3/24
- (21) International Application Number: PCT/US00/05548
- (22) International Filing Date: 2 March 2000 (02.03.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/122,994 5 March 1999 (05.03.1999) US
09/435,043 8 November 1999 (08.11.1999) US
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- (81) Designated States (*national*): AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, 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, UZ, VN, YU, ZW.
- (84) Designated States (*regional*): 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.
- (88) Date of publication of the international search report:
18 January 2001

[Continued on next page]

(54) Title: RESONANT FREQUENCY INDUCTION FURNACE SYSTEM USING CAPACITIVE VOLTAGE DIVISION



(57) Abstract: An induction furnace is provided comprising a voltage source series inverter (14), a load circuit (16) having a combination of an induction coil (34) and a resonating capacitor bank (C1, C2), and control circuitry (40) to phase lock the inverter frequency to the natural resonant frequency of the load. The capacitor bank can be divided into two groups, one (C1) across the output of the inverter and the other (C2) in series with the load. This arrangement allows for the division of the inverter voltage across the furnace coil according to the ratio of the two capacitances. The inverter uses pulse width modulation and is buffered from the load circuit by means of a small series connected inductor (17). Additionally, the system can have a common power supply system that supplies power in any desired proportion to a plurality of induction furnaces.

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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.

INTERNATIONAL SEARCH REPORT

 International application No.
PCT/US00/05548

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H05B 6/04, H02M 3/24

US CL : Please See Extra Sheet.

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)

U.S. : 219/660, 662, 663, 665, 671; 363/62, 98, 131

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y, E	US 6,064,584 A (CORNEC et al) 16 May 2000, see entire document, especially columns 2-4 and 6-7.	1, 10
A	US 5,523,631 A (FISHMAN et al) 04 June 1996, abstract, claims 1-32.	none
Y	US 5,412,557 A (LAUW) 02 May 1995, see abstract, columns 1-4 and 34-37.	1, 10



Further documents are listed in the continuation of Box C.



See patent family annex.

* *A* *E* *L* *O* *P*	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance earlier document published on or after the international filing date document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed	*T* *X* *Y* *&*	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art document member of the same patent family
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Date of the actual completion of the international search

16 AUGUST 2000

Date of mailing of the international search report

29 AUG 2000

 Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
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Washington, D.C. 20231

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/05548

A. CLASSIFICATION OF SUBJECT MATTER:

US CL :

219/660, 661, 662, 663, 665, 666, 671; 363/62, 98, 131; 373/147-150