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(54) Title: ARC WELDING SYSTEM WITH POWER CONVERTER AND CONTROLLER FOR OPERATING THE POWER/CONVERTER
THROUGH A WAVEFORM CONTROL SIGNAL AND THE MOTION OF THE ELECTRODE/THROUGH A MOTION CONTROL SIGNAL
BASED BOTH ON WELDING STATE AND MOTION STATE/TABLES AND SENSING DATA

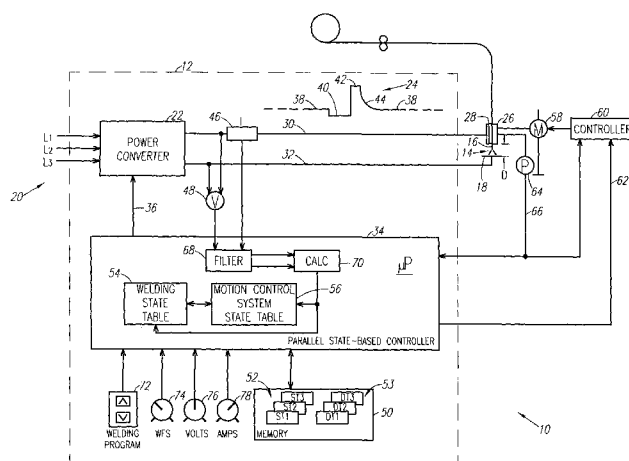


FIG. 1

(57) Abstract: An arc welding system (10) includes a welding torch (26), an electrode (16), and a power supply (12) having a switching-type power converter (22) connected to the torch (26). A parallel state-based controller (34) is connected to the power converter (22) and provides a waveform control signal thereto for controlling its operations. The controller (34) generates a motion control signal (62) for controlling movements of the electrode (16) and/or the torch (26). A sensor (48) senses welding voltage or welding current. A memory (50) stores a welding state table (54) comprising sequential control states, and stores a motion control system state table (56) comprising further sequential control states. The welding waveform (24) is defined in the welding state table (54). The controller (34) controls the operations of the power converter (22) through the waveform control signal according to the welding state table (54), simultaneously adjusting the motion control signal (62) according to the motion control system state table (56). The controller (34) transitions between control states according to the signal received from the sensor (48).

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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ADD.

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	WO 2013/150364 A1 (LINCOLN GLOBAL INC. ; W.T. MATTHEWS ET AL) 10 October 2013 (2013-10-10) paragraphs [0048] - [0051]; figures -----	1-21
Y	US 2007/056942 A1 (J. A. DANIEL ET AL) 15 March 2007 (2007-03-15) paragraph [0003]; claims; figures -----	1-21
Y	JP H10 193116 A (HITACHI ENG & SERVICE CO LTD) 28 July 1998 (1998-07-28) abstract; figures paragraphs [0028], [0032] -----	1-21
A	JP S63 192562 A (HITACHI LTD) 9 August 1988 (1988-08-09) abstract; figures ----- -/-	1-21



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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 278 390 A (G. D. BLANKENSHIP) 11 January 1994 (1994-01-11) column 13, line 23 - column 14, line 20; figure 9 -----	1-21

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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