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(54) Title: SYSTEM FOR AND METHOD OF GAS METAL ARC WELDING USING A CONTACT TIP HAVING AN UPPER AND A LOWER PORTIONS CONNECTED TO TWO DIFFERENT POWER SUPPLIES

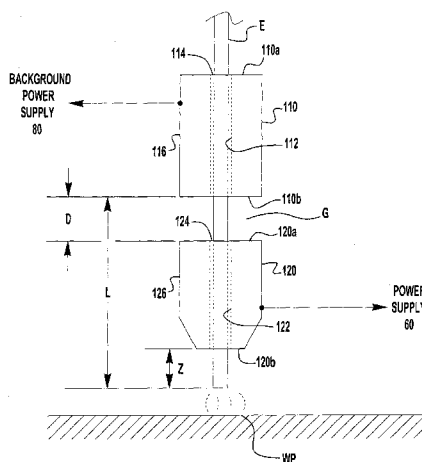


FIG. 4

(57) Abstract: The present application describes a method and a system with a welding torch having a contact tip which has an upper portion (110) and a lower portion (120), where the upper portion (110) and the lower portion (120) are electrically isolated from each other. Each of the upper portion (110) and the lower portion (120) make contact with the same electrode (E) during a welding operation. A first power supply (80) is coupled to the upper portion (110) which provides a first current to the upper portion during the welding operation, and a second power supply (60) is coupled to the lower portion (120) which provides a second current during the welding operation. The first and second currents are accumulated in the electrode (E) during welding to provide a welding waveform. The first power supply (60) can have a higher inductance than the second power supply (80).



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)
B23K

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	EP 2 522 453 A1 (KOBE STEEL LTD [JP]) 14 November 2012 (2012-11-14) paragraphs [0063] - [0065]; figure 7 -----	1,3,4,6, 9,11,12, 15
X	JP 2010 194566 A (DAIHEN CORP) 9 September 2010 (2010-09-09)	1-6,8-15
Y	abstract paragraph [0016]; figure 1 -----	7
Y	US 4 580 026 A (STOL ISRAEL [US]) 1 April 1986 (1986-04-01)	7
A	column 5, line 14 - column 6, line 15; figure 1 ----- -/--	1-6,8-15

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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.
X	WO 2005/030422 A1 (FRONIUS INT GMBH [AT]; ARTELSMAIR JOSEF [AT]; RESCH ANDREAS [AT]) 7 April 2005 (2005-04-07) abstract; claims; figures -----	1,2,6,7, 9
A	JP 2008 229641 A (DAIHEN CORP) 2 October 2008 (2008-10-02) abstract; figures -----	1,9

INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/IB2013/001571

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
EP 2522453	A1	14-11-2012	CN 202639618 U	02-01-2013
			EP 2522453 A1	14-11-2012
			US 2012285932 A1	15-11-2012

JP 2010194566	A	09-09-2010	CN 101811215 A	25-08-2010
			JP 2010194566 A	09-09-2010

US 4580026	A	01-04-1986	CA 1253580 A1	02-05-1989
			DE 3683406 D1	27-02-1992
			EP 0204559 A2	10-12-1986
			JP S6297773 A	07-05-1987
			US 4580026 A	01-04-1986

WO 2005030422	A1	07-04-2005	AT 413801 B	15-06-2006
			DE 212004000048 U1	01-06-2006
			WO 2005030422 A1	07-04-2005

JP 2008229641	A	02-10-2008	NONE	
