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(54) Title: METHOD AND APPARATUS FOR DETERMINATION OF ELECTRICAL WELDING CIRCUIT VARIABLES

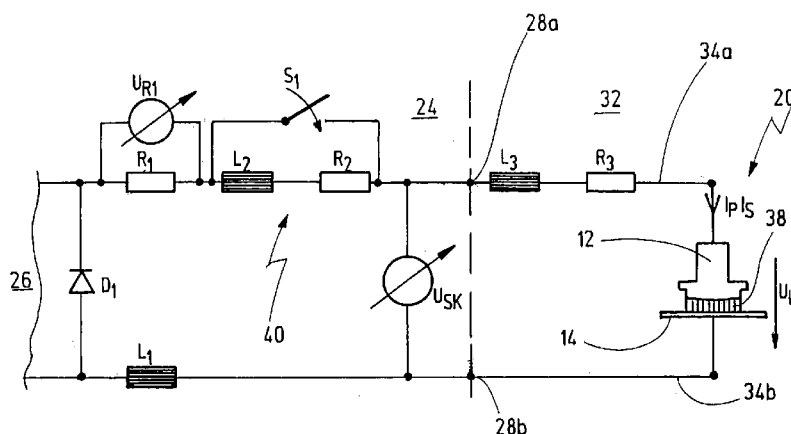


Fig.2

(57) Abstract: The invention relates to a method for determination of electrical variables (R_3 , L_3) of a welding circuit (32) which is connected to an electrical power supply device (24) which is designed to provide either a welding current (I_s) or a lesser pilot current (I_p), with the power supply device (24) having an input circuit (40) for providing the pilot current (I_p), which input circuit (40) is bridged in order to provide the welding current (I_s), having the following steps: a) determination of a first electrical variable (R_3) when the input circuit (40) is not bridged, and b) determination of a second electrical variable (L_3) when the input circuit (40) is bridged.

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2009/008026

A. CLASSIFICATION OF SUBJECT MATTER
 INV. B23K9/095 B23K9/20
 ADD.

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)

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 practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/110691 A1 (ABB AB [SE]; SKARIN DICK [SE]; RUAULT KADDANI PASCALE HF [SE]) 23 December 2004 (2004-12-23) page 4, line 22 - line 32 page 11, line 27 - page 14, line 10	13, 14
A	US 6 359 258 B1 (BLANKENSHIP GEORGE D [US] ET AL) 19 March 2002 (2002-03-19) abstract; figures	1-16
A	WO 2007/132362 A2 (LINCOLN GLOBAL INC [US]; DANIEL JOE [US]; MATTHEWS TOM [US]) 22 November 2007 (2007-11-22) figures	1-16
A	GB 823 614 A (CROMPTON PARKINSON LTD) 18 November 1959 (1959-11-18) page 3, line 123 - page 4, line 32	1-16



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
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- *P* document published prior to the international filing date but later than the priority date claimed

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- *Y* 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

Date of the actual completion of the international search

21 May 2010

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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2009/008026

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-12, 15, 16(completely); 13, 14(partially)

Method for determination of electrical variables of a welding circuit (Claims 13 and 14 as dependent on claim 12).

2. claims: 13, 14(partially)

Method for controlling a welding process (claim 13 as independent claim)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2009/008026

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