



(51) International Patent Classification:
B23K 11/00 (2006.01) *B23K 11/25* (2006.01)

(21) International Application Number:
PCT/EP2009/053503

(22) International Filing Date:
25 March 2009 (25.03.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
UD2008A000067 28 March 2008 (28.03.2008) IT

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR),

[Continued on next page]

(54) Title: WELDING HEAD FOR A MACHINE FOR THE FORMATION OF METAL MESH, RELATIVE WELDING METHOD AND MACHINE FOR THE FORMATION OF METAL MESH USING SAID WELDING HEAD

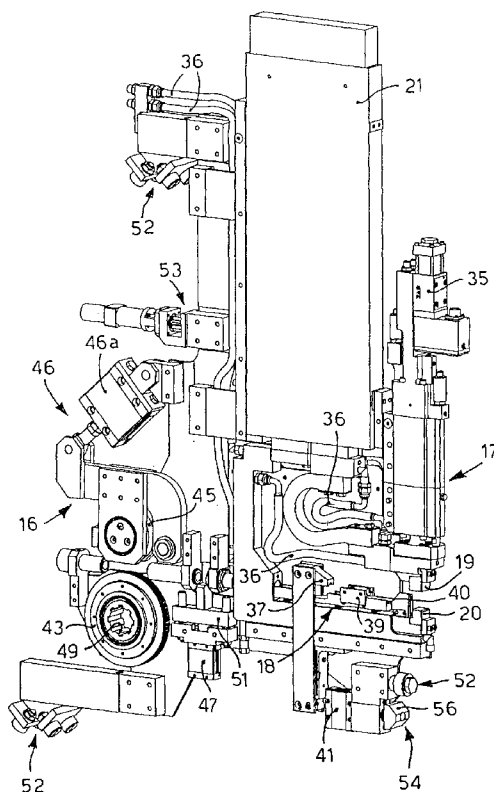


fig. 3

(57) Abstract: Welding head for the formation of a metal mesh comprising longitudinal wires (12) and transverse wires (13), comprising at least a feed unit (16) able to feed step-wise a plurality of longitudinal wires (12), and a welding unit (17) by means of which the longitudinal wires (12) are welded to corresponding transverse wires (13). The welding unit (17) comprises at least two electrodes (19,20) selectively movable between a first feed position, in which at least a first electrode (19) is distant from the transverse (13) and longitudinal (12) wires, and a second welding position, in which both the electrodes (19,20) contact and grip the wires (12,13) and apply different tensions in order to weld the wires to each other (12,13). The welding head comprises at least a movement member (22) operatively associated at least with the first electrode (19) in order to move it between the first and the second position, first sensor members (25) associated with the movement member (22) and configured to detect the position of the first electrode (19) with respect to the two wires (12, 13) and/or second sensor members (30,31) associated with the movement member (22) and conformed to detect the working pressure of the first electrode (19).



OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments (Rule 48.2(h))*

Published:

— *with international search report (Art. 21(3))*

(88) Date of publication of the international search report:

3 December 2009

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/053503

A. CLASSIFICATION OF SUBJECT MATTER

INV. B23K11/00 B23K11/25

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	BE 830 194 A1 (CENTRE DE RECHERCHES METALLURGIQUES) 1 October 1975 (1975-10-01)	1-3, 19-20
Y	page 1, line 1 - line 3 page 3, line 31 - page 4, line 4	7
X	US 4 609 802 A (SOTONYI THOMAS [DE] ET AL) 2 September 1986 (1986-09-02)	1,4-6
Y	column 4, line 65 - column 5, line 5 abstract; figures	7
A	US 5 134 269 A (RITTER GERHARD [AT] ET AL) 28 July 1992 (1992-07-28)	1
	abstract; figure 1	
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☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

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"T" 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

"X" 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

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"&" document member of the same patent family

Date of the actual completion of the international search

7 July 2009

Date of mailing of the international search report

12/10/2009

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2009/053503

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	WO 2009/015401 A1 (EVG ENTWICKLUNG VERWERT GES [AT]; RITTER KLAUS [AT]; TREMMEL ROBERT [A] 5 February 2009 (2009-02-05) page 16, line 12 - page 17, line 6; figures 1-3	1,4, 19-20

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2009/053503

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 allsearchable 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 reportcovers 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.:

see additional sheet(s)

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: 1-7, 19-20

Welding head for the formation of metal mesh with sensor means

2. claims: 8-12

Welding head for the formation of metal mesh with positioning and centering unit

3. claims: 13-16

Welding head for the formation of metal mesh with feed unit

4. claims: 17-18

Welding head for the formation of metal mesh with head translating means

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2009/053503

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