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(54) Title: METHODS OF AND SYSTEMS FOR FORCED FREEZE FLASH WELDING OF ADVANCED HIGH STRENGTH STEELS WITH AN OFFSET STAGE

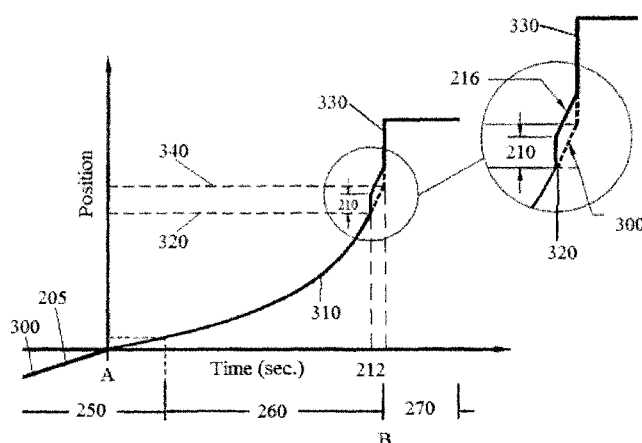


Fig. 2A

(57) **Abstract:** In a force freeze welding method and system for joining metal work pieces, a controlled and programmable electrical potential is applied to a circuit including a first work piece (130) and a second work piece (140). The first work piece (130) is linearly translated towards the second static work piece (140) to engage along a faying interface (190). The first work piece (130) and the second work piece (140) move together at a controlled rate and voltage is applied to the circuit which produces heat to soften or plasticize the faying interface (190) during a flashing stage (310). A position offset (210) or abrupt compression force is applied to at least one of the first work piece (130) and the second work piece (140) prior to applying an upset (330) to force the first work piece (130) and the second work piece (140) together to weld the first work piece (130) and the second work piece (140) along the faying interface (190).

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. B23K11/04
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 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	GB 2 403 174 A (CORUS UK LTD) 29 December 2004 (2004-12-29)	1-10,12, 14-21
Y	page 10, line 11, last paragraph - page 2; figure 2	11,13
A	----- DATABASE WPI Week 198030 Thomson Scientific, London, GB; AN 1980-52557C XP002688281, -& JP 55 077984 A (OSAKA ELECTRIC CO LTD) 12 June 1980 (1980-06-12) abstract; figures	1-6, 8-10,12, 14,16-21
Y	----- WO 2010/116680 A1 (NIPPON STEEL CORP ; K. KARIMINE ET AL) 14 October 2010 (2010-10-14) abstract; figures 2a-c ----- -/-	11,13



Further documents are listed in the continuation of Box C.



See patent family annex.

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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.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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