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(54) Title: SYSTEM AND METHOD FOR WELD REMOVAL, CUTTING, AND GOUGING WITH VACUUM REMOVAL OF BYPRODUCTS

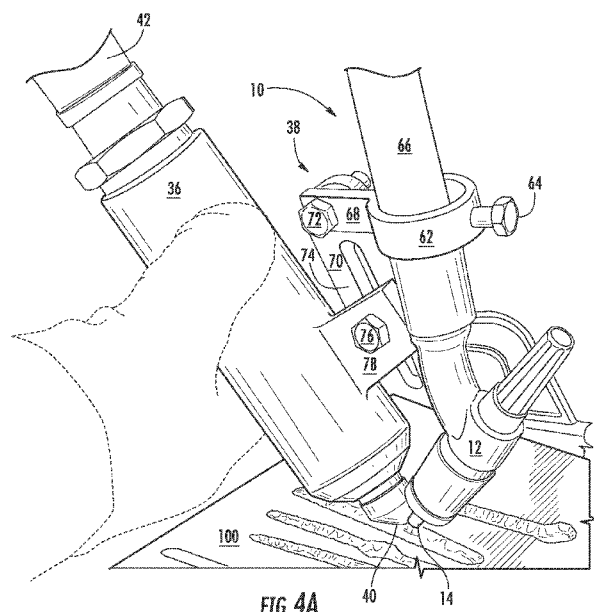


FIG. 4A

(57) Abstract: An adjustable vacuum and support system (25) for evacuating particulate matter, smoke, excess gasses, and molten metal from a work area during TIG welding and for providing adjustable support to a welding head (12). The vacuum system has a vacuum head (36) and a vacuum nozzle (40). An adjustable mounting bracket arrangement (38) has a first portion fixed to the vacuum head (36) and a second portion securable to the welding head (12). The bracket arrangement (38) establishes pivotal and slidable couplings between the welding head (12) and the vacuum head (36). The vacuum nozzle (40) has a support surface (41) for being rested on a surface of a workpiece (100) to support the vacuum head (36) and the welding head (12). The support surface (41) of the vacuum nozzle (40) can be a base bevel (41) surface at the tip of the nozzle (40). An opposed suction bevel surface (43) can have a nozzle aperture (45) interposed therealong.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/044575**A. CLASSIFICATION OF SUBJECT MATTER****B23K 9/167(2006.01)i, B23K 9/16(2006.01)i, B23K 9/235(2006.01)i**

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 9/167; B23K 26/00; B23K 9/29; B23K 9/32

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models since 1975.

Japanese utility models and applications for utility models since 1975.

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: fume, vacuume, evacuate, Tig, nozzle

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 08-112684 A (ISHIKAWAJIMA HARIMA HEAVY IND CO LTD) 07 May 1996 See paragraph 23 - paragraph 28 and figure 1.	1-13,15-24 14,25-26
Y A	US 5079404 A1 (ZAMUNER; FRANK) 07 January 1992 See column 3, line 67 - column 5, line 6 and figures 1-2.	1-13,15-24 14,25-26
Y	JP 2000-052041 A (ANLET CO LTD) 22 February 2000 See paragraphs 11 - 16 and figure 1.	1-13,15-24
Y	US 4493970 A1 (RIEPEL; PERRY J. et al.) 15 January 1985 See column 3, line 54 - column 4, line 52 and figures 1, 3.	1,17



Further documents are listed in the continuation of Box C.



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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 08-112684 A	07.05.1996	JP 8112684 A	07.05.1996
US 5079404 A1	07.01.1992	None	
JP 2000-052041 A	22.02.2000	JP 2000-052041 A	22.02.2000
US 4493970 A1	15.01.1985	None	