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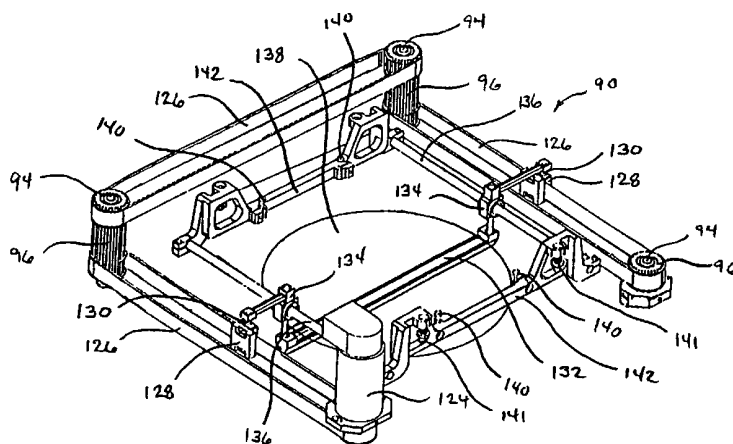
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- (88) Date of publication of the international search report:
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[Continued on next page]

(54) Title: A MICROELECTRONIC WORKPIECE PROCESSING TOOL INCLUDING A PROCESSING REACTOR HAVING A PADDLE ASSEMBLY FOR AGITATION OF A PROCESSING FLUID PROXIMATE TO THE WORKPIECE



(57) Abstract: An integrated tool is provided including at least one workpiece processing station having a paddle assembly. In accordance with another independent aspect of the present invention, the workpiece processing station is adapted for adjusting the level of the processing fluid relative to a workpiece, wherein the portion of the workpiece to be processed and possibly the paddle is selectively immersed within the processing fluid. In accordance with a further independent aspect of the present invention, a paddle is provided for use proximate to a workpiece in a workpiece processing station. The paddle includes one or more sets of delivery ports and one or more sets of fluid recovery ports. In at least one embodiment, the paddle provides for agitation of a processing fluid proximate to the surface of the workpiece. In at least another embodiment, the paddle provides for the delivery and/or recovery of one or more fluids to the portion of the workpiece to be processed. One aspect of the present invention enables the fluids supplied to the workpiece by the paddle to be limited to the space located between the workpiece and the paddle, thus avoiding mixing of these fluids with the processing fluid located within the bowl assembly not supplied by the paddle.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01L21/00 C25D21/10 C25D7/12

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)

IPC 7 H01L C25D

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, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 199, no. 602 -& JP 07 284738 A (TOPPAN PRINTING CO LTD) abstract	1-3, 12
Y		4, 15-19, 29-32
A		38
X	--- PATENT ABSTRACTS OF JAPAN vol. 018, no. 658 (E-1643), 13 December 1994 (1994-12-13) -& JP 06 260468 A (TOKUYAMA CERAMICS KK) abstract	1, 12
A	--- -/--	16, 29, 38

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

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International Application No

PCT/US 01/00173

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 11, 26 December 1995 (1995-12-26) -& JP 07 211724 A (CASIO COMPUT CO LTD), 11 August 1995 (1995-08-11) abstract; figure 4 ---	26
X	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 11, 30 September 1998 (1998-09-30) -& JP 10 172974 A (DENSO CORP), 26 June 1998 (1998-06-26) abstract; figure 1 ---	26
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X	US 6 001 235 A (ARKEN ET AL.) 14 December 1999 (1999-12-14) column 5, line 59-62 ---	27
X	US 5 421 987 A (TZANAVARAS ET AL.) 6 June 1995 (1995-06-06) column 7, line 10-18 ---	27
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Y	WO 99 25004 A (APPLIED MATERIALS) 20 May 1999 (1999-05-20) page 6, line 18 -page 7, line 3 ---	28
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A	PATENT ABSTRACTS OF JAPAN vol. 017, no. 579 (E-1451), 21 October 1993 (1993-10-21) -& JP 05 175158 A (FUJITSU LTD) abstract ---	1,12,16, 29,38

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International Application No

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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.
A	PATENT ABSTRACTS OF JAPAN vol. 012, no. 198 (C-502) -& JP 62 297495 A (ELECTROPLATING ENG OF JAPAN CO) abstract ---	1-3, 12-14, 16-18, 29,38
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International application No.
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Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 fee, this Authority did not invite payment of any additional fee.
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.
- ☒ 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: 1-8,12-22,29-35,38-47

Apparatus for plating a layer of material on a workpiece

2. Claims: 9-11,23-25,36,37

Apparatus for plating comprising a plurality of float assemblies

3. Claim : 26

Apparatus for plating comprising a processing vessel with two fluid outlets

4. Claim : 27

Apparatus for plating comprising a magnet

5. Claim : 28

Apparatus for plating with a special head assembly

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/00173

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