



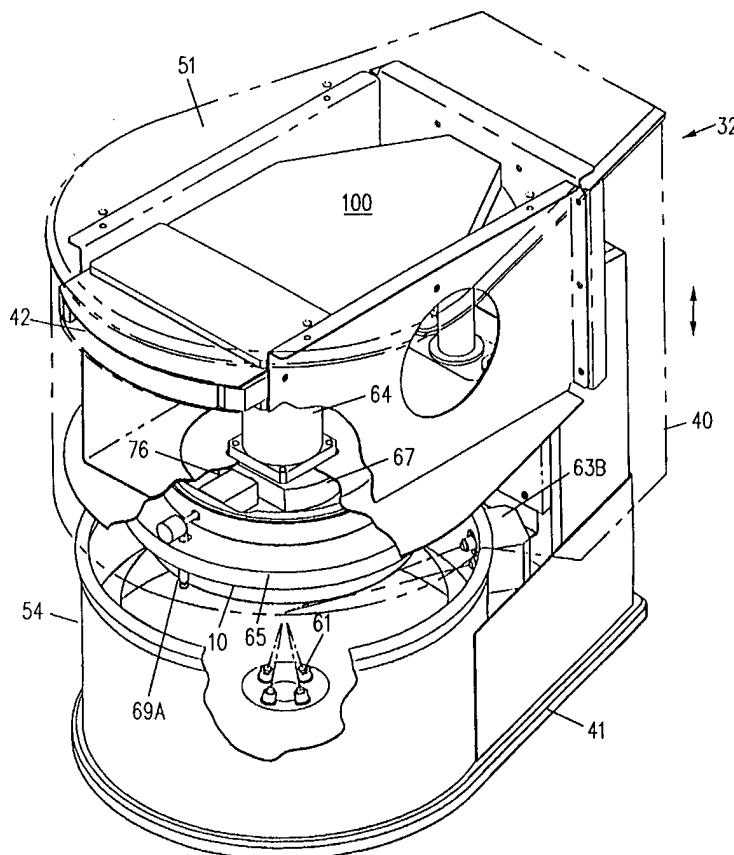
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : H01L 21/00, B05B 15/02</p>	<p>A3</p>	<p>(11) International Publication Number: WO 98/02905 (43) International Publication Date: 22 January 1998 (22.01.98)</p>
<p>(21) International Application Number: PCT/US97/11725 (22) International Filing Date: 15 July 1997 (15.07.97) (30) Priority Data: 680,739 15 July 1996 (15.07.96) US (71) Applicant: OLIVER DESIGN, INC. [US/US]; 5 Victor Square, Scotts Valley, CA 95066 (US). (72) Inventor: JONES, Oliver, David; 152 Vista Del Pajaro, Watsonville, CA 95076 (US). (74) Agents: STEUBER, David, E. et al.; Skjerven, Morrill, MacPherson, Franklin & Friel, Suite 700, 25 Metro Drive, San Jose, CA 95110 (US).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 7 May 1998 (07.05.98)</p>	

(54) Title: WAFER SPIN DRYER AND METHOD OF DRYING A WAFER

(57) Abstract

In a spin dryer for semiconductor wafers, the wafer is held beneath a platen with its active side (i.e., the side containing the components or circuitry) facing upward. One or more nozzles spray rinse water on the top surface of the wafer and the wafer is rotated to remove the excess rinse water, thereby drying the wafer. A splash guard adjacent the edge of the wafer insures that the excess rinse water thrown off by the spinning wafer is deflected downward where it cannot again come into contact with the active side of the wafer. The platen is rotated dry at the same time, with no rinse water being splashed back onto the active side of the wafer. The spin dryer also includes a separate section which cleans and dries the end-effector of the robot which inserts the wafer into the spin dryer while the wafer is being dried.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 97/11725

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 H01L21/00 B05B15/02

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 6 H01L B05B

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)

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. 14, no. 371 (E-0963), 10 August 1990 & JP 02 134820 A (HITACHI LTD), 23 May 1990,	16, 17
A	see abstract	1, 3
A	--- WO 87 07002 A (EASTMAN KODAK COMPANY) 19 November 1987 see the whole document	1-10, 16, 17
A	--- WO 95 11518 A (SEZ SEMICONDUCTOR-EQUIPMENT ZUBEHÖR FÜR DIE HALBLEITERFERTIGUNG GMBH) 27 April 1995 see page 5, line 17 - page 7, line 31; figures 1-4	1, 4-9
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Date of the actual completion of the international search

18 February 1998

Date of mailing of the international search report

20. 03. 98

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 97/11725

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	C.G.METREAUD: "article handling apparatus" IBM TECHNICAL DISCLOSURE BULLETIN, vol. 9, no. 5, October 1966, pages 548-549, XP002048522 see the whole document	1,4-7
X	--- DE 41 29 778 A (MERCEDES-BENZ AKTIENGESELLSCHAFT) 9 July 1992 see column 2, line 5 - column 3, line 13; figure	22-24
X	--- US 4 977 911 A (VETTER ET AL.) 18 December 1990 see the whole document -----	22,23

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 97/ 11725

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:

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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:

1. Claims: 01-21,25-30
2. Claims: 22-24

For further information please see form PCT/ISA/206 sent 17.12.97.

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.

INTERNATIONAL SEARCH REPORT

Intern: al Application No
PCT/US 97/11725

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