(19) World Intellectual Property Organization International Bureau



) | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1

(43) International Publication Date 4 January 2007 (04.01.2007)

(10) International Publication Number WO 2007/001486 A3

- (51) International Patent Classification: *B65H 1/00* (2006.01) *C23C 14/50* (2006.01)
- (21) International Application Number:

PCT/US2006/001723

- (22) International Filing Date: 18 January 2006 (18.01.2006)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:

60/644,929

19 January 2005 (19.01.2005) U

- (71) Applicant (for all designated States except US): TOSOH SMD ETNA, LLC [US/US]; 3600 Gantz Road, Grove City, Ohio 43123-1895 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): REED, Wiley, Zane [US/US]; 100 West Red For Trail, Greenville, SC 29615 (US). COSPER, Bobby, R. [US/US]; 8741 Highway 301, Trenton, GA 30752 (US). SCHMIDT, Kenneth, G. [US/US]; 330 Driftwood Drive, Piedmont, SC 29673 (US). BULTZ, Neil, D. [US/US]; 135 Sylvan Way, Greenville, SC 29605 (US). NOZICKA, David, M. [US/US]; 15428 140th Street, Wellsburg, Iowa 50680 (US).

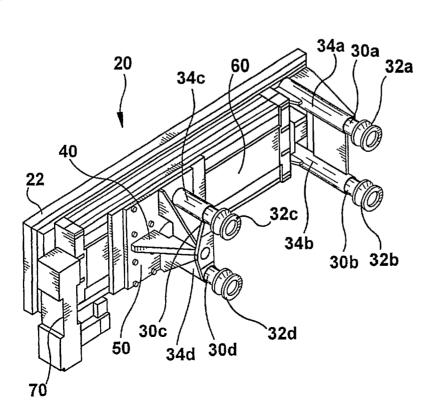
- (74) Agents: PEACOCK, Bruce et al.; WEGMAN, HESSLER & VANDERBURG, Suite 200, 6055 Rockside Woods Boulevard, Cleveland, Ohio 44131 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, 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, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

[Continued on next page]

(54) Title: END EFFECTOR FOR HANDLING SPUTTERING TARGETS



(57) Abstract: A fixture (20) and method is provided for gripping an article, such as a sputtering target. The fixture (20) comprises a base (22). a first set of contact rollers (32a, 32b), and a second set of contact rollers (32c, 32d), wherein at least one of the first (32a, 32b) and the second set (32c. 32d) are adjustably positioned relative to the other of the first (32a, 32b) and the second set on the base (32c. 32d). The contact rollers (32a-32d) can be configured as v-grooved wheels that will only touch chamfered portions of an outer diameter of the sputtering target when the contact rollers (32a-32d) are clamped against the sputtering target. At least one of the first set and the second set of contact rollers (32a-32d) can be pivotally mounted on a slide (40), with the slide (40) being adjustably positioned on the base (22) of the fixture (20).

WO 2007/001486 A3



 before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments 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.

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

4 October 2007

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US06/01723

| A. CLASSIFICATION OF SUBJECT MATTER IPC: B65H 1/00(2006.01); C23C 14/50(2006.01) | | | | |
|---|---|--|--|---------------------------------------|
| USPC: 414/222.01,222.05;118/500,503;204/298.15,298.23 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) U.S.: 414/222.01, 222.05; 118/500, 503; 204/298.15, 298.23 | | | | |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched NONE | | | | |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) NONE | | | | |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT | | | | T n 1 1 |
| Category * | Citation of document, with indication, where appropriate, of the relevant passages | | | Relevant to claim No. |
| X | USPGPUB (MURRAY et al) 17 April 2003 (17.04.2003), Figs. 1, 2; Page 3 paragraphs 0025-0028, paragraph 0037. | | | 1, J |
| A | | | 2, 4-20 | |
| A US 4,892,455 A (HINE) 09 January 1990 (09.01.1990), Abstract; Figs. 1-3. | | | 1-20 | |
| A | A US 6,652,216 B1 (ASTEGNO et al) 25 November 2003 (25.11.2003), Fig. 2; Column 6 lines 49-68; Column 7 lines 1-34. | | | s 1-20 |
| | | | | |
| Further documents are listed in the continuation of Box C. | | See patent family annex. "T" later document published after the international filing date or priority | | |
| * Special categories of cited documents: | | • | date and not in conflict with the apprinciple or theory underlying the in | olication but cited to understand the |
| "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent published on or after the international filing date | | "X" | document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step | |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | | "Ү" | when the document is taken alone document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art | |
| | | "&" | document member of the same pate | |
| "P" document published prior to the international filing date but later than the priority date claimed | | | | |
| Date of the action 11 | | | nailing of the international se | aren report |
| 13 June 2007 (13.06.2007) Name and mailing address of the ISA/US | | Authorize | ed officer | "udog the der (1 |
| Mail Stop PCT, Attn: ISA/US | | Rodney G. McDonald ROD | | ODNEY G. MCDONALD |
| Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201 | | | e No. 571-272-1300 | PRIMARY EXAMINER |

Facsimile No. (571) 273-3201
Form PCT/ISA/210 (second sheet) (April 2005)