

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
24 April 2008 (24.04.2008)

PCT

(10) International Publication Number
WO 2008/048324 A3

(51) International Patent Classification:
B01D 8/00 (2006.01)

(21) International Application Number:
PCT/US2006/060165

(22) International Filing Date: 23 October 2006 (23.10.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/267,058 4 November 2005 (04.11.2005) US

(71) Applicant (for all designated States except US): **APPLIED MATERIALS, INC.** [US/US]; 3050 Bowers Avenue, Santa Clara, California 95054 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **RITCHIE, Alan A.** [GB/US]; 3008 Ferndale Court, Pleasanton, California 94588 (US).

(74) Agents: **PATTERSON, B Todd** et al.; Patterson & Sheridan Llp, 3040 Post Oak Blvd., Suite 1500, Houston, Texas 77056 (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, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

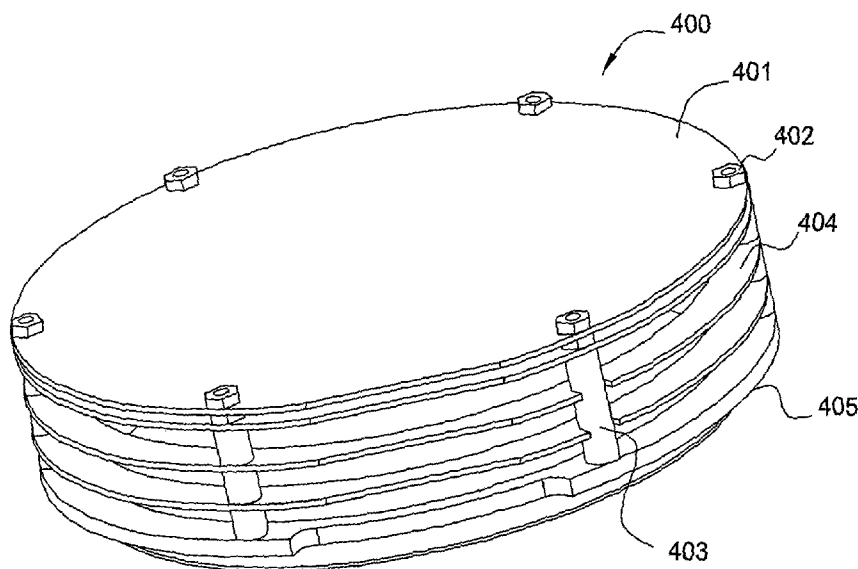
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
24 July 2008

(54) Title: RADIATION SHIELD FOR CRYOGENIC PUMP FOR HIGH TEMPERATURE PHYSICAL VAPOR DEPOSITION



(57) Abstract: A method and apparatus to shield a cryogenic pump in a physical vapor deposition chamber comprising a physical vapor deposition chamber, a gasket in thermal contact with the physical vapor deposition chamber, at least one post in contact with the gasket, a radiation shield connected at the top of the post, and at least one intermediate ring in contact with the post. A method and apparatus for a radiation shield for a cryogenic pump comprising a cryogenic pump with a region upstream from the cryogenic pump, a gasket in thermal contact with the region upstream from the cryogenic pump, at least one post in contact with the gasket, a radiation shield connected at the top of the post, and at least one intermediate ring in contact with the post.



WO 2008/048324 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US06/60165

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **B01D 8/00**(2006.01)

USPC: 62/55.5

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. : 62/55.5

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

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2002/0015855 A1 (SAJOTO et al) 07 February 2002 (07.02.2002), see entire document.	1,2,4,7-10,12,15-18 and 20
Y	US 4,267,707 A (HEMMERICH) 19 May 1981 (19.05.1981), see entire document.	1,2,4,7-10,12,15-18 and 20
Y	US 6,263,679 B1 (PAYNTING) 24 July 2001 (24.07.2001), see entire document.	2,7,10,12,15-18,20
A	US 6,223,540 B1 (EGERMEIER) 01 May 2001 (01.05.2001), see entire document.	1-20
A	US 5,782,096 A (BARTLETT et al) 21 July 1998 (21.07.1998), see entire document.	1-20
A	US 4,446,702 A (PETERSON et al) 08 May 1984 (08.05.1984), see entire document.	1-20

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"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 when the document is taken alone
"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)	"Y" 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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 07 May 2008 (07.05.2008)	Date of mailing of the international search report 28 MAY 2008
---	--

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer William C. Doerrler <i>William C. Doerrler</i> Telephone No. (571) 272-3750 <i>WCD</i>
---	---