

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
17 April 2008 (17.04.2008)

PCT

(10) International Publication Number
WO 2008/045285 A3

(51) International Patent Classification:
C03B 25/02 (2006.01) C03B 32/00 (2006.01)
C03B 29/02 (2006.01) G02B 5/18 (2006.01)

(74) Agents: DURKEE, Paul, D. et al; Daly, Crowley, Mof-
ford & Durkee, Llp, Suite 301a, 354a Turnpike St., Canton,
MA 02021 (US).

(21) International Application Number:
PCT/US2007/021321

(22) International Filing Date: 4 October 2007 (04.10.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/548,447 11 October 2006 (11.10.2006) US

(71) Applicant (for all designated States except US):
RAYTHEON COMPANY [US/US]; 870 Winter Street,
Waltham, MA 02451-1449 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): EFIMOV, Oleg
[US/US]; 717 Shadow Lake Drive, Thousand Oaks, CA
91360 (US). HAMMON, David [US/US]; 1420 Vaquero
Drive, Simi Valley, CA 93065 (US).

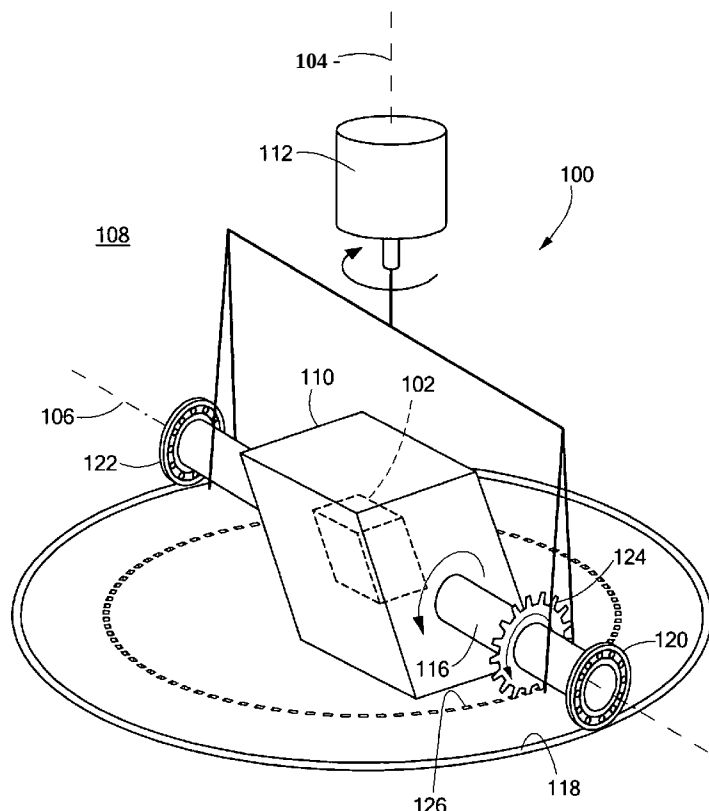
(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH,
CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG,
ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL,
IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK,
LR, LS, LT, LU, 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, MT, NL, PL,

[Continued on next page]

(54) Title: METHOD, APPARATUS AND HOLDER DEVICE FOR THERMAL DEVELOPMENT OF LARGE AREA SOLIDS

(57) Abstract: Methods and apparatus to rotate a sample about first and second axes in a heat chamber to obtain a desired homogeneous modification of properties of the sample and maintain a surface figure.





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

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(H))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(Ui))

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

9 October 2008

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/021321

A. CLASSIFICATION OF SUBJECT MATTER

INV. C03B25/02 C03B29/02 C03B32/00 G02B5/18

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)

C03B F25B F25D G02B

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2003 202401 A (NIPPON KOGAKU KK) 18 July 2003 (2003-07-18) abstract the whole document -----	1-6, 11-15
A	US 1 582 335 A (CLARK WALTER G) 27 April 1926 (1926-04-27) Fig. 1,2 p. 1, 1. 95-p. 2, 1. 17 p. 2, 1. 110-115 p. 3, 1. 47-62 -----	1-6, 11-15
A	US 3 295 843 A (MCMASTER HAROLD A ET AL) 3 January 1967 (1967-01-03) column 1, line 10 - line 25 column 3, line 48 - line 57 column 5, line 38 - column 6, line 20 column 12, line 30 - line 39; claim 1 ----- -/--	1, 11



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

'E' earlier document but published on or after the international filing date

'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)

'O*' document referring to an oral disclosure, use, exhibition or other means

'P' document published prior to the international filing date but later than the priority date claimed

'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

'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

'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.

'&' document member of the same patent family

Date of the actual completion of the international search

13 May 2008

Date of mailing of the international search report

03/09/2008

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Deckwerth, Martin

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/021321

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
E	JP 2007 277045 A (COVALENT MATERIALS CORP) 25 October 2007 (2007-10-25) .abstract the whole document -----	1,11
A	US 2002/045104 A1 (EFIMOV OLEG M [US] ET AL) 18 April 2002 (2002-04-18) paragraphs [0007], [0060] -----	1,11
A	CARDINAL T ET AL: "Comparative study of photo-induced variations of X-ray diffraction and refractive index in photo-thermo-refractive glass" JOURNAL OF NON-CRYSTALLINE SOLIDS, NORTH-HOLLAND PHYSICS PUBLISHING. AMSTERDAM, NL, vol. 325, no. 1-3, 15 September 2003 (2003-09-15), pages 275-281, XP004448272 ISSN: 0022-3093 2.2 Exposure and Thermal Development, last paragraph -----	1,11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/021321

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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 No. III Observations where unity of invention is lacking (Continuation of item 3 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 allsearchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

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.:

see additional sheet

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ 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: 1-6, 11-15

Claims 1-6, and 11-15 directed to a method and system for rotating a glass sample about first and second axes within a heating chamber for obtaining a desired homogeneous modification of properties of the sample.

2. claims: 7-10, 16-19, 20-22

Claims 7-10, 16-19 and 20-22 directed to a method, a system and a holder comprising at least first and second holder plates for holding a sample.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/021321

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2003202401 A	18-07-2003	NONE	
US 1582335 A	27-04-1926	FR 535182 A GB 163267 A	11-04-1922 05-01-1922
US 3295843 A	03-01-1967	BE 656160 A DE 1471989 B1 GB 1084227 A JP 49028017 B JP 51024526 B JP 53031885 B	16-03-1965 02-01-1970 23-07-1974 24-07-1976 05-09-1978
JP 2007277045 A	25-10-2007	NONE	
US 2002045104 A1	18-04-2002	US 6586141 B1	01-07-2003