

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
14 May 2010 (14.05.2010)

(10) International Publication Number  
**WO 2010/054225 A3**

- (51) **International Patent Classification:**  
A61F 9/007 (2006.01) A61M 1/00 (2006.01)
- (21) **International Application Number:**  
PCT/US2009/063589
- (22) **International Filing Date:**  
6 November 2009 (06.11.2009)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
61/198,626 7 November 2008 (07.11.2008) US
- (71) **Applicant (for all designated States except US):** **ABBOTT MEDICAL OPTICS INC.** [US/US]; 1700 E. St. Andrew Place, Santa Ana, CA 92705 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **RANEY, Rob** [US/US]; 115 Irvine Cove Circle, Laguna Beach, CA 92651 (US). **CLAUS, Michael, J.** [US/US]; 70 Ambrose, Newport Coast, CA 92657 (US). **GERG, James** [US/US]; 24725 Woodhill Lane, Lake Forest, CA 92630 (US). **WONG, Wayne, S.** [US/US]; 31 Monument Place,

Irvine, CA 92602 (US). **KING, David, A.** [US/US]; 1724 Beachwood Way, Pleasanton, CA 92677 (US). **STAGGS, James, W.** [US/US]; 29572 Seriana, Laguna Niguel, CA 92677 (US). **LEE, Fred** [US/US]; 88 Montbello, Irvine, CA 92620 (US).

(74) **Agent:** **PANG, Andrew, Y.**; c/o Abbott Medical Optics Inc., 1700 E. St. Andrew Place, Santa Ana, CA 92705 (US).

(81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, 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, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, 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,

[Continued on next page]

(54) **Title:** AUTOMATICALLY SWITCHING DIFFERENT ASPIRATION LEVELS AND/OR PUMPS TO AN OCULAR PROBE

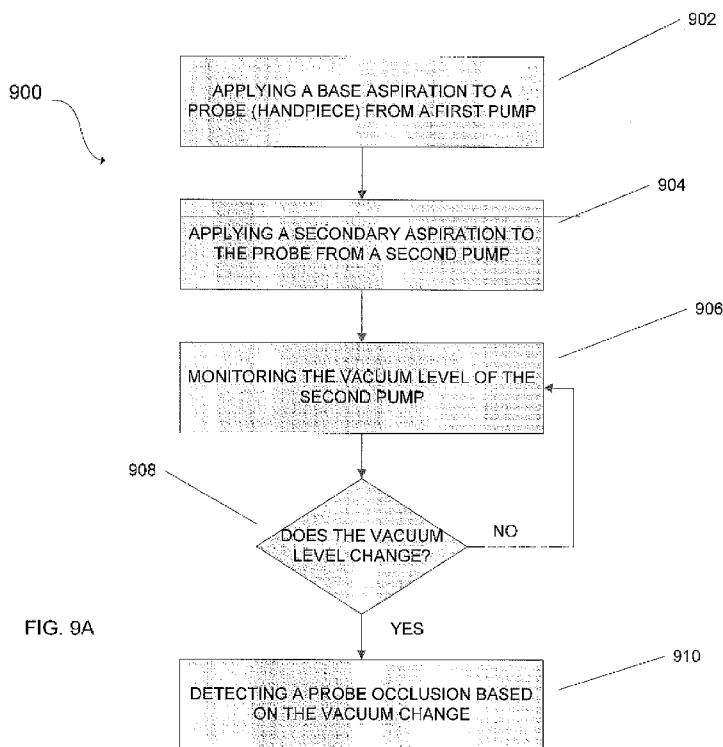


FIG. 9A

(57) **Abstract:** Methods and apparatuses for automatically switching different aspiration levels to an ocular probe are disclosed herein. The probe may be a phacoemulsification prober A first aspiration level, supplied by a first pump, roay-be-applied-to the-probe simultaneously with ultrasonic energy. A second aspiration level, supplied by a second pump, may be automatically switched from the first aspiration level. Control feed back of the pumps may be varied according to set thresholds.

WO 2010/054225 A3



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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

**(88) Date of publication of the international search report:**  
2 September 2010

**Published:**

— *with international search report (Art. 21(3))*

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2009/063589

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. A61F9/007      A61M1/00 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) A61F A61M		
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		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007/143797 A1 (HOLDEN JEANNETTE [AU]; HOLDEN HUGO ROSS [AU]) 21 December 2007 (2007-12-21) paragraph [0052] - paragraph [0137]; figures	10, 11
X	WO 2008/030872 A1 (ADVANCED MEDICAL OPTICS INC [US]; GERG JAMES [US]; REISIN CARINA R [US] 13 March 2008 (2008-03-13) paragraph [0003] paragraph [0015] - paragraph [0032]; figures	10, 11, 31-34
X	WO 2008/060995 A1 (ADVANCED MEDICAL OPTICS INC [US]; KING DAVID A [US]; MURI JOHN I [US];) 22 May 2008 (2008-05-22) paragraph [0031] - paragraph [0066]; figures	10-12, 31-34
----- -/--		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> 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	Date of mailing of the international search report	
13 July 2010	21/07/2010	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Strubel, Christine	

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2009/063589

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007/121144 A1 (ADVANCED MEDICAL OPTICS INC [US]; CLAUS MICHAEL J [US]; WONG WAYNE S [ ]) 25 October 2007 (2007-10-25) page 7, line 29 - page 19, line 13; figures -----	31-33
X	US 2001/023331 A1 (KANDA HIDENORI [JP] ET AL) 20 September 2001 (2001-09-20) paragraph [0031] - paragraph [0053]; figures -----	21,22, 25,26
X	WO 2006/101908 A2 (ADVANCED MEDICAL OPTICS INC [US]; CLAUS MICHAEL J [US]; WONG WAYNE S [ ]) 28 September 2006 (2006-09-28) page 4, line 16 - page 15, line 29 -----	21,22,24
A	EP 1 849 443 A1 (ALCON INC [CH]) 31 October 2007 (2007-10-31) paragraph [0017] - paragraph [0021]; figures -----	35-41
A	US 2007/060926 A1 (ESCAF LUIS J [CO]) 15 March 2007 (2007-03-15) paragraph [0116] - paragraph [0117] -----	35-41

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 1-9, 14-20, 27-30

Method claims 1-9,14-20 and 27-30 relate to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT - Methods for treatment of the human or animal body by therapy (treatment of cataracts) and by surgery (inserting a probe tip into the eye, removing material from an eye). Additional Comment: Although claims 1-6 are drafted in a very general way and contain no explicit reference to treatment of the eye of a human or animal body, it is obvious in the light of the description that the claimed methods refer exclusively to removal of ocular fluid.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2009/063589

## 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.: 1-9, 14-20, 27-30  
because they relate to subject matter not required to be searched by this Authority, namely:  
see FURTHER INFORMATION sheet PCT/ISA/210
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 all searchable 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.:

### 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: 10-13, 31-34

A system with a processor configured to detect occlusion by detecting an increased pressure differential or by detecting a vacuum level

---

2. claims: 21-26

A system with an irrigation system with variable irrigation rate

---

3. claims: 35-41

A phacoemulsification needle configured to move either in a longitudinal or non-longitudinal cutting mode and with a first pump being operated during a non-longitudinal cutting mode and with a second pump being operated during a longitudinal cutting mode

---

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/063589

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
WO 2007143797	A1	21-12-2007	AU	2007260595 A1	21-12-2007
			CA	2649984 A1	21-12-2007
			EP	2034936 A1	18-03-2009
WO 2008030872	A1	13-03-2008	AU	2007292376 A1	13-03-2008
			CA	2662797 A1	13-03-2008
			EP	2059275 A1	20-05-2009
			EP	2191798 A1	02-06-2010
			US	2008125698 A1	29-05-2008
WO 2008060995	A1	22-05-2008	AU	2007319416 A1	22-05-2008
			CA	2669299 A1	22-05-2008
			EP	2086608 A1	12-08-2009
			US	2008114290 A1	15-05-2008
WO 2007121144	A1	25-10-2007	EP	2004114 A1	24-12-2008
			US	2006224107 A1	05-10-2006
US 2001023331	A1	20-09-2001	JP	3935653 B2	27-06-2007
			JP	2001212169 A	07-08-2001
WO 2006101908	A2	28-09-2006	AU	2006227647 A1	28-09-2006
			CA	2602436 A1	28-09-2006
			CN	101146498 A	19-03-2008
			EP	1861052 A1	05-12-2007
			JP	2008532727 T	21-08-2008
			US	2006224143 A1	05-10-2006
			US	2010130915 A1	27-05-2010
EP 1849443	A1	31-10-2007	AU	2007201775 A1	08-11-2007
			CA	2585593 A1	21-10-2007
			JP	2007289700 A	08-11-2007
			US	2007249941 A1	25-10-2007
US 2007060926	A1	15-03-2007	AU	2007283230 A1	14-02-2008
			CA	2660011 A1	14-02-2008
			EP	2056754 A1	13-05-2009
			WO	2008017909 A1	14-02-2008
			JP	2010500073 T	07-01-2010
			KR	20090042837 A	30-04-2009