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AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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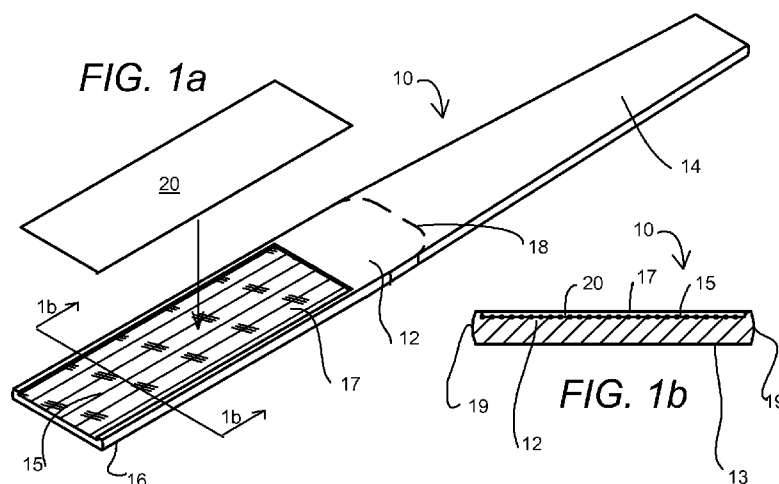
ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- 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))

[Continued on nextpage]

(54) Title: BIOLOGICAL SAMPLE STORAGE APPARATUS AND METHOD



(57) Abstract: Disclosed is a biological sample holder, a container for storing multiple holders, and an automated holder retrieval system. The sample holder may comprise an elongate generally planar support including a handle end and an opposing biological sample storage end, wherein, a substrate for accepting a biological sample is mounted to the holder at said sample storage end. Optionally the substrate is so mounted within a recess in the surface of the support and the recess has a local surface providing a reaction surface for allowing a sub-sample to be removed from the medium by mechanical action, such as cutting or punching. The container may include an array of wells each well being generally square or rectangular in plan and the holders dimensioned so that they are held diagonally in a respective well. The automated biological sample storage apparatus may include a mechanical handling device, and an associated electronic control capable of controlling the mechanical handling device to pick a predetermined sample holder from an associated well, or to place a predetermined sample holder into an associated well, optionally removing or replacing a container lid where a lid is used.

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25 M y 2013

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/074126

A. CLASSIFICATION OF SUBJECT MATTER
 INV. A61B10/00 B01L3/00 AOINI/00 B01L9/00
 ADD.
 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)
 A61B BOIL A01N

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 practicable, 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.
A	US 2007/258857 AI (SANGHA JANGBI R S [US]) 8 November 2007 (2007-11-08) paragraph [0005] ; figure 1 -----	1-13
Y	LÖNNBERG M ET AL: "Ul tra-sensi tive irnmunochromatographi c assay for quanti tati ve determi nati on of erythropoi eti n", JOURNAL OF IMMUNOLOGICAL METHODS, ELSEVI ER SCIENCE PUBLISHERS B.V. .AMSTERDAM, NL, vol . 339 , no. 2 , 31 December 2008 (2008-12-31) , pages 236-244 , XP025658831 , ISSN : 0022-1759 , DOI : 10.1016/J .JIM.2008.09 .022 [retri eved on 2008-10-23] figure 1 ----- -/- .	1-12

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 application or patent 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 15 May 2013	Date of mailing of the international search report 28/05/2013
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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 Ti ede, Ral ph
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/074126

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2002/155617 A1 (PHAM ANDREW A [US] ET AL COASSIN PETER J [US] ET AL) 24 October 2002 (2002-10-24) paragraph [0077] -----	1
Y	US 2004/101966 A1 (DAVIS JAMES C [US] ET AL) 27 May 2004 (2004-05-27) paragraphs [0060] , [0083] , [0084] ; figures 1,2, 3 -----	1-13
Y	US 2003/203491 A1 (ANDREWSKI ZYGMUNT M [US] ET AL) 30 October 2003 (2003-10-30) paragraphs [0093] - [0108]; figures 1,2 paragraph [0145] -----	2-10,12
X	W0 93/07292 A1 (ORGENICS INTERNATIONAL HOLDING [NL]) 15 April 1993 (1993-04-15) -----	14-23
Y	the whole document -----	1-13
A	US 5 376 337 A (SEYMOUR EUGENE H [US]) 27 December 1994 (1994-12-27) the whole document -----	1
X	US 2005/023672 A1 (OOSTMAN CLIFFORD A [US] ET AL) 3 February 2005 (2005-02-03) paragraphs [0001] - [0010]; figure 1 paragraphs [0069] - [0073], [0078] - [0085] paragraphs [0093] , [0094] -----	14-16, 18-26
X	GB 2 414 700 A (BIZPAC [AU]) 7 December 2005 (2005-12-07) pages 2-4, 11; figures 1-3 -----	14
X	W0 2007/093009 A1 (BIZPAC AUSTRALIA PTY LTD [AU]; MORRISON ALLAN D [AU] ; DAVIN BRADLEY F) 23 August 2007 (2007-08-23) paragraphs [0079] - [0087]; figures 2,6b paragraphs [0091] - [0094] paragraph [0106] -----	14-21

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2012/074126

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.: 27
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:
see FURTHER INFORMATION sheet PCT/ISA/210

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: 1-13

Apparatus and method to diagonally place a sample holder into a rectangular well.

2. claims: 14-26

Sample holder suitable to be placed into rectangular or square wells further comprising planar supports, a handle, a sample storage end and a substrate for accepting and storing a biological sample is mounted to the holder at the sample storage end.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box 11.2

Claims Nos.: 27

Claim 27 does not fulfill the requirements of Rule 6.2 (a) PCT as it specifically refers to the drawings - the claim is therefore unclear (Article 6 PCT). This uncertainty renders the scope of claim 27 so vague, that no meaningful search is possible for the remaining subject-matter of claim 27. According to Article 17(2) (a) (ii) PCT claim 27 was disregarded.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/EP2012/074126

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007258857 A1	08-11-2007	US 2007258857 A1 WO 2007130300 A2	08-11-2007 15-11-2007

US 2002155617 A1	24-10-2002	US 6517781 B1 US 2002155617 A1 US 2004202582 A1 US 2007009883 A1	11-02-2003 24-10-2002 14-10-2004 11-01-2007

US 2004101966 A1	27-05-2004	AU 2003302384 A1 EP 1569753 A2 JP 4850274 B2 JP 2006507502 A JP 2009300448 A US 2004101966 A1 WO 2004047672 A2	18-06-2004 07-09-2005 11-01-2012 02-03-2006 24-12-2009 27-05-2004 10-06-2004

us 2003203491 A1	30-10-2003	NONE	

Wo 9307292 A1	15-04-1993	AT 147440 T AU 2789492 A DE 69216640 D1 DE 69216640 T2 EP 0612354 A1 IL 102486 A JP H07501933 A US 5527673 A WO 9307292 A1	15-01-1997 03-05-1993 20-02-1997 19-06-1997 31-08-1994 20-11-1997 02-03-1995 18-06-1996 15-04-1993

us 5376337 A	27-12-1994	NONE	

us 2005023672 A1	03-02-2005	NONE	

GB 2414700 A	07-12-2005	NONE	

WO 2007093009 A1	23-08-2007	US 2007249961 A1 WO 2007093009 A1	25-10-2007 23-08-2007
