



- (51) International Patent Classification:  
G01N 21/95 (2006.01)
- (21) International Application Number:  
PCT/EP2013/003406
- (22) International Filing Date:  
12 November 2013 (12.11.2013)
- (25) Filing Language:  
English
- (26) Publication Language:  
English
- (30) Priority Data:  
1220397.2 13 November 2012 (13.11.2012) GB
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- (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, 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, IR, IS, JP, KE, KG, 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, SA, 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.

- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): 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, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

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

[Continued on next page]

(54) Title: APPARATUS AND METHOD FOR INSPECTING SEALS OF ITEMS

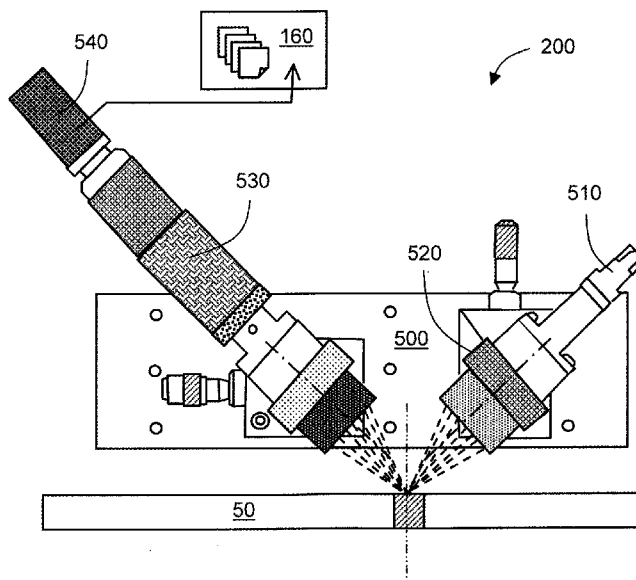


FIG. 6

(57) Abstract: A measuring apparatus (200) is provided for inspecting a seal (50) of an item (20). The measuring apparatus (200) includes a radiation source (510, 520) for providing radiation for illuminating the seal (50) of the item (20), a detector (530, 540) for receiving radiation from the item (20) for generating a corresponding detected signal, and a processing arrangement (160) for processing the detected signal to generate an output signal indicative of a state of the seal (50). The radiation source (510, 520) is arranged to focus the radiation into a plurality of focal points at the seal (50) of the item (20), wherein the focal points are mutually spatially spaced apart. Moreover, the detector (530, 540) is arranged to image one or more of the focal points and to be selectively sensitive to an intensity of radiation received from the one or more focal points to generate a detected signal. Furthermore, the measuring apparatus (200) includes a processing arrangement (160) for receiving the detected signal and for processing the detected signal to generate the output signal indicative of the state of the seal (50).



**Published:**

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

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

10 July 2014

INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2013/003406

A. CLASSIFICATION OF SUBJECT MATTER  
INV. G01N21/95  
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)  
G01N G01M G01B

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 453 535 A (SEPHA LTD [GB]) 15 April 2009 (2009-04-15)	1,2, 8-10, 16-18
Y	abstract; figure 1 page 6, line 23 - page 8, line 17 page 17, lines 1-18	3-7, 11-15
Y	----- US 2010/296107 A1 (KERANEN HEIMO [FI]) 25 November 2010 (2010-11-25) abstract; figures 1-6,10,12,14 paragraphs [0003], [0004], [0036] - [0038], [0049] - [0054] -----	3-7, 11-15
A	WO 2010/052431 A1 (EDIXIA [FR]; PIROT ERIC [FR]) 14 May 2010 (2010-05-14) abstract; figures 1-3 page 4, line 28 - page 10, line 32 ----- -/--	1,10,18

Further documents are listed in the continuation of Box C.

See patent family annex.

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Date of the actual completion of the international search  6 March 2014	Date of mailing of the international search report  13/03/2014
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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  Brison, Olivier
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2013/003406

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 7 142 707 B2 (ABDOLLAHI MOHSEN [US] ET AL) 28 November 2006 (2006-11-28) cited in the application the whole document	1,10,18
A	----- EP 1 304 560 A1 (LASERQUIPMENT AG [DE]) 23 April 2003 (2003-04-23) abstract; figures 1-7 paragraphs [0001], [0002], [0016] - [0019]	1,10,18
A	----- US 2010/118138 A1 (DJACHIACHVILI YOURI N [US]) 13 May 2010 (2010-05-13) the whole document	1,10,18
A	----- WO 2005/114155 A1 (SEPHA LTD [GB]; PARKER ANDREW ERNEST [GB]; STEWART NEIL [GB]; STORKEY) 1 December 2005 (2005-12-01) page 1, lines 4-9; figures 1-8 page 27, line 13 - page 31, line 12 -----	1,10,18

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2013/003406

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2453535	A	15-04-2009	NONE
US 2010296107	A1	25-11-2010	CN 101529200 A 09-09-2009 EP 2076733 A1 08-07-2009 ES 2400380 T3 09-04-2013 FI 20065669 A 19-04-2008 JP 5155325 B2 06-03-2013 JP 2010507089 A 04-03-2010 US 2010296107 A1 25-11-2010 WO 2008046966 A1 24-04-2008
WO 2010052431	A1	14-05-2010	EP 2350621 A1 03-08-2011 FR 2938067 A1 07-05-2010 WO 2010052431 A1 14-05-2010
US 7142707	B2	28-11-2006	AU 2004230628 A1 28-10-2004 EP 1611434 A1 04-01-2006 US 2005050451 A1 03-03-2005 WO 2004092717 A1 28-10-2004
EP 1304560	A1	23-04-2003	DE 10151345 A1 30-04-2003 EP 1304560 A1 23-04-2003
US 2010118138	A1	13-05-2010	NONE
WO 2005114155	A1	01-12-2005	EP 1756552 A1 28-02-2007 US 2007296963 A1 27-12-2007 WO 2005114155 A1 01-12-2005