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(54) Title: INTEGRATED RADIATION SHIELD AND RADIATION STOP

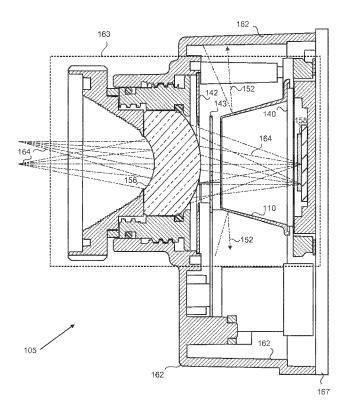


FIG. 1

(57) Abstract: An apparatus includes a detector that measures radiation. The apparatus also includes a window that is relationally coupled to the detector and a shield, so that the window is in between the detector and the shield. The apparatus further includes the shield that emits substantially constant radiation, and substantially blocks radiation from a camera housing at least partially surrounding the shield, so that the detector measures radiation passing through an optical system and the shield.



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).

- 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))
- LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, (88) Date of publication of the international search report: SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, 19 March 2015

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INTERNATIONAL SEARCH REPORT

International application No.

Lee W. Young

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			PC1/US 14	//26594	
A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - G01J 1/04 (2015.01) CPC - G01J 1/0214; H04N 5/2252; H04N 5/2254; H04N 2005/2 According to International Patent Classification (IPC) or to both national classification and IPC					
B. FIEL	DS SEARCHED				
Minimum do IPC(8): G01J CPC: G01J	Minimum documentation searched (classification system followed by classification symbols) IPC(8): G01J 1/04 (2015.01) CPC: G01J 1/0214; H04N 5/2252; H04N 5/2254; H04N 2005/2				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 348/164; 250/339.03,339.04, 370.15; IPC(8): G01J 1/04 (2015.01) CPC: G01J 1/0214; H04N 5/2252; H04N 5/2254; H04N 2005/2255; H01L 31/09 (keyword limited; terms below)					
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Patbase; Google Scholar; Google Patents Search terms used: Camera housing; radiation; window; shutter; shield; detector					
C. DOCU	MENTS CONSIDERED TO BE RELEVANT			Т —	
Category*	Citation of document, with indication, where appropriate, of the relevant passages		ant passages	Relevant to claim No.	
X 	US 2007/0120058 A1 (BLACKWELL et al.) 31 May 200 especially; para [0062], [0067], [0069], [0070], [0073],	07 (31.05.2007), entire [0151].	document,	1, 2, 6-8, 12	
Υ.				9-11, 13	
X V	US 6,144,031 A (HERRING et al.) 07 November 2000 (07.11.2000), entire document, especially; col. 7, In 15-21, 59-62; col. 9, In 28-38; 50-64.		cument,	1, 3-5 9-11	
Y	US 2009/0084956 A1 (GAT) 02 April 2009 (02.04.2009	9), entire document, es	pecially; para	13	
A	[0056], [0094]. US 6,515,285 B1 (MARSHALL et al.) 04 February 2003 (04.02.2003), entire document, especially; Abstract; col 1, in 41-43, col 7, in 11-51, col 14, in 13-39, col 15, in 16-35.		document,	1-13	
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Further documents are listed in the continuation of Box C.					
* Special categories of cited documents: "A" document defining the general state of the art which is not considered "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand					
to be of "E" earlier a	to be of particular relevance "E" earlier application or patent but published on or after the international "X" document of particular relevance; the claimed invention cannot				
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other		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			
special	reason (as specified) ent referring to an oral disclosure, use, exhibition or other	considered to in combined with on	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		
"P" docume	document published prior to the international filing date but later than "&" document member of the same patent family the priority date claimed				
		Date of mailing of the international search report			
02 January 2015 (02.01.2015)		2 1 J A N 2015			
Name and mailing address of the ISA/US		Authorized officer:			

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Facsimile No. 571-273-3201

INTERNATIONAL SEARCH REPORT

International application No.

, PCT/US 14/26594

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:				
Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:				
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: This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.				
Group I: claims 1-13: drawn to an apparatus comprising a camera housing, detector to measure radiation, a window, and a shield coupled to the window operable to block radiation from impinging on the detector.				
Group II: claims 14-21: drawn to a method for calibrating a thermal imaging device comprising: imaging a scene on a detector, providing a shield to shield the detector from non-scene radiation, operating the detector at a first ambient temperature, gathering data representative of an output signal associated with the detector and first detector temperature associated with the first ambient temperature operating the detector at a second ambient temperature; gathering second data representative of an output signal associated with the detector and a second detector temperature associated with the second ambient temperature and calibrating the thermal imaging device to compensate for infrared radiation from the shield. — see extra 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 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.: 1-13				
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.				

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 14/26594 -

Continuation of Box No. III: -- Observations where unity of invention is lacking

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Special technical features:

Group I requires a camera housing, and a window, not found in the other groups.

Group II requires a calibration method including an imaging step, operating the detector at a first ambient temperature, gathering data representative of an output signal associated with the detector and first detector temperature associated with the first ambient temperature operating the detector at a second ambient temperature; gathering second data representative of an output signal associated with the detector and a second detector temperature associated with the second ambient temperature and calibrating the thermal imaging device to compensate for infrared radiation from the shield, not found in the other groups.

Shared Features

The only technical features shared by Groups I and II that would otherwise unify the groups are a thermal or radiation detector, a shield operable to shield the detector from non-scene radiation and wherein compensation means are provided to compensate for effects of radiation emitted by the shield.

However, these shared technical features do not represent a contribution over prior art, because the shared technical features are disclosed by US 6,515,285 B1 to Marshall et al. (hereinafter 'Marshall') 04 February 2003 (04.02.2003), which discloses a thermal or radiation detector (Abstract, col 1, In 41-43), a shield operable to shield the detector from non-scene radiation (col 14, In 13-39) and wherein compensation means are provided to compensate for effects of radiation emitted by the shield (col 7, In 11-51, col 14, In 13-39, col 15, In 16-35).

As the shared technical features were known in the art at the time of the invention, they cannot be considered special technical features that would otherwise unify the groups.

Groups I and II therefore lack unity under PCT Rule 13 because they do not share a same or corresponding special technical feature.