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PTM20140224105640 – Freedom to Operate report

2016-01-01

Scope of search: Freedom to operate -

1. In force patents or pending applications which state claims that might risk the use and/or the manufacture of the product in the territory as specified in the territory section below.
2. Other publications that may indicate that the product features are in the public domain.

The Product:

An optical inspection system for seeds.

An imaging system comprising a camera, background elements and mirrors. The mirrors are perpendicular to one another. The imaging system is intended to receive a sample between the mirrors, so that mirror pair generates three images of the sample viewed from three different angles. The camera directed toward the pair of mirrors and the background element comprises a surface directed towards the mirror pair and provides a background for the images to facilitate image processing.

In one embodiment of the invention the camera is provided on a first side of the dividing plane and at least part of background element is arranged on a second side of the parting plane .

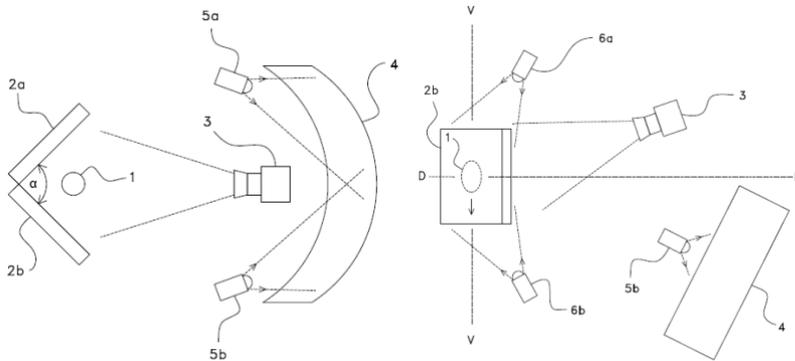
In a further embodiment of the invention, the surface on background element which is directed toward the mirror pair is illuminated by backlighting elements. With backlight element addressed in this manner, no direct light is in the camera field of view.

The imaging system can be designed to receive seeds and the background element is then preferably blue .

Features for the FTO evaluation:

1. Optical inspection device comprising mirrors, background light source, direct light source for the specimen, camera and processor.

2. Said background light source wavelengths are about 400nm - 475nm.
3. Said direct light source wavelengths are about 475nm - 775nm.



Territory: United States and Europe

Duration: This search was concluded after 20 hours.

Report findings: An online version of the report can be viewed by following the links below. The patent links will be opened in a new window with a dedicated professional system for creating patent search reports called reporteditortm. The system allows the search specialist to edit and deliver a clear and simple display of the report publications. Reports can be easily downloaded, printed or sent to any third party from the system.

<https://www.reporteditor.com/reports/report/882ea2701825a961>

The report lists 19 publications:

1. [US8548222\(B2\)](#) - SEED SORTER
2. [US8401271\(B2\)](#) - SEED SORTER
3. [US8189901\(B2\)](#) - SEED SORTER
4. [US7656520\(B2\)](#) - Illumination device for product examination via pulsed illumination
5. [US7339660\(B1\)](#) - Illumination device for product examination
6. [US7480038\(B2\)](#) - Illumination Device for Product Examination via Pulsed Illumination
7. [US7154596\(B2\)](#) - Method and apparatus for backlighting and imaging multiple views of isolated features of an object
8. [US6813016\(B2\)](#) - Co-planarity and top-down examination method and optical module for electronic leaded components
9. [US7012682\(B2\)](#) - Co-planarity examination method and optical module for electronic components
10. [US7808644\(B2\)](#) - Device for Optically Measuring the Shapes of Objects and Surfaces
11. [US7041997\(B2\)](#) - Device and method for optical control under diffuse illumination and observation means of crockery items or any glazed ceramic products

12. [US7830530\(B2\)](#) - Device and Method for Optical Measurement of Grains From Cereals and Like Crops
13. [US2012280146\(A1\)](#) - METHOD AND SPECTROSCOPIC ANALYSIS APPLIANCE, ESPECIALLY FOR ANALYSING FOOD, WITH MULTI-CHANNEL TREATMENT OF SPECTRAL DATA
14. [EP2592328\(A1\)](#) - INDIRECT ILLUMINATION DEVICE AND ARTICLE INSPECTION SYSTEM USING SAME
15. [US2008204733\(A1\)](#) - Sensing in Meat Products and the Like
16. [US5440127\(A\)](#) - Method & apparatus for illuminating target specimens in inspection

systems

17. [US5201576\(A\)](#) - Shadowless spherical illumination system for use in an article inspection system
18. [US5051872\(A\)](#) - Hemispherical non-glare illuminator
19. [US2007090310\(A1\)](#) - Methods and apparatus for inspecting an object

Conclusion:

Publications 1-12 are in force patents in which the approved claims might restrict the use of the product in parts of the territories.

Publication 13, 14 are pending patent applications that might restrict the use of the product in parts of the territories in case of approval.

Publications 15-19 are lapsed patents that might indicate the freedom to operate in the territory.

See annex enclosed under.

Annex - Search Strategy

Patent legal status report:

The patent legal status report below states where the patent and the patent applications found in the search are valid*.

	Patent No.	Legal Status			Source
		In Force	Pending	Ceased	
1.	US8548222	US AT BE BG CH CZ DE DK EE ES FR GB HU IE IT LI LU MC MT NL RO SK TR			US PAIR; EP Register
2.	US8401271	US AT BE BG CH CZ DE DK EE ES FR GB HU IE IT LI LU MC MT NL RO SK TR			US PAIR; EP Register
3.	US8189901	US AT BE BG CH CZ DE DK EE ES FR GB HU IE IT LI LU MC MT NL RO SK TR			US PAIR; EP Register
4.	US7656520	US			US PAIR
5.	US7339660	US			US PAIR
6.	US7480038	US			US PAIR
7.	US7154596	US			US PAIR
8.	US6813016	US			US PAIR
9.	US7012682	US			US PAIR
10.	US7808644	US	AT CH DE FR GB IT LI		US PAIR; EP Register
11.	US7041997	US	EP		US PAIR; EP Register
12.	US7830530	US	EP		US PAIR; EP Register
13.	US2012280146		US, EP		US PAIR; EP Register
14.	EP2592328		EP		US PAIR; EP Register
15.	US2008204733			Ceased	US PAIR; EP Register
16.	US5440127			Ceased	US PAIR
17.	US5201576			Ceased	US PAIR
18.	US5051872			Ceased	US PAIR
19.	US2007090310			Ceased	US PAIR

Legal status Disclaimer:

1. The legal status above was based on online register databases and should not be considered final without further investigation.
2. Only Simple family members (i.e. claim priority from the same priority documents) are listed.
3. (!) If the patent family is too large only the major countries are listed and an exclamation mark is added before the number.

4. Only the countries that were defined in the territory section above were listed. There might be additional family members for each patent in the table.
5. The information is valid only to the time of the search and might have changed after.
6. The preferred source for the status information is the national register database.

If the information cannot be found in the national register database the information is taken from INPADOC.

If the information cannot be found in INPADOC the information is based on the kind code.

7. Patents that are older than 20 years are marked as ceased without confirmation (except pharmaceutical patents).
8. (?) If the information specialist has some doubts about the information, a question mark is added.

Sources:

The search was performed in the following databases:

Espacenet
USPTO
WIPO (+national collections)

Main Keywords (+variations):

reflector mirror camera light illumination source waveband wavelength frequency inspection detect directional range spectrum dual

double

Questel Orbit
Google patents tmdn.org Design View WIPO Hague Express

seed
grain granular radiation background rear

behind 400nm 475nm 775nm LED
food specimen ambient image nano

Main International and Cooperative classifications:

G01N2021/00 G01N2021/84 G01N2021/88 G01N2021/8851 G01N21/17 G01N21/3151
G01N2021/3129 G01N2021/3133 G01N2021/3148 G01N2021/3155 G01N2021/3181
G01N2021/8816

G01N2021/8819 G01N2021/8845 G01N2021/1736 G01N2021/1753 G01J3/427 G01N33/00
G01N33/02 G01N33/025 G01B11/00 A01C1/02 A01C1/025

Please note that the search was not limited to the above and cross referencing between publications was widely used.