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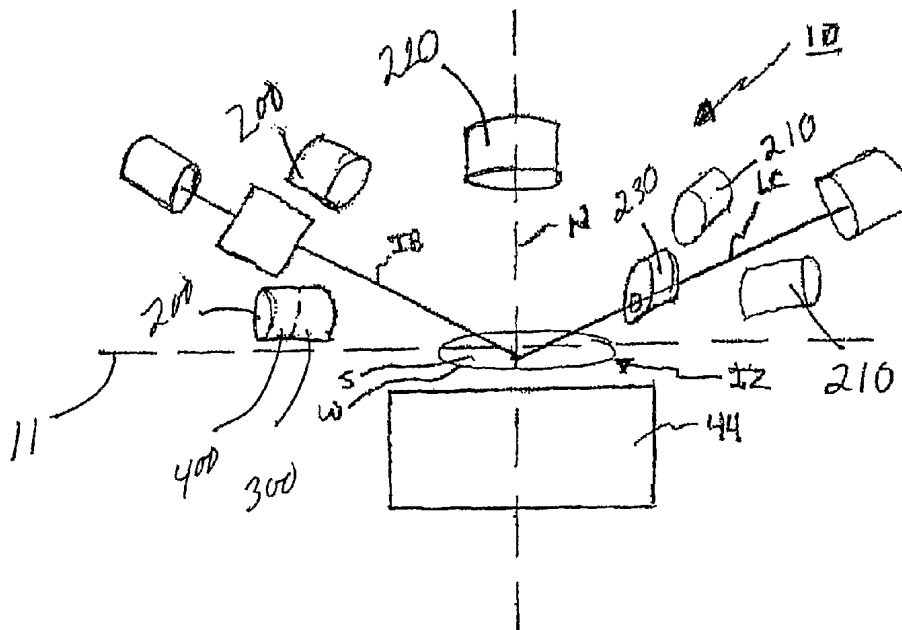
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Declarations under Rule 4.17:

- 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))

[Continued on next page]

(54) **Title:** SYSTEM AND METHOD FOR CONTROLLING LIGHT SCATTERED FROM A WORKPIECE SURFACE IN A SURFACE INSPECTION SYSTEM



(57) **Abstract:** A surface inspection system, as well as related components and methods, are provided. The surface inspection system includes a beam source subsystem, a beam scanning subsystem, a workpiece movement subsystem, an optical collection and detection subsystem, and a processing subsystem. The system features masking positioned in the collection and detection subsystem arranged to selectively prevent a portion of scattered light from passing through. Also included is a scatter absorbing system having a series of scatter absorbing elements for minimizing unrelated to the scatter associated with a desired location on the surface.



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9 April 2009

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/45930

A. CLASSIFICATION OF SUBJECT MATTER

IPC: G01N 21/00(2006.01)

USPC: 356/237.2

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)

U.S. : 356/237.1-237.5, 239.1-239.8

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)

EAST and WEST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- A	US 5,046,847 (NAKATA et al) 10 September 1991 (10.09.1991), column 9, lines 6-17, figures 1-3, 36-38.	1, 5, 7, 8 ----- 2-4, 6, 9-12
X --- A	US 5,177,559 (BATCHELDER et al) 05 January 1993 (05.01.1993), figure 3.	1, 5, 7, 8 ----- 2-4, 6, 9-12

☐ 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 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

30 May 2008 (30.05.2008)

Date of mailing of the international search report

07 JUL 2008

Name and mailing address of the ISA/US

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BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In order for more than one species to be examined, the appropriate additional examination fees must be paid. The species are as follows:

- a. Figure 3
- b. Figure 81
- c. Figure 8

The claims are deemed to correspond to the species listed above in the following manner:

- a. Claims 1-12
- b. Claims 13-16
- c. Claims 17-18

The following claim(s) are generic: no generic.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons:

Species (a) relates to an optical collection and detection system having a light detection unit, collector module, a detector relay assembly and mask positioned between the detector relay assembly and the light detection unit for preventing a portion of the scattered light.

Species (b) relates to a collection and detection system for collecting reflected light and scattered light formed by the impinging of the optical beam on the surface at the desired location, and a scatter absorbing system having a series of scatter absorbing elements for minimizing unrelated to the scatter associated with the desired location on the surface.

Species (c) relates to a collection subsystem for collecting scattered light comprises a plurality of collection lenses, each having a known surface roughness and the plurality of lenses having a total surface roughness that does not exceed a selected amount of roughness.

Each of species discloses different types of collection subsystem and they are not having the same corresponding special technical features, thus they do not relate to a single general inventive concept.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/45930

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.:
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:
Please See Continuation 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 any 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.: 1-12

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.