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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/469,009	03/24/2017	Rune FISKER	0079124-000141	9858

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BUCHANAN, INGERSOLL & ROONEY PC
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER

DANG, HUNG Q

ART UNIT	PAPER NUMBER
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2484

NOTIFICATION DATE	DELIVERY MODE
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01/29/2018

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPDOC1@BIPC.com

Office Action Summary	Application No. 15/469,009	Applicant(s) FISKER ET AL.	
	Examiner HUNG DANG	Art Unit 2484	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/30/2017.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

- 5) ☒ Claim(s) 1 and 52-72 is/are pending in the application.
 5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) _____ is/are allowed.
- 7) ☒ Claim(s) 1 and 52-72 is/are rejected.
- 8) ☐ Claim(s) _____ is/are objected to.
- 9) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 03/24/2017 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) ☐ All b) ☐ Some** c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) ☐ Notice of References Cited (PTO-892) | 3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date <u>01/05/2018</u> | 4) ☐ Other: _____ |

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file

provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(l)(1) - 706.02(l)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 1 and 52-72 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-19 and 21-23 of U.S. Patent No. 9,629,551. Although the claims at issue are not identical, they are not patentably distinct from each other because they are obvious variants to each other.

Current Application	US Patent No. 9,629,551
1. (Currently Amended) A method for detecting a movable object in a location, when scanning a rigid object in the location by means of a 3D scanner for	1. A method for detecting a movable object in a location, when scanning a rigid object in the location by means of a 3D scanner for generating a virtual 3D model of the

generating a virtual 3D model of the rigid object, wherein the method comprises: - providing a first 3D representation of at least part of a surface by scanning at least part of the location; - providing a second 3D representation of at least part of the surface by scanning at least part of the location; - determining for the first 3D representation a first excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation; and	rigid object, wherein the method comprises: providing a first 3D representation of at least part of a surface by scanning at least part of the location; providing a second 3D representation of at least part of the surface by scanning at least part of the location; determining for the first 3D representation a first excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation; determining for the second 3D representation a second excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation;
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- if a portion of the surface in the second 3D representation is located in space in the first excluded volume, the portion of the surface in the second 3D representation is disregarded in the generation of the virtual 3D model. 52. (New) The method according to claim 1, wherein the rigid object is a patient's set of teeth, and the location is the mouth of the patient. 53. (New) The method according to claim 1, wherein the movable object is a soft tissue part of a patient's mouth.	if a portion of the surface in the first 3D representation is located in space in the second excluded volume, the portion of the surface in the first 3D representation is disregarded in the generation of the virtual 3D model, and/or if a portion of the surface in the second 3D representation is located in space in the first excluded volume, the portion of the surface in the second 3D representation is disregarded in the generation of the virtual 3D model. 2. The method according to claim 1, wherein the rigid object is a patient's set of teeth, and the location is the mouth of the patient. 3. The method according to claim 1, wherein the movable object is a soft tissue part of a patient's mouth.
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54. (New) The method according to claim 1, wherein the movable object is a dentist's instrument or remedy which is temporarily present in a patient's mouth.	4. The method according to claim 1, wherein the movable object is a dentist's instrument or remedy which is temporarily present in a patient's mouth.
55. (New) The method according to claim 1, wherein the movable object is a finger.	5. The method according to claim 1, wherein the movable object is a finger.
56. (New) The method according to claim 1, wherein at least part of the surface captured in the first representation and at least part of the surface captured in the second representation are overlapping the same surface part on the rigid object.	6. The method according to claim 1, wherein at least part of the surface captured in the first representation and at least part of the surface captured in the second representation are overlapping the same surface part on the rigid object.
57. (New) The method according to claim 1, wherein the first representation of at least part of the surface is defined as the first representation of at least a first part of the surface, and the second representation of at least part of the	7. The method according to claim 1, wherein the first representation of at least part of the surface is defined as the first representation of at least a first part of the surface, and the second representation of at least part of the surface is defined as the second representation of at least a

surface is defined as the second representation of at least a second part of the surface.	second part of the surface.
58. (New) The method according to claim 1, wherein the method comprises determining a first scan volume in space related to the first representation of at least part of the surface, and determining a second scan volume in space related to the second representation of at least part of the surface.	8. The method according to claim 1, wherein the method comprises determining a first scan volume in space related to the first representation of at least part of the surface, and determining a second scan volume in space related to the second representation of at least part of the surface.
59. (New) The method according to claim 1, wherein the scan volume is defined by focusing optics in the 3D scanner and a distance to the surface which is captured.	9. The method according to claim 1, wherein the scan volume is defined by the focusing optics in the 3D scanner and the distance to the surface which is captured.
60. (New) The method according to claim 58, wherein the first scan volume related to the first representation of at least	10. The method according to claim 1, wherein the first scan volume related to the first representation of at least part of the surface is the volume in space

part of the surface is the volume in space between focusing optics of the 3D scanner and the surface captured in the first representation; and the second scan volume related to the second representation of at least part of the surface is the volume in space between the focusing optics of the 3D scanner and the surface captured in the second representation. 61. (New) The method according to claim 58, wherein the first excluded volume and second excluded volume in space where no surface can be present corresponds to the first scan volume and the second scan volume, respectively. 62. (New) The method according to claim 1, wherein the volume of the 3D scanner itself is defined as an excluded volume.	between the focusing optics of the 3D scanner and the surface captured in the first representation; and the second scan volume related to the second representation of at least part of the surface is the volume in space between the focusing optics of the 3D scanner and the surface captured in the second representation. 11. The method according to claim 1, wherein the first excluded volume and second excluded volume in space where no surface can be present corresponds to the first scan volume and the second scan volume, respectively. 12. The method according to claim 1, wherein the volume of the 3D scanner itself is defined as an excluded volume. 13. The method according to claim 1,
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63. (New) The method according to claim 1, wherein a near threshold distance is defined, which determines a distance from a captured surface in the first representation and the second representation, where a surface portion in the second representation or the first representation, respectively, which is located within the near threshold distance from the captured surface and which is located in space in the first excluded volume or in the second excluded volume, respectively, is not disregarded in the generation of the virtual 3D model. 64. (New) The method according to claim 1, wherein a far threshold distance is defined, which determines a distance from a captured surface, where the volume outside the far threshold distance is not included in the excluded volume of a	wherein a near threshold distance is defined, which determines a distance from the captured surface in the first representation and the second representation, where a surface portion in the second representation or the first representation, respectively, which is located within the near threshold distance from the captured surface and which is located in space in the first excluded volume or in the second excluded volume, respectively, is not disregarded in the generation of the virtual 3D model. 14. The method according to claim 1, wherein a far threshold distance is defined, which determines a distance from the captured surface, where the volume outside the far threshold distance is not included in the excluded volume of a representation.
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representation.	15. The method according to claim 1, wherein the first representation of at least part of a surface is a first subscan of at least part of the location, and the second representation of at least part of the surface is a second subscan of at least part of the location.
65. (New) The method according to claim 1, wherein the first representation of at least part of a surface is a first subscan of at least part of the location, and the second representation of at least part of the surface is a second subscan of at least part of the location.	16. The method according to claim 1, wherein the first representation of at least part of a surface is a provisional virtual 3D model comprising the subscans of the location acquired already, and the second representation of at least part of the surface is a second subscan of at least part of the location.
66. (New) The method according to claim 1, wherein the first representation of at least part of a surface is a provisional virtual 3D model comprising the subscans of the location acquired already, and the second representation of at least part of the surface is a second subscan of at least part of the location.	17. The method according to claim 1, wherein acquired subscans of the location are adapted to be added to the provisional virtual 3D model concurrently with the acquisition of the subscans.
67. (New) The method according to claim 1, wherein acquired subscans of the location are adapted to be added to the	

provisional virtual 3D model concurrently with the acquisition of the subscans. 68. (New) A nontransitory computer readable medium encoded with a computer program product comprising program code for causing a data processing system to perform the method of claim 1, when said program code is executed on the data processing system. 69. (New) A system for detecting a movable object in a location, when scanning a rigid object in the location by means of a 3D scanner for generating a virtual 3D model of the rigid object, wherein the system comprises a hardware processor configured to: - provide a first 3D representation of at least part of a surface by scanning at least part of the location;	rejected for the same reason as discussed in claim 1 above. 23. A system for detecting a movable object in a location, when scanning a rigid object in the location by means of a 3D scanner for generating a virtual 3D model of the rigid object, wherein the system comprises a hardware processor configured to: provide a first 3D representation of at least part of a surface by scanning at least part of the location; provide a second 3D representation of at
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- provide a second 3D representation of at least part of the surface by scanning at least part of the location; - determine for the first 3D representation a first excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation; and	least part of the surface by scanning at least part of the location; determine for the first 3D representation a first excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation; determine for the second 3D representation a second excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation; disregard the portion of the surface in the first 3D representation in the generation of the virtual 3D model, if a portion of the surface in the first 3D representation is located in space in the second excluded volume, and/or disregard the portion of the surface in the second 3D representation in
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- disregard the portion of the surface in the second 3D representation in the generation of the virtual 3D model, if a portion of the surface in the second 3D representation is located in space in the first excluded volume. 70. (New) The method according to claim 1, wherein the movable object is an inside of a cheek, a tongue, lips, gums and/or loose gingival. 71. (New) The method according to claim 1, wherein the movable object is a dental suction device, cotton rolls, and/or cotton pads. 72. (New) The method according to claim 1, wherein: the first excluded volume is determined to be a space where no surface of the rigid object is present.	the generation of the virtual 3D model, if a portion of the surface in the second 3D representation is located in space in the first excluded volume. 18. The method according to claim 1, wherein the movable object is an inside of a cheek, a tongue, lips, gums and/or loose gingival. 19. The method according to claim 1, wherein the movable object is a dental suction device, cotton rolls, and/or cotton pads. 21. The method according to claim 1, wherein: the first excluded volume is determined to be a space where no surface of the rigid object is present, and the second excluded volume is determined to be a space where no surface of the rigid object is present.
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	22. A nontransitory computer readable medium encoded with a computer program product comprising program code for causing a data processing system to perform the method of claim 1, when said program code is executed on the data processing system.
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG DANG whose telephone number is (571)270-1116. The examiner can normally be reached on IFT.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, THAI Q. TRAN can be reached on 571-272-7382. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2484

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HUNG DANG/

Primary Examiner, Art Unit 2484

Doc Code: DIST.E.FILE Document Description: Electronic Terminal Disclaimer - Filed		PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce
Electronic Petition Request	TERMINAL DISCLAIMER TO OBIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	
Application Number	15469009	
Filing Date	24-Mar-2017	
First Named Inventor	Rune FISKER	
Attorney Docket Number	0079124-000141	
Title of Invention	DETECTION OF A MOVABLE OBJECT WHEN 3D SCANNING A RIGID OBJECT	
☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action ☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.		
Owner	Percent Interest	
3SHAPE A/S	100%	
The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s) 9629551 as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns. In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later: - expires for failure to pay a maintenance fee; - is held unenforceable; - is found invalid by a court of competent jurisdiction; - is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321; - has all claims canceled by a reexamination certificate; - is reissued; or - is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer. ☒ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.		

☐ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.	
Applicant claims the following fee status: ☐ Small Entity ☐ Micro Entity ☒ Regular Undiscounted	
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.	
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ☒ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application Registration Number <u>67184</u> ☐ A sole inventor ☐ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ☐ A joint inventor; all of whom are signing this request	
Signature	/David W. Leibovitch/
Name	David W. Leibovitch

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
 Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)	MAIL STOP AMENDMENT
	)	
Rune FISKER <i>et al.</i>	)	Group Art Unit: 2484
	)	
Application No.: 15/469,009	)	Examiner: DANG, HUNG Q
	)	
Filed: March 24, 2017	)	Confirmation No.: 9858
	)	
For: DETECTION OF A MOVABLE OBJECT	)	
WHEN 3D SCANNING A RIGID	)	
OBJECT	)	

SUPPLEMENTAL AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Further to the Reply filed on April 10, 2018, please amend the above-identified patent application as follows.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Previously Presented) A method for detecting a movable object in a location, when scanning a rigid object in the location by means of a 3D scanner for generating a virtual 3D model of the rigid object, wherein the method comprises:

- providing a first 3D representation of at least part of a surface by scanning at least part of the location;

- providing a second 3D representation of at least part of the surface by scanning at least part of the location;

- determining for the first 3D representation a first excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation;

and

- if a portion of the surface in the second 3D representation is located in space in the first excluded volume, the portion of the surface in the second 3D representation is disregarded in the generation of the virtual 3D model.

2 – 51. (Cancelled)

52. (Previously Presented) The method according to claim 1, wherein the rigid object is a patient's set of teeth, and the location is the mouth of the patient.

53. (Previously Presented) The method according to claim 1, wherein the movable object is a soft tissue part of a patient's mouth.

54. (Previously Presented) The method according to claim 1, wherein the movable object is a dentist's instrument or remedy which is temporarily present in a patient's mouth.

55. (Previously Presented) The method according to claim 1, wherein the movable object is a finger.

56. (Previously Presented) The method according to claim 1, wherein at least part of the surface captured in the first representation and at least part of the surface captured in the second representation are overlapping the same surface part on the rigid object.

57. (Previously Presented) The method according to claim 1, wherein the first representation of at least part of the surface is defined as the first representation of at least a first part of the surface, and the second representation of at least part of the surface is defined as the second representation of at least a second part of the surface.

58. (Previously Presented) The method according to claim 1, wherein the method comprises determining a first scan volume in space related to the first representation of at least part of the surface, and determining a second scan volume in space related to the second representation of at least part of the surface.

59. (Currently Amended) The method according to claim 58 ~~[[1]]~~, wherein the first scan volume and the second scan volume are ~~[[is]]~~ defined by focusing optics in the 3D scanner and a distance to the surface which is captured.

60. (Currently Amended) The method according to claim 58, wherein the first scan volume related to the first representation of at least part of the surface is the volume in space between focusing optics of the 3D scanner and the surface captured in the first representation; and the second scan volume related to the second representation of at least part of the surface is the volume in space between ~~[[the]]~~ focusing optics of the 3D scanner and the surface captured in the second representation.

61. (Previously Presented) The method according to claim 58, wherein the first excluded volume and second excluded volume in space where no surface can be present corresponds to the first scan volume and the second scan volume, respectively.

62. (Previously Presented) The method according to claim 1, wherein the volume of the 3D scanner itself is defined as an excluded volume.

63. (Previously Presented) The method according to claim 1, wherein a near threshold distance is defined, which determines a distance from a captured surface in the first representation and the second representation, where a surface portion in the second representation or the first representation, respectively, which is located within the near threshold distance from the captured surface and which is located in space in the first excluded volume or in the second excluded volume, respectively, is not disregarded in the generation of the virtual 3D model.

64. (Previously Presented) The method according to claim 1, wherein a far threshold distance is defined, which determines a distance from a captured surface, where the volume outside the far threshold distance is not included in the excluded volume of a representation.

65. (Previously Presented) The method according to claim 1, wherein the first representation of at least part of a surface is a first subscan of at least part of the location, and the second representation of at least part of the surface is a second subscan of at least part of the location.

66. (Currently Amended) The method according to claim 1, wherein the first representation of at least part of a surface is a provisional virtual 3D model comprising [[the]] subscans of the location acquired already, and the second representation of at least part of the surface is a second subscan of at least part of the location.

67. (Currently Amended) The method according to claim 66 [[1]], wherein acquired subscans of the location are adapted to be added to the provisional virtual 3D model concurrently with the acquisition of the subscans.

68. (Previously Presented) A nontransitory computer readable medium encoded with a computer program product comprising program code for causing a data processing system to perform the method of claim 1, when said program code is executed on the data processing system.

69. (Previously Presented) A system for detecting a movable object in a location, when scanning a rigid object in the location by means of a 3D scanner for generating a virtual 3D model of the rigid object, wherein the system comprises a hardware processor configured to:

- provide a first 3D representation of at least part of a surface by scanning at least part of the location;

- provide a second 3D representation of at least part of the surface by scanning at least part of the location;

- determine for the first 3D representation a first excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation;

and

- disregard the portion of the surface in the second 3D representation in the generation of the virtual 3D model, if a portion of the surface in the second 3D representation is located in space in the first excluded volume.

70. (Previously Presented) The method according to claim 1, wherein the movable object is an inside of a cheek, a tongue, lips, gums and/or loose gingival.

71. (Previously Presented) The method according to claim 1, wherein the movable object is a dental suction device, cotton rolls, and/or cotton pads.

72. (Previously Presented) The method according to claim 1, wherein:
the first excluded volume is determined to be a space where no surface of the rigid object is present.

REMARKS

Claims 59, 60, 66, and 67 are amended herein so as to clarify antecedent basis for certain claim terms and correct some claim dependencies.

Should any questions arise about this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application the undersigned respectfully requests that she be contacted at the number indicated below.

If additional fees are required for any reason, please charge Deposit Account No. 02-4800 the necessary amount.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: June 1, 2018

By: /Mythili Markowski/
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Registration No. 67,063

Customer No. 21839
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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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NOTICE OF ALLOWANCE AND FEE(S) DUE

21839 7590 07/31/2018
BUCHANAN, INGERSOLL & ROONEY PC
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER

DANG, HUNG Q

ART UNIT

PAPER NUMBER

2484

DATE MAILED: 07/31/2018

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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15/469,009

03/24/2017

Rune FISHER

0079124-000141

9858

TITLE OF INVENTION: DETECTION OF A MOVABLE OBJECT WHEN 3D SCANNING A RIGID OBJECT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0	\$0	\$1000	10/31/2018

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax **(571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

21839 7590 07/31/2018
BUCHANAN, INGERSOLL & ROONEY PC
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/469,009	03/24/2017	Rune FISKE	0079124-000141	9858

TITLE OF INVENTION: DETECTION OF A MOVABLE OBJECT WHEN 3D SCANNING A RIGID OBJECT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0	\$0	\$1000	10/31/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
DANG, HUNG Q	2484	348-066000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.	2. For printing on the patent front page, list (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____ (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____ 3 _____
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3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
☐ Applicant asserting small entity status. See 37 CFR 1.27
☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/469,009	03/24/2017	Rune FISHER	0079124-000141	9858
21839 7590 07/31/2018 BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			EXAMINER DANG, HUNG Q	
			ART UNIT	PAPER NUMBER
			2484	
DATE MAILED: 07/31/2018				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/469,009	Applicant(s) FISKER ET AL.	
	Examiner HUNG DANG	Art Unit 2484	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 06/01/2018.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are 1 and 52-72. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
Certified copies:
a) ☒ All b) ☐ Some *c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 14/232363.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s) 1. ☐ Notice of References Cited (PTO-892) 2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____ 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date ____ . 5. ☐ Examiner's Amendment/Comment 6. ☐ Examiner's Statement of Reasons for Allowance 7. ☐ Other ____ .	
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/HUNG DANG/ Primary Examiner, Art Unit 2484	
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