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| 15/888,764                                                                                                    | 02/05/2018  | Bo ESBECH            | 0079124-000162                  | 3964                        |
| 21839 7590 09/20/2019<br>BUCHANAN, INGERSOLL & ROONEY PC<br>POST OFFICE BOX 1404<br>ALEXANDRIA, VA 22313-1404 |             |                      | EXAMINER<br>KASSA, YOSEF        |                             |
|                                                                                                               |             |                      | ART UNIT<br>2663                | PAPER NUMBER                |
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***Notice of Pre-AIA or AIA Status***

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 02/05/2018 and 07/12/2018 are made of a record. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

***Double Patenting***

2. 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 obviousness-type 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); and *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 a non-statutory double patenting

ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-18 are rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-18 of U.S. patented application No. 8998719. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 of the instant application discloses “obtaining a digital 3D representation of the tooth, where the digital 3D representation comprises shape data and texture data for the tooth; and determining a tooth shade value for at least one point on the tooth based on the texture data of the corresponding point of the digital 3D representation and on known texture values of one or more reference tooth shade values”; and

claim 1 of the patented application 10010387 discloses “obtaining a digital 3D representation of the tooth, where the digital 3D representation comprises shape data and texture data for the tooth; determining a tooth shade value for at least one point on the tooth based on the texture data of the corresponding point of the digital 3D representation and on known texture values of one or more reference tooth shade values; deriving a certainty score expressing the certainty of the determined tooth shade value; and generating a visual representation of the certainty score and displaying this visual representation in a user interface, wherein the visual representation of the certainty score is at least one of a binary code, a bar structure with a color

gradient, a numerical value, and a comparison between the texture data and the known texture value of the determined tooth shade value”.

***Claim Rejections - 35 USC §103***

3. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 10-13 are rejected under 35 U.S.C. 103 as being unpatentable over Quadling et al (US Patent 8532355), and further in view of Liag (US Patent 8570530).

With regard to claim 1, Quadling et al discloses obtaining a digital 3D representation of the tooth (refer to col. 2, lines 64-col. 3, lines 6), where the digital 3D representation comprises shape data and texture data for the tooth (refer to col. 2, lines 30-35); and (determining a tooth shade value) for at least one point on the tooth based on the texture data of the corresponding point of the digital 3D representation and on known texture values of one or more reference tooth shade values (refer to col. 15, lines 44-51). Quadling et al reference does not expressly call for determining a tooth shade value. However, at the same field of endeavor, Liag discloses this feature (refer to col. 3, lines 58-63). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching to Liag image data processing system into Quadling et al system. The suggestion/motivation for doing so would have been to provide obtaining tooth shade information (refer to col. 3, lines 32-38 of Liag). Therefore, it would have been obvious to combine Liag with Quadling et al to obtain the invention as specified in claim 1.

With regard to claim 2, Quadling et al discloses wherein determining the tooth shade value for the point comprises selecting the reference tooth shade value with the known texture value closest to the texture data of the point (refer to col. 6, lines 44-51).

With regard to claim 3, Quadling et al discloses wherein determining the tooth shade value for the point comprises an interpolation of the two or more reference tooth shade values having known texture values close to the texture data of the point (refer to col. 16, lines 1 -31).

With regard to claim 10, Quadling et al discloses wherein the one or more reference tooth shade values relate to shade values for natural teeth with intact surface and/or to shade values for teeth prepared for a dental restoration (refer to col. 6, lines 44-51).

With regard to claim 11, Quadling et al failed to discloses comparing the texture data with known texture values for soft oral tissue, such as gum tissue and gingiva value. However, at the same field of endeavor, Liag discloses this feature (refer to col. 3, lines 58-63). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching to Liag image data processing system into Quadling et al system. The suggestion/motivation for doing so would have been to provide obtaining tooth shade information (refer to col. 3, lines 32-38 of Liag). Therefore, it would have been obvious to combine Liag with Quadling et al to obtain the invention as specified in claim 11.

With regard to claim 12, Quadling et al discloses the texture information comprises at least one of tooth color or surface roughness (refer to col. 3, lines 49-53).

With regard to claim 13, Quadling et al discloses creating a shade profile for the tooth from shade values determined one or more points on the tooth (refer to 3, lines 49-53).

***Allowable Subject Matter***

4. Claims 4-9, 14-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Other Prior Art Cited***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent No. (7296996), (7134874), (6471511) and (6450807).

***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOSEF KASSA whose telephone number is (571) 272-7452. If attempts to reach the examiner by telephone are unsuccessful, examiner email address Yosef.kassa@uspto.gov. The examiner can normally be reached on Monday-Friday from 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone and email are unsuccessful, the examiner's supervisor, Dwayne Bost can be reached on (571) 272-7023. The fax phone numbers for the organization where this application or proceeding is assigned is (571) 273-8300 for regular communication and (571) 273-8300 for after Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service office whose telephone number is (571) 272-2600.

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.

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09/16/2019.

**/YOSEF KASSA/**

**Primary Examiner, Art Unit 2669**