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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/250,426	01/20/2021	Rudolf Schmid	81076US004	7144

196179 7590 06/04/2024

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EXAMINER
FOLGMANN, DREW S

ART UNIT	PAPER NUMBER
3772	

NOTIFICATION DATE	DELIVERY MODE
06/04/2024	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.

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Office Action Summary	Application No. 17/250,426	Applicant(s) Schmid et al.	
	Examiner DREW S FOLGMANN	Art Unit 3772	AIA (FITF) Status Yes

-- 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 29 February 2024.

☐ 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) 1-13 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5a) Of the above claim(s) _____ is/are withdrawn from consideration.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) 1-13 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 20 January 2021 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)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

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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.

Claim Objections

Claim 1 is objected to because of the following informalities: "wherein light mixing element" in claim 1, lines 15-16 should read –wherein the light mixing element--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

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.

Claim(s) 1-7, 9-10 are rejected under 35 U.S.C. 103 as being unpatentable over Kim (US 2008/0268401) in view of Lillelund (US 2013/0294066).

Regarding claim 1, Kim discloses a dental light polymerization device in FIGS. 1-11, comprising an intra-oral tip portion (410), and a handle portion (430), and further a polymerization light source (120) and a light mixing element (130, construed to be a light mixing element as it receives and transmit lights from a plurality of LED light sources), wherein the polymerization light source comprises at least a first LED (124) exhibiting *a first light emission peak wavelength* ([0051] "when only the second light-emitting chips 124 among the light-emitting chips 120 employed in the LED of the present invention are operated to emit light, only a photopolymer that can be subjected to a polymerization reaction by light with a wavelength in a range of 425 nm to 475 nm is cured") and a second LED (126) exhibiting *a second light emission peak wavelength* ([0051], "When only the third light-emitting chips 126 are operated to emit light, only a photopolymer that can be subjected to a polymerization reaction by light with a

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wavelength in a range of 475 nm to 525 nm is cured"), wherein the first and second LED are each configured for emitting visible light within a wavelength range of 380nm to 495nm ([0051]), wherein the first and second light emission peak wavelength differ from each other by at least 10nm ([0051]), wherein the light mixing element is formed of a solid transparent body describes how the different wavelength ranges can be 10nm apart and are for curing different photopolymers receptive to different wavelengths), wherein the light mixing element is formed of a solid transparent body ([0034], "a lens 130 made of a transparent material") having a rear portion (portion of 130 facing 120 as shown in FIG. 4) and an adjacent front portion (portion of 130 facing away from 120 as shown in FIG. 4), wherein the lens can be different shapes ([0038], "The lens 130 is to allow the light, which has been emitted from the light-emitting chips 120, to be transmitted and dispersed therethrough. Although the lens is generally formed to have a hemispherical shape, it can be modified to have any one of various shapes such as a rectangle, a pentagon, an octagon, a circle and the like"), wherein the light mixing element is arranged with the rear end facing the polymerization light source (the rear end of 130 faces 120) and with the front end facing away from the polymerization light source (the front of 130 faces away from 120).

Kim teaches that the light mixing element can be various shapes but fail(s) to disclose wherein the rear portion has the shape of a square-based truncated pyramid, a center axis of which forming an optical axis, and wherein the front portion has a convex shape, wherein the rear portion forms a rear end of the light mixing element and the front portion forms a front end of the light mixing element, wherein the rear end forms a first diagonal dimension and the rear portion, adjacent the front portion extending directly from the rear portion, forms a greater second diagonal dimension, and wherein light mixing element has a square cross-sectional shape along its full length other than the convex shape of the front portion.

However, **Lillelund** teaches a light mixing element (701) wherein the rear portion (see figure below) has the shape of a square-based truncated pyramid ([0037], "pyramid frustum"), a center axis

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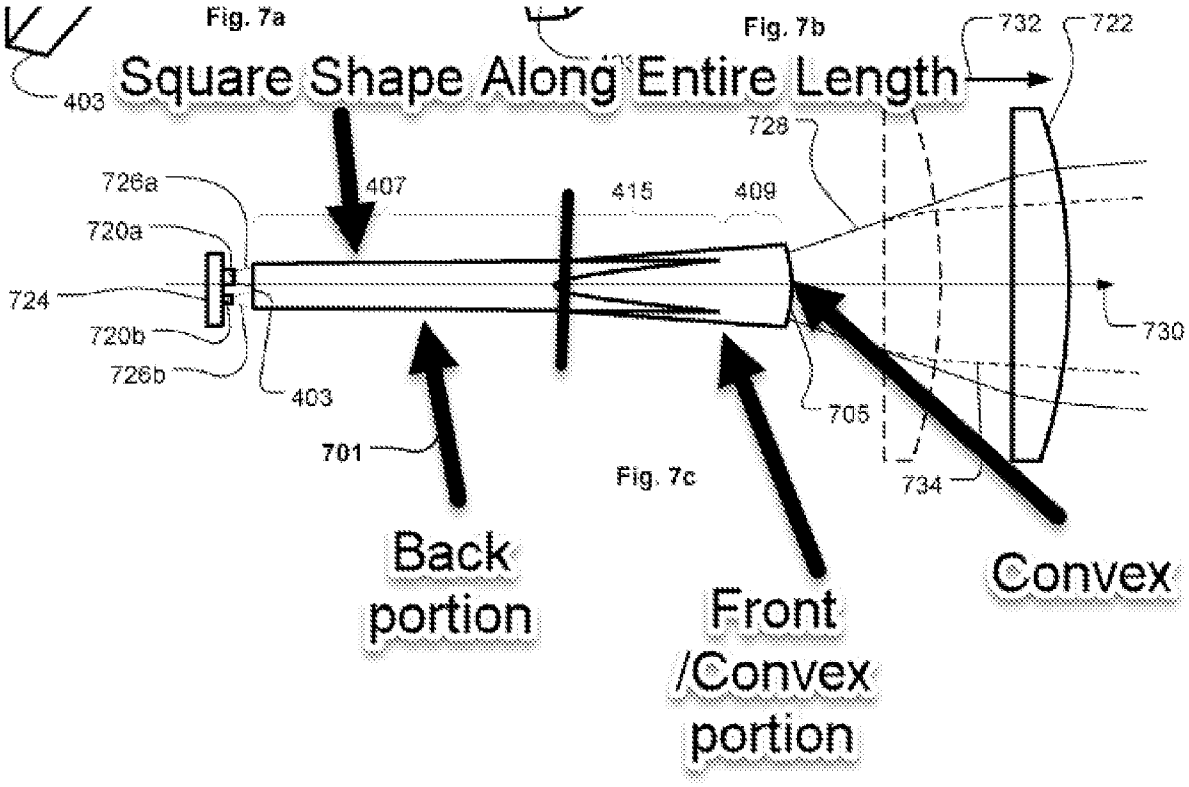
(longitudinal axis of 701) forming an optical axis, and wherein the front portion (see figure below) has a convex shape ([0050], “the con frustum is formed a curve surface” , shown in FIG. 7c to be convex), wherein the rear portion form a rear end of the light mixing element and the front portion forms a front end of the light mixing element (as shown in FIG. 7c), wherein the rear end forms a first diagonal dimension (diagonal dimension of 403) and the rear portion, adjacent the rear portion, forms a greater second diagonal dimension (towards 409/415 as the rear portion is a “pyramid frustum” with a larger front end), and wherein the light mixing element has a square cross-sectional shape along its full length other than the convex shape of the front portion (shown below to have a square cross section along its full length outside of the front/convex shape of the front portion).



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