

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CANFIELD SCIENTIFIC, INC.,
Petitioner,

v.

QUANTIFICARE S.A.,
Patent Owner.

IPR2021-01511
Patent 10,070,119 B2

Before BRIAN J. MCNAMARA, JOHN D. HAMANN, and
BRIAN D. RANGE, *Administrative Patent Judges*.

RANGE, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314, 37 C.F.R. § 42.4

I. INTRODUCTION

Canfield Scientific, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1–4 and 8–11 of U.S. Patent No. 10,070,119 B2 (“the ’119 patent,” Ex. 1001). QuantifiCare S.A. (“Patent Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). This panel held a conference call with the parties on January 21, 2022, and, on the call, authorized supplemental briefing regarding construction of claim 1’s “two views according to two different angles” recitation. Pursuant to that authorization, Petitioner filed a Reply to Patent Owner’s Preliminary Response on January 28, 2022. Paper 14 (“Reply”). Patent Owner filed a Sur-Reply on February 4, 2022. Paper 15 (“Sur-reply”).

We have authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314; 37 C.F.R. § 42.4(a) (2020). The standard for institution is set forth in 35 U.S.C. § 314(a), which provides that *inter partes* review may not be instituted unless “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” As discussed below, we determine that Petitioner shows a reasonable likelihood of prevailing with respect to at least one challenged claim. Accordingly, we institute *inter partes* review of all challenged claims based on all grounds asserted in the Petition. *See* 37 C.F.R. § 42.108(a).

At this juncture, we have not made a final determination as to the patentability of any challenged claim or any factual or legal issue underlying the patentability inquiry. Any final determination will be based on the record developed during trial. Patent Owner should understand that any argument for patentability not asserted in a timely filed Response to the Petition or in another manner permitted during trial shall be deemed waived, even if that argument was presented in the Preliminary Response.

II. BACKGROUND

A. Real Parties-in-Interest

The parties identify themselves as the real parties-in-interest. Pet. 2; Paper 4, 1.

B. Related Matters

The parties identify the following as a related matter: *QuantifiCare, Inc. v. Canfield Scientific, Inc.*, C.A. No. 1:20-cv-12305 (D.N.J. September 3, 2020). Pet. 3; Paper 4, 1. In addition, Petitioner has filed petitioner for *inter partes* review of two additional patents related to the '119 patent that are also owned by Patent Owner: (i) U.S. Patent No. 10,165,253 B2 (IPR2021-01518) and (ii) U.S. Patent No. 10,681,334 B2 (IPR2021-01519).

C. The '119 Patent (Ex. 1001)

The '119 patent is titled “Device and Method to Reconstruct Face and Body in 3D.” Ex. 1001, code 54. The challenged patent relates to a stereophotogrammetry device used “to picture and reconstruct in 3D the surface of objects of different sizes,” e.g., different body parts such as the face and the torso. *Id.* 3:22–25; *see id.* 1:6–14, 1:41–48. By way of background, the '119 patent explains that “[s]tereophotogrammetry consists in [simultaneously] gathering the images of a subject from at least two view with a calibrated camera,” i.e., a “stereo-pair.” *Id.* at 1:24–29. The stereo-pair is used to “reconstruct . . . a dense representation in 3-Dimensions of the surface of the observed object.” *Id.* at 1:30–32.

Figures 1 and 2, reproduced below, respectively show side- and top-views of an “implementation” of a stereophotogrammetry device and its components. *Id.* at 3:48–51.

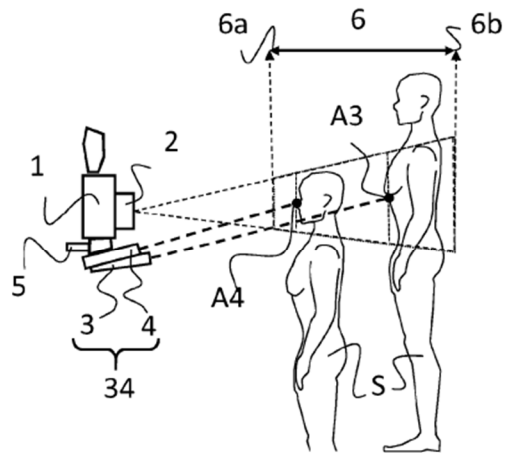


FIG. 1

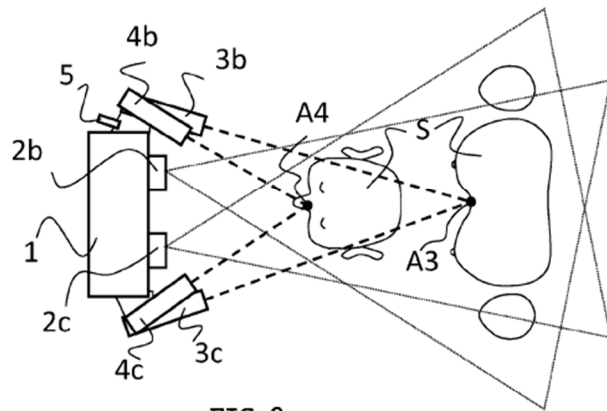


FIG. 2

Figures 1 represents a possible implementation of the '119 patent's device as viewed from the side, and Figure 2 represents a possible implementation of the device as viewed from the top. *Id.* at 3:48–51. As shown in Figures 1 and 2, camera body (1) includes double optics (2). *Id.* at 8:23–24. As shown in Figure 2, double optics (2) are “composed of two sub-optics (2b) and (2c), enabling the acquisition of a stereo[-]pair [of images] corresponding to two slightly different viewing angles” simultaneously. *Id.* at 8:24–27; *see id.* at 3:28–31. For example, Figure 8 shows a series of stereo-pair images taken at different angles for a face. *Id.* at 11:1–8.

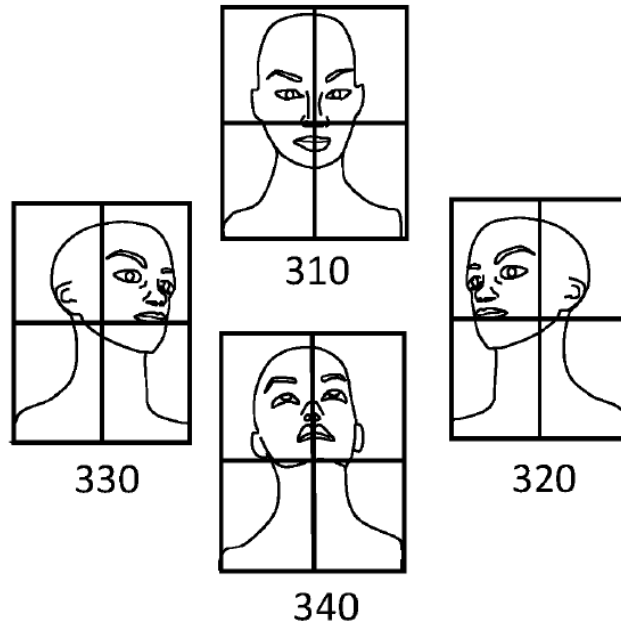


FIG. 8

The '119 patent specification describes Figure 8 as presenting “viewpoints optimized for imaging a face using a field of view close to an A4 surface format.” *Id.* at 3:66–67. Using the captured stereo-pairs, “a comprehensive representation in 3D of the surface of the subject (S)” can be constructed. *Id.* at 10:26–37.

Further, the stereophotogrammetry device captures stereo-pairs of images at “two distinct distances for picture taking corresponding respectively to position (A3) and (A4)” such that the stereo-pairs of images are in focus at positions A3 and A4, which are within the device’s depth of field 6. *Id.* at 8:29–39; *see id.* at 6:23–26. For example, position A3 is used for capturing images of the torso while position A4 is used for capturing images of the face. *Id.* at 6:3–12; *see id.* 1:41–48. Positions A3 and A4 can be identified by the convergence of respective light patterns projected onto the subject to be imaged, the respective light patterns converging at the distances for positions A3 and A4. *Id.* at 4:46–67. For example, as shown in

Figure 2, a light pattern emitted by first pair of light beamers (3b) and (3c) converge at point (A3) and a different light pattern emitted by second pair of light beamers (4b) and (4c) converge at point (A4). *Id.* at 8:40–44; *see id.* at 4:56–59. Accordingly, “by placing the subject so that the light patterns projected by a first pair of beamers are superposed on the surface of the subject[,] one is placing the subject at” the first pre-defined position (and similarly for the light pattern emitted by the second pair of beamers converging at the second position). *Id.* at 4:48–56; *see id.* 5:10–26.

D. Challenged Claims

Petitioner challenges claims 1–4 and 8–11 of the ’119 patent. Pet. 1. Claim 1 is the only challenged independent claim. Claim 1 is illustrative of the claimed subject matter, and we reproduce claim 1 with Petitioner’s added bracketed identifiers and line breaks for claim elements.

1. [1.01] A device for stereophotogrammetry comprising
[1.02] a camera body (1) and
[1.03] a double-optics (2) comprising two sub-optics (2b) and (2c), configured for a simultaneous acquisition of two views according to two different angles,
[1.04] wherein the device is comprising a positioning system (34) configured to define a position of a target subject (S) for one of at least two distinct pre-defined point positions (A3, A4) of the target subject (S) relative to the stereophotogrammetry device,
[1.05] the at least two distinct predefined point positions comprising a closer point position (A4) and a farther point position (A3), the closer point position (A4) being closer to the stereophotogrammetry device than the farther point position (A3), and wherein the positioning system (34) is comprising at least two pairs of light beamers (3b, 3c) and (4b, 4c) where a first pair of light beamers (3b, 3c) is converging to the farther point

position (A3) and a second pair of light beamers (4b, 4c) is converging to the closer point position (A4), and

[1.06] wherein the device comprises a switch (5) comprising a first selection position configured to select the farther point position (A3) and a second selection position configured to select the closer point position (A4),

[1.07] wherein the switch (5) is configured to switch on the first pair of light beamers (3b, 3c) in the first selection position and wherein the switch (5) is configured to switch on the second pair of light beamers (4b, 4c) in the second selection position.

Ex. 1001, 11:32–57; *see also* Pet. 16 (using same identifiers).

E. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims are unpatentable based on the following grounds:

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1	1–4, 8	103	Plassmann ¹ , Treuillet ² , Staller ³
2	9–11	103	Plassmann, Treuillet, Staller, Peng ⁴

Pet. 5. The Petition is also supported by the Declaration of Gerhardt Paul Otto, Ph.D. Ex. 1003.

¹ WO 2010/097572 A2, published Sept. 2, 2010 (Ex. 1007).

² Sylvie Treuillet, et al., *Three-Dimensional Assessment of Skin Wounds Using a Standard Digital Camera*, IEEE Transactions on Medical Imaging, Vol. 28, No. 5 at 752 (2009) (Ex. 1016).

³ US 7,257,322 B2, issued Aug. 14, 2007 (Ex. 1006).

⁴ Qi Peng et al., *Automated 3D Scenes Reconstruction Using Multiple Stereo Pairs from Portable Four-Camera Photographic Measurement System*, International Journal of Optics, Vol. 2015 (2015).

III. ANALYSIS

A. Level of Ordinary Skill in the Art

To determine whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). In assessing the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citing *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962–63 (Fed. Cir. 1986)). “[O]ne or more factors may predominate.” *Id.*

Petitioner argues that

[a] person of ordinary skill in the art (“POSITA”) would have had a working understanding of photography, stereophotogrammetry, and distance measuring in photography or stereophotogrammetry. Such an individual would have a master’s degree with a scientific focus on subjects such as optics and/or image processing, with at least about three years of experience in the field of photography, and stereophotogrammetry, as well as image processing in these fields, or an equivalent qualification.

Pet. 15 (citing Ex. 1003 ¶¶ 17–20).

Patent Owner argues that Petitioner asserts a “high level of skill [which] is not necessary to understand or practice the teachings of the ‘119 patent.” Prelim. Resp. 17 (citing Ex. 2006 ¶¶ 29–30). Instead, Patent Owner asserts “a POSITA would need, and thus have, only Bachelor’s degree in Physics or Electrical Engineering or a similar field and two to three years of

experience, including experience in image processing and computer graphics.” *Id.*

The parties’ dispute regarding the level of ordinary skill in the art does not substantively impact our analysis for purposes of institution. Rather, we find that in applying either parties’ definition for what comprises the level of ordinary skill in the art that Petitioner shows that there is a reasonable likelihood that it would prevail in proving the unpatentability of at least one of the challenged claims. Thus, we do not need to choose between the parties’ proposed definitions at this stage of the proceeding.

During trial, and in accordance with our Rules, the parties should address what substantive effect, if any, the different proposed definitions for the level of ordinary skill in the art have on analyzing what the prior art teaches or in evaluating unpatentability of the challenged claims.

B. Claim Construction

Because the Petition was filed after November 13, 2018, we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), following the standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b); 83 Fed. Reg. 51,340, 51,340–41, 51,343 (Oct. 11, 2018). In applying such standard, claim terms are generally given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic*

Sofamor Danek, Inc., 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

In the Petition, Petitioner states that “Petitioner does not believe that express constructions are required for any terms.” Pet. 17. Petitioner does not change its position in its Preliminary Reply. *See generally* Prelim. Reply.

In the Preliminary Response, Patent Owner asserts the claim term “two sub-optics (2b) and (2c), configured for a simultaneous acquisition of two views according to two different angles” “is comprised of common words used in common parlance without any special meaning in the art, and therefore the ordinary and customary meaning is clear.” Prelim. Resp. 6–7. Patent Owner does not change its position in its Preliminary Sur-Reply. *See generally* Prelim. Sur-Reply.

The parties agree that the terms of the challenged claims should be afforded their plain and ordinary meaning. Accordingly, we do not provide any express constructions for any terms, and afford the claim terms their plain and ordinary meaning. *See, e.g., Nidec Motor Corp. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

C. The Law of Obviousness

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time of the invention to a person having ordinary skill in the art. *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis

of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of non-obviousness, if present.⁵ *See Graham*, 383 U.S. at 17–18. When evaluating a claim for obviousness, we also must “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

D. Alleged Obviousness Based on Plassmann, Treuillet, and Staller

Petitioner asserts that ’119 patent claims 1–4 and 8 are obvious over Plassmann, Treuillet, and Staller. Pet. 29–58. For the reasons that follow, we determine that Petitioner establishes a reasonable likelihood that it would prevail in showing that Plassmann, Treuillet, and Staller renders these claims obvious. We provide an overview of Plassmann, Treuillet, and Staller before we address this ground.

1. Overview of Plassmann (Ex. 1007)

Plassmann is a World Intellectual Property Organization publication that relates to an apparatus for the production of stereoscopic images. Ex. 1007 codes (10), (19), (57). Plassman describes variations of the “MAVIS” system. *Id.* at 12:25–5. Plassmann’s apparatus captures “two images [which are] needed to form a stereo image . . . to produce a three-dimensional representation of the subject.” *Id.* at 12:25–29. The apparatus further includes two light emitting diodes (LEDs) emitting respective beams

⁵ Patent Owner does not present arguments or evidence of such objective evidence of non-obviousness. *See generally* Prelim. Resp.

which converge at a particular distance in front of the apparatus. *Id.* At 12:7–13.

Below, we reproduce Plassmann Figures 1A and 1B.

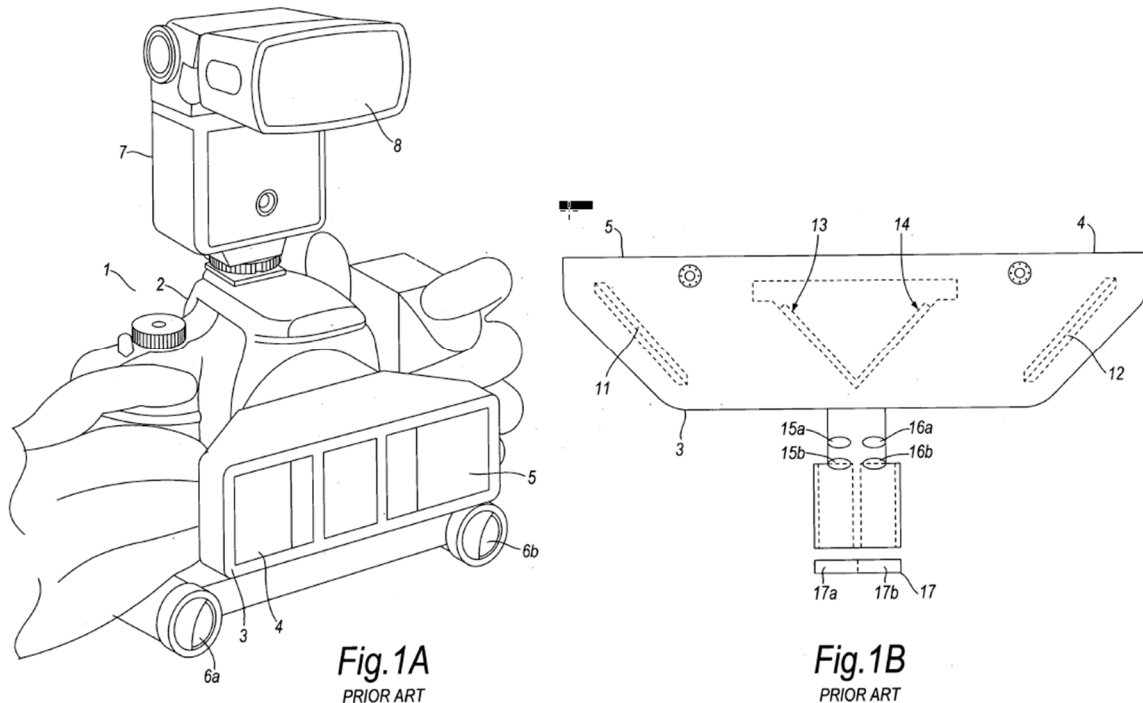


Figure 1A is a perspective representation of an apparatus for obtaining stereoscopic images, showing body 2, e.g., a camera, and adaptor 3. *Id.* at 11:3–4, 11:28–12:4. Further Figure 1B shows a “plan view” of adaptor 3 in further detail. *Id.* at 11:5–6, 12:13–14. Adaptor 3 has two apertures 4, 5 which respectively collect light which is respectively focused onto charge coupled device parts 17a, 17b, forming respective first and second images. *Id.* at 12:15–25. The first and second images form a stereo image used to produce a three-dimensional representation of a subject. *Id.* at 12:25–29.

Additionally, as shown in Figure 1A, the apparatus includes

two low-powered light emitting diodes (LEDs) 6a, 6b, each provided with a [focusing] lens to produce a beam of light and being arranged so that the beams converge and meet at a point a fixed and desired distance from the apparatus, this distance

corresponding to the distance at which the camera lens is [focused].

Id. at 12:8–13. The converging beams act as “a guide to show distance between the apparatus and subject.” *Id.* at 16:12–14.

2. Overview of Treuillet (Ex. 1016)

Treuillet is a paper that relates to an “approach to build 3-D models of skin wounds from color images.” Ex. 1016, 752. Treuillet explains that “[b]y taking two color images from different points of view, stereophotogrammetry allows the computation of the 3-D coordinates of numerous points on the skin lesion.” *Id.* at 754.

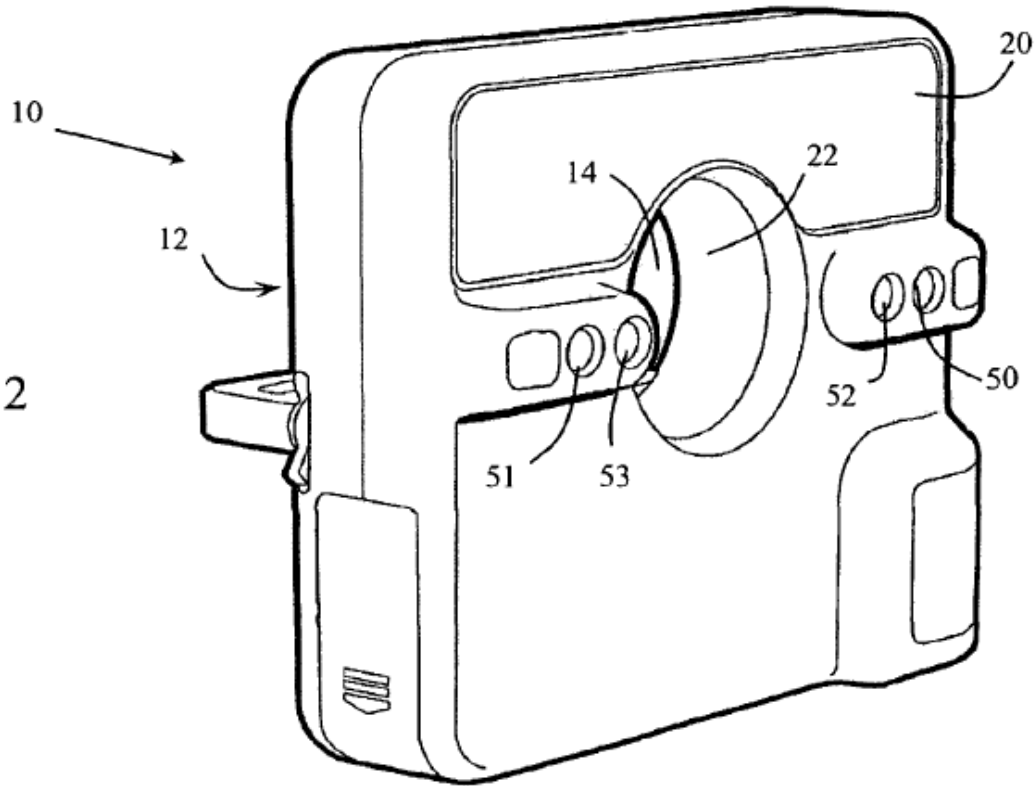
By way of imaging technology background, Treuillet describes the MAVIS II system as “a reflex digital camera equipped with special dual lens optics for recording two images from slightly different viewpoints, generating a stereo pair” which includes “two tube-shaped projectors produce beams of light which intersect in a single spot when the camera is held at the right distance” at “about 80 cm from the wound,” with a tolerance of plus or minus 15 cm. *Id.* at 755.

3. Overview of Staller (Ex. 1006)

Staller is a US patent that relates to a diffuser attachment for a camera including a “distance measurement device [that] uses a pair of light beams which intersect at a repeatable distance from the diffuser body to readily enable positioning of an object to be photographed at that repeatable distance.” Ex. 1006, codes (10), (12), (57).

Below, we reproduce Figure 2, which shows a front perspective view of a diffuser. *Id.* at 3:13–14.

Fig. 2



As shown in Figure 2, the diffuser “includes a distance measurement device or indicator in the form of a plurality of light beam emitters 50–53.” *Id.* at 5:13–15. “Each pair of emitters 50–51, 52–53 creates a pair of angled light beams which intersect at different distances in front of diffuser body 12.” *Id.* at 5:17–18. As such, “[e]ach of the pairs of light beams allows diffuser 10 to be relocated at the same repeatable 20 distance from a subject.” *Id.* at 5:18–21; *see id.* Fig. 4. That is, each pair of emitters indicates a different distance. *Id.* at 2:30–35; *see id.* at 5:64–6:2.

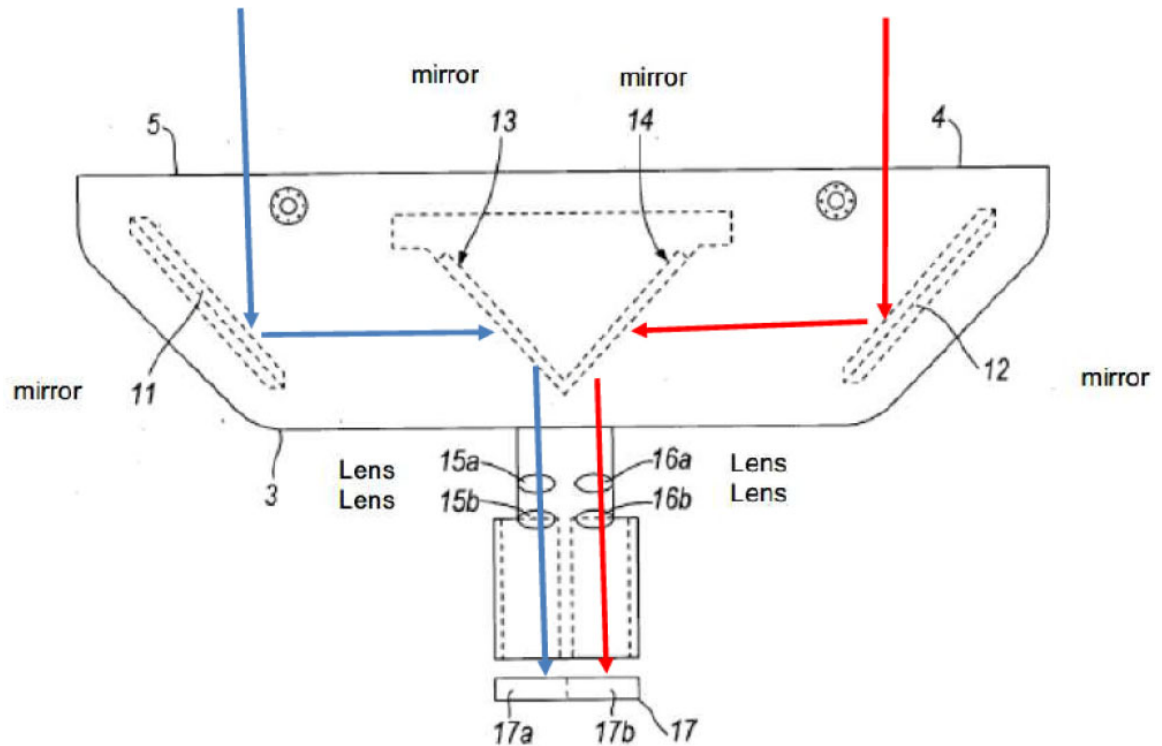
Further, either of the emitter pairs, i.e., pair 50–51 or pair 52–53, are selected using a selector switch. *Id.* at 5:38–41. By selecting a particular emitter pair, the distance measurement device indicates a particular distance measurement. *See id.*

4. Discussion

Based on the present record, we determine that Petitioner sufficiently shows that the subject matter of '119 patent claims 1–4, and 8 are obvious over the combined disclosures of the Plassmann, Treuillet, and Staller references. Pet. 29–58. Having considered each argument raised in the Preliminary Response, we find that none undermine Petitioner's persuasive showing. *See* Prelim. Resp. 18–61. In order to provide guidance to the parties, we address Patent Owner's arguments with more detail below.

- a) Plassmann teaching “a double-optics (2) comprising two sub-optics (2b) and (2c), configured for a simultaneous acquisition of two views according to two different angles”

Petitioner argues that Plassmann teaches “a double-optics (2) comprising two sub-optics (2b) and (2c), configured for a simultaneous acquisition of two views according to two different angle.” Pet. 32–34 (citing Ex. 1007, 21:14–25, Fig. 1B; Ex. 1003 ¶¶ 107–110). Patent Owner argues that Plassmann does not teach this recitation and instead has sub-optics “configured for the simultaneous acquisition of two views according to the same angle.” Prelim. Resp. 19. To make this argument, Patent Owner annotates Figure 1B of Plassmann which we reproduce below with Petitioner's annotations. *Id.*



Plassmann Figure 1B depicts a plan view of an adaptor used with the MAVIS apparatus. Ex. 1007, 11:5–6, 11:25–12:29. Petitioner annotates Figure 1B with red and blue lines to illustrate that Plassmann allegedly “comprises double-optics employing two sets of sub-optics (i.e., 11, 13, 15a, and 15b (blue) and 12, 14, 16a, and 16b (red)).” Pet. 34.

Petitioner argues that “Plassmann’s Figure 1B is substantially identical to the ’119 patent’s figures depicting the claimed depicting claimed double optics and two sub-optics.” Pet. 33–34 (citing Ex. 1001, Fig. 6; Ex. 1003 ¶¶ 108–109). Petitioner argues that Plassmann teaches, for example, that light forming the first image (depicted by blue annotations) hits the adaptor, hits mirror 11 and then mirror 13 before passing through lenses (15a,b). *Id.* at 20–21 (citing Ex. 1007 1214–22; Ex. 1003 ¶ 78). According to

Petitioner, one of ordinary skill in the art “would recognize the combination of mirrors and lenses traversed by each light path in Plassmann comprises double-optics employing two sets of sub-optics (*i.e.* 11, 13, 15a, and 15b (blue) and 12, 14, 16a, and 16b (red)) as recited.” *Id.* at 34 (citing Ex. 1003 ¶ 109). Petitioner adds that “[d]ue to spaced mirrors 11 and 12, two images are necessarily taken at different angles.” *Id.* In addition, Petitioner argues that “[b]ecause images are captured using a single camera, [one of ordinary skill in the art] would understand they are obtained simultaneously.” *Id.*

Patent Owner disputes that Plassmann teaches this limitation. Prelim. Resp. 19–24. Patent Owner’s argument assumes that the blue and red light paths are the only light paths by which Plassmann acquires light. *Id.* at 20 (“The blue and red light paths defining the angles at which the two views are acquired by mirrors 11 and 12 are parallel.”). Patent Owner, however, overreads the annotations and does not establish that Plassmann is detecting only a single beam of light such as a laser. Rather, as Petitioner alleges, Plassmann’s suboptics each acquire “views of an observed object.” Pet. 30; *see also id.* at 17 (explaining, among other things, that Plassmann seeks to solve problems relating to “imaging objects”); Ex. 1007, (57) (“An apparatus (100) is provided for the production of stereoscopic images”). Each sub-optic, thus, captures a pyramid view akin to the triangular views depicted by Figure 2 of the ’119 patent. Based on the current record, we understand from the portions of Plassmann that Petitioner cites that each Plassmann sub-optic collects light from an area (the area of the subject to be imaged) and that the light from the subject takes many different paths depending on the point of the subject from which the light originates. *See, e.g.,* Pet. 34; Ex. 1003 ¶¶ 107–109; Ex. 1007, 12:14–25.

Each sub-optic of Plassmann is in a different position (e.g., displaced from one another) and, therefore, views the subject from a different angle. Pet. 32–34; Plassmann Figure 1B. Moreover, each sub-optic will receive light from, for example, the center point of the object to be imaged from a different angle. The plain language of “a double-optics (2) comprising two sub-optics (2b) and (2c), configured for a simultaneous acquisition of two views according to two different angles” requires nothing more. The ’119 specification, similar to Plassmann, describes its stereo pairs as having different viewpoints and different viewing angles. Ex. 1001, 8:24–27, 10:26–31. Neither claim 1 nor any particular portions of the ’119 specification limits the language at issue to, for example, requiring that the apparatus’s two center-most rays of light not be parallel. At this stage of the proceeding, based on the preliminary record, Petitioner has sufficiently shown that Plassmann teaches “a double-optics (2) comprising two sub-optics (2b) and (2c), configured for a simultaneous acquisition of two views according to two different angles.” Moreover, at this stage of the proceeding, we afford the testimony of Dr. Van Der Weide, Patent Owner’s declarant, on this issue little weight as it is based on the incorrect premise that “the light paths of the views are parallel and thus at the same angle,” and does not explain otherwise the basis for the testimony that the two images are acquired at the same angle. Ex. 2006 ¶¶ 56–62.

b) Predefined point positions

Claim 1 recites, for example, “wherein the device is comprising a positioning system (34) configured to define a position of a target subject (S) for one of at least two distinct pre-defined point positions (A3, A4) of the

target subject (S) relative to the stereophotogrammetry device.” Ex. 1001, 11:32–57.

We agree with Petitioner and find that Plassmann teaches a positioning system that uses a pair of light beamers to signal when a target subject is reaching a predefined distance position to the camera. *See* Ex. 1007, Fig. 1A (light beamers 6a, 6b); Pet. 34–35. Plassmann teaches that these light beams converge at a predefined distance “corresponding to the distance in which the camera lens is focussed.” Ex. 1007, 12:7–13. More specifically, Plassmann states the following:

The apparatus is also provided with two low-powered light emitting diodes (LEDs) 6a, 6b, each provided with a focussing lens to produce a beam of light and being arranged so that the beams converge and meet at a point a fixed and desired distance from the apparatus, this distance corresponding to the distance at which the camera lens is focussed.

Id.; Pet. 34–35. Accordingly, we find, at this stage of the proceeding, that Plassmann teaches the limitation, save for having a second predefined distance position—if there are two different distance positions, one necessarily is closer to the camera body and the other one farther. Ex. 1007, 12:7–13, Fig. 1A.

As way of guidance to the parties, however, we provide the following discussion. At this stage of the proceeding, and based on the current record, we find that Petitioner sufficiently shows that Plassmann’s device has a depth of field of at least 30 centimeters, and that one of ordinary skill in the art would have understood that Plassmann’s device was a MAVIS II device. *See* Pet. 36–37, 36 n.5 (citing Ex. 1016, 755; Ex. 1003 ¶¶ 1115–116). We also find, at this stage of the proceeding, and based on the current record, that Petitioner does not sufficiently show that due to this depth of field range

that Plassmann’s device “includes at least three ‘predefined’ distances at which imaging may occur: 65 centimeters, 80 centimeters, and 95 centimeters from the camera.” *Id.* at 37 (citing Ex. 1003 ¶ 116). In particular, based on the current record, we find that Petitioner does not sufficiently show that the edges of the range (i.e., 65 centimeters and 95 centimeters) are predefined distances for which Plassmann’s device would signal when a subject is reaching that edge distance. *Id.*

Nonetheless, as further discussed below, we determine that Petitioner has adequately established that at a person of skill in the art would have had reason to modify Plassmann to include predefined distances as suggested by the combined teachings of Plassmann, Treuillet, and Staller. Thus, our decision here does not turn on whether or not Plassmann *individually* teaches predefined distances.

c) Reason to combine the teachings of Plassmann, Treuillet, and Staller

Petitioner relies on Plassmann as teaching most of claim 1’s recitations. For example, Plassmann teaches a stereoscopic adaptor and teaches one pair of light beamers producing intersecting light beams to position a subject within Plassmann’s depth of field. Pet. 17, 34–36; Ex. 1003, Figs. 6a, 6b, ¶ 111. Petitioner does not allege that Plassmann, by itself, discloses claim 1’s recitations regarding two pairs of light beamers converging on two different point positions.

To explain why the two pairs of light beamers recitations nonetheless would have been obvious, Petitioner relies on Treuillet and Staller. Petitioner’s declarant, Dr. Paul Otto, testifies that a person of skill in the art would have understood that the Plassmann device “has a depth of field

which contains many distances at which ‘the camera lens is focused.’”

Ex. 1003 ¶ 113. Petitioner relies on Treuillet to confirm that Plassmann was capable of an expanded depth of field. Pet. 36; Ex. 1003 ¶ 113. Petitioner then relies on Staller as teaching multiple light beamers to define more than one imaging position within a depth of field. Pet. 41–42; Ex. 1006, Fig. 4, 2:29–34, 5:56–6:2. Petitioner argues that a person of skill in the art would have been motivated to predefine two distances from a device in order to provide for varying levels of magnification. Pet. 45–46. Petitioner further explains that a person of skill in the art would have had a reasonable expectation of success in combining the references’ teachings. *Id.* at 46–47.

Patent Owner presents many arguments why a person of skill in the art would not have combined the teachings of Plassmann and Treuillet. Prelim. Resp. 25–49. For example, Patent Owner argues that Treuillet emphasizes that “Treuillet’s imaging device and procedure are completely different than, and incompatible with Plassmann’s imaging device and procedure.” *Id.* at 27. As a threshold matter, we note that Treuillet’s statements contrasting its primary disclosure from the Plassmann device do not discourage adding a second pair of light beamers to Plassmann’s device. *Cf. e.g., In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) (“The prior art’s mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed in the ’198 application.”).

Most critically, Patent Owner’s arguments regarding Treuillet’s imaging device do not squarely address Petitioner’s limited use of Treuillet. *Cf. In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is not whether the features of a secondary reference may be bodily

incorporated into the structure of the primary reference. . . .”). Although much of Treuillet focuses on a device that is different than the Plassmann device, Treuillet also teaches that the MAVIS II device may take acceptable wound photographs from 65 centimeters to 95 centimeters. Pet. 36; Ex. 1003 ¶ 113; Ex. 1016, 755. A person of skill in the art would understand that acceptable medical wound photographs would have to be adequately focused and that Treuillet, therefore, teaches a depth of field from 65 centimeters to 95 centimeters. Ex. 1003 ¶ 113 (explaining that a person of skill in the art would understand that Plassmann has an expanded depth of field because it can “accurately image a subject at multiple positions”). Petitioner also presents evidence that a person of skill in the art would understand that the MAVIS II Treuillet refers to is the same device as the MAVIS device that Plassmann refers to. Ex. 1003 ¶ 114.

Patent Owner does not persuasively dispute that Plassmann’s device would have some depth of field. Rather, Patent Owner admits that every spectrophotography device has some depth of field. Prelim. Resp. 35 (“While true that no stereophotogrammetry device has zero depth of field”). Patent Owner also does not present persuasive evidence disputing that a person of skill in the art would understand that the Plassmann’s MAVIS device would have the depth of field described in Treuillet.

Patent Owner also argues that a person of skill in the art would not modify Plassmann to include predefined distances 65 centimeters, 80 centimeters, and 95 centimeters from the camera because predefined distances at 65 and 95 centimeters would be useless. Prelim. Resp. 37–41. This argument is unpersuasive because Plassmann’s use cases are not necessarily limited to those envisaged by Patent Owner’s hypotheticals. Staller teaches plurality of pairs of light beams that “intersect at a different

repeatable distance from the diffuser body.” Pet. 23, Ex. 1006, 2:23-65. The advantage of the plurality of pairs of light beams is taught by Staller: repeatability. Ex. 1006, 6:10–15 (referring a concern for “repeatable scale” to “improve the usefulness of close ranges for medical” applications). Plassmann already teaches use of one pair of light beams for positioning, and a person of skill in the art would have understood that the Plassmann device could benefit from multiple pairs of light beams in the same way the Staller device benefits from the multiple pairs of light beams to enable positioning at more than one repeatable distance from the camera. Ex. 1003 ¶¶ 138–139. As the Supreme Court has explained:

[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. . . . [A] court must ask whether the improvement is more than the predictable use of prior art elements according to their established function.

KSR Int’l, Co. v. Teleflex Inc., 550 U.S. 398, 417 (2007) (emphasis added).

Patent Owner further argues that there would be no reason to combine Staller’s teachings with the Plassmann device because the issue of “scale” in Staller does not apply to Plassmann. Prelim. Resp. 49–52. Patent Owner argues that “scale” is not a problem that applies to three-dimensional images because a person can either change the size or zoom of a generated 3D representation as needed or can determine distance from an object through a mathematical model. *Id.* at 51–52. These arguments do not undermine the benefit taught by Staller. Even if, as Patent Owner argues, a person of skill in the art could develop or utilize different solutions to address scale, this does not make Staller’s solution less obvious. *Cf. Medichem, S.A. v. Rolabo*,

S.L., 437 F.3d 1157, 1165 (Fed. Cir. 2006) (“[A] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine.”).

At this stage of the proceeding, based on the preliminary record, Petitioner has sufficiently established that a person of skill in the art would have had reason to combine the Plassmann device as evidenced by Treuillet with multiple pairs of light beams as taught by Staller with a reasonable expectation of success.

c) Petitioner’s use of Shiffman, Clarke, Williams, and Hoefflin

Patent Owner argues that Petitioner improperly supports its grounds of unpatentability with Shiffman, Clarke, Williams, and Hoefflin. Prelim. Resp. 53–54. We disagree. Petitioner does not rely on these references’ teachings to meet any claim recitation. Rather, Petitioner uses these reference to further evidence the knowledge that a person of skill in the art would have had, and that a person of skill in the art would have had reason to combine the teachings of Plassmann (as evidenced by Treuillet) and Staller. Pet. 38–40. We appropriately consider such knowledge as part of our obviousness analysis. *See Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (emphasizing that an obviousness analysis should consider “the background knowledge possessed by a person having ordinary skill in the art”).

Patent Owner cites *Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1335 (Fed. Cir. 2020), to support its position. There, the Board erred by instituting *inter partes* review based upon a ground that the petitioner never alleged. *Id.* We do not do this here, and *Philips* does not forbid a petitioner from citing references as evidence to support reason to combine

the teachings of a ground's references. To the contrary, the Supreme Court has explained that the *inter partes* review petitioner “gets to define the contours of the proceeding.” *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, (2018). Here, the Petitioner defined the contours of *inter partes* review by, in part, including additional evidence to buttress motivation to combine.

Patent Owner further argues in some detail that Hoeffelin does not provide a reason to modify Plassmann. Prelim. Resp. 55–60. For institution purposes, we need not address the merits of Patent Owner's argument regarding Hoeffelin because, even if we were to disregard Hoeffelin, Petitioner adequately establishes, on this preliminary record, reason to combine the teachings of Plassmann, Treuillet, and Staller for the reasons we explain above.

E. Alleged Obviousness Based on Plassmann, Treuillet, Staller, and Peng

Petitioner asserts that '119 patent claims 9–11 are obvious over Plassmann, Treuillet, Staller, and Peng. We provide an overview of Peng before we address this ground.

1. Overview of Peng (Ex. 1009)

Peng is a paper that relates to an “automatic 3D reconstruction method” to reconstruct a 3D scene using “complementary stereo information from four cameras.” Ex. 1009, 1. In particular, Peng's “3D model reconstruction system us[es] images acquired from multiple stereo pairs.” *Id.* at 2. Peng explains that a “normal camera” has a “limited field-of-view.” *Id.* at 6. Accordingly, Peng describes a process to “reconstruct a large and integrated scene” by “finding more than three spatial matched points between different 3D models [and] can achieve 3D model stitching.” *Id.*; *see id.* at 2–3.

2. Discussion

Claims 9–11 depend from claim 1. Based on the present record, we determine that Petitioner sufficiently shows that the subject matter of ’119 patent claims 9–11 are obvious over the combined disclosures of the Plassmann, Treuillet, Staller, and Peng references. Pet. 58–70. Patent Owner does not separately address this ground and, as explained above, Patent Owner’s arguments regarding ground one do not undermine Petitioner’s persuasive showing. *See* Prelim. Resp. 60–61.

IV. CONCLUSION

For the above reasons, because Petitioner sufficiently demonstrates a reasonable likelihood of showing that the subject matter of the challenged claims would have been obvious over the combined disclosures of the asserted references, we *grant* the Petition and institute an *inter partes* review. 35 U.S.C. § 314(a).

V. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted as to claims 1–4 and 8–11 of the ’119 patent based on all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), an *inter partes* review of claims 1–4 and 8–11 of the ’119 patent shall commence on the entry date of this Decision, and notice is hereby given of the institution of trial.

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