
**UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD**

CANFIELD SCIENTIFIC, INC.,
Petitioner

v.

MELANOSCAN LLC,
Patent Owner

Case No. IPR2017-02125

Patent No.: 7,359,748

**PATENT OWNER'S RESPONSE
PURSUANT TO 37 C.F.R. § 42.120**

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Pursuant to 37 C.F.R. § 42.120, Patent Owner Melanoscan LLC (“Melanoscan”) submits its Response to Canfield Scientific, Inc.’s (“Canfield’s”) Corrected Petition, Paper No. 9 (“Petition” or “Pet.”) for *inter partes* review (“IPR”) of U.S. Patent No. 7,359,748 (“the ‘748 patent”), Case No. IPR2017-02125. This filing is timely under 37 C.F.R. § 42.120, and in accordance with the Scheduling Order of the Patent Trial and Appeal Board (“the Board”) of April 9, 2018 (Paper No. 16).

In support of this Response, Melanoscan relies on not only the exhibits filed herewith and the arguments herein, but its Preliminary Response (Paper No. 11) (“POPR”) and the exhibits filed therewith and the arguments therein, which are incorporated herein by reference.

I. INTRODUCTION.

On March 30, 2018, the Board instituted *inter partes review* of claims 1-8, 11, 30, 32-34, 46 and 51 of the ‘748 patent on only grounds 1, 2, 4 and 5 set forth below. Paper No. 15. On May 17, 2018, the Board issued an order (Paper No. 20) modifying its previous institution order to institute trial on all grounds presented in the Petition, resulting in this IPR constituting grounds 1-5 set forth below.

Ground 1: Claims 1-5, 8, 11, 30, 33-34, 46 and 51 under 35 U.S.C. § 103 as unpatentable over Voigt *et al.*, “Topodermatographic Image Analysis for Melanoma Screening and the Quantitative Assessment of Tumor Dimension

Parameters of the Skin,” *Cancer* 75(4):981-988 (Feb. 15, 1995) (“Voigt”) and Hurley *et al.*, “Body Measurement System Using White Light Projected Patterns for Made-to-Measure Apparel,” *SPIE* Vol. 3131, 212-223 (July 7, 1997) (“Hurley”).

Ground 2: Claims 1-4, 8, 11, 30, 33-34 and 51 under 35 U.S.C. § 103 as unpatentable over Voigt and PCT publication no. WO 98/28908 (“Crampton”).

Ground 3: Claims 1-8, 11, 30, 33-34, 46 and 51 under 35 U.S.C. § 103 as unpatentable over Hurley.¹

Ground 4: Claims 6 and 7 under 35 U.S.C. § 103 as unpatentable over Voigt, Hurley and Daanen *et al.*, “Whole Body Scanners,” *Displays* 19, 111-120 (1998) (“Daanen”).

Ground 5: Claims 32 and 36 under 35 U.S.C. § 103 as unpatentable over Voigt, Crampton and PCT publication no. WO 99/56249 (“Dye”).

Canfield has failed to establish by a preponderance of the evidence as required by 35 U.S.C. § 316(e) that any of the instituted claims are unpatentable.

Melanoscan also maintains that the Petition is barred by 35 U.S.C. § 315(a), and that the Board lacks jurisdiction to conduct this IPR.

¹ The Board’s institution decision listed claim 88 under Ground 2. Melanoscan is proceeding with the understanding that the Board intended claim 11, not claim 88, as set forth in the Petition.

Accordingly, the Board should uphold the patentability of all claims in this IPR.

II. THE PETITION IS BARRED BY 35 U.S.C. 315(A) AND THE BOARD LACKS THE JURISDICTION AND AUTHORITY TO CONDUCT THIS IPR.

Melanoscan respectfully maintains that Canfield's Petition is barred by 35 U.S.C. § 315(a), and thus the Board lacks jurisdiction to conduct this IPR, for all of the reasons Melanoscan set forth in its POPR (Section III). Accordingly, the Board should terminate this IPR and uphold the patentability of all instituted claims.

III. THE CHALLENGED CLAIMS ARE PATENTABLE.

A. The Invention and the '748 Patent.

The development of the invention and the '748 patent are discussed in detail in the POPR Sections III. A and B, and the testimony of the inventor, Dr. Rhett Drugge, to which, for brevity, the Board is respectfully referred. *See* Ex. 2010.

In brief, Dr. Drugge's invention, among other things, addressed several deficiencies in the detection, diagnosis and treatment of skin cancers at the time of the invention. Exs. 1001 1:25-50²; 2010 ¶¶ 12, 14-15. Early detection and diagnosis is critical for treatment and increased chance of survival. Exs. 1001 1:30-32, 62-65, 3:24-25; 2010 ¶¶ 13, 15.

² The '748 patent is cited by column:lines format.

Prior to the invention, patient examination usually consisted of visual inspection of the skin, or of photographs of the skin by a practitioner. Exs. 1001 1:54-56, 1:67-2:3, 2:27-30, 2:39-61; 2010 ¶¶ 16-18. Photographs were also used to compare the patient's current condition to a previously-recorded condition, which is an important tool because a key indication of cancer is a change in a mole, lesion or other skin feature over time, e.g., size, shape, color, etc. Exs. 1001 3:1-3, 6:15-17; 2010 ¶ 19.

Dr. Drugge sought to address several shortcomings of then-existing examination and imaging techniques. Exs. 1001 1:51-53, 2:59-61, 3:29-31; 2010 ¶¶ 15, 16, 20, 28-30. He recognized the need for repeatable imaging conditions including, among other things, lighting, image scale, and angle relative to the camera, to accurately assess whether a clinically significant change had occurred. Ex. 2010 ¶¶ 21-27; *see* Ex. 1001 6:6-18.

Dr. Drugge's total immersion photography ("TIP") system claimed in the '748 patent addressed such shortcomings. *Id.* ¶ 32. The TIP system includes, *inter alia*, an enclosure or other structure defining a specified imaging position and a plurality of imaging devices and light sources to illuminate the subject, where each imaging device is located a predetermined distance relative to the specified imaging position. Exs. 1001 4:24-46, 5:3-5, 18:21-25, Abstract, Figures; 2010 ¶ 32. The system can substantially simultaneously image multiple portions, if not

essentially all, of the patient, from multiple perspectives and angles, addressing that the human body has many and convoluted surfaces. Exs. 1001 1:7-10, 3:15-16, 4:24-46, 5:3-14; 2010 ¶¶ 32, 33. This, in combination with the light sources, reduces effects of shadowing and inconsistent lighting, and allows accurate and precise measurements. Exs. 1001 3:15-18, 3:23-28, 4:39-56, 6:6-10, 6:21-22, 17:4-6, 20:60-62, Figures; 2010 ¶¶ 32, 37-38.

Compared to the prior art, TIP reduces imaging time, increases accuracy, and provides repeatability of imaging over time. Exs. 1001 3:11-15, 6:4-17, 17:33-35, 17:43-47, 17:62-65; 2010 ¶¶ 35-37. TIP thus enables clinically-relevant evaluation of imaged features by comparing images taken over time. Exs. 1001 6:15-17, 2010 ¶ 40. TIP's value has been proven by real-world successes, such as detecting the world's smallest melanoma, and the advancement of patient health and outcomes. Exs. 1001 1:51-53, 1:62-65, 3:11-15, 3:24-28; 2010 ¶¶ 41-42.

B. The Level of Skill in the Art.

As Dr. van der Weide has testified, a person of ordinary skill in the art at the time of the invention ("POSA") would have at least an associate's degree (two-year) in photography or related disciplines with two years' experience in digital photography and use of computers for collecting, manipulating and viewing images. Ex. 2019 ¶ 28. The '748 patent relates to, *inter alia*, imaging a person or portion thereof. Ex. 2019 ¶¶ 29, 33-35; *see also* Pet., 5. A person having the level

of skill as testified by Dr. van der Weide would understand the principles of obtaining those images, including the imaging devices that could be used. Ex. 2019 ¶ 29. Such a person would also understand which lighting could be used to obtain those images. *Id.* This includes the different types of light schemes by which a subject can be illuminated, the uses and applications of those schemes, and the limitations of those schemes. *Id.* Such a person would also understand the systems and procedures for collecting, manipulating and viewing those images, including with the use of computers, so that the images could be utilized. *Id.*

Canfield's expert Dr. Muller opines that a POSA would require a more advanced degree (a four-year degree) in higher scientific disciplines (e.g., physics, electrical engineering), along with post-graduate experience. *See Pet.*, 5. However, such an advanced education and experience is beyond the level of skill a POSA would possess. Ex. 2019 ¶ 30. One would not require that elevated level of skill to understand and use the technology for acquiring images of a person for measurements, including the range of cameras that can be used, the wide variety of illumination types available for lighting a subject, what instrumentations or sensors can be used for monitoring or measuring illumination, and how to collect, manipulate and view images from cameras by using computers. *See id.* 29-30. Further, the '748 patent indicates that persons in the field of body photography before the invention, even for dermatologic medicine, were photographers. Exs.

1001 1:42-43, 1:1:51-53, 1:59-61, 3:10-23; 2019 ¶ 30. Nonetheless, Dr. van der Weide has testified that his opinions hold even if Canfield’s definition of a POSA applies. Ex. 2019 ¶ 31.

On the other hand, Dr. Muller bases his opinion on only his definition of a POSA. As Dr. Muller’s opinion incorrectly attributes extraordinary knowledge and skill to a POSA in addressing the question of whether that POSA would find the invention unpatentable, Dr. Muller’s opinions should be disregarded because he analyzed obviousness from a wrong, and overly strict, perspective. *See* Fed. R. Evid. 702.

C. Claim Construction.³

Melanoscan maintains its positions regarding claim construction set forth in the POPR (Section III. D), including:

1. “Specified Imaging Position”

“A specified imaging position” means an imaging position that is defined by the enclosure “specifically or definitively.” *See* Exs. 1001 5:3-5; 18:36-44; 19:37-48; 20:34-44, 21:40-44; FIGS. 1, 3, 5 (markings at respective center 108, 308); 2012; 2019 ¶ 36.

³ These constructions use the Office’s “broadest reasonable interpretation standard.” 37 C.F.R. § 42.100(b). Should the Office’s proposed regulations replacing this standard with that employed by federal district courts come to apply to this proceeding, *see* 83 Fed. Reg. 90, 21221 (May 9, 2018), Melanoscan reserves the right to modify its constructions.

2. “Second means . . . for specifying an imaging position”

This term means, according to its ordinary and customary meaning, the markings at the center 108, 308 of the respective device/system 100, 300 shown in FIGS. 1, 3, 5 and equivalents thereof. *See* Ex. 1001 5:3-5; 18:36-44; 19:37-48; 20:34-44; 21:40-44; FIGS. 1, 3, 5; 2019 ¶ 42; 35 U.S.C. § 112(6).

3. “Each Imaging Device/Mean Is Located A Predetermined Distance Relative To The Specified Imaging Position”

“Each imaging device/means is located a predetermined distance relative to the specified imaging position/second means,” according to the ordinary and customary meaning, means that each imaging device/means is located (*i.e.*, is situated in a particular place or set in a particular spot) a predetermined distance (*i.e.*, a distance that is determined or established in advance) relative to the specified imaging position. *See* Exs. 1001 4:42-43 (“With subject placement, the camera array coordinates and distances are known in relation to the subject”), FIGS. 1, 3, 5; 2010 ¶ 32; 2013; 2014; 20; 2019 ¶ 37; 2028 (“locate” means “situate in a particular place”); 2029 (“locate” means “2: to set or establish in a particular spot or position”).

4. “Centerline”

“Centerline” should be construed according to its ordinary and customary meaning. Ex. 2019 ¶ 38.

Canfield contends that it means “a line dividing the imaged object through its center.” Pet., 7. This is incorrect because the claims, which are directed to a device, define the centerline as a structural feature of the “device” defined by the specified imaging position or the second means, which are a structural feature of the device as well. Ex. 2019 ¶ 38. Nowhere do the claims or the specification suggest that the centerline is defined by the object being imaged. *Id.*

The specification text Canfield relies on to assert that the person defines the centerline merely states that the system is sized so that the “person could easily stand at the *center 108 of the device*” (Ex. 1001 18:36-39 (emphasis added)). This statement relates to the size of the device and where the person may stand, not that the person defines the center (or centerline). It also states the center is part of the device, not the person.

5. “First means for receiving and enclosing a person or portion thereof”

This term means an enclosed structure and equivalents thereof and can include an optional doorway and equivalents thereof. *See* Exs. 1001 4:11-16, 4:24-27, 5:3-5, 18:35-36, 18:45-48, 19:5-8, 19:50-54, 20:9-13; 20:46-50; 21:14-16, Abstract, Figs. 1, 3, 5; 2015; 2019 ¶ 41; 35 U.S.C. § 112(6).

6. The “Wherein” Clause

The recitation in claims 1 and 51 from “wherein each . . .” through the end of the claim should be construed according to its ordinary and customary meaning.

See Exs. 1001 1:5-18, 3:47-63, 4:39-46, 5:24-39; 5:63-6:2, 6:63-7:2; 7:10-16, 7:17-34, 7:5-8:3; 1002, 277-78; 2019 ¶¶ 39-40.

Canfield's contention that the device "precisely measures" the features "using" the predetermined distance, coordinates, focal length and resolution (Pet., 8) is incorrect. *See* POPR III.D.6. By the claims' plain wording, each of the plurality of imaging devices/means defines respective coordinates, a respective location/predetermined distance relative to the specified imaging position, and a respective focal length and resolution information, which in combination allow precise measurement of imaged features of a subject at the specified imaging position. The single sentence in the prosecution history, which Canfield misquotes (Ex. 1002, 277-78) does not say that the distance, focal length, distance or resolution information is "used" to make measurements or is input into an equation or algorithm. The sentence is not, especially in context, a "clear and unmistakable" disavowal of claim scope. *See Mass. Inst. of Tech. v. Shire Pharm.*, 839 F.3d 1111, 1121-22 (Fed. Cir. 2016) (prosecution statements must be read in context); *Avid Tech., Inc. v. Harmonic, Inc.*, 812 F.3d 1040, 1045 (Fed. Cir. 2016). *See* POPR III.D.6.

D. Canfield Fails to Meet Its Burden to Prove That Claims 1-5, 8, 11, 30, 33-34, 46 and 51 Are Unpatentable over Voigt and Hurley.

To establish unpatentability of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *See CFMT, Inc. v. Yieldup Int'l*

Corp., 349 F.3d 1333, 1342 (Fed. Cir. 2003) (“no combination of the prior art, even if supported by a motivation to combine, would disclose all the limitations of the claims”); *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974) (obviousness requires a suggestion of all limitations in a claim). A patent claim “is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). “[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *Id.* Accordingly, it is “[Petitioner]’s burden to demonstrate both ‘that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.’” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367-68 (Fed. Cir. 2016) (internal citations omitted); *see also Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1335 (Fed. Cir. 2013) (claims not obvious where reasonable expectation of success lacking, even if one had motivation to combine).

Canfield contends that a POSA would have combined Voigt and Hurley in a particular manner that would provide the invention of independent claims 1 and 51. Melanoscan maintains its position in its POPR (Section IV.E) that a POSA would not have done so. Canfield’s alleged rationales to combine Voigt and Hurley are

flawed. Canfield improperly, in hindsight reconstruction, modifies Voigt with only certain features of Hurley, and the combination of Voigt and Hurley is improper under applicable law. The Board should find that Canfield has not proven claims 1-5, 8, 11, 30, 33-34, 46 and 51 unpatentable under Ground 1 by a preponderance of the evidence.

1. Summary of Voigt

Voigt is directed to an imaging system for measuring and detecting changes in melanoma skin lesions. Ex. 1003, 981.

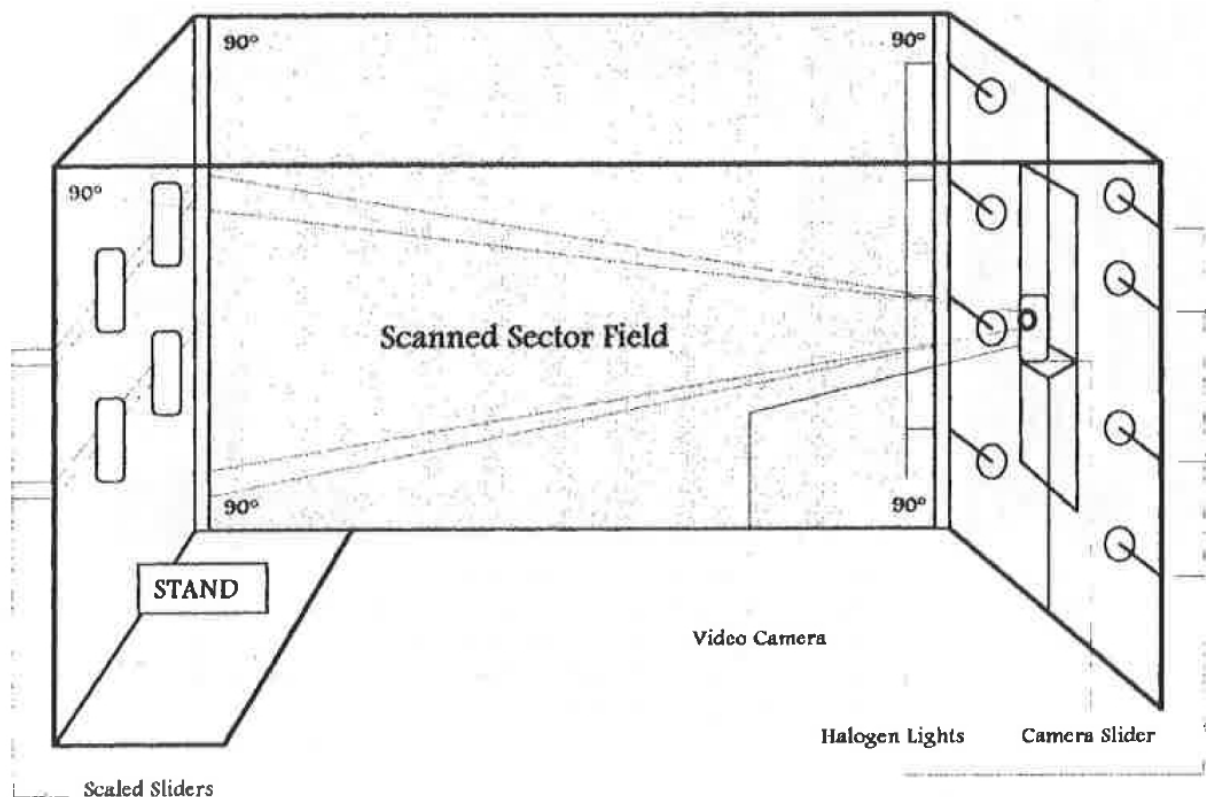


Figure 1. Topodermatographic position framework (schematic). Patient's median standing level (left), median video camera/ bilateral lighting level (right), and scanned sector field (middle) between camera and preset skin-surface area.

A patient is positioned within a position framework on a wall. *Id.*, 982, FIG. 1 (left side). A single video camera is located on an opposite wall. *Id.* (right side). The camera is mounted on a vertical slider at the centerline of the device, which is adjusted to a required vertical height for each patient. *Id.* After positioning the patient and sliding camera, the camera takes an image of the patient, which is used to measure the lesion. *Id.*, 982-83. At a later date, the patient is placed at the same position in the position framework, the sliding camera is set to the previous position, the patient is again imaged with the camera, and the resulting image is used to measure the lesion again. *Id.*

Contrary to Canfield's contentions, Voigt does not recognize the usefulness of Dr. Drugge's invention. Ex. 2019 ¶¶ 47-51. Canfield and Dr. Muller attempt to mislead the Board into thinking that Voigt's mention of "total body photography" relates to the invention. Pet., 29-30; Muller Decl. ¶¶ 116, 133. It does not. In the art, "total body photography" was a known procedure. Ex. 2019 ¶¶ 47-48. It did

involve taking photographs of the entire body, but consisted of taking individual photographs of a part of the body one-at-a-time, with the image containing a scaling object such as a ruler interposed between the camera and the patient's skin, and then—continuously repositioning or re-posing the subject until the entire body was photographed. Exs. 2026, 1239-40; 2019 *Id.* ¶ 48. This is not the invention, in which, *inter alia*, multiple imagers are located at different positions relative to the subject to image the subject. Ex. 2019 ¶¶ 35, 49; *see* claims 1, 51. Total body photography did not involve multiple cameras arranged with respect to the subject, and certainly not with the claimed arrangement. *Id.* ¶ 35.

Canfield and Dr. Muller also mislead the Board by contending that “[t]he ‘748 patent recognizes that total body photo systems are used more widely than medicine, recognizing the use of such systems by clothiers.” Pet. 29-30; Muller Decl. ¶ 138. The ‘748 patent does not make any such statement about total body photography. Ex. 2019 ¶ 35. Instead, the ‘748 patent described *prospective* applications of Dr. Drugge’s invention, which was “Total Immersion Photography” or “TIP,” not “total body photography.” Exs. 1001, 5:60-8:13 (“Below are some examples, but not limited to, in regard to the invention's scope and *intended applications of TIP*” (emphasis added)); 2019 ¶ 35.

The Board should not allow itself to be fooled by Canfield’s and Dr. Muller’s deceptiveness into believing that the ‘748 patent admits or evidences the

relevance of the prior art to the claimed invention. To the contrary, the patent criticizes total body photography. *E.g.*, Ex. 1001 2:40-45 (“Such approaches have also been limited by the need for a “point-and-shoot” photographer”); 2:51-53 (“point and shoot techniques” require “a trained operator”); 2:59-61 (“this approach requires multiple posings by the photographer and the subject that may exceed 30 views in total”); *see* Exs. 2010 ¶ 20; 2019 ¶¶ 35, 50. The ‘748 patent then describes how the invention, *i.e.*, Total Immersion Photography, solves the deficiencies of total body photography. *E.g.*, 1001 3:11-15 (“eliminating the barrier of an available expert photographer”), 6:6-10 (addressing patient movement and modesty factors); 17:43-47 (“may reduce patient time spent in a health care . . . facility”); *see* Exs. 2010 ¶¶ 35, 40; 2019 ¶¶ 35, 50.

Voigt also criticizes total body photography. *Id.* ¶¶ 47-51. Voigt discusses the inability of total body photography and other known “technical procedures” to achieve critical “reproducibility registration conditions” necessary for screening skin lesions of interest over time to detect changes. Exs. 1003, 981 (“[t]hus far, the reproducibility of positioning . . . has been a major technical obstacle that has not yet been mastered successfully”), 986-87; 2019 ¶¶ 33, 46, 48, 52, 53, 66, 81. To “solve the reproducibility problem,” Voigt uses a position framework that fixes the patient’s position using horizontal sliders attached to the rear wall of the device and has adjustable-position camera on the opposing wall. Exs. 1003, 982, 987,

FIG. 1; 2019 ¶¶ 34, 50, 53, 54, 80. The positions of the horizontal sliders and the vertical position of the sliding camera are recorded, and “*identically* re-adjusted” during later imaging so that the positioning of the patient and the camera are reproduced each time. Exs. 1003, 982 (emphasis added), 987, FIG. 1; 2019 ¶¶ 50, 52-54, 80. Thus, the position framework with its horizontal sliders, the vertical adjustability of the camera, and the recording and replication of those settings are critical to reproducibility and accurate measurement. Ex. 2019 ¶¶ 51, 55, 56, 60, 80, 81; *see* Ex. 1003, 981-82, 986-87.

Voigt recognizes the problem of reproducibility but addresses it in a very different manner than the ‘748 patent. Ex. 2019 ¶¶ 33, 50. Voigt uses a rear wall with a position framework and sliders that position the patient (and posture), and adjusting the camera height for the patient. 1003, 982, 987, FIG. 1; Exs. 2019 ¶¶ 34, 50, 52-54, 80. The positions of the sliders and cameras must be recorded and then identically set the next imaging time. *Id.*; *see* Ex. 1003, 981-82, 986-87.

Dr. Drugge’s invention solves the problem by, using claim 1 as an example, using a plurality of imaging devices vertically and laterally spaced from each other on opposite sides of a centerline from each other, where the imaging devices are each located a predetermined distance relative to a specified imaging position and define respective coordinates and said respective predetermined distance relative to the specified imaging position. Ex. 2019 ¶¶ 33, 34, 49. This creates a coordinate

space that allows precise measurements of people or objects located in the space. Exs. 2010 ¶¶ 32-38; 2019 ¶ 34. In this manner, reproducibility is achieved without having to tightly position a patient with sliders against a wall, adjusting the vertical height of the camera, recording the positions of the sliders and camera, and identically readjusting their positions for subsequent imaging. Ex. 2019 ¶¶ 33, 34.

2. Summary of Hurley

Hurley's goal is to create a system for body measurements for made-to-measure apparel. Exs. 1004, 212; 2019 ¶¶ 63, 64, 67, 86.

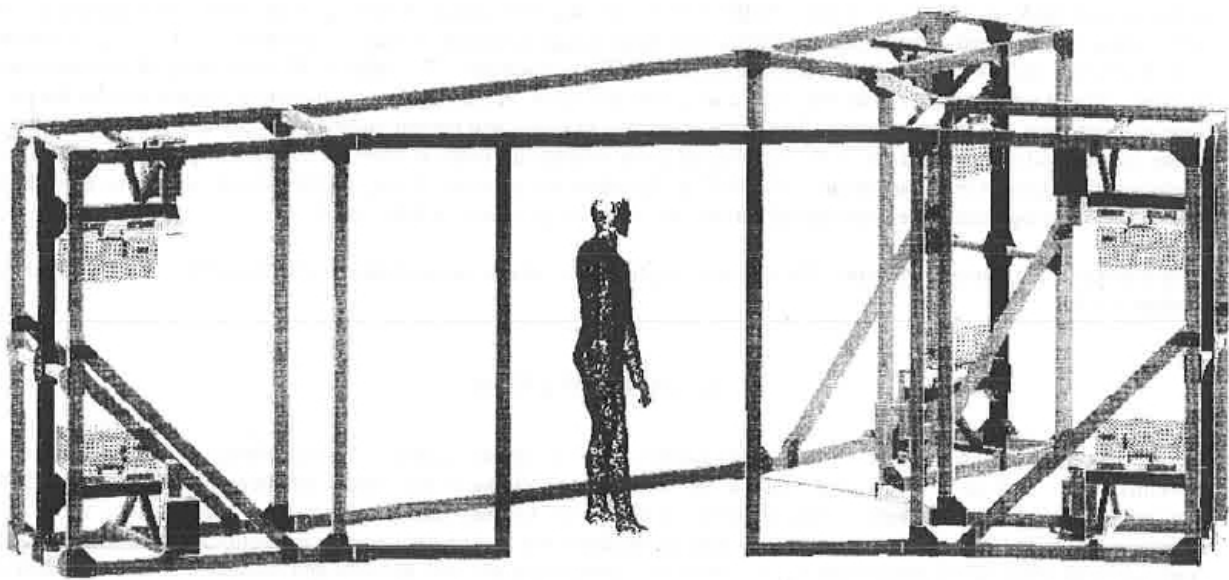


Figure 2.1 Overview of Body Measurement System for made-to-measure apparel.

The system uses three sets of two sensors mounted on a structure, each set mounted at a different viewing angle relative to a person standing within the device. Exs. 1004, 212-13; FIG. 2.1; 2019 ¶ 63. When a person stands in the device, projectors sequentially partially illuminate the person with different light

grating patterns. Exs. 1004, 212-14; FIGS. 2.1, 2.2; 2019 ¶¶ 64, 66. The sensors each image a portion of the person, and the system generates an external outline of the person from the data sets. Exs. 1004, 212-14; FIGS. 2.1, 2.2, 5.1, 5.2; 2019 ¶¶ 65, 72. This external outline does not contain any surface features of the person, such as skin lesions or like features. Ex. 2019 ¶¶ 65, 72; *see* Ex. 1004, Figs. 5.1, 5.2.

Hurley's sensors acquire images in a "round robin acquisition scheme in which "the images . . . are captured in succession." Exs. 1004, 214; 2019 ¶ 66. The scan takes about two seconds for the first grating (1 mm). *Id.* ¶ 66. The scan using the second grating (5 mm) is then performed, taking additional time. Ex. 2019 ¶ 66; *see* Ex. 1004, 214.

Though Hurley's goal is to allow measurement for made-to-measure apparel, Hurley does not state that it achieves that. Hurley states only that the system was "under development," and work was "progressing to extract measurements from the data sets" *Id.*, 212, 223. A POSA would understand from this that, while the authors were perhaps working on extracting measurements, they had not yet successfully done so. Ex. 2019 ¶¶ 66, 88. If they had, they likely would have included results in the article, i.e., examples of successful measurements they had extracted. *Id.* That would be the normal practice. *Id.* ¶¶ 68, 88. That they did not include any results would further lead a

POSA to understand that Hurley had not been shown to provide accurate body measurements, even for clothing. *Id.*

A POSA would understand that Hurley and its technology are quite dissimilar to Voigt. *See Id.* ¶¶ 64-65.

Voigt is directed to locating, assessing and tracking melanomas and other skin lesions, which involves millimeter-scale measurements, and generates high resolution images of the skin for this purpose. Exs. 1003, 981, 984; 2019 ¶¶ 68, 70. Reproducibility of imaging conditions for subsequent measurements is crucial to enable tracking of skin features over time. Exs, 1003, 981-82, 986-87; 2019 ¶¶ 51, 55, 56, 60, 80, 81

Hurley is directed to a completely different endeavor that involves none of the concerns of Voigt. Ex. 2019 ¶¶ 64-65. Hurley is directed to the art of body measurement, which entails creating an outline, silhouette or avatar of the outer surface of a subject, but does not depict any skin features. *Id.* ¶¶ 63, 65, 72; *see* Ex. 1004, 212-14; FIGS. 5.1, 5.2. Hurley seeks to provide measurements for clothing, not millimeter-scale measurements of melanomas and skin lesions. Exs. 1004, 212; 2019 ¶¶ 63, 64, 67, 68, 70, 86. Nor is Hurley concerned with reproducibility over time, because it relates to one-time measurements for clothing. Ex. 2019 ¶ 67 *see* Ex. 1004.

Unlike Voigt, the person stands at no particular position in the device. *See* Exs. 1004, FIG. 2.1; 2019 ¶¶ 67, 86. For this reason, Hurley places a calibration object approximately where the subject will stand in order to “assure correct coverage.” Exs. 1004, 221; 2019 ¶¶ 67, 86.

In contrast to Voigt’s broad-spectrum (white, diffuse) illumination, Hurley uses structured illumination techniques - phase contrast or phase shifting - to create strong contrast bands of light and dark across the subject. Exs. 1004, 212, 214, FIG. 2.2; 2019 ¶¶ 64, 65, 66. A POSA would understand that by using such illumination, it would be infeasible to evaluate skin conditions (e.g., lesions) and make precise measurements of skin features as in Voigt and as claimed in the ‘748 patent. Ex. 2019 ¶¶ 65, 71, 72.

A POSA would also understand that structured illumination techniques are also extraordinarily sensitive to subject movement. *Id.* ¶ 66. While this may not be an issue with respect to measurements for clothing, it is untenable for cancer screening, where the image clarity required at the small scales of melanoma can be destroyed with even slight patient movements. *See Id.* A POSA would recognize that Hurley’s sequential “round robin” acquisition of images would exacerbate the problem of subject movement. *Id.*; *see* Ex. 1004, 214. The acquisition takes several seconds. Ex. 2019 ¶ 66; *see* Ex. 1004, 214. During that length of time, the patient may move, meaning the positioning of the patient relative to the camera,

i.e., image registration, would vary among the images. Ex. 2019 ¶ 66. While this may not be problematic for clothing measurement (though, as discussed above, that had not yet been determined by Hurley’s authors), at the scale and detail required for cancer screening, this poses a high risk of an inaccurate assessment. *Id.* It would also be impossible to recreate the (varied) image registrations in later scans, destroying a key requirement for tracking lesions as Voigt teaches. *Id. see* Ex. 1003, 981-82, 986-87.

Hurley and Voigt thus have disparate purposes, (e.g., detecting the outer edge of a body versus creating an accurate image of the skin), use different techniques (e.g., edge detection versus image pixelization), and have vastly different accuracy requirements. Ex. 2019 ¶¶ 64, 65, 68, 70; *see* Ex. 1003, 985 (“discussing dividing images into pixels”). A POSA would understand that Hurley is entirely unsuitable for imaging, viewing, and assessing skin conditions as in Voigt, as well as tracking them over time. Ex. 2019 ¶ 66.

3. Modifying Voigt’s Adjustable Camera to Be a Fixed Position Camera Would Render Voigt Unsatisfactory for Its Intended Purpose.

An invention is not obvious if the proposed modification of the prior art would render it unsatisfactory for its intended purpose. *See DePuy Spine, Inc. v. Metronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326-27; MPEP § 2143.01(V) (citing *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984)). Canfield alleges, *inter alia*,

that a POSA would replace Voigt's vertically-adjustable camera with non-adjustable, fixed-position cameras as present in Hurley. Pet., 30. A POSA would not do so, because such would render Voigt unsatisfactory for its intended purpose. Ex. 2019 ¶¶ 60-61; *see DePuy Spine*, 567 F.3d at 1326-27.

Voigt emphasizes the need to address “the technical problem of insufficient registration reproducibility” in systems “[u]sing the computer as a diagnostic tool for the image analysis of sequentially captured skin surface images” Exs. 1003, 981; 2019 ¶¶ 33, 46, 48, 52, 53, 66, 81. Voigt points out that in prior systems:

[Q]uantitative assessment of multiple skin surface alterations and their dynamic changes over time is nearly impracticable because of inadequate objective registration modalities. . . . In oncology, the clinical need to detect, measure, and follow skin-surface changes over time or during therapy is **influenced crucially by the inevitable requirement to obtain** comparable information based on **reproducible registration conditions**. Thus far, the **reproducibility of positioning skin-surface areas for** digitized videographic **imaging** has been a **major technical obstacle** that has not yet been mastered successfully.

Ex. 1003, 981 (emphasis added). To overcome this “major technical obstacle” and “provide reliable registration reproducibility,” Voigt teaches the use of “a specifically designed position framework.” *Id.*, 981, 982, 987; Ex. 2019 ¶¶ 34, 50, 53, 54, 80. Figure 1 (reproduced again below) shows that the “position framework” consists of the following: “Patient’s median standing level (left) [including ‘Scaled Sliders’], median video camera/bilateral lighting level (right) [including ‘Camera Slider’], and scanned sector field (middle) between camera and preset skin-surface area.” Exs. 1003, 982; 2019 ¶ 53.

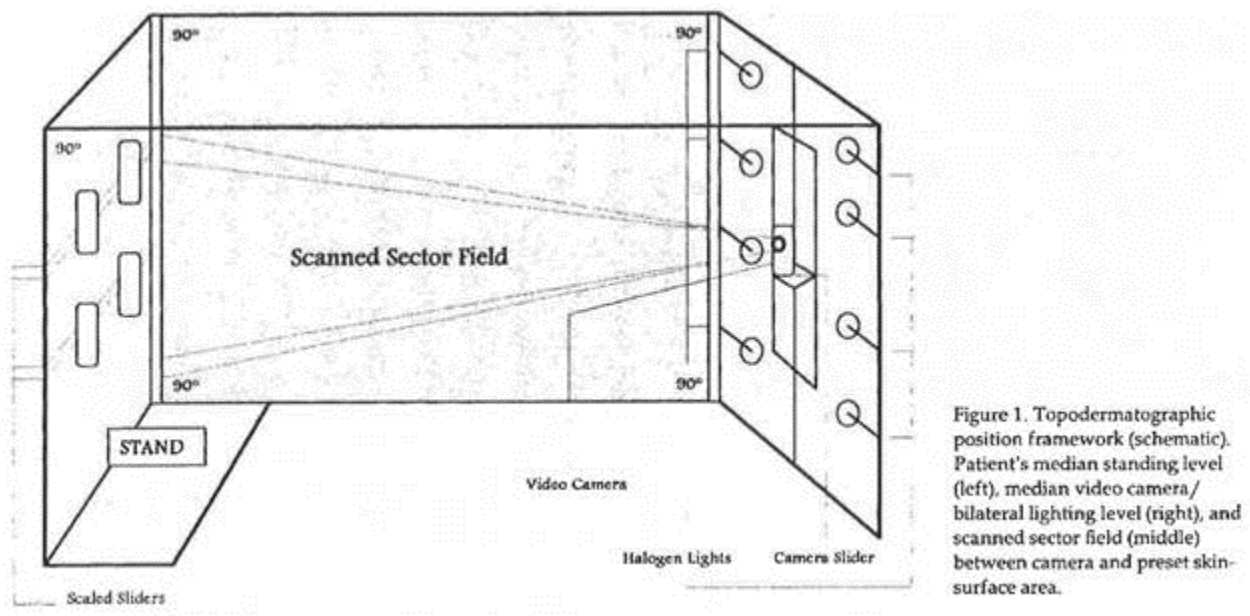


Figure 1. Topodermatographic position framework (schematic). Patient's median standing level (left), median video camera/bilateral lighting level (right), and scanned sector field (middle) between camera and preset skin-surface area.

Voigt describes with reference to Figure 1 how the position framework was used to register the camera and its scanned sector field with the target registration area of the patient as follows:

- First, “the patient's standing position was fixed at the thoracic and iliac level by symmetrically fitting the lateral extent of the trunk shape into horizontally adjustable scaled sliders of the position framework, the positions of which were recorded and identically readjusted for serial follow-up measurements.”

- Second, “the vertical height of the video camera was adjusted on a scaled-camera slider, and its framework position was recorded.”

Exs. 1003, 982; 2019 ¶¶ 50, 53, 54, 60, 80.

As can be seen, the purpose of Voigt’s position framework is to provide “reliable registration reproducibility” by (i) fixing the patient’s standing position (which is “recorded and identically readjusted for serial follow-up measurements”), and also (ii) adjusting the “vertical height of the video camera . . . on a scaled-camera slider” (where “its framework position [is] recorded” for serial follow up as well) so that the camera and its scanned sector field is registered with the target registration area of the patient.⁴ Ex. 2019 ¶¶ 33, 52, 53, 54; *see* Ex. 1003, 982.

⁴ Voigt’s description of “reliable registration reproducibility” describes the ability to reliably and reproducibly register, *i.e.*, adjust so that they correspond exactly in position or are in proper alignment, the adjustable scaled sliders and the scaled-camera slider of the position framework. Exs. 1003, 982; 2022-25; *see* Ex. 2019 ¶ 53.

In sum, Voigt teaches that (i) “the clinical need to detect, measure, and follow skin-surface changes over time . . . is influenced crucially by the inevitable requirement to obtain . . . reproducible registration conditions” (*id.* at 981); and (ii) these crucial conditions are achieved by using “the specifically designed position framework.” Specifically, the position framework fixes the standing position of the patient with the horizontally-adjustable scaled sliders, and then adjusts the vertical height of the camera with the scaled-camera slider in order to register the scanned sector field of the camera with the target registration area of the patient. Exs. 1003, 981, 987; 2019 ¶¶ 33, 50, 52-54, 60, 80.

In practice, patients are of different heights, and the camera height needs to be adjustable to accommodate those different heights. Ex. 2019 ¶ 54; *see* Ex. 1003, 982. Importantly, though, the camera height must be re-adjusted to that same height at later imaging of that patient to reproduce the previous registration conditions, e.g., so the image boundaries and the anatomic match points are identical to that in previous imaging. Exs. 1003, 981-982, 986-87; 2019 ¶ 54. Yet in certain circumstances, such as when the patient is a child and grows between imaging sessions, the camera would *not* be adjusted to the same exact height as previously. Ex. 2019 ¶ 55. A POSA would understand this, and thus that the vertical adjustability of Voigt’s camera is vital for reproducing registration

conditions as needed for accurate measurements of skin lesions and melanomas. *Id.* ¶ 51, 55, 56, 60, 80, 81; *see* Ex. 1003, 981-82, 986-87.

Conversely, a POSA would understand that substituting fixed position cameras as in Hurley for Voigt's adjustable camera would not provide "reproducible registration conditions" that "crucially" influence the ability to accurately detect and measure skin-surface changes over time. Ex. 2019 ¶¶ 60, 67. Nor does Hurley suggest that its fixed cameras would provide such registration reproducibility. *Id.* ¶ 67. Hurley does not require registration reproducibility because it does not involve measurement comparisons over time. *Id.* ¶¶ 66, 67.

The proposed modification would prevent the position framework from vertically adjusting the camera and, in turn, registering the camera and its scanned sector field with the target registration area of the patient. Ex. 2019 ¶ 67. Instead, the fixed cameras would define fixed scanned sector fields, where each scanned sector field would target the same vertical location regardless of the patient and without reference to, or registration with the target registration area of each patient. *Id.* ¶ 67. Accordingly, as a POSA would necessarily recognize, the proposed modification would not be able to achieve, and would render Voigt inoperable for

its intended purpose. *Id.* ¶¶ 60, 61. The claimed invention is thus not obvious for these reasons.⁵ *See DePuy Spine*, 567 F.3d at 1326-27; MPEP § 2143.01(V).

4. Modifying Voigt’s Adjustable Camera to Be a Fixed Position Camera Would Improperly Change the Principle of Operation of Voigt.

The claimed invention would not have been obvious if the proposed modification of Voigt would change its principle of operation. *See* MPEP § 2143.01(VI) (citing *In re Ratti*, 270 F.2d 810, 813 (C.C.P.A. 1959)). As discussed above, Voigt teaches that obtaining “reproducible registration conditions” crucially influences the ability to detect, measure and follow skin-surface changes over time, and that this result is achieved by both (i) fixing the position of the patient with the horizontally-adjustable scaled sliders and (ii) adjusting the vertical height of the camera on its scaled-camera slider to thereby reproducibly register the camera and its scanned sector field with the target registration area of the patient.⁶ Exs. 1003, 981-82, 986-87; 2019 ¶¶ 33, 50, 52, 53, 54, 60, 67, 80. A POSA would necessarily understand that substituting Hurley’s fixed cameras for Voigt’s vertically-

⁵ As a POSA would recognize the modification would render Voigt inoperable, there would also be no reasonable expectation of success required for obviousness. *See Intelligent Bio-Sys*, 821 F.3d at 1367-68; *Broadcom Corp.*, 732 F.3d at 1335; MPEP § 2143.02. The fact that Voigt could be modified does not alone render the claims unpatentable. *See* MPEP §§ 2143.01(III), (IV).

⁶ Voigt further teaches that his system enables “a median registration accuracy of > 95%” and “provides a comprehensive, reproducible, and quantifiable diagnostic access to any skin lesion distribution relative to time changes.” Ex. 1003, 987.

adjustable camera would change the principle of operation of Voigt. Ex. 2019 ¶ 67. Voigt teaches the use of a vertically adjustable camera, whereas the proposed combination would eliminate this feature and use vertically-fixed, non-adjustable cameras instead. *Id.* ¶ 67. This would require a substantial reconstruction and redesign of the elements shown in Voigt and a substantial (yet unidentified) change in the procedures used to accurately and reproducibly image patients over time, which would be a fundamental change in the basic principles under which Voigt was designed to and does operate. *Id.* ¶ 67; *see In re Ratti*, 270 F.2d at 813. Indeed, using fixed cameras to image is the exact opposite principle of operation of adjusting a movable/adjustable camera for imaging. *Id.* ¶ 67; *see In re Ratti*, 270 F.2d at 813 (reversing obviousness where the invention relied on resiliency and the prior art taught rigidity, which was “a change in the basic principle under which the [primary reference] construction was designed to operate” (alteration in original)); MPEP § 2143.01(VI).

The claims are not obvious for these reasons also.

5. A POSA Would Not Have Had a Reason to Modify Voigt.

There was also no technical, economic or other reason at the time of the invention for a POSA to substitute Voigt’s single, adjustable camera with multiple fixed cameras as Canfield contends. *See KSR*, 550 U.S. at 419.

Though Voigt’s single (but adjustable) camera system requires repositioning of a patient to acquire additional views of the patient, Voigt does not describe any deficiencies in its system such that a POSA would seek to modify it. Ex. 2019 ¶ 61. To the contrary, Voigt teaches that the adjustability of the camera is necessary to achieve “reproducible registration conditions” and thus “crucially” influences the ability to detect and measure skin-surface changes over time. *Supra* at Section III.D.3. Nor does Hurley describe any deficiencies with single camera systems that would provide a reason to modify Voigt. *Id.* ¶ 67. Hurley does not mention single camera systems at all, much less that adding more cameras would address deficiencies in those systems. *Id.* ¶ 67. The mere presence of multiple cameras in Hurley is not sufficient reason to modify Voigt. *See KSR*, 550 U.S. at 419 (the existence of the elements in the prior art does not render an invention obvious).

Nor does Hurley’s use of multiple cameras for producing body outlines for clothing measurements suggest that multiple cameras would be beneficial or useful for cancer detection systems. Ex. 2019 ¶ 44, 45, 65, 67; *see Hynix Semiconductor Inc. v. Rambus Inc.*, 645 F.3d 1366, 1353 (Fed. Cir. 2011). As discussed above and testified by Dr. van der Weide, the differences between Voigt’s cancer screening system and Hurley’s body outline system would mean a POSA would not apply technology from Hurley to Voigt. Ex. 2019 ¶ 44, 64, 65, 67.

In addition, a POSA would understand from Hurley's express teachings that adding multiple cameras would require that the imaging be done sequentially in round-robin fashion. *Id.* ¶ 66. A POSA would understand, though, again from Hurley's express teachings as to the time the imaging takes, that such is too long and unsuitable for imaging the skin for cancer screening. *Id.* A POSA would understand that the high risk of patient movement according to the teachings of Hurley would render the skin images unusable. *Id. see also Intelligent Bio-Sys*, 821 F.3d at 1367-68 (no reasonable expectation of success); *Broadcom Corp.*, 732 F.3d at 1335. A POSA would therefore not add additional cameras to Voigt for these reasons also. Ex. 2019 ¶ 66.

Conversely, Canfield's rationales for modifying Voigt are flawed. Canfield contends that a POSA would add more cameras to Voigt in order to cover the entire body without repositioning, avoid shadowing or shading, and to reduce time to scan a whole body. Pet., 30. However, none of these results would be achieved by adding more cameras to Voigt. Ex. 2019 ¶¶ 33, 50, 51, 56, 57, 58, 65. The horizontally-adjustable, scaled sliders in Voigt's position framework (which Canfield contends would remain in a combination of Voigt and Hurley) would block or occlude portions of the patients' skin being imaged. *Id.* This is so because the sliders would necessarily be located between the skin and one or more cameras imaging the person. *Id.* ¶ 56. Voigt's rear wall would certainly block the camera

located “behind” or lateral to the person, where Canfield alleges a POSA would place a camera in view of Hurley’s alleged teaching of such. *Id.* ¶ 57. Even if not outright blocking the skin surface, the rear wall and sliders mounted thereon would cast shadows onto the skin surface, which would prevent accurate and complete imaging. *Id.* ¶¶ 50, 56, 57, 58; Ex. 2010 ¶ 21; *see* Ex. 1001 6:6-10. Therefore, one would still need to reposition the patient to scan the whole body, the time to do so would not be reduced, and shadowing and shading would not be eliminated. Ex. 2019 ¶ 56.

As for such shadowing/shading, Hurley does not teach that multiple cameras reduce shading. *Id.* ¶ 65. Dr. Muller relies on Daanen for this. Muller Decl. ¶¶ 120, 141. However, Daanen is not asserted as a basis for this ground, and Dr. Muller’s testimony should be disregarded.

Further, none of the systems discussed in Daanen include patient positioning frameworks as in Voigt. Ex. 2019 ¶ 90. Daanen’s comment regarding shading does not refer to systems where a physical structure is present between the camera and the patient and causes shadowing/shading. *Id.* ¶ 90. A POSA would understand this, and thus not use multiple cameras in Voigt to try to avoid such shading. *Id.* ¶ 95.

The occlusion and shadowing problems with Canfield’s alleged combination would remain even if Voigt’s positioning framework were modified as Dr. Muller

contends. *Id.* ¶ 57. Dr. Muller contends that Voigt’s rear wall could be removed, and a POSA would understand that sliders could then be attached to the “existing outer framework” or to the stand. Muller Decl. ¶ 125. This is incorrect.

As a first matter, Dr. Muller’s proposed modifications to Voigt’s positioning system do not, as they must, derive from the prior art, nor does Dr. Muller or Canfield contend that they do, much less identify where the prior art suggests such. Ex. 2019, ¶ 57; *see CFMT*, 349 F.3d at 1342. Canfield’s contentions lack any basis. Voigt does not even disclose an “outer framework” to which the sliders allegedly could be attached. Ex. ¶ 57. Therefore, a POSA would not modify Voigt’s position framework as Dr. Muller contends. *See id.* Dr. Muller’s contentions are an impermissible hindsight attempt to shoehorn the prior art into the invention. *See KSR*, 550 U.S. at 421 (cautioning against hindsight).

Regardless, such modifications would still result in the sliders themselves, blocking the patient’s skin, as well as the structures attaching the sliders to the “outer framework” or the stand. Maintaining any of Voigt’s positioning framework, then, would prevent the entire body from being imaged at one time, require the patient to be repositioned to image areas of the body blocked by the positioning structure, and cause shadowing and shading.

The proposed combination would even render Hurley unsatisfactory for its intended purpose to provide clothing measurements. *Id.* ¶ 65; Ex. 1004, 212;

DePuy Spine, 567 F.3d at 1326-27. The positioning system structure would block parts of the body, preventing measurements from being made of those parts. Ex. 2019 ¶ 65. Further, the Hurley system, being limited to edge detection and body outlines would consider the structures to be part of the body, resulting in highly inaccurate clothing measurements. *Id.*

Canfield's proposed combination would thus fail to achieve the purposes of its alleged rationales. *See* Ex. 2019, ¶¶ 33, 50, 51, 56, 58, 65.

The only way to avoid these problems would be to completely remove Voigt's position framework so that it would not occlude and/or shadow parts of the body. *Id.* ¶ 51. Such a system, though, would lack the claimed specified imaging position/second means, a centerline defined thereby, and all the limitations related to a specified imaging position or a centerline. Ex. 2019 ¶¶ 67, 86; *see also* Section III.F, *infra* (discussing Hurley and its lack of a specified imaging position); POPR Section III.E.3. The system would not provide the claimed invention. *See CFMT*, 349 F.3d at 1342 (invention not obviousness where combination fails to teach a claim element).

Such removal would also render Voigt inoperable and/or unsatisfactory for its intended purpose. *See DePuy Spine*, 567 F.3d at 1326-27; MPEP § 2143.01(V); *see also* POPR Section III.E.5. As discussed above, and acknowledged by the Board in its institution decision (Paper 15, 20), Voight teaches that this structure is

critical to provide the needed reproducibility for monitoring and measuring melanomas. Ex. 2019 ¶¶ 52, 53, 54, 55, 56, 57. A POSA would understand that, without this structure, Voigt would not function as needed. Ex. 2019 ¶ 57; *see DePuy Spine*, 567 F.3d at 1326-27; *see also Intelligent Bio-Sys*, 821 F.3d at 1367-68 (no reasonable expectation of success).

This is further so because, as discussed in Section III.D.2, *supra* a POSA would read Hurley as not yet having successfully extracted accurate measurements from the imaging. Ex. 2019 ¶¶ 68, 88. Even if Hurley did work for clothing measurements, a POSA would understand that the lack of Voigt’s positioning system would not allow accurate measurements at the small scale required for melanomas and skin lesions. *Id.* ¶¶ 52-57. This is despite that the proposed modified system would have more cameras than Voigt. *Id.* ¶ 57. The additional cameras would not overcome the lack of Voigt’s positioning system. *Id.*

This holds even if Hurley has a “specified imaging position” as Canfield contends. Voigt is clear that its positioning framework, with its horizontal sliders that fix the patient position “at the thoracic and iliac level” to prevent axial and transversal spinal flexion, is needed to obtain the necessary precise, repeatable positioning of the patient. Exs. 1003, 982, 987; 2019 ¶¶ 50, 52-57, 60, 80. A POSA would understand that, even if in Hurley the person stands at a particular location, the lack of a structure for fixing the person’s thoracic and iliac regions

would allow unacceptable axial and transversal spinal flexion. Ex. 2019 ¶ 57; *see* Ex. 1004, FIG 2.1. A POSA would therefore still possess no reason to believe that a system without Voigt's position framework would allow imaging and assessment of cancers and lesions. Ex. 2019 ¶¶ 52-57.

Such removal would also improperly change the principle of operation of Voigt. *See In re Ratti*, 270 F.2d at 813; MPEP § 2143.01(VI). As discussed above, Voigt images melanomas and lesions on the skin using the principle of operation of repeatedly precisely registering the selected target region of the patient and the camera by, in addition to adjusting the vertical position of the camera, placing the patient against the rear wall using horizontal sliders, recording the positions of the sliders (and the camera), and identically adjusting and registering them during future imaging. Exs. 1003, 982, 987; 2019 ¶¶ 33, 50, 52-54, 60, 80. Eliminating the sliders, the recordation of their position, and re-adjustment to the same position during subsequent imaging would necessarily require a different principle of operation to image the lesions and melanomas. Ex. 2019 ¶ 57 (Voigt would need to function differently). Of course, the lack of Voigt's position framework in Hurley is of no concern in Hurley because it provides only body silhouettes, not images of tiny melanomas, and it does not purport to be suitable for imaging, assessing and tracking skin cancers. *Id.* ¶¶ 63-

65. However, it would be a prohibitive concern to a POSA in modifying Voigt. *Id.* ¶¶ 33, 50, 52-57.

Canfield also contends one would add more cameras to increase resolution of the imaged subject. However, a POSA would instead use a single camera with increased resolution as needed to avoid the unnecessary additional cost and complexity of adding more cameras. *Id.* ¶ 61; *see Hynix Semiconductor*, 645 F.3d at 1353 (“the fact that a combination is expected to increase cost has some bearing on the obviousness of that combination”). Cost aside, multiple cameras, unlike a single camera, for example, must be aligned with each other and that alignment must be maintained to image properly. Ex. 2019 ¶ 61. Indeed, Crampton teaches that a single higher resolution camera can be better than several, less expensive, lower resolution cameras, and expressly prefers single-camera layouts. Exs. 1006, 9-10, 13; 2019 ¶ 78.

Further, Canfield, through Dr. Muller, relies on Daanen for this alleged rationale. Muller Decl. ¶¶ 119, 139. Daanen is not asserted as a basis for this ground, and Dr. Muller’s testimony should thus be disregarded. Regardless, Daanen’s comment on “resolution” was in reference to a laser stripe body outline system. Ex. 2019 ¶ 93; *see* Ex. 1005, 115. As discussed in Sections III.E.1 and III.F.2, *infra*, a POSA would understand that laser stripe scanning is entirely unsuitable for skin cancer screening, and “resolution” in the context of laser stripe

scanning is different from the “resolution” of the skin images used in Voigt. Ex. 2019 ¶ 71, 73, 93, 94; *see also Hynix Semiconductor*, 645 F.3d at 1353 (obviousness requires evidence that modification would be beneficial).

Canfield’s further rationale of avoiding maintenance due to durability issues of a single moving camera as opposed to multiple fixed cameras (Pet., 30) is also flawed. Ex. 2019 ¶ 61. Neither Hurley nor Voigt teach or suggest this. *Id.* ¶¶ 61, 67. Again, Canfield and Dr. Muller improperly rely on Daanen for this alleged rationale, which is not asserted in this ground. *See Muller Decl.* ¶¶ 121, 143.

Canfield’s reliance on Daanen is nonetheless misplaced. Daanen relates to cameras that move during the imaging itself. Ex. 2019 ¶ 91; *see* Ex. 1005. In Voigt, the camera’s vertical position is adjustable to reproduce prior imaging conditions, but does not move during imaging. Exs. 1003, 982; 2019 ¶ 60. Daanen’s comment is not applicable to Voigt’s camera, nor would a POSA think that it is. Ex. 2019 ¶ 91. A POSA would understand that Voigt’s camera does not present maintenance and durability issues as do cameras that move during imaging, often rapidly. *Id.* ¶ 91; Ex. 1005 (device scanning time of a couple of seconds or less).

For the reasons discussed above, a POSA would not modify Voigt to include additional cameras, and Canfield’s rationales do not support doing so.

E. Canfield Fails to Meet Its Burden to Prove That Claims 1-4, 8, 11, 30, 33-34 and 51 Are Unpatentable over Voigt And Crampton.

Canfield contends that Voigt contains all the limitations of the independent claims except for the recited plurality of imagers/imaging means. Pet., 47. Canfield contends that this is disclosed in Crampton, and it would be obvious to incorporate multiple cameras as in Crampton into the Voigt device for the same reasons given for combining Hurley with Voigt. *Id.*, 52-53. Canfield is incorrect for the reasons discussed below. The Board should find that Canfield has not proven these claims unpatentable under Ground 2 by a preponderance of the evidence.

1. Summary of Crampton

Crampton is directed to kiosks that use cameras to image a person and create an avatar of that person. Exs. 1006, 1, 4; 2019 ¶¶ 70, 72. Sensors capture data points regarding the external surface of the person, and from the data points, a computer generates an avatar. Exs. 1006, 1, 3-4, 7-8; 2019 ¶ 70. That is, Crampton does not create an actual image of the person, but merely creates a graphical representation of the silhouette or outer surface of the person in the form of a “closed, texture mapped, 3D polygonal mesh Avatar.” Exs. 1006, 8; 2019 ¶¶ 70, 72. Thus, unlike Voigt but like Hurley, Crampton is not directed to imaging skin surface features such as skin lesions and melanomas, and its avatar does not include such surface features. Ex. 2019 ¶¶ 70, 72. As with Hurley’s body outline,

a POSA would understand that Crampton's avatar cannot be used to image, view or assess skin features. Nor is Crampton directed to tracking changes over time. *Id.* Also unlike Voigt, which uses a video camera, Crampton uses "static" cameras, meaning they take "still" or single-frame images, not video. Exs. 1006, 7; 2019 ¶ 71.

Crampton discloses two embodiments. Embodiment 1 (Figures 1-6) uses a "laser stripe" structured illumination data capture method, which is described as "[t]he main data capture method." Exs. 1006, 7; 2019 ¶ 71. Sensors 57 are located on moveable linear axes 50a, 50b driven by a motor. Exs. 1006, 7, 8, FIGS. 4-6; 2019 ¶ 71. The sensors 57 each contain lasers 55, that each generate a laser stripe 51, 52, and cameras 53, 54. Exs. 1006, 7, 8, FIGS. 4-6; 2019 ¶ 71. During scanning, laser stripes 51, 52 are sequentially projected upon the person as the sensors 57 (including the cameras 53, 54) are moved along the axes 50a, 50b. Exs. 1006, 7, 8, FIGS. 4-6; 2019 ¶ 71. The cameras 53, 54 sequentially capture an image of each stripe on the person as the sensors move. Exs. 1006, 7, 8, FIGS. 4-6; 2019 ¶ 71. The resulting data set is then converted into an avatar. Exs. 1006, 8-9; 2019 ¶ 71.

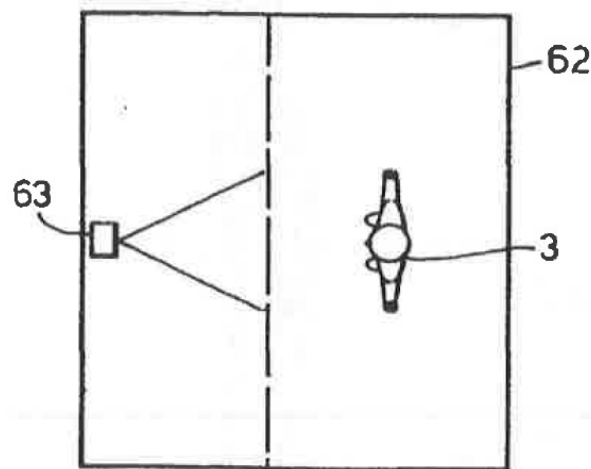
Laser illumination is particularly unsuitable for imaging skin features such as melanomas because it constitutes a single wavelength of coherent light. Ex. 2019 ¶ 73. The image would contain only the color of the laser, so the image

would not contain the actual colors or shades of the skin surface and features. *Id.* Without such colors/shades, it would be effectively impossible to even see the features of interest in an image. *Id.* The color(s)/shade(s) of the skin surface are also vital because they themselves are an important diagnostic tool to identify, distinguish and assess skin features. *Id.* Changes in color(s)/shade(s) over time also indicate changes in the feature, and are used for clinical assessment, e.g., melanoma progression. *Id.* Colors/shades are additionally important for identifying borders of features by contrasting coloration/shading compared to surrounding skin. *Id.* Borders, and changes thereof over time, are another crucial tool to detect, assess and track cancers. *Id.*; see Ex. 1003 (using images to discern borders to detect and track lesions).

Embodiment 2 (Figs. 7-11) uses lighting generators such as LEDs 70, 71 instead of laser stripes. Exs. 1006, 10, 13; FIG. 10; Ex. 2019 ¶ 76. Like Hurley, the person is illuminated with “fringe or other types of structured light.” Exs. 1006, 10, 13; FIG. 10; 2019 ¶¶ 71-72, 76, 77. Data captured by the camera(s) 63 is used to capture images of the person, and the captured data is used to generate the avatar. Exs. 1006, 10, 13; FIG. 10; 2019 ¶ 76.

An important concern to Crampton is the size, cost and complexity of the kiosks, as well as reliability. See Ex. 2019 ¶ 78. To this end, Crampton criticizes, discredits and discourages kiosks with a larger number of cameras, and cameras on

multiple sides of a person, due their cost, size and reliability. Exs. 1006, 9-10 (discussing “high . . . costs as well as a lower degree of reliability,” that can offset any benefits); *see* 2019 ¶ 78. Crampton thus teaches in several places that it is preferable to use as few cameras as possible with the lowest resolution as possible, which is less costly and more reliable. Exs. 1006, 9-10; 2019 ¶ 78. The preferred embodiment is a kiosk 62 with a centrally-mounted single camera on only one side of the person, just like Voigt, which “has the lowest . . . costs as well as a higher degree of reliability.” Exs. 1006, 9-10; 2019 ¶ 78.



Exs. 1006, 13, FIG. 7.

2. A Combination of Voigt and Crampton Embodiment 1 Does Not Teach or Provide the Invention.

As discussed above, Voigt teaches an adjustable camera, and thus lacks an imaging device/means located a predetermined distance relative to a specified imaging position/second means, and defining respective coordinates and said respective predetermined distance relative to the specified imaging position, as

claimed. Embodiment 1 of Crampton also has moving cameras, and there is no teaching or suggestion in Crampton that the laser stripe system could have fixed cameras. Ex. 2019 ¶ 71. Crampton’s brief mention of “static” cameras merely means, at discussed above, that the cameras 53, 54 take still images instead of video. Ex. 1006, 7; 2019 ¶ 71. Embodiment 1 thus lacks the claimed imaging device/means located a predetermined distance relative to a specified imaging position/second means, and defining respective coordinates and said respective predetermined distance relative to the specified imaging position. The combination of Voigt and Embodiment 1, i.e., even incorporating the multiple cameras of Crampton into Voigt, would likewise have movable cameras, and still lack the above-discussed limitations of the claims. The claims cannot be unpatentable over Voigt and Embodiment 1.⁷ See *CFMT*, 349 F.3d at 1342.

3. The Claims Are Patentable in View of Voigt and Crampton Embodiment 2.

Claims 1 and 51 require that a plurality of the imaging devices/means are vertically spaced relative to each other, that a plurality of the imaging devices/means are laterally spaced relative to each other, and that a plurality of the imaging devices/means are located on opposite sides of the centerline relative to each other. Most of the kiosks plainly do not meet these limitations because they

⁷ Even if the laser stripe system had fixed cameras, the claims would be patentable because a POSA would not modify Voigt’s movable camera to a fixed camera. See *infra* at Section III.E.3

do not have vertically spaced cameras and/or they do not have a *plurality* of cameras located on each side of a centerline. Ex. 1006, FIGS. 7, 9; *see also* Ex. 2019 ¶ 78 (Crampton does not teach or suggest that the embodiments of FIG. 7 have additional cameras other than those shown that are vertically-spaced relative to each other).

Fig.7.

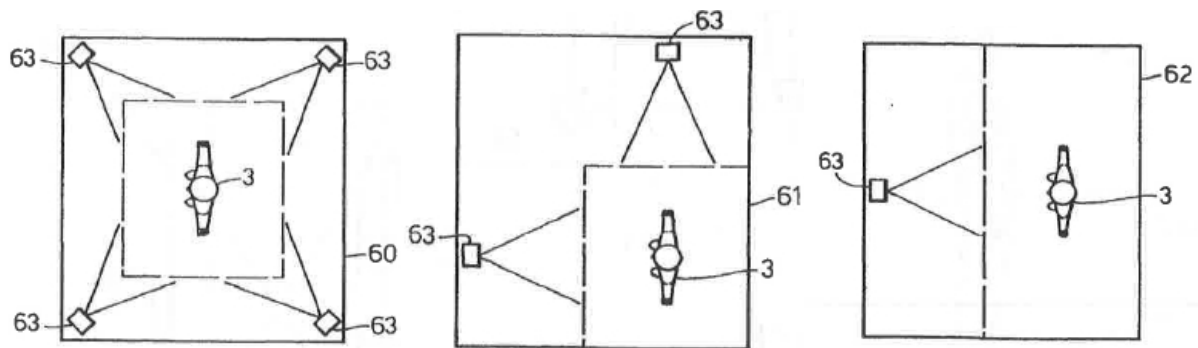


Fig.9.

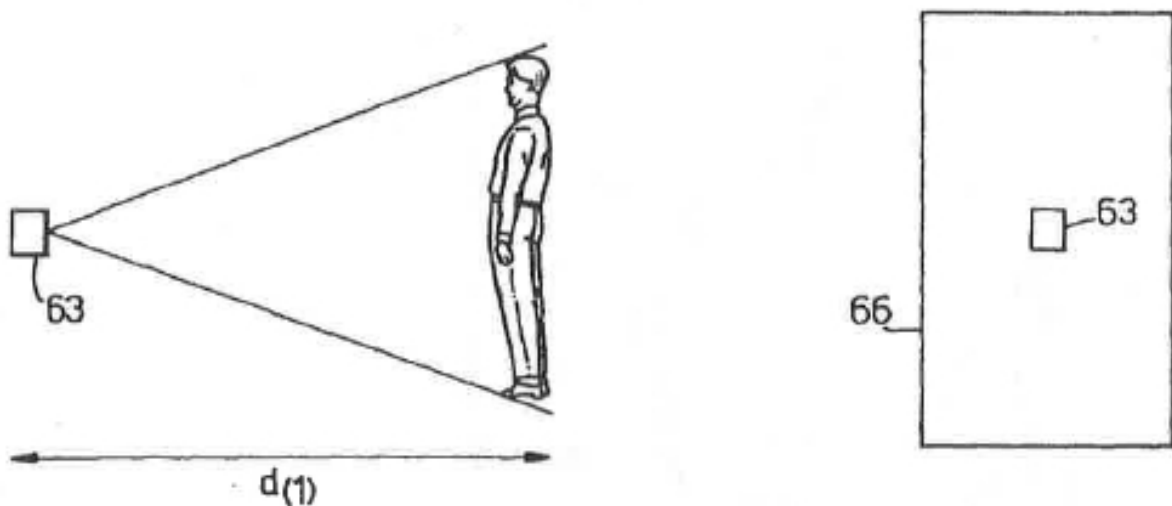
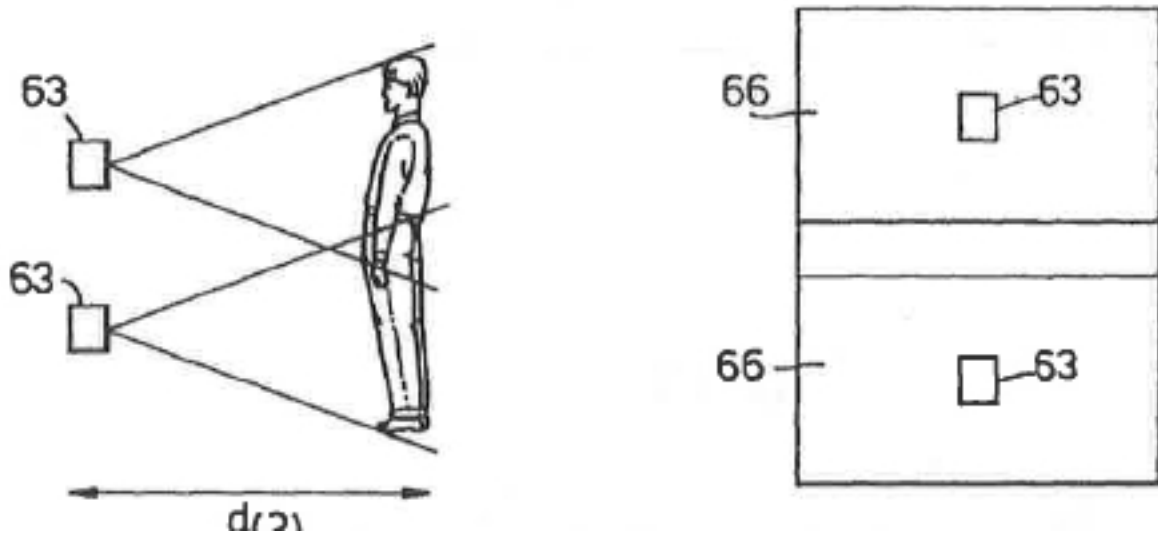
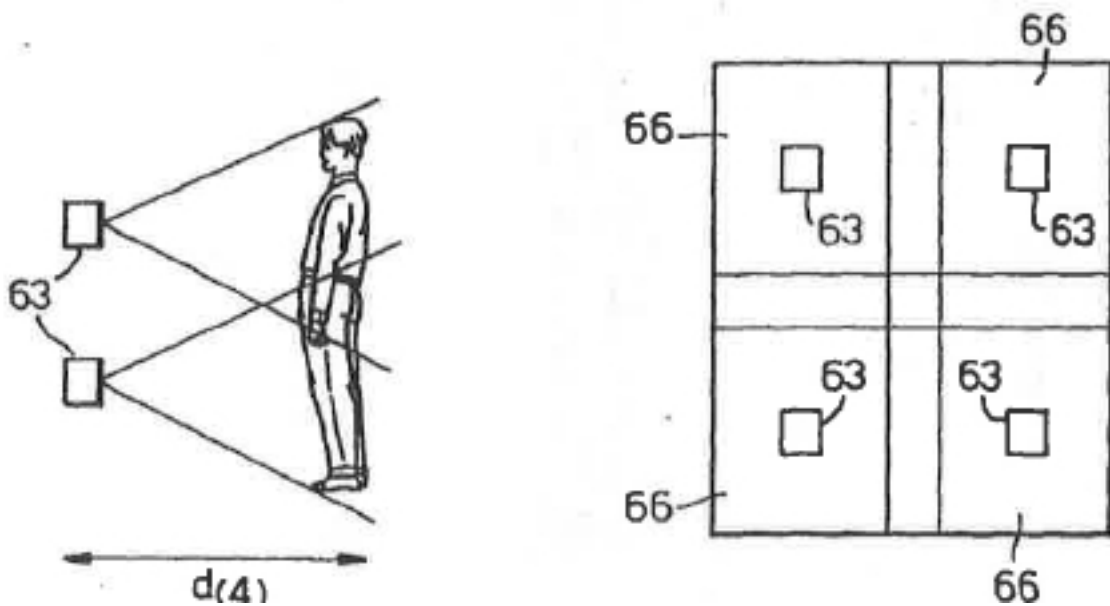


Fig.9.



As for the sole other kiosk of Embodiment 2 from FIG. 9 shown below, a POSA would not have modified Voigt to include that camera arrangement for the reasons hereinafter set forth. *Id.* ¶¶ 79-83.



a. Modifying Voigt's Adjustable Camera to Be a Fixed Position Camera Would Render Voigt Unsatisfactory for Its Intended Purpose.

Substituting Voigt's vertically-adjustable camera with the fixed cameras of Crampton would improperly render Voigt unsatisfactory for its intended purpose for the same or similar reasons that substituting the fixed cameras of Hurley would do so. Ex. 2019 ¶¶ 81, 83; *see DePuy Spine*, 567 F.3d at 1326-27; MPEP § 2143.01(V). As discussed above, Section III.D.4, Voigt overcomes the “major technical obstacle” in the prior art and provides “reliable registration reproducibility” by, in addition to positioning the patient in the horizontal sliders, adjusting the “vertical height of the video camera . . . on a scaled-camera slider” (where “its framework position [is] recorded” for serial follow up as well) so that the camera and its scanned sector field is registered with the target registration area of the patient. Exs. 1003, 981-82, 987; 2019 ¶¶ 33, 50, 52-54, 60, 80, 81, 83. Replacing the adjustable camera with fixed cameras would define fixed scanned sector fields, where each scanned sector field would target the same vertical location regardless of the patient and without reference to, or registration with the target registration area of each patient. Ex. 2019 ¶¶ 67, 81, 83. A POSA would necessarily recognize such modification would render Voigt inoperable for, and not able to achieve its purpose to “provide reliable registration reproducibility” in order to image and track skin features over time. Exs. 1003, 981-82, 986-87; Ex.

2019 ¶¶ 67, 81, 83. The claimed invention is thus not obvious over Embodiment 2 for at least these reasons.⁸ See *DePuy Spine*, 567 F.3d at 1326-27; MPEP § 2143.01(V).

b. Modifying Voigt's Adjustable Camera to Be a Fixed Position Camera Would Improperly Change the Principle of Operation of Voigt.

Substituting Voigt's vertically-adjustable camera with the fixed cameras of Crampton would improperly change the principle of operation of Voigt for the same or similar reasons that substituting the fixed cameras of Hurley would do so. Ex. 2019 ¶¶ 81, 83; see *In re Ratti*, 270 F.2d at 813; MPEP § 2143.01(VI). As discussed above, Section III.D.4, Voigt teaches that adjusting the vertical height of the camera on its scaled-camera slider to thereby reproducibly register the camera and its scanned sector field with the target registration area of the patient is necessary to obtain "reproducible registration conditions" that crucially influence the ability to detect, measure and follow skin-surface changes over time. Exs. 1003, 981-82, 986-87; 2019 ¶¶ 33, 50, 52, 53, 54, 60, 67, 80. A POSA would understand that substituting Crampton's fixed cameras for Voigt's vertically-adjustable camera would change the principle of operation of Voigt, requiring substantial reconstruction and redesign of the elements shown in Voigt, along with

⁸ A POSA's recognition that Voigt would be inoperable also means there would not be a reasonable expectation of success. See *Intelligent Bio-Sys*, 821 F.3d at 1367-68; *Broadcom Corp.*, 732 F.3d at 1335; MPEP § 2143.02; see also MPEP § 2143.01(III), (IV).

substantial, unidentified changes in the imaging procedures, to accurately and reproducibly image patients over time. Ex. 2019 ¶ 83. Fixed cameras are the opposite principle of operation than adjusting a movable/adjustable camera to reproduce the registration of the camera and its scanned sector field with the target registration area of the patient. *Id.* ¶ 67; *see In re Ratti*, 270 F.2d at 813. The claims are not obvious for these reasons also.

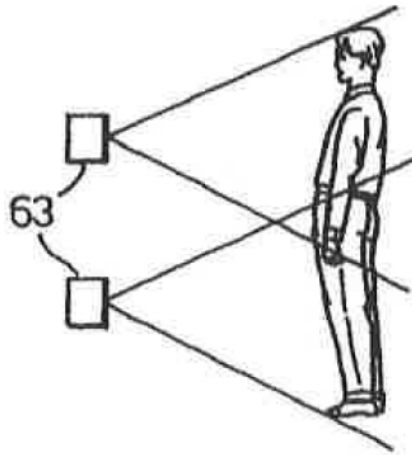
c. A POSA Would Not Have Had a Reason to Modify Voigt.

In addition to the above, there was also no technical, economic or other reason at the time of the invention for a POSA to substitute Voigt's single, adjustable camera with multiple fixed cameras as Canfield contends. *See KSR*, 550 U.S. at 419.

First, all the reasons why a POSA would not modify Voigt's movable/adjustable camera to be a fixed camera in view of Hurley discussed in Section III.D, *supra* apply equally here. Ex. 2019 ¶ 82. Canfield has alleged the same rationales for modifying Voigt in view of Crampton as it does for modifying Voigt per Hurley. Pet., 53. Those rationales, though, do not stand up with respect to Crampton for the same reasons they fail for Hurley. *See* Section III.D.5, *supra*.

Canfield further contends that a POSA would add additional cameras in order to capture the entire body in a single pose in a "total body" system.

However, that rationale is inapplicable because, in the embodiment of FIG. 9, the cameras are all on a single side of the person.



Exs. 1006, FIG. 9; 2019 ¶ 79. The person would still need to be repositioned to capture the entire body, so it is not a “total body” system.⁹ Ex. 2019 ¶ 79; *see* Ex. 1006, FIG. 9. A POSA would thus not add cameras to Voigt for Canfield’s alleged reason. Ex. 2019 ¶ 79.

Canfield next contends that Crampton teaches that additional cameras permit imaging at a greater resolution, allegedly illustrated by FIG. 9. This is not correct. Crampton’s discussion of FIG. 9 consists of two short sentences, neither of which mentions resolution. Exs. 1006, 13; 2019 ¶ 82. Nowhere does Crampton teach using more cameras to increase resolution. Ex. 2019 ¶ 82.

⁹ This is true whether the cameras move or not. Ex. 2019 ¶ 79. The number of poses needed is determined by how many sides of the person at which the cameras are located. Exs. 1006, 9 (discussing same); 2019 ¶ 79. Where the cameras are not located on all sides of the person, multiple poses are needed, even if the cameras move. *Id.* ¶ 79.

Quite the opposite. As discussed above and in the POPR, Crampton stresses reducing the cost and complexity of the kiosks. It criticizes, discredits and discourages the use of more cameras and placing cameras on multiple sides of a person due to cost, size and reduced reliability. Crampton advises to use as few cameras as possible, and its preferred embodiment is a kiosk with a centrally-located camera on only one side of the person. Indeed, Crampton's repeated concern about the lower reliability of an increased number of cameras directly undercuts Canfield's alleged rationale that multiple cameras would "avoid maintenance due to durability issues." Ex. 2019 ¶ 78; *see DePuy Spine*, 567 F.3d at 1326 ("An inference of nonobviousness is especially strong where the prior art's teachings undermine the very reason being proffered as to why a person of ordinary skill would have combined the known elements").

At the very least, a POSA would not act contrary to Crampton's express teachings, but would follow Crampton and not add more cameras to Voigt. *See* Ex. 2019 ¶ 78; *Hynix Semiconductor*, 645 F.3d at 1353 ("the fact that a combination is expected to increase cost has some bearing on the obviousness of that combination"). Why would one do so when Crampton itself teaches and prefers embodiments having a single camera?

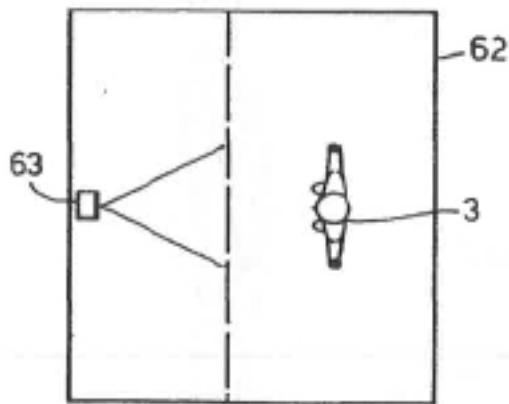
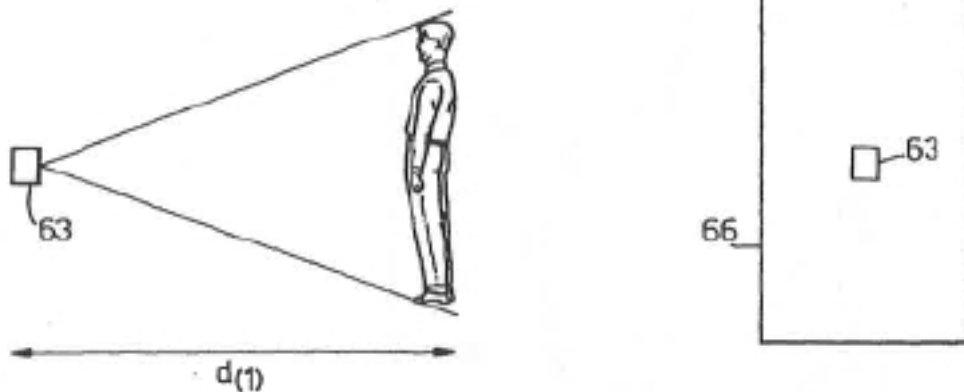


Fig.9.



Exs. 1006, FIGS. 7, 9.

Moreover, as Dr. van der Weide has testified, a POSA would use a single camera with increased resolution as needed to avoid the unnecessary additional cost and complexity of adding more cameras. *Id.* ¶ 61; see *Hynix Semiconductor*, 645 F.3d at 1353.

For at least the reasons above, challenged claims 1 and 51, and claims 2-8, 11, 30, 33-34 and 46 dependent thereon, are patentable over Voigt and Crampton. *See In re Fine*, 837 F.2d at 1076.

F. Canfield Fails to Meet Its Burden to Prove That Hurley Renders Claims 1-8, 11, 30, 33-34, 46 and 51 Unpatentable.

Hurley fails to render claims 1-5, 8, 11, 30, 33-34 and 51¹⁰ of the '748 patent unpatentable. The Board should find that Canfield's has failed to prove these claims unpatentable under Ground 3 by a preponderance of the evidence.

Canfield contends that Hurley teaches all the limitations of independent claim 1 except that Hurley does not "use" the distance from the imaging position, focal length and resolution to calculate precise measurements, but it would be obvious to do so. Canfield is incorrect.

First, Canfield's unpatentability contentions are based on an erroneous claim construction of the "wherein" clause, as discussed in Section III.C.6 *supra*. See also POPR Section III.D.6. For this reason alone, Canfield has failed to prove unpatentability because it has not submitted any evidence that the "wherein" clause is obvious under the correct claim construction.

Nevertheless, Hurley lacks several additional limitations of claims 1 and 51. As discussed in the POPR Section III.E.3 and found by the Board (Paper 15, 29-30), Hurley lacks an enclosure that defines a specified imaging position. Briefly, as previously discussed, there is no particular or specific location at which the

¹⁰ Though Canfield lists independent claim 51 as challenged under this ground, neither the Petition nor Dr. Muller addresses claim 51. Pet., 60-75; Muller Decl. ¶¶ 239-97. Having submitted no evidence at all, Canfield has thus not met its burden to prove unpatentability of the claim on the asserted ground by a preponderance of the evidence. Melanoscan nonetheless addresses claim 51.

person stands within the Hurley device, and therefore there is no “specified imaging position” or “second means.” Exs. 1004, 213, FIG 2.1; 2019 ¶ 86. This is confirmed by Hurley’s calibration procedure, which is performed wherever the person stands in the system. *See* Exs. 2004, 221; 2019 ¶ 86. If Hurley had a specified imaging position, and resultant predetermined distances and coordinates as claimed, there would be no need for calibration. Ex. 2019 ¶ 86; *see supra*, Section II.A; POPR Section III.A.

Hurley necessarily also lacks a specified imaging position/second means defining a centerline as claimed, and all the limitations of the claims related to either the specified imaging position/second means or the centerline:

- A plurality of imaging devices/means “located on opposite sides of the **centerline** . . .” (claims 1, 51)
- “[E]ach imaging device/means is located a predetermined distance relative to the **specified imaging position**.” (claims 1, 51)
- Each imaging device/means “defines respective coordinates and said respective predetermined distance relative to the **specified imaging position/second means**.” (claims 1, 51)
- “[A]t least two light sources are positioned symmetrically relative to the **center line** . . .” (claim 4)

- “[A] a first imaging array spaced a predetermined distance relative to the **specified imaging position**” (claim 5)
- “[A] second imaging array spaced a predetermined distance relative to the **specified imaging position**, and laterally spaced adjacent to the first imaging array on an opposite side of the **centerline** . . .” (claim 5)
- “[A] third imaging array spaced a predetermined distance relative to the **specified imaging position**” (claim 6)
- “[A] fourth imaging array spaced a predetermined distance relative to the **specified imaging position**” (claim 6)
- “[T]he plurality of light sources is symmetrical about the **center line**” (claim 7)
- “[A] third light source . . . symmetrical about the **center line** to the second light source” (claim 7)

Hurley further lacks a device “allowing precise measurement of imaged features of the person or portion,” regardless of claim construction. As discussed above in Section III.D.2, Hurley does not teach that it actually provides accurate measurements, even for clothing. In view of this, there is no preponderance of the evidence establishing that Hurley allowed precise measurement of imaged features as claimed. The possibility that Hurley might unknowingly work does not rise to the level of a preponderance of the evidence. *See In re Robertson*, 169 F.3d 743,

745 (a feature cannot be deemed present in prior art because it possibly (or even probably) exists).

As Hurley lacks multiple limitations of claims 1, 4-7, and 51, these claims are patentable. *See CFMT*, 349 F.3d at 1342. Claims 2, 3, 8, 11, 30, 33-34 and 46 dependent on claim 1 are likewise patentable. *See In re Fine*, 837 F.2d at 1076.

Further regarding claim 6, Hurley lacks a fourth imaging array as claimed, but Canfield contends it would be obvious to add a fourth pair of sensors to Hurley to obtain greater detail of the back of the person. Canfield contends that a POSA would modify Hurley because “Hurley noted that its design economized on the number of sensor arrays” and thus a POSA would add a fourth pair of sensors “if greater detail was desired.” Pet., 71. Canfield mischaracterizes Hurley. Hurley says nothing about its design being “economized.” Ex. 2019 ¶¶ 67, 87.

Further, it is the ‘748 patent that discusses the desirability of additional imaging arrays, not Hurley. Obviousness cannot be based on the patentee’s own disclosure. *See In re McLaughlin*, 443 F.2d 1392, 1395 (C.C.P.A. 1971). Conversely, Hurley makes no suggestion that more detail is needed for the back of the person or to add an additional set of sensors behind the person. Ex. 2019 ¶ 67. To the contrary, Hurley teaches that only one sensor head is needed behind the person because less detail is needed than in the front. Exs. 1004, 212; 2019 ¶ 67. Canfield’s alleged rationale of “desire” for more detail simply did not exist at the

time of the invention. *See* Ex. 2019 ¶ 67. Canfield has once again improperly used the claims as a template and then contended, in retrospect, that a POSA would modify Hurley under a fictitious rationale. *See KSR*, 550 U.S. at 418, 421; *Metalcraft of Mayville*, 848 F.3d at 1367; *In re Fritch*, 972 F.2d at 1266.

Moreover, in addition to the lack of a reason to add a fourth array at the time of the invention, a POSA would not do so due to the added and unnecessary cost and complexity it would add to the system. Ex. 2019 ¶ 67; *see Hynix Semiconductor*, 645 F.3d at 1353.

For at least the reasons above, challenged claims 1-8, 11, 30, 33-34, 46 and 51 are patentable over Hurley.

G. Canfield Fails to Meet Its Burden to Prove That Claims 6-7 Are Patentable over Voigt, Hurley and Daanen.

The combination of Voigt, Hurley and Daanen fails to render claims 6 and 7 unpatentable for the reasons below. The Board should find that Canfield has not proven these claims unpatentable under Ground 4 by a preponderance of the evidence.

1. Summary of Daanen.

Daanen briefly describes eight scanning systems that generate a copy of the surface geometry of the human body. Exs. 1005, 111; 2019 ¶ 90. Thus, as with Hurley and Crampton, the systems do not create an image of the skin with skin surface features (such as melanomas), but only an outline of the subject. Exs.

1005, 111, Figures; 2019 ¶ 90. All of the systems use stripe or other structured/patterned illumination. *See* Exs. 1005, 112 (systems have “light sources that project a line or other pattern on the human body”); 2019 ¶ 92.

Canfield’s challenge to claims 6 and 7 relies solely on the Vitronic system mentioned in Daanen.¹¹ Pet., 76-77. The Vitronic system uses a laser scanning technique, similar to Crampton. *See* Exs. 1005, 112-13, 115; 2019 ¶ 93. That is, the lasers and cameras are mounted on a *moving* frame and moved upwards and downwards to “scan” the person as a thin horizontal laser line is progressively projected onto the body surface. Exs. 1005, 112-13, 115; 2019 ¶ 93. As can be seen in Daanen Figure 4(b), the outline generated by the system does not include skin surface features such as skin lesions. One could not, from this outline (or the

¹¹ Accordingly, Melanoscan need not address the other systems discussed in Daanen. Nonetheless, none of the other systems renders claims 6 and 7 obvious. Claim 6 requires that the system have at least eight imaging devices. Ex. 2019 ¶ 93. Only one other system, the Hamamatsu system, has at least eight cameras. *Id.*; *see* Ex. 1005, 118. That system, like the Vitronic system, utilizes moving cameras. Ex. 1005, 117-118 (cameras scan from top to bottom); FIG. 10. The claims are not obvious over the Hamamatsu system for the same or similar reasons they are not obvious over the Vitronic system, discussed below.

The Petition briefly mentions, but does not rely on, the TC² system, which it contends is the Hurley device. However, Daanen does not discuss Hurley, but another article by some of Hurley’s authors. *See* Ex. 1005, 120. Canfield also mischaracterizes Daanen when it states that the TC² system “was used in the apparel industry.” Pet. at 20. Nothing in Daanen (or Hurley) states or suggests that the TC²/Hurley system had been used in the apparel industry. Ex. 2019 ¶ 91. Rather, Daanen states that “Later, the [TC²] system **will be** commercialized,” Ex. 1005, 115 (emphasis added), meaning that the system had not been commercialized, but was merely a goal. Ex. 2019 ¶ 91.

outlines generated by the other systems), assess or track cancers or other skin lesions. Ex. 2019 ¶ 90.

2. A POSA Would Not Have Modified Voigt and Hurley in View of Daanen to Provide the Claimed Invention.

Canfield alleges that claim 6 is obvious because it “would have been an obvious design choice” to use the Vitronic camera arrangement in the alleged Voigt/Hurley combination “to achieve total body coverage.” Pet., 77. This is incorrect.

Claims 6 depends from claim 1, which as demonstrated in in Section III.D above, is patentable over Voigt and Hurley. Claim 6 is therefore patentable also. *See In re Fine*, 837 F.2d at 1076.

Moreover, a POSA would not have modified Voigt/Hurley as Canfield contends. Ex. 2019 ¶¶ 92, 94, 95. To create a body outline, the systems in Daanen use stripes or patterned lighting to illuminate a subject, not broad-spectrum diffuse lighting like Voigt, and the specific Vitronic system Canfield relies on uses laser lighting. *Id.* ¶ 92. As discussed above (Section III.E.2), structured lighting, especially monochromatic laser lighting, does not and cannot provide images of the skin suitable for cancer screening. Ex. 2019 ¶¶ 92-93. Such lighting would in fact render Voigt inoperable and unsatisfactory for its intended purpose. *Id.*; *see DePuy Spine*, 567 F.3d at 1326-27. In view of this, and that Daanen does not even create images showing skin features, a POSA would not see Daanen as providing

any beneficial teachings regarding cancer screening systems. Ex. 2019 ¶¶ 92-93; *see Hynix Semiconductor*, 645 F.3d at 1353. A POSA would thus not modify Voigt/Hurley in view of Daanen. Ex. 2019 ¶¶ 92-93,

Canfield's rationale is an inadequate reason to further modify Voigt/Hurley. According to Canfield, the alleged Voigt/Hurley combination would already provide total body coverage. Pet., 30. Nothing in the prior art suggests that Hurley's "coverage" is inadequate so that one of ordinary skill would even seek to modify the system in view of Daanen. Ex. 2019 ¶ 95. Nor does the prior art suggest (nor Canfield) that additional imaging arrays would improve upon the Hurley arrangement so as to lead a POSA to make the alleged modification. *Id.* ¶ 95; *see Hynix Semiconductor*, 645 F.3d at 1353; *see also KSR*, 550 U.S. at 419 (a claim "is not proved obvious merely by demonstrating that each of its elements was known, independently, in the prior art").

Conversely, the number of cameras in the Vitronic system are for a very different purpose than providing additional coverage of the body. Ex. 2019 ¶ 93. Daanen teaches that "[t]he Vitronic has the best resolution of the mentioned systems: the resolution is 1-2 mm in every direction... mainly caused by the large number of cameras that is used." Exs. 1005, 115; 2019 ¶ 93. A POSA would thus understand that the number of cameras is to increase 3D resolution (which is different from the resolution of an actual image the skin surface as in Voigt), not to

increase the scanned area. Ex. 2019 ¶ 93. Accordingly, a POSA would understand that Vitronic’s number of cameras do not suggest adding additional cameras to a cancer screening system that images the skin surface. Ex. 2019 ¶ 93.

This is so even though Daanen surveys fixed camera systems. First, Canfield does not rely on these systems, so they do not form part of the asserted ground. Regardless, these systems do not contain the number of cameras recited by claim 6, or more cameras than Hurley, and thus would not lead a POSA to add additional cameras to the alleged Voigt/Hurley combination. *Id.* ¶ 93; *see CFMT*, 349 F.3d at 1342 (prior art must suggest all limitations).

Regardless, as discussed above (Section III.D.3.b), one failure of the alleged Voigt/Hurley combination is that Voigt’s position framework with sliders would occlude and/or shadow parts of the body, so that it would not provide “total body coverage.” Ex. 2019 ¶¶ 90, 94. Adding additional cameras as alleged per Daanen would not address that problem or otherwise provide total body coverage. *Id.* ¶¶ 90-94. The positioning structure would still be located between the cameras and the body, occluding or shadowing the images. *Id.* ¶¶ 90-94.

On the other hand, adding additional imaging arrays would inject additional (and unnecessary) cost and complexity into the system. Ex. 2019 ¶ 90. A POSA would not modify the prior art to make it more costly and complex, especially in

view of the lack of any need for or benefit of doing so. *Id.*; *KSR*, 550 U.S. at 418-19; *Hynix Semiconductor*, 645 F.3d at 1353.

For claim 7, Canfield contends that it would be an “obvious design choice” to use the lighting arrangement of Daanen to “illuminate the subject, and to do so symmetrically . . . because it ensures consistent illumination.” Pet., 79. However, claim 7 is dependent on claim 6, and thus likewise patentable. *See In re Fine*, 837 F.2d at 1076. Further, the lighting arrangements of Voigt and Hurley illuminate the subject symmetrically and consistently. *E.g.*, Exs. 1003, FIG. 1 (symmetric light sources); 1004, FIG. 2.1 (symmetric lighting). Nothing in the prior art suggests otherwise, or that there is some inadequacy of Voigt or Hurley’s lighting so that a POSA would seek to further modify it in view of Daanen. Nor does the prior art suggest that the arrangement in Daanen would improve upon the Voigt or Hurley arrangements. *Id.* ¶ 95; *see Hynix Semiconductor*, 645 F.3d 1336 at 1353. In contrast, adding additional lighting arrays as (allegedly) taught by Daanen would inject additional, unnecessary cost and complexity into the system. Ex. 2019 ¶ 90. A POSA would not do so. *Id.* ¶ 90; *see KSR*, 550 U.S. at 418-19; *Hynix Semiconductor*, 645 F.3d at 1353.

For at least the reasons above, challenged claims 6 and 7 are patentable over Voigt, Hurley, and Daanen.

H. Canfield Fails to Meet Its Burden to Prove That Claims 32 and 36 Are Unpatentable over Voigt, Crampton and Dye.

The combination of Voigt, Crampton and Dye fails to render claims 32 and 36 unpatentable. Claims 32 and 36 depend from claim 1, which as demonstrated in Section III.E above, is patentable over Voigt and Crampton. Claims 32 and 36 are therefore patentable too. *See In re Fine*, 837 F.2d at 1076. The Board should find that Canfield has failed to prove unpatentability of claims 32 and 36 by a preponderance of the evidence.

IV. CONCLUSION

Canfield has failed to prove by a preponderance of the evidence that any instituted claims are unpatentable on the grounds in this IPR. The Board should therefore uphold the patentability of the claims.

Date: June 20, 2018

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CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Patent Owner's Response totals 13,513, which is less than the 14,000 allowed under 37 C.F.R. § 42.24(a)(1), (b)(1).

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CERTIFICATE OF SERVICE

I hereby certify that on this 20th day of June, 2018, a true and correct copy of the foregoing Patent Owner's Preliminary Response and its Exhibits, including this Certificate of Service, has been caused to be served in its entirety via electronic mail on counsel of record for Petitioner as set forth below, and through filing this document through the Patent Trial and Appeal Board End to End System:

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