

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MITO RED LIGHT, INC.,
Petitioner,

v.

JOOVV, INC.,
Patent Owner.

Case IPR2024-00621
Patent 11,253,719

DECLARATION OF DR. JIANZHONG JIAO, PH.D.

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I, Dr. Jianzhong Jiao, hereby declare as follows:

I. BACKGROUND AND QUALIFICATIONS

1. My experience and qualifications are summarized in my curriculum vitae, a copy of which is provided as EX2015.

2. I received my B.S. degree in Mechanical Engineering from the Beijing Polytechnic University in Beijing, China in 1980. Immediately thereafter, I completed my M.S. degree in Applied Physics from the Beijing Institute of Posts and Telecommunications in Beijing, China in 1983. I thereafter attended Rensselaer Polytechnic Institute for graduate studies for the Ph.D. program for Physics in 1985. I thereafter received my Ph.D. degree in Electrical Engineering from Northwestern University in Evanston, IL in 1989.

3. I worked at General Motors Corporation from 1989 to 1993 as a Senior Development Engineer on automotive lighting applications including leading and managing R&D projects to implement automotive lighting using LEDs and other technologies.

4. I worked at North American Lighting, Inc. a Koito Group Company, from 1993 to 2007 as a Manager and then General Manager of Engineering Technology on a variety of matters including strategic planning for new technology implementation including HID, LED, adaptive front-lighting system (AFS) technologies, establishing and managing an engineering team over four departments

(Optical Design, Electronic Technologies, Engineering Analysis, Regulation and Standards), and growth of revenue and expansion of the U.S. customer base.

5. I worked at OSRAM Opto Semiconductors Inc. from 2007 to 2015 as a Director of Regulations and Emerging Technologies on a variety of matters including establishing strategies for LED technology and applications, managing LED technology strategies and implementations in automotive lighting, general illumination, horticulture lighting, intelligent lighting, human centric lighting, displays, and others applications, managing activities relating to LED and lighting regulations and standards, and interfacing with academia, industrial consortium programs, and governmental agencies on technology development in LEDs and lighting technologies.

6. Since 2015, I have been self-employed as a Consultant in the areas of LEDs, lasers, and lighting technologies and applications for industry, governmental agencies, and professional associations. I am also currently involved in the academic arena through a variety of professional activities. For example, I serve as an instructor for short courses, workshops, and seminars for the SAE International (formerly Society of Automotive Engineers, Mar. 2003 – present); for the Society of International Optical Engineers (Jan. 2009 – Jan. 2014), for Strategies in Light (May 2011 – 2021) and for Light Fair International (May 2010 – present). I have also served as an adjunct professor, an assistant professor, and a teaching/research

assistant at several universities in the U.S. and around the world including Fudan University (Shanghai, China), Lawrence Technological University (Southfield, MI), Purdue University Anderson Campus (Anderson, IN), Northwestern University (Evanston, IL), and the Beijing Institute of Posts and Telecommunications (Beijing, China).

7. I am currently active in the following Professional Organizations: SAE International (SAE, since 1989 as an SAE Fellow Member); International Society for Optical Engineering (SPIE, since 1989 as an SPIE Senior Member); Illuminating Engineering Society (IES, since 2007); American Society of Agricultural and Biological Engineers (ASABE, since 2014); International Commission on Illumination (CIE – U.S.A., since 2007).

8. I have served in the leadership roles in several U.S. professional associations, trade associations and standardization organizations that are developing LED and LED lighting standards, including: Past Chair of the Plant Growth LED Lighting Committee of the American Society of Agricultural and Biological Engineers (ASABE); Past Chair of the Lighting Standard Committee of SAE; Past Treasurer of the Testing Procedures Committee of IES; current Vice Chair of the Light Sources Committee of IES; current Chair of the Computer Committee of IES; and Member of the Roadway Lighting Committee of IES; Member of Standard Technical Panel of UL.

9. I have received various honors and awards over the years, including: SAE James M. Crawford Executive Standards Committee Outstanding Achievement Award (2022); Senior Member of SPIE (2015); SAE Arch T. Colwell Cooperative Engineering Medal (2010); SAE Fellow (2008); SAE Technical Standards Board Outstanding Contribution Award (2008); SAE Forest R. McFarland Award (2007 and 2000); and Excellence in Oral Presentation Award at the SAE 2005 World Congress (2005).

10. I have written over fifty technical papers and articles, and have served as Editor on fifteen books, on LEDs and lighting technologies as listed on my CV. See EX2015. I have been invited to deliver numerous speeches and presentations on LEDs and LED lighting at various conferences since 1995.

11. Additionally, I am an inventor for nine U.S. patents: U.S. Patent No. 7,144,141 entitled “Self-Aim Vehicle Light Device”; U.S. Patent No. 7,059,754 entitled “Apparatus and Method for Providing a Modular Vehicle Light Device”; U.S. Patent No. 6,953,261 entitled “Reflector Apparatus for a Tubular Light Source”; U.S. Patent No. D503,004 entitled “Vehicle Fog Lamp”; U.S. Patent No. 6,623,132 entitled “Light Coupler Hingedly Attached to a Light Guide for Automotive Lighting”; U.S. Patent No. 6,305,813 entitled “Display Device Using a Light Guide for Exterior Automotive Lighting”; U.S. Patent No. 6,007,224 entitled “Automotive Headlamp Reflector and Method for its Design”; U.S. Patent No.

5,390,265 entitled “Fiber Optic Light Coupler”; U.S. Patent No. 5,197,792 entitled “Illuminator Device for a Display Panel.”

II. INTRODUCTION

12. I have been asked by counsel to review relevant materials and render my expert opinion in connection with technical matters in response to the Petition for *Inter Partes* Review of U.S. Patent No. 11,253,719 (“the ’719 Patent”). I am competent to testify about the matters set forth herein. All of the facts and statements contained herein are within my personal knowledge and/or within my field of expertise, and they are true and correct to the best of my knowledge.

13. This Declaration contains a summary of my opinions, with supporting explanations, concerning the patentability of the ’719 Patent. I have been asked to address certain aspects of Mr. Bretschneider's testimony and the positions of Petitioner in this IPR. If I do not address a specific issue or opinion offered by Mr. Bretschneider or Petitioner, this does not imply or suggest I agree with such an issue or opinion.

14. I understand that the parties in this matter are Mito Red Light, Inc. (“MRL”) and Joovv, Inc. (“JOOVV”).

15. I understand that JOOVV owns the ’719 Patent and MRL is seeking cancellation of Claims 1, 2, 3, 9, 10, 11, 16, 17, and 19 of the ’719 Patent.

III. COMPENSATION

16. I am being compensated at my normal consulting rate of \$400 per hour for my work and testimony, \$200 per hour for travel time, and I am being reimbursed for reasonable expenses incurred in providing my services in this case. My compensation is not dependent on my testimony or the outcome of this case. I have no financial interest in Mito Red Light, Joovv, or the '719 Patent.

IV. CHALLENGED CLAIMS AND GROUNDS IN IPR

17. I understand the grounds of unpatentability which are being considered are as follows:

Ground 1: Whether Claims 1, 2, 3, 9, 10, 11, 16, 17, and 19 are obvious under 35 U.S.C. §103 in view of Dijkstra (EX1004) and POSITA knowledge.

Ground 2: Claims 1, 2, 3, 9, 10, 11, 16, 17, and 19 are obvious under 35 U.S.C. §103 in view of Dijkstra (EX1004), a POSITA's knowledge, and Norwood (EX1005).

V. MATERIALS CONSIDERED

18. I have reviewed the documentation listed below discussed in this Declaration. I have also relied on my education, background, and experience.

- a. The '719 Patent (EX1001);
- b. The '719 Patent file history (EX1003);
- c. Arizona Court's Claim Construction Ruling (EX2008)
- d. MRL's Petition for *Inter Partes* Review (Paper 2);

- e. Dijkstra reference (EX1004);
- f. Norwood reference (EX1005); and
- f. Mr. Bretschneider's declaration (EX1002).

VI. LAW OF ANTICIPATION AND OBVIOUSNESS

19. I am not an attorney. For the purposes of this Declaration, I have been informed about certain aspects of the law that are relevant to my opinions. My understanding of the law is summarized below.

20. I understand that determining whether a patent claim is valid requires a two-step analysis. First, the claim must be construed. Second, the properly construed claim must be compared to the prior art.

21. I understand that claim construction is a matter of law and that the final claim constructions for this proceeding will be determined by the Patent Trial and Appeal Board.

22. I understand that in the context of an *inter partes* review, claims are construed from the perspective of a person of ordinary skill in the art at the time of the purported invention (which is approximated based on the earliest priority date of the patent). I understand that absent disclaimer or express definition, claim terms are given their plain and ordinary meaning to a person of ordinary skill in the art in view of the specification and file history and knowledge of a person of skill in the art.

23. I understand that a patent claim is invalid if it is anticipated by the prior art (i.e., lacks novelty). I understand that anticipation requires the disclosure in a single prior art reference of every limitation of the claim, expressly or inherently, with the limitations arranged as specified in the claim.

24. I understand that, although not expressly disclosed, subject matter may be inherently disclosed in a prior art reference where that subject matter is necessarily present in the expressly disclosed subject matter and would be understood to be so by those of ordinary skill in the art. I understand that the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.

25. I understand that a patent claim is obvious and therefore invalid if the claimed subject matter, as a whole, would have been obvious to a person of ordinary skill in the art as of the priority date of the patent based on one or more prior art references and/or the knowledge of one of ordinary skill in the art. I understand that an obviousness analysis must consider (1) the scope and content of the prior art, (2) the differences between the claims and the prior art, (3) the level of ordinary skill in the pertinent art, and (4) secondary considerations, if any, of non-obviousness (such as unexpected results, industry praise, commercial success, long-felt but unmet need, failure of others, copying by others, and skepticism of experts).

26. I understand that a prior art reference may be combined with other references to disclose each element of the invention under 35 U.S.C. § 103. I understand that a reference may also be combined with the knowledge of a person of ordinary skill in the art, and that this knowledge may be used to combine multiple references. I further understand that a person of ordinary skill in the art is presumed to know the relevant prior art. I understand that the obviousness analysis may take into account the inferences and creative steps that a person of ordinary skill in the art would employ.

27. In determining whether a prior art reference could have been combined with other prior art or other information known to a person having ordinary skill in the art, I understand that the following principles may be considered:

- a. A combination of familiar elements according to known methods is likely to be obvious if it yields predictable results;
- b. The substitution of one known element for another is likely to be obvious if it yields predictable results;
- c. The use of a known technique to improve similar items or methods in the same way is likely to be obvious if it yields predictable results;
- d. The application of a known technique to a prior art reference that is ready for improvement to yield predictable results;

- e. Any need or problem known in the field and addressed by the reference can provide a reason for combining the elements in the manner claimed;
- f. A person of ordinary skill often will be able to fit the teachings of multiple references together like a puzzle; and
- g. The proper analysis of obviousness requires a determination of whether a person of ordinary skill in the art would have a "reasonable expectation of success" — not "absolute predictability" of success — in achieving the claimed invention by combining prior art references.

28. I understand that whether a prior art reference invalidates a patent claim as obvious is determined from the perspective of a person of ordinary skill in the art. While there is no requirement that the prior art contain an express suggestion to combine known elements to achieve the claimed invention, a suggestion to combine known elements to achieve the claimed invention may come from the prior art as a whole, or individually, as filtered through the knowledge of one skilled in the art. In addition, the inferences and creative steps a person of ordinary skill in the art would employ are also relevant to the determination of obviousness.

29. When a work is available in one field, design alternatives and other market forces can prompt variations of it, either in the same field or in another. If a person of ordinary skill in the art can implement a predictable variation and would see

the benefit of doing so, that variation is likely to be obvious. In many fields, there may be little discussion of obvious combinations, and in these fields market demand — not scientific literature — may drive design trends. When there is a design need or market pressure and there are a finite number of predictable solutions, a person of ordinary skill in the art has good reason to pursue those known options.

30. I understand there is no rigid rule that a reference or combination of references must contain a “teaching, suggestion, or motivation” to combine references. But, I understand that the “teaching, suggestion, or motivation” test can be a useful guide in establishing a rationale for combining elements of the prior art.

31. This test poses the question as to whether there is an express or implied teaching, suggestion, or motivation to combine prior art elements in a way that realizes the claimed invention, and it seeks to counter impermissible hindsight analysis.

VII. OVERVIEW OF THE ’719 PATENT

32. The ’719 Patent describes and claims systems and methods of photobiomodulation therapy (or light therapy), which is a therapeutic technique that uses low-level emission of selective wavelengths of light to improve health and to treat a variety of health conditions, including skin issues, such as wrinkles, scars, persistent wounds, and many other conditions. EX1001, at 1: 42-46. The ’719 Patent

describes and shows a photobiomodulation therapy system that provides a highly effective way to treat many common ailments of the human body. *Id.*, at Abstract. The invention provides two or more light therapy devices that are communicatively coupled together in various ways. *Id.* Each of the light devices include a housing, a communication module, and a plurality of lights arranged and configured to emit at least one of red light and near infrared light. *Id.* The '719 Patent describes a first light therapy device 12a with a first housing 14a and a second light therapy device 12b with a second housing 14b. *Id.*, at 5:12-31. The first light therapy device 12a has a “first plurality of lights” 16a and the second light therapy device 12b has a “second plurality of lights” 16b. *Id.*

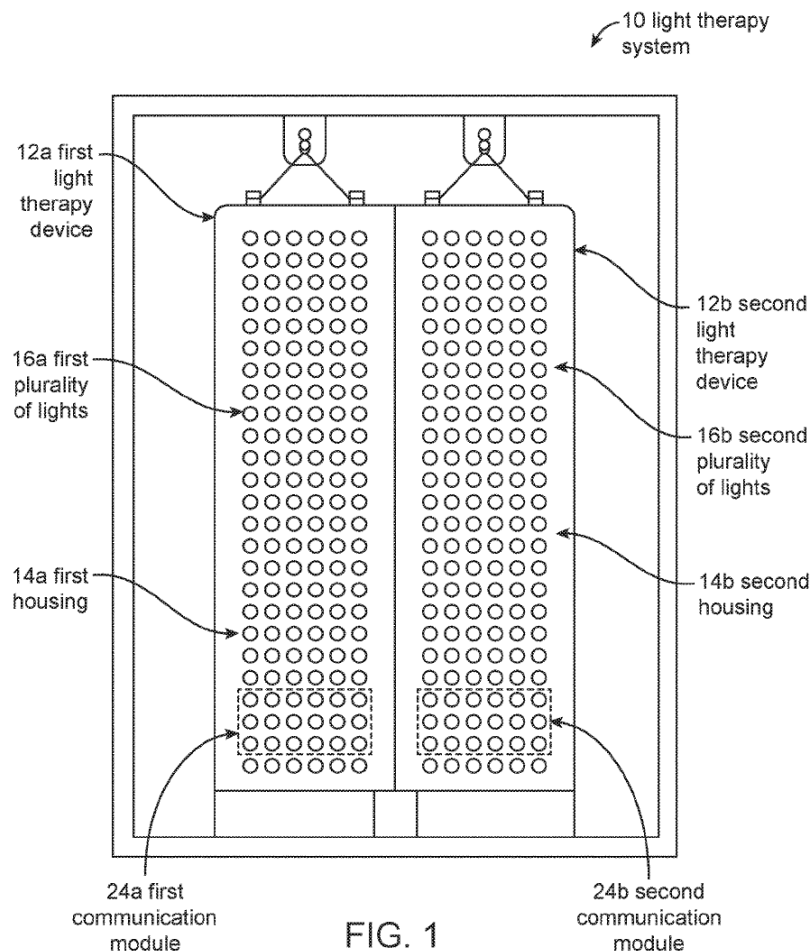


Figure 1 '719 Patent, FIG. 1

33. The above Figure 1 is the reproduction of '719 Patent FIG. 1. FIG. 1 illustrates each of the two “plurality of lights” as 6 columns and 25 rows of circles arranged in a rectangular grid, 16a and 16b. *See* EX1001, FIG. 1. The specification explains that the purpose of the plurality of lights is to “treat an entire body at once.” *See Id.*, at 5:1-3 (“Many top professionals have adopted light therapy, but oftentimes the light therapy devices and systems used are not big enough to treat an entire body at once”); at 6:15-18 (“a user is standing in the middle of the light therapy system

10 to treat the entire body with light therapy simultaneously”). Through the use of the invention of the ’719 Patent, “the area of treatment can be expanded to reduce the time and number of treatments to achieve the desired results.” *Id.*, at 6:6-8.

34. Normal parlance in English refers to “a light” or “lights” as structure(s), e.g., something that is energized by flipping a switch (scenario 1) and also refers to “a light” or “lights” as an electromagnetic wave, e.g., the visible energy that lights up a room (scenario 2). Claim 1 recites a “plurality of lights configured to emit.” EX1001, at 11:55-61. The “configured to emit” (light waves) limitation excludes scenario 2 and makes clear that what is being referenced in Claim 1 of the ’719 Patent is a plurality of electrically powered structures that each cause/produce light to be emitted.

35. This definition is consistent with the prosecution history of the ’719 Patent, where the Examiner cited two references against Claim 1, U.S. Patent Pub. No. 2011/0054573 to Mitchell (“Mitchell”) (EX2009) and U.S. Patent Pub. No. 2018/0008839 to Hamid (“Hamid”) (EX2010), asserting that each has a “plurality of lights configured to emit.” EX1003, at 192-95. First, the Examiner pointed to the panel of lights 404 in Mitchell’s FIG. 4 (reproduced below shown as Figure 2) as disclosing the “plurality of lights configured to emit” of Claim 1 of the ’719 Patent. *Id.*

FIG. 4

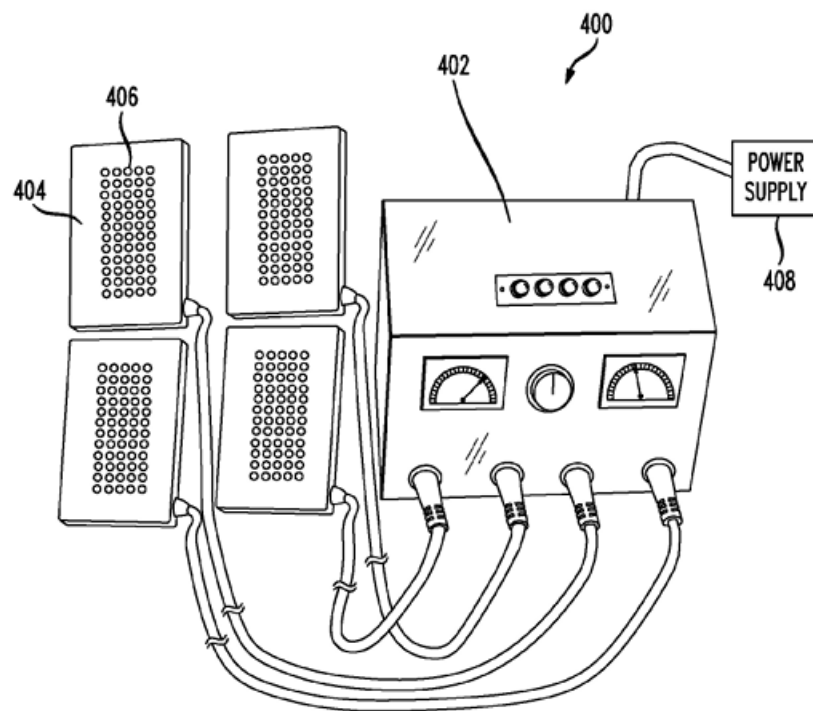


Figure 2_Mitchell, FIG. 4

36. Michell’s panels of lights 404 (EX2009, at FIG. 4) are undeniably similar in structure to the panels of lights 16a and 16b, labeled “plurality of lights,” in FIG. 1 of the ’719 Patent, reproduced above. Each is an array of individual light emitters that broadcast separate light beams into the environment.

37. The Examiner then cited to paragraph [0046] of Hamid, which describes its FIG. 2 (reproduced below shown as Figure 3) which shows “dozens of discrete VCSEL laser devices [that] can more or less uniformly flood the entire scalp 202 with near infrared monochromatic light.” EX1003, at 195; EX2010, at Fig. 2.

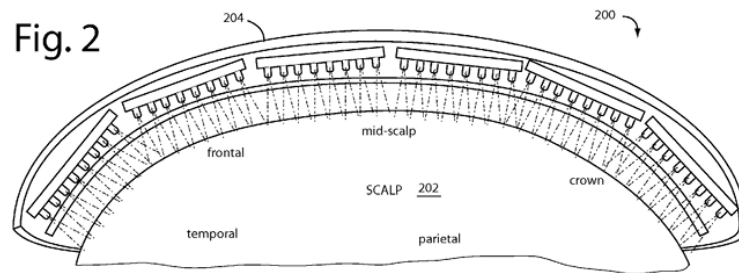


Figure 3_Hamid, Fig. 2

38. Like Mitchell, Hamid teaches an array of individual light emitters that simultaneously broadcast separate light beams into a user's scalp when the device is being used to treat a scalp condition. EX2010, at ¶ [0026-27] (“These laser arrays A-F 130-135 are generally about an inch or two square and arranged in tiles for 100% laser light coverage of the user's entire scalp . . . in current embodiments we've found it best to treat all areas of the scalp together at the same time and not divide treatments into zones.”).

39. Thus, one of skill in the art, after reading the specification and file history of the '719 Patent, would understand that each one of the “plurality of lights configured to emit at least one of red light and near infrared light” is multiple and spatially separated lights that broadcasts many (e.g., 6 x 25, or 150) separate light beams (not a single beam) onto a user's body.

VIII. LEVEL OF ORDINARY SKILL IN THE ART

40. I understand that a person of ordinary skill in the art (POSITA) is a hypothetical person skilled in the art, not a judge, a layperson, a person skilled in the

remote arts, or a genius in the art at hand. This person of ordinary skill is an individual who is presumed to be one who thinks along the lines of conventional wisdom in the art at the time of the invention and is not one who undertakes to innovate, whether by extraordinary insight or systematic research. This person of ordinary skill is also a person of ordinary creativity, not an automaton. Relevant factors in determining the level of ordinary skill in the art include the educational level of the inventor and those who work in the field. Other considerations include various prior art approaches employed in the art, types of problems encountered in the art, the rapidity with which innovations are made, and the sophistication of the technology involved. Not all considerations may be present in every case, and the education level of inventors is not itself conclusive. Consumers have many different preferences for bag designs and a person of ordinary skill would need education, training, or practical experience sufficient to understand those preferences.

41. A person of ordinary skill in the art would, at the time of the invention described in the '719 Patent, possess a bachelor's degree in an engineering field (e.g., mechanical, chemical, electrical, or materials science) and at least two years of design and engineering experience with LED panel lighting or display products.

42. The educational background provides a foundation of product design principles useful for designing and constructing photobiomodulation panels and shortens the learning curve. A person with less educational background but more

relevant practical experience designing photobiomodulation panels may also meet this standard.

IX. CLAIM CONSTRUCTION

43. I understand the Arizona district court construed two claim terms that are not currently relevant to Joovv’s Preliminary Response to the Petition. EX2008. I reviewed the Arizona Court’s claim term definitions and have applied the plain and ordinary meaning to the remaining terms in the patent’s claims.

X. ASSERTED REFERENCES

A. U.S. Patent Publication No. 2019/0030359 to Dijkstra (“Dijkstra”)

44. I understand the Petition relies on U.S. Patent Publication No. 2019/0030359 to Dijkstra (“Dijkstra”). EX1004. Dijkstra describes “a light therapy device for providing therapeutic treatment to a user's body.” *Id.*, at Abstract. Dijkstra discloses one or more small devices that project various types of light onto a treatment area of a subject. *Id.* The device has optical sensors that allow it to follow the subject and continuously target the treatment area with the light treatment, even as the subject moves. *Id.* (“the device is having a rotatable assembly that automatically follows the movement of the desired area of the body needs to be treated.”).

45. Dijkstra differs from the invention claimed in the ’719 Patent in *at least* one very important aspect: Dijkstra’s light beam emission is very purposely and

specifically a single steerable light—not a plurality of lights. This fact is explained extensively in the specification and shown in all of Dijkstra’s figures. Unlike the invention of the ’719 Patent, which is designed to broadcast extensive and non-aimed light on the entire body of a subject at the same time, Dijkstra’s devices are designed to be extremely precise and able to target only small areas on the body, e.g., “into the nasal cavity,” at any given time with a single light (beam). EX1004, at ¶ [0036]. Dijkstra’s devices are precise enough to, “with the help of a motor[,] keep[] the light projection intact on the treatment portion of the user body regardless of the movement of the user body or the treatment portion,” to “keep the projected light away from the user’s eyes,” and, when two devices are operating, each one “prevents an overlap of the light.” EX1004, at ¶ [0017], [0064], [0067]. Dijkstra instructs that “the light therapy device adjusts focus of the light projection in case the light rays scattering out of the treatment portion (towards sensitive areas e.g., eyes) and making user uncomfortable.” *Id.*, at [0108]. This precision is shown, for example, in Dijkstra’s FIG. 4A (reproduced below shown as Figure 4), where a specific area—and only that area—on a user’s forehead, is being treated.

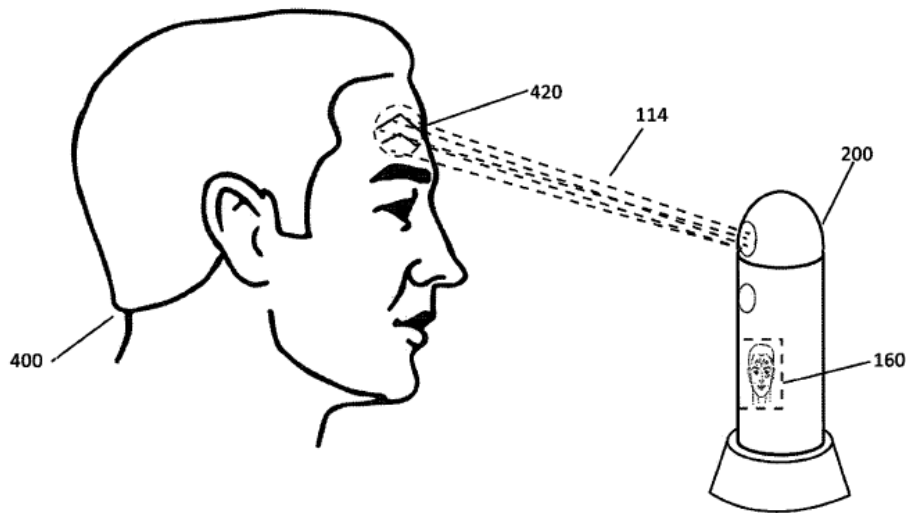


FIG. 4A

Figure 4_Dijkstra, FIG. 4A

46. In one instance, Dijkstra’s specification uses the word “array” in connection with lights. However, Dijkstra is referring to multiple devices each with a single aim of a single light beam, as shown in its FIG. 9. Dijkstra does not disclose an array of light beams being emitted from a single device. Dijkstra is very clearly designed to rotate and steer its single output of light. If Dijkstra were to rotate while broadcasting multiple (an array of) light beams from a single device, it would be difficult or perhaps impossible to “keep the projected light away from the user’s eyes” and also keep “the light rays scattering out of the treatment portion,” as is required by Dijkstra. EX1004, at ¶ [0024].

47. In the following paragraphs, I will cite to clear support within Dijkstra that proves (1) Dijkstra does not show “a first housing with a first plurality of lights

configured to emit”; and (2) Dijkstra specifically teaches away from such an arrangement. Petitioner’s entire argument that Dijkstra shows a “plurality of lights” is just a blind citation to three paragraphs in Dijkstra, without explanation or argument, and a citation to a single paragraph of their expert’s report, again, without explanation or argument.

48. As an initial matter, Petitioner conflates what the word “light” refers to in Dijkstra’s Detailed Description. A POSITA understands that the word “light” is commonly used to describe two types of objects. Type 1 is a natural agent (electromagnetic radiation) that stimulates sight and makes things visible, e.g., visible light or emitted light. Type 2 is a hardware device that emits light, e.g., a headlight or a flashlight. Dijkstra has used light in the specification for both objects and it is important to distinguish between the two during this analysis. Claim 1 of the ‘719 Patent recites a “plurality of lights configured to emit.” EX1001, at 11:55-61. The “configured to emit” (light waves) limitation excludes type 1 and makes clear that what is being referenced in Claim 1 of the ‘719 Patent is a plurality of electrically powered structures that each cause/produce light to be emitted, i.e., type 2.

49. Dijkstra’s detailed description starts at paragraph [0059] and refers to FIGs. 1 & 2, which show the relevant components of its light therapy device 200. Dijkstra explains that each device 200 has a first housing 210 rotatably mounted on

a second housing 220. EX1004, at ¶ [0059]. Dijkstra's FIG. 2 is reproduced below shown as Figure 5.

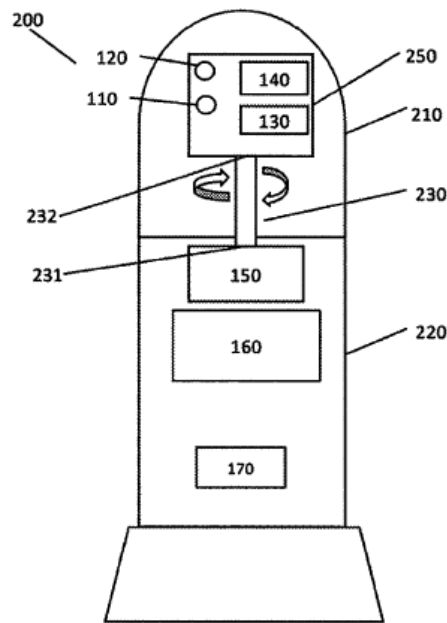


FIG. 2

Figure 5_Dijkstra, FIG. 2

50. The rotatable head 250 includes a single light projection unit 110 and a camera unit 120, which are both controlled by a controlling unit 130. EX 1004, at ¶ [0059]. The single light projection unit 110 is comprised of a light head 111, a light direction controller 112, and a light source 113. *Id.*, at ¶ [0061]. **Dijkstra only describes and shows each device as having a single light projection unit 110, i.e., a single light emitter.** Dijkstra's block diagram FIG. 1 (reproduced below shown as Figure 6) has the consistent description as in FIG. 2 for the singularity of the light

projection unit 110. A POSTA would have understood based on FIG. 2 that the light therapy device 200 is constructed, operated, and controlled with a singular light projection unit or light emitter.

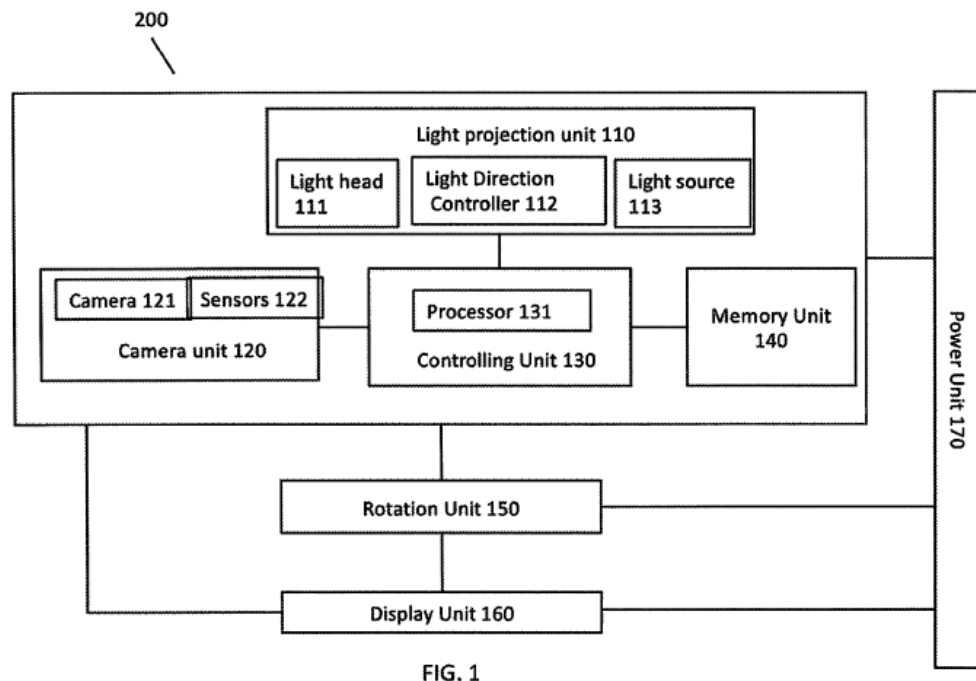


FIG. 1

Figure 6_Dijkstra, FIG. 1

51. Paragraph [0061] of Dijkstra explains that “the light source 113 projects a light [singular] on the light direction controller 112 which is able to control and divert the light [singular] as per the controlling unit 130 input.” *Id.* (emphasis added). The specification goes on to explain that “the light direction controller 112 uses saccade mirror, direction tuning film, laser sintering, or mirror type galvanometer, etc. techniques for controlling a direction of a light [in the singular] emitted from the light source 113.” *Id.* (emphasis added).

52. Paragraph [0061] consistently refers to “a light” **in the singular** being emitted and explains why there is and can only be a single light emitted from the device—because it is very specifically aimed at the treatment site (a portion of a user body) by the light direction controller 112. In paragraph [0063], Dijkstra describes that “**the** light source 113 may be a LED light, infrared light, a UV light, a laser light, photo reactive chemical producing light, phosphorus or any other suitable light source.” EX 1004 at ¶ [0063]. (Emphasis added). In all examples of the light source, a singular light (a light beam) is emitted from the direction controller 112 within the light project unit 110.

53. Dijkstra describes the importance of the single light beam precision control. Paragraph [0064] provides significant details on how Dijkstra tracks the treatment site of the user. It explains that “[t]he light direction controller 112 follows a treatment portion of a user body to an extent by changing a direction of the light projection . . . once the treatment portion starts moving . . . keeps the light projection [i.e., emission] intact on the treatment portion of the user body regardless of the movement of the user body or the treatment portion.” EX1004, at ¶ [0064]. The precision required by and provided by Dijkstra to track the subject and move the single light output/emission is further clarified in paragraph [0067], where Dijkstra states “[t]he light projection unit 110 project[s] a light . . . **the light head 111 keeps the projected light away from the user's eyes, as the . . . light projection could**

be hazardous to the human eyes.” *Id.*, at ¶ [0067] (emphasis added). Further precision is described in paragraph [0108] where Dijkstra instructs that “the light therapy device adjusts **focus** of **the [singular] light projection** in case the light rays scattering out of the treatment portion (towards sensitive areas e.g., eyes) and making user uncomfortable.” *Id.*, at ¶ [0108] (emphasis added). Intense precision is taught throughout the specification. See e.g., *Id.* at ¶ [0136] (“The devices emit infrared light...into the nasal cavity”); ¶ [0037] (“applied to the genitalia area of male/female humans and animals to treat erectile dysfunction”); ¶ [0110] (“light to treat a port-wine stain . . . a capillary malformation in the skin”); FIG. 3 (“projecting a light on ... one external body condition”); ¶ [0016] (“light projection unit to project a light on the external body condition”); ¶ [0024] (“focus of a light on the ... portion of the user body”); ¶ [0061] (“controlling a direction of a light emitted from the light source 113”). Dijkstra consistently refers to what is emitted from the device as “a light,” in the singular. Based on the detailed description for the construction, operation, and control of the Dijkstra light therapy device a POSTA would have understood that there is simply no way Dijkstra could provide the required “focus” and light direction it describes as being necessary if it emitted a plurality of lights, as Petitioner loosely suggests, albeit without any explanation, in the Petition.

54. Dijkstra provides ample additional support for its light direction precision requirement and abilities. For example, paragraph [0087] of Dijkstra teaches:

the mirror galvanometer (not shown) acts as the light direction controller 112. A light from the light source 113 is made to fall on at least one mirror of the galvanometer and the controlling unit provides input to the galvanometer, based on the controlling unit 130 input the coil of the galvanometer rotates and projects the light [in the singular] in the desired direction through the light head 111 . . . The light [in the singular] from the light source is made to fall on the mirror. The reflected light will fall on a light head attached to the mirror galvanometer. When the coil deflects the mirror deflects with it. The light [in the singular] which is deflected also moves on a treatment portion of the user body.

(Emphasis added). Paragraph [0089] teaches:

The light therapy device 200 does not select the area near the user's eyes for the treatment as it can be hazardous to the eyes, the light therapy device 200 uses low wavelength light projection for treating the area near the user's eye. Further, the controlling unit 130 does not allow the light [in the singular] projection [i.e., emission] to go beyond the treatment portion or a predefined distance.

(Emphasis added). Paragraphs [0087] & [0089] again refer to what is projected/emitted as “a light” or “the light,” in the singular, and they explain the precise control of that single beam of light, which is required to protect the safety of the patient, and which is made possible by the control unit 130.

55. The fact that Dijkstra’s devices only emit a single light beam is made clear in a number of other portions of Dijkstra as well. For example:

1. Paragraph [0077]: “the controlling unit 130 allows **the** light projection unit 110 to project **a light [in the singular]** on the at least one external body condition and/or the at least one internal body condition according to the treatment profile.” (Emphasis added).
2. Paragraph [0078]: “the controlling unit 130 allows **the** light projection unit 110 to project **a light [in the singular]** on the at least one external body condition and/or the at least one internal body condition based on the treatment profile at step 380.” (Emphasis added).
3. Paragraph [0079]: “projecting **a light [in the singular]** 114 on the treatment portion 420.” (Emphasis added).
4. Paragraph [0080]: “the user 400 manually selects the treatment portion 420 via the display unit 160 and projects **a light [in the singular]** 114 on the treatment portion 420.” (Emphasis added).

56. The figures of Dijkstra only show Dijkstra’s devices having a single light emission, via a single projection unit 110. Specifically, FIG. 2 (reproduced above shown as Figure 4 in paragraph 45) shows the light projection unit 110 as a single opening, not a plurality of openings. FIG. 4A (reproduced below) shows a single light beam being projected onto a small section of a subject’s forehead.

57. Dijkstra’s FIG. 7 (reproduced below shown as Figure 7) shows a single light beam being projected onto various sections of the subject, using the light direction controller 112 within the light projection unit 110.

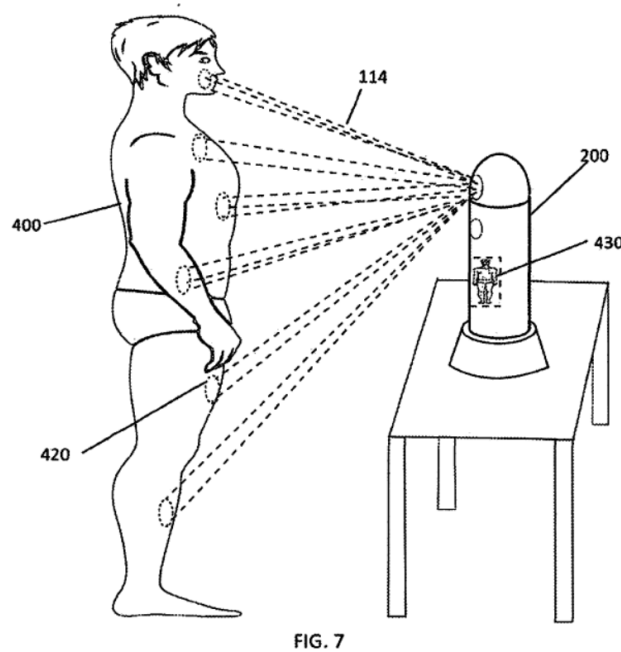


Figure 7_Dijkstra, FIG. 7

58. It is clear to a POSITA that the dashed lines in FIG. 7 illustrate one singular light beam varying its projecting location or position on the subject one at a time based on the control needs and it does not mean to project multiple light beams from one device simultaneously. Similarly, FIG. 8 (reproduced below shown as Figure 8) shows two devices being used on a subject simultaneously. The small circles on the subject's body are potential treatment areas, each targeted one at a time and coming from a single projecting beam emitted from the single light projection unit 110. *Id.* Dijkstra's devices are not able to treat more than one location on a user body at a time, due to the single focused and precisely directional-controlled light beam emitted. EX1004, at ¶ [0064] ("The light direction controller 112 follows a

treatment portion of a user body to an extent by changing a direction of the light projection”); ¶ [0098] (“each light therapy device is projecting light towards a separate treatment portion on the user body”).

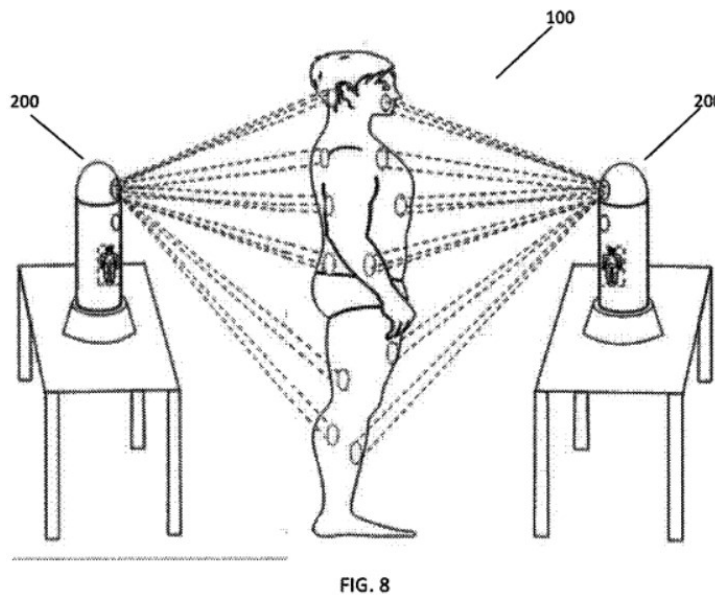


Figure 8_Dijkstra, FIG. 8

59. Finally, Dijkstra’s FIG. 9 (reproduced below shown as Figure 9) shows four devices being used to treat a subject. The figure also shows the singular light emitted from each device is only treating a specific area of the subject’s skin, and each device does not project multiple light beams simultaneously.

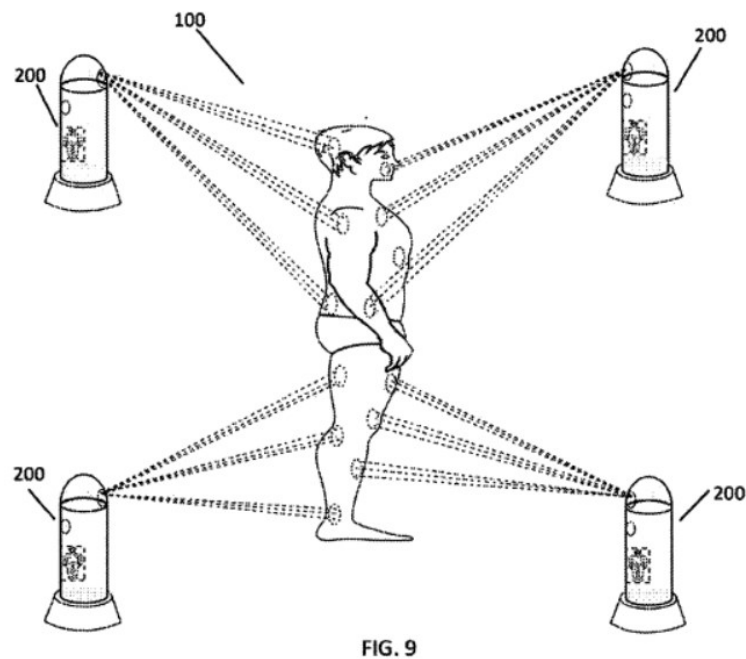


Figure 9_Dijkstra, FIG. 9

60. Dijkstra makes clear that “the two or more light therapy devices automatically allocate their separate treatment portions so that they do not overlap each other's treatment portion while the light [in the singular] is being projected on the allocated treatment portion by the two or more light therapy devices.” EX1004, at ¶ [0098]. If Dijkstra’s each device broadcasts a plurality of lights, it would be exceedingly difficult, if not impossible, to prevent the light from “overlapping” other treatment areas.

61. Dijkstra stands in stark contrast to the invention of the ’719 Patent that uses large panels of lights and discloses “a user is standing in the middle of the light

therapy system 10 to treat the entire body with light therapy simultaneously.”
EX1001, at 6:15-18.

62. Dijkstra is flush with disclosure explaining the precision provided by its devices, the reason that precision is required, and, when describing light emitted from each device, always refers to it in the singular. In fact, the word “lights” (plural) does not appear a single time in Dijkstra, while it appears 263 times in the specification and claims of the ’719 Patent.

i. Petitioner’s Argument that Dijkstra Discloses a First Housing and a First Plurality of Lights Configured to Emit Fails

63. Petitioner alleges in the Petition that “Dijkstra shows . . . a first housing (210) and a first plurality of lights arranged and configured to emit red light or near-infrared light.” Pet., at p. 9. The Petition, however, fails to provide a specific identification of what structure in Dijkstra is supposed to be the “plurality of lights configured to emit.” Petitioner simply cites three paragraphs in Dijkstra ([0019], [0129], and [0133]) and to one paragraph (144) in the report of its expert, Dr. Bretschneider, without explanation or argument of any kind. *Id.*, at p. 10.

64. The paragraph Petitioner cites to in Dr. Bretschneider’s report does not point to or explain which structures in Dijkstra supposedly show “a first housing (210) and a first plurality of lights configured to emit.” EX1002, at ¶ 144. That paragraph, 144, of Dr. Bretschneider’s report, simply cites to other sections of the

report. Specifically, in paragraph 144, Dr. Bretschneider says “*See infra* ¶ 80-131.”

A search for the word “plural” in Dr. Bretschneider’s report reveals that the first paragraph he mentions “plural” in connection with Dijkstra is paragraph 89, and it says “a first plurality of lights (array per [0034]).” (EX1002, at ¶ 89). The paragraph of Dijkstra Dr. Bretschneider is referring to, [0034], in its entirety, reads “[0034] According to yet another aspect of the present disclosure, the light therapy device uses infrared light which tends to be used to treat wrinkles and other problems caused by poor skin support, such as translucent skin or coarse skin.” There is not one mention of the word “array” or “plurality” in paragraph [0034] of Dijkstra. Paragraph 89 of Dr. Bretschneider’s report does not provide any further support for his conclusion and, in fact, does not even attempt to identify where, in Dijkstra, “a second plurality of lights configured to emit” can be found. Paragraph 108 of Dr. Bretschneider’s report appears to be a copy of paragraph 89, again only citing to paragraph [0034] of Dijkstra. (EX1002, at ¶ 108). There is no other citation to Dijkstra within his report to for “a plurality of lights configured to emit.”

65. Having found no support whatsoever in Dr. Bretschneider’s report, Patent Owner returns to the three paragraphs cited to by Petitioner in the Petition. Paragraph [0019] of Dijkstra refers to “the light projection unit...and a light source” in the singular, which does not support Petitioner’s position. Paragraph [0129] of Dijkstra is quickly dispatched because it says absolutely nothing about the number

of lights in the Dijkstra device. Paragraph [0133] states that “LED treatments_s [plural] work by using an **array** of bright light-emitting diodes that send low-level light energy into the deeper layers of the skin.” (Emphasis added). This, on first blush, appears to have a potential to contradict Respondent’s argument that Dijkstra does not disclose a housing with a “plurality” of lights. But read closer, one realizes the sentence is referring to “treatments,” not an actual physical structure, and “treatments” is written in the plural form. This makes sense, as Dijkstra describes “a user **using** a **plurality** of light therapy **devices** 200 according to an exemplary embodiment” as shown in FIG. 9. Dijkstra at ¶ [0047] (emphasis added); FIG. 9. The parties are clearly in agreement on this fact, as Petitioner included FIG. 9 in this section of the Petition. See Pet. at p. 10 and Petitioner’s inclusion of FIG. 9.

66. With reference to FIG. 9, Dijkstra teaches “wherein a user is using a **plurality** of light therapy **devices** 200 for full body treatment at a time. In this, the user is surrounded by the **plurality** of light therapy **devices** and each light therapy device is projecting light towards a separate treatment portion on the user body.” *Id.*, at ¶ [0098]. Naturally, a plurality of devices 200, each with one LED light, would, together, comprise a plurality of LEDs. Dijkstra continues “[f]urther, the two or more light therapy devices automatically allocate their separate treatment portions so that they do not overlap each other's treatment portion while the light is being projected on the allocated treatment portion by the two or more light therapy devices.” *Id.*, at

¶ [0017]. If assuming that each device 200 was broadcasting an “array” of light beams, it would be exceedingly difficult, if not impossible, to prevent the beams from overlapping on a human or animal subject. Thus, Dijkstra’s paragraph [0133], which describes “treatments,” does not disclose “a first housing and a first plurality of lights configured to emit,” as recited in independent claim 1 of the ’719 Patent. The Petitioner’s suggested plurality of lights is a contradiction to the construction, operation, and control of the Dijkstra’s disclosure, and Petitioner’s Argument that Dijkstra Discloses a First Housing and a First Plurality of Lights Configured to Emit fails.

ii. Petitioner has Failed to Meet its Burden of Presenting a Prima Facie Case of Unpatentability on Ground 1

67. Petitioner has not only failed to discuss where and how Dijkstra discloses a “plurality of lights configured to emit,” Petitioner has not mentioned it at all. “In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (emphasis added); *see also In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1375 (Fed. Cir. 2016) (“In an inter partes review, the burden of persuasion is on the petitioner to prove ‘unpatentability by a preponderance of the evidence,’ 35 U.S.C. § 316(e), and that burden never shifts to the patentee.”) (quoting *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800

F.3d 1375, 1378 (Fed. Cir. 2015)). Petitioner has failed to meet its burden to present a prima facie case of unpatentability on this ground.

68. In the interest of thoroughness and completeness, and although it was not raised by Petitioner, Patent Owner would like to address Dijkstra's paragraph [0051]. This paragraph is a template statement indicating the use of terms in the patent stated in the singular can be interpreted as plural. This paragraph is not specific to the actual invention in Dijkstra and does not adequately enable a Dijkstra device that could have more than a single light source. As stated above, Dijkstra's specification only and purposely discloses a single embodiment – a device that emits a single light beam for the purposes of light beam control in direction, location, etc. Nowhere in Dijkstra's specification is there any disclosure of a direction controller 112 that can divert the single light beam from the light source 113 into multiple directions to form plural light beams or for a single device to have more than a single light source 113 and more than a single light projection unit 110. Such configuration does not exist, would defeat the claimed goals of Dijkstra, and certainly is not enabled by a single catch-all template paragraph. *Application of Armbruster*, 512 F.2d 676, 677 (C.C.P.A. 1975) (“a specification which ‘describes’ does not necessarily also ‘enable’ one skilled in the art to make or use the claimed invention”). Dijkstra's disclosure is fundamentally and essentially different from '719 Patent

claims of “plurality of lights”, in which the extended and non-aimed lights are projected to “full body” (EX1001, FIG. 3).

69. Finally, Paragraph [0019] states “the light projection unit includes a light direction controller, a light head and a light source, wherein the light source is a laser light, LEDs, photoreactive chemical producing light, phosphorus or any other suitable light source generating the light ranging from 100-1600 nm wavelength.” Although this argument has not been made by Petitioner or its expert, a POSITA would have understood that the “s” after LED does not change the fact that Dijkstra only describes one light source. As explained above, every portion of Dijkstra that actually discuss Dijkstra’s light source very clearly refers to it as a singular light. As just one example, paragraph [0063] contains virtually identical language to that of paragraph [0019], but refers to “LED” in the singular. EX1004, at ¶ [0063] (“the light source 113 may be a LED light, infrared light, a UV light, a laser light, photo reactive chemical producing light, phosphorus or any other suitable light source generating the light in a range of 100-1600 nm wavelength for treating a person.”) (emphasis added). The same is true with paragraph [0103] (“the light source 113 projecting the light on the light direction controller 112 is selected from a group of LED light, a laser light, an Infrared light, UV Light, an electromagnetic light or any other suitable light”). Patent Owner has provided above many other citations to Dijkstra referring to the light source as something that produces a single light beam

and the figures show the same. It simply makes sense that Dijkstra would consistently refer to “a LED” and “a light” throughout the specification, e.g., paragraphs [0028], [0033], [0063], [0133], and Claim 14, and describe and enable precise light beam control for supporting single light projection per device. A POSITA would have understood that Dijkstra is referring to the fact that one of several different “LEDs” may need to be selected in order to produce the desired wavelength within the specified wavelength range (100-1600 nm) mentioned in that same sentence, as Dijkstra does discuss the fact that (light-emitting) diodes only produce light in certain (wavelength) ranges (often with a very narrow bandwidth). Dijkstra at ¶ [005] (“light spectrums emitted by LEDs (blue or red) are known to be therapeutic for skin treatment against maladies”) (emphasis added). A POSITA would also have understood that knowing LED die has very narrow spectral (wavelength) emission, such as either blue or red. Petitioner has not only not discussed this portion of Dijkstra, Petitioner has not mentioned it at all. In all aspects, Dijkstra’s disclosure is for a single light projected from a single light source. Again, this is fundamentally and essentially different from the ’719 Patent claims of “plurality of lights”, in which the extended and non-aimed lights are projected to “full body” (EX1001, FIG. 3). Once again, “[i]n an inter partes review, the burden of persuasion is on the petitioner to prove ‘unpatentability by a preponderance of the evidence,’ 35 U.S.C. § 316(e), and that burden never shifts to the patentee.” *In re*

Magnum Oil Tools Int’l, Ltd., 829 F.3d at 1375. Petitioner has failed to meet its burden to present a prima facie case of unpatentability on this ground.

B. U.S. Patent Publication No. 2006/0237439 to Norwood (“Norwood”)

70. I understand the Petition relies on U.S. Patent Publication No. 2006/0237439 to Norwood (“Norwood”). EX1005.

71. Norwood discloses a fragrance “plug-in diffuser having one or more LEDs used as nightlights and/or ornamental displays.” EX. 1005, at ¶ [0001]. The structure consists of a housing 11, a compartment or slot 6 for receiving an active material, a heating element 8, and a lighting element 7. *Id.*, at ¶ [0050]. A set of “diffusion outlets 5 . . . provide for a chimney effect so that air movement occurs across the front of an active material cartridge contained in a compartment or slot 6 formed in the housing 11. *Id.*, at ¶ [0059]. FIGs 1 and 2 of Norwood are reproduced below shown as Figure 10.

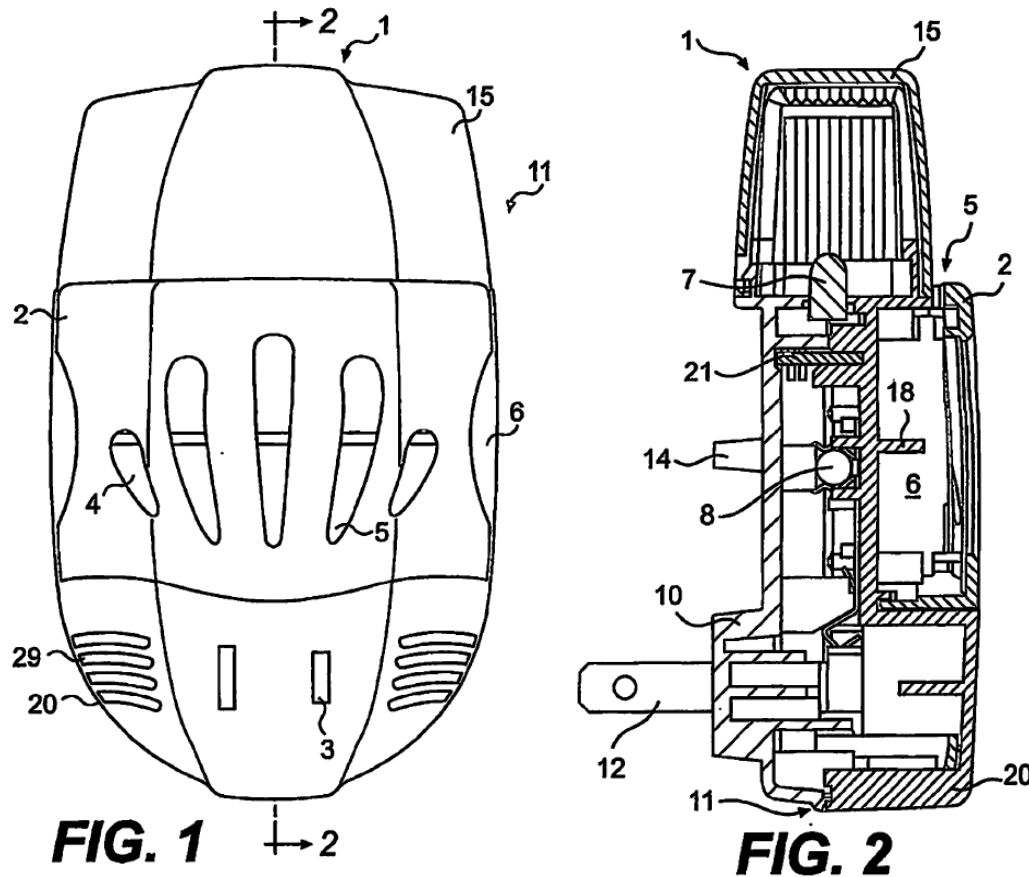


Figure 10 Norwood, FIG. 1 and FIG. 2

72. “The lighting element 7 . . . may be a single LED or a plurality of LEDs, such as one or more LED arrays. If multiple LEDs are used, they may be arranged in, for example, a line, a circle, a square, a flower shape, a rainbow shape, or any other desired shape or arrangement [and can be] LEDs of the same or different colors depending on the particular aesthetic design of the diffuser.” *Id.*, at ¶ [0053].

73. Norwood teaches wall plug-in scented diffusers that include decorative low-power LEDs (less than 0.1 watts) that serve the sole purpose of providing a

nightlight and/or ornamental displays. Specifically, with regard to its purpose, Norwood teaches “the LED lighting element 7 of our invention provides sufficient light, i.e., is of a sufficient luminous intensity, to satisfactorily perform as a nightlight.” EX1004, at ¶ [0053]. Norwood further teaches that its nightlight is of unusually low power. *Id.*, at ¶ [0056] (“the LED lighting element 7 of our invention uses substantially less power than conventional nightlight devices . . . only a small fraction (less than 0.1 watt) is used to power the LED lighting element 7.”) Norwood further teaches that if multiple LEDs are used, it is only for aesthetic purposes. EX1005, at ¶ [0053] (“If multiple LEDs are used, they may be arranged in, for example, a line, a circle, a square, a flower shape, a rainbow shape, or any other desired shape or arrangement [and can be] LEDs of the same or different colors depending on the particular aesthetic design of the diffuser”).

C. The Petition Fails to Show a Likelihood of Prevailing on the Dijkstra + Norwood Ground

74. Norwood is entirely non-analogous art to the devices of Dijkstra that provide therapeutic skin treatment via a specialized high-power intense singular light source. Petitioner claims Norwood is analogous, stating Norwood “addressed the ‘problem is that conventional diffusers typically do not have suitable controllability for varying the emission of light and/or fragrance.’” Pet., at p. 36. While controllability may be one aspect of the claimed photobiomodulation therapy

systems and methods of the '719 Patent, it is unrelated to the type of light source being used.

75. More importantly, the '719 Patent teaches the plurality of lights arranged and configured to emit lights that are projecting onto full body of a user who's taking the light therapy. In particular, one of ordinary skill in the art of photobiomodulation therapy systems and methods for medial treatment would find two aspects of non-analogous art disclosed by Norwood.

76. The first aspect is Norwood's LED light emission level. Norwood discloses a purely aesthetic ornamental display device with a very low light emission level using low-power (less than 0.1 watts) LEDs. The LED light emission then is diffused with diffusors to be shaped in an esthetic fashion such as flowers and rainbows to serve the function solely as a nightlight and/or ornamental display. Norwood's LEDs are ordinary, low power light sources. *Id.* at ¶ [0056] ("only a small fraction (less than 0.1 watt) is used to power the LED lighting element 7."). In contrast, Dijkstra requires a "high-powered" light source. EX1004, at ¶ [0107] ("the device provides intense pulsed light IPL) treatment. In this, a high-powered, computer-controlled, visible, broad-spectrum pulse of light, generally in the visible spectral range of 400 to 1200 nm and a frequency range of 1 to 1,000,000 (Hz) with or without variable hertz is delivered."). A POSITA would have understood that low emission level ornamental display device is a contradiction to the function and

purpose of high emission level lighting therapeutic device, which light emission level must be established for various skin treatment purposes. If it assumes that power level used in the Norwood's device might be increased, it will lead to malfunction or destroy the "stimulation, such as fragrance and/or sound" (EX1005, at [0015]).

77. The second aspect is the light projection in Norwood. Contracting to the aesthetic ornamental purpose in Norwood, Dijkstra teaches light projection onto a specifically aimed at area or portion of user's body. Norwood's disclosure shall not and cannot define where the emitted lights to be projected onto, because there is no reason or intention to control the light projecting direction, beam spread, or light intensity level as disclosed in Dijkstra. Norwood and Dijkstra teach non-analogous or contradictory light projections. Norwood discloses the light to be seen by users as an aesthetic device, and it serves as visual pleasure purpose. Contractively, Dijkstra discloses the light to be precisely projected onto an area of user's body, and it is specifically designed to avoid hitting the user's eyes.

78. A POSITA would have understood that there would not be any motivation to combine Dijkstra with Norwood. Regardless of the light color or controllability disclosed by each, the light emission level and light projection in Norwood and Dijkstra have the opposite purposes. '719 Patent claim [1a] states "a first light therapy device," but Norwood's disclosed device is contradictory to a light

therapy device. '719 Patent claim [1b] states “a second light therapy device,” but, again, Norwood’s disclosed device is contradictory to a light therapy device. '719 Patent claim [1c] states “communicative coupling the first light therapy device directly to the second light therapy device,” but Norwood’s specification for communications between the devices does not disclose the coupling between first and second light therapy devices. '719 Patent claim [1e] teaches the usage of light therapy devices with different modes, which is the light projection onto full body of a user, that is contradictive to Dijkstra mode control for specifically aimed area of the users’ body. Therefore, a POSITA knowledge does not allow Dijkstra to be used as in this claim element of the '719 Patent.

79. Thus, the combination of Dijkstra and Norwood does not and cannot render claim 1 of the '719 Patent obvious.

80. As for the '719 Patent’s claims 2, 3, 9, 10, 11, 16, 17, and 19, the Petitioner failed to provide any argument for motivation to combine Dijkstra and Norwood, or Dijkstra and POSITA knowledge. The fundamental differences of light emission level and light projection in the light therapy device described by Dijkstra and the aesthetic ornamental device described by Norwood is so widely contradictive and they are non-analogous art. The combination would be strongly against POSITA’s common sense, technical knowledge, and objective view. As such,

the combination of Dijkstra and Norwood or Dijkstra and POSITA knowledge does not and cannot render the '719 Patent's claims 2, 3, 9, 10, 11, 16, 17, and 19 obvious.

XII. CONCLUSION

81. Based on the foregoing, it is my opinion that Petitioner has failed to establish by a preponderance of the evidence that Claims 2, 3, 9, 10, 11, 16, 17, and 19 of the '719 Patent are unpatentable over the cited references and knowledge of a POSITA.

82. In signing this Declaration, I recognize that the Declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be called upon to testify in deposition or before the Patent Trial and Appeal Board. If called upon to testify, I would testify truthfully and competently to all matters stated in this Declaration.

83. I reserve the right to supplement my opinions in the future to respond to any arguments that Petitioner raises and to take into account new information as it becomes available to me.

Mito Red Light, Inc. v. Joovv, Inc.
Patent No. 11,253,719—IPR2024-00621

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true and that such statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed on June 28, 2024, in San Francisco, California.

A handwritten signature in dark ink, appearing to read "Jianzhong Jiao", written over a horizontal line.

DR. JIANZHONG JIAO, PH.D.