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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EUNSUNG GLOBAL CORP.,

Petitioner,

v.

HYDRAFACIAL LLC,

Patent Owner.

Case No. IPR2025-00453
U.S. Patent No. 11,446,477

PATENT OWNER PRELIMINARY RESPONSE

[REDACTED]

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EXHIBIT LIST

Exhibit No.	Description
2001	Declaration of Karl R. Leinsing, MSME, PE
2002	<i>Curriculum Vitae</i> of Karl R, Leinsing
2003 – 2004	[RESERVED]
2005	2016-05-09 Order Granting Plaintiff’s Motion for Summary Judgment, <i>Edge Systems LLC v. Aguila</i> , Case No. 14-cv-24517, D.I. 225 (S.D. Fla. May 09, 2016)
2006	2014-12-19 Motions Hearing Transcript, <i>Edge Systems LLC v. Aguila</i> , Case No. 14-cv-24517, D.I. 55 (S.D. Fla. Dec. 19, 2014)
2007	2015-01-29 Report and Recommendations on Plaintiff’s Application for Preliminary Junction, <i>Edge Systems LLC v. Aguila</i> , Case No. 14-cv-24517, D.I. 81 (S.D. Fla. Jan. 29, 2015)
2008	2015-02-24 Order Adopting D.I. 81 Report and Recommendation, <i>Edge Systems LLC v. Aguila</i> , Case No. 14-cv-24517, D.I. 89 (S.D. Fla. Feb. 24, 2015)
2009	Declaration of Vipul Savsani [SEALED]
2010	HydraFacial Equipment Sales Report, 2005 - Q2 2024 [SEALED]
2011 – 2013	[RESERVED]
2014	U.S. Patent No. 6,582,442 (“Simon”)
2015	Printout of webpage: https://www.celluma.com/products/celluma-pod
2016 – 2023	[RESERVED]

Exhibit No.	Description
2024	Proposed Protective Order
2025	Redline Proposed Protective Order
2026 – 2029	[RESERVED]
2030	Hydrafacial Syndeo™ Instruction for Use (IFU), revised May 1, 2023
2031	HydraFacial MD™ Elite™ User Guide, revised November 1, 2023
2032	Hydrafacial™ Allegro MD Instructions for Use (IFU), revised November 06, 2023
2033	HydraFacial MD™ System Owner's Manual (Tower Owner's Manual) (2005)
2034	HydraFacial™ Handpiece User Guide, Revised February 19, 2020
2035	HydraFacial Nectre® System Owner's Manual, Revised May 14, 2008
2036	HydraFacial™ Nectre® System User Manual, Revised January 27, 2009
2037	HydraFacial™ Nectre® System Service Manual, Revised June 12, 2009
2038	Introducing . . . HydraFacial MD™ by Edge Systems Advertisement
2039	HydraFacial™ Rejuvenate Your "Microderm" Business! Advertisement (January/February 2006)
2040	HydraFacial™ Whole New Skin Advertisement
2041	My Life. My Time. My Skin HydraFacial MD™ Advertisement, Dated May 11, 2015
2042	Unique Patented HydraFacial MD® TECHNOLOGY Advertisement (2013)

Exhibit No.	Description
2043	HYDRAFACIAL™ TOWER SYSTEM Advertisement (2020)
2044	The Elite™ is the Latest HydraFacial System with Advancements to Ensure Your Practice's Success Advertisement (2020)
2045	EXPECT EVERYTHING: Introducing the Brand-New HydraFacial Elite Advertisement (2020)
2046	Expect Everything with the New HydraFacial Elite
2047	The Allegro™ System Advertisement (2020)
2048	Excerpts from the 2003 Bloomsbury Dictionary of Science and Technology 1 st Ed.
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2053	Estimating Water Flow Rates (W.L. Trimmer)
2054	Viscosity of Endodontic Irrigants: Influence of Temperature, Dental Research Journal 2015
2055	Optimization Formula of Antioxidant Cream Vitamin E (α -tocopherol acetate) with Virgin Coconut Oil (VCO), Dian Ermawati, Uswatun Chasanah and Dwi Dwi.
2056	Dixon Valve & Coupling Company. (n.d.). Viscosity chart. https://www.dixonvalve.com/sites/default/files/product/files/brochures-literature/viscosity%20chart.pdf (last accessed May 12, 2025)

I. INTRODUCTION

The Petition challenges one of the seminal patents for hydrodermabrasion technology. HydraFacial, the patent owner, pioneered hydrodermabrasion around 2005 and has since been awarded numerous related patents, including the '477 patent, which protect HydraFacial's core innovations. These innovations—originally developed in the founders' garages in Long Beach, California—have driven HydraFacial's tremendous growth and created an entirely new industry. Over the years, this success has resulted in HydraFacial generating nearly [REDACTED] [REDACTED] in sales of its hydrodermabrasion systems protected by the '477 patent.

Hydrodermabrasion systems rejuvenate the skin by applying various fluid solutions to cleanse and exfoliate the skin surface, extract debris from pores, and deeply hydrate and moisturize the skin. These systems are widely used by physicians and aestheticians as part of comprehensive treatment regimens.

The systems claimed in the '477 patent deliver treatment materials to a patient's skin while simultaneously suctioning the used material and debris into a waste container. Users can select a desired treatment material from multiple containers. These containers are connected to a handpiece assembly via a manifold system and supply conduit. As the working end of the handpiece assembly contacts the skin, a vacuum source generates negative pressure at the working end of the handpiece assembly, drawing the skin toward the handpiece assembly and pulling

treatment material from the selected container. Concurrently, the used fluid and debris is suctioned into the waste container. This configuration allows clinicians to choose from multiple treatment materials during a session, enabling customized, multi-step treatments tailored to each patient's needs.

Petitioner Eunsung constructed its validity challenge with the '477 patent as a blueprint and worked backwards to cobble together disparate technologies in the prior art. In Grounds 1A-1D, Eunsung's proposed combination starts with the Karasiuk reference, which describes a single-treatment device that has one reservoir, no manifold, no console, and a downstream vacuum source—used to deliver high-viscosity lotions and abrasive particles to a patient's skin. Eunsung attempts to incorporate Karasiuk's components into the Palmer reference, which describes a dental irrigation system that has an upstream pump, tiny tubing (1/16th inch), and a rotary “selector valve means” (not a manifold). This system delivers low-viscosity liquids in “pulsed jets” at high velocity into a patient's mouth. A person of ordinary skill in the art (“POSITA”) would have recognized that these are fundamentally different technologies and found no motivation to combine them. The Petition resorts to unsupported “general knowledge” to fill in significant gaps, relying on hindsight rather than sound technical reasoning.

Critically, Eunsung's proposed Karasiuk-Palmer combination also fails to satisfy all claim limitations. The “selector valve means” in Palmer, which Eunsung

contends is a manifold system, does not meet the manifold system limitation—even under Eunsung’s adopted definition.

Eunsung’s attempt to join Palmer’s dental irrigation system with Karasiuk’s skin treatment device also renders the modified system inoperable. This proposed combination requires removing a critical component from Palmer’s system when joining it to Karasiuk’s device, and also requires applying other Palmer and Karasiuk components where they do not function as intended. These modifications leave the proposed combination unable to deliver treatment fluid to the handpiece assembly, rendering it useless for any skin treatment procedure. A POSITA would have had no motivation to construct such a configuration. The Petition offers no credible rationale for combining the cited elements and instead improperly uses the disclosure of the ’477 patent as a template to assemble parts from unrelated prior art into a system that ultimately does not work.

In Grounds 2A-2B, Eunsung relies on Greenberg as the primary reference. Here, as with Palmer, Eunsung points to a valve in Greenberg that cannot meet the manifold system limitations, even under Eunsung’s adopted definition of the term manifold. Moreover, Greenberg relates to a microdermabrasion system using only solid dry abrasive particles to abrade the skin, whereas the “treatment material” recited in the claims excludes Greenberg’s solid dry particles. Indeed, microdermabrasion is the industry that HydraFacial’s hydrodermabrasion systems

essentially replaced. Finally, a POSITA would not have been motivated to make the combination of Greenberg's disparate embodiments that Eunsung proposes. Eunsung never provides a rationale for these combinations. For example, Eunsung adds a vacuum to Greenberg's Fig. 5 schematic in an attempt to meet the claim limitations, but never explains why or how a POSITA would do so, which is particularly problematic as Greenberg itself indicates an upstream compressor is employed, and not a downstream vacuum, as Eunsung inexplicably proposes.

HydraFacial's patented products have experienced tremendous commercial success and have been subject to blatant copying by competitors, including Eunsung and its distributor. As the Federal Circuit has held, these objective indicia can be the most probative evidence of non-obviousness in the record and enable the tribunal to avoid the trap of hindsight. The Federal Circuit has established that secondary considerations of non-obviousness serve as important safeguards against improper reliance on hindsight, as exemplified by the flawed reasoning advanced by Eunsung.

Because Eunsung has not met its burden to show there is a reasonable likelihood that at least one claim is unpatentable, the Board should decline to institute *inter partes* review under 35 U.S.C. § 314(a).

II. BACKGROUND AND PATENTED TECHNOLOGY

A. HydraFacial and Hydrodermabrasion

HydraFacial pioneered the field of hydrodermabrasion and is a worldwide leader in the design, development, manufacture and sale of high-quality hydrodermabrasion systems. These systems rejuvenate skin by applying different liquid solutions to the skin to cleanse and exfoliate the skin surface, extract debris from pores, and thoroughly hydrate and moisturize the skin. HydraFacial markets and sells these systems throughout the United States to end users such as dermatologists, plastic surgeons, cosmetic physicians, and aestheticians at medical spas. Below is HydraFacial's latest flagship product, the Syndeo, along with the three treatment solutions and the cleaning solution.



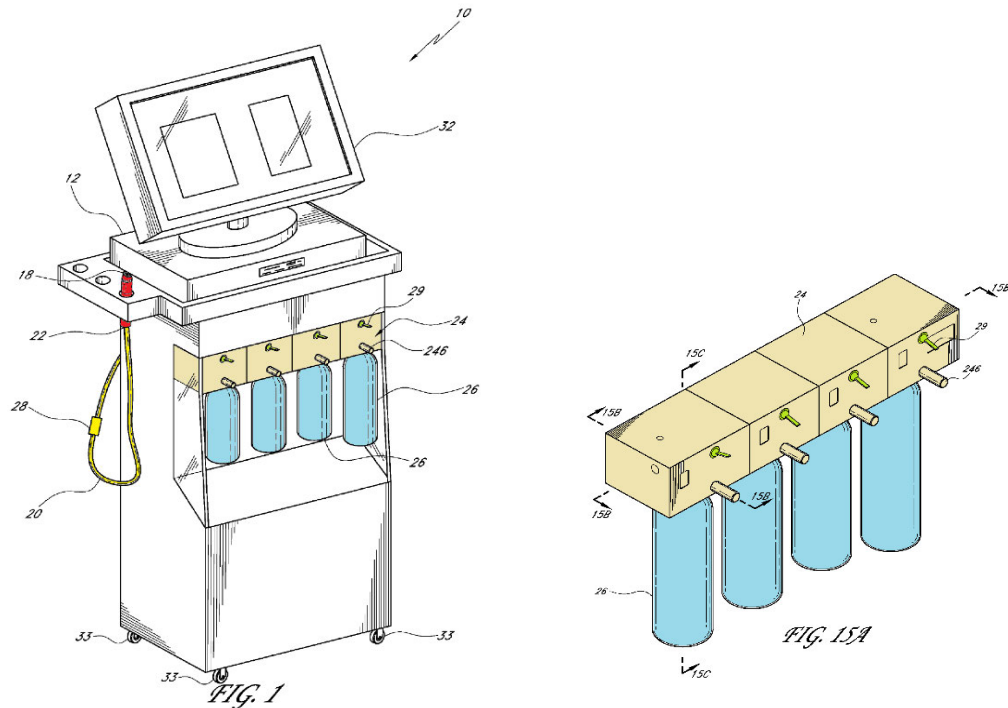
The hydrodermabrasion industry owes its origin to HydraFacial and its patented technology. HydraFacial's revolutionary hydrodermabrasion systems, including the Syndeo above, are protected by the '477 patent. The disclosure of the '477 patent dates back to 2005 and is the original disclosure describing HydraFacial's hydrodermabrasion systems that created the industry.

B. The Patented Technology

The '477 patent discloses a skin treatment system that applies treatment liquids from multiple containers sequentially or simultaneously to the patient's skin. Ex. 1001, 6:19-22; *id.*, 13:14-15. Unlike prior art microdermabrasion systems that

are often painful and will dry out and often damage the skin (*id.*, 1:41-50, 2:9-15), the systems disclosed in the '477 patent exfoliate dead skin cells and extract impurities by applying a vacuum “while simultaneously bathing the healthy underlying skin with active treatment material.” *Id.*, 7:52-56. These treatment materials “can facilitate cleansing, exfoliating, hydrating, and/or provide residual antioxidant protection.” *Id.*, 7:56-58. The claims of the '477 patent are directed to skin treatment systems that have multiple containers containing the treatment materials and involve removing waste from the skin surface via a waste conduit while drawing treatment materials from the first container or second container to the working end of a handpiece assembly via the supply conduit. *See, e.g.*, claim 1.

The treatment system applies treatment liquids to a person's skin while simultaneously suctioning spent treatment fluid and debris away from the skin and into a waste container. Ex. 1001, 5:54-60, 7:43-51. The user can select a desired treatment medium from multiple treatment-fluid containers (shown in blue below). *Id.*, 6:13-22, 15:53-55, 17:9-21.



Id., Figs. 1 (annotated), 15A (annotated). The '477 patent describes the same treatment materials used in the Syndeo and other HydraFacial commercial products: “active-4™” as a cleansing and exfoliating serum (*id.*, 15:53-65); “Beta-HD™” as a salicylic acid extraction serum (*id.*, 15:65-16:6); and “Antiox-6™” as an antioxidant hydration serum (*id.*, 16:6-15).

HydraFacial’s patented system can also include a manifold system (shown in beige above). The manifold system can connect to the treatment material containers of the system and, when there is at least one container connected to the system, the container is in fluid communication with the handpiece assembly (shown in red above) through a supply conduit (shown in yellow above). *Id.*, 2:23-28, 3:50-52, 5:19-22, 6:14-16, 17:9-21, 17:65-19:3. The system also contains a vacuum source

which, when the user contacts the working end of the handpiece assembly against the skin, creates an area of negative pressure inside the tip. *Id.*, 10:63-11:2. That negative pressure pulls the patient's skin against the working end of the handpiece assembly. *Id.*, 10:63-11:5. The negative pressure also draws treatment material from the selected container while simultaneously suctioning waste and spent treatment fluid into a waste container. *Id.*, 7:52-65, 10:63-11:9. The multiple treatment material containers allow the physician or esthetician using the device to selectively draw treatment material from the containers and thereby provide a customized, multi-step treatment for each patient. *Id.*, 6:16-29, 16:26-51.

C. Level of Ordinary Skill in the Art

As explained by Mr. Leinsing, a POSITA for the '477 patent would have a degree in science or engineering plus a minimum of three years of experience in the medical device industry. Ex. 2001, ¶ 22. Alternatively, a product designer could have an additional two years of experience in the industry in lieu of a formal science or engineering degree. *Id.* The POSITA would also consult with a physician as needed to understand the medical implications of the disclosed device, including the effect of the device on skin. *Id.* This definition of a POSITA appropriately takes into consideration both engineering knowledge important for understanding mechanical aspects of the device and the skin treatment implications of the device.

Eunsung’s definition of a POSITA, which does not adequately account for the medical and skin treatment implications of the system, affects both Eunsung’s and Mr. Simon’s analysis of the claims in view of the prior art. When the differences between the prior art and the claimed invention are assessed in purely mechanical terms, it can lead to hindsight bias. For example, Mr. Simon fails to appreciate the differences between HydraFacial’s patented technology and the prior art technology he holds a patent on. *See* Ex. 2014 (Simon patent directed to dry-particle microdermabrasion). As explained below, this hindsight bias invades Mr. Simon’s analysis when attempting to combine disparate technologies like the dental irrigation system disclosed in Palmer with the single-reservoir skin treatment system disclosed in Karasiuk.

Nevertheless, despite these important differences in the definition of a POSITA, HydraFacial’s expert has assessed obviousness under both HydraFacial’s and Eunsung’s definitions and determined the claims would not have been obvious under either definition. Ex. 2001, ¶¶ 21-25.

III. CLAIM CONSTRUCTION

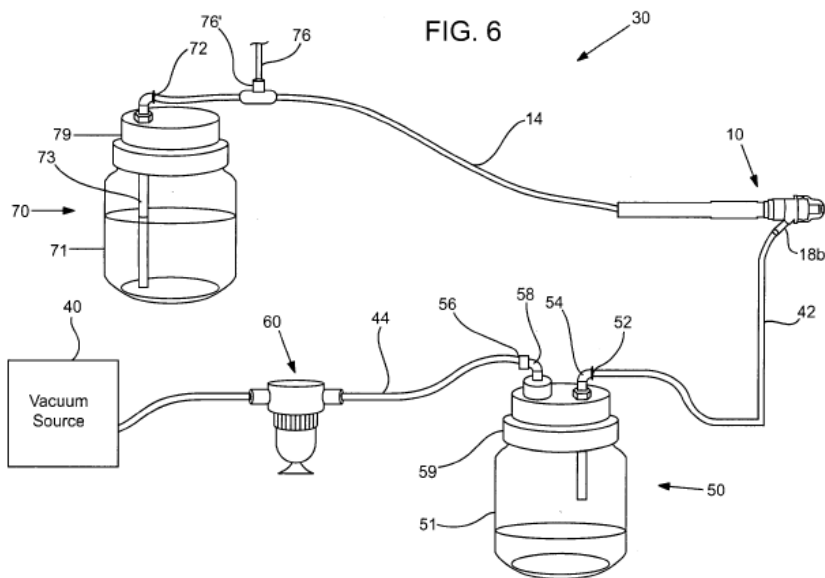
Eunsung asserts that “[n]o formal claim constructions are necessary.” *See* Pet., 2. HydraFacial agrees no formal constructions are necessary, except to address Eunsung’s implicit constructions in two instances. First, HydraFacial addresses the

ordinary meaning of “manifold”¹ as understood by both parties. Second, HydraFacial addresses Eunsung’s implicit and incorrect construction of “treatment material.” Ex. 2001, ¶ 26.

IV. THE CLAIMS OF THE ’477 PATENT ARE PATENTABLE OVER THE PRIOR ART

A. Karasiuk

As shown in Figure 6 below, Karasiuk is a simple device that draws liquid from just one jar during a treatment.



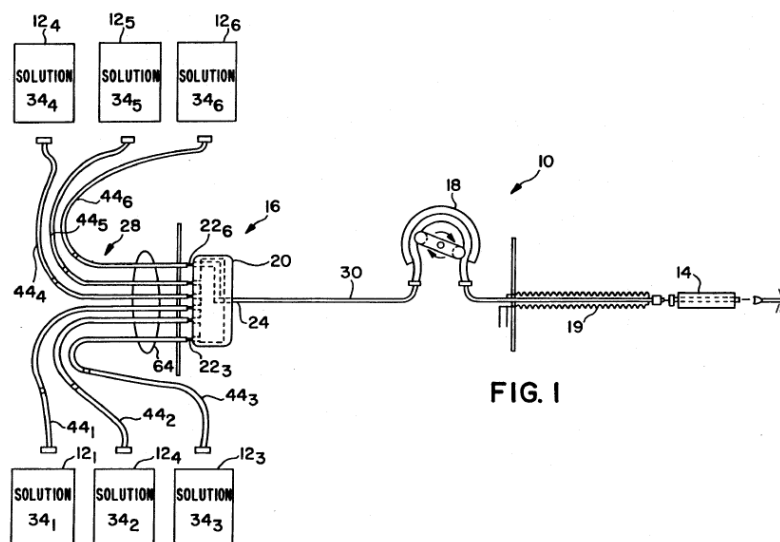
Ex. 1004, Fig. 6, [0020]. Karasiuk indisputably lacks a manifold system in communication with a first container and an at least a second container as recited in

¹ Although the claims recite a “manifold system,” Eunsung’s proposed definition is in relation to a “manifold.”

independent claims 1, 9, and 15. Nothing in Karasiuk suggests separately storing and applying different treatment materials in a single treatment. At most, Karasiuk lists different solutions, suspensions, or compounds that can be contained “alone or in combination” in Karasiuk’s single reservoir 70. *Id.*, [0061]; Ex. 2001, ¶¶ 30, 31.

B. Palmer

Palmer is an irrigation system used in periodontal procedures. Ex. 1005, 1:10-15. As such, Palmer delivers “pulsed jets” of treatment solution at constant pressure and substantially constant volumetric flow rate to the treatment area in the patient’s mouth. *Id.*, 2:52-56, 11:17-23 (pressure of 25 psi and flow rate of 22-25 mL/minute). Palmer employs a peristaltic pump 18 located upstream of handpiece 14 to generate the pulsed jets of solution, as shown in Fig. 1. Ex. 2001, ¶ 32.

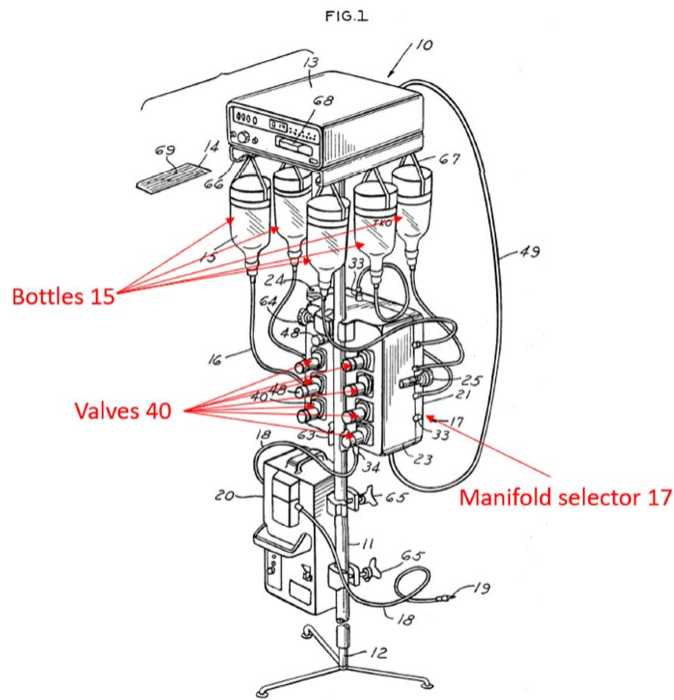


Ex. 1005, Fig. 1. The handpiece sprays the pulsed jets directly at a treatment site in the patient’s mouth to irrigate it. *Id.*, 3:15-26. Unlike a skin treatment system,

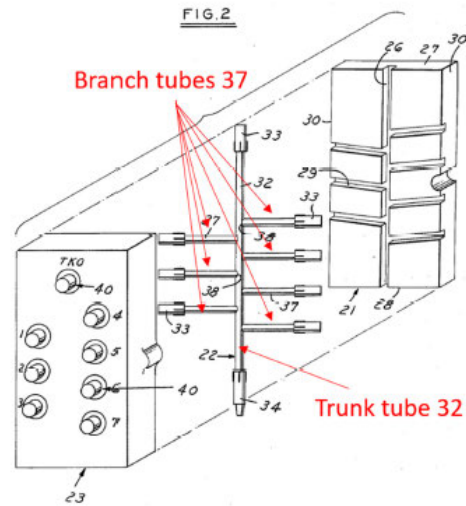
Palmer is a one-way irrigation system that lacks any mechanism to vacuum the spent solution from the patient's mouth and back through the handpiece. Indeed, Palmer uses the peristaltic pump "as a natural check valve since it cannot aspirate solution back into the cannula" of the handpiece. *Id.*, 3:30-33; Ex. 2001, ¶¶ 33-34.

C. Wunsch

Wunsch describes a system for sequentially dispensing multiple intravenous (IV) solutions from multiple solution sources through a single catheter. Ex. 1020, 5:18-22. Each solution source is connected to a distinct branch (*e.g.*, branch tubes 37) of a manifold (*e.g.*, combination of trunk tube 32 and branch tubes 37), with flow through each branch controlled by a valve selector that actuates valves mounted on a manifold plate. *Id.*, 7:49-52. These valves are individually actuated by electronically operable motors or solenoids. *Id.*, 6-18-26; Ex. 2001, ¶ 35.



Wunsch, FIG. 1 (annotated)



Wunsch, FIG. 2 (annotated)

Pet., 49, 51.

The “manifold system” (*e.g.*, combination of trunk tube 32 and branch tubes 37) from Wunsch cannot, independently, control the flow of treatment of material. *See* Ex. 1020, 4:1-10, 7:17-56; Pet., 50 (“In operation, by activating an individual valve 40, the user can selectively connect a chosen bottle 15 to the trunk tube 32 for delivery.”). The “manifold” of Wunsch (*i.e.*, the trunk tube 32 and branch tubes 37) would result in an open system with uncontrolled, free-flowing liquid from each solution source. Ex. 2001, ¶ 36.

Wunsch’s volumetric infusion pump meters the dispensed quantity of each solution. Ex. 1020, 6:7-13. The sequence and timing of solution delivery is governed by a sequencer-timer, which automatically and successively actuates each

valve in accordance with a predetermined program (e.g., stored on a program card).

Id., 5:25-35, 51-55; Ex. 2001, ¶ 37.

D. Greenberg

Greenberg discloses a microdermabrasion machine that uses dry abrasive particles to abrade the skin. *See* Ex. 1006 at Abstract. Greenberg is focused on “using abrasive particles of different sizes and/or type.” *Id.*, [0002]. For example, the embodiment in Figs. 1-2, includes two separate and distinct assemblies on either side of the machine, each with its own recovery container, supply container, and handle to separately drive particles of different sizes or type. *Id.*, [0049]; Ex. 2001, ¶¶ 38-41.

Greenberg includes different embodiments of the microdermabrasion machine. The embodiment in Fig. 3 includes two assemblies, each with a supply container 18, 26 and recovery container 14, 22 and a handle 16, 24. Ex. 1006, [0065]. However, unlike the version in Figs. 1-2, it includes only one pneumatic source 12, and thus has two valves 70 and 72 that operate in tandem to direct the flow from the pneumatic source. *Id.*; Ex. 2001, ¶ 42.

The embodiment of the microdermabrasion apparatus in Fig. 4 is referred to as a “joint assembly,” where it has two different supply containers 18, 26 but only a single recovery container 14. Ex. 1006, [0067]. It has a valve 30 that connects the supply containers 18, 26 to the different handpieces 16, 24. Ex. 2001, ¶ 43.

The embodiment in Fig. 5 includes three containers 90, 94, 98, one recovery container 104, and one handpiece 102. Ex. 1006, [0077]. It employs two valves 106 and 108. Greenberg explains that “[a] supply container can be chosen to be in communication with handle 102 and recovery container 104 by the use of valve 106 that controls air flow into the respective supply container and valve 108 that then connects that supply container to the handle 102 and recovery container 104.” *Id.* Thus, valve 106 controls air flow into the supply containers to aerate and suspend and then propel the abrasive particles downstream to valve 108, which is connected to the handle 102. Greenberg’s Fig. 5 embodiment does not include a vacuum source downstream of the recovery container. Ex. 2001, ¶ 44. Greenberg discloses another version in Fig. 6 that includes one supply container and one recovery container. *Id.*, ¶ 79. All versions disclosed by Greenberg employ riser tubes that are generally not compatible with liquid suctioning. Ex. 1006, Figs. 1-6; Ex. 2001, ¶ 45.

E. Grounds 1A-1D: A POSITA Would Have Had No Motivation to Modify Karasiuk

Eunsung alleges a POSITA would have been motivated to modify Karasiuk to use multiple types of skin treatments stored in separate containers during the same treatment. Pet., 9-13. Eunsung alleges the motivation would have come from two sources: “Based on [1] general knowledge and [2] Karasiuk’s disclosure, a POSITA

would have recognized the desirability of using multiple types of treatment solutions *during microdermabrasion*.”² *Id.*, 10; Ex. 2001, ¶ 94.

But neither “general knowledge” nor “Karasiuk’s disclosure” provides a motivation to use multiple types of treatment solutions *during microdermabrasion*, let alone to modify Karasiuk’s single-container system to add more containers and a “manifold.” Ex. 2001, ¶ 95.

1. “General Knowledge” Was Not a Motivation

The Petition includes no explanation of the “general knowledge” that would have supposedly motivated a POSITA to modify Karasiuk. Eunsung instead punts this task to its expert witness, Mr. Simon. Pet., 9 (citing Ex. 1003, ¶¶ 94, 95). The Board should disregard this “general knowledge” argument because Eunsung fails to provide a “full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence.” 37 C.F.R. § 42.22(a)(2); *Fidelity Nat’l Info. Servs., Inc., v. DataTreasury Corp.*, IPR2014-00489, Paper 9 at 9 (PTAB Aug. 13, 2014) (“We, therefore, decline to consider information presented in a supporting declaration, but not discussed sufficiently in a petition.”); Ex. 2001, ¶¶ 96, 97.

² Emphasis added by HydraFacial throughout unless noted otherwise.

However, even considering Simon's declaration, his understanding of "general knowledge" is fatally flawed for several reasons. Simon asserts that "multiple treatment solutions are desirable during microdermabrasion." Ex. 1003, ¶ 86 (citing Burgess (Ex. 1013) and Lee (Ex. 1016)); Ex. 2001, ¶¶ 90, 91. But Simon's cited evidence contradicts his assertion that treatment solutions are desirable *during microdermabrasion*. Ex. 2001, ¶ 98.

For example, the Burgess section cited by Simon states: "*When the treatment is completed*, residual crystals should be gently brushed off the skin," then the skin can be "rinsed with tepid water and a moisturizer with adequate sunscreen applied." Ex. 1013, 86 (emphasis added). This makes sense because, as Burgess explains, the traditional application of microdermabrasion involves the use of "fine, sharp crystals" to sandblast the skin. Ex. 1013, 84. It would be antithetical to apply moisturizer during a microdermabrasion procedure that is blasting the skin with fine, sharp crystals. Simon himself agrees, in describing Burgess, that moisturizer is applied "when microdermabrasion *is completed*." Ex. 1003, ¶ 86 (emphasis added); Ex. 2001, ¶ 99. Thus, no treatment solution is applied *during* microdermabrasion, let alone multiple treatment solutions, as Simon alleges. Ex. 2001, ¶ 91.

Next, Simon cites to Lee as "general knowledge," but Simon misapprehends the reference when he alleges "Lee discloses delivering vitamin C during microdermabrasion." Ex. 1003, ¶ 100 (citing Ex. 1016, 1). In fact, Lee involves

testing “the topical delivery of vitamin C” *after* laser treatment or microdermabrasion “using an *in vitro* model of nude mouse skin.” Ex. 1016, 1. The *in vitro* testing involves treating excised mouse skin with a laser or microdermabrasion, then mounting the skin fragment for 12 hours in a “Franz vertical diffusion assembly” filled with a vitamin C formulation to determine the “amount of vitamin C retained in the skin.” *Id.*, 2 (Materials and Methods); Ex. 2001, ¶ 100. In no way does Lee provide any motivation to use multiple types of treatment solutions during microdermabrasion as Simon alleges. Ex. 2001, ¶ 100.

Eunsung also relies on “general knowledge” to argue that “fluid delivery techniques required to use multiple containers with Karasiuk’s handpiece were well-known and part of a POSITA’s general knowledge.” Pet., 11. Here, Eunsung provides a citation to Simon and a string citation (without pin cites) to several different, unrelated references that purportedly show the general knowledge art, with no substantive explanation. *Id.* The references include Hewlett Packard’s jet dispenser system (Trueba (Ex. 1008)) and multiple dental irrigation systems (Palmer (Ex. 1005), Armstrong (Ex. 1011), and Pond (Ex. 1007)). This string citation, without any substantive explanation, does not satisfy Eunsung’s obligation to explain why a person of ordinary skill in the art would have modified Karasiuk based on the purported general knowledge in the art. Ex. 2001, ¶ 101.

Simon's cited testimony is conclusory. Ex. 1003, ¶¶ 87-91; Ex. 2001, ¶ 101. He gives a vanilla description of the references and fails to explain how incorporating the structure from any of the disparate devices would, as he claims, "improve the flexibility and functionality offered by Karasiuk's system." Ex. 1003, ¶ 87. That these references contain "multiple containers" and were "well-known and part of a POSITA's general knowledge," as Simon avers, does not, by itself, apprise a POSITA with any reason to modify Karasiuk. *Id.*; Ex. 2001, ¶ 102. The mere fact that multiple containers were used in some contexts would not have suggested to a POSITA that using multiple containers would have improved Karasiuk's single-container design. Ex. 2001, ¶¶ 101, 102. And merely alleging generic advantages such as flexibility and functionality is insufficient absent specific evidence why a POSITA would have modified Karasiuk to yield the claimed invention. *ActiveVideo Networks, Inc. v. Verizon Commc'ns., Inc.*, 694 F.3d 1312, 1327 (Fed. Cir. 2012).³

For these reasons, Eunsung has failed to show that "general knowledge" provides a motivation to modify Karasiuk to include multiple containers with

³ Eunsung also offers a half-hearted "mere duplication" argument. Pet., 11 (citing *In re Harza*, 274 F.2d 669 (CCPA 1960)). Even if it were articulated, the argument is inapposite because it fails to account for additional claimed structure and function, such as the claimed block.

multiple types of treatment solutions. *Cisco Sys., Inc. v. Video Sols. PTE. Ltd.*, IPR2024-00922, Paper 7 at 14 (PTAB Nov. 12, 2024) (“Put simply, we are not persuaded by Petitioner’s arguments regarding the background knowledge art because those arguments are not sufficiently explained.”); Ex. 2001, ¶ 102.

2. “Karasiuk’s Disclosure” Was Not a Motivation

Next, Eunsung points to “Karasiuk’s disclosure” itself as a motivation to modify Karasiuk. But, like the “general knowledge,” the argument is fatally flawed. There is no disclosure in Karasiuk of using multiple types of treatment solutions from multiple containers in a skin treatment, and Eunsung does not argue otherwise. The only Karasiuk disclosure that Eunsung cites is: (1) the types of compounds that can be used in Karasiuk’s single reservoir 70 (e.g., “lotions/vitamins or other fluids”); and (2) Karasiuk’s boilerplate language that “various [undescribed] changes” may be made “without departing from the true spirit and scope of the invention.” Pet., 10-11 (quoting Ex. 1004, [0024], [0047], [0061], [0070]). Simon cites and quotes these same passages from Karasiuk without further explanation. Ex. 1003, ¶¶ 85, 87; Ex. 2001, ¶ 103.

Regarding the types of compounds disclosed in Karasiuk, they include, e.g., abrasive particles, bleaching formulations, acne treatment formulations, lines/wrinkle treatment formulations, hydrating formulations, and antioxidant formulations. Ex. 1004, [0061]. Karasiuk explains they can be “employed alone or

in combination with other compounds” in a single reservoir 70. *Id.* A POSITA would have appreciated the simplicity of combining various constituents in a single step as part of a single mixture to achieve the benefits of each individual constituent. Ex. 2001, ¶ 104. Eunsung points to no evidence a POSITA would have doubted the efficacy of applying the chosen constituents in a single step as part of a single mixture. *Id.*

Turning to Karasiuk’s boilerplate, Eunsung fails to explain how its mention of “various changes” and “the true spirit and scope of the invention” (Ex. 1004, [0070]), would have motivated a POSITA to make any particular modification at all, let alone the detailed and specific modifications proposed by Eunsung of adding multiple types of treatment solutions in multiple containers, along with a block and associated connections that allow selection of the treatment solutions. Such broad and vague language does not authorize Eunsung to *ex post* read into Karasiuk concepts taken from the ’477 patent to reconstruct the claimed inventions. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.”); Ex. 2001, ¶ 105.

Thus, “Karasiuk’s disclosure” contains no evidence of a motivation to modify Karasiuk’s system to include additional containers with treatment fluids and a block to control the flow of treatment fluids. Ex. 2001, ¶ 106.

3. Eunsung's Reliance on Palmer Is Based Solely on Hindsight

Eunsung asserts that in view of “general knowledge” and “Karasiuk’s disclosure,” a POSITA “would have investigated other references such as Palmer to achieve benefits offered by multiple treatment solutions.” Pet., 11-12. But, as explained above, neither “general knowledge” nor “Karasiuk’s disclosure” could have plausibly motivated a POSITA to investigate other references as Eunsung claims. Eunsung’s entire foundation for a POSITA seeking out Palmer is erroneous. Ex. 2001, ¶ 107.

It is no surprise then that the alleged “benefits” Eunsung has selected from Palmer are rooted in the needs of periodontal irrigation systems at the time, not any then-known skin treatment system. Eunsung’s attempt to shoehorn them into Karasiuk’s skin treatment system can only be explained with impermissible hindsight. *Id.*, ¶ 108.

The **first and second alleged benefits** are “allow[ing] easy selection among multiple treatment solutions” and “enabl[ing] sequential delivery of different treatment solutions.” Pet., 11-12. However, both benefits are premised on Palmer’s described need for multiple irrigating solutions delivered sequentially in a periodontal procedure—i.e., hydrogen peroxide for “removal of loose organic debris,” zinc chloride for “reduc[ing] inflammation,” sodium fluoride for “desensitization of tooth structure,” and stannous fluoride and chlorhexidine

digluconate for “reduction of bacterial concentration.” Ex. 1005, 1:33-43; *id.*, 5:52-64. Palmer’s motivation was, as Eunsung agrees, the drawback in “conventional irrigation arrangements” that did not provide “the opportunity of easy selection among several irrigant solutions.” Petition, 11 (quoting Ex. 1005, 1:30-53); Ex. 2001, ¶ 109.

Palmer’s additional disclosure further informs a POSITA the sequential delivery was actually unique to periodontal irrigation systems, which involved color coding the solutions and use of “flavor coordinated” solutions. Ex. 1005, 3:42-48. Using “substantially the same predetermined flavor” allows a patient to be “treated with two or more solutions during the procedure, *one after the other*, without being subjected to the discomfort which would normally occur when a person tastes two or more *diverse flavors, one immediately after the other.*” Ex. 1005, 6:42-51 (emphasis added). Eunsung erroneously cites this passage in alleging POSITA would have applied Palmer’s teachings to Karasiuk’s skin treatment system, but the sequential delivery is clearly meant for periodontal irrigation systems. Pet., 12. Ex. 2001, ¶ 110.

Dental clinicians would have recognized the lack of easy selection among irrigant solutions to be a problem for dental-irrigation devices because delivering multiple dental-irrigation solutions together in a single step would necessarily dilute and destroy the efficacy of many such solutions. Ex. 2001, ¶ 112. By contrast,

Eunsung does not identify any such drawback with Karasiuk's skin treatment system; rather, a POSITA would have expected Karasiuk's delivery of a mixture of treatment fluids in a single step to achieve the efficacy of each of individual fluids. Therefore, Eunsung has not shown that clinicians would have recognized any problem with Karasiuk's single-container design in need of a solution. *Id.*, ¶ 111.

Eunsung also relies on the following assertion of Palmer in the first benefit:

If circumstances require the use of a different treatment solution, either with the same or a subsequent patient, the solution remaining in the tank is usually discarded and the tank must be cleaned and refilled with the new solution. This procedure is time-consuming and costly, not to mention messy.

Ex. 1005, 1:47-53 (cited by Pet., 11). Palmer's opinion that cleaning and refilling a dental-irrigation tank is a time-consuming, costly, and messy procedure is irrelevant to Karasiuk's skin treatment procedure. Ex. 2001, ¶ 112. Neither Eunsung nor Simon asserts a POSITA would have found cleaning or refilling Karasiuk's reservoir to be sufficiently time-consuming, costly, and messy to justify adding more containers and a complicated fluid-selection structure to Karasiuk's device. In fact, a POSITA would have expected the operation of Karasiuk's single-container device to be *less* time-consuming, costly, and messy than Eunsung's proposed multi-container device. *Id.*, ¶ 111.

The **third alleged benefit** is “minimiz[ing] refilling downtime because when a particular container runs out mid-operation, the combined system can quickly switch to a second container to keep the supply flowing.” Pet., 12. However, Eunsung presents no evidence a POSITA would have considered Karasiuk’s reservoir to be too small to contain sufficient treatment fluid for its purpose. And if the size of Karasiuk’s reservoir were a concern, Eunsung presents no evidence a POSITA would have been motivated to add complicated valves and tubing simply to allow a clinician to switch to an extra container of the same treatment fluid. Indeed, a POSITA would have simply increased the size of Karasiuk’s reservoir so it could contain the amount of treatment fluid required for most procedures. Ex. 2001, ¶ 113. Because nothing in Karasiuk restricts the size of the reservoir, a POSITA would have understood Karasiuk as teaching or suggesting the use of a reservoir adequately sized for Karasiuk’s purpose. Moreover, Eunsung presents no evidence clinicians could not quickly refill the reservoir for abnormal procedures requiring more treatment fluid than usual, or that the possibility of such abnormal procedures would drive a POSITA to add structure unnecessary for most procedures. *Id.*, ¶ 112.

The **fourth alleged benefit** is “Palmer’s modular design to provide added flexibility, organization, and portability.” Pet., 12. But this supposed benefit is irrelevant to Eunsung’s proposed change from Karasiuk’s single-container design to

a multi-container design. Rather, as Eunsung recognizes, it relates to the desirability of container placement in a variety of *locations*, such as on a countertop, on a mobile cart, in a cabinet, or underneath a counter. Pet., 12-13; *see also* Ex. 2001, ¶ 113.

In sum, Eunsung’s citation to Palmer’s benefits for periodontal irrigation is premised entirely on a hindsight reconstruction of the claimed invention. Eunsung presents no evidence a POSITA would have appreciated any of these benefits in the field of skin treatment before the priority date of the ’477 patent. While those in the field now understand the benefits of, e.g., sequential delivery in view of the teachings of the ’477 patent and the success of HydraFacial’s commercial embodiments of the ’477 patent, it would be legally improper to assume, without evidence, that a POSITA would have appreciated those benefits at the time of the invention. Ex. 2001, ¶ 114.

F. Grounds 1A-1D: The Karasiuk-Palmer Combination Renders Karasiuk’s Device Inoperable

“[C]ombinations that change the ‘basic principles under which the [prior art] was designed to operate,’ or that render the prior art ‘inoperable for its intended purpose,’ may fail to support a conclusion of obviousness.” *Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 F. App’x 755, 757–758 (Fed. Cir. 2015) (non-precedential) (quoting *In re Ratti*, 270 F.2d 810, 813 (CCPA 1959); *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984)).

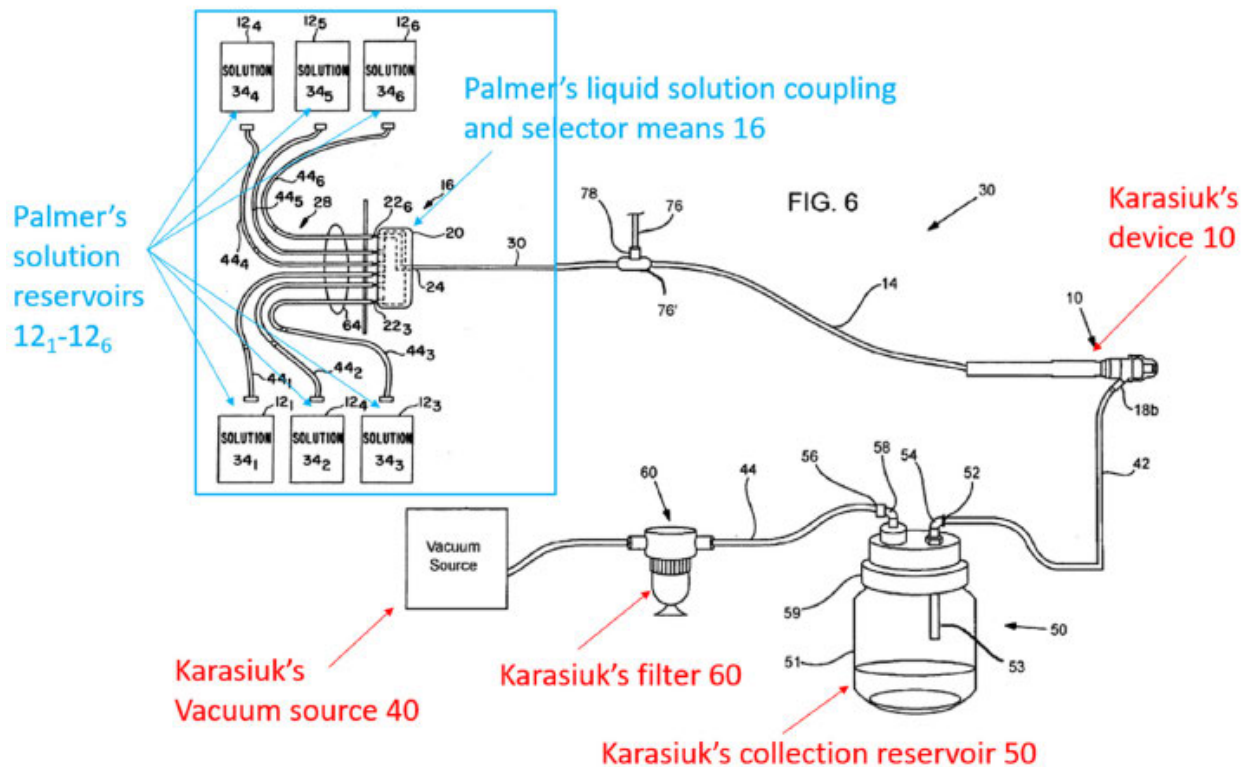
Grounds 1A-1D in the Petition rely on the combination of Karasiuk and Palmer. Pet., 1. As explained below, Eunsung’s combination of these two systems would fundamentally alter their operation in multiple ways and make Karasiuk’s device inoperable for its intended purpose. Ex. 2001, ¶ 47; *see also id.*, ¶ 27. The Karasiuk system as modified with Palmer cannot deliver treatment solutions to the handpiece. *Id.* A POSITA would have had no motivation to construct a device that does not work from these unrelated pieces of prior art. *Id.*

These flaws in the combined Karasiuk-Palmer system are fatal to all proposed grounds of unpatentability under Ground 1A-1D. *See, e.g., Samsung Electronics Co. Ltd. v. Neonode Smartphone LLC*, IPR2021-00144, Paper 24 at 13-14 (citing *Plas-Pak* and denying institution where proposed combination would change reference’s principle of operation and render it inoperable); *R.J. Reynolds Vapor Co. v. Fontem Holdings I B.V.*, IPR2018-00629, Paper 10 at 19-20 (citing *In re Gordon* and denying institution where proposed modification would render prior art unsatisfactory for its intended purpose such that “there is no suggestion or motivation to make the proposed modification.”); Ex. 2001, ¶ 48.

1. Karasiuk-Palmer’s Vacuum Source Draws Only Air through the Breather Line and Never Draws Material from the Reservoirs

In Eunsung’s proposed combination of the Karasiuk and Palmer systems, Eunsung contends that “Karasiuk’s vacuum source would be used to pump treatment

solutions from Palmer's multiple fluid containers and collect waste/debris." Pet., 9. That is, Eunsung removes Palmer's peristaltic pump from Palmer's system and instead relies on Karasiuk's vacuum source 40 downstream of the handpiece to act as the vacuum source in the combined device. Ex. 2001, ¶ 49. Eunsung depicts this combination as a literal concatenation of Palmer's Fig. 1 and Karasiuk's Fig. 6, calling it "Karasiuk, Modified FIG. 6".



Karasiuk, Modified FIG. 6

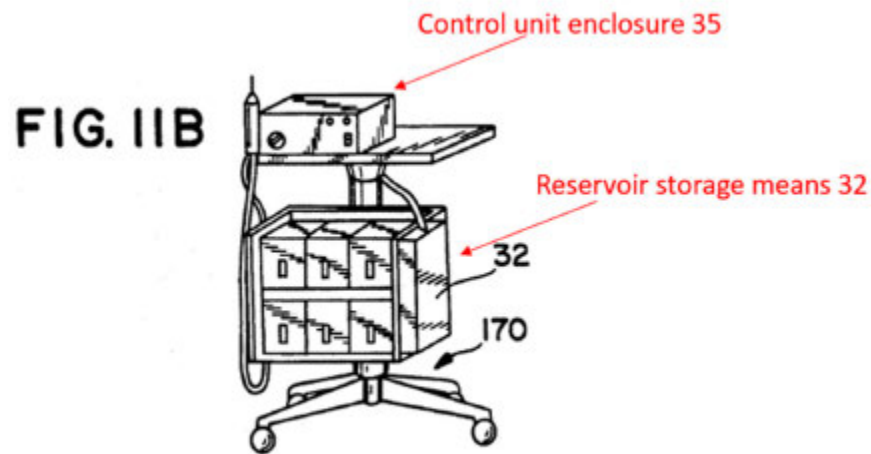
Pet., 9, 17.

Eunsung arranges the mash-up device such that "Karasiuk's tube 14 (e.g., *upstream of breather line 76*) would replace, or be connected to, Palmer's second

tubing means 30 to achieve benefits resulting from selection of different treatment solutions.” Pet., 9 (emphasis added), 24, 26. Thus, Eunsung has positioned Karasiuk’s breather line 76 upstream of Karasiuk’s device 10 (the handpiece) and downstream of both Palmer’s “liquid solution coupling and selector means 16” and Palmer’s solution reservoirs 12₁ - 12₆. *Id.* Eunsung repeatedly contends that this arrangement “achieve[s] benefits resulting from selection of different treatment solutions.” Pet., 9, 24, 26; Ex. 2001, ¶ 50.

Karasiuk explains that the breather line 76 “includes an adjustable valve 78 or other means for varying an amount of air that is allowed into tube 14.” Ex. 1004, 7:19-23. The feature “allows the amount vacuum to be adjusted for a given fluid.” *Id.*, 7:23-24; Ex. 2001, ¶ 51.

Eunsung’s Karasiuk-Palmer mash-up combination also involves adoption of Palmer’s “mobile cart 170” for allegedly providing “increased portability and/or organization.” Pet., 7-8. In Eunsung’s combination, Palmer’s mobile cart 170 houses the claimed multiple containers (Palmer’s “solution reservoirs 12₁ - 12₆”) in the “reservoir storage means 32” on the bottom of the mobile cart 170, located underneath the system components in the “control unit enclosure 35,” which are on the shelf above:



Palmer, FIG. 11B

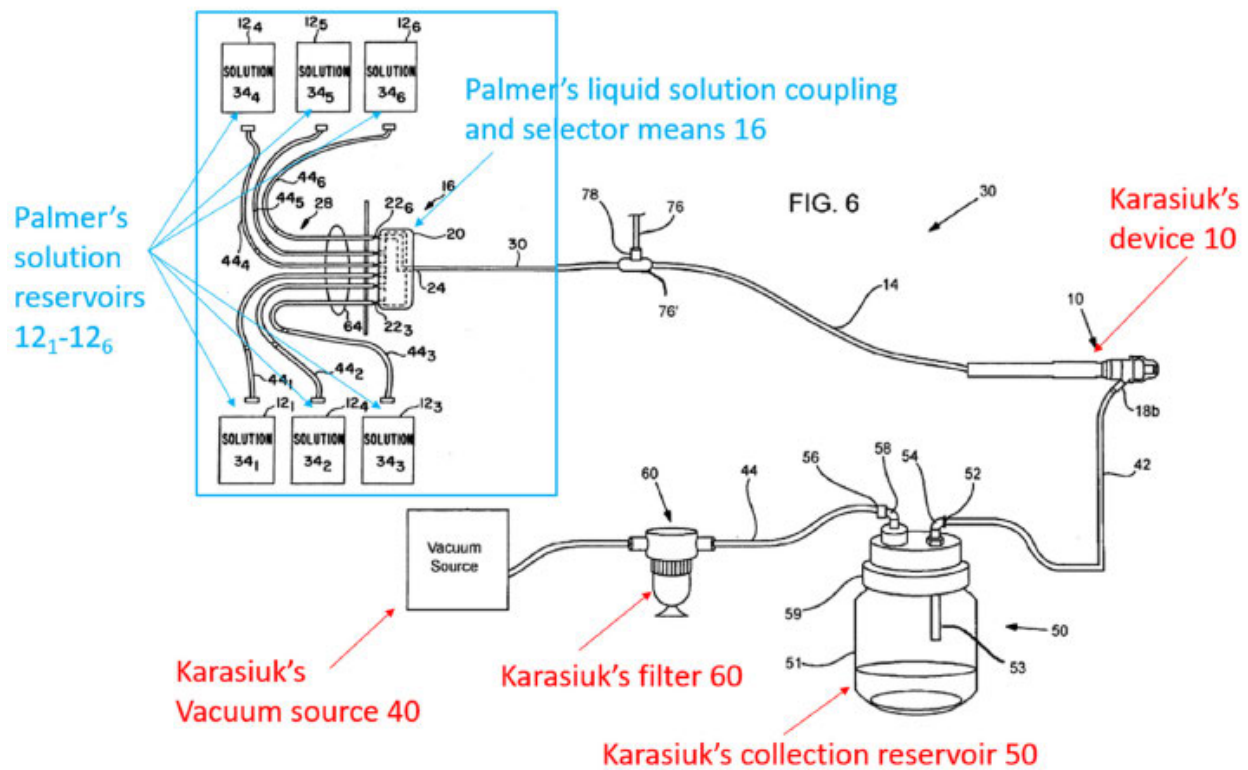
Pet., 14; *see also* Ex. 2001, ¶ 52.

Eunsung's combination of Karasiuk with Palmer renders Karasiuk's system inoperable for its intended purpose. Ex. 2001, ¶ 53. In the Karasiuk-Palmer combination, Palmer's solution reservoirs 12₁ - 12₆ are necessarily located below Karasiuk's breather line 76 and handpiece. *Id.* In this configuration, Karasiuk's vacuum source will draw only air through the breather line 76 along tube 14. *Id.* In Eunsung's proposed combination, the vacuum source would be unable to provide any vacuum force to draw material from Palmer's solution reservoirs to the handpiece. *Id.* This is because the air flow will take the path of least resistance to suck air from the breather line 76 as described by Karasiuk instead of fluid from Palmer's solution reservoirs 12 in Eunsung's proposed combination. A good analogy is having a crack in a drinking straw. *Id.*

This configuration in Eunsung's Karasiuk-Palmer combination changes the basic principles under which Karasiuk was designed to operate and renders it unsatisfactory for its intended purpose. *See Plas-Pak*, 600 Fed. Appx. at 759-60; Ex. 2001, ¶ 53. Further, Eunsung's proposed arrangement clearly defeats the purpose Eunsung promoted behind the combination, "achiev[ing] benefits resulting from selection of different treatment solutions." Treatment solutions cannot be selected nor provide any benefits if they cannot reach the handpiece. For these reasons, Eunsung has not established that claims would have been obvious under any grounds and the Board should deny institution.

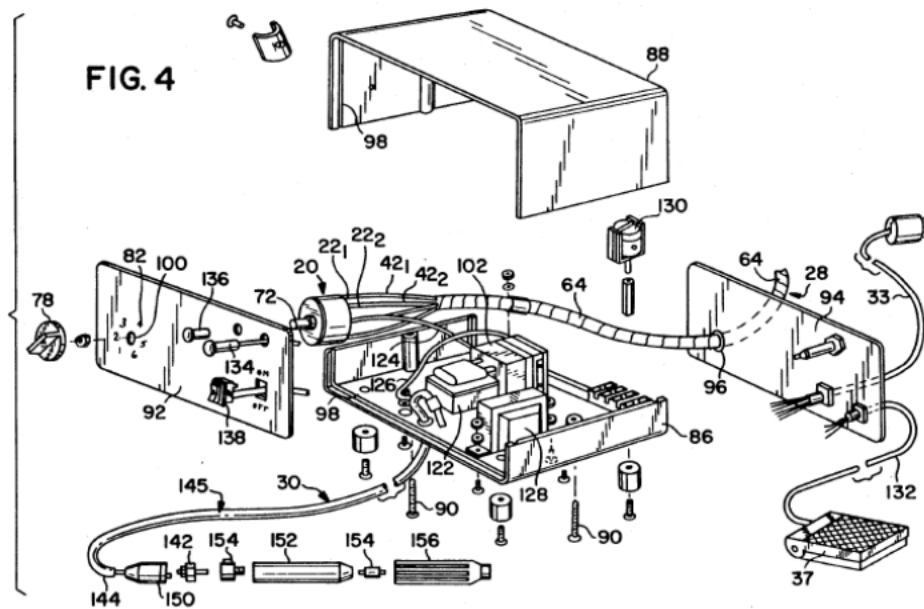
2. Karasiuk-Palmer's Tube Diameter Prevents Flow of Treatment Material to the Handpiece Assembly

As explained above, for the Karasiuk-Palmer combination, Eunsung relies on Palmer for its liquid solution coupling and selector means 16 and solution reservoirs 12. Ex. 2001, ¶¶ 54, 55.



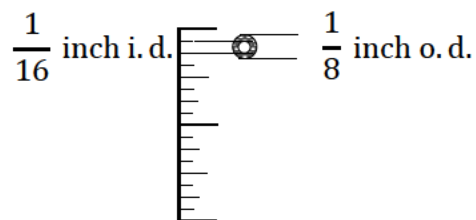
Karasiuk, Modified FIG. 6

Pet., 9, 17. The liquid solution coupling and selector means 16 is within Palmer's control unit enclosure 35, which is shown in an exploded view in Fig. 4 of Palmer:



Ex. 1005, Fig. 4. Ex. 2001, ¶ 55.

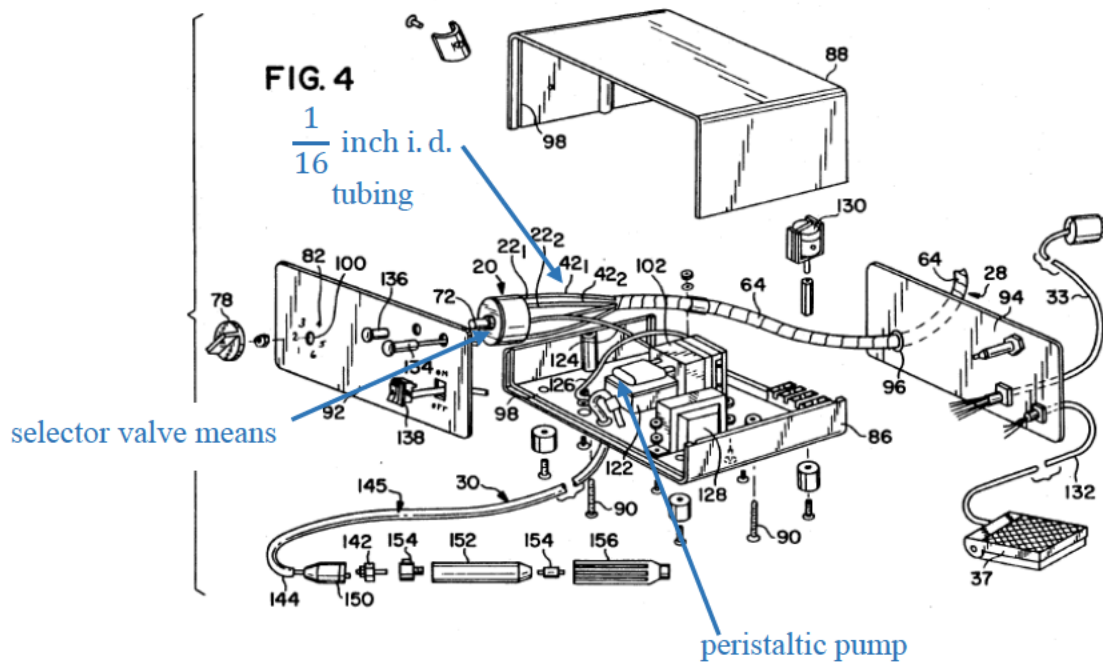
Palmer discloses that tubing with an outside diameter of $1/8^{\text{th}}$ inch and an inside diameter of $1/16^{\text{th}}$ inch is used in the six tubes 42 running between the solution reservoirs 12 and the selector valve means 20 located within the control unit enclosure and in tubing 126 running from the control unit enclosure 35 to the handpiece 14. *See* Ex. 1005, 7:21-24, 9:17-19, 9:40-43. For perspective, Mr. Leinsing prepared the image below that shows the cross-sectional diameter of Palmer's tubing on the scale of an 8 ½ x 11-inch sheet of paper:



Ex. 2001, ¶ 56.

Given that Palmer's system is designed to produce high-velocity spray to irrigate a patient's mouth with a low volumetric output, tubing with an extremely narrow inside diameter of 1/16th inch is appropriate. Ex. 2001, ¶ 57. Palmer's system is designed to deliver the pulsed jets of irrigating solution at a pressure of 22-25 psi, with a flow rate of only 22 to 25 mL per minute. Ex. 1005, 11:17-23; Ex. 2001, ¶ 58. At that flow rate, it would take 40-45 minutes of continual spraying to use all the contents of the 1000 mL containers disclosed in Palmer. Ex. 1005, 5:26-30; Ex. 2001, ¶ 58. Further, Palmer's tubing is appropriately small so that it is flexible and compact in the bundle of six tubes that extend from the control unit enclosure 35 to the reservoir storage means 32, which houses the solution reservoirs 12. Ex. 2001, ¶ 57.

Palmer's system supports the use of such small tubing because Palmer's peristaltic pump is located directly adjacent to the selector valve means 20 to generate pressure to draw the liquids from the containers. *Id.*, ¶ 59. This is shown in Fig. 4:



Ex. 1005, Fig. 4 (annotated). Additionally, Palmer uses low-viscosity rinse solutions, minimizing any resistance from the liquid flowing through the tubing. *Id.*, 5:52-64; Ex. 2001, ¶ 59.

In Eunsung's proposed combination of Karasiuk and Palmer, Palmer's small-diameter tubing renders the combined device inoperable. *Id.*, ¶ 60. As discussed above, Eunsung's proposed combination removes Palmer's peristaltic pump and replaces it with Karasiuk's vacuum source 40, which is located at the end of the fluid path, downstream of the handpiece 10 and collection reservoir 50. Ex. 2001, ¶ 61. As a general matter, the pressure drop exhibited along a length of tubing is directly proportional to the length of the tubing. *Id.* Thus, in Eunsung's modification, the added distance between the vacuum source and Palmer's solution reservoirs 12

results in increased pressure loss (*i.e.*, increased head loss) at the solution reservoirs

12. *Id.*

In fluid dynamics, the pressure drop (ΔP) across a pipe is strongly influenced by the pipe's internal diameter. For laminar flow of a Newtonian fluid in a straight circular pipe, the relationship is governed by the Hagen-Poiseuille equation:

$$\Delta P = \frac{8\mu L Q}{\pi r^4}$$

where μ is the dynamic viscosity of the fluid, L is the length of the pipe, Q is the volumetric flow rate, and r is the pipe radius. *See* Ex. 2052, 1; Ex. 2001, ¶ 62. As the equation above indicates, an increase in tubing length L and use of higher viscosity solutions (as used in hydrodermabrasion procedures) will increase the pressure drop or resistance to flow. *Id.* Moreover, as illustrated with the equation and explained by Mr. Leinsing, even a modest decrease in radius would result in a dramatic increase in pressure loss because the pressure drop is inversely proportional to the fourth power of the radius of the pipe (e.g., halving the radius of a pipe would cause the pressure drop to increase 16-fold). Ex. 2001, ¶ 62.

Additionally, maintaining a constant volumetric flow rate (Q) while reducing pipe diameter necessarily increases fluid velocity. This relationship is governed by the following equation, $Q=A \cdot v$, where A is the cross-sectional area (which scales with the square of the pipe's diameter) and v is the flow velocity. *See* Ex. 2053, 1;

Ex. 2001, ¶ 63. Thus, even modest reductions in pipe diameter result in substantial increases in velocity (*e.g.*, halving the pipe's radius reduces the area by a factor of four, thereby quadrupling the velocity to maintain the same flow rate). *Id.*, 64, 65.

Thus, in addition to the issue of the breather line 76 discussed above, which prevents the vacuum source 40 from drawing suction at the solution reservoirs 12, Palmer's small-diameter tubing and the distance between Karasiuk's vacuum source 40 and Palmer's solution reservoirs 12, would inhibit the generation of suction at the solution reservoirs 12 in Eunsung's combination of Karasiuk and Palmer. Ex. 2001, ¶ 66.

Moreover, Karasiuk discloses using lotion—often mixed with solid abrasive particles—as the treatment material in the reservoir 70. *See* Ex. 1004, [0059]-[0061]. Lotions have a significantly higher viscosity than the rinse solutions used in Palmer's system. Ex. 2001 ¶ 67; *see* Ex. 2054, 6 (dental irrigants having viscosities between 35.5 cP and 182.1 cP); *see also* Ex. 2055, 1 (showing vitamin E creams with viscosities between 12,000-26,000 cP); *see also* Ex. 2056, 1 (showing water having a viscosity of 1 cP, face cream at 10,000 cP, and hand cleaner at 2,000 cP).

If a lotion were used in Palmer's solution reservoirs 12, it would encounter significant frictional losses (or drag) in Palmer's 1/16th inch diameter tubes, which run from the solution reservoirs 12 to the selector valve means 20 in the control unit enclosure 35. Ex. 2001, ¶ 68. Palmer's tubing is too narrow to allow fluid flow to

the handpiece under vacuum pressure from Karasiuk's vacuum source 40. Even if some fluid managed to reach the handpiece, the resulting volumetric flow rate would be unacceptably low for use in a skin treatment procedure. *Id.*, ¶ 69.

3. Removing Palmer's Peristaltic Pump from Karasiuk-Palmer Leads to Unrestricted Flow of Liquid from the Reservoirs

Even if Eunsung were somehow permitted to fix these fatal flaws in the Karasiuk-Palmer combination discussed above, Eunsung's combination would still be inoperable. Ex. 2001, ¶¶ 70-72. As explained above, Eunsung's proposed combination of Karasiuk and Palmer removes Palmer's peristaltic pump 18 and adds Karasiuk's vacuum source 40, which is positioned downstream of the handpiece. In doing so, Eunsung introduces another fatal flaw into the Karasiuk-Palmer system. *Id.*

Palmer's peristaltic pump 18 is located downstream of the selector valve means 20 and acts as a valve, preventing liquid from flowing from the solution reservoirs when the peristaltic pump is inactive. *Id.*, ¶ 71; *see* Ex. 1005, 11:30-34 (Palmer explaining that is peristaltic pump "serves as a natural check valve."). Furthermore, Palmer's selector valve means 20, which Eunsung relies on for the claimed manifold, serves as an uninterrupted pathway from the selected solution reservoir.

With Palmer's peristaltic pump removed from Eunsung's combination system, the material in the selected solution reservoir would flow uncontrolled to or from the selected solution reservoir, even without activating the vacuum source. Ex. 2001, ¶ 72. Thus, once again, these alterations would render the system inoperable. Therefore, Eunsung cannot meet its burden of showing that any claims of the '477 patent would have been obvious over the cited prior art.

G. Grounds 1A-1D: Palmer Does Not Disclose a Manifold System

In each of Grounds 1A-1D, the Petition relies on a combination of Karasiuk and Palmer (Pet., 1), but this combination fails to disclose a limitation required by all claims—namely, a “manifold system.” All independent claims recite a manifold system in fluid communication with multiple fluid containers. Limitation [1.1] in claim 1 recites “a manifold system in communication with a first container and at least a second container;” limitation [9.1] in claim 9 recites “a manifold system in communication with at least two containers;” and limitation [15.1] in claim 15 recites “a manifold system in communication with at least two containers.” Ex. 2001, ¶ 73.

In Grounds 1A-1C, Eunsung relies on Palmer's “selector valve means 20” as allegedly satisfying the manifold limitations. But Palmer's selector valve means 20 cannot meet these limitations under the well-understood meaning of “manifold.” In the Petition, Eunsung recognizes that a “manifold” has multiple openings under the

ordinary meaning. Palmer's selector valve means 20, in contrast, is limited to a one-input-one-output connection. Ultimately, Eunsung's argument contradicts its own definition of "manifold," finds no support in Palmer, and relies on impermissible hindsight. *See* Ex. 2001, ¶ 74.

1. The Ordinary Meaning of "Manifold"

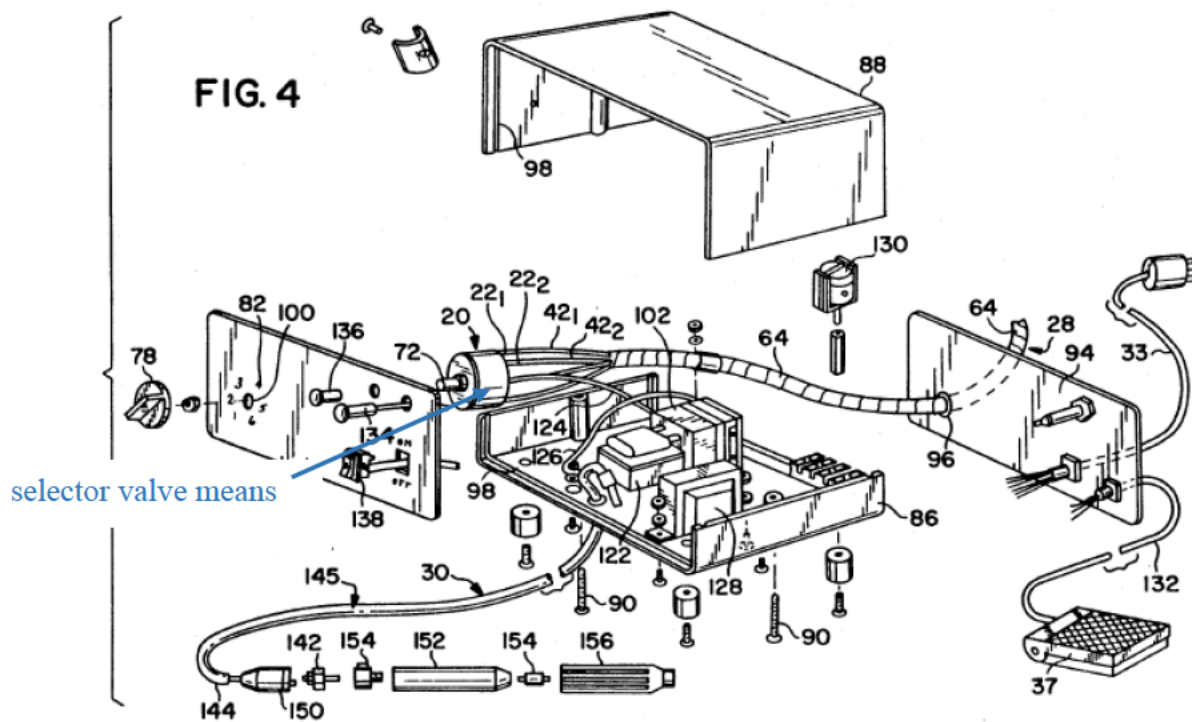
The term "manifold" is common in the mechanical arts. The ordinary meaning of manifold is a pipe or closed space in a machine that has multiple openings, allowing liquids and gases to enter and leave. *See* Ex. 2001, ¶¶ 75-76.

In accord with this commonly understood meaning, Eunsung cites a mechanical engineering dictionary in the Petition that defines "manifold" as "a chamber or pipe with many openings." Pet., 15, n.4 (citing Ex. 1029, 5); *see also* Ex. 1003, ¶107 n.2 (Ex. 1029, 5). Thus, there can be no dispute regarding the ordinary meaning of "manifold" or that it applies to the claims of the '477 patent. Ex. 2001, ¶ 77.

2. Palmer's Selector Valve Means 20 Is Not a Manifold System

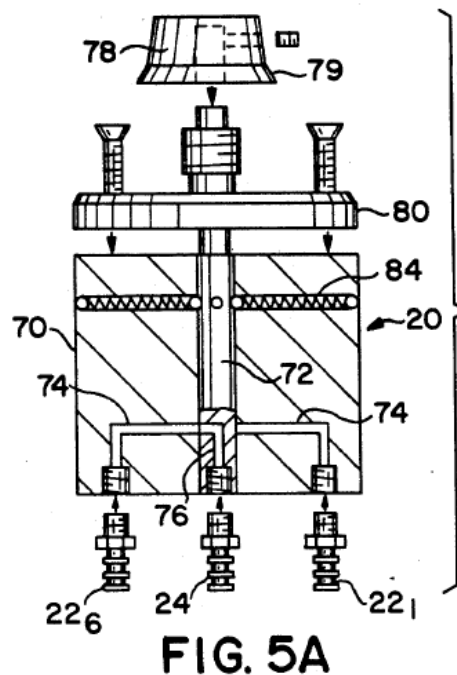
Eunsung asserts that the manifold system limitations are met by Palmer's "selector valve means 20." *See* Pet., 15-23. But Eunsung's argument fails under the well understood meaning of "manifold," a meaning which Eunsung has adopted. Ex. 2001, ¶ 78.

Palmer's Fig. 4 shows that the selector valve means 20 is a rotary-type valve located in the control unit enclosure 35:



Ex. 1005, Fig. 4 (annotated); Ex. 2001, ¶ 79.

Palmer's Fig. 5A provides a more detailed view of the selector valve means 20:

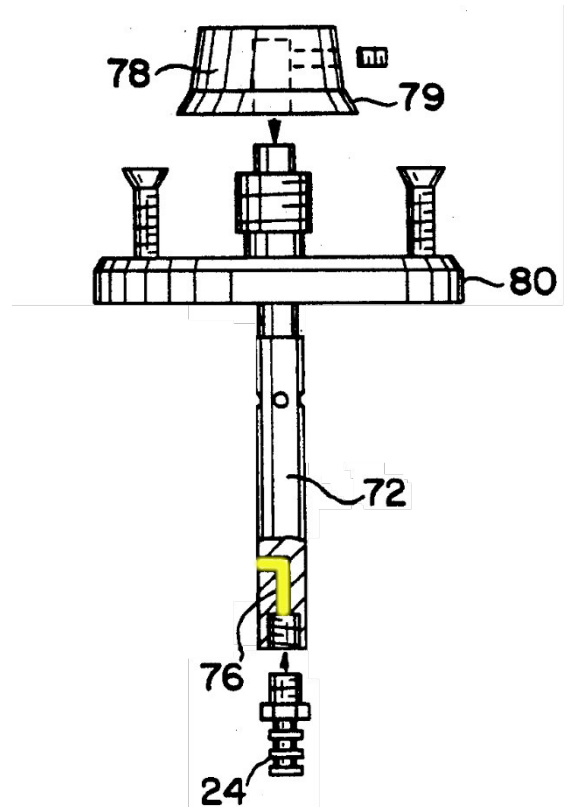


Ex. 1005, Fig. 5A; Ex. 2001, ¶ 79.

Palmer describes the selector valve means 20 as having a one-input-to-one-output arrangement: “means for coupling a selected **one** of the inputs 22 to **the** output 24.” Ex. 1005, 5:1-9. The selector valve means 20 includes a main body 70 and a central cylinder core or stem 72, which is mounted within the main body 70. *Id.*, 8:6-8. The central cylinder core 72 has a “liquid outlet passage 76,” which consists of a single inlet and a single outlet: “A liquid outlet passage 76 is formed in the rotatable core 72 having **one end opening** into the selector valve output port 24 **and**

another end opening onto the cylindrical core surface in the plane of the inner ends of passages 74.” *Id.*, 8:13-18 (emphasis added). Ex. 2001, ¶ 80.

The outlet passage 76’s single-input-to-single-output connection within the core 72 is shown in yellow in the excerpt from Fig. 5A below:



Id., Fig. 5A excerpt (annotated); Ex. 2001, ¶ 81.

When a user rotates the knob 78 on the front of the selector valve means 20, the central cylinder core 72 is “rotated until the end of the outlet passage 76 communicates with the particular inlet passage 74 corresponding to the inlet coupled to the desired irrigating solution.” Ex. 1005, 8:45-48. “For example, when the knob is rotated so that the pointer 78 indicates the indicia designated ‘6’, the outlet passage

76 communicates with the inlet passage 74 which opens into the inlet port 22₆ which is coupled to the solution 34₆ contained in the reservoir 12₆.” Ex. 1005, 8:48-53; *see also* Ex. 2001, ¶ 82.

As illustrated in Fig. 5A, the selector valve means 20 connects the inlet port 22₆ to the outlet passage 76 (the connected path shown in green), while the inlet port 22₁ is disconnected and physically blocked from the outlet passage 76 (the disconnected path shown in red):

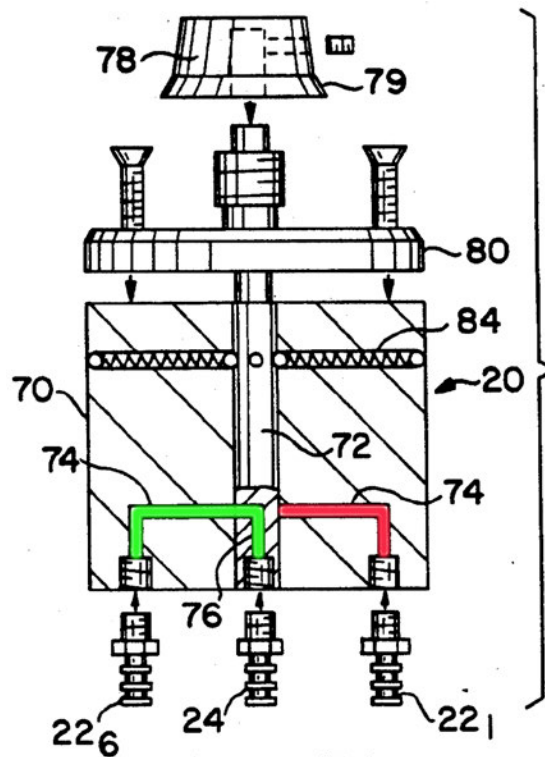


FIG. 5A

Ex. 1005, Fig. 5 (annotated). The annotated figure also illustrates that the remaining inlet ports—22₂, 22₃, 22₄, 22₅—are disconnected and effectively isolated from the outlet passage 76. Ex. 2001, ¶ 83. Palmer further explains the selector valve means

20 is a “means for coupling a selected **one** of the inputs 22 to **the** output 24.” Ex. 1005, 5:1-9 (emphasis added). Thus, Palmer’s selector valve means 20 works specifically because it is **not** a manifold; it provides only a single, isolated pathway through the central cylinder core 72. Ex. 2001, ¶ 83.

Accordingly, Palmer’s design is fundamentally distinct from a manifold, which, according to Eunsung’s own cited definition, requires “a chamber or pipe with **many** openings.” Pet., 15, n.4. Palmer’s selector valve means 20 is neither a chamber nor a pipe with **many** openings. And it has only a single, isolated pathway, as explained above. As such, Palmer’s selector valve means 20 does not meet the manifold system limitation in independent claims 1, 9, and 15, and the Petition fails to establish otherwise. Ex. 2001, ¶ 84.

Recognizing this deficiency, the Petition proposes a modification to the Karasiuk-Palmer combination, which itself is flawed and relies on hindsight rather than objective reasoning based on the prior art. In Ground 1A, Eunsung argues that “a POSITA would have found it obvious to use a manifold system to implement Palmer’s functionality of switching treatment fluids.” Pet., 20-21. It asserts that manifolds were, e.g., “well-known,” “within a POSITA’s general knowledge,” one of “a finite number of identified, predictable solutions,” and “an obvious design choice.” *Id.*, 20-22. But these conclusory assertions do not establish that a POSITA **would have been motivated** to make such a substitution—only that a POSITA **could**

have. See *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (“[O]bviousness concerns whether a skilled artisan not only could have made but would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention.”).

Critically, the Petition and expert declaration identify no shortcoming in Palmer’s selector valve means 20 that would justify replacing it. Pet., 20-22; Ex. 1003, ¶¶ 113-114. At most, the Petition contends a POSITA would have selected a manifold because “it eliminates the need of manual connecting/disconnecting and allows for a simpler handpiece design with one input.” Pet., 22. However, Palmer’s selector valve means 20 already eliminates manual connections, and the Petition and expert declaration fail to explain how a manifold could possibly simplify Karasiuk’s handpiece design. Ex. 2001, ¶ 85.

The Petition also argues that incorporating a manifold in the Karasiuk-Palmer combination “would have merely involved a simple substitution of one well-known element for another to obtain predictable results.” Pet., 22. But this is inconsistent with the Petition’s own cited definition of a “manifold.” A device that selectively connects one input to one output, like Palmer’s selector valve means 20, is not equivalent to “a chamber or pipe with many openings.” Replacing one with the other would require significant unaddressed structural and functional changes to

accommodate the manifold's many openings. Ex. 2001, ¶ 86. This is not a simple substitution.

Accordingly, Petitioner has failed to establish that Palmer discloses a manifold or that a POSITA would have modified Palmer to include one.

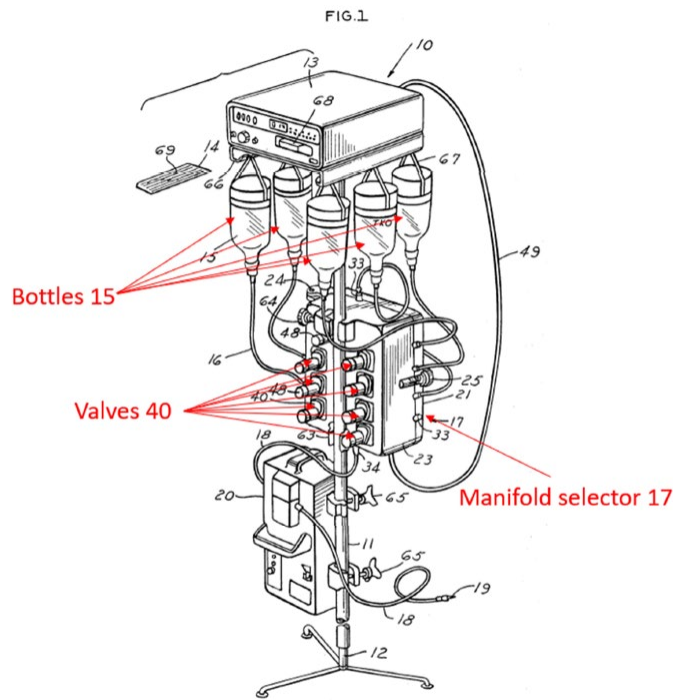
H. Grounds 1C-1D: Wunsch Does Not Cure Palmer's Deficiencies

In Ground 1C, Eunsung tacks on Wunsch to the combination of Karasiuk and Palmer in an attempt to cure Palmer's deficiencies. Pet., 1, 48-65. Indeed, Eunsung asserts that a POSITA would have entirely replaced Palmer's liquid solution coupling and selector means 16 with Wunsch's manifold selector and sequencer-timer. Pet., 1, 51. But this proposed modification is illogical and clearly driven by hindsight. Ex. 2001, ¶ 87.

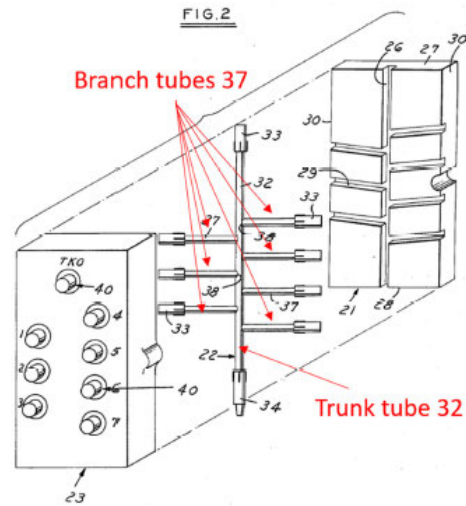
First, Eunsung touts Wunsch's benefits as supposed motivation for selecting its manifold, but then when carrying over the manifold to the Karasiuk-Palmer combination, Eunsung neglects to carry over the component allegedly providing that benefit. Eunsung alleges a POSITA would have been motivated because "Wunsch's manifold selector is automatically controlled by the sequence-timer to allow automatic dispensing of different treatment fluids." Pet., 53. Wunsch makes clear that "[t]he quantity of solution dispensed is metered by a volumetric infusion pump." Ex. 1020, Abstract; *see also id.*, 7:57-65 ("[F]luid volume through the dispensing tube 18 is controlled by the volumetric infusion pump 20."). Ex. 2001, ¶ 88.

Yet, the Petition never incorporates Wunsch's infusion pump when combining Wunsch with Karasiuk and Palmer, and thus provides no means of regulating Wunsch's manifold selector through the sequencer-timer. *See* Pet., 54-55. Instead, Eunsung attempts to incorporate only "Wunsch's manifold selector and sequence timer." Pet., 51. Without the infusion pump, the alleged automatic control has no feedback loop and cannot function as intended. Ex. 2001, ¶¶ 89-91.

Second, Eunsung never explains how Wunsch's manifold selector and sequence timer could possibly be applied to the existing combination of Karasiuk and Palmer. Eunsung attempts to extract Wunsch's manifold selector 17—with its manifold 22, including trunk tube 32 and a plurality of branch tubes 37—and apply it to the already overly complicated and problematic combination of Karasiuk and Palmer. Ex. 2001, ¶ 92.



Wunsch, FIG. 1 (annotated)



Wunsch, FIG. 2 (annotated)

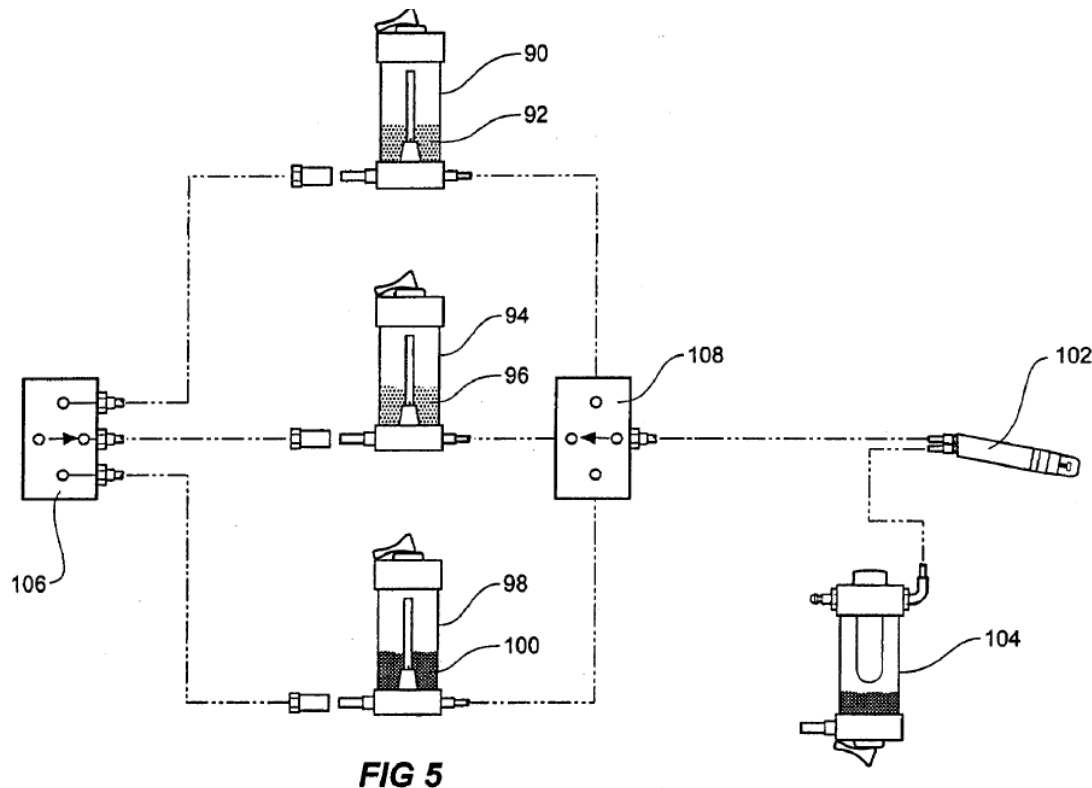
Pet., 49, 51.

Eunsung has not met its burden to show that a skilled artisan would have been motivated to make such a combination. Ex. 2001, ¶ 93. Thus, Eunsung’s backup theory relying on Wunsch for the manifold system also fails.

I. Grounds 2A-2B: Greenberg Does Not Disclose a Manifold System

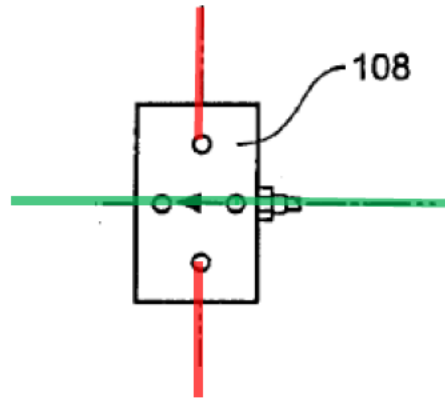
In Grounds 2A-2B, the Petition relies on Greenberg as allegedly disclosing the “manifold system” recited in all claims. Pet., 72-73. But, as with Palmer’s selector control valve 20 in Grounds 1A-1D, the one-inlet-to-one-outlet valve that Eunsung points to in Greenberg for Grounds 2A-2B is not the claimed “manifold system.” Ex. 2001, ¶¶ 115, 116.

Specifically, Eunsung points to valve 108 in Greenberg's Fig. 5 embodiment as allegedly meeting the "manifold system" limitations of the challenged claims. Pet., 72-73. Fig. 5 is shown below, with valve 108 positioned downstream of the supply containers 90, 94, and 98 and upstream of the handle 102. Ex. 2001, ¶ 117



Ex. 1006, Fig. 5. As Mr. Leinsing explains, a POSITA would have understood in reading Greenberg that valve 108 is a rotary valve or three-way valve, neither of which is a manifold. Ex. 2001, ¶ 118. The Fig. 5 schematic shows that valve 108 includes only a single outlet line on the downstream side of the valve and includes a

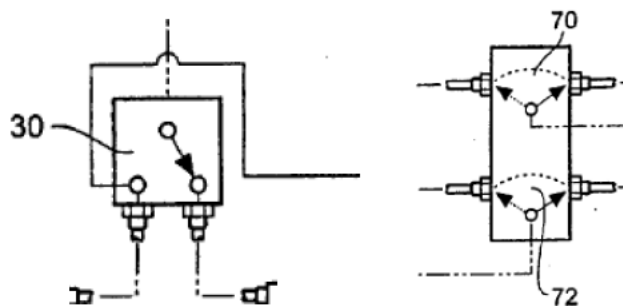
selector for the upstream side represented by the arrow on the valve, which permits selection of a single inlet line entering the valve.



Ex. 1006, Fig. 5 (excerpted and annotated); Ex. 2001, ¶ 118. Thus, like Palmer’s selector valve means 20, Greenberg’s valve 108 works specifically because it is *not* a manifold; it provides only a single, isolated pathway through the valve. Ex. 2001, ¶ 119.

Indeed, none of Greenberg’s embodiments discloses a manifold system. Rather, Greenberg’s other embodiments also disclose use of a switch or valve, such as a rotary valve. For example, the embodiment in Figs. 1-2 includes “switch 30,” which Greenberg describes as “control[ing] *a solenoid* that switches the vacuum pump from operatively being connected either to the first or second assembly.” Ex. 1006, [0050] (emphasis added). Similarly, the Fig. 3 embodiment includes “valves 70 and 72,” which Greenberg indicates are “adapted to operate in tandem and that control the coupling of the pneumatic source with the relevant supply and recovery

containers.” *Id.*, [0065]. Each of valves 70 and 72 is a single-inlet-to-single-outlet valve, rather than a manifold.



Ex. 1006, Fig. 2 (excerpt), Fig. 3 (excerpt); Ex. 2001, ¶ 120.

According to Eunsung’s own cited definition, a manifold requires “a chamber or pipe with *many* openings.” Pet., 15, n.4 (emphasis added). Greenberg’s valve design is fundamentally distinct from a manifold, as Greenberg’s valve 108 is neither a chamber nor a pipe with *many* openings, and it has only a single, isolated pathway. Accordingly, Greenberg’s valve 108 does not meet the manifold system limitations in independent claims 1, 9, and 15. Ex. 2001, ¶ 121.

Recognizing this deficiency, Eunsung again proposes a backup theory to modify Greenberg, but the modification is flawed and relies on hindsight rather than objective reasoning based on the prior art. Eunsung argues that “a POSITA would have found it obvious to use a manifold system to implement Greenberg’s functionality of switching treatment materials.” Pet., 74. It asserts that manifolds were, e.g., “well-known,” “within a POSITA’s general knowledge,” and one of “a

finite number of identified, predictable solutions.” *Id.*, 74-75. But these conclusory assertions do not establish that a POSITA **would have been motivated** to make such a substitution—only that a POSITA **could have**. See *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (“[O]bviousness concerns whether a skilled artisan not only could have made but would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention.”); Ex. 2001, ¶ 122.

Critically, the Petition and expert declaration identify no shortcoming in Greenberg’s valve 108 that would justify replacing it. Pet., 74-75; Ex. 1003, ¶¶ 273-274. At most, the Petition contends a POSITA would have selected a manifold because “it eliminates the need of manual connecting/disconnecting and allows for a simpler handpiece design with one input.” Pet., 74-75. However, Greenberg’s valve 108 already eliminates manual connections, and the Petition and expert declaration fail to explain how a manifold system could possibly simplify Greenberg’s handpiece design. Ex. 2001, ¶ 123.

The Petition also argues that incorporating a manifold in Greenberg “would have merely involved a simple substitution of one well-known element for another to obtain predictable results.” Pet., 75. But this is inconsistent with the Petition’s own cited definition of a “manifold.” A device that selectively connects one input to one output, like Greenberg’s valve 108, is not equivalent to “a chamber or pipe

with many openings.” Replacing one with the other would require significant unaddressed structural and functional changes to accommodate the manifold’s many openings. Ex. 2001, ¶124. This is not a simple substitution.

Accordingly, Petitioner has failed to establish that Greenberg discloses a manifold system or that a POSITA would have modified Greenberg to include one.

J. Grounds 2A-2B: Greenberg Does Not Disclose the Claimed “Treatment Material”

The independent claims of the ’477 patent recite that the manifold system is “in fluid communication” with the handpiece assembly and “in communication with” multiple containers, and also recite that the multiple containers are “configured to contain a treatment material.” Greenberg does not disclose the claimed “treatment material.” Although no express construction is needed, the Board should determine that the ordinary meaning of “treatment material” in the context of the specification and claims excludes dry abrasive particles.⁴ Ex. 2001, ¶ 126.

As an initial matter, Eunsung and Mr. Simon appreciate that the Examiner, during prosecution of the ’477 patent, chose not to rely on Greenberg in rejecting

⁴ As Eunsung notes, “claim terms need only be construed to the extent necessary to resolve the controversy.” Pet., 2 (citing *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011)).

the “treatment material” and “fluid communication” limitations because Greenberg discloses using only dry abrasive particles and fails to disclose these limitations. Pet. 4; Ex. 1003, ¶ 51. Yet, Eunsung has taken the position that Greenberg’s solid abrasive particles constitute a “fluid” and satisfy the “treatment material” limitations. *See* Pet., 78 (“[A] POSITA would have understood and found obvious that Greenberg’s *‘particles’ constitute ‘fluid’* within the meaning of the ’477 patent”), 78-79 (emphasis added) (characterizing dry abrasive particles as within the scope of “treatment material”); Ex. 2001, ¶ 126.

Eunsung’s interpretation of “treatment material” and “fluid” is inconsistent with the specification. Eunsung interprets the following specification paragraph as somehow broadening the scope of “fluid” and “treatment material” to cover solid abrasive particles.

As used herein, the term “treatment material” is a broad term and includes, but is not limited to, medicament, a substance tending to flow or conform to the outline of its container such as fluid, gas, liquid (e.g., serums, water, saline, etc.), gel, fluidized material, additives, and/or a plurality of fine solids. The general term “fluid” is used throughout synonymously with the term “treatment material” and is to be given the same broad definition.

Ex. 1001, 5:38-45 (cited by Pet., 78). Citing this passage, Eunsung argues that “Greenberg’s abrasive particles” correspond to “**a plurality of fine solids.**” Pet., 78 (emphasis by Eunsung).

Contrary to Eunsung’s contention, the ’477 patent expressly distinguishes prior-art microdermabrasion technology using abrasive particles. The specification explains that with microdermabrasion, “the surface of the skin is removed due to mechanical rubbing by a handpiece emitting a stream of sand or grit” to wear away “cell layers of the skin.” Ex. 1001, 1:58-65. It further explains that the “momentum of the grit tends to wear away two to three cell layers of the skin with each pass of the handpiece.” *Id.*, 1:63-65. Microdermabrasion can be a painful experience and due to its harsh nature, can often leave patients with redness. *Id.*, 1:46-50 (describing dermabrasion as painful and leaving the skin “red and raw-looking”).

In contrast to microdermabrasion’s stream of sand or grit, the ’477 patent discloses a system for treating skin that “deliver[s] **fluid** from at least one of the **plurality of fluid sources** to the handpiece assembly.” *Id.*, 2:25-28. Consistent with this distinction, the claims of the ’477 patent do not cover prior-art microdermabrasion and, instead, jettison the painful procedure for hydrodermabrasion. The systems claimed by the ’477 patent wholly eliminate resurfacing the skin with sandpaper-like blasts of abrasive particles.

The specification distinguishes between “wet” and “dry” modes on the basis that the “wet” mode applies treatment materials to the skin and the “dry” mode does not:

During some skin treatment procedures, *treatment materials from multiple containers 26 are sequentially or simultaneously applied to the patient’s skin during a “wet” mode of operation.* ... In some embodiments, the console 12 can be *used for a “dry” mode of operation.* That is, the console 12 can be used to exfoliate skin, for example, without [sic: while] delivering *little or substantially no treatment fluid.*

Ex. 1001, 6:19-27 (emphasis added).

Further demonstrating that the treatment materials are not dry solid particles, the specification explains “the handpiece assemblies can be used *without treatment material*, i.e., the handpiece can be used *in a dry procedure.*” Ex. 1001, 13:20-23 (emphasis added). That the inventors described the procedure without treatment material as a “dry procedure” demonstrates that the treatment materials are not dry solid particles.

The specification also correlates the “effectiveness of the fluid” on the skin with the amount of time the “active ingredients of the treatment material” are retained on the skin:

Fluid traveling down the longer pathway is in contact with the person’s skin 80 for a longer period of time. Thus, tighter spirals lead to

increased contact time between the fluid and the skin 80. These longer contact times can increase the *effectiveness of the fluid* because the skin can absorb an adequate amount of *active ingredients of the treatment material*. Fluid retention time on the patient's skin can be increased to *increase hydration, serum retention, and the like*.

Ex. 1001, 10:1-9 (emphases added). Thus, the identified functions of longer fluid contact times—absorption of ingredients, hydration, and serum retention—are not functions performed by solids. And, the specification lists numerous examples of fluids—including serums, hydration agents and additives, acids, extracts, and other substances—that are undoubtedly liquids, not solids. *Id.*, 15:53-16:25.

Moreover, Eunsung has not—and cannot—allege that the discussion of “treatment material” and “fluid” in the specification amounts to an inventor’s definitional lexicography. The mere fact that a sentence starts with the phrase “as used herein, the term...” does not per se render the sentence lexicography. *See Abbott Labs. v. Syntroon Bioresearch, Inc.*, 334 F.3d 1343, 1355 (Fed. Cir. 2003) (holding that statement in specification starting with “[a]s used herein, ‘analyte’ refers....” is not lexicography). Furthermore, “the written description's use of ‘may also include,’ ‘e.g.,’ ‘such as,’ and ‘etc. makes clear the patentee did not intend” lexicography. *Baxalta Inc. v. Genentech, Inc.* 972 F.3d 1341, 1549 (Fed. Cir. 2020).

Thus, based on the intrinsic record, the Board should reject Eunsung’s attempt to broaden “treatment material” to encompass the dry solid particles disclosed in

Greenberg. If the Board determines a formal claim construction is necessary, the Board should find that “treatment material” has its plain and ordinary meaning in view of the specification and that such meaning does not encompass dry solid particles. Ex. 2001, ¶ 129.

Such an evaluation is sufficient to resolve the parties’ dispute and find that Greenberg does not disclose the claimed “treatment material.” Indeed, Eunsung does not dispute that Greenberg discloses only dry particles and Eunsung never proposes any modification of Greenberg’s microdermabrasion system to use anything other than dry particles. *See* Pet., 75-76 (citing Greenberg for its disclosure of different types of abrasive particles). Ex. 2001, ¶ 130.

K. Grounds 2A-2B: A POSITA Would Not Have Been Motivated to Combine Greenberg’s Different Embodiments

In Grounds 2A-2B, Eunsung must rely on different structures from multiple different embodiments in Greenberg in an attempt to cover all of the claim limitations in the challenged claims. However, Eunsung fails to provide any motivation to combine these different structures, and a POSITA would have lacked such motivation. Eunsung’s combination of these different structures is driven by hindsight alone. Ex. 2001, ¶ 131.

For example, Eunsung asserts that Fig. 5’s three supply containers and two valves would be used instead of Fig. 1’s two supply containers (existing in Fig. 1’s

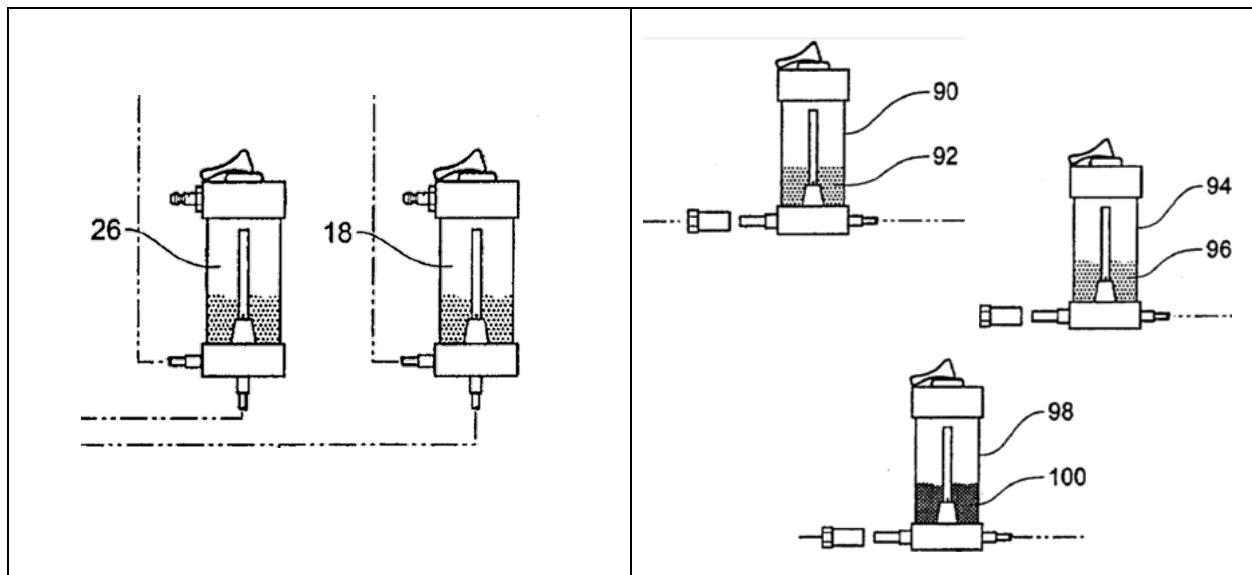
separate assemblies) and one valve, that Fig. 5's one recovery container would be used instead of Fig. 1's two recovery containers, and that Fig. 5's single handle would be used instead of Fig. 1's two handles. *See* Pet., 68. Eunsung further asserts, "[a]s Mr. Simon describes, other structures described with respect to FIGS. 1-4 would be similarly applicable for the FIG. 5 implementation." *Id.*, 69 (citing Ex. 1003, ¶ 75).⁵ Eunsung next asserts that Fig. 3's "vacuum pump 12" is added to Fig. 5's schematic in an attempt to satisfy limitations [1.4], [1.5], and [1.7]. Pet., 80-83, 85-87; Ex. 2001, ¶ 132.

But Eunsung and Mr. Simon fail to provide any explanation of how or why any of these structures from Figs. 1-4 would be combined or implemented in Greenberg's Fig. 5 embodiment. *See* Pet., 68 (alleging Fig. 5's implementation would have been "readily incorporated" into Fig. 5 but failing to provide any motivation to do so). Mr. Simon essentially repeats the Petition's description and also fails to provide any motivation for the combination of different structures. *See* Ex. 1003, ¶ 133.

In fact, Greenberg itself indicates that these structures in the Figs. 1-4 embodiments are not compatible with the Fig. 5 embodiment. For example,

⁵ For the "other structures," Mr. Simon describes only Fig. 1's "tube 20" to be used in Fig. 5. Ex. 1003, ¶ 75.

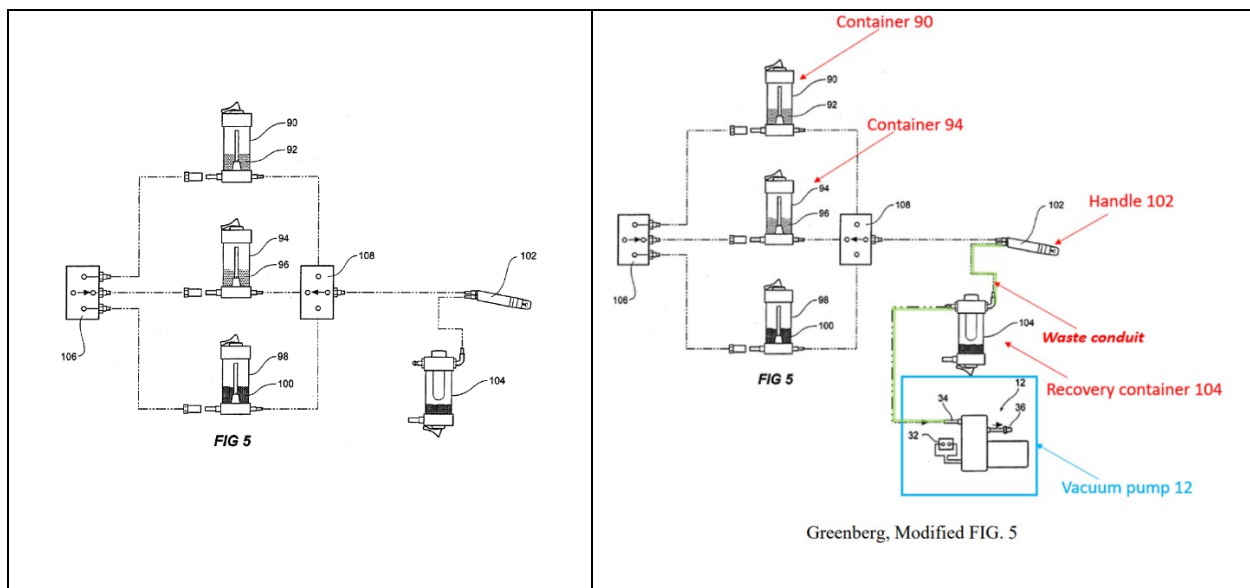
Greenberg states that “[w]herever possible, the same reference numbers will be used through the drawings and the following description to refer to the same and like parts.” Ex. 1006, [0048]. Throughout the Figs. 1-4 embodiments, Greenberg uses the same reference numbers for the supply containers, recovery containers, and handles. But in the Fig. 5 embodiment, Greenberg uses different reference numbers for Fig. 5’s supply containers, recovery container, and handle. *Compare, e.g.,* Ex. 1006, Figs. 1-4 (reference numbers 18, 26 for supply containers) *with* Fig. 5 (reference numbers 90, 94, 98 for supply containers). Ex. 2001, ¶ 134. Furthermore, Greenberg indicates in Fig. 5 that those supply containers are structurally different than, e.g., the Fig. 2 supply containers, each having different outlet configurations:



Ex. 1006, Figs. 2 (excerpted), Fig. 5 (excerpted); Ex. 2001, ¶ 135.

Eunsung’s combination of different Greenberg embodiments is particularly problematic in Eunsung’s addition of the vacuum pump to Greenberg’s vacuum-free

Fig. 5 embodiment. In addressing the “vacuum source” claimed in limitation [1.4], Eunsung points to Fig. 3’s “vacuum pump 12.” Pet., 78. And, when addressing limitations [1.5] and [1.7] related to the function and orientation of the vacuum source, Eunsung includes an image in the Petition that literally concatenates Fig. 3’s vacuum pump 12 onto the Fig. 5 schematic, which in its original does not include a vacuum.



Ex. 1006, Fig. 5; Pet., 82, 86; Ex. 2001, ¶ 136.

Eunsung, however, never addresses whether a POSITA would have even been motivated to modify Fig. 5 in this manner. For limitation [1.5], Eunsung essentially just repeats the claim language to allege a POSITA would find the modification obvious: “A POSITA would have understood and found obvious that Greenberg’s vacuum pump 12 is fluidly connected to recovery container 104.” Pet. 81. Likewise, for limitation [1.7], Eunsung again merely repeats the language of the claim—

without any additional evidence—to allege a POSITA would have found the motivation obvious. *Id.*, 86-87; Ex. 2001, ¶ 137. Eunsung has not met its burden to show that a POSITA would have been motivated to combine these different embodiments. *See Belden*, 805 F.3d at 1073 (“[O]bviousness concerns whether a skilled artisan not only could have made but would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention.”).

And in fact, a POSITA would not have been motivated to add a vacuum source to Greenberg’s Fig. 5 embodiment. Ex. 2001, ¶ 138. On its own, Greenberg’s Fig. 5 embodiment lacks any type of pneumatic source, whether a vacuum or a compressor. However, a POSITA in reading Greenberg would understand that the embodiment in Fig. 5 uses a compressor upstream of the supply containers and valve 106 to supply air pressure to the system rather than vacuum pump downstream of the recovery container. *Id.*, ¶ 138. Greenberg states: “A supply container can be chosen to be in communication with handle 102 and recovery container 104 by ***use of valve 106 that controls air flow into the respective supply container*** and valve 108 that [then] connects that supply container to the handle 102 and recovery container 104.” Ex. 1006, [0077] (emphasis added). That is, Greenberg indicates that air pressure to propel the abrasive particles is supplied to the system from a compressor upstream of valve 106 to supply air to the respective supply container

and thereby aerate the particles in the container and drive the particles through valve 108 to the handle 102. Ex. 2001, ¶ 138.

Eunsung and Mr. Simon have not shown in Ground 2A that a POSITA would have been motivated to combine Greenberg’s different embodiments to arrive at the claimed invention. I note that in Ground 2B, Eunsung adds only Trueba to the combination but this combination fails to address any of the deficiencies in Greenberg in Ground 2A. Moreover, adding Trueba’s mucosal inhaler that employs Hewlett Packard inkjet technology will only make the already complicated combination of different Greenberg embodiments worse. *See* Ex. 1008, 1:7-13; Ex. 2001, ¶ 139.

V. OBJECTIVE INDICIA REINFORCE PATENTABILITY OF THE CLAIMS AND PROTECT AGAINST EUNSUNG’S HINDSIGHT BIAS

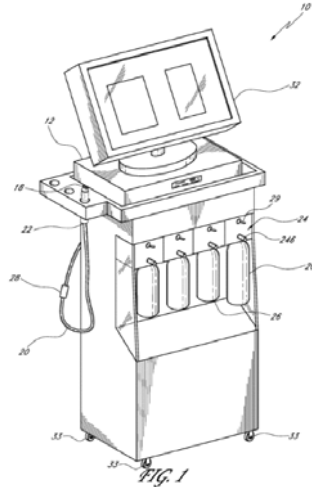
Objective evidence of nonobviousness—commercial success, copying, and industry praise—further demonstrates the patentability of the challenged claims. Objective indicia “are not just a cumulative or confirmatory part of the obviousness calculus but constitute[] independent evidence of nonobviousness.” *Leo Pharm. Prods., Ltd. v. Rea*, 726 F.3d 1346, 1358 (Fed. Cir. 2013) (internal quotation marks omitted). “[T]he objective indicia of nonobviousness are crucial in avoiding the trap of hindsight.” *Id.* Indeed, such evidence “may often be the most probative and cogent evidence in the record” and “may often establish that an invention appearing

to have been obvious in light of the prior art was not.” *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012) (internal quotation marks omitted). Though each objective indicia provides substantial weight to nonobviousness, “it stands to reason that these individual weights would sum to a greater weight” to firmly establish the challenged claims are patentable. *Volvo Penta of the Ams., LLC v. Brunswick Corp.*, 81 F.4th 1202, 1215 (Fed. Cir. 2023).

A nexus between the objective indicia and a novel feature of the claimed invention is presumptively attributed to the patented invention where the product is coextensive with the claimed features. *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1328 (Fed. Cir. 2008) (citation omitted). Here, there is a nexus between the objective indicia and the claimed invention. Specifically, as shown below: (1) the HydraFacial Systems are embodiments of, and coextensive with, the claimed inventions, such that nexus is presumed; and (2) the objective indicia result directly from the HydraFacial Systems’ unique and claimed ability to selectively apply multiple treatment fluids drawn from separate containers. Ex. 2001, ¶ 140.

Here, at least four HydraFacial multi-container systems practice the claims of the ’477 patent and are co-extensive with them: HydraFacial’s Tower, Elite, Allegro, and Syndeo systems (collectively, “HydraFacial Systems”). HydraFacial’s Tower system was the originating multi-container system, first sold in 2005. The Tower is

reflective of the system depicted in the figures in the '477 patent, including Fig. 1 as shown below:

Tower Product	'477 Patent, Fig. 1
	

Ex. 2033 at 1; Ex. 2001, ¶ 141; Ex. 1001, Fig. 1.

As Mr. Leinsing explains in detail, each of the Tower, Elite, Allegro, and Syndeo systems practices at least claim 1 of the '477 patent. Ex. 2001, ¶¶ 142-222. Furthermore, as Mr. Leinsing also explains, the HydraFacial Systems are co-extensive with the claims of the '477 patent. *Id.*, ¶¶ 223-227. For example, claim 1 of the '477 patent is directed to skin treatment systems with specific key features including (1) a console including a manifold; (2) a first fluid container and at least a second fluid container; (3) a handpiece assembly comprising a tip; (4) fluid communication between the manifold and the handpiece assembly; (5) a vacuum source, and (6) fluid communication between the handpiece assembly and a waste

conduit that is operatively coupled to the vacuum source. *Id.*, ¶ 225. Each of the Syndeo, Elite, Allegro, and Tower is a skin treatment system that includes these key features recited in the claims. *Id.*, ¶¶ 225, 142-222.

Additionally, as Mr. Leinsing explains, the HydraFacial Systems do not include other key or driving features that are not claimed. *Id.*, ¶ 226. The HydraFacial Systems may be equipped with ancillary components like a red and blue light therapy handpieces, but these handpieces are insignificant to the HydraFacial Systems. *Id.* The HydraFacial Systems are, and have been, extensively marketed as hydrodermabrasion systems. *See id.* (citing Ex. 2038 (Tower), Ex. 2039 (Tower), Ex. 2040 (Tower), Ex. 2041 (Tower), Ex. 2042 (Tower), Ex. 2043 (Tower), Ex. 2044 (Elite), Ex. 2045 (Elite), Ex. 2046 (Elite), Ex. 2047 (Allegro)). Furthermore, red and blue light therapy could be achieved using less expensive devices. *Id.*; Ex. 2001, ¶ 226; Ex. 2015. It is the significant features of the HydraFacial Systems that have been claimed in the '477 patent and are coextensive with the claims.

Thus, for these reasons, a nexus between the objective indica discussed below and the patented invention is presumed.

A. HydraFacial's Commercial Success Provides Objective Evidence the Claims Are Not Obvious

The HydraFacial Tower was the first hydrodermabrasion product that allowed clinicians to selectively apply multiple treatment fluids drawn from separate

containers. Ever since the launch of the Tower in 2005, and with the Allegro, Elite, and Syndeo that followed, the HydraFacial Systems have been financially successful in the field HydraFacial created. *See e.g.*, Ex. 2009, ¶ 7.

As evidence of this success, the HydraFacial Systems have generated global revenue of nearly [REDACTED] from May 2005 through June 2024:

Product	Period	Global Revenue
Tower	2005-2023	[REDACTED]
Allegro	2012 - Q2 2024	[REDACTED]
Elite	2016 - Q2 2024	[REDACTED]
Syndeo	2022 - Q2 2024	[REDACTED]
Total	2005 - Q2 2024	[REDACTED]

Ex. 2009, ¶ 7; Ex. 2010. As explained above, a nexus is presumed between this tremendous commercial success and the claimed features of the '477 patent. The HydraFacial Systems have been manufactured almost entirely in the United States, and have experienced tremendous commercial successes in the United States and throughout the world. Thus, the global sales revenue is properly reflective of that commercial success. *See, e.g., Lindemann Maschinenfabrik GMBH v. Am. Hoist & Derrick Co.*, 730 F.2d 1452, 1461 (Fed. Cir. 1984) (“The district court improperly discounted the weight due the evidence of commercial success because that success occurred abroad. A showing of commercial success of a claimed invention,

wherever such success occurs, is relevant in resolving the issue of nonobviousness.”).

Given the significant sales revenue attributed to the HydraFacial Systems, HydraFacial need not present market share data at this time. *Chemours Co. FC, LLC v. Daikin Indus., Ltd.*, 4 F.4th 1370, 1378 (Fed. Cir. 2021) (market share data is potentially useful, but “is not required to show commercial success.”).

Furthermore, additional evidence confirms a nexus exists between the commercial success of the HydraFacial Systems and the claims of the ’477 patent, including the claimed feature of selecting treatment fluids from multiple containers. The commercial success of the HydraFacial Systems is particularly astounding compared to another HydraFacial product, the Nectre. The Nectre was a product offered by HydraFacial from approximately 2008 to 2013. Ex. 2009, ¶ 8. The Nectre, like the Karasiuk reference relied on by Eunsung, used only a single container rather than allowing clinicians to selectively apply multiple treatment fluids drawn from separate containers. Ex. 2001, ¶ 228. An image of the Nectre is shown below:



Ex. 2036 at 11; Ex. 2001, ¶ 228-260. A clinician was required to manually change out the container during the treatment to use a different treatment solution. Ex. 2036 at 11. Except for using a single container at a time, the Nectre is comparable in every other material respect to the HydraFacial Systems. Ex. 2001, ¶ 228-260.

The Nectre experienced poor sales and HydraFacial discontinued it in 2013. Ex. 2009, ¶ 8; Ex. 2010. By contrast, the Tower and Allegro multi-container systems experienced strong sales over the same period of 2008-2013. Ex. 2009, ¶ 8; Ex. 2010. The Tower was available on the market over the same period as the Nectre, 2008-2013, and the Allegro overlapped for two years, 2012-2013. But despite the Nectre's similarities and overlapping sales period, it achieved only about [REDACTED] in revenue between 2008 and 2013, whereas the Tower and Allegro together had approximately [REDACTED] over the same period. Ex. 2009, ¶ 8. The staggering difference in sales revenue between devices that are essentially the same except for the Tower and Allegro including the claimed ability to allow clinicians to selectively

apply multiple treatment fluids drawn from separate containers demonstrates that that claimed feature is responsible for the commercial success of the HydraFacial Systems. Ex. 2001, ¶¶ 261-263.

B. Copying of the HydraFacial Systems Provides Objective Evidence the Claims Are Not Obvious

The copying by competitors of the HydraFacial Systems is strong evidence the claims of the '477 patent would not have been obvious. *Volvo Penta*, 81 F.4th at 1213 (“[A]lthough copying is not alone dispositive of nonobviousness, we have usually considered a determination of copying to be strong evidence of nonobviousness.”) (internal quotation marks omitted).

HydraFacial became aware in 2014 that Rafael Newton Aguila (“Aguila”) was selling a knockoff (shown on the right below) of the HydraFacial Tower product (on the left):



EDGE HYDRAFACIAL® PRODUCT



DEFENDANT'S ACCUSED PRODUCT

Ex. 2005 (Summary Judgment Order) at 6. Aguila even attempted to pass off his company as Edge Systems (as HydraFacial was previously known), going to great lengths to assume Edge's identity. *Id.*, 6-7.

Aguila lured customers into thinking the knockoff product was an authentic version of HydraFacial's Tower. For example, Dr. Elliot Dubois, a plastic surgeon who was looking to buy a hydrodermabrasion device at time, purchased a knockoff product from Aguila thinking he was actually purchasing an authentic HydraFacial Tower product from HydraFacial. *Id.*, 7.

In November 2014, HydraFacial filed an emergency motion for an ex parte temporary restraining order ("TRO") and also sought a preliminary injunction. *Id.*, 8-9. The court granted the TRO in December 2014 and later entered a preliminary injunction against Aguila. *Id.*; Ex. 2007; Ex. 2008. The court subsequently also granted HydraFacial's motion for summary judgment of patent and trademark infringement and entered a permanent injunction. Ex. 2005, 42-43. In that ruling, the court characterized Aguila's copying this way:

Bootleg. Clone. Copycat. Imitation. Knock-off. Palm-Off. However one labels a peddled product that conspicuously capitalizes on another's intellectual property rights, this case presents the quintessential example.

Id., 1.

The '477 patent had not issued by 2014, and, therefore, was not being asserted against Aguila. Rather, HydraFacial asserted patents from a different patent family against Aguila. *Id.*, 3-4. Nonetheless, Aguila's wholesale copying of the features claimed in the '477 patent is strong evidence that the '477 patent would not have been obvious. *Liqwd, Inc. v. L'Oreal USA, Inc.*, 941 F.3d 1133, 1138 (Fed. Cir. 2019) ("[W]here there is evidence of actual copying efforts, that evidence is always relevant.").

VI. CONCLUSION

For the foregoing reasons, HydraFacial respectfully requests that the Board deny institution of the Petition.

Respectfully submitted,

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Dated: May 27, 2025

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CERTIFICATE OF TYPE-VOLUME LIMITATIONS
UNDER 37 C.F.R. § 42.24

The undersigned certifies that the foregoing **PATENT OWNER PRELIMINARY RESPONSE** contains 13,494 words, exclusive of the parts exempted as provided in 37 C.F.R. §42.24(a), and therefore complies with the type-volume limitations of 37 C.F.R. §42.24(a).

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of **PATENT OWNER PRELIMINARY RESPONSE** and **EXHIBITS 2001-2002, 2005-2010, 2014-2015, 2024-2025, 2030-2056** are being served on May 27, 2025, via email pursuant to 37 C.F.R. § 42.6(e), to counsel for Petitioner as addressed below:

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