

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AESTHETIC MANAGEMENT PARTNERS, LLC AND AESTHETIC
MANAGEMENT PARTNERS, INC.,
Petitioner,

v.

HYDRAFACIAL LLC,
Patent Owner.

Case No. IPR2025-01169
Patent No. 9,550,052

**PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT
NO. 9,550,052 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42**

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EXHIBITS

- EUNSUNG-1001 U.S. Pat. No. 9,550,052 to Ignon (“the ’052 patent”)
- EUNSUNG-1002 Excerpts from the Prosecution History of the ’052 patent (“the Prosecution History”)
- EUNSUNG-1003 Declaration of Mr. Eric Simon
- EUNSUNG-1004 U.S. Patent Publication No. 2003/0212415 (“Karasiuk”)
- EUNSUNG-1005 U.S. Patent No. 5,199,604 (“Palmer”)
- EUNSUNG-1006 U.S. Patent Publication No. 2003/0093089 (“Greenberg”)
- EUNSUNG-1007 U.S. Patent No. 6,390,815 (“Pond”)
- EUNSUNG-1008 U.S. Patent No. 6,684,880 (“Trueba”)
- EUNSUNG-1009 U.S. Patent No. 4,512,764 (“Wunsch 1982”)
- EUNSUNG-1010 U.S. Patent Publication No. 2003/0018252 (“Duchon”)
- EUNSUNG-1011 U.S. Patent No. 4,215,476 (“Armstrong”)
- EUNSUNG-1012 Friedman, et al., Chemical peels, dermabrasion, and laser therapy, *Disease-a-Month* 55.4 (2009): 223-235 (“Friedman”)
- EUNSUNG-1013 Burgess, Cheryl M., *Cosmetic dermatology*, Heidelberg, Germany: Springer, 2005 (“Burgess”)
- EUNSUNG-1014 Pickering, J. A., Touch-sensitive screens: the technologies and their application, *International Journal of Man-Machine Studies* 25.3 (1986): 249-269 (“Pickering”)
- EUNSUNG-1015 Friedman, Mark J. et al., The AMSA injection: A new concept for local anesthesia of maxillary teeth using a computer-controlled injection system. *Quintessence Int* 29 (1998): 297-

303 (“Friedman 1998”)

- EUNSUNG-1016 Lee, Woan-Ruoh, et al., Lasers and microdermabrasion enhance and control topical delivery of vitamin C, Journal of investigative dermatology 121.5 (2003): 1118-1125 (“Lee”)
- EUNSUNG-1017 U.S. Patent No. 6,511,486 (“Mercier”)
- EUNSUNG-1018 U.S. Patent Publication No. 2001/0049511 (“Coleman”)
- EUNSUNG-1019 U.S. Patent No. 6,428,518 (“Brengele”)
- EUNSUNG-1020 U.S. Patent No. 4,559,036 (“Wunsch”)
- EUNSUNG-1021 U.S. Patent No. 6,099,511 (“Devos”)
- EUNSUNG-1022 U.S. Patent No. 5,163,902 (“Lynn”)
- EUNSUNG-1023 U.S. Patent No. 5,190,525 (“Oswald”)
- EUNSUNG-1024 U.S. Patent No. 6,673,082 (“Mallett”)
- EUNSUNG-1025 Rajan, Poonam, et al., Skin barrier changes induced by aluminum oxide and sodium chloride microdermabrasion, Dermatologic surgery 28.5 (2002): 390-393 (“Rajan”)
- EUNSUNG-1026 Karimipour, Darius J., et al., Molecular analysis of aggressive microdermabrasion in photoaged skin, Archives of dermatology 145.10 (2009): 1114-1122 (“Karimipour”)
- EUNSUNG-1027 U.S. Patent No. 6,241,739 (“Waldron”)
- EUNSUNG-1028 U.S. Patent No. 3,865,352 (“Nelson”)
- EUNSUNG-1029 Nayler, Gordon. Dictionary of mechanical engineering. SAE International, 1996 (“Nayler”)
- EUNSUNG-1030 Declaration of Harold Walbrink

LISTING OF CLAIMS

Claim 1	
[1.pre]	A system for performing a skin treatment procedure, the system comprising:
[1.1]	a console including a manifold, the manifold being in fluid communication with a first fluid container and at least a second fluid container, the first fluid container and the at least the second fluid container being configured to contain a treatment material for a skin treatment procedure, wherein the treatment material comprises a liquid;
[1.2]	a handpiece assembly comprising a tip, the tip being configured to contact a skin surface of a subject;
[1.3]	a supply conduit placing the manifold of the console in fluid communication with the handpiece assembly, wherein a distal end of the supply conduit is configured to couple to the handpiece assembly;
[1.4]	wherein the manifold is configured to control a flow of treatment material from the first fluid container and at least the second fluid container through the supply conduit; and
[1.5]	a vacuum source;
[1.6]	a waste conduit in fluid communication with the tip of the handpiece assembly to remove waste away from a skin surface of a subject during a skin treatment procedure, wherein the waste conduit is operatively coupled to the vacuum source; and
[1.7]	wherein the system is configured to permit a user to select the treatment material from the first fluid container or the at least second fluid container to be delivered through the supply conduit to the handpiece assembly; and
[1.8]	wherein, when the vacuum source is activated and the tip contacts the skin surface, a suction force is created within the waste conduit and along the tip, thereby removing waste from the skin surface via the waste conduit while drawing treatment material from the first fluid container or the second fluid container to the tip via the supply conduit.

Claim 2	
[2]	The system of claim 1, wherein the console comprises a display, wherein the display comprises a user input device to facilitate controlling a flow of treatment materials from the first fluid container or the at least a second fluid container to the handpiece assembly.
Claim 3	
[3]	The system of claim 2, wherein the user input device comprises a touch screen.
Claim 4	
[4]	The system of claim 1, wherein the first fluid container or the at least a second fluid container is releasably coupled to the manifold.
Claim 5	
[5]	The system of claim 1, wherein the manifold is configured to be placed in fluid communication with at least four fluid containers.
Claim 6	
[6]	The system of claim 1, wherein treatment materials from the first fluid container and at least the second fluid container are delivered to the supply conduit sequentially or simultaneously.
Claim 7	
[7]	The system of claim 1, wherein the console is movable.
Claim 8	
[8]	The system of claim 1, wherein the tip of the handpiece assembly is configured to exfoliate skin tissue as the handpiece assembly is moved relative to a skin surface of a subject.
Claim 9	

[9]	The system of claim 1, wherein each of the supply conduit and the waste conduit connects to a corresponding connector along a proximal end of the handpiece assembly.
Claim 10	
[10]	The system of claim 1, wherein the manifold of the console is configured to be placed in fluid communication with a container comprising an antimicrobial fluid or other disinfecting agent for periodic flushing of the manifold.
Claim 11	
[11.pre]	A system for performing a skin treatment procedure, the system comprising:
[11.1]	a manifold in fluid communication with at least two fluid containers, each of the at least two fluid containers being configured to contain a treatment material, wherein the treatment material comprises a liquid;
[11.2]	a handpiece assembly comprising a tip, the tip being configured to contact a skin surface of a subject;
[11.3]	a supply conduit placing the manifold in fluid communication with the handpiece assembly, wherein a distal end of the supply conduit is configured to secure to the handpiece assembly;
[11.4]	a vacuum source; and
[11.5]	a waste conduit in fluid communication with the handpiece assembly to remove waste from a skin surface of a subject during a procedure, wherein the waste conduit is operatively coupled to the vacuum source;
[11.6]	wherein the manifold is configured to control a flow of treatment material from each of the at least two fluid containers through the supply conduit;
[11.7]	wherein the system is configured to permit a user to select the fluid container from which treatment material is delivered to the supply conduit.
Claim 12	

[12]	The system of claim 11, further comprising a user input device for selecting a treatment material to be passed through the supply conduit to the handpiece assembly.
Claim 13	
[13]	The system of claim 11, wherein the system comprises a display, wherein the display comprises a user input device to facilitate controlling a flow of treatment materials from the at least two fluid containers.
Claim 14	
[14]	The system of claim 13, wherein the user input device comprises a touch screen.
Claim 15	
[15]	The system of claim 11, wherein the at least two fluid containers is releasably coupled to the manifold.
Claim 16	
[16]	The system of claim 11, wherein the tip of the handpiece assembly is configured to exfoliate skin tissue as the handpiece assembly is moved relative to a skin surface of a subject.
Claim 17	
[17]	The system of claim 11, wherein the manifold is configured to be placed in fluid communication with a container comprising an antimicrobial fluid or other disinfecting agent for periodic flushing of the manifold.

Petitioner, Aesthetic Management Partners, LLC and Aesthetic Management Partners, Inc. (collectively “Petitioner”), petitions for *Inter Partes* Review of claims 1-17 (“Challenged Claims”) of U.S. Patent No. 9,550,052 (“’052 patent”).

I. REQUIREMENTS

A. Grounds for Standing

Petitioner certifies that the ’052 patent is available for IPR. Petitioner is not barred or estopped from requesting this review.

B. Challenge and Relief Requested

Petitioner requests IPR and cancellation of the Challenged Claims on the grounds below. This Petition, supported by the declaration of Harold Walbrink¹ (EUNSUNG-1028), demonstrates that there is a reasonable likelihood that Petitioner will prevail with respect to cancellation of at least one challenged claim. See, 35 U.S.C. §314(a).

Ground	Claims	Basis (§103)
1A	1, 4-12, 15-17	Karasiuk, Palmer
1B	1-17	Karasiuk, Palmer, Trueba
1C	9	Karasiuk, Palmer, Mercier
1D	1, 4-12, 15-17	Karasiuk, Palmer, Wunsch
1E	1-17	Karasiuk, Palmer, Wunsch, Trueba

¹ Petitioner has retained Harold Walbrink in this proceeding. Mr. Walbrink has adopted the positions and opinions set forth in EUNSUNG-1003, the declaration of Eric Simon, as his own. EUNSUNG-1030, ¶19. While Petitioner is not relying directly on Mr. Simon’s declaration in this Petition, for administrative expediency, this Petition cites only to EUNSUNG-1003.

Ground		Claims	Basis (§103)
1F	9		Karasiuk, Palmer, Wunsch, Mercier

The '052 patent claims priority (not conceded) to a series of applications, the earliest filed December 30, 2005 (“Critical Date”). Applied references are §102(b) prior art:

Reference	Published Date
Karasiuk	11/13/2003
Palmer	4/6/1993
Trueba	2/3/2004
Mercier	1/28/2003
Wunsch	12/17/1985

C. Claim Construction

All claim terms should be construed according to *Phillips*. No formal claim constructions are necessary since “claim terms need only be construed to the extent necessary to resolve the controversy.” *Wellman*, 642 F.3d at 1361.

Petitioner reserves the right to respond to constructions offered by Patent Owner or adopted by the Board. Petitioner does not concede that the Challenged Claims satisfy all statutory requirements, including 35 U.S.C. §§101 and 112. Petitioner has applied prior art in a manner consistent with Patent Owner’s allegations of infringement.

D. Level of Ordinary Skill

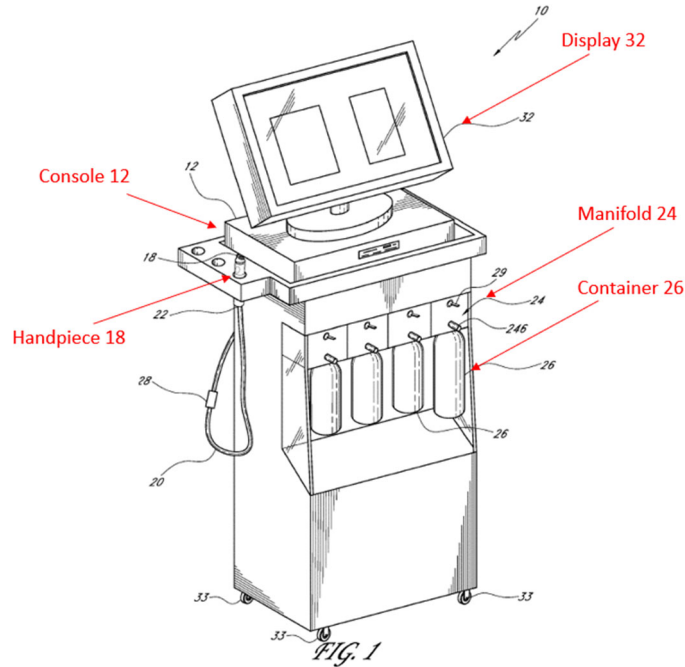
A person having ordinary skill in the art (POSITA) at the time of the alleged

invention would have had an undergraduate degree (B.S.) in Mechanical Engineering or equivalent knowledge, training, or experience, with two years of work experience in the design of mechanical products, design of fluidic systems, and/or the design of devices intended for medical or cosmetological applications. Additional education or industry experience may compensate for a deficit in one of the other aspects of the requirements stated above. EUNSUNG-1003, [13]-[14].

II. '052 PATENT

A. Summary

The '052 patent describes a skin treating apparatus having a console with a user input device and a handpiece assembly. EUNSUNG-1001, Abstract; EUNSUNG-1003, [38]-[43]. The apparatus includes a manifold system “configured to hold releasably a plurality of fluid sources and deliver fluid ... to the handpiece assembly.” EUNSUNG-1001, Abstract, FIG. 1; EUNSUNG-1003, [38]. The microdermabrasion disclosed in the '052 patent was well-known before the Critical Date. EUNSUNG-1003, [28]-[37].



EUNSUNG-1001, FIG. 1.²

B. Prosecution History

During prosecution, the Examiner raised rejections over Coleman (US2001/0049511), Greenberg (US2003/0093089), Duchon (US2003/0018252), and Nelson (US3865352). EUNSUNG-1002, 153-163; EUNSUNG-1003, [45]. In response, Applicant made amendments to the independent claims. EUNSUNG-1002, 130-138; EUNSUNG-1003, [46]. In a final rejection, the Examiner rejected the amended claims over the same prior art. EUNSUNG-1002, 98-112; EUNSUNG-1003, [47]. In response, Applicant pursued additional claim amendments. EUNSUNG-1002, 69-79; EUNSUNG-1003, [48].

² Annotations are added unless indicated otherwise.

A Notice of Allowance with an examiner's amendment was issued shortly after. EUNSUNG-1002, 31-41; EUNSUNG-1003, [49]. The reasons for allowance indicated that the Examiner allowed the claims because the claims were amended to recite two key limitations: (1) a treatment material that comprises a liquid; and (2) a vacuum source that both removes debris and draws treatment materials. EUNSUNG-1002, 39-40; EUNSUNG-1003, [50]. As discussed below, Karasiuk discloses both of these limitations. *See infra* §III.A.1.

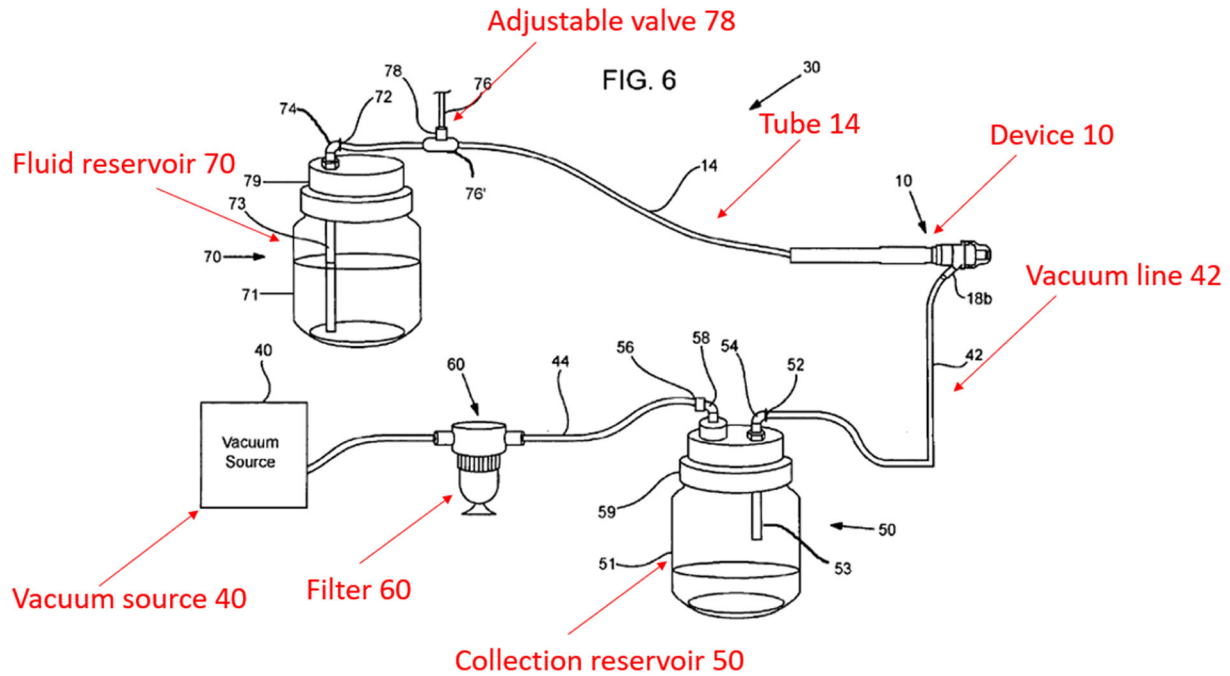
During prosecution, the examiner did not consider Palmer, Trueba, or Wunsch. Karasiuk and Mercier were buried in an IDS containing over 300 references. EUNSUNG-1002, 198-213; EUNSUNG-1003, [51]; *infra* §IV.A.

III. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. [GROUND 1A]: Karasiuk-Palmer

1. Karasiuk

Karasiuk's system conducts microdermabrasion procedures using a hand-piece that delivers (from fluid reservoir 70) a fluid treatment solution and retrieves the resulting waste/debris (into collection reservoir 50). EUNSUNG-1004, Abstract, [0044]-[0045], [0063]-[0066], FIG. 6; EUNSUNG-1003, [52]-[59].



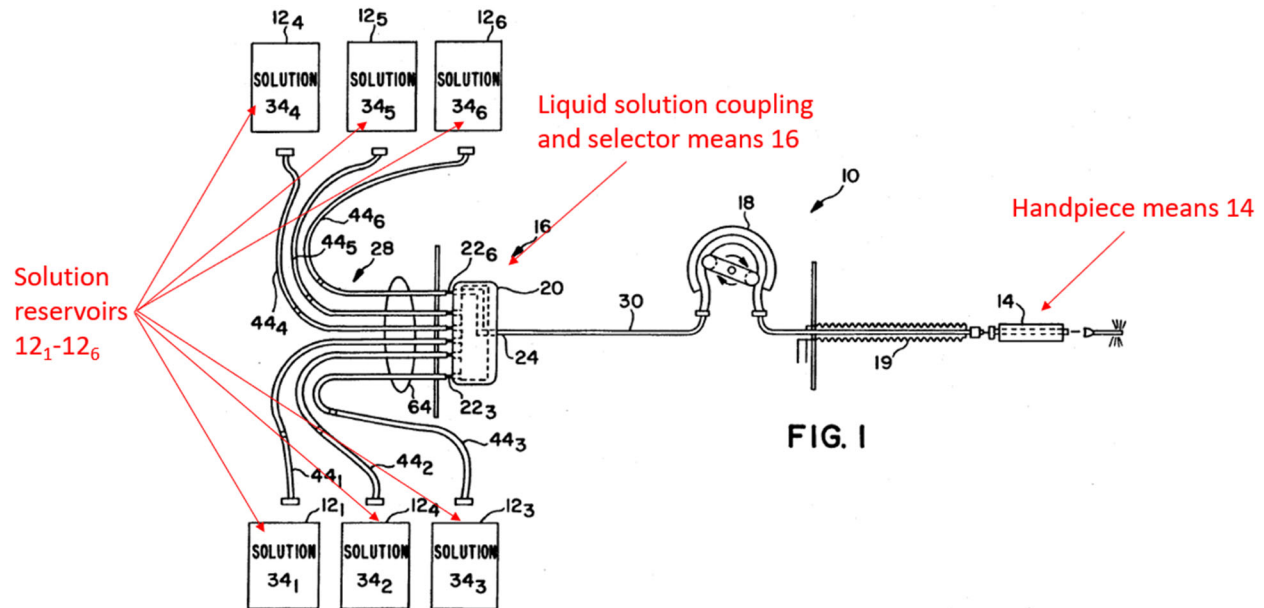
Karasiuk, FIG. 6

Karasiuk's system includes handpiece 10 (also referred to as "device 10"), vacuum source 40, and fluid reservoir 70. EUNSUNG-1004, [0056]. Handpiece 10 is connected to collection reservoir 50 and vacuum source 40 by a vacuum line (e.g., vacuum lines 42, 44, and/or 46), and also connected to fluid container 70 via tube 14. EUNSUNG-1004, [0059].

In operation, "the fluid contents in fluid reservoir 70 are drawn through tube 14 and into device 10 where they flow out of the cannula 16 through openings 16d and are applied to the skin." EUNSUNG-1004, [0063]-[0064]. "As the flow of the fluids continues out of the vacuum head base and into vacuum line 42, it carries with it the exfoliated skin particles and any other waste that is removed through the microdermabrasion process." EUNSUNG-1004, [0066].

2. Palmer

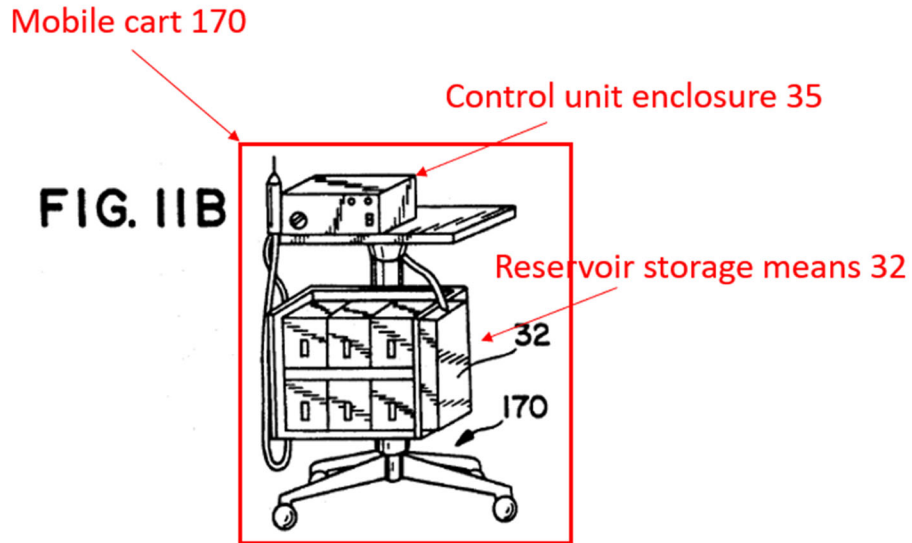
Palmer discloses a medical device system for delivering a selected fluid treatment solution to an application site through a handpiece. EUNSUNG-1003, [60]-[63]; EUNSUNG-1005, Abstract, 4:50-68, FIG. 1.



Palmer, FIG. 1

Palmer's system comprises handpiece means 14 in fluid communication with six solution reservoirs 12 and selector means 16 for selecting the fluid container. EUNSUNG-1005, Abstract, 4:50-68.

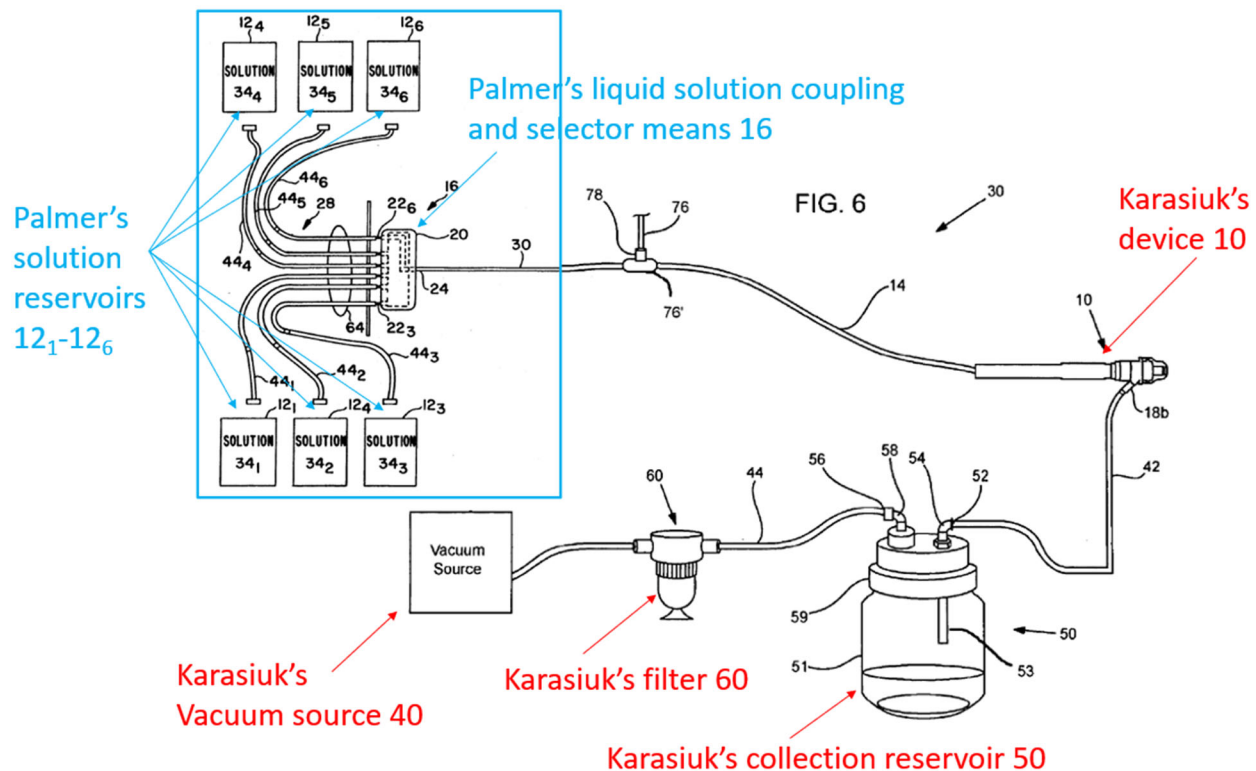
As shown in FIG. 11B, Palmer's "mobile cart 170" receives control unit enclosure 35 and "reservoir storage means 32 in the form of modular single-shelf racks" for increased portability and/or organization. EUNSUNG-1005, 9:58-10:16.



Palmer, FIG. 11B

3. Karasiuk-Palmer Combination

In Karasiuk-Palmer, Karasiuk's reservoir 70 would have been modified based on Palmer's teachings of multiple containers (e.g., reservoirs 12₁-12₆) and selector means 16, an example of which is illustrated in Modified FIG. 6. EUN-SUNG-1003, [76]-[95].



Karasiuk, Modified FIG. 6

In the combination, Karasiuk's vacuum source would be used to pump treatment solutions from Palmer's multiple fluid containers and collect waste/debris. EUNSUNG-1003, [76]-[77]; EUNSUNG-1004, [0020], [0056], [0064]-[0066]. Instead of being connected to single reservoir 70, 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. *Id.* In the resulting system, the vacuum source performs pumping the treatment solution and removing waste/debris, according to Karasiuk. *Id.*

Additionally, a POSITA would have been motivated and found it obvious to

place (1) multiple containers and selector means (as taught by Palmer) and (2) handheld device 10, collection reservoir 50, vacuum source 40, and other relevant components (as taught by Karasiuk) in a modular structure (e.g., Palmer’s mobile cart 170) for known benefits, such as increased portability and organization. EUNSUNG-1003, [78]. Palmer recognizes that “[b]y providing the reservoir storage means 32 in the form of modular single-shelf racks, a high degree of flexibility is provided.” EUNSUNG-1005, 9:63-10:2, FIGS. 11A-11C. Indeed, such a modular configuration for medical devices was well-known before the Critical Date. EUNSUNG-1003, [78]-[82].

Several reasons would have prompted a POSITA to modify Karasiuk’s system based on Palmer’s teachings. EUNSUNG-1003, [83]-[93]. As discussed in §III.A.1, Karasiuk’s system uses a handpiece for applying a fluid treatment solution to a treatment site and a vacuum for collecting waste during microdermabrasion. EUNSUNG-1004, Abstract, [0044]-[0045], [0056]-[0059], [0063]-[0066], FIG. 6; EUNSUNG-1003, [83]. Based on general knowledge and Karasiuk’s disclosure, a POSITA would have recognized the desirability of using multiple types of treatment solutions during microdermabrasion. EUNSUNG-1003, [84] (discussing EUNSUNG-1013 and EUNSUNG-1016); EUNSUNG-1004, [0024] (“other solutions or compounds offering various benefit(s)”), [0047] (“application of lo-

tions/vitamins or other fluids”), [0061] (listing various treatment solutions). Further, Karasiuk appreciates that “various changes may be made and equivalents may be substituted without departing from the true spirit and scope of the invention.” EUNSUNG-1004, [0070]. From this disclosure and POSITA’s general knowledge, a POSITA would have been motivated to consider use of multiple containers of treatment solutions to improve the flexibility and functionality offered by Karasiuk’s system. EUNSUNG-1003, [85]; *In re Harza*, 274 F.2d 669, 671 (CCPA 1960) (mere duplication of parts carries no patentable significance). Indeed, as Mr. Simon explains, fluid delivery techniques required to use multiple containers with Karasiuk’s handpiece were well-known and part of a POSITA’s general knowledge. EUNSUNG-1003, [85]-[89] (citing EUNSUNG-1005, EUNSUNG-1008, EUNSUNG-1007, EUNSUNG-1011, EUNSUNG-1020).

With this motivation and knowledge, a POSITA would have investigated other references such as Palmer to achieve benefits offered by multiple treatment solutions. EUNSUNG-1003, [90]. **First**, a POSITA would have been motivated to modify Karasiuk based on Palmer’s multiple containers and selector means to allow easy selection among multiple treatment solutions. EUNSUNG-1003, [90]; EUNSUNG-1005, 1:30-53, 2:48-4:2. Palmer recognizes that “[c]onventional irrigation arrangements...generally do not provide the opportunity of easy selection

among several irrigant solutions.” EUNSUNG-1005, 1:30-53. “If circumstances require the use of a different treatment solution, ... the solution remaining in the tank is usually discarded and the tank must be cleaned and refilled with the new solution,” which “is time-consuming and costly, not to mention messy.” *Id.* Palmer’s solution with multiple containers and selector means addresses this problem. EUNSUNG-1005, Abstract, 2:48-4:2, cl.1, FIG. 1; EUNSUNG-1003, [90].

Second, the combination would enable sequential delivery of different treatment solutions. EUNSUNG-1003, [91]. In this regard, Palmer discloses “[w]hen treatment with the particular irrigating solution is completed, the system can be either switched to another solution,” so that “a patient may be treated with two or more solutions during the same procedure, one after the other.” EUNSUNG-1005, 11:9-12, 6:46-51.

Third, the combination would minimize 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. EUNSUNG-1003, [92]; EUNSUNG-1011, 2:7-10.

Fourth, a POSITA would have been motivated to adopt Palmer’s modular design to provide added flexibility, organization, and portability. EUNSUNG-1003, [93]; EUNSUNG-1005, 9:58-10:2. Palmer discloses “[b]y providing the reservoir storage means 32 in the form of modular single-shelf racks, a high degree of

flexibility is provided” and “the reservoir storage means can be placed on a countertop 168 (FIG. 11A), or on a mobile cart 170 (FIG. 11B) or in a cabinet 172 underneath a counter (FIG. 11C).” EUNSUNG-1005, 9:58-10:2. A POSITA would have viewed these modular/mobile benefits of Palmer as applicable to microdermabrasion systems like Karasiuk’s, and would have been motivated to use Palmer’s console design in the microdermabrasion system resulting from the combination. EUNSUNG-1003, [93].

A POSITA would have had a reasonable expectation of success in such a combination. EUNSUNG-1003, [94]. Both Karasiuk and Palmer are directed to medical devices that deliver treatment solutions to treatment sites via a handpiece. EUNSUNG-1003, [94]; EUNSUNG-1004, Abstract, [0013]-[0015], FIG. 6; EUNSUNG-1005, Abstract, 1:10-15, FIG. 1; EUNSUNG-1006, [0003]; EUNSUNG-1001, 6:41-44. Although Palmer describes an example of dental work, Palmer’s disclosure “relates generally to methods and apparatus for delivering liquid solutions to treatment sites.” EUNSUNG-1005, 1:10-11. From this, a POSITA would have understood and found obvious that Palmer’s teachings are applicable to delivering fluids for other medical procedures (e.g., microdermabrasion). EUNSUNG-1003, [94]. As Mr. Simon noted, by the Critical Date, fluid delivery systems and techniques were largely compatible and were used interchangeably across various applications without undue experimentation. *Id.* (citing EUNSUNG-1011).

Replacement of Karasiuk’s reservoir 70 with Palmer’s multiple containers and selector means reflects a simple substitution of a known element for another to obtain predictable results—allowing selection of different treatment solutions. EUNSUNG-1003, [95]. This replacement would also reflect the use of a known technique to improve similar devices in the same way. *Id.*

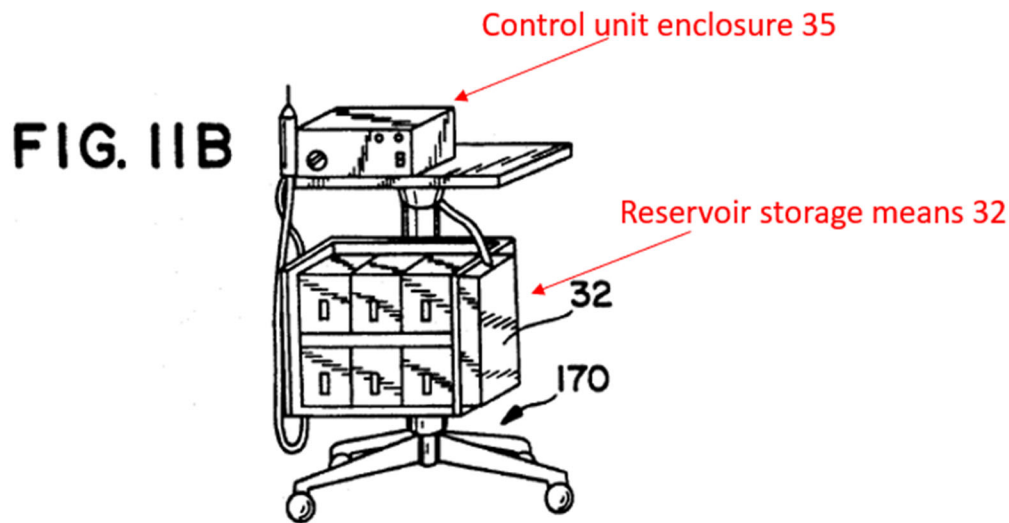
4. Claim 1

[1.pre]

To the extent the preamble is limiting, Karasiuk describes a “micro-dermabrasion device, microdermabrasion system employing the device.” EUNSUNG-1004, [0014], Abstract, FIG. 6; EUNSUNG-1003, [96]; *see* §III.A.3; *infra* [11].

[1.1]

The Karasiuk-Palmer system includes a ***console*** in the form of, for example, “mobile cart 170” that receives Palmer’s multiple containers (reservoir storage means 32 receiving multiple reservoirs) and selector means (control unit enclosure 35), and also receives Karasiuk’s handheld device 10, collection reservoir 50, vacuum source 40, and other relevant components in a modular structure. §III.A.3; EUNSUNG-1005, 9:58-10:2, FIGS. 11A-11C; EUNSUNG-1003, [97]-[115].



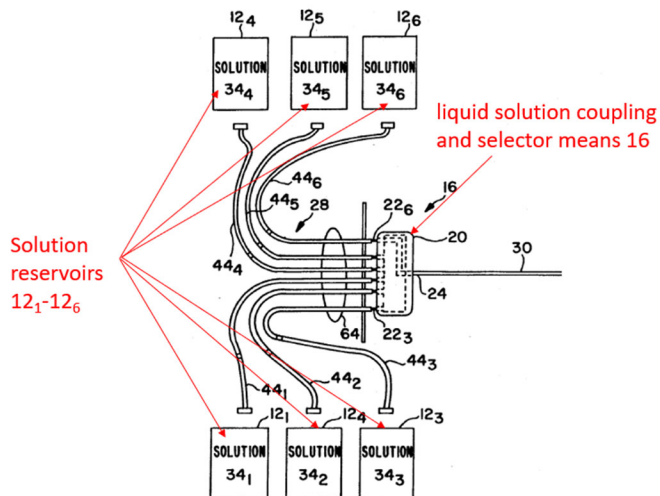
Palmer, FIG. 11B

This aligns with the '052 patent's disclosure of console that receives multiple containers, valve system, handpiece, vacuum pump, and waste container, and is placed on four casters for "easy movement." EUNSUNG-1001, 14:26-36, 9:6-8, 18:27-34, 10:59-60, 5:61-6:3, 7:35-37; EUNSUNG-1003, [98].

Further, a POSITA would have been motivated and found it obvious to place Karasiuk-Palmer's system in a console for known benefits, such as increased portability and organization. EUNSUNG-1003, [99]. Indeed, as Mr. Simon explains, using a console to house similar medical devices was well-known and would have been within a POSITA's general knowledge. EUNSUNG-1003, [99]-[103] (discussing EUNSUNG-1010, EUNSUNG-1005, EUNSUNG-1011, EUNSUNG-1020). A POSITA would have had a reasonable expectation of success in placing Karasiuk-Palmer's components in a console, as it would constitute the use of a

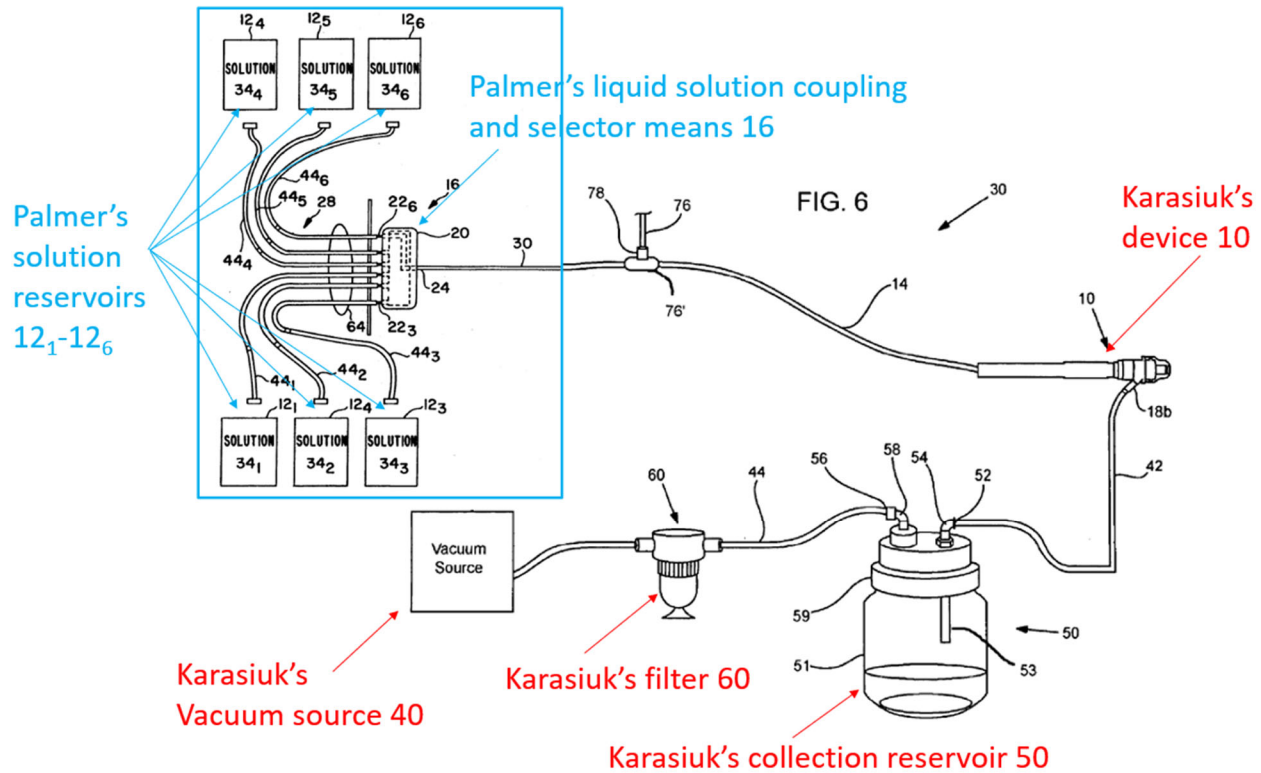
known technique to improve similar devices in the same way. *Id.*

Within the *console*, Karasiuk-Palmer describes a *manifold*³ based on Palmer's teaching of "liquid solution coupling and selector means 16" that is included in the control unit enclosure 35 and configured for coupling handpiece means 14 to a selected one of the liquid solutions in a respective solution reservoir 12. EUNSUNG-1005, 4:60-63, 5:1-14; EUNSUNG-1003, [104]. As shown in Palmer's FIG. 1 and Modified Karasiuk's FIG. 6, Palmer's "liquid solution coupling and selector means 16 include[s] selector valve means 20 having a plurality of inputs 22, an output 24, and means for coupling a selected one of the inputs 22 to the output 24." EUNSUNG-1005, 5:1-9.



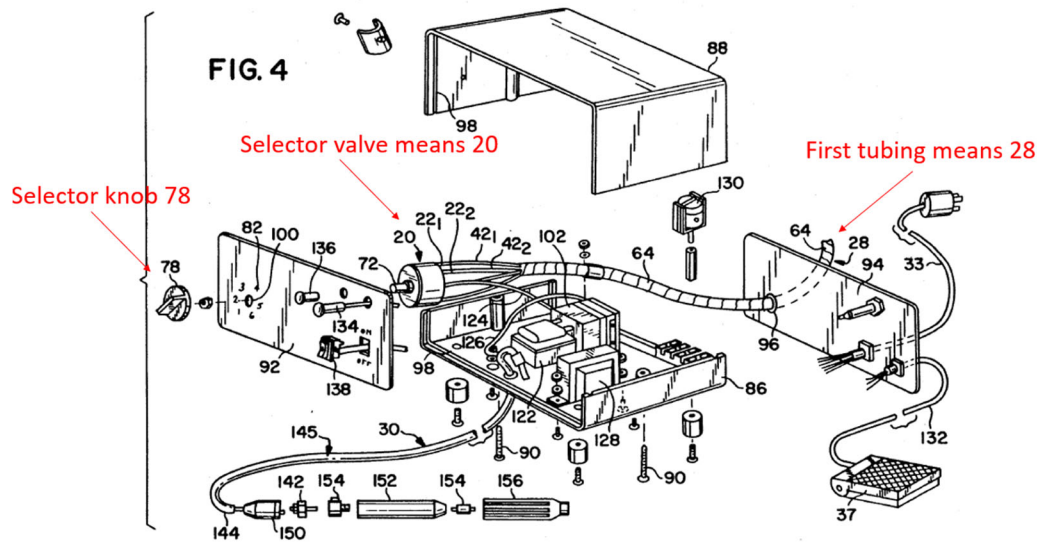
Palmer, FIG. 1 (partial)

³ The dictionary definition of "manifold" is "a chamber or pipe with many openings." EUNSUNG-1029, 5.



Karasiuk, Modified FIG. 6

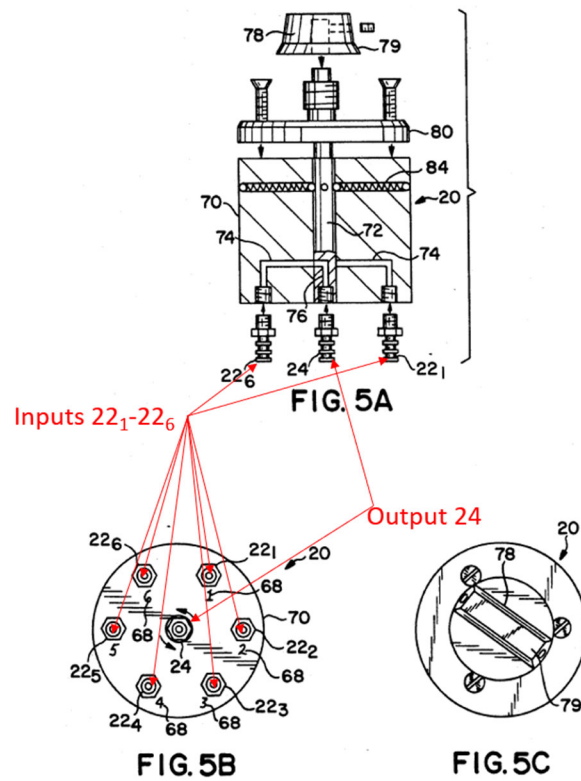
Palmer's FIG. 4 shows an exploded view of control unit enclosure 35 including first tubing means 28, **selector valve means 20** (connected via valve inputs 22₁-22₆ to solution reservoirs 12₁-12₆), and selector knob 78. EUNSUNG-1005, 8:22-9:16, FIG. 4; EUNSUNG-1003, [105]. The '052 patent also explains: "The manifold system 24 can have a modular design so that it can be removed from the console 12." EUNSUNG-1001, 17:53-54.



Palmer, FIG. 4

Palmer illustrates an exemplary selector valve means 20 in FIGS. 5A-5C.

EUNSUNG-1003, [106].



Palmer, FIGS. 5A-5C

Referring to FIGS. 5A-5B, selector valve means 20 includes main body 70 defining multiple “liquid inlet passages 74” with multiple “input port[s] 22” and “liquid outlet passage 76” with “selector valve output port 24.” EUNSUNG-1005, 8:6-21; EUNSUNG-1003, [107]. Further, main body 70 defines a “bore which receives the rotatable core 72 in a plane common with the inner ends of the other inlet passages 74.” *Id.* The “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.” *Id.*

As explained by Mr. Simon, this structure corresponds to the “manifold” described in the ’052 patent. EUNSUNG-1003, [108]. Specifically, the ’052 patent recites: “The manifold system is configured to hold releasably a plurality of fluid sources and deliver fluid from at least one of the plurality of fluid sources to the handpiece assembly.” EUNSUNG-1001, Abstract. As shown in FIG. 1 of the ’052 patent, the “the console 12 comprises the manifold system 24 designed to draw treatment fluid from at least one of the containers 26 based on user selection” (e.g., via switches 29). EUNSUNG-1001, 17:5-7. Similar to the ’052 patent’s manifold system 24, Palmer’s liquid solution coupling and selector means 16 (including selector valve 20) is also designed to draw treatment fluid from at least one of Palmer’s containers 12₁-12₆ based on user selection (e.g., via selector knob 78).

EUNSUNG-1003, [108]; EUNSUNG-1005, 8:22-53 (“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.”). Therefore, a POSITA would have understood and found obvious that (1) Palmer’s selector valve 20, (2) Palmer’s liquid solution coupling and selector means 16 (including the valve 20), or (3) Palmer’s control unit enclosure 35 (housing the coupling and selector means 16) correspond to, and perform the operations of, the *manifold*, located within the “mobile cart 170” (*console*). EUNSUNG-1003, [108]; EUNSUNG-1005, 9:58-10:16, 4:53-5:14, 8:22-9:16, FIG. 11B.

Notably, [1.1] does not require the manifold to “hold” the fluid containers, or that the manifold to be built into the console. EUNSUNG-1003, [109]. Indeed, the definition of “manifold” includes “a chamber or pipe with many openings.” EUNSUNG-1029, 5. Thus, a POSITA would have understood and found obvious that Karasiuk-Palmer includes a manifold (e.g., Palmer’s liquid solution coupling and selector means 16) within the console (e.g., Palmer’s mobile cart 170). EUNSUNG-1003, [109].

Alternatively or in addition, a POSITA would have found it obvious to use a manifold to implement Palmer’s functionality of switching treatment fluids. EUN-

SUNG-1003, [110]. Indeed, manifolds were well-known devices for selecting between different fluids and would have been within a POSITA's general knowledge. EUNSUNG-1003, [110] (discussing EUNSUNG-1010, EUNSUNG-1019 thru EUNSUNG-1022). A POSITA would have viewed a manifold as one of a finite number of options to achieve the functionality described by Palmer that would have been obvious to try. *Id.* First, based on Karasiuk and Palmer, a POSITA would have recognized a need to selectively dispense different treatment fluids. EUNSUNG-1003, [110]. As discussed above in §III.A.3, Karasiuk recognizes the desirability of using multiple types of treatment solutions during microdermabrasion. EUNSUNG-1003, [110] (discussing EUNSUNG-1013 and EUNSUNG-1016); EUNSUNG-1004, [0024] ("other solutions or compounds offering various benefit(s)."), [0047] ("application of lotions/vitamins or other fluids"), [0061] (listing various treatment solutions). Karasiuk further discloses the use of manifolds for connections to containers in a microdermabrasion system. EUNSUNG-1004, [0056] ("manifold cover"), [0059] ("manifold"). Palmer also discloses using selector knob 78 to selectively dispense different treatment solutions. EUNSUNG-1003, [110]; EUNSUNG-1005, 8:22-53. Second, a POSITA would have understood that there were a finite number of identified, predictable solutions to selectively dispense treatment solutions from multiple containers, including (1) manually con-

necting/disconnecting the handpiece to different containers via one tube, (2) connecting the handpiece to each container via a separate valve-controlled tube, and (3) connecting the handpiece to multiple containers via a manifold (e.g., classic block style, a T-junction or a Y-junction). EUNSUNG-1003, [110]. A POSITA would have had “good reason to pursue the known options,” and thus, using a manifold would have been obvious to try. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007); EUNSUNG-1003, [110]. Further, a POSITA would have selected a manifold among this finite number of identified, predictable solutions because it eliminates the need of manual connecting/disconnecting and allows for a simpler handpiece design with one input. EUNSUNG-1003, [110].

Alternatively or in addition, using a manifold to implement Palmer’s functionality of switching treatment fluids would have been an obvious design choice without any unexpected results. EUNSUNG-1003, [111]. As evidenced by Wunsch, using a manifold to implement Palmer’s functionality of switching treatment fluids yields expected results, and thus would have been an obvious matter of design choice within the skill of the art. EUNSUNG-1020, Abstract, 7:39-56, 8:17-26, FIGS. 1-4; EUNSUNG-1003, [111].

A POSITA would have had a reasonable expectation of success in implementing Palmer’s switching between different fluids and providing a single fluid output using a manifold as it would have merely involved a simple substitution of

one well-known element for another to obtain predictable results. EUNSUNG-1003, [112]-[113]. For example, Duchon, Brengle, Wunsch, and Devos all disclose using a manifold to selectively dispense multiple treatment solutions. *Id.*; EUNSUNG-1010, [0086]-[0088], [0145]; EUNSUNG-1019, Abstract; EUNSUNG-1020, Abstract, FIG. 1; EUNSUNG-1021, Abstract, FIG. 1.

As discussed above in §III.A.3, and as shown in modified FIG. 6 of Karasiuk, Karasiuk-Palmer describes that the manifold (e.g., Palmer’s liquid solution coupling and selector means 16) is in fluid communication with six solution reservoirs (e.g., Palmer’s solution reservoirs 12₁-12₆) which would have been understood as including a *first fluid container and at least a second container*.

EUNSUNG-1003, [114]; §III.A.3; EUNSUNG-1005, 5:1-18.

Also, Palmer discloses that its six solution reservoirs each include “a respective liquid solution” (*liquid*) with a unique color coding. EUNSUNG-1005, 4:53-57, 5:37-6:32; EUNSUNG-1003, [115]. Karasiuk also recognizes the desirability of using multiple types of liquid skin treatment solutions during microdermabrasion (*skin treatment procedure*). EUNSUNG-1003, [115]; EUNSUNG-1004, [0024], [0047], [0061]. Thus, in Karasiuk-Palmer, it would have been obvious to use Palmer’s multiple containers to hold different treatment liquids as taught by Karasiuk and Palmer—for example, a first container holding an antioxidant formulation and a second container holding a hydrating formulation. EUNSUNG-1003,

[115].

[1.2]

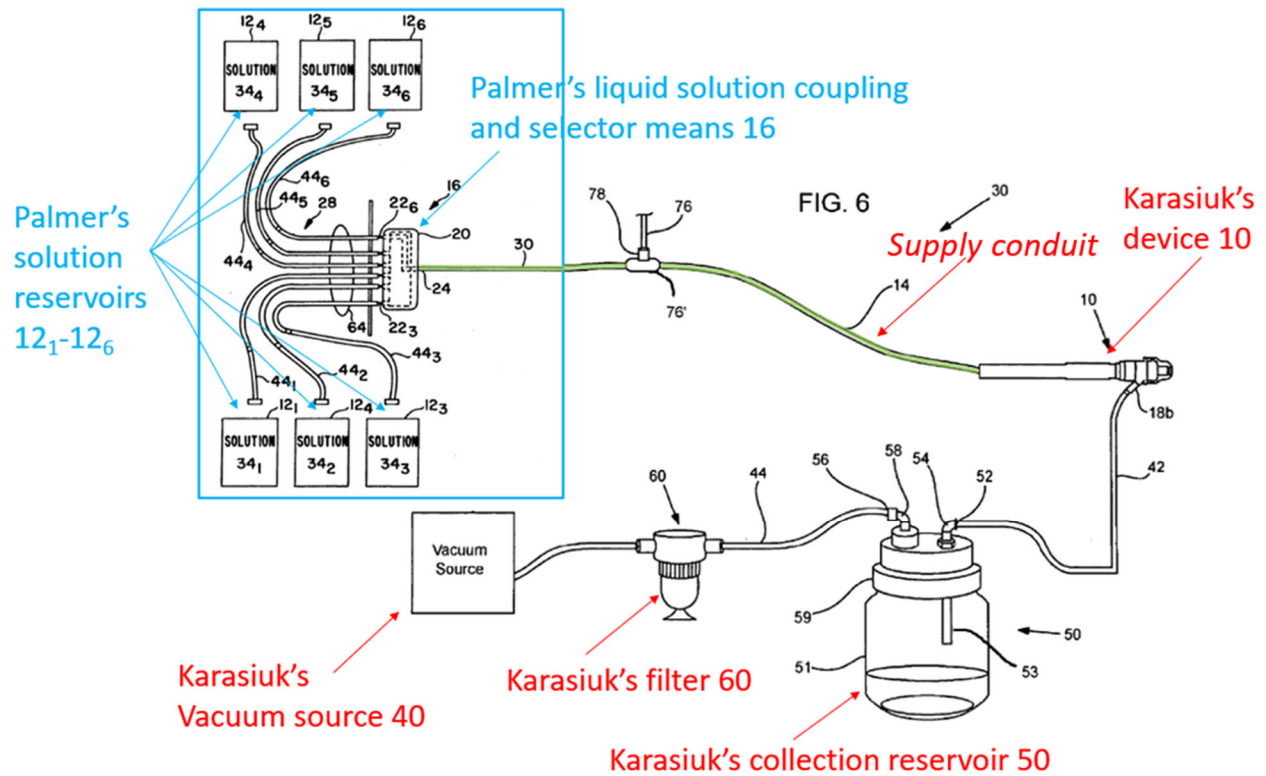
Karasiuk-Palmer includes a handpiece assembly configured to contact skin tissue of a subject, such as Karasiuk's "[d]evice 10" (FIG. 6) designed to be "**handheld by a user** for its application to the skin of a patient." EUNSUNG-1004, [0044]-[0047], [0063]; EUNSUNG-1003, [116]-[117]. FIG. 1A of Karasiuk also shows a "treatment tip 20" that is "smooth surfaced and adapted to glide over the skin surface for application of lotions/vitamins or other fluids thereto during processing." *Id.*; EUNSUNG-1004, [0047], FIG. 1A.

Similarly, Palmer describes "handpiece means 14" (FIG. 1) for "delivering a selected one of the liquid solutions contained in one of the reservoirs 12 directly to a treatment site." EUNSUNG-1005, 4:57-60; EUNSUNG-1003, [118]. Palmer's FIG. 8 also shows "a handpiece means and an associated applicator tip." EX1005, 4:35-37; EUNSUNG-1003, [119].

[1.3]

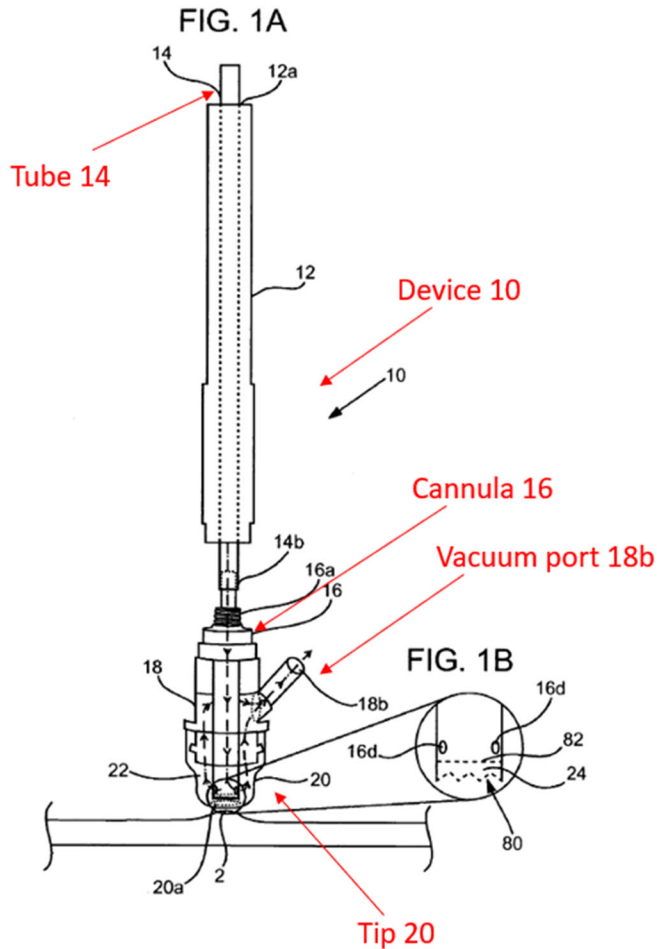
As discussed above in [1.1], a POSITA would have understood and found obvious that (1) Palmer's selector valve 20, (2) Palmer's liquid solution coupling and selector means 16 (including the valve 20), or (3) Palmer's control unit enclosure 35 (housing the coupling and selector means 16) correspond to, and perform the operations of, the *manifold*. EUNSUNG-1003, [120].

As discussed above in §III.A.3, in Karasiuk-Palmer, instead of being connected to single reservoir 70, 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. EUNSUNG-1003, [121]; EUNSUNG-1004, [0020], [0056], [0064]-[0066]. Thus, in Karasiuk-Palmer, a supply conduit (e.g., Karasiuk's tube 14 or collectively Palmer's second tubing means 30, Karasiuk's T joint 76', and Karasiuk's tube 14) places the manifold (e.g., Palmer's liquid solution coupling and selector means 16) in fluid communication with the handpiece assembly (e.g., Karasiuk's device 10). *Id.*; EUNSUNG-1005, 5:1-18.



Karasiuk, Modified FIG. 6

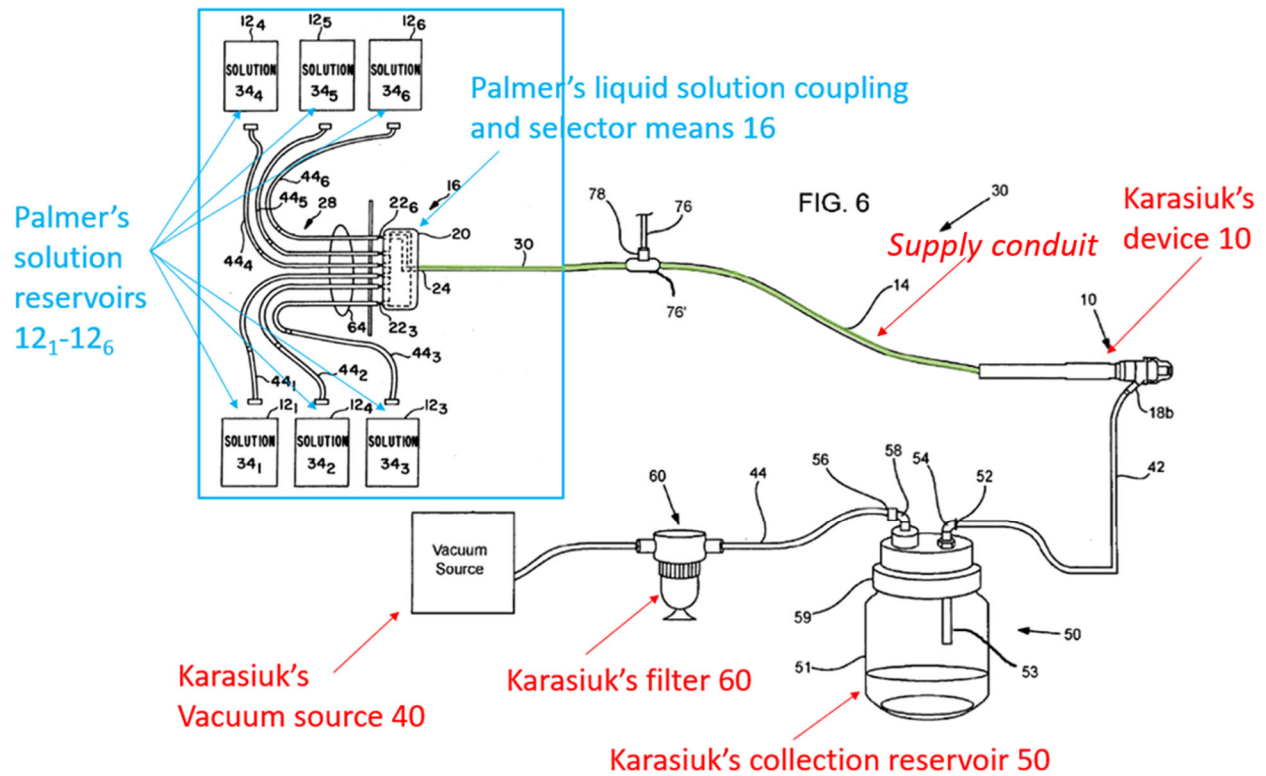
As shown in modified FIG. 6 and FIG. 1A, a distal end of the supply conduit (e.g., Karasiuk's tube 14 or collectively Palmer's second tubing means 30, Karasiuk's T joint 76', and Karasiuk's tube 14) is configured to couple to the hand-piece assembly (e.g., Karasiuk's device 10). EUNSUNG-1003, [122]; EUNSUNG-1004, [0044]-[0045], [0059], FIGS. 1A and 6.



Karasiuk, FIG. 1A

[1.4]

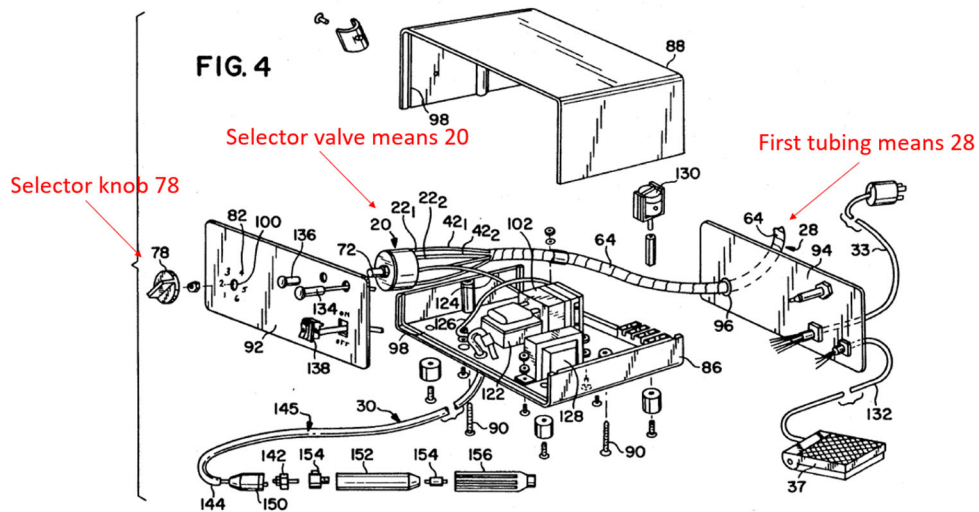
As discussed in [1.1] and [1.3], Palmer's solution reservoirs (*the first fluid container and at least the second fluid container*) are each connected to Palmer's "liquid solution coupling and selector means 16" (*manifold*), which is connected to Karasiuk's handpiece via a *supply conduit* (e.g., Karasiuk's tube 14 or collectively Palmer's second tubing means 30, Karasiuk's T joint 76', and Karasiuk's tube 14). EUNSUNG-1003, [123].



Karasiuk, Modified FIG. 6

As discussed in §III.A.3, in Karasiuk-Palmer, Karasiuk's reservoir 70 is replaced with Palmer's multiple reservoirs and "liquid solution coupling and selector means 16" to allow selection of different treatment solutions. EUNSUNG-1003, [124].

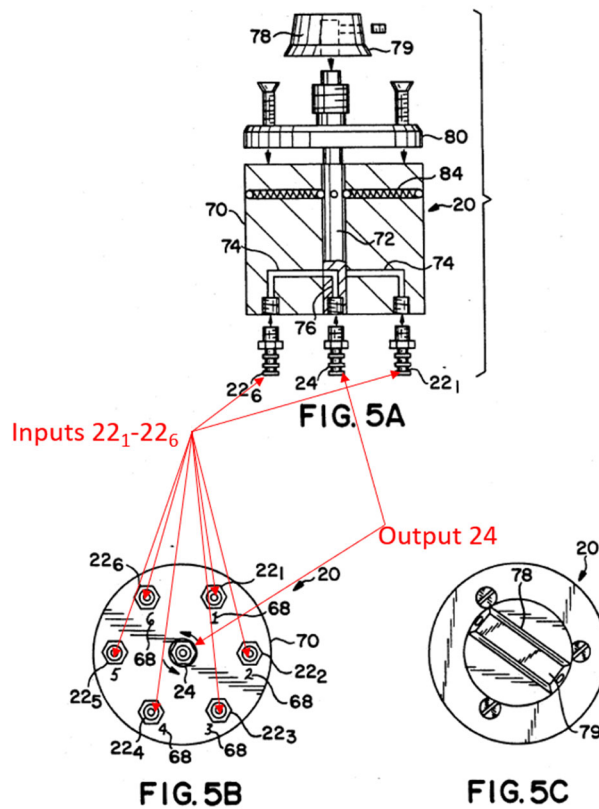
Palmer's FIG. 4 shows an exploded view of control unit enclosure 35 including first tubing means 28, **selector valve means 20** (connected via valve inputs 22₁-22₆ to solution reservoirs 12₁-12₆), and selector knob 78. EUNSUNG-1005, 8:22-9:16, FIG. 4; EUNSUNG-1003, [125].



Palmer, FIG. 4

Palmer illustrates an exemplary selector valve means 20 in FIGS. 5A-5C.

EUNSUNG-1003, [126].



Palmer, FIGS. 5A-5C

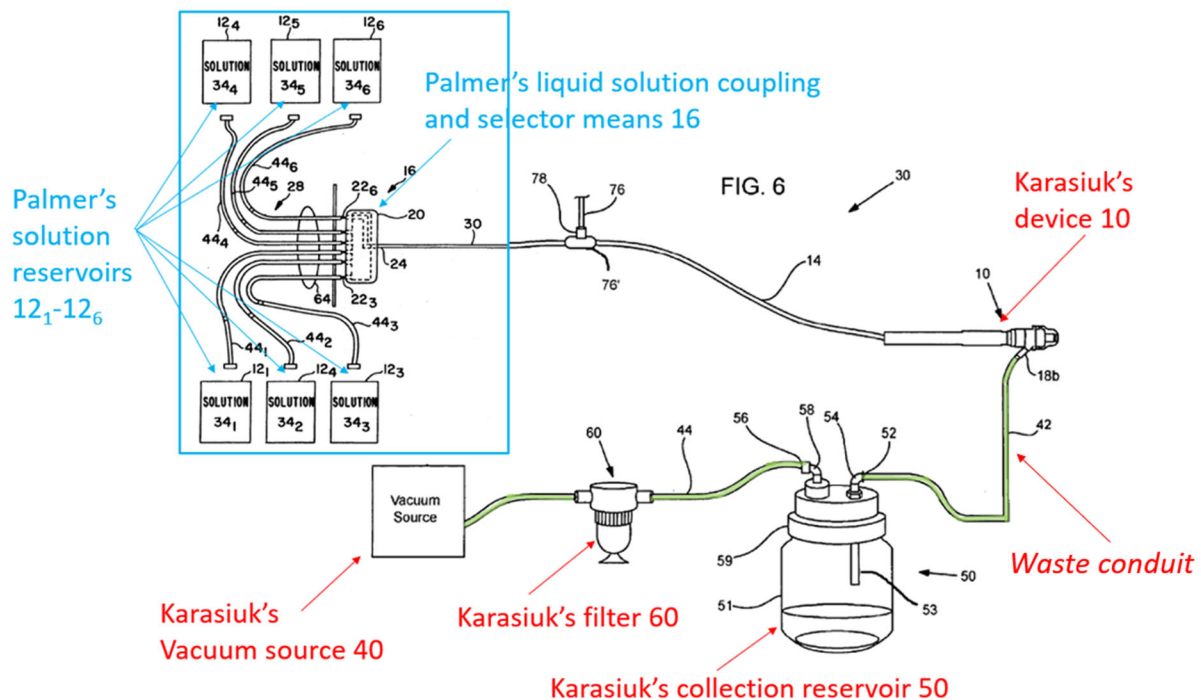
Referring to FIGS. 5A-5B, selector valve means 20 includes main body 70 defining multiple “liquid inlet passages 74” with multiple “input port[s] 22” and “liquid outlet passage 76” with “selector valve output port 24.” EUNSUNG-1005, 8:6-21; EUNSUNG-1003, [127]. Further, main body 70 defines a “bore which receives the rotatable core 72 in a plane common with the inner ends of the other inlet passages 74.” *Id.* The “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.” *Id.* As explained by Mr. Simon, this structure corresponds to (or renders obvious in combination with a POSITA’s general knowledge as discussed at [1.1]) the “manifold” described in the ’052 patent. EUNSUNG-1003, [127]. In operation, by turning selector knob 78, the manifold selectively connects the handpiece (e.g., Karasiuk’s device 10) to a selected solution reservoir. EUNSUNG-1003, [127]; EUNSUNG-1005, 8:22-53.

Thus, in Karasiuk-Palmer, a POSITA would have understood that the manifold (e.g., Palmer’s liquid solution coupling and selector means 16) is configured to control a flow of treatment material from the first fluid container (e.g., Palmer’s solution reservoir 12₁) and at least the second fluid container (e.g., Palmer’s solution reservoir 12₂) through the supply conduit (e.g., Karasiuk’s tube 14 or collectively Palmer’s second tubing means 30, Karasiuk’s T joint 76’, and Karasiuk’s

tube 14). EUNSUNG-1003, [128].

[1.5]

As discussed in §III.A.3, in Karasiuk-Palmer, Karasiuk's vacuum source would be used to pump treatment solutions from Palmer's multiple fluid containers and collect waste/debris. EUNSUNG-1003, [129]; EUNSUNG-1004, [0020], [0056], [0064]-[0066]. Instead of being connected to single reservoir 70, 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. *Id.* In the resulting system, the vacuum source performs pumping the treatment solution and removing waste/debris, according to Karasiuk. *Id.*; EUNSUNG-1004, [0020], [0056], [0064]-[0066].

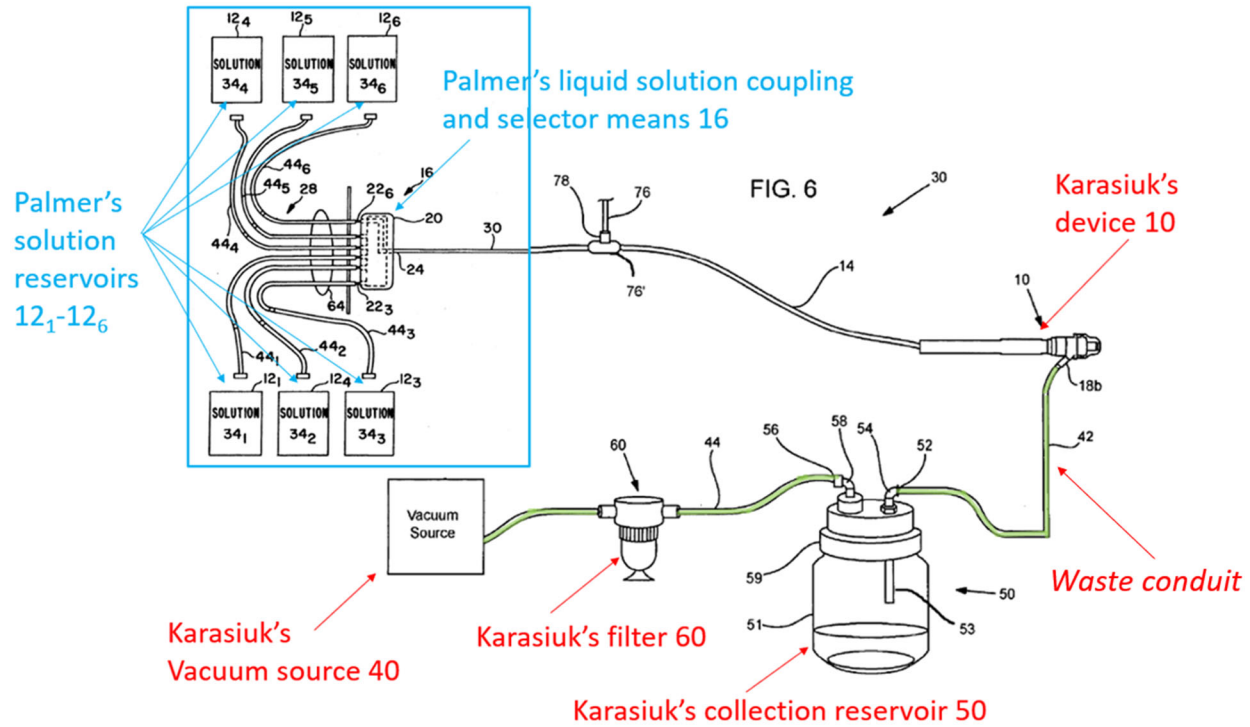


Karasiuk, Modified FIG. 6

[1.6]

As discussed in §III.A.3, in Karasiuk-Palmer, Karasiuk's vacuum source would be used to pump treatment solutions from Palmer's multiple fluid containers and collect waste/debris. EUNSUNG-1003, [130]-[132]; EUNSUNG-1004, [0020], [0056], [0064]-[0066]. For example, Karasiuk discloses "[a]s the flow of fluids continues out of the vacuum head base and into vacuum line 42, **it carries with it the exfoliated skin particles and any other waste that is removed through the microdermabrasion process.**" EUNSUNG-1004, [0066].

As shown in FIG. 1A of Karasiuk and modified FIG. 6 of Karasiuk, in Karasiuk-Palmer, the tip (e.g., Karasiuk's tip 20) of the handpiece assembly (e.g., Karasiuk's device 10) has a "[v]acuum opening 18b" that is in fluid communication with "vacuum source 40" through the "vacuum line between device 10 and vacuum source 40" (e.g., collectively vacuum line 42, second vacuum line 44, vacuum line 46) (respectively or collectively a **waste conduit**). EUNSUNG-1004, [0056], FIGS. 1A and 6; EUNSUNG-1005, 4:50-68, 9:58-10:2, FIGS. 1, 11B; EUNSUNG-1003, [133].

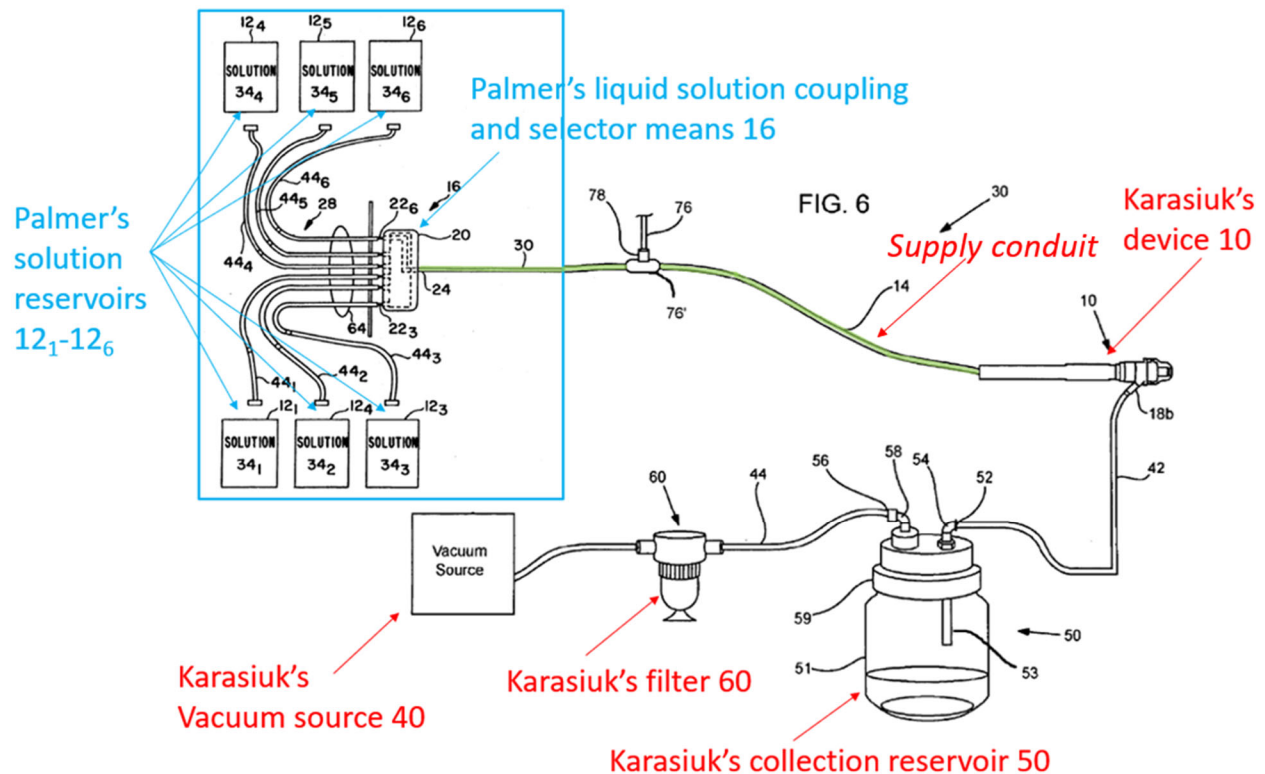


Karasiuk, Modified FIG. 6

Thus, in Karasiuk-Palmer, a POSITA would have understood and found obvious that the system includes a waste conduit (e.g., Karasiuk's "vacuum line between device 10 and vacuum source 40" or collectively Karasiuk's vacuum line 42, second vacuum line 44, vacuum line 46) that is in fluid communication with the tip of the handpiece assembly (e.g., Karasiuk's device 10) to remove waste away from a skin surface of a subject during microdermabrasion (*a skin treatment procedure*), wherein the waste conduit is operatively coupled to the vacuum source (e.g., Karasiuk's vacuum source 40). EUNSUNG-1003, [134].

[1.7]

As discussed in §III.A.3, in Karasiuk-Palmer, Karasiuk's reservoir 70 is replaced with Palmer's multiple reservoirs and "liquid solution coupling and selector means 16" to allow selection of different treatment solutions. EUNSUNG-1003, [135]. Karasiuk discloses that upon forming a vacuum loop, the fluid contents in the fluid reservoir are "drawn through tube 14 and into device 10...and are applied to the skin." EUNSUNG-1004, [0064].



Karasiuk, Modified FIG. 6

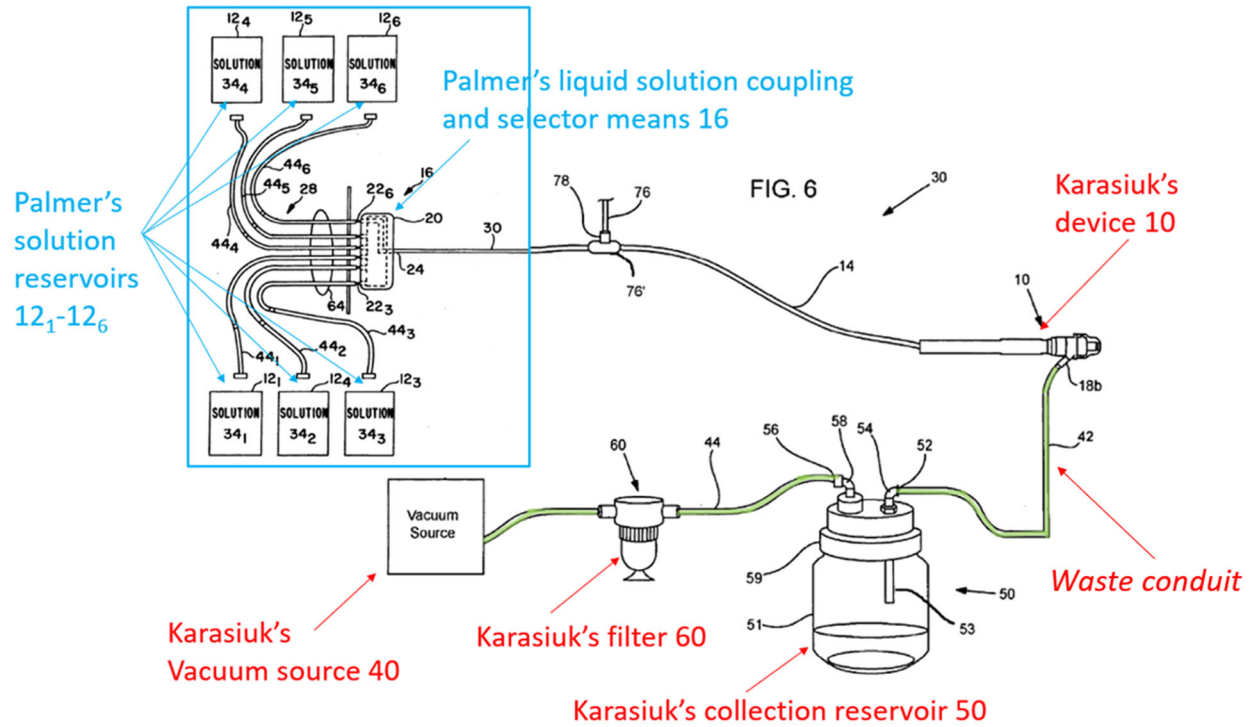
As discussed in [1.4], in operation, by turning selector knob 78, the manifold (e.g., Palmer's liquid solution coupling and selector means 16) selectively connects

the handpiece (e.g., Karasiuk's device 10) to a selected solution reservoir. EUNSUNG-1003, [136]; EUNSUNG-1005, 8:22-53.

Thus, a POSITA would have understood and found obvious that Karasiuk-Palmer's system is configured to permit a user to select (e.g., by turning Palmer's selector knob 78) the treatment material from the first fluid container or the at least second fluid container to be delivered through the supply conduit to the handpiece assembly. EUNSUNG-1003, [137].

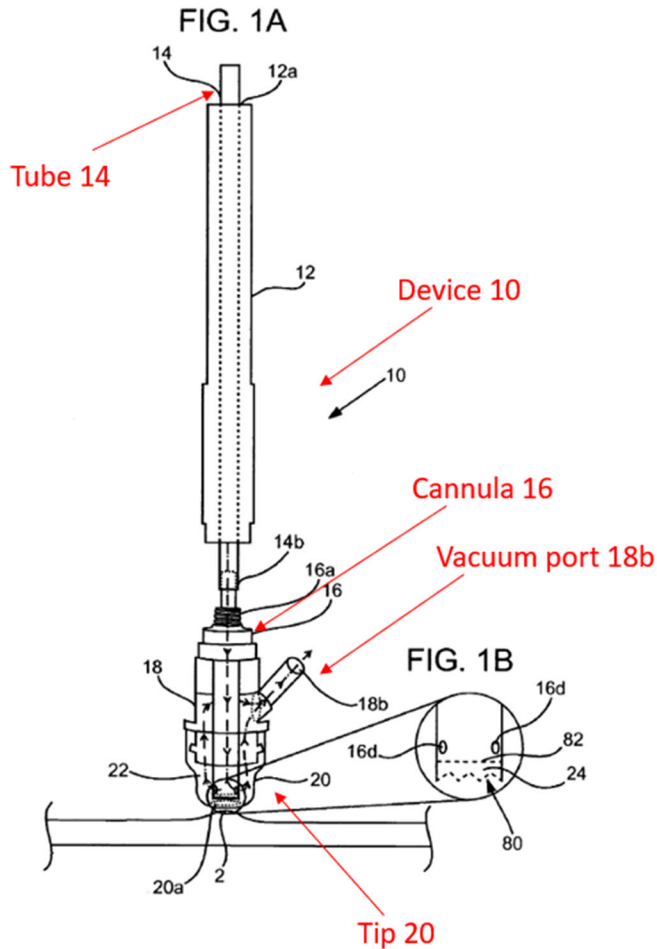
[1.8]

As discussed in §III.A.3, in Karasiuk-Palmer, Karasiuk's *vacuum source* 40 is connected to collection reservoir 50 and device 10 (*handpiece assembly*) to remove waste/debris as well as to draw treatment solutions from Palmer's fluid containers. EUNSUNG-1003, [138]; EUNSUNG-1004, [0020], FIG. 6.



Karasiuk, Modified FIG. 6

“When vacuum is applied through opening 18b, an opening 20a is sealed off, for example **by placing it up against the skin tissue**, a closed loop vacuum flow path is established between the vacuum source and connecting line, vacuum opening 18b, annulus 22, opening(s) 16d, passageway 16c and tube 14.” EUNSUNG-1004, [0054], FIGS. 1A and 6. Upon forming a vacuum loop, the fluid contents in the fluid reservoir are “drawn through tube 14 and into device 10...and are applied to the skin.” EUNSUNG-1004, [0064]. “As the flow of fluids continues out of the vacuum head base and into vacuum line 42, **it carries with it the exfoliated skin particles and any other waste that is removed through the micro-dermabrasion process.**” EUNSUNG-1004, [0066].



Karasiuk, FIG. 1A

Thus, a POSITA would have understood and found obvious that when the vacuum source is activated and the tip contacts the skin surface, a suction force is created within the waste conduit (e.g., Karasiuk's "vacuum line between device 10 and vacuum source 40" or collectively Karasiuk's vacuum line 42, second vacuum line 44, vacuum line 46) and along the tip, thereby removing waste from the skin surface via the waste conduit while drawing treatment material from the first fluid

container or the second fluid container to the tip via the supply conduit. EUNSUNG-1003, [139]-[141].

5. Claim 4

As discussed in §III.A.3, in Karasiuk-Palmer, instead of being connected to single reservoir 70, 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. EUNSUNG-1003, [142]; EUNSUNG-1004, [0020], [0056], [0064]-[0066].

As discussed in [1.1] and [1.4], in Karasiuk-Palmer, the manifold (e.g., Palmer's liquid solution coupling and selector means 16) is in fluid communication with a first fluid container and at least a second fluid container. EUNSUNG-1003, [142].

Palmer further discloses that Palmer's second tubing means 30 is connected to each of Palmer's six solution reservoirs via a “**quick-disconnect** right angle membrane-penetrating adapter 40” which “is connected to the end of each of the tubes 42 for **quick-disconnect connection** to the membrane cap 38 of a respective reservoir to pierce the membrane, thereby coupling each tube to the solution contained in that reservoir.” EUNSUNG-1005, 7:34-39. Thus, a POSITA would have understood and found obvious that, in Karasiuk-Palmer, each of Palmer's six solution reservoirs (*the first fluid container or the at least a second fluid container*) is

releasably coupled to the manifold. EUNSUNG-1003, [144].

6. Claim 5

As discussed in §III.A.3, in Karasiuk-Palmer, Karasiuk's reservoir 70 is replaced with Palmer's multiple reservoirs and "liquid solution coupling and selector means 16" to allow selection of different treatment solutions. EUNSUNG-1003, [145].

As discussed above in §III.A.3 and as shown in modified FIG. 6 of Karasiuk, Karasiuk-Palmer includes six solution reservoirs (e.g., reservoirs 12₁-12₆) in fluid communication with the manifold (e.g., Palmer's liquid solution coupling and selector means 16). EUNSUNG-1005, 5:1-18. Thus, a POSITA would have understood and found obvious that, in Karasiuk-Palmer, the manifold is configured to be placed in fluid communication with at least four fluid containers. EUNSUNG-1003, [146].

7. Claim 6

As discussed in §III.A.3, Karasiuk-Palmer includes "**a selector valve** for fluidly coupling the handpiece to a selected one of the liquid solutions" contained in "a plurality of solution reservoirs 12," as taught by Palmer. EUNSUNG-1005, Abstract, 4:50-63, 8:6-21, FIGS. 1, 5A-5C; EUNSUNG-1003, [147]. As discussed in [1.6], the reservoirs in the combination contain different solutions. EUNSUNG-1005, 4:50-63; EUNSUNG-1003, [147].

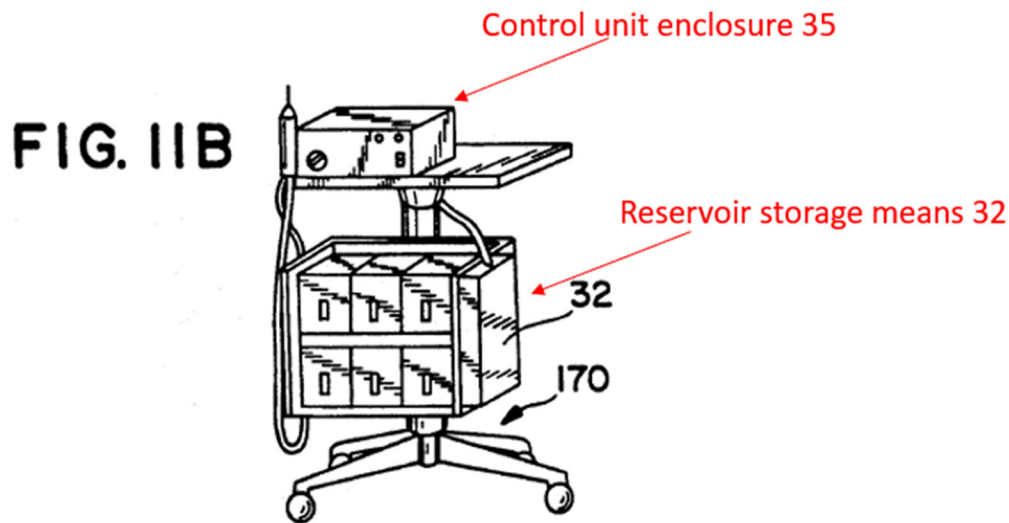
In operation, “a patient may be treated with two or more solutions during the same procedure, **one after the other**,” and “[w]hen treatment with the particular irrigating solution is completed, **the system can be ... switched to another solution**.” EUNSUNG-1005, 6:46-51, 11:9-12. Karasiuk recognizes desirability of using multiple types of skin treatment solutions during microdermabrasion. EUNSUNG-1003, [148]; EUNSUNG-1004, [0024], [0047], [0061]. Therefore, the Karasiuk-Palmer system would have used Palmer’s multiple containers to *sequentially* deliver different skin treatment solutions—for example, a first container holding an antioxidant formulation (e.g., vitamin) and a second container holding a hydrating formulation (e.g., lotion). §III.A.3; EUNSUNG-1003, [148].

Alternatively, a POSITA would have found it obvious to configure Karasiuk-Palmer to achieve sequential or simultaneous delivery of treatment fluids from the first fluid container and at least the second fluid container. EUNSUNG-1003, [149]. For example, Trueba discloses: “... one or more of the bioactive agents from the reservoirs 54, 56 can be delivered from dispenser 30. The multiple bioactive agents may be administered sequentially or simultaneously.” EUNSUNG-1008, 11:21-24; EUNSUNG-1003, [149].

8. Claim 7

As discussed in [1.1] above, the Karasiuk-Palmer system includes a *console*

in the form of, for example, “mobile cart 170” that receives Palmer’s multiple containers (reservoir storage means 32 receiving multiple reservoirs) and selector means (control unit enclosure 35), and also receives Karasiuk’s handheld device 10, collection reservoir 50, vacuum source 40, and other relevant components in a modular structure. §III.A.3; EUNSUNG-1005, 9:58-10:2, FIGS. 11A-11C; EUNSUNG-1003, [150]. A POSITA would have understood and found obvious that this console is movable at least because Palmer’s FIG. 11B shows that this “mobile cart 170” is placed on four casters. EUNSUNG-1003, [150].



Palmer, FIG. 11B

9. Claim 8

As discussed in [1.5] and [1.6] above, in Karasiuk-Palmer, the tip (e.g., Karasiuk’s tip 20) of the handpiece (e.g., Karasiuk’s device 10) defines “opening

or port 18b” for “connection of a vacuum source ... via a vacuum line” and to remove “the exfoliated skin particles and any other waste” from the handheld device. EUNSUNG-1004, [0054], [0066], [0047], FIG. 1A; EUNSUNG-1003, [151].

Karasiuk discloses that upon forming a vacuum loop, “[a] targeted area of the skin (which is defined by the perimeter of the opening 20a is drawn up into the tip 20 and a central portion of the skin is drawn into contact with abrasive member 24.” EUNSUNG-1004, [0064]. As the user of device 10 “glides the tip 20 over the surface of the skin, **the targeted area in contact with the abrasive surface 24 is scraped over the abrasive surface** wherein microdermabrasion of that portion of the skin is performed.” EUNSUNG-1004, [0064]. “As the flow of fluids continues out of the vacuum head base and into vacuum line 42, **it carries with it the exfoliated skin particles and any other waste that is removed through the microdermabrasion process.**” EUNSUNG-1004, [0066]. Tip 20 can be (1) tightly fitted over the end of vacuum head base 18, or (2) integrally machined or molded with vacuum head base 18. EUNSUNG-1004, [0047], FIG. 1A; EUNSUNG-1003, [151].

Thus, a POSITA would have understood and found obvious that the tip 20 (*tip*) of Karasiuk’s handheld device 10 (*handpiece assembly*) is configured to exfoliate skin tissue as the handpiece assembly is moved relative to a skin surface of a subject. EUNSUNG-1003, [152].

10. Claim 9

As discussed at [1.3], in Karasiuk-Palmer, a supply conduit places the manifold of the console in fluid communication with the handpiece assembly, wherein a distal end of the supply conduit is configured to couple to the handpiece assembly. EUNSUNG-1003, [153]; EUNSUNG-1004, FIG. 6. Connecting the supply conduit and the waste conduit to a corresponding connector along a proximal end of the handpiece assembly (e.g., by locating Karasiuk’s vacuum port 18b at a proximal end of the handpiece assembly) would have been an obvious design choice because it is merely the rearrangement of parts without any “difference in function” or “unexpected results.” EUNSUNG-1003, [153].⁴ As evidenced by Mercier, doing this yields expected results without altering the function of the Karasiuk-Palmer system, and thus would have been “an obvious matter of design choice within the skill of the art.” EUNSUNG-1003, [153]; *Kuhle*, 526 F.2d at 555.

Alternatively or in addition, locating Karasiuk’s vacuum port 18b on a proximal end of the handpiece assembly would have been obvious to try. EUNSUNG-

⁴ *In re Rice*, 341 F.2d 309, 314 (CCPA 1965); *see also, e.g., In re Japikse*, 181 F.2d 1019 (CCPA 1950); *In re Kuhle*, 526 F.2d 553 (CCPA 1975); *see also* MPEP § 2144.04(VI)(C).

1003, [154]. A POSITA would have recognized a finite number of identified, predictable locations to locate Karasiuk's vacuum port 18b: at a proximal end of the handpiece assembly (similar to Mercier's FIG. 4), at a middle point between the proximal end and the distal end (similar to Karasiuk's FIG. 1), or at a distal end of the handpiece assembly. EUNSUNG-1003, [154]. A POSITA would have had "good reason to pursue the known options," and thus, connecting the supply conduit and the waste conduit to a corresponding connector along a proximal end of the handpiece assembly (e.g., by locating Karasiuk's vacuum port 18b at a proximal end of the handpiece assembly) would have been obvious to try. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007); EUNSUNG-1003, [154].

11. Claim 10

As discussed in [1.1], in Karasiuk-Palmer, the manifold (e.g., Palmer's liquid solution coupling and selector means 16) of the console (e.g., Palmer's mobile cart 170) is configured to be placed in fluid communication with a first fluid container and at least a second fluid container. EUNSUNG-1003, [155].

Palmer discloses that its solution reservoir 12₁ may contain an **"aqueous bacteriostatic rinse solution for use as a flush."** EUNSUNG-1005, 5:52-55.

Palmer also discloses that "[t]he apparatus enables the handpiece tubing and handpiece to be flushed with the flush solution prior to shutting off the unit." EUNSUNG-1005, 11:14-16. A POSITA would have understood and found obvious that

by flushing the handpiece, Palmer's bacteriostatic rinse solution will also flush the manifold (e.g., Palmer's liquid solution coupling and selector means 16). EUN-SUNG-1003, [157].

Thus, in Karasiuk-Palmer, a POSITA would have found it obvious that the manifold of the console is configured to be placed in fluid communication with a container comprising an antimicrobial fluid (e.g., Palmer's bacteriostatic rinse solution) or other disinfecting agent for periodic flushing of the manifold. EUN-SUNG-1003, [155]-[158].

12. Claim 11

[11.pre]

See [1.pre]. EUNSUNG-1003, [159].

[11.1]

See [1.1]. EUNSUNG-1003, [160].

[11.2]

See [1.2]. EUNSUNG-1003, [161].

[11.3]

See [1.3]. As discussed in [1.3], in Karasiuk-Palmer, a POSITA would have understood and found obvious that a distal end of the supply conduit is configured to "couple" to the handpiece assembly. EUNSUNG-1003, [162]. For the same reasons, a POSITA would have understood and found obvious that a distal end of the

supply conduit is configured to “secure” to the handpiece assembly.⁵ EUNSUNG-1003, [162]; EUNSUNG-1004, [0044] (“Handle 12 is annular or tubular, providing a passageway 12a through which tube 14 is extended”), [0045] (“The distal end 14b of tube 14 is connected to cannula 16, Cannula 16 is adapted to be fixed to handle 12”), [0059] (“Tube 14 extends from the proximal end of the micro-dermabrasion device 10”), FIGS. 1A and 6. A POSITA would have understood and found obvious that, for the supply conduit to deliver treatment solutions to the handpiece, it needs to be securely connected to and be in fluid communication with the handpiece. *Id.*

[11.4]

See [1.5]. EUNSUNG-1003, [163].

[11.5]

See [1.6]. EUNSUNG-1003, [164].

[11.6]

See [1.4]. EUNSUNG-1003, [165].

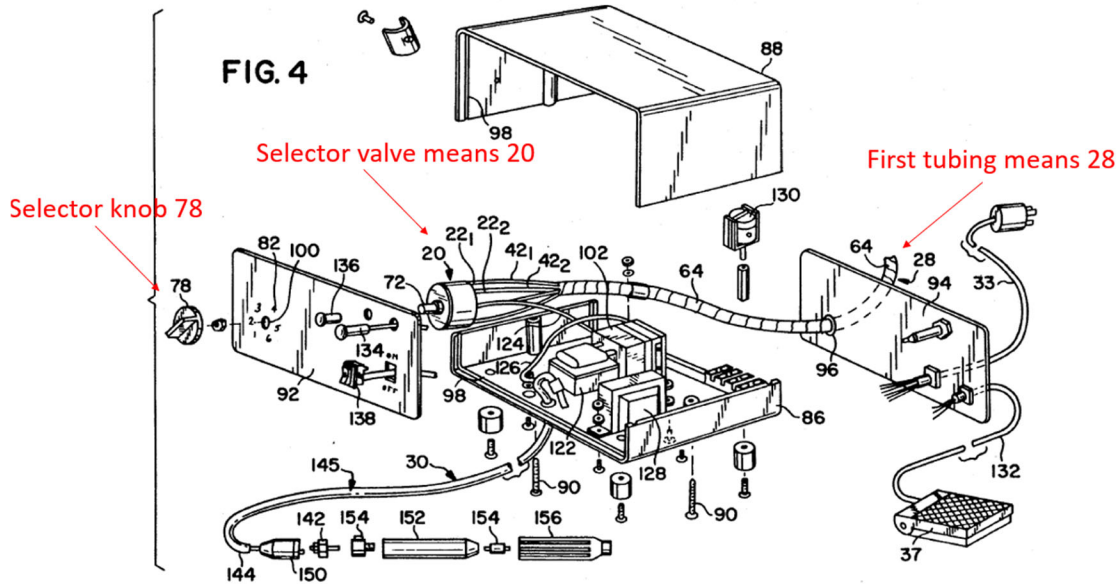
[11.7]

See [1.7]. EUNSUNG-1003, [166].

⁵ The specification of the ’052 patent does not use the term “secure.”

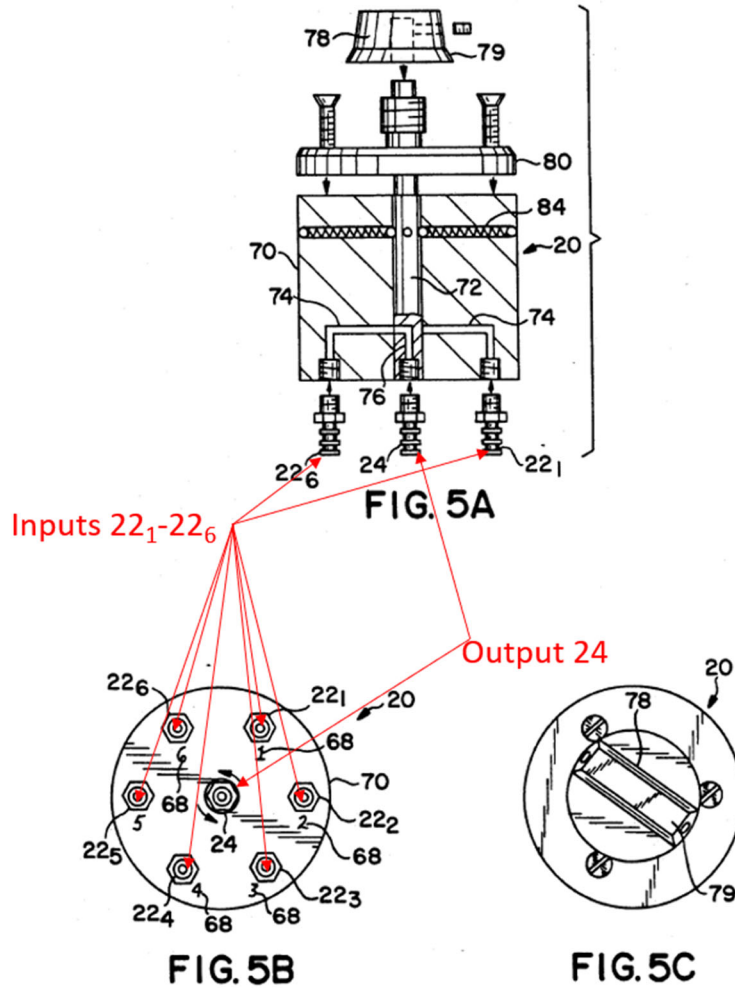
13. Claim 12

Palmer discloses a user input device in the form of a selector knob 78. EUNSUNG-1005, 8:22-9:16, FIG. 4; EUNSUNG-1003, [167]-[170]. Palmer's FIG. 4 shows an exploded view of control unit enclosure 35 including first tubing means 28, **selector valve means 20** (connected via valve inputs 22₁-22₆ to solution reservoirs 12₁-12₆), and selector knob 78. EUNSUNG-1005, 8:22-9:16, FIG. 4; EUNSUNG-1003, [167].



Palmer, FIG. 4

Palmer illustrates an exemplary selector valve means 20 in FIGS. 5A-5C.



Palmer, FIGS. 5A-5C

Referring to FIGS. 5A-5B, selector valve means 20 includes main body 70 defining multiple “liquid inlet passages 74” with multiple “input port[s] 22” and “liquid outlet passage 76” with “selector valve output port 24.” EUNSUNG-1005, 8:6-21. Further, main body 70 defines a “bore which receives the rotatable core 72 in a plane common with the inner ends of the other inlet passages 74.” *Id.* The “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.” *Id.* In operation, by turning selector knob 78, the manifold selectively connects the handpiece (e.g., Karasiuk’s device 10) to a selected solution reservoir. EUNSUNG-1003, [169]; EUNSUNG-1005, 8:22-53.

Thus, a POSITA would have understood or found obvious that Karasiuk-Palmer includes a user input device (e.g., Palmer’s selector knob 78) for selecting a treatment material to be passed through the supply conduit to the handpiece assembly. EUNSUNG-1003, [170].

14. Claim 15

See [4]. EUNSUNG-1003, [171].

15. Claim 16

See [8]. EUNSUNG-1003, [712].

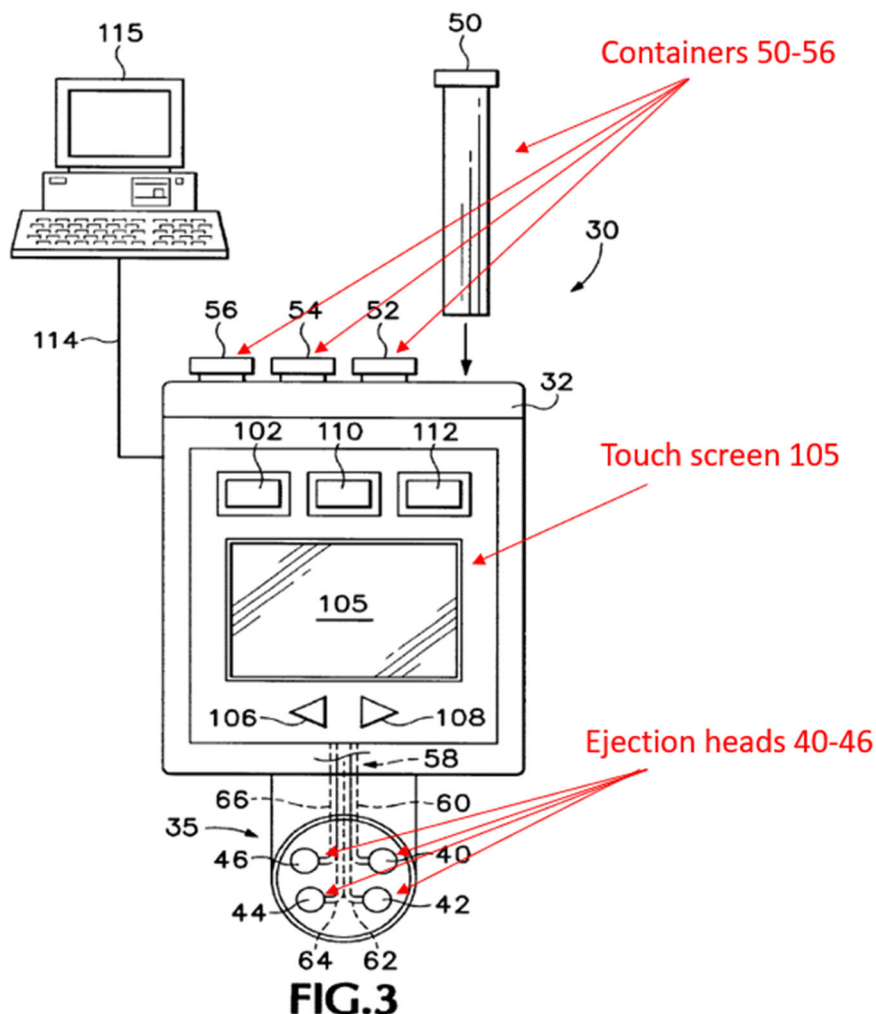
16. Claim 17

See [10]. EUNSUNG-1003, [173].

B. [GROUND 1B]: Karasiuk-Palmer-Trueba

1. Trueba

Similar to Karasiuk and Palmer, Trueba discloses a fluid delivery system including multiple containers 50-56 and pump means (e.g., ejection heads 40-46). EUNSUNG-1008, Abstract, 8:49-11:3, FIG. 3; EUNSUNG-1003, [64]-[68].



Trueba, FIG. 3

Trueba's fluid delivery is controlled by a computer (e.g., controller 100) linked to a user input device (e.g., external computer 115 or touch screen 105). EUNSUNG-1003, [65]. For example, "[c]ontroller 100 operates to apply firing signals to the ejection heads 40-46, which respond by ejecting fluid from reservoirs 50-56." EUNSUNG-1008, 10:60-62. Touch screen 105 includes "a series of images that, when touched with a finger or stylus, program the controller 100" and select a particular drug or dosage. EUNSUNG-1008, 11:42-12:8, FIG. 3.

Using this computer control, multiple compositions can be automatically dispensed simultaneously or sequentially. EUNSUNG-1008, 3:4-8, 5:18-6:9, 6:10-16, 11:4-34; EUNSUNG-1003, [66]-[67]. Trueba's device can be programmed to respond to changing clinical circumstances. EUNSUNG-1008, 11:15-20; EUNSUNG-1003, [68]. Further, the device can be programmed to "prevent unauthorized alteration of dosages" and "permit certain ranges of dosages to be administered." EUNSUNG-1008, 12:2-9; EUNSUNG-1003, [68].

2. Karasiuk-Palmer-Trueba Combination

In the Karasiuk-Palmer-Trueba combination ("Karasiuk-Palmer-Trueba"), Karasiuk-Palmer's system would have been modified based on Trueba's teachings of computer control and display. EUNSUNG-1003, [174]-[189]. For example, in the resulting system, Karasiuk-Palmer's selector means (e.g., Palmer's selector valve 20) would be controlled by a computer (e.g., Trueba's controller 100), which is controlled by a user input device (e.g., Trueba's touch screen 105 and/or computer 115), to control the flow of treatment solutions from containers (e.g., Palmer's reservoirs 12₁-12₆), so that a user can use the user input device to select a flow of fluids from the containers. EUNSUNG-1003, [174]. The combined device also includes a display (e.g., Trueba's touch screen 105) that indicates which solution is being delivered. *Id.*

A POSITA would have been motivated to modify Karasiuk-Palmer's system

by including Trueba's computer control and display for several benefits, such as added precision, automation, and clarity. EUNSUNG-1003, [175].

First, in the combination, Trueba would allow programming delivery of different treatment materials at different times and thus allow automated delivery following complex administration protocols. EUNSUNG-1008, 3:34-38, 4:65-5:17, 6:1-9, 6:27-7:9, 10:52-11:49, FIG. 1; EUNSUNG-1003, [176].

Second, Trueba's techniques offer additional benefits in that "[c]omputerized control of medication dosing, which may be programmed by medical personnel for subsequent automated delivery, can help avoid toxic drug interactions, overdoses, and death." EUNSUNG-1008, 6:1-9, 12:2-5; EUNSUNG-1003, [177].

Third, the combination would benefit from Trueba's touch screen that shows "a series of images that, when touched with a finger or stylus, program the controller 100" and that "indicate[s] which selections have been made" and displays "information such as desired dosages, frequency, and potential side effects." EUNSUNG-1008, 11:42-12:8, FIG. 3; EUNSUNG-1003, [178] (citing EUNSUNG-1014).

A POSITA would have had a reasonable expectation of success in implementing the combination given the technical similarities between Karasiuk, Palmer, and Trueba. EUNSUNG-1003, [179]-[187]. Trueba's system is similar to

Karasiuk's, including treatments "for topical application of a bioactive composition to the surface of the subject, such as a patch of skin." EUNSUNG-1008, 3:22-27; EUNSUNG-1003, [179]. Trueba also discloses a system similar to Palmer's by selecting from different treatment materials from different containers. EUNSUNG-1008, 3:4-8, 5:14-26, 11:4-34, FIG. 3; EUNSUNG-1003, [179].

Further, Karasiuk-Palmer-Trueba would merely constitute the use of a known technique to improve similar devices in the same way. EUNSUNG-1003, [186]. Indeed, by the Critical Date, computer (e.g., PLC) controlled fluid delivery systems were well-known. EUNSUNG-1003, [185]-[186]; EUNSUNG-1007, FIG. 3; EUNSUNG-1008, 11:4-34, FIG. 3; EUNSUNG-1015, Abstract. The modification requires nothing more than automating the manual process in Karasiuk-Palmer with well-known automation techniques. EUNSUNG-1003, [186]-[187].

As discussed in §III.A.3, a POSITA would have viewed the modular/mobile benefits of Palmer as applicable to microdermabrasion systems like Karasiuk's, and would have been motivated to use Palmer's console design in the microdermabrasion system resulting from the combination of Karasiuk-Palmer-Trueba. EUNSUNG-1003, [93]. As discussed in [1.1], a POSITA would have been motivated and found it obvious to place Karasiuk-Palmer's system in a console for known benefits, such as increased portability and organization. EUNSUNG-1003, [93]. For similar reasons, in Karasiuk-Palmer-Trueba, a POSITA would have been

motivated to place the relevant components, including Trueba's touch screen, in the console (e.g., Palmer's mobile cart 170) to provide added flexibility, organization, and portability. EUNSUNG-1003, [93].

3. Claims 1, 4-12, 15-17

As discussed in §III.A, Karasiuk-Palmer-Trueba renders obvious claims 1, 4-12, 15-17 for the same reasons as discussed regarding Karasiuk-Palmer. EUNSUNG-1003, [190].

4. Claim 2

As discussed in §III.A, Karasiuk-Palmer-Trueba renders obvious claim 1 for the same reasons as discussed regarding Karasiuk-Palmer. EUNSUNG-1003, [191]. Karasiuk-Palmer-Trueba further renders obvious [2] based on Trueba's teachings.

As discussed in §III.B.2, Karasiuk-Palmer-Trueba's system includes a display indicating which solution is being delivered, and that the display can be a user input device (e.g., Trueba's touch screen 105) to select a flow of fluids from containers to the handpiece. EUNSUNG-1003, [192]; EUNSUNG-1008, 11:40-12:8, FIG. 3. Further, as discussed in §III.B.2, a POSITA would have understood and found it obvious to place the touch screen in the console to provide added flexibility, organization, and portability. EUNSUNG-1003, [192]; EUNSUNG-1008, FIG. 3. Thus, in Karasiuk-Palmer-Trueba, a POSITA would have understood and found

obvious that the console comprises a display (e.g., Trueba's display 105), wherein the display comprises a user input device (e.g., Trueba's touch screen 105) to facilitate controlling a flow of treatment materials from the first fluid container or the at least a second fluid container to the handpiece assembly. EUNSUNG-1003, [192].

5. Claim 3

As discussed in §III.B.2, Karasiuk-Palmer-Trueba's user input device includes a touch screen. EUNSUNG-1003, [193]; EUNSUNG-1008, 11:40-12:8, FIG. 3.

6. Claim 6

As discussed in §III.A, Karasiuk-Palmer-Trueba renders obvious claim 6 for the same reasons as discussed regarding Karasiuk-Palmer. EUNSUNG-1003, [194].

Karasiuk-Palmer-Trueba further renders obvious [6] based on Trueba's teachings. To the extent that the term "sequentially" is interpreted to require automatic switching between first and second treatment fluids, Karasiuk-Palmer-Trueba renders this limitation obvious. EUNSUNG-1003, [195]; EUNSUNG-1008, 3:4-8, 5:18-6:9, 6:10-16, 11:4-34, 12:2-9. As discussed in §III.B.2, Karasiuk-Palmer-Trueba's system employs "[c]omputerized control of medication dosing, which may be programmed by medical personnel **for subsequent automated delivery,**" as taught by Trueba. EUNSUNG-1008, 6:6-9; EUNSUNG-1003, [195].

Trueba also discloses simultaneous delivery of treatment fluids and allows user programming of sequential or simultaneous delivery. EUNSUNG-1008, 11:4-49; EUNSUNG-1003, [195]. A POSITA would have found it obvious to employ Trueba's automation in the system of Karasiuk-Palmer to provide added precision (avoiding human error), automation, and clarity, resulting in automatic switching and delivery of treatment fluids in a sequential or simultaneous manner. EUNSUNG-1003, [195]; *In re Venner*, 262 F.2d 91, 95 (CCPA 1958) (broadly providing an automatic or mechanical means to replace a manual activity which accomplished the same result is not sufficient to distinguish over the prior art).

7. Claim 12

See [2]. EUNSUNG-1003, [196].

As discussed in §III.A, Karasiuk-Palmer-Trueba renders obvious claim 11 for the same reasons as discussed regarding Karasiuk-Palmer. EUNSUNG-1003, [197]. Karasiuk-Palmer-Trueba further renders obvious [12] based on Trueba's teachings.

As discussed in §III.B.2, Karasiuk-Palmer-Trueba's system includes a display indicating which solution is being delivered, and that the display can be a user input device (e.g., Trueba's touch screen 105) to select a flow of fluids from containers to the handpiece. EUNSUNG-1003, [198]; EUNSUNG-1008, 11:40-12:8, FIG. 3. Thus, in Karasiuk-Palmer-Trueba, a POSITA would have understood and

found obvious that the system includes a user input device (e.g., Trueba's touch screen 105) for selecting a treatment material to be passed through the supply conduit to the handpiece assembly. EUNSUNG-1003, [198].

8. Claim 13

See [2]. EUNSUNG-1003, [199].

9. Claim 14

See [3]. EUNSUNG-1003, [200].

C. [GROUND 1C]: Karasiuk-Palmer-Mercier

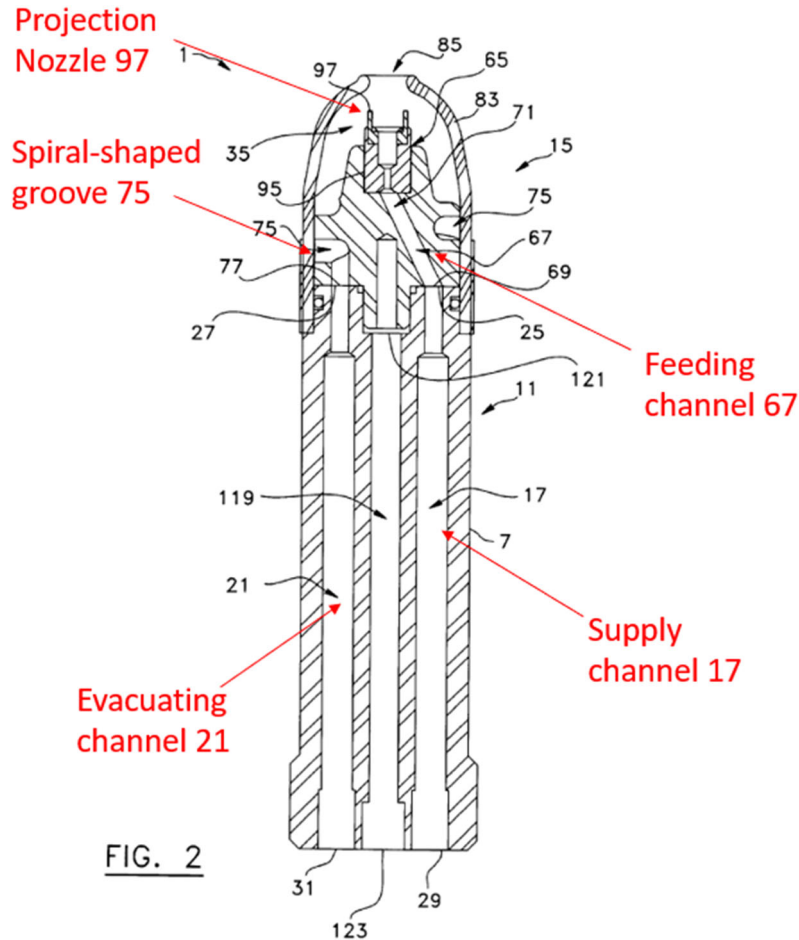
1. Mercier

Similar to Karasiuk, Mercier discloses a dermabrasion device for abrasively removing skin surface. EUNSUNG-1017, Title and Abstract; EUNSUNG-1003, [69]-[72]. Mercier's device "has a projection head for projecting the abrasive stream **orthogonally** to the skin surface to be removed; an evacuation chamber operatively connected to the evacuating channel for facilitating evacuation of the removed skin surface and used abrasive stream into the evacuating channel; and **rotation-inducing mechanisms** for giving a rotational pattern to the abrasive stream projected from the operative head." EUNSUNG-1017, Abstract.

Mercier discloses that its handpiece design with the "rotation-inducing mechanisms" is advantageous because it allows "great stability of the projected abrasive stream" and "creates a homogeneous sweeping action in the manner of a

generally rotational rubbing motion,” which enables the device to project an abrasive stream orthogonally to the skin surface to be removed without causing “skin stabbing” thereon. EUNSUNG-1017, 2:11-14 and 11:61-12:15; EUNSUNG-1003, [70].

Specifically, Mercier’s feeding channel 67 can include one coaxial groove 107 so as to induce the rotational pattern onto the abrasive stream 5 projected through the feeding channel 67. EUNSUNG-1017, 8:22-28. Further, Mercier’s projection nozzle 97 can include a projection channel 101 with one coaxial groove 109 so as to induce the rotational pattern to the abrasive stream 5 projected through the projection channel 101. EUNSUNG-1017, 8:28-33. As shown in Mercier’s FIG. 2, Mercier’s handpiece includes (1) a supply channel 17 for delivering treatment solution to the operative head 15 from a supply stream source 19 and (2) an evacuating channel 21 for removing debris to an evacuating means 23. EUNSUNG-1017, 4:56-61.



Mercier, FIG. 2

2. Karasiuk-Palmer-Mercier

In Karasiuk-Palmer-Mercier, Karasiuk-Palmer's handpiece (e.g., Karasiuk's device 10) would be replaced by Mercier's handpiece (e.g., Mercier's hand tool 1). EUNSUNG-1003, [201]-[212]. Specifically, Mercier's supply channel 17 would be connected to a supply conduit (e.g., Karasiuk's tube 14 or collectively Palmer's second tubing means 30, Karasiuk's T joint 76', and Karasiuk's tube 14) and Mercier's evacuating channel 21 would be connected to a waste conduit (e.g., Karasiuk's "vacuum line between device 10 and vacuum source 40" or collectively

Karasiuk's vacuum line 42, second vacuum line 44, vacuum line 46). EUNSUNG-1003, [201]; EUNSUNG-1017, 4:56-61.

Several reasons would have prompted a POSITA to modify Karasiuk-Palmer's system based on Mercier's teachings. EUNSUNG-1003, [202]. As discussed in §III.A.3, Karasiuk-Palmer's system uses a handpiece for applying a fluid treatment solution to a treatment site and a vacuum for collecting waste during microdermabrasion. EUNSUNG-1004, Abstract, [0044]-[0045], [0056]-[0059], [0063]-[0066], FIG. 6; EUNSUNG-1003, [202]. Thus, both Karasiuk-Palmer and Mercier are directed to a microdermabrasion device with a handpiece for applying a fluid treatment solution to a treatment site and a vacuum for collecting waste during microdermabrasion. EUNSUNG-1003, [202]; EUNSUNG-1004, Abstract, [0013]-[0015], FIG. 6; EUNSUNG-1017, Abstract. Based on general knowledge and Mercier's disclosure, a POSITA would have recognized the desirability of using Mercier's rotation-inducing mechanisms. EUNSUNG-1003, [202]; EUNSUNG-1017, 2:11-14, 11:61-12:15. Further, Karasiuk appreciates that "various changes may be made and equivalents may be substituted without departing from the true spirit and scope of the invention." EUNSUNG-1004, [0070]. From this disclosure and a POSITA's general knowledge, a POSITA would have been motivated to consider use of Mercier's handpiece design to improve Karasiuk-Palmer's system. EUNSUNG-1003, [202].

First, as explained by Mercier, a major problem associated with traditional handpiece design is that the hand tool is devised to project the abrasive stream onto the skin surface to be removed at a tilted angle, which gives rise to an abrasion pattern on the skin surface in the form of an undesirable “half-moon” pattern. EUNSUNG-1017, 1:43-51. In order to avoid this “half-moon” pattern, a POSITA would have been motivated to adopt Mercier’s handpiece design with a “rotation inducing mechanism.” EUNSUNG-1003, [203]; EUNSUNG-1017, 10:62-66.

Second, as explained by Mercier, another problem with traditional handpiece design is that it requires handpieces to be operated at an optimal tilted angle with respect to the skin surface, making it difficult for a manual operator to keep the tilted angle consistent during the procedure. EUNSUNG-1017, 1:51-61. In order to avoid this “tilted angle” problem, a POSITA would have been motivated to adopt Mercier’s handpiece design with a “rotation inducing mechanism.” EUNSUNG-1003, [204]; EUNSUNG-1017, 10:66-11:15.

Third, as explained by Mercier, another problem with traditional handpiece design is that it tends to mark the skin surface with deep cavities, a phenomenon commonly known as “pitting” or “skin stabbing.” EUNSUNG-1017, 1:65-2:14. In order to avoid this “skin stabbing” problem, a POSITA would have been motivated to adopt Mercier’s handpiece design with a “rotation inducing mechanism.” EUNSUNG-1003, [205]; EUNSUNG-1017, 11:61-12:15.

Fourth, as explained by Mercier, Mercier’s handpiece design is also advantageous because it enables a controlled and adjustable removal of the skin surface. EUNSUNG-1017, 10:42-61. Thus, a POSITA would have been motivated to adopt Mercier’s handpiece design in order to achieve a more controlled and adjustable removal. EUNSUNG-1003, [206].

Finally, a POSITA would have been motivated to adopt Mercier’s handpiece design because it is easy to assemble, easy to use, and easy to maintain. EUNSUNG-1003, [207]; EUNSUNG-1017, 12:16-23.

A POSITA would have had a reasonable expectation of success in such a combination. EUNSUNG-1003, [208]. As discussed above, both Karasiuk-Palmer and Mercier are directed to a microdermabrasion device with a handpiece for applying a fluid treatment solution to a treatment site and a vacuum for collecting waste during microdermabrasion. EUNSUNG-1003, [208]; EUNSUNG-1004, Abstract, [0013]-[0015], FIG. 6; EUNSUNG-1017, Abstract. Replacement of Karasiuk-Palmer’s handpiece (e.g., Karasiuk’s device 10) with Mercier’s handpiece (e.g., Mercier’s hand tool 1) reflects a simple substitution of a known element for another to obtain predictable results—allowing easier operation and avoiding the “skin stabbing” and “half-moon” issues. EUNSUNG-1003, [208]. This replacement would also reflect the use of a known technique to improve similar devices in the same way. *Id.*

Alternatively, in Karasiuk-Palmer-Mercier, Karasiuk-Palmer's handpiece (e.g., Karasiuk's device 10) would be modified based on Mercier's handpiece (e.g., Mercier's hand tool 1) so that an evacuating channel is extended inside Karasiuk's handle 12 alongside Karasiuk's tube 14 so that Karasiuk's vacuum port 18b is located at proximal end 14a of Karasiuk's tube 14. EUNSUNG-1003, [209]; EUNSUNG-1017, FIGS. 2 and 4. In this way, both the supply conduit (e.g., Karasiuk's tube 14 or collectively Palmer's second tubing means 30, Karasiuk's T joint 76', and Karasiuk's tube 14) and the waste conduit (e.g., Karasiuk's "vacuum line between device 10 and vacuum source 40" or collectively Karasiuk's vacuum line 42, second vacuum line 44, vacuum line 46) are connected to the proximal end of the handpiece (e.g., Karasiuk's device 10). *Id.* A POSITA would have been motivated to make this modification because it allows bundling the supply conduit and waste conduit together, allowing easier handling by the operator. EUNSUNG-1003, [209].

A POSITA would have had a reasonable expectation of success in making such a modification. EUNSUNG-1003, [210]. Both Karasiuk-Palmer and Mercier are directed to a microdermabrasion device with a handpiece for applying a fluid treatment solution to a treatment site and a vacuum for collecting waste during microdermabrasion. EUNSUNG-1003, [210]; EUNSUNG-1004, Abstract, [0013]-

[0015], FIG. 6; EUNSUNG-1017, Abstract. A POSITA would have viewed moving Karasiuk's vacuum port 18b to the proximal end of the handpiece as a simple modification that would reflect the use of a known technique to improve similar devices in the same way. EUNSUNG-1003, [210]. For example, Greenberg also discloses a similar microdermabrasion device with a handpiece for applying a fluid treatment solution to a treatment site and a vacuum for collecting waste during microdermabrasion, where each of the supply conduit and the waste conduit connects to a corresponding connector along a proximal end of the handpiece assembly. EUNSUNG-1006, FIGS. 1-6.

Alternatively or in addition, locating Karasiuk's vacuum port 18b on a proximal end of the handpiece assembly would have been obvious to try. EUNSUNG-1003, [211]. A POSITA would have recognized a finite number of identified, predictable locations to locate Karasiuk's vacuum port 18b: at a proximal end of the handpiece assembly (similar to Mercier's FIG. 4), at a middle point between the proximal end and the distal end (similar to Karasiuk's FIG. 1), or at a distal end of the handpiece assembly. EUNSUNG-1003, [211]. A POSITA would have had "good reason to pursue the known options," and thus, locating Karasiuk's vacuum port 18b at a proximal end of the handpiece assembly would have been obvious to try. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007); EUNSUNG-1003, [211].

Alternatively or in addition, locating Karasiuk’s vacuum port 18b at a proximal end of the handpiece assembly would have been an obvious design choice because it is merely the rearrangement of parts without any “difference in function” or “unexpected results.” EUNSUNG-1003, [212].⁶ As evidenced by Mercier, locating Karasiuk’s vacuum port 18b at a proximal end of the handpiece assembly yields expected results without altering the function of the Karasiuk-Palmer system, and thus would have been “an obvious matter of design choice within the skill of the art.” EUNSUNG-1003, [212]; *Kuhle*, 526 F.2d at 555.

3. Claim 9

As discussed in §III.A, Karasiuk-Palmer-Mercier renders obvious claim 9 for the same reasons as discussed regarding Karasiuk-Palmer. EUNSUNG-1003, [213]. Karasiuk-Palmer-Mercier further renders obvious [9] based on Mercier’s teachings.

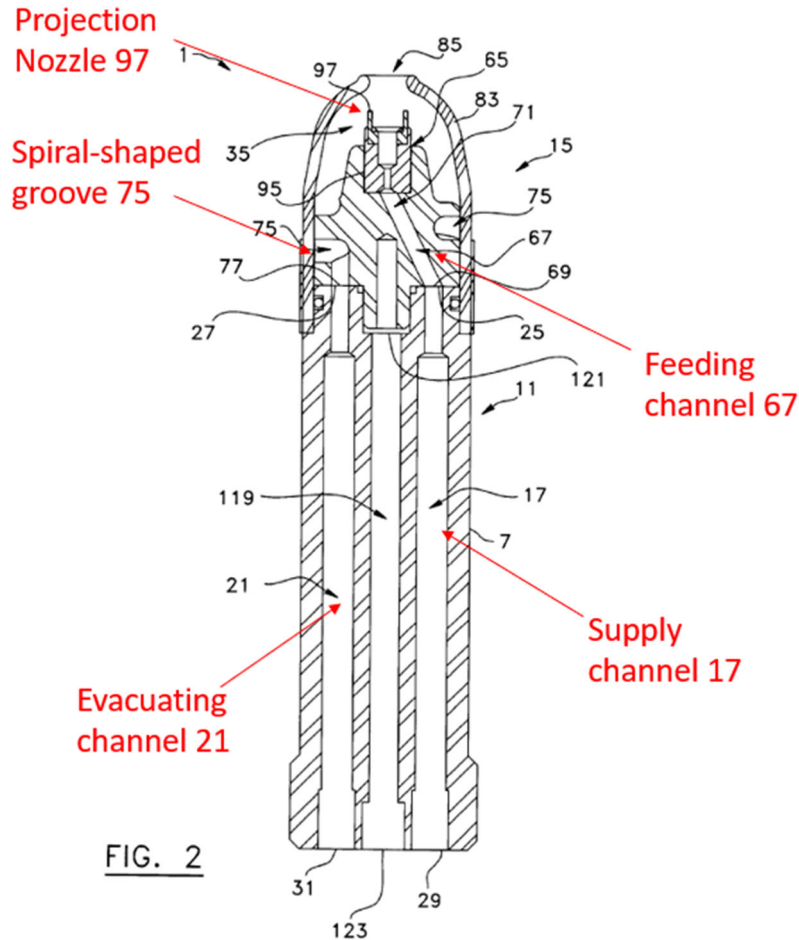
As discussed in §III.C.2, in Karasiuk-Palmer-Mercier, Karasiuk-Palmer’s handpiece (e.g., Karasiuk’s device 10) would be replaced by Mercier’s handpiece (e.g., Mercier’s hand tool 1). EUNSUNG-1003, [214]. Specifically, Mercier’s supply channel 17 would be connected to a supply conduit (e.g., Karasiuk’s tube 14 or

⁶ *In re Rice*, 341 F.2d 309, 314 (CCPA 1965); *In re Japikse*, 181 F.2d 1019 (CCPA 1950); *In re Kuhle*, 526 F.2d 553 (CCPA 1975); MPEP § 2144.04(VI)(C).

collectively Palmer's second tubing means 30, Karasiuk's T joint 76', and Karasiuk's tube 14) and Mercier's evacuating channel 21 would be connected to a waste conduit (e.g., Karasiuk's "vacuum line between device 10 and vacuum source 40" or collectively Karasiuk's vacuum line 42, second vacuum line 44, vacuum line 46). EUNSUNG-1003, [214]; EUNSUNG-1017, 4:56-61.

As shown in FIG. 2, Mercier's supply channel 17 has a connector (e.g., second extremity 29) along a proximal end of the handpiece assembly, and Mercier's evacuating channel 21 has a connector (e.g., second extremity 31) along a proximal end of the handpiece assembly. EUNSUNG-1003, [215]; EUNSUNG-1017, FIG. 2. Mercier further discloses that "the second extremities 29, 31 of the supply and evacuating channels 17, 21 are preferably provided with **push-in connectors 62**, as better shown in FIG. 2, so as to facilitate connection of the flexible tubes 43, 55." EUNSUNG-1017, 5:66-6:3; FIG. 6.

Thus, in Karasiuk-Palmer-Mercier, a POSITA would have understood and found obvious that each of the supply conduit and the waste conduit connects to a corresponding connector along a proximal end of the handpiece assembly (e.g., Mercier's hand tool 1). EUNSUNG-1003, [216]; EUNSUNG-1017, 4:56-61, 5:66-6:3, FIG. 2.



Mercier, FIG. 2

Alternatively, as discussed above in §III.C.2, Karasiuk-Palmer’s handpiece (e.g., Karasiuk’s device 10) would be modified based on Mercier’s handpiece (e.g., Mercier’s hand tool 1) so that an evacuating channel is extended inside Karasiuk’s handle 12 alongside Karasiuk’s tube 14 so that Karasiuk’s vacuum port 18b is located at proximal end 14a of Karasiuk’s tube 14. EUNSUNG-1003, [217]; EUNSUNG-1017, FIG. 2. In this way, both the supply conduit (e.g., Karasiuk’s tube 14 or collectively Palmer’s second tubing means 30, Karasiuk’s T joint 76’, and Karasiuk’s tube 14) and the waste conduit (e.g., Karasiuk’s “vacuum line between

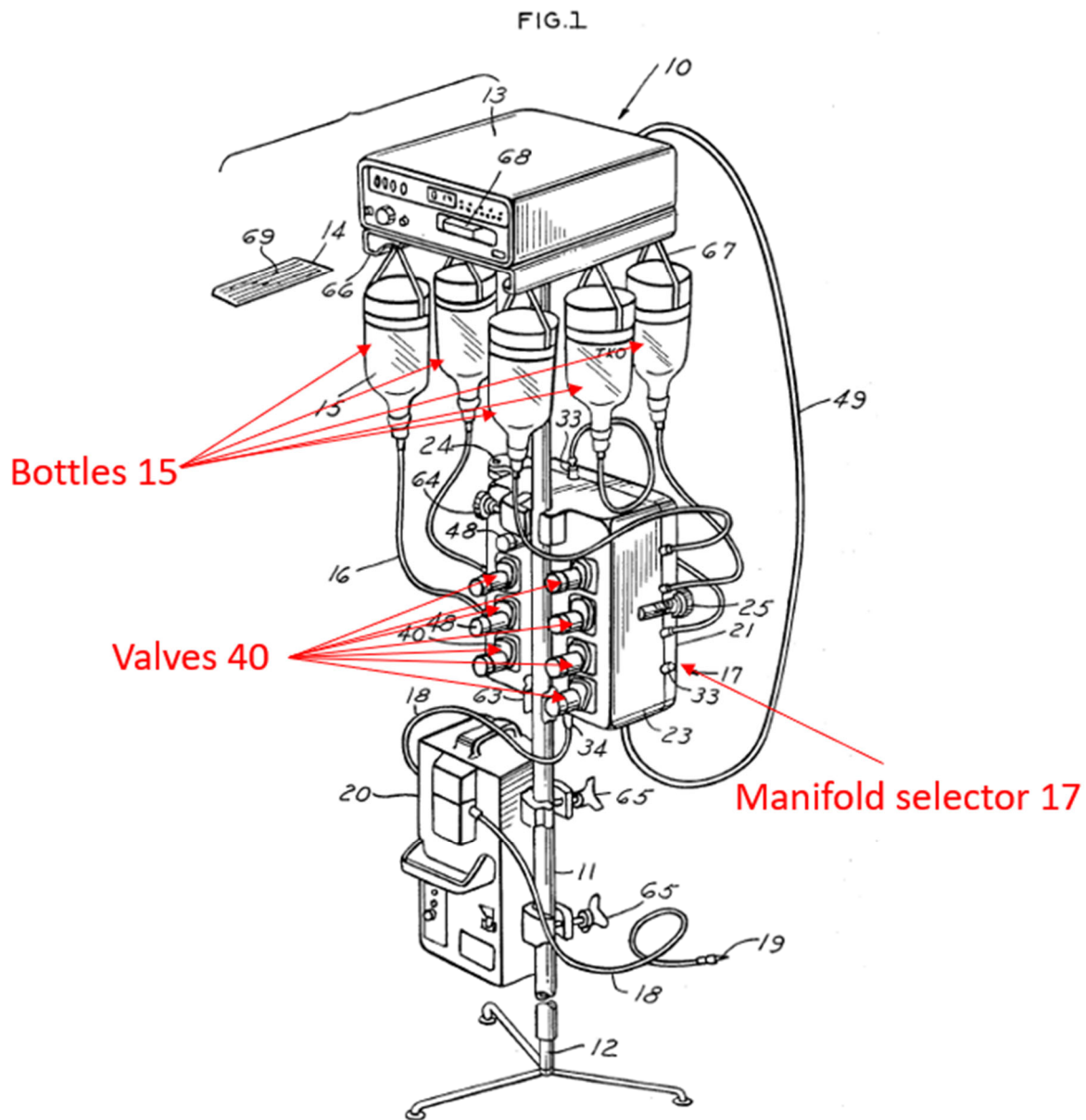
device 10 and vacuum source 40” or collectively Karasiuk’s vacuum line 42, second vacuum line 44, vacuum line 46) are connected to the proximal end of the handpiece (e.g., Karasiuk’s device 10). *Id.* A POSITA would have been motivated to make this modification because it allows bundling the supply conduit and waste conduit together, allowing easier handling by the operator. EUNSUNG-1003, [217]. Indeed, as Mr. Simon explains, a POSITA would have understood or found obvious that having one general entry/exit location for conduits extending from a microdermabrasion handpiece would have offered the operator convenience during operation in only having to keep track of one set of bundled conduits extending from the handpiece, rather than two. EUNSUNG-1003, [217]. In Karasiuk’s design, the waste conduit extends from a different location and in a different direction than the supply conduit, which makes it more difficult for an operator to keep track of the conduits during operation and makes it more likely that the movement of the handpiece would cause one of the supply or waste conduits to become tangled or inadvertently get caught on the patient or another object in the treatment area. EUNSUNG-1003, [217]. A POSITA would have viewed these aspects of Karasiuk’s design to be disadvantageous relative to Mercier’s design in terms of allowing the operator to manipulate the handpiece without interference between the waste/supply conduits and objects in the treatment area. EUNSUNG-1003, [217]. Based on these disadvantages and consistent with Mercier’s design, a

POSITA would have been motivated and would have found it obvious to modify Karasiuk's design to have the waste conduit extend from the proximal end of the handpiece such that it extends from the same end of the handpiece in the same direction as the supply conduit and can be bundled with the supply conduit in a manner that is less likely to result in interference with other objects during operation. EUNSUNG-1003, [217].

D. [GROUND 1D]: Karasiuk-Palmer-Wunsch

1. Wunsch

Wunsch discloses an apparatus for sequentially dispensing a plurality of solutions through a manifold that is connected to each of the solutions to be administered. EUNSUNG-1020, Abstract, 7:39-56, 8:17-26, FIGS. 1-4; EUNSUNG-1003, [73]-[75]. As shown in FIG. 1, the manifold selector 17 includes a plurality of valves 40, which control the flow of solution from the plurality of bottles 15. EUNSUNG-1020, 6:18-48, 7:16-56. Each of the valves 40 has an open position in which fluid is permitted to flow from the supply tubes 16 into the dispensing tube 18 and a closed position in which the branch tube 37 or trunk 32 is pinched off to prevent fluid flow therethrough. EUNSUNG-1020, 7:52-56.

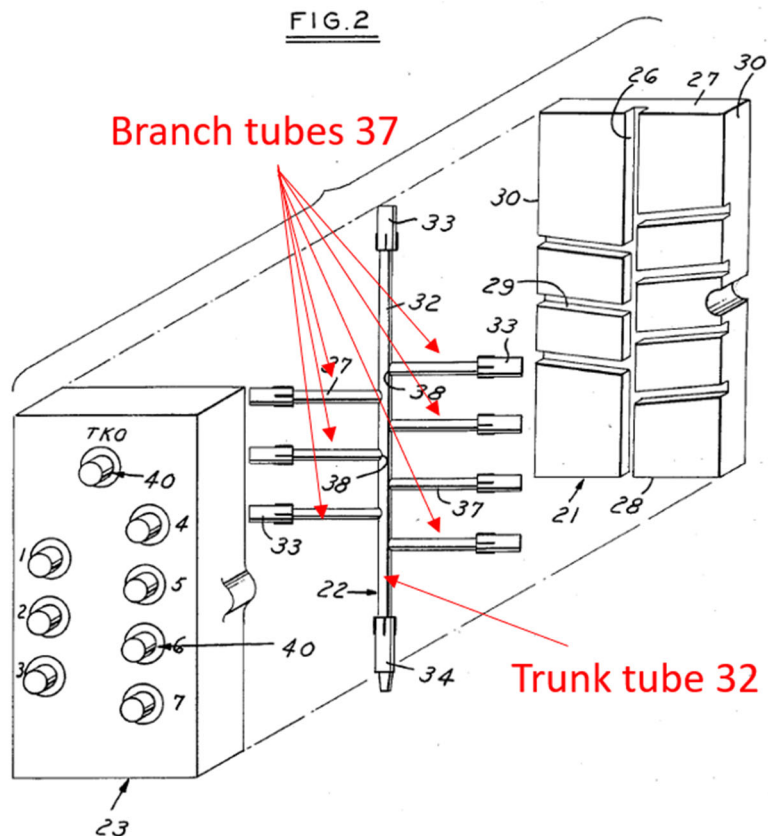


Wunsch, FIG. 1 (annotated)

Wunsch further discloses exemplary reversible electric motors 48, FIG. 3, or solenoids 59, FIG. 4, for individually controlling the operation of the respective valves 40. EUNSUNG-1020, 3:16-22, 6:24-26, FIGS. 3-4; EUNSUNG-1003, [74].

These motors are connected to and controlled by a sequencer-timer 13. EUNSUNG-1020, 5:25-35, 8:27-9:5. In operation, the user can program the sequencer-timer 13 to automatically operate the valves 40 to achieve automatic switching between different solutions and sequential delivery of different solutions. EUNSUNG-1020, 9:36-10:64.

As shown below in FIG. 2, Wunsch's manifold selector 17 includes a manifold 22 including a trunk tube 32 and a plurality of branch tubes 37, each of which connecting to one of the plurality of bottles 15. EUNSUNG-1020, 3:23-42, 6:61-7:16; EUNSUNG-1003, [75]. In operation, by activating an individual valve 40, the user can selectively connect a chosen bottle 15 to the trunk tube 32 for delivery. EUNSUNG-1020, 3:23-42, 7:17-56.



Wunsch, FIG. 2 (annotated)

2. Karasiuk-Palmer-Wunsch

In the Karasiuk-Palmer-Wunsch combination (“Karasiuk-Palmer-Wunsch”), Karasiuk-Palmer’s system would have been modified so that Palmer’s liquid solution coupling and selector means 16 is replaced with Wunsch’s manifold selector and sequencer-timer. EUNSUNG-1003, [218]-[231]. Specifically, each of Palmer’s containers (e.g., Palmer’s reservoirs 12₁-12₆) is connected via a corresponding supply tube 16 to Wunsch’s solution manifold selector 17, which is connected via dispensing tube 18 to Karasiuk’s tube 14. EUNSUNG-1020, 5:56-6:48, FIG. 1; EUNSUNG-1003, [218].

In the combination, Karasiuk's vacuum source would be used to pump treatment solutions from Palmer's multiple fluid containers and collect waste/debris. EUNSUNG-1003, [219]; EUNSUNG-1004, [0020], [0056], [0064]-[0066]. Instead of being connected to single reservoir 70, Karasiuk's tube 14 (e.g., upstream of breather line 76) would replace, or be connected to, Wunsch's dispensing tube 18 to achieve benefits resulting from selection of different treatment solutions. *Id.* In the resulting system, the vacuum source performs pumping the treatment solution and removing waste/debris, according to Karasiuk. *Id.*; EUNSUNG-1004, [0020], [0056], [0064]-[0066].

Wunsch discloses sequentially dispensing a plurality of solutions through a manifold that is connected to each of the solutions to be administered. EUNSUNG-1020, Abstract, 7:39-56, 8:17-26, FIGS. 1-4. Karasiuk recognizes desirability of using multiple types of skin treatment solutions during microdermabrasion. EUNSUNG-1003, [220]; EUNSUNG-1004, [0024], [0047], [0061]. Therefore, the Karasiuk-Palmer-Wunsch system would have used Wunsch's manifold selector to *sequentially* deliver different skin treatment solutions—for example, a first container holding an antioxidant formulation (e.g., vitamin) and a second container holding a hydrating formulation (e.g., lotion). §III.A.3; EUNSUNG-1003, [220].

Karasiuk-Palmer-Wunsch renders obvious the use of Wunsch's manifold for the same reasons discussed regarding obviousness of using a manifold discussed

for Karasiuk-Palmer. EUNSUNG-1003, [221]; *see* §III.A, [1.1].

A POSITA also would have been motivated to employ Wunsch’s manifold selector and sequencer-timer for several reasons. EUNSUNG-1003, [222]. First, Wunsch’s manifold selector can be automatically controlled by the sequencer-timer to allow automatic dispensing of different treatment fluids. EUNSUNG-1020, 3:43-68, 4:11-17, 4:47-60. Wunsch discloses that “an accurate method for sequentially metering several different medications” is desirable because manual selection (e.g., via Palmer’s liquid solution coupling and selector means 16) is limited in that an operator must attend to the manual switching and the flushing of the system between different treatment fluids. EUNSUNG-1020, 2:10-13, 2:33-49. Based on this disclosure, a POSITA would have understood that manual selection is both cumbersome and prone to error, and would have been motivated to adopt Wunsch’s automatic control to provide added convenience and help avoid mis-selection by the user. EUNSUNG-1003, [222].

Second, a POSITA would have been motivated to adopt Wunsch’s manifold selector because it allows flushing of the manifold using the Keep Open Base Solution (TKO) between different treatment fluids to avoid cross-contamination between two treatment fluids. EUNSUNG-1020, 2:33-49, 3:6-13, 8:6-9 (“thereby preventing intermixing of solutions”); EUNSUNG-1005, 1:54-68 (avoiding contamination); EUNSUNG-1003, [223].

Third, a POSITA would have been motivated to adopt Wunsch's manifold selector because it allows easy replacement of the disposable manifold between patients, avoiding cross-contamination between patients and avoiding the need to clean and sterilize the manifold between uses. EUNSUNG-1020, 1:65-2:9; 2:50-59, 4:40-45, 6:27-38, 8:10-16; EUNSUNG-1005, 1:54-68 (avoiding contamination); EUNSUNG-1003, [224].

Additionally, a POSITA would have been motivated and found it obvious to place (1) multiple containers (as taught by Palmer), (2) Wunsch's manifold selector and sequencer-timer, and (3) Karasiuk's handheld device 10, collection reservoir 50, vacuum source 40, and other relevant components in a modular structure (e.g., Palmer's mobile cart 170) for known benefits, such as increased portability and organization. EUNSUNG-1003, [225]-[230]. Palmer recognizes that "[b]y providing the reservoir storage means 32 in the form of modular single-shelf racks, a high degree of flexibility is provided." EUNSUNG-1005, 9:63-10:2, FIGS. 11A-11C. Indeed, such a modular configuration for medical devices was well-known before the Critical Date. EUNSUNG-1003, [225]-[230].

A POSITA would have replaced Palmer's liquid solution coupling and selector means 16 with Wunsch's manifold selector and sequencer-timer with a reasonable expectation of success. EUNSUNG-1003, [231]. Both Palmer's liquid solution coupling and selector means 16 and Wunsch's manifold selector are used to

allow selected delivery of different treatment fluids. EUNSUNG-1005, 8:22-53; EUNSUNG-1020, Abstract, 7:39-56, 8:17-26, FIGS. 1-4; EUNSUNG-1003, [231]. While Wunsch's system is used for intravenous delivery, a POSITA would have understood that Wunsch's manifold selector and sequencer-timer are equally applicable to Karasiuk's topical delivery. EUNSUNG-1003, [231]. Wunsch discloses in detail how to set up the manifold selector, which contains a plurality of valves 40 controlled by motor means (e.g., reversible electric motor 48 or solenoids 59) and how to use the sequencer-timer to control the valves (e.g., by sending positive voltages). EUNSUNG-1020, Abstract, 3:16-42, 5:25-35, 7:17-56, 8:17-9:5, 9:36-10:64, FIGS. 1-4; EUNSUNG-1003, [231]. Replacing Palmer's liquid solution coupling and selector means 16 with Wunsch's manifold selector and sequencer-timer constitutes a simple substitution of one known element for another to obtain predictable results—automated sequential delivery of multiple treatment fluids. EUNSUNG-1003, [231].

3. Claim 1

[1.pre]

See Ground 1A. EUNSUNG-1003, [232].

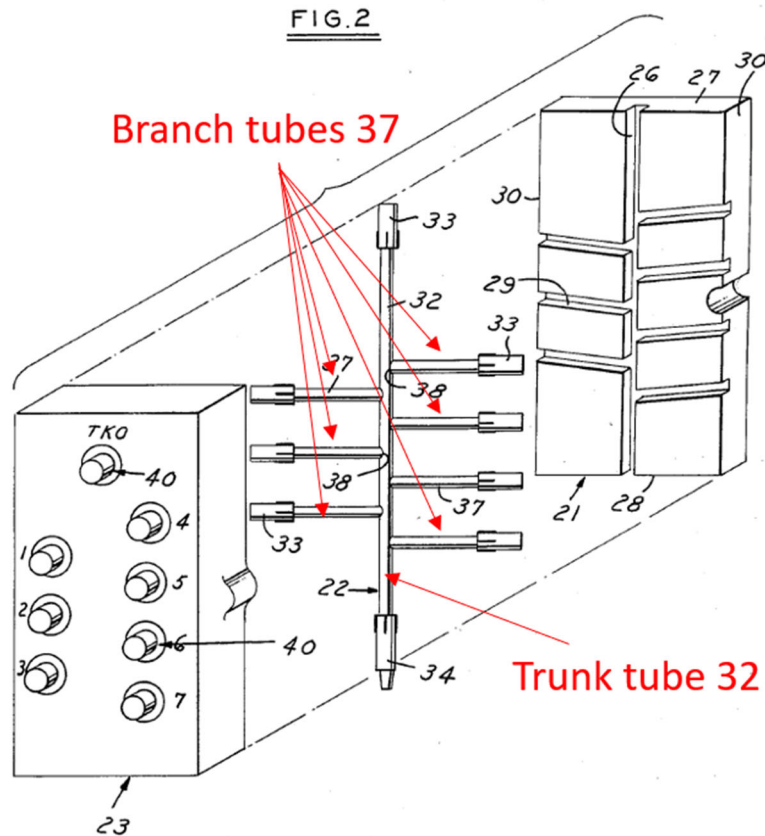
[1.1]

See Ground 1A. EUNSUNG-1003, [233].

Regarding “console,” Wunsch further illustrates in FIG. 1 that the system is mounted on a support standard post 12. EUNSUNG-1020, 5:18-24, 9:19-29, FIG.

1. A POSITA would have been motivated and found it obvious to place (1) multiple containers (as taught by Palmer), (2) Wunsch's manifold selector and sequencer-timer, and (3) Karasiuk's handheld device 10, collection reservoir 50, vacuum source 40, and other relevant components in a modular structure (e.g., Palmer's mobile cart 170) for known benefits, such as increased portability and organization. EUNSUNG-1003, [234]. Palmer recognizes that "[b]y providing the reservoir storage means 32 in the form of modular single-shelf racks, a high degree of flexibility is provided." EUNSUNG-1005, 9:63-10:2, FIGS. 11A-11C. Indeed, such a modular configuration for medical devices was well-known before the Critical Date. EUNSUNG-1003, [234].

Regarding "manifold," as discussed above in §III.D.2, in Karasiuk-Palmer-Wunsch, Karasiuk-Palmer's system would have been modified so that Palmer's liquid solution coupling and selector means 16 is replaced with Wunsch's manifold selector and sequencer-timer. EUNSUNG-1003, [235]. As discussed above in §III.D.1, Wunsch discloses that manifold selector 17 includes a manifold 22 including a trunk tube 32 and a plurality of branch tubes 37, each of which connecting to one of the plurality of bottles 15. EUNSUNG-1020, 3:23-42, 6:61-7:16; EUNSUNG-1003, [235].



Wunsch, FIG. 2 (annotated)

In operation, by activating an individual valve 40, the user can selectively connect a chosen bottle 15 to the trunk tube 32 for delivery. EUNSUNG-1020, 3:23-42, 7:17-56; EUNSUNG-1003, [236].

[1.2]

See Ground 1A. EUNSUNG-1003, [237].

[1.3]

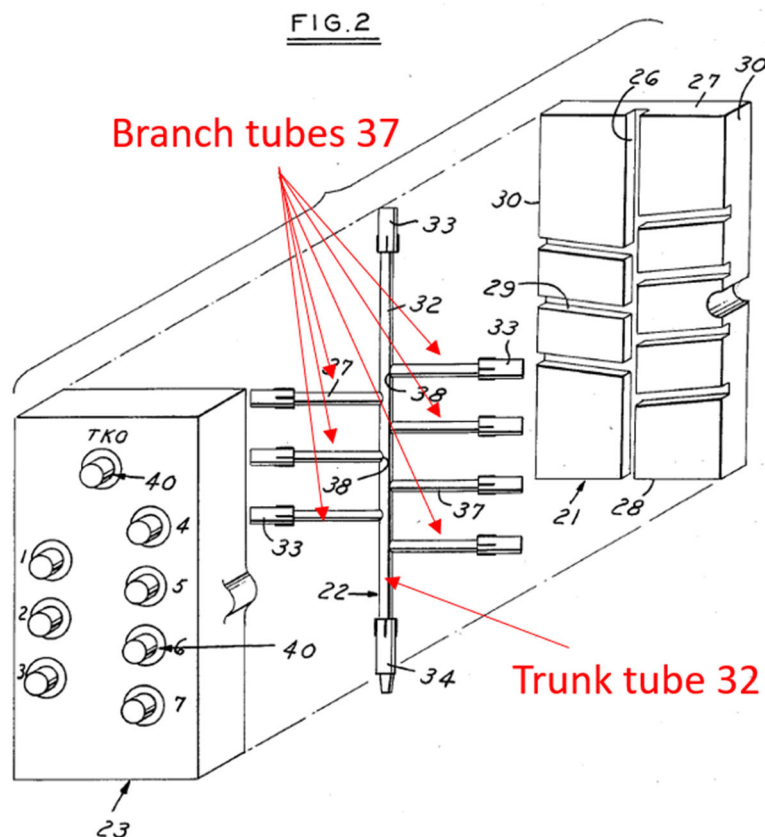
See Ground 1A. EUNSUNG-1003, [238].

[1.4]

See Ground 1A. EUNSUNG-1003, [239].

As discussed above in §III.D.2, in Karasiuk-Palmer-Wunsch, Karasiuk-Palmer's system would have been modified so that Palmer's liquid solution coupling and selector means 16 is replaced with Wunsch's manifold selector and sequencer-timer. EUNSUNG-1003, [240].

Regarding "manifold," as discussed above in §III.D.1, Wunsch discloses that manifold selector 17 includes a manifold 22 including a trunk tube 32 and a plurality of branch tubes 37, each of which connecting to one of the plurality of bottles 15. EUNSUNG-1020, 3:23-42, 6:61-7:16; EUNSUNG-1003, [241].



Wunsch, FIG. 2 (annotated)

In operation, by activating an individual valve 40, the user can selectively

connect a chosen bottle 15 to the trunk tube 32 for delivery. EUNSUNG-1020, 3:23-42, 7:17-56; EUNSUNG-1003, [242].

[1.5]

See Ground 1A. EUNSUNG-1003, [243].

[1.6]

See Ground 1A. EUNSUNG-1003, [244].

[1.7]

See Ground 1A. EUNSUNG-1003, [245].

In Karasiuk-Palmer-Wunsch, sequencer-timer 13 is a controlled sequencer that allows users to program arbitrary on-off sequences on eight to ten independent channels by means of pencil marks applied to tracks 69 upon the program card 14, FIG. 1. EUNSUNG-1020, 9:43-68; EUNSUNG-1003, [246]. To program the on-off timing sequence, the operator simply darkens the desired On intervals on the card 14 upon the respective tracks 69 with a soft No. 2 pencil. EUNSUNG-1020, 10:18-25. Timing information represented by pencil marks on the programming card 14 along the respective tracks 69 is read by photosensors or a suitable card reader. EUNSUNG-1020, 10:1-8. On the output end, the programmer timer 13 provides positive voltages to activate the switches in the manifold selector 17 in compliance with the information programmed on the program input card 14. EUNSUNG-1020, 9:62-68. By programming Wunsch's sequencer-timer 13, a user can select the treatment material from the first fluid container or the at least second

fluid container to be delivered through the supply conduit to the handpiece assembly. EUNSUNG-1003, [246].

[1.8]

See Ground 1A. EUNSUNG-1003, [247].

4. Claim 4

See Ground 1A. EUNSUNG-1003, [248].

Wunsch further discloses that manifold 22 is releasably coupled to the containers via supply tubes 16. EUNSUNG-1020, 4:41-46, 6:13-17, 6:27-38 (“to permit removal and replacement of tubing manifold 22”), 8:10-16 (“the tubing manifold may be simply disconnected from the supply tubes 16 and removed from the manifold selector 17”); EUNSUNG-1003, [249]. Wunsch discloses that the releasable connection allows replacement of the manifold 22 when a new patient is to be hooked up to the manifold selector 17. EUNSUNG-1020, 8:10-16. In view of this disclosure, because the treatment fluids for one patient may differ from the those for the next patient, a POSITA would have understood and found obvious that the first fluid container or the at least a second fluid container is releasably coupled to the manifold via supply tubes 16. EUNSUNG-1003, [249].

5. Claim 5

See Ground 1A. EUNSUNG-1003, [250]

Wunsch discloses “up to eight solutions may be accommodated by a single manifold selector 17.” EUNSUNG-1020, 8:17-26. Wunsch also shows in FIG. 1

five different bottles 15 (*fluid containers*). EUNSUNG-1020, FIG. 1; EUNSUNG-1003, [251].

6. Claim 6

See Ground 1A. EUNSUNG-1003, [252].

Wunsch discloses sequentially dispensing a plurality of solutions through a manifold that is connected to each of the solutions to be administered. EUNSUNG-1020, Abstract, 7:39-56, 8:17-26, FIGS. 1-4. Karasiuk recognizes desirability of using multiple types of skin treatment solutions during microdermabrasion. EUNSUNG-1003, [253]; EUNSUNG-1004, [0024], [0047], [0061]. Therefore, the Karasiuk-Palmer-Wunsch system would have used Wunsch's manifold selector to *sequentially* deliver different skin treatment solutions—for example, a first container holding an antioxidant formulation (e.g., vitamin) and a second container holding a hydrating formulation (e.g., lotion). §III.A.3; EUNSUNG-1003, [253].

As shown in FIG. 1, Wunsch's manifold selector 17 includes a plurality of valves 40, which control the flow of solution from the plurality of bottles 15. EUNSUNG-1020, 6:18-48, 7:16-56; EUNSUNG-1003, [254]. Each of the valves 40 has an open position in which fluid is permitted to flow from the supply tubes 16 into the dispensing tube 18 and a closed position in which the branch tube 37 or trunk 32 is pinched off to prevent fluid flow therethrough. EUNSUNG-1020, 7:52-56.

Wunsch further discloses exemplary reversible electric motors 48, FIG. 3, or solenoids 59, FIG. 4, for individually controlling the operation of the respective valves 40. EUNSUNG-1020, 3:16-22, 6:24-26, FIGS. 3-4. These motors are connected to and controlled by a sequencer-timer 13. EUNSUNG-1020, 5:25-35, 8:27-9:5. In operation, the user can program the sequencer-timer 13 to automatically operate the valves 40 to achieve automatic switching between different solutions and sequential delivery of different solutions. EUNSUNG-1020, 9:36-10:64.

Thus, a POSITA would have understood and found obvious that in Karasiuk-Palmer-Wunsch, treatment materials from the first fluid container and at least the second fluid container are delivered to the supply conduit sequentially or simultaneously. EUNSUNG-1003, [255].

7. Claim 7

See Ground 1A. EUNSUNG-1003, [256].

Regarding “console,” Wunsch further illustrates in FIG. 1 that the system is mounted on a support standard post 12. EUNSUNG-1020, 5:18-24, 9:19-29, FIG. 1. A POSITA would have understood and found obvious that Wunsch’s console is also movable. EUNSUNG-1003, [257].

8. Claim 8

See Ground 1A. EUNSUNG-1003, [258].

9. Claim 9

See Ground 1A. EUNSUNG-1003, [259].

10. Claim 10

See Ground 1A. EUNSUNG-1003, [260].

11. Claim 11

[11.pre]

See [1.pre]. EUNSUNG-1003, [261].

[11.1]

See [1.1]. EUNSUNG-1003, [262].

[11.2]

See [1.2]. EUNSUNG-1003, [263].

[11.3]

See [1.3]. As discussed in [1.3], in Karasiuk-Palmer-Wunsch, a POSITA would have understood and found obvious that a distal end of the supply conduit is configured to “couple” to the handpiece assembly. EUNSUNG-1003, [264]. For the same reasons, a POSITA would have understood and found obvious that a distal end of the supply conduit is configured to “secure” to the handpiece assembly.⁷ EUNSUNG-1003, [264]; EUNSUNG-1004, [0044], [0045], [0059], FIGS. 1A and 6. A POSITA would have understood and found obvious that for the supply conduit to deliver treatment solutions to the handpiece, it needs to be securely connected to and be in fluid communication with the handpiece. *Id.*

⁷ The specification of the ’052 patent does not use the term “secure.”

[11.4]

See [1.5]. EUNSUNG-1003, [265].

[11.5]

See [1.6]. EUNSUNG-1003, [266].

[11.6]

See [1.4]. EUNSUNG-1003, [267].

[11.7]

See [1.7]. EUNSUNG-1003, [268].

12. Claim 12

Wunsch discloses a user input device in the form of a sequencer-timer 13. EUNSUNG-1003, [269]. In Karasiuk-Palmer-Wunsch, the sequencer-timer 13 is a controlled sequencer that allows users to program arbitrary on-off sequences on eight to ten independent channels by means of pencil marks applied to tracks 69 upon the program card 14, FIG. 1. EUNSUNG-1020, 9:43-68. To program the on-off timing sequence, the operator simply darkens the desired On intervals on the card 14 upon the respective tracks 69 with a soft No. 2 pencil. EUNSUNG-1020, 10:18-25. Timing information represented by pencil marks on the programming card 14 along the respective tracks 69 is read by photosensors or a suitable card reader. EUNSUNG-1020, 10:1-8. On the output end, the programmer timer 13 provides positive voltages to activate the switches in the manifold selector 17 in com-

pliance with the information programmed on the program input card 14. EUNSUNG-1020, 9:62-68. A POSITA would have understood and found obvious that Wunsch's sequencer-timer 13 is a user input device for selecting a treatment material to be passed through the supply conduit to the handpiece assembly. EUNSUNG-1003, [269].

13. Claim 15

See [4]. EUNSUNG-1003, [270].

14. Claim 16

See [8]. EUNSUNG-1003, [271].

15. Claim 17

See [10]. EUNSUNG-1003, [272].

E. [GROUND 1E]: Karasiuk-Palmer-Wunsch-Trueba

1. Karasiuk-Palmer-Wunsch-Trueba

In Karasiuk-Palmer-Wunsch-Trueba, Karasiuk-Palmer-Wunsch is further modified by Trueba based on Trueba's teachings of computer control and display. EUNSUNG-1003, [273]-[276]. While Wunsch discloses a sequencer-timer in the form of a controlled sequencer that reads instructions from a marked up program card 14, a POSITA would have understood that computer technologies have progressed significantly since 1982, and would have replaced Wunsch's sequencer-timer with Trueba's computer with a touch screen to provide a more convenient user-interface, added clarity, and added programming capabilities. EUNSUNG-

1003, [273]. Through this modification, Karasiuk-Palmer-Wunsch-Trueba’s system employs “[c]omputerized control of medication dosing, which may be programmed by medical personnel **for subsequent automated delivery**,” as taught by Trueba. EUNSUNG-1008, 6:6-9; EUNSUNG-1003, [273].

Further, for the same reasons discussed in §III.B.2 regarding Karasiuk-Palmer-Trueba, a POSITA would have been motivated to modify Karasiuk-Palmer-Wunsch to include Trueba’s computer control and display with a reasonable expectation of success. EUNSUNG-1003, [274]. Comparing to Karasiuk-Palmer-Trueba, Wunsch provides added expectation of success because Wunsch discloses in detail how to set up the manifold selector, which contains a plurality of valves 40 controlled by motor means (e.g., reversible electric motor 48 or solenoids 59) and how to use the sequencer-timer to control the valves (e.g., by sending positive voltages). EUNSUNG-1020, Abstract, 3:16-42, 5:25-35, 7:17-56, 8:17-9:5, 9:36-10:64, FIGS. 1-4; EUNSUNG-1003, [274]. Replacing Wunsch’s sequencer-timer 13 with Trueba’s computer with a touch screen constitutes a simple substitution of one known element for another to obtain predictable results—a more convenient user-interface, added clarity, and added programming capabilities. EUNSUNG-1003, [274].

For the reasons discussed in §III.B.2, Karasiuk-Palmer-Wunsch-Trueba’s system includes a display indicating which solution is being delivered, and that the

display can be a user input device (e.g., Trueba's touch screen 105) to select a flow of fluids from containers to the handpiece. EUNSUNG-1003, [275]; EUNSUNG-1008, 11:40-12:8, FIG. 3.

For the reasons discussed in §III.B.2, a POSITA would have understood and found it obvious to place the touch screen in the console to provide added flexibility, organization, and portability. EUNSUNG-1003, [276]; EUNSUNG-1008, FIG. 3.

2. Claims 1, 4-12, 15-17

As discussed in §III.D, Karasiuk-Palmer-Wunsch-Trueba renders obvious claims 1, 4-12, 15-17 for the same reasons as discussed regarding Karasiuk-Palmer-Wunsch. EUNSUNG-1003, [277].

3. Claim 2

As discussed in §III.D, Karasiuk-Palmer-Wunsch-Trueba renders obvious claim 1 for the same reasons as discussed regarding Karasiuk-Palmer-Wunsch. EUNSUNG-1003, [278]. Karasiuk-Palmer-Wunsch-Trueba further renders obvious [2] based on Trueba's teachings.

As discussed in §III.E.1, Karasiuk-Palmer-Wunsch-Trueba's system includes a display indicating which solution is being delivered, and that the display can be a user input device (e.g., Trueba's touch screen 105) to select a flow of fluids from containers to the handpiece. EUNSUNG-1003, [279]; EUNSUNG-1008,

11:40-12:8, FIG. 3. Further, as discussed in §III.E.1, a POSITA would have understood and found it obvious to place the touch screen in the console to provide added flexibility, organization, and portability. EUNSUNG-1003, [279]; EUNSUNG-1008, FIG. 3. Thus, in Karasiuk-Palmer-Wunsch-Trueba, a POSITA would have understood and found obvious that the console comprises a display (e.g., Trueba's display 105), wherein the display comprises a user input device (e.g., Trueba's touch screen 105) to facilitate controlling a flow of treatment materials from the first fluid container or the at least a second fluid container to the hand-piece assembly. EUNSUNG-1003, [279].

4. Claim 3

As discussed in §III.E.1, Karasiuk-Palmer-Trueba's user input device includes a touch screen. EUNSUNG-1003, [280]; EUNSUNG-1008, 11:40-12:8, FIG. 3.

5. Claim 6

As discussed in §III.D, Karasiuk-Palmer-Wunsch-Trueba renders obvious claim 6 for the same reasons as discussed regarding Karasiuk-Palmer-Wunsch. EUNSUNG-1003, [281].

Karasiuk-Palmer-Wunsch-Trueba further renders obvious [6] based on Trueba's teachings. EUNSUNG-1003, [282]; EUNSUNG-1008, 3:4-8, 5:18-6:9, 6:10-16, 11:4-34, 12:2-9. As discussed in §III.E.1, Karasiuk-Palmer-Wunsch-

Trueba's system employs "[c]omputerized control of medication dosing, which may be programmed by medical personnel **for subsequent automated delivery**," as taught by Trueba. EUNSUNG-1008, 6:6-9; EUNSUNG-1003, [282]. A POSITA would have found it obvious to employ Trueba's automation in the system of Karasiuk-Palmer-Wunsch to provide a more convenient user-interface, added clarity, and added programming capabilities. EUNSUNG-1003, [282].

6. Claim 12

See [2]. EUNSUNG-1003, [283].

As discussed in §III.D, Karasiuk-Palmer-Wunsch-Trueba renders obvious claim 12 for the same reasons as discussed regarding Karasiuk-Palmer-Wunsch. EUNSUNG-1003, [284]. Karasiuk-Palmer-Wunsch-Trueba further renders obvious [12] based on Trueba's teachings.

As discussed in §III.E.1, Karasiuk-Palmer-Wunsch-Trueba's system includes a display indicating which solution is being delivered, and that the display can be a user input device (e.g., Trueba's touch screen 105) to select a flow of fluids from containers to the handpiece. EUNSUNG-1003, [285]; EUNSUNG-1008, 11:40-12:8, FIG. 3. Thus, in Karasiuk-Palmer-Wunsch-Trueba, a POSITA would have understood and found obvious that the system includes a user input device for selecting a treatment material to be passed through the supply conduit to the handpiece assembly.

7. Claim 13

See [2]. EUNSUNG-1003, [286].

8. Claim 14

See [3]. EUNSUNG-1003, [287].

F. [GROUND 1F]: Karasiuk-Palmer-Wunsch-Mercier

1. Karasiuk-Palmer-Wunsch-Mercier

For the reasons discussed above regarding Karasiuk-Palmer-Mercier, a POSITA would have combined Karasiuk-Palmer-Wunsch with Mercier. *See* §III.C.2. EUNSUNG-1003, [288]-[290].

In Karasiuk-Palmer-Wunsch-Mercier, Karasiuk-Palmer-Wunsch's handpiece (e.g., Karasiuk's device 10) would be replaced by Mercier's handpiece (e.g., Mercier's hand tool 1). EUNSUNG-1003, [289]. Specifically, as discussed at §III.C.2, Mercier's supply channel 17 would be connected to a supply conduit and Mercier's evacuating channel 21 would be connected to a waste conduit. EUNSUNG-1003, [289]; EUNSUNG-1017, 4:56-61.

Alternatively, in Karasiuk-Palmer-Wunsch-Mercier, Karasiuk-Palmer-Wunsch's handpiece (e.g., Karasiuk's device 10) would be modified based on Mercier's handpiece (e.g., Mercier's hand tool 1) so that an evacuating channel is extended inside Karasiuk's handle 12 alongside Karasiuk's tube 14 so that Karasiuk's vacuum port 18b is located at proximal end 14a of Karasiuk's tube 14. EUNSUNG-1003, [290]; EUNSUNG-1017, FIG. 2. In this way, as discussed at §III.C.2, both

the supply conduit and the waste conduit are connected to the proximal end of the handpiece (e.g., Karasiuk’s device 10). *Id.* A POSITA would have been motivated to make this modification because it allows bundling the supply conduit and waste conduit together, allowing easier handling by the operator. EUNSUNG-1003, [290].

2. Claim 9

As discussed in §III.D, Karasiuk-Palmer-Wunsch-Mercier renders obvious claim 9 for the same reasons as discussed regarding Karasiuk-Palmer-Wunsch. EUNSUNG-1003, [291]. Karasiuk-Palmer-Wunsch-Mercier further renders obvious [9] based on Mercier’s teachings. *See* §III.C.3. EUNSUNG-1003, [291].

IV. FEES

Please apply any fees to Deposit Account No. 232825.

V. CONCLUSION

Petitioner requests cancellation of all Challenged Claims.⁸

VI. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(a)(1)

A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)

Petitioner is the real party-in-interest.

B. Related Matters Under 37 C.F.R. § 42.8(b)(2)

⁸ In view of the Board’s new process bifurcating discretionary considerations, Petitioner has removed arguments regarding discretionary considerations from this understudy petition as unnecessary. *See* March 26, 2025 Memorandum on Interim Processes for PTAB Workload Management at 1-2.

The '052 patent is the subject of ongoing litigation in:

- *HydraFacial LLC et al v. eMIRAméd USA LLC et al*, 8-24-cv-01865 (CDCA)
- *HydraFacial LLC v. Luvo Medical Technologies et al*, 2-24-cv-00587 (DUT)
- *Certain Hydrodermabrasion Systems and Components Thereof*, Inv. No. 337-TA-1416 (ITC)
- *HydraFacial LLC f/k/a Edge Systems LLC v. Sinclair Pharma Limited et al*, 2-24-cv-06250 (CDCA)
- *HydraFacial LLC f/k/a Edge Systems LLC v. Aesthetic Management Partners, LLC et al*, 2-24-cv-02480 (WDTN)
- *HydraFacial LLC f/k/a Edge Systems LLC v. Medicreations LLC*, 2-24-cv-00855 (DNV)
- *Edge Systems LLC v. Ageless Serums LLC*, 4-20-cv-04335 (SDTX)
- *Edge Systems LLC v. Cartessa Aesthetics, LLC*, 2-20-cv-06082 (EDNY)
- *Edge Systems LLC et al v. Imagemicroderm, Inc.*, 2-17-cv-08699 (CDCA)
- *Edge Systems LLC et al v. Aesthetic Skin Systems LLC*, 2-17-cv-04597 (CDCA)
- *Edge Systems LLC v. Cartessa Aesthetics, LLC*, 25-1119 (CAFC)
- *HydraFacial LLC f/k/a Edge Systems LLC v. Candela Corporation et al*, 1-25-cv-00418 (DDE)

- *Eunsung Global Corp. v. HydraFacial LLC f/k/a Edge Systems LLC*,
IPR2025-00445

Additionally, IPR2025-00145, involving related U.S. Pat. No. 11,865,287, was instituted on June 2, 2025.

Petitioner has filed a Contingent Motion for Joinder contemporaneously with this Petition. In the event that IPR2025-00445 is instituted first, Petitioner requests that this Petition be instituted and joined pursuant to 35 U.S.C. §315(c) and 37 C.F.R. §§ 42.22 and 42.122(b) with the inter partes review proceeding initiated concerning the '052 patent: *Eunsung Global Corp. v. HydraFacial LLC*, IPR2025-00445, which was filed on January 10, 2025.

The undersigned is unaware of any other any other judicial or administrative matter that would affect, or be affected by, a decision in the proceeding.

C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation of counsel.

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D. Service Information

Please address all correspondence and service to the address listed above.

Petitioner consents to service of all documents via electronic mail.

Respectfully submitted,

Dated: July 3, 2025

/Scott A. McKeown/
Scott A. McKeown, Reg. No. 42,866
Wolf, Greenfield & Sacks, P.C.

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24, the undersigned certifies that the foregoing Petition for *Inter Partes* Review contains 13,980 words excluding a table of contents, a table of authorities, Mandatory Notices under § 42.8, a certificate of service or word count, or appendix of exhibits or claim listing. Petitioner has relied on the word count feature of the word processing system used to create this paper in making this certification.

Date: July 3, 2025

/MacAulay Rush/
MacAulay Rush
Paralegal
WOLF, GREENFIELD & SACKS, P.C.

CERTIFICATE OF SERVICE UNDER 37 C.F.R. § 42.6 (E)(4)

I certify that on July 3, 2025, a copy of the foregoing document, including any exhibits or appendices filed therewith, is being served via *Overnight FedEx* at the following correspondence address of record for the patent:

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A courtesy copy was also sent via electronic mail to all counsel of record in IPR2025-00445 at the following addresses:

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