UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

HYDRAFACIAL LLC,
Patent Owner.

_____

Case No. IPR2025-01217
Patent No. 11,446,477

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PETITION FOR INTER PARTES REVIEW
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.1 et seq

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EXHIBITS

EUNSUNG-1001	U.S. Pat. No. 11,446,477 to Ignon ("the '477 patent")
EUNSUNG-1002	Excerpts from the Prosecution History of the '477 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. 6,162,232 ("Shadduck")

EUNSUNG-1018 U.S. Patent Publication No. 2001/0049511 ("Coleman")

EUNSUNG-1019 U.S. Patent No. 6,428,518 ("Brengle")

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 Lacey, Gerard, and Kenneth M. Dawson-Howe. "The application of robotics to a mobility aid for the elderly blind." Robotics and Autonomous Systems 23.4 (1998): 245-252.

EUNSUNG-1029 Nayler, Gordon. Dictionary of mechanical engineering. SAE International, 1996 ("Nayler")

EUNSUNG-1030 Card, Stuart K., Jock D. Mackinlay, and George G. Robertson.

	"A morphological analysis of the design space of input devices." ACM Transactions on Information Systems (TOIS) 9.2 (1991): 99-122.
EUNSUNG-1031	U.S. Patent No. 3,930,598 (“Slagle”)
EUNSUNG-1032	Excerpts from the Prosecution History of the ’052 patent (“the ’052 Prosecution History”)
EUNSUNG-1033	U.S. Pat. No. 9,550,052 to Ignon (“the ’052 patent”)
EUNSUNG-1034	Declaration of Harold Walbrink

LISTING OF CLAIMS

Claim 1	
[1.pre]	A skin treatment system comprising:
[1.1]	a manifold system in communication with a first container and at least a second container, wherein each of the first container and the at least second container is configured to contain a treatment material, the manifold system being positioned in or on a console;
[1.2]	a supply conduit placing the manifold system in fluid communication with a handpiece assembly;
[1.3]	wherein the handpiece assembly comprises a working end having a skin contact surface;
[1.4]	a vacuum source;
[1.5]	a waste conduit in fluid communication with the handpiece assembly and the vacuum source to move waste away from the working end of the handpiece assembly during a skin treatment procedure; and
[1.6]	at least one control to permit control of a flow of treatment material from the first container and the at least second container through the supply conduit to the handpiece assembly;
[1.7]	wherein the vacuum source is configured to create a suction force within the waste conduit and along the working end of the handpiece assembly to help remove waste from the handpiece assembly via the waste conduit and to help transfer at least one treatment material from the manifold system to the handpiece assembly.
Claim 2	
[2]	The system of claim 1, further comprising a computing device configured to control at least one function of the system.

Claim 3	
[3]	The system of claim 1, further comprising a user input device to facilitate control of a flow of treatment material from at least one of the first container and the at least second container to the handpiece assembly.
Claim 4	
[4]	The system of claim 3, wherein the user input device comprises a touch screen.
Claim 5	
[5]	The system of claim 1, further comprising a display.
Claim 6	
[6]	The system of claim 1, wherein the manifold system is in fluid communication with at least four containers.
Claim 7	
[7]	The system of claim 1, wherein the first container and the at least second container are configured to releasably couple to the manifold system.
Claim 8	
[8]	The system of claim 1, wherein treatment materials from the first container and the at least second container are configured to be delivered to the supply conduit sequentially or simultaneously.
Claim 9	
[9.pre]	A skin treatment system comprising:
[9.1]	a manifold system in communication with at least two containers that are configured to be secured to the manifold system, wherein each of the at least two containers is configured to contain a treatment material;

[9.2]	a handpiece assembly configured to contact a skin surface of a subject, wherein a supply conduit places the manifold system in fluid communication with the handpiece assembly;
[9.3]	a vacuum source; and
[9.4]	a waste conduit in fluid communication with the handpiece assembly and the vacuum source to move waste away from the handpiece assembly;
[9.5]	wherein the system is configured to deliver at least one treatment material from at least one of the at least two containers to the handpiece assembly via the supply conduit using, at least in part, a vacuum created along a distal end of the handpiece assembly by the vacuum source.
Claim 10	
[10]	The system of claim 9, wherein the manifold system is positioned in a console.
Claim 11	
[11]	The system of claim 9, further comprising a computing device configured to control at least one function of the system.
Claim 12	
[12]	The system of claim 9, further comprising a user input device to facilitate control of a flow of treatment materials from at least one of the at least two containers to the handpiece assembly.
Claim 13	
[13]	The system of claim 12, wherein the user input device comprises a touch screen.
Claim 14	
[14]	The system of claim 9, wherein treatment materials from a first container and a second container are configured to be delivered to the supply conduit sequentially or simultaneously.

Claim 15	
[15.pre]	A skin treatment system comprising:
[15.1]	a manifold system in communication with at least two containers, wherein each of the at least two containers is configured to contain a treatment material;
[15.2]	a handpiece assembly configured to contact a skin surface of a subject;
[15.3]	a supply conduit placing the manifold system, and thus the at least two containers, in fluid communication with the handpiece assembly; and
[15.4]	a waste conduit in fluid communication with the handpiece assembly and a vacuum source to move waste away from the handpiece assembly; and
[15.5]	wherein the system is configured to deliver treatment materials from at least one of the at least two containers to the handpiece assembly via the supply conduit using, at least in part, a vacuum created along a distal end of the handpiece assembly by the vacuum source.
Claim 16	
[16]	The system of claim 15, wherein the manifold system is positioned in a console.
Claim 17	
[17]	The system of claim 15, further comprising a computing device configured to control at least one function of the system.
Claim 18	
[18]	The system of claim 15, further comprising a user input device to facilitate control a flow of treatment materials from at least one of the at least two containers to the handpiece assembly.
Claim 19	
[19]	The system of claim 18, wherein the user input device comprises a touch screen.

Claim 20	
[20]	The system of claim 15, wherein treatment materials from the first container and the at least second container are configured to be delivered to the supply conduit sequentially or simultaneously.

Petitioner, Aesthetic Management Partners, LLC and Aesthetic Management Partners, Inc. (collectively "Petitioner"), petitions for *Inter Partes* Review of claims 1-20 ("Challenged Claims") of U.S. Patent No. 11,446,477 ("'477 patent").

I. REQUIREMENTS

A. Grounds for Standing

Petitioner certifies that the '477 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 Walbrink[1] (EUNSUNG-1034), 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, 3, 6-10, 12, 14-16, 18, 20	Karasiuk, Palmer
1B	1-20	Karasiuk, Palmer, Trueba
1C	1, 3, 6-10, 12, 14-16, 18, 20	Karasiuk, Palmer, Wunsch
1D	1-20	Karasiuk, Palmer, Wunsch, Trueba
2A	1, 3, 6-10, 12, 14-16, 18, 20	Greenberg

[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-1034, ¶19. While Petitioner is not relying directly on Mr. Simon's declaration in this Petition, for adminstrative expediency, this Petition cites only to EUNSUNG-1003.

Ground	Claims	Basis (§103)
2B	1-20	Greenberg, Trueba

The ’477 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
Greenberg	5/15/2003
Trueba	2/3/2004
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.

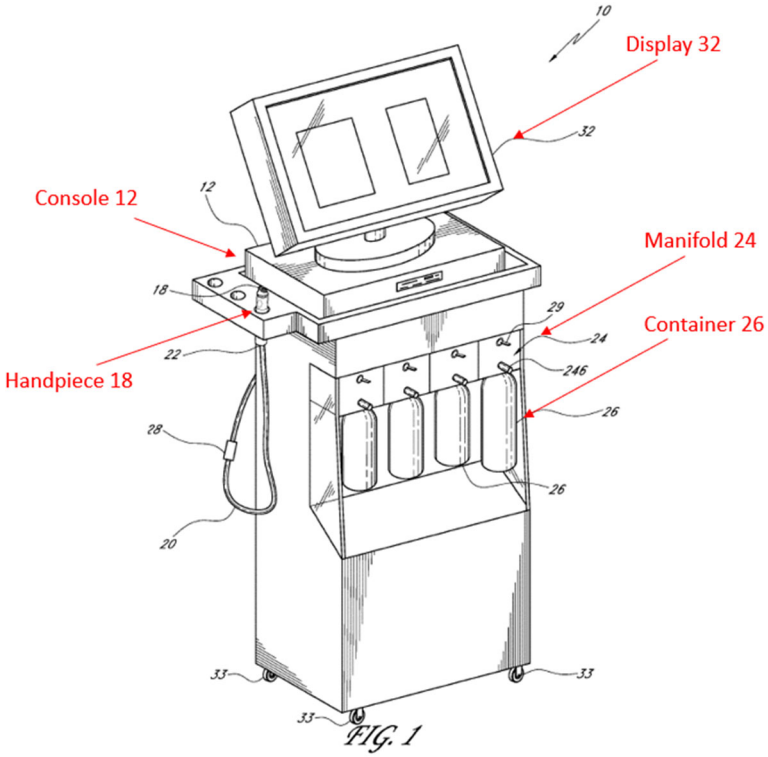
D. Level of Ordinary Skill

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. EUNSUNG-1003, [13]-[14].

II. '477 PATENT

A. Summary

The '477 patent describes a skin treating apparatus having a console with a user input device and a handpiece assembly. 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]-[43]. The microdermabrasion disclosed in the '477 patent was well-known before the Critical Date. EUNSUNG-1003, [28]-[37].



EUNSUNG-1001, FIG. 1.[2]

B. Prosecution History

During prosecution, claims were rejected as obvious over Coleman (US2001/0049511), Slagle (US3930598), Shadduck (US6162232), Duchon (US20030018252), and Greenberg. EUNSUNG-1002, 397-402, 235-246, 114-127. To overcome the rejections, Applicant pursued claim amendments and filed a terminal disclaimer. *Id.*, 350-360, 215-225, 99-111, 26-33.

During prosecution, Palmer, Trueba, and Wunsch were not considered by

[2] Annotations are added unless indicated otherwise.

the Office, let alone applied in a rejection. Karasiuk was buried in an IDS containing over 400 references and was not applied in a rejection. EUNSUNG-1002, 468-486; *infra* §IV.A. Among the references applied in this petition, only Greenberg was applied in a rejection for various dependent claim features. EUNSUNG-1002, 124-125, 243-244. The Examiner erred in not issuing a rejection based on Greenberg alone or in view of Trueba, presumably because Greenberg discloses applying treatment materials in the form of particles and does not expressly describe "fluid communication." EUNSUNG-1003, [51]. As discussed in Section E.2, however, a POSITA would have understood and found obvious that Greenberg's "particles" constitute "fluid" within the meaning of the '477 patent. EUNSUNG-1003, [51]; EUNSUNG-1001, 5:38-53; EUNSUNG-1006, [0040]; [0017]. Notably, during prosecution of US9550052B2 ("the '052 patent"), to distinguish Greenberg, Applicant amended claims to recite "a liquid" treatment solution. EUNSUNG-1032, 62-79.[3] By contrast, the '477 patent is not so limited. Thus, the examiner erred in not issuing a rejection based on Greenberg alone or in view of Trueba.

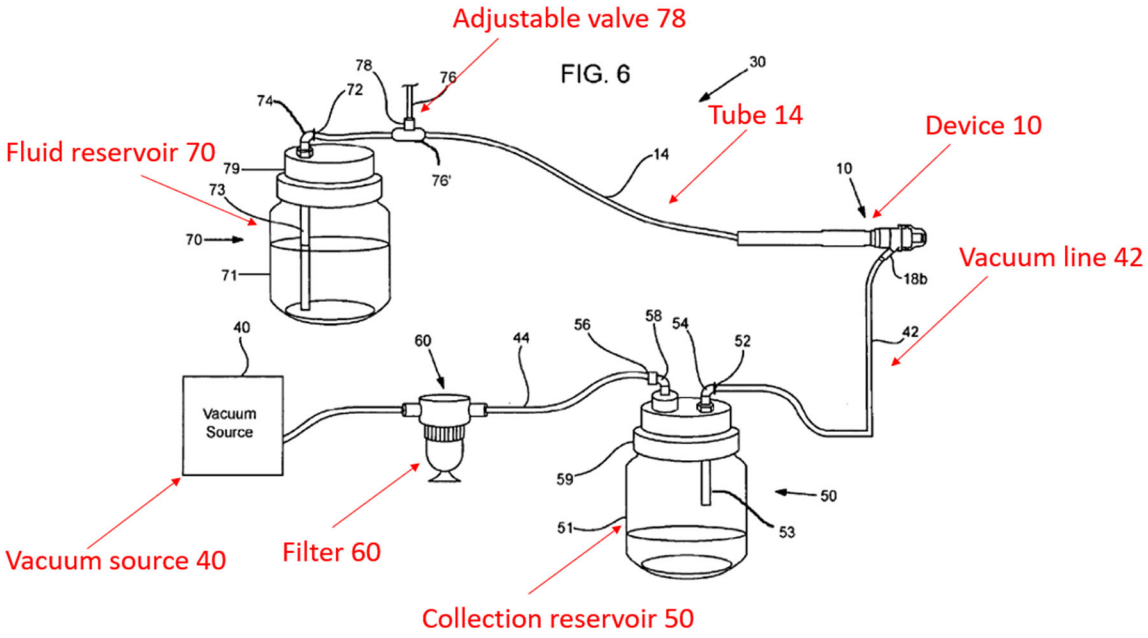
III. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. [GROUND 1A]: Karasiuk-Palmer

1. Karasiuk

[3] *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 980 (Fed. Cir. 1999).

Karasiuk's system conducts microdermabrasion procedures using a handpiece 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

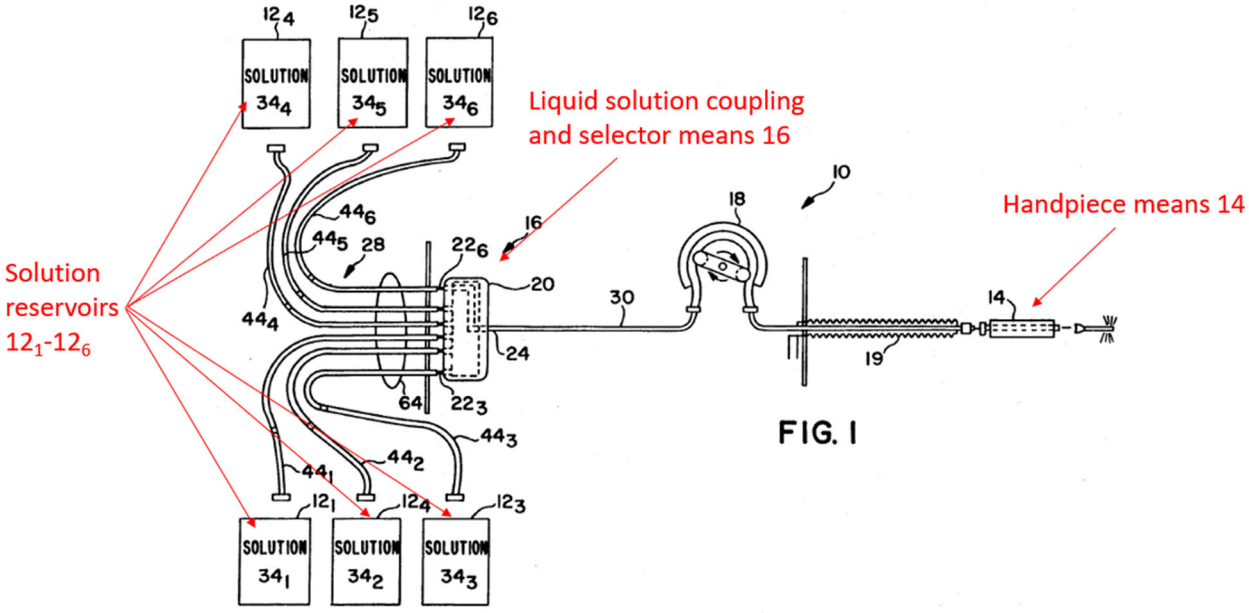
Karasiuk's system includes handpiece 10 (also referred to as "device 10"), vacuum source 40, and fluid reservoir 70. EUNSUNG-1004, [0056]. Handpiece 10 is connected to collection reservoir 50 and vacuum source 40 by a vacuum line (e.g., vacuum lines 42, 44, and/or 46), and also connected to fluid container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

In operation, "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

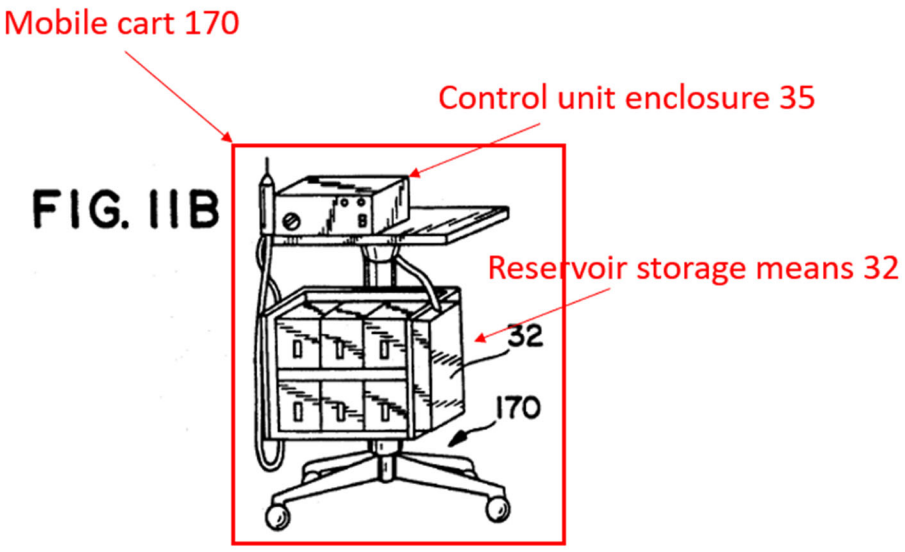
Palmer discloses a medical device system for delivering a selected fluid treatment solution to an application site through a handpiece. EUNSUNG-1003, [60]-[63]; EUNSUNG-1005, Abstract, 4:50-68, FIG. 1.



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.

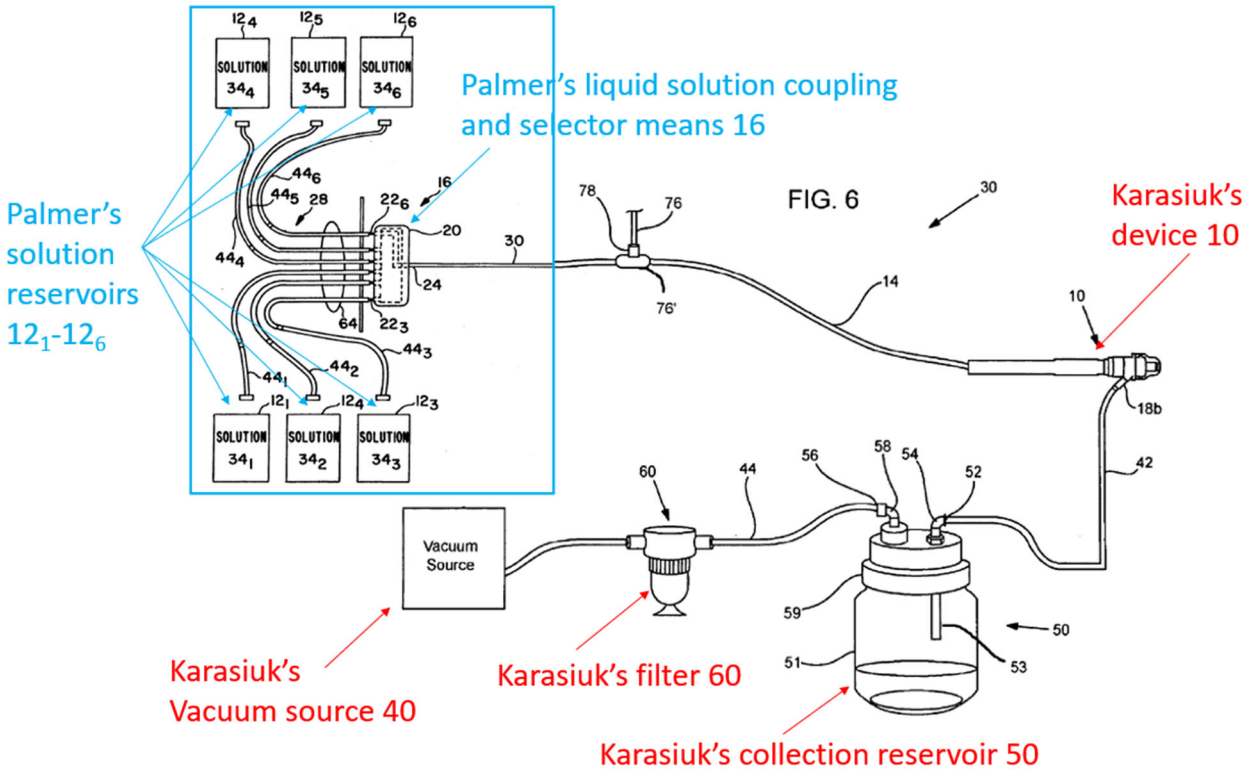
As shown in FIG. 11B, Palmer's "mobile cart 170" receives control unit enclosure 35 and "reservoir storage means 32 in the form of modular single-shelf racks" for increased portability and/or organization. EUNSUNG-1005, 9:58-10:16.



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 12_1-12_6) and selector means 16, an example being illustrated in Modified FIG. 6. EUNSUNG-1003, [78]-[97].



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, [78]-[79]; 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].

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, [80]. 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, [80]-[84].

Several reasons would have prompted a POSITA to modify Karasiuk's system based on Palmer's teachings. EUNSUNG-1003, [85]-[95]. 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, [85]. 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, [86]; EUNSUNG-1004, [0024], [0047] ("application of lotions/vitamins or other fluids"), [0061]. 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, [87]; *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, [87]-[91].

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, [92]. 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, [92]; 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, [92].

Second, the combination enables sequential delivery of different treatment solutions. EUNSUNG-1003, [93]. 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 minimizes refilling downtime because when a particular container runs out mid-operation, the combined system switches to a second container to keep the supply flowing. EUNSUNG-1003, [94]; 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, [95]; 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, [95].

A POSITA would have had a reasonable expectation of success in such a combination. EUNSUNG-1003, [96]-[97]. Both Karasiuk and Palmer are directed to medical devices that deliver treatment solutions to treatment sites via a handpiece. EUNSUNG-1003, [96]; EUNSUNG-1004, Abstract, [0013]-[0015], FIG. 6; EUNSUNG-1005, Abstract, 1:10-15, FIG. 1; EUNSUNG-1006, [0003]. 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, [96]. 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.*

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, [97]. This replacement would also reflect the use of a known technique to improve similar devices in the same way. *Id*.

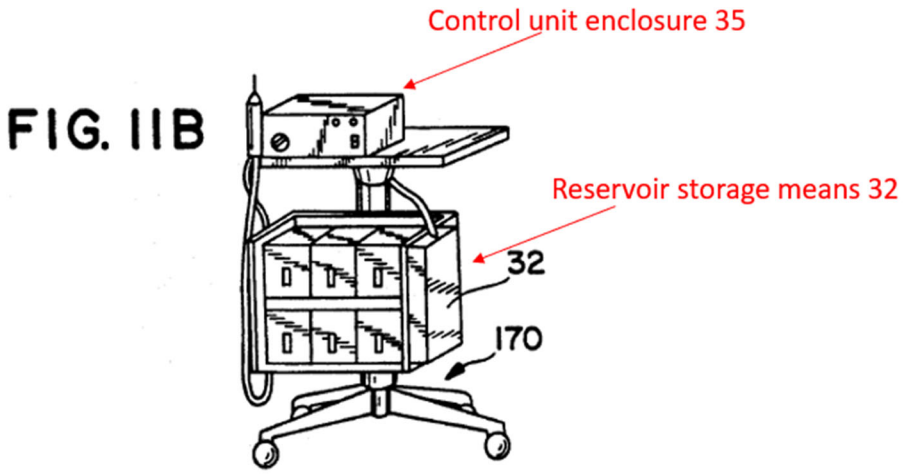
4. Claim 1

[1.pre]

If the preamble is limiting, Karasiuk describes "microdermabrasion device, ***microdermabrasion system*** employing the device." EUNSUNG-1004, [0014], Abstract, FIG. 6; EUNSUNG-1003, [98]; §III.A.3; *infra* [16][4]

[1.1]

Karasiuk-Palmer 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, [99]-[100].



Palmer, FIG. 11B

[4] All emphasis is added unless indicated otherwise.

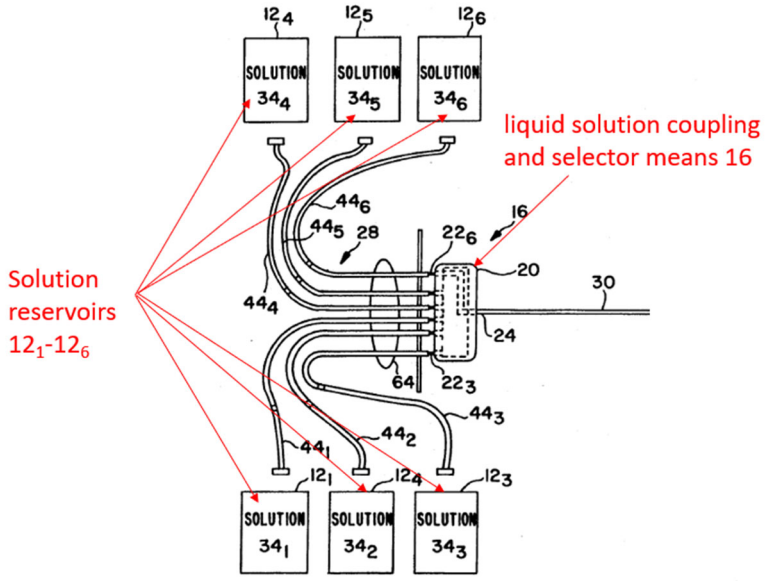
This aligns with and renders obvious the '477 patent's disclosure of a console that receives multiple containers, valve system, handpiece, vacuum pump, and waste container, and is placed on four casters for "easy movement." EUNSUNG-1001, 14:30-40, 9:11-13, 18:30-47, 10:64-65, 5:64-6:11, 7:40-42; EUNSUNG-1003, [101].

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, [102]. 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, [102]-[106]. Indeed, a POSITA would have viewed a console as one of a finite number of options to achieve increased portability and/or organization that would have been obvious to try. *Id*. 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 this ***console***, Karasiuk-Palmer describes a ***manifold system***[5] based on

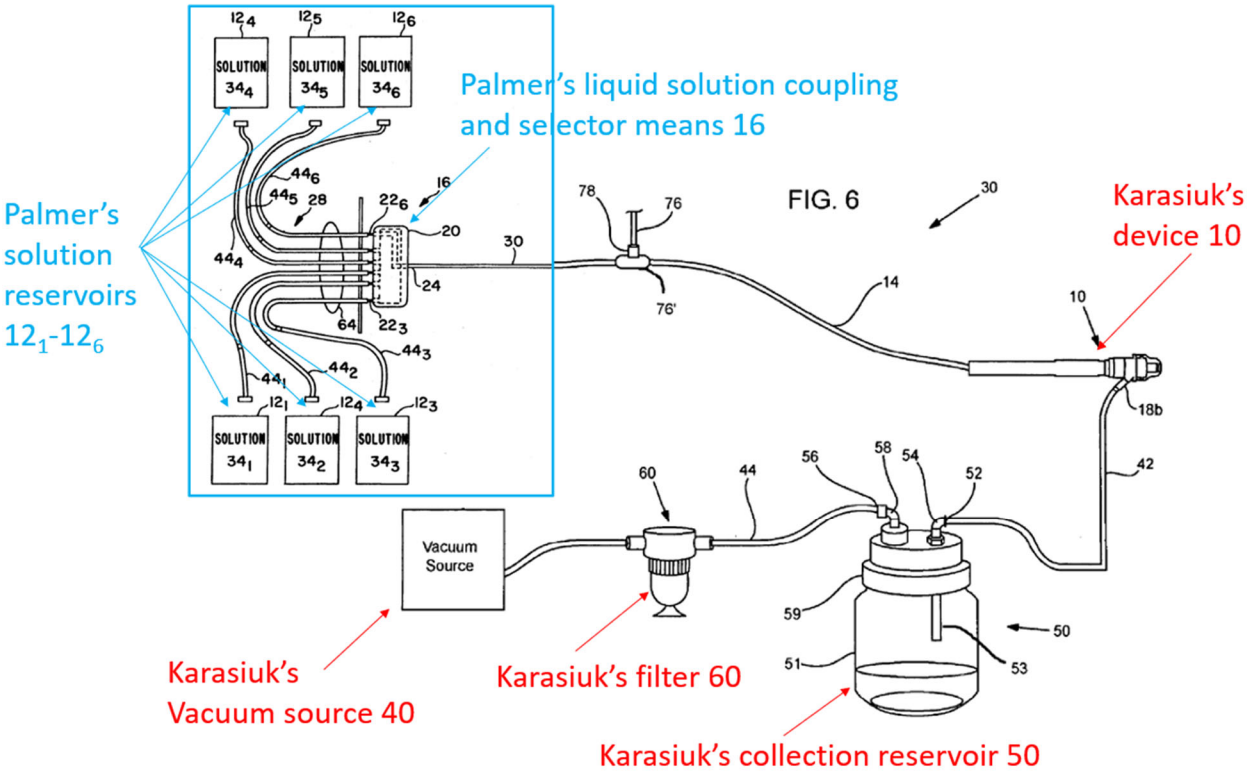
[5] The dictionary definition of "manifold" is "a chamber or pipe with many openings." EUNSUNG-1029, 5. The '477 patent uses the terms "manifold," "manifold system," and "manifold assembly" interchangeably to refer to component 24 in

Palmer's teaching of "liquid solution coupling and selector means 16" that is included in 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, [107]. 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.



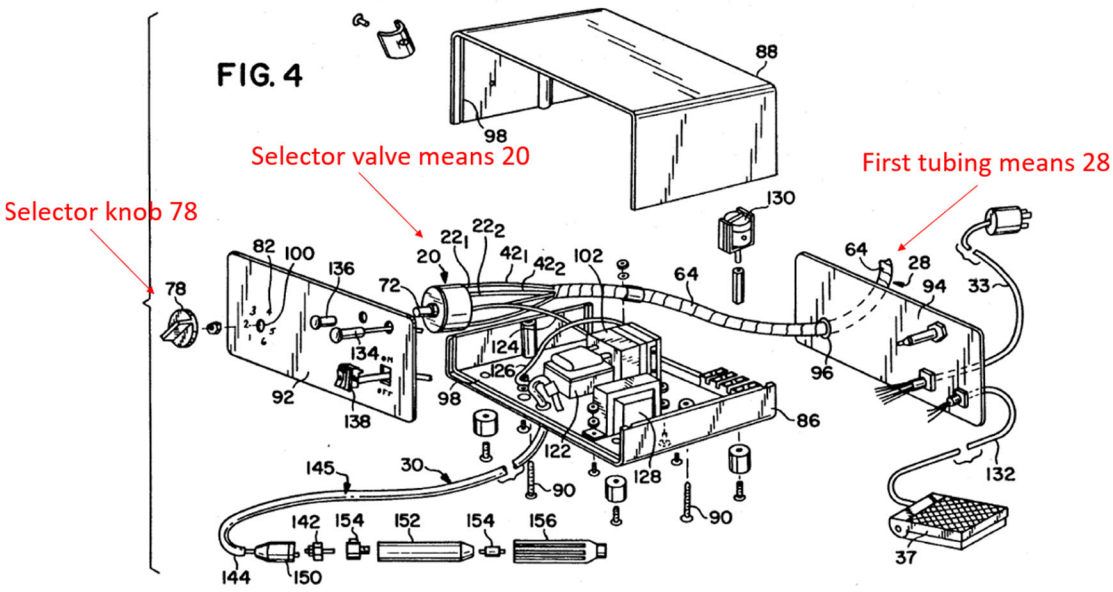
Palmer, FIG. 1 (partial)

FIG. 1. EUNSUNG-1001, 6:13 ("manifold system 24"), 17:53 ("manifold 24"), 15:52 ("manifold assembly 24").



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 22_1-22_6 to solution reservoirs 12_1-12_6), and selector knob 78. EUNSUNG-1005, 8:22-9:16, FIG. 4; EUNSUNG-1003, [108]. The '477 patent also explains: "manifold system 24 can have a modular design so that it can be removed from the console 12." EUNSUNG-1001, 17:57-58.



Palmer, FIG. 4

Palmer illustrates exemplary selector valve means 20 in FIGS. 5A-5C. EUNSUNG-1003, [109].

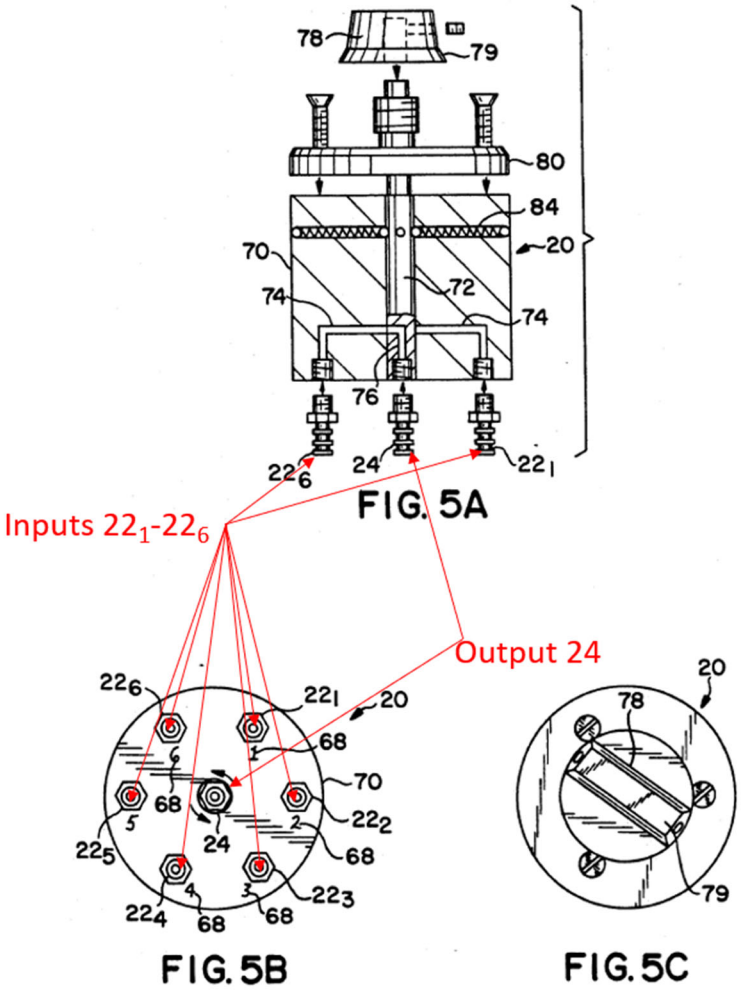


FIG. 5A

FIG. 5B

FIG. 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; EUNSUNG-1003, [110]. 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) the manifold system described in the '477 patent. EUNSUNG-1003, [111]; EUNSUNG-1001, Abstract, FIG. 1, 17:9-11; EUNSUNG-1005, 8:22-53. 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 valve 20), or (3) Palmer's control unit enclosure 35 (housing coupling and selector means 16) correspond to, and perform the operations of, the ***manifold system***, and are positioned in or on Palmer's "mobile cart 170" (***console***). EUNSUNG-1003, [111]; EUNSUNG-1005, 9:58-10:16, 4:53-5:14, 8:22-9:16, FIG. 11B.

Notably, [1.1] does not require the manifold system to "hold" the containers, or the manifold system to be built into the console. EUNSUNG-1003, [112]. 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 system (e.g., Palmer's liquid solution coupling and selector means 16) within the console (e.g., Palmer's mobile cart 170). EUNSUNG-1003, [112].

Alternatively or in addition, a POSITA would have found it obvious to use a

manifold system to implement Palmer's functionality of switching treatment fluids. EUNSUNG-1003, [113]. Manifold systems were well-known devices for selecting between different fluids and would have been within a POSITA's general knowledge. EUNSUNG-1003, [114]. A POSITA would have viewed a manifold system 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, [113]. As discussed in §III.A.3, Karasiuk recognizes desirability of using multiple types of treatment solutions during microdermabrasion. EUNSUNG-1003, [113]; EUNSUNG-1004, [0024], [0047], [0061]. 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, [113]; 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 connecting/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 system. EUNSUNG-1003, [113]. A POSITA

would have had "good reason to pursue the known options," and thus, using a manifold system would have been obvious to try. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007); EUNSUNG-1003, [113]. Further, a POSITA would have selected a manifold system 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, [113].

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, [114].

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 system as it would have merely involved a simple substitution of one well-known element for another to obtain predictable results. EUNSUNG-1003, [115]-[116]. For example, Duchon, Brengle, Wunsch, and Devos all disclose using a manifold system to selectively dispense multiple treatment solutions. EUNSUNG-1010, [0086]-[0088], [0145]; EUNSUNG-1019, Abstract; EUNSUNG-1020, Abstract, FIG. 1; EUNSUNG-1021, Abstract, FIG. 1.

As discussed in §III.A.3, and as shown in modified FIG. 6 of Karasiuk, Karasiuk-Palmer's manifold system (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 12_1-12_6) which would have been understood as including a ***first container and at least a second container***. EUNSUNG-1003, [117]; §III.A.3; EUNSUNG-1005, 5:1-18.

Also, Palmer's six solution reservoirs each include "a respective liquid solution" with a unique color coding. EUNSUNG-1005, 4:53-57, 5:37-6:32; EUNSUNG-1003, [118]. Karasiuk also recognizes the desirability of using multiple types of liquid skin treatment solutions during microdermabrasion. EUNSUNG-1003, [118]; EUNSUNG-1004, [0024], [0047], [0061]. Thus, in Karasiuk-Palmer, it would have been obvious to use Palmer's multiple containers to hold different treatment materials 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, [118].

[1.2]

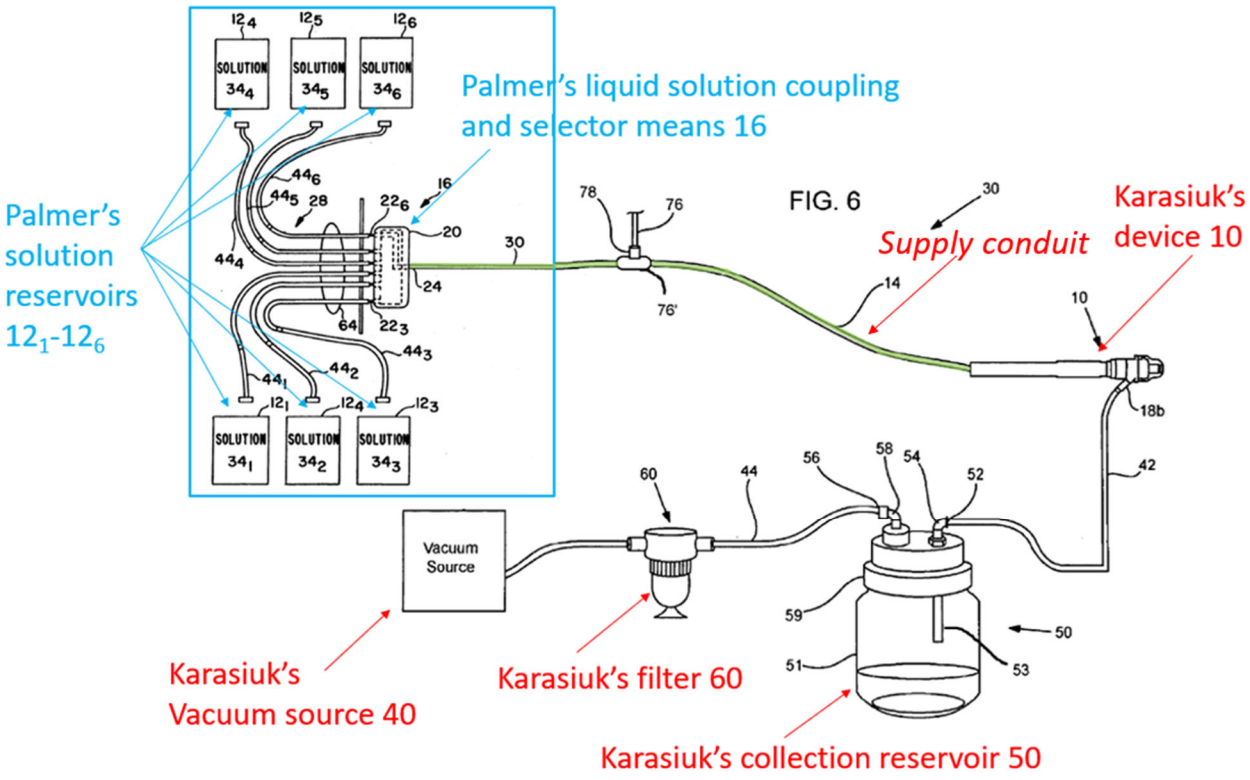
Karasiuk-Palmer includes a ***handpiece assembly***[6] configured to contact skin tissue of a subject, such as Karasiuk's "[d]evice 10" (FIG. 6) designed to be "**handheld by a user** for its application to the skin of a patient." EUNSUNG-1004,

[6] The '477 patent uses the terms "handpiece" and "handpiece assembly" interchangeably to refer to the same component 18 in FIG. 1. EUNSUNG-1001, 5:18 ("handpiece assembly 18"), 5:49-50 ("handpiece 18").

[0044]-[0047], [0063]; EUNSUNG-1003, [119]-[120]. 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, [120].

As discussed 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 valve 20), or (3) Palmer's control unit enclosure 35 (housing coupling and selector means 16) correspond to, and perform the operations of, the ***manifold system***. EUNSUNG-1003, [121].

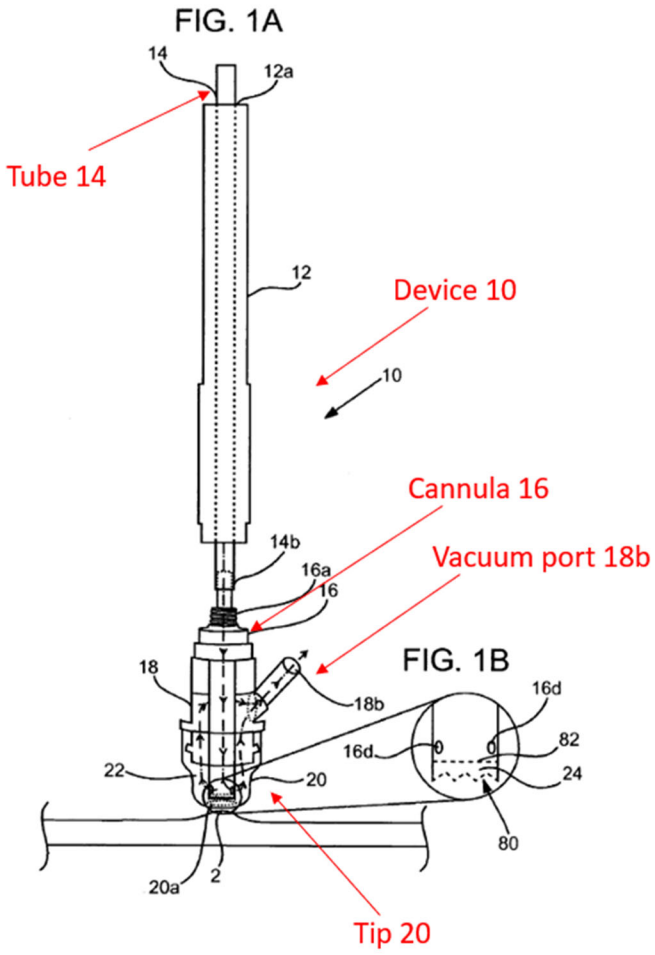
As discussed in §III.A.3, in Karasiuk-Palmer, instead of being connected to single reservoir 70, Karasiuk's tube 14 (e.g., upstream of breather line 76) would replace, or be connected to, Palmer's second tubing means 30 to achieve benefits resulting from selection of different treatment solutions. EUNSUNG-1003, [122]; 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 system (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

[1.3]

As shown in modified FIG. 6 and FIG. 1A, Karasiuk's device 10 includes a "treatment tip 20" that is "smooth surfaced and adapted to glide over the skin surface for application of lotions/vitamins or other fluids." EUNSUNG-1004, [0047]. A POSITA would have understood that Karasiuk's treatment tip 20 has a working end with a skin contact surface. EUNSUNG-1003, [123]-[124].

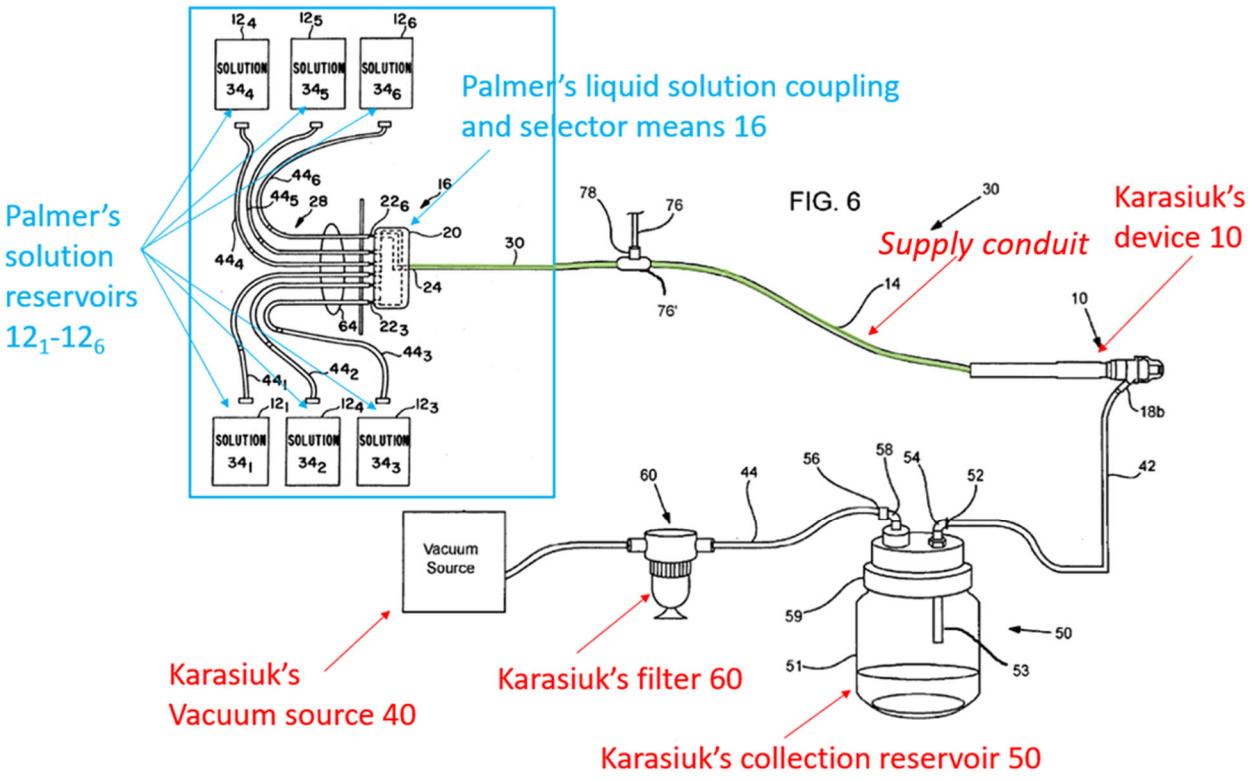


Karasiuk, FIG. 1A

[1.4]

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, [125]; 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].



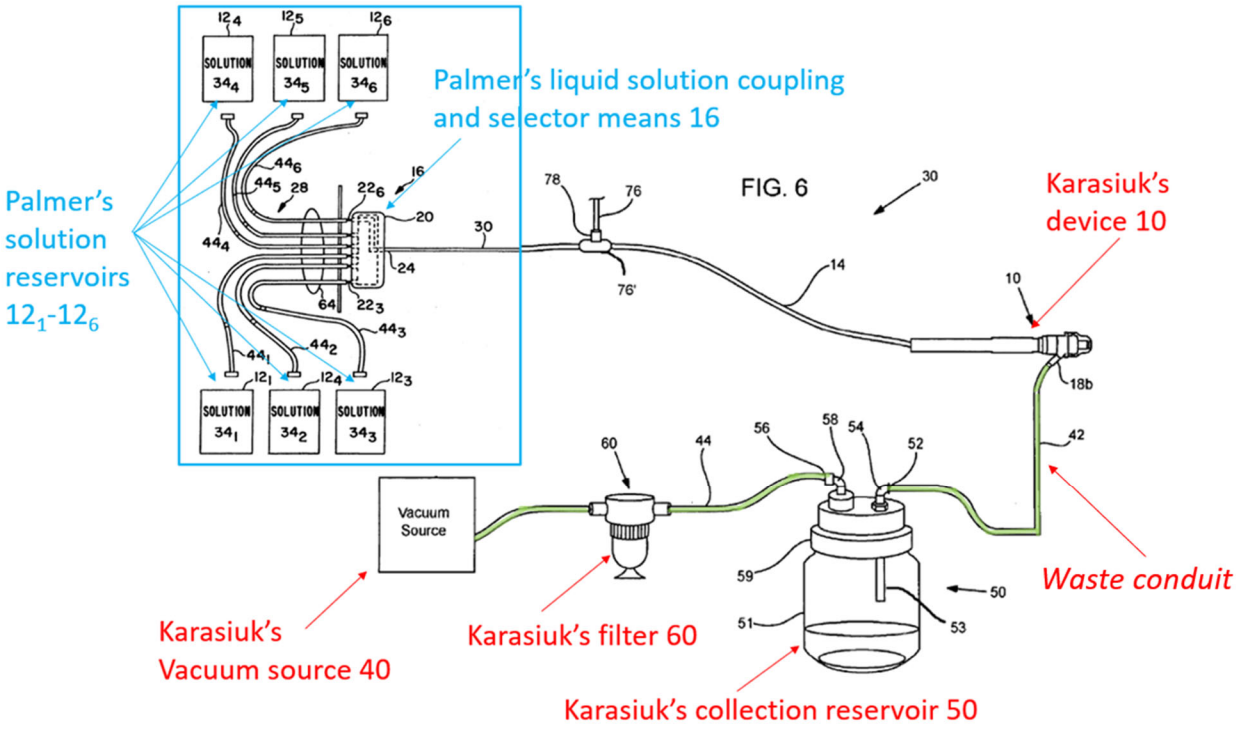
Karasiuk, Modified FIG. 6

[1.5]

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, [126]-[128]; 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 and modified FIG. 6, 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, [129].



Karasiuk, Modified FIG. 6

As shown in Karasiuk's modified FIG. 6, a POSITA would have understood

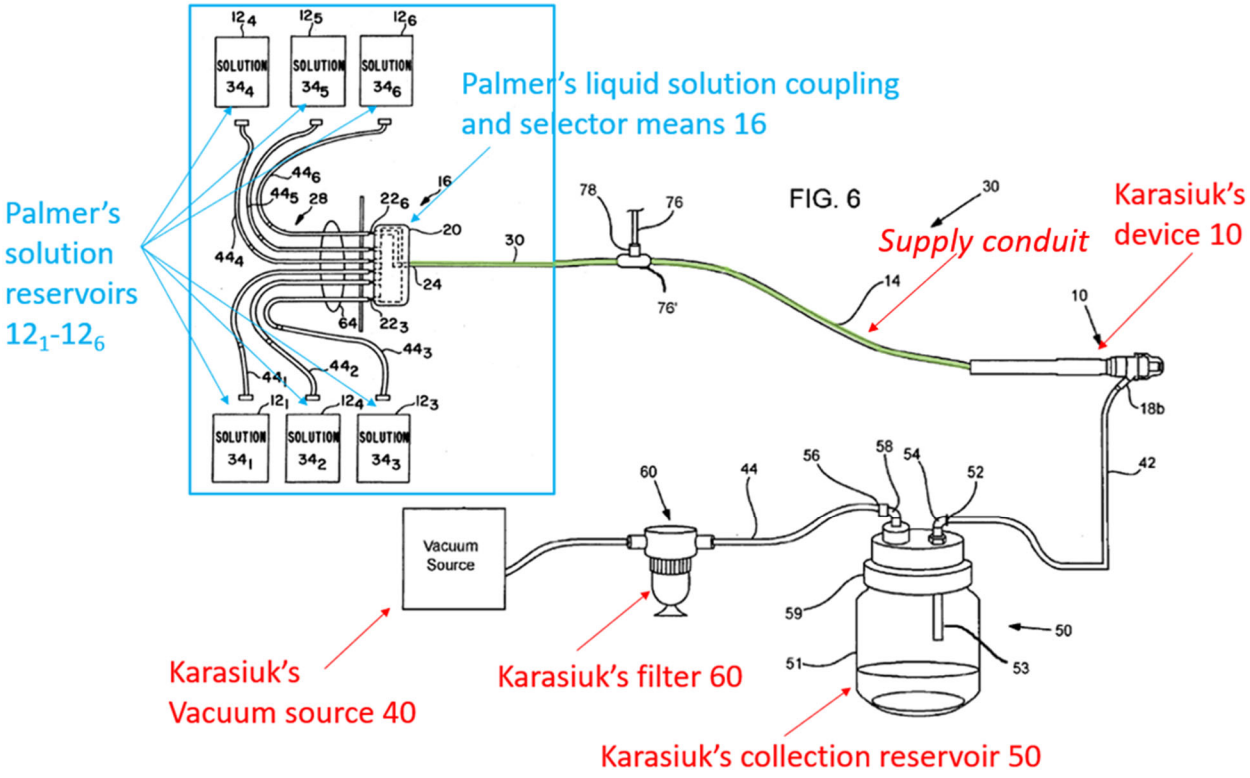
and found obvious that the system includes a waste conduit (e.g., Karasiuk's "vacuum line between device 10 and vacuum source 40" or collectively Karasiuk's vacuum line 42, second vacuum line 44, vacuum line 46) that is in fluid communication with the tip of the handpiece assembly (e.g., Karasiuk's device 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, [126]-[130].

[1.6]

A POSITA would have understood that the term "control" broadly covers (1) human-machine interfaces such as a joystick, a knob (e.g., volume control knob), a switch (e.g., selection switch), or a slider; and/or (2) a control mechanism for controlling flow (e.g., a valve). EUNSUNG-1028, 4; EUNSUNG-1030, 1-4; EUNSUNG-1003, [131]. For example, the '477 patent describes "controller 60" in the form of "a rotatable knob or handle, digital controller, or the like." EUNSUNG-1001, 9:2-3. The '477 patent further describes a flow rate controller in the form of "a flow control valve such as a globe valve, butterfly valve, needle valve, or variable orifice," "an electronically controlled solenoid valve," "clamps, pinch valves, or other suitable devices." EUNSUNG-1001, 9:4-16.

As discussed in §III.A.3, 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, [132]. Karasiuk discloses that upon forming a vacuum loop, 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

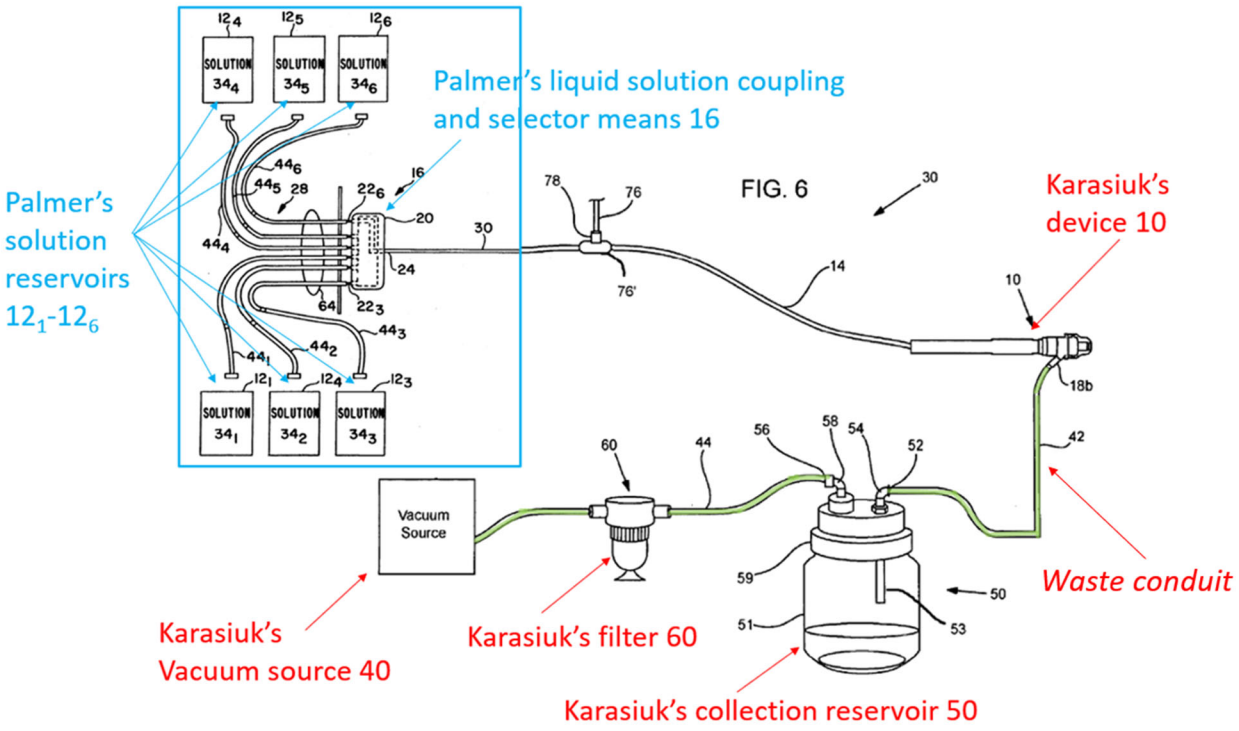
As discussed in [1.4], by turning selector knob 78, the manifold system (e.g., Palmer's liquid solution coupling and selector means 16) selectively connects the handpiece assembly (e.g., Karasiuk's device 10) to a selected solution reservoir. EUNSUNG-1003, [133]; EUNSUNG-1005, 8:22-53.

Alternatively or additionally, Karasiuk describes "**an adjustable valve 78** or other means for varying an amount of air that is allowed into the tube 14." EUNSUNG-1004, [0059], FIG. 6; EUNSUNG-1003, [134]. Karasiuk also discloses "a valve or other flow control mechanism may be provided in fluid delivery line 14 to control the amount of liquid passing through the line." *Id*. Karasiuk's adjustable valve 78 acts as a control that is separate from Palmer's knob 78 and Palmer's liquid solution coupling and selector means 16 (or a part thereof, e.g., selector valve 20). EUNSUNG-1003, [134]; EUNSUNG-1004, [0059].

Thus, a POSITA would have understood and found obvious that Karasiuk-Palmer's system comprises at least one control (e.g., Palmer's knob 78, Palmer's liquid solution coupling and selector means 16 (or a part thereof), Karasiuk's adjustable valve 78) to permit control of a flow of treatment material from the first container and the at least second container through the supply conduit to the handpiece assembly (e.g., Karasiuk's device 10). EUNSUNG-1003, [131]-[135].

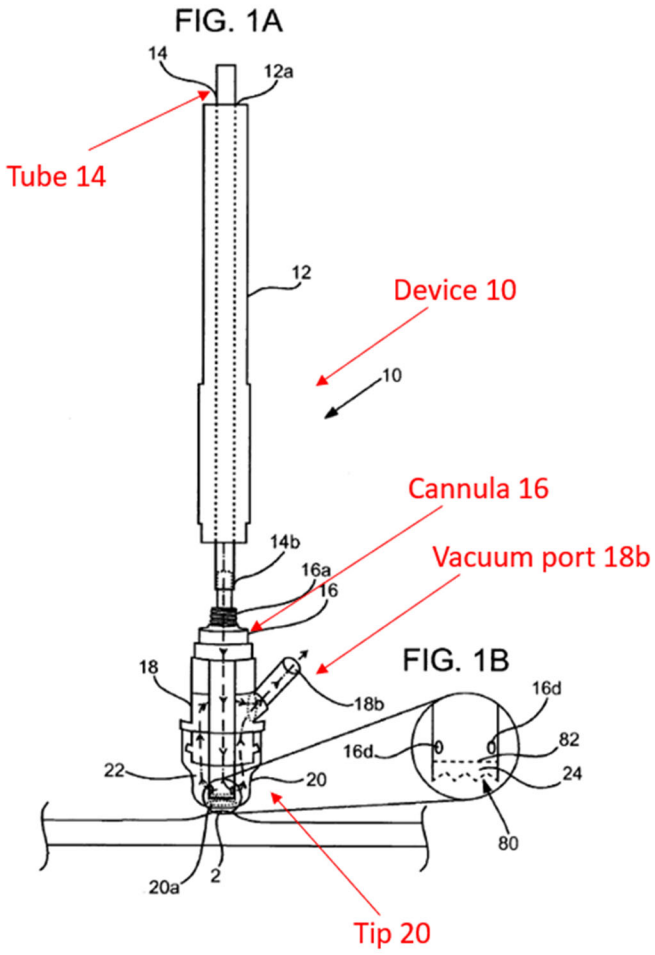
[1.7]

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, [136]; 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-1003, [137]; 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 microdermabrasion process**." EUNSUNG-1004, [0066].



Karasiuk, FIG. 1A

A POSITA would have understood and found obvious that the vacuum source is configured to create a suction force within the waste conduit and along the working end of the handpiece assembly (e.g., Karasiuk's tip 20) to help remove waste from the handpiece assembly via the waste conduit and to help transfer at least one treatment material from the manifold system to the handpiece assembly. EUNSUNG-1003, [136]-[139].

5. Claim 3

As discussed for [1.6], Karasiuk-Palmer's system comprises at least one

control (e.g., Palmer's knob 78, Palmer's liquid solution coupling and selector means 16, Karasiuk's adjustable valve 78) to permit control of a flow of treatment material from the first container and the at least second container through the supply conduit to the handpiece assembly (e.g., Karasiuk's device 10). EUNSUNG-1003, [140].

A POSITA would have understood that Palmer's knob 78, Palmer's liquid solution coupling and selector means 16, and/or Karasiuk's adjustable valve 78 also constitutes a user input device to facilitate control of a flow of treatment material from at least one of the first container and the at least second container to the handpiece assembly. EUNSUNG-1003, [141].

6. Claim 6

As discussed in §III.A.3, 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, [142].

As discussed in §III.A.3 and as shown in modified FIG. 6, Karasiuk-Palmer includes six solution reservoirs (e.g., reservoirs 12_1-12_6) in fluid communication with the manifold system (e.g., Palmer's liquid solution coupling and selector means 16). EUNSUNG-1005, 5:1-18; EUNSUNG-1004, FIG. 6. Thus, a POSITA would have understood and found obvious that, in Karasiuk-Palmer, the manifold system is configured to be placed in fluid communication with at least four fluid

containers. EUNSUNG-1003, [143].

7. Claim 7

As discussed in §III.A.3, instead of being connected to single reservoir 70, Karasiuk's tube 14 would replace, or be connected to, Palmer's second tubing means 30 to achieve benefits resulting from selection of different treatment solutions. EUNSUNG-1003, [144]; EUNSUNG-1004, [0020], [0056], [0064]-[0066].

As discussed in [1.1] and [1.4], the manifold system (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, [145].

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 container and the at least a second container***) is releasably coupled to the manifold system. EUNSUNG-1003, [146].

8. Claim 8

As discussed in §III.A.3, Karasiuk-Palmer includes "**a selector valve** for fluidly coupling the handpiece assembly 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].

9. Claim 9

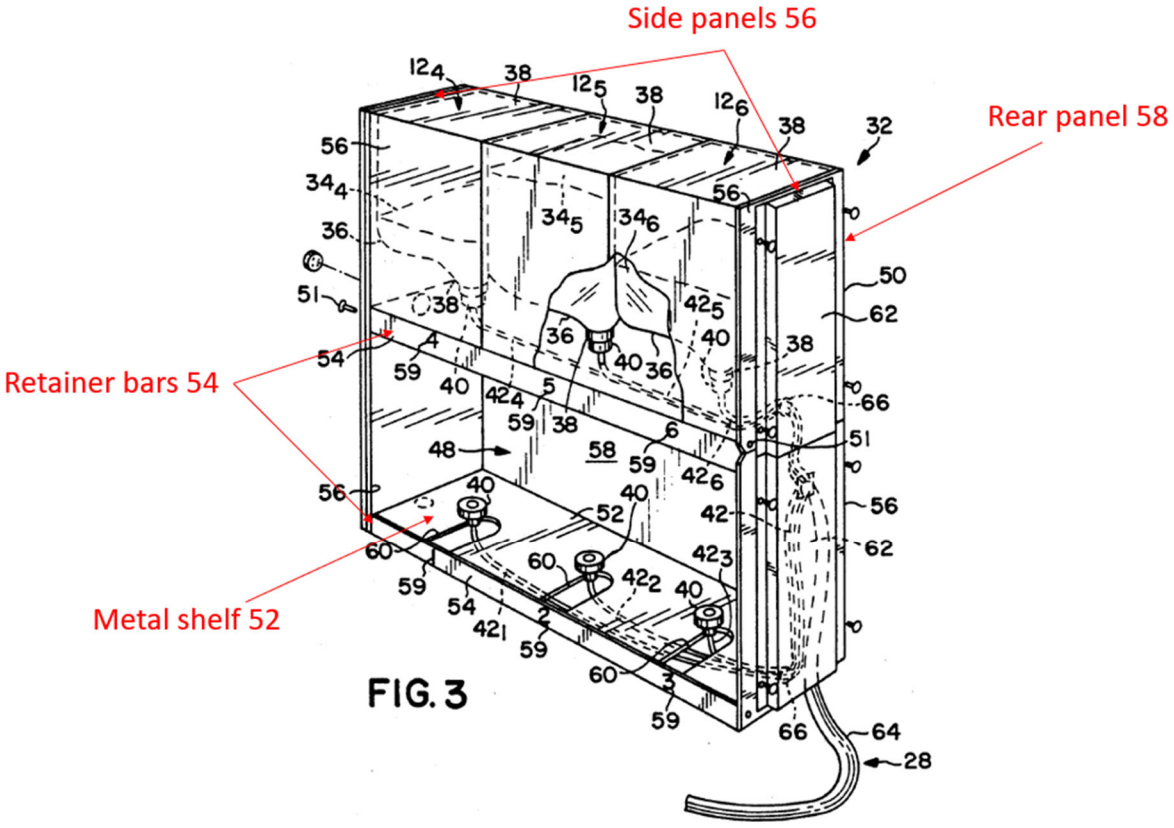
[9.pre]

See [1.pre]. EUNSUNG-1003, [150].

[9.1]

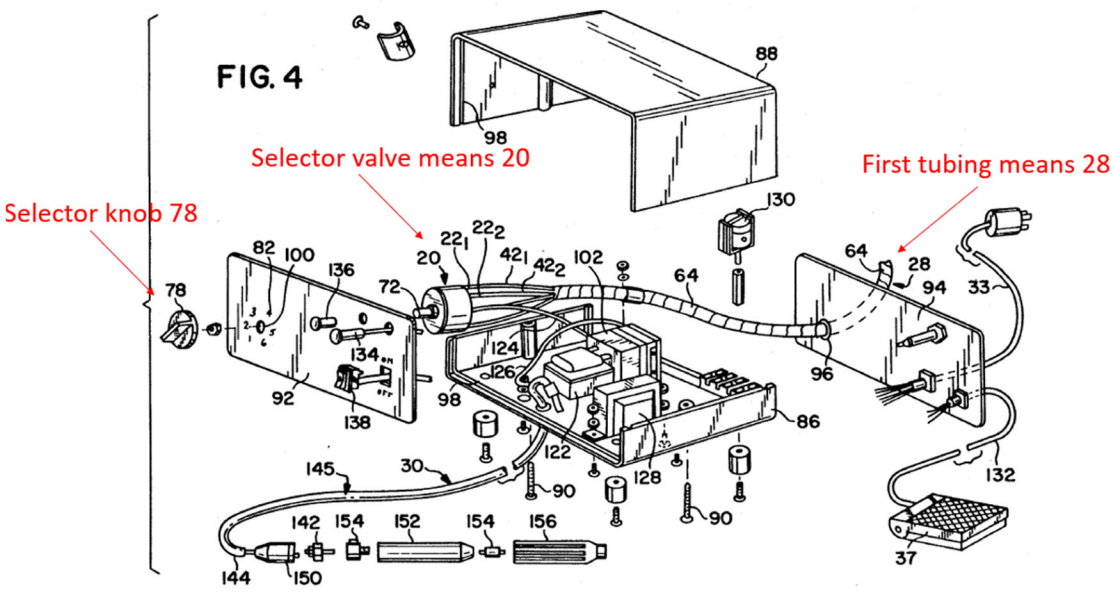
See [1.1]. EUNSUNG-1003, [151]. While the '477 patent discloses "the manifold system 24 securely holds the bottle 26," the '477 patent does not use the term "secure" or "secured to." EUNSUNG-1001, 17:48-49. A POSITA would have understood that the term "secured to" simply means "securely connected to." EUNSUNG-1003, [151]. Indeed, [9.1] does not require the manifold system to "hold" the containers, and the definition of "manifold" includes "a chamber or pipe with many openings." EUNSUNG-1003, [151]; EUNSUNG-1029, 5. As discussed for [1.1], the manifold system is in communication with a first container and at least a second container. EUNSUNG-1003, [151]. A POSITA would have understood and found obvious that Karasiuk-Palmer includes a manifold system (e.g., Palmer's liquid solution coupling and selector means 16) in communication with at least two containers that are secured to the manifold system. EUNSUNG-1003, [151].

Further, a POSITA would have found obvious that each of the at least two containers are secured to the manifold system. EUNSUNG-1003, [152]. Palmer's containers (e.g., Palmer's reservoirs 12_1-12_6) are securely housed in reservoir storage means 32 in the form of modular single-shelf racks, each comprising metal shelf 52 having retainer bar 54 fastened to its front edge, side panels 56 extending upwardly from its side edges and rear panel 58 extending upwardly from the rear edge of the shelf. EUNSUNG-1005, 6:52-7:7, FIG. 3. Thus, a POSITA would have understood that each of the at least two containers are configured to be secured to Palmer's reservoir storage means 32. EUNSUNG-1003, [152].



Palmer, FIG. 3

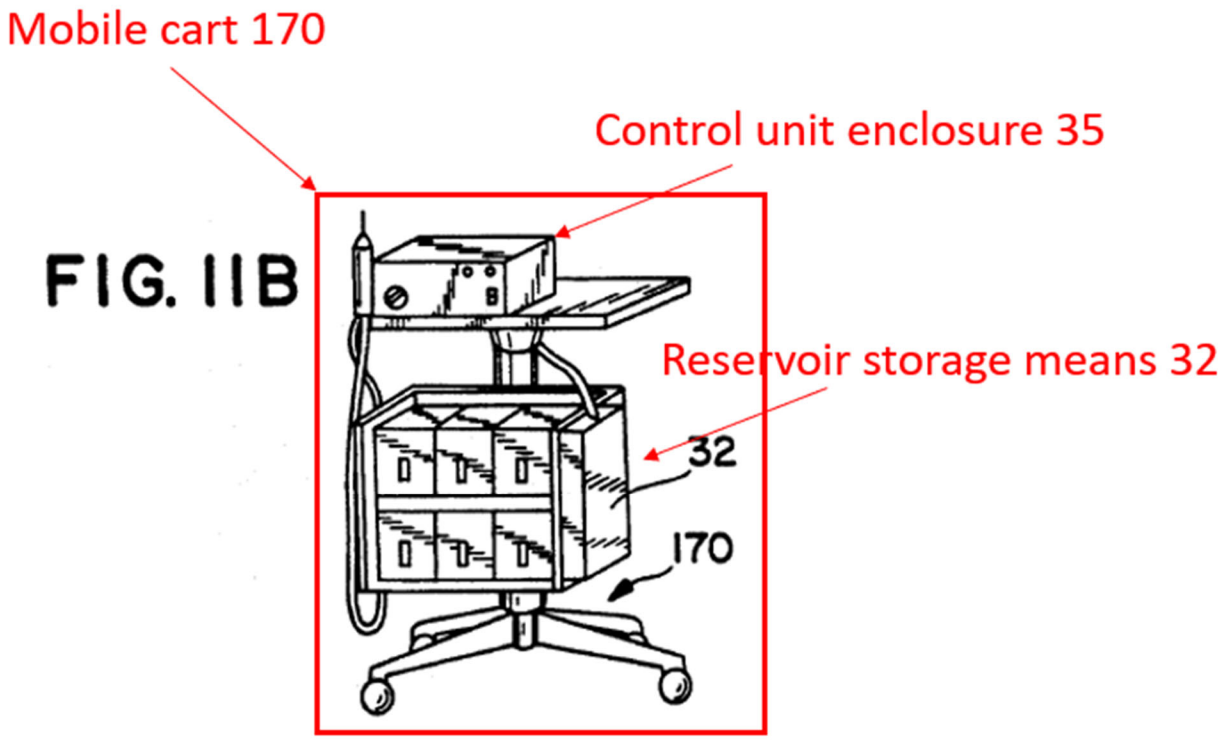
As discussed regarding [1.1], a POSITA would have understood and found obvious that (1) Palmer's selector valve 20, (2) Palmer's liquid solution coupling and selector means 16 (including valve 20), or (3) Palmer's control unit enclosure 35 (housing coupling and selector means 16) correspond to, and perform the operations of, the ***manifold system***. EUNSUNG-1003, [153]. Palmer further discloses securing Palmer's liquid solution coupling and selector means 16 (including valve 20) to control unit enclosure 35. EUNSUNG-1005, 8:36-39, FIG. 4; EUNSUNG-1003, [153].



Palmer, FIG. 4

In Palmer, reservoir storage means 32 and control unit enclosure 35 are placed in mobile cart 170. EUNSUNG-1005, 9:57-10:2. During transportation of mobile cart 170, in order to prevent disconnection and to keep the manifold system in communication with the containers, a POSITA would have found it obvious that

both reservoir storage means 32 and control unit enclosure 35 are secured to mobile cart 170, and that each of the at least two containers are configured to be secured to the manifold system (via reservoir storage means 32, control unit enclosure 35, and mobile cart 170). EUNSUNG-1003, [154].



Palmer, FIG. 11B

[9.2]

See [1.2] and [1.3]. EUNSUNG-1003, [155].

[9.3]

See [1.4]. EUNSUNG-1003, [156].

[9.4]

See [1.5]. EUNSUNG-1003, [157].

[9.5]

See [1.6] and [1.7]. EUNSUNG-1003, [158]. A POSITA would have understood that the "distal end" of the handpiece assembly corresponds to the "working end" of the handpiece assembly as recited in claim 1. EUNSUNG-1003, [158]; EUNSUNG-1001, 7:4-5. As discussed in §III.A.3, 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, [158]; EUNSUNG-1004, [0020], [0054], [0064], [0066], FIGS. 1A and 6.

10. Claim 10

See [1.1]. EUNSUNG-1003, [159].

11. Claim 12

See [3]. EUNSUNG-1003, [160].

12. Claim 14

See [8]. EUNSUNG-1003, [161].

13. Claim 15

[15.pre]

See [1.pre], [9.pre]. EUNSUNG-1003, [162].

[15.1]

See [1.1], [9.1]. EUNSUNG-1003, [163].

[15.2]

See [1.2], [1.3], [9.2]. EUNSUNG-1003, [164].

[15.3]

See [1.1], [1.2], [9.2]. EUNSUNG-1003, [165].

[15.4]

See [1.4], [1.5], [9.3], [9.4]. EUNSUNG-1003, [166].

[15.5]

See [1.6], [1.7], [9.5]. EUNSUNG-1003, [167].

14. Claim 16

See [1.1], [10]. EUNSUNG-1003, [168].

15. Claim 18

See [3], [12]. EUNSUNG-1003, [169].

16. Claim 20

See [8], [14]. EUNSUNG-1003, [170].

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].

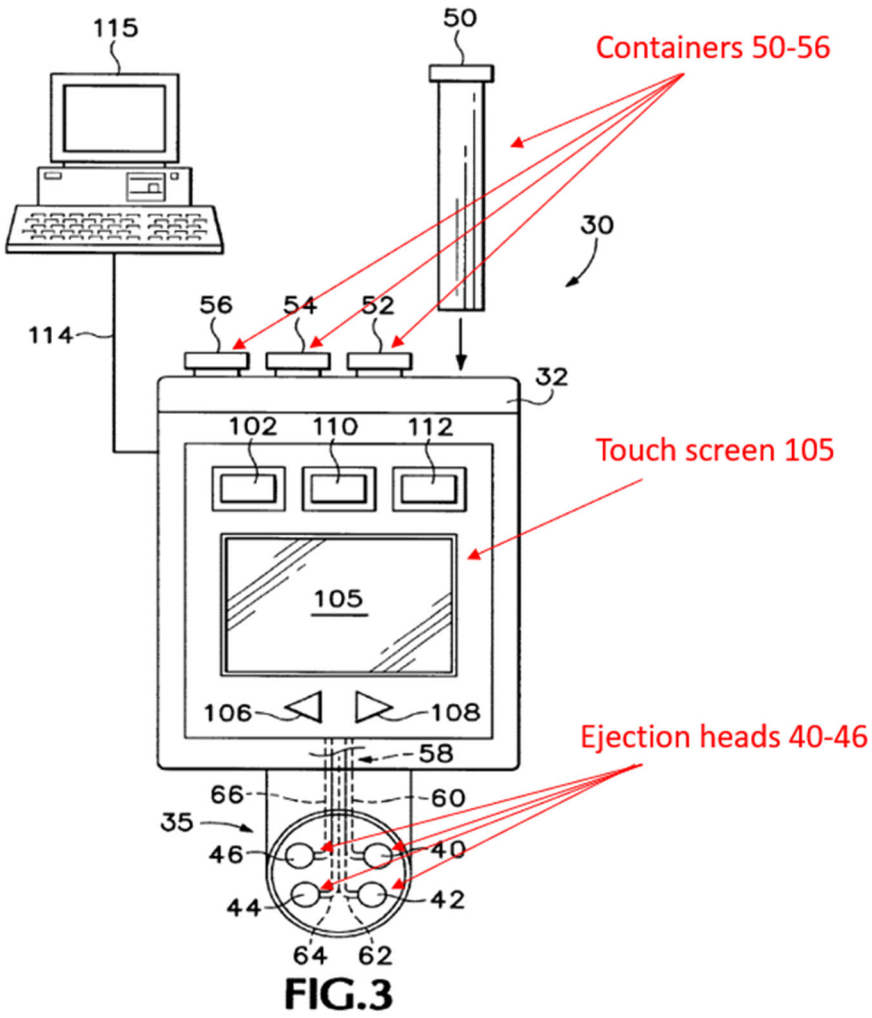


FIG.3

Trueba, FIG. 3

Trueba's fluid delivery is controlled by a computer (e.g., controller 100) linked to a user input (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, [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, [171]-[186]. 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 (e.g., Trueba's touch screen 105), to control the flow of treatment solutions from containers (e.g., Palmer's reservoirs 12_1-12_6), so that a user can use the user input device to select a flow of fluids from the containers. EUNSUNG-1003, [171]. 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, [172].

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, [173].

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, [174].

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, [175].

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, [176]. 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, [176]. 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, [176].

Further, Karasiuk-Palmer-Trueba would merely constitute the use of a known technique to improve similar devices in the same way. EUNSUNG-1003, [183]. By the Critical Date, computer (e.g., PLC) controlled fluid delivery systems were well-known. EUNSUNG-1003, [182]-[184]; 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, [183].

3. Claims 1, 9, 15, and dependent claims

As discussed in §III.A, Karasiuk-Palmer-Trueba renders obvious claims 1, 9, 15, and certain dependent claims (claims 1, 3, 6-10, 12, 14-16, 18, 20) for the same reasons as discussed regarding Karasiuk-Palmer. EUNSUNG-1003, [187].

Karasiuk-Palmer-Trueba further renders obvious [8], [14], and [20] based on Trueba's teachings. If the term "sequentially" is interpreted to require automatic switching between first and second treatment fluids, Karasiuk-Palmer-Trueba renders this limitation obvious. EUNSUNG-1003, [188]; 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, [188]. Trueba also discloses simultaneous delivery of treatment fluids and allows user programming of sequential or simultaneous delivery. EUNSUNG-1008, 11:4-49; EUNSUNG-1003, [188]. 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, [188]; *In re Venner,* 262 F.2d 91, 95 (CCPA 1958).

4. Claims 2, 11, 17

As discussed in §III.B.2, Karasiuk-Palmer-Trueba includes a computing device (e.g., Trueba controller 100) configured to control at least one function (e.g., delivery of fluids). EUNSUNG-1003, [189]; EUNSUNG-1008, 3:34-38, 4:65-5:17, 6:1-9, 6:27-7:9, 10:52-11:49, 12:2-5, FIG. 1.

5. Claims 3, 12, 18

As discussed in §III.B.2, Karasiuk-Palmer-Trueba includes a user input device (e.g., Trueba's touch screen 105) to select a flow of fluids from at least one of the first container and the at least second container (e.g., Palmer's reservoirs 12_1-12_6) to the handpiece assembly (e.g., Karasiuk's device 10). EUNSUNG-1003, [190]; EUNSUNG-1008, 11:40-12:8, FIG. 3.

6. Claims 4, 13, 19

As discussed in §III.B.2, Karasiuk-Palmer-Trueba's user input device includes a touch screen (e.g., Trueba's touch screen 105). EUNSUNG-1003, [191]; EUNSUNG-1008, 11:40-12:8, FIG. 3.

7. Claim 5

As discussed in §III.B.2, Karasiuk-Palmer-Trueba's system includes a display (e.g., Trueba's touch screen 105) indicating which solution is being delivered. EUNSUNG-1003, [192]; EUNSUNG-1008, 11:40-12:8, FIG. 3.

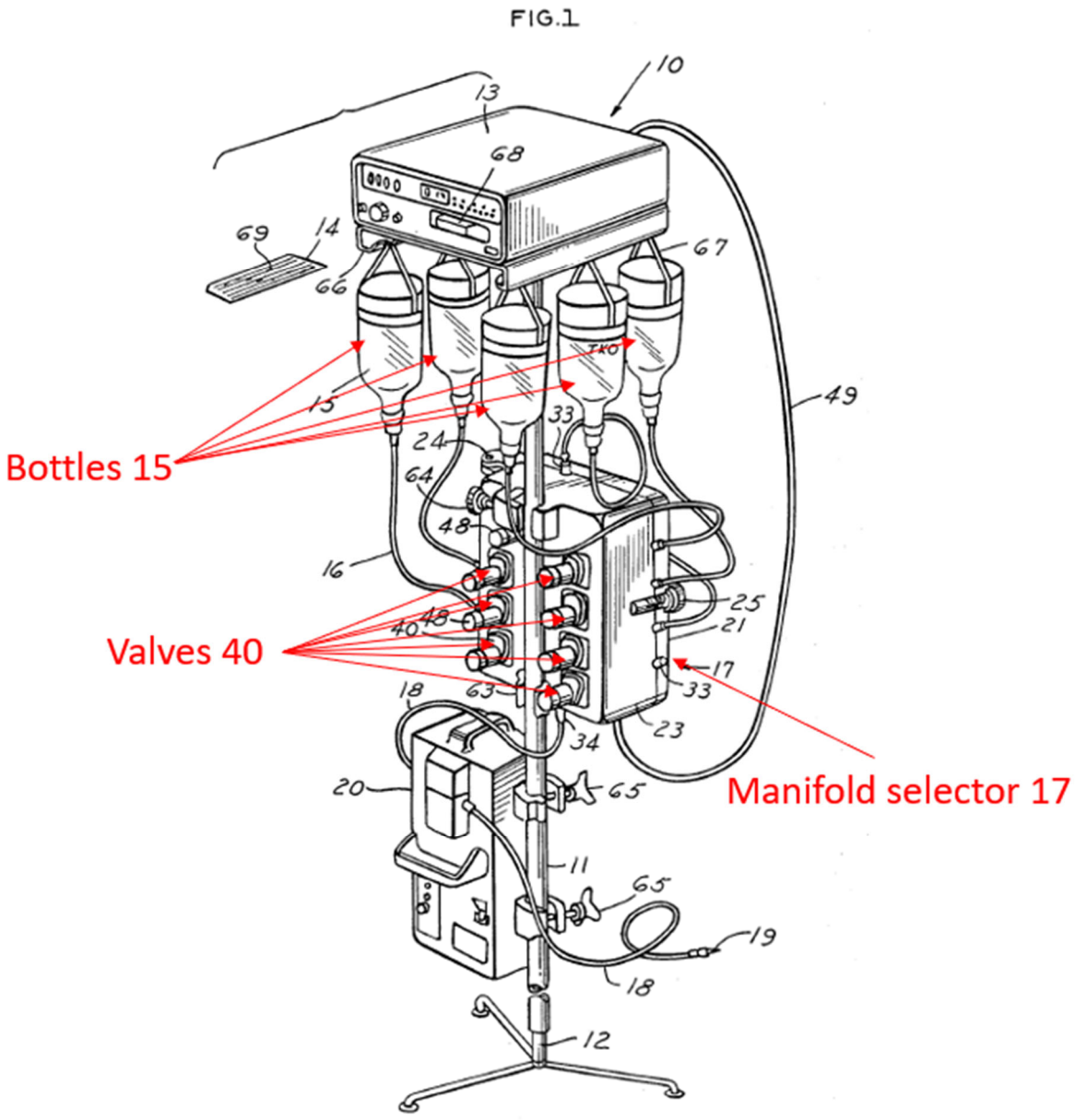
If an additional display is required separate from the touch screen, Trueba discloses coupling external computer 115 to controller 100. EUNSUNG-1008, 12:9-36, FIG. 3; EUNSUNG-1003, [193]. A POSITA would have understood and found obvious that this external computer 115 would include an additional display separate from Trueba's touch screen 105. *Id.*

C. [GROUND 1C]: 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, [69]-[71]. As shown in FIG. 1, manifold selector 17 includes a plurality of valves 40, which control the flow of solution from bottles 15. EUNSUNG-1020, 6:18-48, 7:16-56. Each valve 40 has an open position in which fluid is permitted to flow

from the supply tubes 16 into dispensing tube 18 and a closed position in which branch tube 37 or trunk 32 is pinched off to prevent fluid flow. EUNSUNG-1020, 7:52-56.

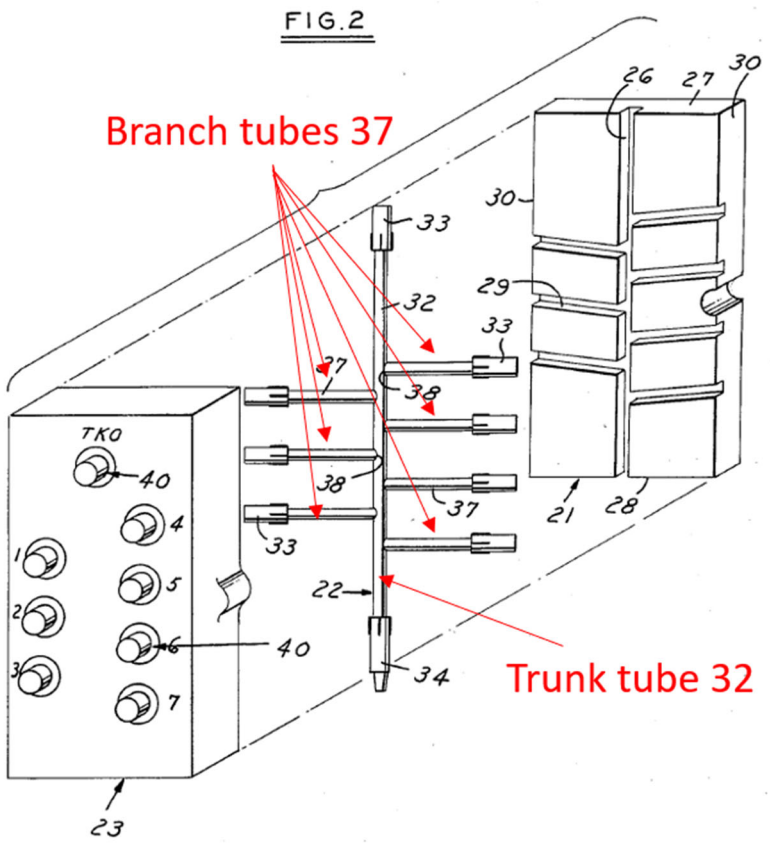


Wunsch, FIG. 1 (annotated)

Wunsch further discloses electric motors 48, FIG. 3, or solenoids 59, FIG. 4,

for individually controlling the respective valves 40. EUNSUNG-1020, 3:16-22, 6:24-26, FIGS. 3-4; EUNSUNG-1003, [70]. These motors are connected to and controlled by sequencer-timer 13. EUNSUNG-1020, 5:25-35, 8:27-9:5. In operation, the user programs 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 in FIG. 2, Wunsch's manifold selector 17 includes manifold 22 including trunk tube 32 and branch tubes 37, each of which connecting to one of the bottles 15. EUNSUNG-1020, 3:23-42, 6:61-7:16; EUNSUNG-1003, [71]. In operation, by activating a valve 40, the user selectively connects a bottle 15 to 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, [194]-[207]. Specifically, each of Palmer's containers (e.g., Palmer's reservoirs 12_1-12_6) is connected via a corresponding supply tube 16 to Wunsch's 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, [194].

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, [195]; EUNSUNG-1004, [0020], [0056], [0064]-[0066]. Instead of being connected to single reservoir 70, Karasiuk's tube 14 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, [196]; 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, [196].

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, [197]; §§III.A.

A POSITA also would have been motivated to employ Wunsch's manifold selector and sequencer-timer for several reasons. EUNSUNG-1003, [198]. First, Wunsch's manifold selector is 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 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, [198].

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; EUNSUNG-1005, 1:54-68 (avoiding contamination); EUNSUNG-1003, [199].

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, [200].

Additionally, as discussed in §III.A.3, 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) 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-1005, 9:63-10:2, FIGS. 11A-11C; EUNSUNG-1003, [201]-[206].

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, [207]. 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, [207]. 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, [207]. 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. 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, [207]. 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, [207].

3. Claim 1

[1.pre]

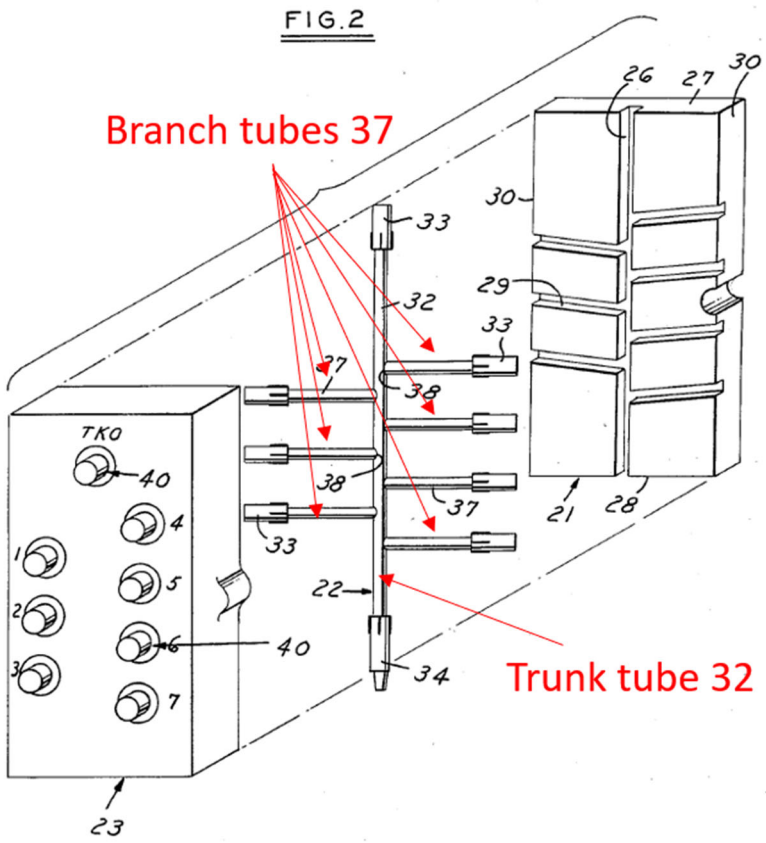
See Ground 1A. EUNSUNG-1003, [208].

[1.1]

See Ground 1A. EUNSUNG-1003, [209].

Regarding "console," Wunsch illustrates in FIG. 1 that the system is mounted on 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) 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, [210]-[215]; EUNSUNG-1005, 9:63-10:2, FIGS. 11A-11C.

Regarding "manifold system," as discussed in §III.C.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, [216]. As discussed in §III.C.1, Wunsch's manifold selector 17 includes manifold 22 including trunk tube 32 and 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, [216].



Wunsch, FIG. 2 (annotated)

By activating a valve 40, the user selectively connects a bottle 15 to trunk tube 32 for delivery. EUNSUNG-1020, 3:23-42, 7:17-56; EUNSUNG-1003, [217].

[1.2]

See Ground 1A. EUNSUNG-1003, [218].

[1.3]

See Ground 1A. EUNSUNG-1003, [219].

[1.4]

See Ground 1A. EUNSUNG-1003, [220].

[1.5]

See Ground 1A. EUNSUNG-1003, [221].

[1.6]

See Ground 1A. EUNSUNG-1003, [222].

As discussed in §III.C.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, [223]-[224]; EUNSUNG-1020, 3:23-42, 7:17-56.

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 program card 14, FIG. 1. EUNSUNG-1020, 9:43-68. By programming Wunsch's sequencer-timer 13, a user selects 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, [225].

Alternatively or additionally, Karasiuk describes "**adjustable valve 78** or other means for varying an amount of air that is allowed into the tube 14." EUNSUNG-1004, [0059], FIG. 6; EUNSUNG-1003, [226]. Karasiuk also discloses "a valve or other flow control mechanism may be provided in fluid delivery line 14 to control the amount of liquid passing through the line." *Id*. A POSITA would have understood that Karasiuk-Palmer-Wunsch's system comprises at least one control (e.g., Wunsch's manifold selector 17, Wunsch's sequencer-timer 13, Karasiuk's adjustable valve 78) to permit control of a flow of treatment material from the first container and the at least second container through the supply conduit to the hand-piece assembly. EUNSUNG-1003, [222]-[226].

[1.7]

See Ground 1A. EUNSUNG-1003, [227].

4. Claim 3

As discussed for [1.6], Karasiuk-Palmer-Wunsch's system comprises at least one control. EUNSUNG-1003, [228]. A POSITA would have understood that manifold selector 17, sequencer-timer 13, and/or Karasiuk's adjustable valve 78 also constitutes a user input device to facilitate control of a flow of treatment material from at least one of the first container and the at least second container to the hand-piece assembly. EUNSUNG-1003, [229].

5. Claim 6

See Ground 1A. EUNSUNG-1003, [230].

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, [231].

6. Claim 7

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

Wunsch's manifold 22 is releasably coupled to the containers via supply tubes 16. EUNSUNG-1020, 4:41-46, 6:13-17, 6:27-38, 8:10-16; EUNSUNG-1003, [233]. Wunsch's releasable connection allows replacement of manifold 22 when a new patient is to be hooked up to manifold selector 17. EUNSUNG-1020, 8:10-16. Because treatment fluids for one patient may differ from 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, [233].

7. Claim 8

See Ground 1A. EUNSUNG-1003, [234].

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. EUNSUNG-1003, [235]; EUNSUNG-1004, [0024], [0047], [0061]. The Karasiuk-Palmer-Wunsch system would have used Wunsch's manifold selector to ***sequentially*** deliver different skin treatment solutions. §III.A.8; EUNSUNG-1003, [235].

As shown in FIG. 1, Wunsch's manifold selector 17 includes valves 40, which control the flow of solution from bottles 15. EUNSUNG-1020, 6:18-48, 7:16-56; EUNSUNG-1003, [236]. Wunsch further discloses reversible electric motors 48, FIG. 3, or solenoids 59, FIG. 4, for individually controlling respective valves 40. EUNSUNG-1020, 3:16-22, 6:24-26, FIGS. 3-4. These motors are connected to and controlled by sequencer-timer 13. EUNSUNG-1020, 5:25-35, 8:27-9:5. In operation, the user programs 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; EUNSUNG-1003, [234]-[237].

8. Claim 9

[9.pre]

See [1.pre]. EUNSUNG-1003, [238].

[9.1]

See [1.1]; §III.A.9. EUNSUNG-1003, [239].

[9.2]

See [1.2] and [1.3]. EUNSUNG-1003, [240].

[9.3]

See [1.4]. EUNSUNG-1003, [241].

[9.4]

See [1.5]. EUNSUNG-1003, [242].

[9.5]

See [1.6], [1.7]; §III.A.9. EUNSUNG-1003, [243].

9. Claim 10

See [1.1]. EUNSUNG-1003, [244].

10. Claim 12

See [3]. EUNSUNG-1003, [245].

11. Claim 14

See [8]. EUNSUNG-1003, [246].

12. Claim 15

[15.pre]

See [1.pre], [9.pre]. EUNSUNG-1003, [247].

[15.1]

See [1.1], [9.1]. EUNSUNG-1003, [248].

[15.2]

See [1.2], [1.3], [9.2]. EUNSUNG-1003, [249].

[15.3]

See [1.1], [1.2], [9.2]. EUNSUNG-1003, [250].

[15.4]

See [1.4], [1.5], [9.3], [9.4]. EUNSUNG-1003, [251].

[15.5]

See [1.6], [1.7], [9.5]. EUNSUNG-1003, [252].

13. Claim 16

See [1.1], [10]. EUNSUNG-1003, [253].

14. Claim 18

See [3], [12]. EUNSUNG-1003, [254].

15. Claim 20

See [8], [14]. EUNSUNG-1003, [255].

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

1. Karasiuk-Palmer-Wunsch-Trueba

In Karasiuk-Palmer-Wunsch-Trueba, Karasiuk-Palmer-Wunsch is modified by Trueba based on Trueba's teachings of computer control and display. EUNSUNG-1003, [256]-[259]; §III.B.2. While Wunsch discloses a sequencer-timer 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, [256]. 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, [256].

As discussed in §III.B.2, 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, [257]. Comparing to Karasiuk-Palmer-Trueba, Wunsch provides added expectation of success because Wunsch discloses in detail how to set up its automated manifold selector. 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, [257]. 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, [257].

As 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). EUNSUNG-1003, [258]; EUNSUNG-1008, 11:40-12:8, FIG. 3. 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, [259]; EUNSUNG-1008, FIG. 3.

2. Claims 1, 9, 15, and dependent claims

As discussed in §III.C, Karasiuk-Palmer-Wunsch-Trueba renders obvious claims 1, 9, 15, and certain dependent claims (claims 1, 3, 6-10, 12, 14-16, 18, 20) for the same reasons as discussed regarding Karasiuk-Palmer-Wunsch. EUNSUNG-1003, [260].

Karasiuk-Palmer-Wunsch-Trueba further renders obvious [8], [14], and [20] based on Trueba's teachings. As discussed in §III.D.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, 6:6-16, 3:4-8, 5:18-6:9, 11:4-34, 12:2-9; EUNSUNG-1003, [261]. Trueba also discloses simultaneous delivery of treatment fluids and allows user programming of sequential or simultaneous delivery. EUNSUNG-1008, 11:4-49; EUNSUNG-1003, [261]. A POSITA would have found it obvious to employ Trueba's automation in the system of Karasiuk-Palmer-Wunsch. *Id.*

3. Claims 2, 11, 17

As discussed in §III.D.1, Karasiuk-Palmer-Wunsch-Trueba includes a computing device (e.g., Trueba controller 100) configured to control at least one function (e.g., delivery of fluids). EUNSUNG-1003, [262]; EUNSUNG-1008, 3:34-38, 4:65-5:17, 6:1-9, 6:27-7:9, 10:52-11:49, 12:2-5, FIG. 1.

4. Claims 3, 12, 18

As discussed in §III.D.1, Karasiuk-Palmer-Wunsch-Trueba includes a user input device (e.g., Trueba's touch screen 105) to select a flow of fluids from at least one of the first container and the at least second container (e.g., Palmer's reservoirs 12_1-12_6) to the handpiece assembly (e.g., Karasiuk's device 10). EUNSUNG-1003, [263]; EUNSUNG-1008, 11:40-12:8, FIG. 3.

5. Claims 4, 13, 19

As discussed in §III.D.1, Karasiuk-Palmer-Wunsch-Trueba's user input device includes a touch screen (e.g., Trueba's touch screen 105). EUNSUNG-1003, [264]; EUNSUNG-1008, 11:40-12:8, FIG. 3.

6. Claim 5

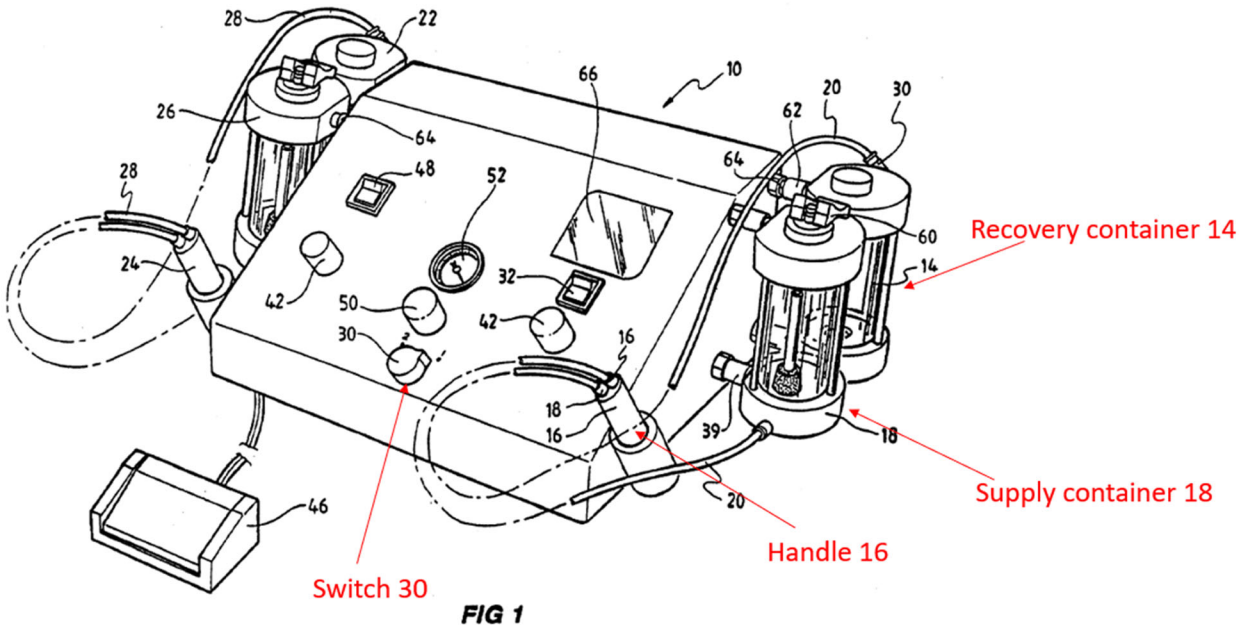
As discussed in §III.D.1, Karasiuk-Palmer-Wunsch-Trueba's system includes a display (e.g., Trueba's touch screen 105) indicating which solution is being delivered. EUNSUNG-1003, [265]; EUNSUNG-1008, 11:40-12:8, FIG. 3.

If an additional display is required separate from the touch screen, Trueba discloses coupling external computer 115 to controller 100. EUNSUNG-1008, 12:9-36, FIG. 3; EUNSUNG-1003, [266]. A POSITA would have understood and found obvious that this external computer 115 would include an additional display separate from Trueba's touch screen 105. EUNSUNG-1003, [266].

E. [GROUND 2A]: Greenberg

1. Greenberg

Greenberg describes a system for conducting microdermabrasion procedures using a handpiece assembly (e.g., hand tool 16) to apply treatment materials to a targeted area of skin. EUNSUNG-1006, Abstract, [0049]-[0064], FIG. 1; EUNSUNG-1003, [72]-[77].

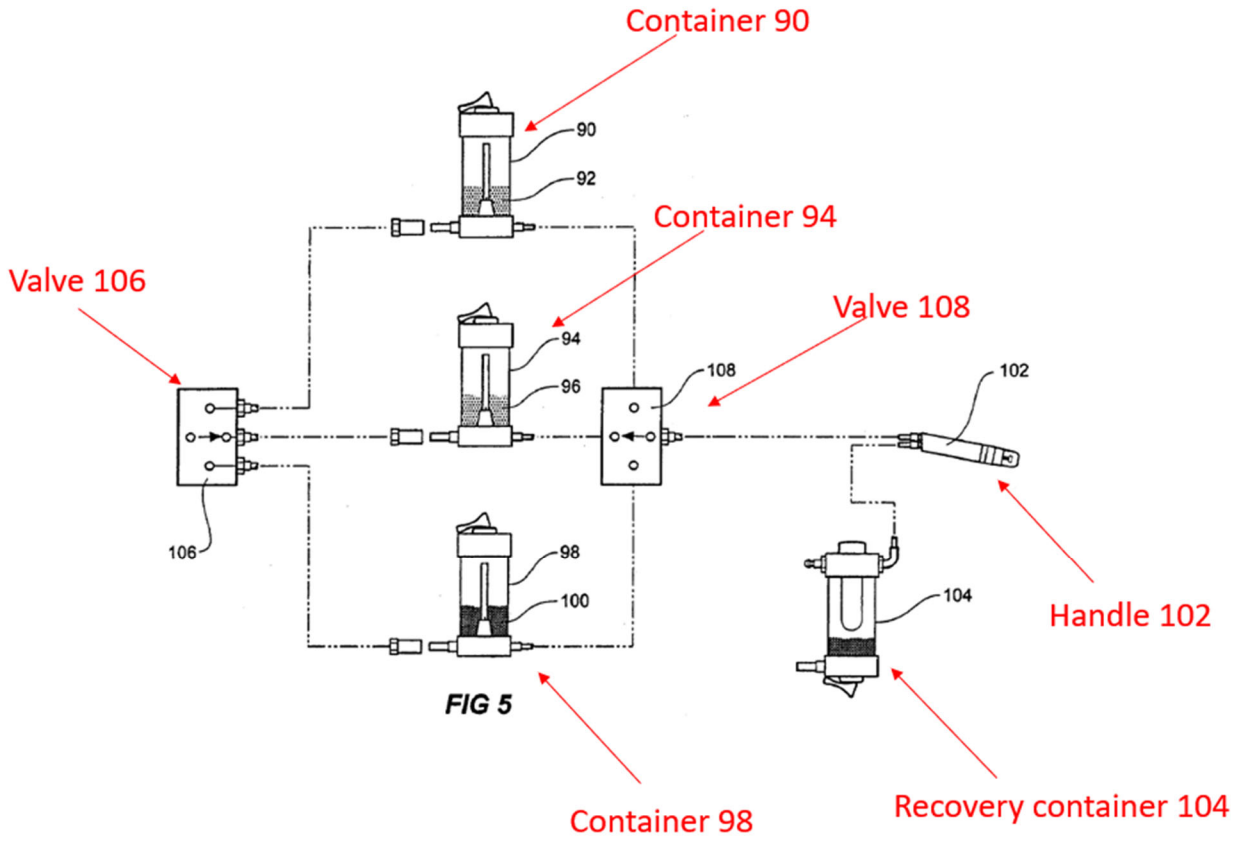


Greenberg, FIG. 1

Greenberg's system includes: (1) "a pneumatic source operatively connected to a recovery container and to a hand tool"; (2) "a plurality of supply containers including particulates"; (3) "a valve selectively connecting said pneumatic source, recovery container and hand tool to a selected one of said supply containers."

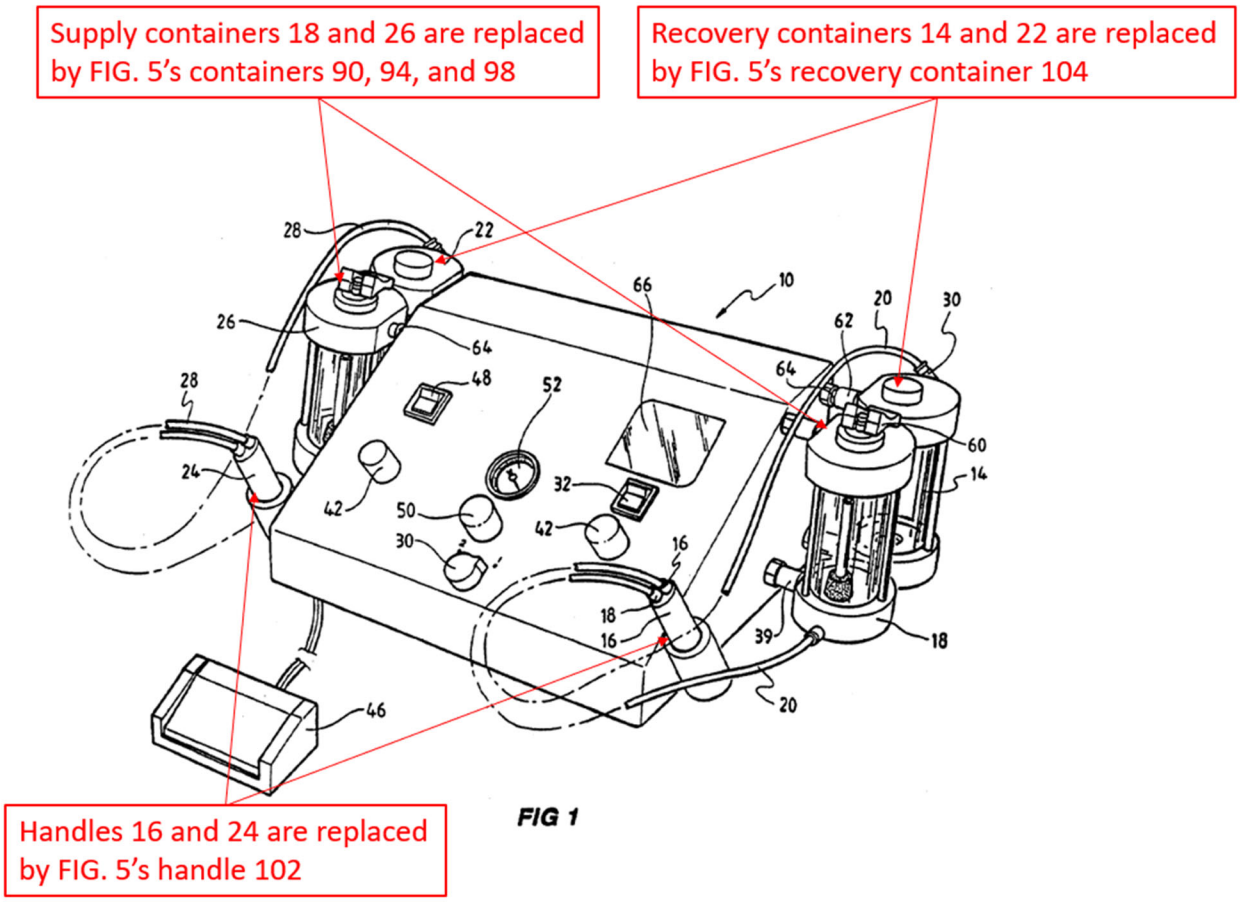
EUNSUNG-1006, [0013]-[0016]; EUNSUNG-1003, [73]. In operation, the pneumatic source, such as "vacuum pump," "provides for an air flow through the recovery container, hand tool and the selected supply container in communication with same, drawing said particles from the supply container through the hand tool and into the recovery container, said hand tool positioned on a surface to be treated and including an aperture so located that particles passing through said hand tool are caused to impinge on the surface thereby treating it." EUNSUNG-1006, [0017], [0026], [0004], [0049]-[0059], [0066], FIG. 3; EUNSUNG-1003, [73].

Greenberg's system allows "a choice of different particles to use in a microdermabrasion machine," "with a plurality of supply containers housing different particles." EUNSUNG-1006, [0073]-[0077]; EUNSUNG-1003, [74]. In FIG. 5, Greenberg's device includes three supply containers (e.g., containers 90, 94, and 98), and valves 106 and 108 control which container is connected to handle 102 and recovery container 104. EUNSUNG-1006, [0077]; EUNSUNG-1003, [74]. In operation, "[a] supply container can be chosen to be in communication with handle 102 and recovery container 104 by the use of valve 106 that controls air flow into the respective supply container and valve 108 that th[e]n connects that supply container to the handle 102 and recovery container 104." *Id.*



Greenberg, FIG. 5

As recognized in Greenberg and also noted by Mr. Simon, FIG. 5's implementation would have been readily incorporated into FIG. 1's apparatus. EUNSUNG-1003, [75]; EUNSUNG-1006, [0077]. As shown in FIG. 1, (1) FIG. 5's containers 90, 94, 98 and valves 106, 108 would be used instead of FIG. 1's supply containers 18 and 26; (2) FIG. 5's recovery container 104 would be used for FIG. 1's recovery containers 14 and 22, and (3) FIG. 5's single handle 102 would replace FIG. 1's two handles 16 and 24. EUNSUNG-1003, [75].



Greenberg, FIG. 1

To connect multiple containers 90, 94, 98 with single handle 102, FIG. 5's control valves (e.g., valves 106 and 108) are used to enable selective fluid communication with each of the containers. EUNSUNG-1003, [75]. As Mr. Simon describes, other structures described with respect to FIGS. 1-4 would have been similarly applicable for the FIG. 5 implementation. *Id.* Further, each of FIG. 5's containers 90, 94, 98, 104 would have been connected to FIG. 1's apparatus 10 in the same manner as FIG. 1's containers 14, 18, 22, 26. EUNSUNG-1006, [0053],

[0062], FIG. 1; EUNSUNG-1003, [75]. The same mechanism and operation described for FIG. 1 would have been used for FIG. 5's implementation. *Id.*

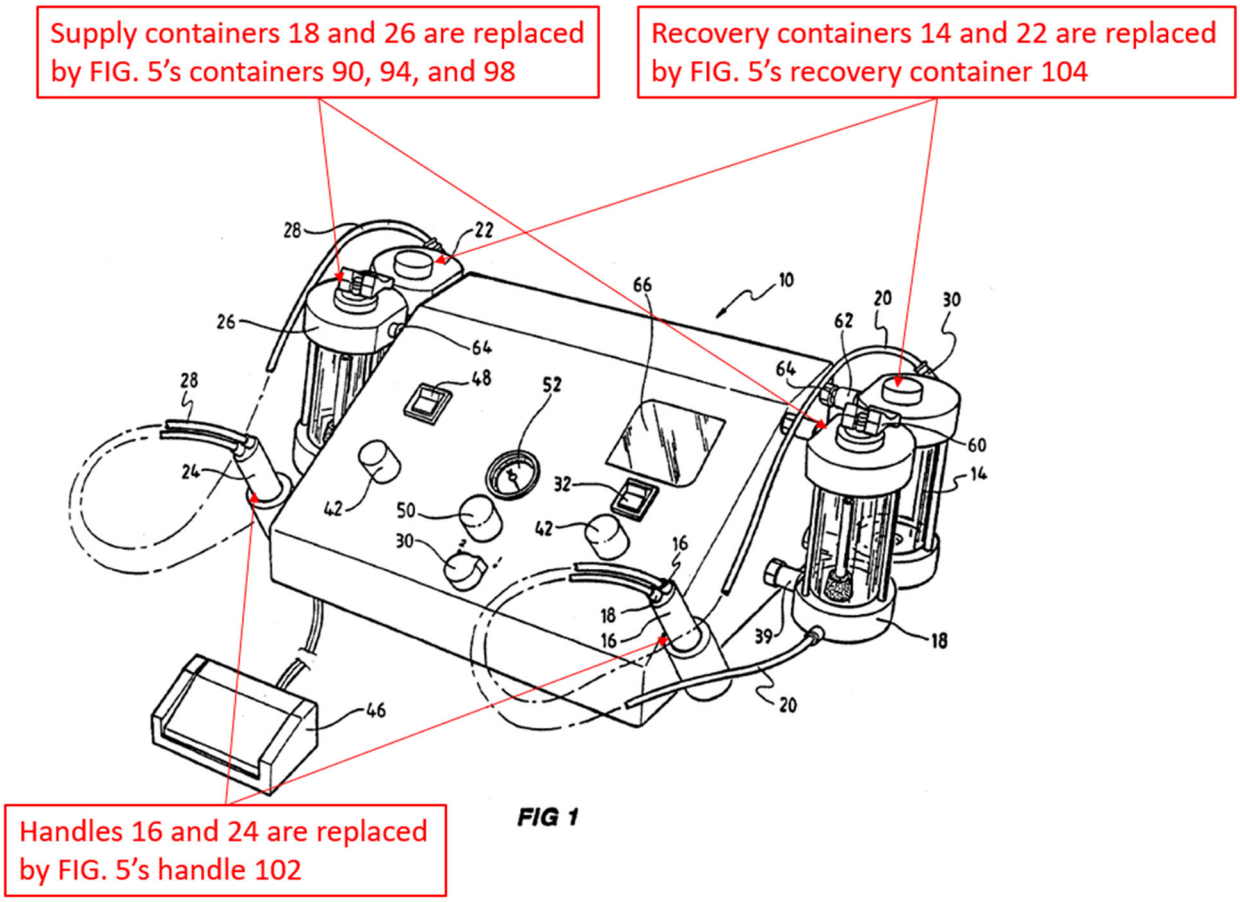
2. Claim 1

[1.pre]

If the preamble is limiting, Greenberg describes "[a] microabrasion apparatus for providing treatment of skin or other surfaces." EUNSUNG-1006, Abstract, FIGS. 1, 3; EUNSUNG-1003, [267].

[1.1]

Greenberg describes the ***console*** by its "apparatus 10." EUNSUNG-1003, [268]. As shown in FIG. 1, Greenberg's apparatus 10 is designed to receive and connect the containers and handles, and enclose components within the apparatus. EUNSUNG-1006, [0049]-[0064]; *supra* §III.E.1; EUNSUNG-1003, [268]. A POSITA would have recognized and found obvious that Greenberg's apparatus corresponds to a ***console*** that receives multiple containers, aligning with the '477 patent's disclosure. EUNSUNG-1003, [268].

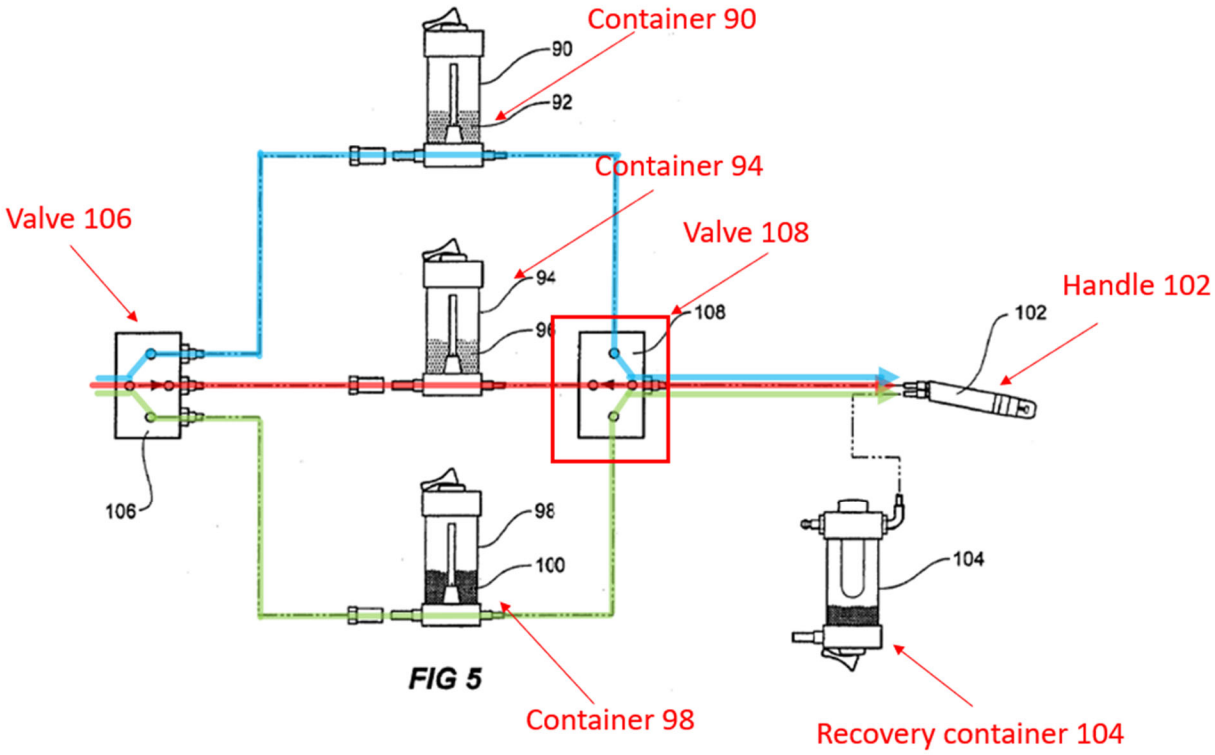


Greenberg, FIG. 1

If Patent Owner argues that Greenberg's apparatus does not include a console, a POSITA would have been motivated and found it obvious to place components of Greenberg's apparatus in a console for increased portability and/or organization. EUNSUNG-1003, [269]. 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. *Id.* A POSITA would have viewed a console as one of a finite number of options to achieve increased portability and/or organization that would have been obvious to try. *Id.* A POSITA would have had a reasonable expectation

of success to place Greenberg's apparatus in a console, as it would constitute the use of a known technique to improve similar devices in the same way. *Id*.

Greenberg discloses or renders obvious the ***manifold system***. EUNSUNG-1003, [270]. As discussed in §III.E.1, FIG. 5's implementation would have been incorporated into FIG. 1's apparatus. As shown in FIG. 5, Greenberg's system includes "valve 108" configured to selectively connect one of supply containers 90, 94, 98 to handle 102 depending on which container is selected via valve 106. EUNSUNG-1006, [0077]; EUNSUNG-1003, [270]. Therefore, Greenberg's valve 108 selectively receives treatment materials from the respective supply containers 90, 94, 98 when these containers are respectively selected to receive air flow thereinto (e.g., blue, red, and green paths in annotated FIG. 5). *Id.*



Greenberg, FIG. 5

A POSITA would have understood and found obvious that one or more of (1) Greenberg's valve 108 and (2) a subpart of Greenberg's apparatus 10 that houses valve 108 correspond to, and perform the operations of, the ***manifold system***. EUNSUNG-1003, [271]. Specifically, the '477 patent's "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, 17:9-11. Similar to the '477 patent's manifold system 24, Greenberg's valve 108 is also designed to draw treatment materials from at least one of Greenberg's containers 90, 94, and 98 based on user selection. EUNSUNG-1003,

[271]; EUNSUNG-1006, [0077], FIG. 5.

Notably, [1.1] does not require the manifold system to "hold" the containers, or that the manifold system to be built into the console. EUNSUNG-1003, [272]; EUNSUNG-1029, 5.

Alternatively or in addition, a POSITA would have found it obvious to use a manifold system to implement Greenberg's functionality of switching treatment materials. EUNSUNG-1003, [273]. Indeed, manifold systems were well-known devices for selecting between different fluids and would have been within a POSITA's general knowledge. *Id.* A POSITA would have viewed a manifold system as one of a finite number of options to achieve the functionality described by Greenberg that would have been obvious to try. *Id*. First, based on Greenberg as discussed in §III.E.1, a POSITA would have recognized a need to selectively dispense different treatment materials. EUNSUNG-1003, [273]; EUNSUNG-1006, [0073]-[0077], FIG. 5. Second, a POSITA would have understood that there were a finite number of identified, predictable solutions to selectively dispense treatment materials from multiple containers. EUNSUNG-1003, [273]; Ground 1A, [1.1]. A POSITA would have had "good reason to pursue the known options," and thus, using a manifold system would have been obvious to try. *Id.* Further, a POSITA would have selected a manifold system among this finite number of identified, pre-

dictable solutions because it eliminates the need of manual connecting/disconnecting and allows for a simpler handpiece design with one input. *Id.*

A POSITA would have had a reasonable expectation of success in implementing Greenberg's switching between different treatment materials and providing a single output using a manifold system as it would have merely involved a simple substitution of one well-known element for another to obtain predictable results. EUNSUNG-1003, [274]; Ground 1A, [1.1]; EUNSUNG-1010, [0086]-[0088], [0145]; EUNSUNG-1019, Abstract; EUNSUNG-1020, Abstract, FIG. 1; EUNSUNG-1021, Abstract, FIG. 1.

As discussed in §III.E.1, and as shown in modified FIG. 5, Greenberg's manifold system (e.g., Greenberg's valve 108 or a well-known manifold element) is in communication with three containers (e.g., Greenberg containers 90, 94, 98) which would have been understood as including a ***first container and at least a second container***. EUNSUNG-1003, [275]; §III.E.1; EUNSUNG-1006, [0077], FIG. 5.

In Greenberg, each of the first container and the at least second container (e.g., containers 90, 94, 98) is configured to contain "a treatment material." EUNSUNG-1006, [0077]; EUNSUNG-1003, [276]. As shown in FIG. 5, Greenberg's three supply containers that contain "different particles each of which performs different types of treatment such as abrasion." EUNSUNG-1006, Abstract, [0077];

EUNSUNG-1003, [277]. In Greenberg, at least three different treatment materials are contained in respective containers, including (a) purely organic materials, (b) a mixture of abrasive particles mixed with organic materials, and (c) abrasive particles that are coated with organic materials. EUNSUNG-1006, [0072]-[0077]; EUNSUNG-1003, [277].

Based on FIGS. 1 and 5, a POSITA would have understood and found obvious that Greenberg's valve 108 (at least part of ***manifold system***) is located inside apparatus 10 (***console***), thereby improving portability and/or organization. EUNSUNG-1006, FIGS. 1 and 5; EUNSUNG-1003, [277].

[1.2]

Greenberg describes "handle 16" (FIG. 1) and "handle 102" (FIG. 5) that are configured to contact skin. EUNSUNG-1006, [0066], [0077], FIG. 3; EUNSUNG-1003, [278]. A POSITA would have understood that Greenberg describes a "handpiece assembly" from these disclosures. *Id.*

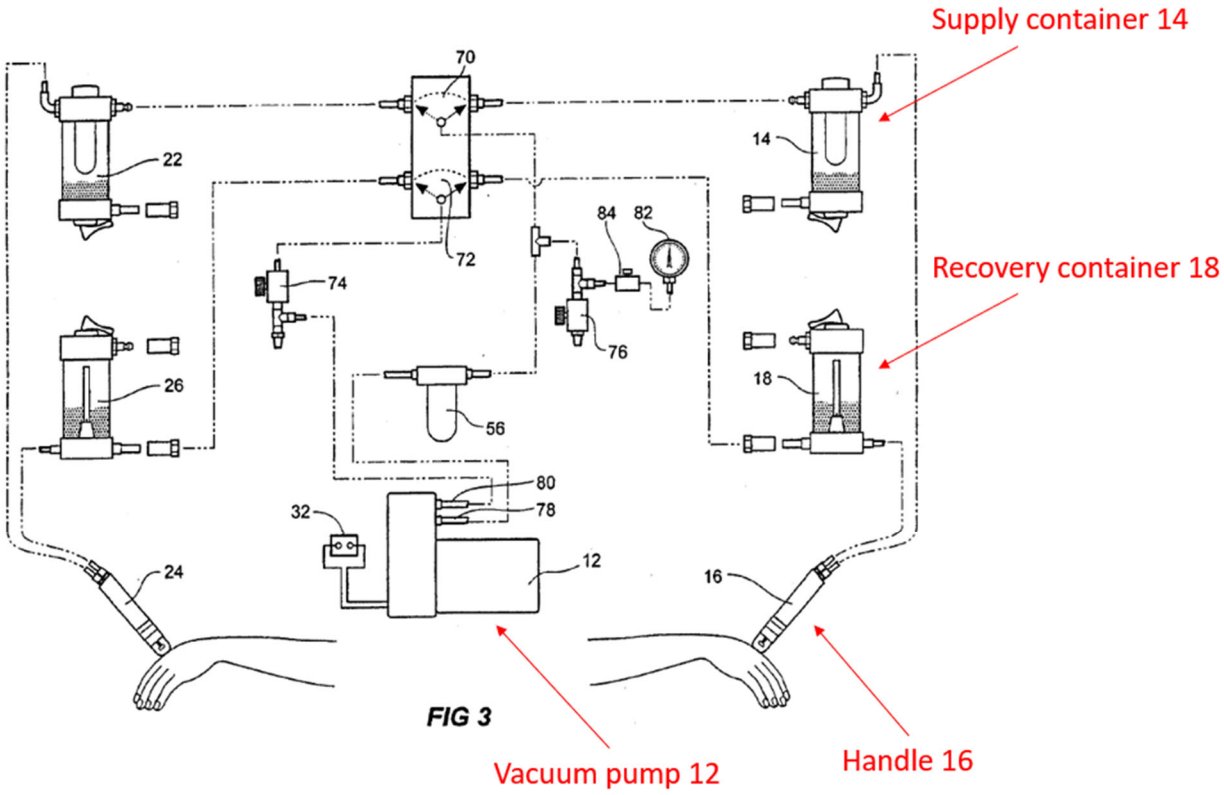
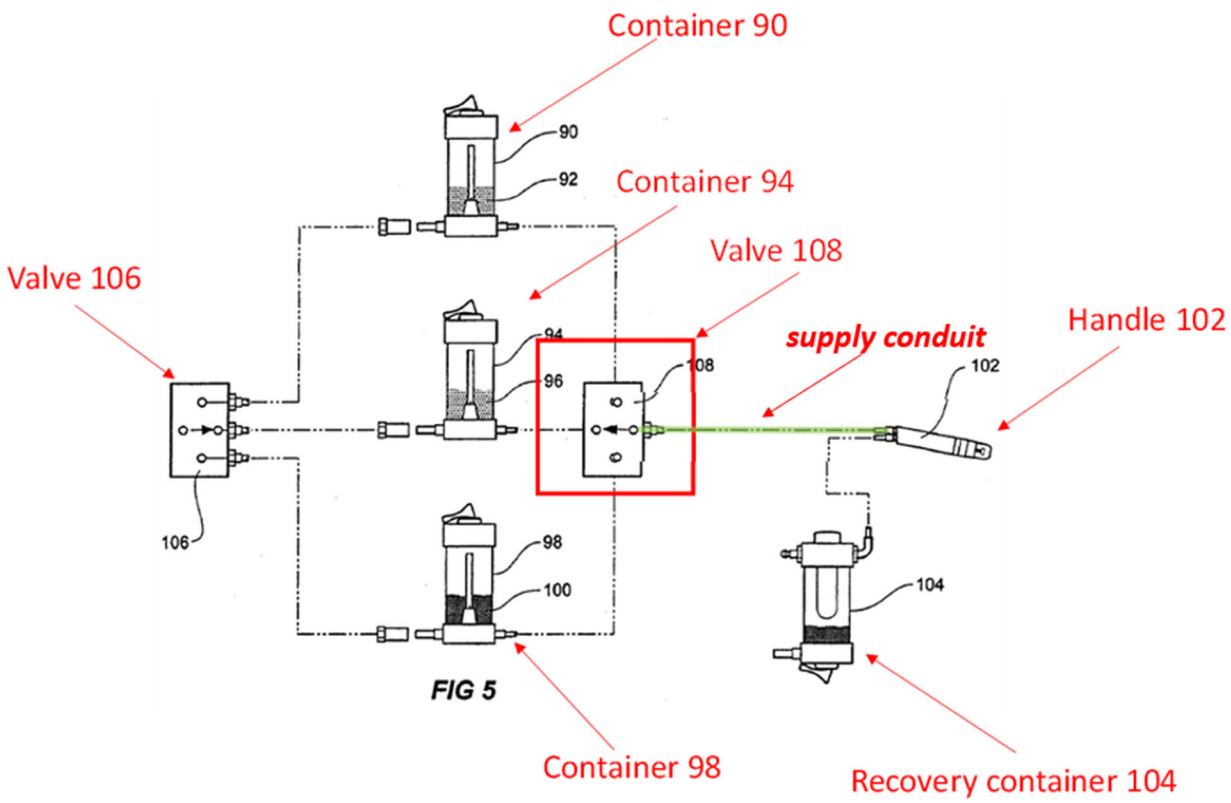


FIG 3

Greenberg, FIG. 3

As discussed regarding [1.1], Greenberg's valve system (including valve 108) (***manifold system***) is selectively in communication with handle 102 (***hand-piece assembly***). EUNSUNG-1006, [0077], FIG. 5; EUNSUNG-1003, [279]. Although FIG. 5 does not label the path (dotted line) between valve 108 and handle 102, it would have been obvious that it is defined by a tube, such as tube 20 illustrated in FIG. 1, and this tube forms a ***supply conduit***. EUNSUNG-1006, [0049], FIG. 1; EUNSUNG-1003, [279].



Greenberg, FIG. 5

If Greenberg does not expressly describe "fluid communication," a POSITA would have understood and found obvious that Greenberg's "particles" constitute "fluid" within the meaning of the '477 patent. EUNSUNG-1003, [280]. The '477 patent describes that "[t]he general term 'fluid' is used throughout synonymously with the term 'treatment material' and is to be given the same broad definition," and defines the term "treatment material" as "a broad term and includ[ing], ... medicament, a substance tending to flow or conform to the outline of its container such as … **a plurality of fine solids**," which corresponds to Greenberg's abrasive particles. EUNSUNG-1001, 5:38-53; EUNSUNG-1003, [280]. Greenberg's system

"us[es] an air flow to carry particles through a hand tool." EUNSUNG-1006, [0040]; [0017]. A POSITA would have understood that the air flow carrying particles is "fluid" as used in the '477 patent, and would have understood that the supply conduit (e.g., tube 20) places the manifold system (e.g., valve 108) in ***fluid communication*** with a handpiece assembly (e.g., handle 102). EUNSUNG-1003, [280].

[1.3]

Greenberg's "handle includes an aperture 40, which is positioned against the surface to be treated." EUNSUNG-1006, [0052], [0066], [0077], FIG. 3; EUNSUNG-1003, [281]. In operation, the pneumatic source, such as "vacuum pump," "provides for an air flow through the recovery container, hand tool and the selected supply container" with "said hand tool **positioned on a surface to be treated**." EUNSUNG-1006, [0017], [0026], [0004], [0049]-[0059], [0066], FIG. 3; EUNSUNG-1003, [281]. As shown in FIG. 3, a POSITA would have understood that Greenberg's handle 102 (***handpiece assembly***) comprises a working end (e.g., where aperture 40 is defined) having a skin contact surface. *Id.*

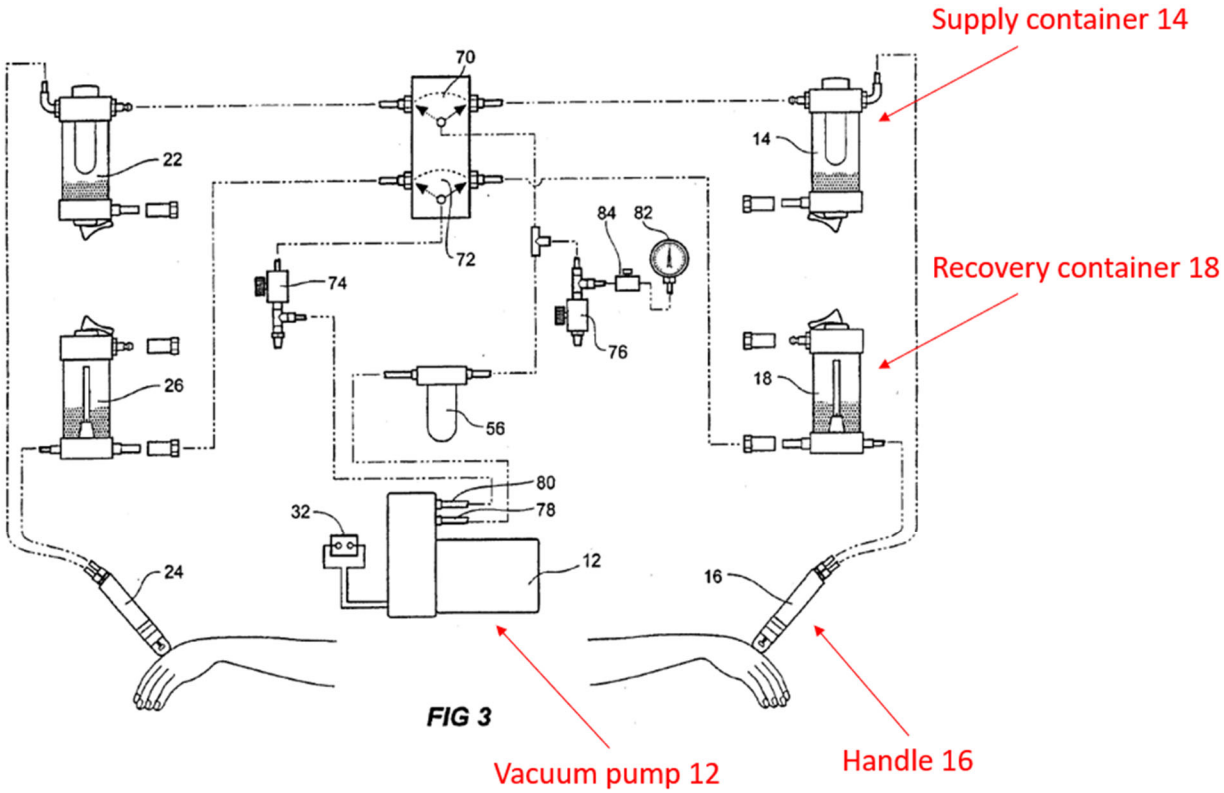


FIG 3

Greenberg, FIG. 3

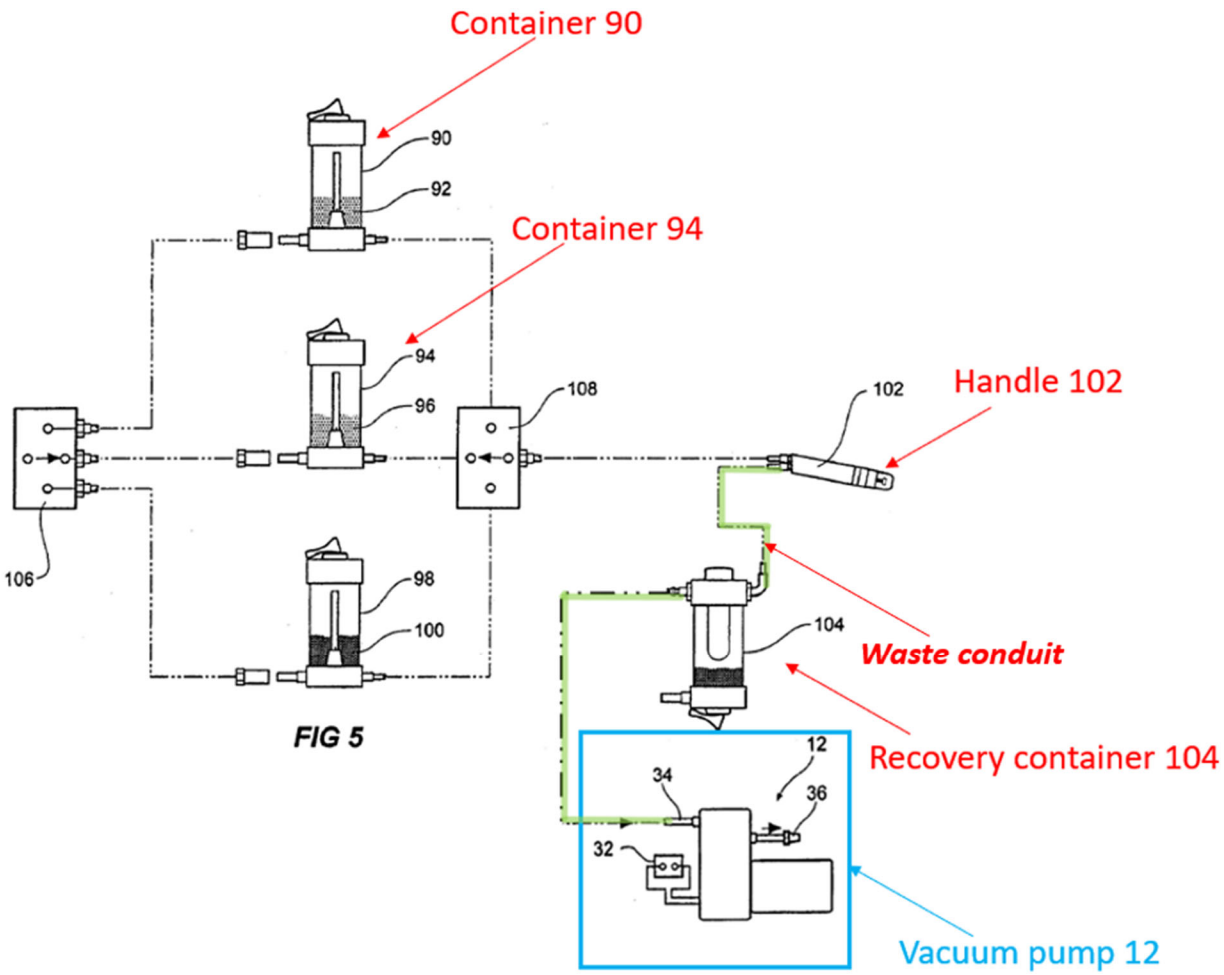
Alternatively or in addition, a POSITA would have found it obvious that Greenberg's handle 102 (***handpiece assembly***) comprises a working end having a skin contact surface because this is the common design for microdermabrasion devices. EUNSUNG-1003, [282].

[1.4]

Greenberg's apparatus includes a "vacuum pump" as "pneumatic source" to "provide[] for an air flow through the recovery container, hand tool and the selected supply container." EUNSUNG-1006, [0017], [0026], [0004], [0049]-[0059], [0066], FIG. 3; EUNSUNG-1003, [283].

[1.5]

As discussed for [1.4], Greenberg's vacuum pump 12 "provides for an air flow through the recovery container, hand tool and the selected supply container." EUNSUNG-1006, [0017], [0026], [0004], [0049]-[0059], [0066], FIG. 3; EUNSUNG-1003, [284]. In Greenberg, "[t]he stream of particles then impinges on the surface against which the aperture is positioned causing micro-abrasions and is subsequently drawn into the recovery container together with any abraded surface debris." EUNSUNG-1006, [0052]. A POSITA would have understood and found obvious that Greenberg's vacuum pump 12 is fluidly connected to recovery container 104. EUNSUNG-1003, [284]. As shown in Modified FIG. 5, Greenberg's handle 102 (***handpiece assembly***) is in fluid communication with vacuum pump 12 (***vacuum source***; [1.4]) via recovery container 104. *Id.*; EUNSUNG-1006, [0017], [0052]; EUNSUNG-1003, [284].



Greenberg, Modified FIG. 5

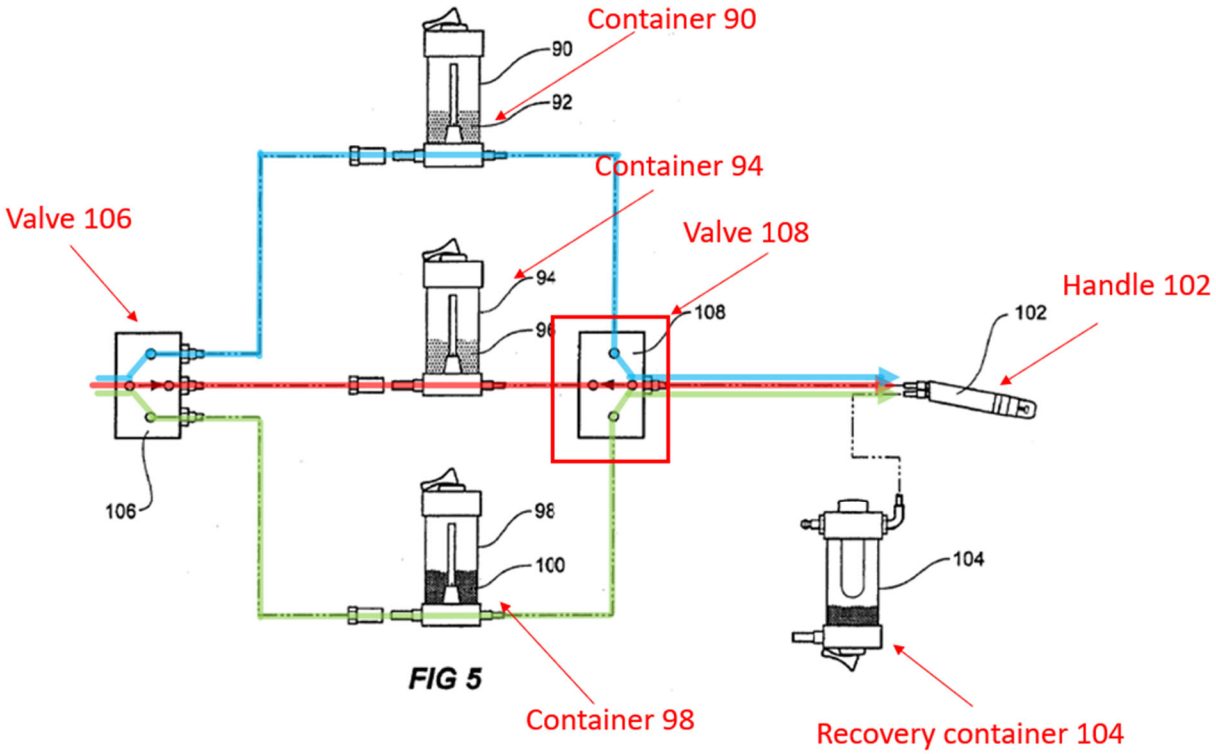
While modified FIG. 5 does not label the path (dotted line) between handle 102 and recovery container 104 and similarly between recovery container 104 and the vacuum pump, it would have been obvious that the path (annotated in green) is defined by a tube, such as FIG. 1's tube 20, and this tube forms the ***waste conduit*** as required in [1.5]. EUNSUNG-1003, [285]. Thus, a POSITA would have understood and found obvious that Greenberg's waste conduit is in fluid communication

with the handpiece assembly (e.g., handle 102) and the vacuum source (e.g., vacuum pump 12) to move waste (e.g., particles and/or abraded surface debris) away from the working end of the handpiece assembly. EUNSUNG-1003, [285].

[1.6]

A POSITA would have understood the term "control" broadly. EUNSUNG-1028, 4; EUNSUNG-1030, 1-4; EUNSUNG-1003, [286]; EUNSUNG-1001, 9:2-16.

As discussed for [1.1], Greenberg's system includes "valve 108" configured to selectively connect one of supply containers 90, 94, 98 to handle 102. EUNSUNG-1006, [0077]; EUNSUNG-1003, [287]. A POSITA would have understood and found obvious that Greenberg's valve 108 acts as a control to permit control of a flow of treatment material from the first container (e.g., container 90) and the at least second container (e.g., container 94). *Id.*



Greenberg, FIG. 5

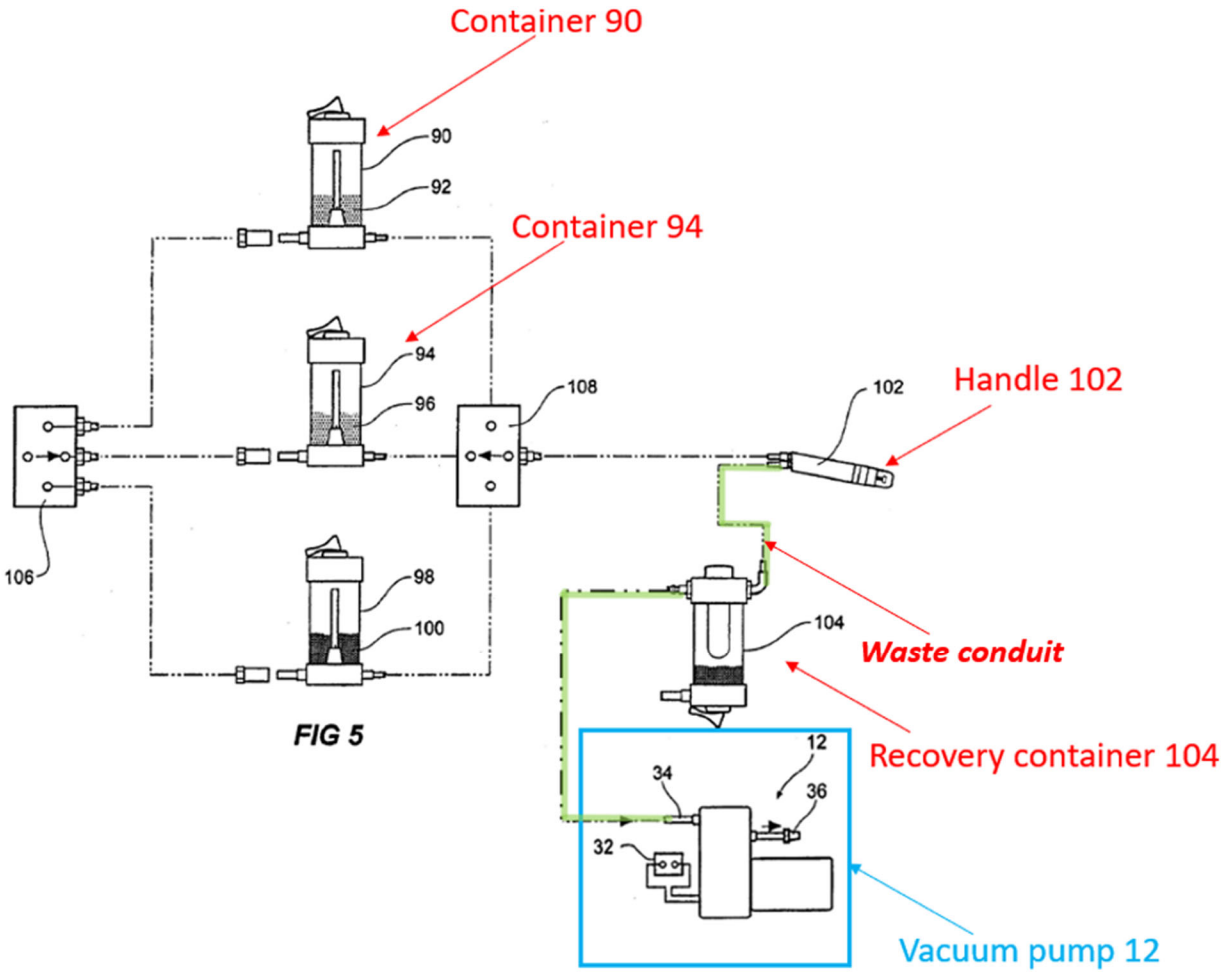
While Greenberg does not explain in detail how valve 108 is operated by a user, Greenberg discloses "**switch 30** that controls a solenoid that switches the vacuum pump from operatively being connected either to the first or second assembly." EUNSUNG-1006, [0050], FIGS. 1-2. Based on this disclosure, a POSITA would have found it obvious that FIG. 5's implementation would have been readily incorporated into FIG. 1's apparatus by using switch 30 to operate valve 108. EUNSUNG-1003, [288]. Indeed, using a solenoid switch to control a manifold system was well-known in the art and well within the skills of a POSITA. *Id.*

Further, Greenberg's supply containers can comprise "inlet 39 connected to

a **regulator 42** having an inlet 44 the regulator controlling the amount of air entering the supply container." EUNSUNG-1006, [0053], FIGS. 1-2. Based on this disclosure, a POSITA would have found it obvious that FIG. 5's implementation would have been incorporated into FIG. 1's apparatus by using regulator 42 to further control the amount of air entering each of containers 90, 94, and 98. EUNSUNG-1003, [289]. Thus, a POSITA would have understood and found obvious that Greenberg discloses at least one control (e.g., valve 108, switch 30, or regulator 42). EUNSUNG-1003, [289].

[1.7]

As discussed in §III.E.1, [1.4], [1.5], Greenberg's vacuum pump 12 draws "**particles from the supply container through the hand tool and into the recovery container**, said hand tool **positioned on a surface to be treated and including an aperture**." EUNSUNG-1006, [0017], [0026], [0004], [0036], [0049]-[0059], [0066], FIG. 3; EUNSUNG-1003, [290]. In Greenberg, "[t]he stream of particles then impinges on the surface against which the aperture is positioned causing micro-abrasions and is subsequently drawn into the recovery container together with any abraded surface debris." EUNSUNG-1006, [0052].



Greenberg, Modified FIG. 5

It would have been obvious that the path (annotated in green) is defined by a tube, such as FIG. 1's tube 20, and this tube forms the ***waste conduit*** as required in [1.5] and [1.7]. EUNSUNG-1003, [291]; EUNSUNG-1006, [0052].

A POSITA would have understood and found obvious that the vacuum source (e.g., vacuum pump 12) is configured to create a suction force within the waste conduit and along the working end (e.g., where aperture 40 is defined) of the handpiece assembly to remove waste (e.g., particles and/or abraded surface debris)

from the handpiece assembly via the waste conduit and to transfer at least one treatment material from the manifold system (e.g., valve 108) to the handpiece assembly (e.g., handle 102). EUNSUNG-1003, [292].

3. Claim 3

As discussed for [1.6], Greenberg discloses at least one control (e.g., valve 108, switch 30, or regulator 42). EUNSUNG-1003, [293]. A POSITA would have understood that switch 30 and/or regulator 42 also constitutes a user input device to facilitate control of a flow of treatment material from at least one of the first container and the at least second container to the handpiece assembly. EUNSUNG-1003, [294].

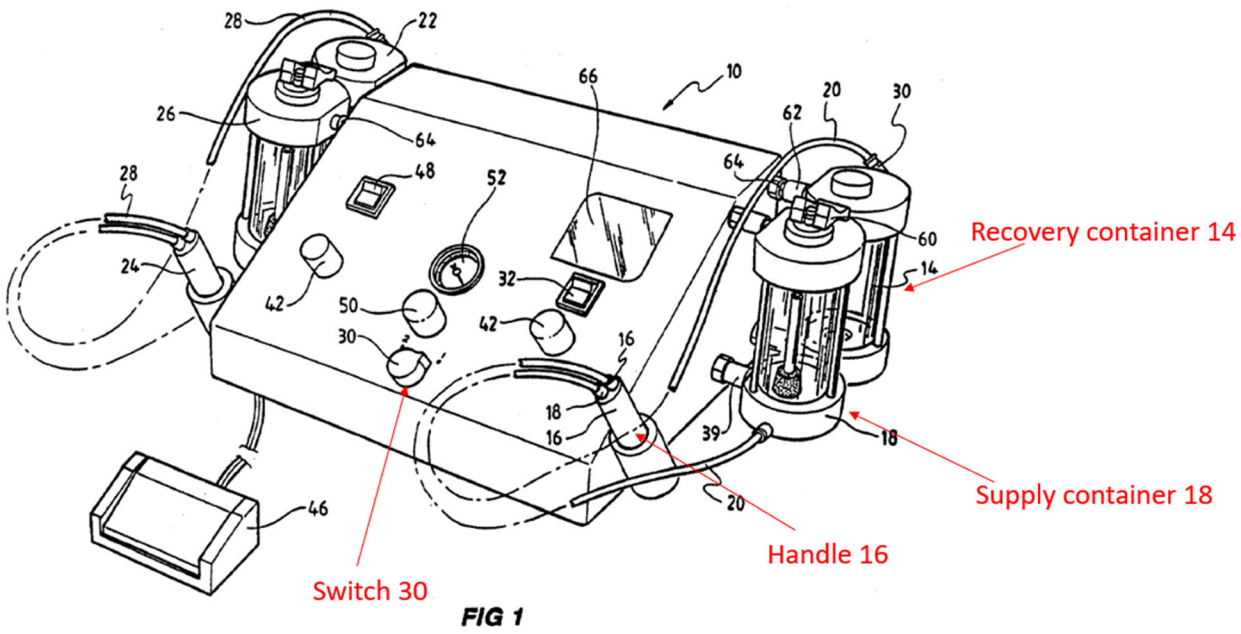
4. Claim 6

As discussed in §III.E.1, [1.1], and as shown in modified FIG. 5, Greenberg's manifold system (e.g., Greenberg's valve 108) is in fluid communication with three containers (e.g., Greenberg containers 90, 94, 98). EUNSUNG-1003, [295]; §III.E.1; EUNSUNG-1006, [0077], FIG. 5. Greenberg discloses that "improvements may very well be made to the present invention without deviating from its scope." EUNSUNG-1006, [0090]. A POSITA would have found it obvious to add an additional supply container to allow selecting additional treatment materials. EUNSUNG-1003, [295]; *In re Harza*, 274 F.2d 669, 671 (CCPA 1960); EUNSUNG-1005, 5:10-64, FIG. 2 (showing six containers); EUNSUNG-1007, FIG. 2

(showing six containers); EUNSUNG-1008, FIG. 1 (showing four containers); EUNSUNG-1009, FIG. 1 (showing five containers); EUNSUNG-1020, FIG. 1 (showing five containers).

5. Claim 7

Greenberg's " supply and recovery container may include **quick-release lids 60** allowing access into the containers." EUNSUNG-1006, [0062]. Further, to assist in mounting the container to the apparatus, "the recovery and the supply container may include projections 62 adapted to engage holding bores 64 on the apparatus." EUNSUNG-1006, [0062], FIG. 1.



Greenberg, FIG. 1

Based on this disclosure regarding quick-release lids 60, projections 62, and holding bores 64, a POSITA would have understood and found obvious that the

supply containers (e.g., containers 90, 94, 98) are releasably coupled to the console (e.g., apparatus 10) and the manifold system (e.g., valve 108), to allow easy replacement of the supply containers when a different treatment material is needed. EUNSUNG-1003, [296]-[297]. Greenberg explains that, "[t]o use different particles, the supply container can simply be replaced at the operator's discretion." EUNSUNG-1006, [0079]. Thus, a POSITA would have understood and found obvious that the first container and the at least second container (e.g., containers 90, 94, 98) are configured to releasably couple to the manifold system (e.g., valve 108). EUNSUNG-1003, [296]-[297].

6. Claim 8

Greenberg's "apparatus contains separate abrasive and fragrant particles and that a user is firstly treated with the highly abrasive particles and **subsequently** with the organic ones that assist in leaving a residual layer on the skin." EUNSUNG-1006, [0084], [0089], [0072]-[0077]; EUNSUNG-1003, [298]. Thus, Greenberg discloses or renders it obvious that the system is configured to deliver a treatment material (e.g., "highly abrasive particles") in the first container (e.g., container 90) and a treatment material (e.g., "organic ones") in the at least second container (e.g., container 94) to the handpiece sequentially ("subsequently"). EUNSUNG-1003, [298].

Alternatively or in addition, a POSITA would have found it obvious to configure Greenberg to achieve sequential or simultaneous delivery of treatment materials from the first container and at least second container. EUNSUNG-1003, [299]. In fact, a POSITA would have found it obvious to use Greenberg's three containers 90, 94, and 98 to deliver, one at a time, three different treatment materials. *Id.* For example, it would have been obvious to apply harsh particles (to "remove quickly and efficiently top surface skin layers"), followed by gentler particles (to "compensate for any serious abrasion"), followed by organic particles (to impart "to the skin substances that help protect and nourish it"). EUNSUNG-1006, [0084], [0089], [0072]-[0077]; EUNSUNG-1003, [299].

7. Claim 9

[9.pre]

See [1.pre]. EUNSUNG-1003, [300].

[9.1]

See [1.1]; §III.A.9. EUNSUNG-1003, [301].

As discussed in §III.A.9, a POSITA would have understood the term "secured to" to simply mean "securely connected to." EUNSUNG-1003, [301]; EUNSUNG-1029, 5. As discussed for [1.1], the manifold system is in communication with a first container and at least a second container. EUNSUNG-1003, [301]. A POSITA would have understood and found obvious that the manifold system is in

communication with at least two containers and that each of the at least two containers are configured to be secured to the manifold system. *Id.*

Further, in order to prevent disconnection and to keep the manifold system in communication with the containers, a POSITA would have found it obvious that the containers (e.g., containers 90, 94, and 98) are secured to the manifold system (e.g., valve 108). EUNSUNG-1003, [302].

[9.2]

See [1.2] and [1.3]. EUNSUNG-1003, [303].

[9.3]

See [1.4]. EUNSUNG-1003, [304].

[9.4]

See [1.5]. EUNSUNG-1003, [305].

[9.5]

See [1.6] and [1.7]. EUNSUNG-1003, [306]. A POSITA would have understood that the "distal end" of the handpiece assembly corresponds to the "working end" of the handpiece assembly as recited in claim 1. EUNSUNG-1003, [306]; EUNSUNG-1001, 7:4-5. As discussed in §III.E.1, in Greenberg, the pneumatic source, such as "vacuum pump," "provides for an air flow through the recovery container, hand tool and the selected supply container." EUNSUNG-1006, [0017], [0026], [0004], [0049]-[0059], [0066], FIG. 3; EUNSUNG-1003, [306].

8. Claim 10

See [1.1]. EUNSUNG-1003, [307].

9. Claim 12

See [3]. EUNSUNG-1003, [308].

10. Claim 14

See [8]. EUNSUNG-1003, [309].

11. Claim 15

[15.pre]

See [1.pre], [9.pre]. EUNSUNG-1003, [310].

[15.1]

See [1.1], [9.1]. EUNSUNG-1003, [311].

[15.2]

See [1.2], [1.3], [9.2]. EUNSUNG-1003, [312].

[15.3]

See [1.1], [1.2], [9.2]. EUNSUNG-1003, [313].

[15.4]

See [1.4], [1.5], [9.3], [9.4]. EUNSUNG-1003, [314].

[15.5]

See [1.6], [1.7], [9.5]. EUNSUNG-1003, [315].

12. Claim 16

See [1.1], [10]. EUNSUNG-1003, [316].

13. Claim 18

See [3], [12]. EUNSUNG-1003, [317].

14. Claim 20

See [8], [14]. EUNSUNG-1003, [318].

F. [GROUND 2B]: Greenberg-Trueba

1. Greenberg-Trueba Combination

In the Greenberg-Trueba combination, Greenberg's system would have been modified based on Trueba's teachings of computer control and display. EUNSUNG-1003, [319]-[327]. In the resulting system, Greenberg's valve 106 and/or valve 108 are further controlled by a computer (e.g., Trueba's controller 100), which is controlled by an user input (e.g., Trueba's touch screen 105), to control the flow of treatment materials from containers (e.g., Greenberg's containers 90, 94, and 98), so that a user can use the user input device to select a flow of treatment materials from the containers. EUNSUNG-1003, [319]. The combined device also includes a display (e.g., Trueba's touch screen 105) that indicates which treatment material is being delivered. *Id.*

A POSITA would have been motivated to modify Greenberg's device by including Trueba's computer control and display for various benefits, such as added precision, automation, and clarity. EUNSUNG-1003, [320]. In fact, as Mr. Simon explains, the same reasons that would have motivated the Karasiuk-Palmer-Trueba

combination (*see* §III.B.2) would similarly apply for the Greenberg-Trueba combination. *Id.*

A POSITA would have had a reasonable expectation of success in implementing the combination given the technical similarities between Greenberg and Trueba. EUNSUNG-1003, [321]-[327]. For example, similar to Greenberg, Trueba's system is "for topical application of a bioactive composition to the surface of the subject, such as a patch of skin," and configured for selecting from different treatment materials from different containers. EUNSUNG-1008, 3:22-27, 3:4-8, 5:14-26, 11:4-34, FIG. 3; EUNSUNG-1003, [321]. The Greenberg-Trueba combination would merely constitute the use of a known technique to improve similar devices in the same way. EUNSUNG-1003, [325]. By the Critical Date, computer (e.g., PLC) controlled fluid delivery systems were well-known. EUNSUNG-1007, FIG. 3; EUNSUNG-1008, FIG. 3; EUNSUNG-1015, Abstract; EUNSUNG-1003, [324]-[326]. The modification requires nothing more than automating the manual process in Greenberg with well-known automation techniques. EUNSUNG-1008, 11:4-34; EUNSUNG-1003, [325].

2. Claims 1, 9, 15 and dependent claims

As discussed in §III.E, Greenberg-Trueba renders obvious claims 1, 9, 15, and certain dependent claims (claims 1, 3, 6-10, 12, 14-16, 18, 20) for the same reasons as discussed regarding Greenberg. EUNSUNG-1003, [328].

Greenberg-Trueba further renders obvious [8], [14], and [20] based on Trueba's teachings. If the term "sequentially" is interpreted to require automatic switching between different treatment materials, Greenberg-Trueba renders this limitation obvious. EUNSUNG-1003, [329]; EUNSUNG-1008, 3:4-8, 5:18-6:9, 6:10-16, 11:4-34, 12:2-9. As discussed in §III.D.1, Greenberg-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, [329]. Trueba also discloses simultaneous delivery of treatment fluids and allows user programming of sequential or simultaneous delivery. EUNSUNG-1008, 11:4-49; EUNSUNG-1003, [329]. A POSITA would have found it obvious to employ Trueba's automation in Greenberg's system to provide added precision (avoiding human error), automation, and clarity, resulting in automatic switching and delivery of treatment materials in a sequential or simultaneous manner. EUNSUNG-1003, [329]; *In re Venner,* 262 F.2d 91, 95 (CCPA 1958).

3. Claims 2, 11, 17

As discussed in §III.D.1, Greenberg-Trueba includes a computing device (e.g., Trueba controller 100) configured to control at least one function (e.g., delivery of treatment materials). EUNSUNG-1003, [330]; EUNSUNG-1008, 3:34-38, 4:65-5:17, 6:1-9, 6:27-7:9, 10:52-11:49, 12:2-5, FIG. 1.

4. Claims 3, 12, 18

As discussed in §III.D.1, Greenberg-Trueba includes a user input device (e.g., Trueba's touch screen 105) to select a flow of treatment material from at least one of the first container and the at least second container (e.g., Greenberg's containers 90, 94, 98) to the handpiece assembly (e.g., Greenberg's handle 102). EUNSUNG-1003, [331]; EUNSUNG-1008, 11:40-12:8, FIG. 3.

5. Claims 4, 13, 19

As discussed in §III.D.1, Greenberg-Trueba's user input device includes a touch screen (e.g., Trueba's touch screen 105). EUNSUNG-1003, [332]; EUNSUNG-1008, 11:40-12:8, FIG. 3.

6. Claim 5

As discussed in §III.D.1, Greenberg-Trueba's system includes a display (e.g., Trueba's touch screen 105) indicating which solution is being delivered. EUNSUNG-1003, [333]; EUNSUNG-1008, 11:40-12:8, FIG. 3.

If an additional display is required separate from the touch screen, Trueba discloses coupling external computer 115 to controller 100. EUNSUNG-1008, 12:9-36, FIG. 3; EUNSUNG-1003, [334]. A POSITA would have understood and found obvious that this external computer 115 would include an additional display separate from Trueba's touch screen 105. *Id.*

7. Claim 6

As discussed in §III.E, Greenberg-Trueba renders claim 6 obvious for the

same reasons as discussed regarding Greenberg. EUNSUNG-1003, [335].

Greenberg-Trueba further renders claim 6 obvious based on Trueba's teachings regarding using four containers. EUNSUNG-1003, [336]; EUNSUNG-1008, FIG. 1 (showing four containers). A POSITA would have been motivated to include additional containers to allow application of different treatment solutions, and to minimize refilling downtime. EUNSUNG-1003, [336]; EUNSUNG-1005, 1:30-53, 2:48-4:2; EUNSUNG-1011, 2:7-10. As discussed in §III.F.1, the Greenberg-Trueba combination would merely constitute the use of a known technique to improve similar devices in the same way and a POSITA would have had a reasonable expectation of success in implementing the combination given the technical similarities between Greenberg and Trueba. EUNSUNG-1003, [336]; EUNSUNG-1008, 3:22-27, 3:4-8, 5:14-26, 11:4-34, FIG. 3.

IV. FEES

Please apply any fees to Deposit Account No. 232825.

V. CONCLUSION

Petitioner requests cancellation of all Challenged Claims.[7]

[7] 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.

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)

The '477 patent is the subject of ongoing litigation in:

- *HydraFacial LLC et al v. eMIRAmed 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 III*; Inv. No. 337-TA-1417 (Violation) 337-TA-1417 (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)
- *HydraFacial LLC f/k/a Edge Systems LLC v. Candela Corporation et al*, 1-25-cv-00418 (DDE)
- *HydraFacial LLC f/k/a Edge Systems LLC v. BQ Aesthetix & Co., LLC*, 0-25-cv-61262 (SDFL)

- *Eunsung Global Corp. v. HydraFacial LLC f/k/a Edge Systems LLC*, IPR2025-00453

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 IPR2025-00453 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*, IPR2025-00453, which was filed on January 14, 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 7, 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 13,891 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 7, 2025

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

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

I certify that on July 7, 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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