

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LUMENIS BE LTD.,¹
Petitioner,

v.

BTL HEALTHCARE TECHNOLOGIES A.S.,
Patent Owner.

IPR2021-01283
Patent 10,695,575 B1

Before BARBARA A. PARVIS, ZHENYU YANG, and DAVID COTTA,
Administrative Patent Judges.

COTTA, *Administrative Patent Judge.*

DECISION

Denying Institution of *Inter Partes* Review
35 U.S.C. § 314, 37 C.F.R. § 42.4

¹ Further to Petitioner's request, we have changed the case caption to reflect that Lumenis Be Ltd., is the successor-in-interest of Lumenis Ltd. Paper 5.

I. INTRODUCTION

Lumenis Be Ltd. (“Petitioner”)² filed a Petition (Paper 2, “Pet.”) to institute *inter partes* review of claims 16–29 of U.S. Patent No. 10,695,575 B1 (Ex. 1001, “the ’575 Patent”). BTL Healthcare Technologies A.S. (“Patent Owner”)³, filed a Preliminary Response. Paper 7 (“Prelim. Resp.”).

Under 35 U.S.C. § 314(a), *inter partes* review may not be instituted unless the Petition “shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” We have reviewed the arguments and evidence of record. Based on the preliminary record, we find that Petitioner has not established a reasonable likelihood that at least 1 of the challenged claims is unpatentable based on the grounds advanced in the Petition. Thus, for reasons explained below, we do not institute *inter partes* review of claims 16–29 of the ’575 patent.

A. Related Patents and Proceedings

The parties identify the following lawsuit as relating to the ’575 patent: *BTL Industries, Inc. v. Allergen Ltd.*, Case No. 1-20-cv-01046 (D. Del.), which was filed August 5, 2020 and closed pending outcome of an ITC proceeding. Pet. 3; Paper 3, 1. The parties additionally identify the following proceeding closed due to settlement as a related matter: *Certain Non-Invasive Aesthetic Body Contouring Devices, Components Thereof, and Methods of Using the Same*, Inv. No. 337-TA-1219 (ITC), filed August 5, 2020. Pet. 3; Paper 3, 2.

² Petitioner identifies itself as the real party-in-interest. Paper 5.

³ Patent Owner identifies itself, BTL Healthcare Technologies A.S., and BTL Industries, Inc. as the real parties-in-interest. Paper 3, 1.

Petitioner further identifies the following post-grant review proceedings previously challenging the '575 patent: *Allergan, Inc. et al v. BTL Medical Technologies SRO et al*, PGR2021-00020 (PTAB, Filed Dec. 14, 2020) (institution denied); and *Allergan, Inc. et al v. BTL Medical Technologies SRO et al*, PGR2021-00021 (PTAB, Filed Dec. 14, 2020) (institution denied). Pet. 3.

The '575 patent is also the subject of IPR2021-01276. Pet. 2–3; Paper 3, 1. Petitioner challenges claims 16–29 of the '575 patent in IPR2021-01283, “[d]ue to word-count constraints and the large number of claims.” Pet. 2–3 (citing Consolidated Trial Practice Guide⁴, 59–61; *see also* 84 Fed. Reg. 64,280 (Nov. 21, 2019)).

Petitioner also filed petitions for *inter partes* review for related patents as follows: (1) petitions for *inter partes* review of U.S. Patent No. 10,478,634 (IPR2021-01273 and IPR2021-01280); (2) petitions for *inter partes* review of U.S. Patent No. 10,632,321 (IPR2021-01275 and IPR2021-01282); (3) petitions for *inter partes* review of U.S. Patent No. 10,709,894 (IPR2021-01278 and IPR2021-01285); and (4) petitions for *inter partes* review of U.S. Patent No. 10,709,895 (IPR2021-01279 and IPR2021-01284). Paper 3, 1.

B. Asserted Grounds of Unpatentability

Petitioner asserts three grounds of unpatentability in this Petition, which are provided in the table below:

⁴ Available at <http://www.uspto.gov/TrialPracticeGuideConsolidated>.

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
16–29	103 ⁵	Simon ⁶
16–29	103	Burnett '870 ⁷ , Magstim ⁸
16–29	103	Simon, Burnett '870

Petitioner relies on the declaration of Dr. Marom Bikson as support for its Petition. Ex. 1002.

C. Technology Overview & the '575 Patent

The '575 patent is titled “Aesthetic method of biological structure treatment by magnetic field,” and concerns methods for aesthetically treating a patient by applying time-varying magnetic fields. Ex. 1001, code (54) (57), 1:53–61.

The '575 patent describes problems with prior art methods for enhancing a patient’s visual appearance by applying magnetic fields, including low energy efficiency and generating unwanted heat. *See id.* at 2:32–58. Additionally, known thermal treatments may result in adverse effects “such as non-homogenous temperature distribution, panniculitis, insufficient blood and/or lymph flow during and/or after the treatment.” *Id.* at 3:1–7. Accordingly, the '575 patent teaches a need for “new aesthetic treatment methods providing improved results in shorter time periods.” *Id.* at 3:8–9. To address this need, the '575 patent discloses “treatment methods

⁵ The Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. §§ 102 and 103. Based on the filing date of the '575 patent, we apply the AIA versions of §§ 102 and 103.

⁶ Simon et al., U.S. 2015/0165226 A1, published June 18, 2015 (Ex. 1004, “Simon”).

⁷ Burnett, U.S. 2014/0148870 A1, published May 29, 2014 (Ex. 1005, “Burnett '870”).

⁸ Hovey, Chris and Jalinous, Reza, *The Guide to Magnetic Stimulation*, The Magstim Company Limited (July 21, 2006) (Ex. 1006, “Magstim”).

and devices . . . [that] produce a time varying magnetic field for patient treatment which better optimizes energy use, increases the effectiveness of the treatments and provide[s] a new treatment.” *Id.* at 3:13–16.

The ’575 patent describes a circuit for “providing high power pulses to the stimulating magnetic field generating device” shown in Figure 5b, reproduced below. *Id.* at 14:31–33.

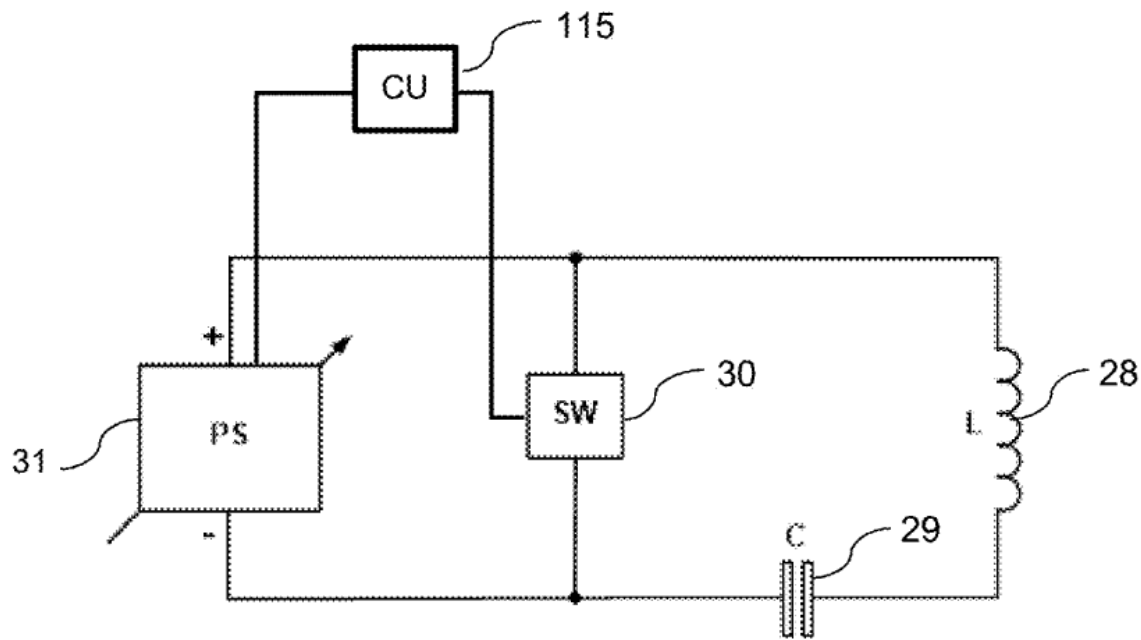


Figure 5b

Figure 5b, above, shows a “circuit for providing high power pulses for improved function of [a] treatment device.” *Id.* at 15:8–9. Figure 5b includes “magnetic field generating device 28 and an energy storage device 29 . . . connected in series and disposed in parallel to the switch 30.” *Id.* at 15:9–12. “To provide an energy pulse, controlled shorting of energy source 31 takes place through the switch 30.” *Id.* at 15:12–15. “[E]nergy source 31” or “switch 30,” or alternately both, “may be regulated by control unit 115. *Id.* at 15:20–23.

An “exemplary embodiment” of a “magnetic treatment device including two independent magnetic field generating circuits” is shown in Figure 12, reproduced below. *Id.* at 20:48–50.

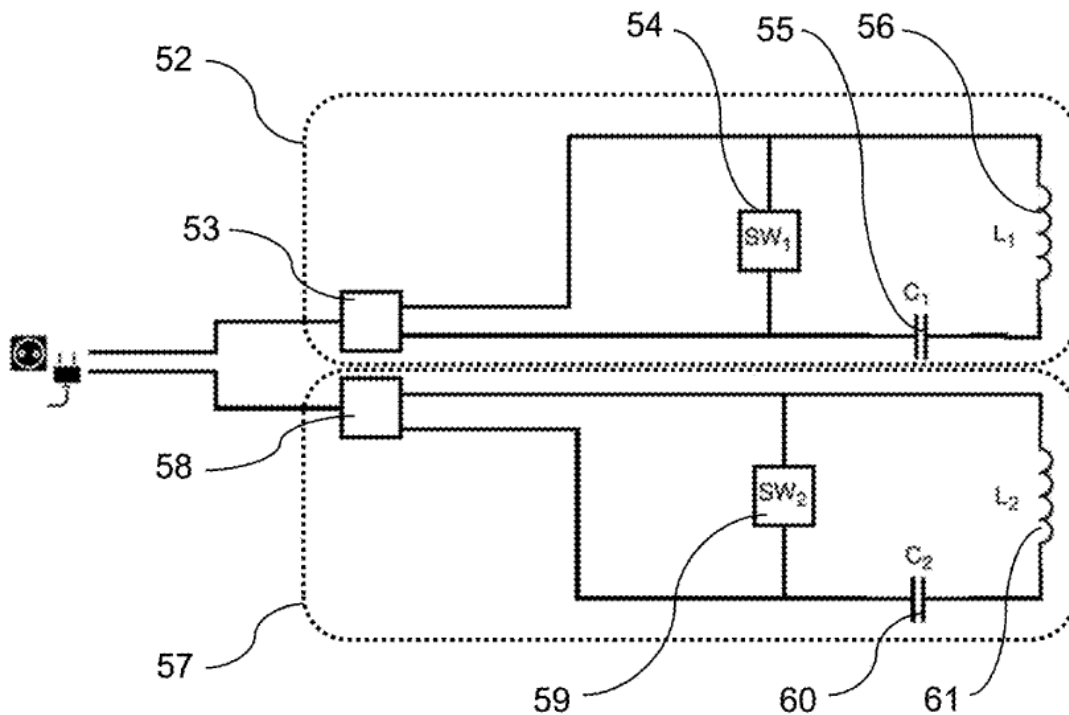


Figure 12

Figure 12, above, shows “an exemplary embodiment of the magnetic treatment device including two independent magnetic field generating circuits.” *Id.* at 20:48–50. The circuit shown in Figure 12 includes magnetic field generating circuit 52 and magnetic field generating circuit 57. *Id.* at Fig. 12, 20:47–56. Magnetic field generating circuit 52 includes “energy source 53[,] switching device 54[,] energy storage device 55[,] and magnetic field generating device 56.” *Id.* at 20:50–53. Magnetic field generating circuit 57 includes “energy source 58[,] switching device 59[,] energy storage device 60[,] and magnetic field generating device 61.” *Id.* at 20:53–56. A control unit controls the provision of energy from the energy storage

devices to the coils to generate magnetic impulses by the coils. *Id.* at 21:14–17.

D. Challenged Claims

The '575 patent includes 29 claims. Of those, claims 16–29 are challenged here. Pet. 1. Independent claim 16 is illustrative of the claims challenged in this Petition and is reproduced below with bracketing added corresponding to the labeling used by Petitioner to refer to various claim elements:

- 16. [pre.] A method for toning muscles of a patient, comprising:
 - [16.a] independently positioning a first and a second applicator laterally on at least one body region of the patient, wherein the body region is the patient's buttocks or abdomen, such that the first and second applicators are located on left and right sides of the body, respectively;
 - [16.b] attaching both the first and the second applicator to the body region by a belt;
 - [16.c] charging a first energy storage device and a second energy storage device;
 - [16.d] discharging the first energy storage device to a first circular magnetic field generating coil to generate a first pulse of a first time-varying magnetic field, wherein the first pulse comprises a first impulse and a time of no stimulation;
 - [16.e] discharging the second energy storage device to a second circular magnetic field generating coil to generate a first impulse of a second time-varying magnetic field after the first pulse of the first time-varying magnetic field begins but before the first pulse of the first time-varying magnetic field ends, wherein the second magnetic field generating coil has the same inductance as the first magnetic field generating coil, and wherein each impulse has a magnetic flux density in a range of 0.1 Tesla to 7 Tesla and an impulse duration in a range of 3 μ s to 1 ms;

- [16.f] cooling the first and the second magnetic field generating coils;
- [16.g] applying a plurality of impulses generated by the first magnetic field generating coil to a muscle, neuromuscular plate, or a peripheral nerve innervating the muscle such that at least one muscle in the body region is caused to contract, the plurality of impulses having a repetition rate in a range of 1 Hz to 300 Hz, wherein the application causes toning of the muscle; and
- [16.h] applying a plurality of impulses generated by the second magnetic field generating coil, to a muscle, neuromuscular plate, or a peripheral nerve innervating the muscle such that at least one muscle in the body region is caused to contract; the plurality of impulses having a repetition rate in a range of 1 Hz to 300 Hz, wherein the application causes toning of the muscle.

Ex. 1001, 109:64–110:38.

II. ANALYSIS

A. *Principles of Law*

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)).

A claim is unpatentable under 35 U.S.C. § 103(a) “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which [that] subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398,

406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary considerations of nonobviousness when presented. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Person of Ordinary Skill in the Art (“POSA”)

In determining the level of skill in the art, we consider the problems encountered in the art, the art’s solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986).

Citing the declaration of Dr. Bikson, Petitioner contends that a POSA would have “had a bachelor’s degree in biomedical engineering, electrical engineering, physics, or related field, and two or more years of professional experience working with the design, development, and/or use of devices that apply electromagnetic energy to stimulate biological tissue.” Pet. 10 (citing Ex. 1002 ¶¶ 1–36). Petitioner further explains that “[a]dditional graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education.” *Id.*

In the Preliminary Response, Patent Owner does not oppose Petitioner’s proposal, nor does it offer a proposal of its own. *See generally* Prelim. Resp.

Petitioner’s definition of the POSA is consistent with the specification of the ’575 patent and the prior art currently of record. However, we find Petitioner’s contentions that the skilled artisan would have had “two or

more” years of experience to be vague, as it encompasses skill levels beyond the proposal level without a defined limit. Accordingly, we adopt Petitioner’s proposal except we do not adopt the “or more” terminology above.⁹ *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (explaining that specific findings regarding ordinary skill level are not required “where the prior art itself reflects an appropriate level and a need for testimony is not shown”) (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985)).

C. Claim Construction

We interpret a claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b) (2020). Under this standard, we construe the claim “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” *Id.*

The parties do not propose a particular construction for any claim term. Pet. 10; *see generally*, Prelim. Resp.

At this stage in the proceeding, we determine that no explicit construction of any claim term is necessary to resolve the issues necessary to determine whether to institute review. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent

⁹ We recognize that the definition of the POSA proposed by Petitioner, and adopted in this decision, differs slightly from the definition we adopted in our decision denying institution in PGR2021-00021. *See* PGR2021-00021, Paper 17 at 9–10. We find that the differences between the two definitions are not material.

necessary to resolve the controversy” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)); *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed ‘to the extent necessary to resolve the controversy’”).

D. Obviousness over Simon (Ex. 1004)

Petitioner asserts that claims 16–29 are unpatentable as obvious over Simon. Pet. 11–39; *see id.* at 15–24 (claim 16), 25–29 (claim 24, which Petitioner argues is obvious for substantially the same reasons as with claim 16), 29–39 (claims 17–23, which depend ultimately from claim 16, and claims 25–29, which depend ultimately from claim 24). Patent Owner contends that Simon does not disclose certain elements of claims 16 and 24. *See* Prelim. Resp. 21–42. We begin with a summary of Simon, then turn to the parties’ dispute.

1. Simon (Exhibit 1004)

Simon is a U.S. Patent Application Publication published on June 18, 2015. Ex. 1004, code (43). Simon relates to delivery of energy impulses (and/or fields) to bodily tissues for therapeutic purposes. Ex. 1004 ¶ 2. Simon describes toroidal magnetic stimulation devices, as well as to non-invasive methods for treating medical conditions using energy that is delivered by such devices. *Id.*

Simon’s device is shown in Figure 1, which is reproduced below.

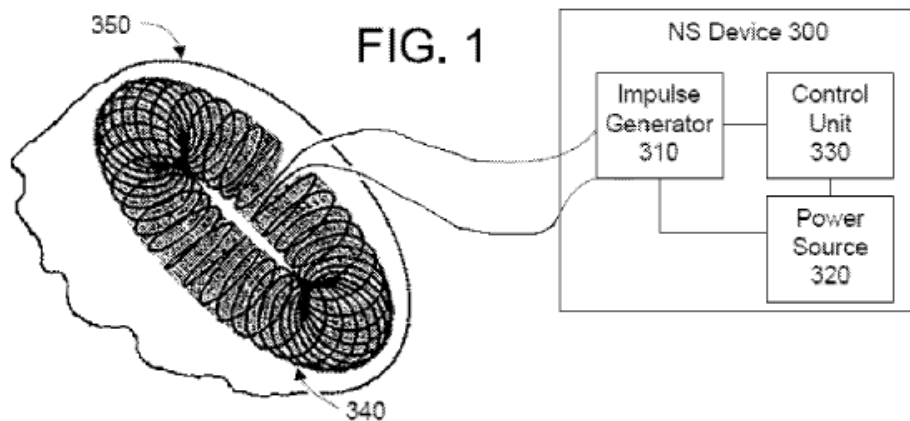


Figure 1, above, is a schematic diagram of nerve stimulating/modulating device 300 for delivering impulses of energy to nerves for the treatment of medical conditions. *Id.* ¶ 54.

As shown in Figure 1, stimulating device 300 includes impulse generator 310, power source 320, and control unit 330, respectively. *Id.* Impulse generator 310 is connected by wires to toroidal-shaped magnetic stimulator coil 340 located within electrically conducting medium 350. *Id.* ¶¶ 54, 56.

Simon illustrates an exemplary electrical voltage/current profile for electrical impulses that are applied to a portion or portions of a nerve in Figure 2, reproduced below.

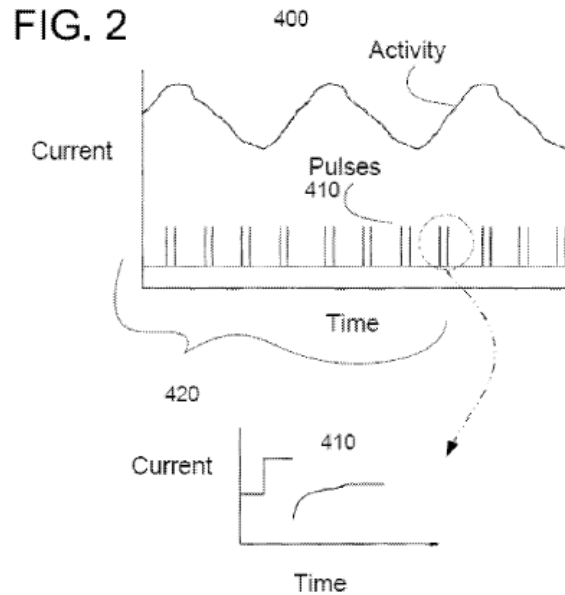
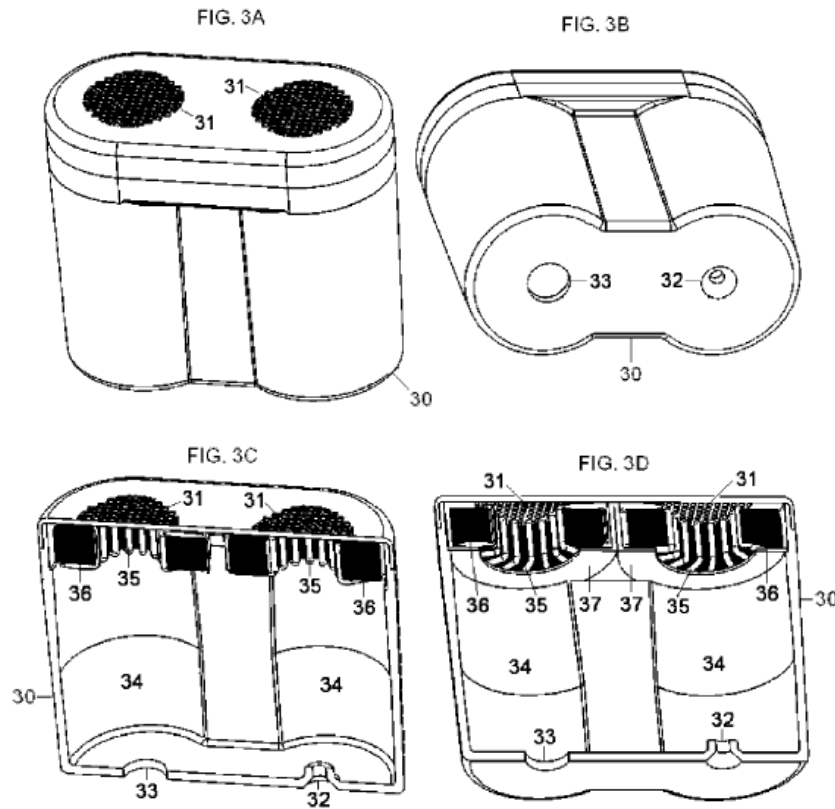


Figure 2, above, illustrates a graph of electrical voltage/current profile 400 with modulating impulse 410 having pulse train 420 shown in the graph with current on the y-axis and time on the x-axis. *Id.* ¶ 60.

Simon describes that pulse generator 310 is implemented using power source 320 and control unit 330 having, for instance, a processor, a clock, a memory. *Id.* ¶ 61. Pulse generator 310 produces pulse train 420 to stimulator coils(s) 340 that deliver stimulating, blocking and/or modulating impulse 410 to the nerve. *Id.*

Simon's dual-toroid magnetic stimulator coil is shown in Figures 3A–3D, which are reproduced below.



Figures 3A–3D, above, illustrate dual-toroid magnetic stimulator coil 30 situated within housing 37. *Id.* ¶¶ 45, 93, 98.

Figures 3A–3D, above, illustrate top and bottom views of toroidal magnetic stimulator 30. *Id.* ¶ 93. Stimulator 30 includes two cylindrical-shaped but interconnected conducting medium chambers 34. *Id.* ¶ 95, Figs. 3A–3D. Each chamber 34 includes coils of wires 35 wound around toroidal cores 36. *Id.* ¶ 97.

2. Analysis

There are two independent claims among the claims challenged in the Petition, claim 16 and claim 24. Claim 16 requires “cooling the first and the second magnetic field generating coils.” Ex. 1001, 110:23–24. Claim 24 similarly requires “cooling both magnetic field generating coils by oil.” *Id.*

at 111:52. Petitioner denominates these claim elements “16.f” and “24.e.” Pet. 22, 27. For convenience, we do the same.

Petitioner asserts that Simon teaches element 16.f based on Simon’s disclosure that “‘coils . . . overheat . . . over an extended period of time’ and needed cooling” and its disclosure of “‘cool[ing] the coils with flowing water or air’ or with ‘ferrofluids.’” Pet. 22 (citing Ex. 1004 ¶ 20). Petitioner also cites the testimony of its declarant, Dr. Bikson who describes the relevant portions of Simon and provides other evidence of cooling solutions. *Id.* (citing Ex. 1002 ¶¶ 78–82, 143–144). For element 24.e, which requires cooling “with oil,” Petitioner refers back to its submission for element 16.c¹⁰ and additionally cites evidence that “oil was . . . known as a coolant.” *Id.* at 27 (citing Ex. 1009, 6:13–14 and Ex. 1010 ¶ 71). Petitioner asserts that a person having ordinary skill in the art “would have been motivated and found it obvious to apply known oil-cooling techniques to **Simon’s** stimulator for heat-sensitive body regions or lengthy treatment.” *Id.* at 28 (citing Ex. 1002 ¶¶ 164–166, 78–82).¹¹

Patent Owner responds by contending the following:

Simon is directed to “*toroidal* magnetic stimulation devices, as well as to non-invasive methods for treating medical conditions using energy that is delivered by such devices.” EX1004, ¶2. Toroidal stimulators generate magnetic fields that

¹⁰ Petitioner’s reference to claim element 16.c appears to be a typographical error as Petitioner’s mapping for that claim element does not relate to cooling. We expect that Petitioner intended to refer back to its submission for element 16.f. We analyze Petitioner’s evidence with respect to the cooling element of claim 24 as if it refers to element 16.f.

¹¹ Petitioner’s assertions for elements 24.e include additional citations not included for element 16.f. For convenience, we consider all evidence cited in connection with both elements when determining whether Petitioner met its burden with respect to each individual claim.

are confined within their coils and do not penetrate into the patient's body. EX1004, ¶¶37, 82, 122, 140, 166, 180. Rather, toroidal stimulators produce their effect by using their toroidal coils to generate and apply an electric current at the surface of the patient's skin, similar to a transcutaneous electrical nerve stimulation ("TENS") device. EX1004, ¶37.

Prelim. Resp. 8.

Patent Owner asserts that "Simon explains that a 'practical disadvantage of [conventional] magnetic stimulator coils is that they overheat when used over an extended period of time, because large coil currents are required to reach threshold electric fields in the stimulated tissue.'" *Id.* at 15–16 (citing Ex. 1004 ¶ 20). Patent Owner further asserts "[b]y contrast, Simon discloses that toroidal magnetic stimulators require significantly less current than conventional magnetic stimulators, and thus produce little to no heat: '[T]oroidal stimulators require *only about 0.001-0.1 of the current and produce virtually no heating.*'" *Id.* at 16 (citing Ex. 1004 ¶ 37); *see also id.* at 37 (citing Ex. 1004 ¶¶ 37, 83) (asserting that Simon "touts that lack of heating is an advantage of [Simon's] device"). Patent Owner, more specifically, asserts that "Simon discloses two characteristics of stimulator 30 that significantly reduce the current required to operate the stimulator, which, in turn, results in little to no heat generation" including (1) "using toroidal cores/coils" and (2) "using the conducting medium 350." *Id.* at 38 (citing Ex. 1004 ¶¶ 37, 83).

Patent Owner points to Simon's disclosure that toroidal stimulators produce "virtually no heating" and asserts a person having ordinary skill in the art "would have understood that stimulator 30 is not cooled as described in Simon's background section, which explains cooling is necessary in conventional stimulators because of heat." *Id.* at 38 (citing Ex. 1004 ¶¶ 20,

37). Patent Owner asserts that Petitioner’s arguments as to why a person having ordinary skill in the art would have been motivated to apply known cooling techniques to Simon’s stimulator are deficient because “Petitioner does not address Simon’s express teachings that stimulator 30 produces little to no heat.” *Id.* at 38–39 (citing Ex. 1004 ¶¶ 37, 56, 83, 184).

Simon describes that its “invention is particularly useful for inducing applied *electrical* impulses that interact with the signals of one or more nerves, or muscles, to achieve a therapeutic result.” Ex. 1004 ¶ 53 (emphasis added). Simon describes that Figure 1 illustrates “a schematic diagram of a nerve stimulating/modulating device 300” (*id.* ¶ 54) “according to the present invention” (*id.* ¶ 43). Petitioner relies on Simon’s disclosures relating to its modulating device, rather than prior art devices, for many recitations in claim 16. *See, e.g.*, Pet. 15–16 (relying on Figures 3A–3D, 4C–4D, illustrating embodiments of magnetic stimulator coil 340 for element 16.a), 17 (relying on Simon’s Figure 1 and stimulating/modulating device 300 for element 16.c), 18–19 (relying on Figure 2 for element 16.d).

Simon further describes the embodiment shown in Figure 1 as follows:

The volume of the container containing electrically conducting medium is labeled in FIG. 1 as 350. Use of the container of conducting medium 350 allows one to generate (induce) electric fields in tissue (and electric field gradients and electric currents) that are equivalent to those generated using current magnetic stimulation devices, but with about 0.0001 to 0.01 of the current conventionally applied to a magnetic stimulation coil. This allows for minimal heating and deeper tissue stimulation.

Ex. 1004 ¶ 83. Further, in the Summary of the Invention, Simon describes that its devices “require only about 0.001 – 0.1 of the current and produce virtually no heating.” *Id.* ¶ 37.

We agree with Patent Owner that Simon's teachings relating to cooling pertain to only commercially available devices described in publications summarized in the Background of the Invention. *Id.* ¶ 20. Simon does not teach cooling the coils with respect to nerve stimulating/modulating device 300 illustrated in Figure 1 or any other embodiment described in accordance with Simon's invention.

We also agree with Patent Owner that Simon's teachings relating to overheating pertain to only commercially available devices described in publications summarized in the Background of the Invention. Simon distinguishes its devices from those on the basis that Simon's devices "produce virtually no heating." *Id.* ¶ 37. Petitioner's theory that a person having ordinary skill in the art would have been motivated to apply known cooling techniques to Simon's stimulator does not take into account Simon's disclosures that its stimulators "produce virtually no heating." *Id.*

We, therefore, determine Petitioner has not shown sufficiently that Simon teaches elements 16.f and 24.e.

3. Conclusion

After consideration of the contentions and the evidence of record, we determine that Petitioner has not shown sufficiently that Simon teaches each recitation of claims 16 and 24. Accordingly, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claims 16 and 24 are unpatentable under 35 U.S.C. § 103 as obvious over Simon. Claims 17–23 depend, directly or indirectly, from claim 16. Claims 25–29 depend, directly or indirectly, from claim 24. Petitioner's arguments and evidence for dependent claims 17–23 and 25–29 do not remedy the deficiencies discussed with respect to claims 16 and 24.

Accordingly, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claims 17–23 and 25–29 are unpatentable under 35 U.S.C. § 103 as obvious over Simon.

E. Obviousness over Burnett '870 (Ex. 1005) and Magstim (Ex. 1006)

Petitioner asserts that claims 16–29 are unpatentable as obvious over the combination of Burnett '870 and Magstim Pet. 39–68; *see id.* at 47–56 (claim 16), 56–59 (claim 24, which Petitioner argues is obvious for substantially the same reasons as with claim 16), 60–68 (claims 17–23, which depend ultimately from claim 16, and claims 25–29, which depend ultimately from claim 24). Patent Owner contends that Simon does not disclose certain elements of claims 16 and 24. *See* Prelim. Resp. 42–59. We begin with a summary of Burnett '870 and Magstim, then turn to the parties' dispute.

1. Burnett '870 (Ex. 1005)

Burnett '870 is a U.S. Patent Application Publication published on May 29, 2014. Ex. 1005, code (43). Burnett '870 describes a system for electromagnetic induction therapy that generates a magnetic field focused on a target nerve, muscle, or other body tissue. Ex. 1005 ¶ 21. An embodiment of Burnett '870's system is shown in Figure 34 reproduced below.

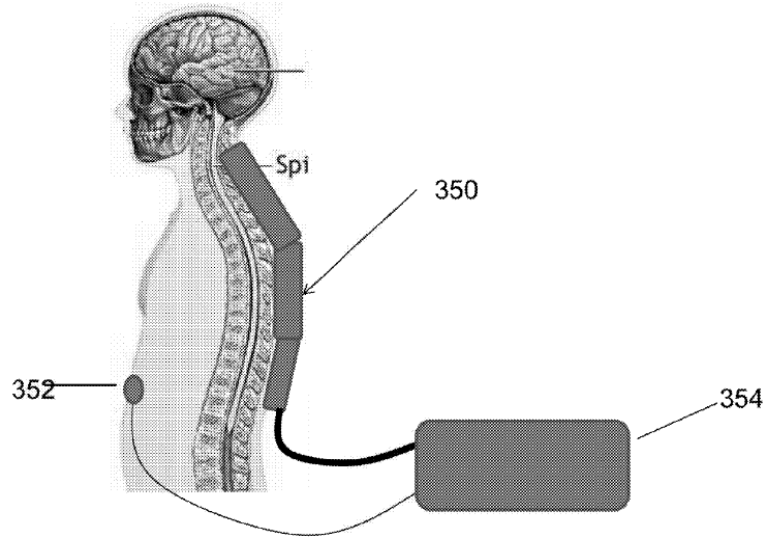


Figure 34 illustrates a schematic view of a system including multiple back applicators placed on a human back, a sensor, and a logic controller. *Id.*

¶ 56.

Figure 34, above, illustrates a profile view of the upper half of a human body with one or more back applicators 350 and sensor 352. *Id.*

¶ 209. Back applicators 350 and sensor 352 are connected by wires to logic controller 354. *See id.*

Referring to Figure 34, Burnett '870 discloses that applicators 350 may include multiple coils that are fired sequentially. *Id.* ¶ 209. Burnett '870 discloses another variation of back applicator 360 with several coils that are pulsed intermittently. *Id.* ¶ 210. The applicator may be held on a patient by an ergonomic position element, e.g., a belt. *Id.* Additionally, coil power line 365 for supplying power or current from logic controller 364 may include “fluid cooling, e.g., air or liquid cooling.” *Id.*

Burnett '870 discloses a variation of the system, shown in Figure 9B, in which coils 106 are disposed within an abdominal garment. *Id.* ¶ 114.

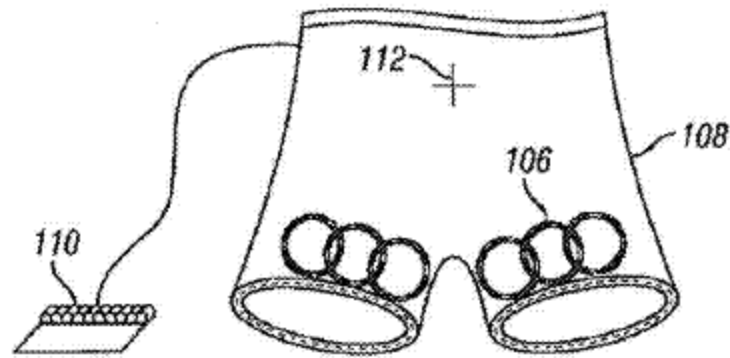


FIG. 9B

Figure 9B, above, illustrates shorts 108, including two separate sets of 3 interlocking rings labelled coils 106 that are connected to a logic controller (not shown) by connector 110. *Id.* ¶ 114, Fig. 9B.

Burnett '870's shorts 108 includes one or more sensors (not shown) that provide feedback to the logic controller. *Id.* ¶ 113. Marking 112 may be added to one side of shorts 108 to indicate wrap orientation. *Id.* ¶ 114.

2. Magstim (Ex. 1006)

Magstim is an industry guide published on July 21, 2006. Ex. 1006, 6; *see* Ex. 1060 ¶ 7. Magstim describes techniques of magnetic stimulation for clinical applications. Ex. 1006, 1.¹² Magstim illustrates its magnetic stimulator in Figure 2, reproduced below.

¹² Magstim includes two sets of page numbers, specifically, original page numbers and page numbers added by Petitioner. We refer to the original page numbers in Magstim.

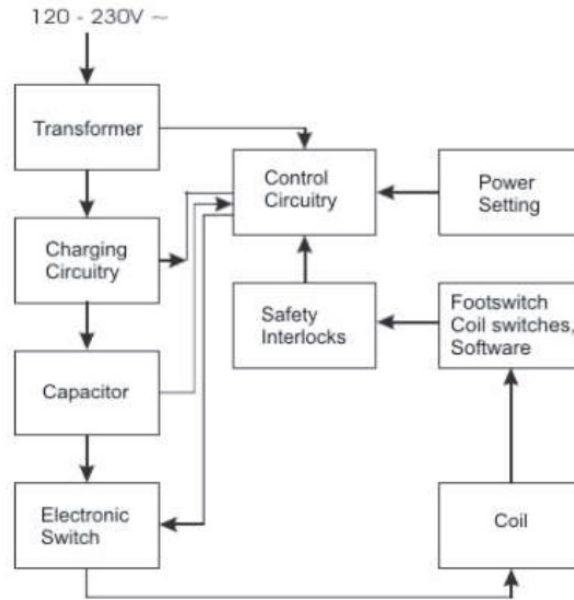


Figure 2, above, illustrates a block diagram of the Magstim Model 200¹³ monophasic stimulator including a transformer, charging circuitry, a capacitor, an electronic switch, and a coil. *See id.* at 4.

Magstim discloses that the transformer charges the capacitor under the control of a microprocessor. *Id.* The capacitor is connected to the coil via an electronic switch when the user wishes to apply the stimulus. *Id.*

Magstim's coil is illustrated in Figure 3, reproduced below.

¹³ Magstim describes its Magstim Model 200 or Magstim 200 as a stimulator that was launched in 1986. *Id.* at 3.

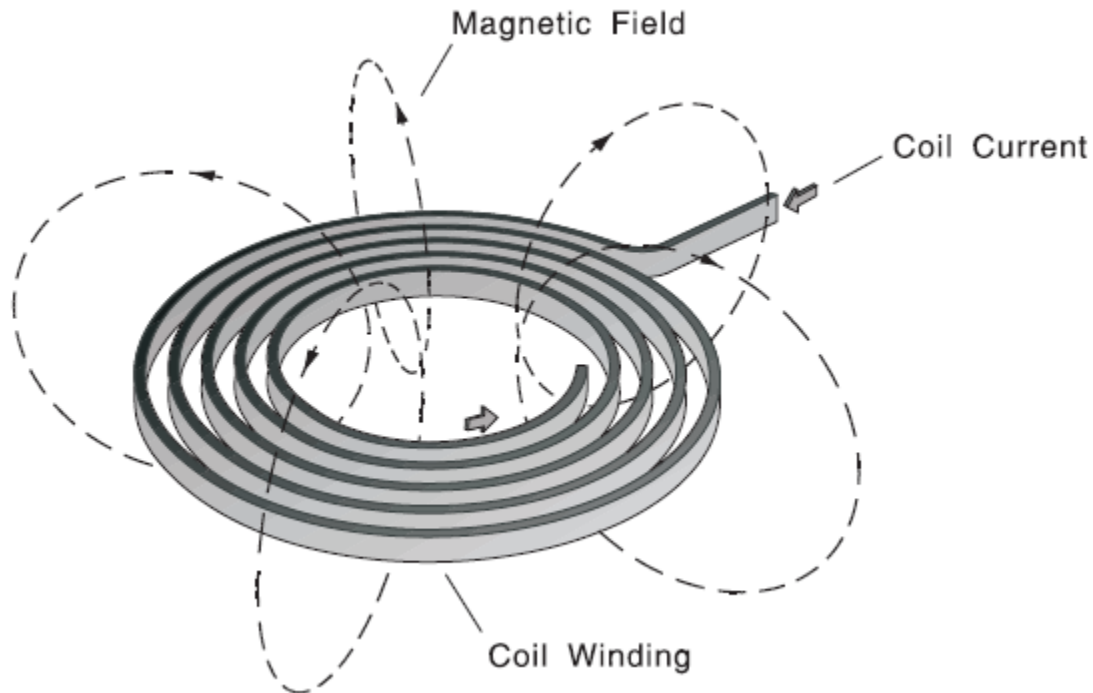


Figure 3, above, illustrates a circular coil winding showing the lines of force generated when current flows through the winding. *Id.* at 5.

Magstim discloses that the Magstim 200 is supplied with a single circular coil or a double coil shaped as a butterfly or figure of eight. *Id.* at 5, 9. Double coils use two windings, normally placed side by side. *Id.*

3. Analysis of Claims 16–23

Independent claim 16 requires “charging a first energy storage device and a second energy storage device.” Ex. 1001, 110:5–6. Petitioner denominates this claim element “16.c.” Pet. 51. For convenience, we do the same.

Petitioner provides a mapping for element 16.c in its claim chart for claim 16. Pet. 51–52. Patent Owner disputes Petitioner’s mapping asserting that the combination of Burnett ’870 and Magstim lacks two energy storage devices. Prelim. Resp. 43–48.

For completeness, we review each of the assertions in Petitioner’s mapping of element 16.c in sequence. Petitioner starts by pointing to two patents described in the background section of Burnett ’870. Pet. 51 (citing Ex. 1005 ¶¶ 13, 14). One of those patents describes “a magnetic stimulation device which consists of a stimulation coil, *a* high-voltage *capacitor*, and a controllable network part.” 1005 ¶ 14 (emphases added). The other patent describes a coil, a body applicator, and “[a] reserve *capacitor*.” *Id.* ¶ 13 (emphasis added). Consistent with Patent Owner’s assertions, both patents cited by Petitioner from the background section of Burnett ’870 describe a stimulator with a single capacitor.

Next Petitioner asserts that Burnett ’870’s “provisional application^[14]” “discloses using a LoFIT system described in Burnett-’185^[15] in its invention.” Pet. 51 (citing Ex. 1023 ¶¶ 1, 2, 20). Consistent with Petitioner’s contentions, the ’720 provisional describes the Low Frequency Induction Therapy (“LoFIT”) system. Ex. 1023 ¶¶ 1–2 (describing treatment “with the use of Low Frequency Induction Therapy (LoFIT)”), 20 (“The LoFIT™ System is currently protected by 3 patents pending and one issued patent: U.S. Pat. No. 6,701,185 entitled ‘Method and apparatus for electromagnetic stimulation of nerve, muscle, and body tissues.’”). The ’720 provisional references U.S. Patent No, 6,701,185 B2 (“Burnett ’185,” Ex. 1024). The portions of the ’720 provisional relied on do not describe details of the LoFIT system.

¹⁴ Petitioner references provisional application No. 60/848,720 (“the ’720 provisional,” Ex. 1023).

¹⁵ Petitioner references U.S. Patent No, 6,701,185 B2 (“Burnett ’185,” Ex. 1024).

Petitioner next asserts that “Burnett-’185 discloses incorporating a capacitor in the circuitry of the device, allowing it to be charged, and using a switch to discharge it to the coil.” Pet. 51 (citing Ex. 1024, 6:66–7:2, 7:27–8:26). Burnett ’185 describes that “[t]he internal circuitry of the logic controller 20 comprises or alternatively consists of a transformer, *a capacitor*, an inducting coil, a diode, and a switch.” Ex. 1024, 6:66–7:1 (emphasis added). Burnett ’185 further describes “[*a*] capacitor and a stimulating coil (not shown) are provided in parallel.” *Id.* at 7:27–28 (emphases added). Throughout the portions of Burnett ’185 relied on by Petitioner, Burnett ’185’s disclosure is limited to a single capacitor. *Id.* at 7:27–8:26 (describing embodiments having “a capacitor” or referring to “the capacitor”). In contrast, Burnett ’185 describes alternative embodiments with multiple coils. *See id.* at 7:53–54 (describing “[o]ne or more coils or arrays of coils”).

In one embodiment, Burnett ’185 describes having a single capacitor and an array of coils 32, which are activated sequentially or simultaneously. Ex. 1024, 7:60–67. Burnett ’185 describes that the sequential activation is accomplished by a switching mechanism. *Id.* Burnett ’185, more specifically, describes the following:

In the other position, the switch prevents the capacitor from discharging to ground and allows the capacitor to be charged. Each coil 32 attached to the logic controller 20 may have its own internal switching mechanism to allow firing of the coil 32 in sequence or to allow the firing of multiple coils simultaneously.

Ex. 1024, 7:64–67. Regardless of the number of coils, consistent with Patent Owner’s assertions (Prelim. Resp. 43–48), Burnett ’185’s disclosure is limited to a single capacitor (Ex. 1024 at 6:66–7:2, 7:27–8:26).

Petitioner next asserts that:

A POSITA would have been motivated and found it obvious to incorporate capacitors in Burnett-'870['s] device based on its reference to the LoFIT system, and its guidance to store energy for the coils, and a POSITA would have understood to charge the capacitors such that they would be discharged to the coils as was known in the art.

Pet. 51 (citing pages 3–4 and Figure 2 of Magstim (Ex. 1006) as supporting evidence). Petitioner's annotated Figure 2 of Magstim is reproduced below.

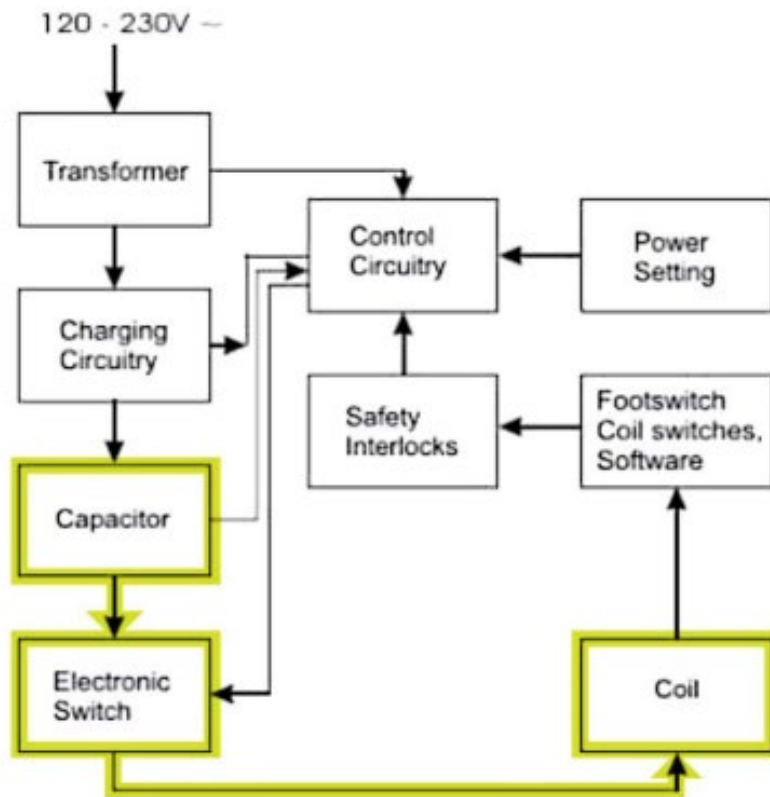


Figure 2, above, illustrates a block diagram of the Magstim Model 200 monophasic stimulator (Ex. 1006, 4, Fig. 2), which includes Petitioner's yellow annotation highlighting the capacitor, the electronic switch, and the coil, as well as the flow from the capacitor to the coil via the electronic switch (Pet. 52).

Magstim describes that the transformer of Magstim charges the capacitor under the control of a microprocessor. Ex. 1006, 4. Magstim further describes that the capacitor is connected to the coil via the electronic switch that delivers energy to the coil when the user wishes to apply the stimulus. *Id.* Magstim discloses that the Magstim 200 is supplied with a single circular coil or a double coil shaped as a butterfly or figure of eight. *Id.* at 5, 9.

Below is a picture of the Magstim with a double coil.



Figure 13 of Magstim, above, is a photograph of a Magstim 200 magnetic stimulator with a double coil. *Id.* at 9.

Consistent with Patent Owner’s arguments (Prelim. Resp. 43–48), Magstim describes the Magstim 200 as having a single capacitor. Ex. 1006, 4, Fig. 2. The Magstim 200 may operate with a double coil. *Id.* at 5, 9.

Petitioner’s mapping in its claim chart concludes with a list of citations, i.e., “See VIII.B.3” and “Bikson ¶¶276–285, 76–77” (Pet. 51), which refer to a section of the Petition entitled “**Motivation to Combine**” (*id.* at 45–47 (§ VIII.B.3)) and Dr. Bikson’s Declaration, respectively.

We turn to the “**Motivation to Combine**” discussion in the Petition that is cited at the end of Petitioner’s mapping. Pet. 45–47. Petitioner asserts the following:

Because **Burnett- '870** discloses using activating two coils “differentially,” and in view of known teachings to use a capacitor for storing energy for a coil, a POSITA would have recognized **Burnett- '870** as teaching separate energy source and storage per coil that would allow for independent control of separate coils to provide programmable discharge patterns of pulse channels. It would have been an obvious, “typical,” implementation to double the energy source, capacitor and switch for a two-coiled design such that each coil has its own circuitry. A POSITA would have been motivated and found it obvious to apply **Magstim’s** teaching in implementing **Burnett-’870’s** stimulation device to charge and discharge the capacitors using switches such that energy would be stored in the capacitors and that the discharge of the capacitors would be controlled to provide power to the coils to generate the time-varying magnetic fields. Bikson, ¶¶257–259, 76–77.

Pet. 45–46. Dr. Bikson’s declaration includes similar testimony. Ex. 1002 ¶ 259.

Petitioner is correct that Burnett ’870 describes activating coils “differentially.” Ex. 1005 ¶ 87. In particular, Burnett ’870 describes “[w]hen multiple coils 26 are present, coils 26 may be activated simultaneously or differentially to generate the desired magnetic field.” *Id.* Burnett ’870, more specifically, describes activating coils differentially as a “firing sequence.” *Id.* However, the evidence of record does not support that the disclosure of “differential” activation of coils requires separate energy storage per coil. In this regard, we note that Burnett ’870’s description of the differential and sequential activation of coils 26 is similar to the description of activating multiple coils sequentially set forth in Burnett ’185. *Compare* Ex. 1005 ¶ 87 (“When multiple coils 26 are present, coils 26 may be activated simultaneously or differentially to generate the desired magnetic field.”), *with* Ex. 1024, 7:64–67 (“Each coil 32 attached to the logic controller 20 may have its own internal switching mechanism to allow

firing of the coil 32 in sequence or to allow the firing of multiple coils simultaneously.’’). As discussed above, Burnett ’185 describes its stimulator as having a single capacitor.

Burnett ’870’s use of multiple coils activated by a single capacitor is also similar to Magstim. Burnett ’870’s coils 26 are within coil wrap 20. Ex. 1005 ¶ 87. Burnett ’870’s coil wrap 20 is shown in Figure 1, reproduced below.

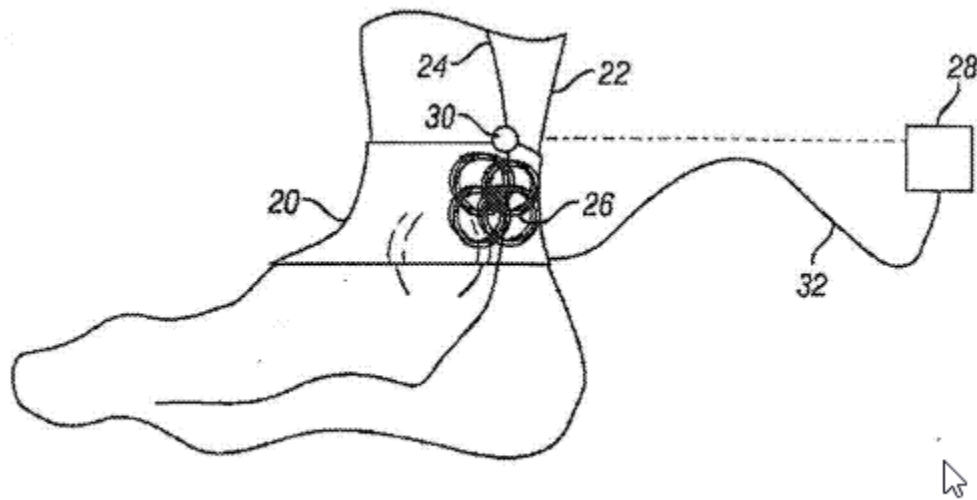


FIG. 1

Figure 1 of Burnett ’870, above, illustrates coil wrap 20 disposed over ankle 22, which includes one or more conductive coils 26. *Id.* ¶¶ 77, 79.

Burnett ’870 describes that coils 26 “may be a single coil shaped in a simple helical pattern or as a figure eight coil, [or] a four leaf clover coil.” *Id.* ¶ 79. Burnett ’870’s description of multiple coils 26 as including, for example, a “figure eight coil” (Ex. 1005 ¶ 79) is similar to the description in Magstim of its double coil being a “figure of eight coil” (Ex. 1006, 5). Magstim’s double coil “is supplied as standard” with the Magstim 200. *Id.*

at 5–6. The Magstim 200 has a single capacitor. *Id.* at 4, Fig. 2. Thus, the mere existence of multiple coils does not require multiple capacitors.

Interpreting “differential” activation of coils as not requiring multiple capacitors is consistent with the disclosure of Burnett ’870. Burnett ’870 describes that “[t]he electric current that produces the magnetic field by flowing through coils 26 is supplied by programmable logic controller 28, which is connected to coils 26, for example, with a power cord 32.” Ex. 1005 ¶ 81. Burnett ’870’s description of its coil wrap 20 does not indicate that coil wrap 20 includes a capacitor. *See, e.g., id.* ¶¶ 77, 79, 81, 87. Petitioner acknowledges that Burnett ’870 “leaves the powering of coils to POSITA.” Pet. 45.

Upon consideration of Burnett ’870, including Burnett ’870’s description of “activating two coils ‘differentially’” and the disclosures of Magstim and Burnett ’185 relied on by Petitioner, we are not persuaded that they support using two capacitors or energy storage devices. Instead, the disclosures of Burnett ’870, Burnett ’185, and Magstim are consistent with Patent Owner’s assertions that the Petition demonstrates a teaching of only a single capacitor.

We turn to Petitioner’s assertion that “[i]t would have been an obvious, ‘typical,’ implementation to double the energy source, capacitor and switch for a two-coiled design such that each coil has its own circuitry.” Pet. 45–46. Petitioner relies on Dr. Bikson’s declaration testimony as the supporting evidence. *Id.* (citing Ex. 1002 ¶¶ 257–259, 76–77).

Petitioner argues and Dr. Bikson testifies that it “would have been an obvious, ‘typical,’ implementation to double the energy source, capacitor and switch for a two-coiled design such that each coil has its own circuitry.” Pet. 45–46; Ex. 1002 ¶ 259. This statement is not followed by a citation to

support what Petitioner and Dr. Bikson consider to be a “typical” implementation. *Id.* However, immediately preceding this statement, the Petition cites Magstim (page 4 and Figure 2) as an example of the “circuitry of a ‘typical simulator’ to control charging (from an energy source, *e.g.*, a transformer) and discharging of a capacitor.” Pet. 45. And immediately following the “typical” statement, Petitioner references applying Magstim’s teaching in Burnett ’870’s device. *Id.* at 46. As such, we infer that Petitioner relies on Magstim as illustrating a typical implementation. This is problematic for Petitioner because, the cited portions of Magstim do not include two capacitors. *See* Ex. 1006, 4, Fig 2.

Elsewhere in his Declaration, Dr. Bikson testifies regarding U.S. Pat. No. 5,718,662 (Ex. 1033, “Jalinous”). Ex. 1002 ¶¶ 76–77. Dr. Bikson testifies that Jalinous discloses that its magnetic stimulator “comprises two sets of capacitors 3 each having a respective, independently controllable discharge control, connected in parallel to provide one common output for each set of capacitors. The two outputs may be used to drive different coils.” Ex. 1002 ¶ 77 (citing Ex. 1033, 2:7–11). Jalinous describes that its apparatus shown in Figure 1 “comprises two sets of capacitors 3,” which “[may be] used to drive different coils or maybe coupled in parallel to drive a single stimulating coil.” Ex. 1033, 2:7–14.

Importantly, Petitioner and Dr. Bikson rely not on incorporating the teachings of Jalinous in Burnett ’870’s device, but on incorporating Magstim. Pet. 46 (explaining that the person having ordinary skill in the art would have found it obvious “to apply **Magstim**’s teaching in implementing **Burnett- ’870**’s stimulation device to charge and discharge the capacitors using switches such that energy would be stored in the capacitors . . . to provide power to the coils to generate time-varying magnetic fields”); Ex.

1002 ¶ 259 (“The application of Magstim’s teaching to Burnett- ’870 would allow energy to be stored in the capacitors, for control of the discharge of the capacitors to provide power to the coils, to thereby generate the time-varying magnetic fields.”). Although the Petition does include a citation to Dr. Bikson’s testimony on Jalinous, it appears without explanation in a string citation, and does not change the fact that Petitioner and Dr. Bikson rely on incorporating Magstim’s teachings on capacitors in Burnett ’870’s device. *See, e.g.*, Pet 46. Absent further explanation, Petitioner’s citation is insufficient to explain how Jalinous supports Petitioner’s position.

Dr. Bikson also testifies “it would have been an obvious design choice to keep the same capacitor-to-coil 1:1 ratio in implementing the two-coiled embodiment of [the] Burnett- ’870 device.” Ex. 1002 ¶ 259. A mere design choice, which does not need to be shown explicitly in the prior art, is generally a minor and obvious choice that solves no stated problem. *Cf. In re Kuhle*, 526 F.2d 553, 555 (CCPA 1975) (“Use of such a means of electrical connection in lieu of those used in the references solves no stated problem and would be an obvious matter of design choice within the skill [in] the art.” (citations omitted)). Furthermore, a finding of obviousness based on design choice is precluded where the difference between the claimed feature and prior art results in a functional difference. *In re Gal*, 980 F.2d 717, 719 (Fed. Cir. 1992).

Here, the current record supports that adding a capacitor to the two-coiled embodiment of Burnett ’870 is not minor and would result in a functional difference. *See e.g.*, Ex. 1001, 19:62–64 (teaching that an embodiment with multiple energy storage devices offers the benefit of “time independency of the impulses generated by the separate magnetic field generating devices”); 19:67–20:2 (teaching that an embodiment with

multiple energy storage devices offers the benefit of “providing various treatments by a plurality of magnetic field generating devices”); 20:57–60 (disclosing that the “magnetic field generating circuit may include a plurality of energy storage devices providing energy to a magnetic field generating device in order to enable higher energy pulse”). Dr. Bikson’s testimony that “it would have been an obvious design choice to keep the same capacitor-to-coil 1:1 ratio in implementing the two-coiled embodiment of [the] Burnett-’870 device” (Ex. 1002 ¶ 259) is conclusory and does not take into account whether such a change would result in a functional difference. In addition, Dr. Bikson cites Magstim as supporting a 1:1 capacitor-to-coil ratio, but does not address that Magstim discloses a single capacitor-to-multiple coil ratios, including, for example, a 1:2 capacitor-to-coil ratio. *See, e.g.*, Ex. 1006, 9 (“Single Pulse Systems may be used for cortical or peripheral stimulation with either single circular or double figure of eight coils.”). Accordingly, we are not persuaded that the Petition establishes that the prior art supports maintaining a 1:1 capacitor-to-coil ratio or that doubling the capacitor would be an obvious design choice.

For the reasons given above, we determine Petitioner has not shown sufficiently that the combination of Burnett ’870 and Magstim teaches element 16.c. Claims 17–23 depend, directly or indirectly, from claim 16. Petitioner’s arguments and evidence for dependent claims 17–23 do not remedy the deficiencies discussed above with respect to claim 16. Accordingly, we conclude that Petitioner has not demonstrated a reasonable

likelihood that it would prevail in showing that claims 16–23 are unpatentable under 35 U.S.C. § 103 as obvious over Simon.¹⁶

4. Analysis of Claims 24–29

Independent claim 24 requires “cooling both magnetic field generating coils by oil.” Ex. 1001, 111:52.¹⁷ Petitioner denominates this claim element “24.e.” Pet. 58. For convenience, we do the same.

Petitioner provides a mapping for element 24.e in its claim chart for claim 24. *Id.* Petitioner’s mapping for this element refers back to its mapping for element 16.f. Accordingly, we consider the Petitioner’s evidence for elements 16.f and 24.e together.

Petitioner contends that Burnett ’870 discloses that it was “known to cool the coils by direct contact with a coolant, e.g., liquid to prevent overheating.” Pet. 55 (citing Ex. 1005, ¶¶ 210, 215, 235; Ex. 1002 ¶¶ 303–304, 78–82). Petitioner further contends that Burnett ’870 “leaves it to POSITAs to choose the type of liquid as coolant, and oil was known in the art for cooling.” *Id.* at 58 (citing Ex. 1010 ¶ 71; Ex. 1008, 3:14–16; Ex. 1002 ¶¶ 324–332, 78–82).

¹⁶ Petitioner relies on much the same evidence to satisfy claim elements 27.a and 27.b, which require “a first energy storage device” and a “second energy storage device.” Pet. 67–68 (claim chart referencing evidence for element 16.c as well as elements 16.d and 16.e). For convenience, we discuss claim 27 in connection with our analysis of claim 24, from which claim 27 depends.

¹⁷ Claim 16 similarly requires “cooling the first and the second magnetic field generating coils.” Ex. 1001, 110:23–24. Because we have already determined that Petitioner has not demonstrated a reasonable likelihood that it will prevail with respect to claim 16 and its dependents, we do not consider whether our analysis of Petitioner’s assertions regarding the cooling features in claim 24 would also apply to claim 16 and its dependents.

At this point in the proceeding, Patent Owner does not dispute that it was known to cool the coils by direct contact with a coolant or that oil was known as one such coolant. Prelim. Resp. 55–58 (addressing Petitioner’s evidence with respect to elements 16.f and 24.e). Instead, Patent Owner argues that Petitioner does not explain how the POSITA would have combined those embodiments in Burnett ’870 that provide coil cooling with the embodiment of Burnett ’870’s Figure 9B – an embodiment that Petitioner expressly relies on in its proof for another element of claim 24. *Id.* We agree with Patent Owner that Petitioner has not persuasively explained how the POSITA would have provided in cooling in the embodiment of Burnett ’870’s Figure 9B.

We begin by considering whether Petitioner relies on Figure 9B to establish obviousness. We conclude that it does. Throughout the Petition, Petitioner relies on Burnett’s Figure 9B as disclosing application of an applicator to the buttocks or abdomen.¹⁸ Pet. 48 (mapping for claim element 16.a, citing “Simon [sic, Burnett ’870], Fig. 9B” for the proposition that “**Burnett-’870** positions applicators laterally on the left and right buttocks or abdomen”), 49 (mapping for claim element 16.b, asserting that “Figure 9B of **Burnett-’870** discloses . . . fixing the applicators to the left and rights sides of the patient’s buttocks”), 56–57 (mapping for claim element 24.b, reproducing Figure 9B to support that “Burnett-’870 discloses independently placing a second applicator . . . on [a] different portion of the body region (*e.g.*, right side of buttocks/abdomen)”) (emphasis omitted).¹⁹ The Petition

¹⁸ We do not determine here that the embodiment of Figure 9B is applied to the buttocks or abdomen, only that Petitioner contends this is the case.

¹⁹ IPR2021-01276, which also challenges the ’575 patent, similarly relies on Figure 9B as disclosing positioning applicators on the buttocks or abdomen.

does not specifically identify any of Burnett '870's embodiments, other than the embodiment of Figure 9B, as disclosing positioning an applicator on the buttocks or abdomen. *See generally*, Pet. 47–68 (claim charts for combination of Burnett '870 and Magstim)

Petitioner's mapping for claim element 24.a asserts that it would have been obvious to place a first applicator “on a portion of a body region (*e.g.*, left side of buttocks/abdomen) of the patient” and its mapping for claim element 24.b asserts that it would have been obvious to place a second applicator “on [a] different portion of the body region (*e.g.*, right side of buttocks/abdomen) of the patient.” Pet. 56 (emphasis omitted). As support, Petitioner cites Figure 9B. Accordingly, we understand Petitioner's showing for claim 24 to rely on the embodiment of Figure 9B.

Having determined that Petitioner relies on the embodiment of Figure 9B, we next consider whether Petitioner has sufficiently shown, for purposes of institution, that it would have been obvious to cool the magnetic field generating coils in that embodiment using oil. Figure 9B is reproduced below.

See e.g. IPR2021-01276, Paper 2, 54 (“Figure 9B of **Burnett-'870** discloses . . . fixing the applicators to the left and right[] sides of the patient's buttocks”).

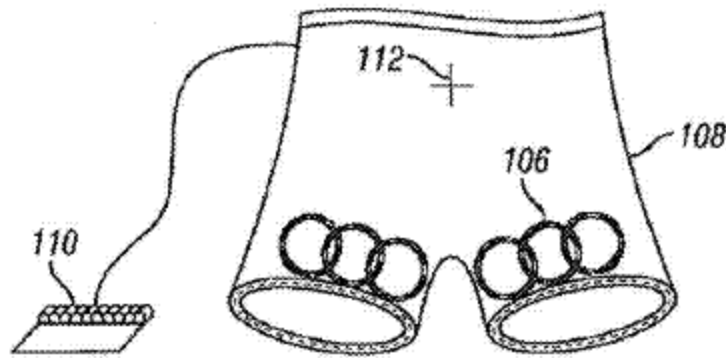


FIG. 9B

Figure 9B “illustrates a variation, in which coils 106 are disposed within an abdominal garment, for example shorts 108 and in which coils 106 are also connected to a logic controller (not shown) by a connector 110.” Ex. 1005 ¶ 114. When a coil wrap is “tailored into a garment,” as in Figure 9B, it can be made from “a soft, body-compatible material, natural or synthetic, for example, cotton, wool, polyester, rayon, Gore-Tex, or other fibers or materials known to a person skilled in the art as non-irritating and preferably breathable.” *Id.* ¶ 78.

As evidence that Burnett '870 discloses cooling the coils, Petitioner cites paragraphs 210, 215, and 235 of Burnett '870. Pet. 55, 58. Petitioner does not identify, and we do not find, any disclosure in the cited material suggesting that the coils in the embodiment of Figure 9B are cooled. Nor does Petitioner explain how the teachings of cooling in the cited paragraphs can be applied to the embodiment of Figure 9B. We review the disclosure of each of the three cited paragraphs of Burnett '870 in sequence.

Paragraph 210 of Burnett '870 discusses the embodiment depicted in Figure 35. Figure 35 is reproduced below.

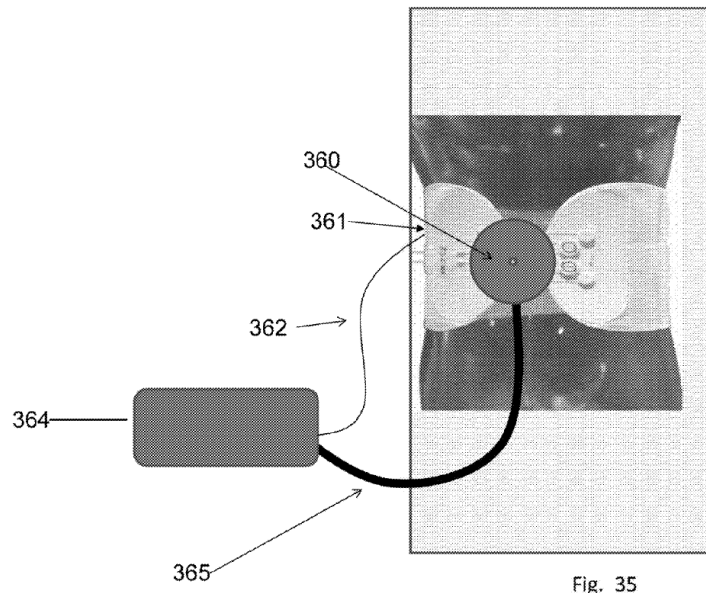


Fig. 35

Figure 35 shows “a variation of a back applicator **360** which may be positioned in proximity to or aligned along a spine.” Ex. 1005 ¶ 210. “The applicator **360** may include several coils.” *Id.* With respect to cooling, paragraph 210 states: “In one variation, a coil power line **365** for supplying power or current from the logic controller **364** to coils positioned in the applicator **360** may include fluid cooling, e.g., air or liquid cooling.” *Id.* Neither Petitioner nor its expert persuasively explains how this teaching of using a coil power line to supply air or liquid cooling would apply when the coils to be cooled are wrapped in a garment (“shorts”) rather than positioned in an applicator. Pet. 55, 58; Ex. 1002 ¶¶ 303–304, 78–82. Figure 9B and its accompanying text do not show or describe a coil power line through which coolant could be delivered to the coils in the garment in the embodiment of Figure 9B. Nor does Petitioner explain how coolant would be delivered to the coils in the embodiment of Figure 9B. Ex. 1005, Fig. 9B, ¶ 114. Even if connector 110 could be adapted for that purpose (an

argument Petitioner does not make), it is not clear how Petitioner contends the coolant would be distributed to coils that lack an applicator casing. The Petition simply cites paragraph 210 as supporting that it was known to cool coils, providing no explanation of how that knowledge would be implemented in the embodiment of Figure 9B. Pet. 55.

Absent persuasive evidence explaining how and why the embodiment of Figure 9B would be combined with the embodiment of Figure 35 with a reasonable expectation of success, it is not enough that Burnett '870 separately discloses an embodiment disclosing the claimed positioning of the applicator and an embodiment disclosing cooling an applicator. Given that Petitioner's obviousness assertions rely on combining the teachings from multiple embodiments, Petitioner was required to provide some explanation of how those teachings fit together to teach or suggest a method employing all of the steps recited in the claims. *In re Stepan Co.*, 868 F.3d 1342, 1346 n.1 (Fed. Cir. 2017) ("Whether a rejection is based on combining disclosures from multiple references, combining multiple embodiments from a single reference, or selecting from large lists of elements in a single reference, there must be a motivation to make the combination and a reasonable expectation that such a combination would be successful, otherwise a skilled artisan would not arrive at the claimed combination.").

Petitioner's citation of Burnett '870's paragraph 215 suffers from the same problem. Paragraph 215 discusses the embodiment depicted in Figure 39. Figure 39 is reproduced below.

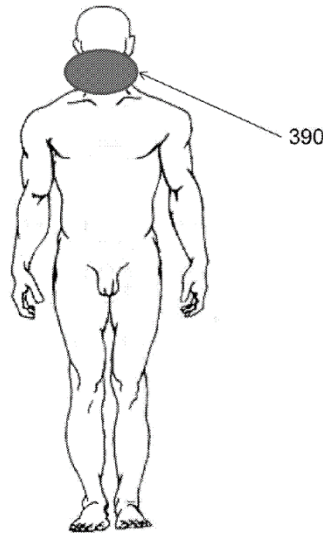


Figure 39 shows “a migraine applicator 390.” Ex. 1005 ¶ 215. According to Burnett '870 “the applicator 390 may have cooling features . . . where cooling is provided by utilizing liquids or airflow, such as rapid airflow to cool the coils or applicator.” *Id.* Again, Petitioner does not persuasively explain how this teaching would apply when the coils to be cooled are wrapped in a garment rather than positioned in an applicator. Pet. 55.

Petitioner's citation of paragraph 235 of Burnett '870 is similarly not persuasive. It discusses placing a coolant in “direct contact” with the “conductive surfaces of [a] coil” by drawing the coolant “through and/or in between the turns of the inductive coil.” *Id.* ¶ 235. This disclosure is consistent with the embodiments of Figure 35 and 39 (discussed above), in which the coils are encased in an applicator. On the present record, it is not clear that this disclosure is consistent with the embodiment of Figure 9B. Patent Owner argues that “a cooling system that works by direct contact” is incompatible with “garment-wrapped coils.” Prelim. Resp. 58. We are not

prepared to make such a determination on this preliminary record. However, it was Petitioner's burden to "show with particularity why the patent it challenges is unpatentable." *Harmonic Inc.*, 815 F.3d at 1363. On the present record, Petitioner has not met that burden because it is not clear how Petitioner contends that coils wrapped in a garment, like those in Figure 9B, would be placed in direct contact with a coolant, as discussed in paragraph 235. Absent such an explanation, we will not speculate on whether and how known cooling systems could be applied in a garment-wrapped coil.

For the reasons given above, we determine Petitioner has not shown sufficiently that the combination of Burnett '870 and Magstim teaches element 24.e. Claims 25–29 depend, directly or indirectly, from claim 24. Petitioner's arguments and evidence for dependent claims 25–29 do not remedy the deficiencies discussed above with respect to claim 24. Accordingly, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claims 24–29 are unpatentable under 35 U.S.C. § 103 as obvious over Burnett '870 and Magstim.

F. Obviousness over Simon and Burnett '870

Petitioner contends that claims 16–29 are "rendered obvious by **Simon**," but, "[t]o the extent that independently-positioned applicators (*e.g.*, [16.a]) and connecting tubes for fluid cooling (*e.g.*, [17.a]-[17.b]) were not well-known or obvious to a POSITA, claims 16–17 (and dependents) are rendered obvious by **Simon** in view of **Burnett-'870**." Pet. 69 (citing Ex. 1002 ¶ 414). In this ground, Petitioner relies on Burnett '870 to address potential deficiencies in Simon's disclosure that do not remedy the problems discussed above. *See supra* § II.D.2. In this regard, we note that in

purporting to address potential deficiencies regarding “connecting tubes for fluid cooling,” Petitioner does not seek to address the deficiency that the embodiment of Simon it relies on does not require cooling. Rather, Petitioner seeks to apply Burnett’s teaching to deliver coolant through a “coil power line” to Simon’s device. Pet. 71–72 (“A POSITA would also have been motivated to apply **Burnett-’870’s** cooling connecting tube teachings in implementing **Simon’s** stimulator to prevent overheating during treatment.”). Thus, Petitioner’s assertions in this ground do not address the deficiencies identified in connection with Petitioner’s assertion that Simon renders the challenged claims obvious. *See supra* § II.D.2.

As discussed above, we determined that Petitioner has not shown sufficiently that Simon teaches the cooling features recited in claim elements 16.f and 24.e. Accordingly, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claims 16–29 would have been obvious over the combination of Simon and Burnett ’870.

III. DISCRETIONARY DENIAL

Patent Owner asserts we should exercise our discretion under 35 U.S.C. § 325(d) to deny *inter partes* review because the Petition presents the same or substantially the same prior art and arguments previously presented to the Office. We need not address Patent Owner’s contentions concerning discretionary denial under § 325(d) because Petitioner has not established a reasonable likelihood of prevailing in demonstrating the unpatentability of any challenged claim of the ’575 patent.

IV. CONCLUSION

We have reviewed the Petition and Preliminary Response, and have considered all of the evidence and arguments presented by Petitioner and Patent Owner. For the foregoing reasons, we conclude that the information presented in the Petition does not establish a reasonable likelihood that Petitioner would prevail in showing that the challenged claims of the '575 patent are unpatentable.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is denied, and no trial is instituted.

For PETITIONER:

Scott McKeown
James L. Davis, Jr.
Keyna Chow
ROPES & GRAY LLP
scott.mckeown@ropesgray.com
james.l.davis@ropesgray.com
keyna.chow@ropesgray.com

For PATENT OWNER:

Richard D. Coller
Jon Wright
Richard Bemben
Lestin Kenton
Christian Camarce
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
rcoller-ptab@sternekessler.com
jwright-ptab@sternekessler.com
rbemben-ptab@sternekessler.com

IPR2021-01283

Patent 10,695,575 B1

lkenton-ptab@sternekessler.com

ccamarce-ptab@sternekessler.com