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571-272-7822

Paper 8
Entered: February 8, 2022

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.

IPR2021-01275
Patent 10,632,321 B2

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

PARVIS, *Administrative Patent Judge.*

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

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[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

The predecessor-in-interest of Lumenis Be Ltd. ("Petitioner"), Lumenis Ltd., filed a Petition (Paper 2 ("Pet.")) requesting *inter partes* review of claims 1–14 ("challenged claims") of U.S. Patent No. 10,632,321 B2 (Ex. 1001, "the '321 patent"), along with the supporting Declaration of Marom Bikson, Ph.D. (Ex. 1002). BTL Healthcare Technologies A.S. ("Patent Owner"), filed a Preliminary Response. Paper 7 ("Prelim. Resp.").

After considering the Petition and the Preliminary Response, as well as all supporting evidence, we exercise our discretion under 35 U.S.C. § 314(a) to deny institution for the reasons stated below.

II. BACKGROUND

A. Real Parties-in-Interest

Petitioner names itself, Lumenis Be Ltd., as the real party-in-interest. Pet. 2; Paper 5, 1. Patent Owner names itself and BTL Industries, Inc. as the real parties-in-interest. Paper 4, 1.

B. Related Matters

As required by 37 C.F.R. § 42.8(b)(2), each party identifies a judicial matter that would affect, or be affected by, a decision in this proceeding. The parties inform us that the '321 patent was recently, but no longer, involved in the following district court case: *BTL Industries, Inc. v. Allergen Ltd.*, Case No. 1-20-cv-01046 (D. Del.), which was filed August 5, 2020 and is now settled. Pet. 3, Paper 4, 1. The parties additionally identify the following settled proceeding 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 4, 2. Petitioner further identifies the following post-grant review proceedings:

Allergan, Inc. et al v. BTL Medical Technologies SRO et al, PGR2021-00017 (PTAB, Filed Dec. 14, 2020) (institution denied); and *Allergan, Inc. et al v. BTL Medical Technologies SRO et al*, PGR2021-00018 (PTAB, Filed Dec. 14, 2020) (institution denied). Pet. 3.

The '321 patent is also the subject of IPR2021-01282. Pet. 2–3; Paper 4, 1. Petitioner challenges claims 15–30 of the '321 patent in IPR2021-01282 in a separate petition "[d]ue to word-count constraints and the large number of claims." Pet. 3 (citing Consolidated Trial Practice Guide[2], 59–61; *see also* 84 Fed. Reg. 64,280 (Nov. 21, 2019)).

Petitioner also has contemporaneously filed petitions for review of related patents as follows: (1) petitions for *inter partes* review of U.S. Patent No. 10,478,634 B2 (IPR2021-01273 and IPR2021-01280); (2) petitions for *inter partes* review of U.S. Patent No. 10,709,894 B2 (IPR2021-01278 and IPR2021-01285); (3) petitions for *inter partes* review of U.S. Patent No. 10,709,895 B2 (IPR2021-01279 and IPR2021-01284); and (4) petitions for *inter partes* review of U.S. Patent No. 10,695,575 B1 (IPR2021-01276 and IPR2021-01283). Paper 4, 1.

C. The '321 Patent

The '321 patent relates to devices and methods using the influence of magnetic and induced electric fields on biological structures. Ex. 1001, 1:22–24. A circuit for providing high power pulses to the stimulating magnetic field generating device is shown in Figure 5b, reproduced below.

[2] Available at http://www.uspto.gov/TrialPracticeGuideConsolidated.

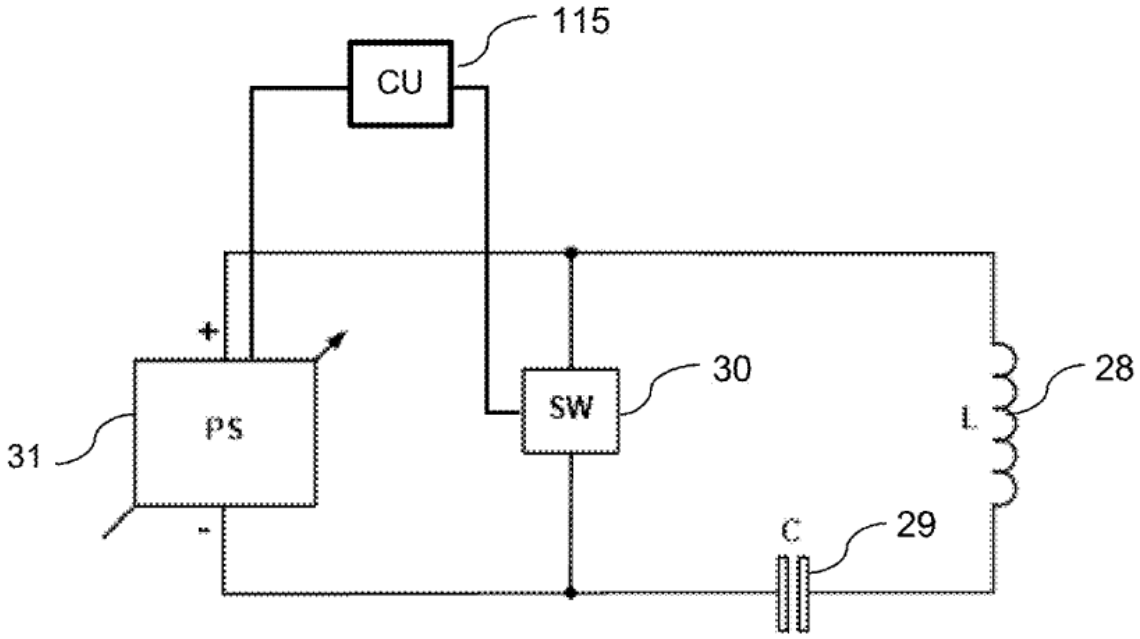


Figure 5b

Figure 5b, above, shows a circuit for providing high power pulses for improved function of a treatment device. *Id.* at 15:11–12.

Figure 5b, above, includes magnetic field generating device 28 and energy storage device 29 connected in series and disposed in parallel to switch 30. *Id.* at 15:12–15. To provide an energy pulse, controlled shorting of energy source 31 takes place through the switch 30. *Id.* at 15:16–18. Energy source 31 or switch 30, or alternately both, may be regulated by control unit 115. *Id.* at 15:23–26.

An exemplary embodiment of a magnetic treatment device including two independent magnetic field generating circuits is shown in Figure 12, reproduced below.

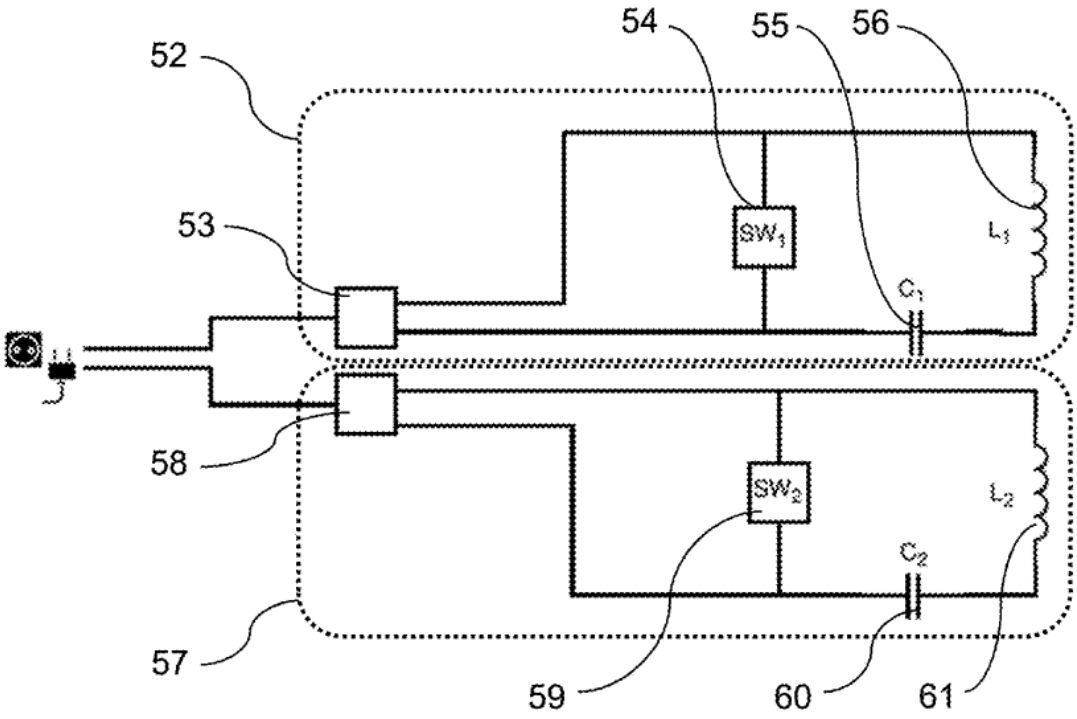


Figure 12

Figure 12, above, shows an embodiment of the magnetic treatment device including two independent magnetic field generating circuits. *Id.* at 20:25–27.

The circuit shown in Figure 12 above includes magnetic field generating circuit 52 and magnetic field generating circuit 57. *Id.* at Fig. 12, 20:27–33. Magnetic field generating circuit 52 includes energy source 53, switching device 54, energy storage device 55, and magnetic field generating device 56. *Id.* at 20:27–30. Magnetic field generating circuit 57 includes energy source 58, switching device 59, energy storage device 60, and magnetic field generating device 61. *Id.* at 20:30–33. A control unit controls providing energy from the energy storage devices to the coils to generate magnetic impulses by the coils. *Id.* at 20:58–61.

D. Illustrative Claims

Petitioner challenges claims 1–14 of the '321 patent. Pet. 1, 6. Claims 1 and 8 are the independent claims. Claims 2–7 depend, directly or indirectly, from claim 1. Claims 9–14 depend, directly or indirectly, from claim 8. Independent claim 1, reproduced below, is illustrative of the claimed subject matter.

> 1. [1.pre][3] A method for toning muscles of a patient using a treatment device that generates time-varying magnetic fields, the method comprising:
> [1.a] charging a first energy storage device and a second energy storage device;
> [1.b] discharging the first energy storage device to a first magnetic field generating coil disposed in a first applicator, and discharging the second energy storage device to a second magnetic field generating coil disposed in a second applicator;
> [1.c] cooling the first magnetic field generating coil and the second magnetic field generating coil with an oil;
> [1.d] placing the first applicator and the second applicator in contact with a body region of the patient, the body region of the patient comprising a buttocks of the patient or an abdomen of the patient;
> [1.e] causing the first magnetic field generating coil to generate an impulse of a first time-varying magnetic field, and causing the second magnetic field generating coil to generate an impulse of a second time-varying magnetic field, the first time-varying magnetic field and the second time-varying magnetic field each having a magnetic flux density in a range of 0.5 Tesla to 7 Tesla at surfaces of the first and second magnetic field generating coils, respectively,

[3] Petitioner's designations to reference the elements of claim 1 are set forth in brackets. Pet. 15–25. Herein we refer to the elements of claim 1 using Petitioner's designations.

[1.f] wherein each impulse of the first time-varying magnetic field and each impulse of the second time-varying magnetic field is biphasic and sinusoidal,

[1.g] wherein the impulse of the first time-varying magnetic field is one of a first plurality of consecutive impulses generated by the first time-varying magnetic field,

[1.h] wherein the impulse of the second time-varying magnetic field is one of a second plurality of consecutive impulses generated by the second time-varying magnetic field, and

[1.i] wherein each of the first plurality of impulses and the second plurality of impulses comprises a repetition rate in a range of 1 Hz to 300 Hz;

[1.j] establishing a pulse of the first time-varying magnetic field, wherein the pulse of the first time-varying magnetic field comprises the impulse of the first time-varying magnetic field and wherein the pulse of the first time-varying magnetic field lasts a time period between a beginning of the impulse of the first time-varying magnetic field and a beginning of a consecutive impulse within the first plurality of consecutive impulses generated by the first time-varying magnetic field;

[1.k] wherein the impulse of the second time-varying magnetic field is generated during the first pulse of the first time-varying magnetic field; and

[1.l] applying the plurality of consecutive impulses of the first time-varying magnetic field and the plurality of consecutive impulses of the second time-varying magnetic field to muscle fibers, neuromuscular plates, or nerves innervating muscle fibers in the body region such that a first muscle and a second muscle of the body region are caused to contract.

Ex. 1001, 108:12–109:3.

E. Evidence

Petitioner relies on the patent document references summarized below.

Name	Patent Document	Exhibit
Simon	US 2015/0165226 A1	1004
Burnett '870	US 2014/0148870 A1	1005

Petitioner relies on the non-patent literature reference summarized below.

Name	Non-Patent Literature Title	Author(s)	Exhibit
Magstim	*The Guide to Magnetic Stimulation*, The Magstim Company (July 2006).	Chris Hovey BSc, Reza Jalinous, Ph.D.	1006

F. Asserted Grounds

Petitioner asserts that the challenged claims of the '321 patent are unpatentable based on the following grounds summarized below:

Claim(s) Challenged	35 U.S.C. §[4]	Reference(s)/Basis
1–14	103	Simon
1–14	103	Burnett '870, Magstim
8–14	103	Simon, Burnett '870

III. ANALYSIS

A. Legal Standards

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is

[4] Because the challenged claims of the '321 patent have an apparent effective filing date on or after March 16, 2013, the 35 U.S.C. §§ 102 and 103 provisions of the Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, §§ 3(b)–3(c), 3(n)(1), 125 Stat. 284, 285–87, 293 (2011) apply and we apply the AIA versions of these statutes. Our application of the AIA law is not an affirmative ruling on the actual effective filing date of this patent.

unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) as "requiring [*inter partes* review] petitions to identify 'with particularity . . . the evidence that supports the grounds for the challenge to each claim'"); *see also* 37 C.F.R. § 42.104(b) (requiring a petition for *inter partes* review to identify how the challenged claim is to be construed and where each element of the claim is found in the prior art patents or printed publications relied upon). That burden never shifts to the patentee. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). Furthermore, Petitioner cannot satisfy its burden of proving obviousness by employing "mere conclusory statements." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter 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 said 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) when in evidence, objective evidence of nonobviousness.[5] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner asserts the following:

[5] Patent Owner does not present objective evidence of nonobviousness.

> On or before July 1, 2016, [persons of ordinary skill in the art] POSITAs would have had a bachelor's degree in biomedical engineering, electrical engineering, physics, or [a] 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. Additional graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education.

Pet. 8–9 (citing Ex. 1002 ¶¶ 1–36). Patent Owner does not provide a response on this issue. *See generally* Prelim. Resp.

On the current record, we find Petitioner's contentions that the skilled artisan would have had "two *or more*" years of experience to be too vague as it encompasses skill levels beyond the proposal level without a defined limit. We, therefore, adopt Petitioner's proposal except we do not adopt the "or more" terminology above. We determine that with our changes Petitioner's proposal is consistent with the level of skill reflected in the '321 patent Specification and the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

We construe the challenged claims by applying the standard used in federal courts, in other words, "the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b)," which is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (2020). Neither party seeks claim construction other than the plain and ordinary meaning of claim terms. *See* Pet. 9; *see generally* Prelim. Resp.

D. Obviousness over Simon—Claims 1–14

Petitioner asserts that claims 1–14 would have been obvious over Simon. Pet. 6. We begin with a summary of Simon, then turn to the parties' dispute.

1. Simon

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.

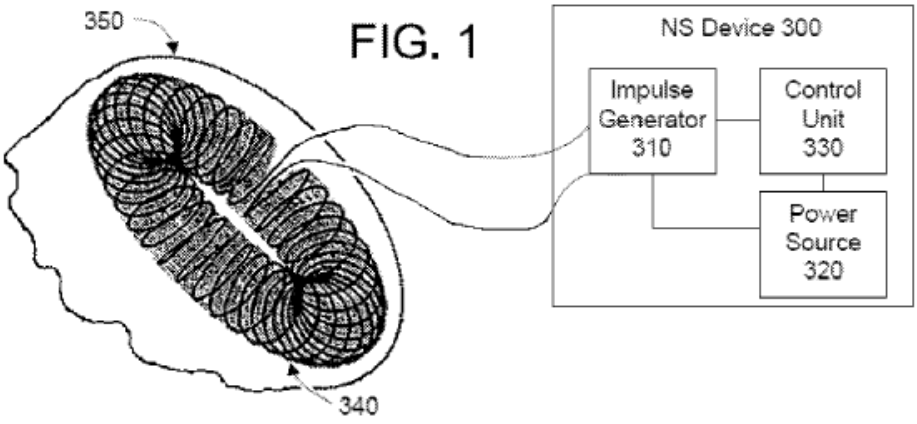


Figure 1, above, is a schematic diagram of nerve stimulating/modulating device 300 for delivering impulses of energy to nerves for the treatment of medical conditions. *Id.* ¶ 54.

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.

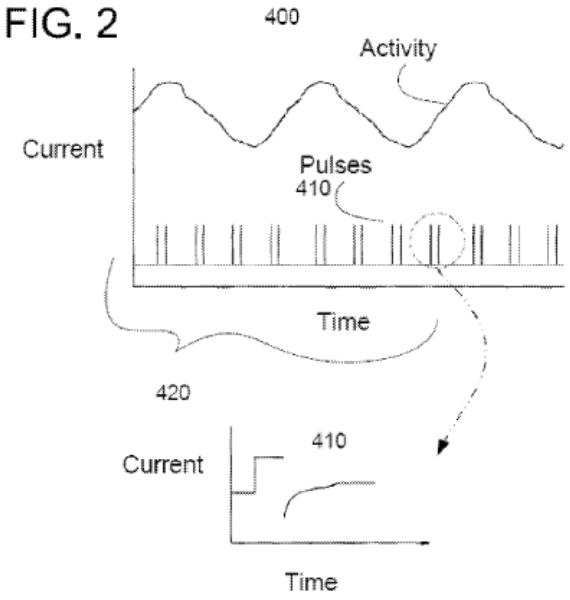
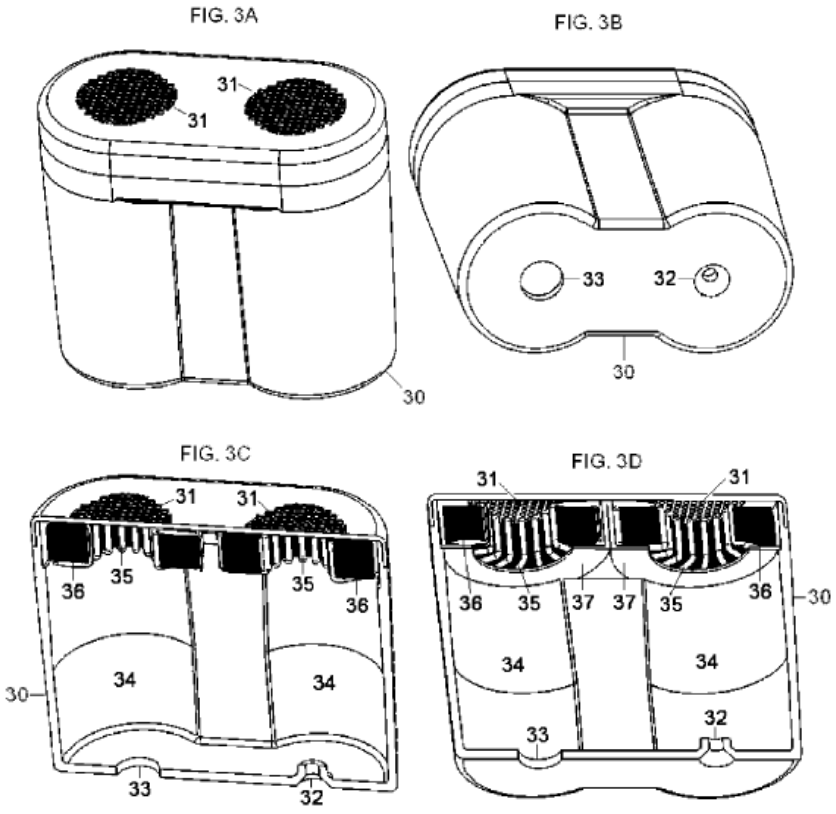


Figure 2, above, illustrates a graph of electrical voltage/current profile 400 with modulating impulse 410 having pulse train 420 shown in the graph with current on the y-axis and time on the x-axis. *Id.* ¶ 60.

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.* ¶ 60. 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.* at 97.

2. Independent Claim 1

a) Element 1.c "cooling the first magnetic field generating coil and the second magnetic field generating coil with an oil"

Petitioner asserts that Simon teaches element 1.c based on Simon's disclosure that "known cooling solutions existed, e.g., 'cool[ing] the coils with flowing water or air' or with 'ferrofluids.'" Pet. 19 (citing Ex. 1004 ¶ 20). Petitioner also provides other evidence of cooling solutions. *Id.* (citing

Ex. 1004 ¶ 20; Ex. 1009, 6:13–14; Ex. 1010 ¶ 71). Petitioner asserts "[t]o the extent argued that oil cooling is disclosed only in **Simon's** background discussion," a person of ordinary skill in the art would have known that "cooling is highly desirable to prevent overheating, particularly for coils in close contact with the skin," "for heat-sensitive body regions," and for "lengthy treatment." *Id.* (citing Ex. 1004 ¶ 197; Ex. 1006, 8). Dr. Bikson's Declaration includes testimony that is substantially the same as Petitioner's arguments. *Compare* Ex. 1002 ¶¶ 129–131, *with* Pet. 19.

Patent Owner responds by contending the following:

> Simon is directed to "*toroidal* magnetic stimulation devices, as well as … non-invasive methods for treating medical conditions using energy that is delivered by such devices." EX1004, ¶2. Toroidal stimulators generate magnetic fields that are confined within its coils and do not penetrate into the patient's body. EX1004, ¶¶37, 82, 122. Rather, toroidal stimulators produce their effect by generating and applying 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 37–38 (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 39 (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.* (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 most recitations in claim. *See*, *e.g.*, Pet. 15–16 (relying on Simon's Figure 1 and stimulating/modulating device 300 for element 1.a), 16–19 (relying on Figures 3A–3D, 4C-4D, and 5 illustrating embodiments of magnetic

stimulator coil 340 for element 1.b), 21–24 (relying on Figure 2 for elements 1.g, 1.h, and 1.j).

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 commercial available devices described in publications summarized in the Background of the Invention. Ex. 1004 ¶ 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 commercial 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 alternative theory that a person having ordinary skill in the art would have been motivated to apply known oil-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 element 1.c, i.e., "cooling the first magnetic field generating coil and the second magnetic field generating coil with an oil."

b) Conclusion—Obviousness of Claim 1 over Simon

After consideration of the contentions and the evidence of record, we determine that Petitioner has not shown sufficiently that Simon teaches each recitation of claim 1. Accordingly, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claim 1 is unpatentable under 35 U.S.C. § 103 as obvious over Simon.

3. Dependent Claims 2–7 and 10–14

Each of claims 2–7 depends, directly, or indirectly, from claim 1. Petitioner's arguments and evidence for dependent claims 2–7 do not remedy the deficiencies discussed with respect to claim 1. Pet. 36–39.

Dependent claim 10 recites "cooling the first magnetic field generating coil and the second magnetic field generating coil." Claim 11 depends from claim 10. Claim 12 recites "directing a fluid cooling media into the first applicator and into the second applicator such that the first magnetic field generating coil and the second magnetic field generating coil are cooled by the fluid cooling media." Claims 13 and 14 depend, directly or indirectly, from claim 12. Petitioner's arguments and evidence for dependent claims 10–14 do not remedy the deficiencies discussed with respect to claim 1. *Id.* at 40–44.

Accordingly, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claims 2–7 and

claims 10–14 are unpatentable under 35 U.S.C. § 103 as obvious over Simon.[6]

E. Obviousness over Burnett '870 and Magstim—Claims 1–14

Petitioner asserts that claims 1–14 would have been obvious over Burnett '870 and Magstim. Pet. 6. We begin with summaries of Burnett '870 and Magstim, and then turn to the parties' dispute.

1. Burnett '870

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.

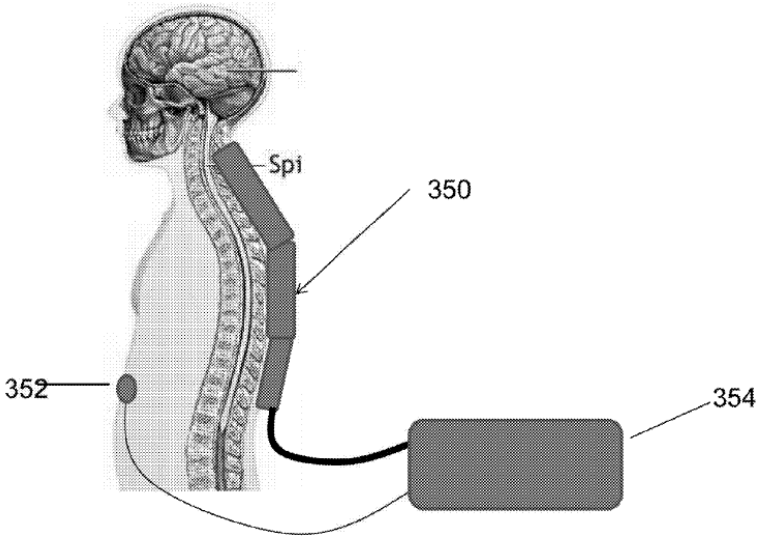


Figure 34 illustrates a schematic view of a system including multiple back applicators placed on a human back, a sensor, and a logic controller. *Id.* ¶ 56.

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.*

[6] We address claims 8 and 9 *infra* § IV.

¶ 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.

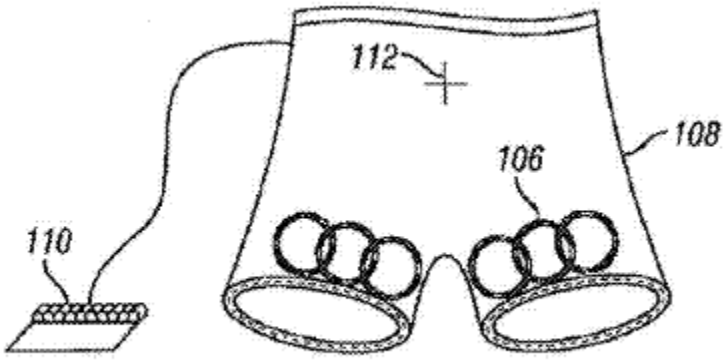


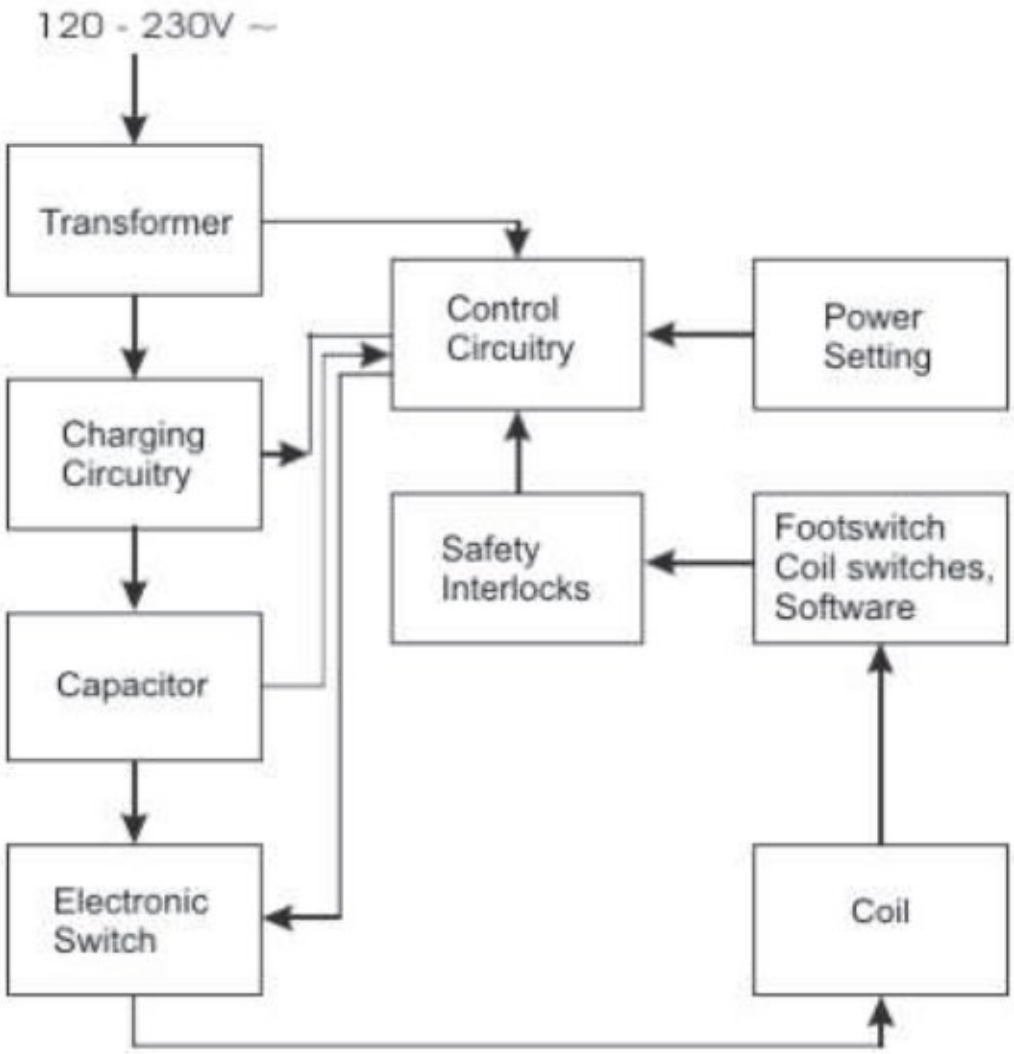
FIG. 9B

Figure 9B, above, illustrates shorts 108, including two separate sets of 3 interlocking rings labelled coils 106 that 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

Magstim describes techniques of magnetic stimulation for clinical applications. Ex. 1006, 1.[7] Magstim illustrates its magnetic stimulator in Figure 2, reproduced below.



[7] 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 200[8] 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.

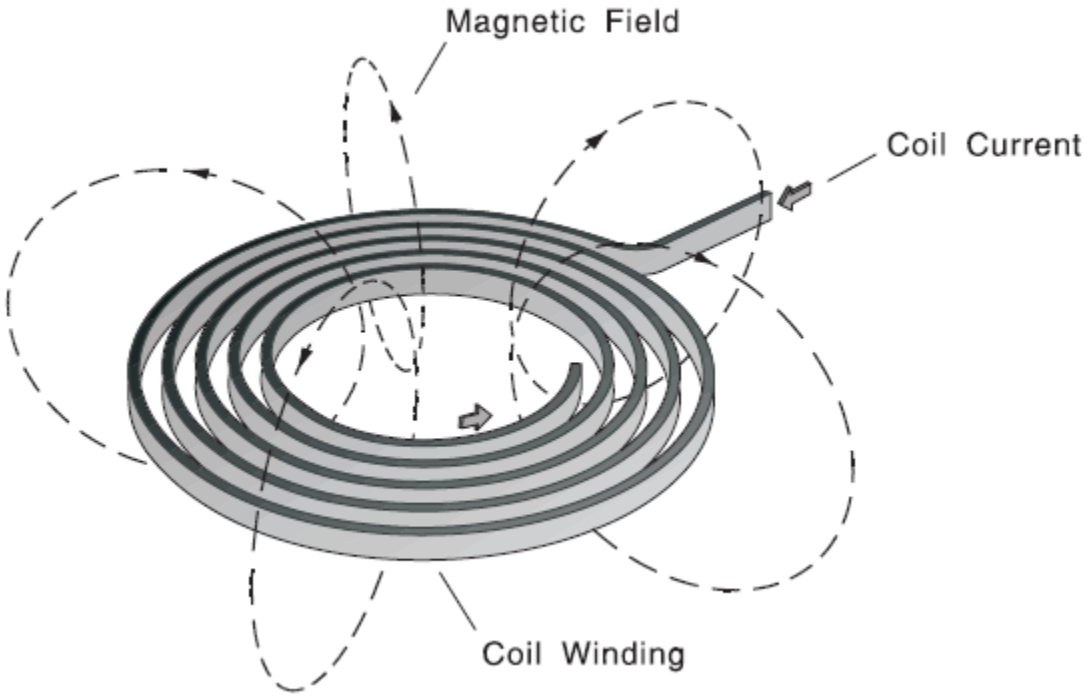


Figure 3, above, illustrates a circular coil winding showing the lines of force generated when current flows through the winding. *Id.* at 5.

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.*

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

3. Independent claim 1

a) Element 1.a: "charging a first energy storage device and a second energy storage device"

Petitioner provides a mapping for element 1.a in its claim chart. Pet. 52–53. Patent Owner disputes Petitioner's mapping asserting that the combination of Burnett '870 and Magstim lacks two energy storage devices/capacitors. Prelim. Resp. 46.

For completeness, we review each of the assertions in Petitioner's mapping of element 1.a in sequence. Petitioner starts by pointing to two patents described in the background section of Burnett '870. Pet. 52 (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." *Id.* ¶ 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[9] discloses using a LoFIT system described in Burnett-'185[10] in its invention." Pet. 52–53 (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

[9] Petitioner references provisional application No. 60/848,720 ("the '720 provisional," Ex. 1023).
[10] Petitioner references U.S. Patent No, 6,701,185 B2 ("Burnett '185," Ex. 1024).

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.

Petitioner next asserts "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. 53 (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 describes "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. *Id.* at 6:66–7:2, 7:27–8:26.

Petitioner next asserts that a person having ordinary skill in the art:

> 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 POSITAs would have understood to charge the capacitors such that they would be discharged to the coils as was known in the art.

Pet. 53 (citing pages 3–4 and Figure 2 of Magstim (Ex. 1006) as supporting evidence). Petitioner's annotated Figure 2 of Magstim is reproduced below.

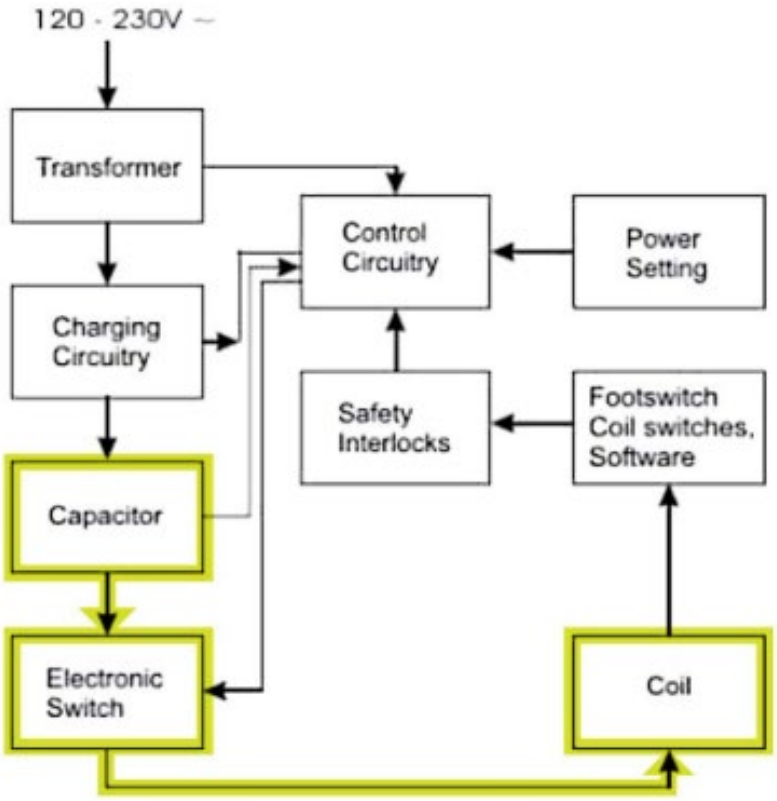


Figure 2, above, illustrates a block diagram of the Magstim Model 200 monophasic stimulator (Ex. 1006, 4, Fig. 2), which includes Petitioner's yellow annotation highlighting the capacitor, the electronic switch, and the coil, as well as the flow from the capacitor to the coil via the electronic switch (Pet. 53).

Magstim describes that the transformer of the 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. Bikson, ¶¶302–309, 76–77, 291–298," (Pet. 53), which refer to a section of the Petition entitled "**Motivation to**

Combine" (*id.* at 50 (§ 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. 50. 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, POSITAs would have recognized **Burnett- '870** as teaching separate energy 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 capacitor and switch for a two-coiled design such that each coil has its own circuitry. POSITAS 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, ¶¶291–298.

Pet. 50–51. Dr. Bikson's declaration includes similar testimony. Ex. 1002 ¶ 294.

Petitioner is correct that Burnett '870 describes activating coils "differentially." 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." Ex. 1005 ¶ 87. 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. *Id.* Burnett '870's coil wrap 20 is shown in Figure 1, reproduced below.

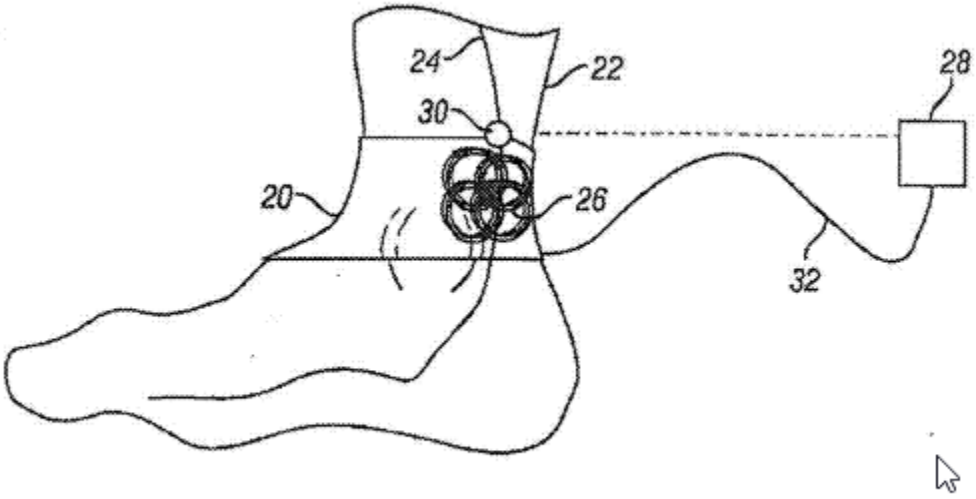


FIG. 1

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 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." *Id.* ¶ 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 its coils to [the] POSITA." Pet. 50.

Upon consideration of Burnett '870, including Burnett '870's description of "activating two coils 'differentially'" and the disclosures of Magstim 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 capacitor and switch for a two-coiled design such that each coil has its own circuitry." Pet. 50–51 (citing Ex. 1002 ¶¶ 291–298). Petitioner relies on Dr. Bikson's declaration testimony as the supporting evidence. *Id.*

Petitioner argues, and Dr. Bikson testifies, that "it would have been an obvious, 'typical,' implementation to double the capacitor and switch for a

two-coiled design that such that each coil has its own circuitry." Pet. 50–51; Ex. 1002 ¶ 294. 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 and discharging of a capacitor" and of "a capacitor and switch for a typical stimulation coil." Pet. 50. And immediately following the "typical" statement, Petitioner references applying Magstim's teaching in Burnett '870's device. 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 ¶¶ 66–67. 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. 51 (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 ¶ 294 ("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 '850's device. *See, e.g.,* Pet 50–51. 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 ¶ 294. 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, 19:60–62 (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"); 19:65–67 (teaching that an embodiment with multiple energy storage devices offers the benefit of "providing various treatments by a plurality of magnetic field generating devices"); 20:34–37 (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 ¶ 294) 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 ("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.

As discussed above, Burnett '870 refers to Burnett '185 and both Burnett '185 and Magstim describe stimulators having multiple coils and a single capacitor. Ex. 1024, 7:27–8:26; Ex. 1006, 4, Fig. 2. For the reasons given above, we determine Petitioner has not shown sufficiently that the combination of Burnett '870 and Magstim teaches element 1.a, i.e., "charging a first energy storage device and a second energy storage device."

b) Conclusion—Obviousness of Claim 1 over Burnett '870 and Magstim

After consideration of the contentions and the evidence of record, we determine that Petitioner has not shown sufficiently that the combination of Burnett '870 and Magstim teaches each recitation of claim 1. Accordingly, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claim 1 is unpatentable under 35 U.S.C. § 103 as obvious over the combination of Burnett '870 and Magstim.

4. Independent Claim 8

Independent claim 8 recites "charging a first capacitor and a second capacitor." For claim 8, Petitioner refers to its arguments and evidence for claim 1 without supplementation. Pet. 65. Petitioner's arguments and evidence for claim 8 do not remedy the deficiencies discussed with respect to claim 1.

Accordingly, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claims 8 is unpatentable under 35 U.S.C. § 103 as obvious over Burnett '870 and Magstim.

5. Dependent Claims 2–7 and 9–14

Each of claims 2–7 depends, directly, or indirectly, from claim 1. Each of claims 9–14 depends, directly or indirectly, from claim 8. Petitioner's arguments and evidence for dependent claims 2–7 and 9–14 do not remedy the deficiencies discussed with respect to claim 1. Pet. 71–76.

Accordingly, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claims 2–7 and claims 9–14 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Burnett '870 and Magstim.

F. Obviousness over Simon and Burnett '870—Claims 8–14

As an alternative to obviousness of claims 8–14 over Simon alone, Petitioner asserts that claims 8–14 would have been obvious over Simon and Burnett '870. Pet. 77–81. Petitioner, however, does not supplement its contentions regarding the cooling features recited in claims 10–14. *Id.*

Accordingly, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claims 10–14 would have been obvious over Simon and Burnett '870.

IV. DISCRETIONARY DENIAL

Under appropriate circumstances, the Board may exercise discretion to deny a petition "even when the petition includes at least one claim subject to a challenge that otherwise meets the criteria for institution." Consolidated Trial Practice Guide[11] at 64; *see also* 84 Fed. Reg. 64,280 (Nov. 21, 2019). The Petition consists of challenges to fourteen claims, each challenged under at least two different grounds of unpatentability, and a total of three grounds of unpatentability. *See* Pet. 6. For the reasons discussed above, Petitioner has not established a reasonable likelihood of prevailing in demonstrating (1) obviousness of claims 1–7 and 10–14 over Simon alone; (2) obviousness of claims 1–7 and 10–14 over the combination of Burnett '870 and Magstim; and (3) obviousness of claims 10–14 over the combination of Simon and Burnett '870. *See supra* §§ III.D–III.E. Assuming without deciding that Petitioner has demonstrated that there is a reasonable likelihood that claims 8 and 9 would have been obvious over Simon alone or Simon and Burnett '870, Petitioner at best could succeed in two of fourteen challenged claims and in two of three grounds. Under the circumstances presented—where

[11] Available at http://www.uspto.gov/TrialPracticeGuideConsolidated.

instituting review would require reviewing all challenged claims under all grounds even though Petitioner could at best succeed in two of fourteen challenged claims and in two of three grounds—we determine it would not be an efficient use of the Board's time and resources to institute review. *See Chevron Oronite Co. v. Infineum USA L.P.*, IPR2018-00923, Paper 9 at 10–11 (PTAB Nov. 7, 2018) (informative); *see also Deeper, UAB v. Vexilar, Inc.*, IPR2018-01310, Paper 7 at 41–43 (PTAB Jan. 24, 2019) (informative). Accordingly, we exercise discretion under 35 U.S.C. § 314(a) to decline to institute *inter partes* review.

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) for the reasons given above.

V. CONCLUSION

We have reviewed the Petition and Preliminary Response, and have considered all of the evidence and arguments presented by Petitioner and Patent Owner. We exercise our discretion under 35 U.S.C. § 314(a) to decline institution.

VI. ORDER

In consideration of the foregoing, it is hereby:

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

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