UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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LUMENIS LTD.,
Petitioner,

v.

BTL HEALTHCARE TECHNOLOGIES A.S.,
Patent Owner.

_____

Case IPR2021-01273
Patent No. 10,478,634

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PETITION FOR *INTER PARTES* REVIEW

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1005	U.S. Patent Application Publication No. 2014/0148870 ("Burnett-'870")
1006	Chris Hovey et al., *The Guide To Magnetic Stimulation*, Magstim, July 21, 2006, Affidavit ("Magstim")[1]
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1008	U.S. Pat. No. 7,396,326 ("Ghiron")
1009	U.S. Pat. No. 10,675,819 ("Li")
1010	U.S. Pat. Pub. No. 2014/0277219A1 ("Nanda")
1011	Alain-Yvan Belanger, *Therapeutic Electrophysical Agents*, 3d Edition, Wolters Kluwer (2015), Declaration ("Belanger")
1012	U.S. Pat. Pub. No. 2012/0245483 ("Lundqvist")
1013	U.S. Patent Application Publication No. 2010/0168501 from Application No. 12/508,529 ("Burnett-'529")

[1] All pinpoint citations to Magstim, throughout this document and the corresponding expert declaration, refer to the page number originally in Magstim itself (*i.e.*, in the bottom middle portion of Magstim).

Exhibit (Ex-)	Description
1014	Gorgey et al., *Effects of Electrical Stimulation Parameters on Fatigue in Skeletal Muscle*, J. Orthop. & Sports Phys. Therapy Vol. 39: 9 (2009) ("Gorgey")
1015	Stevens et al., *Neuromuscular Electrical Stimulation for Quadriceps Muscle Strengthening After Bilateral Total Knee Arthroplasty: A Case Series*, Journal of Orthopaedic & Sports Physical Therapy, 34(1):21-29 (2004) ("Stevens")
1016	Doucet et al., *Neuromuscular Electrical Stimulation for Skeletal Muscle Function*, Yale Journal of Biology & Medicine 85:201-215 (2012) ("Doucet")
1017	Abulhasan et al., *Peripheral Electrical and Magnetic Stimulation to Augment Resistance Training*, Journal of Functional Morphology and Kinesiology, 1(3):328-342 (2016) ("Abulhasan")
1018	Remed, Salus Talent Brochure (2010) ("Salus")
1019	Iskra Medical, TESLA Stym Website (2013) ("TESLA Stym")
1020	510(k) Summary, No. K163165, AM-100 (2017) ("AM-100")
1021	510(k) Summary, No. K160992, HPM-6000 (2016) ("HPM-6000")
1022	U.S. Pat. Pub. No. 2003/0158585 ("Burnett '585")
1023	U.S. Provisional Patent Application Ser. No. 60/848,720 ("Burnett-Provisional-'720")
1024	U.S. Pat. No. 6,701,185 ("Burnett-'185")
1025	U.S. Pat. Pub. No. 2008/0306325 ("Burnett-'325")
1026	U.S. Pat. No. 6,155,966 ("Parker")
1027	U.S. Pat. No. 5,344,384 ("Ostrow")
1028	Andrey Gennadievich Belyaev, *Effect of Magnetic Stimulation on the Strength Capacity of Skeletal Muscle* (2015) (Ph.D. dissertation,

Exhibit (Ex-)	Description
	Federal State Budgetary Educational Institution of Higher Professional Education "Velikiye Luki State Academy of Physical Culture and Sport") (English translation) ("Belyaev")
1029	Andrey Gennadievich Belyaev, *Effect of Magnetic Stimulation on the Strength Capacity of Skeletal Muscle* (2015) (Ph.D. dissertation, Federal State Budgetary Educational Institution of Higher Professional Education "Velikiye Luki State Academy of Physical Culture and Sport") (Russian)
1030	U.S. Pat. No. 7,024,239 ("George")
1031	U.S. Pat. No. 5,181,902 ("Erickson")
1032	U.S. Pat. Pub. No. 2006/0199992 ("Eisenberg")
1033	U.S. Pat. No. 5,718,662 ("Jalinous")
1034	U.S. Pat. No. 5,061,234 ("Chaney")
1035	U.S. Pat. No. 10,271,900 ("Marchitto-'900")
1036	U.S. Pat. Pub. No. 2016/0184601 ("Gleich")
1037	Judith Woehrle et al., *Dry Needling and its Use in Health Care – A Treatment Modality and Adjunct for Pain Management*, J. Pain & Relief, 4(5):1-3 (2015) ("Woehrle")
1038	U.S. Patent Publication No. 2015/0157873 ("Sokolowski")
1039	U.S. Patent No. 7,744,523 ("Epstein")
1040	U.S. Pat. No. 6,738,667 ("Deno")
1041	U.S. Pat. No. 6,871,099 ("Whitehurst")
1042	U.S. Patent Application Publication No. US20050075701 ("Shafer-'701")

Exhibit (Ex-)	Description
1043	U.S. Patent Application Publication No. US20050075702 ("Shafer-'702")
1044	D. Suarez-Bagnasco et al., *The Excitation Functional for Magnetic Stimulation of Fibers*, 32nd Ann. Int'l Conf. of the IEEE EMBS, 4829–33 (2010) ("Suarez-Bagnasco")
1045	Zhi-De Deng et al., *Electric field depth-focality tradeoff in transcranial magnetic stimulation: simulation comparison of 50 coil designs*, Brain Stimulation, 6(1):1-13 (2013) ("Zhi-De-Deng-Electric")
1046	Zhi-De Deng, *Electromagnetic Field Modeling of Transcranial Electric and Magnetic Stimulation: Targeting, Individualization, and Safety of Convulsive and Subconvulsive Applications*, (2013) (Ph.D. dissertation, Columbia University) ("Zhi-De-Deng-Electromagnetic")
1047	U.S. Patent Application Publication No. 2011/0190569 ("Simon-'569")
1048	U.S. Patent Application Publication No. 2011/0152967 ("Simon-'967")
1049	U.S. Patent Application Publication No. 2011/0125203 ("Simon-'203")
1050	U.S. Patent Application Publication No. 2011/0046432 ("Simon-'432")
1051	U.S. Patent No. 9,089,719 ("Simon-'719")
1052	U.S. Patent No. 9,037,247 ("Simon-'247")
1053	U.S. Patent No. 8,868,177 ("Simon-'177")
1054	File History of U.S. Patent Application No. 12/859,568 (excerpts) ("File-history-'568")

Exhibit (Ex-)	Description
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1056	File History of U.S. Patent Application No. 13/005,005 (excerpts) ("File-history-'005")
1057	File History of U.S. Patent Application No. 13/024,727 (excerpts) ("File-history-'727")
1058	*Allergan, Inc. et al v. BTL Medical Technologies SRO et al*, PGR2021-00017, Paper 16 (Institution Denial Decision on §112(f)) ("PGR2021-00017-ID")
1059	*Allergan, Inc. et al v. BTL Medical Technologies SRO et al*, PGR2021-00020 (PTAB, Filed Dec. 14, 2020), Paper 16 (Institution Denial Decision on §112(f)) ("PGR2021-00020-ID")
1060	*Reserved*
1061	U.S. Patent Application Publication No. 2015/0025299 ("Edoute")
1062	International Application Publication No. WO 2015/179571 ("Errico")
1063	U.S. Patent Application Publication No. 2011/0172735 ("Johari")
1064	U.S. Patent Application Publication No. 2013/0123765 ("Zarsky")
1065	U.S. Patent No. 6,200,259 ("March")
1066	U.S. Patent Application Publication No. 2020/0155221 ("Marchitto-'221")
1067	U.S. Patent Application Publication No. 2006/0187607 ("Mo")
1068	Declaration of Jonathan Bradford

I. INTRODUCTION

Lumenis Ltd. ("Petitioner") respectfully requests IPR of Claims 1-8 and 23-30 ("Claims") of U.S. 10,478,634 ("'634") pursuant to §§311-319 and §42.100.

'634 is directed to electrical stimulation of body tissues using magnetic field. '634, 3:13–16, 3:33–37, 3:51–60. Its exemplary device includes two applicators placed on a patient's body causing tissues to contract, thereby "toning' them. '634, '634, 5:18–25; *see also id.*, 10:31–34, 15:56–58, Figs. 15-16. Figure 12 (annotated) shows each applicator has a circuit that contains a capacitor to discharge energy to a magnetic field generating coil. '634, 7:28–31. Bikson, ¶¶98-105.

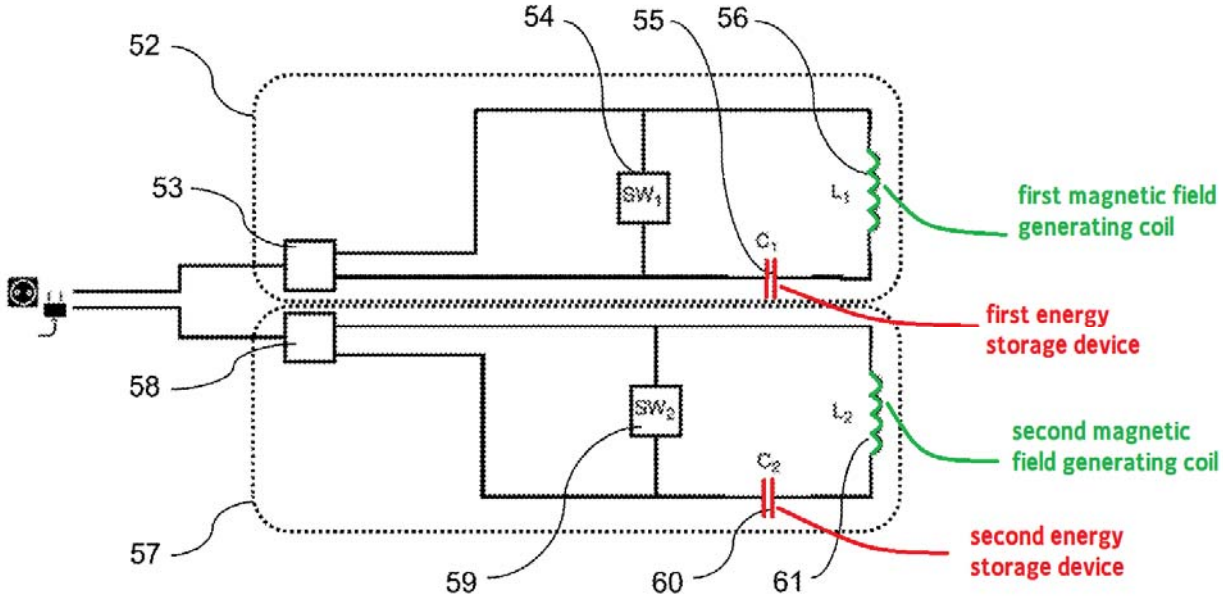


Figure 12

'634 explains that "magnetic methods" were already in use. '634, 2:32–35;

see also id., 2:44–47. Its purported novelty is to combine technologies of "magnetic field with radiofrequency, light, mechanical or pressure source." '634, 2:53–61; *see also id.*, 3:33–34. However, all Claims are directed to merely using magnetic fields for toning muscles. Bikson, ¶¶43-44, 98-105.

Although the Claims are lengthy, reciting parameters and components, these elements are conventional features well known in the art. Bikson, ¶¶74-97. **Simon** discloses a magnetic device with two applicators for stimulating muscles during rehabilitation. Simon, *Abstract,* [0053]-[0054], [0197]. Bikson, ¶¶112-120, 193. **Burnett-'870** discloses a device with multiple applicators comprising coils to generate magnetic field to stimulate muscle. Burnett-'870, *Abstract*, Fig. 9B, [0114]. Bikson, ¶¶194-205, 330. **Magstim** discloses fundamentals of magnetic field, including the parameters and components recited in the Claims. Magstim, 1, 3-4. Bikson, ¶¶206-212.

II. MANDATORY NOTICES UNDER 37 C.F.R. §42.8

A. Real Party-in-Interest

Lumenis Ltd. is the real party-in-interest. No other party had access to or control over the present Petition, and no other party funded or participated in preparation of the present Petition.

B. Related Matters

Petitioner is concurrently filing another petition (IPR2021-01280) challenging claims 9-22 of the '634 patent. Due to word-count constraints and the large number of claims, requiring 10,933 words in IPR2021-01273 and 11,106 words in IPR2021-01280, claims 1-8 and 23-30 are presented separately herein. *See* PTAB Consolidated Trial Practice Guide, November 2019, 59-61 (permitting parallel petitions in certain circumstances, such as a large number of claims).

The '634 patent is not the subject of any other co-pending litigation. However, the '634 patent was the subject of the following litigations that were stayed or resolved and did not involve or relate to the Petitioner:

- *Certain Non-Invasive Aesthetic Body Contouring Devices, Components Thereof, and Methods of Using the Same*, Inv. No. 337-TA-1219 (ITC, Filed Aug. 5, 2020) (the "ITC Case") (settled);
- *BTL Industries, Inc. v. Allergan Ltd. et al*, No. 1-19-cv-02356 (D. Del., Filed Dec. 26, 2019) (settled);
- *Allergan, Inc. et al v. BTL Medical Technologies SRO et al*, IPR2021-00312 (PTAB, Filed Dec. 14, 2020) ("Allergan's IPR") (Presented a different set of §103 grounds than those presented in this Petition; settled prior to institution decision);

C. Lead and Back-Up Counsel

Lead Counsel	Backup Counsel
Scott A. McKeown Reg. No. 42,866 **ROPES & GRAY LLP** 2099 Pennsylvania Avenue, NW Washington, D.C. 20006-6807 Phone: +1-202-508-4740 Fax: +1-617-235-9492 scott.mckeown@ropesgray.com **Mailing address for all PTAB correspondence:** ROPES & GRAY LLP IPRM—Floor 43 Prudential Tower 800 Boylston Street Boston, Massachusetts 02199-3600	James L. Davis, Jr. Reg. No. 57,325 (Back-up) Keyna Chow *Pro Hac Vice* (Back-up) **ROPES & GRAY LLP** 1900 University Avenue, 6th Floor East Palo Alto, CA 94303-2284 Phone: 650-617-4000 Fax: 617-235-9492 James.l.davis@ropesgray.com Keyna.Chow@ropesgray.com

Petitioner consents to electronic service of documents to the email addresses of the counsel identified above.

III. PAYMENT OF FEES

The undersigned authorizes the Office to charge the fee required by §42.15(a) for this Petition for review to Deposit Account No. 18-1945, under Order No. 116610-0002-652. Any additional fees that might be due are also authorized.

IV. REQUIREMENTS FOR *INTER PARTES* REVIEW

A. Grounds for Standing

Pursuant to §42.104(a), Petitioner certifies '634 is available for IPR.

Petitioner is not barred or estopped from requesting IPR challenging the Claims on the grounds herein.

B. Identification of Challenge

Pursuant to §§42.104(b), Petitioner requests the Board cancel the Claims as unpatentable.[2]

1. Specific Art on Which the Challenge is Based

Name	Exhibit	Filed	Published	Prior art
Simon	1004	3/3/2015	6/18/2015	§102(a)(1)-(2)
Burnett-'870	1005	11/20/2013	5/29/2014	§102(a)(1)-(2)
Magstim	1006	--	7/21/2006	§102(a)(1)

a. §§314(a) and 325(d) are inapplicable

Simon and **Magstim**[3] were not before Examiner; **Burnett-'870** was cited in an IDS among hundreds of references, but not otherwise identified or applied to reject claims during prosecution. Examiner never considered the testimony of Dr. Bikson (Ex-1002) regarding these documents. Ex-1003.

Although '634 was previously litigated in the ITC, Petitioner had no

[2] The art predates '634's earliest priority date; Petitioner takes no position as to the priority claims.
[3] Although **Magstim** (not previously cited or considered) and the operating manuals (cited but not applied to reject claims) are from the same company, the respective disclosures are substantially different—**Magstim** is a guide that teaches stimulation principles, techniques, and applications claimed in '634, while the manuals describe product operations.

involvement or input to those proceedings, nor any relationship to any party challenging the patent therein; '634 invalidity was not decided before the matter was settled. This petition presents unique grounds not presented in IPR2021-00312—neither **Simon** nor **Burnett-'870** was asserted; and **Magstim**[4] is not applied the same way as in any prior ground, which prevent application of §§314(a) and 325(d) denial.

2. Statutory Grounds on Which the Challenge is based

Ground	Statute	Claim(s)	Prior Art
1	§103	1-8, 23-30	Simon
2	§103	1-8, 23-30	Burnett-'870 in view of Magstim
3	§103	1-8, 23-30	Simon in view of Burnett-'870

See §VIII.

V. BACKGROUND

A. '634 Patent

'634 is directed to producing a time-varying magnetic field to remodel or improve muscles. '634, 3:13–16, 3:33–37, 3:51–60. It describes a device with applicators positioned on a patient's target body regions using an "adjustable belt." '634, 10:31–34, 15:56–58, Figs. 15-16.

[4] **Magstim** served as a primary reference in the PGR for disclosing two applicators; in contrast, **Magstim** is asserted here as a secondary reference for disclosing basic magnetic field parameters and applications.

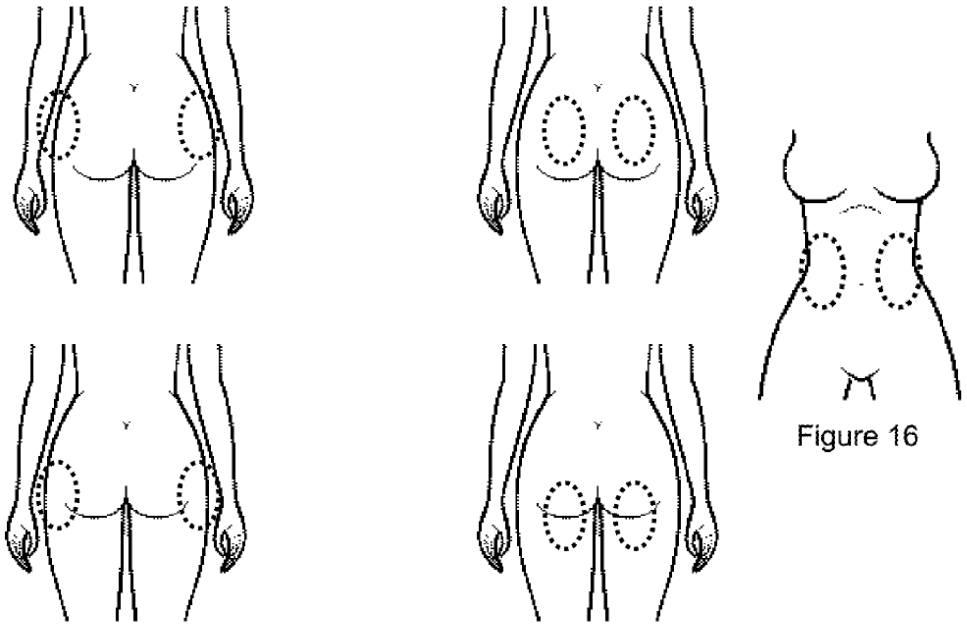


Figure 15

Figure 16

The device includes a "control unit" to regulate magnetic field parameters, and a "casing" with a "cooling media" for the applicators. '634, 2:22–25, 10:19–23, 12:30–34. The device's circuits include energy storage devices (*i.e.*, capacitors) for discharging energy to coils. '634, 7:28–31. Bikson, ¶¶98-101

The coils generate "impulses" (*i.e.*, "magnetic stimulus") to cause muscle contractions. '634, 3:55–65, 5:42. Figure 8 illustrates the impulses are biphasic and are sinusoidal:

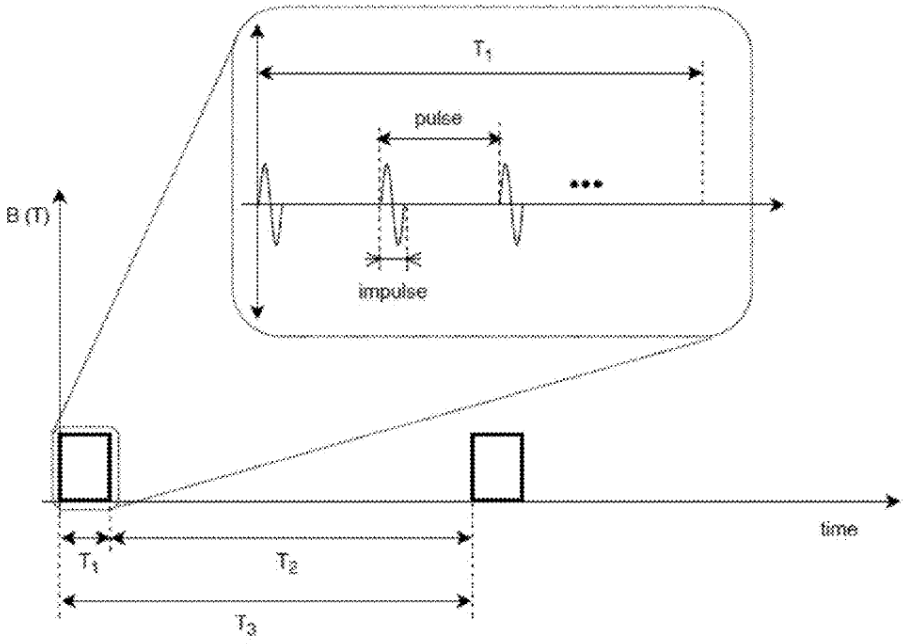


Figure 8

'634, Fig. 8, 5:42, 93:52–55. A "pulse" is defined as the period of treatment between the beginning of a first impulse and the beginning of a second impulse. '634, 5:43–46. Bikson, ¶¶102-105.

B. Prosecution History

'634 issued from U.S. Application No. 16/034,793, filed 7/13/2018. Ex-1003, 1–115. USPTO granted Track 1, prioritized status on 9/19/2018. Ex-1003, 160–162. Bikson, ¶¶106.

Appellant canceled claims 1–30, and submitted 30 new claims in an Amendment filed 1/2/2019, and then rewrote the claims in Amendments filed 2/6/2019 and 2/12/2019 not in response to any action taken by the Examiner. Ex-1003, 200–220, 221–234, 235–246. The Examiner issued no art-based rejections

against the claims, before allowing them on 4/1/2019, without any reasons for allowance. Ex-1003, 253–259. Bikson, ¶¶107-108.

VI. LEVEL OF ORDINARY SKILL IN THE ART

On or before 7/1/2015, a POSITA 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. Additional graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education. Bikson, ¶¶1-42.

VII. CLAIM CONSTRUCTION

Claim terms subject to IPR are to be construed according to the *Phillips* standard applied in district court. §42.100(b). Petitioner applies the plain and ordinary meanings of terms. Only terms necessary to resolve the controversy must be construed. *Nidec Motor v. Zhongshan Broad Ocean Motor*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). Bikson, ¶¶109-110.

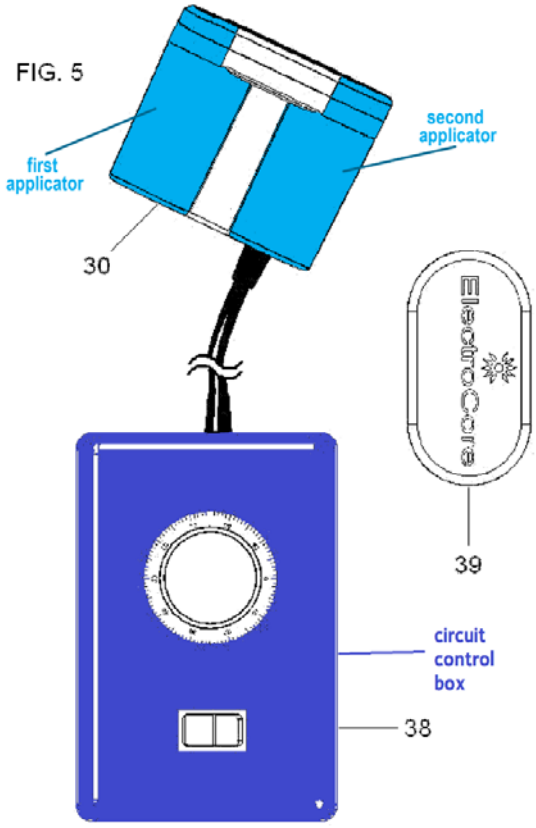
VIII. GROUNDS OF UNPATENTABILITY

A. Ground 1: Claims 1-8 and 23-30 are rendered obvious by Simon

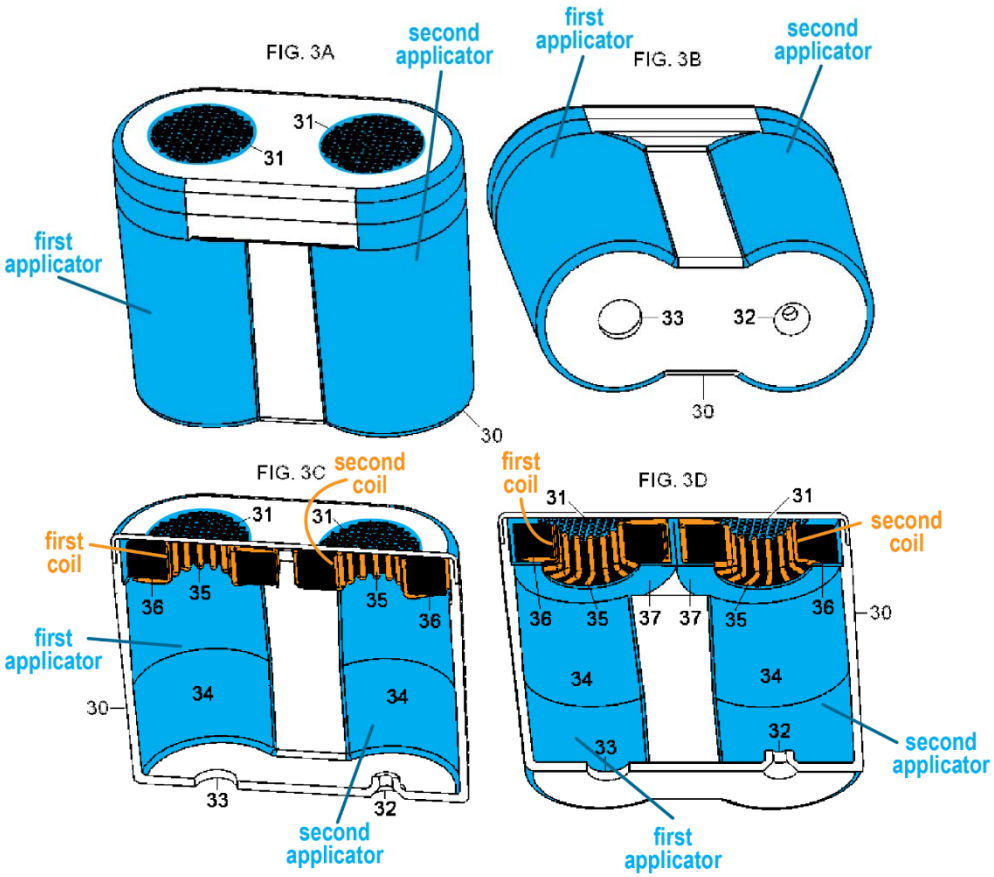
1. Simon Overview

Simon discloses a magnetic stimulator for muscle "[r]ehabilitation." Simon,

title, [0002], [0197].



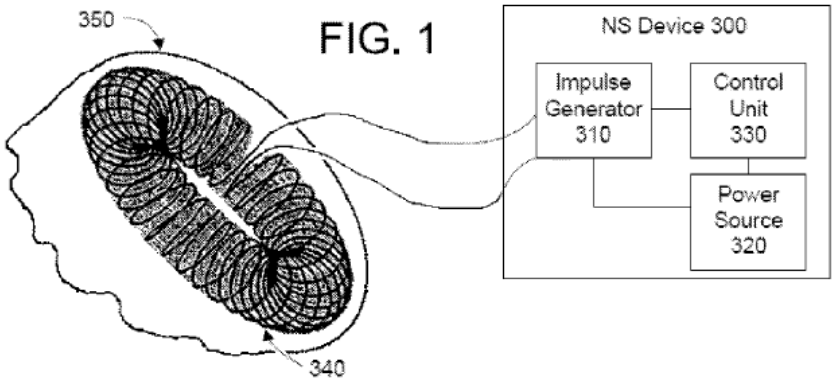
Simon, Fig. 5, [0103]. Figures 3A-3D (annotated) show **Simon's** stimulator with two **applicators** situated within a "housing," each **applicator** containing a "**coil**" that generates a time-varying magnetic field when a capacitor is "discharged." Simon, [0012], [0045], [0047], [0098].



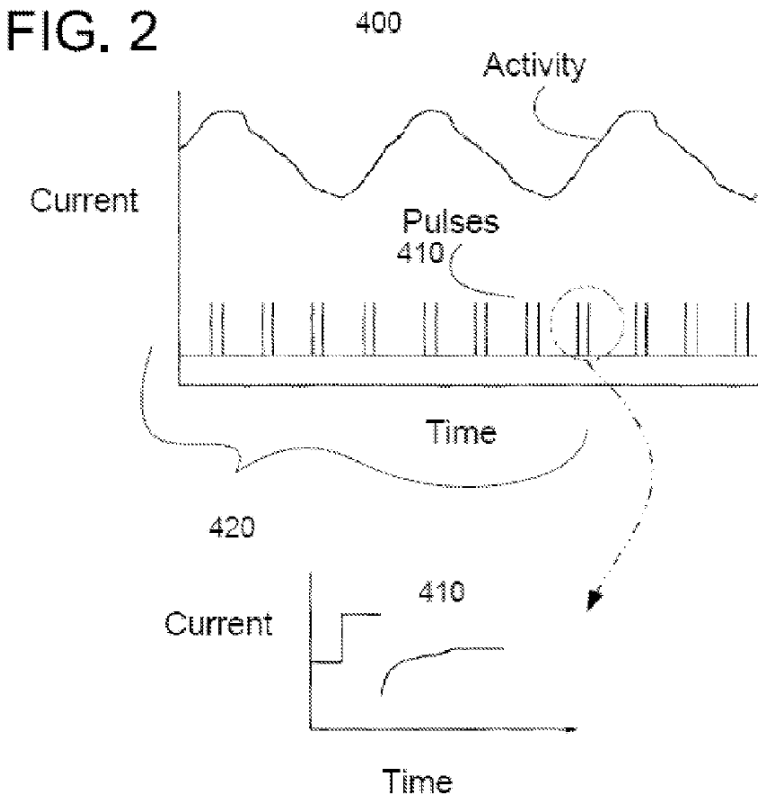
Each **coil** "induces an electromagnetic field" to apply "electrical impulses" to muscles within target body regions (*e.g.*, abdomen). Simon, [0024], [0027]-[0028], [0035], [0053]. Simon's stimulator may contain more than two **applicators**, with varying shapes and configurations for different applications based on the "anatomical location of the stimulation and determining the appropriate pulse configuration." Simon, [0031], [0100]-[0102], Fig. 4C-4D. Bikson, ¶¶111-114.

Simon's device has an "impulse generator," containing a capacitor and connected to a "control unit" causing the impulse generator to generate a signal for

each **coil**. Simon, [0019], [0057], Fig. 1. The control unit controls the capacitor via switching. Simon, [0019]. The impulse generator may contain a "bank of capacitors" discharged to coils at different times such that multiple, and serial pulses may be generated. Simon, [0019], [0063]. Bikson, ¶¶115-116.



Simon's coils generate consecutive "energy impulses" to stimulate tissue:



Simon, Fig. 2, [0002], [0029], [0035]. **Simon** teaches adjustable parameters for the stimulation signal including frequency, pulse amplitude, and repetition rate. Simon, [0059], [0063]-[0064], [0104]. Bikson, ¶117.

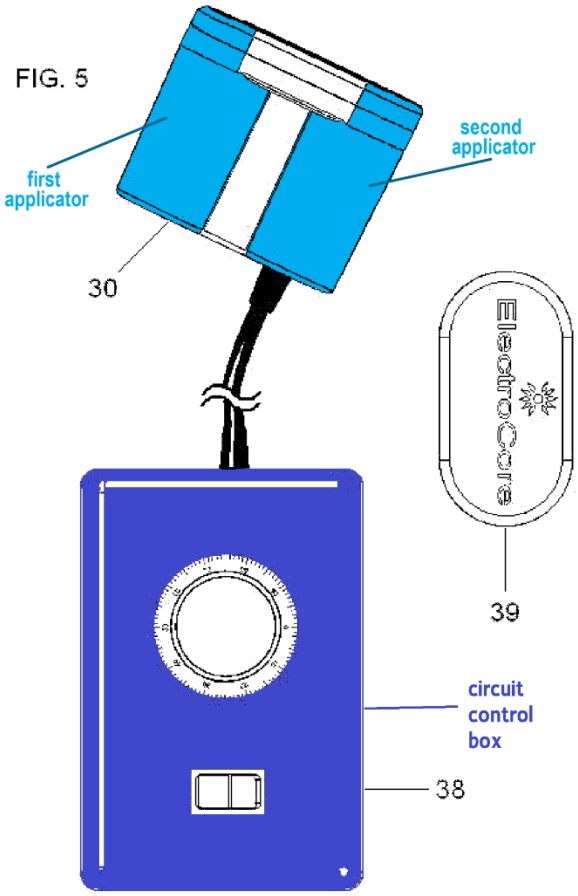
Simon aims to "significantly less[en] pain or discomfort" during treatment. Simon, [0016], [0123]. Applied current may be "increased gradually, first to a level wherein the patient feels sensation," then "set to a level." Simon, [0123]. **Simon** recognizes magnetic stimulator coils "overheat" during "extended" use, so it discloses solutions such as "cool[ing] the coils" with flowing water, air, or "ferrofluids." Simon, [0020]. Bikson, ¶¶118-119.

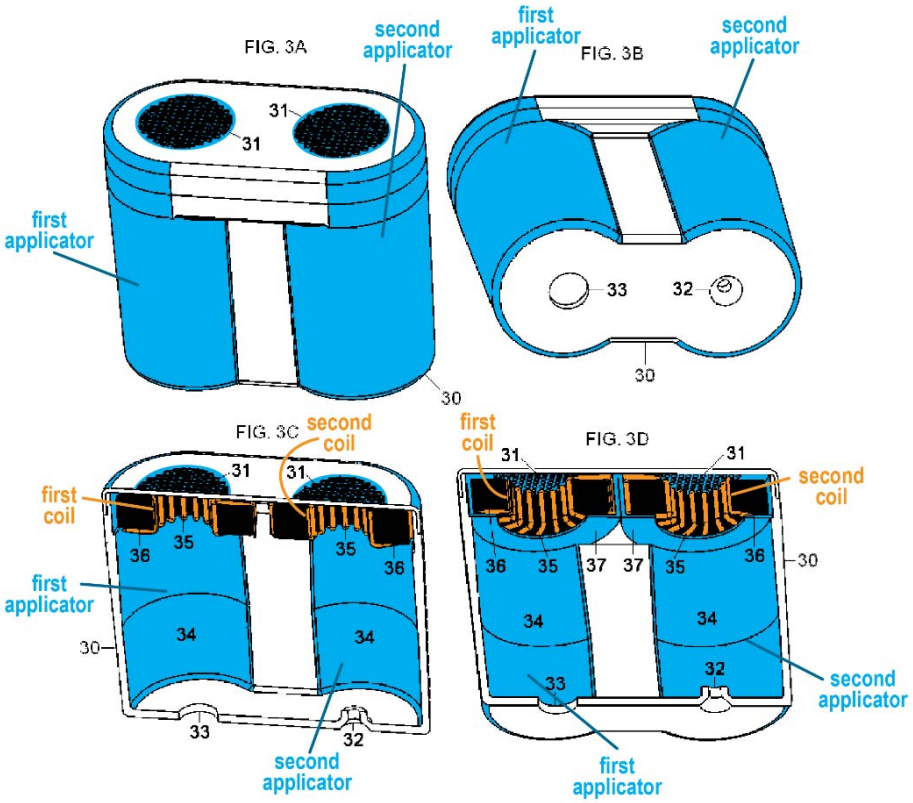
To the extent argued that **Simon** does not explicitly disclose a magnetic fluence between 50-1,500 T cm^2, fluence is based on magnetic flux density and coil area, and a POSITA would have been motivated and found it obvious to use "different diameter toroidal coils…preferred for different applications," *e.g.*, larger coils when treating larger body regions such as "abdomen." Simon, [0099], [0105]. *See, e.g.*, Burnett-'870 (disclosing coils with 3-7in diameter, resulting in fluence of 68 T cm^2 for 1.5T magnetic field and 3-in coil). Such a routine change in coil diameter, which Simon discloses may "differ[]" would predictably work and provide the expected functionality based on the explained teachings. Simon, [0099]. Bikson ¶120, 47-60.

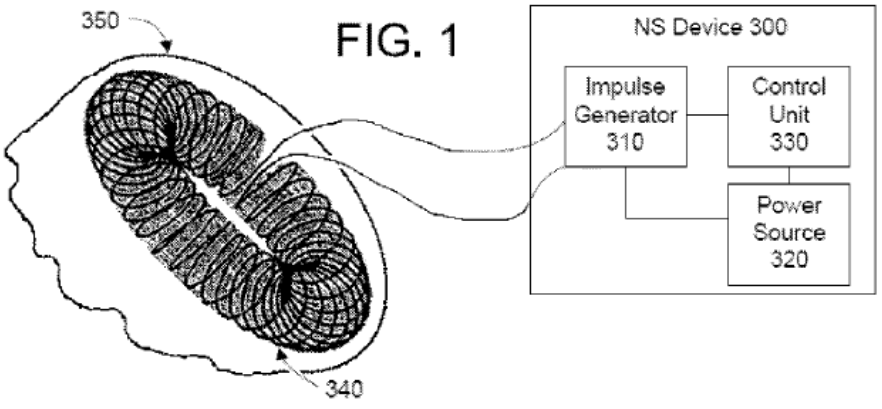
2. Claim Charts

a. Independent Claims 1 and 23

Claim Elements	Simon
[1.pre] A method for toning muscles in a patient using time-varying magnetic fields, the method comprising:	**Simon discloses a method for toning muscles in a patient using time-varying magnetic fields.** **Simon** discloses "[m]agnetic stimulation devices and methods of therapy" for muscle "rehabilitation," which POSITAs would have recognized as muscle toning. Simon, title, Abstract, [0197]; AM-100, 3, 5 (device for "muscle toning"); HPM-6000, 3 (same device used for "muscle...rehabilitative purposes"); Bikson ¶¶45-73. **Simon** discloses an "apparatus" that induces a "time-varying magnetic field" to apply "energy" to a target region within a "patient." Simon, Abstract, [0015], [0023]-[0024], [0053]. The apparatus are placed on "abdomen" in order to produce an "intended beneficial physiological effect." Simon, [0035]-[0036]. Bikson, ¶¶121-122, 61-73.
[1.a] placing a first applicator comprising a magnetic field generating coil in contact with a patient's skin or clothing at a body region of the patient, wherein the body region is an abdomen or a buttock;	**Simon discloses placing a first applicator** (*e.g.*, first applicator of "stimulator 30") **comprising a magnetic field generating coil** (*e.g.*, "coil") **in contact with a patient's skin or clothing at a body region of the patient** (*e.g.*, "target skin surface")**, wherein the body region is an abdomen** (*e.g.*, "abdomen")**.** **Simon** discloses a "stimulator 30" containing **applicators** and connected to "a **circuit control box** 38":

Claim Elements	Simon
	 Simon, Fig. 5 (annotated); [0103]. The stimulator 30 may have two **applicators** "that lie side-by-side," each containing a "**coil[]** 35" disposed in "its own housing 37":

Claim Elements	Simon
	 Simon, Fig. 3A-D (annotated), [0031], [0098]. **Simon** is not limited to two **applicators**; the shapes and configurations may vary based on, *e.g.*, "the anatomical location of the stimulation." Simon, [0031], [0100]-[0102], Fig. 4C-4D. **Simon** discloses a two-applicator stimulator "positioned…on…abdomen…" and cites prior art "abdomen" treatment. Simon, [0035], [0105], [0175]. Simon discloses coupling applicator to a "target skin surface" and recognizes prior-art treatments "attaching electrodes to the surface of the skin". Simon, [0056], [0014], [0022], [0032]. Bikson ¶¶123-127, 45-77.
[1.b] coupling the first applicator to the patient with an adjustable flexible belt so that the	**Simon teaches coupling the first applicator** (*e.g.*, first applicator of "stimulator 30") **to the patient with an adjustable flexible belt** (*e.g.*, "strap, harnesses") **so that the belt holds the first applicator to the patient's skin or clothing.**

Claim Elements	Simon
belt holds the first applicator to the patient's skin or clothing;	*See* [1.a]—**Simon** discloses fixing a stimulator having two applicators to a body region (*e.g.,* "abdomen"; *see* [1.a] above) with "[s]traps, harnesses, or frames," *i.e.*, a belt, to "maintain the stimulator in position." Simon, [0147], [0154], [0168], [0182]. For example, **Simon** discloses "using a strap" to hold stimulator coils "against the patient" and further discloses placing the device on conducting gel dispensed onto "patient's skin." Simon, [0168], [0194]. **Simon** leaves it to a POSITA to choose a belt, and it was well-known to use a flexible/"adjustable" belt. *E.g.*, Burnett-'870, [0007], [0114], [0209]. A POSITA would have understood **Simon's** belt would be flexible to treat different body parts with vastly different dimensions (including "neck, ankle, abdomen, or scalp") or accommodate different-sized patients. Simon, [0035], [0123]. Bikson, ¶¶128-130, 75-81.
[1.c] providing energy to the magnetic field generating coil in order to generate a time-varying magnetic field; and	**Simon teaches providing energy to the magnetic field generating coil** (*e.g.*, "coil") **in order to generate a time-varying magnetic field.** *See* [1.a]—**Simon** discloses a "source of power supplies a pulse of electric charge to [a] coil, such that the coil induces an…electric field." Simon, Abstract. **Simon's** device has "an impulse generator" coupled to a "power source" and "control unit": 

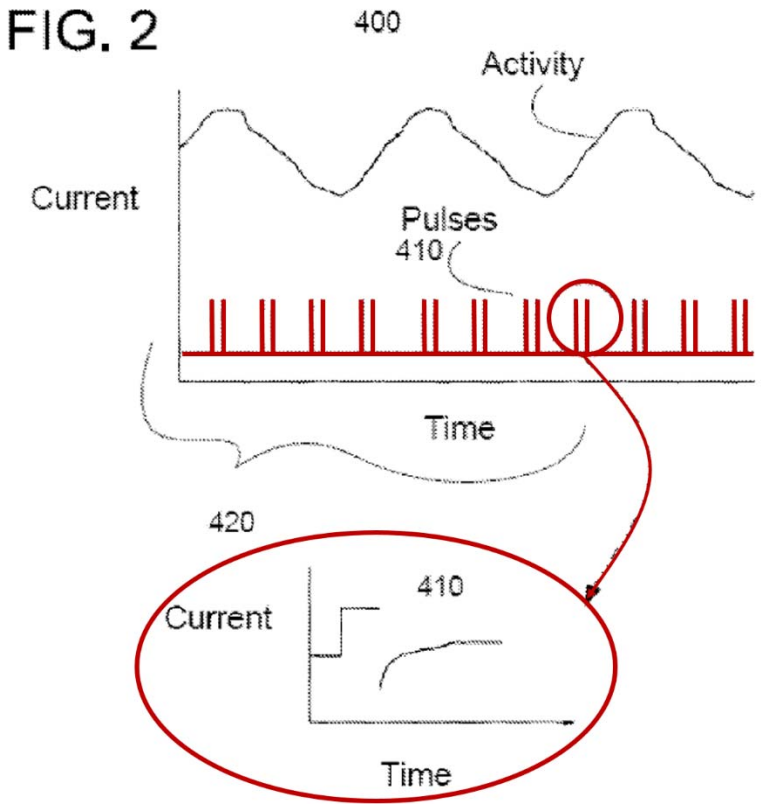
Claim Elements	Simon
	Simon, Fig. 1, [0054]. The "impulse generator" contains "a capacitor," which stores energy when "[charged]…under the control of a control unit." Simon, [0019]. Capacitors are then "discharged," providing energy to each **coil** when a user wishes to "apply [a] stimulus." Simon, [0019], [0025]. **Simon's** "apparatus" induces a "time-varying magnetic field" to apply "energy" to a target region within a "patient." Simon, *Abstract*, [0015], [0023]-[0024], [0035]-[0036], [0053]. Bikson, ¶¶131-135, 82-83.
[1.d] applying a magnetic fluence of 50 T cm^2 to 1,500 T cm^2 to the body region,	**Simon teaches applying a magnetic fluence of 50 T cm^2 to 1,500 T cm^2** (*e.g.*, 68 T cm^2) **to the body region.** *See* [1.pre]-[1.b]—Fluence is magnetic flux density multiplied by area. '634, 14:1-7. **Simon** discloses a magnetic field of "about 0.1 to 2 Tesla." Simon, [0030], [0104]. **Simon** further discloses "[d]ifferent diameter" coils "may be preferred for different applications," leaving the diameter to a POSITA. Simon, [0099]. It was known to use coils from 3-7 inches in diameter. Burnett-'870, [0201]. A POSITA would have understood and found it obvious to use coils with these diameters to advantageously provide additional applications of **Simon's** device on different-sized body regions. A coil with 3-in diameter (*i.e.*, 1.5in or 3.81cm radius) and flux density of 1.5T would have magnetic fluence within the claimed range, *e.g.*, 68 T cm^2 (1.5 Tesla x 3.14 x $(3.81cm)^2$ = 68 T cm^2). Bikson, ¶¶136-139.
[1.e] wherein the time-varying magnetic field is applied to the body region with a magnetic flux density sufficient	**Simon discloses the time-varying magnetic field is applied to the body region** (*e.g.*, "abdomen") **with a magnetic flux density sufficient to cause a muscle contraction in the body region.** *See* [1.pre]-[1.c]—**Simon** discloses placing applicators on body regions such as abdomen (Simon, [0035]); the resulting

Claim Elements	Simon
to cause a muscle contraction in the body region.	consecutive "electrical impulses" stimulate muscles/tissues. Simon, Abstract, [0012], [0053], [0060]-[0061], [0083], [0105], Fig. 2. **Simon** teaches—as was well-known—that muscles "contract" while stimulated. Simon, [0158], [0194], [0195]. Moreover. It was known that using biphasic pulsed current to stimulate muscles would cause muscle contraction leading to strengthening—getting "larger and stronger," thereby toning muscles. *See, e.g.*, Belanger, 234. Bikson, ¶¶140-142, 45-73.

Claim Elements	Simon
[23.pre] A method for body shaping via a contraction of a muscle using time-varying magnetic fields applied to a patient, the method comprising:	**Simon discloses a method for body shaping via a contraction of a muscle using time-varying magnetic fields applied to a patient.** *See* [1.pre], [1.e]—to the extent argued **Simon** does not disclose this limitation, it was known that muscle contraction leads to a reduction in adipose tissue proximate the muscles, leading to body shaping as was known in the art. *See, e.g.*, Sokolowaski, [0003]-[0005] ("stimulation leads to a breakdown of fatty tissue"). Bikson, ¶¶143-144, 45-73.
[23.a] placing a first applicator including a first magnetic field generating coil in contact with the patient's skin or clothing at a first body region; placing a second applicator including a second magnetic field generating coil in contact with the patient's skin or	**Simon discloses placing a first applicator including a first magnetic field generating coil in contact with the patient's skin or clothing at a first body region; placing a second applicator including a second magnetic field generating coil in contact with the patient's skin or clothing at a second body region.** *See* [1.pre]-[1.b], [1.e]—**Simon** discloses "first and second time-varying magnetic fields" are generated by "first and second coils." Simon, [0025]. Bikson, ¶¶145-146, 74-75.

Claim Elements	Simon
clothing at a second body region;	
[23.b] charging at least one energy storage device having a capacitance in a range of 5 nF to 100 mF;	**Simon teaches charging at least one energy storage device** (*e.g.*, capacitor) **having a capacitance in a range of 5 nF to 100 mF.** *See* [1.c]—**Simon** leaves it to POSITAs to choose a capacitor, and using a capacitor with the broad claimed range of capacitance in a stimulator was known in the art. For example, **Simon** cites Epstein as an exemplary "magnetic stimulator[] circuit," including capacitors with capacitance of "at least 50 uF," (0.05mF). Epstein, 8:19-22; Burnett-'585, [0071] (capacitance of "at least 5,000 microfarads": 5mF). Bikson, ¶¶147-148, 56-60, 82-83.
[23.c] switching at least one switching device in order to enable discharging the at least one energy storage device to the first and the second magnetic field generating coils, wherein each magnetic field generating coil has an inductance in a range of 500 nH to 1 mH;	**Simon teaches switching at least one switching device in order to enable discharging the at least one energy storage device** (*e.g.*, "capacitor") **to the first and the second magnetic field generating coils** (*e.g.*, "coils")**, wherein each magnetic field generating coil has an inductance in a range of 500 nH to 1 mH.** *See* [1.c], [23.b]—**Simon** discloses discharging a capacitor "through the coil via an electronic switch (e.g., a controlled rectifier)." Simon, [0019]; [0103] (using an "on/off switch" for "circuit control" in the stimulator). **Simon** incorporates by reference Herbst, which discloses generating "dependent or independent, synchronized" (*i.e.*, synchronous) pulses "available simultaneously" for multiple output channels. Herbst, [0070]. **Simon** leaves it to POSITAs to choose the "desired coil inductance," and using a coil with the broad range of inductance was known in the art. Simon, [0099]; *see*, e.g., Magstim, Table 1 (describing coils with, *e.g.*, 13.5μH/16μH). Bikson, ¶¶149-151, 47-60.

Claim Elements	Simon
[23.d] generating a first time-varying magnetic field by the first magnetic field generating coil and generating a second time-varying magnetic field by the second magnetic field generating coil;	**Simon discloses generating a first time-varying magnetic field by the first magnetic field generating coil and generating a second time-varying magnetic field by the second magnetic field generating coil.** *See* [1.pre]-[1.a], [1.c], [23.a], [23.c]—**Simon** discloses "first and second time-varying magnetic fields" are generated by "first and second coils." Simon, [0025]. Bikson, ¶¶152-153, 75-77.
[23.e] assembling a plurality of magnetic pulses generated by the first and the second magnetic field generating coils into respective bursts comprising a first time period comprising a train of subsequent magnetic pulses, and a second time period in which no time-varying magnetic field is generated, and	**Simon teaches assembling a plurality of magnetic pulses generated by the first and the second magnetic field generating coils into respective bursts comprising a first time period comprising a train of subsequent magnetic pulses, and a second time period in which no time-varying magnetic field is generated.** *See* [1.pre]-[1.a], [1.c], [23.c]—**Simon** discloses a plurality of pulses, e.g., "1 to 20 pulses." Simon, [0030], [0043], [0104], cl. 7. Fig. 2. Simon uses both "pulses" and "impulse[s]" to refer to the claimed pulses. **Simon** discloses a plurality of sequential "impulse[s] 410," form "pulse train 420," in an "exemplary electrical voltage/current profile for a stimulating, blocking and/or modulating impulse" producing biological activity including tissue stimulation:

Claim Elements	Simon
	 Simon, Fig. 2 (color-annotated), [0060]-[0061] (Simon discloses a "pulse" (referred to as "impulse" in the language of the patent) duration). **Simon** discloses an adjustable "duty cycle," *i.e.* stimulation on/off ratio including for bursts, and acknowledges a "10 seconds on, 10 seconds off" treatment cycle. Simon, [0062], [0064], [0111]. Bikson, ¶¶154-157, 49.
[23.f] applying the bursts to the first and second body region of the patient including a buttock or abdomen with a repetition rate in a range of 0.1 Hz to	**Simon discloses applying the bursts to the first and second body region of the patient including a buttock or abdomen with a repetition rate in a range of 0.1 Hz to 700 Hz** (*e.g.*, "1-5000Hz") **such that a muscle contraction is caused.** *See* [1.a]-[1.c], [1.e], [23.pre]-[23.a], [23.e]—**Simon** discloses current "passed through the coils in bursts of **pulses**" repeating at 1-5000Hz (within the claimed range) with "1-20

Claim Elements	Simon
700 Hz such that a muscle contraction is caused.	**pulses** per burst"—**Simon's** burst is equivalent to the "train" of the patent. Simon, [0030], Fig. 2. Bikson, ¶¶158-159, 52.

b. Dependent Claims 2-8 and 24-30

Claim Elements	Simon
[2] The method of claim 1, further comprising applying the time-varying magnetic field to muscle fibers, neuromuscular plates, or nerves innervating muscle fibers in order to cause a repetitive contraction of at least one muscle of a group including: rectus abdominis muscle, external oblique muscle, internal oblique muscle and/or transversus abdominis; or gluteus maximus muscle, gluteus medius muscle and/or gluteus minimus muscle; or m. quadriceps femoris.	**Simon discloses applying the time-varying magnetic field to muscle fibers, neuromuscular plates, or nerves innervating muscle fibers in order to cause a repetitive contraction of at least one muscle of a group including: rectus abdominis muscle, external oblique muscle, internal oblique muscle and/or transversus abdominis; or gluteus maximus muscle, gluteus medius muscle and/or gluteus minimus muscle; or m. quadriceps femoris.** *See* [1.a], [1.e], [23.a], [23.e]-[23.f]—**Simon's** device would be used on various "bodily tissues"/"target region[s] within a patient." Simon, [0002], [0024], [0035]-[0036]. Consecutive impulses would cause repetitive contractions on target muscles; "abdomen" comprises "rectus abdominis," internal/external obliques, and transverse abdominal. Simon, [0175]. Bikson, ¶¶160-161, 45-73.

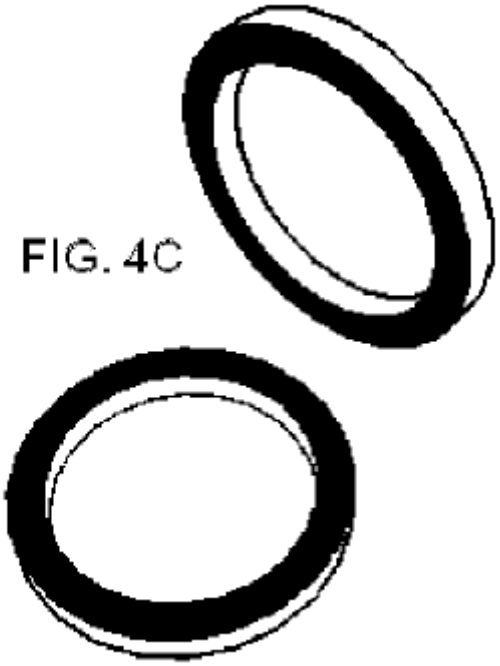
Claim Elements	Simon
[3] The method of claim 1, further comprising applying the time-varying magnetic field to muscle fibers, neuromuscular plates, or nerves innervating muscle fibers in bursts, wherein each burst comprises first and second time periods; wherein the first time period consists of a plurality of magnetic pulses causing the contraction of the muscle, and wherein no time-varying magnetic field is generated during the second time period.	**Simon discloses applying the time-varying magnetic field to muscle fibers, neuromuscular plates, or nerves innervating muscle fibers in bursts, wherein each burst comprises first and second time periods; wherein the first time period consists of a plurality of magnetic pulses causing the contraction of the muscle, and wherein no time-varying magnetic field is generated during the second time period.** *See* [1.pre]-[1.a], [1.c], [1.e], [23.e]. Bikson, ¶¶162-163.
[4] The method of claim 1, further comprising charging an energy storage device having a capacitance of 5 µF to 500 µF; and discharging the energy storage	**Simon teaches charging an energy storage device** (*e.g.*, "capacitor") **having a capacitance of 5 µF to 500 µF; and discharging the energy storage device to the magnetic field generating coil.** *See* [1.c], [23.b]-[23.c]. Bikson, ¶¶164-165, 82-83.

Claim Elements	Simon
device to the magnetic field generating coil.	
[5] The method of claim 1, further comprising assembling magnetic pulses into a burst with a treatment duty cycle that is a percentage of a time of application of a train of the magnetic pulses of the burst and a total time of the burst, wherein the treatment duty cycle is between 20% and 90%.	**Simon teaches assembling magnetic pulses into a burst with a treatment duty cycle that is a percentage of a time of application of a train of the magnetic pulses of the burst and a total time of the burst, wherein the treatment duty cycle is between 20% and 90%.** *See* [23.f]—**Simon** discloses an adjustable "duty cycle," *i.e.* stimulation on/off ratio including for bursts, and acknowledges a "10 seconds on, 10 seconds off" treatment cycle which would have a 50% duty cycle, within the claimed range. Simon, [0062], [0064], [0111]. **Simon** leaves it to POSITAs to choose a duty cycle, and using a duty cycle between 20% and 90% was known and conventional in the art. *See, e.g.,* March 6:43-46 (disclosing a duty cycle between 10-100%); Belanger, Table 13-2 (disclosing a duty cycle of 9%-67%), 248-49 ("Duty cycle" of "20%" or "30%"). POSITAs would have been motivated and found it obvious to use a duty cycle within this range to "conserve energy" and to provide sufficient stimulation for the muscle stimulation. *Id.* Bikson, ¶¶166-169, 45-60.
[6] The method of claim 1, further comprising placing a second applicator comprising a second magnetic field generating coil in contact with the patient's skin or clothing at the body region of the patient, wherein the	**Simon teaches placing a second applicator** (*e.g.*, "applicator") **comprising a second magnetic field generating coil** (*e.g.*, "coil") **in contact with the patient's skin or clothing at the body region** (*e.g.*, buttocks/abdomen) **of the patient, wherein the second magnetic field generating coil** (*e.g.*, "coil") **is configured to apply a time-varying magnetic field simultaneously with the first magnetic field generating coil.** *See* [1.pre]–[1.c], [23.a], [23.c]—Figures 3, 5 of **Simon** show that the two applicators are applied simultaneously. Herbst discloses generating "dependent or independent, synchronized" pulses for multiple output channels. Herbst,

Claim Elements	Simon
second magnetic field generating coil is configured to apply a time-varying magnetic field simultaneously with the first magnetic field generating coil.	[0070]. Synchronous switching in a magnetic muscle stimulator was well known. *See, e.g.,* Belanger, 220 ("stimulation modes (synchronous, reciprocal, overlap)"), 242-243, 246; Burnett-'870, [0086]-[0087] ("coils…activated simultaneously"). A POSITA would have been motivated and found it obvious to apply this known teaching of synchronous switching to treat two body regions (that may be mirror image of each other) similarly such that both regions would have the same visual appearance after treatment. Bikson, ¶¶170-172, 54-55, 89-97.
[7] The method of claim 6 wherein the magnetic field generating coils each have an inductance in a range of 500 nH to 1 mH.	**Simon teaches the magnetic field generating coils** (*e.g.*, "coils") **each having an inductance in a range of 1 nH to 50 mH.** *See* [1.pre]-[1.a], [23.c]. Bikson, ¶¶173-174.
[8] The method of claim 1, further comprising: generating a first burst comprising a first train of magnetic pulses having a first repetition rate; generating a second burst comprising a second train of magnetic pulses having a second repetition rate; and generating a third train of magnetic pulses having a	**Simon teaches generating a first burst comprising a first train of magnetic pulses having a first repetition rate** (*e.g.*, "repetition rate")**; generating a second burst comprising a second train of magnetic pulses having a second repetition rate** (*e.g.*, "repetition rate")**; and generating a third train of magnetic pulses having a third repetition rate** (*e.g.*, "repetition rate")**, wherein the first, second, and third repetition rates are each different from each other** (*e.g.*, "modulated frequency" throughout treatment)**.** *See* [1.pre]-[1.a], [1.c], [23.c], [23.e]-[23.f]—**Simon** discloses an "adjustable" "repetition rate." Simon, [0062]-[0063]. For example, **Simon** teaches a "modulated frequency" embodiment where frequency may "be varied" throughout treatment. Simon, [0059]. **Simon** discloses "[c]ontrol of the system may be based upon feedback." Simon, [0058]. Accordingly, applicator repetition rates may be increased or decreased through this system control. Herbst additionally

Claim Elements	Simon
third repetition rate, wherein the first, second, and third repetition rates are each different from each other.	discloses independently-set repetition rates for a "two…output" system. Herbst, [0037]. Bikson, ¶¶175-176, 54-55, 89-96.
[24] The method of claim 23, further comprising applying the bursts to at least one of a rectus abdominis muscle, external oblique muscle, internal oblique muscle and transversus abdominis muscle.	**Simon discloses applying the bursts to at least one of a rectus abdominis muscle, external oblique muscle, internal oblique muscle and transversus abdominis muscle.** *See* [2], [1.a], [1.e], [23.a], [23.e]-[23.f]. Bikson, ¶¶177-178, 45-73.
[25] The method of claim 23, further comprising applying the bursts to at least one of a gluteus maximus muscle, gluteus medius muscle, and gluteus minimus muscle.	**Simon teaches applying the bursts to at least one of a gluteus maximus muscle, gluteus medius muscle, and gluteus minimus muscle.** *See* [2], [1.a], [1.e], [23.a], [23.e]-[23.f]—**Simon** discloses treating a variety of "target anatomical location[s]." [0035], [0102]. Simon leaves it to POSITAs to choose which area to treat, including "neck, abdomen, ankle, and head" and "equally…to other tissues and nerves." Simon, [0105]. It was well-known to apply magnetic treatment to the buttocks. *See* Burnett-'870, Fig. 9B, [0114] ("abdominal garment" with coils over buttocks). Bikson, ¶¶179-180.
[26] The method of claim 23, wherein the train lasts between 1 and 5 seconds, and wherein a	**Simon teaches the train lasts between 1 and 5 seconds, and wherein a repetition rate of the time-varying magnetic field is between 5 Hz and 50 Hz** (*e.g.,* "10 to 20 hertz")**.** *See* [23.e]-[23.f]—**Simon** discloses "adjustable" parameters including "train duration" but leaves the choice of duration to

Claim Elements	Simon
repetition rate of the time-varying magnetic field is between 5 Hz and 50 Hz.	a POSITA. Simon, [0059]. A train duration of 1-5 seconds was known and conventional in the art. *See, e.g.,* Magstim, Fig. 21 (showing "5.0s" for "Duration…for each train."), Belanger, 236 . A POSITA would have been motivated and found it obvious to choose this train duration for patient comfort and to mimic muscle contraction and relaxation—muscle contractions of "3 to 6 seconds" were known to mimic natural muscle contraction, leading to a "smooth" and comfortable evoked contraction. Belanger, 236. Bikson, ¶¶181-182, 52-55, 89-93.
[27] The method of claim 23, further comprising applying the bursts to at least one of an m. quadriceps femoris, m. biceps femoris, m. semimembranosus, m. semitendinosus, tensor fascia latae muscle, vastus lateralis muscle, iliotibial muscle, and m. triceps surae.	**Simon teaches applying the bursts to at least one of an m. quadriceps femoris, m. biceps femoris, m. semimembranosus, m. semitendinosus, tensor fascia latae muscle, vastus lateralis muscle, iliotibial muscle, and m. triceps surae.** *See* [1.a]-[1.b], [1.e], [2], [23.a], [23.e]-[23.f]—**Simon** discloses "ankle" treatment or treatment near the "tibia," and recognizes treatment of "legs" was known. Simon, [0034], [0083], [0168]. To the extent argued **Simon** does not disclose this limitation, a POSITA would have been motivated and found it obvious to use **Simon's** device for known treatments of these leg muscles. *E.g.*, Burnett-'870, Fig. 9, 30-31, [0012] ("coils to be placed around…a leg"), [0088], [0109], [0118], [0157], [0163], [0174], [0176], [0179], [0205] ("leg applicator 320"), [0218]. Bikson, ¶¶183-185.
[28] The method of claim 23, further comprising positioning the first applicator and the second applicator at the	**Simon teaches positioning the first applicator and the second applicator at the body region in mutually tilted planes** (*e.g.*, "not all…in the same plane") **defined by an angle.**

Claim Elements	Simon
body region in mutually tilted planes defined by an angle.	*See* [1.a]-[1.b], [2], [27]—Simon discloses that the "toroids" in its applicators "need not all lie in the same plane," *i.e.*, mutually tilted:  Simon, Fig. 4C, [0100], Abstract, [0086] ("conform to the generally non-planar contours of a patient's skin having an arbitrary orientation"). Bikson, ¶¶186-187.
[29] The method of claim 23, further comprising applying the bursts to at least one of an m. biceps brachialis, m. coracobrachialis, m. deltoideus, m. triceps brachii, m. anconeus, muscles of forearm, mm.	**Simon discloses applying the bursts to at least one of an m. biceps brachialis, m. coracobrachialis, m. deltoideus, m. triceps brachii, m. anconeus, muscles of forearm, mm. pectorales minors and mm. pectorales majors.** *See* [1.a]-[1.b], [1.e], [2], [23.a], [23.e]-[23.f], [27]—**Simon** discloses placing an applicator on "ulnar edge of the forearm," *i.e.*, applying bursts to muscles of forearm. Simon, [0175]. **Simon** further recognizes known treatment of "arms." Simon, [0083]. To the extent argued **Simon** does not disclose this limitation, a POSITA would have been motivated and found it obvious

Claim Elements	Simon
pectorales minors and mm. pectorales majors.	to use **Simon's** device for known treatments of these arm/shoulder muscles. *E.g.*, Burnett-'870, Figure 9D ("shoulder strap"), 31 ("arm applicator") 41 ("shoulder harness), [0012] ("coils to be placed around an arm"), [0018] ("deliver therapy to…shoulder"), [0053], [0063], [0114] ("shoulder strap"), [0204]. Bikson, ¶¶188-190.
[30] The method of claim 23, further comprising coupling the first and second applicators to the patient with an adjustable flexible belt, so that the belt holds the first and second applicators to the patient's skin or clothing.	**Simon discloses coupling the first and second applicators** (*e.g.,* first/second applicators of "stimulator 30") **to the patient with an adjustable flexible belt** (*e.g.,* "strap, harnesses")**, so that the belt holds the first and second applicators to the patient's skin or clothing.** *See* [1.a]-[1.b]. Bikson, ¶¶191-192, 75-81.

B. Ground 2: Claims 1-8 and 23-30 are rendered obvious by Burnett-'870 in view of Magstim

1. Burnett-'870 Overview

Burnett-'870 discloses applying time-varying magnetic fields sufficient to "cause contraction of muscle fibers," and thereby "toning" it. Burnett-'870, *Title, Abstract,* [0003], [0011], [0227]. **Burnett-'870**'s device has multiple applicators comprising coils to generate magnetic fields on target muscles, as shown in Figure 9B where "coils 106" are disposed in an "abdominal garment". Burnett-'870, *Abstract*, [0070], [0114].

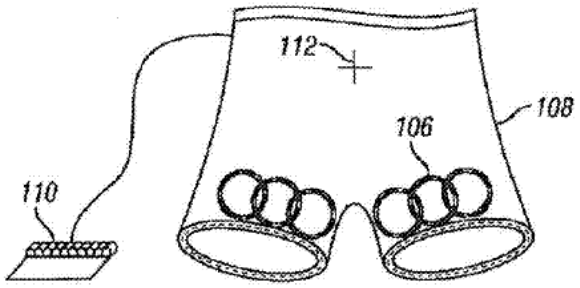


FIG. 9B

Burnett-'870 discloses attaching coils to a body region via a "belt," a "wrap" (Fig. 9A), a "band" (Fig. 9C), or a "strap" (Fig. 9D) that are "adjustable" allowing the coils to be independently positioned. Burnett-'870, [0007], [0114], [0209]. Bikson, ¶¶194-199.

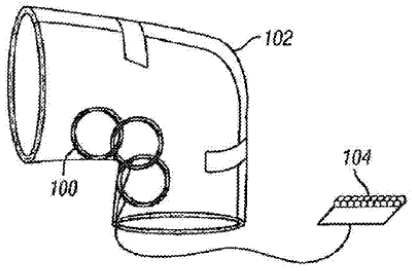


FIG. 9A

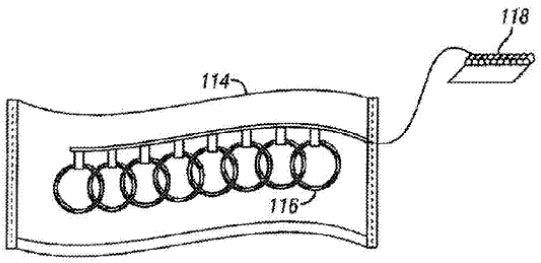


FIG. 9C

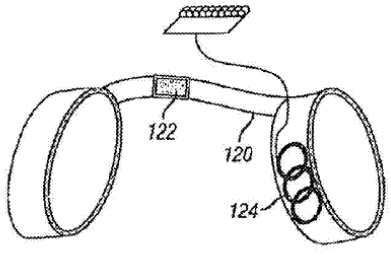


FIG. 9D

Burnett-'870 discloses cooling the coil by direct contact with a liquid coolant. Burnett-'870, [0210], [0215], [0235], Fig. 35. Bikson, ¶200.

Burnett-'870 uses a "logic controller" to adjust the parameters of the magnetic fields based on feedback from a patient via a "display screen". Burnett-'870, *Abstract,* [0196]. **Burnett-'870** discloses it was known to include a "capacitor" in the device, and uses a "switch" to control the connection between the controller and the applicators. Burnett-'870, [0013]–[0014], [0085], [0111]. **Burnett-'870** leaves the powering of coils to a POSITA. Burnett-'870, [0130]. Bikson, ¶¶201-203.

Burnett-'870 also discloses that impulses of the magnetic fields may occur "simultaneously or differentially." Burnett-'870, [0087]. The treatment parameters, *e.g.*, "amplitude and/or firing sequence of coils 26," "position of coils 26," and "frequency of stimulation," are adjustable. Burnett-'870, [0070], [0085], [0087], [0117], [0129]. Because **Burnett-'870** explains that the magnetic fields may occur "differentially," this implies that **Burnett-'870** contemplates separate capacitors—one for each coil. Bikson, ¶¶204-205.

2. Magstim Overview

Magstim is a "[g]uide" to magnetic stimulation techniques and clinical applications, such as "rehabilitation" and "sports medicine" for "training muscle and… improving its fatigue resistance." Magstim, 1, 3, 39. Bikson, ¶¶206.

Figure 2 shows a "block diagram of a typical stimulator." Magstim, 3–4.

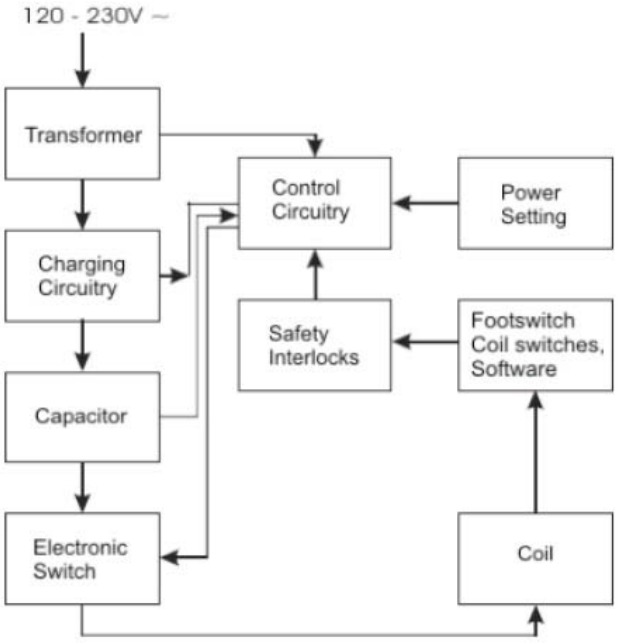


Figure 2: Block diagram of the Magstim 200[2] monophasic stimulator

Figure 2 illustrates "charg[ing] a capacitor under the control of a microprocessor," and connecting the capacitor to "the coil via an electronic switch" to generate a magnetic field, as shown in Figure 3. Magstim, 4. **Magstim** also illustrates the impulses as biphasic and sinusoidal. Magstim, 9, Fig. 14. Bikson, ¶¶207-209

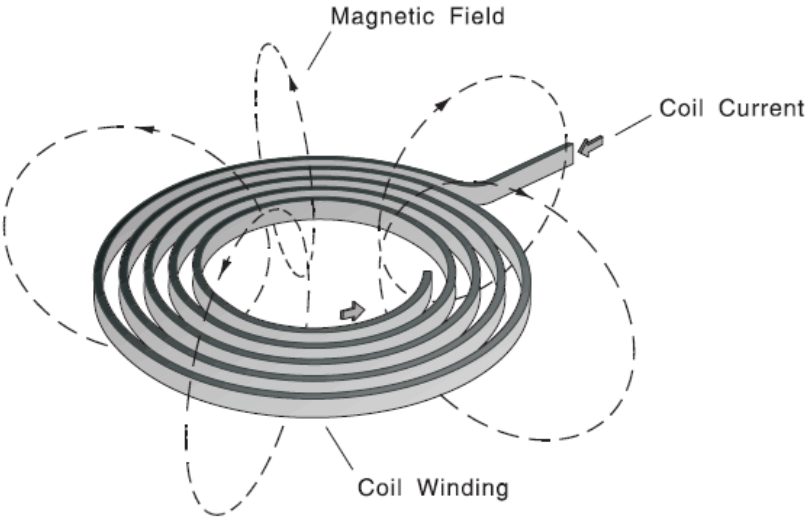


Figure 3: a circular coil showing the lines of force generated when current flows through the winding

Magstim discloses a controller for controlling generation of the magnetic fields using a "touch sensitive" "setup screen" that allows various parameters (*e.g.*, "Start Time, Power, Frequency Duration and Wait Time" over "trains of pulses") to be adjusted, as illustrated in Figure 21. Bikson, ¶¶210-211.

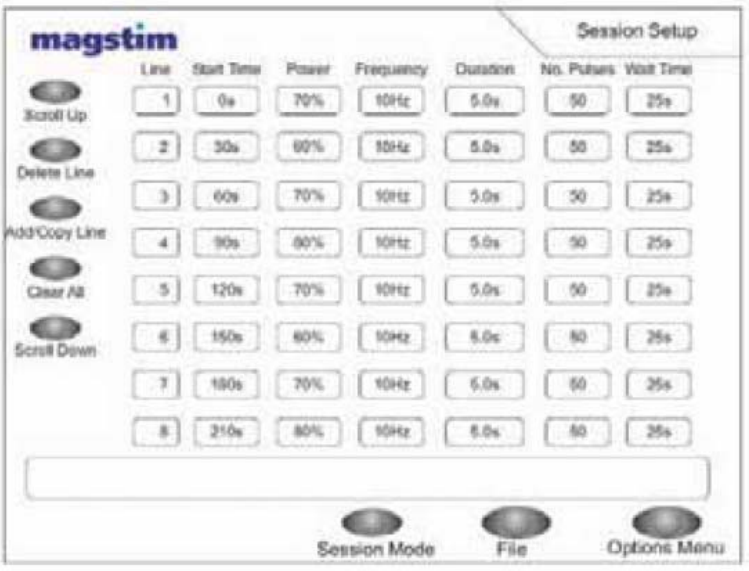


Figure 21: the Session software screen showing the parameters which can be controlled by the program

Magstim was publicly accessible and available to the POSITA as early as 2010. Suarez-Bagnasco, 4833 (reference [11]). **Magstim** was published for "world-wide readership," with copies distributed freely. Magstim, 1, 44. The Wayback Machine shows **Magstim** was disseminated via UC Irvine website by 2012. Magstim, Affidavit. Public documents cited **Magstim** and its URL. Zhi-De-Deng-Electric, 18 (reference [146]); Zhi-De-Deng-Electromagnetic, 276 (reference [161]; Simon-'569, ¶¶0036-0037; Simon-'967, ¶¶0051-0052; Simon-'203, ¶¶0017-0018, 0190; Simon-'432, ¶¶0090, 0094; Simon-'719, 7:48-8:1; Simon-'247, 20:29-43; Simon-'177, 11:19-39; File-history-'568, 10; File-history-'050, 11; File-history-'005, 3; File-history-'727, 4. Bikson, ¶¶212.

3. Motivation to Combine

Burnett-'870 discloses a device with multiple applicators with coils to generate magnetic fields on target tissues. Burnett-'870, *Abstract*. To the extent argued that **Burnett-'870** does not explicitly disclose details of a typical magnetic stimulation device, **Magstim** describes the details and operations of such device and its applications. Magstim, 1. Bikson, ¶213.

Burnett-'870 discloses that incorporating a "capacitor" in a magnetic stimulator was known. Burnett-'870, [0013]–[0014]. **Burnett-'870** also discloses using a "switch" to control the connection between the controller and the applicators. Burnett-'870, [0085], [0111]. **Burnett-'870** leaves the powering of coils to POSITA, **Magstim** teaches a known implementation of incorporating capacitors and switches in circuitry of a "typical stimulator" to control charging and discharging of a capacitor, using an electronic switch, to power a connected stimulation coil. Magstim, 4; Fig. 2. 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 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. 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, ¶¶214-216.

Although **Burnett-'870** does not explicitly disclose that the impulses of the magnetic fields are biphasic and sinusoidal, **Magstim** discloses it. Magstim, 9; Fig. 14. A POSITA would have been motivated and found it obvious to look to **Magstim's** teaching of "standard stimulator" biphasic and sinusoidal impulses in implementing **Burnett-'870**'s device. As explained in **Burnett'-870**, these signals had known benefits for therapeutic applications. Bikson, ¶¶217-218.

Both **Burnett-'870** and **Magstim** are in the same field of endeavor—electromagnetic stimulation of the body and are analogous art to '634. **Burnett-'870** discloses using magnetic field to stimulate muscles. Burnett-'870, *Abstract*. **Magstim** discloses using magnetic field to induce electrical current to stimulate muscles. Magstim, 1, 12. Bikson, ¶219.

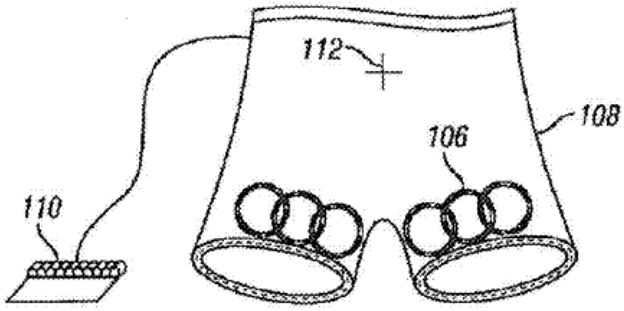
A POSITA would have found it routine, straightforward and advantageous to apply **Magstim's** known teachings of using capacitors to store energy and switches to control their discharge to power stimulation coils to generate magnetic

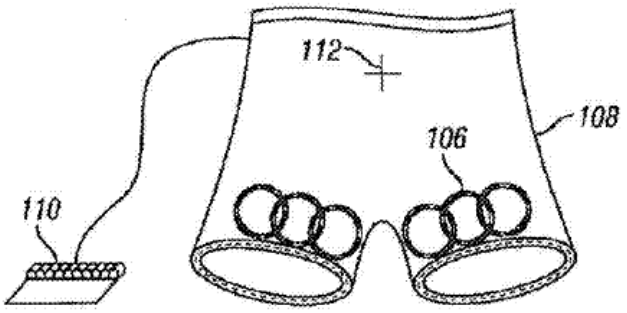
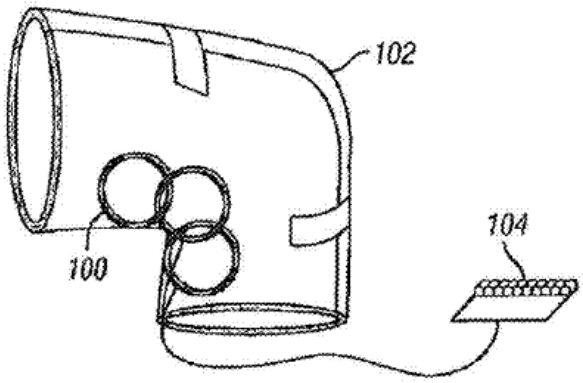
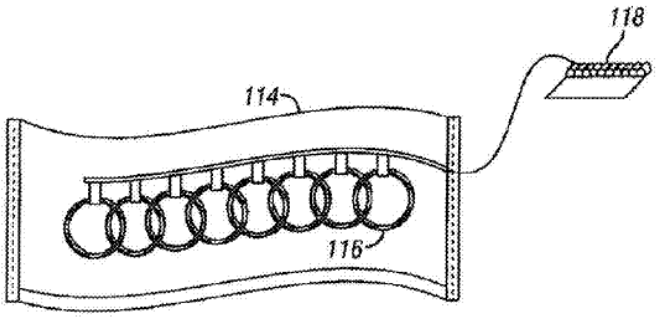
fields, and other known basics of magnetic fields, in implementing **Burnett-'870's** stimulation device, and would have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. *See KSR Intern. Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1731 (2007). Bikson, ¶220.

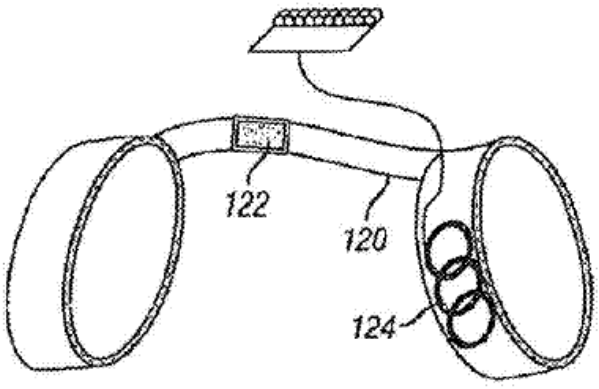
4. Claim Charts

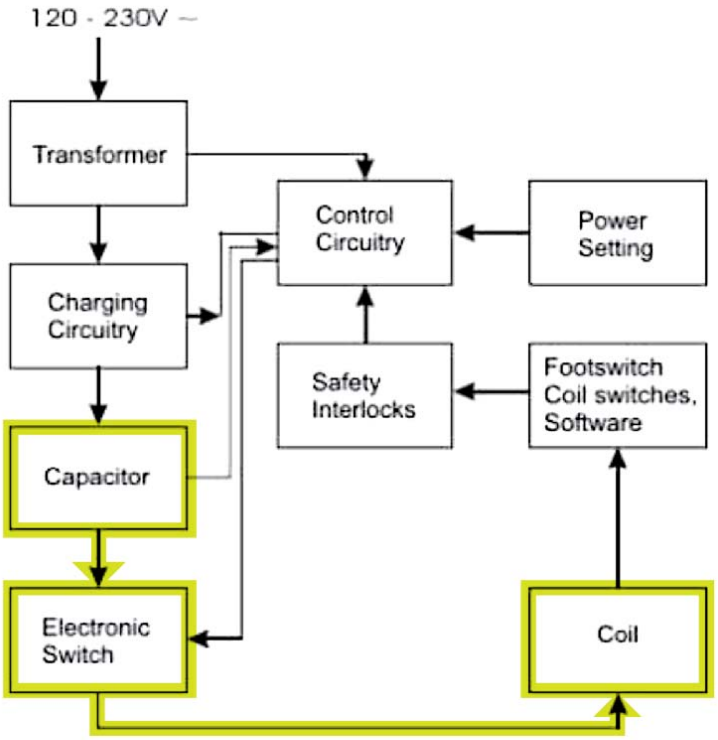
a. Independent Claims 1 and 23

Claim Elements	Burnett-'870 in view of Magstim
[1.pre] A method for toning muscles in a patient using time-varying magnetic fields, the method comprising:	**Burnett-'870 discloses a method for toning muscles in a patient using time-varying magnetic fields.** Burnett-'870 discloses "methods for electromagnetic induction therapy" using "body contoured applicators" that include "coils configured to generate an electromagnetic or magnetic field focused on a target nerve, muscle or other body tissues"; and the magnetic fields are "time varying" and "pulsed." Burnett-'870, *Abstract*, [0003]. Burnett-'870 discloses "toning tissue with focused, coherent EMF [electromagnetic field]." Burnett-'870 [0011], [0225]-[0226]. Bikson, ¶¶221-224, 45-73.
[1.a] placing a first applicator comprising a magnetic field generating coil in contact with a patient's skin or clothing at a body region of the patient, wherein the body region is	**Burnett-'870 discloses placing a first applicator** (*e.g.*, "applicator") **comprising a magnetic field generating coil** (*e.g.*, "coil") **in contact with a patient's skin or clothing at a body region of the patient, wherein the body region is an abdomen or a buttock.** **Burnett-'870** discloses multiple applicators comprising coils to generate magnetic fields on target muscles. Burnett-'870, *Abstract*. Figure 9B illustrates two applicators, each with a set of coils 106, disposed within an "abdominal garment"

Claim Elements	Burnett-'870 in view of Magstim
an abdomen or a buttock;	covering and treating left and right sides of a patient's buttocks/abdomen. Burnett-'870, [0114].  FIG. 9B A POSITA would understand that when a patient wears the abdominal garment, the coils contact the patient's skin or clothing. Bikson, ¶¶225-228, 78-81.
[1.b] coupling the first applicator to the patient with an adjustable flexible belt so that the belt holds the first applicator to the patient's skin or clothing;	**Burnett-'870 teaches coupling the first applicator** (*e.g.*, "applicator") **to the patient with an adjustable flexible belt** (*e.g.*, "abdominal garment," "belt") **so that the belt holds the first applicator to the patient's skin or clothing.** *See* [1.a]. **Burnett-'870** explains that "incorporat[ing] an adjustable belt" was known in the art. Burnett-'870, [0007]. Figure 9B discloses a flexible belt (*e.g.*, the portion of the "abdominal garment" which circles the patient's waist) coupling the applicators to left and rights sides of the patient's buttocks/abdomen, so that the time-varying magnetic field may be applied through the coils. Burnett-'870, [0114].

Claim Elements	Burnett-'870 in view of Magstim
	 FIG. 9B Figures 9A-D show fixing the applicators to a body region (*e.g.*, "knee"/"arm"/"head"/"neck"/"lower back") with a belt (*e.g.*, "wrap"/"strap"/"band"/"buckle"). Burnett-'870, [0114]–[0115].  FIG. 9A  FIG. 9C

Claim Elements	Burnett-'870 in view of Magstim
	 FIG. 9D To the extent argued that **Burnett-'870**'s abdominal garment does not explicitly include a belt, a POSITA would have been motivated and found it obvious to modify **Burnett-'870's** abdominal garment, which fixes both applicators to a body portion, to be a belt because such would allow more flexibility in applications as a belt is adjustable and may be used on different-sized patients, and easier to maintain than an undergarment that may be unsanitary, or require washing after each use. Bikson, ¶¶229-234, 78-81.
[1.c] providing energy to the magnetic field generating coil in order to generate a time-varying magnetic field; and	**Burnett-'870 in view of Magstim teaches providing energy to the magnetic field generating coil** (*e.g.*, "coil") **in order to generate a time-varying magnetic field.** **Burnett-'870** discloses it was known to use capacitors as energy storage devices in a magnetic stimulator. Burnett-'870, [0013]–[0014]. Indeed, its provisional application discloses using in its invention a LoFIT system described in Burnett-'185. Burnett-Provisional-'720, [0001]–[0002], [0020]. 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. Burnett-'185, 6:66–7:2, 7:27–8:26. A POSITA would have been motivated and found it obvious to incorporate capacitors in **Burnett-'870's** system based on **Burnett-'870's** reference to the LoFIT system, and **Burnett-'870's** guidance to store energy for the coils, and a POSITA

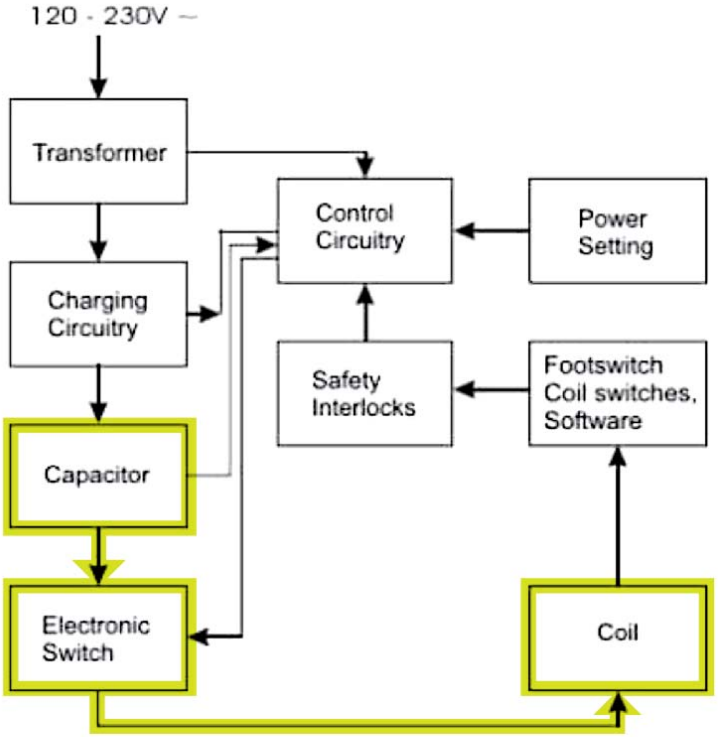
Claim Elements	Burnett-'870 in view of Magstim
	would have understood to charge the capacitors such that they would be discharged to the coils as was known in the art. *See, e.g., id.*; Magstim, 3-4 ("charg[ing] a capacitor under the control of a microprocessor"), Fig. 2. *See* VIII.B.3. Bikson, ¶¶54-55, 82-83.  *Figure 2: Block diagram of the Magstim 200[2] monophasic stimulator* Because a capacitor stores energy to be discharged, and a coil uses energy to generate a magnetic field, a POSITA would have understood that the capacitor is charged by an energy source, such that the energy is discharged to the coil to generate the magnetic field, as was known in the art. *See, e.g.*, Magstim, 3–4, Fig. 2 ("a transformer charges a capacitor …and the capacitor is then connected to the coil via an electronic switch when the user wishes to apply the stimulus"). Bikson, ¶¶235-242, 82-83.

Claim Elements	Burnett-'870 in view of Magstim
[1.d] applying a magnetic fluence of 50 T cm^2 to 1,500 T cm^2 to the body region,	**Burnett-'870 teaches applying a magnetic fluence of 50 T cm^2 to 1,500 T cm^2** (*e.g.,* 68 T cm^2, or 886 T cm^2) **to the body region.** *See* [1.pre]–[1.b]—**Burnett-'870** discloses generating a magnetic field having a magnetic flux density of "about 0.25 to 1.5 [T]esla," and "about 1 to 10 [T]esla." Burnett-'870, [0195]; and that the coil diameters may range from about 3.0 to about 7 inches or from about 4 to about 5 inches or the diameter may about 4.5 inches." Burnett-'870, [0201]. Because magnetic fluence is calculated based on flux density and coil radius, **Burnett-'870** teaches applying a magnetic fluence that would fall within the claimed range, *e.g.,* 68 T cm^2 (based on a flux density of 1.5 Tesla and a coil having a diameter of 3 inches (equating to a radius of 1.5 inches or 3.81 cm)), or 886 T cm^2 (based on a flux density of 7 Tesla and a coil having a diameter of 5 inches (equating to a radius of 2.5 inches or 6.35 cm)). Bikson, ¶¶243-250
[1.e] wherein the time-varying magnetic field is applied to the body region with a magnetic flux density sufficient to cause a muscle contraction in the body region.	**Burnett-'870 teaches the time-varying magnetic field is applied to the body region** (*e.g.*, buttocks/abdomen") **with a magnetic flux density sufficient to cause a muscle contraction in the body region.** *See* [1.pre]–[1.b]—**Burnett-'870** discloses "generating a magnetic field" having a "magnetic flux" density measured in Tesla. Burnett-'870, [0089], [0195]. **Burnett '870**'s device "may stimulate regions of the body to treat conditions requiring [] maximal stimulation (*i.e.*, sufficient to cause contraction of muscle fibers and firing of nerves)." Burnett-'870 [0227]. Bikson, ¶¶251-254, 45-73.

Claim Elements	Burnett-'870 in view of Magstim
[23.pre] A method for body shaping via a contraction of a muscle using time-varying	**Burnett-'870 discloses a method for body shaping via a contraction of a muscle using time-varying magnetic fields applied to a patient.** *See* [1.pre], [1.e]—**Burnett-'870**'s "body contoured applicators" that stimulate muscles for contraction provides

Claim Elements	Burnett-'870 in view of Magstim
magnetic fields applied to a patient, the method comprising:	an "induction therapy" for body shaping. Bikson, ¶¶255-257, 61-73.
[23.a] placing a first applicator including a first magnetic field generating coil in contact with the patient's skin or clothing at a first body region; placing a second applicator including a second magnetic field generating coil in contact with the patient's skin or clothing at a second body region;	**Burnett-'870 teaches placing a first applicator including a first magnetic field generating coil in contact with the patient's skin or clothing at a first body region** (*e.g.,* left buttock)**; placing a second applicator including a second magnetic field generating coil in contact with the patient's skin or clothing at a second body region** (*e.g.,* right buttock)**.** *See* [1.pre]–[1.b], [1.e]. Bikson, ¶¶258-259, 75-77.
[23.b] charging at least one energy storage device having a capacitance in a range of 5 nF to 100 mF;	**Burnett-'870 in view of Magstim teaches charging at least one energy storage device** (*e.g.*, capacitors) **having a capacitance in a range of 5 nF to 100 mF.** *See* [1.c]. **Burnett-'870** leaves it to POSITAs to choose a capacitor, and using a capacitor with the very broad claimed range of capacitance in a stimulator device was known in the art. *See, e.g.,* Burnett-'585, [0071] (using capacitors having a capacitance of "at least 5,000 microfarads," which is 5mF); Epstein, 8:19-22 ("at least 50 uF," which is 0.05mF). Bikson, ¶¶260-262, 82-83.

Claim Elements	Burnett-'870 in view of Magstim
[23.c] switching at least one switching device in order to enable discharging the at least one energy storage device to the first and the second magnetic field generating coils, wherein each magnetic field generating coil has an inductance in a range of 500 nH to 1 mH;	**Burnett-'870 in view of Magstim teaches switching at least one switching device in order to enable discharging the at least one energy storage device** (*e.g.*, "capacitor") **to the first and the second magnetic field generating coils** (*e.g.*, "coils")**, wherein each magnetic field generating coil has an inductance in a range of 500 nH to 1 mH.** *See* [1.c], [23.b]. **Burnett-'870** discloses using a "switch" to control stimulation. Burnett-'870, [0085], [0111] (disclosing "direct switching of the current circuit" between logic controller and sensor). POSITAS would have understood that the capacitors would be discharged to the applicators' coils, *e.g.*, via switches as was known in the art. *See, e.g.,* Burnett-'185, 6:66–7:2, 7:27–8:26; Magstim, 4, Fig. 2. *See* VIII.B.3.

Claim Elements	Burnett-'870 in view of Magstim
	 *Figure 2: Block diagram of the Magstim 200² monophasic stimulator* **Burnett-'870** leaves it to POSITAs to choose the coils, and using coils with the very broad claimed range of inductance in a stimulator device was known in the art. *See, e.g.*, Magstim, 4, Table 1 (all coils have an inductance between 2,550nH and 0.0235mH). Bikson, ¶¶263-267.
[23.d] generating a first time-varying magnetic field by the first magnetic field generating coil and generating a second time-varying magnetic field by the second magnetic	**Burnett-'870 discloses generating a first time-varying magnetic field by the first magnetic field generating coil and generating a second time-varying magnetic field by the second magnetic field generating coil.** *See* [1.pre]–[1.a], [1.c], [23.c]. Bikson, ¶¶268-269.

Claim Elements	Burnett-'870 in view of Magstim
field generating coil;	
[23.e] assembling a plurality of magnetic pulses generated by the first and the second magnetic field generating coils into respective bursts comprising a first time period comprising a train of subsequent magnetic pulses, and a second time period in which no time-varying magnetic field is generated, and	**Burnett-'870 teaches assembling a plurality of magnetic pulses generated by the first and the second magnetic field generating coils into respective bursts comprising a first time period comprising a train of subsequent magnetic pulses, and a second time period in which no time-varying magnetic field is generated.** *See* [1.pre]–[1.a], [1.c], [23.c]. **Burnett-'870** discloses that the magnetic fields are "time varying," "pulsed," and "intermittently applied"; the coils operate at a frequency; and that target regions are "exposed to the *impulses*" of the magnetic fields—indicating that the fields generate a burst comprising a train of pulses. Burnett '870, Abstract, [0003], [0195], [0226]. It was also known in the art to use consecutive impulses of "fixed frequency" to form a train of pulses (*i.e.,* each impulse in a train has the same interstimulus interval) because such treatment is "useful" in therapeutic applications, such as rehabilitating muscles. *See, e.g.,* Magstim 3, 6, 11–12. **Burnett-'870** discloses using "intermittent pulsed magnetic fields" to include "periods…not subjected to stimulatory signal." Burnett-'870, [0233]–[0234], [0252]–[0253]. It was known in the art that there is a time period between pulses that are called inter-pulse interval to create a time gap which no magnetic field is generated. *See, e.g.,* Magstim, 10, 11 (discussing interpulse spacing and independent pulses). Accordingly, POSITAs would have been motivated and found it obvious to generate a burst from each coil comprising a train of pulses having a fixed frequency followed by a period of no stimulation. Bikson, ¶¶270-276, 49, 89-93.
[23.f] applying the bursts to the first and second body region of the patient including a	**Burnett-'870 discloses applying the bursts to the first and second body region of the patient including a buttock or abdomen with a repetition rate in a range of 0.1 Hz to 700 Hz** (*e.g.,* "10 to 20 hertz") **such that a muscle contraction is caused.**

Claim Elements	Burnett-'870 in view of Magstim
buttock or abdomen with a repetition rate in a range of 0.1 Hz to 700 Hz such that a muscle contraction is caused.	*See* [1.a]–[1.c], [1.e], [23.pre]–[23.a], [23.e] **Burnett-'870** discloses "[o]peration of a conductive coil at about 10 to 20 hertz." Burnett-'870, [0195] (further discloses operating ranges "about 5 to 100 hertz"). It was also known in the art to use a repetition rate in the claimed range. *See, e.g.,* Magstim, 13 (disclosing "up to a maximum of 100Hz."). Bikson, ¶¶277-279, 45-53.

b. Dependent Claims 2-8 and 24-30

Claim Elements	Burnett-'870 in view of Magstim
[2] The method of claim 1, further comprising applying the time-varying magnetic field to muscle fibers, neuromuscular plates, or nerves innervating muscle fibers in order to cause a repetitive contraction of at least one muscle of a group including: rectus abdominis muscle, external oblique muscle, internal oblique muscle and/or transversus abdominis; or gluteus maximus	**Burnett-'870 discloses applying the time-varying magnetic field to muscle fibers, neuromuscular plates, or nerves innervating muscle fibers in order to cause a repetitive contraction of at least one muscle of a group including: rectus abdominis muscle, external oblique muscle, internal oblique muscle and/or transversus abdominis; or gluteus maximus muscle, gluteus medius muscle and/or gluteus minimus muscle; or m. quadriceps femoris.** *See* [1.a], [1.e], [23.a], [23.e]–[23.f]—consecutive impulses would cause repetitive contractions on target muscles; and POSITAs would have understood that the buttocks and abdomen comprises the claimed muscle. Bikson, ¶¶280-283, 45-73, 89-91.

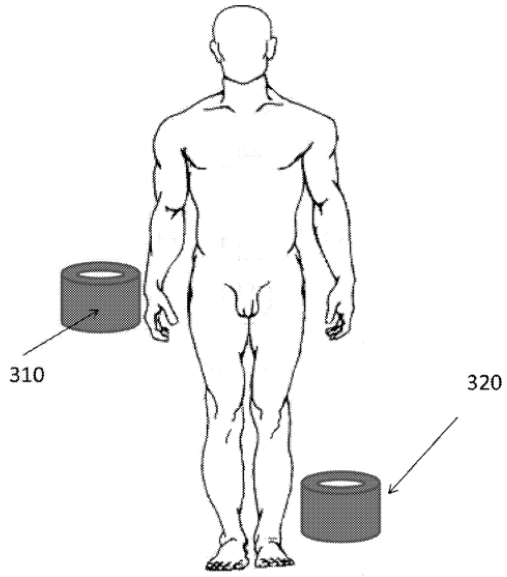
Claim Elements	Burnett-'870 in view of Magstim
muscle, gluteus medius muscle and/or gluteus minimus muscle; or m. quadriceps femoris.	
[3] The method of claim 1, further comprising applying the time-varying magnetic field to muscle fibers, neuromuscular plates, or nerves innervating muscle fibers in bursts, wherein each burst comprises first and second time periods; wherein the first time period consists of a plurality of magnetic pulses causing the contraction of the muscle, and wherein no time-varying magnetic field is generated during the second time period.	**Burnett-'870 discloses applying the time-varying magnetic field to muscle fibers, neuromuscular plates, or nerves innervating muscle fibers in bursts, wherein each burst comprises first and second time periods; wherein the first time period consists of a plurality of magnetic pulses causing the contraction of the muscle, and wherein no time-varying magnetic field is generated during the second time period.** *See* [1.pre]–[1.a], [1.c], [1.e], [23.e]. Bikson, ¶¶284-285.
[4] The method of claim 1, further comprising charging an	**Burnett-'870 in view of Magstim teaches charging an energy storage device** (*e.g.*, "capacitor") **having a capacitance of 5 µF to 500 µF; and discharging the energy storage device to the magnetic field generating coil.**

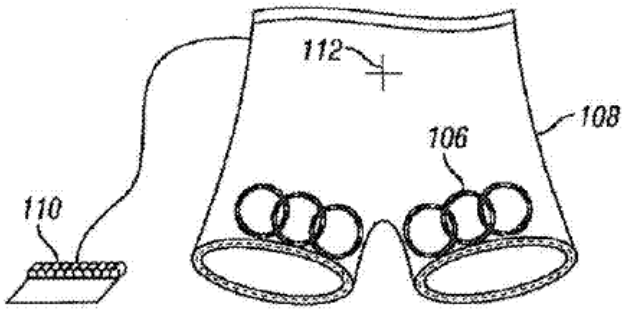
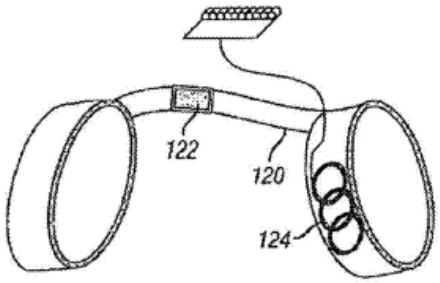
Claim Elements	Burnett-'870 in view of Magstim
energy storage device having a capacitance of 5 μF to 500 μF; and discharging the energy storage device to the magnetic field generating coil.	*See* [1.c], [23.b]–[23.c]. Bikson, ¶¶286-287.
[5] The method of claim 1, further comprising assembling magnetic pulses into a burst with a treatment duty cycle that is a percentage of a time of application of a train of the magnetic pulses of the burst and a total time of the burst, wherein the treatment duty cycle is between 20% and 90%.	**Burnett-'870 teaches assembling magnetic pulses into a burst with a treatment duty cycle that is a percentage of a time of application of a train of the magnetic pulses of the burst and a total time of the burst, wherein the treatment duty cycle is between 20% and 90%.** *See* [23.f]—**Burnett-'870** discloses it was known in the prior art to have a treatment plan using multiple coils including "duty cycle." Burnett-'870, [0012]. **Burnett-'870** leaves it to POSITAs to choose a duty cycle, and using a duty cycle between 20% and 90% was known and conventional in the art. *See, e.g.*, March (cited in **Burnett-'870** for duty cycle), 6:43-46 (disclosing a duty cycle between 10-100%); Belanger, Table 13-2 on 235 (disclosing a duty cycle of 9%-67%), 239. POSITAs would have been motivated and found it obvious to use a duty cycle within this range to "conserve energy" and to provide sufficient stimulation for the muscle stimulation. *Id.* Bikson, ¶¶288-293.
[6] The method of claim 1, further comprising placing a second applicator comprising a second magnetic field generating coil in contact with the patient's skin or clothing at	**Burnett-'870 teaches placing a second applicator** (*e.g.*, "applicator") **comprising a second magnetic field generating coil** (*e.g.*, "coil") **in contact with the patient's skin or clothing at the body region** (*e.g.*, buttocks/abdomen) **of the patient, wherein the second magnetic field generating coil** (*e.g.*, "coil") **is configured to apply a time-varying magnetic field simultaneously with the first magnetic field generating coil.** *See* [1.pre]–[1.c], [23.c].

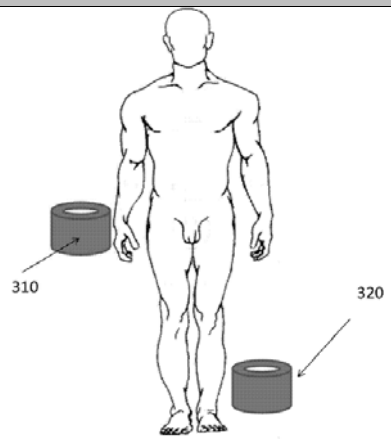
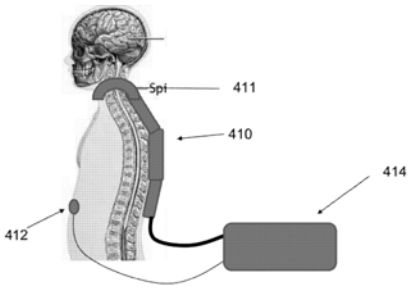
Claim Elements	Burnett-'870 in view of Magstim
the body region of the patient, wherein the second magnetic field generating coil is configured to apply a time-varying magnetic field simultaneously with the first magnetic field generating coil.	**Burnett-'870** discloses multiple coils may be activated "simultaneously," "differentially," or "sequentially" to generate "the desired magnetic field[s]." Burnett-'870, [0086]–[0087], [0094], [0209]. **Burnett-'870** allows the coils to be adjusted (switched) at the same time. Burnett-'870, [0067], [0083], [0085], [0087]–[0088], [0090], [0093], [0095], [0100], [0110], [0120], [0123], [0127], [0196], [0202], [0220], [0237]–[0241]. Synchronous switching in a magnetic muscle stimulator was well known. *See, e.g.*, Belanger, 220 ("stimulation modes (synchronous, reciprocal, overlap)"), 242–243, 246. A POSITA would have been motivated and found it obvious to apply this known teaching of synchronous switching to treat two body regions (that may be mirror image of each other) similarly such that both regions would have the same visual appearance after treatment. Bikson, ¶¶294-299, 89-97.
[7] The method of claim 6 wherein the magnetic field generating coils each have an inductance in a range of 500 nH to 1 mH.	**Burnett-'870 teaches the magnetic field generating coils** (*e.g.*, "coils") **each having an inductance in a range of 1 nH to 50 mH.** *See* [1.pre]–[1.a], [23.c]. Bikson, ¶¶300-301.
[8] The method of claim 1, further comprising: generating a first burst comprising a first train of magnetic pulses having a first repetition rate; generating a second burst comprising a second train of	**Burnett-'870 teaches generating a first burst comprising a first train of magnetic pulses having a first repetition rate; generating a second burst comprising a second train of magnetic pulses having a second repetition rate; and generating a third train of magnetic pulses having a third repetition rate, wherein the first, second, and third repetition rates are each different from each other.** *See* [1.pre]–[1.a], [1.c], [23.c], [23.e]–[23.f]. **Burnett-'870** discloses "the amplitude and/or firing sequence of coils 26 may be ramped up progressively." Burnett-'870, [0085]. **Burnett-'870** further discloses "adjust[ing] one or

Claim Elements	Burnett-'870 in view of Magstim
magnetic pulses having a second repetition rate; and generating a third train of magnetic pulses having a third repetition rate, wherein the first, second, and third repetition rates are each different from each other.	more of firing sequence, firing strength or position of coils 26 within coil wrap 20 during the initial setup and also during successive therapy sessions." Burnett-'870, [0087]; *see also id.*, [0023], [0069]–[0070], [0123], [0183], [0188]–[0189], [0193]–[0194], [0196]. **Burnett-'870** further discloses "[a]n apparatus according to the variations described herein may deliver any frequency of stimulation, including low frequencies, high frequencies, and frequencies and ultrahigh frequencies…." Burnett-'870, [0117]. Thus, **Burnett-'870** discloses repetition rates may be adjusted such that they are either higher or lower than the prior repetition rates. To the extent argued that **Burnett-'870** does not explicitly disclose that first, second, third repetition rates differ from one another, **Burnett-'870** teaches that repetition rates may increase/decrease in response to control so that each applicator generates bursts of different repetition rates over multiple time periods. It was well-understood by a POSITA that supra-maximal muscular stimulation at a continuously high repetition rate will quickly cause fatigue, and thus it would have been obvious to a POSITA to program **Burnett-'870**'s system to generate successive pulse trains by using a high repetition rate to cause a strong contraction, a lower repetition rate in a different pulse train to prevent muscle fatigue, and another repetition rate between the high and low rates during either a ramp-up or ramp-down period. Bikson, ¶¶302-308, 54-55, 89-96.
[24] The method of claim 23, further comprising applying the bursts to at least one of a rectus abdominis muscle, external oblique muscle, internal oblique muscle	**Burnett-'870 discloses applying the bursts to at least one of a rectus abdominis muscle, external oblique muscle, internal oblique muscle and transversus abdominis muscle.** *See* [2]; [1.a], [1.e], [23.a], [23.e]–[23.f]. Bikson, ¶¶309-310.

Claim Elements	Burnett-'870 in view of Magstim
and transversus abdominis muscle.	
[25] The method of claim 23, further comprising applying the bursts to at least one of a gluteus maximus muscle, gluteus medius muscle, and gluteus minimus muscle.	**Burnett-'870 discloses applying the bursts to at least one of a gluteus maximus muscle, gluteus medius muscle, and gluteus minimus muscle.** *See* [2]; [1.a], [1.e], [23.a], [23.e]–[23.f]. Bikson, ¶¶311-312.
[26] The method of claim 23, wherein the train lasts between 1 and 5 seconds, and wherein a repetition rate of the time-varying magnetic field is between 5 Hz and 50 Hz.	**Burnett-'870 teaches the train lasts between 1 and 5 seconds, and wherein a repetition rate of the time-varying magnetic field is between 5 Hz and 50 Hz** (*e.g.,* "10 to 20 hertz")**.** *See* [23.e]–[23.f]—**Burnett-'870** discloses generating a train of pulses, but leaves it to POSITAs to choose the duration of train, and a train duration of 1-5 seconds was known and conventional in the art. *See, e.g.,* Magstim, Fig. 21 (showing "5.0s" for "Duration…for each train."). A POSITA would have been motivated and found it obvious to choose this train duration for patient comfort and to mimic muscle contraction and relaxation—muscle contractions of "3 to 6 seconds" were known to mimic natural muscle contraction, leading to a "smooth" and comfortable evoked contraction. Belanger, 236.. Bikson, ¶¶313-317, 47-60.
[27] The method of claim 23, further comprising applying the bursts to at least one of an m. quadriceps	**Burnett-'870 teaches applying the bursts to at least one of an m. quadriceps femoris, m. biceps femoris, m. semimembranosus, m. semitendinosus, tensor fascia latae muscle, vastus lateralis muscle, iliotibial muscle, and m. triceps surae.**

Claim Elements	Burnett-'870 in view of Magstim
femoris, m. biceps femoris, m. semimembranosus, m. semitendinosus, tensor fascia latae muscle, vastus lateralis muscle, iliotibial muscle, and m. triceps surae.	*See* [1.a]–[1.b], [1.e], [2], [23.a], [23.e]–[23.f]—**Burnett-'870**'s "body-contoured applicators" include embodiments for the legs, as shown in Figure 9, 30-31. Burnett-'870, [0012] ("coils to be placed around…a leg"), [0088], [0109], [0118], [0157], [0163], [0174], [0176], [0179], [0205] ("leg applicator 320"), [0218]. Bikson, ¶¶318-320. Fig. 31a  Fig. 31b
[28] The method of claim 23, further comprising positioning the first applicator and the second applicator at the body region in mutually tilted planes defined by an angle.	**Burnett-'870 teaches positioning the first applicator and the second applicator at the body region in mutually tilted planes defined by an angle.** *See* [1.a]–[1.b], [2], [27]—because applicators are "body-contoured" and independently positioned, they would be placed mutually tilted defined by an angle on curved body region, *e.g.,* abdomen. Burnett-'870, *Abstract*, [0220], [0223]. Bikson, ¶¶321-323, 75-77.

Claim Elements	Burnett-'870 in view of Magstim
	 FIG. 9B
[29] The method of claim 23, further comprising applying the bursts to at least one of an m. biceps brachialis, m. coracobrachialis, m. deltoideus, m. triceps brachii, m. anconeus, muscles of forearm, mm. pectorales minors and mm. pectorales majors.	**Burnett-'870 discloses applying the bursts to at least one of an m. biceps brachialis, m. coracobrachialis, m. deltoideus, m. triceps brachii, m. anconeus, muscles of forearm, mm. pectorales minors and mm. pectorales majors.** *See* [1.a]–[1.b], [1.e], [2], [23.a], [23.e]–[23.f], [27]—**Burnett-'870**'s "body-contoured applicators" include embodiments for the arms and shoulders, as shown in Figure 9D ("shoulder strap"), Figures 31A–B ("arm applicator"), and Figure 41 ("shoulder harness). Burnett-'870, [0012] ("coils to be placed around an arm"), [0018] ("deliver therapy to…shoulder"), [0053], [0063], [0114] ("shoulder strap"), [0204]. Bikson, ¶¶324-327, 78-81.  FIG. 9D

Claim Elements	Burnett-'870 in view of Magstim
	Fig. 31a  Fig. 31b  Fig. 41
[30] The method of claim 23, further comprising coupling the first and second applicators to the patient with an adjustable flexible belt, so that the belt holds the first and second applicators to the patient's skin or clothing.	**Burnett-'870 discloses coupling the first and second applicators to the patient with an adjustable flexible belt, so that the belt holds the first and second applicators to the patient's skin or clothing.** *See* [1.a]–[1.b]. Bikson, ¶¶328-329.

A. Ground 3: Claims 1-8, 23-30 are rendered obvious by Simon in view of Burnett-'870

Claims 1-8, 23-30 are rendered obvious by **Simon**—*see* Ground 1. To the extent argued that applying magnetic fluence between 50-1,500 T cm^2 (*e.g.*, [1.d]) was not well-known or obvious to a POSITA, claim 1 (and dependents) are rendered obvious by **Simon** in view of **Burnett-'870**. Bikson, ¶331.

Simon discloses a magnetic stimulator with coils of "[d]ifferent diameters…for different applications." Simon, [0099]. Simon discusses that for a "generic application" the outer diameter may be 1-5cm." *Id.* Moreover, Simon discloses an electric field having flux density of 0.1-2T. Simon, [0030]. As described in the '634 patent, magnetic fluence is magnetic flux density multiplied by area. '634, 14:1-7. For a coil with outer diameter 5cm and flux density 2T, magnetic fluence is 39.27 T cm^2, lower than the claimed range. To the extent argued that **Simon** does not disclose applying magnetic fluence between 50-1,500 T cm^2, **Burnett-'870** discloses using coils with 3-7in diameter, which provide magnetic fluence of 68 T cm^2 (within the claimed range) for a coil with 3in diameter and flux density of 1.5T. Burnett-'870, [0201]; Ground-2-[1.d]. Using **Burnett-'870's** 7-in diameter coil (radius 3.5in, or 8.89cm), the fluence would be ~372 T cm^2 (1.5T x 3.14 x 8.89cm^2 = 372.43 Tcm^2). Bikson ¶332.

Both **Simon** and **Burnett-'870** are in the same field of endeavor—

electromagnetic stimulation of the body—also analogous art to the '634. **Simon** is directed to a "magnetic stimulation device" for muscles; **Burnett-'870** is also directed to a device for muscle "toning" with "coils configured to generate…[a] magnetic field." Simon, title, [0029]-[0030]; Burnett-'870, Abstract, [0003], [0011], [0225]-[0226]. Bikson, ¶333.

A POSITA would have been motivated to apply **Burnett-'870's** teachings of a coil with 3-7in diameter, resulting in the claimed magnetic fluence range, in implementing **Simon's** stimulation device. **Simon's** device is suitable for various "body surfaces having…arbitrary orientation" for a "diverse" range of applications including "neck, abdomen, ankle, and head" stimulation and muscle "rehabilitation." Simon, [0036], [0040], [0105], [0197]. Moreover, **Simon** discloses coils with "[d]ifferent diameter…for different applications" and leaves the exact dimensions to a POSITA. Simon, [0099]. **Simon** discloses that design considerations include "anatomical location of the stimulation." Simon, [0102]. Applying **Burnett-'870's** 3-7in diameter coils advantageously increases the range of treatments possible using **Simon's** device for target body regions of various sizes. Burnett-'870, [0201]. A POSITA would have had a reasonable expectation of success in applying **Burnett-'870's** teachings of 3-7in coil diameter to allow use of **Simon's** device for "diverse" applications, *e.g.*, on larger muscle groups like "abdomen." Simon, [0040], [0100], [0105], Burnett-'870, [0114], Fig. 9A).

Bikson, ¶334.

Thus, a POSITA would have found it routine, straightforward and advantageous to apply **Burnett-'870's** known teachings of coil diameter allowing the claimed magnetic fluence range in implementing **Simon's** magnetic stimulator, and would have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. *See KSR Intern. Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1731 (2007). Bikson, ¶335.

IX. SECONDARY CONSIDERATIONS

'634 Claims are overwhelmingly demonstrated as obvious by the grounds presented herein that cannot be overcome by any alleged objective indicia. Petitioner is aware that Patent Owner presented purported evidence of secondary considerations of non-obviousness in the ITC Case. Because the purported evidence was presented in confidential expert reports, Petitioner does not have access to such evidence. Petitioner reserves the right to respond to any secondary considerations Patent Owner may assert in this proceeding. Bikson, ¶336.

X. CONCLUSION

Petitioner respectfully requests IPR of Claims 1-8 and 23-30 of the '634. Bikson, ¶¶337-339.

Dated: August 13, 2021

Respectfully submitted,

By: */Scott A. McKeown/*
Scott A. McKeown
Registration No. 42,866
ROPES & GRAY LLP

Lead Counsel for Petitioner

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. §42.24(a) and (d), the undersigned hereby certify that the Petition For *Inter Partes* Review complies with the type-volume limitation of 37 C.F.R. §42.24(a)(i) because, exclusive of the exempted portions, it contains 10,933 words as counted by the word processing program used to prepare the paper.

Dated: August 13, 2021

/Keyna Chow/
Keyna Chow
ROPES & GRAY LLP

CERTIFICATE OF SERVICE

The undersigned certifies service pursuant to 37 C.F.R. §§42.6(e) and 42.105(b) on the Patent Owner by FedEx of a copy of this Petition for Inter Partes Review and supporting materials at the correspondence address of record for the '634 patent:

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON DC 20005

J.C. Rozendaal
JCROZENDAAL@sternekessler.com
Cc: BTL_Emsculpt_Litigation@sternekessler.com

Dated: August 13, 2021

Respectfully submitted,

By: */Scott A. McKeown/*
Scott A. McKeown
Registration No. 42,866
ROPES & GRAY LLP

Lead Counsel for Petitioner