IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re *Ex Parte* Reexamination of:	)
U. S. Patent No. 7,948,208	) Control No.: *To be assigned*
Issue Date: May 24, 2011	) Group Art Unit: *To be assigned*
Inventors: Afshin Partovi, *et al.*	) Examiner: *To be assigned*
Appl. No. 11/757,067	) Confirmation No.: *To be assigned*
Filing Date: June 1, 2007	)
For: POWER SOURCE, CHARGING SYSTEM, AND INDUCTIVE RECEIVER FOR MOBILE DEVICES	)

Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

REQUEST FOR *EX PARTE* REEXAMINATION OF U.S. PATENT NO. 7,948,208

Reexamination is requested under 35 U.S.C. § 302 and 37 C.F.R. § 1.510 for claim 1 of U.S. Patent No. 7,948,208 B1 (the '208 patent), which issued on May 24, 2011 to assignee Mojo Mobility, Inc.

The *ex parte* reexamination fee of $12,600 is paid herewith by deposit account authorization. The Commissioner is hereby authorized to charge any additional fees which may be required regarding this request, or credit any overpayment, to Deposit Account No. 50-2613. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-2613.

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Ex. PA-4	International Patent Application Publication No. WO2006/022365 to Yamauchi ("*Yamauchi*")
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Ex. PA-4TRC	Certificate of Translation of International Patent Application Publication No. WO2006/022365
Ex. PA-7	Physics, Henry Semat *et al.*, Rinehart & Co., Inc., 1958, Chapters 29-32 ("*Semat*")
Ex. PA-8	GB Patent Application Publication No. 2202414 ("*Logan*")
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Ex. PA-15	Spiral Inductor Design for Quality Factor, Sang-Gug Lee et al., Journal of Semiconductor Technology and Science, Vol. 2. No. 1, March 2002 ("*Lee*")
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Ex. PA-24	U.S. Patent No. 5,702,431 ("*Wang*")
Ex. PA-25	Handbook of Radio and Wireless Technology, Stan Gibilisco, McGraw-Hill, 1999 ("*Gibilisco*")
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I. Introduction

An *ex parte* reexamination is requested on claim 1 of U.S. Patent No. 7,948,208, which issued on May 24, 2011 to Partovi ("the '208 patent," Ex. PAT-A), for which the U.S. Patent and Trademark Office ("Office") files identify Mojo Mobility Inc. ("Mojo" or "Patent Owner") as the assignee. In accordance with 37 C.F.R. § 1.510(b)(6), Requester Samsung Electronics Co., Ltd. ("Requester") hereby certifies that the statutory estoppel provisions of 35 U.S.C. § 315(e)(1) and 35 U.S.C. § 325(e)(1) do not prohibit it from filing this *ex parte* reexamination request.

This request raises substantial new questions of patentability based on prior art that the Office did not have before it or did not fully consider during the prosecution of the '208 patent, and which discloses or suggests the features recited in the challenged claims. Requester respectfully urges that this Request be granted and that reexamination be conducted with "special dispatch" pursuant to 35 U.S.C. § 305.

In accordance with 37 C.F.R. § 1.20(c), the fee for *ex parte* reexamination (non-streamlined) is submitted herewith. If this fee is missing or defective, please charge the fee as well as any additional fees that may be required to Deposit Account No. 50-2613.

II. Related Proceedings

On February 28, 2023, Patent Owner filed suit against Requester asserting, *inter alia*, infringement of the '208 patent in *Mojo Mobility Inc. v. Samsung Electronics Co., Ltd.*, No 2-22-CV-00398 (E.D. Tex.).

Requester filed *inter partes* review petition against the '208 patent on June 27, 2023. IPR2023-01086, Paper 1. The Patent Trial and Appeal Board ("the PTAB") denied *inter partes* review.

This request, however, does not raise "the same or substantially the same prior art or arguments" previously presented, including in IPR2023-01086. 35 U.S.C. § 325(d). This request is based on prior art that the Office did not have before it or did not fully consider during the prosecution of the '208 patent, and that the PTAB did not have before it in IPR2023-01086, and which discloses or suggests the features recited in the challenged claims, especially under the broadest reasonable interpretation standard applicable to this request. And the references used in this request are substantially different than those used in the aforementioned *inter partes* reviews.

III. Identification of Claims and Citation of Prior Art Presented

Requester respectfully requests reexamination of claim 1 of the ’208 patent in view of the following prior art references, which are also listed on the attached PTO Form SB/08 (Ex. PA-SB08).

Ex. PA-1	U.S. Patent Application Publication No. 2006/0202665 to Hsu (“*Hsu*”)
Ex. PA-2	U.S. Patent Application Publication No. 2007/0029965 to Hui (“*Hui*”)
Ex. PA-3	U.S. Patent No. 5,713,939 to Nedungadi (“*Nedungadi*”)
Ex. PA-4	International Patent Application Publication No. WO2006/022365 to Yamauchi (“*Yamauchi*”)
Ex. PA-4TR	Official Translation of International Patent Application Publication No. WO2006/022365
Ex. PA-4TRC	Certificate of Translation of International Patent Application Publication No. WO2006/022365

A copy of each of the above-listed references is attached to this request pursuant to 37 C.F.R. § 1.510(b)(3). A copy of the ’208 patent is also attached to this request as Exhibit PAT-A pursuant to 37 C.F.R. § 1.510(b)(4).

IV. Overview of the ’208 Patent

A. Specification and Drawings of the ’208 Patent

The ’208 patent is titled “Power source, charging system, and inductive receiver for mobile devices.” The named inventors are Afshin Partovi and Michael Sears. It issued from United States Patent Application No. 11/757,067 (“’067 application”), which was filed on June 1, 2007. The ’208 patent claims the benefit of provisional application Nos. 60/810,262 (“’262 provisional”) (Ex. PAT-G), filed on June 1, 2006, 60/810,298 (“’298 provisional”) (Ex. PAT-H), filed on June 1, 2006, and 60/868,674 (“’674 provisional”) (Ex. PAT-I), filed on December 5, 2006.

The ’208 patent is directed to “[a] power source, charging system, and inductive receiver for mobile devices.” (Ex. PAT-A, Abstract.) More specifically, the ’208 patent describes an “[a] pad or similar base unit comprises a primary, which creates a magnetic field by applying an alternating current to a winding, coil, or any type of current carrying wire.” (*Id.*, Abstract.)

Figure 1 excerpted below shows a diagram of an embodiment of the alleged invention of the ’208 patent.

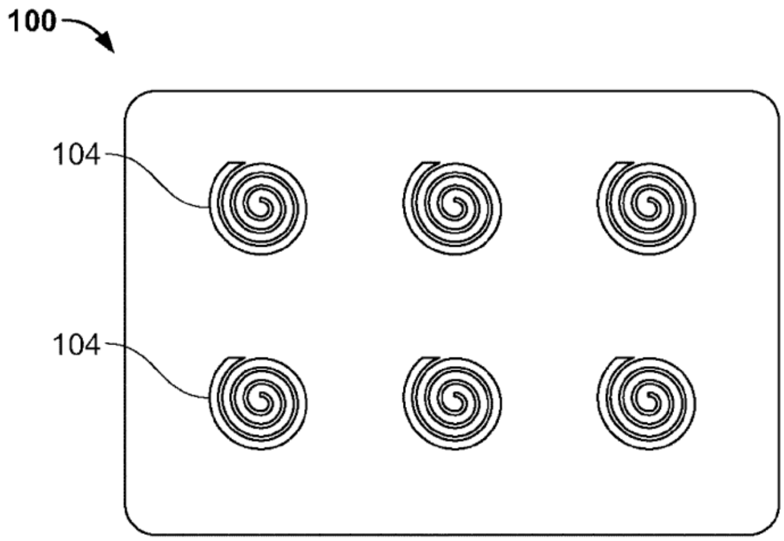


FIG. 1

(*Id.*, Figure 1.)

The ’208 patent explains that the pad of Figure 1:

> comprises multiple coils or sets of wires 104. These coils or wires can be the same size as or larger than the coils or wires in the mobile devices, and can have similar or different shapes, including for example a spiral shape. For example, for a mobile device charger designed to charge up to four mobile devices of similar power (up to 10 W each) such as mobile handsets, MP3 players, etc., four or more of the coils or wires would ideally be present in the mobile device charger.

(*Id.*,6:30-38.)

Figure 10 of the ’208 patent excerpted below shows a more detailed view of the charger:

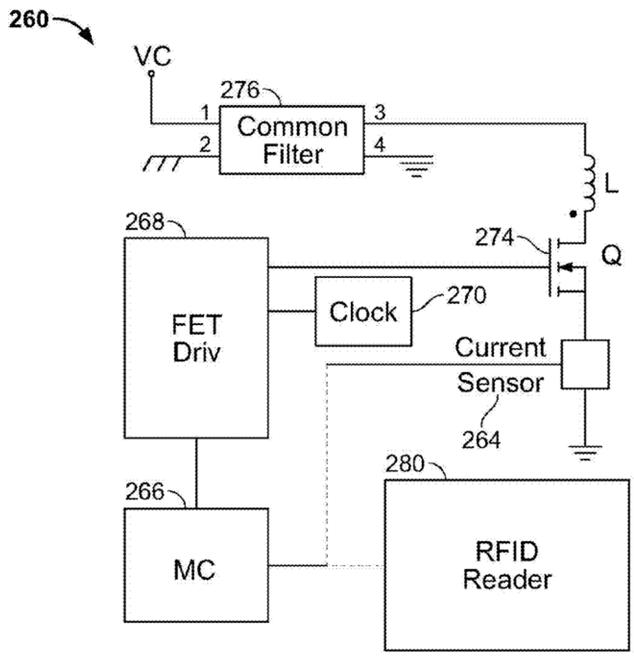


FIG. 10

(*Id.*, FIG. 10.)

The '208 patent describes Figure 10 as follows:

> As shown in FIG. 10, in accordance with one embodiment, the pad circuit 260 incorporates a micro control unit (MCU1) 266 that can enable or disable the FET driver 268. The MCU1 receives input from another sensor mechanism that will provide information that it can then use to decide whether a device is nearby, what voltage the device requires, and/or to authenticate the device to be charged.

(*Id.*, 17:63-18:2.)

Each of the components utilized in the alleged invention of the '208 patent was known prior to the priority date of the '208 patent. (Ex. PA-DEC, ¶69.)

B. Prosecution History of the '208 patent

Claim 1 of the '208 patent issued after multiple iterations of rejections by the examiner and amendments by applicant. (*See*, *e.g.*, Ex. PAT-B, 712 (1st Office Action dated 1/26/2009), 680 (Response to 1st Office Action), 619 (2nd Office Action dated 10/19/2009), 602 (Response to 2nd Office Action), 571 (3rd Office Action dated 05/10/2010), 538 (Response to 3rd Office Action).)

The examiner allowed the claim only after applicant amended claim 1 to include the "selectiv[e] switching" and "capacitive or other component" features. (*Id.*, 538 (Response to 3rd

Office Action), 491 (Supplemental Notice of Allowability)[1].) However, as explained throughout this Request, the features identified by the examiner were well-known in the art at the time of the invention.

C. Level of Ordinary Skill

A person of ordinary skill in the art ("POSITA") around the time of the purported invention would have had at least a master's degree in electrical engineering, or a similar discipline, and at least two years of experience in the relevant field, e.g., wireless power transfer. More education can supplement practical experience and vice versa. (Ex. PA-DEC, ¶¶20-21.)

V. Claim Construction

"During patent examination, the pending claims must be 'given their broadest reasonable interpretation consistent with the specification.'" MPEP § 2111; *see also* MPEP § 2258. Limitations in the specification are not read into the claims. MPEP § 2258. The standard of claim interpretation in reexamination is different than that used by the courts in patent litigation.[2] Therefore, any claim interpretations submitted or implied herein for the purpose of this reexamination do not necessarily correspond to the appropriate construction under the legal standards mandated in litigation. MPEP § 2686.04.11; *see also In re Zletz*, 893 F.2d 319, 322, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). For purposes of this request, Requester believes that no special constructions of the challenged claims are needed over the asserted prior art. (Ex. PA-DEC, ¶¶70-71.)

VI. Statement of Substantial New Questions of Patentability

The following combinations of prior art disclose or suggest all of the features of claim 1 of the '208 patent.

1 The applicant followed the allowance with multiple information disclosure statements that elicited similar notices of allowances. (PAT-B, 36-39, 72-80, 287-290, 294-298, 287-290.)

2 Requester reserves all rights and defenses available including, without limitation, defenses as to invalidity, unenforceability, and non-infringement regarding the '208 patent. Further, because the claim interpretation standard used by courts in patent litigation is different from the appropriate standard for this reexamination, any claim constructions submitted or implied herein for the purpose of this reexamination are not binding upon Requester in any litigation related to the '208 patent. Specifically, any interpretation or construction of the claims presented herein or in Dr. Baker's declaration for reexamination, either implicitly or explicitly, should not be viewed as constituting, in whole or in part, the Requester's own interpretation or construction of such claims.

<u>SNQ1</u>: *Hsu*, *Yamauchi*, and *Nedungadi* raise a substantial new question of patentability (SNQ1) with respect to claim 1 of the '208 patent.

<u>SNQ2</u>: *Hsu*, *Hui*, *Yamauchi*, and *Nedungadi* raise a substantial new question of patentability (SNQ2) with respect to claim 1 of the '208 patent.

The above combinations were not applied in a rejection by the Patent Office during prosecution. Nor were they presented in IPR2023-01086, which involved different prior art. While *Hsu* was applied as a secondary reference in IPR2023-01086, it was not presented as a primary reference like in the instant request. Moreover, as explained in detail below, *Hsu* discloses the "current modulation" in the receiver coil limitation the Board found missing from *Nakamura* in IPR2023-01086. IPR2023-01086, Paper 10, 16-22 (Feb. 13, 2024). Thus, "the request is not based on the same or substantially the same prior art or arguments presented in the prior petition." Control No. 90/015,130, Order Granting Request for Ex Parte Reexamination (November 17, 2022), 10-11.

For the reasons discussed below and in the accompanying declaration of Dr. Baker (Ex. PA-DEC), *Hsu*, *Hui*, *Yamauchi*, and *Nedungadi* raise substantial new questions of patentability (SNQ1-2) with respect to claim 1 of the '208 patent.

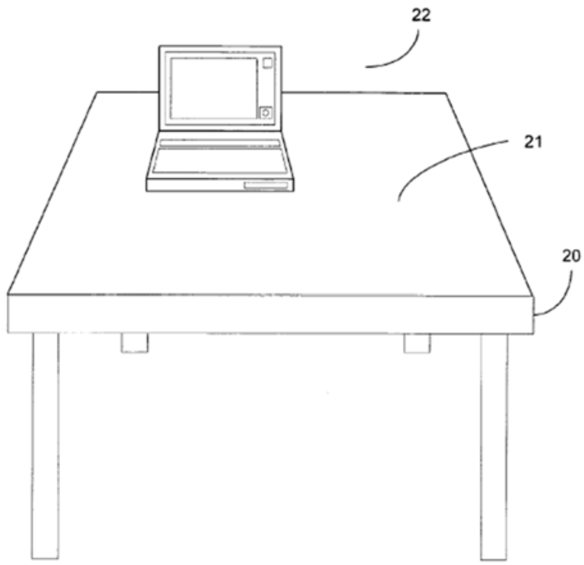
A. SNQ1: *Hsu* in View of *Yamauchi*, and *Nedungadi* Discloses or Suggests Claim 1

Mojo asserts that claim 1 of the '208 patent is entitled to at least an effective filing date of December 5, 2006, which is the filing date of provisional application No. 60/868,674 ("'674 provisional") (Ex. PAT-F). (*See* Ex. LIT-1, 6.) Even assuming *arguendo* that claim 1 of the '208 patent is entitled to the June 1, 2006 date of the two earliest provisional applications in the priority chain, *Hsu*, *Yamauchi*, and *Nedungadi* are prior art.

Hsu was filed on May 13, 2005 and published on September 14, 2006, and thus qualifies as prior art at least under pre-AIA 35 U.S.C. § 102(e). *Yamauchi* published on March 2, 2006, and thus qualifies as prior art at least under pre-AIA 35 U.S.C. § 102(a). *Nedungadi* was filed on September 16, 1996 and published on February 3, 1998, and thus qualifies as prior art at least under pre-AIA 35 U.S.C. § 102(b).

1. Overview of *Hsu*

Hsu discloses "an inductive powering device [for] provid[ing] power to a portable device." (Ex. PA-1, Abstract.) For example, *Hsu* discloses a "powering device 20 with an inductive powering surface 21 for powering a portable device [22] placed on the surface." (Ex. PA-1, ¶[0018], FIG. 1.) "[I]f the powering device 20 is a conference table, users participating in a meeting only have to place their laptop computers or tablet PC's on the surface of the table, and their portable devices will be automatically powered or recharged by the table surface." (*Id.*, ¶[0018].)



(*Id.*, FIG. 1.) Hsu further discloses:

> Turning now to FIG. 2, the power transfer from the inductive powering surface 21 to the portable device 22 is by means of the inductive coupling between a primary coil 26 in the inductive powering surface and a second primary coil 25 in the portable device. The primary coil 26 and secondary coil 25 form a transformer. When the primary coil 26 is driven with an alternating signal at a selected frequency, the variation of the magnetic flux is picked up by the secondary coil 25 and induces an alternating voltage signal across the secondary coil. The alternating voltage signal can then be converted into power by a power supply circuit in the portable device for powering the operations of the portable device.

(*Id.*, ¶[0019].)

"[T]he inductive powering surface 21 has a plurality of primary coils 26 arranged therein that can be energized for transferring power to the portable device 22 placed on the surface. One example of the multi-coil arrangement in the inductive powering surface is shown in FIG. 6." (*Id.*, ¶[0020].) In an embodiment, "only those [primary coils] that are covered by or overlapping with the secondary coil 25 are to be energized for transferring power to the portable device." (*Id.*, ¶[0029].)

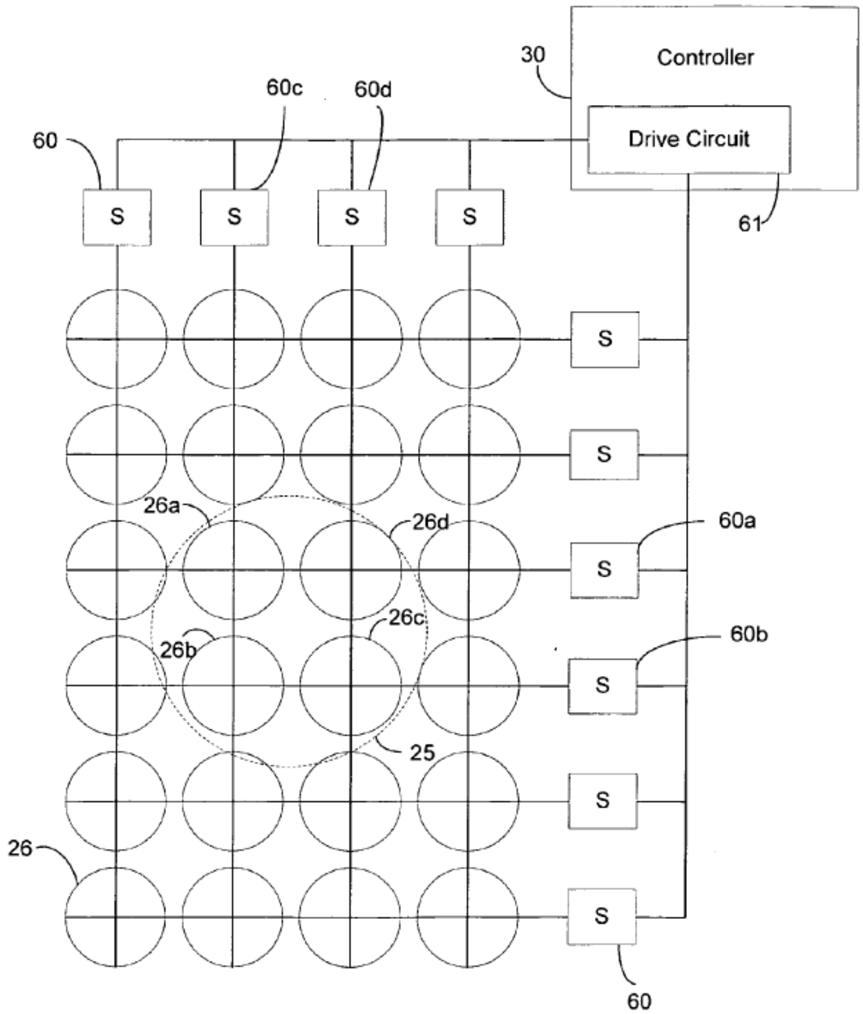


FIG. 6

(*Id.*, FIG. 6.)

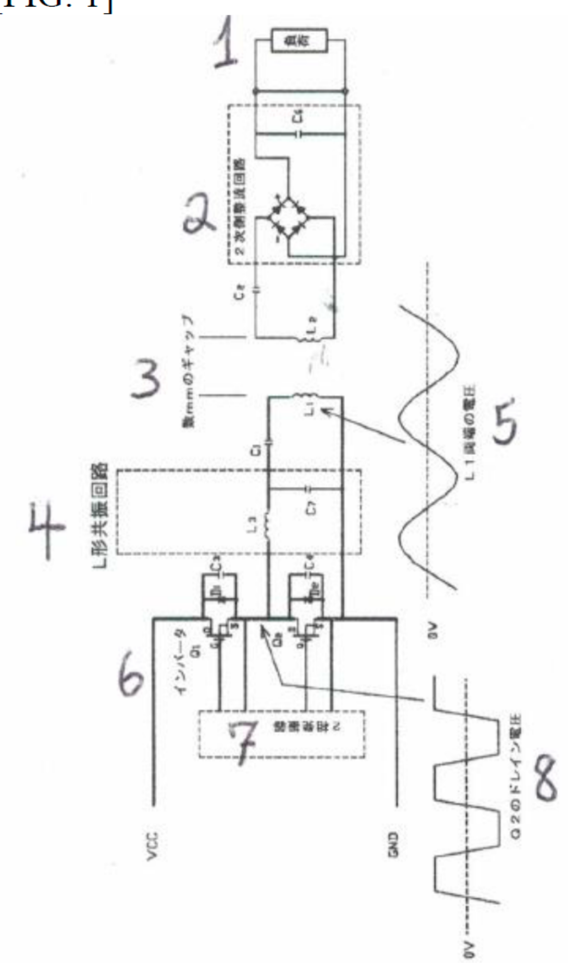
2. Overview of *Yamauchi*

Yamauchi is titled "Non-contact power transmission device." *Yamauchi* discloses "a non-contact power transmission device that is highly efficient, can be miniaturized, and can reduce harmonic components unnecessarily radiated from a primary coil." (Ex. PA-4TR, Abstract.)

Yamauchi describes an inductive power transfer system. (*Id.*, ¶[0001] ("The present invention relates to a non-contact power transmission device, and more particularly, to a non-contact power transmission device improving power transmission efficiency, enabling size reduction and high efficiency, and reducing harmonic components unnecessarily radiated by the primary coil").) As shown in FIG. 1, the "non-contact power transmission device" includes "a capacitor C_1 [that] is serially connected with the primary coil L_1 to form a primary series resonant circuit. Further, a capacitor C_2 is serially connected to the secondary coil L_2 to form a secondary series resonant circuit." (*Id.*, ¶[0023].) Moreover, "a coil L_3 is connected at a connection point between the source S of the field-effect transistor Q_1 and the drain D of the field-effect transistor Q_2. Further, a capacitor C_7 that resonates with the coil L_3 is serially connected in an inverted L shape to form a resonant circuit ([] 'L-shaped resonant circuit')." (*Id.*, ¶[0027].) "The L-shaped resonant circuit [] also has functions as a filter (low-pass filter), and can reduce unnecessary radiation of harmonic components from the primary coil L_1." (*Id.*, ¶[0030].)

FIG. 1 is excerpted below:

[FIG. 1]



1 Load 2 Secondary side rectifier circuit 3 Gap of several mm 4 L-shaped resonant circuit 5 Voltage at both ends of L1 6 Inverter Q1 7 Two-phase oscillator 8 Drain voltage of Q2

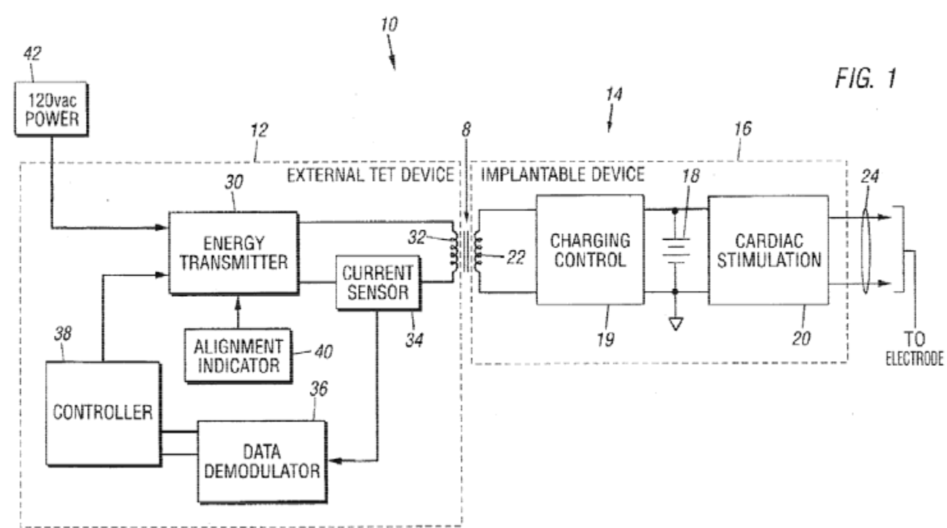
(*Id.*, FIG. 1.)

Yamauchi is also in the same field as the Asserted Patents as *Yamauchi* can be applied to battery charging. (*See*, *e.g.*, *id.*, ¶[0036].) *Yamauchi* is also pertinent to the same types of problems the inventors of the Asserted Patents were trying to solve. For example, *Yamauchi* relates to an L-shaped resonance circuit that can "reduce the unnecessary radiation of the harmonic component from the primary side coil." (*Id.*, ¶[0030].) These are problems with which the inventor was concerned. (*See*, *e.g.*, PAT-A, 16:61-17:17.)

3. Overview of *Nedungadi*

Nedungadi is titled "Data communication system for control of transcutaneous energy transmission to an implantable medical device." *Nedungadi* discloses "battery-powered implantable devices that receive energy for recharging the battery from an external transcutaneous energy transmitter." (Ex. PA-3, 1:10-13.)

Nedungadi discloses an implantable device, having a battery, that is capable of being inductively charged by an external device (labelled "External TET Device" in Figure 1). (*Id.*, 5:34-56.) As shown in Figure 1 of *Nedungadi* the external TET device has a coil 32 that is used to provide power to the coil 22 of the implantable device. (*Id.*) *Nedungadi* discloses the implantable device 14 may communicate with the external TET device 12. (*Id.*) This communication may include the control circuitry 19 in the implantable device "sampl[ing] battery and voltage and current" and then "transmit[ting] that data to TET 12 via coils 32, 22, in order to control the energy transmission between TET device 12 and implantable device 14." (*Id.*)



(*Id.*, FIG. 1.)

To transmit the "sampled data," the charging control circuit of the implantable device "alternately disconnects and reconnects the battery from the charging circuit in a predetermined manner, causing the current in the coil 32 of TET device 12 to change in response to the change in load across coil 22." (*Id.*, 5:45-51.) The resulting change in the current of the charging coil 32 can be detected by "current sensor 34 and transmitted to data demodulator 36 . . . [which] decodes voltage and current values and communicates these values to controller 38 which, pursuant to predetermined parameters, control the power output of the transmitter 30." (*Id.*, 5:51-56.)

Nedungadi is also in the same field as the Asserted Patents as *Nedungadi* relates to an inductive charging system. (*See, e.g.*, Ex. PA-3, 1:10-16; 1:38-41.) *Nedungadi* is also pertinent to the same types of problems the inventors of the Asserted Patents were trying to solve. For example, *Nedungadi* relates to a data modulator connected to the secondary coil that periodically transmits charging and power status information to the primary coil. (*Id.*, 8:40-51.) These are problems with which the inventors of the Asserted Patents were concerned. (*See*, *e.g.*, Ex. PAT-A, 7:20-36.)

4. Claim 1

a. A charger system for use with a mobile, electronic, or other device and/or battery, battery door, or skin for use with the device, for charging and/or powering the device and/or battery inductively, comprising:

To the extent the preamble is limiting, *Hsu* discloses this limitation. (Ex. PA-DEC, ¶90.) For example, *Hsu* discloses an inductive powering device 20 that has a plurality of primary coils that can be energized to transfer power via inductive coupling ("**charging and/or powering the device … inductively**") to a secondary coil in the portable device 22 (e.g. laptops or tablet PCs) ("**mobile, electronic, or other device**"), when the portable device 22 is placed on an inductive powering surface 21 of the powering device 20. (*See, e.g.*, Ex. PA-1, ¶¶[0006], [0018], [0019], FIG. 1.)

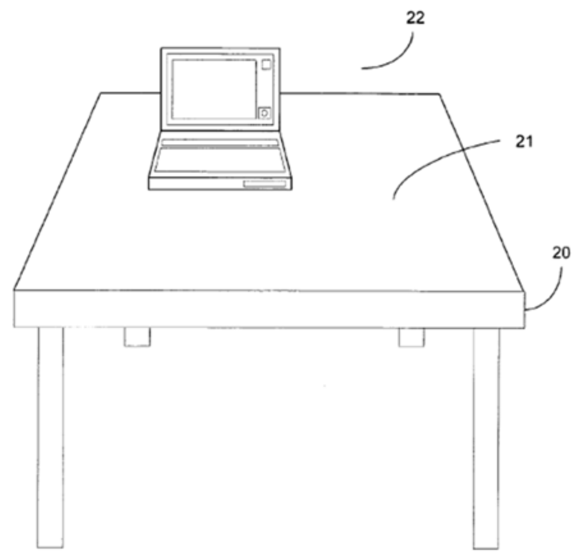


FIG. 1

(*Id.*, FIG. 1.) The portable device 22 is a "**mobile device**," as claimed.

b. a base unit having a surface, and comprising a plurality of primary coils arranged behind and parallel to the surface,

Hsu discloses this limitation. (Ex. PA-DEC, ¶¶91-92.) For instance, *Hsu*'s powering device 20 ("**base unit**") has an inductive powering surface 21 ("**surface**") that has a plurality of primary coils 26 arranged therein ("**comprising a plurality of primary coils**") that can be energized for transferring power to the portable device 22 placed on the surface. (*See, e.g.*, Ex. PA-1, ¶¶[0018], [0020], FIG. 2.)

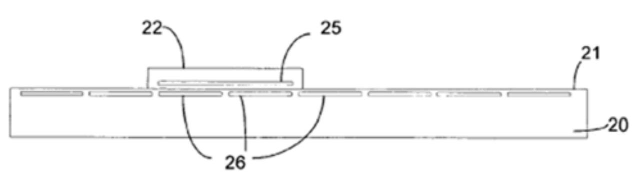


FIG. 2

(*Id.*, FIG. 2.) The primary coils 26 are arranged under and parallel ("**arranged behind and parallel**") to the surface 21 of the powering device 20 as evident from Figure 2. (*Id.*, FIG. 2.)

Figure 6 shows one example of an arrangement of the primary coils. (*Id.*, ¶[0020]; Ex. PA-DEC, ¶92.)

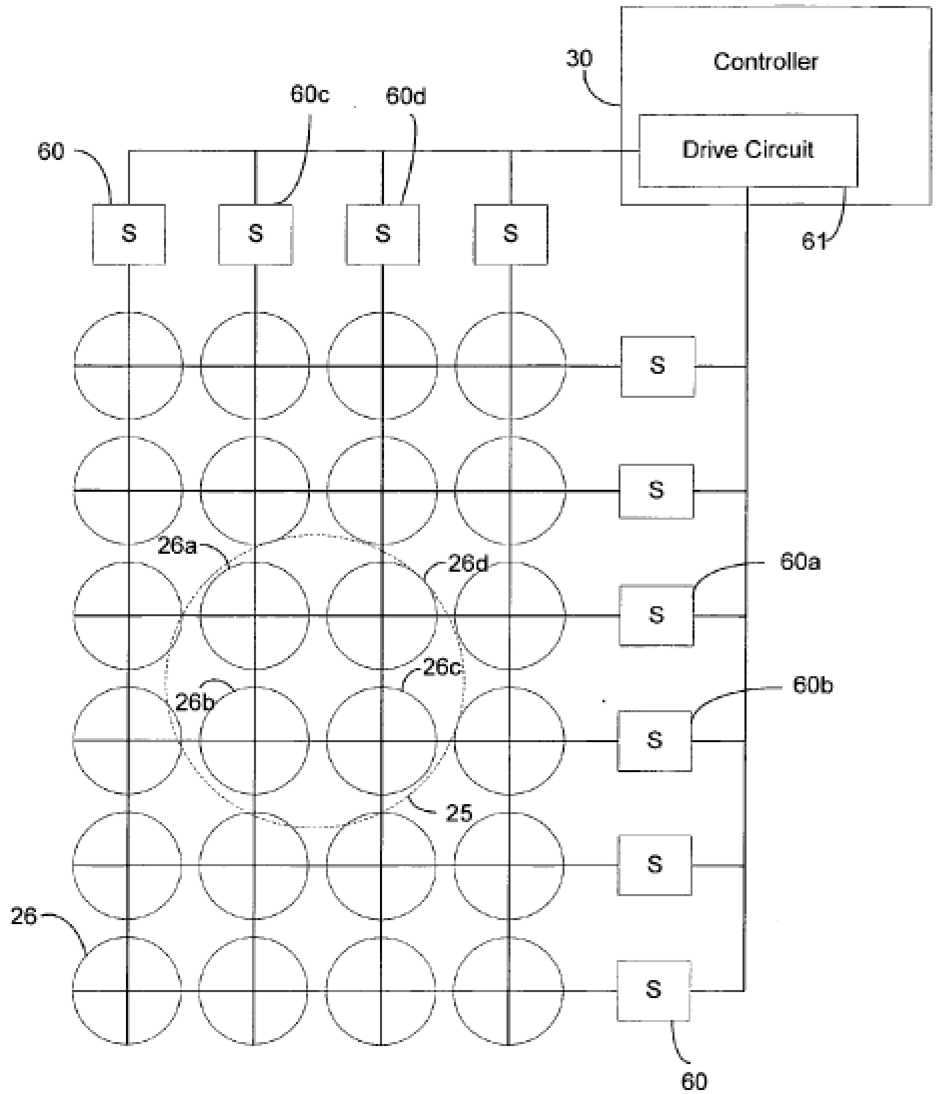


FIG. 6

(Ex. PA-1, FIG. 6.)

c. [a base unit] … wherein each of the primary coils is positioned within the base unit, and

Hsu discloses this limitation. (Ex. PA-DEC, ¶93.) As shown in FIG. 2, *Hsu*'s **primary coils** 26 are positioned **within** the powering device 20 ("**base unit**").

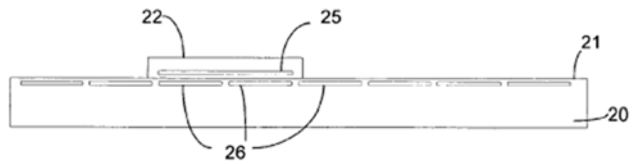


FIG. 2

(*Id.*, FIG. 2, *see also id.*, ¶[0020].)

d. [a base unit] … wherein each of the primary coils is associated with a switching circuit in the base unit, which switching circuit is capable of being selectively switched to activate its associated primary coil so that, when an electrical current is passed through that activated primary coil, a magnetic field is generated by that activated primary coil in a direction substantially perpendicular to the surface of the base unit, and

Hsu discloses this limitation. (Ex. PA-DEC, ¶¶94-98.) *Hsu* describes an arrangement of primary coils 26 with reference to Figure 6. (Ex. PA-1, ¶[0030].) In this arrangement, "the primary coils 26 are arranged generally in a two-dimensional matrix with multiple rows and columns, each row or column can be switchably connected to a drive circuit 61 by means of respective switches 60." (*Id.* (emphasis added).) "A primary coil 26 can be turned on, i.e., energized or excited, when both its row and column are connected to the drive circuit." (*Id.*) For example, primary coil 26a will be energized when switches 60a and 60c are activated so that primary coil 26a is connected to drive circuit 61. (Ex. PA-DEC, ¶94; Ex. PA-1, ¶[0030], ("During the scan phase as described above, the controller 26 identifies these four primary coil by means of the RFID transmission. Thereafter, the controller 26 actuates the switches 60a, 60b, 60c, 60d to connect the four primary coils 26a, 26b, 26c, 26d to the drive circuit, thereby energizing these coils, while the other coils are not energized.").) Therefore, each primary coil 26 "**is associated with a switching circuit in the base unit**" (e.g., switches 60a, 60b, 60c, or 60d). As discussed above, each of the switches "**is capable of being selectively switched to activate its associated primary coil**," as claimed.

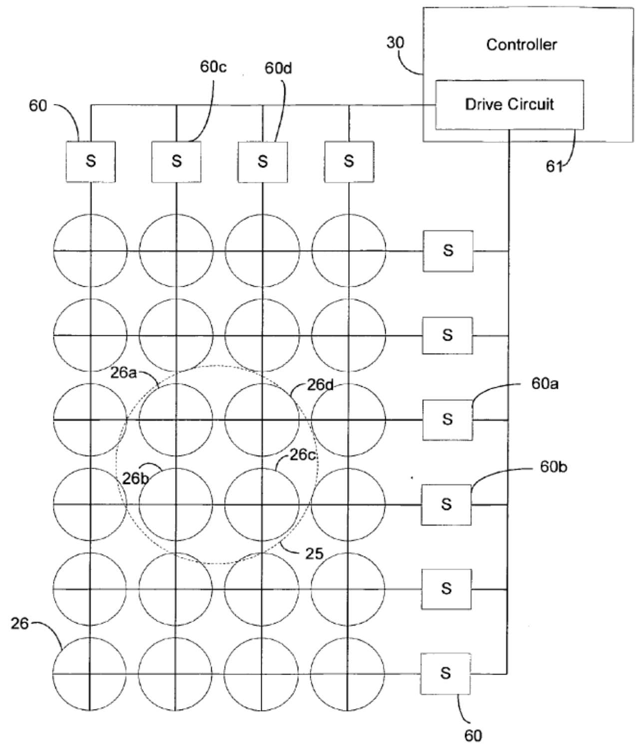


FIG. 6

(*Id.*, Figure 6.)

Selectively actuating two switches activates a specific primary coil. For example, primary coil 26a will be energized when switches 60a and 60c are activated so that primary coil 26a is selectively connected to drive circuit 61. (Ex. PA-Dec, ¶96; Ex. PA-1, ¶[0030].) Energizing the selected primary coil means driving the selected primary coil with an "alternating signal at a selected frequency" to inductively transfer power to the secondary coil. (Ex. PA-1, ¶[0019], [0020], [0024].) A POSITA would have understood that this means passing "**an electrical current [] through that activated primary coil**," as claimed. (Ex. PA-Dec, ¶96.) That is the basic principle behind inductive charging, as confirmed by the '208 patent. (*Id.*) Indeed, it is the passing of alternating electrical current through the primary coil that creates varying magnetic flux, which "is picked up by the secondary coil 25" to induce a voltage therein. (*Id.*; Ex. PA-1, ¶[0019].)

When the primary coil is energized (i.e., an alternating current is passed through it), a "**magnetic field is generated by that activated primary coil in a direction substantially perpendicular to the surface of the base unit**," as claimed. As shown in both Figures 2 and 6, the secondary coil 25 ("**receiver coil**") is parallel to the primary coil 26. Therefore, in order for the "magnetic flux to be picked by the secondary coil" (Ex. PA-1, ¶[0019]), at least some of the magnetic flux would need to be generated perpendicular to the plane of the primary coil 25. (EX. PA-DEC, ¶97.) In fact, it was well-known to a POSITA that the magnetic field should be configured to flow out of the charging surface perpendicularly ("**in a direction substantially perpendicular to the surface**") "because it allows the energy transfer over the surface on which electronic equipment (to be charged) is placed." (*See, e.g.*, Ex. PA-2, ¶[0005].)

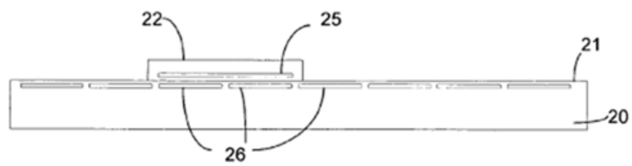


FIG. 2

(Ex. PA-1, FIG. 2.)

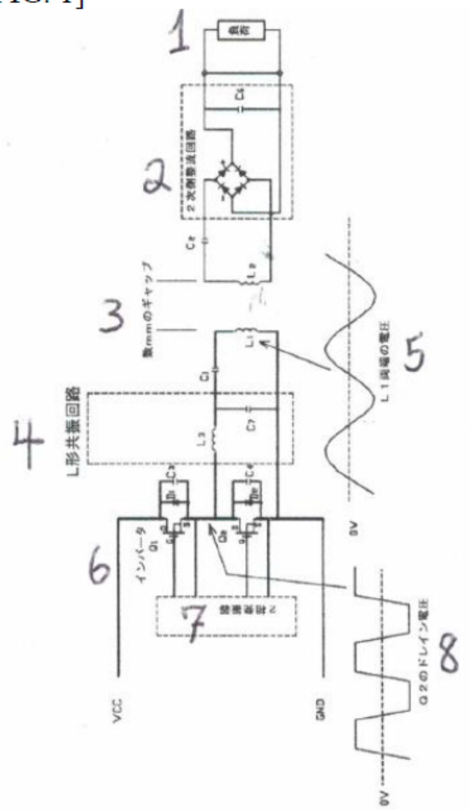
Moreover, there is no explanation in the '208 patent as to how a magnetic field "perpendicular to the surface" of the primary coil is generated. (Ex. PA-DEC, ¶98.) The '208 patent summarily states that "center of the primary in the charger contains a magnet . . . with the poles parallel to the charger surface and the magnetic field perpendicular to the charger surface." (Ex. PA-1, 11:27-34.) This disclosure pertains to the magnetic field of the magnet and not the magnetic field generated by the primary coil. To the extent it is Patent Owner's position that the magnetic field of the primary coil is perpendicular to the charger surface because the primary and receiver coils are aligned (i.e., are parallel), then *Hsu* has the same exact configuration as shown in Figure 2 above.

e. [a base unit] … wherein the base unit and/or switching circuit includes a capacitive or other component that decreases harmonics in that activated primary coil;

Hsu in view of *Yamauchi* discloses or suggests this limitation. (Ex. PA-DEC, ¶¶99-103.) *Hsu* does not explicitly disclose that the powering device ("**base unit**") includes a capacitor or other component that decreases harmonics in the activated primary coil 26.

Yamauchi, however, discloses such a limitation. Like *Hsu, Yamauchi* discloses an inductive charging system having a primary side (shown on the bottom of FIG. 1) ("**base unit**"), with a primary side coil L_1 ("**primary coil**") that transfers power to a receiver coil (shown on the top of FIG. 1). (*See, e.g.*, Ex. PA-4TR, ¶[0023], FIG. 1; Ex. PA-DEC, ¶100.)

[FIG. 1]



1 Load 2 Secondary side rectifier circuit 3 Gap of several mm 4 L-shaped resonant circuit 5 Voltage at both ends of L1 6 Inverter Q1 7 Two-phase oscillator 8 Drain voltage of Q2

(Ex. PA-4TR, FIG. 1.)

Yamauchi discloses the base unit has a coil L_3 and capacitor C_7 which together form an L-shaped resonance circuit. (*Id.*, ¶[0027], ("in the present embodiment, as shown in FIG. 1, a coil L_3 is connected at a connection point between the source S of the field-effect transistor Q_1 and the drain D of the field-effect transistor Q_2. Further, a capacitor C_7 that resonates with the coil L_3 is serially connected in an inverted L shape to form a resonant circuit ([] 'L-shaped resonant circuit')."").) *Yamauchi* also discloses the "L-shaped resonant circuit [] also has functions as a filter (low-pass filter), and can reduce unnecessary radiation of harmonic components from the primary coil L_1." (*Id.*, ¶[0030] (emphasis added).) *Yamauchi* therefore discloses a component, the L-shaped resonance circuit, that is part of the base unit (the primary side unit), that decreases harmonics in the primary side coil L_1. (Ex. PA-DEC, ¶101.)

A POSITA would have been motivated to adopt *Yamauchi*'s L-shaped resonance circuit in *Hsu*'s base unit so as to reduce the unnecessary radiation of the harmonic component from the activated primary coils. (Ex. PA-DEC, ¶102.) A POSITA would have had a reasonable expectation of success in making such a modification given that the modification would have been a straightforward combination of well-known technologies using known methods and techniques familiar to such a skilled person. (*Id.*) For example, a POSITA would have known how to incorporate *Yamauchi*'s teachings of reducing unnecessary radiation of harmonic components from the primary coil in *Hsu*'s circuit. (*Id.*) A POSITA would have understood and would have known that unnecessary radiation of harmonic components can be reduced in *Hsu* by introducing a low-pass filter (like in *Yamauchi*) in the powering device. (*Id.*) *See KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 416-17 (2007).

Accordingly, the combination of *Hsu* and *Yamauchi* discloses or suggests "[a base unit] … wherein the base unit and/or switching circuit includes a capacitive or other component that decreases harmonics in that activated primary coil," as claimed. (Ex. PA-DEC, ¶103.)

f. a power supply for passing a current through the primary coils when activated, to generate the magnetic field in a direction substantially perpendicular to the plane of the primary coils;

The *Hsu-Yamauchi* combination discloses or suggests this limitation. (Ex. PA-DEC, ¶¶104-106.) As discussed above in Section VI.A.4.d, *Hsu* discloses **a drive circuit 61** that energizes selected primary coils 26 by passing an electric current through the coils to generate a "magnetic field in a direction substantially perpendicular to the plane of the primary coils." (Ex. PA-1, FIG. 6, ¶[0030], ("During the scan phase as described above, the controller 26 identifies these four primary coil by means of the RFID transmission. Thereafter, the controller 26 actuates the switches 60a, 60b, 60c, 60d to connect the four primary coils 26a, 26b, 26c, 26d to the drive circuit [61], thereby energizing these coils, while the other coils are not energized.").)

Hsu further discloses that the drive circuit 61 may be DC powered or AC powered. (*See, e.g.*, Ex. PA-1, ¶[0031], ("Different switching mechanisms may be used to selectively energize the selected primary coils, depending whether the drive circuit is DC powered or AC powered.").) Figures 7A and 7B of *Hsu* shows schematic diagrams for DC and AC powered drive configurations for driving a primary coil. (Ex. PA-1, ¶[0015]-[0016].) As shown in Figures 7a and 7b, the primary coil 26 can be powered by voltage source Vcc for DC powered drive circuits, or oscillating circuit 72 for AC powered drive circuits. (*See e.g.*, *id.*, ¶[0031], ("In the DC powered drive circuit, the two switches 71a and 71b alternatingly connects the opposite ends of the primary coil 26 between a <u>DC voltage Vcc</u> and the ground . . .") (emphasis added); *see also id.*, ¶[0032], ("In the

AC powered drive circuit in FIG. 7B, an oscillating signal at the desired drive frequency is connected to the primary coil by a switch. The oscillating signal is generated by an oscillating circuit 72 . . ."); Ex. PA-DEC, ¶105.)

FIG. 7A

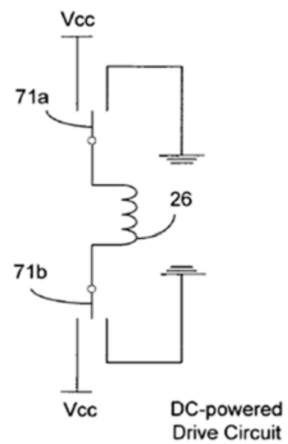
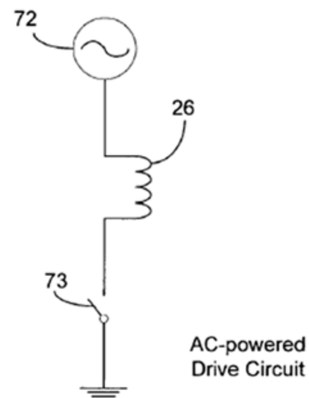


FIG. 7B



(Ex. PA-1, FIGS. 7A, 7B.) A POSITA would have understood the Vcc and the oscillating circuit 72 shown in Figures 7A and 7B to be power supplies. Therefore, *Hsu* discloses a powering source, such as Vcc ("**power supply**"), that passes a current through the primary coils when activated. (Ex. PA-DEC, ¶106.)

g. a communications interface that the base unit, and the mobile, electronic, or other device and/or battery, battery door, or skin for use with the device, use to communicate with one another during powering or charging,

The *Hsu-Yamauchi* combination discloses or suggests this limitation. (Ex. PA-DEC, ¶¶107-109.) *Hsu* discloses a controller 30 in the powering device 20 that serves the function of an RFID reader to read/interface with an RFID microchip associated with the secondary coil 25 of the portable device 22. (*See, e.g.*, Ex. PA-1, ¶¶[0021], [0023] ("a controller 30 of the powering device 20 serves the function of the RFID reader, and the primary coils 26 of the powering surface are used as antennas for transmitting radio frequency waves to the RFID microchip 32 of the passive portable device and receiving the radio waves returned by the RFID microchip."), *see also id.* ("The controller 30 has . . . circuitry for decoding radio frequency signals received by the primary coil and to retrieve information contained therein.").) The radio waves returned by the RFID microchip include information pertaining to the portable device such as the "maximum idle time between the power transfer operations, the minimum duty cycle for active power transfer, the size of the secondary power coil, and/or the maximum instant transferred power." (*Id*., ¶[0028].) *Hsu*'s controller 30 is therefore "**a communications interface that the base unit, and the mobile, electronic, or other device and/or battery, battery door, or skin for use with the device, use to communicate with one another**," as claimed.[3]

The above-identified communication between the controller 30 and the RFID microchip is "**during powering or charging**," as claimed. (*See infra* Section VI.A.4.n (explaining that *Hsu*'s RFID communication continues during the actual power transfer/charging operation).) Specifically, the RF waves transmitted by the primary coil (after being driven by controller 30) are used to power the RFID microchip. (*Id*., ¶¶[0021], [0023], [0024], [0025], [0029]); Ex. PA-DEC, ¶109.)

h. [the communications interface …] to poll each of the primary coils, or receive a signal from a sensor associated therewith, to verify the presence of the mobile, electronic, or other device and/or battery, battery door, or skin for use with the device placed upon or close to the surface of the base unit,

The *Hsu-Yamauchi* combination discloses or suggests this limitation. (Ex. PA-DEC, ¶¶110-111.) *Hsu*'s controller 30 detects the presence and location of a portable device 22 ("**mobile device**") close to the surface of the powering device 20 ("**base unit**") by scanning the primary coils 26 ("**poll each of the primary coils**") of the powering device according to a scan pattern (e.g. a linearly progressive pattern in which the controller loops through the rows or columns of the primary coils, or any other pattern):

> As mentioned above, the inductive powering surface has a plurality of primary coils 26, and only those that are covered by or overlapping with the secondary coil 25 are to be energized for transferring power to the portable device. <u>To that end, the controller 36 of the powering device first determines whether any portable device is present on the powering surface and, if so, the location of the secondary coil of that device</u>. Referring to FIG. 5, <u>to detect the presence and location of the secondary coil, the controller scans the primary coils</u>. The scan pattern may be a linearly progressive pattern in which the controller loops through the rows or columns of the primary coils, or may be any other desired pattern. For each primary coil 26, the controller operates an appropriate driver circuit to energize the coil at a sensing frequency, such as 13.56 MHz, and at

[3] The claim recites "to communicate with one another." Under the broadest reasonable interpretation, one-way (as opposed to bi-directional) communication between the charger and the receiver is sufficient to satisfy the claim limitation. (Ex. PA-Dec, ¶108.)

> a lower power level (step 50). If a secondary coil is present and overlaps with that primary coil, the RFID circuit in the portable device will pick up the waves sent by the primary coil (step 51), power up the RFID chip, and return RF waves containing information about the portable device. . . In this way, <u>the controller goes through the primary coils according to the scan pattern</u>, and identifies those primary coils that have picked up responses from the RFID device

(Ex. PA-1, ¶[0029] (emphasis added); *see also infra* Section VI.A.4.n (explaining that *Hsu*'s RFID communication continues during the actual power transfer/charging operation).)

Hsu's controller 30 therefore scans (**polls**) each of the primary coils to verify the presence of the secondary coil of the portable device 22 nearby. (*Id.*, ¶[0028], ("Using a RFID device in the portable device to enable detection by the inductive powering device …"); Ex. PA-DEC, ¶111.)

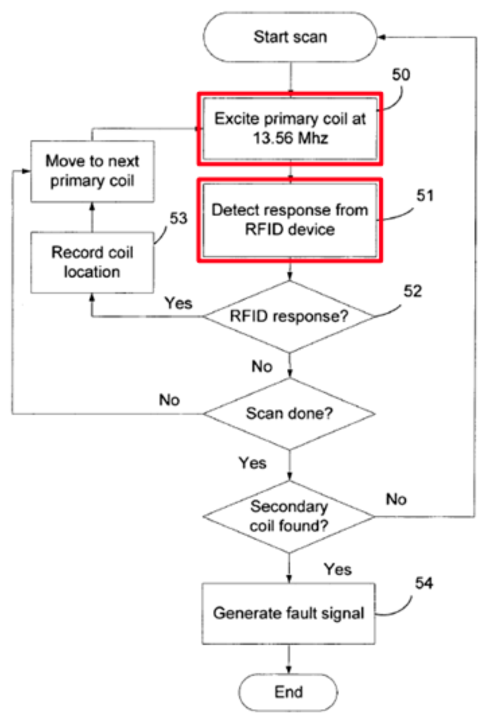


FIG. 5

(Ex. PA-1, FIG. 5.)

i. [the communications interface …] to … select, based on the polling or sensing, from within the plurality of primary coils, and selectively switch, using their associated switching circuits to activate, only those one or more primary coils which are determined to be most closely aligned with a receiver coil at the mobile, electronic, or other device and/or battery, battery door, or skin for use with the device, and

The *Hsu-Yamauchi* combination discloses or suggests this limitation. (Ex. PA-DEC, ¶¶112-114.) For instance, *Hsu* discloses that through scanning, the controller identifies the primary coils that have picked up responses from the RFID device in the portable device that overlap the primary coils ("**select, based on the polling or sensing, from within the plurality of primary coils**") and, thereafter, energizes those primary coils at a power delivery frequency to transfer power to the portable device via inductive interaction with the secondary coil. (*See, e.g.*, Ex. PA-1, ¶[0029], FIG. 5; Ex. PA-DEC, ¶112.)

Hsu discloses that only the primary coils 26 that overlap with the secondary coil 25 ("**only those one or more primary coils which are determined to be most closely aligned with a receiver coil at the mobile [] or other device**") are selected for energization. (*Id.*, ¶¶[0029]-[0030].) For example, only primary coils 26a-d in Figure 6 are energized as they are the only ones that overlap with the secondary coil 25 ("**receiver coil**") of the portable device 22. (*Id.*, ¶¶[0029]; [0030] ("By way of example, in the example shown in FIG. 6, four primary coils 26a, 26b, 26c, 26d overlap with the secondary coil 25. During the scan phase as described above, <u>the controller 26 identifies these four primary coil by means of the RFID transmission</u>. Thereafter, the controller 26 actuates the switches 60a, 60b, 60c, 60d to connect the four primary coils 26a, 26b, 26c. 26d to the drive circuit, <u>thereby energizing these coils, while the other coils are not energized</u>."); *see also id.*, ¶[0034] ("In a preferred embodiment, the primary coils are sized such that multiple primary coils overlap with the secondary coil when the portable device is placed on the inductive powering surface."); Ex. PA-DEC, ¶113.)

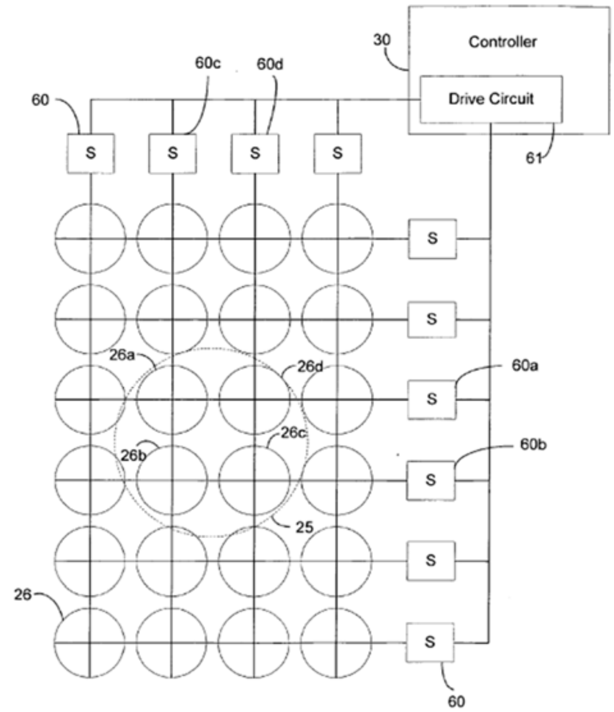


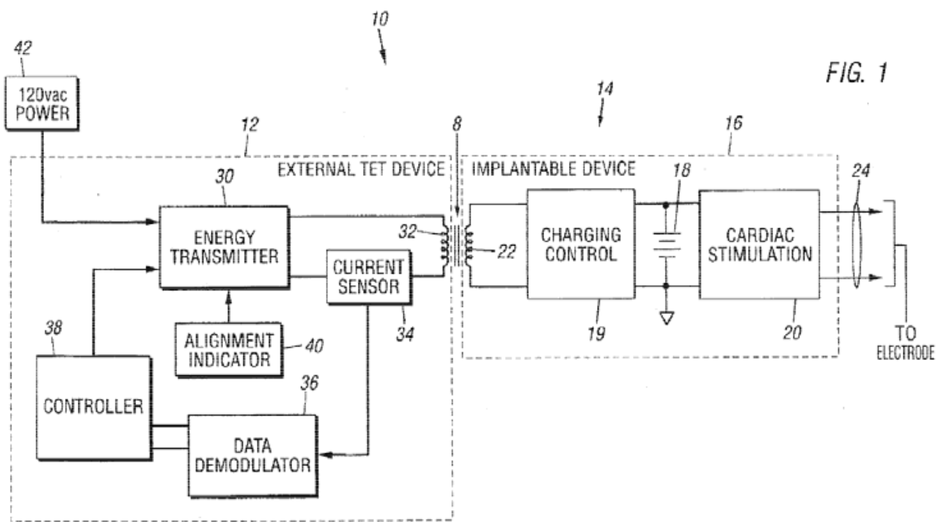
FIG. 6

(Ex. PA-1, FIG. 6.) Moreover, each of the selected primary coils is energized by selecting activating certain switches ("**selectively switch, using their associated switching circuits to activate**"). (Ex. PA-Dec, ¶114; Ex. PA-1, ¶[0030], ("[T]he controller 26 actuates the switches 60a, 60b, 60c, 60d to connect the four primary coils 26a, 26b, 26c, 26d to the drive circuit, thereby energizing these coils, while the other coils are not energized.") (emphasis added).)

j. [a communications interface …] to … periodically thereafter exchange information to provide power transfer to the device and/or battery, including device and/or battery charging or power status or presence; and

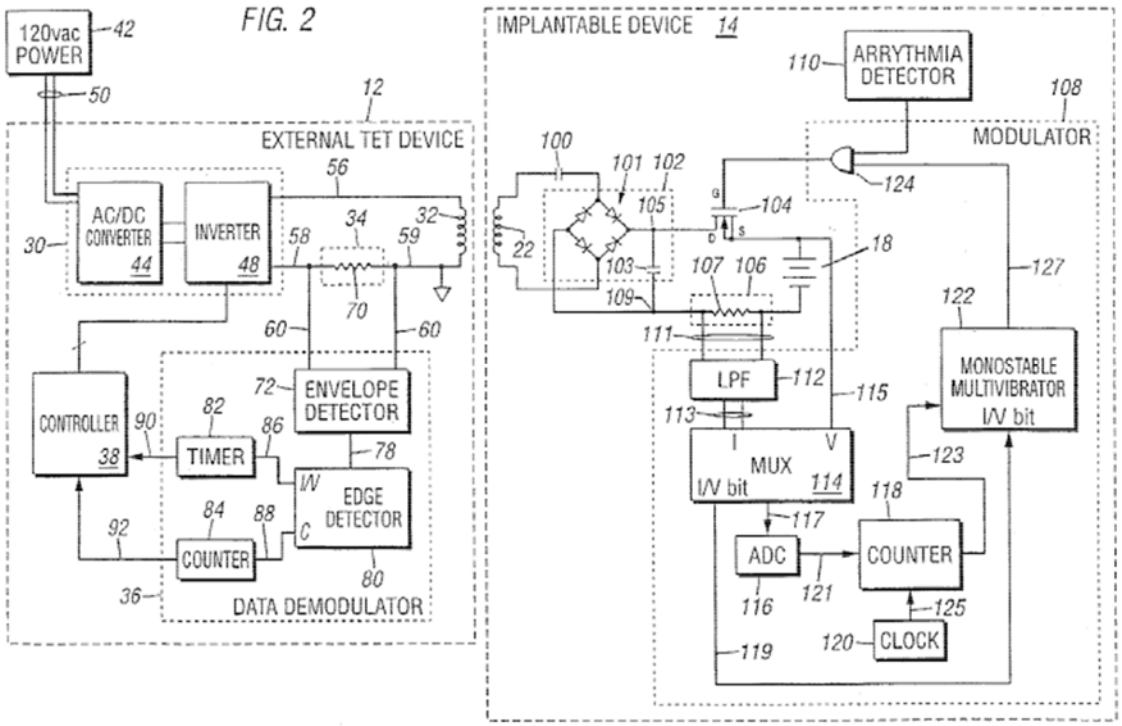
The *Hsu-Yamauchi* system combined with *Nedungadi* discloses or suggests this limitation. (Ex. PA-DEC, ¶¶115-118.) As discussed above with reference to claim limitation 1.i, controller 30 in *Hsu* identifies one or more primary coils 26 to provide power transfer to the portable device 20. *Supra* Section VI.A.4.i. But *Hsu* does not expressly disclose "**periodically**" exchanging information "**thereafter**," as claimed. However, *Nedungadi* does, as explained below.

Like *Hsu* and *Yamauchi*, *Nedungadi* discloses an inductive charging system for charging a battery. (*See, e.g.*, Ex. PA-3, 1:9-13.) As shown in Figure 1 of *Nedungadi* an external device 12 has a primary coil 32 that is used to provide power to a receiver coil 22 of an implantable device 14. (*Id.*, 5:12-40.) *Nedungadi* discloses that the implantable device 14 may communicate with the external TET device 12. (*Id.*, 5:41-56.) For example, the control circuitry 19 in the implantable device "samples battery voltage and current" and "transmits that data to TET 12 via coils 32, 22, in order to control the energy transmission between TET device 12 and implantable device 14." (*Id.*) "The battery voltage is indicative of the level of charge of battery 18." (*Id.*, 5:40-45.) The battery voltage is "**battery charging or power status**," as claimed. (Ex. PA-DEC, ¶116.)



(Ex. PA-3, FIG. 1.)

In particular, a data modulator 108 in an implantable device 14 senses battery voltage and current at regular intervals (once every minute or two) and communicates those values to the controller 38 ("**communications interface**") in the charger (i.e., the external TET device 12). (*Id.*, 8:40-51.) "Depending on those values, the output power" of the charger is regulated by controller 38. (*Id.*) *Nedungadi* therefore discloses periodically communicating battery voltage and current values from the receiver to the controller in the charger that controls power transfer based on those received values ("**a communications interface to . . . periodically thereafter exchange information to provide power transfer to the device and/or battery, including device and/or battery charging or power status or presence**"). (Ex. PA-DEC, ¶117.)



(*Id.*, FIG. 2.)

A POSITA would have been motivated to adopt *Nedungadi*'s above-identified techniques in the *Hsu-Yamauchi* combination so that the power transfer can be controlled in accordance with the charging status of the battery. (Ex. PA-DEC, ¶118.) *See KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 416-17 (2007). These techniques (including the periodic exchange of battery voltage between the charger and receiver) allow "control[ling] the delivery of energy to [the] battery [in the portable device]." (Ex. PA-3, 5:7-11.) A POSITA would have had a reasonable expectation of success in making such a modification to the *Hsu-Yamauchi* combination given that the modification would have been a straightforward combination of well-known technologies using known methods and techniques familiar to such a skilled person. (Ex. PA-DEC, ¶118.) For example, *Hsu*'s portable device is configured to transmit power requirements of the portable device (e.g., the "maximum idle time between the power transfer operations, the minimum duty cycle for active power transfer, the size of the secondary power coil, and/or the maximum instant transferred power"). (Ex. PA-1, ¶[0028].) Thus, it would be within ordinary skill to configure *Hsu*'s portable device based on *Nedungadi*'s teachings to transfer additional information (e.g., battery voltage) "periodically" during charging so as to allow the controller in the powering device to adjust the power transfer. A POSITA knew how to communicate information from the receiver side to the primary side during charging, as evidenced by *Nedungadi* and other prior art. (Ex. PA-Dec, ¶¶42-44.)

k. wherein the substantially perpendicular magnetic field is used to inductively generate a current in the receiver coil within or on the mobile, electronic, or other device and/or battery, battery door, or skin for use with the device placed upon the activated primary coil of the base unit, to charge or power the device and/or battery, and

The *Hsu-Yamauchi-Nedungadi* combination discloses or suggests this limitation. (Ex. PA-DEC, ¶¶119-121.) As discussed above with respect to limitations 1.d and 1.i, *Hsu* discloses energizing selected primary coils 26 by passing an electric current through the coils to generate a magnetic field in a direction substantially perpendicular to the plane of the primary coils. (*Supra* Sections VI.A.4.d., VI.A.4.i.) The selected primary coils are those that overlap with a secondary coil 25 ("**receiver coil**") of a portable device 22 placed on the powering device 20 ("**the device placed upon the activated primary coil of the base unit, to charge or power the device and/or battery**"). (Ex. PA-1, FIGS. 2, 6, [0020], [0029]-[0030].)

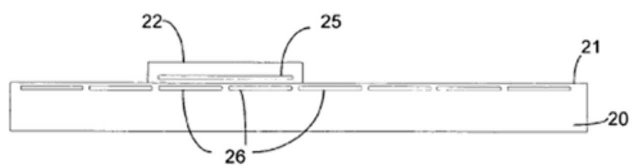


FIG. 2

(*Id.*, FIG. 2.)

Hsu further discloses that "[w]hen the primary coil 26 is driven with an alternating signal, . . . <u>the variation in the magnetic flux</u>" is picked up by the secondary coil 25 such that an "alternating voltage signal" is "induce[d]" in the secondary coil 25 ("**receiver coil**"). (Ex. PA-1, ¶¶[0019] (emphasis added), [0024], FIGS. 2, 6.[4]) This means that a current is induced in the secondary coil 25 because an alternating voltage across an inductor (such as the secondary coil 25) would result in a current in the coil. (Ex. PA-DEC, ¶120.) That is the basic principle behind inductive charging, as confirmed by the '208 patent. (*Id.*) Indeed, the alternating voltage signal induced in the receiver coil 25 powers the power supply circuit (Ex. PA-1, ¶[0019]), which means that current is supplied to the power supply circuit by receiver coil 25. (Ex. PA-DEC, ¶120.)

[4] A POSITA understands that "magnetic flux" is a measure of the "magnetic field" passing through a given area. (Ex. PA-DEC, ¶120.)

Hsu thus discloses "**wherein the substantially perpendicular magnetic field is used to inductively generate a current in the receiver coil within or on the mobile, electronic, or other device and/or battery, battery door, or skin for use with the device placed upon the activated primary coil of the base unit, to charge or power the device and/or battery**," as claimed. (Ex. PA-DEC, ¶121.)

l. wherein the base unit, and receiver coil or circuitry associated therewith, use current modulation performed by the receiver coil or its circuitry, to provide an indication that is then used by the base unit to:

The combined *Hsu*-*Yamauchi*-*Nedungadi* system discloses or suggests this limitation. (Ex. PA-DEC, ¶¶122-125.) *Hsu* discloses that an RFID microchip in the portable device 22 "send[s] information back to the reader in the form of radio-frequency waves," where the primary coil 26 acts as an antenna for receiving the RF waves from the RFID microchip. (*See, e.g.*, Ex. PA-1, ¶¶[0021]-[0026].) On the portable device side, the secondary coil 25 ("**receiver coil**") is used as the transmitting antenna to send the RF waves to the primary coil 26. (*Id*., ¶[0027].) And the RF waves include "information regarding the power requirements for the portable device" that is then used by the powering device 20 ("**base unit**") "to facilitate the power transfer operation." (*Id*., ¶¶[0021], [0028], [0029].) The secondary coil 25 ("**receiver coil**") thus "**provides an indication that is then used by the base unit**," as claimed.

According to Patent Owner, if a secondary coil is used to transmit data to a primary coil, then the secondary coil is performing "current modulation." Specifically, Patent Owner's expert in litigation, Dr. Ricketts, has opined that the '298 provisional in the '208 patent priority chain provides "clear support" for the use of "current modulation." (Ex. LIT-2, 13-27 (¶¶16, 17).)[5] Dr. Ricketts opines that data transfer through a coil used as an antenna constitutes a disclosure of "current modulation" in that coil. (Ex. PA-DEC, ¶¶123-124.)

[5] Mojo withdrew its confidentiality designation for this exhibit (Ex. LIT-2) prior to filing.

3. Support in the priority provisional applications

a) June 1, 2006 provisional priority applications

060106 16638 U.S. PTO

PTO/SB/16 (04-05)
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

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(*Id*., 23.)

In another embodiment, the receiver in the battery also includes a means for providing information regarding battery manufacturer, required voltage, capacity, current, charge status, serial number, temperature, etc. to the charger. In a simplified embodiment, only the manufacturer, required voltage, and / or serial number is transmitted. This information is used by the charger to adjust the primary to provide the correct charge conditions. The regulator in the receiver would then regulate the current and the load to charge the battery correctly and would end charge at the end. In another embodiment, the receiver would control the charging process fully depending on the time dependent information on battery status provided to it. Alternatively, the charging process can be controlled by the charger in a similar manner. The information exchange between the charger and the receiver may be through an RF link or an optical transmitter / detector or some combination. RF ID techniques, Near-Field Communication (NFC), bluetooth or some method for information transfer can be used. Similarly, the receiver could send signals that can be used by the charger to determine the location of the receiver to

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Attorney Docket No. 86044.4

determine which coil or section of the charger to activate. The communication link can also use the same coil or wires as antenna for data transfer or use a separate antenna or use the capabilities of the mobile device (i.e. built in blue tooth or NFC).

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PTO/SB/16 (04-05)
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(*Id*., 24 (highlighting by Dr. Ricketts).)

Thus, consistent with Patent Owner's arguments in litigation, *Hsu* discloses "**current modulation**" in the secondary coil 25 ("**receiver coil**") to communicate the power requirements to the powering device 20 ("**base unit**") because the secondary coil 25 is used as an antenna for data transfer. (Ex. PA-DEC, ¶125.)

m. [indication … used by the base unit to] … determine and regulate one or more of output voltage, current, or power provided by the base unit to the device and/or battery to be within the range of one or more of a value of a required voltage, current, or other power parameter for the mobile, electronic, or other device and/or battery, battery door, or skin for use with the device, and/or

The *Hsu-Yamauchi Nedungadi* combination discloses or suggests this limitation. (Ex. PA-DEC, ¶¶126-127.) For instance, *Hsu* discloses using the secondary coil to send power requirement information to the charger. (*See, e.g.*, Ex. PA-1, ¶¶[0027], [0028].) Such power requirements include the maximum idle time between the power transfer operations, the minimum duty cycle for active power transfer, the size of the secondary powering coil, and/or the maximum instant transferred power, etc. ("**[a] range of one or more of a value of a required voltage, current, or other power parameter for the mobile [] or other device**"). (*Id.*) *Hsu* therefore discloses using the secondary coil to send power requirement information to the charger. This information is used to "**determine and regulate"** the power output to the portable device. (*Id.,* ¶[0029] ("the information may include power requirements of the portable device that may be used by the controller to facilitate the power transfer operation.").)

n. [indication … used by the base unit to] … verify the continued presence of the receiver coil near the base unit.

It should be noted that this limitation is optional in view of the "and/or" connector in the previous limitation. *See, supra*, Section VI.A.4.m. Notwithstanding, *Hsu* in view of *Yamauchi*, *Nedungadi* discloses or suggests this limitation. (Ex. PA-DEC, ¶¶128-129.) For instance, *Hsu* discloses a controller that scans the primary coils to detect the presence and location of the secondary coil, wherein the scan pattern may be linearly progressive pattern in which the controller loops through the rows or columns of the primary coils or may be another desired pattern. (*See, e.g.*, Ex. PA-1, ¶¶[0029]-[0030].) The controller is scanning the primary coils for a RF signal from the secondary coil RFID chip. (*Id.*) Once the controller detects the RF signal it powers on the corresponding primary coils. (*Id.*)

A POSITA would have understood that the scanning of the primary coils for an RF signal from the secondary coil RFID chip continues even after a device is charging. (*See e.g.*, Ex. PA-1, ¶[0025] ("The wide separation between the two frequencies [scanning at 13.56 MHz and power transfer at 100 MHz] allows the RFID chip 32 to be isolated from the normal powering circuit of the portable device, such that the power transfer operation will not interfere with the sensing operation or overwhelm the RFID chip. The primary coil 26 <u>can optionally be driven at both the 13.56 MHz and 100 KHz at the same time.</u>") (emphasis added).) Otherwise the powering device 20 would remain powered on in perpetuity. Therefore, the primary coil, while charging, receives a signal from the secondary device's RFID chip, which is sent from the secondary coil, notifying ("**verify**") the controller that the portable device 22 (and its secondary coil 25) is still present ("**the continued presence of the receiver coil near the base unit**"). (Ex. PA-DEC, ¶129.)

B. SNQ2: *Hsu* in View of *Hui*, *Yamauchi*, and *Nedungadi* Discloses or Suggests Claim 1

Even assuming *arguendo* that claim 1 of the '208 patent is entitled to the June 1, 2006 date Mojo contends as the effective filing date, *Hsu*, *Hui*, *Yamauchi*, and *Nedungadi* are prior art.

As explained above in Section VI.A, *Hsu*, *Yamauchi*, and *Nedungadi* are prior art. *Hui* was filed on September 23, 2005 and published on February 8, 2007, and thus qualifies as prior art at least under pre-AIA 35 U.S.C. § 102(e).

1. Overview of *Hsu*

See supra Section VI.A.1.

2. Overview of *Yamauchi*

See supra Section VI.A.2.

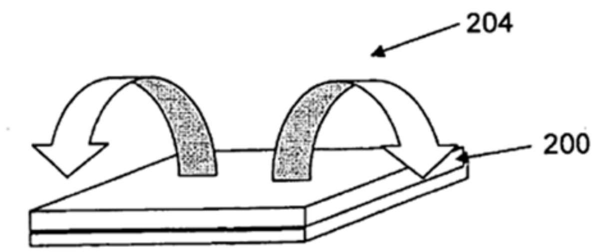
3. Overview of *Nedungadi*

See supra Section VI.A.3.

4. Overview of *Hui*

Hui is titled "Rechargeable battery circuit and structure for compatibility with a planar inductive charging platform." *Hui* discloses "a battery pack for an electronic device" that includes "a battery charging circuit, and an energy receiving element adapted to receive power from a planar inductive charging system." (Ex. PA-2, Abstract.)

Hui discloses an "inductive battery charging platform" in Figure 2, where the "lines of flux of this charging platform flow 'perpendicularly' in and out of the charging surfaces." (Ex. PA-2, ¶[0005].) "This perpendicular flow of flux is <u>very beneficial</u> because it allows the energy transfer over the surface on which the electronic equipment (to be charged) is placed." (*Id*. (emphasis added).)



(*Id.*, FIG. 2.)

In one embodiment, *Hui* discloses charging a battery pack in a mobile phone by placing the mobile phone over the "planar charging platform of FIG. 2 (which has the magnetic flux lines flowing into and out of the charging surface perpendicularly)." (*Id.*, ¶[0050].) In particular, an "energy receiving element in the form of a simple planar device is introduced [into] this battery pack structure so that this battery pack can be charged inductively by the planar charging platform of FIG. 2." (*Id.*) The "energy receiving element" includes an "energy pick-up coil," which is "essentially a planar inductor." (*Id.*, ¶[0051].)

> When sensing a high-frequency AC magnetic flux flowing perpendicularly (or vertically) from the surface of the planar inductive battery charging platform, the energy pick-up coil will develop an AC voltage by Faraday's law and picks up the energy transmitted from a planar charging platform. This coil enclosing the soft magnetic sheet (as a low-profile magnetic core) is essentially a planar inductor. This planar inductor and the series-connected AC capacitor 3 form a series resonant tank that can amplify the AC voltage for the diode rectifier 4. The diode rectifier 4 and the DC capacitor 5 rectify the AC voltage into a DC voltage that can be fed to a battery charging circuit. Preferably a voltage regulator can be used to provide a stable DC voltage from the output of the rectifier.

(*Id.*)

Hui is also in the same field as the '208 patent because it discloses a system for inductively charging a battery using a charging platform. (*See e.g.*, Abstract.) *Hui* is also pertinent to the same types of problems the inventors of the Asserted Patents were trying to solve. For example, *Hui*'s inductive charging platform advocates for the use of "planar PCB transformer technology" for planar windings which generate "magnetic flux lines flowing into and out of the charging surface perpendicularly." (*Id.*, ¶¶[0008], [0050], [0054].) These are problems with which the inventor of the '208 patent was concerned. (*See, e.g.*, PAT-A, 6:46-62.)

5. Claim 1

a. A charger system for use with a mobile, electronic, or other device and/or battery, battery door, or skin for use with the device, for charging and/or powering the device and/or battery inductively, comprising:

See supra Section VI.A.4.a. (Ex. PA-DEC, ¶131.)

b. a base unit having a surface, and comprising a plurality of primary coils arranged behind and parallel to the surface,

See supra Section VI.A.4.b. (Ex. PA-DEC, ¶132.)

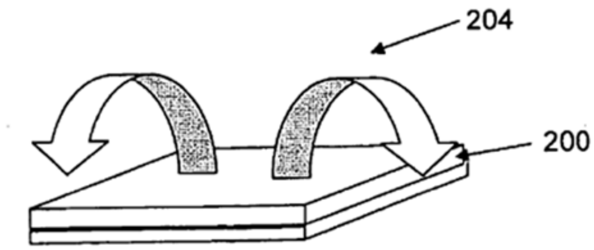
c. [a base unit] … wherein each of the primary coils is positioned within the base unit, and

See supra Section VI.A.4.c. (Ex. PA-DEC, ¶133.)

d. [a base unit] … wherein each of the primary coils is associated with a switching circuit in the base unit, which switching circuit is capable of being selectively switched to activate its associated primary coil so that, when an electrical current is passed through that activated primary coil, a magnetic field is generated by that activated primary coil in a direction substantially perpendicular to the surface of the base unit, and

Hsu in view of *Hui* discloses or suggests this limitation. (Ex. PA-DEC, ¶¶134-137.) As discussed above, *Hsu* discloses or suggests that the magnetic field generated by the activated primary coil 26 is "in a direction substantially perpendicular to the surface of the base unit." *See supra* Section VI.A.4.d. To the extent Patent Owner contends that *Hsu* does not disclose generation of a magnetic field in a direction substantially perpendicular to the surface of the base unit, *Hui* discloses such a limitation. (Ex. PA-DEC, ¶¶134-137.)

Like *Hsu*, *Yamauchi* and *Nedungadi*, *Hui* discloses a system for inductive charging. (Ex. PA-2, Abstract) *Hui* discloses an "inductive battery charging platform" in Figure 2, where the "lines of flux of this charging platform flow 'perpendicularly' in and out of the charging surfaces." (Ex. PA-2, ¶[0005].) "This perpendicular flow of flux is very beneficial because it allows the energy transfer over the surface on which the electronic equipment (to be charged) is placed." (*Id.* (emphasis added); Ex. PA-DEC, ¶135.)



(Ex. PA-2, FIG. 2.)

In one embodiment, *Hui* discloses charging a battery pack in a mobile phone by placing the mobile phone over the "planar charging platform of FIG. 2 (which has the magnetic flux lines flowing into and out of the charging surface perpendicularly)." (*Id.*, ¶[0050].) In particular, an "energy receiving element in the form of a simple planar device is introduced [into] this battery pack structure so that this battery pack can be charged inductively by the planar charging platform of FIG. 2." (*Id.*) The "energy receiving element" includes an "energy pick-up coil," which is "essentially a planar inductor." (*Id.*, ¶[0051]; Ex. PA-DEC, ¶136.)

A POSITA looking to maximize the power transfer from the primary coil 26 to the secondary coil 25 for charging a portable device in *Hsu* would have looked to *Hui*, which is similarly directed towards charging of portable electronic devices using a planar inductive platform. (.) Such a POSITA would have been motivated to configure the magnetic field generated by *Hsu*'s primary coils 26 to be perpendicular to the surface of the powering device 20 because "perpendicular flow of flux is <u>very beneficial</u> [as] it allows the energy transfer over the surface on which the electronic equipment (to be charged) is placed." (Ex. PA-2, ¶[0005] (emphasis added).) A POSITA would have had a reasonable expectation of success in making such a modification given that the modification would have been a straightforward combination of well-known technologies using known methods and techniques familiar to such a skilled person. (Ex. PA-DEC, ¶137.)

e. [a base unit] … wherein the base unit and/or switching circuit includes a capacitive or other component that decreases harmonics in that activated primary coil;

The combined *Hsu-Hui* system in further combination with *Yamauchi* discloses or suggests this limitation for the reasons set forth in Section VI.A.4.e. For the reasons set forth in Section VI.A.4.e, a POSITA would have been motivated, with a reasonable expectation of success, to modify the *Hsu-Hui* system to include "a capacitive or other component that decreases harmonics in that activated primary coil." (Ex. PA-DEC, ¶138.)

f. a power supply for passing a current through the primary coils when activated, to generate the magnetic field in a direction substantially perpendicular to the plane of the primary coils;

The combined *Hsu-Hui-Yamauchi* system discloses or suggests this limitation for the same reasons as reasons set forth in Section VI.A.4.f and further set forth in Section VI.B.5.d. (Ex. PA-DEC, ¶139.)

g. a communications interface that the base unit, and the mobile, electronic, or other device and/or battery, battery door, or skin for use with the device, use to communicate with one another during powering or charging, to

The combined *Hsu-Hui-Yamauchi* system discloses or suggests this limitation for the reasons set forth in Section VI.A.4.g. The combination of *Hsu* and *Yamauchi* with *Hui* does not impact the analysis set forth in Section VI.A.4.g. (Ex. PA-DEC, ¶140.)

h. [the communications interface …] to poll each of the primary coils, or receive a signal from a sensor associated therewith, to verify the presence of the mobile, electronic, or other device and/or battery, battery door, or skin for use with the device placed upon or close to the surface of the base unit,

The combined *Hsu-Hui-Yamauchi* system discloses or suggests this limitation for the reasons set forth in Section VI.A.4.g. The combination of *Hsu* and *Yamauchi* with *Hui* does not impact the analysis set forth in Section VI.A.4.g (Ex. PA-DEC, ¶141.)

i. [the communications interface …] to … select, based on the polling or sensing, from within the plurality of primary coils, and selectively switch, using their associated switching circuits to activate, only those one or more primary coils which are determined to be most closely aligned with a receiver coil at the mobile, electronic, or other device and/or battery, battery door, or skin for use with the device, and

The combined *Hsu-Hui-Yamauchi* system discloses or suggests this limitation for the reasons set forth in Section VI.A.4.g The combination of *Hsu* and *Yamauchi* with *Hui* does not impact the analysis set forth in Section VI.A.4.g (Ex. PA-DEC, ¶142.)

j. [the communications interface …] to … periodically thereafter exchange information to provide power transfer to the device and/or battery, including device and/or battery charging or power status or presence; and

The combined *Hsu-Hui-Yamauchi* system in further combination with *Nedungadi* discloses or suggests this limitation for the reasons set forth in Section VI.A.4.e For the reasons set forth in Section VI.A.4.e, a POSITA would have been motivated, with a reasonable expectation of success, to modify the *Hsu-Hui-Yamauchi* system to "**periodically thereafter exchange information to provide power transfer to the device and/or battery, including device and/or battery charging or power status or presence**," as disclosed in *Nedungadi*. (Ex. PA-DEC, ¶143.)

k. wherein the substantially perpendicular magnetic field is used to inductively generate a current in the receiver coil within or on the mobile, electronic, or other device and/or battery, battery door, or skin for use with the device placed upon the activated primary coil of the base unit, to charge or power the device and/or battery, and

The combined *Hsu-Hui-Yamauchi-Nedungadi* system discloses or suggests this limitation for the reasons set forth in Section VI.A.4.g (Ex. PA-DEC, ¶144.)

l. wherein the base unit, and receiver coil or circuitry associated therewith, use current modulation performed by the receiver coil or its circuitry, to provide an indication that is then used by the base unit to

The combined *Hsu-Hui-Yamauchi-Nedungadi* system discloses or suggests this limitation for the reasons set forth in Section VI.A.4.l. (Ex. PA-DEC, ¶145.)

m. [indication … used by the base unit to] … determine and regulate one or more of output voltage, current, or power provided by the base unit to the device and/or battery to be within the range of one or more of a value of a required voltage, current, or other power parameter for the mobile, electronic, or other device and/or battery, battery door, or skin for use with the device, and/or

The combined *Hsu-Hui-Yamauchi-Nedungadi* system discloses or suggests this limitation for the reasons set forth in Section VI.A.4.m. (Ex. PA-DEC, ¶146.)

n. [indication … used by the base unit to] … verify the continued presence of the receiver coil near the base unit.

The combined *Hsu-Hui-Yamauchi-Nedungadi* system discloses or suggests this limitation for the reasons set forth in Section VI.A.4.m (Ex. PA-DEC, ¶147.)

VII. Detailed Explanation of the Pertinence and Manner of Applying the Prior Art to the Claims

A. Bases for Proposed Rejections of the Claims

The following is a quotation of pre-AIA 35 U.S.C. § 102 that forms the basis for all of the identified prior art:

> A person shall be entitled to a patent unless . . .
>
> (e) the invention was described in — (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language . . . .

The following is a quotation of pre-AIA 35 U.S.C. § 103(a) that forms the basis of all of the following obviousness rejections:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negative by the manner in which the invention was made.

The question under 35 U.S.C. § 103 is whether the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention. In *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), the Court mandated that an obviousness analysis allow for "common sense" and "ordinary creativity," while at the same time not requiring "precise teachings directed to the specific subject matter of the challenged claim[s]." *KSR*, 550 U.S. at 418, 420-421. According to the Court, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 416. In particular, the Court emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art." *Id.* at 401. The Court also stated that "when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious." *Id.* at 417.

The Office has provided further guidance regarding the application of *KSR* to obviousness questions before the Office.

> If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique

> has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

MPEP § 2141(I) (quoting *KSR* at 417.)

The MPEP identifies many exemplary rationales from *KSR* that may support a conclusion of obviousness. Some examples that may apply to this reexamination include:

- Combining prior art elements according to known methods to yield predictable results;
- Simple substitution of one known element for another to obtain predictable results;
- Use of a known technique to improve similar devices in the same way;
- Applying a known technique to improve devices in the same way;
- Choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success ("obvious to try")

MPEP § 2141(III).

In addition, the Office has published *Post-KSR* Examination Guideline Updates. *See* Fed. Reg. Vol. 75, 53464 (the "Guideline Updates"). The Guideline Updates discuss developments after *KSR* and provide teaching points from recent Federal Circuit decisions on obviousness. Some examples are listed below:

> A claimed invention is likely to be obvious if it is a combination of known prior art elements that would reasonably have been expected to maintain their respective properties or functions after they have been combined.

Id. at 53646.

> A combination of known elements would have been prima facie obvious if an ordinary skilled artisan would have recognized an apparent reason to combine those elements and would have known how to do so.

Id. at 53648.

> Common sense may be used to support a legal conclusion of obviousness so long as it is explained with sufficient reasoning.

Id.

B. Proposed Rejections

Pursuant to 37 C.F.R. § 1.510(b)(2), Requester identifies claim 1 as the claim for which reexamination is requested. The proposed rejections below, in conjunction with the analysis in

Sections IV-VI above and the attached declaration of Dr. Baker (Ex. PA-DEC), provide a detailed explanation of the pertinence and manner of applying the prior art to claim 1.

1. Proposed Rejection #1

Claim 1 is obvious over *Hsu*, *Yamauchi*, and *Nedungadi* under 35 U.S.C. § 103, as shown by the discussion above in Section VI.A and the declaration of Dr. Baker provided in Exhibit PA-DEC.

2. Proposed Rejection #2

Claim 1 is obvious over *Hsu*, *Hui*, *Yamauchi*, and *Nedungadi* under 35 U.S.C. § 103, as shown by the discussion above in Section VI.A and the declaration of Dr. Baker provided in Exhibit PA-DEC.

VIII. Conclusion

For the reasons set forth above, the Requester has established at least one substantial new question of patentability with respect to claim 1 of the ’208 patent. The analysis provided in this Request and in the declaration of Dr. Baker (Ex. PA-DEC) demonstrates the invalidity of claim 1 in view of prior art that was not substantively considered by the Patent Office. Therefore, it is requested that this request for reexamination be granted and claim 1 be cancelled.

As identified in the attached Certificate of Service and in accordance with 37 C.F.R. §§ 1.33(c) and 1.510(b)(5), a copy of this Request has been served, in its entirety, to the address of the attorney of record.

Respectfully submitted,

PAUL HASTINGS LLP

Dated: June 28, 2024 By: /Naveen Modi/
Naveen Modi (Reg. No. 46,224)