

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INDUCTEV, INC.
Petitioner

v.

WITRICITY CORPORATION
Patent Owner

Inter Partes Review No.: IPR2023-01208
U.S. Patent No. 8,912,687

PATENT OWNER'S RESPONSE

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LIST OF EXHIBITS

Exhibit No.	Description
2001	Declaration of Mark Horenstein, Ph.D.
2002	Curriculum Vitae of Mark Horenstein, Ph.D.
2003	Transcript of Deposition of Dr. Mark Allen

I. INTRODUCTION

The Petition for *inter partes* review of U.S. Patent No. 8,912,687 (Exhibit 1001, “the ’687 patent”) fails to demonstrate that claims 1-18 (“challenged claims”) are unpatentable under 35 U.S.C. § 103 as being obvious over U.S. Patent Appl. Publ. No. 2009/0299918 (Exhibit 1007, “Cook”) in view of U.S. Patent Appl. Publ. No. 2010/0036773 (Exhibit 1005, “Bennett”) for at least two reasons.

First, Cook and Bennett do not disclose or suggest all of the features of the challenged claims. In particular, the cited references do not disclose or suggest “an authorization facility to confirm compatibility of the resonators and provide authorization for initiation of transfer of power.” At best, Cook and Bennett merely disclose determining whether the vehicle to be charged is associated with an account that is authorized to receive charging, such as a paid subscription service. Cook and Bennett fail to disclose that compatibility of the resonators is confirmed prior to initiating the power transfer.

Second, Petitioner has failed to provide a sufficient motivation for combining Cook and Bennett. Petitioner vaguely alleges that the “Cook/Bennett combination” teaches the “authorization facility” element, but does not specifically articulate whether Petitioner is relying on Cook or Bennett for allegedly disclosing this feature, or how or why a person of skill in the art (“POSA”) would modify Cook to include the function of confirming resonator compatibility that is allegedly

disclosed by Bennett, and also allegedly disclosed by Cook. Petitioner argues that the authorization process in Cook indicates that the vehicle has a compatible resonator, but argues that a POSA would have looked to Bennett “for implementation details” for Cook’s vehicle authorization. But these alleged “implementation details” are not recited in the challenged claims, nor are they relevant to Petitioner’s alleged combination. Indeed, Petitioner argues that certain features of Bennett, such as encrypting communications between the charging station and vehicle, would have motivated a POSA to combine Bennett with Cook. But features like encryption, and other unrelated features cited by Petitioner, have nothing to do with confirming resonator compatibility. Petitioner’s hodge-podge obviousness argument, and grasping for arbitrary benefits of Bennett to support a motivation to combine, smack of impermissible hindsight, and fail to meet the requirement of articulating a reason why a POSA would have combined Bennett with Cook in the way Petitioner proposes.

For at least these reasons, the Board should enter a final decision affirming the validity of the challenged claims.

II. STATEMENT OF MATERIAL FACTS IN DISPUTE

Petitioner did not submit a statement of material facts in its IPR petition. As such, no response is due pursuant to 37 C.F.R. §42.23(a), and no facts are admitted.

III. STATEMENT OF RELIEF REQUESTED

Patent Owner respectfully requests that the Board confirm patentability of the challenged claims.

IV. OVERVIEW OF THE '687 PATENT AND ITS PROSECUTION HISTORY

The '687 Patent relates generally to wireless energy transfer for vehicle applications, and more specifically to non-radiative or near-field wireless energy transfer. *See e.g.*, '687 Patent at Abstract. The '687 Patent was filed on November 3, 2011, and claims priority to a number of prior applications, the earliest of which was filed September 27, 2008. The effective filing date of the challenged claims is not at issue, and therefore Patent Owner omits further discussion of the chain of priority. The '687 Patent application was allowed without rejection on June 26, 2014.

The '687 Patent specification notes that radiative, or far-field, wireless power transfer uses low-directionality antennas, such that power is radiated in all directions, and only a small portion actually overlaps with a receiver. *See id.* at 2:55-66. This approach is sufficient for applications such as cellular communications, but is not practical for transferring useful amounts of electrical energy to, for example, power or charge electrical devices. *Id.* at 2:66-3:2. Non-radiative, or near-field (also known as induction), wireless energy transfer uses an

oscillating current passing through a primary coil to generate an oscillating magnetic near-field that induces currents in a near-by receiving or secondary coil. *Id.* at 3:12-17. However, such induction schemes may only transfer power over very short distances with very small offset tolerances between the primary power supply unit and the secondary receiver unit. *Id.* at 3:18-22.

The '687 Patent discloses the use of coupled electro-magnetic resonators with long-lived oscillatory resonant modes to transfer power from a power supply to a power drain. *Id.* at 3:3:39-43. A resonator is typically an inductor/capacitor circuit that stores energy in a magnetic field and an electric field, and oscillates between the two. *See id.* at 16:66-17:12. The energy stored in the resonator may decay based on intrinsic losses, which are represented by an intrinsic loss rate, Γ . *Id.* at 17:13-25. The Quality Factor, or Q-factor, or Q, of the resonator is inversely proportional to the intrinsic losses. *Id.* at 17:26-29. The '687 Patent claims recite a vehicle wireless power system that includes first and second resonators defined in terms of their Q-factors and intrinsic loss rates Γ to provide power from the first resonator the second resonator. Independent claim 13 is representative of all of the challenged independent claims, and is reproduced below:

13. A vehicle wireless power system, comprising:
 - a power supply, the power supply configured to supply power at a rate sufficient to charge the battery of a vehicle that is driven at least in part by electrical power;

a first electromagnetic resonator coupled to the power supply and having a mode with a resonant frequency ω_1 , an intrinsic loss rate Γ_1 , and a first Q-factor $Q_1 = \omega_1/2\Gamma_1$, the first electromagnetic resonator housed in a housing configured to be disposed in proximity to the vehicle;

a load configured to power the drive system of the vehicle using electrical power;

a second electromagnetic resonator adapted to be housed upon the vehicle and configured to be coupled to the load, the second electromagnetic resonator having a mode with a resonant frequency ω_2 , an intrinsic loss rate Γ_2 , and a second Q-factor $Q_2 = \omega_2/2\Gamma_2$,

wherein the second electromagnetic resonator is configured to be wirelessly coupled to the first electromagnetic resonator to provide resonant, non-radiative wireless power to the second electromagnetic resonator from the first electromagnetic resonator; and

an authorization facility to confirm compatibility of the resonators and provide authorization for initiation of transfer of power.

In addition to the claim elements relating to the first and second electromagnetic resonators, claim 13 (as well as independent claims 1 and 7) recite an “authorization facility to confirm compatibility of the resonators and provide authorization for initiation of transfer of power.” The ’687 Patent specification explains that the source and the device to be charged include “authentication capability” to “ensure that only compatible sources and devices are able to transmit and receive power.” *Id.* at 102:14-17. The specification also explains that the authentication may also be used to “ensure that only authentic devices that are of a specific manufacturer and not clones of devices and sources from other

manufacturers, or only devices that are part of a specific subscription or plan are able to receive power from a source.” *Id.* at 102:17-21. In other words, the ’687 Patent separately describes the authorization facility functions of confirming resonator compatibility and providing authorization for initiating power transfer.

V. CLAIM CONSTRUCTION

Petitioner and its declarant, Dr. Mark Allen, contend that the elements of the challenged claims should be construed according to their plain meaning, but fail to provide the alleged “plain meaning” for any terms of the Challenged Claims. (*See*, Pet. at 7; Ex. 1003 at ¶ 82). Patent Owner respectfully submits that the term “to confirm compatibility of the resonators and provide authorization for initiation of transfer of power”¹ should be construed to determine whether the challenged claims are valid over the cited prior art.

A. Claim Terms Are To Be Given Ordinary Meaning In Light Of The Specification And Prosecution History

In an IPR proceeding, claim terms are given their ordinary and customary meaning as understood by one of ordinary skill in the art in view of the specification and the prosecution history of the patent. *See* 37 C.F.R. § 42.100(b);

¹ Patent Owner’s claim construction argument regarding the claimed “authorization facility” focuses on representative claim 13, but is equally applicable to independent claims 1 and 7, which recite an identical claim element.

Netflix Inc. v. Divx, LLC, IPR2020-00646, Paper 66 at 11 (Apr. 17, 2024) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (*en banc*)).

B. The Term “Confirm Compatibility Of The Resonators And Provide Authorization For Initiation Of Transfer Of Power” Should Be Construed To Mean “Verify That Parameters Of The Resonators Will Permit Power Transfer And Provide Authorization Prior To Initiating The Transfer Of Power”

Although Petitioner does not articulate an express construction for the term “confirm compatibility of the resonators and provide authorization for initiation of transfer of power,” Petitioner implicitly attempts to lump together (1) confirming compatibility and (2) authorizing power transfer. However, the plain language of the claim and the ’687 patent specification indicate that these are two separate functions performed by the claimed authorization facility. For the reasons explained below, and supported by the declaration of Patent Owner’s expert, Dr. Horenstein, (Ex. 2001, “Horenstein Decl.”), Patent Owner submits that “confirm compatibility of the resonators and provide authorization for initiation of transfer of power” should be construed to mean “verify that parameters of the resonators will power transfer and provide authorization prior to initiating the transfer of power.”

Starting with the claim language itself, the claim term recites “an authorization facility to confirm compatibility of the resonators *and* provide authorization for initiation of transfer of power.” Ex. 1001 at claim 13. By reciting

two functions—confirming resonator compatibility and providing authorization—and joining them using the conjunctive term ‘and,’ the claim language itself indicates that confirming compatibility of the resonators must be different than providing authorization. *See e.g., Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1382 (Fed. Cir. 2008) (“different claim terms are presumed to have different meanings.”); *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1333 n. 3 (Fed. Cir. 2006) (“[T]he use of two terms in a claim requires that they connote different meanings....”).

The specification likewise describes the confirmation of resonator compatibility and authorizing power transfer as separate functions. For example, the specification explains that the source and device include authentication capability, which “may be used to ensure that only compatible sources and devices are able to transmit and receive power.” Ex. 1001 at 102:14-17. The specification explains that the authentication may also include ensuring that only authentic devices are being used, and that “only devices that are part of a specific subscription or plan are able to receive power from a source.” *Id.* at 102:17-21. Therefore, to the extent Petitioner suggests that merely verifying that the vehicle to be charged is authorized to receive charging (*e.g.*, because it is linked with a subscription account) also confirms resonator compatibility, such an argument

contradicts how a POSA would understand the '687 patent specification, which describes these two functions separately. *See* Horenstein Decl. ¶¶ 25-30.

Moreover, as Dr. Horenstein explains in his declaration, a number of parameters of the resonators may effect whether the resonators are compatible, or able to perform power transfer. *See* Horenstein Decl. ¶¶ 30-41. For example, one parameter is the resonant frequencies of the resonators. Matching the resonant frequencies of the resonators may optimize energy transfer, however the '687 Patent notes that the resonant frequencies need not be exactly matches in order to have sufficient energy transfer. *See* '687 Patent at 23:6-11. In addition, the respective Q-factors of the resonators impacts whether the resonators are compatible. *See id.* at 23:6-22; Horenstein Decl. at ¶¶ 31-33). Moreover, at his deposition, Dr. Allen testified that resonator compatibility is based on a number of parameters in addition to resonant frequency and Q-factor. For example, Dr. Allen indicated that the physical size of the resonators, the lateral offset, and energy delivery rate affect resonator compatibility. Ex. 2003 at 54:9-55:1. Therefore, Dr. Allen's testimony is consistent with Patent Owner's construction that confirming resonator compatibility would be understood by a POSA to mean "verifying that parameters of the resonators will permit power transfer."

C. Person of Ordinary Skill in the Art

Patent Owner does not disagree with Petitioner's definition of the level of ordinary skill in the art, which is a bachelor's degree in electrical engineering (or equivalent) and at least two years of industry or equivalent research experience in the field of wireless energy transfer. Patent Owner does not believe that resolution of the Petition depends on the precise definition of the level of ordinary skill.

VI. PETITIONER HAS FAILED TO MEET ITS BURDEN OF SHOWING THE CHALLENGED CLAIMS ARE OBVIOUS

Petitioner's obviousness analysis fails for multiple reasons. First, Cook and Bennett, whether considered alone or in combination, do not disclose every feature recited in the claims of the '687 Patent. Specifically, the cited references do not disclose or suggest "an authorization facility to confirm compatibility of the resonators and provide authorization for initiation of transfer of power." Cook and Bennett both disclose determining whether the vehicle to be charged has an account that permits charging, such as an account with a paid subscription, but fail to teach or suggest confirming compatibility of the resonators for initiating of transfer of power.

Second, Petitioner has failed to identify an adequate motivation to combine Cook and Bennett. Petitioner first argues that Cook fails to provide "details" of its authorization system, and would have looked to Bennett for those "details." But there is no indication that the teaching of Cook is in any

way deficient, and Petitioner’s declarant, Dr. Allen, acknowledged that these alleged “details” are not needed to implement the authorization system of Cook. Petitioner then points to a series of unrelated features from Bennett and their associated benefits as the justification for combining the separate alleged feature of confirming resonator compatibility. But specific details regarding encryption, for example, have no bearing on whether a POSA would have combined confirming resonator compatibility from Bennett with Cook.

Thus, for at least these reasons, which are explained in detail below, Cook in view of Bennett does not render the challenged claims unpatentable for obviousness.

A. Scope And Content Of The Prior Art

**1. Cook (U.S. Patent Appl. Publ. No. 2009/0299918)
(“Cook”)**

Cook is directed to a system for wirelessly recharging the battery of an automobile. *See* Cook at Abstract. Cook notes that vehicle charging stations were known, but that such charging stations were mostly associated with public areas such as airports and public parking spaces, and provided as a public service to encourage the use of electric vehicles. *See id.* at ¶ [0007]. Cook notes, however, that such public charging stations “are not a long-term practical solution.” *Id.*

Cook discloses a charging system that includes a plurality of chargers 150, which may be located in various locations, such as within the ground near a parking space. *Id.* at ¶ [0011]. The charger 150 includes a coil 152, a capacitor 154, and a charging circuit 156 that “produces a signal of appropriate frequency for magnetic transmission.” *Id.* at ¶ [0013]. The automobile in Cook includes a magnetic resonant antenna 110, which includes an inductive loop 111 in parallel with a capacitor 112. *Id.* at ¶ [0011]. When the magnetic resonant antenna 110 comes into range of an appropriate transmitter, the magnetic resonant antenna 110 “receives a magnetic signal” from the transmitter, which is converted into output current by a receiver circuit 115. *Id.* The output current is used for charging a battery 102 of the automobile.

Cook also discloses that the charger 150 includes an “information detecting part,” which may be a “send and receive portion 160” that wirelessly detects a unique identifier indicative of the vehicle. *Id.* at [0014]. Cook describes one embodiment in which the vehicle includes an RFID device 121 that “uniquely identifies the vehicle,” when the RFID device 121 is detected by the send and receive device 160. *Id.* Cook discloses an additional embodiment in which a camera or scanner can be used to detect a written item on the automobile, such as a license plate or serial number. *Id.*

Figure 2 of Cook describes the vehicle charging operation. At step 200, the identification of the vehicle is detected. *Id.* at Fig. 2, ¶ [0015]. At step 205, a determination is made as to whether the “detected identification has an account associated therewith,” which may be performed by a controller 180. *Id.* “If the controller verifies the ID as being one that is associated with an account at 205, charging is enabled.” *Id.* at ¶ [0015]. Cook explains that enabling charging “causes power to be delivered from the AC Main, through a meter 175, to the charging device 150.” *Id.* The meter 175 keeps track of how much power is delivered, and the controller 180 is able to bill the account associated with the vehicle for the amount of power delivered. *See id.* At no point does Cook confirm the compatibility of the vehicle resonator and the charger resonator. Rather, the vehicle battery is “automatically charged whenever the antenna 112 comes into range of a wireless charging circuit of appropriate type, e.g., the right frequency.” *Id.* at ¶ [0011].

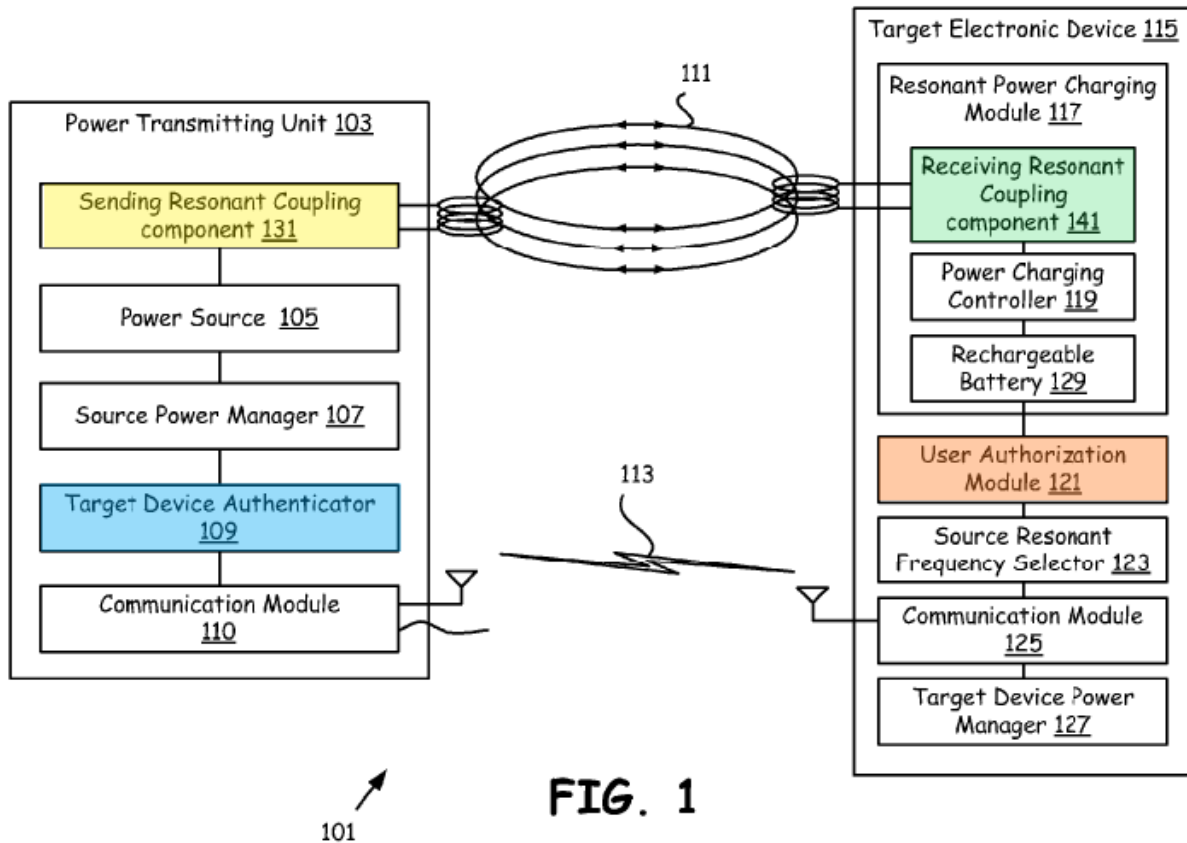
Cook further describes an additional embodiment that encrypts the ID of the vehicle to guard against cloned IDs. *Id.* at [0017]. The vehicle may encrypt the ID and the time at which the encryption occurred using a private encryption key. *Id.* The controller uses a decryption key to check whether the ID can be decrypted, and if so, whether the encrypted time is correct, to avoid reuse of a previously-sent message. *Id.* The encryption method of Cook is

used to further confirm the identity of the vehicle to be charged, but again is silent with respect to confirming compatibility of the resonators.

**2. Bennett (U.S. Patent Appl. Publ. No. 2010/0036773)
(“Bennett”)**

Bennett is directed to wireless charging of a battery powered device, and more particularly to near field wireless resonance power delivery to a target device. *See* Bennett at ¶ [0003]. Bennett explains that many mobile devices such as laptop computers and cell phones include a rechargeable battery that needs to be plugged into a power socket in order to recharge. *Id.* at [0005]. However, power sockets may be unavailable, power cords may become misplaced, and carrying additional batteries is inconvenient. *Id.* at [0005]-[0006]. Therefore, Bennett proposes a wireless charging system that uses magnetic resonance to transfer power from a power transmitting unit to a target device. *Id.* at [0023]-[0024].

In particular, Fig. 1 of Bennett (below) shows a power transmitting unit 103 and a target electronic device 115. The power transmitting unit 103 includes a sending resonant coupling component 131 (shown in yellow), and the target electronic device 115 includes a receiving resonant coupling component 141 (shown in green). *See id.* at Fig. 1, ¶ [0029].



Ex. 1005 (Bennett) – Fig. 1 (annotated)

The sending resonant coupling component 131 generates magnetic waves 111, such as non-radiated magnetic field waves at specified target resonant frequency, and the receiving resonant coupling component 141 receives the power transmission provided by the sending resonant coupling component 131, which is used to charge the rechargeable battery 129. *See id.* at ¶¶ [0029]-[0030].

The power transmitting unit 103 includes a target device authenticator 109 (shown above in blue), and the target electronic device 115 includes a user authorization module 121 (shown above in orange), which together facilitate the authentication of the target electronic device 115 for resonant power delivery. *Id.* at ¶ [0037]. The user authorization module 121 exchanges authentication information with the power transmitting unit 103, which compares the authentication information with subscriber information stored in a database that is accessed by the target device authenticator 109. *See id.* “If the match is determined, then resonant power delivery is initiated.” *Id.* Bennett explains that this “power control signal exchange operation” is required for authentication of the target electronic device 115 before power delivery. *Id.* at ¶ [0039]. The power control communication is performed by a communication module 110 of the power transmitting unit 103 and a communication module 125 of the target electronic device 115 via RF communication channel 113. *Id.* at ¶¶ [0039], [0045].

After authentication is completed, the source resonant frequency selector 123 may provide a tuning mechanism to tune the receiving resonant coupling component 141 to the same resonant frequency as the sending resonant coupling component 131. *See id.* at ¶¶ [0037]-[0038]. The target electronic device 115 monitors the charge level of the rechargeable battery

129, and communicates a request to terminate power delivery when the charge level exceeds a charge limit. *See id.* at ¶ [0047].

Figure 5 of Bennett shows the target device authenticator 109 of Fig. 1, and includes, *inter alia*, a target device authentication database 507.

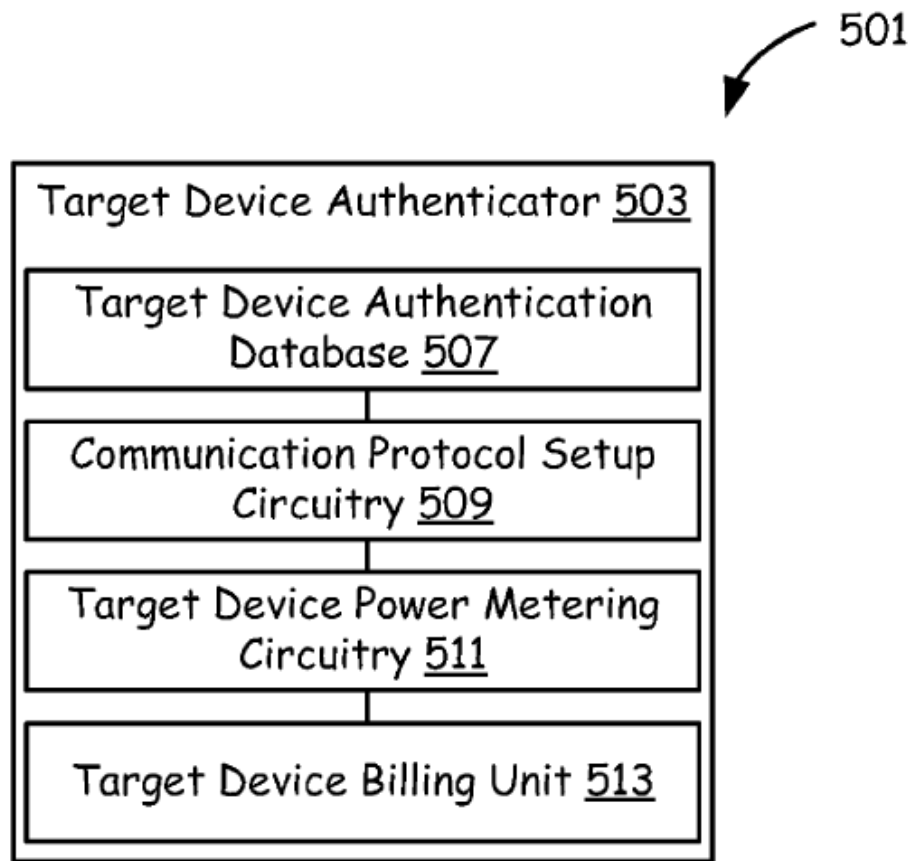


FIG. 5

Bennett – Fig. 5

Bennett explains that the target device identification database 507 includes information of all subscribers who have subscribed with the power

source. *Id.* at ¶ [0066]. The database information contains pre-assigned identification number of the target device, relevant personal details of the user, and a preferred magnetic resonant frequency for the target device. *Id.* When the target device communicates with the power source to request a power transfer, the target device provides its identity information to the power source, which “cross-verifies with its target device identification database 507 contents.” *Id.* “If the communicated information matches the database 507 contents then the resonant power delivery is initiated.” *Id.*

As in Cook, the Bennett authentication process merely compares identity information provided by the target device to information stored in a database, and initiates power transfer if the information matches. Bennett, like Cook, is silent with respect to confirming compatibility between the sending resonant coupling component 131 and the receiving resonant coupling component 141.

B. Independent Claims 1, 7, and 13 Are Patentable Over Cook In View of Bennett

1. Neither Cook Nor Bennett Disclose An Authorization Facility To Confirm Compatibility Of The Resonators For Initiating Power Transfer

The Petition is ambiguous regarding whether Petitioner is relying on Cook or Bennett for allegedly disclosing the claimed “an authorization facility to confirm compatibility of the resonators and provide authorization for initiation of transfer

of power.” Petitioner initially points to Cook (Pet. at 47-48) for allegedly disclosing this feature, but then identifies portions of Bennett that allegedly disclose this feature, noting that “a POSA could have and would have looked to Bennett for implementation details for Cook’s vehicle authorization.” (Pet. at 48). In fact, at his deposition, Petitioner’s declarant, Dr. Allen, could not say whether he was relying on Cook or Bennett for allegedly disclosing the claimed authorization facility. *See* Ex. 2003 (Allen Dep. Tr. at 26:17-27:25). Petitioner’s failure to specifically articulate how the cited references allegedly render the challenged claims obvious, by itself, fails to carry Petitioner’s burden. *See Sisvel Int’l S.A. v. Sierra Wireless, Inc.*, 82 F.4th 1355, 1364 (Fed. Cir. 2023) (finding failure to show obviousness where Petition “does not explain what reference is the primary versus secondary reference, what elements are missing from the primary reference, what elements should be added from the secondary reference to reach the claimed invention, or why those particular elements would be obvious to add.” Regardless of Petitioner’s ambiguous allegations, neither Cook nor Bennett disclose “an authorization facility to confirm compatibility of the resonators . . . for initiation of transfer of power.”

a. Cook Fails To Disclose Confirming Compatibility Of The Resonators

Petitioner first argues that Cook discloses an information detecting part to “detect a unique identifier indicative of the vehicle 100” and that power is “allowed to be dispensed if an encrypted value properly agrees with the proper encryption code and proper token time.” (Pet. at 47, citing Cook at ¶¶ [0014], [0018]). But the cited portions of Cook fail to disclose an authorization facility that confirms compatibility of the first and second resonators for initiation of transfer of power. Rather, Cook merely discloses the use of a unique identifier (*e.g.*, via an RFID device) to confirm that an account is associated with the identifier before allowing charging to begin. *See* Cook [0015]. Cook describes that the unique identifier may be an RFID device, or may be a written item on the automobile that can be detected by a camera, such as a license plate, serial number, or barcode. *See Id.* Nowhere does Cook explain that the unique identifier contains any information about the resonator located on the vehicle that would allow resonator compatibility to be confirmed.

At his deposition, Dr. Allen admitted that the unique ID in Cook does not contain information about the resonator on the vehicle, such as the resonant frequency, but instead “could imagine” that a person of ordinary skill “could” include the resonant frequency. Ex. 2003 at 48:9-49:3. But to invalidate a claim, each claim element must be expressly or inherently disclosed in the prior art must disclose— “not merely probably or possibly present.” *Therasense, Inc. v. Becton,*

Dickinson & Co., 593 F.3d 1325, 1332 (Fed. Cir. 2010) (quoting *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1295 (Fed. Cir. 2002)). That the unique ID of Cook “could” contain information regarding the resonant frequency of the vehicle resonator is inadequate.

Petitioner next selectively quotes from Cook to argue that transmitting an encrypted message indicating that “charging is enabled” for the vehicle corresponds to “indicating that it has a compatible resonator.” Pet. at 47 (quoting Cook ¶ [0015]). This portion of Cook does not even mention encryption, or that there is any confirmation regarding resonator compatibility. Cook actually discloses that “[i]f the controller verifies the ID as being one that is associated with an account at 205, **charging is enabled.**” Cook ¶ [0015] (emphasis added). This portion of Cook merely discloses checking if the vehicle ID is associated with an account that can be billed for the amount of power transferred, and is silent with respect to resonator compatibility. *See Id.*

The encryption referenced by Petitioner is described in a different embodiment of Cook, which merely discloses that the unique ID can be encrypted. *See id.* at ¶ [0017]. But this embodiment merely explains that the unique ID and the time it is transmitted are encrypted to prevent cloned IDs or IDs that are re-used. *See Id.* Just because the ID may be encrypted does not disclose or suggest that the compatibility of the resonators is confirmed. *See Horenstein Decl.* ¶¶ 56-

57. Therefore, Cook fails to disclose the claimed authorization facility to confirm compatibility of the resonators for initiating power transfer.

b. Bennett Also Fails To Disclose Confirming Compatibility Of The Resonators

Apparently acknowledging that Cook does not disclose confirming compatibility of the resonators, Petitioner argues that Cook “left the details of those vehicle-side components to a POSA,” who “could have and would have looked to Bennett for implementation details for Cook’s vehicle authorization.” Pet at 47-48. But none of the portions of Bennett cited by Petitioner disclose confirming compatibility of the resonators.

Bennett discloses a “target device authenticator 109” of a power transmitting unit, and a “user authorization module 121” of the target electronic device. Bennett [0029], [0030], [0041]. Bennett explains that the target device authenticator 109 and the user authorization module 121 verify the identity of the target device, and confirm whether the user has subscribed to the power-charging service. *Id.* at [0037], [0052]. But like the deficient teachings of Cook, these portions of Bennett merely addresses whether the user has an account that can be billed for use of the charging station, and says nothing about compatibility of the resonators. *See* Horenstein Decl. ¶¶ 44-45.

Petitioner cites two portions of Bennett for allegedly disclosing confirming resonator compatibility, both of which are silent regarding this feature. First, Petitioner relies on Bennett's teaching that a "power control signal exchange operation is required for the authentication of the target electronic device 115 before a successful resonant power delivery." Pet. at 49 (quoting Bennett [0039]). But this statement is also silent with respect to resonator compatibility. Paragraph [0039] of Bennett describes monitoring the battery level of the rechargeable battery 129, and initiating a "resonant power charge operation" when the battery level is low. Thus, while one skilled in the art would understand that the "power control signal exchange operation" relates to the automatic triggering of the resonant power charge operation based on the battery level of the rechargeable battery, it says nothing about the compatibility of the resonators. *See* Horenstein Decl. ¶ 59.

Petitioner next cites to Bennett's teaching of "automatically adjust[ing]" the power transmission frequency "to achieve the optimum reception from an antenna/resonant coupling mechanism." Pet. at 49 (quoting Bennett [0038]). However, this portion of Bennett is describing a "source resonant frequency selector 123," not the target device authenticator 109 or the user authorization module 121. Specifically, the source resonant frequency selector "provides a tuning mechanism in order to achieve the required resonant coupling effect," but does not "confirm compatibility of the resonators . . . for initiation of transfer of

power,” as recited in the challenged claims. Bennett at ¶ [0038]. Indeed, the immediately preceding paragraph of Bennett explains that the power transmitting unit (i.e., the charger) authenticates the target device by comparing information received from the target device with subscriber information contained in a database. *See* Bennett at ¶ [0037]. If a match is determined, “then resonant power delivery is initiated.” *Id.* Importantly, Bennett explains that “[t]he authentication is followed by optional frequency selection.” *Id.* That is, the source resonant frequency selector 123 relied on by Petitioner is an optional step that occurs after authentication has occurred. Therefore, this portion of Bennett also fails to disclose or suggest “an authorization facility to confirm compatibility of the resonators and provide authorization for initiation of transfer of power,” as recited in the challenged claims. *See* Horenstein Decl. ¶¶ 60-63.

2. Petitioner Has Failed To Show Why A POSA Would Have Combined Bennett With Cook

Even if Bennett were determined to disclose confirming resonator compatibility to initiate power transfer (which it does not), Petitioner has not articulated a coherent reason why a POSA would have combined Bennett with Cook in the manner that Petitioner proposes. Rather, Petitioner trots out a number of varying motivations, none of which are sufficient to meet Petitioner’s burden.

First, as mentioned above, Petitioner contends that Cook “left the details” about vehicle authentication to a POSA, who allegedly would have looked to Bennett for such details. Pet at 47-48. But at his deposition, Dr. Allen agreed that a POSA would be able to implement an authorization scheme based on Cook, and would not need the details of Bennett. *See* Ex. 2003 at 49:17-50:3; *see also* Horenstein Decl. ¶ 69.

Next, Petitioner cites various alleged “details” and purported benefits that would have allegedly motivated a POSA to combine Cook and Bennett. For example, Petitioner argues that a POSA implementing Cook “would have turned to Bennett for details on how to tune Cook’s wireless charging system to different frequencies for compatibility with different vehicles.” Pet. at 21. However, tuning to a frequency is not equivalent to confirming resonator compatibility to initiate power transfer. For example, the ’687 Patent specification distinguishes between an authorization facility that confirms compatibility of the resonators and adjusting the resonant frequency to optimize power transfer. For example, the ’687 Patent specification explains that “[e]nergy exchange between two electromagnetic resonators can be optimized when the resonators are tuned to substantially the same frequency.” Col. 4:18-21. The ’687 Patent specification also explains that “even though certain frequency and Q matching conditions may optimize the system efficiency of energy transfer, these conditions may not need to be exactly met in

order to have efficient enough energy transfer for a useful energy exchange.” Col. 23: 7-11. That is, unlike the claimed authorization facility that confirms resonator compatibility for initiating power transfer, Petitioner’s reliance on frequency tuning relates to different process of optimizing energy transfer after charging has begun. *See Horenstein Decl.* ¶¶ 60-63.

Petitioner next argues that although Cook discloses using encrypted signals to transmit the vehicle ID, Cook does not “detail the communication link that would be used to transmit those encrypted signals in a magnetic resonant charging system. Pet. at 22. According to Petitioner, a POSA would have turned to Bennett to use in-band or out-of-band channels “as well as additional compatibility, safety, and security checks that would be useful in a resonant wireless power transfer system like Cook’s.” *Id.* But there is no indication in Cook that the use of in-band versus out-of-band channels was an issue that would have prompted a POSA to combine Bennett with Cook. Moreover, whether signals are transmitted using in-band versus out-of-band channels is entirely unrelated to confirming resonator compatibility, which is the feature Petitioner alleges is disclosed by Bennett and would have been obvious to combine with Cook. *See Horenstein Decl.* ¶ 71. Petitioner cannot meet its burden of proving obviousness by identifying random features of Bennett that neither explicitly or inherently include the feature Petitioner actually proposes combining.

Petitioner’s remaining alleged motivations fare no better. Petitioner argues that Cook and Bennett are analogous art, both to each other and to the ’687 Patent. Pet. at 22. But whether Cook and Bennett are analogous art to the ’687 Patent is merely the threshold to determine if Cook and Bennett can be relied upon under § 103 in the first place. *See e.g., Sisvel Int’l*, 82 F.4th at 1364. Petitioner must separately explain why one skilled in the art would have combined Cook and Bennett in the manner proposed. *See id.* (merely asserting that references are analogous art “is an insufficient articulation for motivation to combine”).

Petitioner next argues that a POSA would have considered Cook and Bennett in combination because “they describe common objectives and methods of monetizing a wireless power transfer system.” Pet. at 23. More specifically, Petitioner notes that both Cook and Bennett disclose systems of initiating power transfer only to authorized users, who can be billed for the amount of power delivered. *Id.* But this actually confirms that there is no reason to combine Cook and Bennett—because Cook already discloses a system that provides power only to authorized users who can be billed, there is no reason to combine Cook with Bennett, who also restricts power transfer to authorized users. *See e.g., S.-Tek Sys., LLC v. Engineered Corrosion Sols., LLC*, 748 Fed. Appx. 1003, 1007 (Fed. Cir. 2018) (no motivation to combine where primary reference already solves problem allegedly providing motivation).

Petitioner next contends that Bennett provides additional details regarding the use of encryption to exchange information between the vehicle and charger. Pet. at 26-27. More specifically, Petitioner alleges that Cook discloses the use of a real-time token type system, but does not explain how the tokens are generated and subsequently decrypted. *Id.* Therefore, according to Petitioner, a POSA would have looked to the “token generator” of Bennett to explain how to generate the real-time token in Cook. *Id.*

However, there is no indication that a POSA would need the “details” of Bennett in this regard. On the contrary, Cook explains that the vehicle has a real time clock, and that real-time token system encrypts the time using the vehicle’s private encryption key. Cook at ¶ [0017]. The controller decrypts the ID and the time, to make sure the ID is not being re-used from a previous time. *Id.* The token generator of Bennett uses a “pseudorandom number generator operable to generate the token.” Pet. at 27 (quoting Bennet ¶ [0046]). Cook explains how its real-time token system functions, such that there is no need to consult the “details” of Bennett. Moreover, Petitioner does not explain how the “pseudorandom number generator” of Bennett would even be used in Cook, which encrypts the time from the vehicle. Petitioner’s alleged “motivation” to seek “details” from Bennett to supplement Cook is nothing more than an attempt to obfuscate Petitioner’s use of impermissible hindsight.

Lastly, Petitioner argues that a POSA would have been motivated to combine Cook with Bennett in order to prevent the battery in Cook from being overcharged. Pet. at 27-28. But again, the alleged benefit of preventing overcharging by monitoring the charge level of the vehicle battery is unrelated to confirming resonator compatibility, which is the feature from Bennett that Petitioner purports to combine with Cook. Identifying various unrelated features of Bennett that may provide some ancillary benefit does not explain why a POSA would have combined the feature of confirming resonator compatibility with Cook. Indeed, Petitioner's scattershot approach of identifying arbitrary benefits of Bennett, and inability to articulate a specific rationale for making the specific combination Petitioner proposes, confirms Petitioner's use of impermissible hindsight.

Patent Owner's arguments above relate to independent claim 13, but apply equally to independent claims 1 and 7, which recite features similar to claim 13.

C. Dependent Claims 2-6, 8-12, and 14-18 Are Patentable

Because dependent claims 2-6 depend from claim 1, dependent claims 8-12 depend from claim 7, and dependent claims 14-18 depend from claim 13, Patent Owner respectfully submits that the Petition has failed to establish that the challenged dependent claims are unpatentable at least by virtue of their respective dependencies.

VII. CONCLUSION

For the foregoing reasons, Petitioner has failed to show that the challenged claims are unpatentable in view of the cited prior art.

Dated: May 24, 2024

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE UNDER 37 C.F.R. § 42.24(d)

Pursuant to 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the foregoing paper complies with the type-volume limits of C.F.R. § 42.24(b)(2). The foregoing paper contains 6,221 words, as calculated by Microsoft Word, excluding the parts of the paper exempted by 37 C.F.R. § 42.24(a)(1).

Dated: May 24, 2024

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CERTIFICATE OF SERVICE

It is certified that a copy of the *Patent Owner's Response* has been served on Petitioner as provided in 37 C.F.R. § 42.6(e) via electronic mail transmission addressed to the persons at the address of record as follows:

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