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Paper 35
Entered: December 20, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INDUCTEV INC.,[1]
Petitioner,

v.

WITRICITY CORPORATION,
Patent Owner.

IPR2021-01166
Patent 8,304,935 B2

Before JAMESON LEE, MIRIAM L. QUINN, and SCOTT RAEVSKY, *Administrative Patent Judges*.

QUINN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)
Denying Patent Owner's Motion to Exclude
37 C.F.R. § 42.64

[1] On November 30, 2022, Petitioner filed an updated mandatory notice notifying the Board of the name change of Petitioner from "Momentum Dynamics Corporation" to the captioned "InductEV Inc." Paper 33.

I. INTRODUCTION

Momentum Dynamics Corporation ("Petitioner") filed a Petition (Paper 2, "Petition" or "Pet.") requesting an *inter partes* review of claims 1–23 ("the challenged claims") of U.S. Patent No. 8,304,935 B2 (Ex. 1001, "the '935 patent"). Patent Owner challenged the Petition by filing a Preliminary Patent Owner Response. Paper 6 ("Prelim. Resp."). After considering the merits of the Petition and Patent Owner's arguments against institution, we instituted *inter partes* review. Paper 7 ("Decision on Institution," "Dec. on Inst.").

During the trial phase, Patent Owner filed a Response (Paper 11, "PO Resp."), Petitioner filed a Reply (Paper 20, "Reply"), and Patent Owner filed a Sur-reply (Paper 27, "Sur-reply"). Further, Patent Owner filed a Motion to Exclude (Paper 28, "Mot."), Petitioner filed an Opposition to the Motion to Exclude (Paper 30, "Opp. Mot."), and Patent Owner filed a Reply in support of its Motion to Exclude (Paper 32, "Reply Mot."). No oral hearing was held as the parties jointly requested to withdraw their requests for oral argument in this proceeding. *See* Paper 31; Ex. 3001.

We have jurisdiction under 35 U.S.C. § 6. We issue this Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons explained below, we conclude that Petitioner has shown by a preponderance of the evidence that claims 1–23 of the '935 patent are unpatentable. *See* 35 U.S.C. § 316(e) (2018).

II. BACKGROUND

A. Real Parties in Interest

Petitioner states that "[t]he real party-in-interest is InductEV Inc. ('Petitioner')." Paper 33. Patent Owner identifies itself, WiTricity Corporation, as the real party in interest. Paper 3, 1.

B. The '935 Patent

The '935 patent, titled "Wireless Energy Transfer Using Field Shaping to Reduce Loss," relates to "wireless energy transfer, also referred to as wireless power transmission." Ex. 1101, code (54), 1:32–34. By way of background, the '935 patent describes known wireless transfers of energy, such as wireless information transfer, as inefficient for transferring useful amounts of electrical energy to power or charge electrical devices. *Id.* at 1:36–50. Using directional antennas to solve for this requires, however, "uninterruptible line-of-sight and potentially complicated tracking and steering mechanisms in the case of mobile transmitters and/or receivers." *Id.* at 1:51–57.

Another known method of transferring power wirelessly is using near-field or non-radiative schemes, in which oscillating current passing through a primary coil generates an oscillating magnetic near-field that induces a current in a nearby secondary coil. *Id.* at 1:60–61. These schemes have been known to transmit modest to large amounts of power, but over very short distances and with very small offset tolerances between the primary power supply unit and the secondary receiving unit. *Id.* at 1:66–2:3.

The '953 patent, therefore, seeks to address these shortcomings, resulting in wireless power transfer over greater distances and alignment offsets than previously realized and without the known limitations of using

antennas as discussed above. *Id.* at 2:6–14. The patent describes using a near-field wireless energy transfer scheme using coupled electromagnetic resonators with energy stored by the magnetic field and electric field primarily confined to the region surrounding the resonators. *Id.* at 2:17–35. Efficient wireless energy transfer is accomplished through the omni-directional, but stationary (non-lossy) near-fields, resulting in distances between the power source-side resonator and the charging device resonator in the order of centimeters to meters. *Id.* at 2:41–53. Additionally, energy exchange between two electromagnetic resonators can be optimized when the resonators are tuned to substantially the same frequency and when the losses in the system are minimal. *Id.* at 2:66–3:2.

Figure 38 of the '935 patent, reproduced below, is a block diagram of a wireless power transmission system employing a two-resonator system. *Id.* at 10:33–34, 58:62–64.

Fig. 38

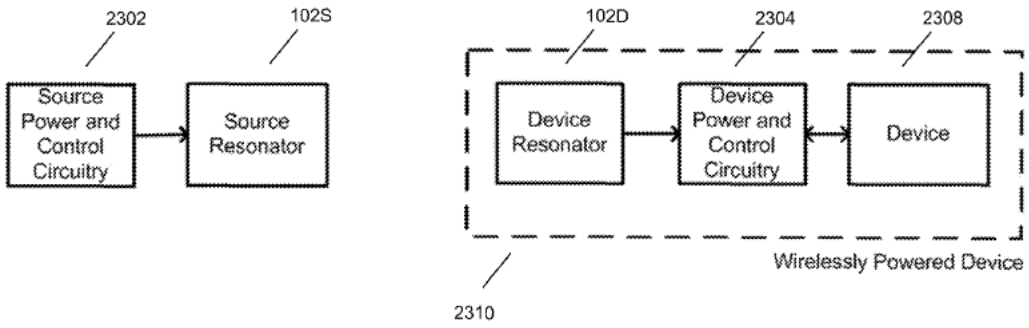

Figure 38 shows a wirelessly powered or charged device 2310 that includes or consists of device resonator 102D and device power and control circuitry 2304, along with device or devices 2308 to which either DC or AC, or both AC and DC power, is transferred. *Id.* at 58:62–59:10. The energy or

power source for a system may include the source power and control circuitry 2302, and a source resonator 102S. *Id.* Thus, device or devices 2308 receive power from device resonator 102D and power and control circuitry 2304. *Id.* For example, device resonator 102D and circuitry 2304 deliver power to device/devices 2308 that "may be used to recharge the battery of the device/devices, power the device/devices directly, or both when in the vicinity of the source resonator 102S." *Id.* "The source and device resonators may be separated by many meters or they may be very close to each other or they may be separated by any distance in between." *Id.* at 59:11–13.

The '935 patent explains loss mechanisms extrinsic to the resonators affect their intrinsic quality factor (Q). *Id.* at 33:5–6. These mechanisms include absorption losses inside the materials of nearby objects and radiation losses related to scattering of the resonant fields from nearby objects. *Id.* at 33:6–9. Absorption losses may be associated with materials that, over the frequency range of interest, have non-zero, but finite conductivity. *Id.* at 33:8–10. Furthermore, according to the '935 patent, "[a]n object may be described as lossy if it at least partly includes lossy materials." *Id.* at 33:14–15.

An apparatus in which a high-Q resonator is integrated may include parts with lossy extraneous materials and objects. *Id.* at 35:66–67. The '935 patent states that "dissipation of energy in these lossy materials and objects may be reduced by a number of techniques" including:

> by using a high conductivity material or structure to partly or entirely cover lossy materials and objects in the vicinity of a resonator[;]

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