UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUPITER RESEARCH, LLC,

Petitioner,

v.

VPR BRANDS, L.P.,

Patent Owner.

Case IPR2022-00299

U.S. Patent No. 8,205,622

PETITIONER JUPITER RESEARCH, LLC'S REQUEST FOR REHEARING

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I. INTRODUCTION

In response to the Decision Denying Institution of Inter Partes Review entered July 12, 2022, (Paper 12, hereinafter "Decision") and pursuant to 37 C.F.R. § 42.71(d), Jupiter Research, LLC ("Petitioner") hereby respectfully requests the Patent Trial and Appeal Board ("Board") reconsider its decision denying institution for inter partes review of U.S. Patent No. 8,205,622 ("the '622 Patent").

II. LEGAL STANDARDS

A party may request rehearing of a decision by the Board whether to institute a trial. 37 C.F.R. § 42.71(c). "The request must specifically identify all matters the party believes the Board misapprehended or overlooked, and the place where each matter was previously addressed in a motion, opposition, a reply, or a sur-reply." 37 C.F.R. § 42.71(d). The Board will review the previous decision for an abuse of discretion. 37 C.F.R. § 42.71(c). "An abuse of discretion may be determined if a decision is based on an erroneous interpretation of law, if a factual finding is not supported by substantial evidence, or if the decision represents an unreasonable judgment in weighing relevant factors." *See, e.g., PNY Techs. Inc. v. Phison Elecs. Corp.*, IPR2013-00472, Paper 16 at 2 (Apr. 23, 2014) (citing *Star Fruits S.N.C. v. United States*, 393 F.3d 1277, 1281 (Fed. Cir. 2005)). Institution is warranted when the Petitioner demonstrates "that there is a reasonable likelihood that at least one of the claims challenged in the petition is unpatentable." 37 C.F.R. § 42.108(c).

III. BASIS FOR RELIEF

Petitioner respectfully requests the Board reconsider the references' teachings regarding electric airflow sensors and diaphragm microphones as well as the unequivocal opinions of Petitioner's Expert as cited in the Petition. The Decision's denial of institution is based primarily on the Board's determination that Petitioner failed to establish that the references to Hon, Cox, and Zhu taught the limitation of an "electric airflow sensor." *See* Decision, at 11, 18, 24. The Board's determination was based on a finding that the '622 Patent discloses "the use of an electric airflow sensor *instead of a mechanical device* in detecting airflow…." Decision, at 11 (citing Ex. 1001, 3:23–29) (emphasis in Decision). Thus, the Board held that the references cited by Petitioner taught mechanical devices rather than an electric airflow sensor. *See* Decision, at 11, 16–17, 22–24.[1] The Board acknowledged that the cited references detect negative pressure resulting from user puffing/inhaling. Decision, at 8, 10, 13, 15, 17, 21–22. However, the Board held that components that respond to negative pressure with movement of components are mechanical not electric and thus do not anticipate an electric airflow sensor as recited in the '622 Patent. Decision, at 22–23.

Petitioner asserts the Decision misapprehended/overlooked several points with

[1] The Board appeared to hold that references using mechanical and/or moving components could not teach an electric airflow sensor. Decision, at 11, 22–23. However, Patent Owner's embodiments include moving components.

respect to the electric airflow sensor as described in the ’622 Patent and interpreted by the Patent Owner. These misunderstandings culminated in overlooking several key teachings in the references cited in the Petition (Paper 2, hereinafter “Petition”) and glossing over the opinion of Petitioner’s Expert.

A. The Board Misapprehended the Nature of the Patent Owner’s Airflow Sensor Which Includes/Is a “Mechanical” Diaphragm Microphone

The Board determined that the electric airflow sensor of the ’622 Patent was not mechanical and did not include mechanical components. This was a misapprehension because the Board overlooked the following points:

1. The Board Overlooked the Patent Owner’s Own Statements that the Airflow Sensor Includes Mechanical Components in the Preferred Embodiment of the ’622 Patent

The Patent Owner characterizes the invention in the Patent Owner’s Preliminary Response (Paper 9, hereinafter “Preliminary Response”), stating “[i]n a preferred embodiment, the ’622 patent discloses an electric airflow sensor as a diaphragm microphone which converts pressure waives [sic] into electrical energy using a thin sheet of material capable of vibrating.” Preliminary Response, at 8 (emphasis added). Thus, Patent Owner admits the electric airflow sensor includes one or more mechanical component(s) that move in response to pressure. To be clear, the diaphragm and thin sheet of material of the “preferred embodiment” are mechanical components. *See* Ex. 1004, at ¶ [0074]. Further, the Patent Owner admitted that the operation of these components is to actually move in response to

pressure caused by the user puffing/inhaling. Preliminary Response, at 8.

The Board overlooked this admission when making the determinations discussed above, namely, the determinations that the allegedly pressure driven sensor (including the membrane/diaphragm) of Hon, the air flow detecting device (and alternative/additional pressure drop detecting device taught to be a diaphragm microphone) of Cox, and the airflow/pressure responsive circuit of Zhu involved mechanical components and thus cannot anticipate electric airflow sensors.

In fact, the Board's interpretation is inconsistent with the Patent Owner's own characterization of the preferred embodiment. Instead, the Patent Owner considered the preferred embodiments of the '622 Patent to include mechanical components that output a signal in response to pressure changes caused by user puffing/inhaling—exactly what the Board found to be deficient in the Petition. Upon resolution of this misunderstanding regarding the **preferred embodiments** of the '622 Patent and the scope of the claims, it is clear Petitioner established, sufficient for the standard of a reasonable likelihood of success, that the references to Hon, Cox, and Zhu teach electric airflow sensors as contemplated by Patent Owner and the '622 Patent.

2. The Board Overlooked the Specific Recitation of a Diaphragm Microphone in Independent Claim 17 and Dependent Claim 14

As discussed in the previous point, the Patent Owner affirmatively stated that **"[i]n a preferred embodiment**, the '622 patent discloses an electric airflow sensor as a **diaphragm microphone** which converts **pressure waives [sic] into electrical**

energy using a thin sheet of material capable of vibrating." Preliminary Response, at 8 (emphasis added). Claims 14 and 17 are both directed to this embodiment and recite that the electric airflow sensor "is a diaphragm microphone."

This language is not broad. No open-ended term such as comprising or including is used. Instead, the claim language is clear and narrow—**the electric airflow sensor is a diaphragm microphone**. Thus, these claims limit the electric airflow sensor to being a diaphragm microphone.

Proceeding logically from this claim language, the electric airflow sensor cannot broadly exclude mechanical components. Further, in at least the specific embodiments of these claims, the electric airflow sensor is "mechanical" in that it is a diaphragm microphone with components that move in response to pressure.

The Board's holding that prior art references that included mechanical components such as membranes/diaphragms moving in response to puffing/inhaling pressure were, by default, not electric airflow sensors is inconsistent with the claims and Patent Owner's own admission. This inconsistency resulted in the Board overlooking the facts in the Petition as discussed in the following point.

3. The Board Overlooked Petitioner's Arguments Regarding the Teachings of Hon and Cox, as well as the Opinion of Petitioner's Expert, with Respect to the Diaphragm Microphone

Finally, as a result of the misapprehensions discussed above, the Board overlooked that the references, particularly Hon and Cox, teach a diaphragm

microphone as described in the Petition. *See* Petition, at 12–18, 28–29, 37–38, 55–56. Further, the Board overlooked the opinion of Petitioner's expert on these points.

With respect to Hon, Petitioner cited the membrane and provided expert testimony. Petition, at 28–29 (citing Ex. 1008 and Ex. 1004). In fact, Petitioner's expert opined that one of skill in the art would interpretate Hon as disclosing a diaphragm microphone. Ex. 1004, at ¶ [0074], [0090]. With respect to Cox, the Petition argued Cox discussed a known diaphragm microphone component, Petition, at 37–38, and Petitioner's expert stated that one of skill in the art "would know that this is equivalent to a diaphragm microphone," Ex. 1004, at ¶ [0110], [0172].

These facts were overlooked based on the Board's misapprehension of the nature of the recited electric airflow sensor and failure to consider Patent Owner's preferred embodiments and specific claim language as discussed above. Instead, the Petition and expert testimony showed a reasonable likelihood of success.

B. The Board Overlooked or Misapprehended The Express Teachings of an Electric Airflow Sensor in Cox

Cox expressly teaches an electric airflow sensor that provides improved activation for inhaler-type devices. Petition, at 15, 33–37. Based on Patent Owner's misdirection, the Board overlooked the clear teachings of the reference and focused on the pressure drop detecting device embodiment, an embodiment that is only a (non-preferred) alternative and/or additional embodiment to the air flow detecting device of the reference. Further, the Board overlooked that Cox expressly teaches

that its embodiments offer the same benefits allegedly provided by the ’622 Patent.

Relatedly, the Board adopted Patent Owner’s arguments that Cox does not provide adequate detail regarding the air flow detecting device 51. On this point, the Board overlooked the fact that Cox’s description of the air flow detecting device 51, while brief, is almost identical to the ’622 Patent’s description of the electric airflow sensor. Still further, the Board overlooked Cox’s teaching that other **known** flow-sensing devices could be used. Petition, at 15–16, 33–37.

These points are discussed separately below:

1. The Board Overlooked Cox’s Clear Teachings Regarding the Air Flow Detecting Device and Improvements in User Activation

Again, Cox teaches an electric airflow sensor that provides improved activation for inhaler-type devices. The Board overlooked the teachings of the reference related to the air flow detecting device 51, focusing on the alternative, non-preferred pressure drop detecting device embodiment. Further, Cox includes express teachings that its solutions improve user-puffing-based activation of inhaler-type devices—the same benefit allegedly provided by the ’622 Patent.

Petitioner argued that Cox teaches an air flow detecting device 51. Petition, at 35. Petitioner specifically cited Col. 5, lines 52–60 of Cox. *Id.* at 35, 54. This section of Cox expressly states that Cox’s device “includes an air flow detecting device 51 **for determining when a predetermined air flow rate exists**…” and that the air flow detecting device 51 is “arranged **to send a signal** to the control device.” Ex.

1007, at 5:52–58 (emphasis added). The signal indicates that the air flow rate exists and thus that a user is drawing on the mouthpiece. *Id.*

Importantly, the Board acknowledged that the cited teachings of Cox "indicate that air flow detecting device 51 is a sensor that detects air movement generated by a user's inhaling or puffing act." Decision, at 15 (referring to Ex. 1007, at 5:54–61). However, the Board held that Petitioner did not sufficiently establish that an electric airflow sensor is in view. Decision, at 15–16. Specifically, the Board held that Petitioner relied solely on the output of the electrical signal. Decision, at 16. Petitioner respectfully disagrees and contends the full teachings of Cox were being relied on in the Petition, including that the air flow detecting device 51 does not just output the signal but also functions to **determine when a predetermined air flow rate exists**. *See* Ex. 1007, at 5:51–53.

Neither the Patent Owner nor the Board offer any explanation for how an air flow detecting device that determines when a predetermined air flow rate exists could be only a mechanical component and not an electric airflow sensor. Instead, the clear reading of Cox as proffered in the Petition is that an electric airflow sensor is used. Patent Owner offered only misdirection on this point—alleging that Cox relied on a pressure drop detecting device, Preliminary Response, at 17, despite the express teaching of Cox that the pressure drop detecting device is used **"[a]s an alternative to, or in addition to, using an airflow detecting device 51 to send a**

signal to the control device 43," Ex. 1007, at 6:32–34 (emphasis added). The Board also focused on this alternative embodiment in finding that the reference did not teach "an electric air flow sensor that is used to turn on and off the electric power source by way of detecting an airflow." Decision, at 17–18. Petitioner respectfully disagrees. The pressure drop detecting device does not limit Cox's teaching of the air flow detecting device. In fact, Cox expressly states: **"[t]he use of an air flow detecting device 51, as compared to a pressure drop detecting device, is presently preferred for inhaler-type applications.**" Ex. 1007, at 6:54–58 (emphasis added).

Applicant respectfully contends that proper review of Cox **without overlooking the primary teachings in favor of the secondary, alternative embodiment of the pressure drop detecting device** clearly shows an air flow detecting device that determines the presence of an air flow rate and signals when the rate is determined to exist and thus controls the power source. Such a device is "an electric air flow sensor that is used to turn on and off the electric power source by way of detecting an airflow" as recited in independent claim 13. As argued in the Petition, the air flow detecting device of Cox is used to determine/confirm an air flow rate is present and then to control the power source to supply power to components in response. Petition, at 16, 35.

Further, with respect to the Board's contention that Petitioner did not offer any

explanation for how Cox would provide the alleged benefits of the electric airflow sensor, *see* Decision, at 16–17, **Petitioner respectfully notes the explanation is present directly in the reference**. To quote Cox again, **"[t]he use of an air flow detecting device 51, as compared to a pressure drop detecting device, is presently preferred for inhaler-type applications because it is anticipated that an air flow detecting device will be easier for users to actuate**…." Ex. 1007, at 6:54–58 (emphasis added); *see also* Petition, at 14–16. Some of the alleged benefits of the '622 Patent were "making the user's puffing action easier or smoother, and being 'more sensitive in turning on and off the vaporizing process than the conventional mechanical system.'" Decision, at 16–17 (quoting Ex. 1001, 3:34–38). **Cox expressly discusses the same benefits for inhaler-type products when discussing its air flow detecting device.** Ex. 1007, at 6:54–58.

Cox includes teachings on the air flow detecting device and the reference expressly connects its air flow detecting device to the same benefits as the '622 Patent. Proper consideration of these points shows a reasonable likelihood of success in invalidating at least one claim.

2. Cox's Description of the Air Flow Detecting Device is Almost Identical to the '622 Patent's Description of the Electric Airflow Sensor

The Board asserted that Cox "does not provide detail as to how air flow detecting device 51 operates, or describe how air flow detecting device 51 interacts

with control device 43 other than sending it a signal." Decision, at 17. In making these statements, the Board appears to be following Patent Owner's argument that Cox did not describe nor enable the air flow detecting device 51 and should be limited to the pressure drop detecting devices. *See* Patent Owner Response, at 17.

As discussed above and in the Petition, Cox is not limited to the alternative or additional embodiment of the pressure drop detecting device. Petition at 16, 35. Instead, Cox expressly provides sufficient teaching regarding the air flow detecting device. *Id.* Cox expressly teaches that a variety of "flow-sensing devices" were known in the art and could be used with the aerosol generator 21. Ex. 1007, at 51–53. Thus, one of skill in the art would not need each and every detail of the air flow detecting device 51 to be supplied.

Nevertheless, Cox also expressly provides description of the air flow detecting device 51 that meets/exceeds the level of description provided for the electric airflow sensor of the '622 Patent. *See* Petition, at 16, 35.

Moreover, the inventor of the '622 Patent clearly was not of the opinion that one of skill required detailed instruction regarding electric airflow sensors. The '622 Patent discusses the electric airflow sensor without any structural detail in the Abstract and Summary of the Invention Sections. Ex. 1001, at Abstract and 2:16–3:52. In the Detailed Description, the '622 Patent provides the following teachings:

Teaching (emphasis added)	**Citation (Exhibit 1001)**
The electric sensor 6 plays the role of detecting the airflow resulted from the puffing action of a user, and wakes up the single chip micyoco 3 to turn on the electricity on/off switch **4** and generate an electric current form the electric power source **5** to the electronic atomizer **22** for vaporizing of a liquid inside the liquid chamber inside the atomizer **22**. The single chip micyoco **3** instructs the electric power source **5** to supply electricity to the system by its embedded computer programs **when a signal is generated through the airflow detected by the electric sensor 6 from the user's puffing action.**	4:12–22
The electronic inhaler includes an inhaler tube **10**, cigarette cap **13** with small holes for air inflow, LED indicator **12**, electric power source **5**, annular tube **16** with its cap **15**, integrated circuit board with a CPU processor **14**, **electric airflow sensor 6,** sensor supporter **61**, and first electric connector **17** with an inserted rush pith **11** surrounded by a silica-gel insulator **18**. The electric power source **5** connects to the circuit board **14**, which connects to the first electric connector **17 and the electric airflow sensor 6.** The LED **12** is connected to both electric power source **5** and the circuit board **14**. **The electric airflow sensor 6 is assembled onto the sensor supporter 61**.	5:9–20
The electronic inhaler includes an inhaler tube **10**, cigarette cap **13** with small holes for air inflow, LED indicator **12**, electric power source **5**, seal piece **25**, sensor supporter **61**, **electric airflow sensor 6**, integrated circuit board with a CPU processor **14**, and the first electric connector **17** located on the DC socket seat **28**. The electric power source **5** connects to the circuit board **14**, which connects to the first electric connector **17 and the electric airflow sensor 6.** The LED **12** is connected to both electric power source **5** and the circuit board **14**. **The electric airflow sensor 6 is assembled onto the sensor supporter 61.**	5:30–41

These quoted passages form the extent of the ’622 Patent’s substantive teachings regarding the electric airflow sensor. Thus, the ’622 Patent teaches that the electric airflow sensor detects airflow and wakes up the micyoco without specifying

any structure whatsoever.[2] The only additional teachings of the '622 Patent are that the electric airflow sensor is connected to the circuit board and assembled on a sensor supporter. Thus, the inventor's opinion was that one of skill in the art would be familiar with electric airflow sensors and did not need further detail.

Cox provides as much specificity, if not more. For example, Cox's Detailed Description provides the following teachings:

Teaching (emphasis added)	**Citation (Exhibit 1007)**
The aerosol generator 21 preferably includes an air flow detecting device 51 for determining when a predetermined air flow rate exists proximate the first end 29 of the tube 27. The air flow detecting device 51 is preferably arranged to send a signal to the control device 43 to indicate that the predetermined air flow rate exists, which may be indicative that a user is drawing on the open end 53 of the mouthpiece 49 section, and the controller is preferably arranged to control the power source to supply power to the valve **35** and the heater **33**, and any other components, in response to the signal from the air flow detecting device. **As seen in FIG. 1, the air flow detecting device 51 is preferably disposed transversely to and upstream of the first end 29 of the tube 27 so that the air flow detecting device will assist in ensuring that an adequate supply of air flow exists to produce and effectively deliver an aerosol from the volatilized material as it expands out of the first end of the tube.** Where the aerosol generator **21** is a multi-piece device, **the air flow detecting device 51 is preferably permanently attached to the second component 25** and is, thus, preferably a permanent component, i.e., it is not disposed of. If desired or necessary,	5:51–6:8

[2] Petitioner notes that even the preferred embodiment (diaphragm microphone) of the '622 Patent is not discussed in the Specification at all and only appears in the claims. This further suggests that the inventor considered these components known to those of skill, bolstering Petitioner's arguments and the opinions of Petitioner's Expert.

however, **the air flow detecting device 51 can be a disposable component** forming part of the first component **23** and can be removably connected, such as through an electrical connection, to the control device **43**.	
To ensure an adequate supply of air for mixing with the volatilized material, as well as to ensure an adequate supply of air for permitting a user to draw on the mouthpiece section and **actuate the air flow detecting device 51,** the mouthpiece section **49** preferably has a plurality of vent holes **55**.	6:15–19
Other known flow-sensing devices, such as those using hot-wire anemometry principles, are also believed to be suited for use with the aerosol generator **21**. The use of an **air flow detecting device 51**, as compared to a pressure drop detecting device, is presently preferred for inhaler-type applications because it is anticipated that an air flow detecting device will be easier for users to actuate as compared to a pressure drop detecting device.	6:51–58
The aerosol generator **21** is preferably used by a user providing a first signal, indicative of a user's intention to use the aerosol generator, to the control device **43**. The first signal may be provided by the user pressing a button **58** (FIG. 2, in phantom) but, particularly where the aerosol generator **21** is intended to be used as an inhaler device, it is preferred that the first signal be provided by some form of draw-actuated device, such as a pressure drop detecting sensor **53** or, **more preferably, an air flow detecting sensor 51.**	11:14–23

Cox expressly teaches that the air flow detecting device detects air flow, determines if the air flow indicates a user draw, and sends a signal to active the aerosol generator. *See* Petition, at 16, 35. Cox also teaches the air flow detecting device is coupled to the control device for activating the power supply, and discloses specific options for locating/attaching the air flow detecting device. *Id.*

Cox's teachings are strikingly consistent with the '622 Patent, supporting Petitioner's assertions that the reference teaches the pertinent limitations. Further, to the extent Cox does not provide specific details regarding the sensor, the '622 Patent

provides even fewer details, again strongly indicating such teachings were unnecessary for one of skill. Finally, Cox expressly discusses "known flow-sensing devices," again indicating such sensors were known to those of skill in the art.

Applicant respectfully requests the Board reconsider these points and contends the Petition demonstrated a reasonable likelihood of success based on Cox.

IV. CONCLUSION

The Petition and accompanying facts establish that the electric airflow sensor according to the '622 Patent includes mechanical components and, in the preferred embodiment, is a diaphragm microphone. Accordingly, the Board misapprehended the nature of the electric airflow sensor when evaluating the references and the Petition. As a result, the Board overlooked the diaphragm microphones of Hon and Cox as well as Petitioner's Expert's opinion on this point.

Further, the Board separately overlooked the teachings of Cox regarding the air flow detecting device and focused on a secondary, alternative embodiment. Relatedly, the Board overlooked Cox's description of the air flow detecting device, the striking similarity to the '622 Patent's description of the electric airflow sensor, and the discussion of known flow-sensing devices.

For at least these reasons, Petitioner respectfully asserts the Petition demonstrated a reasonable likelihood that at least one of the challenged claims is unpatentable and respectfully requests institution on Grounds 1–4.

Respectfully submitted,

/Anthony L. Meola/
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Counsel for Petitioner

CERTIFICATE OF SERVICE

The undersigned certifies service pursuant to 37 C.F.R. § 42.6(e) and 42.105(b). The Patent Owner consents to electronic service of this Petition via dropbox link and/or at the following email addresses:

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