

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DYSON TECHNOLOGY LIMITED AND DYSON, INC.,
Petitioner,

v.

OMACHRON INTELLECTUAL PROPERTY INC.,
Patent Owner.

IPR2024-00690
Patent 10,117,550 B1

Before MATTHEW S. MEYERS, RYAN H. FLAX, and
BRENT M. DOUGAL, *Administrative Patent Judges*.

MEYERS, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. *Background and Summary*

Petitioner, Dyson Technology Ltd. and Dyson, Inc., (“Petitioner” or “Petitioners”) filed a Petition to institute an *inter partes* review of claims 1–28 (the “challenged claims”) of U.S. Patent 10,117,550 B1 (Ex. 1001, “the ’550 patent”). Paper 1 (“Pet.”). Omachron Intellectual Property Inc. (“Patent Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”).

We have authority, acting on the designation of the Director, to determine whether to institute an *inter partes* review. 35 U.S.C. § 314; 37 C.F.R. § 42.4(a) (2020). The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least [one] of the claims challenged in the petition.”

After considering the Petition, the Preliminary Response, and the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail with respect to at least one of the challenged claims. Accordingly, we institute an *inter partes* review of all challenged claims on all asserted grounds pursuant to 35 U.S.C. § 314. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359–1360 (2018) (requiring institution on all claims, if any); *see also* Patent Trial and Appeal Board Consolidated Trial Practice Guide 64 (Nov. 2019) (“Trial Practice Guide”) (providing guidance in view of SAS).¹

¹ Consolidated PTAB Trial Practice Guide (Nov. 2019), *available at* <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

B. Real Parties-in-Interest

Petitioner identifies Dyson Technology Ltd. and Dyson, Inc. as the real parties-in-interest. Pet. 123; Paper 6, 1. Patent Owner identifies Omachron Intellectual Property Inc., Omachron Alpha Inc., SharkNinja Operating LLC, and SharkNinja Sales Company as real parties-in-interest. Paper 4, 1. Patent Owner also states that “SharkNinja Management LLC may be a real party-in-interest.” *Id.*

C. Related Proceedings

The parties identify that the ’550 patent as the subject of *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-cv-12372 (D. Mass.) and *SharkNinja Operating LLC et al v. Dyson, Inc.*, No. 1:23-cv-11277 (D. Mass.). Pet. 123; Paper 4, 1.

D. Overview of the ’550 Patent

The ’550 patent is titled “SURFACE CLEANING APPRATUS.” Ex. 1001, code (54). The ’550 patent describes that the present invention “relates to a type of stick vacuum cleaner wherein a hand vacuum cleaner is removably mounted to a drive handle and provides motive power to draw dirty air into the surface cleaning head.” *Id.* at 1:19–22. Figure 96 of the ’550 patent illustrates a cross-sectional view of the ’550 patent’s surface cleaning apparatus, and is reproduced below.

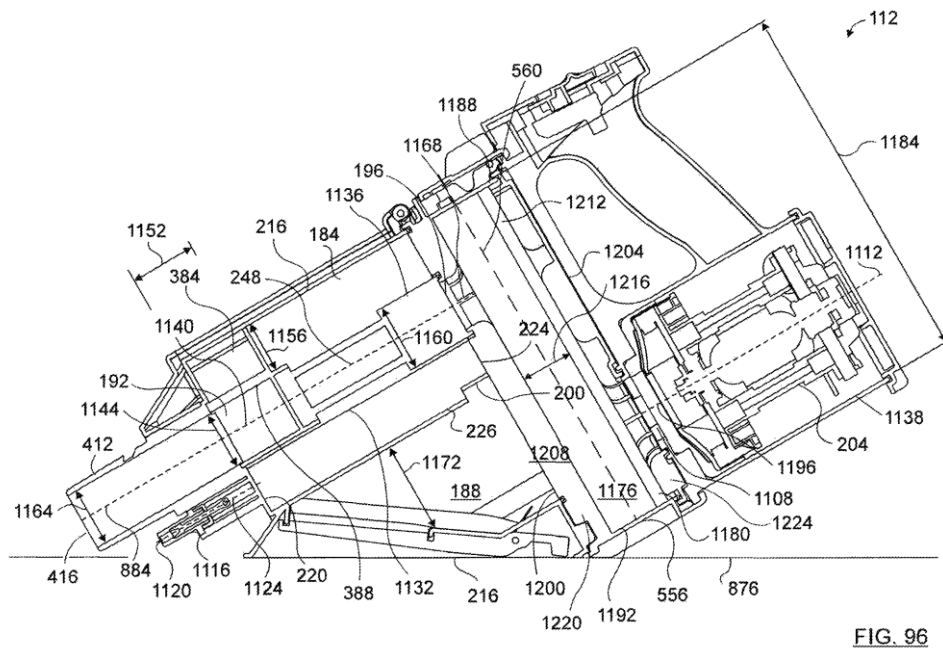


Figure 96 depicts a cross-sectional view of a the '550 patent's handvac.

Ex. 1001, 4:57–58. The '550 patent discloses that

handvac 112 may include an electrical connector 1116 for providing power to an upstream attachment (e.g. a surface cleaning head). As shown, connector 1116 may extend from a front connector end 1120 along a connector axis 1124 to a rear connector end 1128. In some embodiments, connector axis 1124 may be parallel to one or more of nozzle axis 884, cyclone axis 248, and motor axis 252. In the illustrated embodiment, connector axis 1124 is parallel to nozzle axis 884, cyclone axis 248, and motor axis 252.

Id. at 34:39–48. In addition, the '550 patent discloses that “handvac 112 may include one or more electrical cables 1132 which extend from electrical connector 1116 rearwardly to electrically couple electrical connector 1116 with a source of power (not shown).” *Id.* at 34:49–52.

E. Illustrative Claim

Petitioner challenges claims 1–28 of the '550 patent. Pet. 3. Challenged claims 1, 12, 20, and 28 are independent. Claim 1 is illustrative, and is reproduced below.

1. A surface cleaning apparatus comprising:
 - (a) a hand vacuum cleaner comprising:
 - (i) a hand vacuum cleaner body comprising a bottom, a handle, the hand vacuum cleaner body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation, the handle having a hand grip portion that extends upwardly and forwardly when the hand vacuum cleaner body is positioned with the bottom on a horizontal surface; and,
 - (ii) a cyclone unit provided at a front end of the hand vacuum cleaner body, the cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end of the cyclone unit having a hand vacuum cleaner air inlet and a rear end wherein the hand vacuum cleaner air inlet is provided in a centre of the front end of the cyclone unit; and,
 - (iii) an electrical connector provided on the front end of the cyclone unit wherein electrical cables extend rearwardly from the electrical connector through a central portion of the cyclone unit toward the suction motor and fan assembly,
 - (b) a surface cleaning head having a front end, a rear end, a dirt air inlet and a cleaning head air outlet; and,
 - (c) a rigid air flow conduit extendable between the cleaning head air outlet and the hand vacuum cleaner air inlet, the rigid air flow conduit having a longitudinally extending conduit axis which is parallel to the cyclone axis of rotation when the rigid air flow conduit extends between the cleaning head air outlet and the hand vacuum cleaner air inlet,wherein the hand vacuum cleaner is removably mountable to a downstream end of the rigid air flow conduit and when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, and the rigid air flow conduit extends between

the surface cleaning head and the hand vacuum cleaner, the handle is a driving handle for the surface cleaning apparatus.

Ex. 1001, 47:60–48:31.

F. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–28 of the ’550 patent are unpatentable on the following grounds (Pet. 4):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–28	102	Butler ²
1–28	103	Butler
1–28	103	Peter ³ , Neroni ⁴
1–28	103	Peter, Neroni, Martelliere ⁵ , Jansen ⁶

Petitioner also relies on the Declaration of Robert Giachetti, Ph.D.

Ex. 1002.

II. ANALYSIS

A. Legal Standards

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)).

² WO 2007/084543 A2, published July 26, 2007 (Ex. 1005, “Butler”).

³ CH 203,675, published June 16, 1939 (Ex. 1006; Ex. 1007 (English Translation), “Peter”).

⁴ US 4,473,933, issued Oct. 2, 1984 (Ex. 1011, “Neroni”).

⁵ FR 1,094,603, published May 23, 1955 (Ex. 1009; Ex. 1010 (English Translation), “Martelliere”).

⁶ US 2008/0189901 A1, published Aug. 14, 2008 (Ex. 1008, “Jansen”).

“A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. Inc. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987). Moreover, “[b]ecause the hallmark of anticipation is prior invention, the prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008). Whether a reference anticipates is assessed from the perspective of an ordinarily skilled artisan. *See Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 1368 (Fed. Cir. 2003) (“[T]he dispositive question regarding anticipation [i]s whether *one skilled in the art* would reasonably understand or infer from the [prior art reference’s] teaching’ that every claim element was disclosed in that single reference.”).

A claim is unpatentable under 35 U.S.C. § 103(a) 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 that subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of non-obviousness (or obviousness) when presented. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

In analyzing the obviousness of a combination of prior art elements, it can be important to identify a reason that would have prompted one of skill in the art “to combine . . . known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418. A precise teaching directed to the specific subject matter of a challenged claim is not necessary to establish obviousness. *Id.* Rather, “any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *Id.* at 420. Accordingly, a party who petitions the Board for a determination of unpatentability based on obviousness must show that “a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (citations omitted).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

We review the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of invention. *Graham*, 383 U.S. at 17. Factors pertinent to determining the level of ordinary skill in the art include (1) the educational level of the inventor; (2) the type of problems encountered in the art; (3) prior-art solutions to those problems; (4) the rapidity with which innovations are made; (5) the sophistication of the technology; and (6) the educational level of workers active in the field. *Env’tl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693,

696–97 (Fed. Cir. 1983). Not all factors may exist in every case, and one or more of these or other factors may predominate in a particular case. *Id.* Moreover, these factors are not exhaustive, but merely a guide to determining the level of ordinary skill in the art. *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007). Further, the prior art itself may reflect an appropriate skill level. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Petitioner asserts that one of ordinary skill in the art (“POSITA” or “POSA”)

would have had a bachelor’s degree in mechanical engineering or a similar field and 2–3 years of experience in fluid dynamics and/or machine design for devices related to fluid dynamics, such as vacuum cleaners. Additional education could offset less experience and vice versa, and a POSA could have also obtained similar knowledge and experience through other means.

Pet. 11. At this stage of the proceeding, “Patent Owner does not challenge Petitioners’ proposed definition of a POSITA,” but “reserves the right to provide an alternative definition of a POSITA if IPR is instituted.” Prelim. Resp. 3.

On the current record, we determine that Petitioner’s definition of a person of ordinary skill in the art is consistent with the scope and content of the ’550 patent and the asserted prior art, and, at this stage, we apply Petitioner’s definition for purposes of this Decision.

C. Claim Construction

In an *inter partes* review, a patent claim shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b). This rule adopts the same claim construction standard used by Article III federal

courts, which follow *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and its progeny.

Under that standard, the words of a claim are generally given their “ordinary and customary meaning,” which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *See Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner “do[es] not believe any claim construction is necessary to resolve the parties’ controversy in this Petition, and the claims should be given their plain and ordinary meaning for purposes of this IPR.” Pet. 11. “Patent Owner does not submit any terms for construction,” but “reserves the right to subsequently submit claim terms for construction should the Board institute IPR.” Prelim. Resp. 3.

We agree with the parties that, at this stage, no terms require explicit construction to resolve the issues presented by the arguments and evidence of record to reach a decision on institution. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (per curiam) (claim terms need to be construed “only to the extent necessary to resolve the controversy” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Alleged Obviousness over Peter and Neroni (Ground 3)

Petitioner asserts that claims 1–28 are unpatentable as obvious over Peter and Neroni. Pet. 68–112. Petitioner also relies on the testimony of Dr. Giachetti to support its arguments. *Id.* (citing Ex. 1002). Patent Owner presents arguments disputing Petitioner’s assertions. See Prelim. Resp. 18–24.

We address Petitioner’s contentions and Patent Owner’s arguments below, beginning with the motivation to combine Peter and Neroni. We first provide a brief overview of the asserted references.

1. Overview of Peter⁷ (Ex. 1007)

Peter is an English translation of a Swiss patent for a vacuum cleaner having “suction nozzles and suction brushes that can be connected to the vacuum cleaner housing both directly and with the interposition of tubular and articulated parts so that they can be rotated, individually exchanged and combined with one another.” Ex. 1007, 1. Figure 1 of Peter, reproduced below, shows a longitudinal section through Peter’s “vacuum cleaner housing with internal parts without external accessories.” *Id.*

⁷ Peter (Ex. 1007) is a certified English translation of the Swiss patent (Ex. 1006) originally published in German.

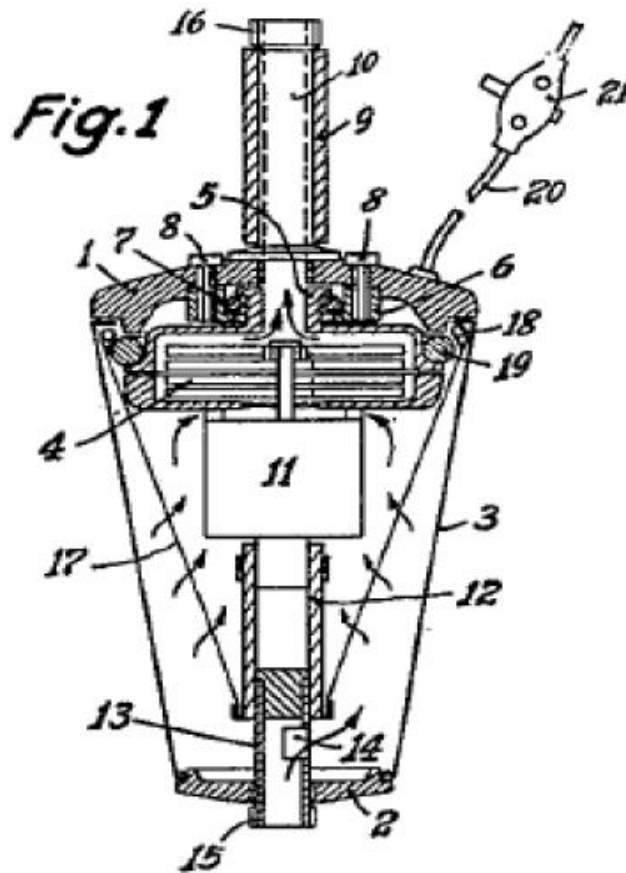


Figure 1 illustrates housing 4 of Peter’s vacuum cleaner with exhaust nozzle 10 that includes rubber grip 9, motor 11, air intake nozzle 13, lateral outlet opening 14, and dust filter 17. *Id.* at 2.

Figure 4 of Peter, reproduced below, shows Peter’s “vacuum cleaner ready for use for cleaning areas that are difficult to access.” Ex. 1007, 1.

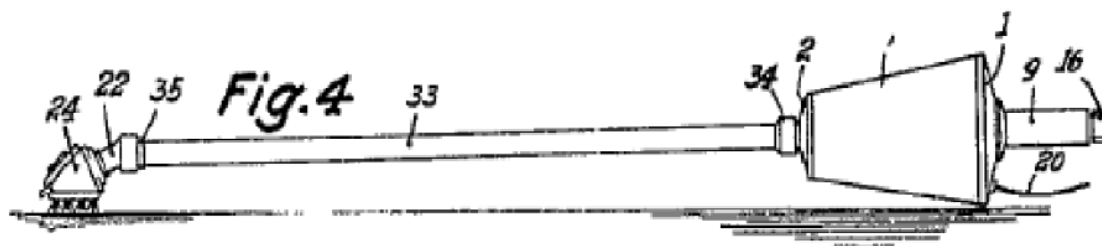


Figure 4 illustrates housing 4 of Peter's vacuum cleaner with extension rod 33 inserted between vacuum cleaner's housing and pipe angle 22 which is connected to suction piece 24. *Id.* at 2.

2. Overview of Neroni (Ex. 1011)

Neroni is entitled "Vacuum Cleaning Tool Adapter with Electrical Control Means," and is directed to a vacuum cleaner with a powered cleaning tool. Ex. 1011, code (67), 1:52–59. Figure 1 of Peter, reproduced below, "is a perspective view of the vacuum cleaning system illustrating a typical canister or tank type vacuum cleaner, hose assembly, power cleaning tool adapter, and power cleaning tool, shown in exploded arrangement." *Id.* at 2:57–61.

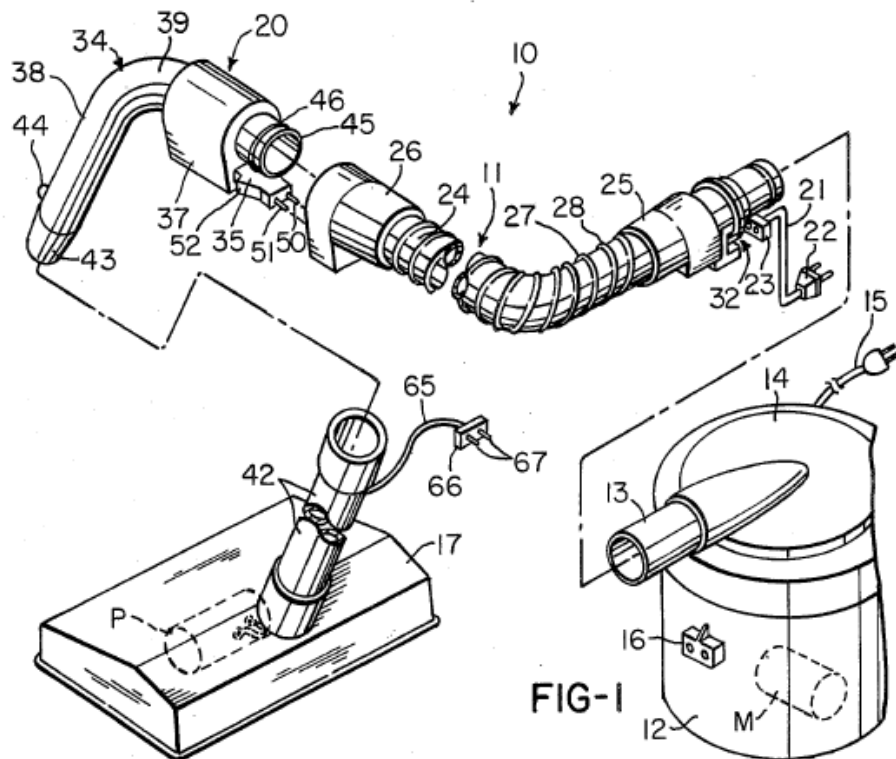


Figure 1 illustrates Neroni's vacuum cleaning system 10 with tank 12, motor M, vacuum tube 13, and female power receptacle 16. *Id.* at 3:22–24, 3:34–36. Neroni discloses that

receptacle 16 is used to supply electrical power through the hose assembly 11 into the adapter 20, and then to motor P of the power cleaning tool 17 which is also operatively connected to the vacuum system itself through the adapter and the hose assembly, through tube 13 and into the vacuum cleaner 12.

Id. at 3:36–42.

3. Motivation to Combine Peter and Neroni

Petitioner asserts that Peter is directed to a handheld vacuum cleaner that includes “a conical ‘housing’ with a tangential ‘lateral outlet opening 14,’ which creates cyclonic airflow within a cyclone unit.” Pet. 68–69 (emphases omitted) (citing Ex. 1007, 2, Figs. 4, 7; Ex. 1002 ¶ 278).

Petitioner notes that Peter’s vacuum may include “an extension rod 33” which can be inserted between the vacuum cleaner housing and suction piece 24. *Id.* at 69 (citing Ex. 1007, 2–3, Fig. 4; Ex. 1002 ¶ 279).

Petitioner asserts that “Neroni teaches a vacuum cleaner with an electrically powered tool” and “runs electricity from the power cleaning tool to power ‘receptacle 16A, and to motor M,’ located in separation ‘tank 12.’” Pet. 70–71 (emphases omitted) (citing Ex. 1011, 3:34–42, 6:42–45, Fig. 1; Ex. 1002 ¶ 282). Petitioner adds that the integral vacuum unit in Neroni’s “tank” or “cleaner 12” is one of “conventional construction,” and as such, one of ordinary skill in the art would have “understood that a cyclone unit is one such ‘conventional construction’ of a vacuum unit, including because Neroni’s tank/cleaner is cylindrical and therefore adapted to cyclonic separation.” *Id.* at 71 (citing Ex. 1011, 3:29–33, Fig. 1; Ex. 1002 ¶ 283).

According to Petitioner, one of ordinary skill in the art would have been motivated to incorporate Neroni’s teachings of a power cleaning tool adaptor into Peter’s cleaning tool in order to “improve cleaning . . . by agitating the surface being cleaned.” Pet. 71–72 (citing Ex. 1007, 1–2;

Ex. 1002 ¶ 285). Petitioner explains that Neroni establishes that “powered cleaning tools were common” in the prior art (*id.* at 72 (citing Ex. 1011, 1:17–49)), and provides evidence that it was known

that “simple brushes or crevice tools without electrically powered features or accessories” are “limit[ed]” in “both their cleaning power and usefulness,” but “a powered cleaning tool attachment including a motor driven rotary agitator, a headlight and/or a booster fan” can provide benefits such as “additional cleaning power” and “greater cleaning efficiency,” including by “scrub[bing] and beat[ing] dirt and debris from the nap of an underlying carpet being cleaned.”

Id. (citing Ex. 1012 ¶¶ 5, 6, 20, 22).

Petitioner reasons that one of ordinary skill in the art would have understood that the addition of a powered floor tool would have “further[ed] Peter’s stated purpose of ‘effortlessly’ cleaning ‘upholstered furniture,’ ‘floors, carpets, and the like,’ and would’ve reasonably expected success, given how well-known such tools were.” Pet. 71–72 (citing Ex. 1007, 1–2; Ex. 1002 ¶ 285). Petitioner concludes that one of ordinary skill in the art would have “been motivated to incorporate Neroni’s electrical system into Peter to achieve these benefits” (*id.* at 72 (citing Ex. 1002 ¶ 286), and doing so “would have simply required the addition of well-known parts” (*id.* at 73 (citing Ex. 1011, 3:34–49; Ex. 1002 ¶ 287).

4. Analysis of Claim 1

Petitioner asserts that claim 1 is unpatentable as obvious over Peter and Neroni. Pet. 68–96 (citing Exs. 1002, 1007, 1011, 1012). We use Petitioner’s notations to identify the claim elements.

a) Uncontested Limitations

Petitioner asserts that claim limitations [1pre], [1a], [1a.1], [1a.2], [1b], [1c], and [1d] are taught or rendered obvious by Peter. Pet. 73–81, 88–91, 94 (citing Exs. 1002, 1007).

With respect to limitations [1pre], [1a], [1a.1], Petitioner asserts that Peter teaches “a ‘vacuum cleaner’ for ‘cleaning floors, carpets’ and other ‘surface[s] to be cleaned.’” Pet. 73 (citing Ex. 1007, Title, 2; Ex. 1002 ¶ 288). For example, Peter discloses that its vacuum cleaner is “designed to be used by hand” and “includes ‘exhaust nozzle 10’ surrounded by ‘rubber grip 9’ for handling.” *Id.* at 74 (citing Ex. 1007, 1, Figs. 3–4; Ex. 1002 ¶¶ 289–290). Petitioner adds that Peter’s vacuum includes a body that “houses a suction motor and fan assembly having a suction motor axis of rotation.” (*id.* at 75 (citing Ex. 1007, 2, Fig. 2; Ex. 1002 ¶¶ 295–297)), and provides details regarding the orientation of Peter’s handle (*id.* at 76–77 (citing Ex. 1007, 2–3, Fig. 1; Ex. 1002 ¶¶ 298–302)).

With respect to limitation [1a.2], Petitioner asserts that “Peter teaches a cyclone unit provided at the front end” of its vacuum. Pet. 78 (citing Ex. 1007, 2, Fig. 1; Ex. 1002 ¶¶ 306–307). According to Petitioner, one of ordinary skill in the art would have understood “that tangential introduction of air into a conically shaped chamber, such as Peter’s ‘housing,’ would create cyclonic airflow; Peter therefore teaches a cyclone unit containing a cyclone chamber.” *Id.* (citing Ex. 1002 ¶ 307). And, to the extent Peter does not contain a cyclone unit, one of ordinary skill in the art would have “been motivated by Peter’s disclosures to modify Peter to include a cyclone unit containing a cyclone chamber.” *Id.* (citing Ex. 1002 ¶ 308); *see also id.* at 79 (citing Ex. 1002 ¶ 308) (“A POSA would’ve reasonably expected

success based on Peter’s express teachings of a conically shaped ‘housing’ and ‘lateral outlet opening 14,’ which are both well-known features of cyclone units.”). Petitioner adds that Peter discloses an “air intake nozzle 13” that is located in a center of the front end of Peter’s cyclone unit. *Id.* at 80 (citing Ex. 1007, 2, Fig. 1; Ex. 1002 ¶¶ 310–312).

With respect to limitation [1b], Petitioner asserts that Peter’s “suction piece 24” and “pipe angle 22” together constitute “a surface cleaning head” with a dirt air inlet, front end and a rear end. Pet. 88–89 (citing Ex. 1007, 2, Fig. 4; Ex. 1002 ¶¶ 332–335). Petitioner provides the following copy of Figure 4 of Peter’s vacuum cleaner, annotated to highlight, a first and second opening. Pet. 89.

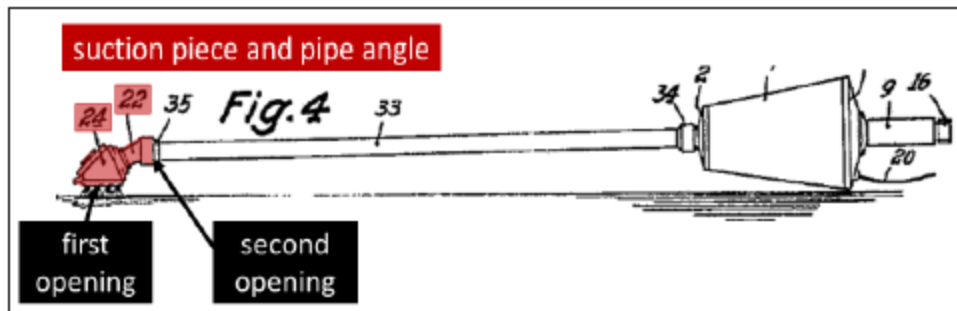


Figure 4 depicts, *inter alia*, “suction piece 24” and “pipe angle 22”. Ex. 1007, 2. Petitioner asserts that “Peter’s first opening is a dirt air inlet” and “Peter’s second opening is a cleaning head air outlet.” Pet. 89 (citing Ex. 1002 ¶ 335). According to Petitioner, one of ordinary skill in the art would have “been motivated to incorporate a powered surface cleaning head with Peter, including by modifying Peter’s surface cleaning head (‘suction piece’ and ‘pipe angle’).” *Id.* at 89–90 (citing *id.* at 68–73; Ex. 1002 ¶ 336).

With respect to limitation [1c], Petitioner asserts that “Peter teaches a rigid airflow conduit extendable between the cleaning head air outlet and the

handvac air inlet” (Pet. 90 (citing Ex. 1007, 2–3; Ex. 1002 ¶¶ 338–339)), and notes that “Peter’s extension rod’s axis is parallel to the cyclone axis of rotation when extension rod 33 extends between the second opening and air intake nozzle 13” (*id.* at 91 (citing Ex. 1007, 2, Fig. 4; Ex. 1002 ¶¶ 340–342) (emphases omitted)). And, with respect to limitation [1d], Petitioner asserts that “Peter’s ‘exhaust nozzle’ with ‘rubber grip’ is a driving handle because driving the handle drives the vacuum cleaner.” *Id.* at 94 (citing Ex. Ex. 1007, 2, Fig. 4; Ex. 1002 ¶¶ 355–360).

Patent Owner does not address or contest these assertions regarding the teachings of Peter. *See* Prelim. Resp. 18–24.

We have analyzed Petitioner’s arguments and cited evidence, and determine that Petitioner has shown a reasonable likelihood of prevailing with respect to these limitations of claim 1.

b) Disputed Limitation [1a.3]

Limitation [1a.3] recites “(iii) an electrical connector provided on the front end of the cyclone unit wherein electrical cables extend rearwardly from the electrical connector through a central portion of the cyclone unit toward the suction motor and fan assembly.” Ex. 1001, 48:10–14.

Petitioner asserts that the combination of Peter and Negroni renders this limitation obvious. Pet. 81–88 (citing Ex. 1002 ¶¶ 314–330). Petitioner asserts that “Neroni’s vacuum has a ‘female power receptacle 16 disposed on the outside surface of its tank 12,’ adjacent ‘vacuum tube 13,’ and electricity runs from the power cleaning tool to ‘receptacle 16A, and to motor M.’” *Id.* at 81–82 (citing Ex. 1011, 3:34–49, 6:42–45, Fig. 1; Ex. 1002 ¶ 318). Thus, Petitioner argues that one of ordinary skill would have “understood that Neroni’s ‘power receptacle 16’ is an electrical

connector, and that it is disposed on the front end of the vacuum unit.” *Id.* at 82 (citing Ex. 1002 ¶ 319).

Petitioner argues that, like Neroni, “Peter’s ‘air intake nozzle 13’ is at the front of the dirt separation unit.” Pet. 82–83 (citing Ex. 1007, 1, Fig. 1; Ex. 1002 ¶ 320). Petitioner provides the following copy of Figure 1 of Peter, annotated to highlight, among several items, cyclone unit, air intake nozzle, and the proposed location of Neroni’s power receptacle. Pet. 84 (citing Ex. 1007, Fig. 1).

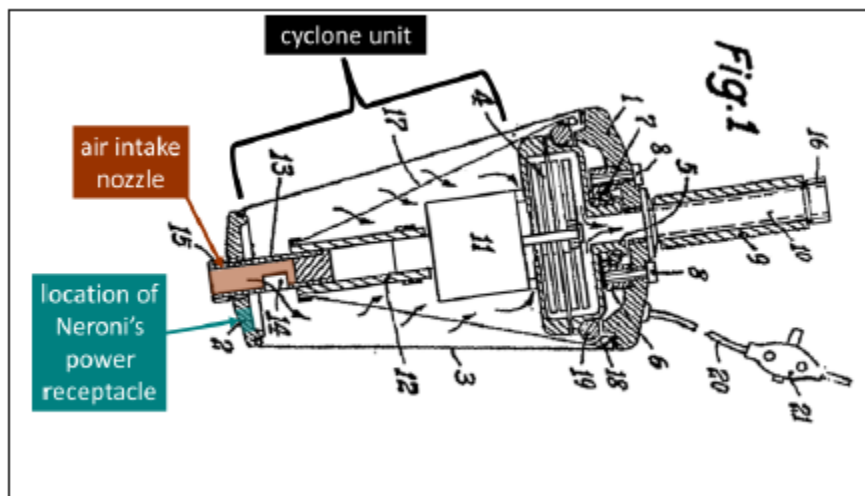


Figure 1 shows a longitudinal section through the vacuum cleaner housing with internal parts, but no external accessories. Ex. 1007, 1. According to Petitioner, one of ordinary skill in the art would have

been motivated to implement Neroni’s “power receptacle 16” on the front end of Peter’s cyclone unit, adjacent the handvac air inlet, and would’ve reasonably expected success. [Ex. 1002 ¶ 321]. A POSA would’ve understood that this was one of a finite number of identified locations for the connector, and it would’ve been the most convenient location to connect a powered attachment to Neroni’s “cord assembly 21A,” because that is where the powered attachment (and rigid airflow conduit

connecting the powered attachment to the vacuum cleaner)
connects to Peter's cleaner.

Id. at 83 (citing Ex. 1002 ¶ 321).

With respect to the recitation that “electrical cables extend rearwardly from the electrical connector through a central portion of the separation unit toward the suction motor and fan assembly,” Petitioner asserts that Neroni teaches this aspect of the claim. Pet. 84 (citing Ex. 1002 ¶ 322). Petitioner provides the following copy of Figure 1 of Neroni, annotated to highlight, among several items, a central portion of the tank, power receptacle, electrical motor, and the tank. Pet. 85 (citing Ex. 1011, Fig. 1).

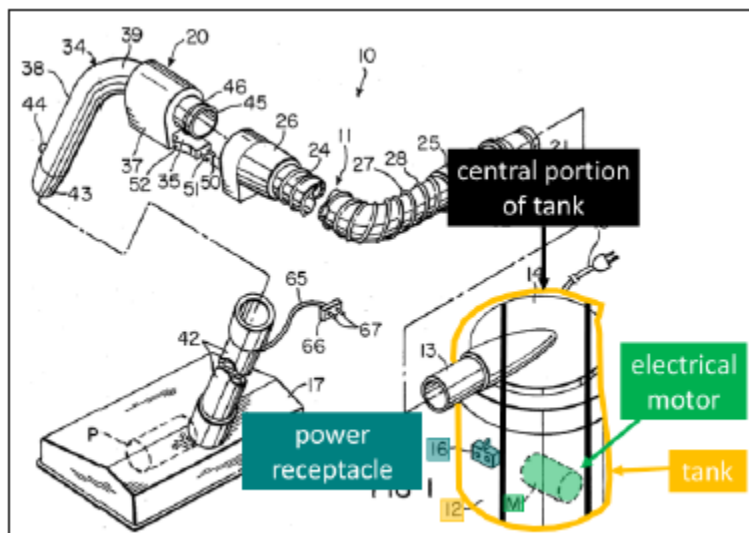


Figure 1 shows a perspective view of Neroni's vacuum cleaning system. Ex. 1011, 2:57–61. Petitioner contends that “[e]lectricity runs from the power cleaning tool to ‘receptacle 16A, and to motor M’ which is positioned in a central portion of ‘tank 12.’” Pet. 85 (emphases omitted) (citing Ex. 1011, 3:29–33, 6:42–45, Fig. 1; Ex. 1002 ¶ 323). According to Petitioner, one of ordinary skill in the art would

understand that electrical cables extend rearwardly from the power receptacle to the motor, and from the motor as a “cord

assembly,” including through a central portion of the separation unit, including a radially central portion shown above, and a central portion from top to bottom, as power receptacle 16 is located roughly halfway between the top and bottom of the tank.

Id. at 85–86 (citing Ex. 1002 ¶ 325). Petitioner adds that “[l]ike Neroni, Peter’s ‘motor 11’ is positioned in the dirt separation unit,” and provides reasons why it would have “been obvious to extend the electrical cables rearwardly through Peter’s ‘connecting piece 12,’ which extends rearwardly through each central portion of the cyclone unit and connects to ‘motor 11.’” *Id.* at 86–87 (citing Ex. 1007, 2, Fig. 1; Ex. 1002 ¶ 328).

5. Patent Owner’s Contentions Regarding Claim 1

Patent Owner contends that Petitioner’s ground of unpatentability based on Peter and Neroni is deficient. *See* Prelim. Resp. 18–23. Patent Owner argues first that the Petition fails to demonstrate that one of ordinary skill in the art would have been motivated to combine Peter and Neroni. *Id.* at 18–21. Patent Owner argues next that the combination of Peter and Neroni does not render obvious limitation [1a.3]. *Id.* at 21–23.

6. Discussion of Claim 1

Having considered the conflicting positions of the parties, we conclude that, at this stage of the proceeding, Petitioner has shown a reasonable likelihood that it would prevail in challenging the patentability of independent claim 1. In our view, Petitioner’s analysis, on this record, adequately identifies where all the elements of claim 1 are found in Peter and Neroni. We also determine that Petitioner provides sufficient arguments and evidence, at this stage of the proceeding, to support its reasoning that a person having ordinary skill in the art would have been motivated to modify

Peter's vacuum cleaner to incorporate Neroni's teachings of a power cleaning tool adaptor, as Petitioner proposes.

Patent Owner argues that the Petition fails to provide "a motivation to combine the references." Prelim. Resp. 19 (citing *KSR Int'l*, 550 U.S. at 420 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006))). Patent Owner explains that "Peter and Neroni are directed to different types of vacuum cleaners, each solving different problems with their respective vacuum cleaners." *Id.* at 19. In light of these differences, Patent Owner argues that

[e]ach of Petitioners' alleged rationales for combining Peter and Neroni are merely conclusory statements with no explanation for why the combination is a simple substitution, why the advantages of the electrical connector on the tank of a canister vacuum as taught by Neroni apply to the stick vacuum of Peter, or why the substitutions would improve the vacuum of Peter.

Id. at 20. Patent Owner further argues that the Declaration of Dr. Giachetti, relied on for support, "merely make[s] conclusory statements . . . without providing any explanation." *Id.* at 21 (citing Ex. 1002).

On the current record, we find that the Petition provides sufficient rationale to modify Peter in view of Neroni. See Pet. 68–73 (citing Ex. 1002 ¶¶ 278–287). For example, Petitioner contends that one of ordinary skill in the art would have been motivated to incorporate Neroni's teachings of a power cleaning tool adaptor into Peter's cleaning tool in order to "improve cleaning . . . by agitating the surface being cleaned." Pet. 71–72 (citing Ex. 1007, 1–2; Ex. 1002 ¶ 285). Petitioner explains that Neroni establishes that "powered cleaning tools were common" in the prior art (*id.* at 72 (citing Ex. 1011, 1:17–49; Ex. 1002 ¶ 285)), and relying on the declaration testimony of Dr. Giachetti, argues that one of ordinary skill in the art would

have “understood the well-known benefits of a powered floor tool and would’ve been motivated to incorporate Neroni’s electrical system into Peter to achieve these benefits” (*id.* (citing Ex. 1002 ¶ 286)).

Patent Owner argues that one of ordinary skill in the art would not have been motivated to combine the vacuums taught by Peter and Neroni because they “are directed to different types of vacuum cleaners” and “each [is concerned with] solving different problems with their respective vacuum cleaners.” Prelim. Resp. 19. However, other than pointing out that the vacuum cleaners in Peter and Neroni are different, Patent Owner itself provides conclusory statements, and fails to adequately explain what these differences are, or why they would deter one of ordinary skill in the art from combining the two references with a reasonable expectation of success. Patent Owner does not argue, and we see no reason to believe, that incorporating Neroni’s teachings of a power cleaning tool adaptor into Peter’s cleaning tool is not within the ability of one of skill in the art. *See KSR Int’l Co.*, 550 at 421 (“A person of ordinary skill is also a person of ordinary creativity, not an automaton.”).

Accordingly, on the current record, we determine that Petitioner has provided sufficient arguments and evidence to support its assertion that one of ordinary skill in the art would have been motivated to combine Peter and Neroni. *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”).

Patent Owner also argues that the combination of Peter and Neroni fails to teach or suggest “(1) an electrical connector provided at the front end

of the cyclone unit or air treatment member, and (2) that electrical cables extend rearwardly from the connector through a central portion of the cyclone unit or air treatment member,” as required by limitation [1a.3].

Prelim. Resp. 21–24. Patent Owner acknowledges that “Neroni discloses a “female power receptacle 16” on the outer surface of [Neroni’s] canister, which supplies power to the cleaning tool through the flexible hose assembly” and “a wiring diagram, which shows that power receptacle 16 is connected to the motor” (*id.* at 21–22 (citing Ex. 1011, 3:34–49, Fig. 4)), but argues that “this does not disclose how the electrical cables themselves are configured” (*id.* at 22). Thus, Patent Owner argues that “Neroni *does not* say (or even suggest) that an electrical cable runs from power receptacle 16 ‘through a central portion of the cyclone unit’ to the motor.” *Id.* And, to the extent “Petitioners argue that it would have been ‘obvious to try’ running an electrical cord through the center of Neroni’s tank (*i.e.*, through the air separation unit) to the motor,” Patent Owner contends that such an argument is based on “impermissible hindsight bias, at best.” Prelim. Resp. 22 (citing Pet. 86).

On this record, we determine that Petitioner’s contentions for limitation [1a.3] are sufficient for purposes of institution. In this regard, we agree with Petitioner that Neroni teaches an electrical connector located on the front end of its separation unit. Pet. 81–83 (citing Ex. 1011, 3:34–49, 6:42–45, Fig. 1; Ex. 1002 ¶¶ 318–320). At this stage of the proceeding, Petitioner also adequately demonstrates that Neroni teaches “electrical cables extending rearwardly from the electrical connector through a central portion of the separation unit toward the suction motor and fan assembly.” *Id.* at 84 (citing Ex. 1011, 3:1–2, 3:29–33, 6:42–45, Figs. 1, 4; Ex. 1002

¶¶ 322–324). Petitioner provides the following copy of Figure 1 of Neroni, annotated to highlight, among several items, a central portion of Neroni’s tank, power receptacle, electrical motor, and the tank. Pet. 85 (citing Ex. 1011, Fig. 1).

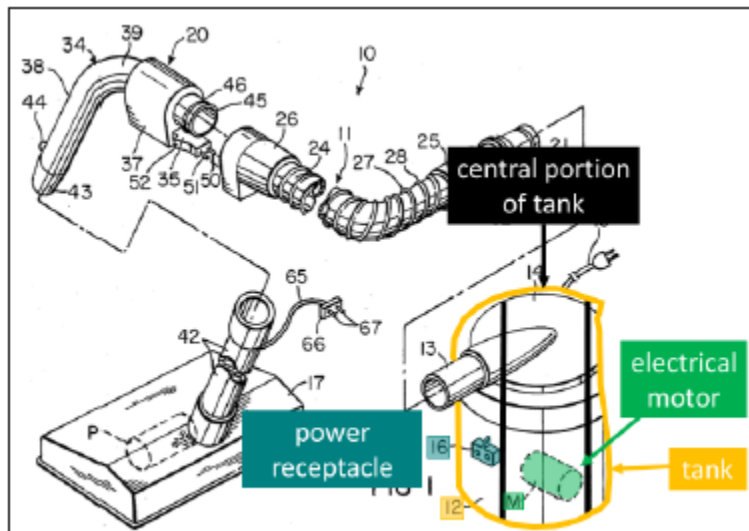


Figure 1 shows a perspective view of Neroni’s vacuum cleaning system. Ex. 1011, 2:57–61. With reference to Petitioner’s annotated version of Neroni’s Figure 1, and, relying on the declaration testimony of Dr. Giachetti, Petitioner asserts that one of ordinary skill in the art would

understand that electrical cables extend rearwardly from the power receptacle to the motor, and from the motor as a “cord assembly,” including through a central portion of the separation unit, including a radially central portion shown above, and a central portion from top to bottom, as power receptacle 16 is located roughly halfway between the top and bottom of the tank.

Pet. 85–86 (citing Ex. 1002 ¶ 325).

We also are not persuaded by Patent Owner’s assertion that Petitioner’s “obvious to try” arguments are based on “impermissible hindsight bias.” Prelim. Resp. 22 (citing Pet. 86). At this stage of the proceeding, Patent Owner has not yet provided declaration testimony to

support its assertions. As a result, Patent Owner’s assertions are founded mostly on attorney argument, and the opinions of Petitioner’s declarant presently stand unrebutted. Here, relying on the declaration testimony of Dr. Dr. Giachetti, Petitioner argues that it would have “been obvious to have Neroni’s cord assembly 15 extend rearwardly through a central portion (centered both front-to-back and top-to-bottom) of the ‘tank’” (Pet. 86 (citing Ex. 1002 ¶ 326)) because

[t]here were a finite number of solutions to implement Neroni’s teaching that electricity runs from “receptacle 16A, and to motor M”—and the most direct route—running an existing electrical cord through the center of Neroni’s “tank” would’ve been obvious to try, simple to implement using known techniques, and would have yielded predictable results of transmitting electricity.

Id. (citing Ex. 1022, 3:22–36, 6:42–45, Fig. 1; Ex. 1002 ¶ 326). Therefore, on the preliminary evidentiary record presently before us, we determine that Petitioner has made a sufficient showing, for purposes of institution, that one of ordinary skill in the art would have had reason to extend Neroni’s extend electrical cables “rearwardly from the electrical connector through a central portion of the cyclone unit toward the suction motor and fan assembly,” as required by limitation [1a.3].

Lastly, Patent Owner argues that “even if Neroni taught or suggested an electrical cable through the middle of the air treatment member in a canister vacuum (it does not), Petitioners are further deficient on explaining why a POSITA would have been motivated to apply that teaching to Peter’s stick vacuum.” Prelim. Resp. 23. According to Patent Owner, “Petitioners make only conclusory statements that a “POSA would’ve been motivated to implement Neroni’s ‘power receptacle 16’ on the front end of Peter’s cyclone unit.” *Id.* We disagree.

Instead, we find Petitioner provides sufficient rationale to apply Neroni's teachings to Peter. For example, Petitioner explains that one of ordinary skill in the art would have been motivated to "implement Neroni's 'power receptacle 16' on the front end of Peter's cyclone unit, adjacent the handvac air inlet" because it would have "been the most convenient location to connect a powered attachment to Neroni's 'cord assembly 21A,' because that is where the powered attachment (and rigid airflow conduit connecting the powered attachment to the vacuum cleaner) connects to Peter's cleaner." Pet. 83 (citing Ex. 1002 ¶ 321). Petitioner also explains that it would have "been obvious to extend the electrical cables rearwardly through Peter's 'connecting piece 12,' which extends rearwardly through each central portion of the cyclone unit and connects to 'motor 11.'" Pet. 87 (citing Ex. 1007, 2, Fig. 1; Ex. 1002 ¶ 328). Petitioner reasons that routing electrical cables "directly to 'motor 11' through Peter's 'connecting piece'" would avoid routing the cables through Peter's dust filter, and thus, "facilitate filter changing." *Id.* at 87–88 (citing Ex. 1002 ¶ 329). We find this to be a reasonable statement that is sufficiently supported at this stage.

In view of all of the above and the evidence of record, we find Petitioner's assertions sufficiently supported to show a reasonable likelihood that claim limitation [1a.3] is unpatentable.

7. Conclusion for Ground 3

After our review of Petitioner's assertions with respect to claim 1 and the supporting evidence (as summarized above), we determine that Petitioner has shown, sufficiently at this stage, that Peter, in combination with Neroni, teaches all the limitations of claim 1, and that a person of ordinary skill in the art would have had reason to combine the features of

each reference, as Petitioner proposes. We therefore determine that Petitioner is reasonably likely to prevail in showing that claim 1 is unpatentable under § 103(a) as obvious over Peter and Neroni.

We have also reviewed the arguments and evidence of record for claims 2–28 in Ground 3, and similarly find that for purposes of institution, Petitioner has demonstrated a reasonable likelihood that Peter and Neroni would have rendered these claims obvious. *See* Pet. 73–112.

On this basis, we institute *inter partes* review of all challenged claims on all grounds in the Petition. *See SAS Institute Inc.*, 138 S. Ct. at 1358; 37 C.F.R. § 42.108(a).

E. Remaining Grounds

Petitioner contends that claims 1–28 are anticipated by Butler (Pet. 12–62 (Ground 1)), and that if claims 1–28 are not anticipated by Butler, they are unpatentable as obvious over Butler (*id.* at 62–68 (Ground 2)). Petitioner further contends that claims 1–28 are unpatentable as obvious over Peter, Neroni, Martelliere, and/or Jansen. Pet. 112–119. Patent Owner disputes Petitioner’s contentions as to these additional grounds. *See* Prelim. Resp. 9–18 and 24–26. Because we have determined above that, at this stage of the proceeding and on the present record, the information presented in the Petition and Preliminary Response shows that there is a reasonable likelihood that Petitioner will prevail with respect to at least one claim based on the alleged obviousness over Peter and Neroni, we need not address Petitioner’s additional challenges at this time. *See* 35 U.S.C. § 314(a).

With respect to Grounds 1 and 2, we note that Patent Owner’s arguments regarding whether Butler discloses or suggests “an electrical connector provided on the front end of the cyclone unit,” as recited by

limitation [1a.3], appear to have some merit. Prelim. Resp. 9–10, 14–15. According to Petitioner, “Butler’s ‘entry tube’ includes an electrical connector provided on the front end of the cyclone separator to connect to ‘power leads’ and power Butler’s powered attachment.” Pet. 22 (citing Ex. 1005, 22:6–11; Ex. 1002 ¶ 117). Alternatively, Petitioner contends that one of ordinary skill in the art would have “been motivated to place an electrical connector on Butler’s entry tube, at a location on the front end of the cyclone separator.” *Id.* at 64 (citing Ex. 1005, 22:5–13; Ex. 1002 ¶ 268).

Although we agree with Petitioner that Butler teaches that “suitable power leads can be provided to connect the powered attachment to the electric circuit.” (Pet. 21 (citing Ex. 1005, 22:5–11)), on the current record and with respect to Ground 1, we agree with Patent Owner there is “[n]o text or figures in Butler [to] support [Petitioner’s] naked assertion” that, without more, Butler discloses “an electrical connector,” as required by limitation [1a.3]. Prelim. Resp. 10. Petitioner reliance on the declaration testimony of Dr. Giachetti does not support Petitioner’s argument because it provides no explanation other than repeating the Petition. *See, e.g.*, Ex. 1002 ¶ 117 (citing Ex. 1005, 22:6–11) (“In my opinion, a POSA would understand that Butler’s “entry tube 524” includes an electrical connector that is provided on the front end of the cyclone separator to connect to “power leads” and provide power to Butler’s powered attachment.”).

And, with respect to Ground 2, we agree with Patent Owner, that on the preliminary evidentiary record presently before us, “Petitioners cite to no objective evidence (other than a parroting a conclusory declaration) in support of their assertion that not only using a connector to power the tools would be obvious to a POSITA, but so too would placing the connector

exactly where the claims require the connector to be.” Prelim. Resp. 14 (citing Pet. 64–65). Petitioner reliance on the declaration testimony of Dr. Giachetti does not support Petitioner’s argument because it similarly provides no explanation other than repeating the Petition. See Ex. 1002 ¶ 268 (citing Ex. 1005, 22:5–13, Fig. 5). We encourage the parties to further develop these arguments and their positions at trial with the caveat that new arguments or theories on unpatentability and related new evidence are not allowed in a Reply, but, rather, a Petitioner’s case must be set forth with particularity in its Petition.

Patent Owner’s arguments in opposition to Ground 4 substantially mirror the arguments raised by Patent Owner with respect to Ground 3, i.e., “nothing in the proposed combination of Peter, Neroni, Martelliere, and/or Jansen cures the issues described above with respect to the “electrical connector” and “electrical cables.” Thus, for the same reasons as explained with respect to Ground 3, Ground 4 fails.” Prelim. Resp. 24. Thus, Patent Owner’s arguments with respect to Ground 4 turn primarily on Ground 3, and whether Petitioner has met its burden of showing that one of ordinary skill in the art would have been motivated to combine the art to result in Petitioner’s proposed combination. *Id.* at 24–26.

Because Petitioner demonstrates that at least one claim of the ’550 patent meets the threshold for institution, we institute *inter partes* review on all challenges. *SAS Inst.*, 138 S. Ct. at 1359–60; see also *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute to require “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

III. CONCLUSION

We determine that the information presented in the Petition establishes that there is a reasonable likelihood that Petitioner would prevail in challenging at least one claim of the '550 patent. Based on the foregoing, we institute *inter partes* review of all challenged claims on all grounds raised in the Petition. At this stage of the proceeding, we have not made a final determination with respect to the patentability of any of the challenged claims or the construction of any claim term.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that *inter partes* review of claims 1–28 of the '550 patent is instituted on the grounds asserted in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this decision.

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Patent 10,117,550 B1

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