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Paper 7
Date: November 19, 2024

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.

IPR2024-00938
Patent 11,389,038 B2

Before ERIC C. JESCHKE, MATTHEW S. MEYERS, and BRENT M. DOUGAL, *Administrative Patent Judges*.

JESCHKE, *Administrative Patent Judge*.

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

I. BACKGROUND

Dyson Technology Limited and Dyson, Inc. (collectively, "Petitioner") filed a Petition to institute *inter partes* review of claims 1–15 of U.S. Patent No. 11,389,038 B2 (Ex. 1001, "the challenged patent"). Paper 2 ("Pet."). Omachron Intellectual Property Inc. ("Patent Owner") timely filed a Preliminary Response. Paper 6 ("Prelim. Resp.").

We have authority to determine whether to institute *inter partes* review. *See* 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2023) ("The Board institutes the trial on behalf of the Director."). *Inter partes* review may not be instituted "unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314. Upon consideration of the evidence and arguments in the record, for the reasons below, we determine that the information presented shows a reasonable likelihood that Petitioner would prevail with respect to at least one of challenged claims 1–15. We thus institute *inter partes* review on all challenged claims on all asserted grounds. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1354, 1359–60 (2018); 37 C.F.R. § 42.108(a) ("When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.").

A. Related Proceedings

The parties together identify two proceedings in the U.S. District Court for the District of Massachusetts involving the challenged patent: *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-cv-12372 (D. Mass.), filed June 6, 2023; and *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-

cv-11277 (D. Mass.), filed June 6, 2023. Pet. 115; Paper 3 (Patent Owner's Mandatory Notices) at 1. Both litigations also involve U.S. Patent No. 10,080,472 B2 ("the '472 patent").

Days after filing the Petition in this proceeding, Petitioner filed a petition for *inter partes* review of claims 1–25 of the '472 patent in IPR2024-00950. *See Dyson Tech. Ltd. & Dyson, Inc. v. Omachron Intell. Prop. Inc.*, IPR2024-00950, Paper 2 (PTAB May 21, 2024). We grant institution in that proceeding concurrently with this Decision. *See* IPR2024-00950, Paper 7.

B. The Challenged Patent

The challenged patent "relates to the field of surface cleaning apparatus." Ex. 1001, 1:20–21. One disclosed embodiment is shown in Figure 13, reproduced below:

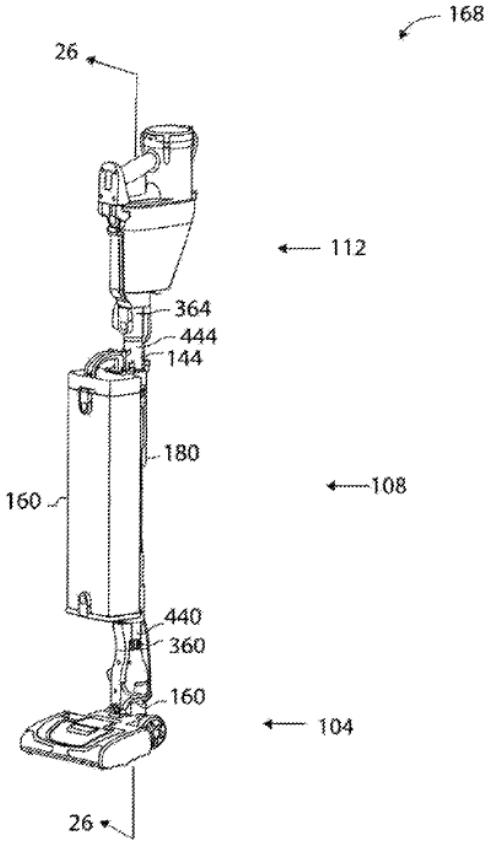


FIG. 13

Ex. 1001, Fig. 13. Figure 13 shows a front perspective view of a surface cleaning apparatus in a large dirt capacity upright cleaning mode. *See id.* at 4:42–43, 18:31–37. Depicted surface cleaning apparatus 168 generally includes surface cleaning head 104, upright section 108, and handvac 112. *Id.* at 18:31–37. Cyclone bin assembly 160 is positioned in the airflow path of the apparatus for "separating and collecting dirt from the airflow." *Id.* at 18:42–45. Handvac 112 includes cyclone bin assembly 136 (unnumbered in Figure 13). *See id.* at 18:42–47. Figure 127 is reproduced below:

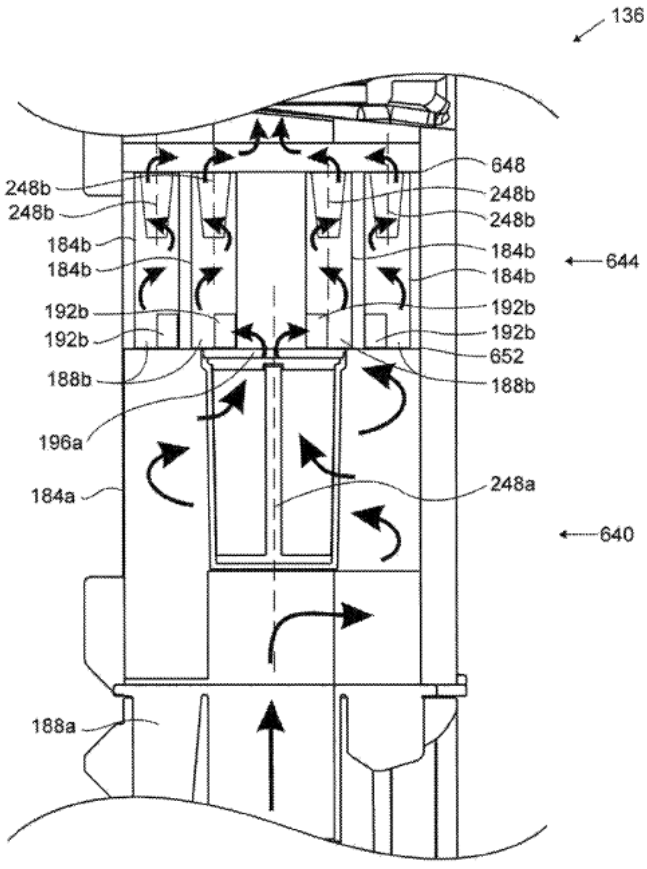


FIG. 127

Ex. 1001, Fig. 127. Figure 127 shows an enlarged partial view of a surface cleaning apparatus depicting cyclone bin assembly 136. *See id.* at 9:1–8. In the depicted embodiment, "first cyclonic cleaning stage 640 includes one

cyclone chamber 184a, and second cyclonic cleaning stage 644 includes a plurality of cyclone chambers 184b arranged in parallel." *Id.* at 22:44–48.[1] The arrows generally show the airflow through the two cyclonic cleaning stages shown in Figure 127.

C. The Challenged Claims

Petitioner challenges claims 1–15, of which only claim 1 is independent. Claim 1 is reproduced below, reformatted from the version provided in the challenged patent, with revised bracketed alphanumerical designations added to identify each clause, and with italicization to identify a limitation discussed below (the "second cyclonic stage" limitation):

1. [**1pre**] A surface cleaning apparatus comprising:

[**1a**] a surface cleaning head having a front end, a rear end, a dirt air inlet and a cleaning head air outlet;

[**1b.1**] a rigid air flow conduit having a rigid wand inlet end having an air inlet in communicable with the cleaning head air outlet, a rigid wand outlet end and a longitudinally extending conduit axis, [**1b.2**] the rigid air flow conduit is moveably mountable to the surface cleaning head between an upper position and an in-use floor cleaning position in which the rigid air flow conduit extends at an angle to the vertical, [**1b.3**] the rigid wand outlet end having an air outlet; and,

[**1c**] a hand vacuum cleaner removably mountable to the rigid wand outlet end, the hand vacuum cleaner having a front end, a rear end, an upper end, a lower end and a hand vacuum cleaner air inlet, the hand vacuum cleaner comprising:

[**1c.i**] a main body comprising a handle and 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, a first handle portion

[1] In this Decision, we omit emphasis on reference numerals in quotations from the challenged patent.

> and a second handle portion, the first handle portion is mounted to the main body at the location of the suction motor and fan assembly;
>
> [**1c.ii**] a first cyclonic stage provided at the front end of the hand vacuum cleaner, the first cyclonic stage having a front end, a rear end and a cyclone axis of rotation extends between the front and rear ends of the first cyclonic stage; and,
>
> [**1c.iii**] *a second cyclonic stage having a front end, a rear end and at least one second stage cyclone having a cyclone axis of rotation that extends between the front and rear ends of the second cyclonic stage and the rear end of the second cyclonic stage is rearward of the rear end of the first cyclonic stage*,
>
> > [**1c.iii.1**] wherein the suction motor is positioned rearward of the first cyclonic stage, and
> >
> > [**1c.iii.2**] wherein, when the hand vacuum cleaner is mounted to the rigid wand outlet end, handle is drivingly connected to the surface cleaning head.

Ex. 1001, 47:65–48:39.[2]

[2] We adopt and apply below Petitioner's designations for the elements of the challenged claims. *See* Pet. viii (showing alphanumerical designations for the language in the challenged claims revised from those originally present in claim 1).

D. Asserted Grounds of Unpatentability

Petitioner challenges claims 1–15 on the following grounds:

Claim(s) Challenged	35 U.S.C. §[3]	Reference(s)/Basis
1–15	103	Butler[4]
1–15	103	Butler, Peng[5]
1–11, 13–15	103	Lehmann[6], Peng
12	103	Lehmann, Peng, Neroni[7]

Petitioner supports its challenges with a declaration from Dr. Robert Giachetti. Ex. 1002 ("the Giachetti Declaration" or "Giachetti Decl.").

II. DISCUSSION

A. The Level of Ordinary Skill in the Art

The level of ordinary skill in the art is "a prism or lens" through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). The person of ordinary skill in the art is a hypothetical person presumed to have known the relevant prior art. *In re*

[3] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Pub. L. No. 112-29, §§ 3(c), 3(n)(1), 125 Stat. 284, 287, 293 (2011). Because there is no dispute that the claims of the challenged patent have an effective filing date after March 16, 2013, we apply the AIA version of this statute. We would reach the same outcome, however, under the pre-AIA version of the statute.

[4] International Publication WO 2007/084543 A2, published July 26, 2007 (Ex. 1005, "Butler").

[5] CN 201958793 U (and certified translation), published September 7, 2011 (Ex. 1008 (Chinese version) and Ex. 1009 (certified translation), "Peng").

[6] GB 194,963 A, published March 22, 1923 (Ex. 1006, "Lehmann").

[7] US 4,473,923, issued October 2, 1984 (Ex. 1007, "Neroni").

GPAC Inc., 57 F.3d 1573, 1579 (Fed. Cir. 1995). In determining the level of ordinary skill in the art, we may consider certain factors, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *Id.* (internal quotation marks and citation omitted).

Petitioner contends that a person having ordinary skill in the art "would have had a bachelor's degree in mechanical engineering or a similar field and 2–3 years of experience in machine design, including machines that include fluid dynamics or fluid paths, such as vacuum cleaners." Pet. 9. Petitioner also states that "[a]dditional education could offset less experience and vice versa, and [one of ordinary skill in the art] could have also obtained similar knowledge and experience through other means." *Id.*

Patent Owner "does not challenge" Petitioner's proposed definition of the level of ordinary skill in the art, but "reserves the right to provide an alternative definition . . . if IPR is instituted." Prelim. Resp. 3.

For purposes of this Decision, we adopt the definition of the level of ordinary skill in the art proposed by Petitioner, which appears consistent with the record at this stage of the proceeding, including the prior art. *See GPAC Inc.*, 57 F.3d at 1579.

B. Claim Construction

In *inter partes* reviews, the Board interprets claim language using the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), as described in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). Under that standard, we generally give claim terms their ordinary and customary meaning, as

would be understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history. *See Phillips*, 415 F.3d at 1313–14. Although extrinsic evidence, when available, may also be useful when construing claim terms under this standard, extrinsic evidence should be considered in the context of the intrinsic evidence. *See id.* at 1317–19.

Neither Petitioner nor Patent Owner proposes constructions for any claim terms. *See* Pet. 9; Prelim. Resp. 2. Based on the current record, we need not construe explicitly any claim terms because doing so would not change the outcome of the analysis below. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) ("The Board is required to construe 'only those terms . . . that are in controversy, and 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)).

C. Asserted Obviousness of Claims 1–15 Based on Butler

Petitioner asserts that claims 1–15 of the challenged patent would have been obvious based on Butler. Pet. 2, 9–65. Patent Owner provides arguments addressing this asserted ground. Prelim. Resp. 7–17. We first summarize aspects of Butler.

1. Overview of Butler

Butler discloses "a vacuum cleaner that can be used to clean floors and carpets, but is particularly adapted to clean stair treads or other elevated horizontal surfaces, stair risers and other inclined or vertical surfaces, and

surfaces located in confine[d] spaces." Ex. 1005, 7:2–5.[8] Figure 2A and Figure 2D of Butler are reproduced below:

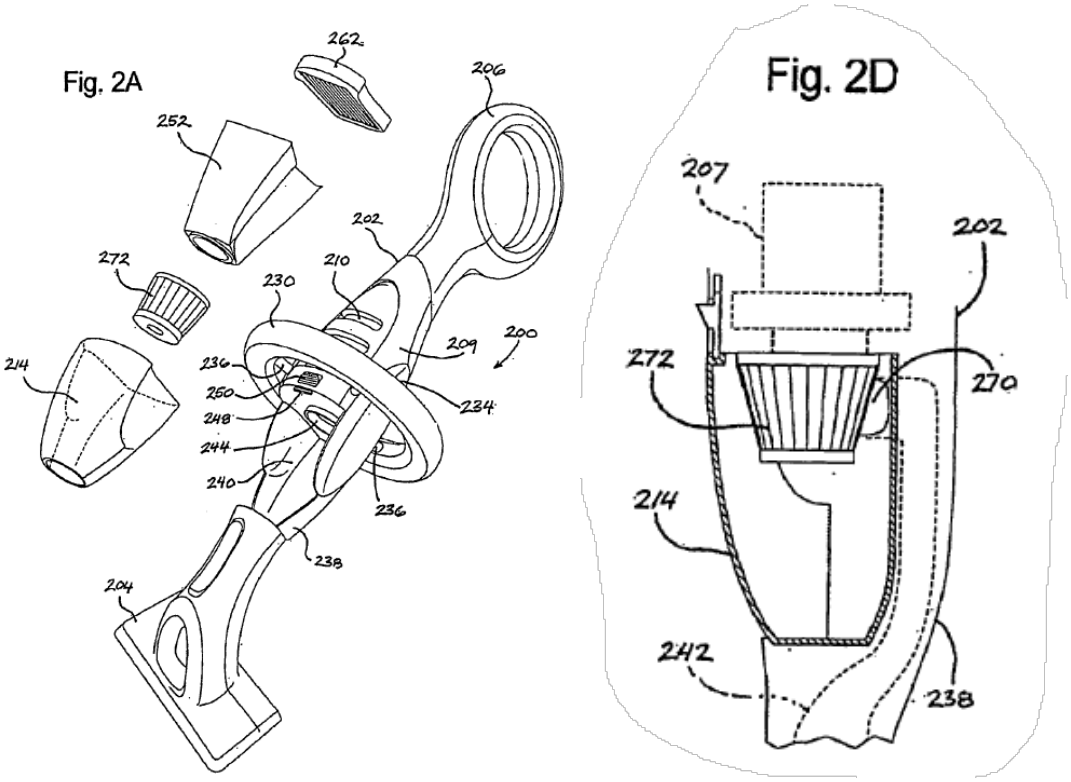


Figure 2A above on the left shows a perspective view of a vacuum cleaner, including "various complementary parts." Ex. 1005, 4:9–10. Figure 2D above on the right is "a cutaway schematic view of a cyclone separator configuration that may be employed with the embodiment of Figure 2A." *Id.* at 4:15–16. Vacuum cleaner 200 depicted in Figure 2A includes rear grip 206, elongated housing 202, foregrip 230, inlet nozzle 204, and fan/motor chamber 209. *See id.* at 15:20–24. Figure 2A also depicts dirt receptacle 214, which is shown detached from vacuum cleaner 200, but is "shaped and sized to be selectively positionable in the pocket

[8] Like Petitioner and Patent Owner, we cite to the native pagination in Butler, rather than the page numbering added by Petitioner in the bottom right corner of each page.

240." *Id.* at 16:14–15. Butler discloses that "various different types of dirt receptacle 214 may be used, and may be interchangeable with one another to provide the user with various cleaning options," including examples shown in Figures 2A–2D. *Id.* at 16:26–29.

As shown above, the exemplary dirt receptacle 214 in Figure 2D includes "a cyclone separation chamber in which the working airflow is swirled to remove dirt and dust by centrifugal or cyclonic action." Ex. 1005, 18:4–5. As shown, "inlet air passage 242 enters or terminates at an inlet port 270 through the dirt receptacle sidewall in a tangential or nearly tangential manner, which initiates a cyclonic flow therein." *Id*. at 18:7–10. The embodiment shown includes frusto-conical filter 272 over fan/motor inlet opening 244 to prevent debris from entering fan/motor 207, but Butler discloses that "any alternative filter shape, material, construction or filtration grade may be used, and multiple filter layers may also be used, as known in the art." *Id.* at 18:10–14.

2. Independent Claim 1

For independent claim 1, Petitioner contends that Butler, when modified as proposed, satisfies each limitation. Pet. 9–48. Patent Owner (1) argues that Butler, as modified, does not satisfy the "second cyclonic stage" limitation (referred to as limitation [1c.iii] above) and (2) argues that Petitioner has failed to show a motivation to modify Butler as proposed and has failed to show a reasonable expectation of success in the proposed modification. *See* Prelim. Resp. 7–17. We first summarize Petitioner's views on why the proposed modification would allegedly satisfy the "second cyclonic stage" limitation, and then we address Patent Owner's arguments.

a. Summary of Petitioner's Positions

Petitioner states that Butler, when modified as proposed, satisfies the "second cyclonic stage" limitation. Pet. 39; *see* Pet. 38–46 (entire discussion). Specifically, Petitioner first identifies teachings in Butler that its dirt separation unit may be modified, which, according to Petitioner, "would have motivated [one of ordinary skill in the art] to modify Butler to use other dirt separation systems." Pet. 39 (citing Ex. 1005, 15:25–29, 16:25–26, 18:3–14, 22:23–25; Giachetti Decl. ¶¶ 151–154). Petitioner highlights six references that allegedly show that one of ordinary skill in the art "would have understood that second cyclonic stages were well-known in the art at the time of the [challenged patent], including with the claimed features and orientation" in the "second cyclonic stage" limitation. Pet. 39–41 (citing Giachetti Decl. ¶ 155; providing images from Ex. 1027 (Fig. 2), Ex. 1028 (Fig. 1), Ex. 1029 (Fig. 1), Ex. 1009 (Fig. 3), Ex. 1021 (Fig. 1b), Ex. 1030 (Fig. 1)). Petitioner states that this "art repeatedly describes this arrangement of the first and second cyclonic stages as 'well-known.'" Pet. 41.

According to Petitioner, "it was well known in the art that two cyclonic stages provided additional filtration of the dirty air, which is an advantage over using a single cyclone." Pet. 42 (citing Giachetti Decl. ¶ 158; discussing Ex. 1009 ¶¶ 4, 5). Petitioner adds that "it was common to orient the first and second cyclonic stages such that . . . the front end of the second cyclonic stage is rearward of the rear end of the first cyclonic stage, including as shown" in three of the six references. *Id.* (citing Giachetti Decl. ¶ 159). Then, Petitioner contends that one of ordinary skill in the art

> would have been motivated [to] modify Butler to add a second cyclone, and orient it as claimed, and with the front end of the

> second cyclonic stage . . . rearward of the rear end of the first cyclonic stage, as was well-known in the art, and would have been motivated to do so based on Butler's express teachings and to achieve the well-known benefit of additional dust separation.

Pet. 42–43 (citing Giachetti Decl. ¶ 160). In addition, Petitioner discusses how the first and second cyclonic stages would have been configured and sized relative to each other in the proposed modified version of Butler, and why the configuration and sizing would not affect the "functionality, efficacy, or efficiency of the filtration system." Pet. 43–44 (citing Giachetti Decl. ¶¶ 161, 162).

Next, Petitioner addresses why the proposed modification would have satisfied the "second cyclonic stage" limitation. Pet. 44–45 (citing Giachetti Decl. ¶ 163). For example, Petitioner explains why one of ordinary skill in the art would have been motivated to "position Butler's second cyclone stage rearward of the first cyclonic cleaning stage." Pet. 44–45 (citing Giachetti Decl. ¶ 163). Petitioner concludes with a discussion of (1) why one of ordinary skill in the art would have had a reasonable expectation of success as to the proposed modification, (2) why the proposed modification would have been a simple substitution yielding a predictable result, (3) why the proposed modification would have improved Butler in a similar way to how other vacuum cleaners were improved, and (4) why one of ordinary skill in the art would have viewed the proposed modification as obvious to try. Pet. 45–46 (citing Giachetti Decl. ¶¶ 164–168).

b. Arguments as to the "second cyclonic stage" Limitation

Patent Owner argues that Petitioner has failed to adequately demonstrate that Butler, when modified as proposed, satisfies the "second cyclonic stage" limitation. Prelim. Resp. 9–11. Specifically, Patent Owner

contends that "the Petition fail[s] to identify any disclosure in Butler that suggests—let alone teaches—a second cyclonic stage" and that, although one of ordinary skill in the art's "'common sense and common knowledge have their proper place in the obviousness inquiry,' common knowledge cannot supply a limitation that is missing from the prior art unless the record establishes that 'the [missing] limitation in question [is] unusually simple and the technology particularly straightforward.'" *Id.* at 9–10 (quoting *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361–62 (Fed. Cir. 2016)). At this stage of the proceeding, Patent Owner's arguments raise some questions as to the propriety of Petitioner's reliance on allegedly "well-known" aspects in this asserted ground.

Petitioner does not rely on *any* of the six references highlighted in discussion of this asserted ground as teaching or suggesting any aspect of the "second cyclonic stage" limitation. Instead, those six references are highlighted as indicating aspects of the relevant technology that are "well-known." *See, e.g.*, Pet. 39 (discussing how one of ordinary skill in the art "would have understood that second cyclonic stages were well-known in the art at the time"), Pet. 41 ("The art repeatedly describes this arrangement of the first and second cyclonic stages as 'well-known.'"). As discussed in the *Arendi* decision, common sense or common knowledge are "typically invoked to provide a known *motivation to combine*, not to supply a missing claim limitation." *Arendi*, 832 F.3d at 1362. In addition, the *Arendi* court noted that, in *Perfect Web Technologies, Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1326 (Fed. Cir. 2009), "common sense was invoked to supply a limitation that was admittedly *missing* from the prior art [when] the limitation in question was unusually simple and the technology particularly

straightforward." *Arendi*, 832 F.3d at 1362. Contrary to Patent Owner's assertion (Prelim. Resp. 10 (first full sentence)), the *Arendi* decision did not limit the use of "common knowledge" in providing missing limitations *only* to situations in which the limitation in question was unusually simple and the technology particularly straightforward"; instead, the court simply noted the facts in *Perfect Web*. *Arendi*, 832 F.3d at 1362.

Indeed, in the statements summarizing the use of common sense to provide a missing limitation, the *Arendi* court does not mention Patent Owner's asserted requirement for a simple limitation or straightforward technology:

> [W]e conclude that while "common sense" can be invoked, even potentially to supply a limitation missing from the prior art, it must still be supported by evidence and a reasoned explanation. In cases in which "common sense" is used to supply a missing limitation, as distinct from a motivation to combine, moreover, our search for a reasoned basis for resort to common sense must be searching. And, this is particularly true where the missing limitation goes to the heart of an invention.

Arendi, 832 F.3d at 1363. These statements indicate that "common sense" or "common knowledge" may supply a missing limitation if a "searching" reasoned analysis is provided, along with adequate evidentiary support.

Patent Owner contends that Petitioner relies on "common sense" as a "wholesale substitute for reasoned analysis and evidentiary support." Prelim. Resp. 10 (quoting *Arendi*, 832 F.3d at 1362). We disagree. Here, unlike in *Arendi*, Petitioner here provided *at least some* reasoned analysis and evidentiary support—including, for example, the six references discussed above—that the "second cyclonic stage" limitation is "well known." *See* Pet. 38–46 (citing Giachetti Decl. ¶¶ 151–168); *see also K/S HIMPP v. Hear-Wear Techs., LLC*, 751 F.3d 1362, 1366 (Fed. Cir. 2014)

(discussing how "an assessment of basic knowledge and common sense as a replacement for documentary evidence for core factual findings lacks substantial evidence support"). To the extent Petitioner continues to assert this ground following institution, the parties should develop this issue further, including addressing whether Petitioner's showing as to the "second cyclonic stage" limitation satisfies the requirements provided in the block quote above (quoting *Arendi*, 832 F.3d at 1363). On the current record and in view of our decision to institute based on other grounds (as discussed below), we reach no conclusion as to whether Petitioner has shown a reasonable likelihood of prevailing in showing that Butler, when modified as proposed, satisfies the "second cyclonic stage" limitation.

c. Arguments as to the Proposed Modification of Butler

Patent Owner presents three arguments as to why Petitioner has failed to show a motivation to modify Butler as proposed and has failed to show a reasonable expectation of success. *See* Prelim. Resp. 12–17. First, Patent Owner asserts that one of ordinary skill in the art "having read Butler would ***not [have] be[en] motivated*** to simply stick a second cyclonic stage to any embodiment disclosed by Butler" because the proposed modification would undermine the stated usage of cleaning stairs instead of floors. *Id.* at 12. Patent Owner contends that one of ordinary skill in the art would have known (1) "that adding a second cyclonic stage would occupy a considerable space and disadvantageously reduce space efficiency" and (2) "that adding such a second cyclonic stage to any embodiment of Butler would add length to the vacuum and/or add length to the distance between the foregrip and the rear grips, disrupting the delicate ergonomic balance, which is the central objective of Butler's teachings." *Id.* at 13 (citing Ex. 1009 ¶ 5).

At this stage of the proceeding, these assertions are mere attorney argument, unsupported by declaration testimony or other evidence of the understanding of one of ordinary skill in the art on the relevant issues. *See In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974) ("Attorney's argument in a brief cannot take the place of evidence."). To the extent Patent Owner contends—with mere attorney argument—that paragraph 5 of Peng would have dissuaded one of ordinary skill in the art from adding a second cyclonic stage for "space efficiency" reasons (Prelim. Resp. 13), we disagree. First, Patent Owner does not provide any explanation to support that position, including testimony from a declarant. *Id.* Second, paragraph 5 of Peng discusses space issues with the second-stage cyclone unit in one reference—Chinese Patent Application CN101862165A—but does not indicate that such concerns impact *all* second-stage cyclone units. *See* Ex. 1009 ¶ 5. The parties should consider further developing the record on these issues, including with declaration testimony, as appropriate.

Second, Patent Owner asserts that Butler "is totally agnostic as to the level of filtration implemented" and that "[a]dditional filtration is not seen as necessarily an advantage by Butler." Prelim. Resp. 13. Thus, according to Patent Owner, one of ordinary skill in the art would not have undertaken the proposed modification. *See id.* at 13–14.

To the extent argued by Patent Owner, Butler need not expressly state a need for increased filtration to support a motivation to combine. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418–19 (2007) (holding that when the teaching-suggestion-motivation test is applied as a rigid formula, it is incompatible with Supreme Court precedent). Instead, "[u]nder the correct analysis, 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. At this stage of the proceeding, Petitioner presents adequate reasoning with rational underpinning—supported by the Giachetti Declaration—that one of ordinary skill in the art would have modified the vacuum cleaner of Butler to include a second cyclonic stage, as claimed, for additional filtration and dust separation. *See, e.g.*, Pet. 42–43 (citing Giachetti Decl. ¶¶ 158–160), 44 (citing Giachetti Decl. ¶ 162), 45–46 (citing Giachetti Decl. ¶¶ 165–168).

Patent Owner's specific assertions as to how one of ordinary skill in the art would have interpreted and applied Butler are mere attorney argument, unsupported by declaration testimony or other evidence of the understanding of one of ordinary skill in the art on the relevant issues. *See Pearson*, 494 F.2d at 1405; *see, e.g.*, Prelim. Resp. 13 (asserting, with no citation, that one of ordinary skill in the art "having read Butler would understand that Butler does not prioritize the maximum filtration power possible but rather ergonomic comfort"), 14 (asserting, with no citation, that one of ordinary skill in the art "having read Butler would not seek to increase filtration power but rather heed the central objective of its teachings and refrain from adding a second cyclonic stage, thereby adding length, to the embodiments").

Third, Patent Owner argues that "adding a second cyclonic stage is nothing close to a simple substitution using known methods that can yield predictable results" and that Petitioner has not provided adequate explanation of the proposed modification. Prelim. Resp. 14. According to Patent Owner, one of ordinary skill in the art "designing a second cyclonic stage would have to design the parts as well as the air flow path mentioned

above in a tight space displayed here in But[l]er Fig. 5, and it is nothing of a 'simple substitution.'" *Id.* at 16.

Petitioner adequately explains the configuration of the proposed modification of Butler at this stage of the proceeding. For example, as part of the more than seven pages of the Petition addressing the "second cyclonic stage" limitation (and as noted above (*see* § II.C.2.a)), Petitioner presents over a page discussing how the first and second cyclonic stages would have been configured and sized relative to each other in the proposed modified version of Butler and also why the proposed configuration and sizing would not affect the "functionality, efficacy, or efficiency of the filtration system." Pet. 43–44 (citing Giachetti Decl. ¶¶ 161, 162).

Further, this discussion relies on two paragraphs in the Giachetti Declaration, whereas Patent Owner relies on mere attorney argument as to the technical issues that one of ordinary skill in the art would have allegedly encountered with the proposed modification. *See* Prelim. Resp. 16 (last sentence); *Pearson*, 494 F.2d at 1405. Patent Owner contends that the Giachetti Declaration provides inadequate support for the proposed modification and makes "conclusory statements." Prelim. Resp. 17. At this stage of the proceeding, without countervailing testimony, we need not and do not determine the sufficiency of Dr. Giachetti's testimony on these issues.

On the current record and in view of our decision to institute based on other grounds (as discussed below), we reach no conclusion as to whether Petitioner has adequately shown a motivation to modify Butler as proposed and has shown a reasonable expectation of success in the proposed modification.

Because the Petition shows a reasonable likelihood that Petitioner would prevail with respect to at least one of the challenged claims based on other asserted grounds (*see* § II.D.2 below and § II.E.2 below), we include this ground in the instituted *inter partes* review. *See SAS*, 138 S. Ct. at 1354, 1359–60; 37 C.F.R. § 42.108(a).

3. Dependent Claims 2–15

Claims 2–15 depend from independent claim 1. Patent Owner does not present any arguments specifically addressing claims 2–15 in the context of this asserted ground. *See* Prelim. Resp. 22. We include claims 2–15 in the context of this asserted ground in the instituted *inter partes* review. *See SAS*, 138 S. Ct. at 1354, 1359–60; 37 C.F.R. § 42.108(a).

D. Asserted Obviousness of Claims 1–15 Based on Butler and Peng

Petitioner asserts that claims 1–15 of the challenged patent would have been obvious based on Butler and Peng. Pet. 2, 65–72. Patent Owner provides arguments addressing this asserted ground. Prelim. Resp. 18–22. We first summarize aspects of Peng.

1. Overview of Peng

In this asserted ground, Petitioner relies on Peng, in addition to Butler (summarized above (*see* § II.C.1 above)). Peng discloses "a cyclone separation device and a cyclone vacuum cleaner equipped with the same." Ex. 1009 ¶ 1. Figure 3 and Figure 4 of Peng are reproduced below:

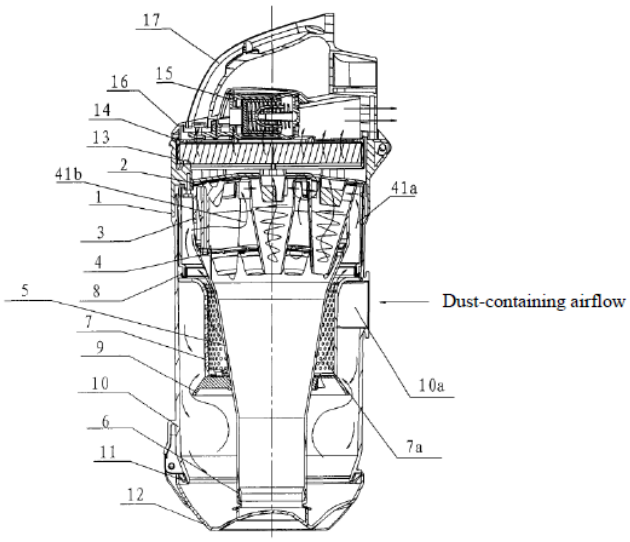


Fig. 3

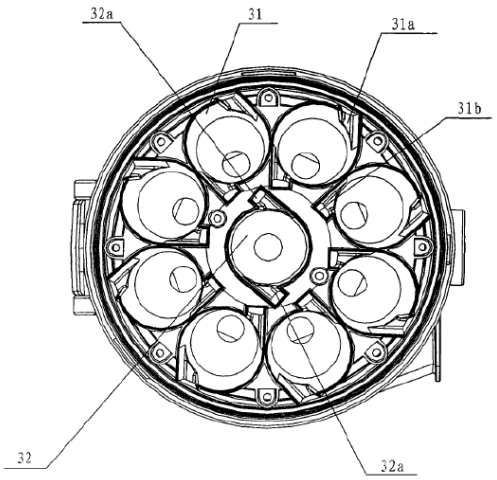


Fig. 4

Ex. 1009, Figs. 3 & 4. Figure 3 above on the left is a schematic view of a cyclone separation device. *Id.* ¶ 34. Figure 4 above on the right is a top view of a separator in a cyclone separation device. *Id.* ¶ 35. The cyclone separation device shown in Figure 3 includes a first cyclone separation unit (shown in the lower portion of Figure 3) and a second cyclone separation unit located downstream from the first cyclone separation unit (shown in the middle-upper portion of Figure 3). *Id.* ¶ 55. The first cyclone separation unit includes dust bucket 10 and mesh filter 7. *Id.* Dust bucket 10 includes tangential air inlet 10a. *Id.*

The second cyclone separation unit includes connecting bucket 5 and separator 3, which includes a plurality of cyclone cylinders 31 (shown in Figure 4). Ex. 1009 ¶ 55. As shown in Figure 4, "separator 3 is arranged such that a plurality of cyclone cylinders 31 are provided around the outside" (*id.* ¶ 56) with central cyclone cylinder 32 in the middle (*id.* ¶ 57).

2. Independent Claim 1

For independent claim 1, Petitioner contends that the proposed combination of Butler and Peng satisfies each limitation. Pet. 65–72. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* Petitioner also articulates reasons to combine the relied-upon aspects of Butler and Peng. *Id.* Patent Owner (1) challenges the articulated reasons to combine Butler and Peng and (2) challenges whether there would have been a reasonable expectation of success in the proposed combination.

We have reviewed Petitioner's contentions with respect to claim 1, and for the reasons below, we determine that the Petition shows a reasonable likelihood that Petitioner would prevail in demonstrating that claim 1 would have been obvious based on Butler and Peng. We address in turn below each of Patent Owner's arguments.

a. The Combination of Butler and Peng

Petitioner asserts that one of ordinary skill in the art would have been motivated to combine Butler and Peng as proposed and also that the proposed combination would satisfy the "second cyclonic stage" limitation. *See* Pet. 65–72. Specifically, Petitioner states that it would have been obvious to one of ordinary skill in the art to have modified "Butler's hand vacuum cleaner to incorporate a two-stage cyclone separation system, including as taught by Peng, for the same reasons as explained in Ground 1,

Limitation [1c.iii]."[9] Pet. 66 (citing Pet. 38–46; Giachetti Decl. ¶¶ 236–238).

Petitioner adds that one of ordinary skill in the art "would have been motivated to incorporate Peng's second cyclonic separation unit immediately downstream of Butler's first cyclonic stage, for the reasons [provided at Pet. 38–46], and to match the orientation of their respective first cyclone stages, with the upstream side at the front, and the downstream side at the rear." Pet. 67 (citing Ex. 1009, Fig. 3; Ex. 1005, Fig. 2D; Ex. 1008 ¶¶ 5, 8, 10, 12, 59, 60; Giachetti Decl. ¶ 240); *see also* Pet. 71 (stating that one of ordinary skill in the art "would have been motivated to use a two-stage cyclonic separation unit with Butler by modifying the dirt receptacle comprising a single cyclone stage and to incorporate Peng's teachings of a second cyclone stage" (citing Giachetti Decl. ¶ 244)).

According to Petitioner, one of ordinary skill in the art (1) "would have understood that a two-stage cyclonic stage provides additional filtration of dirty air, which is an advantage over a single cyclone separation device" and (2) "would have been motivated to combine Butler with the teachings in Peng by adding a second cyclonic stage immediately downstream to the first to achieve the well-known and predictable benefits of additional dust separation." Pet. 71–72 (citing Giachetti Decl. ¶¶ 244–245).

Patent Owner presents three arguments as to why Petitioner has allegedly failed to show a motivation to combine Butler and Peng as proposed. *See* Prelim. Resp. 18–21. First, Patent Owner argues that one of

[9] Peng is one of the six references discussed above in the context of the asserted ground of obviousness based on Butler alone. *See* § II.C.2.a; Pet. 40 (showing Figure 3 of Peng in the bottom right quadrant).

ordinary skill in the art would not have undertaken the proposed combination because Petitioner failed to "identify with any specificity why [one of ordinary skill in the art] would want to increase filtration power in But[l]er." Prelim. Resp. 19. With this argument, Patent Owner references and largely repeats the second of the three arguments addressed above as to the asserted ground of obviousness based on Butler alone. *See* Prelim. Resp. 19 (referencing Prelim. Resp. 12–17); *see also* § II.C.2.c above. The discussion above applies equally here.

Second, Patent Owner asserts that one of ordinary skill in the art "having read Butler would ***not [have] be[en] motivated*** to simply stick a second cyclonic stage from Peng to any embodiment disclosed by Butler" because the proposed modification would have undermined the stated usage in Butler of cleaning stairs instead of floors. Prelim. Resp. 19–20. Specifically, Patent Owner contends that one of ordinary skill in the art would have known "that adding a second cyclonic separator stage from this embodiment of Peng to Butler would be a large-scale modification severely altering the ergonomics and stated benefits of the Butler's disclosed embodiments." *Id.* at 20. According to Patent Owner, "Peng does not cure Butler's teaching away from the proposed combination because Peng teaches that even adding a compact dual cyclone still would have resulted in a longer device in contrast to Butler's objectives." *Id.* at 20–21. Patent Owner adds that one of ordinary skill in the art would have known "that adding a conventional second cyclonic stage to any embodiment of Butler would add length to the vacuum and/or add length to the distance between the foregrip and the rear grips, disrupting the delicate ergonomic balance, which is the central objective of Butler's teachings." *Id.* at 21.

At this stage of the proceeding, these assertions are mere attorney argument, unsupported by declaration testimony or other evidence of the understanding of one of ordinary skill in the art on the relevant issues. *See Pearson*, 494 F.2d at 1405. As to Patent Owner's assertions that "Peng explicitly teaches that adding a second cyclonic stage would occupy a considerable space and disadvantageously reduce space efficiency" (Prelim. Resp. 21 (citing Ex. 1009 ¶ 5)) and that this alleged teaching would have dissuaded one of ordinary skill in the art from adding a second cyclonic stage for space efficiency reasons, we disagree. As discussed previously, paragraph 5 of Peng discusses space issues with the second-stage cyclone unit in one specific reference—Chinese Patent Application CN101862165A—but gives no indication that such a concern impacts *all* second-stage cyclone units. *See* Ex. 1009 ¶ 5. The parties should consider further developing the record on these issues, including with declaration testimony, as appropriate.

Third, Patent Owner argues that one of ordinary skill in the art would not have undertaken the proposed combination because the objectives of Peng and Butler differ. Prelim. Resp. 21. Specifically, Patent Owner contends that "Peng makes clear that prior art second cyclonic stage configurations have their drawbacks, and that its teachings and design of the disclosed embodiments are focused on increasing the cross-sectional area of the air inlets of the second stage cyclone cylinders, evenly distributing airflow, and 'improving the separation efficiency,'" but that "none of these objectives align with . . . Butler's stated objective of providing an ergonomic and maneuverable cleaner for stairs." *Id.*

At this stage of the proceeding, Patent Owner does not adequately explain this argument. Patent Owner cites no caselaw—and we are aware of none—requiring the alignment of the alleged "objectives" of two prior art references relied on in an obviousness ground. The parties should consider further developing the record on this issue as appropriate.

At this stage of the proceeding and on the current record, we determine that Petitioner has made a sufficient showing that a person of ordinary skill in the art would have had reason to combine Butler and Peng as proposed and that the articulated reasoning is supported by rational underpinning.

b. Reasonable Expectation of Success

Patent Owner argues that Petitioner has failed to show a reasonable expectation of success in combining Butler and Peng as proposed. *See* Prelim. Resp. 21–22. Patent Owner asserts that (1) Petitioner "made no attempt to establish" a reasonable expectation of success for this proposed combination and that (2) "[t]his deficiency alone dooms this ground." *Id.* at 21. According to Patent Owner, there is "is nothing routine or simple or predictable" about the proposed combination. *Id.* at 22.

Although Petitioner does not expressly use the phrase "reasonable expectation of success" in the section of the Petition solely addressing this asserted ground (*see* Pet. 65–72), Petitioner does state that one of ordinary skill in the art "would have been motivated to combine Butler with the teachings in Peng by adding a second cyclonic stage immediately downstream to the first to achieve the *well-known and predictable* benefits of additional dust separation." Pet. 71–72 (emphasis added) (citing Giachetti Decl. ¶ 244). We view this statement referring back to a similar

discussion in the section of the Petition addressing the asserted ground of obviousness based on Butler alone, which relied on Butler's teachings as to interchangeable components to show a reasonable expectation of success:

> Furthermore, Butler expressly teaches that its various components are combinable and "may be interchangeable with one another to provide the user with various cleaning options," Ex1005, 16:25–29, and that "the present invention includes embodiments in which the features described herein are used individually or in various other inventive combinations," *id.* at 43:29–44:3; *see also id.* at 4:17–28, 18:22–28, 19:9–15, 34:12–13 (components are combinable). Combining Butler's components would have been obvious, with at least a reasonable expectation of success, including based on these teachings. Ex1002 ¶164. [One of ordinary skill in the art] would have understood that a simple substitution of one cyclonic stage for two cyclonic stages, where there would be an additional dust filtration, would have yielded the predictable result of additional dust filtration. *Id.* at ¶¶165–166.

Pet. 45. Central to this analysis, for the asserted ground based on Butler and Peng, Petitioner incorporates this earlier discussion—including the discussion of reasonable expectation of success—by *expressly* relying on the *same reasoning* provided for the asserted ground of obviousness based on Butler alone (referred to by Petitioner as "Ground 1"). *See* Pet. 66 ("It would have been obvious to modify Butler's hand vacuum cleaner to incorporate a two-stage cyclone separation system, including as taught by Peng, for the same reasons as explained in Ground 1, Limitation [1c.iii]. *See* Ground 1, Limitation [1c.iii]. Ex1002 ¶¶236–238."); Pet. 45 (containing the block quote above, located in the section addressing "[1c.iii]"). On the current record, and for the reasons above, Petitioner has made a sufficient showing that a person of ordinary skill in the art would have had a

reasonable expectation of success in combining Butler and Peng as proposed.

Patent Owner does not offer any arguments specifically addressing the limitations of claim 1. *See* Prelim. Resp. 18–22. We have reviewed these aspects of Petitioner's contentions and determine that the Petition provides a sufficient showing, at this stage of the proceeding, that the combination of Butler and Peng satisfies each limitation. *See* Pet. 65–72. For the reasons above, we determine, based on the current record, that the Petition shows a reasonable likelihood that Petitioner would prevail in demonstrating that claim 1 would have been obvious based on Butler and Peng.

3. Claims 2–15

For dependent claims 2–15, Petitioner contends that the proposed combination of Butler and Peng satisfies each limitation. Pet. 65–72. Patent Owner does not present any arguments specifically addressing claims 2–15 in the context of this asserted ground. *See* Prelim. Resp. 22. We include claims 2–15 in the context of this asserted ground in the instituted *inter partes* review. *See SAS*, 138 S. Ct. at 1354, 1359–60; 37 C.F.R. § 42.108(a).

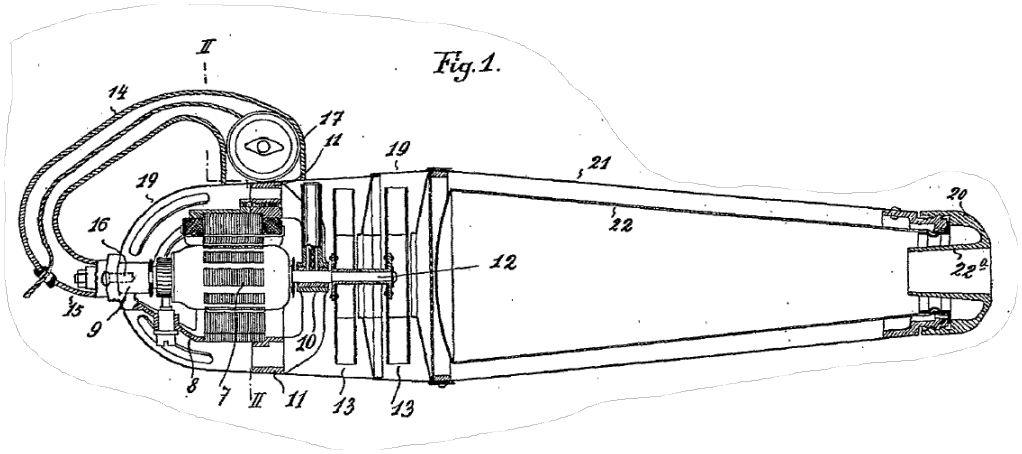
E. Asserted Obviousness of Claims 1–11 and 13–15 Based on Lehmann and Peng

Petitioner asserts that claims 1–11 and 13–15 of the challenged patent would have been obvious based on Lehmann and Peng. Pet. 2, 72–107. Patent Owner provides arguments addressing this asserted ground. Prelim. Resp. 23–27. We first summarize aspects of Lehmann.

1. Overview of Lehmann

In this asserted ground, Petitioner relies on Lehmann, in addition to Peng (summarized above (*see* § II.D.1 above)). Lehmann discloses "a portable vacuum cleaner, comprising in a casing an electromotor, a

centrifugal fan, and a dust bag." Ex. 1006, 1:25–29. Figure 1 of Lehmann is reproduced below:



Ex. 1006, Fig. 1. Figure 1 depicts a longitudinal section of a portable vacuum cleaner. *Id.* at 1:52–53. The portable vacuum cleaner depicted includes electromotor 7 driving two-stage centrifugal fan 13 via motor shaft 12. *Id.* at 1:63–70. Dust bag 22 is enclosed within tapering part 21 and cap 20. *Id.* at 1:78–82.

2. Independent Claim 1

For independent claim 1, Petitioner contends that the proposed combination of Lehmann and Peng satisfies each limitation. Pet. 72–99. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage with respect to the corresponding claim limitation. Pet. 79–99. Petitioner also articulates reasons to combine the relied-upon aspects of Lehmann and Peng. Pet. 72–79. Patent Owner (1) challenges the articulated reasons to combine Lehmann and Peng and (2) challenges whether there would have been a reasonable expectation of success in the proposed combination.

We have reviewed Petitioner's contentions with respect to claim 1, and for the reasons below, we determine that the Petition shows a reasonable

likelihood that Petitioner would prevail in demonstrating that claim 1 would have been obvious based on Lehmann and Peng. We address in turn below each of Patent Owner's arguments.

a. The Combination of Lehmann and Peng

Petitioner asserts that one of ordinary skill in the art would have been motivated to combine Lehmann and Peng as proposed and also that one of ordinary skill in the art would have had a reasonable expectation of success in the proposed combination. *See* Pet. 72–79. Explaining the proposed combination, Petitioner states that one of ordinary skill in the art "would have been motivated to substitute Lehmann's dust separation unit (a dust bag) with Peng's separation unit (a two-stage cyclonic separation unit) to achieve the well-known benefits of modern cyclonic separation, including as described" on pages 72 through 76 of the Petition. Pet. 76 (citing Giachetti Decl. ¶ 251).

Petitioner first discusses why Lehmann and Peng are analogous art. Pet. 77 (citing Giachetti Decl. ¶ 252). Second, Petitioner asserts that the proposed "combination would have involved a simple substitution of known elements for others to obtain predictable results." *Id*. (citing Giachetti Decl. ¶ 253). According to Petitioner, one of ordinary skill in the art would have understood that the proposed substitution "would achieve the predictable results of filtering air (with a high[-]level efficiency, without loss of suction as the bag filled, without the need to purchase, change, or dispose of dust bags, and would allow a user to see how full the dust separation unit is)." Pet. 77–78 (citing Giachetti Decl. ¶ 253). Third, Petitioner contends that it would have been obvious to try the proposed combination because one of ordinary skill in the art would have understood that "there are a finite

number of identified dust-separation solutions, including dust bags (as Lehmann teaches) and cyclonic separators (as Peng teaches), and it would have been obvious to try to achieve the known benefits" described by Petitioner. Pet. 78 (citing Giachetti Decl. ¶ 254).

Patent Owner presents two arguments as to why Petitioner has failed to show a motivation to combine Lehmann and Peng as proposed. *See* Prelim. Resp. 23–26. First, Patent Owner argues that the time gap between the publication dates of Lehmann and Peng would hinder the combination and that Petitioner has failed to identify why one of ordinary skill in the art "would have selected Lehmann as a starting point and then additionally want to modify Lehmann incorporating Peng's first and second cyclonic stages, from almost 90 years later." *Id.* at 23 (also noting that "Lehmann is a publication that is over a century old" and that "Lehmann and Peng are 89 years apart").

As an initial matter, "[t]he mere age of the references is not persuasive of the [non]obviousness of the combination of their teachings, absent evidence that, notwithstanding knowledge of the references, the art tried and failed to solve the problem." *In re Wright*, 569 F.2d 1124, 1127 (CCPA 1977). Further, Petitioner presented more than seven pages addressing the "Motivation to Combine Lehmann and Peng." Pet. 72–79. Patent Owner's conclusory statements that Petitioner's efforts "fail" do not substantively address significant portions of Petitioner's presented reasoning. *See, e.g.*, Prelim. Resp. 23 (concluding that "Petitioners fail to establish that [one of ordinary skill in the art] would have been motivated to combine Lehmann and Peng" and that "Petitioners fail to identify why [one of ordinary skill in the art] at the time of invention would have selected Lehmann as a starting

point and then additionally want to modify Lehmann incorporating Peng's first and second cyclonic stages").

Second, Patent Owner contends that Lehmann lists "four objectives" in its disclosure that are allegedly "incompatible with Petitioner['s] proposed combination of Lehmann and Peng":

> 1. Facility of manipulation, so that it can be handled by a child if desired.
> 2. Compactness, enabling it to operate under and behind chairs and like furniture.
> 3. Favorable distribution of weight.
> 4. Efficient suction, equal to that of stationary appliances.

Ex. 1006, 1:25–36, *quoted at* Prelim. Resp. 24. In support, as to the first three objectives, Patent Owner argues that "Peng's two-stage cyclonic separation unit is significantly larger in size than Lehmann's embodiment" and thus the alleged proposed combination would "become less easy to manipulate, less compact, and obtained lopsided weight distribution (the two-stage cyclonic separation unit being significantly heavier than the original simple dirt bag)." Prelim. Resp. 25. As to the fourth objective, Patent Owner contends that paragraph 5 of Peng would have dissuaded one of ordinary skill in the art from "mov[ing] further to a two-stage cyclonic separator, knowing that an extra layer of smaller cyclones may reduce the suction efficiency, causing blocks and reducing effectiveness of cleaning." *Id.* at 24 (citing Ex. 1009 ¶ 5).

At this stage of the proceeding, these assertions are mere attorney argument, unsupported by declaration testimony or other evidence of the understanding of one of ordinary skill in the art on the relevant issues. *See Pearson*, 494 F.2d at 1405. The parties should, however, consider further

developing the record on these issues—including with declaration testimony—as appropriate.

At this stage of the proceeding and on the current record, we determine that Petitioner has made a sufficient showing that a person of ordinary skill in the art would have had reason to combine Lehmann and Peng as proposed and that the articulated reasoning is supported by rational underpinning.

b. Reasonable Expectation of Success

In the section of the Petition addressing the motivation to combine Lehmann and Peng, Petitioner presents two reasons why one of ordinary skill in the art "would have had a reasonable expectation of success substituting Lehmann's dust bag with Peng's cyclonic separator teachings." Pet. 78 (citing Giachetti Decl. ¶ 255). First, Petitioner states that one of ordinary skill in the art "would have understood that these two separation units could be used interchangeably, and would have further expected success for the reasons stated above, including because such modification involves a simple substitution of known elements that perform similar functions in similar ways." *Id.* (citing Giachetti Decl. ¶ 255). Second, Petitioner states that one of ordinary skill in the art "would have had a reasonable expectation of success incorporating Peng's cyclonic-separation teachings into Lehmann because it was well-known that front-located air inlets (such as Lehmann's) create cyclonic separation by using a tangential opening." Pet. 78–79 (discussing teachings of tangential air inlets in Peng and Martelliere (Ex. 1011 (French version) and Ex. 1012 (translation))).

Patent Owner asserts that Petitioner has failed to show a reasonable expectation of success in combining Lehmann and Peng as proposed. *See*

Prelim. Resp. 26. Patent Owner contends that "Petitioner's conclusory claim to the contrary only cites one paragraph of the parroting expert declaration as support." *Id.* (citing Pet. 78). According to Patent Owner, Petitioner "address[es] nothing with regard to any potential issues mismatching the two differently sized halves of a vacuum cleaner as proposed, such as how the air flow outlets of Peng's second stage cyclones are drawn to the disclosed two-stage centrifugal fans as disclosed by Lehmann." *Id.*

On the record here, Petitioner has made a sufficient showing that a person of ordinary skill in the art would have had a reasonable expectation of success in combining Lehmann and Peng as proposed. Here, Patent Owner does not specifically address paragraph 255 of the Giachetti Declaration. The mere fact that Petitioner cites only one paragraph[10]—especially when Patent Owner does not cite any contrary declaration testimony—does not alone constitute a deficiency in Petitioner's presentation at this stage of the proceeding.

Moreover, on the current record, we are persuaded that one of ordinary skill in the art would have been technically capable of modifying the sizes of the relied-upon portions of the devices in Lehmann and Peng to give one of ordinary skill in the art a reasonable expectation of success in their combination, as proposed. *See KSR*, 550 U.S. at 418 (stating that the obviousness analysis "can take account of the inferences and creative steps that a person of ordinary skill in the art would employ"), 421 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton."). In

[10] The discussion of reasonable expectation of success on pages 78 and 79 of the Petition actually cites *two* paragraphs of the Giachetti Declaration: paragraphs 255 and 256.

contrast, Patent Owner's contrary assertion is mere attorney argument. *See Pearson*, 494 F.2d at 1405. The parties should consider further developing the record on this issue—including with declaration testimony—as appropriate.

Patent Owner does not offer any arguments specifically addressing the limitations of claim 1. *See* Prelim. Resp. 23–27. We have reviewed these aspects of Petitioner's contentions and determine that the Petition provides a sufficient showing, at this stage of the proceeding, that the combination of Lehmann and Peng satisfies each limitation. *See* Pet. 72–99. For the reasons above, we determine, based on the current record, that the Petition shows a reasonable likelihood that Petitioner would prevail in demonstrating that claim 1 would have been obvious based on Lehmann and Peng.

3. Claims 2–11 and 13–15

For dependent claims 2–11 and 13–15, Petitioner contends that the proposed combination of Lehmann and Peng satisfies each limitation. Pet. 99–107. Patent Owner does not present any arguments specifically addressing claims 2–11 and 13–15 in the context of this asserted ground. *See* Prelim. Resp. 27. We include claims 2–11 and 13–15 in the context of this asserted ground in the instituted *inter partes* review. *See SAS*, 138 S. Ct. at 1354, 1359–60; 37 C.F.R. § 42.108(a).

F. Asserted Obviousness of Claim 12 Based on Lehmann, Peng, and Neroni

Petitioner asserts that claim 12 of the challenged patent would have been obvious based on Lehmann, Peng, and Neroni. Pet. 2, 107–111. Patent Owner does not present any arguments specifically addressing claim 12 in the context of this asserted ground, but rather, relies on the same arguments presented as to the prior ground. *See* Prelim. Resp. 27. We include claim 12

in the context of this asserted ground in the instituted *inter partes* review. *See SAS*, 138 S. Ct. at 1354, 1359–60; 37 C.F.R. § 42.108(a).

III. CONCLUSION

For the reasons above, we determine that the Petition shows a reasonable likelihood that Petitioner would prevail with respect to at least one of challenged claims 1–15 of the challenged patent. At this stage of the proceeding, no final determination has yet been made with regard to the patentability of any of the challenged claims or any underlying factual or legal issues, including the construction of claim terms. The final determination will be based on the record as developed during the *inter partes* review.

IV. ORDER

Accordingly, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), *inter partes* review is hereby instituted as to claims 1–15 of the challenged patent on all asserted grounds and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, *inter partes* review shall commence on the entry date of this Decision, with notice hereby given of the institution of a trial.

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