

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.

IPR2024-00950
Patent 10,080,472 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 1–25 of U.S. Patent No. 10,080,472 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 1–25. 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

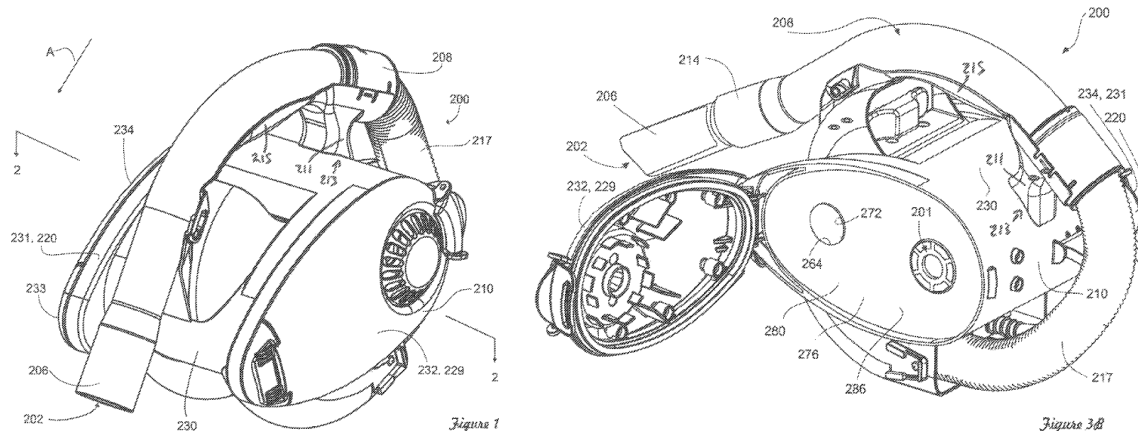
The parties together identify two proceedings in the U.S. District Court for the District of Massachusetts involving the challenged patent: *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-cv-12372 (D. Mass.), filed June 6, 2023; and *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-

cv-11277 (D. Mass.), filed June 6, 2023. Pet. 141; Paper 4 (Patent Owner's Mandatory Notices) at 1. Both litigations also involve U.S. Patent No. 11,389,038 B2 ("the '038 patent").

Days before filing the Petition in this proceeding, Petitioner filed a petition for *inter partes* review of claims 1–15 of the '038 patent in IPR2024-00938. See *Dyson Tech. Ltd. & Dyson, Inc. v. Omachron Intell. Prop. Inc.*, IPR2024-00938, Paper 2 (PTAB May 17, 2024). We grant institution in that proceeding concurrently with this Decision. See IPR2024-00938, Paper 7.

B. The Challenged Patent

The challenged patent "relates to surface cleaning apparatuses, such as vacuum cleaners." Ex. 1001, 1:18–19. One disclosed embodiment is shown in Figures 1 and 3B, reproduced below:



Ex. 1001, Figs. 1 & 3B. Figure 1 depicts a perspective view of a surface cleaning apparatus, and Figure 3B is a different perspective view of the same cleaning apparatus, with a first door in the open configuration. Ex. 1001, 3:12–13, 3:21–23. Surface cleaning apparatus 200 shown above includes handle 215, suction and filtration unit 210, and main housing 220. *Id.* at 4:1–22. Dirty air inlet 202 begins an airflow passage extending through

nozzle 206, wand 214, air conduit 208, and then through hose 217 into suction and filtration unit 210. *Id.* at 4:9–16. Through the openable door 229, pre-motor filter 276 can be removed, replaced, or cleaned. *Id.* at 6:63–66.

Figure 2 is reproduced below:

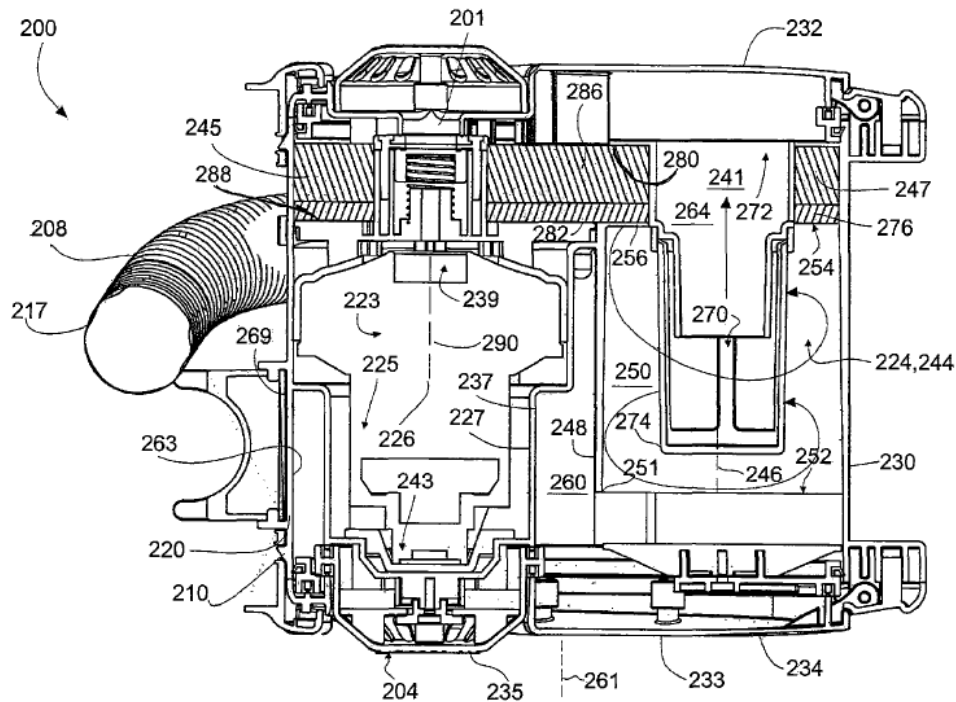


Figure 2

Ex. 1001, Fig. 2. Figure 2 depicts a cross section taken along line 2-2 of the surface cleaning apparatus shown in Figure 1. Ex. 1001, 3:14. As shown in this view, cleaning apparatus 200 includes clean air outlet 204, suction motor 226, dirt chamber 260, and filtration member 224, which removes particulate matter from the air flowing from hose 217, with the particulate matter settling in dirt collection chamber 260. *Id.* at 4:7–9, 4:18–25, 5:14–16, 6:13–19.

Suction motor 226 draws air through the airflow passage described above. *See id.* at 4:23–25. The challenged patent discloses that “the

filtration member 224 may include a plurality of cyclone chambers, or a plurality of cyclonic stages.” *Id.* at 4:61–64.¹ Cyclone 244 includes cyclone wall 248, integral with central wall 230, and together with central wall 230 defines cyclone chamber 250. *See id.* at 4:66–5:2. Pre-motor filter 276 has a portion 245 centered over suction motor 226 and a portion 247 that overlies at least half of cyclone 244. *See id.* at 6:43–46.

C. The Challenged Claims

Petitioner challenges claims 1–25, of which claims 1 and 14 are independent. Claims 2–13 depend from claim 1, and claims 15–25 depend from claim 14. Claim 1 is reproduced below, reformatted from the version provided in the challenged patent and with bracketed alphanumerical designations added to identify each clause:

1. [1pre] A hand vacuum cleaner having a front end, a rear end, and comprising:

[1a] a main housing;

[1b] a dirty fluid inlet;

[1c] a cyclone bin assembly comprising a cyclone chamber downstream of the dirty fluid inlet, the cyclone chamber comprising a first end, a second end, a cyclone axis, a cyclone air inlet and a cyclone air outlet wherein the cyclone air outlet is located at the second end;

[1d1] a pre-motor filter comprising an upstream side and a downstream side, [1d2] the pre-motor filter is positioned in a pre-motor filter housing having an openable cover, [1d3] the cyclone axis extends through the pre-motor filter housing;

¹ In this Decision, we omit emphasis on reference numerals in quotations from the challenged patent and prior art references.

[1e] a suction motor positioned in the main housing and located downstream of the pre-motor filter and rearward of the cyclone bin assembly;

[1f] an air flow path extending from the pre-motor filter to the suction motor;

[1g] a clean air outlet downstream of the suction motor;
and,

[1h1] a handle connected to the hand vacuum cleaner at first and second locations, wherein the first location is at a position of the suction motor in the main housing and a first handle portion is connected at the first location,

[1h2] wherein a projection of the first handle portion extends through the suction motor,

[1h3] wherein the pre-motor filter housing is openable without moving the handle with respect to the cyclone chamber,
and

[1h4] wherein the pre-motor filter housing cover is openable while the cyclone bin assembly is in fluid flow communication with the suction motor.

Ex. 1001, 14:20–52.²

² We adopt and apply below Petitioner’s designations for the elements of the challenged claims. *See* Pet. viii–xii (showing alphanumerical designations for the language in the challenged claims). We have removed the alphabetical designations originally provided in claim 1. *See* Ex. 1001, 14:20–52.

D. Asserted Grounds of Unpatentability

Petitioner challenges claims 1–25 on the following four grounds:

Claim(s) Challenged	35 U.S.C. § ³	Reference(s)/Basis
1–4, 8–17, 21–25	103(a)	Butler ⁴
1, 2, 5, 7, 9–15, 17, 18, 20, 22–25	103(a)	Butler, Oh ⁵
6, 19	103(a)	Butler, Oh, Organ ⁶
1–25	103(a)	Eriksson-Jons ⁷ , Martelliere ⁸

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. §§ 102 and 103 that became effective on March 16, 2013. Pub. L. No. 112-29, §§ 3(c), 3(n)(1), 125 Stat. 284, 287, 293 (2011). Petitioner applies the pre-AIA versions of §§ 102 and 103. *See* Pet. 2–3. We would reach the same outcome, however, under the AIA versions of the statutes.

⁴ International Publication WO 2007/084543 A2, published July 26, 2007 (Ex. 1005, “Butler”).

⁵ GB 2400309 A, published Oct. 13, 2004 (Ex. 1006, “Oh”).

⁶ GB 2372431 A, published Aug. 28, 2002 (Ex. 1007, “Organ”).

⁷ US 2,149,135, issued Feb. 28, 1939 (Ex. 1008, “Eriksson-Jons”).

⁸ FR 1 094 603 (and translation (Ex. 1010)), published May 23, 1955 (Ex. 1009, “Martelliere”).

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 fluid dynamics and/or machine design for devices related to fluid dynamics, such as vacuum cleaners.” Pet. 13. 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. 2.

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. 13; 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 1–4, 8–17, and 21–25 Based on Butler

Petitioner asserts that claims 1–4, 8–17, and 21–25 of the challenged patent would have been obvious based on Butler. Pet. 3, 14–74. Patent Owner provides arguments addressing this asserted ground. Prelim. Resp. 9–18. 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, 7:2–5.⁹ Figure 2A and Figure 2D of Butler are reproduced below:

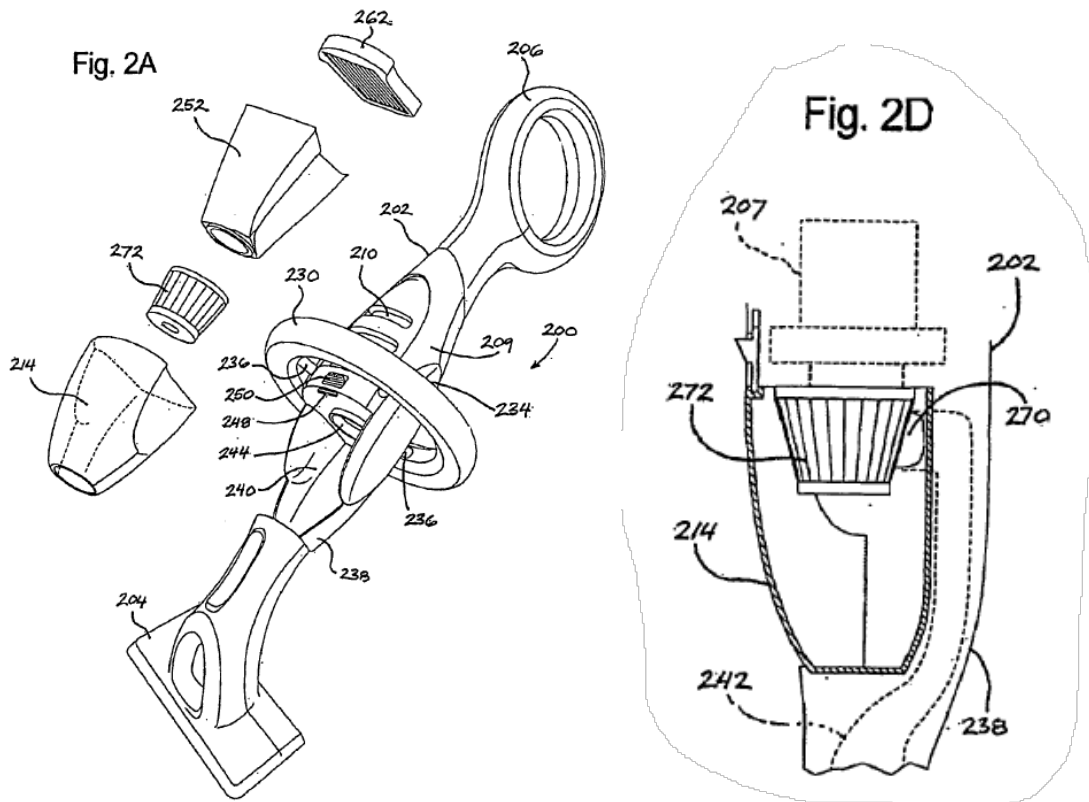


Figure 2A above on the left shows a perspective view of a vacuum cleaner, including “various complementary parts.” Ex. 1005, 4:9–10. Figure 2D above on the right is “a cutaway schematic view of a cyclone separator configuration that may be employed with the embodiment of Figure 2A.” *Id.* at 4:15–16. 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

⁹ Like both 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 of Butler.

200, but is “shaped and sized to be selectively positionable in the pocket 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 Claims 1 and 14

For independent claims 1 and 14, Petitioner contends that Butler, when modified as proposed, satisfies each limitation. Pet. 14–55. To support its arguments, Petitioner identifies certain passages in Butler and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* Petitioner also articulates reasons to modify the relied-upon aspects of Butler. *Id.* Patent Owner (1) argues that Butler, as modified, does not satisfy the pre-motor filter housing limitation (referred to as limitation 1d2 above and similar to 14d2 in claim 14), (2) argues that Butler, as modified, does not satisfy the openable housing limitation

(referred to as limitation 1h3 above and similar to 14h3 in claim 14), and (3) argues that Butler, as modified, does not satisfy the openable cover limitation (referred to as limitation 1h4 above and similar to 14h4 in claim 14). *See* Prelim. Resp. 9–17.

We have reviewed Petitioner’s contentions with respect to claims 1 and 14, and for the reasons below, we determine that the Petition shows a reasonable likelihood that Petitioner would prevail in demonstrating that claims 1 and 14 would have been obvious based on Butler. We address in turn each of Patent Owner’s arguments.

a. The Pre-motor Filter Housing Limitation

The pre-motor filter housing limitation in claims 1 and 14 recites that “the pre-motor filter is positioned in a pre-motor filter housing having an openable cover.” Ex. 1001, 14:30–31, 15:44–45. Petitioner states that Butler “teaches and renders obvious” this limitation. Pet. 26, 26–32 (entire discussion). As to the recited “pre-motor filter housing,” Petitioner discusses dirt receptacle 214 in Figures 2C and 2D and discusses dustcup 1522 in Figure 15. *See* Pet. 26–28. As to the recited “pre-motor filter,” Petitioner discusses filter 262 in Figure 2C, frusto-conical filter 272 in Figure 2D, and pre-motor filter 1545 in Figure 15. *See* Pet. 26–28.

According to Petitioner, one of ordinary skill in the art would have understood Butler’s dirt receptacle 214 and dustcup 1522 as “interchangeable.” Pet. 28 (citing Giachetti Decl. ¶ 122). Petitioner states that, to the extent pre-motor filter 1545 is not positioned in dustcup 1522, one of ordinary skill in the art would have extended dustcup 1522 to dividing midwall 1518 and opening 1536—and thereby “house” pre-motor filter 1545—to “facilitate[] a tight seal, improv[e] suction and avoid[]

accidental dirt spillage.” Pet. 28–29 (citing Giachetti Decl. ¶¶ 123–124; Ex. 1005, Fig. 15, 35:16–22).

Petitioner discusses how Butler discloses that dirt receptacle 214 “may be covered by an access panel or door” and that one of ordinary skill in the art would have modified dustcup 1522 to include a similar openable cover in order to allow access to the interior of the dirt receptacle and to allow access to the pre-motor filter for cleaning, removal, or unclogging. Pet. 29–30 (citing Giachetti Decl. ¶¶ 125–126; Ex. 1005, 18:26–19:5, 8:15–17, 16:25–29). Petitioner also states that one of ordinary skill in the art would have “found it obvious to implement an openable cover on Butler’s ‘dustcup 1522,’ given Butler’s teachings of interchangeability and to allow a user to access the interior of Butler’s ‘dustcup 1522’ for cleaning (e.g., to dislodge fibrous material), filter-servicing, or to retrieve an object.” Pet. 30–31¹⁰ (citing Giachetti Decl. ¶ 126).

Patent Owner presents three arguments as to the pre-motor filter housing limitation. *See* Prelim. Resp. 9–15. First, Patent Owner argues that Petitioner “failed to identify any disclosure in Butler that teaches ‘a pre-motor [filter] housing,’ or that the pre-motor [filter] housing has an ‘openable cover’ as recited.” *Id.* at 9. According to Patent Owner, Petitioner has not “established that either of Butler’s dirt receptacle 214 or dustcup 1522 houses the respective filters.” *Id.* at 11.

At this stage of the proceeding, Petitioner has adequately explained why the discussed filters in the Figures 2C and 2D embodiments of Butler

¹⁰ Some statements in the Petition (including the statement quoted here) include bolding and coloring for certain phrases. Here and elsewhere, we do not include such bolding and coloring in quotations from the Petition.

(including using the annotated Figures at the bottom of page 27 of the Petition) are “positioned in” dirt receptacle 214. *See* Pet. 27. Patent Owner’s argument to the contrary is 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.”). Further, as to the Figure 15 embodiment, Petitioner has adequately explained why one of ordinary skill in the art would have modified that embodiment such that pre-motor filter 1545 is “positioned in” dustcup 1522, to the extent it is not already. *See* Pet. 28–29. Again, Patent Owner’s argument to the contrary is mere attorney argument. *See Pearson*, 494 F.2d at 1405.

As to the “openable cover” portion of the pre-motor filter housing limitation, Patent Owner merely concludes that Petitioner has not adequately identified “any disclosure” in Butler (Prelim. Resp. 9), but Patent Owner has failed to substantively address the discussion in three pages of the Petition on that issue. *See* Pet. 29–32.

Second, Patent Owner argues that Petitioner “improperly identif[ies] Butler’s dustcup 1522/dirt receptacle 214 as being both the claimed ‘cyclone chamber’ and the claimed ‘premotor filter housing’ and contends that, “[a]t times, Petitioner[] even identif[ies] Butler’s dirt receptacle 214 as the ‘cyclone bin assembly.’” Prelim. Resp. 11 (citing Pet. 19, 28, 51). According to Patent Owner, the challenged patent “treats each of the cyclone bin assembly, the cyclone chamber, and the pre-motor filter housing as distinct from the other.” *Id.* at 12 (citing Ex. 1001, 6:19–32, 8:4–26).

The record does not support the premise of Patent Owner’s argument. Contrary to Patent Owner’s assertion, Petitioner identifies “dustcup 1522’s cyclonic separation chamber”—rather than *the entirety of* dustcup 1522—as a “cyclone chamber.” Pet. 19. Further, on none of the cited pages of the Petition does Petitioner identify dirt receptacle 214 as a “cyclone chamber.”

Further, at this stage of the proceeding, the record does not support Patent Owner’s position that the challenged patent clearly differentiates the three recited structures. For example, one of the quoted passages discloses that “pre-motor filter 276 is preferably housed in the chamber 241,” indicating that the “pre-motor filter housing” and the “cyclone chamber” may—at least potentially—provide overlapping functions. *See* Ex. 1001, 6:19–32. Similarly, the other quoted passage discloses that “cyclone bin assembly 1110 includes a cyclone chamber 1118,” again indicating at least potential overlapping functionality. *See id.* at 8:4–26. The parties should consider further developing the record on these issues, including whether *the language of each claim* (rather than just the Specification) requires the three recited structures at issue to be separate and distinct. *See, e.g., Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1304 (Fed. Cir. 2011) (“Thus, the specifications and the claims indicate that the ‘retainer member’ and the ‘needle holder’ need not be two separate pieces.”).

Third, Patent Owner asserts as inadequate Petitioner’s stated reasons to modify Butler to arrive at the “openable door” portion of the pre-motor filter housing limitation and the explanation for that modification. *See* Prelim. Resp. 13–15. Specifically, Patent Owner argues that the disclosure in Butler regarding an “access panel or door” highlighted by Petitioner is inadequate as it does not “suggest where such an access panel or door would

be located, attached, or generally implemented.” *Id.* at 13 (citing Ex. 1005, 18:26–30).

Because the prior art need not explicitly disclose or suggest the proposed modification, however, the absence of express teachings regarding the proposed modification does not undermine the asserted ground. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (stating that the obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ”).

In addition, Patent Owner contends that Petitioner’s arguments “are driven by impermissible hindsight” and include “only conclusory statements about the modifications they propose being ‘obvious to try’ and the alleged advantages or motivations to modifying Butler in such ways.” Prelim. Resp. 14. Patent Owner adds that the paragraphs of the Giachetti Declaration relied upon provide only “conclusory statements about simple modifications that were obvious to try and alleged advantages without providing any explanation for such conclusory statements.” *Id.* at 15.

Petitioner adequately explains, on the current record, the reasons to modify Butler to arrive at the pre-motor filter housing limitation. The discussion on this issue spans six plus pages of the Petition, with approximately eleven paragraphs of the Giachetti Declaration supporting that discussion. *See* Pet. 26–32; Giachetti Decl. ¶¶ 119–129. In contrast, Patent Owner relies on mere conclusory attorney argument as to the Petition’s alleged failings. *See Pearson*, 494 F.2d at 1405. At this stage of

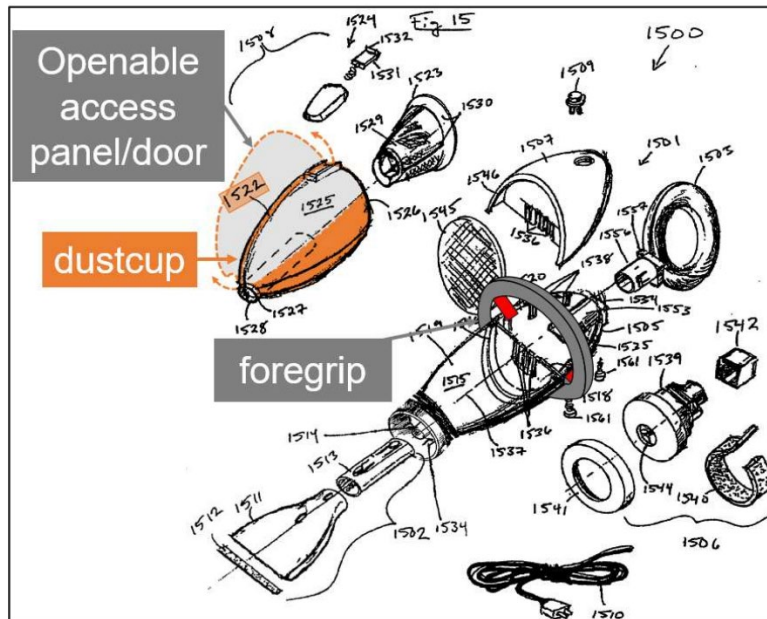
the proceeding, without countervailing testimony, we need not and do not determine the sufficiency of Dr. Giachetti's testimony on these issues.

On the current record, we determine that Petitioner has made a sufficient showing that Butler, when modified as proposed, satisfies the pre-motor filter housing limitation.

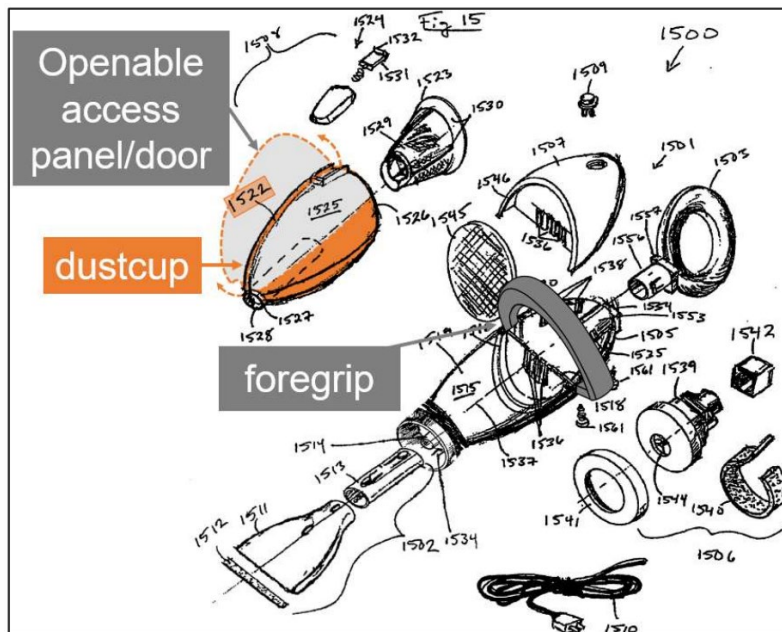
b. The Openable Housing Limitation

The openable housing limitation in claims 1 and 14 recites that “the pre-motor filter housing is openable without moving the handle with respect to the cyclone chamber.” Ex. 1001, 14:47–48, 16:4–6. Petitioner states that Butler teaches this limitation. *See* Pet. 49–51. First, Petitioner identifies as the recited “openable pre-motor filter housing” Butler’s “‘dustcup 1522’/‘dirt receptacle 214’ having an ‘access panel or door’” and identifies as the recited “cyclone chamber” Butler’s “‘dustcup 1522’/‘dirt receptacle 214’”s ‘cyclon[e/ic]’ ‘separation chamber.’” Pet. 49 (alteration by Petitioner). Before providing three composite images (reproduced below) explaining its position, Petitioner adds that one of ordinary skill in the art “would have recognized that, in each of Figure 15’s handle configurations described in [1h1]¹¹/[14h1], Butler’s pre-motor filter housing is openable without moving the handle with respect to the cyclone chamber at least because Butler’s handle is at a position of the suction motor, not the pre-motor filter housing” (Pet. 49–50):

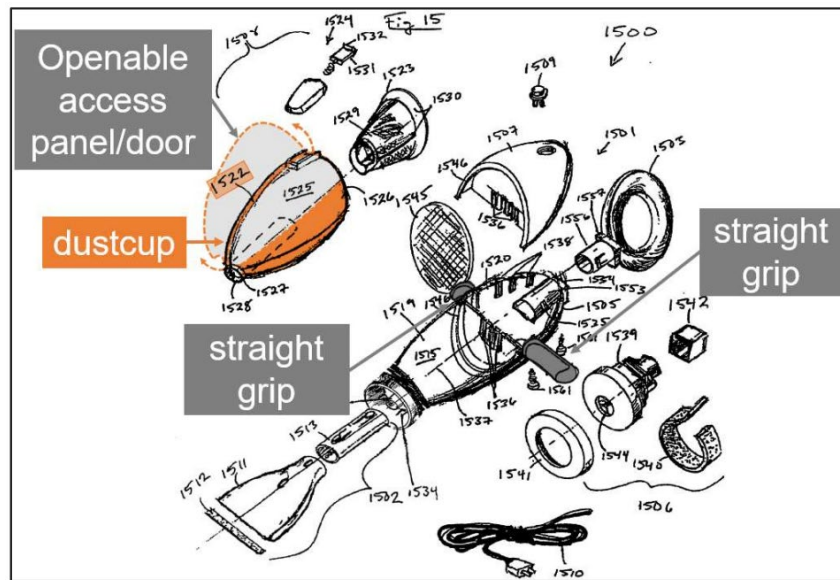
¹¹ Limitation 1h1 in claim 1 recites: “a handle connected to the hand vacuum cleaner at first and second locations, wherein the first location is at a position of the suction motor in the main housing and a first handle portion is connected at the first location.” Ex. 1001, 14:41–44.



Pet. 50 (citing Ex. 1005, Fig. 15 & Fig. 5 (modified); Giachetti Decl. ¶¶ 164–165). In this modified and annotated version of Figure 15 of Butler, Petitioner added (1) a gray text box identifying an “Openable access panel/door” added to the Figure, (2) an orange text box identifying element 1522 as a “dustcup,” and (3) a gray text box identifying as a “foregrip” an added structure similar to foregrip 530 from Figure 5 of Butler. *Id.*



Pet. 50 (citing Ex. 1005, Fig. 15 & Fig. 2A (modified); Giachetti Decl. ¶¶ 164–165). In this modified and annotated version of Figure 15 of Butler, Petitioner added (1) a gray text box identifying an “Openable access panel/door” added to the Figure, (2) an orange text box identifying element 1522 as a “dustcup,” and (3) a gray text box identifying as a “foregrip” an added structure. *Id.*



Pet. 51 (citing Ex. 1005, Figs. 15, 3 (modified), 2A, 2C, 16; Giachetti Decl. ¶¶ 164–165). In this modified and annotated version of Figure 15 of Butler, Petitioner added (1) a gray text box identifying an “Openable access panel/door” added to the Figure, (2) an orange text box identifying element 1522 as a “dustcup,” and (3) two gray text boxes identifying as “straight grip” two added structures similar to straight grips 330 from Figure 3 of Butler. *Id.*

Patent Owner presents two arguments regarding the openable housing limitation. *See* Prelim. Resp. 15–16. First, Patent Owner argues that Petitioner has “not cited any disclosure in Butler that teaches or suggests a pre-motor filter housing or that such a housing is openable.” *Id.* at 15. This

argument does not address Petitioner's positions in the context of this ground. As made clear in Petitioner's discussion of the pre-motor filter housing limitation, Petitioner proposes to *modify* Butler to provide an *openable* pre-motor filter housing; Petitioner does not rely solely on Butler. *See* Pet. 26–32, 49 (addressing the openable housing limitation but highlighting “[1d2]/[14d2]” as to the “openable pre-motor filter housing”).

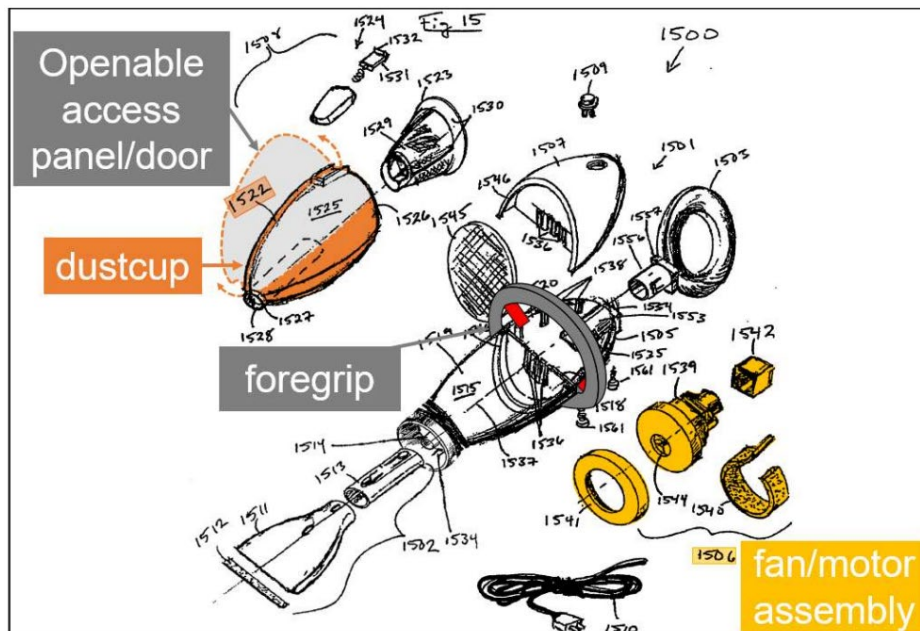
Second, Patent Owner argues that Petitioner has failed to cite any “disclosure or discussion in Butler that suggests that the access panel or door is placed such that it can be opened without moving the dustcup with respect to the handle” and also failed to provide “any explanation of why a person of ordinary skill in the art” would have modified Butler to provide that feature. Prelim. Resp. 16, 15.

Again, Patent Owner's arguments do not address Petitioner's positions. As noted regarding the prior argument, Butler does not disclose an *openable* pre-motor filter housing at all and thus also does not disclose the housing being openable in the particular manner recited. In addition, contrary to Patent Owner's argument, Petitioner does not take the position that one of ordinary skill in the art would have *further* modified Butler such that the housing is openable in the particular manner recited; instead, Petitioner takes the position that, once Butler is modified as proposed to provide the *openable* pre-motor filter housing (as discussed above), that housing would have been openable in the particular manner recited based on the already-present relative positioning of the handle, suction motor, and pre-motor filter housing. *See* Pet. 49–50 (quote spanning these two pages).

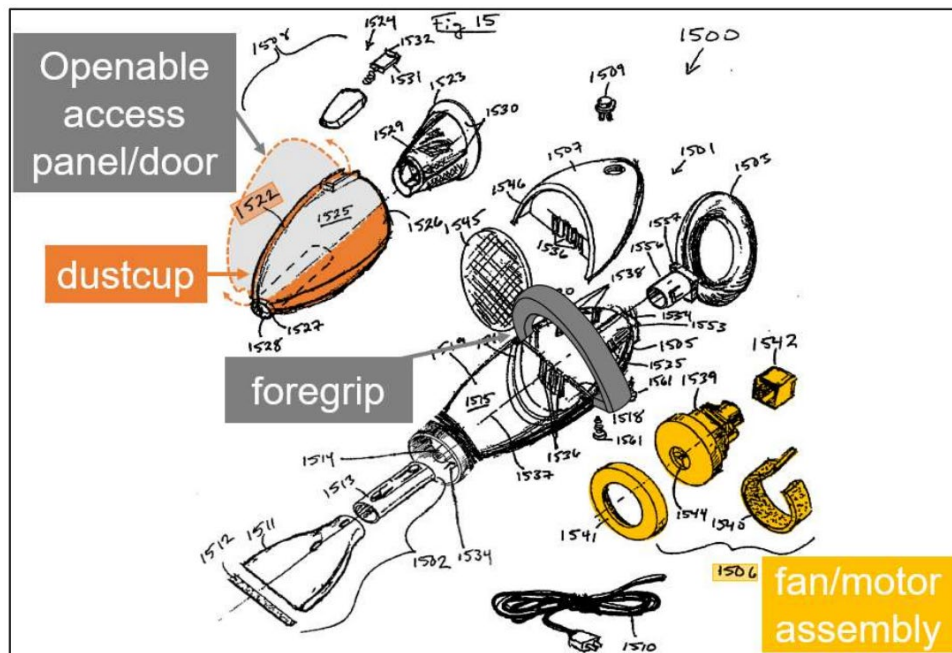
At this stage of the proceeding and on the current record, we determine that Petitioner has made a sufficient showing that Butler, when modified as proposed, satisfies the openable housing limitation.

c. The Openable Cover Limitation

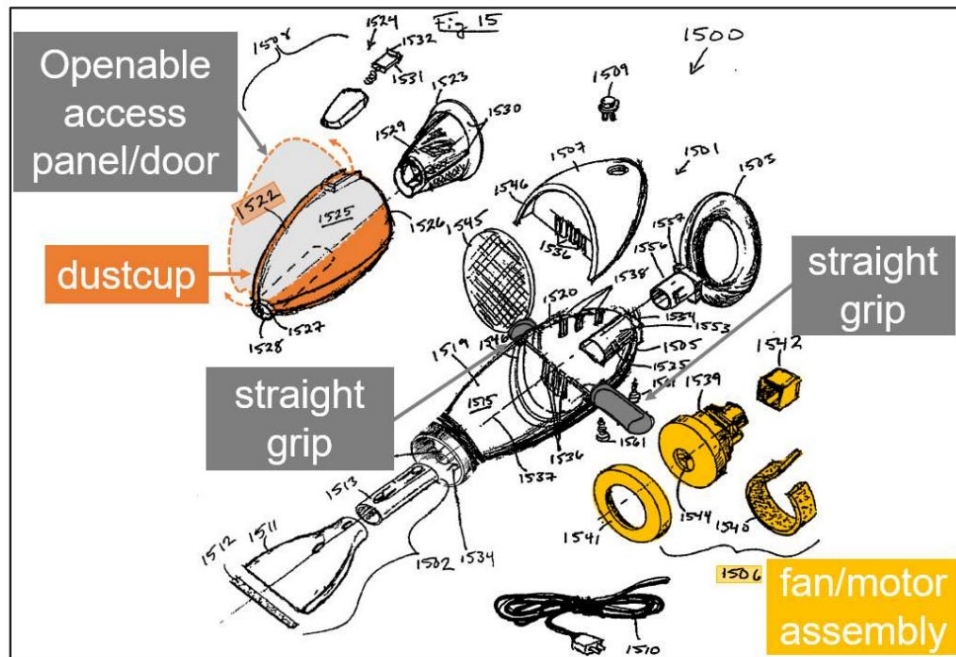
The openable cover limitation in claims 1 and 14 recites that “the pre-motor filter housing cover is openable while the cyclone bin assembly is in fluid flow communication with the suction motor.” Ex. 1001, 14:50–52, 16:7–9. Petitioner states that Butler teaches this limitation. *See* Pet. 51–53. First, Petitioner states that “Butler’s pre-motor filter housing cover (‘dustcup 1522’/‘dirt receptacle 214’/s ‘access panel or door’) is openable while the cyclone bin assembly (‘dustcup assembly 1508’/‘dirt receptacle 214’) is in fluid flow communication with the suction motor (‘fan/motor assembly’)” because “Butler’s ‘access panel or door’ is opened without blocking an airway, removing the cyclone bin assembly, or removing the suction motor.” Pet. 51. Petitioner provides three composite images explaining its position:



Pet. 52 (citing Ex. 1005, Fig. 15 & Fig. 5 (modified); Giachetti Decl. ¶ 168). In this modified and annotated version of Figure 15 of Butler, Petitioner added (1) a gray text box identifying an “Openable access panel/door” added to the Figure, (2) an orange text box identifying element 1522 as a “dustcup,” (3) a gray text box identifying as a “foregrip” an added structure similar to foregrip 530 from Figure 5 of Butler, and (4) a yellow text box and yellow highlighting identifying fan/motor assembly 1506 as “fan/motor assembly.” *Id.*



Pet. 52 (citing Ex. 1005, Fig. 15 & Fig. 2A (modified); Giachetti Decl. ¶ 168). In this modified and annotated version of Figure 15 of Butler, Petitioner added (1) a gray text box identifying an “Openable access panel/door” added to the Figure, (2) an orange text box identifying element 1522 as a “dustcup,” (3) a gray text box identifying as a “foregrip” an added structure, and (4) a yellow text box and yellow highlighting identifying fan/motor assembly 1506 as “fan/motor assembly.” *Id.*



Pet. 53 (citing Ex. 1005, Figs. 15, 3 (modified); Giachetti Decl. ¶ 168). In this modified and annotated version of Figure 15 of Butler, Petitioner added (1) a gray text box identifying an “Openable access panel/door” added to the Figure, (2) an orange text box identifying element 1522 as a “dustcup,” (3) two gray text boxes identifying as “straight grip” two added structures similar to straight grips 330 from Figure 3 of Butler, and (4) a yellow text box and yellow highlighting identifying fan/motor assembly 1506 as “fan/motor assembly.” *Id.* Petitioner adds that “[b]ecause the cyclone chamber is contained within the cyclone bin assembly ([1c]/[14c]), [one of ordinary skill in the art] would have understood the cyclone chamber is in fluid flow communication with the suction motor for the same reasons.” Pet. 53 (citing Giachetti Decl. ¶ 169).

Patent Owner presents two arguments regarding the openable cover limitation. *See* Prelim. Resp. 16–17. First, Patent Owner argues that Petitioner has “fail[ed] to establish that Butler even teaches or suggests an openable pre-motor filter housing.” *Id.* at 17. Again, this argument does not

address Petitioner's positions in the context of this ground. As made clear in Petitioner's discussion of the pre-motor filter housing limitation, Petitioner proposes to *modify* Butler to provide an *openable* pre-motor filter housing, rather than rely solely on Butler. *See* Pet. 26–32.

Second, Patent Owner argues that Petitioner has failed to cite any “disclosure or discussion in Butler that suggests that the access panel or door is placed so that it can be opened without the dustcup (the cyclone chamber/cyclone bin assembly) being removed, and therefore no longer being in fluid flow communication with the suction motor” and also failed to explain “why a person of ordinary skill in the art would have modified Butler” to provide that feature. Prelim. Resp. 17.

Again, Patent Owner's arguments do not address Petitioner's positions. As noted above, Butler does not disclose an *openable* pre-motor filter housing at all and thus also does not disclose the housing being openable in the particular manner recited. In addition, contrary to Patent Owner's argument, Petitioner does not take the position that one of ordinary skill in the art would have *further* modified Butler such that the housing is openable in the particular manner recited; instead, Petitioner takes the position that, once Butler is modified as proposed to provide the *openable* pre-motor filter housing (as discussed above), that housing would have been openable in the particular manner recited based on the already-present relative positioning of cyclone chamber, cyclone bin assembly, and suction motor. *See* Pet. 53 (citing Giachetti Decl. ¶ 169).

At this stage of the proceeding and on the current record, we determine that Petitioner has made a sufficient showing that Butler, when modified as proposed, satisfies the openable cover limitation.

Patent Owner does not offer any arguments specifically addressing the remaining limitations of claims 1 or 14. *See* Prelim. Resp. 9–17. 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 Butler, when modified as proposed, satisfies each limitation and that one of ordinary skill in the art would have had reason to modify Butler as proposed. *See* Pet. 14–55. We determine, based on the current record, that the Petition shows a reasonable likelihood that Petitioner would prevail in demonstrating that claims 1 and 14 would have been obvious based on Butler.

3. Claims 2–4, 8–13, 15–17, and 21–25

For dependent claims 2–4, 8–13, 15–17, and 21–25, Petitioner contends that Butler, when modified as proposed, satisfies each limitation. Pet. 55–74. Patent Owner does not present any arguments specifically addressing claims 2–4, 8–13, 15–17, and 21–25 in the context of this asserted ground. *See* Prelim. Resp. 17–18. We include claims 2–4, 8–13, 15–17, and 21–25 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, 2, 5, 7, 9–15, 17, 18, 20, and 22–25 Based on Butler and Oh

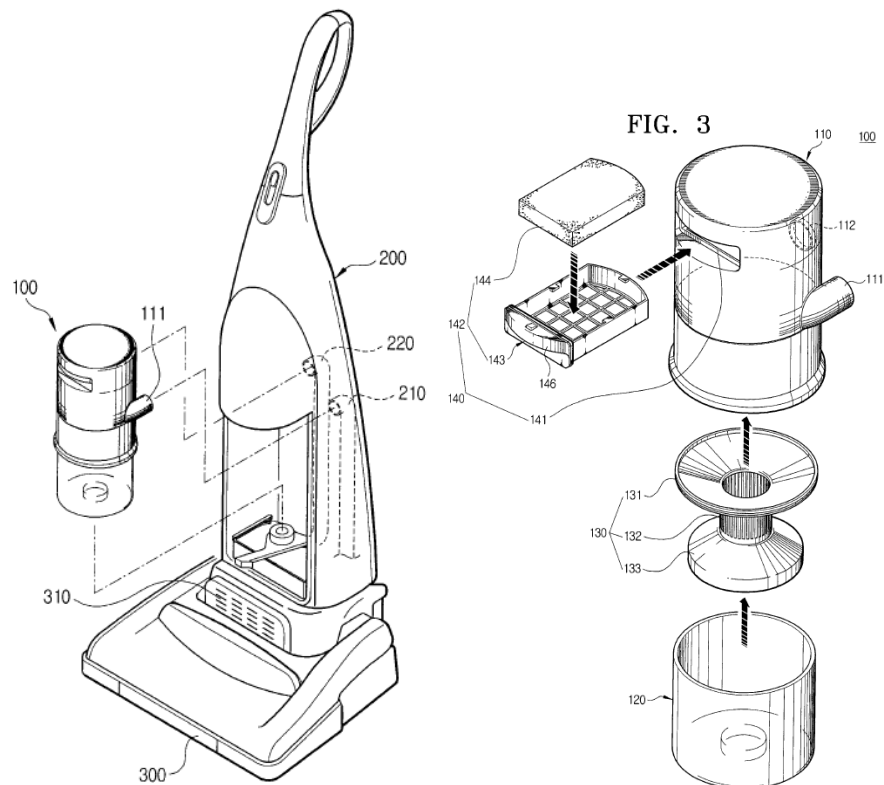
Petitioner asserts that claims 1, 2, 5, 7, 9–15, 17, 18, 20, and 22–25 of the challenged patent would have been obvious based on Butler and Oh. Pet. 3, 75–94. Patent Owner provides arguments addressing this asserted ground. Prelim. Resp. 18–23. We first summarize aspects of Oh.

1. Overview of Oh

In this asserted ground, Petitioner relies on Oh, in addition to Butler (summarized above (*see* § II.C.1)). Oh discloses “a cyclone-type dust collecting apparatus for an upright vacuum cleaner, which allows air

containing various dusts and foreign substances . . . to form a vortex current.” Ex. 1006, 1:3–7.¹² Figure 8 and Figure 3 of Oh are reproduced below:

FIG. 8



Ex. 1006, Figs. 8 & 3. Figure 8 above on the left is a perspective view of a cyclone-type dust collecting apparatus in a vacuum cleaner, and Figure 3 above on the right is an exploded view of the cyclone-type dust collecting apparatus. *Id.* at 4:20–21, 4:12–13. Cyclone-type dust collecting apparatus 100 includes cyclone body 110, dust-collecting container 120, grill assembly 130, and fine dust filter 140. *See id.* at 4:23–25. Dirty air enters cyclone

¹² Like both Petitioner and Patent Owner, we cite to the native pagination in Oh, rather than the page numbering added by Petitioner in the bottom right corner of each page of Oh.

body 110 in a tangential direction through air inlet port 111 and is cleaned using centrifugal force; the clean air is exhausted through air outlet port 112. *Id.* at 4:31–5:11. Filter assembly 142 is “detachably disposed, in the manner of a drawer, in the filter mounting portion 141 through the front opening” shown in Figure 3. *Id.* at 6:7–8.

2. Independent Claims 1 and 14

For independent claims 1 and 14, Petitioner contends that the proposed combination of Butler and Oh satisfies each limitation. Pet. 75–89. 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 Oh. Pet. 75–82. Patent Owner challenges the articulated reasons to combine Butler and Oh.

We have reviewed Petitioner’s contentions with respect to claims 1 and 14, and for the reasons below, we determine that the Petition shows a reasonable likelihood that Petitioner would prevail in demonstrating that claims 1 and 14 would have been obvious based on Butler and Oh. We address in turn below Patent Owner’s arguments.

Petitioner asserts that one of ordinary skill in the art would have been motivated to combine Butler and Oh as proposed. *See* Pet. 75–82. Specifically, Petitioner summarizes teachings in Oh regarding its airflow path and filter position, which Petitioner states are “beneficial for not spilling dirt.” Pet. 76 (citing Ex. 1006, 7:21–24). Petitioner adds that “Oh’s orientation—where air flows from the pre-motor filter’s top portion to its bottom portion—beneficially avoids this potential dust spillage by collecting dust on the upper portion of the filter.” Pet. 77 (citing Ex. 1006, 7:17–24;

Giachetti Decl. ¶ 234). Then, Petitioner highlights filter case 143 and fine filter 144 shown in Figure 3 of Oh (reproduced above), stating that “Oh teaches that using a drawer allows for easy and hygienic filter cleaning, by, for example, using a ‘handle 146 . . . provided at a front face of the filter case 143’ to assist in hygienically ‘disassembling the filter 140 to remove the collected fine dust.’” Pet. 78 (citing Ex. 1006, 6:11–12, 7:19–24; Giachetti Decl. ¶ 236).

Petitioner states that one of ordinary skill in the art “would have been motivated to modify Butler’s pre-motor filter to incorporate Oh’s pre-motor filter teachings in three ways to achieve these benefits.” Pet. 78 (citing Giachetti Decl. ¶ 237). First, Petitioner states that one of ordinary skill in the art “would have been motivated to house Butler’s premotor filter in a slidably removable housing, such as Oh’s ‘detachably disposed,’ ‘drawer’-style ‘filter case 143.’” *Id.* (citing Ex. 1006, 6:7–9, Fig. 3; Giachetti Decl. ¶ 238). As to why, Petitioner contends that one of ordinary skill in the art (1) “would have been motivated by Butler’s express teachings that it is beneficial to provide access to its filters to ‘service’ them (e.g., cleaning or replacement), to find ways to improve such access” and (2) “would have understood Oh’s detachably disposed, drawer-style filter case provides such improved access for hygienic servicing, as Oh teaches.” Pet. 78–79 (citing Ex. 1005, 7:27–28, 8:15–17; Ex. 1006, 6:11–12, 7:19–24; Giachetti Decl. ¶ 238). Petitioner adds that, “[b]y using Oh’s drawer-style filter case teachings, a user desiring to access only the pre-motor filter could beneficially remove only the pre-motor filter, rather than opening the entire dustcup 1522’s ‘access panel or door,’ which would reduce accidental spillage of dust collected in the entire dustcup” and that one of ordinary skill

in the art “would have also understood that this filter housing would provide additional support and protection for Butler’s pre-motor filter.” Pet. 79 (citing Giachetti Decl. ¶ 238).

According to Petitioner, this proposed modification (1) “would have involved combining known prior art elements (pre-motor filters and removable filter housings) according to known methods (locating the pre-motor filter in the removable filter housing) to yield predictable results”; (2) “would have involved a simple substitution of one known element (a pre-motor filter in a housing accessed by opening a panel or door) for another (a pre-motor filter in drawer-style housing accessed by sliding out the housing) to yield these predictable results of increased support and accessibility”; and (3) “would have been at least obvious to try, as there were a finite number of identified, predictable solutions for accessing Butler’s pre-motor filter, including by opening an access panel or door (as Butler teaches) or by sliding a drawer-style filter case (as Oh teaches).” Pet. 79–80 (citing Giachetti Decl. ¶ 239).

Second, Petitioner discusses how one of ordinary skill in the art “would have been motivated to orient the airflow through Butler’s pre-motor filter to flow from its upper portion towards its lower portion, as Oh teaches, to improve hygienic filter removal and cleaning.” Pet. 80–81 (citing Ex. 1006, 7:17–24, Fig. 7; Giachetti Decl. ¶ 241). According to Petitioner, one of ordinary skill in the art (1) “would have been motivated by Butler’s express teachings that it is beneficial to ‘service’ the pre-motor filter, to find ways to improve the filter-servicing process” and (2) “would have understood Oh’s pre-motor filter airflow orientation was a known way of doing so, including based on Oh’s express teachings that top-to-bottom

airflow results in dust collection at the top of the filter, reducing the likelihood of dirt spilling when removing the filter.” Pet. 81 (citing Ex. 1005, 7:27–28, 8:15–17; Ex. 1006, 7:21–24; Giachetti Decl. ¶ 241). Petitioner adds that one of ordinary skill in the art would have understood incorporating Oh’s airflow orientation (1) “uses known methods/techniques (top-to-bottom filter airflow) to modify a known device ready for improvement (a pre-motor filter having collected dust stored on the bottom side) to yield predictable results (filtering air and collecting the filtered dust on the filter’s top side to reduce spillage)”; (2) represents a “simple substitution of one known element (a bottom-to-top airflow pre-motor filter) for another (a top-to-bottom airflow pre-motor filter) to obtain these predictable results”; and (3) would have been “at least obvious to try, as there were a finite number of ways to route airflow through a pre-motor filter, including bottom-to-top (as Butler teaches) and top-to-bottom (as Oh teaches).” *Id.* (citing Giachetti Decl. ¶ 241).

Third, Petitioner states that one of ordinary skill in the art “would have also been motivated to replace Butler’s bottom-to-top pre-motor filter with Oh’s top-to-bottom pre-motor filter and filter housing to achieve the same benefits.” Pet. 82 (citing Giachetti Decl. ¶ 242).

Patent Owner presents three arguments as to why Petitioner has allegedly failed to show a motivation to combine Butler and Oh as proposed. *See* Prelim. Resp. 18–23. First, Patent Owner argues that Petitioner’s argument “is driven by impermissible hindsight” and includes “only conclusory statements . . . without providing any explanation for those statements.” *Id.* at 18. According to Patent Owner, Petitioner “make[s] broad statements about simple substitution and alleged advantages of

modifying Butler based on Oh's disclosure without providing any explanation or supporting evidence for such statements." *Id.* at 19. In addition, Patent Owner asserts that Petitioner has provided "no discussion" as to how the proposed modifications would have been made. *Id.* at 20. Patent Owner also contends that the paragraphs of the Giachetti Declaration relied upon in support provide only "conclusory statements about simple modifications requiring applying known techniques to similar devices and alleged advantages without providing any explanation for such statements." *Id.* at 23 (citing Giachetti Decl. ¶¶ 228–243).

Petitioner adequately explains the reasons to combine Butler and Oh and the nature of the proposed modifications at this stage of the proceeding. The discussion on this issue spans seven plus pages of the Petition, with approximately sixteen paragraphs of the Giachetti Declaration supporting that discussion. In contrast, Patent Owner relies on mere conclusory attorney argument as to the Petition's alleged failings. *See Pearson*, 494 F.2d at 1405. 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.

Second, Patent Owner argues that Petitioner "manufacture[s] disclosure in Butler, asserting that a '[person of ordinary skill in the art] would have been motivated by Butler's express teachings that it is beneficial to "service" the pre-motor filter.'" Prelim. Resp. 19–20 (quoting Pet. 81; Ex. 1005, 7:27–28, 8:15–17). According to Patent Owner, "[n]either of the cited portions of Butler discuss servicing the pre-motor filter." *Id.* at 20.

Although Patent Owner is correct that neither of the two passages highlighted expressly references servicing the pre-motor filter, the second

passage discloses “the need to service . . . filters,” including post-motor filter 112 “or *other filters in the device*.” Ex. 1005, 8:15–17 (emphasis added), *cited at* Pet. 81. Patent Owner quotes but fails to address the reference to “other filters” as part of this argument. *See* Prelim. Resp. 20.

Third, Patent Owner asserts that one of ordinary skill in the art would not have been motivated to combine Butler and Oh because they “are directed to different types of vacuum cleaners, each solving different problems with their respective vacuum cleaners.” Prelim. Resp. 21. According to Patent Owner, Butler “is directed to a stair cleaning vacuum” whereas Oh “is directed to a[n] ‘upright vacuum cleaner.’” *Id.* (citing Ex. 1005, Fig. 2A; quoting Ex. 1006, 1:3–7). Patent Owner argues that Petitioner’s reasons to combine Butler and Oh are “merely conclusory statements with no explanation for why the combination is a simple substitution, why the advantages of the detachable filter drawer in Oh’s upright vacuum apply to Butler’s stair cleaning vacuum, or why the substitutions would improve the vacuum of Butler.” *Id.* at 22.

At this stage of the proceeding, Patent Owner’s 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 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 Butler and Oh as

proposed and that the articulated reasoning is supported by rational underpinning.

Patent Owner does not offer any arguments specifically addressing the limitations of claims 1 and 14. *See* Prelim. Resp. 18–23. 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 Oh satisfies each limitation. We determine, based on the current record, that the Petition shows a reasonable likelihood that Petitioner would prevail in demonstrating that claims 1 and 14 would have been obvious based on Butler and Oh.

3. Claim 2, 5, 7, 9–13, 15, 17, 18, 20, and 22–25

For dependent claims 2, 5, 7, 9–13, 15, 17, 18, 20, and 22–25, Petitioner contends that the proposed combination of Butler and Oh satisfies each limitation. Pet. 89–94. Patent Owner does not present any arguments specifically addressing claims 2, 5, 7, 9–13, 15, 17, 18, 20, and 22–25 in the context of this asserted ground. *See* Prelim. Resp. 23. We include claims 2, 5, 7, 9–13, 15, 17, 18, 20, and 22–25 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 6 and 19 Based on Butler, Oh, and Organ

Petitioner asserts that claims 6 and 19 of the challenged patent would have been obvious based on Butler, Oh, and Organ. Pet. 3, 94–96. Patent Owner does not present any arguments specifically addressing claims 6 and 19 in the context of this asserted ground, but rather, relies on the same arguments presented as to the prior ground. *See* Prelim. Resp. 24. We include claims 6 and 19 in the context of this asserted ground in the

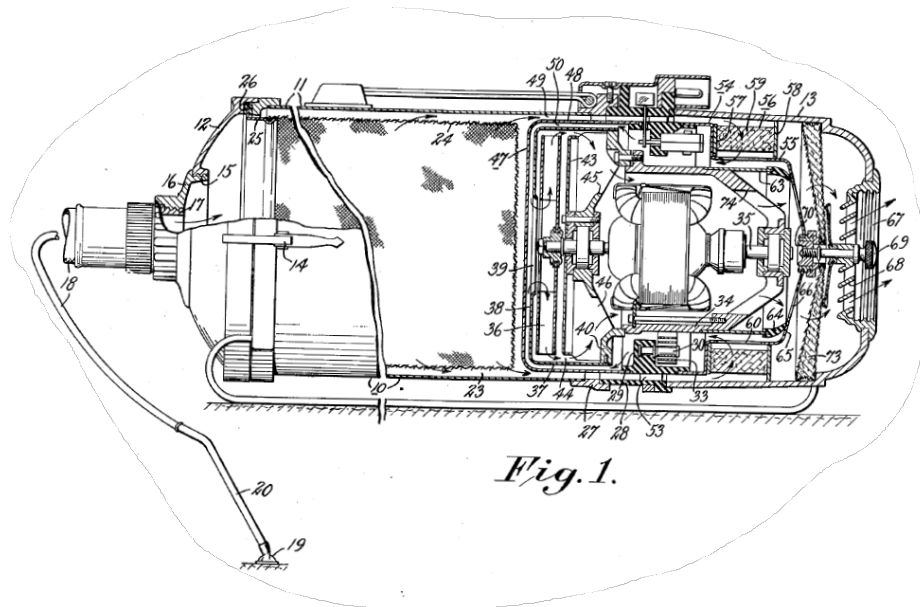
instituted *inter partes* review. See *SAS*, 138 S. Ct. at 1354, 1359–60; 37 C.F.R. § 42.108(a).

F. Asserted Obviousness of Claims 1–25 Based on Eriksson-Jons and Martelliere

Petitioner asserts that claims 1–25 of the challenged patent would have been obvious based on Eriksson-Jons and Martelliere. Pet. 3, 97–137. Patent Owner provides arguments addressing this asserted ground. Prelim. Resp. 24–26. We first summarize aspects of the relied-upon prior art.

1. Overview of Eriksson-Jons

Eriksson-Jons discloses a vacuum cleaner “wherein a dust separating member, such as a dust bag, is located ahead of the fan with respect to the direction of air flow, whereby the dirt carried in by the air stream is separated therefrom before it reaches the fan.” Ex. 1008, p. 1(left col.), lines 4–10.¹³ Figure 1 of Eriksson-Jons is reproduced below:

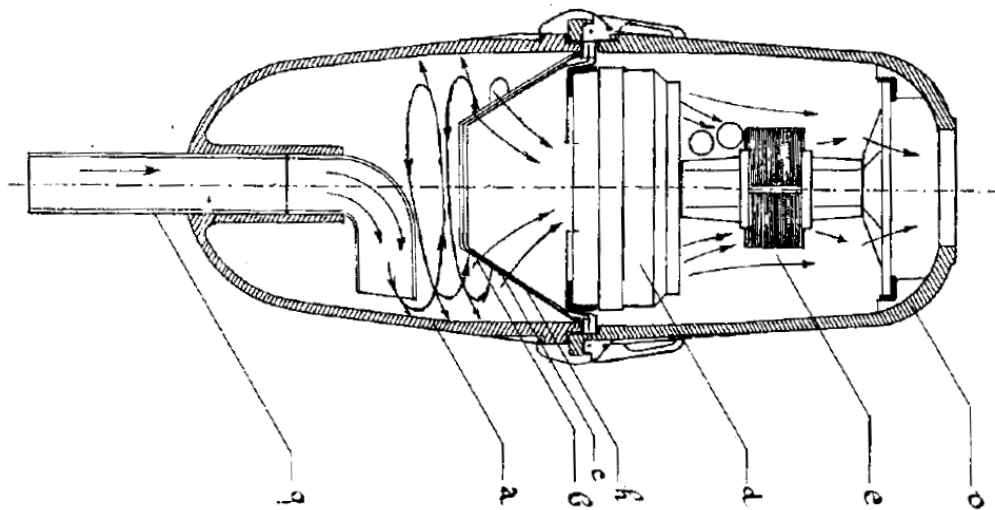


¹³ Like both Petitioner and Patent Owner, we cite to the native pagination in Eriksson-Jons, rather than the page numbering added by Petitioner in the bottom right corner of each page of Eriksson-Jons.

Ex. 1008, Fig. 1. Figure 1 depicts a cross-sectional view of an embodiment of the disclosed vacuum cleaner. *Id.* at 1(left col.), ll. 54–55. The depicted vacuum cleaner includes hollow casing 10, flexible hose 18 connected to suction nozzle 19 via rigid handle 20, dust bag 24 inside dust separating chamber 23, motor housing 34, and filter 56. *Id.* at 1(right col.), l. 5 – 2(left col.), l. 31. In operation, air enters inlet 15 and travels along the paths indicated by the arrows in Figure 1, through dust bag 24, out rotor 36, along angular discharge opening 44, around flange 40, past the motor and armature shaft 35, through openings 66 and filter 73, and exiting via exhaust opening 67. *Id.* at 1(right col.), l. 11 – 2(left col.), l. 34; *id.* at 2(left col.), l. 53 – 2(right col.), l. 15 (describing the operation of the vacuum).

2. Overview of Martelliere

Martelliere discloses a broom-type vacuum cleaner that uses a “Whirlwind” principle and filtering to prevent clogging and maintain stable suction. Ex. 1010, 1 (right side). The sole Figure is reproduced below:



The Figure depicts a cross-sectional view of the airflow through the disclosed vacuum cleaner. Martelliere discloses use of the “Whirlwind” principle as occurring through “arrival of the air sucked tangentially to the

interior wall of the transparent container” and that the dirt and debris “are deposited in the bottom of the container, after having [been] separated from the air, before it passes through the filter screen.” Ex. 1010, 1 (right side). According to Martelliere, this prevents clogging of interchangeable sieve filter b¹⁴ and fabric c, and helps maintain stable suction. *Id.* at 1 (right side).

3. Independent Claims 1 and 14

For independent claims 1 and 14, Petitioner contends that the proposed combination of Eriksson-Jons and Martelliere satisfies each limitation. Pet. 97–120. Patent Owner (1) argues that the combination of Eriksson-Jons and Martelliere does not satisfy the handle projection limitation (referred to as limitation 1h2 above) and (2) challenges the articulated reasons to combine Eriksson-Jons and Martelliere in the manner asserted. *See* Prelim. Resp. 24–26. We address in turn each of Patent Owner’s arguments.

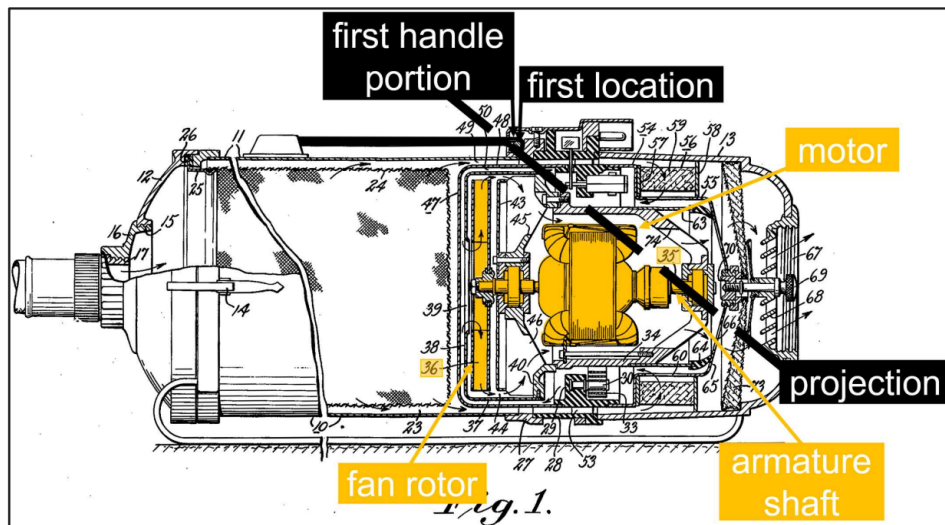
a. The Handle Projection Limitation

The handle projection limitation in claims 1 and 14 recites that “a projection of the first handle portion extends through the suction motor.” Ex. 1001, 14:45–46, 16:3–4. Petitioner presents three alternative arguments as to why the combination of Eriksson-Jons and Martelliere allegedly satisfies this limitation. *See* Pet. 112–117. Patent Owner argues that Petitioner has failed to meet the burden of showing that the combination

¹⁴ Although Martelliere appears to use a Latin small letter b with hook (b) to designate the interchangeable sieve filter in its figure, we use a Latin small letter b with no hook (i.e., a common “b”) to align with the parties’ usage. *See, e.g.*, Pet. 12; Prelim. Resp. 24.

relied upon satisfies the handle projection limitation. *See* Prelim. Resp. 25–26. We address each of Petitioner’s alternative positions in turn below.

First, Petitioner states that “[a] projection of Eriksson-Jons’s first handle portion extends through the suction motor (motor, armature shaft 35, and fan rotor 36)” with Petitioner providing the following annotated version of Figure 1 of Eriksson-Jons:



Pet. 113 (citing Ex. 1008, Fig. 1; Giachetti Decl. ¶ 370). In the annotated version of Figure 1 of Eriksson-Jons above, Petitioner added (1) a black solid line on the handle of the depicted vacuum, with nearby text boxes identifying a “first handle portion” and a “first location, (2) a dashed black line identified as “projection,” which starts at the “first location” and overlays the “motor,” identified with an orange text box, and (3) orange text boxes identifying a “fan rotor” and an “armature shaft.” *Id.* According to Petitioner, one of ordinary skill in the art would have understood the depicted handle to be flexible given the flexible handles on other models of vacuum cleaners allegedly sold by Electrolux—the assignee of Eriksson-Jons—during and after the date of issuance of that patent. *See* Pet. 113–114

(depicting vacuum cleaners allegedly from the 1920s, 1930s, and 1950 from Exhibit 1017; citing Giachetti Decl. ¶ 371).

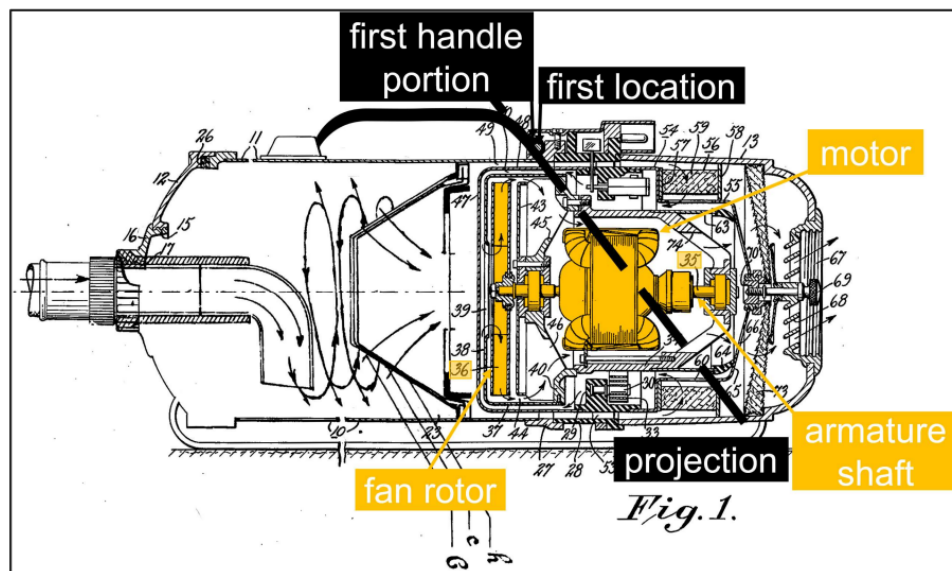
Even assuming that Petitioner is correct and the handle in the depicted embodiment of Eriksson-Jons is flexible, at this stage of the proceeding Petitioner has not adequately explained why the “projection” identified in the annotated version of Figure 1 above (corresponding with Petitioner’s first alternative position (Pet. 113)) falls within the proper scope of “a projection of the first handle portion” recited in the limitation at issue. Notably, neither Petitioner nor Patent Owner discuss the construction of the handle projection limitation in the briefing thus far. Although the term “projection” does not appear to be discussed in the Specification, both the Examiner and the Applicant addressed the scope of the handle projection limitation during prosecution. *See, e.g.*, Ex. 1004 at 143 (“For the purpose of examination, the examiner will consider this to be ‘a projection of a portion of the handle that connects to the first location extends **through the suction motor axis.**’”), 161 (“As discussed during the interviews, the projection of the portion of the handle recited in claims 1 and 14 is not a physical projection, but rather a ‘virtual’ extension of the handle portion.”). The parties should consider developing the record on this issue during trial as appropriate.

As the second of Petitioner’s three alternatives for the handle projection limitation, Petitioner appears to assume that the handle identified in the Figure 1 embodiment of Eriksson-Jons is *rigid*, and Petitioner discusses why one of ordinary skill in the art would have replaced the alleged *rigid* handle with a *flexible* handle:

It would have been obvious to use a flexible handle with Eriksson-Jons to increase useability, mobility, and user comfort,

as flexible handles were well known in the art as providing those benefits. [Giachetti Decl.] ¶373. Such a modification would have involved a simple substitution of a rigid handle with a flexible handle to predictably result in a user-friendly handle; it would have been at least obvious to try as there were a finite number of handle types (including rigid and flexible handles); and [one of ordinary skill in the art] would have had a reasonable expectation of success because it would have been a simple substitution that would not otherwise affect device operation.

Pet. 114–115. Petitioner then states that “[w]hen a flexible handle is used with Eriksson-Jons, a **projection** of the **first handle portion** extends through the suction motor” with Petitioner providing the following annotated and modified version of Figure 1 of Eriksson-Jons:



Pet. 115 (citing Ex. 1008, Fig. 1 (modified); Giachetti Decl. ¶ 370). In the annotated and modified version of Figure 1 of Eriksson-Jons above, Petitioner added (1) a black solid line on the handle of the depicted vacuum, with nearby text boxes identifying a “first handle portion” and a “first location,” with the handle having two bends not present in the original Figure 1, (2) a dashed black line identified as “projection,” which starts at the “first location” and overlays the “motor,” identified with an orange text

box, and (3) orange text boxes identifying a “fan rotor” and an “armature shaft.” *Id.*

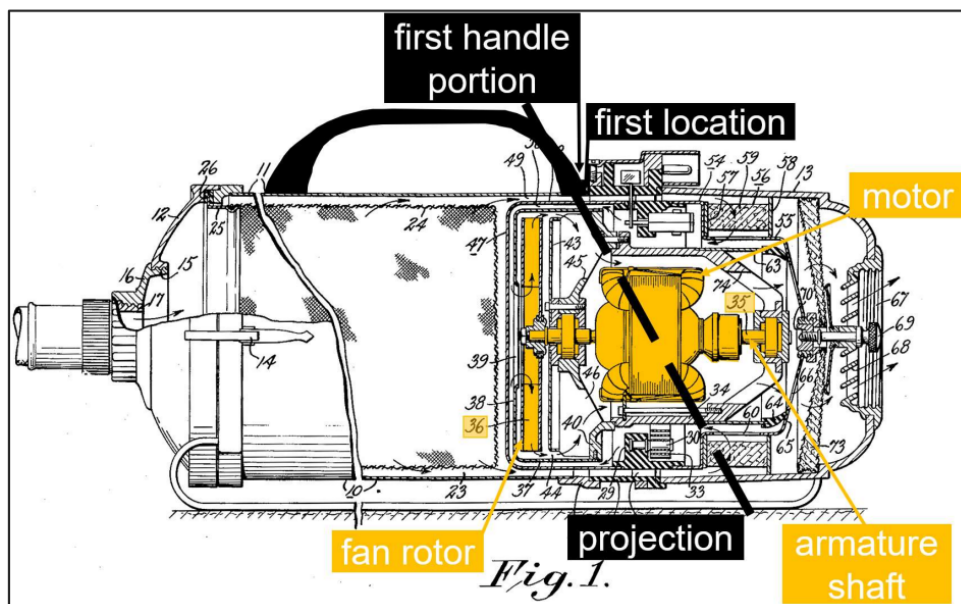
From this annotated Figure, Petitioner appears to take the position that the identified “projection” is a virtual extension of the handle continuing in the direction of the handle structure nearest the “first location.” *See* Pet. 115. At this stage of the proceeding, however, Petitioner has not adequately explained its position or the basis for that position. The parties should consider developing the record on this issue during trial as appropriate. Patent Owner challenges Petitioner’s stated reasons to modify the assumed rigid handle to be flexible in the context of this second alternative position (Prelim. Resp. 26), but Patent Owner relies on mere conclusory attorney argument as to the Petition’s and the Giachetti Declaration’s alleged failings as to replacing the handle. *See Pearson*, 494 F.2d at 1405.

As the last of Petitioner’s three alternatives for the handle projection limitation, Petitioner appears to assume that the handle identified in the Figure 1 embodiment of Eriksson-Jons is *flexible*, and Petitioner discusses why one of ordinary skill in the art would have replaced the alleged *flexible* handle with a *rigid* handle. Pet. 115–117. In support, Petitioner posits that “Electrolux created vacuums similar to Eriksson-Jons with rigid arched handles after Eriksson-Jons was issued but well before the [challenged patent’s] claimed priority date.” Pet. 115–116 (depicting vacuum cleaners allegedly from the 1950s and 1960s from Exhibit 1017; citing Giachetti Decl. ¶ 374). Petitioner presents reasons to have used a rigid arched handle:

It would have been obvious to use a rigid arched handle with Eriksson-Jons to increase useability, mobility, and user comfort, as rigid arched handles were well known in the art and

would have involved a simple substitution of one handle for another to predictably result in a user-friendly handle; it would have been at least obvious to try as there are a finite number handle options; and [one of ordinary skill in the art] would have had a reasonable expectation of success because it would have been a simple substitution that would not otherwise affect device operation.

Pet. 116–117 (citing Giachetti Decl. ¶ 375). Petitioner then states that “[w]hen a rigid arched handle is used with Eriksson-Jons, a **projection** of the **first handle portion** extends through the suction motor” with Petitioner providing the following annotated and modified version of Figure 1 of Eriksson-Jons:



Pet. 117 (citing Ex. 1008, Fig. 1 (modified); Giachetti Decl. ¶ 375). In the annotated and modified version of Figure 1 of Eriksson-Jons above, Petitioner added (1) a black solid line on the handle of the depicted vacuum, with nearby text boxes identifying a “first handle portion” and a “first location,” with the handle having two bends not present in the original Figure 1, (2) a dashed black line identified as “projection,” which starts at

the “first location” and overlays the “motor,” identified with an orange text box, and (3) orange text boxes identifying a “fan rotor” and an “armature shaft.” *Id.*

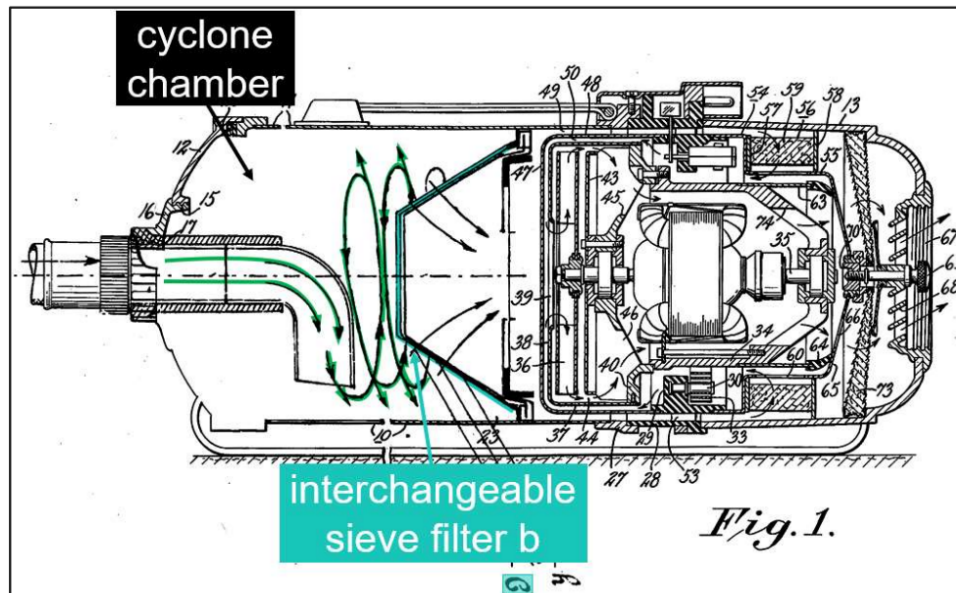
From this annotated Figure, Petitioner again appears to take the position that the identified “projection” is a virtual extension of the handle continuing in the direction of the handle structure nearest the “first location.” *See* Pet. 117. At this stage of the proceeding, however, Petitioner has not adequately explained its position or the basis for that position. The parties should consider developing the record on this issue during trial as appropriate. Patent Owner challenges Petitioner’s stated reasons to modify the assumed rigid handle to be flexible in the context of this third alternative position (Prelim. Resp. 26), but Patent Owner relies on mere conclusory attorney argument as to the Petition’s and the Giachetti Declaration’s alleged failings as to replacing the handle. *See Pearson*, 494 F.2d at 1405.

For these reasons, 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 made a sufficient showing that the proposed combination of Eriksson-Jons and Martelliere satisfies the handle projection limitation or whether Petitioner has adequately shown a motivation to modify the handle of Eriksson-Jons as proposed in the second and third alternatives discussed above.

b. The Combination of Eriksson-Jons and Martelliere

Petitioner asserts that one of ordinary skill in the art would have been motivated to combine Eriksson-Jons and Martelliere as proposed. *See* Pet. 97–100. Specifically, Petitioner states that one of ordinary skill in the art “would have been motivated to combine Martelliere’s cyclonic-

separation teachings with Eriksson-Jons' vacuum cleaner as shown in this composite image provided in the Petition:



Pet. 98. The composite image here incorporates interchangeable sieve filter b and other structures from Figure 1 of Martelliere into Figure 1 of Eriksson-Jons, and Petitioner then adds (1) a text box identifying a “cyclone chamber,” (2) a text box identifying “interchangeable sieve filter b,” and (3) blue lines highlighting airflow within the “cyclone chamber.” *Id.*

According to Petitioner, one of ordinary skill in the art would have been motivated to combine Eriksson-Jons and Martelliere as proposed based on the “many known benefits, including benefits Martelliere explicitly teaches.” Pet. 98 (citing Giachetti Decl. ¶ 319). For example, Petitioner states as follows regarding Martelliere’s “Whirlwind Principle”:

As Martelliere teaches, “[b]y application of the ‘Whirlwind’ principle,” i.e., cyclonic filtration, “the materials are deposited in the bottom of the container, after having separated from the air, before it passes through the filter screen,” which “prevent[s] clogging” and creates “stable suction,” and by using a transparent cyclonic chamber, “the user is able, when stopped, to see where

the filling of the container is” and “can therefore better judge when it must be emptied.”

Pet. 98–99 (alteration in original) (quoting Ex. 1010, 1). Petitioner then discusses (1) why Eriksson-Jons and Martelliere are analogous art, (2) why the proposed combination would have been a “simple substitution,” (3) why the proposed combination would have been “obvious to try,” and (4) why the proposed combination would have had a reasonable expectation of success. *See* Pet. 99–100 (citing Giachetti Decl. ¶¶ 319–323).

Patent Owner argues that Petitioner has not shown that one of ordinary skill in the art would have been motivated to combine Eriksson-Jons and Martelliere as proposed. *See* Prelim. Resp. 24–25. Patent Owner argues that, instead, Petitioner “provide[s] conclusory statements about simple substitution and alleged advantages of modifying Eriksson-Jons to incorporate Martelliere’s disclosure without providing any explanation for such statements.” *Id.* at 24. Patent Owner also contends that the paragraphs of the Giachetti Declaration relied upon in support provide only “conclusory statements about simple substitution and alleged advantages without providing any explanation for those statements.” *Id.* at 25 (citing Giachetti Decl. ¶¶ 317–323).

Petitioner adequately explains the reasons to combine Eriksson-Jons and Martelliere and the nature of the proposed modifications at this stage of the proceeding. The discussion on this issue spans four pages of the Petition, with approximately nine paragraphs of the Giachetti Declaration supporting that discussion. In contrast, Patent Owner relies on mere conclusory attorney argument as to the Petition’s alleged failings. *See Pearson*, 494 F.2d at 1405. 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.

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 Eriksson-Jons and Martelliere as proposed and that the articulated reasoning is supported by rational underpinning.

Because the Petition shows a reasonable likelihood that Petitioner would prevail with respect to at least one of the challenged claims based on at least one of the asserted grounds (*see* § II.C.2 above and § II.D.2 above), we include this asserted ground in the instituted *inter partes* review.

4. *Dependent Claims 2–13 and 15–25*

Claims 2–13 depend from independent claim 1 and claims 15–25 depend from independent claim 14. Patent Owner does not present any arguments specifically addressing claims 2–13 and 15–25 in the context of this asserted ground. *See* Prelim. Resp. 24–27. We include claims 2–13 and 15–25 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 1–25 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 1–25 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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