

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.

IPR2024-01151
Patent 11,910,984 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 1–18 of U.S. Patent No. 11,910,984 B2 (Ex. 1001, “the challenged patent”). Paper 2 (“Pet.”). Omachron Intellectual Property Inc. (“Patent Owner”) timely filed a Preliminary Response. Paper 7 (“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) (2024) (“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 1–18. 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 identify a proceeding in the U.S. International Trade Commission involving the challenged patent: *Certain Surface Cleaning Devices and Components Thereof*, Dkt. No. 337-TA-1404 (U.S. I.T.C.),

filed April 23, 2024. Pet. 117–118; Paper 4 (Patent Owner’s Mandatory Notices) at 1.

The ITC Litigation also involves U.S. Patent No. 11,903,546 B2 (“the ’546 patent”). Petitioner filed a petition for *inter partes* review of claims 1–15 of the ’546 patent in IPR2024-01162. *See Dyson Tech. Ltd. & Dyson, Inc. v. Omachron Intell. Prop. Inc.*, IPR2024-01162, Paper 2 (PTAB July 11, 2024). We grant institution in that proceeding concurrently with this Decision. *See* IPR2024-01162, Paper 9.

B. The Challenged Patent

The challenged patent relates to “surface cleaning apparatus” and, in particular, to a “hand vacuum cleaner.” Ex. 1001, 1:21–24. Figure 1 is reproduced below:

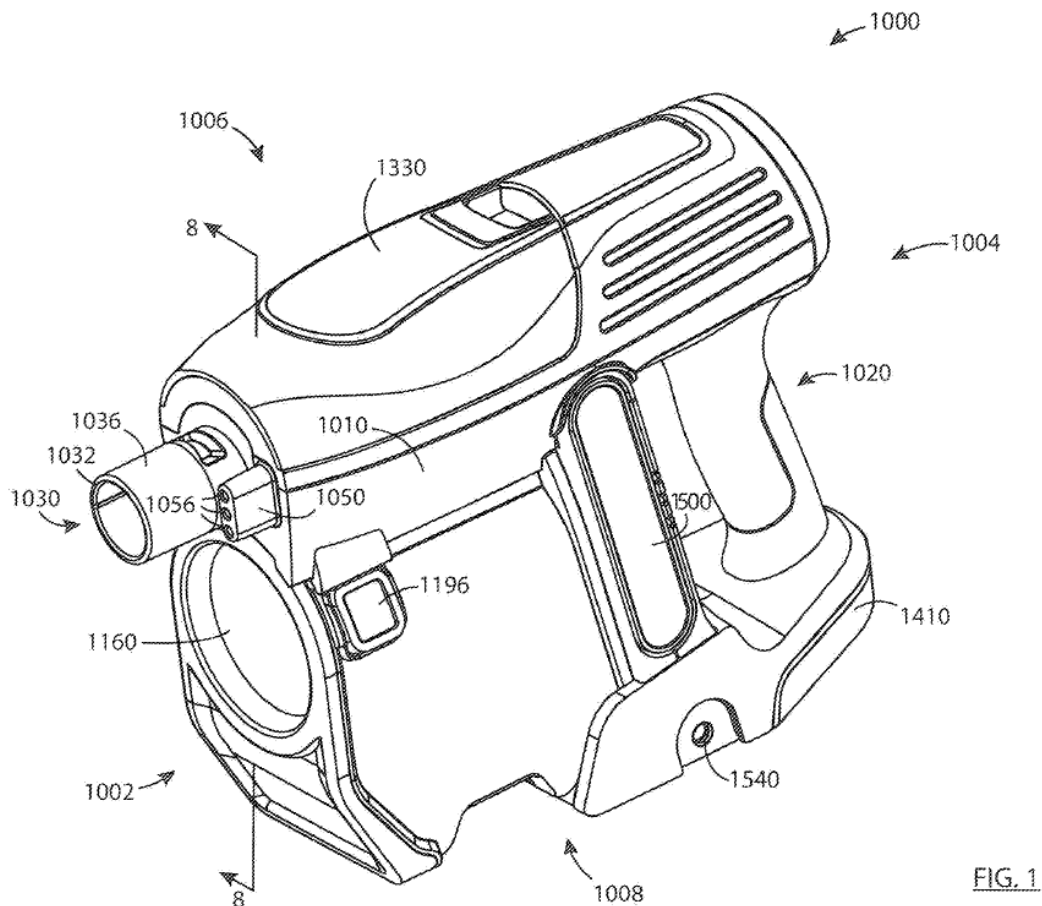


Figure 1 depicts a “top perspective view of a hand vacuum cleaner.” Ex. 1001, 13:46–47. Depicted surface cleaning apparatus 1000 includes main body 1010, handle 1020, dirty air inlet 1030, and removable battery pack 1500. *Id.* at 16:51–56, 18:54–57. Figure 6 is reproduced below:

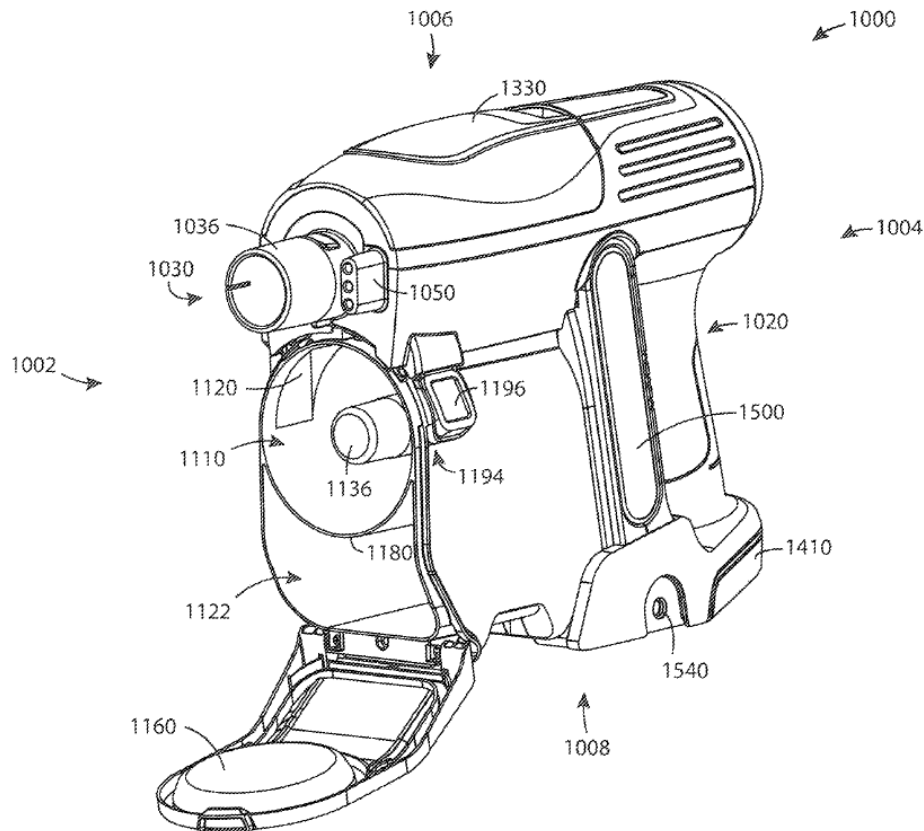


FIG. 6

Figure 6 is perspective view of the hand vacuum cleaner of Figure 1 with the “front door or lid in an open position.” Ex. 1001, 13:56–57. The configuration shown here includes cyclone chamber 1110, cyclone air inlet 1120 within cyclone sidewall 1180, as well as dirt collection chamber 1122. *Id.* at 17:6–13, 19:64–20:2, 20:55–57. Unnumbered openable front door 1190 (shown in the open configuration), when closed (as shown in Figure 1), covers cyclone chamber 1110 (via front end wall 1160) and covers direct collection chamber 1122 (via unnumbered front end wall 1126). *Id.* at 22:52–59. The challenged patent discloses that “front door 1190 may be

secured in the closed position using any suitable type of locking mechanism, including a latch mechanism that may be released by a user.”¹ *Id.* at 23:6–9.

As one possibility, the challenged patent discloses that front door 1190 may be secured in the closed position “by an assembly door lock 1194 or other suitable locking mechanism” and discloses that, “[p]referably, the assembly door lock may include at least one release actuator 1196 so that a user may unlock the assembly door lock, e.g., by depressing the actuator.” Ex. 1001, 23:14–20. The challenged patent states that “[t]he actuator for opening/releasing the openable portion of the cyclone assembly may be provided on the cyclone assembly 1100 or on any other portion of the hand vacuum 1000 (such as the handle 1020).” *Id.* at 23:20–23.

C. The Challenged Claims

Petitioner challenges claims 1–18, of which claims 1 and 10 are independent. Claims 2–9 depend from claim 1, and claims 11–18 depend from claim 10. Independent 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, an upper side and a lower side, the hand vacuum cleaner comprising:

[1a] an air flow passage extending from a dirty air inlet provided at the front end to a clear air outlet provided at the rear end;

[1b] a vacuum cleaner body comprising a suction motor positioned in the air flow passage, a front end, a rear end and a handle;

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

[1c] a cyclone unit positioned in the air flow passage upstream from the suction motor, the cyclone unit comprising a cyclone having a front end, a rear end, a cyclone axis of rotation extending between the front and rear ends of the cyclone, the cyclone unit further comprising an axially extending cyclone unit wall which extends to a front end of the cyclone unit, the front end of the cyclone unit comprising a front door that is moveable between a closed position and an open position; and,

[1d] a lock securing the front door in the closed position, the lock comprising an actuator, wherein the actuator is spaced towards the rear end of the cyclone.

Ex. 1001, 36:2–24.²

D. Asserted Grounds of Unpatentability

Petitioner challenges claims 1–18 on the following grounds:

Claim(s) Challenged	35 U.S.C. § ³	Reference(s)/Basis
1–18	103	Dimbylow, ⁴ Howes ⁵

² We adopt and apply below Petitioner’s designations for the elements of the challenged claims. *See* Pet. ix–xi (showing alphanumerical designations for the language in the challenged claims). We have removed the alphabetical designations originally in claim 1. *See* Ex. 1001, 36:2–24.

³ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. §§ 102, 103 that became effective on March 16, 2013. Pub. L. No. 112-29, §§ 3(b)–3(c), 3(n)(1), 125 Stat. 284, 285–87, 293 (2011). Because there is no dispute that the challenged claims have effective filing dates after March 16, 2013, we apply the AIA versions of the statutes. We would reach the same outcome, however, under the pre-AIA versions.

⁴ US 2017/0079489 A1, published March 23, 2017 (Ex. 1005, “Dimbylow”).

⁵ US 8,021,453 B2, issued Sept. 20, 2011 (Ex. 1006, “Howes”).

Claim(s) Challenged	35 U.S.C. § ³	Reference(s)/Basis
1–18	103	IPVG, ⁶ Nakai ⁷
1–18	103	IPVG, Nakai, Sunderland 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 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 of 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

⁶ GB 283,179, published August 9, 1928 (Ex. 1007, “IPVG”). “IPVG” are the initials of the Swiss corporate entity that filed the application that published as GB 283,179: **Inventia Patent-Verwertungs-Gesellschaft**.

⁷ US 7,175,682 B2, issued Feb. 13, 2007 (Ex. 1008, “Nakai”).

⁸ International Publication WO 2013/117901 A1, published August 15, 2013 (Ex. 1017, “Sunderland”).

include fluid dynamics or fluid paths, such as vacuum cleaners.” Pet. 12. 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 1–18 Based on Dimbylow and Howes

Petitioner asserts that claims 1–18 of the challenged patent would have been obvious based on Dimbylow and Howes. Pet. 3, 13–49. Patent Owner provides arguments addressing this asserted ground. Prelim. Resp. 8–19. We first summarize aspects of the relied-upon prior art.

1. Overview of Dimbylow

Dimbylow discloses “a handheld vacuum cleaner comprising a cyclonic separating unit.” Ex. 1005 ¶ 3. Figure 2 of Dimbylow is reproduced below:

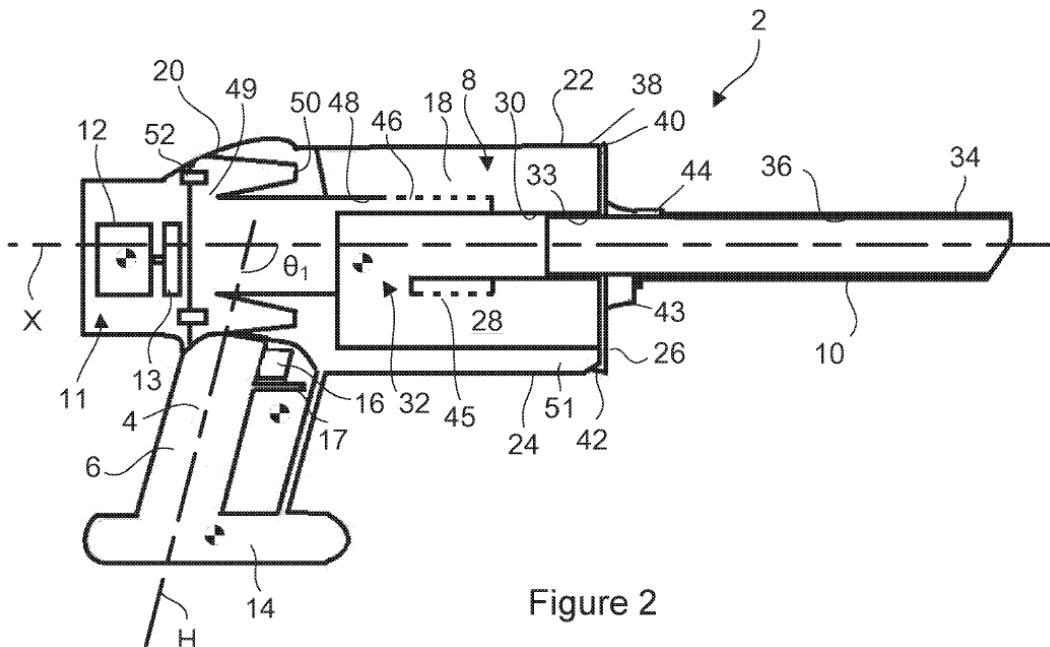


Figure 2

Figure 2 depicts a profile sectional view of a handheld vacuum cleaner. Ex. 1005 ¶ 23. Handheld vacuum cleaner 2 includes motor 12 and impeller 13, which, using power from battery 14, generates airflow through cyclonic separation chamber 28 within primary cyclonic separator 18. *Id.* ¶¶ 31–33. The user holds handle 6 and presses trigger 16 to operate the device. *Id.* ¶ 31. Primary cyclonic separator 18 “comprises a separator body 22 in the form of a bin having a cylindrical outer wall 24 and an end wall 26.” *Id.* ¶ 33.

Figures 1 and 8 are reproduced below:

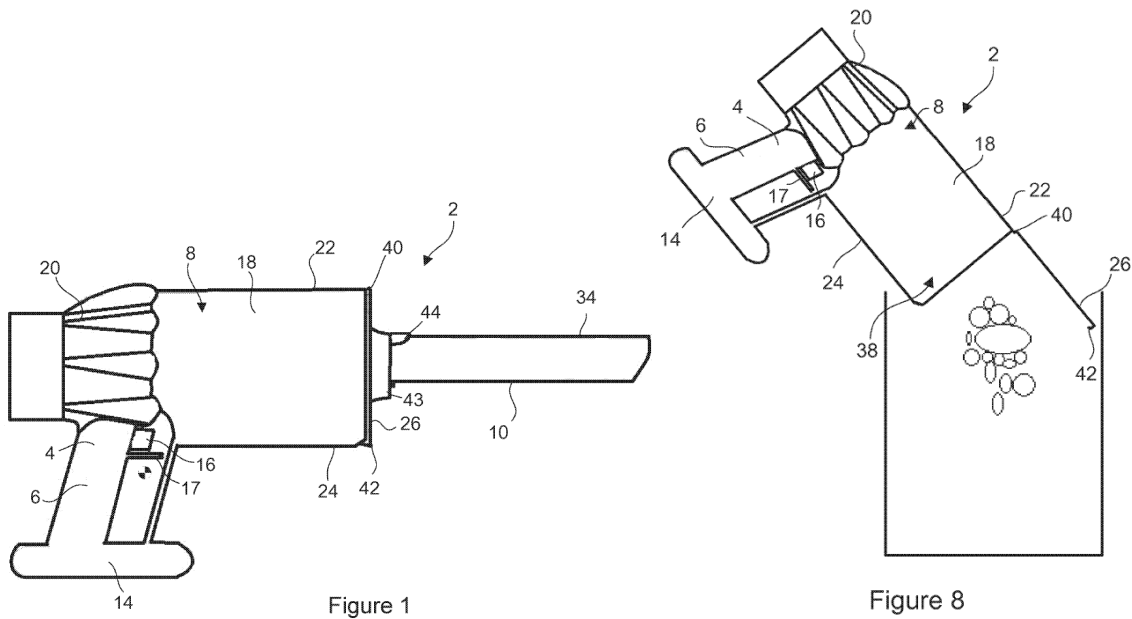


Figure 1 is a profile view of a handheld vacuum cleaner, and Figure 8 is the vacuum cleaner of Figure 1 being emptied. Ex. 1005 ¶¶ 22, 29. During use, dirt is retained in dirt collector 38. *Id.* ¶ 37. To empty dirt collector 38, the user disconnects tool 10 then releases catch 42 to pivot end wall 26 from the closed position (shown in Figure 1) to the open position (shown in Figure 8). *Id.* ¶ 48.

2. Overview of Howes

Howes discloses “a collecting chamber for a bagless vacuum cleaner” and “a vacuum cleaner which incorporates the collecting chamber.”

Ex. 1006, 1:15–17. Figure 2a of Howes is reproduced below:

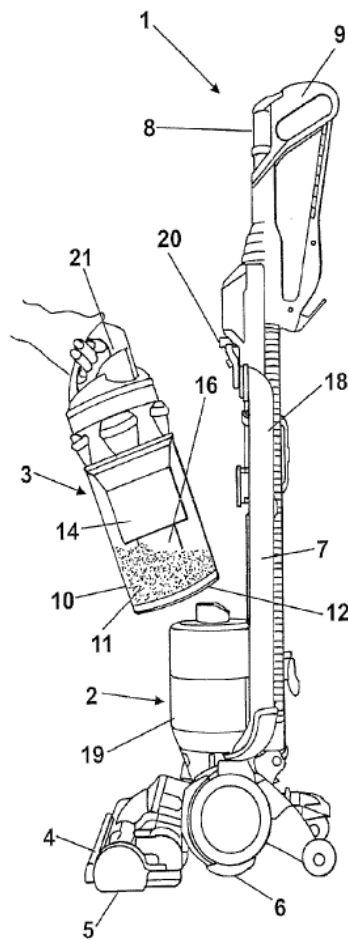


Fig. 2a

Figure 2a depicts dirt and dust separation apparatus 3 being separated from vacuum cleaner 1. Ex. 1006, 2:53–54, 3:3–5.

Figures 3 and 4 are reproduced below:

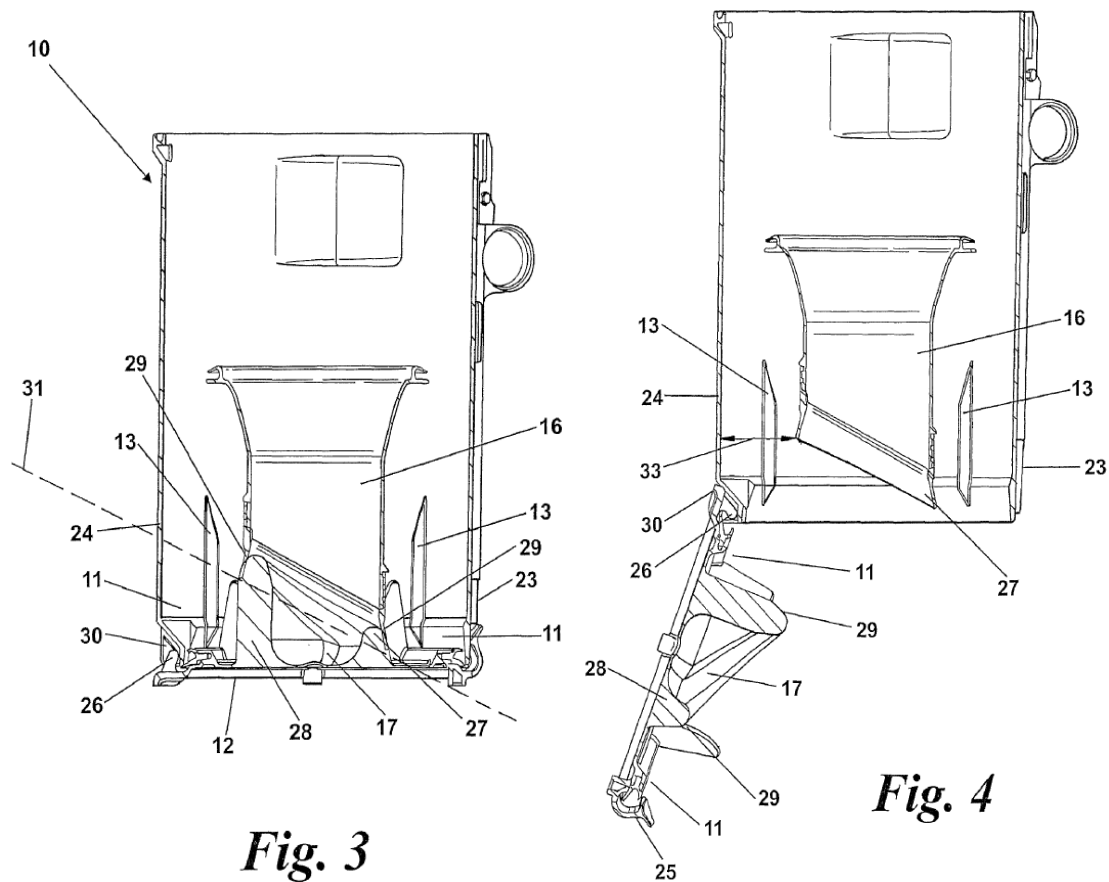


Figure 3 is a partly sectional side view of part of cyclonic chamber 10 shown in Figure 2a with base 12 closed, and Figure 4 is the same view as Figure 3, but with base 12 open. Ex. 1006, 2:56–59. Base 12 “is attached to the cyclone chamber 10 by means of a hinge 26 to allow pivotal movement of the base 12 between the open and closed positions” as shown in Figures 3 and 4, respectively. *Id.* at 4:11–13.

Figure 2b is reproduced below:

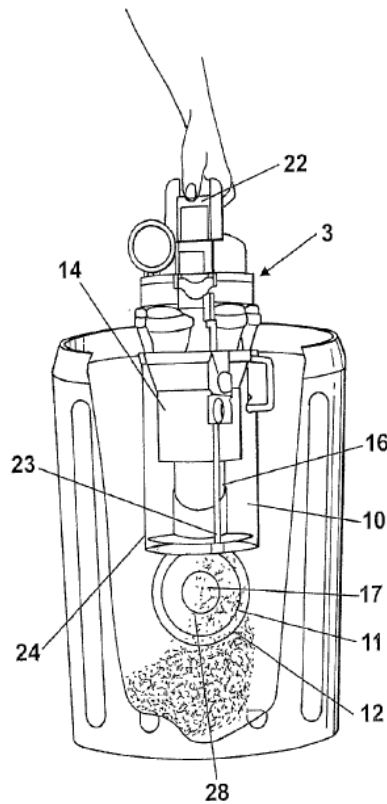


Fig. 2b

Figure 2b depicts dirt and dust separation apparatus 3 being emptied into a trash can. Ex. 1006, 2:55. To empty the apparatus, the user presses button 22 (shown in Figure 2b) to move push-rod 23 into catch 25 (identified in Figure 4), so that base 12 moves to the open position. *See id.* at 4:1–10.

3. Independent Claims 1 and 10

For independent claims 1 and 10, Petitioner contends that the proposed combination of Dimbylow and Howes discloses each limitation. Pet. 13–34. 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 Dimbylow and Howes.

Pet. 13–21. Patent Owner (1) argues that the combination of Dimbylow and Howes does not satisfy the “lock securing” limitations in claims 1 and 10 (referred to as limitations 1d and 10e, respectively) and (2) challenges the articulated reasons to combine Dimbylow and Howes with a reasonable expectation of success. *See* Prelim. Resp. 8–18.

We have reviewed Petitioner’s contentions with respect to claims 1 and 10, and for the reasons below, we determine that the Petition shows a reasonable likelihood that Petitioner would prevail in demonstrating that claims 1 and 10 would have been obvious based on Dimbylow and Howes. We address in turn each of Patent Owner’s arguments.

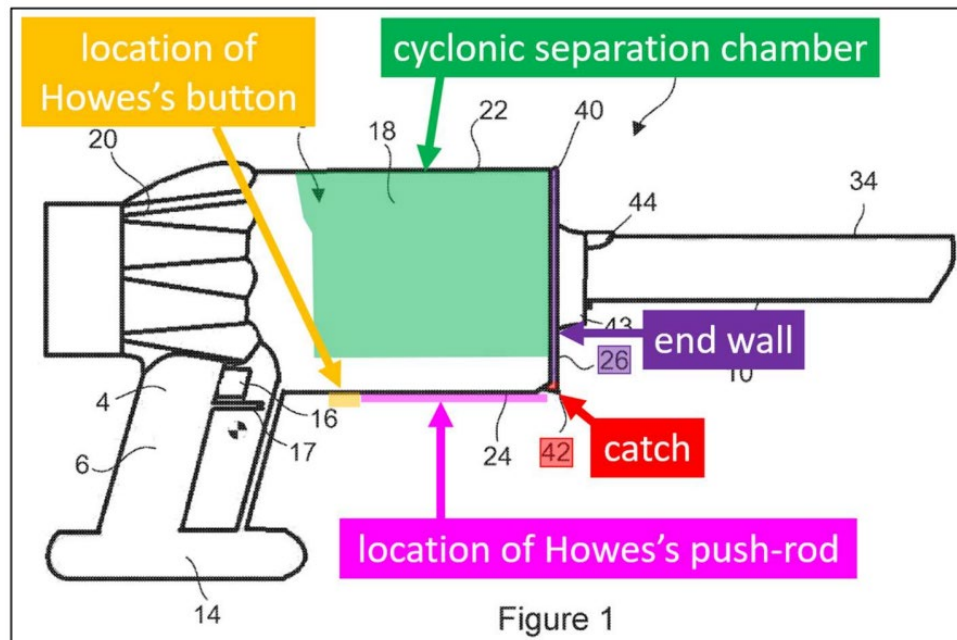
a. The “lock securing” Limitations

The “lock securing” limitations in independent claims 1 and 10 each begin with the same recitation—“a lock securing the front door in the closed position, the lock comprising an actuator”—but then each recites a different “wherein” clause, with the “lock securing” limitation in claim 1 reciting “wherein the actuator is spaced towards the rear end of the cyclone” and the “lock securing” limitation in claim 10 reciting “wherein the actuator is located at an elevation of an upper end of the pistol grip handle and forward of the pistol grip handle.” Ex. 1001, 36:22–24, 37:5–8.

Petitioner asserts that the combination of Dimbylow and Howes satisfies both “lock securing” limitations. *See* Pet. 29–34 (citing Giachetti Decl. ¶¶ 115–126). As to the common language for the two limitations, Petitioner argues (1) that Dimbylow discloses “a lock securing the front door in the closed position,” (2) that Howes discloses “a lock securing the openable door in the closed position, the lock comprising an actuator,” and (3) that one of ordinary skill in the art “would have been motivated to

combine Dimbylow and Howes to include an ‘actuator mechanism,’ as Howes teaches, to Dimbylow’s hand vacuum and would have reasonably expected success.” *See* Pet. 29–32 (citing Giachetti Decl. ¶¶ 117–122). Patent Owner does not challenge Petitioner’s positions as to the common language for the two “lock securing” limitations.

As to the “wherein” clause in the “lock securing” limitation in claim 1, Petitioner states that “the combination of Dimbylow and Howes renders obvious the actuator is spaced towards the rear end of the cyclone” because, “[i]n their combined teachings, Howes’s ‘actuator mechanism’ (including ‘button 22’ and ‘push-rod 23’) releases Dimbylow’s ‘end wall 26’ (by releasing Dimbylow’s ‘catch 42’).”⁹ Pet. 32 (citing Giachetti Decl. ¶¶ 123–124). Petitioner then provides this annotated version of Figure 1 of Dimbylow explaining the location of some structures in the combination:



⁹ 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.

Pet. 33 (citing Ex. 1005, Fig. 1; Ex. 1006, 4:1–10; Giachetti Decl. ¶ 123). In the annotated version of Figure 1 of Dimbylow here, Petitioner added (1) an orange text box, an orange shaded area, and an arrow identifying the “location of Howes’s button,” (2) a green text box, a green shaded area, and an arrow identifying a “cyclonic separation chamber,” (3) a purple text box, a purple shaded area, and an arrow identifying reference numeral 26 as an “end wall,” (4) a red text box, a red shaded area, and an arrow identifying reference numeral 42 as a “catch,” and (5) a pink text box, a pink shaded area, and an arrow identifying the “location of Howes’s push-rod.” *Id.*

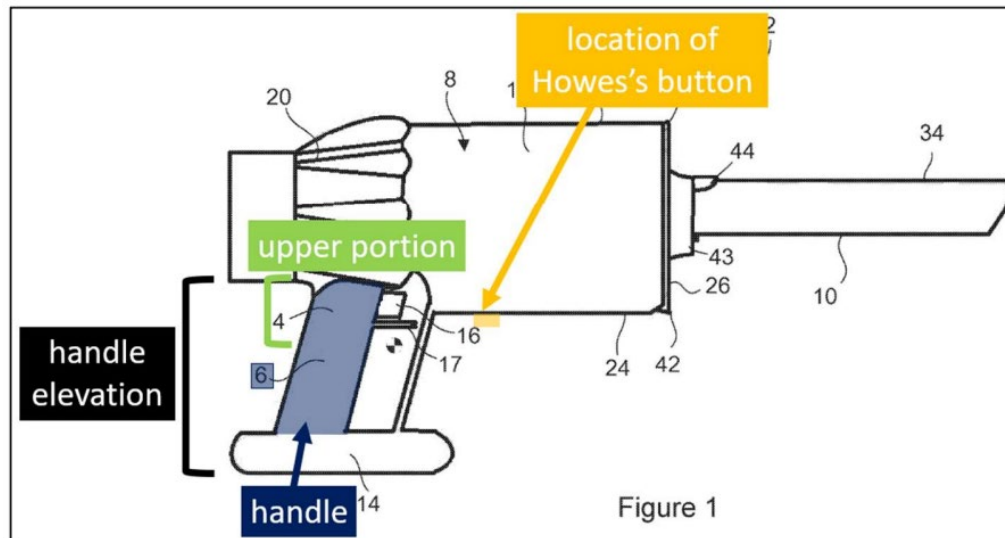
According to Petitioner, one of ordinary skill in the art

would have found it obvious to locate Howes’s actuator in the convenient location identified above—spaced towards the rear end of the cyclone (i.e., the end closer to the handvac rear end)—and would have reasonably expected success doing so, including because Howes’s cyclone, when oriented as shown in Dimbylow, likewise has its actuator at the rear of the cyclone.

Pet. 33 (citing Giachetti Decl. ¶ 124; Pet. 13–21 (discussing motivation to combine Dimbylow and Howes)).

As to the “wherein” clause in the “lock securing” limitation in claim 10, Petitioner states (1) that “the combination of Dimbylow and Howes renders obvious locating the actuator at an elevation of an upper end of the pistol-grip handle and forward of the pistol-grip handle” and (2) that one of ordinary skill in the art “reading Dimbylow and Howes would have found it obvious to conveniently locate the ‘button 22’ (actuator) at an elevation of an ‘upper portion’ (upper end) of Dimbylow’s ‘handle 6,’ and forward of ‘handle 6.’” Pet. 33 (citing Giachetti Decl. ¶¶ 125–126).

Petitioner then provides this annotated version of Figure 1 of Dimbylow explaining the location of some structures in the combination:



Pet. 34 (citing Ex. 1005 ¶ 31, Fig. 1; Ex. 1006, 4:1–10; Giachetti Decl. ¶ 125). In the annotated version of Figure 1 of Dimbylow here, Petitioner added (1) a black text box and brackets identifying a “handle elevation,” (2) a green text box and brackets identifying an “upper portion,” (3) an orange text box, an orange shaded area, and an arrow identifying the “location of Howes’s button,” and (4) a blue text box, a blue shaded area, and an arrow identifying reference numeral 6 as a “handle.” *Id.* According to Petitioner, one of ordinary skill in the art would have understood, in the combined teachings of Dimbylow and Howes, that the actuator is forward of Dimbylow’s “handle 6.” *Id.* (citing Giachetti Decl. ¶ 126; Ex. 1005 ¶ 31 (“A trigger guard 17 extends forwardly from the handle below the trigger 16.”)).

Patent Owner presents three arguments regarding the “wherein” clauses in claims 1 and 10.¹⁰ First, Patent Owner argues that, “as Fig[ure] 2b of Howes clearly disclose[s], th[e] ‘button 22’ [in Howes] is located well above the upper end of the cyclonic separator in an upright configuration. In other words, it is not, for example, ‘spaced towards the rear end of the cyclone.’” Prelim. Resp. 9.

On the current record, this argument does not identify a deficiency in Petitioner’s position as to either “wherein” clause in the “lock securing” limitations. Petitioner does not rely on Figure 2b of Howes as teaching the locations for the “actuator” as recited in either of the “wherein” clauses. Instead, Petitioner explains why one of ordinary skill in the art would have *further modified* the teachings of Dimbylow and Howes to locate the “actuator” as shown in the two annotated versions of Figure 1 of Dimbylow provided above (*see also* Pet. 33, 34), which address the “wherein” clauses in claims 1 and 10, respectively. *See* Pet. 17–18 (discussing why one of ordinary skill in the art would have located the “actuator” from Howes in the locations proposed), *cited at* Pet. 33 (stating that one of ordinary skill in the art “reading Dimbylow and Howes would have found it obvious to locate Howes’s actuator in the convenient location identified above—spaced towards the rear end of the cyclone (i.e., the end closer to the handvac rear end)—and would have reasonably expected success doing so, including because Howes’s cyclone, when oriented as shown in Dimbylow, likewise

¹⁰ As a reminder, the “wherein” clause in claim 1 recites “wherein the actuator is spaced towards the rear end of the cyclone,” and the “wherein” clause in claim 10 recites “wherein the actuator is located at an elevation of an upper end of the pistol grip handle and forward of the pistol grip handle.” Ex. 1001, 36:22–24, 37:5–8.

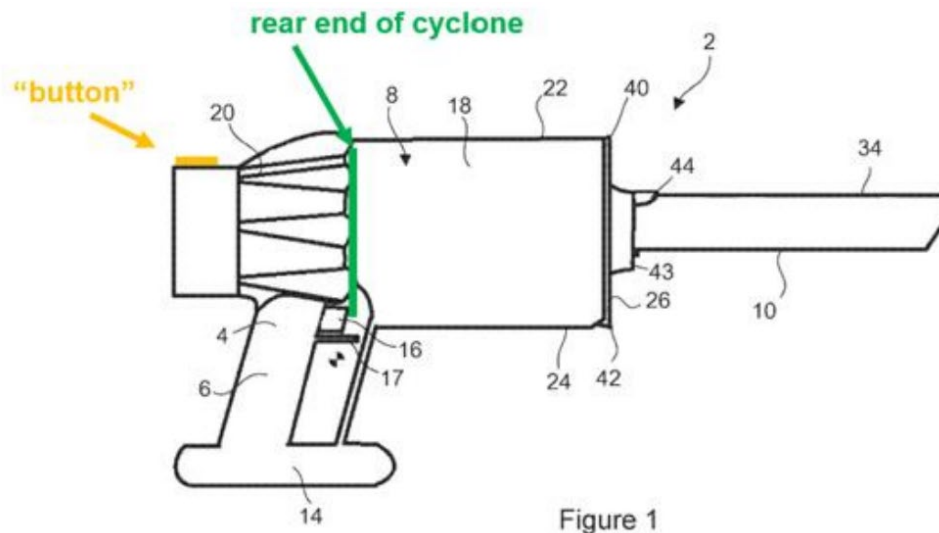
has its actuator at the rear of the cyclone”). Patent Owner’s argument attacks Howes individually but does not address Petitioner’s position on the locations recited in the two “wherein” clauses. *See Bradium Techs. LLC v. Iancu*, 923 F.3d 1032, 1050 (Fed. Cir. 2019) (“A finding of obviousness, however, cannot be overcome ‘by attacking references individually where the rejection is based upon the teachings of a combination of references.’” (quoting *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986))).

Second, Patent Owner acknowledges the locations for the “actuator” proposed by Petitioner as to the two “wherein” clauses at issue, but Patent Owner argues that “Petitioner[] cite[s] to nothing in either Howes or Dimbylow teaching or suggesting that the actuator (‘b[u]tton’) would be placed where Petitioner[] propose[s] it to be.” Prelim. Resp. 10.

On the current record, this argument does not show a deficiency in Petitioner’s positions. Although “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does,” 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.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). As discussed above regarding Patent Owner’s first argument, Petitioner discusses why one of ordinary skill in the art would have *further modified* the teachings of Dimbylow and Howes to locate the “actuator” from Howes as recited in the “wherein” clauses, and that discussion is supported by the testimony of Dr. Giachetti. *See* Pet. 17–18 (citing Giachetti Decl. ¶¶ 83–85), 32–34 (citing Giachetti Decl. ¶¶ 123–125). With this argument, Patent

Owner has not adequately addressed that discussion, or the related testimony in the Giachetti Declaration.

Third, Patent Owner argues that, based on the location of button 22 in Howes, one of ordinary skill in the art would have located the “actuator” in the proposed combination at the top, rear of the hand vacuum cleaner, as shown in the annotated figure below:



Prelim. Resp. 12. In the annotated version of Figure 1 of Dimbylow, Petitioner added (1) green text and a line identifying a “rear end of cyclone” and (2) orange text and an orange box identifying a “button.” *Id.* Patent Owner continues by asserting that “Petitioner’s proposed combination improperly relocates the ‘button’ from Howes forward and downward to its current location,” but, according to Patent Owner, “Petitioner failed to identify any motivation or rationale of why a [person of ordinary skill in the art] would have moved the button from the location in Howes to where the Petition proposes it to be.” *Id.* at 12–13.

On the current record, this argument does not identify a deficiency in Petitioner’s position. As an initial matter, Patent Owner’s statements as to

how one of ordinary skill in the art would have located the button based on the teaching in Howes is mere attorney argument, unsupported by declaration testimony or other evidence as to the understanding of one of ordinary skill in the art on the relevant issue. *See Elbit Sys. of Am., LLC v. Thales Visionix, Inc.*, 881 F.3d 1354, 1359 (Fed. Cir. 2018) (“‘[A]ttorney argument is not evidence’ and cannot rebut other admitted evidence.” (quoting *Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017))). Further, contrary to Patent Owner’s position—and as discussed above—Petitioner has presented reasoning as to why one of ordinary skill in the art would have allegedly *further modified* the teachings of Dimbylow and Howes to locate the “actuator” from Howes in the locations proposed, and that presentation is supported by the testimony of Dr. Giachetti. *See* Pet. 17–18 (citing Giachetti Decl. ¶¶ 83–85), 32–34 (citing Giachetti Decl. ¶¶ 123–125). Patent Owner states that Petitioner has “failed to identify any motivation or rationale” (Prelim. Resp. 13), but Patent Owner fails to address the reasoning Petitioner *did* present.

On the current record, we determine that Petitioner has made a sufficient showing that the proposed combination of Dimbylow and Howes discloses the subject matter of the “lock securing” limitations in claims 1 and 10.¹¹

b. The Motivation to Combine Dimbylow and Howes

Petitioner asserts that one of ordinary skill in the art would have been motivated to combine Dimbylow and Howes as proposed, with a reasonable

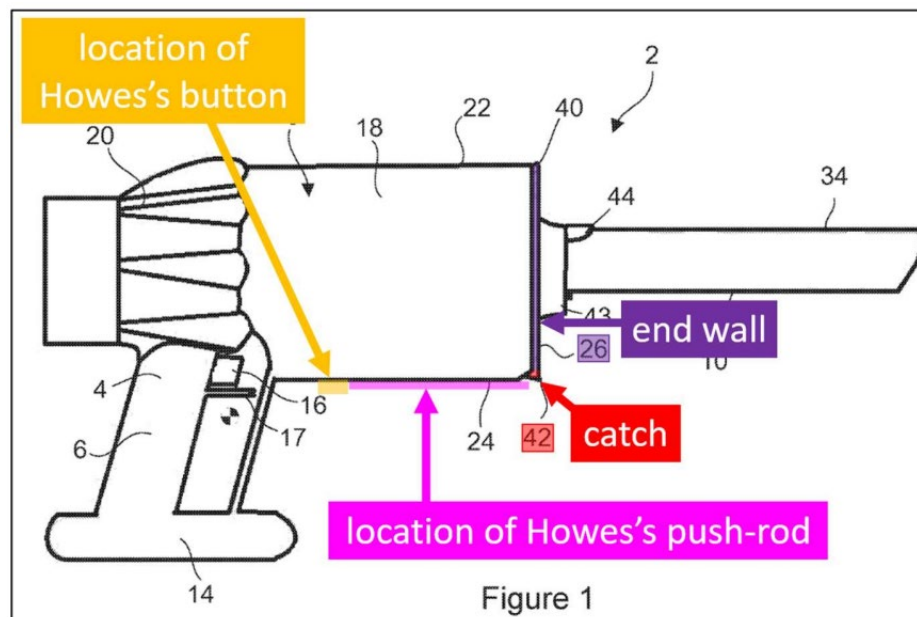
¹¹ We address in the next subsection Patent Owner’s arguments that one of ordinary skill in the art would not have combined Dimbylow and Howes as proposed.

expectation of success. *See* Pet. 13–21. Specifically, Petitioner first summarizes the dust-emptying design of the handheld vacuum cleaner in Figures 1 and 8 of Dimbylow (as provided above (*see* § II.C.1)). Pet. 13–14. Petitioner notes that the design includes catch 42 to open end wall 26 but that Dimbylow does not disclose how catch 42 is released. Pet. 14. Then, Petitioner summarizes the dust-emptying design of the separator in Figures 2b, 3, and 4 of Howes (as provided above (*see* § II.C.2)). Pet. 15–16.

As to the motivation to combine Dimbylow and Howes, Petitioner states that one of ordinary skill in the art

would have been motivated to implement Howes’s base “actuator mechanism” teachings, including “button 22” and “push-rod 23,” as the method by which Dimbylow’s “catch 42 is . . . released by the user” to achieve Dimbylow’s stated goal of “intuitive and ergonomic” dust emptying that reduces the “risk that dirt will spill . . . onto a user during emptying.”

Pet. 17 (quoting Ex. 1006, 4:1–10; Ex. 1005 ¶ 48) (citing Giachetti Decl. ¶¶ 83–90). Petitioner provides the following image showing the proposed combination:



Pet. 17. In the annotated version of Figure 1 of Dimbylow here, Petitioner added (1) an orange text box, an orange shaded area, and an arrow identifying the “location of Howes’s button,” (2) a purple text box, a purple shaded area, and an arrow identifying reference numeral 26 as an “end wall,” (3) a red text box, a red shaded area, and an arrow identifying reference numeral 42 as a “catch,” and (4) a pink text box, a pink shaded area, and an arrow identifying the “location of Howes’s push-rod.” *Id.* According to Petitioner, “[b]ecause Dimbylow does not teach how a user releases its ‘catch,’ a [person of ordinary skill in the art] would have been motivated to look for ways to do this.” Pet. 18 (citing Giachetti Decl. ¶ 84).

Petitioner also states that one of ordinary skill in the art would have understood that the relied-upon aspects of Howes would “further Dimbylow’s stated purpose of providing ‘intuitive and ergonomic’ dust emptying . . . because simply pushing a button located near the handle with one hand while continuing to hold the cleaner’s handle with the other hand is a very intuitive and ergonomic method of emptying the collected dust.” Pet. 18 (citing Giachetti Decl. ¶ 85; Ex. 1005 ¶ 48). In addition, Petitioner states that one of ordinary skill in the art would have understood that the relied-upon aspects of Howes would “further Dimbylow’s stated purpose of providing a dirt-emptying process that reduces the ‘risk that dirt will spill . . . onto a user during emptying’ because the user would not need to place his/her hand in front of or even near the dirt collection chamber’s openable door, which, when opened, releases the dirt.” Pet. 19 (quoting Ex. 1005 ¶ 48) (citing Giachetti Decl. ¶ 86).

Petitioner then discusses (1) why both Dimbylow and Howes are analogous art to the claimed invention, (2) why the proposed combination

would have involved a simple substitution of known elements to obtain a predictable result, (3) why the proposed combination would have involved applying a known technique to a known device ready for improvement to yield predictable results, (4) why the proposed combination would have been at least obvious to try, and (5) why one of ordinary skill in the art would have had a reasonable expectation of success in the proposed combination. *See* Pet. 19–21.

Patent Owner presents three arguments addressing the motivation to combine Dimbylow and Howes with a reasonable expectation of success. *See* Prelim. Resp. 14–18. First, Patent Owner asserts that Petitioner provides “conclusory statements about cherry-picked substitution and alleged advantages of modifying Dimbylow based on Howes’s disclosure without providing any explanation for such conclusory statements.” *Id.* at 14. According to Patent Owner, “[n]othing in Dimbylow or Howes . . . suggests that a push-rod from a detachable dirt collection chamber of an upright vacuum can or should be retro-fitted to a handheld vacuum” and “Dimbylow does not identify ‘catch 42’ as a problem or issue to be resolved.” *Id.* Patent Owner asserts that each of Petitioner’s reasons to combine “are merely conclusory statements with no explanation for why the combination should be conducted in the specific proposed manner, why the alleged advantages of the pushrod mechanism apply to the handheld vacuum according to Dimbylow, or why the modifications would improve the vacuum of Dimbylow.” *Id.* at 15–16.

At this stage of the proceeding, Petitioner adequately explains the reasons to combine Dimbylow and Howes. The discussion on these issues spans eight 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 Elbit Sys.*, 881 F.3d at 1359. Moreover, the relied-upon prior art need not expressly teach or suggest the proposed combination and also need not identify modified components as a “problem.” *See KSR Int’l*, 550 U.S. at 418 (discussing how 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”).

Second, Patent Owner argues that because Dimbylow discloses a hand vacuum and Howes discloses an upright vacuum with no attachable cleaning tool, “there is no evidence a [person of ordinary skill in the art] would have looked to Howes to fill in alleged gaps in Dimbylow.” Prelim. Resp. 14–15.

On the current record, this argument does not identify a deficiency in Petitioner’s position. As an initial matter, Patent Owner has not adequately explained why the overall form factor of the devices in the relied-upon prior art—i.e., a hand vacuum versus upright vacuum—would impact the motivation to combine when the aspects relied on from Howes relate more narrowly to structures allowing opening of dust collection units (a problem common to both hand vacuums *and* uprights). *See, e.g.*, Pet. 18 (discussing why one of ordinary skill in the art “would have been particularly motivated to look at similar references (including cyclonic vacuum-cleaner references having the same assignee, Dyson) that teach mechanisms to release a similar component (door catch) on a similar device (dirt collection chamber) to accomplish a similar goal (hygienic and convenient bin emptying)” (citing Giachetti Decl. ¶ 84)); *see also In re Paulsen*, 30 F.3d 1475, 1481–82 (Fed.

Cir. 1994) (affirming rejection of a laptop computer hinge as obvious over hinged cabinets, piano lids, etc., because the “problem is not unique to portable computers”). Patent Owner’s conclusory statement that “no evidence” has been presented does not address Petitioner’s positions.

Third, Patent Owner asserts that the paragraphs of the Giachetti Declaration relied upon as to motivation to combine provide only “conclusory statements about simple substitution and alleged advantages without providing any explanation for such conclusory statements.” Prelim. Resp. 16 (citing Giachetti Decl. ¶¶ 78–91). According to Patent Owner, Dr. Giachetti does not explain why one of ordinary skill in the art “would have taken the ‘button’ and ‘push-rod’ according to Howes and place them into an embodiment according to Dimbylow exactly where the claims require other than a conclusory reason of ‘convenience.’” *Id.* (citing Giachetti Decl. ¶¶ 78–91, 120–125).

At this stage of the proceeding, Dr. Giachetti (like Petitioner) adequately explains the reasons to combine Dimbylow and Howes. As acknowledged by Patent Owner with its citations to the Giachetti Declaration while making this argument, the discussion by Dr. Giachetti on these issues spans approximately twenty paragraphs and over thirteen pages. *See* Giachetti Decl. ¶¶ 78–91, 120–125, *cited at* Prelim. Resp. 16. In contrast, Patent Owner relies on mere conclusory attorney argument as to alleged failings of the Giachetti Declaration. *See Elbit Sys.*, 881 F.3d at 1359. For example, Patent Owner presents attorney argument—unsupported by any evidence—that the “proposed location of the button is far out of reach from the user’s thumb, and it is not ‘ergonomic’ or ‘convenient’ to be operated by the user’s thumb as intended by Howes.” *See*

Prelim. Resp. 17. At this stage of the proceeding, and without countervailing testimony, we need not and do not determine the overall sufficiency of Dr. Giachetti's testimony on these issues.

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 modify Dimbylow and Howes as proposed and that the articulated reasoning is supported by rational underpinning.

c. Conclusion as to Claims 1 and 10

Patent Owner does not offer any arguments addressing the remaining limitations of claims 1 and 10. *See* Prelim. Resp. 8–18. We have reviewed Petitioner's contentions with respect to the remaining limitations of claims 1 and 10, and we determine that the Petition provides a sufficient showing, at this stage of the proceeding, that the combination of Dimbylow and Howes satisfies each limitation.

4. Claims 2–9 and 11–18

For dependent claims 2–9 and 11–18, Petitioner contends that the proposed combination of Dimbylow and Howes satisfies each limitation. Pet. 34–49. Patent Owner does not present any arguments specifically addressing claims 2–9 and 11–18 in the context of this asserted ground. *See* Prelim. Resp. 8–18. We include claims 2–9 and 11–18 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 1–18 Based on IPVG and Nakai

Petitioner asserts that claims 1–18 of the challenged patent would have been obvious based on IPVG and Nakai. Pet. 3, 50–94. Patent Owner

provides arguments addressing this asserted ground. Prelim. Resp. 19–23.
We first summarize aspects of the relied-upon prior art.

1. Overview of IPVG

IPVG discloses a “portable dust suction apparatus of the enclosed bag type.” Ex. 1007, 1:10–12. Figure 1 of IPVG is reproduced below:

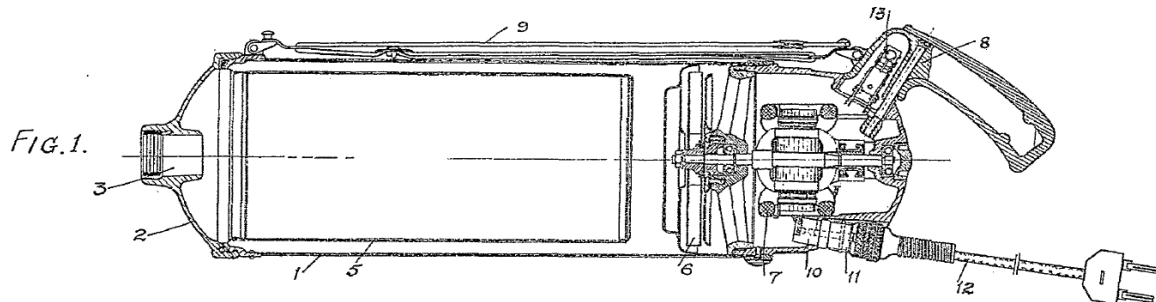


Figure 1 is a longitudinal sectional view of the portable dust suction apparatus. Ex. 1007, 1:45–46. The depicted apparatus includes casing 1, closed off at the front end by screwed cover 2, which includes suction opening 3 for taking in dirt and debris to dust bag 5. *Id.* at 1:51–57. Fan 6, driven by electric motor 7, generates air flow through the apparatus, which exits to the right in the configuration shown, near handle 8. *Id.* at 1:55–62.

Figure 2 is reproduced below:

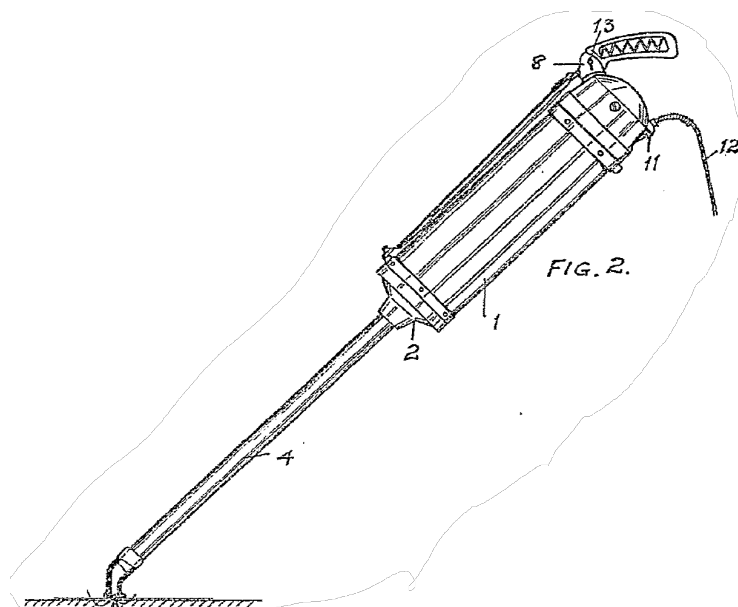


Figure 2 is a side elevation view of the apparatus in use. Ex. 1007, 1:47–48. In the configuration here, suction pipe 4 has been added to convey dirt and debris up towards suction opening 3. *Id.* at 1:51–55.

2. Overview of Nakai

Nakai discloses “an electric vacuum cleaner equipped with a dust collection unit, . . . the dust collection unit having a dust collecting case that can be opened by opening a lid member thereof to discharge the accumulated dust, and a lock mechanism for tightly locking the closed lid member.” Ex. 1008, 1:10–16.

Figures 3 and 8 of Nakai are reproduced below:

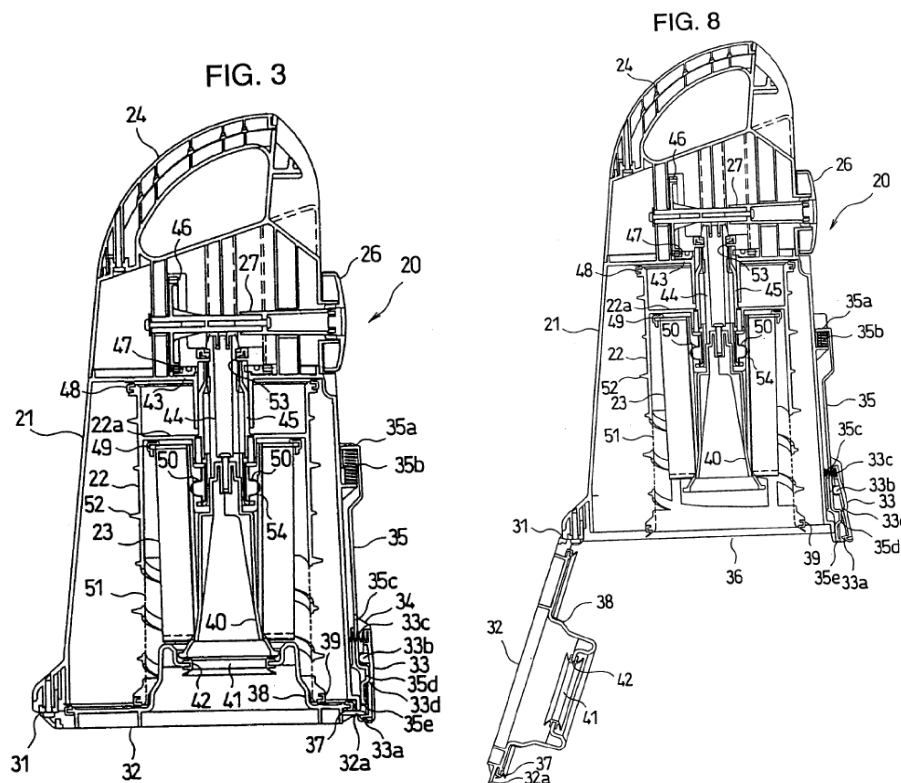


Figure 3 (on the left) is a sectional side elevation view of a dust collection unit, and Figure 8 (on the right) is a similar view with the lid member of the dust collection unit opened. Ex. 1008, 2:56–58, 3:3–5. Both figures show dust collection unit 20, which can be detached from the main

body 1 of the vacuum (shown in Figures 1 and 2). *Id.* at 3:65–67. Dust collection unit 20 includes cylindrical dust collection case 21 with a suction port offset from the center such that “dust-containing air sucked from the suction port is set in a whirlpool motion inside the dust collecting case 21.” *Id.* at 4:22–26. Lid member 32 is rotatably mounted on the bottom of dust collecting case 21 via hinge 31. *See id.* at 4:27–29. In addition, lid member 32 “can be locked by hooking up the clamp hook 33a formed on the lower end of the clamp lever 33 on an extended peripheral portion 32a of the lid member 32.” *Id.* at 4:31–34. To open lid member 32 and remove the accumulated dust inside dust collection case 21, a user pushes down manipulatory section 35a of lid opening stick 35, thereby rotating clamp lever 33 away from lid member 32. *Id.* at 7:11–24.

3. Independent Claims 1 and 10

For independent claims 1 and 10, Petitioner contends that the proposed combination of IPVG and Nakai discloses each limitation. Pet. 50–81. Patent Owner argues that the combination of IPVG and Nakai is “inoperative” and does not satisfy the “air flow passage” limitations (referred to as limitations 1a and 10a). *See Prelim. Resp.* 19–23.

a. The “air flow passage” Limitations

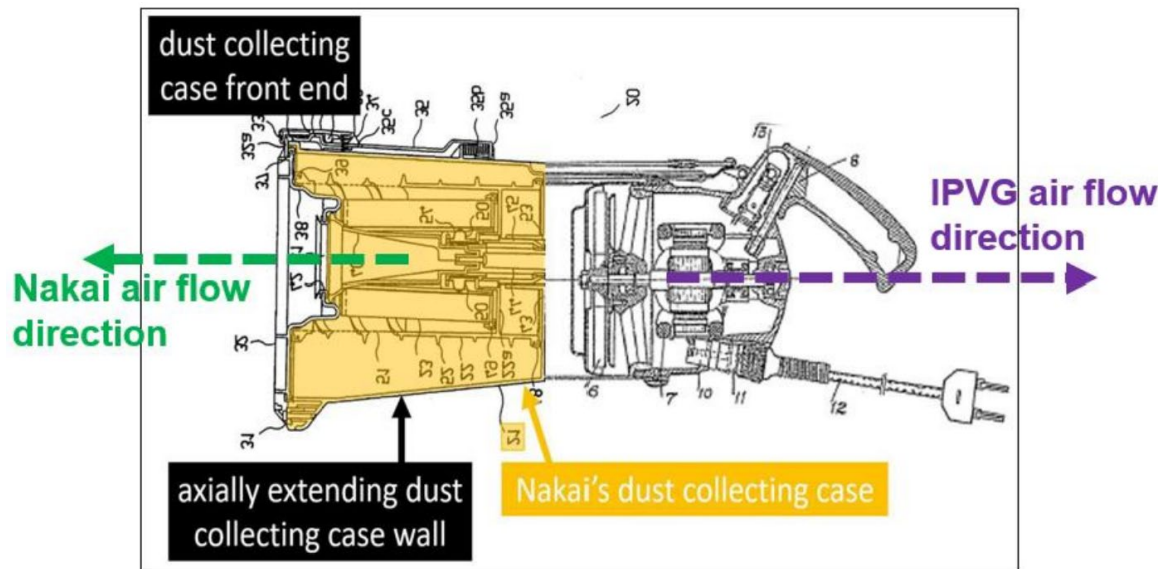
The “air flow passage” limitations in claims 1 and 10 each recite “an air flow passage extending from a dirty air inlet provided at the front end to a clear air outlet provided at the rear end.” Ex. 1001, 36:5–7, 36:55–57. Petitioner states that both “IPVG, and the combination of IPVG and Nakai” satisfy these limitations. Pet. 66.

We first address Petitioner’s reliance on IPVG alone. On the current record, it is unclear how Petitioner intends to rely on IPVG *alone* to satisfy

the “air flow passage” limitations because some of the structures in IPVG highlighted in the discussion of these limitations are not present in the proposed combination. For example, Petitioner identifies “IPVG’s ‘suction opening 3’” as the recited “dirty air inlet,” but, in the proposed combination, IPVG’s screwed cover 2 (which includes suction opening 3) is replaced with Nakai’s lid member 32 and hinge 31. *See* Pet. 54–55 (discussing this aspect of the proposed combination).

Turning to Petitioner’s reliance on the combination of IPVG and Nakai as to the “air flow passage” limitations, Petitioner first discusses certain alleged teachings of Nakai and states that the combined teachings of IPVG and Nakai “meet these limitations because the air flows from a dirty air inlet located at the front end, such as IPVG’s ‘suction opening 3’ (when modified to create cyclonic airflow), to a clear air outlet at the rear end, such as IPVG’s ‘exhaust.’” Pet. 67 (citing Giachetti Decl. ¶ 208). As an initial matter, Petitioner’s apparent reliance on IPVG’s suction opening 3 is again perplexing because (as discussed in the prior paragraph), in the proposed combination, IPVG’s screwed cover 2 (which includes suction opening 3) is replaced with Nakai’s lid member 32 and hinge 31. *See* Pet. 54–55.

Patent Owner argues that the proposed combination is “inoperative” and fails because “the airflow flows out of the separator in two opposite directions and, notably, there is **no air inlet** at all (and the Petition does not attempt to identify one).” Prelim. Resp. 19, 21. In support, Patent Owner provides a composite image of the proposed combination (as provided by Petitioner (*see* Pet. 75)) with purple and green lines and text added by Patent Owner to show the alleged opposite directions of the air flow of the components from IPVG and Nakai:



Prelim Resp. 22. In the composite image, the right side is the right portion of the portable dust suction apparatus from Figure 1 of IPVG, onto which Patent Owner has overlaid purple text stating “IPVG air flow direction” with a dotted arrow facing to the right. *Id.* The left side of the composite image includes dust collection case 21 from Figure 3 of Nakai (as proposed as part of the combination (Pet. 53–54)) with text boxes identifying (1) “dust collecting case front end,” (2) “axially extending dust collecting case wall,” and (3) “Nakai’s dust collecting case.” Prelim. Resp. 22. Onto the left side of the composite image, Patent Owner has overlaid green text stating “Nakai air flow direction” with a dotted arrow facing to the left. *Id.* Patent Owner contends that the “combination therefore has no operational air flow and no ‘dirty air inlet provided at the front end’” as the “air flow passage” limitations require. *Id.*

At this stage of the proceeding, the record supports Patent Owner’s argument on this issue. The passage from Nakai block quoted by Patent Owner supports that the clean air outlet from Nakai’s dust collection case 21 flows out of suction port 41 and therefore supports that airflow would be to

the left in the composite image above. *See* Prelim. Resp. 19–20 (quoting Ex. 1008, 6:9–15). For example, the quoted passage begins that “[t]he clean air filtered by the dust collection unit 20 [in Nakai] is discharged from the suction port 41 (of the dust collecting case 21) located below the cylindrical member 40 of the main filter 23.” Ex. 1008, 6:9–12 (emphasis added). And Petitioner acknowledges that the purple arrow in the composite image above accurately represents the clear air outlet from the apparatus in Figure 1 of IPVG. *See* Pet. 66 (including Figure 1 of IPVG with a red arrow to the right showing the air flow) (citing, *inter alia*, Ex. 1007, 1:57–58 (discussing how “[a]t the exhaust or blowing end of the casing is mounted a handle 8”)). Thus, as argued by Patent Owner, the proposed combination appears to have two of the recited “clean air outlet[s],” one of which is “provided at the rear end” as required (i.e., shown with the purple arrow in the composite image above), but, as further argued by Patent Owner, Petitioner has not adequately identified any “dirty air inlet provided at the front end” in the combination. *See* Prelim. Resp. 21 (discussing how the proposed “combination **has two air outlets, no air inlets, and totally conflicting air flows**” and how, in the proposed combination, “there is **no air inlet** at all (and the Petition does not attempt to identify one)”).

To the extent Petitioner purports to rely on “a dirty air inlet located at the front end, such as IPVG’s ‘suction opening 3’ (when modified to create cyclonic airflow)” (Pet. 67), Petitioner has not adequately explained such an allegedly proposed modification to allow Patent Owner to respond. And the cited paragraph of the Giachetti Declaration repeats much of the Petitioner’s discussion on this issue and does not provide adequate clarity. *See* Giachetti Decl. ¶ 208, *cited at* Pet. 67. On the current record and in view of our

decision to institute based on another ground (*see* § II.C.3), we reach no conclusion as to whether Petitioner has made a sufficient showing that the proposed combination of IPVG and Nakai satisfies the “air flow passage” limitations.

b. Conclusion as to Claims 1 and 10

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.3), we include claims 1 and 10 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).

4. Claims 2–9 and 11–18

For dependent claims 2–9 and 11–18, Petitioner contends that the proposed combination of IPVG and Nakai satisfies each limitation. Pet. 81–94. Patent Owner does not present any arguments specifically addressing these claims in the context of this asserted ground. *See Prelim. Resp.* 19–23. We include claims 2–9 and 11–18 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 1–18 Based on IPVG, Nakai, and Sunderland

Petitioner asserts that claims 1–18 of the challenged patent would have been obvious based on IPVG, Nakai, and Sunderland. Pet. 3, 94–113. As to independent claims 1 and 10 (as well as dependent claims 2, 8, 9, 17, and 18), Petitioner relies on IPVG and Nakai to address the recited limitations in the same manner as relied upon in the prior asserted ground (based on IPVG and Nakai). *See Pet.* 104.

Patent Owner does not provide arguments separately addressing this asserted ground but instead relies on the same arguments address as to the *prior* asserted ground, based on IPVG and Nakai. *See* Prelim. Resp. 23 (“Further inclusion of Sunderland does not cure the deficiencies and inoperability of IPVG and Nakai identified above.”). Because the Petition shows a reasonable likelihood that Petitioner would prevail with respect to at least one of the challenged claims based on another asserted ground (*see* § II.C.3), 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).

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 1–18 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 1–18 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.

IPR2024-01151
Patent 11,910,984 B2

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