

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.

IPR2024-00733
Patent 10,327,607 B2

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

MEYERS, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Dyson Technology Limited and Dyson, Inc. (“Petitioner” or “Petitioners”) filed a Petition to institute an *inter partes* review of claims 1–14 (the “challenged claims”) of U.S. Patent 10,327,607 B2 (Ex. 1001, “the ’607 patent”). Paper 1 (“Pet.”). Omachron Intellectual Property Inc. (“Patent Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”).

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

After considering the Petition, the Preliminary Response, and the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail with respect to at least one of the challenged claims. Accordingly, we institute an *inter partes* review of all challenged claims on all asserted grounds pursuant to 35 U.S.C. § 314. *See SAS Inst. Inc. v. Iancu*, 584 U.S. 357, 370–71 (2018) (requiring institution on all claims, if any); *see also* Patent Trial and Appeal Board Consolidated Trial Practice Guide 64 (Nov. 2019) (providing guidance in view of *SAS*).¹

¹ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

B. Real Parties-in-Interest

Petitioner identifies Dyson Technology Limited and Dyson, Inc. as the real parties-in-interest. Pet. 111.

Patent Owner identifies Omachron Intellectual Property Inc., Omachron Alpha Inc., SharkNinja Operating LLC, and SharkNinja Sales Company as the real parties-in-interest. Paper 3, 1. Additionally, Patent Owner indicates that “SharkNinja Management LLC may be a real party-in-interest.” *Id.*

C. Related Proceedings

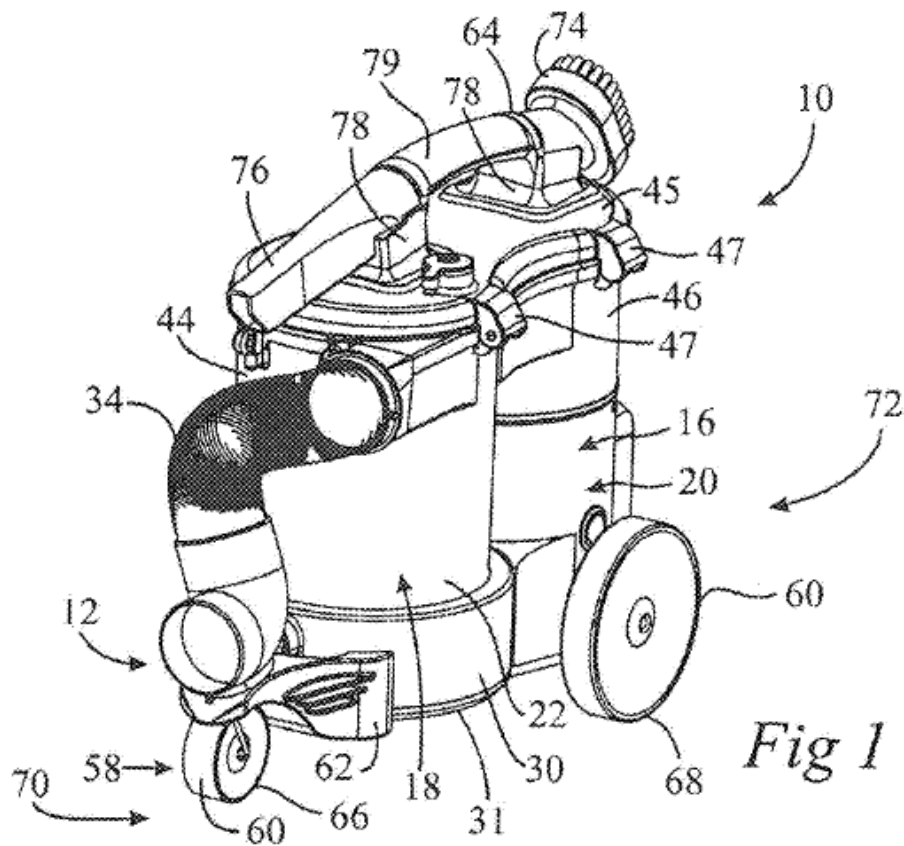
The parties identify the following district court litigation as being related to the '607 patent: *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-cv-12372 (D. Mass.) and *SharkNinja Operating LLC et al v. Dyson, Inc.*, No. 1:23-cv-11277 (D. Mass.). Pet. 111; Paper 3, 1.

D. Overview of the '607 Patent

The '607 patent is titled “Surface Cleaning Apparatus.” Ex. 1001, code (54). The '607 patent states that “surface cleaning apparatuses include vacuum cleaners, including upright vacuum cleaners, hand carryable vacuum cleaners, canister type vacuum cleaners, and Shop-VacTM type vacuum cleaners.” *Id.* at 1:38–41. According to the '607 patent, a shortcoming of upright vacuum cleaners is that they “may not be useable in smaller or crowded areas.” *Id.* at 1:47–50. The '607 patent further notes that while canister vacuum cleaners have an “improv[ed] mobility of the cleaning head,” “consumers must separately move a canister body, which can add an extra step during the cleaning process.” *Id.* at 1:50–54. In light of the drawbacks of prior apparatuses, the '607 patent discloses a surface cleaning apparatus that “comprises a portable cleaning unit, which may be carried by

hand or shoulder strap such as a pod, which is removably mounted on a wheeled base.” *Id.* at 1:64–67.

Figure 1 of the '607 patent illustrates a perspective view of a surface cleaning apparatus, and is reproduced below.



As shown in Figure 1, “[s]urface cleaning apparatus 10 may be a canister type vacuum cleaner, a Shop-Vac™ type vacuum cleaner, or another type of vacuum cleaner that may be mounted to a wheeled base.” Ex. 1001, 8:42–45. Apparatus 10 includes dirty fluid inlet 12 and clean air outlet 14 (not shown in Figure 1), with “a fluid flow path extending therebetween.” *Id.* at 8:45–47. Portable cleaning unit 16, which may comprise one of a

variety of configurations, is located in the fluid flow path and includes “at least one cyclonic separation stage 18 for removing dirt from air, or for removing liquid from air or to pick up liquid.” *Id.* at 8:47–50. In addition, “surface cleaning apparatus 10 may comprise a handle 64, and/or a shoulder strap 65 (shown in FIG. 8) for maneuvering cleaning unit 16 when it is removed from wheeled based 58.” *Id.* at 12:5–8.

Figure 9 of the '607 patent illustrates a cross-sectioned configuration of a cleaning unit, and is reproduced below.

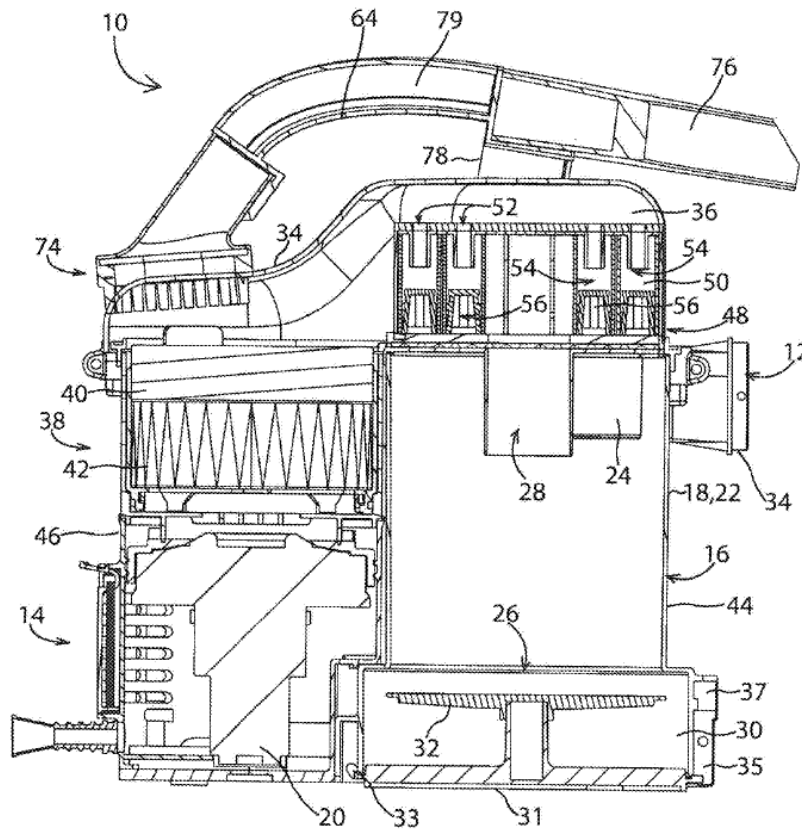


Fig. 9

In the embodiment shown in Figure 9, “cleaning unit 16 comprises first 18 and second 48 cleaning stages housed in first housing 44, and filter assembly 38 and motor 20 housed in second housing 46 laterally adjacent the first housing.” Ex. 1001, 9:3–7. In this embodiment, “cyclonic cleaning stage 18 includes a single cyclone chamber 22,” with “[a] dirty or separated material collection chamber 30 [] mounted below dirty material outlet 26, for collecting material removed from the air in cyclone chamber 22.” *Id.* at 9:15–21. Air from clean air outlet 28 above cyclone chamber 22 is directed into cleaning stage 48, which “comprises a plurality of second stage cyclones 50 in parallel.” *Id.* at 9:61–65. The ’607 patent discloses that second stage 48 “may be removably mounted in first housing 44 and may optionally be provided with a handle(not shown) [sic],” “for emptying or optional[] replacement when it is full.” *Id.* at 10:7–11. “Alternately, the second cyclonic stage may[]be emptyable with the first cyclonic separation stage 18, as is known in the vacuum cleaner art.” *Id.* at 10:11–14.

E. Illustrative Claim

Petitioner challenges claims 1–14 of the ’607 patent. Pet. 3–4. Challenged claims 1 and 12–14 are independent. Independent claim 1 is illustrative, and is reproduced below.

1. A hand carriable surface cleaning apparatus comprising:
 - a) a fluid flow path extending between a dirty air inlet and a clean air outlet:
 - b) a first cyclonic cleaning stage positioned in the fluid flow path downstream from the dirty air inlet, the first cyclonic cleaning stage comprising an upper end, a bottom end spaced longitudinally below the upper end and a side wall extending therebetween, the first cyclonic cleaning stage having a dirt

collection region with a bottom door that is openable to empty the dirt collection region;

c) a second cyclonic cleaning stage positioned in the fluid flow path downstream from the first cyclonic cleaning stage, the second cyclonic cleaning stage having an upper end which is positioned above the upper end of the first cyclonic cleaning stage, the second cyclonic cleaning stage is longitudinally moveable relative to all of the sidewall of the first cyclonic cleaning stage;

d) a suction motor positioned in the fluid flow path downstream from the second cyclonic cleaning stage; and,

e) a handle;

wherein the second cyclonic cleaning stage comprises a plurality of second cyclones connected fluidly in parallel with each other,

wherein the second cyclones are positioned around a central longitudinal axis that extends through the first cyclonic cleaning stage and the openable bottom door, and

wherein the plurality of second cyclones includes a first set of second cyclones arranged in an inner ring and a second set of second cyclones arranged in an outer ring laterally surrounding the inner ring.

Ex. 1001, 20:14–47. Claims 2–11 depend from claim 1. *Id.* at 20:48–21:24. Claims 12–14 are also independent claims. *Id.* at 21:25–22:54.

F. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–14 of the '607 patent are unpatentable on the following 11 grounds:

Claim(s) Challenged	35 U.S.C. §²	Reference(s)/Basis
1, 3, 4, 6–13	102	Liddell ³
1, 3–13	103	Liddell or Liddell, Organ ⁴
10	103	Liddell, Organ, DC14 Manual ⁵
14	103	Liddell, Lim ⁶ or Liddell, Organ, Lim
1–4, 6–13	103	Simpson ⁷ , Liddell
1–13	103	Simpson, Liddell, Organ
10	103	Simpson, Liddell, DC14 Manual or Simpson, Liddell, Organ, DC14 Manual
14	103	Simpson, Liddell, Lim or Simpson, Liddell, Organ, Lim
1–4, 6–9, 11–13	103	Soler ⁸ , Liddell
4, 5	103	Soler, Liddell, Organ
14	103	Soler, Liddell, Lim

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

Ex. 1002.

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. §§ 102 and 103 effective March 16, 2013. Because the ’607 patent’s earliest effective filing date is before the effective date of the AIA amendments to §§ 102 and 103 (*see* Ex. 1001, code (60)), this decision refers to the pre-AIA versions of §§ 102 and 103.

³ GB 2 399 780 A, published Sept. 29, 2004 (Ex. 1005, “Liddell”).

⁴ GB 2 372 434 A, published Aug. 28, 2002 (Ex. 1006, “Organ”).

⁵ Dyson DC14 Owner’s Manual, dated June 3, 2004 (Ex. 1009, “DC14 Manual”).

⁶ US 2004/0237482 A1, published Dec. 2, 2004 (Ex. 1010, “Lim”).

⁷ US 1,940,609, issued Dec. 19, 1933 (Ex. 1007, “Simpson”).

⁸ US 5,267,371, issued Dec. 7, 1993 (Ex. 1008, “Soler”).

II. ANALYSIS

A. Legal Standards

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion does not shift to the patent owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

1. Anticipation

A prior art reference can only anticipate a claim if it discloses all the claimed limitations “arranged or combined in the same way as in the claim.” *Wm. Wrigley Jr. Co. v. Cadbury Adams USA LLC*, 683 F.3d 1356, 1361 (Fed. Cir. 2012) (quoting *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1370 (Fed. Cir. 2008)). “However, a reference can anticipate a claim even if it ‘d[oes] not expressly spell out’ all the limitations arranged or combined as in the claim, if a person of skill in the art, reading the reference, would ‘at once envisage’ the claimed arrangement or combination.” *Kennametal, Inc. v. Ingersoll Cutting Tool Co.*, 780 F.3d 1376, 1381 (Fed. Cir. 2015) (alteration in original) (quoting *In re Petering*, 301 F.2d 676, 681 (CCPA 1962)); *see also Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1343 (Fed. Cir. 2016) (distinguishing *Net MoneyIN* when the

reference in question explicitly contemplated the combination of the disclosed functionalities).

2. *Obviousness*

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which that subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of non-obviousness when presented. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

In analyzing the obviousness of a combination of prior art elements, it can be important to identify a reason that would have prompted one of skill in the art “to combine . . . known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418. A precise teaching directed to the specific subject matter of a challenged claim is not necessary to establish obviousness. *Id.* Rather, “any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *Id.* at 420. Accordingly, a party who petitions the Board for a determination of unpatentability based on obviousness must show that “a skilled artisan would have been motivated to combine the teachings of the prior art

references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (citations omitted).

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

B. Level of Ordinary Skill in the Art

We review the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of invention. *Graham*, 383 U.S. at 17. Factors pertinent to determining the level of ordinary skill in the art include (1) the educational level of the inventor; (2) the type of problems encountered in the art; (3) prior-art solutions to those problems; (4) the rapidity with which innovations are made; (5) the sophistication of the technology; and (6) the educational level of workers active in the field. *Envtl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696–97 (Fed. Cir. 1983). Not all factors may exist in every case, and one or more of these or other factors may predominate in a particular case. *Id.* Moreover, these factors are not exhaustive, but merely a guide to determining the level of ordinary skill in the art. *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007). Further, the prior art itself may reflect an appropriate skill level. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Petitioner asserts that one of ordinary skill in the art “would have had a bachelor’s degree in mechanical engineering or a similar field and 2–3 years of experience in machine design, including machines that include fluid

dynamics or fluid paths, such as vacuum cleaners.” Pet. 12. Petitioner notes that “[a]dditional education could offset less experience and vice versa,” and that one of ordinary skill in the art “could have also obtained similar knowledge and experience through other means.” *Id.* At this stage of the proceeding, “Patent Owner does not challenge Petitioners’ proposed definition” of the level of skill in the art. Prelim. Resp. 11.

On the current record, we determine that Petitioner’s definition of a person of ordinary skill in the art is consistent with the scope and content of the ’607 patent, and, at this stage, we apply Petitioner’s definition for purposes of this Decision.

C. Claim Construction

In an *inter partes* review, a patent claim shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b). This rule adopts the same claim construction standard used by Article III federal courts, which follow *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and its progeny.

Under that standard, the words of a claim are generally given their “ordinary and customary meaning,” which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *See Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in

evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner submits that the challenged claims’ “preambles should be construed as non-limiting” and “[t]he remaining [claim] terms should be given their plain and ordinary meaning for purposes of this IPR.” Pet. 12. More particularly, Petitioner asserts that the preambles of independent claims 1 and 12–14, which each recite “[a] hand carriable surface cleaning apparatus,” “should be construed as non-limiting because the body of the challenged claims each describe a structurally complete vacuum cleaner,” and the preambles only state a purpose or intended use. *Id.* at 13.

Alternatively, to the extent the preambles of the independent claims may be limiting, Petitioner asserts that the plain and ordinary meaning of “hand carriable” is “able to be carried by a hand or hands.” *Id.*

Patent Owner acknowledges that there is no presumption that preamble language should be treated as limiting, but argues that here, the preambles are limiting because they “‘recite[] essential structure or steps [and are] necessary to give life, meaning, and vitality to the claims[s].’” Prelim. Resp. 3–4 (quoting *Proveris Sci. Corp. v. Innovasystems, Inc.*, 739 F.3d 1367, 1372 (Fed. Cir. 2014)). According to Patent Owner, “[t]he entirety of the intrinsic record demonstrates that the ‘hand carriable’ limitation of the preamble is a critical part of the invention of the ’607 [p]atent,” and “[t]hat the surface cleaning apparatus of the claims is ‘hand carriable’ is a ‘fundamental characteristic of the claimed invention.’” *Id.* at 5 (quoting *Poly-Am., L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1310 (Fed. Cir. 2004)). In addition, Patent Owner contends that “the plain and

ordinary meaning of ‘hand carriable,’ based on the intrinsic record, excludes upright and canister-style vacuum cleaners.” *Id.* at 8.

To support its position, Patent Owner points out that each independent claim requires “a handle,” and argues that the preamble is drawn to “a ‘hand carriable surface cleaning apparatus’ informs the purpose and structure of the claimed ‘handle’—*i.e.*, the handle must be of the type to allow a user to carry the surface cleaning device.” Prelim. Resp. 6. According to Patent Owner, the Specification of the ’607 patent also supports the criticality of the “hand carriable” language in the preambles by repeatedly using this phrase, particularly to distinguish the invention from other types of vacuum cleaners. *See id.* at 6. Lastly, Patent Owner argues that for claim 8, which depends from independent claim 1, and for independent claim 12, the recitation of limitations with antecedent basis in the preambles also demonstrates that the preambles are limiting. *Id.* at 4–5 (citing *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1358 (Fed. Cir. 2012)).

At this stage of the proceeding, we agree with Petitioner that the preamble term “hand carriable” does not limit the claimed apparatuses. “[A] preamble is not limiting ‘where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.’” *Catalina Marketing*, 289 F.3d at 808 (quoting *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997)). This rule against giving effect to intended-use language in the preamble “reflects a longstanding substantive aspect of the patent statute—specifically, the ‘well settled’ fundamental principle ‘that the recitation of a new intended use for an old product does not make a claim to that old product patentable.’”

Arctic Cat Inc. v. GEP Power Products, Inc., 919 F.3d 1320, 1328 (Fed. Cir. 2019) (quoting *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997)). In this case, we view the phrase “hand carriable,” as it appears in the preamble, to be indicative of an intended use of the claimed apparatuses, rather than a structural limitation, and as such, we do not see it to be limiting based on the current record.

Patent Owner does not point to any particular structural limitation required by the preamble term “hand carriable.” *See* Prelim. Resp. 2–10. Although the independent claims each recite “a handle,” the claims do not explicitly tie this limitation to the “hand carriable” language in the preambles. In any case, to the extent the handle recited in the claims may be used for carrying the claimed apparatus, the claims need not rely on the preamble term “hand carriable” for antecedent basis, as the handle limitation is introduced in the body of the claims. In other words, with respect to the functionality of carrying the apparatus by hand, the claim bodies recite “a structurally complete invention.” *Catalina Marketing*, 289 F.3d at 808.

Despite Patent Owner’s assertion that “[t]he focus on the ‘portable’ and ‘hand carriable’ nature of the embodiments disclosed throughout the ’607 [p]atent indicates that the preamble recitation has been employed to characterize the claimed invention and thus is limiting” (Prelim. Resp. 6), we do not see the term “hand carriable” as being critical or fundamental to the claimed invention because the claims are predominantly directed toward cleaning functionality, not portability. The independent claims each recite interrelated features that pertain to cleaning, for example, “a fluid flow path,” “a first cyclonic cleaning stage positioned in the fluid flow path,” “a

second cyclonic cleaning stage positioned in the fluid flow path downstream from the first cyclonic cleaning stage,” and “a suction motor positioned in the fluid flow path downstream from the second cyclonic cleaning stage.” The recited “handle” in the independent claims is ancillary to the other interrelated features in the claims.

Aside from the recited “handle,” the bodies of the independent claims do not recite structural limitations that define any “hand carriable” features, which we find weighs against a construction that would require the “hand carriable” language to limit the claims. For example, although the ’607 patent discusses the terms “hand carriable,” “hand or strap carriable,” or “hand carriable mode” while describing a cleaning apparatus when it is removed from a base (*see, e.g.*, Ex. 1001, 2:21–25, 3:8–11, 5:67–6:6, 10:56–59, 11:33–36), the claims do not recite limitations relating to whether or not the cleaning apparatus is attached or removed from a base.

Patent Owner analogizes the “hand carriable” language in the preambles of the ’607 patent to the “travel trailer” language in the preamble at issue in *In re Fought*, 941 F.3d 1175 (Fed. Cir. 2019) (Prelim. Resp. 7), where the court held that “a ‘travel trailer’ is a specific type of recreational vehicle and that this term is a structural limitation of the claims.” *Fought*, 941 F.3d at 1179. We are not persuaded that the *Fought* case requires a similar result in this proceeding. In *Fought*, the record included extrinsic evidence supporting a conclusion that “[t]owability is a structural difference, not an intended use,” and “[a] living area is likewise a structural requirement.” 941 F.3d at 1179. Here, on this limited record, Patent Owner

has not persuaded us that “hand carriable” is a structural difference or requirement.

Although the ’607 patent discloses that “surface cleaning apparatuses include vacuum cleaners, including upright vacuum cleaners, hand carriable vacuum cleaners, canister type vacuum cleaners, and Shop-VacTM type vacuum cleaners” (Ex. 1001, 1:38–41), this listing of different types of vacuum cleaners does not imply that the term “hand carriable” alone denotes different structure. For example, in the Figure 1 embodiment, the ’607 patent indicates that “[s]urface cleaning apparatus 10 may be a canister type vacuum cleaner, Shop-VacTM type vacuum cleaner, or another type of vacuum cleaner that may be mounted to a wheeled base.” *Id.* at 8:42–45. The ’607 patent further discloses that “[i]n any embodiment, surface cleaning apparatus 10 may comprise a handle 64 . . . for maneuvering cleaning unit 16 when it is removed from wheeled base 58.” *Id.* at 12:5–8. Thus, according to the ’607, even types of vacuums listed separately along with “hand carriable vacuum cleaners” (*see id.* at 1:38–41), such as the Figure 1 embodiment, can be carried in part when detached from a base.

Further, looking at Figure 1, and given the handle 64, one of ordinary skill in the art would understand that the entirety of surface cleaning apparatus 10 could be carried by hand. The ’607 patent indicates using an apparatus “as a wheel mounted surface cleaning apparatus when convenient for a user since the user need not carry the surface cleaning apparatus, or as a hand or strap carriable surface cleaning apparatus, such as when a stairs . . . is to be cleaned.” Ex. 1001, 5:67–6:5. Although it may be more convenient to detach a surface cleaning apparatus from a wheeled base when

cleaning stairs, one of ordinary skill in the art would certainly recognize that wheeled vacuums, whether upright, canister type, or some other variety, are capable of being used on a set of stairs by hand carrying them. Accordingly, to the extent the '607 patent distinguishes “hand carriable” vacuum cleaners from other varieties, the term “hand carriable,” as it appears in the preamble, in and of itself does not imply specific structural limitations due patentable weight in the claims, but rather indicates a type of vacuum that may be particularly advantageous for being “hand carriable,” even though other types of vacuums can also be carried by hand. This is in contrast to the *Fought* case, where the term “travel trailer” structurally distinguished the claim at issue from cargo trailers, because cargo trailers could not realistically be used for living quarters. *See* 941 F.3d at 1179.

We also disagree with Patent Owner’s argument that the preambles are limiting because dependent claim 8 and independent claim 12 depend on them for antecedent basis. Prelim. Resp. 4–5. The limitations in dependent claim 8 and independent claim 12 that refer to the preambles also do not indicate that the “hand carriable” language provides essential structure for the bodies of the claims. In this regard, claim 8 recites “wherein the dirty air inlet is located at a front end of the hand carriable surface cleaning apparatus” Ex. 1001, 21:10–11. Claim 12 recites “the hand carriable surface cleaning apparatus further comprises a screen positioned in the fluid flow path” *Id.* at 21:51–53. In both instances, the repetition of the preamble phrase “hand carriable surface cleaning apparatus” simply serves to refer to the claimed apparatus as a whole. These recitations do not further limit the “hand carriable” aspect of the apparatuses introduced in the preambles.

Rather, in claim 8 the relevant limitation is “the dirty air inlet is located at a front end,” which modifies the dirty air inlet introduced in the body of claim 1. And, in claim 12, the relevant limitation is “a screen positioned in the fluid flow path,” which modifies the fluid flow path introduced in the body of claim 12. In short, the “hand carriable” language in the preambles is not required for antecedent basis in either of claims 8 or 12, as the limitations in claims 8 and 12 that refer to the preambles could simply have referred to “the apparatus,” rather than “the hand carriable surface cleaning apparatus,” without changing the scope of the claims.

On the current record, and for purposes of this decision, we are persuaded that the plain and ordinary meaning of “hand carriable” does not require any particular structural limitations, but rather only requires the capability of being carried by hand. *See* Pet. 13 (comparing vacuum cleaners that may be carried by hand versus a vacuum cleaner that may be fixed in place and cannot be carried by hand). Patent Owner attempts to distinguish “hand carriable surface cleaning apparatuses” from apparatuses that “plainly are not ‘carried by a hand or hands,’ such as upright and canister-style vacuum cleaners.” Prelim. Resp. 8. But, as noted above, such vacuums can be carried by hand, even if this is not the primary way of maneuvering such a vacuum. For example, the ’607 patent refers to surface cleaning apparatus 10 depicted in Figure 1 as being “a canister type vacuum cleaner, Shop-VacTM type vacuum cleaner, or another type of vacuum cleaner that may be mounted to a wheeled base.” Ex. 1001, 8:42–43. As shown in Figure 1, this apparatus includes handle 64, and we see nothing in

the '607 patent indicating that this apparatus cannot be picked up and carried by hand while still attached to the wheeled base.

Patent Owner's proposed construction—that “hand carriable” “excludes vacuums that are not traditionally carried around by hand, such as upright and canister-style vacuums” (Prelim. Resp. 10)—is unsatisfactory and overly narrow, as one is left to guess the limits of an apparatus that is “hand carriable,” for example, whether it must not have a base with wheels, or whether it is distinguishable from other vacuums in some other way, for example, by size, shape, or weight. That is, Patent Owner's proposed construction would require us to read limitations from the Specification of the '607 patent into the claims, which we decline to do. While “the specification is ‘always highly relevant to the claim construction analysis,’” *Phillips*, 415 F.3d at 1315 (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)), we do not import limitations from the Specification into the claim. *See id.* at 1323 (noting “the danger of reading limitations from the specification into the claim”).

Thus, at this stage of the proceeding, we determine that the preamble term “hand carriable” is not limiting in any of the challenged claims. But, to the extent that a full record developed during trial would result in a determination that the term “hand carriable” is limiting, we are persuaded Petitioner's proposed construction of “hand carriable”—i.e., “able to be carried by a hand or hands” (Pet. 13)—is a proper construction.

We determine that we need not construe any other terms at this stage of the proceeding. *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)).

D. Alleged Anticipation by Liddell (Ground 1)

Petitioner asserts that claims 1, 3, 4, and 6–13 are anticipated by Liddell. Pet. 15–37. Petitioner also relies on the testimony of Dr. Giachetti to support its arguments. *Id.* (citing Ex. 1002). Patent Owner presents arguments disputing Petitioner’s contentions based on Liddell. *See* Prelim. Resp. 19–21.

1. Overview of Liddell (Ex. 1005)

Liddell relates to a “cyclonic separating apparatus for use in a vacuum cleaner.” Ex. 1005, 1:3–4. Figure 1b, reproduced below, illustrates a side view of a vacuum cleaner.

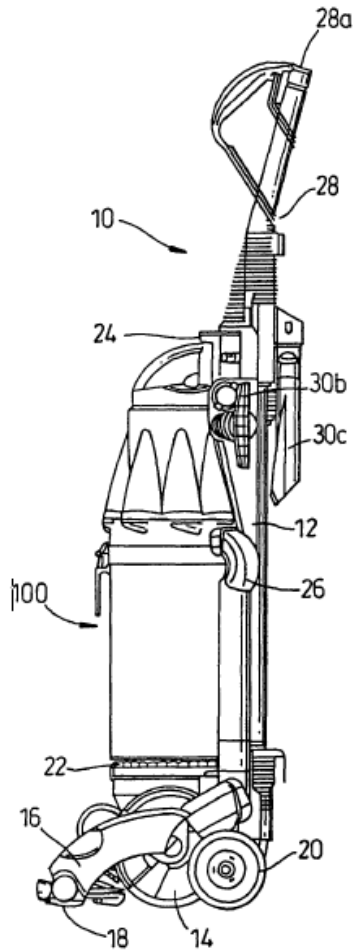


Fig. 1b

Figure 1b shows vacuum cleaner 10 includes upstanding body 12, on which cyclonic separating apparatus 100 is mounted above motor casing 14. *Id.* at 4:9–10, 4:26–27. Upstanding body 12 of vacuum cleaner 10 includes “upstream ducting (not shown) for carrying dirty air to an inlet of the cyclonic separating apparatus 100 and downstream ducting 26 for carrying cleaned air away from the cyclonic separating apparatus 100”. *Id.* at 4:31–5:3. Also included in upstanding body 12 is hose and wand assembly

28, which may “function as a handle for [maneuvering] the vacuum cleaner 10 over a surface to be cleaned.” *Id.* at 4:16–18.

An embodiment of cyclonic separation apparatus 100 is shown in more detail in Figures 2a–2c, reproduced below.

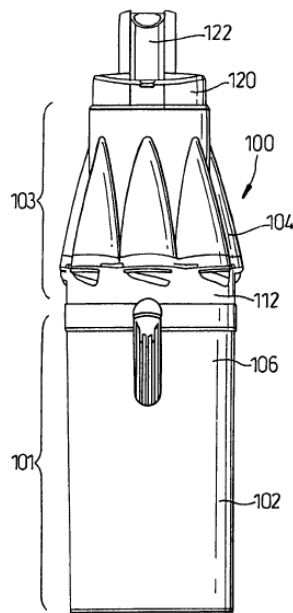


Fig. 2a

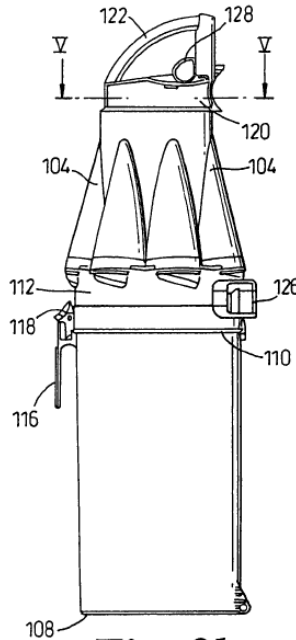


Fig. 2b

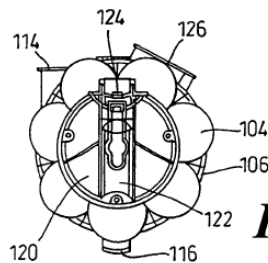


Fig. 2c

As shown in Figures 2a–2c, apparatus 100 includes “upstream cyclone unit 101 consisting of a single upstream cyclone 102 and a downstream cyclone unit 103 consisting of a plurality of downstream cyclones 104 arranged in parallel.” Ex. 1005, 5:20–22. “The uppermost ends of the downstream cyclones 104 project inside an upper portion 120,” which “supports a handle

122 by means of which the entire cyclonic separation apparatus 100 can be carried.” *Id.* at 6:14–18.

2. *Analysis of Claim 1*

Petitioner asserts claim 1 is anticipated by Liddell. Pet. 15–25 (citing Ex. 1002). We use Petitioner’s notations to identify the claim elements. *See Id.* at iii.

a) *[1pre] A hand carriable surface cleaning apparatus*

Petitioner argues that the preamble is not limiting (Pet. 13), but asserts that, if construed as limiting, Liddell discloses the preamble (*id.* at 15 (citing Ex. 1002 ¶¶ 78–82; Ex. 1005, Figs. 1b, 2b, 6:16–18)). More particularly, Petitioner asserts that “Liddell’s vacuum cleaner is hand carriable: it includes ‘handle 122’ for carrying it.” *Id.* at 15 (Ex. 1005, 6:16–18). Petitioner also points to a Dyson product manual and a Dyson patent as evidence that the handle in Liddell can be used to carry the vacuum cleaner. *See id.* at 15–16 (citing Ex. 1014, 6; Ex. 1018, Fig. 3, 5:29–30).

b) *[1a] a fluid flow path extending between a dirty air inlet and a clean air outlet*

Petitioner asserts that Liddell discloses this limitation. Pet. 17 (citing Ex. 1002 ¶¶ 83–85). More particularly, Petitioner asserts that “Liddell teaches a dirty air inlet; collectively ‘inlet 18,’ ‘upstream ducting,’ and ‘inlet port 114;’ a clean air outlet, located at ‘filter cover 22’ where air is ‘exhausted from the vacuum cleaner;’ and a fluid flow path extending between them.” *Id.* (citing Ex. 1005, 4:11–12, 4:31–5:30, 6:1–2, 6:20–23, 7:17–26, 8:7–14, 9:14–31, 9:31–10:3).

c) *[1b] a first cyclonic cleaning stage positioned in the fluid flow path downstream from the dirty air inlet, the first cyclonic cleaning stage*

comprising an upper end, a bottom end spaced longitudinally below the upper end and a side wall extending therebetween, the first cyclonic cleaning stage having a dirt collection region with a bottom door that is openable to empty the dirt collection region

Petitioner asserts that Liddell discloses this limitation. Pet. 17–18 (citing Ex. 1002 ¶¶ 86–89). More particularly, Petitioner asserts that “Liddell teaches a first cyclonic cleaning stage, ‘upstream cyclone unit 101 consisting of a single upstream cyclone 102’” that “is positioned in the fluid flow path downstream from the dirty air inlet.” *Id.* at 17 (citing Ex. 1005, Figs. 2a, 2b, 4:31–5:14, 5:20–30, 6:14–25, 7:10–15, 9:11–9:15). Petitioner also asserts that “Liddell’s bottom door is openable to empty the dirt collection region: it includes ‘a mechanism for opening the base 108 of the cylindrical bin 106 for emptying purposes.’” *Id.* at 18 (citing 6:23–6:25, 7:3–6, 9:11–14).

d) [1c] a second cyclonic cleaning stage positioned in the fluid flow path downstream from the first cyclonic cleaning stage, the second cyclonic cleaning stage having an upper end which is positioned above the upper end of the first cyclonic cleaning stage, the second cyclonic cleaning stage is longitudinally moveable relative to all of the sidewall of the first cyclonic cleaning stage

Petitioner asserts that Liddell discloses this limitation. Pet. 18–21 (citing Ex. 1002 ¶¶ 90–95). More particularly, Petitioner asserts that “Liddell teaches a second cyclonic cleaning stage, ‘downstream cyclone unit 103,’ positioned in the fluid flow path downstream from the first cyclonic cleaning stage” that has an upper end positioned above the upper end of the first cyclonic cleaning stage and “is longitudinally moveable relative to all of the sidewall of the first cyclonic cleaning stage (sidewall of cylindrical bin

106 of upstream cyclone unit 101).” *Id.* at 18–19 (citing Ex. 1005, Fig. 2a, 2b, 3b, 5:20–22, 5:30–6:2, 6:16–25, 7:17–26, 9:7–10:3).

e) [1d] a suction motor positioned in the fluid flow path downstream from the second cyclonic cleaning stage

Petitioner asserts that Liddell discloses this limitation. Pet. 21 (citing Ex. 1002 ¶¶ 96–98). More particularly, Petitioner asserts that “Liddell’s motor is in the fluid flow path downstream from the second cyclonic cleaning stage (downstream cyclone unit 103).” *Id.* (citing Ex. 1005, 5:5–22, 6:20–23).

f) [1e] a handle

Petitioner asserts that Liddell discloses this limitation. Pet. 22 (citing Ex. 1002 ¶¶ 99–101). More particularly, Petitioner asserts that Liddell’s “handle 122” constitutes a “handle;” as claimed. *Id.* (citing *id.* at 15–16); *see also* Ex. 1005, 6:16–17 (“The upper portion 120 supports a handle 122 by means of which the entire cyclonic separation apparatus 100 can be carried.”).

g) [1f] wherein the second cyclonic cleaning stage comprises a plurality of second cyclones connected fluidly in parallel with each other

Petitioner asserts that Liddell discloses this limitation. Pet. 23–24 (citing Ex. 1002 ¶¶ 102–107). More particularly, Petitioner asserts that “Liddell teaches ‘downstream cyclone unit 103 consist[s] of a plurality of downstream cyclones 104[/204] arranged in parallel’” such that “[a]ir from each of the downstream cyclones 104/204 passes ‘into the annular chamber 160 and from there to the outlet port 126.’” *Id.* (citing Ex. 1005, Figs. 4a, 7, 5:21–22, 7:20–26, 7:28–8:5, 8:7–14, 9:15–10:3, 10:5–6).

h) [1g] wherein the second cyclones are positioned around a central longitudinal axis that extends through the first cyclonic cleaning stage and the openable bottom door

Petitioner asserts that Liddell discloses this limitation. Pet. 24 (citing Ex. 1002 ¶¶ 108–110). More particularly, “Liddell teaches the second cyclones (downstream cyclones 104/204) are positioned around a central longitudinal axis 150 that extends through the first cyclonic cleaning stage (upstream cyclone unit 101) and the openable bottom door (base 108).” *Id.* (citing Ex. 1005, Figs. 1–3b, 4b, 7, 5:23–24, 6:6–8, 7:5–6).

i) [1h] wherein the plurality of second cyclones includes a first set of second cyclones arranged in an inner ring and a second set of second cyclones arranged in an outer ring laterally surrounding the inner ring

Petitioner asserts that Liddell discloses this limitation. Pet. 25 (citing Ex. 1002 ¶¶ 111–112). More particularly, Petitioner asserts that “Liddell teaches that ‘twelve parallel cyclones 204 are provided,’ and ‘[n]ine of the cyclones 204 are located in an outer ring and three cyclones are located in an inner ring.’” *Id.* (citing Ex. 1005, Fig. 7, 10:5–20).

3. Patent Owner’s Contentions Regarding Claim 1

Patent Owner contends that Petitioner’s ground of unpatentability based on Liddell is deficient. *See* Prelim. Resp. 19–21. More particularly, Patent Owner argues that, assuming the preamble is construed as limiting, “[t]he Petition failed to identify any structural feature in Liddell that would suggest that its upright vacuum cleaner is a hand carriable surface cleaning apparatus as recited.” *Id.* at 19.

4. Discussion of Claim 1

Having considered the conflicting positions of the parties, we conclude that, at this stage of the proceeding, Petitioner has shown a

reasonable likelihood that it would prevail in challenging the patentability of independent claim 1. In our view, Petitioner’s analysis, on this record, adequately identifies where all the elements of claim 1 are found in Liddell.

At this stage of the proceeding, Patent Owner’s arguments regarding the preamble are not persuasive because they are based on reading the term “hand carriable” as a limitation of claim 1. For the reasons discussed above in Section II.C, we conclude on the current record, for purposes of this Decision, that the preamble of claim 1, setting forth a “hand carriable surface cleaning apparatus,” is not limiting. *See Catalina*, 289 F.3d at 809 (“[P]reambles describing the use of an invention generally do not limit the claims because the patentability of apparatus or composition claims depends on the claimed structure, not on the use or purpose of that structure.”).

Even if the preamble were entitled to patentable weight, at this stage of the proceeding, Patent Owner has not adequately shown that Liddell’s vacuum cleaner is not “hand carriable.” As discussed above, on this record, we determine that Petitioner proposes the correct construction that “hand carriable” means “able to be carried by a hand or hands.” Pet. 13. Patent Owner’s proposed construction requires us to unnecessarily read limitations into claim 1, and we are not persuaded to adopt that construction at this juncture. *See* Prelim. Resp. 8 (“[T]he plain and ordinary meaning of ‘hand carriable,’ based on the intrinsic record, excludes upright and canister-style vacuum cleaners.”). Because the record supports that a user could pick up and carry the vacuum cleaner disclosed by Liddell using the identified handle (*see* Pet. 15; *see also* Ex. 1002 ¶¶ 79–82 (discussing this hand-carriable feature)), we determine that Liddell’s vacuum cleaner is “hand

carriable.” *Cf.* Prelim. Resp. 6 (“That the claim is drawn to a “hand
carriable surface cleaning apparatus” informs the purpose and structure of
the claimed ‘handle’—*i.e.*, the handle must be of the type to allow a user to
carry the surface cleaning device.”).

We find that Petitioner’s arguments and evidence in support thereof
sufficient at this stage of the proceeding for the reasons explained by
Petitioner. *See* Pet 15–37. Accordingly, based on the arguments and
evidence on the record before us, we determine, for purposes of this
Decision, that Petitioner has established a reasonable likelihood that
independent claim 1 is anticipated by Liddell.

5. *Claims 3, 4, and 6–13*

Claims 3, 4, and 6–11 depend directly or indirectly from claim 1.
Claims 12 and 13 are independent. Petitioner provides a clause-by-clause
analysis of where each element in dependent claims 3, 4, and 6–11 and
independent claims 12 and 13 is disclosed in Liddell. *See* Pet. 15–37.
Throughout Petitioner’s analysis, Petitioner cites and relies on the testimony
of Dr. Giachetti for evidentiary support. *See id.*

Patent Owner does not specifically address any of the dependent
claims with respect to this ground. For independent claims 12 and 13, Patent
Owner relies on the same arguments discussed above regarding independent
claim 1. *See* Prelim. Resp. 19–21. Those arguments are not persuasive at
this stage for the reasons given above.

We find Petitioner’s arguments and evidence in support thereof
sufficient at this stage of the proceeding for the reasons explained by
Petitioner. *See* Pet. 15–37. Accordingly, based on the arguments and

evidence on the record before us, we determine, for purposes of this Decision, that Petitioner has established a reasonable likelihood of prevailing on dependent claims 3, 4, and 6–11 and independent claims 12 and 13.

6. Conclusion for Ground 1

After considering the information presented in the Petition and the Preliminary Response, we determine that Petitioner establishes a reasonable likelihood of prevailing on its challenge to at least one of claims 1, 3, 4, and 6–13 of the '607 patent.

E. Alleged Obviousness over Simpson and Liddell (Ground 5)

Petitioner asserts that claims 1–4 and 6–13 are unpatentable as obvious over Simpson and Liddell. Pet. 57–71. Petitioner also relies on the testimony of Dr. Giachetti to support its arguments. *Id.* (citing Ex. 1002). Patent Owner presents arguments disputing Petitioner's assertions. *See* Prelim. Resp. 28–30.

We address Petitioner's contentions and Patent Owner's arguments below, beginning with the motivation to combine Simpson and Liddell. We first provide a brief overview of Simpson.

1. Overview of Simpson (Ex. 1007)

Simpson is directed to “a portable electric cleaner which avoids the difficulties of the ordinary portable cleaner, while embodying the benefits of a tool having a tubular handle, without the [encumbrance] of a heavy suction hose.” Ex. 1007, 1:27–32. Simpson describes that an operator holds its vacuum cleaner “by one hand of the operator grasping the handle on the

motor case, [and] assisted if desired, by the other hand grasping the adjacent bend of the tubular shank.” *Id.* at 1:45–52.

Figure 1, reproduced below, illustrates a side view of Simpson’s vacuum cleaner.

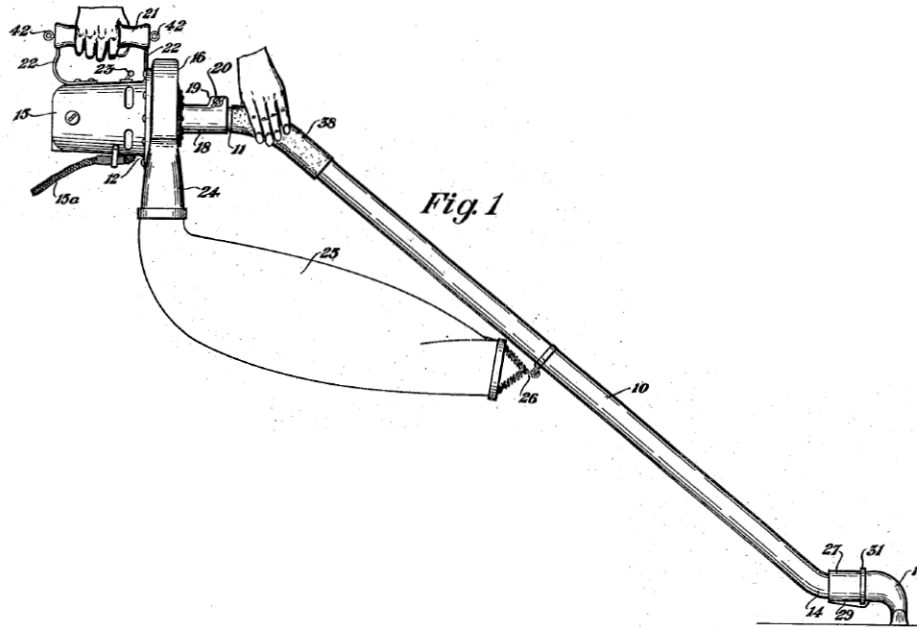
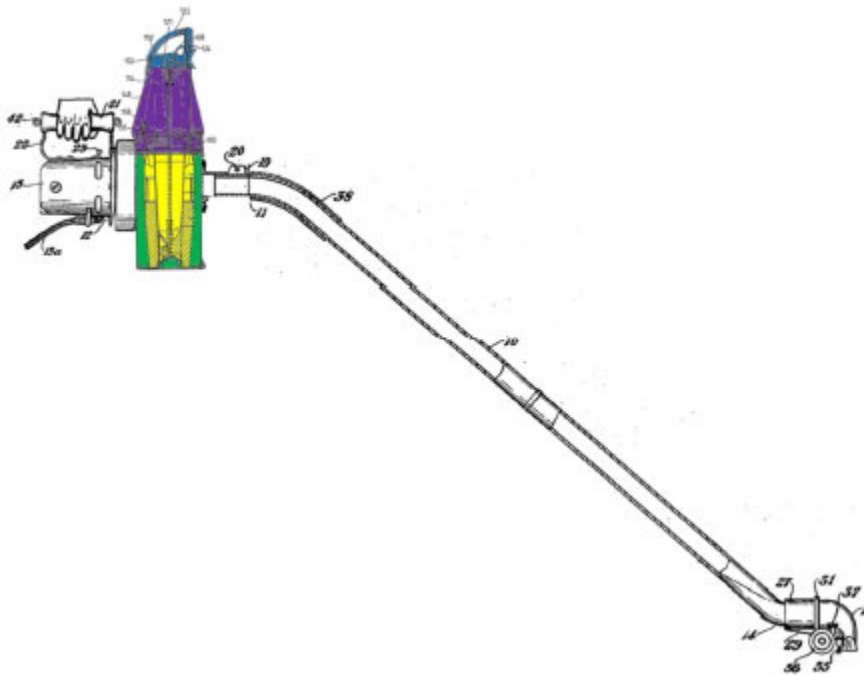


Figure 1 shows Simpson’s vacuum cleaner includes horizontal motor 15, “fan casing 16, in which is mounted the coaxial exhausting fan 17, and the axial inlet neck 18,” “handle 21,” “outlet neck 24,” and “dust collector bag 25.” *Id.* at 1:101–107, 2:11–23.

2. Motivation to Combine Simpson and Liddell

Petitioner asserts that “Simpson teaches a handheld vacuum with a vertically-oriented separation unit that deposits dust vertically into a dust bag.” Pet. 57 (citing Ex. 1007, 1:45–58, 2:65–84, Fig. 1). Petitioner further asserts that “Liddell teaches a vertically-oriented cyclonic separation unit and dirt collection bin.” *Id.* at 57–58 (citing Ex. 1005, 4:26–28, Fig. 1a; Pet. 15–28). And, relying on the declaration testimony of Dr. Giachetti,

Petitioner asserts that one of ordinary skill in the art “would have understood that Simpson’s non-cyclonic separator and Liddell’s cyclonic separator were interchangeable solutions for separating dirt from air,” and as such, “been motivated to substitute Liddell’s cyclonic separator in place of Simpson’s outlet neck 24 and dust collector bag 25 for the benefits of cyclonic separation, including maintaining steady suction as the separator fills with dirt.” *Id.* at 59 (citing Ex. 1002 ¶¶ 256–259). Petitioner provides the following copy of Figure 1 of Simpson, modified to illustrate the proposed combination of Simpson and Liddell. *Id.* at 58 (citing Ex. 1007, Fig. 1).



Petitioner’s copy of Figure 1 depicts Simpson’s vacuum cleaner modified to use Liddell’s cyclonic separating apparatus. *Id.* (citing Ex. 1005, Fig. 1a; Ex. 1007, Fig. 1; Ex. 1002 ¶ 254).

Petitioner contends that one of ordinary skill in the art would have known the benefits of “cyclonic” vacuums, and thus, “been motivated to

substitute Simpson’s dust separation system with a bagless cyclonic separator” in order to provide “a consistently high level of suction, even as the collecting chamber fills with dirt.” *Id.* (citing Ex. 1002 ¶¶ 261–262; Ex. 1006, 1:8–13). In addition, Petitioner contends that one of ordinary skill in the art would have been

motivated to substitute Simpson’s dust separation system for Liddell’s because of their common vertical orientation, which Simpson teaches is beneficial because it causes “dirt and foreign matter picked up by the cleaner . . . to accumulate by the action of gravity in the lower portions of the bag away from the outlet neck 24 leaving the same unrestricted.” Ex[.]1007, 3:53–72; Ex[.]1002 ¶ 262. The same benefit extends to Liddell’s cyclonic separating apparatus 100 by preventing accumulated debris from clogging inlet port 114 on bin 106. *Id.*

Pet. 59–60. According to Petitioner, one of ordinary skill in the art “would be further motivated to combine Liddell’s cyclonic separator with Simpson in a vertical orientation because vertically oriented cyclonic separators were used in other prior art handheld cyclonic suction devices, like Merritt.” *Id.* at 60 (citing Ex. 1002 ¶ 264; Ex. 1021, 1:97–102, 1:107–118, 2:55–65, Fig. 3).

3. *Analysis of Claim 1*

Petitioner asserts that claim 1 is unpatentable as obvious over Simpson and Liddell. Pet. 62–67 (citing Exs. 1002, 1005, 1007). We use Petitioner’s notations to identify the claim elements. *See Id.* at iii.

a) *[1pre] A hand carriable surface cleaning apparatus*

Petitioner argues that the preamble is not limiting (Pet. 13), but asserts that, if construed as limiting, the combination of Simpson and Liddell teaches it (*id.* at 62 (citing Ex. 1002 ¶¶ 268–74). More particularly,

Petitioner asserts that “Simpson’s figures show its vacuum being hand carried and teaches ‘handle 21 may be grasped in the right hand and the left hand placed upon the grip 38’ such that the ‘weight of the motor-fan exhausting unit is freely carried by the handle.’” *Id.* (citing Ex. 1007, 2:65–84, 1:45–58, Figs. 1, 10).

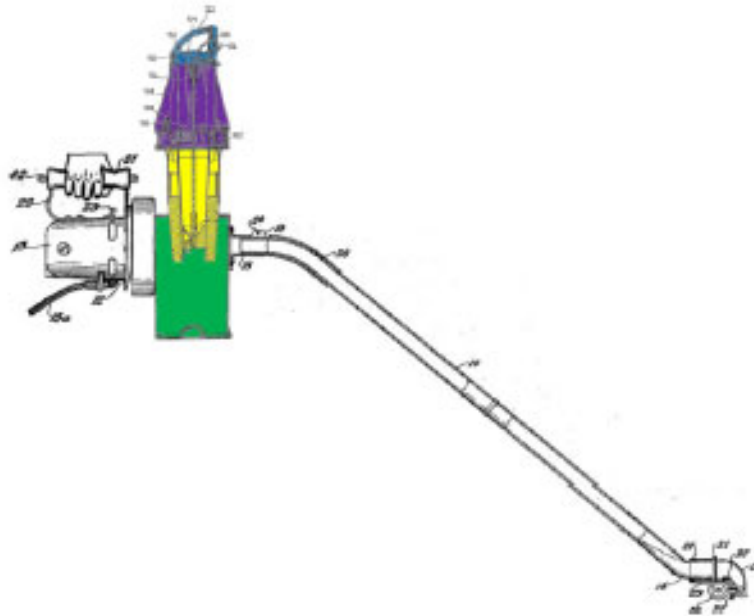
b) [1a] a fluid flow path extending between a dirty air inlet and a clean air outlet

Petitioner asserts that the combination of Simpson and Liddell teaches this limitation. Pet. 63–64 (citing Ex. 1002 ¶¶ 275–277). Petitioner asserts that “[w]hen combined, Simpson’s inlet neck 18 and Liddell’s inlet port 114 collectively form a dirty air inlet for introducing dirty air into upstream cyclone unit 101.” *Id.* (citing Ex. 1007, 1:101–107, 3:53–58; Ex. 1005, 5:26–30).

c) Limitations [1b], [1c], [1f], [1g], and [1h]

Petitioner asserts that Liddell teaches or renders obvious these limitations. Pet. 64 (citing *id.* at 17–21, 23–28). Petitioner also contends that the combination of Simpson and Liddell renders obvious these limitations. Pet. 64–65 (citing Ex. 1002 ¶¶ 278–282). In this regard, Petitioner asserts that “[w]hen combined, Simpson’s separator is replaced with Liddell’s cyclonic separator and post-motor air outlet.” *Id.* (citing *id.* at 57–61).

Petitioner provides the following copy of Figure 1 of Simpson, modified to illustrate the proposed combination of Simpson and Liddell. Pet. 65 (citing Ex. 1007, Fig. 1).



Petitioner's copy of Figure 1 depicts Simpson's vacuum cleaner (shown in black like drawing) modified to use Liddell's cyclonic separating apparatus (shown in blue, purple, yellow, and green annotated illustration). *Id.* (citing Ex. 1007, Fig. 1). Relying on the illustration above, Petitioner contends that one of ordinary skill in the art

would understand the second cyclonic cleaning stage and screen remain moveable, as taught by Liddell, because when a user disengages handle 116 and catch 118, downstream cyclone unit 103 and shroud 140 (with perforated portion 144) are released from the sidewall of upstream cyclone unit 101 and the remainder of the vacuum.

Id. (citing Ex. 1002 ¶ 282).

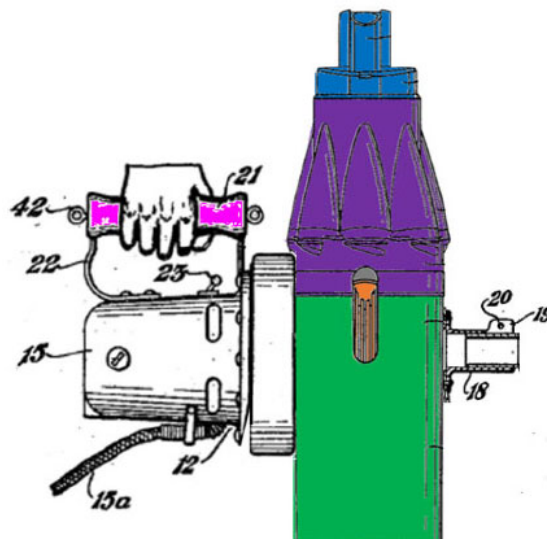
d) [Id] a suction motor positioned in the fluid flow path downstream from the second cyclonic cleaning stage

Petitioner asserts that the combination of Simpson and Liddell teaches this limitation. Pet. 66 (citing Ex. 1002 ¶¶ 283–285). More particularly, Petitioner asserts that, “[w]hen combined, Simpson's motor 15 is positioned

in the fluid flow path downstream from Liddell's second cyclonic cleaning stage (downstream cyclone unit 103) and upstream from a post-motor outlet, as taught by Liddell." *Id.* (citing Ex. 1002 ¶ 284). In addition, Petitioner asserts that "Liddell teaches a suction motor, which 'draw[s air] into the vacuum' and out a post-motor outlet, and it would have been obvious to modify Simpson with Liddell's motor '[i]n order for the cyclonic separation apparatus 100 to be brought into operation,' as taught by Liddell." *Id.* (citing Ex. 1005, 5:5–14; Ex. 1002 ¶ 285).

e) [1e] a handle

Petitioner asserts that "Simpson and Liddell each teach these limitations, as does their combination." Pet. 67 (citing Ex. 1002 ¶¶ 286–288). More particularly, Petitioner asserts that "Simpson teaches a 'handle 21' and Liddell teaches a 'handle 116,' as does their combination." *Id.* (citing Ex. 1007, 2:65–84, Ex. 1005, 5:30–6:2; Ex. 1002 ¶ 288). And, to support its position, Petitioner provides the following copy of Figure 1 of Simpson, modified to illustrate the proposed combination of Simpson and Liddell. *Id.* (citing Ex. 1007, Fig. 1).



Petitioner's copy of Figure 1 depicts Simpson's vacuum cleaner (shown in black line drawing with purple coloring added to identify the handle) modified to use Liddell's cyclonic separating apparatus (shown colored blue, purple, orange and green). *Id.* (citing Ex. 1005, Fig. 2b; Ex. 1007, Fig. 1).

4. Patent Owner's Contentions Regarding Claim 1

Patent Owner contends that Petitioner's ground of unpatentability based on Simpson and Liddell is deficient. *See* Prelim. Resp. 28–30. According to Patent Owner, the Petition fails to demonstrate an adequate explanation for why one of ordinary skill in the art would combine Simpson and Liddell to arrive at the claimed invention. *Id.*

5. Discussion of Claim 1

Having considered the conflicting positions of the parties, we conclude that, at this stage of the proceeding, Petitioner has shown a reasonable likelihood that it would prevail in challenging the patentability of independent claim 1. In our view, Petitioner's analysis, on this record, adequately identifies where all the elements of claim 1 are found in Simpson and Liddell. We also determine that Petitioner provides sufficient arguments and evidence, at this stage of the proceeding, to support its reasoning that a person having ordinary skill in the art would have been motivated to modify Simpson's vacuum cleaner to incorporate Liddell's teachings of a vertically-oriented cyclonic separation unit, as Petitioner proposes.

Patent Owner argues that the Petition fails to provide a motivation to combine Simpson and Liddell. Prelim. Resp. 28. Patent Owner explains that "Simpson and Liddell are directed to different types of vacuum cleaners,

each solving different problems with their respective vacuum cleaners.” *Id.*

In light of these differences, Patent Owner argues that

[e]ach of Petitioners’ alleged rationales for combining Simpson and Liddell are merely conclusory statements with no explanation for why the combination is a simple substitution, not a rationale for why a POSITA would employ the particular cyclonic separation arrangement of Liddell, which includes two cyclonic stages and dirt collection areas within the cyclone chamber, for the dust collection bag of Simpson.

Id. at 29. Patent Owner further argues that the Declaration of Dr. Giachetti, relied on for support, “merely repeat[s] the Petition’s unsupported and conclusory statements without providing any explanation.” *Id.* at 30 (citing Ex. 1002 ¶¶ 250–267).

On the current record, we find that the Petition provides sufficient rationale to modify Simpson in view of Liddell. *See* Pet. 57–61 (citing Ex. 1002 ¶¶ 250–267). For example, Petitioner contends that one of ordinary skill in the art would have been motivated to incorporate Liddell’s cyclonic separating apparatus into Simpson’s vacuum cleaner in order to reap “the benefits of cyclonic separation, including maintaining steady suction as the separator fills with dirt.” *Id.* at 59 (citing Ex. 1002 ¶¶ 256–259). Petitioner explains that Organ establishes that “bagless vacuums like ‘cyclonic’ vacuums were ‘becoming increasingly popular’” in the prior art because they are able “to maintain a consistently high level of suction, even as the collecting chamber fills with dirt” (*id.* (citing Ex. 1006, 1:8–13)), and relying on the declaration testimony of Dr. Giachetti, argues that one of ordinary skill in the art would have “would have been motivated to substitute Simpson’s dust separation system with a bagless cyclonic separator for the same reason” (*id.* (citing Ex. 1002 ¶ 281)).

Patent Owner argues that one of ordinary skill in the art would not have been motivated to combine the vacuums taught by Simpson and Liddell because they “are directed to different types of vacuum cleaners” and “each [is concerned with] solving different problems with their respective vacuum cleaners.” Prelim. Resp. 28. Patent Owner argues further that the Petition fails to explain what modifications “would be needed to transform Simpson’s bag type vacuum into a bagless cyclonic arrangement.” *Id.* at 29.

However, other than pointing out that the vacuum cleaners in Simpson and Liddell are different, Patent Owner itself provides merely conclusory statements, and fails to adequately explain what these critical differences are, or why they would deter one of ordinary skill in the art from combining the two references with a reasonable expectation of success. In our view, Petitioner adequately identifies how one of ordinary skill in the art would go about “substitut[ing] Liddell’s cyclonic separator in place of Simpson’s outlet neck 24 and dust collector bag 25.” Pet. 59 (citing Ex. 1002 ¶¶ 256–259); *see also id.* at 60 (“[O]rienting [Liddell’s] cyclonic separating apparatus 100 vertically would have further motivated POSAs to simply connect Liddell’s inlet port 114 with Simpson’s inlet neck 18 to introduce tangential airflow into upstream cyclone unit 101.”). Patent Owner does not argue, and we see no reason to believe, that substituting Simpson’s dust separation system with Liddell’s cyclonic separating apparatus is not within the ability of one of skill in the art. *See KSR Int’l Co.*, 550 at 421 (“A person of ordinary skill is also a person of ordinary creativity, not an automaton.”).

Therefore, on the current record, we determine that Petitioner has provided sufficient arguments and evidence to support its assertion that one

of ordinary skill in the art would have been motivated to combine Simpson and Liddell. *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”). Accordingly, based on the arguments and evidence on the record before us, we determine, for purposes of this Decision, Petitioner has established a reasonable likelihood that independent claim 1 is unpatentable as obvious over Simpson and Liddell.

6. *Claims 2–4 and 6–13*

Claims 2–4 and 6–11 depend directly or indirectly from claim 1. Claims 12 and 13 are independent. Petitioner provides a clause-by-clause analysis of where each element in dependent claims 2–4 and 6–11 and independent claims 12 and 13 is disclosed in, or rendered obvious by, the combination of Simpson and Liddell. *See* Pet. 57–71. Throughout Petitioner’s analysis, Petitioner cites and relies on the testimony of Dr. Giachetti for evidentiary support. *See id.*

Patent Owner does not specifically address any of the dependent claims with respect to this ground. For independent claims 12 and 13, Patent Owner relies on the same arguments discussed above regarding independent claim 1. Prelim. Resp. 28–30. Those arguments are not persuasive at this stage for the reasons given above.

We find Petitioner’s arguments and evidence in support thereof sufficient at this stage of the proceeding for the reasons explained by Petitioner. *See* Pet. 57–71. Accordingly, based on the arguments and

evidence on the record before us, we determine, for purposes of this Decision, that Petitioner has established a reasonable likelihood of prevailing on dependent claims 2–4 and 6–11 and independent claims 12 and 13.

7. Conclusion for Ground 5

After considering the information presented in the Petition and the Preliminary Response, we determine that Petitioner establishes a reasonable likelihood of prevailing on its challenge to at least one of claims 1–4 and 6–13 of the '607 patent.

F. Additional Grounds 2–4 and 6–11

Petitioner additionally contends that claims 1 and 3–13 would have been obvious over Liddell and/or Liddell and Organ (Ground 2), claim 10 would have been obvious over Liddell, Organ and DC14Manual (Ground 3), claim 14 would have been obvious over Liddell and Lim and/or Liddell, Organ, and Lim (Ground 4), claims 1–13 would have been obvious over Simpson, Liddell, and Organ (Ground 6), claim 10 would have been obvious over Simpson, Liddell, and DC14Manual and/or Simpson, Liddell, Organ, and DC14Manual (Ground 7), claim 14 would have been obvious over Simpson, Liddell, and Lim and/or Simpson, Liddell, Organ, and Lim (Ground 8), claims 1–4, 6–9, and 11–13 would have been obvious over Soler and Liddell (Ground 9), claims 4 and 5 would have been obvious over Soler, Liddell, and Organ (Ground 10), and claim 14 would have been obvious over Soler, Liddell, and Lim (Ground 11).

Patent Owner disputes Petitioner's contentions as to these additional grounds. *See* Prelim. Resp. 21–27, 30–39. Because we have determined

above that, at this stage of the proceeding and on the present record, the information presented in the Petition and Preliminary Response shows that there is a reasonable likelihood that Petitioner will prevail with respect to at least one claim based on the alleged anticipation by Liddell (Ground 1) and the alleged obviousness over Simpson and Liddell (Ground 5), we need not address Petitioner's additional challenges at this time. *See* 35 U.S.C. § 314(a). We will address the parties' positions on these grounds at trial, based on the full record, to the extent necessary.

III. CONCLUSION

We conclude that the information presented in the Petition demonstrates that there is a reasonable likelihood that Petitioner would prevail in challenging at least one of claims 1–14 of the '607 patent as unpatentable. Accordingly, we institute an IPR as to all challenged claims and all the grounds raised in the Petition. *See SAS Inst.*, 584 U.S. at 370–71 (holding that a decision to institute under 35 U.S.C. § 314 may not institute on fewer than all claims challenged in the petition); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (stating that the decision whether to institute *inter partes* review requires “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

Our determination in this Decision is not a final determination on either the patentability of any challenged claims or the construction of any claim term. The factual findings set forth in this Decision are preliminary and provided for the sole purpose of deciding whether to institute a review. Any final findings will be based on the full trial record, including any

information presented by Patent Owner in a timely filed response to the Petition. *See Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (noting that “there is a significant difference between a petitioner’s burden to establish a ‘reasonable likelihood of success’ at institution, and actually proving invalidity by a preponderance of the evidence at trial”) (quoting 35 U.S.C. § 314(a) and comparing *id.* with § 316(e)).

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that *inter partes* review of claims 1–14 of the ’607 patent is instituted on all of the grounds asserted in the Petition; and

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

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