

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DYSON TECHNOLOGY LIMITED AND DYSON, INC.,
Petitioners,

v.

OMACHRON INTELLECTUAL PROPERTY INC.,
Patent Owner.

Case No. IPR2024-00938
U.S. Patent No. 11,389,038

PATENT OWNER'S PRELIMINARY RESPONSE

TABLE OF CONTENTS

	<u>Page</u>
TABLE OF ABBREVIATIONS	ii
I. INTRODUCTION	1
II. CLAIM CONSTRUCTION	2
III. LEVEL OF ORDINARY SKILL IN THE ART	3
IV. TECHNICAL BACKGROUND	3
A. Summary of the '038 Patent.....	3
B. Overview of Asserted References	4
V. SPECIFIC GROUNDS OF UNPATENTABILITY	7
A. Petitioners Fail to Show that Butler Renders Obvious Challenged Claims 1–15 (Ground 1)	7
B. Petitioners Fail to Show that Butler in View of Peng Renders Obvious Challenged Claims 1–15 (Ground 2).....	18
C. Petitioners Fail to Show that Lehmann in View of Peng Renders Obvious Challenged Claims 1–11 and 13–15 (Ground 3)	23
D. Petitioners Fail to Show that Lehman in View of Peng and Neroni Renders Obvious Challenged Claim 12 (Ground 4)	27
VI. CONCLUSION.....	27

TABLE OF ABBREVIATIONS

Abbreviation	Term
'038 patent	U.S. Patent No. 11,389,038 (Ex1001)
Butler	PCT Publication No. 2007/084543 to Butler et al.
Challenged Claims	Claims 1–15 of U.S. Patent No. 11,389,038
Fig.	Figure
IPR	<i>inter partes</i> review
Lehmann	U.K. Patent No. GB194,963 to Lehmann
Peng	Certified English Translation of CN 201958793 to Peng
Neroni	U.S. Patent No. 4,473,923 to Neroni et al.
Patent Owner	Omachron Intellectual Property Inc.
Petitioners	Dyson Technology Limited and Dyson, Inc.
POSITA	person[s] of ordinary skill in the art

I. INTRODUCTION

Patent Owner Omachron Intellectual Property Inc. provides the following Preliminary Response to the Petition filed by Dyson Technology Limited and Dyson, Inc. requesting *inter partes* review of claims 1–15 of U.S. Patent No. 11,389,038.

Petitioners had the burden of showing that there is a reasonable likelihood that it would prevail with respect to at least one of the challenged claims. 35 U.S.C. § 314(a). Petitioners did not meet that burden. Although Petitioners nakedly asserted that the claims are a “mish-mash of claimed features” that were “well-known,” Petitioners’ cited references, alone or in combination, cannot render obvious the required configuration of a hand vacuum cleaner, having a second cyclonic stage with a rear end that is rearward of the rear end of the first cyclonic stage. Petitioners propose four obviousness grounds based on two primary references, Butler and Lehmann, but neither Butler nor Lehmann disclose anything about a second cyclonic stage. Petitioners fail to show any compelling reason why it would have been obvious to a POSITA to add a second cyclonic stage to either Butler or Lehmann; instead, Petitioners create illogical Franken-vacuums in an effort to read the prior art onto the Challenged Claims.

For obviousness, a Petition must provide, with particularity, rationale to combine the teachings of the cited art and establish “whether the relevant skilled artisan had a motivation to combine pieces of prior art in the way eventually claimed

in the patent at issue.” *Intercontinental Great Brands LLC v. Kellogg N. Am. Co.*, 869 F.3d 1336, 1343 (Fed. Cir. 2017). Petitioners did not provide any such rationale. At best, Petitioners rely on hindsight bias to argue that a combination of references still somehow renders obvious the Challenged Claims. But hindsight bias cannot be “the thread that stitches together prior art patches into something that is the claimed invention.” *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017). Petitioners’ obviousness grounds therefore all fail.

For at least these reasons and those set forth below, Petitioners failed to show a reasonable likelihood of success on any Challenged Claim, and the Board should deny institution of IPR.

II. CLAIM CONSTRUCTION

A claim subject to IPR shall be construed using the same standard as in a civil action. 37 C.F.R. § 42.100(b). The Board need only construe terms “to the extent necessary to resolve the controversy.” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). At this stage, Patent Owner does not submit any terms for construction. Patent Owner reserves the right to subsequently submit claim terms for construction should the Board institute IPR.

III. LEVEL OF ORDINARY SKILL IN THE ART

Solely for the purpose of this Preliminary Response, Patent Owner does not challenge Petitioners' proposed definition of a POSITA. Patent Owner reserves the right to provide an alternative definition of a POSITA if IPR is instituted.

IV. TECHNICAL BACKGROUND

A. Summary of the '038 Patent

The '038 Patent is directed to a "type of stick vacuum cleaner wherein a hand vacuum cleaner is removably mounted to a drive handle and provides motive power to draw dirty air into the surface cleaning head." Ex1001, 1:19–23.

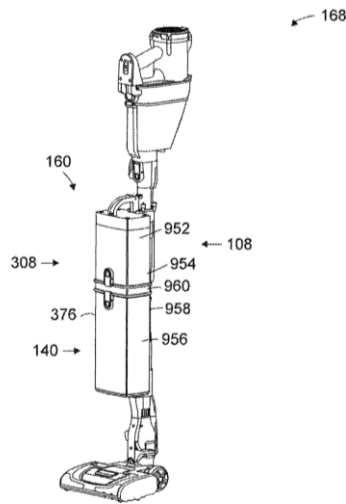
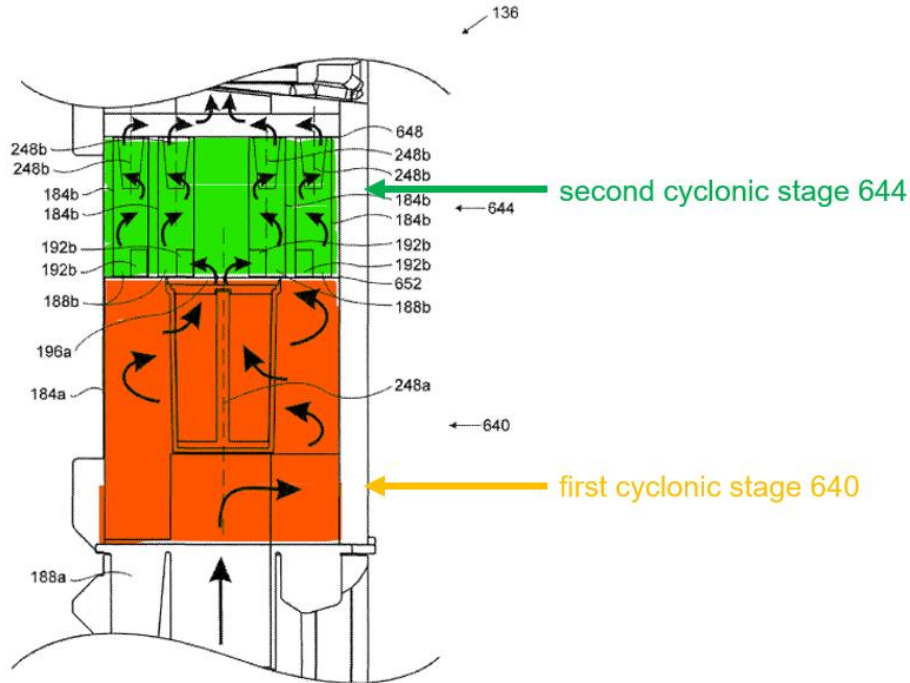


FIG. 82

Id., Fig. 82. Among other things, the '038 Patent improves the prior art by providing "a second cyclonic cleaning stage" downstream of first cyclonic stage, where the second stage cyclone chambers may be oriented so that the chambers include "air inlets 192 b at front end 648 and air outlets at rear end 652" in order to "reduce directional changes in the airflow which may reduce backpressure developed

through second stage cyclone chambers 184 b for enhanced airflow efficiency.” *Id.*, 22:27–50, Fig. 127.



Id., Fig. 127 (annotated).

B. Overview of Asserted References

1. Butler

Butler is a 2007 PCT publication that details several distinct embodiments of a specialized “Stair Cleaning Vacuum.” Ex1005, Title. Butler discusses various existing solutions such as “upright and canister vacuum cleaners,” “stick vacuums,” and “compact hand-held vacuums,” and concludes that there “exists a need for an improved vacuum cleaner” specifically adapted for cleaning “raised” surfaces, and “particularly stair treads and risers.” *Id.*, 1:5–24, 3:10–16. Two distinct

embodiments from Butler—one associated with Figure 2A and the other with Figure 5—are shown below.

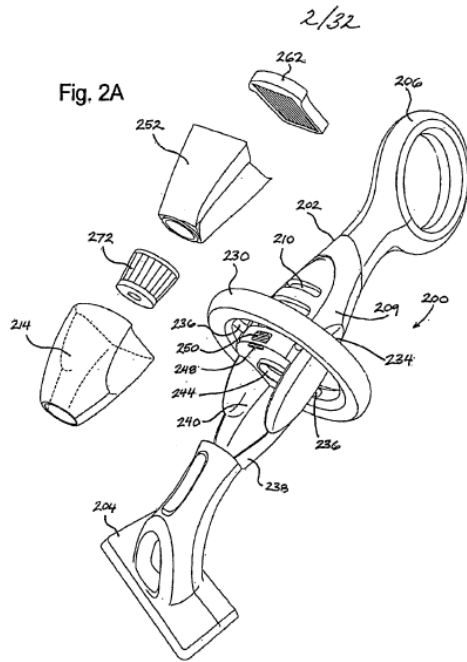
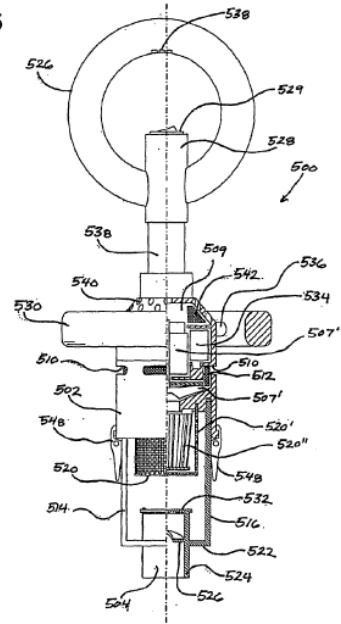


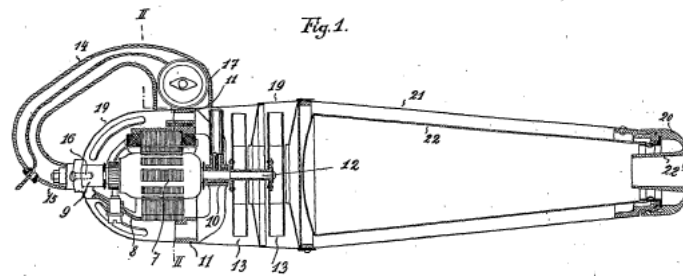
Fig. 5



Id., Figs. 2A, 5.

2. Lehmann

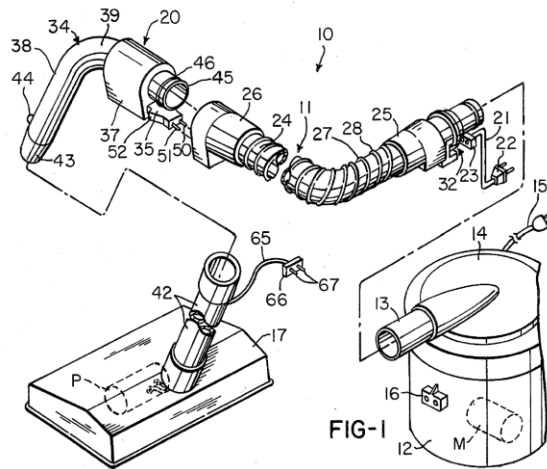
Lehmann is a 1922 U.K. patent for a vacuum cleaner comprising “a casing, an electromotor, a centrifugal fan, and a dust bag” that is intended to be both maneuverable and compact. Ex1006, 1:25–38.



Id., Fig. 1.

3. Neroni

Neroni is a 1984 U.S. patent for a “Vacuum Cleaning Tool Adapter with Electrical Control Means.” Ex1011, Title. Neroni describes a “cainster or tank type” of vacuum cleaner with a “hose assembly [that] is attached to the tank at one end” and attached to “a powered cleaning tool” at the other end. *Id.*, 1:6–17. Neroni describes a “female power receptacle 16 disposed on the outside surface of its tank 12” that is used to “supply electrical power through the hose assembly 11 into the adapter 20, and then to motor P of the power cleaning tool 17.” *Id.*, 3:34–49.

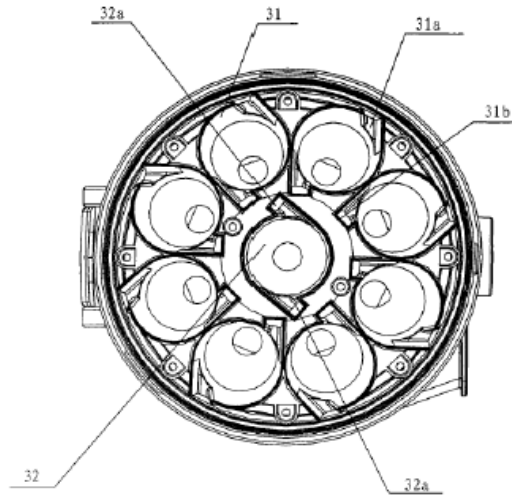


Id., Fig. 1.

4. Peng

Peng is a Chinese utility model, published in 2011, for an improvement to a “cyclone vacuum cleaner” with two cyclone units. Peng discloses that the prior art second stage cyclones disadvantageously “occupy a considerable space” and may have accumulation of dirt on the outer walls of the cyclone cylinders. Ex1009, ¶15.

Peng seeks to provide increased “separation efficiency” and improved “air purification effect” by disclosing a design with multiple cyclone cylinders on the peripheral and one central cyclone cylinder, each of the cylinders having two air inlets. Ex1009, ¶57.



Id., Fig. 4.

V. SPECIFIC GROUNDS OF UNPATENTABILITY

A. Petitioners Fail to Show that Butler Renders Obvious Challenged Claims 1–15 (Ground 1)

Petitioners’ principal argument is that a POSITA would have, based on his or her knowledge alone and without any express suggestion in the reference to do so, modified Butler to include the claimed second cyclonic stage rearward of the first cyclonic stage. As explained in more detail below, this argument is driven by nothing more than impermissible hindsight. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“A factfinder should be aware, of course, of the distortion

caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning.”). Petitioners provide conclusory statements that the modifications they propose to Butler are “obvious to try”—*e.g.*, adding a second cyclonic stage as the claims require—and that there are advantages to modifying Butler in such ways. Petitioners, however, use the claim language itself as a motivation to modify Butler—not any motivation from other references in the art or from the common sense of a POSITA, or even any other motivation consistent with *KSR*’s instruction to look to the “need or problem known in the field of endeavor at the time of invention and addressed by the patent.” *Id.* at 420.

It is established law that “where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful,” it is erroneous to equate “obvious to try” with obviousness—which is exactly what Petitioners did here. *In re Kubin*, 531 F.3d 1351, 1359 (Fed. Cir. 2009) (citing *In re O'Farrell*, 853 F.2d 894, 903 (Fed. Cir. 1988)). Because Butler does not identify any details regarding how to add a second cyclonic stage, and Petitioners do not establish that any such details are well-enough known in the art, Petitioners resort to improperly filling in these holes in Butler with improper hindsight.

Petitioners look to a POSITA’s supposed common knowledge to gap-fill. Pet., 39–46. “[K]nowledge of a problem and motivation to solve it are entirely

different from motivation to combine particular references” or to modify a particular reference in view of the knowledge of a POSITA. *Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1373 (Fed. Cir. 2008). Petitioners claim to have identified a problem in Butler (alleged need for increased filtration power), but the teaching of Butler never identifies this as an issue and is completely indifferent with respect to that alleged issue. Even assuming that this non-problem in Butler requires solving, Petitioners still come up short in identifying a motivation to solve such problems in the ways required by the Challenged Claims.

- 1. Butler does not teach or disclose “a second cyclonic stage having a front end, a rear end and at least one second stage cyclone having a cyclone axis of rotation that extends between the front and rear ends of the second cyclonic stage and the rear end of the second cyclonic stage is rearward of the rear end of the first cyclonic stage” [1.c.iii]**

All challenged claims require “a second cyclonic stage” of the hand vacuum cleaner. And, specifically, all challenged claims further require that “the rear end of the second cyclonic stage is rearward of the rear end of the first cyclonic stage.” Petitioners fail to meet their burden of showing that Butler renders obvious these elements. In particular, the Petition failed to identify any disclosure in Butler that suggests—let alone teaches—a second cyclonic stage. Indeed, Butler is completely silent on a second cyclonic stage.

Petitioners conclusorily claim that a POSITA “would have understood that second cyclonic stages were well-known in the art at the time of the ’038 Patent.”

Pet., 39. While a POSITA's "common sense and common knowledge have their proper place in the obviousness inquiry," common knowledge cannot supply a limitation that is missing from the prior art unless the record establishes that "the [missing] limitation in question [is] unusually simple and the technology particularly straightforward." *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361–62 (Fed. Cir. 2016). References to common sense "cannot be used as a wholesale substitute for reasoned analysis and evidentiary support"—which is exactly what Petitioners do. *Id.* It is error to rely only upon "conclusory statements and unspecific expert testimony" for the alleged combination. *Id.* at 1366.

Here, undisputably missing from Butler is "a second cyclonic stage having a front end, a rear end and at least one second stage cyclone" where, specifically, "the rear end of the second cyclonic stage is rearward of the rear end of the first cyclonic stage." Petitioners try to gap-fill an essential limitation that's completely missing from Butler with POSITA's alleged knowledge, yet their contentions and parroting expert declaration lack necessary specificity. Petitioners fail to show that this limitation is "unusually simple and the technology particularly straightforward," as required under *Arendi*.

Furthermore, Petitioners fail to identify with any specificity which embodiment out of multiple disclosed by Butler is to be modified in view of the alleged knowledge—let alone how that specific embodiment would be modified to

includes a second cyclonic stage. Petitioners throw in a laundry list of figures from various publications that allegedly show a second cyclonic stage without specifying which second cyclonic stage listed should be transplanted into Butler. Pet., 40–41. Even assuming that a POSITA would have known about the concept of a second cyclonic stage and that, generally, a second cyclonic stage can assist a first cyclonic stage in providing extra filtration, Petitioners fail to identify with any specificity why a POSITA would want to increase filtration power in Butler. Nor do Petitioners explain with any specificity how a POSITA would choose an embodiment from Butler's disclosure, would choose an embodiment of a second cyclonic stage from POSITA's common knowledge, would transplant that second cyclonic stage from knowledge into Butler exactly as claimed, would be motivated to specifically combine that way putting the added cyclonic stage downstream of the first cyclonic stage, or would be able to do so with reasonable expectation of success. Instead, Petitioners simply compile a list of references allegedly disclosing "a second cyclonic stage" without formally including them in the ground, and handwave that a second cyclonic stage can be added to Butler. Pet., 39–46. These efforts are not sufficient for Petitioners to meet their burden.

2. Petitioners fail to show motivation to combine Butler and a POSITA's common knowledge or a reasonable expectation of success

In alleging without support that a POSITA would have been motivated to just stick a second cyclonic stage in Butler, Petitioners' "conclusory statements and unspecific expert testimony" ignores Butler's express teachings to the contrary. In fact, as explained below, a POSITA having read Butler would ***not be motivated*** to simply stick a second cyclonic stage to any embodiment disclosed by Butler.

Butler is primarily concerned with cleaning stairs instead of floors and specifically addresses the ergonomic challenges of cleaning stairs. Conventional stick vacuums are "difficult to manipulate in enclosed stairwells, closets, and other confined spaces" and the length "also makes it difficult for the user to hold the grip located at the end of the handle when cleaning stairs." Ex1005, 2:29–3:2. Butler is also extra sensitive to not increase the distance between the foregrips and the rear grips disclosed: "[i]f the distance between the grips is too great, the user might find it difficult to grasp both grips at the same time while still being able to easily maneuver the device." Ex1005, 14:28–30. Petitioners suggest that any changes to the dimensions are insignificant, but this conclusion is unsupported (other than by an expert declaration parroting the petition) and—more critically—is directly called into question by the large sizes of the exemplary two-stage cyclonic separators shown. Pet., 40–41, 44.

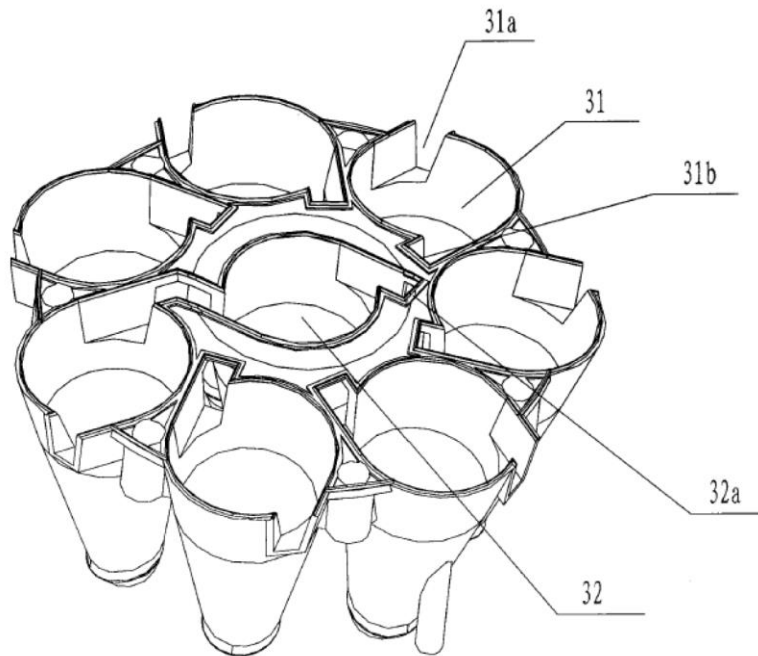
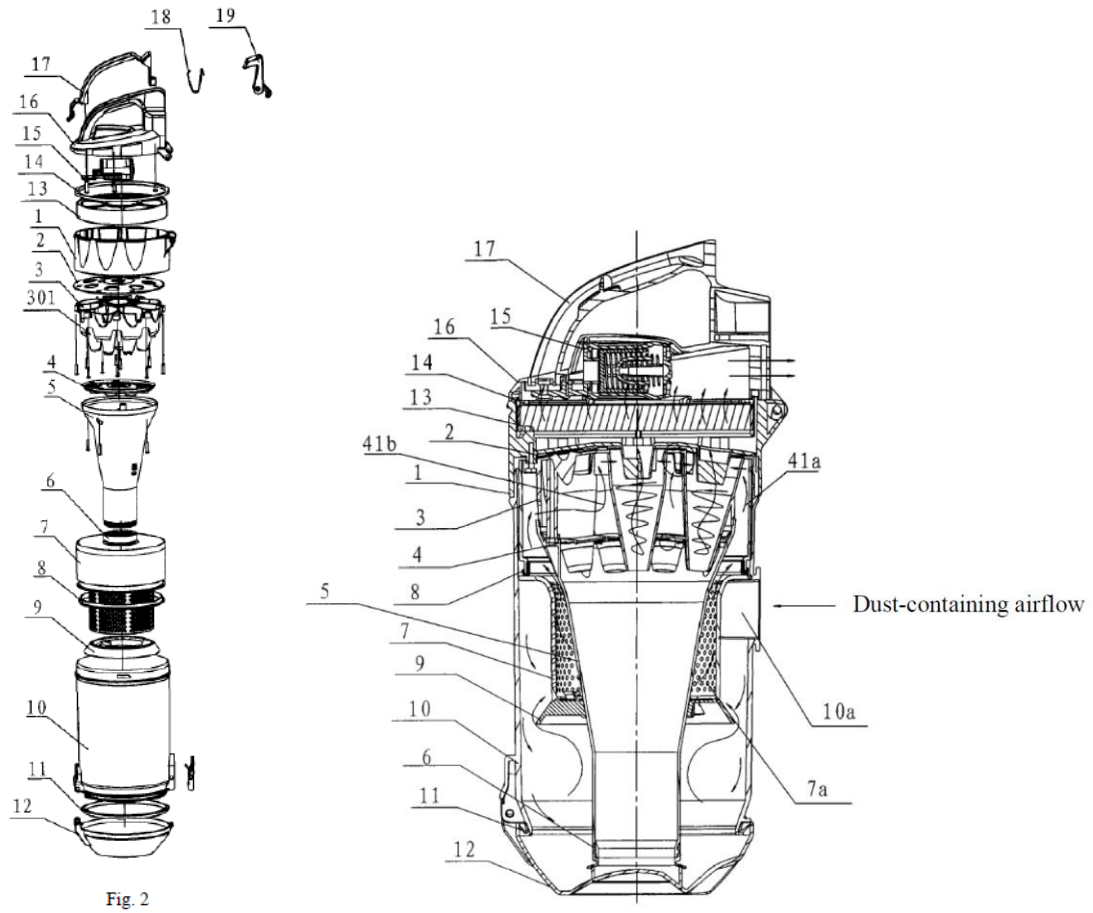
A POSITA would have known that adding a second cyclonic stage would occupy a considerable space and disadvantageously reduce space efficiency. See Ex1009, ¶5. A POSITA would also have known that adding such a second cyclonic stage to any embodiment of Butler would add length to the vacuum and/or add length to the distance between the foregrip and the rear grips, disrupting the delicate ergonomic balance, which is the central objective of Butler's teachings.

Further, while Butler acknowledges that a variety of filtration performances and grades may be used, it is totally agnostic as to the level of filtration implemented. For example, regarding a filter that is placed between the cyclonic separator and the motor, Butler teaches that "any alternative filter shape, material, construction or filtration grade may be used." Ex1005, 18:10–14. Similarly, regarding a post-motor filter, Butler discloses that "[s]uch filters may also have any filtration performance grade, such as HEPA grade ... or ULPA grade Of course, lesser or greater grades of filtration media may also be used." Ex1005, 7:25–8:7. As such, a POSITA having read Butler would understand that Butler does not prioritize the maximum filtration power possible but rather ergonomic comfort. Petitioners' (and their expert's) conclusory allegation that "two cyclonic stages provided additional filtration of the dirty air, which is an advantage over using a single cyclone" is baseless and unsupported by the record of Butler. Pet., 42; Ex1002, ¶158. Additional filtration is not seen as necessarily an advantage by Butler.

Therefore, a POSITA having read Butler would not seek to increase filtration power but rather heed the central objective of its teachings and refrain from adding a second cyclonic stage, thereby adding length, to the embodiments. Thus, Petitioners fail to identify *with specificity* any motivation to combine the alleged knowledge with the disclosure of Butler.

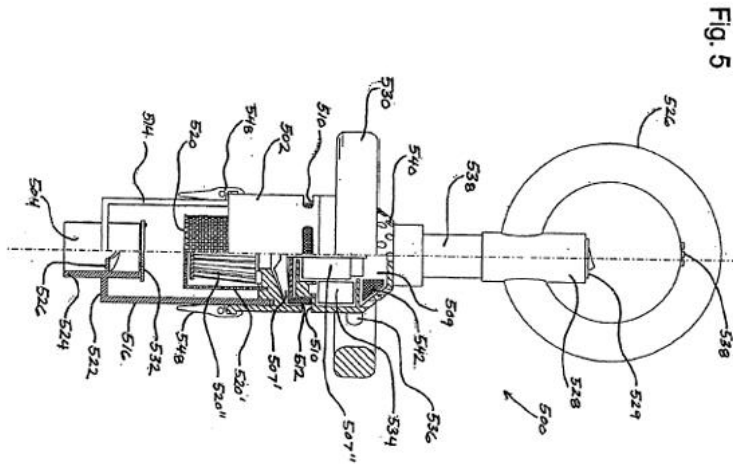
Petitioners claim that a POSITA “would have understood that a simple substitution of one cyclonic stage for two cyclonic stages, where there would be an additional dust filtration, would have yielded the predictable result of additional dust filtration.” But Petitioners, again, find absolutely no support for this allegation other than the parroting expert’s declaration.

Contrary to Petitioners’ arguments, as exemplified by Peng, adding a second cyclonic stage is nothing close to a simple substitution using known methods that can yield predictable results. For example, in order for Peng to fit a second cyclonic stage in a vacuum cleaner, as shown in Figures 2, 3, and 6 of Peng, the shapes and dimensions of nearly a dozen parts, as well as how they relate to each other spatially, have to be configured. Petitioners provide no explanation on how these parts of Peng’s cyclone would be modified to work in Butler.



Ex1009, Figs. 3, 4, 6.

Adding to the challenge, Butler's disclosed embodiment with a cyclone separator (Fig. 5) has a specifically packed area immediately to the rear of the cyclone chamber. For example, as shown in Fig. 5, a fan/motor chamber 509 houses a fan/motor 507, a foam ring 542 as well as batteries 534. Butler further teaches that "the housing includes a number of vents 540 for allowing air to pass through the housing 502 to cool the motor 507" that "[a] foam ring 542 may also be provided to prevent particles from the motor from exiting the vents 540 and obstruct the user's view into the fan/ motor chamber 509," and that "[t]he housing 502 also includes a number of exhaust apertures 510 for releasing the working air flow to the atmosphere after it is cleaned by the vacuum cleaner 500." Ex1005, 20:12–28. A POSITA designing a second cyclonic stage would have to design the parts as well as the air flow path mentioned above in a tight space displayed here in Butler Fig. 5, and it is nothing of a "simple substitution."



Ex1005, Fig. 5.

As noted above, Petitioners' only "support" for their proposed rationales for modifying Butler is the Declaration of Mr. Giachetti (Ex1002). However, the paragraphs of Mr. Giachetti's declaration cited by Petitioners merely parrot the Petition, making conclusory statements about simple modifications that were allegedly obvious to try and alleged advantages without providing any explanation for such conclusory statements.

At bottom, the Board need not give any weight to Petitioners' conclusory arguments on motivations to modify Butler in view of the knowledge of a person of ordinary skill in the art. Petitioners therefore failed to establish that a POSITA would have had a reasonable expectation of success modifying Butler as Petitioners proposed.

Thus, Petitioners have not met their burden of showing that claim 1 is rendered obvious by Butler under Ground 1.

3. Butler does not render obvious Challenged Dependent Claims 2–15

Because Butler fails to render obvious claim 1 of the '038 Patent, Butler necessarily fails to invalidate dependent claims 2–15, which depend on independent claim 1. As such, Petitioners fail to demonstrate a reasonable likelihood of success on any claim in Ground 1.

B. Petitioners Fail to Show that Butler in View of Peng Renders Obvious Challenged Claims 1–15 (Ground 2)

Knowing the holes in their arguments based on Butler alone, Petitioners turn to a Chinese utility model application (Peng) to fill the gap. But Petitioners again use the Challenged Claims as the guide for their analysis in hindsight, making the same mistakes, identifying a non-problem never contemplated in Butler, and forcibly mashing a cherry-picked element from Peng into Butler.

1. Petitioners fail to show a motivation to combine Butler and Peng as proposed

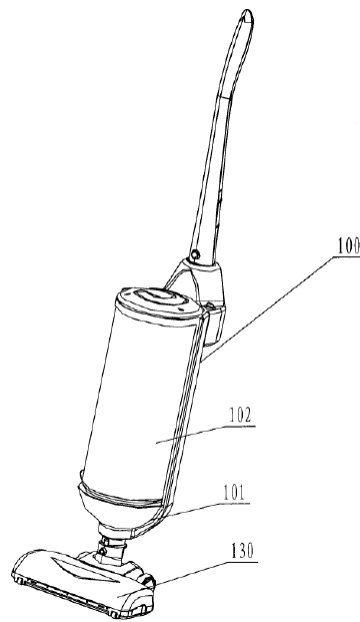
As discussed above, Butler not only fails to disclose any “second cyclonic stage” but it also provides no teachings regarding where the supposed second cyclonic stage may be located. In arguing for a combination of Butler and Peng, Petitioners use the '038 Patent and the Challenged Claims as a guide to cure these deficiencies. Petitioners cite to no objective evidence (other than a parroting a conclusory declaration) in support of their assertion that not only adding a second cyclonic stage according to Peng to Butler would be obvious to a POSITA, but so too would placing the added second cyclonic stage exactly where the claims require the second cyclonic stage to be. *See* Pet., 66–68 (citing only one figure of Butler and one paragraph of an expert declaration to support the conclusion that a POSITA “would have been motivated to incorporate Peng’s second cyclonic separation unit immediately downstream of Butler’s first cyclonic stage”).

Petitioners conclusorily claim that a POSITA would be motivated to combine Butler and Peng for the same reasons provided in Ground 1 combining Butler and POSITA's supposed knowledge. Pet., 67. Therefore, for the same reasons explained above in Section V.A, Petitioners fail to meet their burden with respect to the Butler and Peng combination.

For example, Petitioners fail to identify with any specificity why a POSITA would want to increase filtration power in Butler. As discussed above in Sec. V.A.2, while Butler acknowledges that a variety of filtration performances and grades may be used, Butler does not prioritize the level of filtration implemented. For example, regarding a filter that is placed between the cyclonic separator and the motor as well as regarding a post-motor filter, Butler teaches that "any alternative filter shape, material, construction or filtration grade may be used." Ex1005, 7:25–8:7, 18:10–14. As such, a POSITA having read Butler would understand that Butler does not seek the maximum filtration power. Petitioners' (and their expert's) conclusory allegation that "two cyclonic stages provides additional filtration of the dirty air, which is an advantage over using a single cyclone" is baseless and unsupported by the record of Butler. Pet., 71; Ex1002, ¶245. Additional filtration is not seen as necessarily an advantage by Butler.

Further, a POSITA having read Butler would ***not be motivated*** to simply stick a second cyclonic stage from Peng to any embodiment disclosed by Butler. As

discussed above, Butler is primarily concerned with cleaning stairs instead of floors and specifically addresses the ergonomic challenges of cleaning stairs: “If the distance between the grips is too great, the user might find it difficult to grasp both grips at the same time while still being able to easily maneuver the device.” Ex1005, 14:28–30. Peng discloses in Fig. 7 that the overall diameter of the cyclonic separator stages is on the scale of a normal upright vertical vacuum cleaner. Thus, adding a second cyclonic separator stage from this embodiment of Peng to Butler would be a large-scale modification severely altering the ergonomics and stated benefits of the Butler’s disclosed embodiments.



Ex1009, Fig. 7.

Peng does not cure Butler’s teaching away from the proposed combination because Peng teaches that even adding a compact dual cyclone still would have

resulted in a longer device in contrast to Butler's objectives. Peng explicitly teaches that adding a second cyclonic stage would occupy a considerable space and disadvantageously reduce space efficiency. Ex1009, ¶5. Thus, a POSITA would also have understood that adding a conventional second cyclonic stage to any embodiment of Butler would add length to the vacuum and/or add length to the distance between the foregrip and the rear grips, disrupting the delicate ergonomic balance, which is the central objective of Butler's teachings.

Further, Peng makes clear that prior art second cyclonic stage configurations have their drawbacks, and that its teachings and design of the disclosed embodiments are focused on increasing the cross-sectional area of the air inlets of the second stage cyclone cylinders, evenly distributing airflow, and "improving the separation efficiency." Ex1009, ¶¶7–8. But none of these objectives align with the Butler's stated objective of providing an ergonomic and maneuverable cleaner for stairs.

Therefore, Petitioners fail to establish that a POSITA would have been motivated to combine Butler and Peng as proposed.

2. Petitioners failed to show a reasonable expectation of success in combining Butler and Peng as proposed

For this ground, Petitioners made no attempt to establish that a POSITA would have a reasonable expectation of success in combining Butler and Peng in the way they propose. *See* Pet., 66–72. This deficiency alone dooms this ground.

As explained above in Sec. V.A.2, combining Butler and Peng is not a simple substitution using known methods yielding predictable results. The second cyclonic stage according to Peng comprises a multitude of components have specifically designed three-dimensional shapes to define various airflow paths; on the other hand, Butler's disclosed embodiment with a cyclonic separator also comprises packed components immediately rearward to the rear end of the first cyclonic stage, including a fan/motor chamber 509, a fan/motor 507, a foam ring 542, exhaust apertures 510, as well as batteries 534, among others. It is nothing routine or simple or predictable rearranging these components from both Butler and Peng.

Accordingly, Petitioners fail to establish that a POSITA would have had a reasonable expectation of success modifying Butler in view of Peng, and Petitioners have not met their burden of showing that claim 1 is rendered obvious by Butler in view of Peng under Ground 2.

3. Butler in view of Peng does not render obvious Challenged Dependent Claims 2–15

Because Butler in view of Peng fails to render obvious independent claim 1, Butler in view of Peng necessarily fails to render obvious dependent claims 2–15, which depend on independent claim 1. As such, Petitioners fail to demonstrate a reasonable likelihood of success on any claim in Ground 2.

C. Petitioners Fail to Show that Lehmann in View of Peng Renders Obvious Challenged Claims 1–11 and 13–15 (Ground 3)

Where a combination of Butler and Peng fails, the alternative combination of Lehmann and Peng does worse. Lehmann is a publication that is over a century old and discloses zero cyclonic separators. Lehmann and Peng are 89 years apart and present wildly different embodiments of a vacuum cleaner. Petitioners fail to establish that a POSITA would have been motivated to combine Lehmann and Peng in the manner they propose and fail to establish that a POSITA would have a reasonable expectation of success combining the two embodiments.

1. Petitioners failed to show a motivation to combine Lehmann and Peng as proposed

All the deficiencies of Butler discussed above are equally applicable, if not more so, to Lehmann. Petitioners fail to identify why a POSITA at the time of invention would have selected Lehmann as a starting point and then additionally want to modify Lehmann incorporating Peng's first and second cyclonic stages, from almost 90 years later.

Lehmann is over a century old and discloses a legacy type of vacuum cleaner with a separation bag. Petitioners have not identified any reason as to why a POSITA at the time of invention would look to select Lehmann's old and outdated embodiment as a starting point for modification. Lehmann comprehensively and explicitly lists the four objectives of its disclosure:

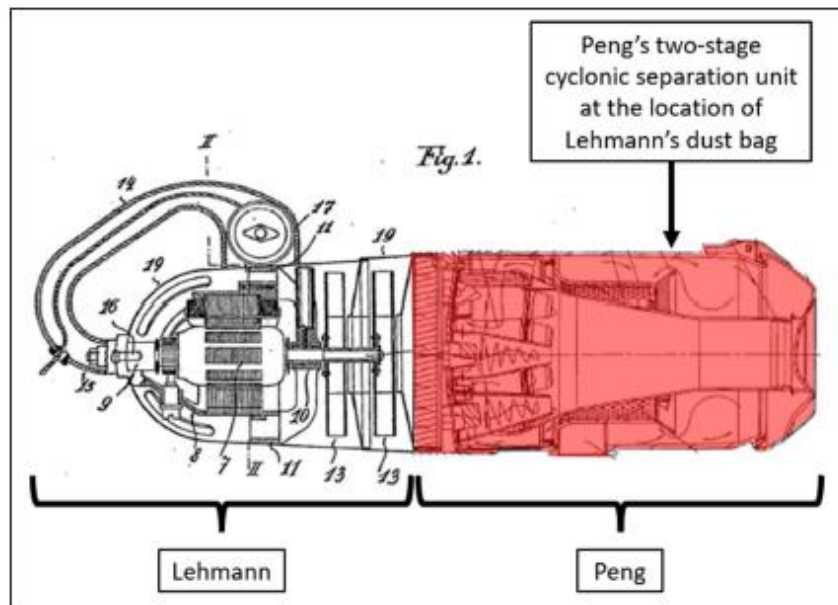
1. Facility of manipulation, so that it can be handled by a child if desired.
2. Compactness, enabling it to operate under and behind chairs and like furniture.
3. Favorable distribution of weight.
4. Efficient suction, equal to that of stationary appliances.

Ex1006, 1:25–36. These objectives are incompatible with Petitioners' proposed combination of Lehmann and Peng. For example, introducing two-stage cyclonic separation (in place of the separation bag of Lehmann) would decrease weight, compactness, and the ability of a user (especially a child) to manipulate the vacuum.

Petitioners cite to a series of publications in support of its contention that a single stage cyclonic separator may provide better suction. *See* Pet., 75–76. But Petitioners do not explain why a POSITA would ever move further to a two-stage cyclonic separator, knowing that an extra layer of smaller cyclones may reduce the suction efficiency, causing blocks and reducing effectiveness of cleaning. *See, e.g.,* Ex1009, ¶5.

“[K]nowledge of a problem and motivation to solve it are entirely different from motivation to combine particular references.” *Innogenetics*, 512 F.3d at 1373. Even assuming that a POSITA would know that substituting a dirt bag separator with a cyclonic separator can improve suction, the POSITA would not necessarily move all the way to a two-stage cyclonic configuration exactly according to Peng.

Peng's cyclonic separator, comprising two stages, is disclosed to be relatively large, on the same scale and perimeters of a normal upright vacuum cleaner. See Ex1009, Fig. 7. As shown below, Petitioners nevertheless propose to clip and paste this entire two-stage into Lehmann's embodiment to create an unwieldy monster, in direct contradiction to Lehmann's stated objectives 1-3.



Pet., 96 (Petitioners' proposed combination of Ex1006, Fig. 1 and Ex1009, Fig. 3).

Peng's two-stage cyclonic separation unit is significantly larger in size than Lehmann's embodiment. Compare Ex1009, Fig. 3 with Ex1006, Figs. 5, 6. In order to create this amalgamation, Lehman's disclosed embodiment has become less easy to manipulate, less compact, and obtained lopsided weight distribution (the two-stage cyclonic separation unit being significantly heavier than the original simple dirt bag). Thus, this proposed combination—which is the result of a cherry-picking

exercise, from disclosures almost 90 years apart, guided by the Challenged Claims—pays zero respect to and directly violates three out of four stated objectives of Lehmann.

Therefore, Petitioners fail to establish that a POSITA would be motivated to combine Lehmann and Peng as proposed.

2. Petitioners failed to show a reasonable expectation of success in combining Lehmann and Peng as proposed

Combining Lehmann and Peng is not a simple substitution using known methods yielding predictable results. Petitioner's conclusory claim to the contrary only cites one paragraph of the parroting expert declaration as support. Pet., 78. As discussed above, the embodiments of Lemann and Peng diverge greatly in both form factors and sizes. Petitioners address nothing with regard to any potential issues mismatching the two differently sized halves of a vacuum cleaner as proposed, such as how the air flow outlets of Peng's second stage cyclones are drawn to the disclosed two-stage centrifugal fans as disclosed by Lehmann.

Accordingly, Petitioners therefore fail to establish that a POSITA would have had a reasonable expectation of success modifying Lehman in view of Peng as Petitioners proposed, and thus have not met their burden of showing that claim 1 is rendered obvious by Butler in view of Peng under Ground 3.

**3. Lehmann in view of Peng does not render obvious
Challenged Dependent Claims 2–15**

Because Lehmann in view of Peng fails to render obvious independent claim 1, Lehmann in view of Peng necessarily fails to render obvious dependent claims 2–11 and 13–15, which depend on independent claim 1. As such, Petitioners fail to demonstrate a reasonable likelihood of success on any claim in Ground 3.

**D. Petitioners Fail to Show that Lehman in View of Peng and Neroni
Renders Obvious Challenged Claim 12 (Ground 4)**

Because Lehmann in view of Peng fails to render obvious independent claim 1 (as explained above), Lehmann in view of Peng and Neroni necessarily fails to render obvious dependent claim 12, which depends on independent claim 1. As such, Petitioners fail to demonstrate a reasonable likelihood of success on Ground 4.

VI. CONCLUSION

For the foregoing reasons, Petitioners have not met their burden of showing a reasonable likelihood that at least one of the Challenged Claims is unpatentable, and institution of *inter partes* review should be denied.

DATED: August 30, 2024

Respectfully Submitted,

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CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

Under the provisions of 37 C.F.R. § 42.24(d), the undersigned attorney hereby certifies that this document complies with the type-volume limitations of 37 C.F.R. § 42.24(b). The word count of the foregoing Patent Owner's Preliminary Response is 5,140, according to the word count tool in Microsoft Word.

DATED: August 30, 2024

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CERTIFICATE OF SERVICE

The undersigned certifies service pursuant to 37 C.F.R. § 42.120 of a copy of this Patent Owner's Preliminary Response upon Petitioners by email on August 30, 2024, to the following email addresses of record:

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