

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. IPR2024-01288
U.S. Patent No. 10,219,661

PATENT OWNER'S PRELIMINARY RESPONSE

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TABLE OF ABBREVIATIONS

Abbreviation	Term
'550 patent	U.S. Patent No. 10,219,661 (Ex1001)
Butler	PCT Publication No. 2007/084543 to Butler et al.
Tsukuji	Japanese Utility Model No. JPS48107459U by Tsukuji
Challenged Claims	Claims 1–16 of U.S. Patent No. 10,219,661
Fig.	Figure
IPR	<i>inter partes</i> review
Martelliere	French Patent No. 1,094,603 to Martelliere
Wenjie	Chinese Patent Publication No. CN103784081A by Wenjie Peng 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 1–16 of U.S. Patent No. 10,219,661.

Petitioners had the burden of showing that there is a reasonable likelihood that it would prevail with respect to at least one challenged claim. 35 U.S.C. § 314(a). Petitioners did not meet that burden. Although Petitioners nakedly assert that the claims “cobble together well-known configurations and features,” Petitioners’ references—whether part of an anticipatory or obviousness-based ground—do not disclose or render obvious the required configuration of the claimed “handle.”

Petitioners first raise both anticipation and obviousness grounds based on Butler. But Butler discloses a fundamentally different, two-handle design and configuration than claimed in the ’661 Patent such that Butler does not disclose or render obvious the handle-related limitations. With respect to anticipation based on Butler, Petitioners improperly rely on multiple, different embodiments without establishing that any single embodiment has the elements “arranged as in the claim.” *Net MoneyIn, Inc. v. Verisign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (“Because the hallmark of anticipation is prior invention, the prior art reference . . . must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’”). In any event, as

explained below, all embodiments of Butler lack the requirements of the claimed “handle,” as none meets all three requirements that it is “inclined forwardly,” is “provided on a sidewall at a rear portion of the hand vacuum cleaner body,” and has a “handle axis that intersects the suction motor.” Furthermore, Petitioners’ arguments for modifying the handle of Butler do so in a way that contradicts the express teachings of Butler and, at best, rely on hindsight bias to arrive at the claimed invention. 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 therefore fail to show that they are likely to prevail on any challenged claim based on Butler.

Petitioners’ obviousness grounds based on Martelliere fare no better. Martelliere describes the dirt separator of a “broom type” vacuum and, notably, does not disclose a handle at all. Petitioners thus attempt to combine Martelliere with Tsukuji, notwithstanding that the combination is in direct contradiction to the teachings of both references and ignores the vast differences in sizes, form factors, and intended uses between the two disclosed embodiments, resulting in a combination that a POSITA would never have been motivated to make. 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.

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 '661 Patent

The '661 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, 1:16–19.

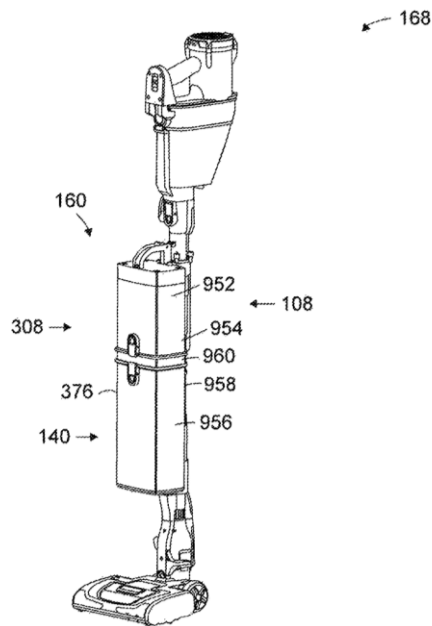
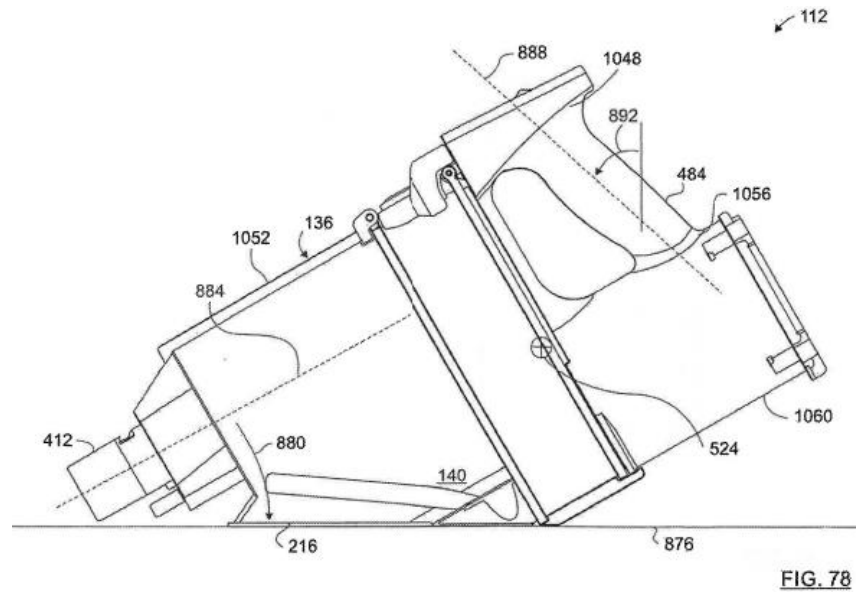


FIG. 82

Id., Fig. 82. The '661 Patent improves the prior art by providing a handle that provides a comfortable handle alignment for grasping when a user picks the vacuum up. *Id.*, 32:41–49. For example, in one embodiment, the forward angle 892 of the handle axis to the vertical “is an acute angle of between 10 and 80 degrees.” *Id.* This configuration is illustrated below in an annotated version of Figure 96 of the '661 Patent.

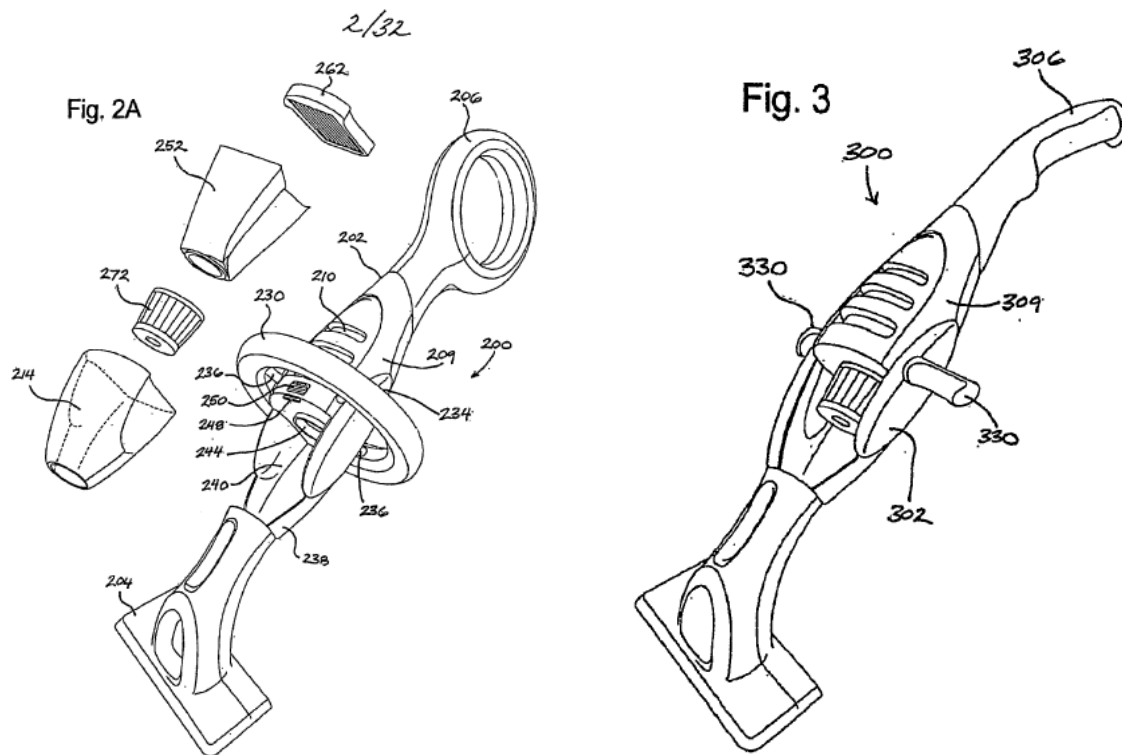


Id., Fig. 78.

B. Overview of Asserted References

1. Butler

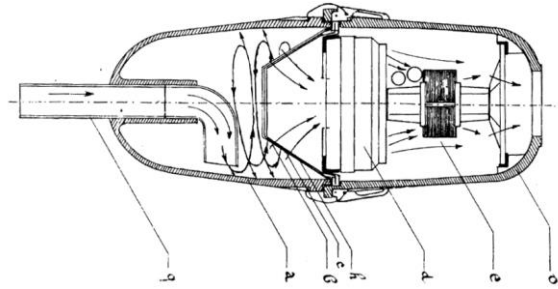
Butler is a 2007 PCT publication that discloses several distinct embodiments of a specialized “Stair Cleaning Vacuum.” Ex1005, Title. Butler discusses various existing solutions such as “upright and canister vacuum cleaners,” “stick vacuums,” and “compact hand-held vacuums,” and concludes that there “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 3—are shown below, each having a very different handle configuration.



Id., Figs. 2A, 3.

2. Martelliere

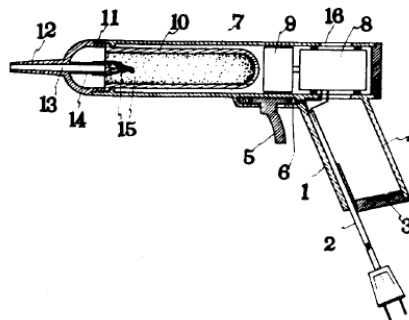
Martelliere is a 1955 French patent for an improvement to a “broom type vacuum cleaner model” that addresses the “recognized difficulty” of emptying dust bags by “replacing fabric [dust] bags” with a container made of “smooth and transparent material.” Ex1009, 1. This transparency allows a user to see how full the dust container is to “better judge when it must be emptied” and to “even see a lost object sucked up by the device and recover it.” *Id.*



Id., 2.

3. Tsukuji

Japanese Utility Model No. JPS48107459U¹ is a 1972 Japanese Utility Model for a “Gun-Shaped Desktop Electric Vacuum Cleaner.” Ex1007, Title. Tsukuji discloses a “gun shaped” handle grip to help orienting the disclosed device “in a relatively fixed orientation” that prevents reverse flow of dust and debris that has already been collected toward the intake tube. *Id.*, 4–5.



Id., Fig. 1.

¹ Petitioners provide a “certified translation” as Ex. 1007, but it contains numerous inaccuracies of translation from Japanese to English, including, among other things, mistranslating the name of the Applicant “Tsuji” as “Tsukuji.” At this preliminary stage, Patent Owner analyzes Ex. 1007 at its face value but reserves the right to challenge the authenticity and accuracy of Ex. 1007 and/or provide a different certified translation of Tsuji (or, as Petitioners call it, “Tsukuji”).

4. Wenjie

Wenjie is a 2014 Chinese Patent Publication for a “Hand-Held Vacuum Cleaner.” Ex1023, Title. Wenjie discloses a hand held vacuum cleaner with a vertical cyclone separator and a motor directly on top of the cyclone separator. *Id.*, [0004]–[0005].

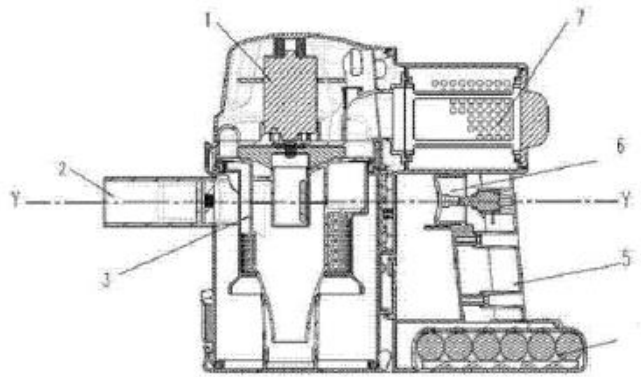


Fig. 1

Id., Fig. 1.

V. SPECIFIC GROUNDS OF UNPATENTABILITY

A. Petitioners Failed to Show that Butler Anticipates Challenged Claims 1–16 (Ground 1)

The '661 Patent discloses and claims a specific configuration and arrangement of components of a hand vacuum cleaner, including a “handle” that “is inclined forwardly at an angle that is between 10 and 80 degrees from a vertical axis” and that has an axis “that intersects the suction motor.” Butler discloses multiple embodiments of a vacuum cleaner specifically adapted for cleaning in stairwells and other confined spaces. Ex1005, 1:2–3. To achieve this objective, each embodiment

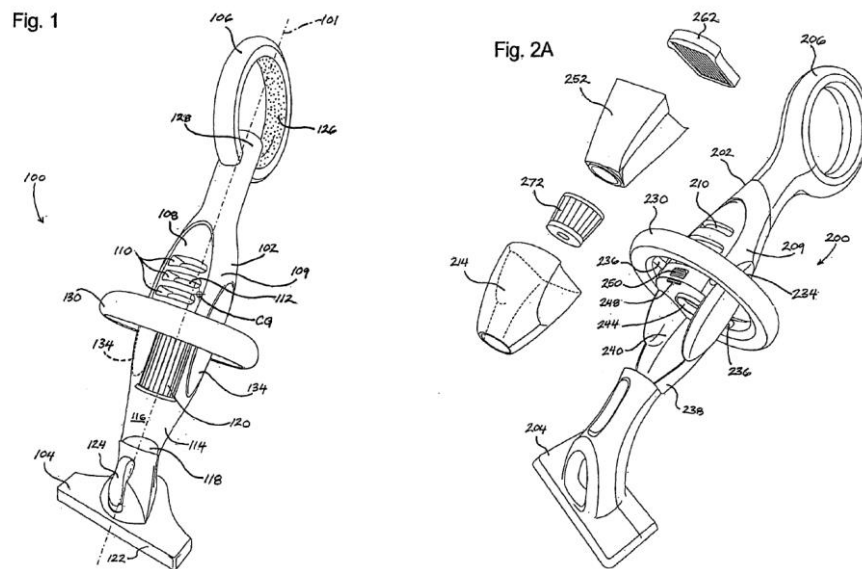
of Butler has a two-handle configuration specific to that embodiment, with each embodiment having “a rear grip” located at one end and a different “foregrip configuration” located between the rear grip and the front air inlet. *Id.*, 3:20–4:1.

Petitioners rely on the “foregrip” of Butler as meeting these “handle” limitations, but no single embodiment of Butler discloses a foregrip configuration that meets all requirements. As such, to make an anticipation challenge, Petitioners improperly attempt to combine different embodiments of Butler, with different locations and configurations of handles (including different foregrips). For example, for element [1f], Petitioners rely on a combination of the embodiments, such as the vacuum cleaner of the Figure 5 embodiment with the foregrips of the Figures 3 and 4 embodiments. *See Pet.*, 41–42. Overall, Petitioners’ anticipation challenge cites different aspects of different embodiments and figures for different limitations, never explaining how a single embodiment discloses all elements. *See generally Pet.*, 9–43. Because Petitioners fail to show that all claim elements are disclosed in Butler in a single embodiment as “arranged in the claim,” Petitioners’ anticipation challenge fails. *See Net MoneyIn*, 545 F.3d at 1369.

Petitioners’ obfuscation hides the reality of Butler. Butler’s embodiments generally have three different foregrip configurations—a looped handle, straight grips, and pistol grips—and no embodiment discloses all requirements of the claimed “handle” of the ’661 Patent.

1. Butler's looped foregrips do not meet the "handle" limitations

Several embodiments of Butler (two of which are reproduced below) include a foregrip with a "continuous loop-like shape" (e.g., foregrip 130) that surrounds the vacuum cleaner body. Ex1005, 11:26–28, 12:3–7. The looped foregrip is attached to the housing by "[o]ne or more radial posts." *Id.*, 12:3–7.



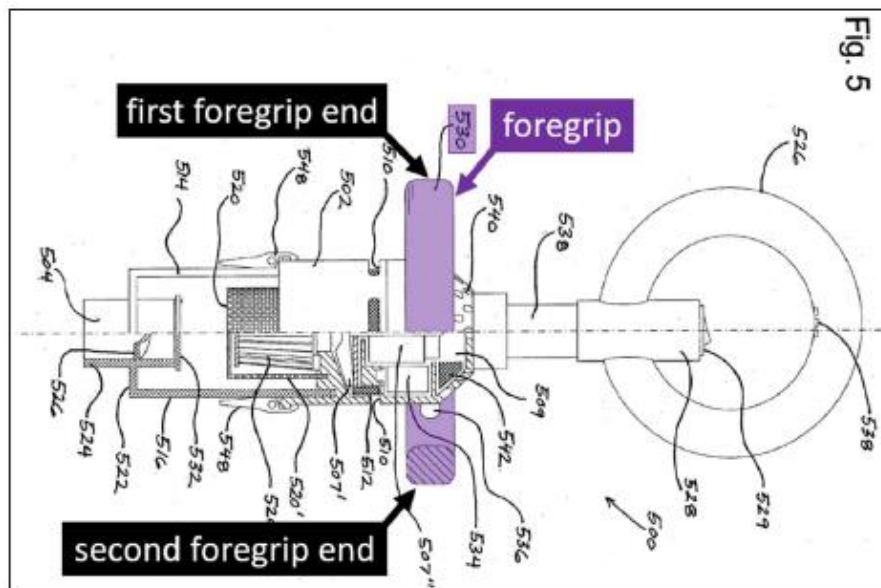
Id., Figs. 1, 2A. The looped foregrips are fundamentally different than the claimed handle of the '661 Patent and, as such, fail to meet several "handle"-related claim requirements.

a. Butler's looped foregrips do not "extend[] between a first handle end and a second handle end"

Element [1a] of the '661 Patent requires "a hand vacuum cleaner body comprising . . . a handle, the handle extending between a first handle end and a second handle end." But Petitioners failed to show that the looped foregrips of these

embodiments (such as foregrip 130 of Figure 1 and foregrip 230 of Figure 2A) have “first” and “second” handle ends. As explained above, Butler states that foregrip 130 “has a continuous loop-like shape that surrounds the vacuum cleaner housing 102, which allows the user to hold the foregrip 130 in virtually any annular location around the housing 102.” Ex1005, 11:26–28, 12:3–7. As a “continuous loop-like shape,” foregrip 130 does not have a “first handle end” or a “second handle end.”

Petitioners’ arguments and annotations on this limitation do not address the circular nature of the foregrip. For example, as shown below, Petitioners arbitrarily label one point of the loop as a “first foregrip end” and a different portion as a “second foregrip end.” Definitionally, however, a circle or closed loop does not have ends.



Pet., 17 (Ex1005, Fig. 5 annotated by Petitioners).

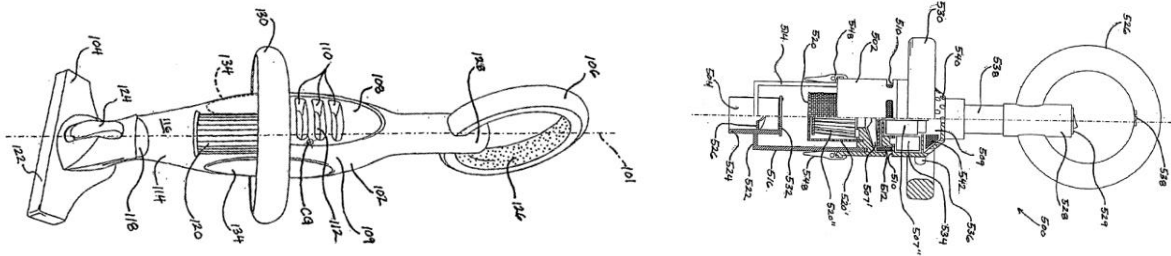
b. Butler's looped foregrips are not "inclined forwardly at an angle that is between 10 and 80 degrees from a vertical axis"

Element [1d] requires that "when the hand vacuum cleaner is positioned with the upper end of the hand vacuum cleaner above the lower end of the hand vacuum cleaner and the lower end of the hand vacuum cleaner is on a horizontal surface, the handle is inclined forwardly at an angle that is between 10 and 80 degrees from a vertical axis." Petitioners failed to show this limitation disclosed by the looped foregrip embodiments.

On this limitation, Petitioners resort to reading into various figures without any textual support and gap-filling with Petitioners' own modifications on the figures without justification. *See* Pet., 28–31. It is the Federal Circuit's longstanding rule that measuring figures without textual support and taking the measurement as explicit disclosure is improper. *See Hockerson-Halberstadt, Inc. v. Avia Group Intern., Inc.*, 222 F.3d 951, 956 (2000) ("Under our precedent, however, it is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue. *See In re Wright*, 569 F.2d 1124, 1127 (CCPA 1977) ('Absent any written description in the specification of quantitative values, arguments based on measurement of a drawing are of little value.')."); *see also In re Wilson et al.*, 312 F.2d 449, 454 (CCPA 1963) ("Patent drawings are not working drawings and

this argument is predicated, moreover, on a greatly enlarged section of a small drawing obviously never intended to show the dimensions of anything.”).

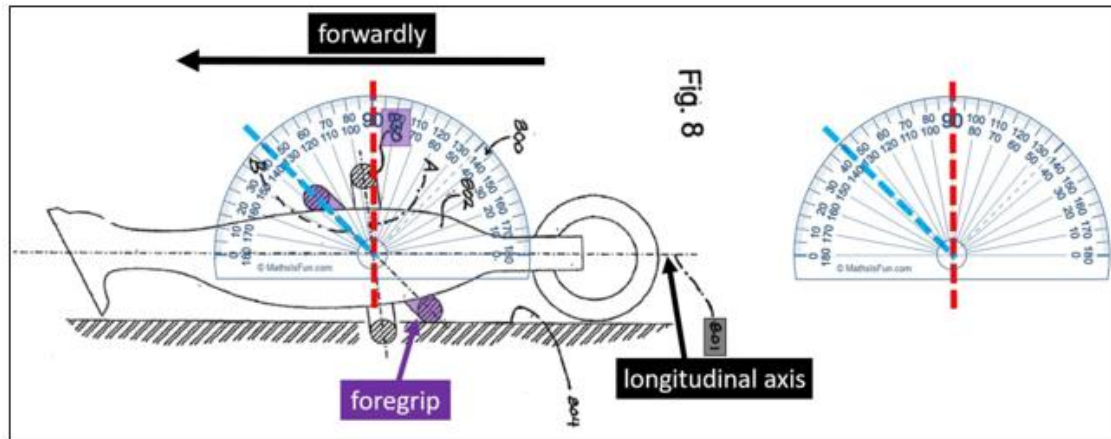
In most embodiments with looped foregrips, such as the one shown below, the foregrips are oriented vertically when the vacuum cleaner is positioned with the upper end of the vacuum cleaner above the lower end of the vacuum cleaner and the lower end of the vacuum cleaner is on a horizontal surface.



Ex1005, Fig. 1 (excerpted and rotated), Fig. 5 (excerpted and rotated).

Nor do the pivotable foregrips of Butler's Figure 8 embodiment, as cited by Petitioners, actually have an inclined handle as recited in the claims of the '661 Patent. A circle does not have a defined incline direction but has an infinite number of axes of symmetry. And neither the specification of the '661 Patent nor Butler teaches anything about measuring the "incline" of a handle shaped as a circle or suggests if such an "incline" exists at all. Petitioners conveniently chose an axis of the circular shape and called that the incline direction, without explaining why the circle's incline is not any other axis, one example of which is the axis that extends

through the horizontal diameter of the circle, which horizontally transverses the vacuum body and has a 90° angle from a vertical axis.



Pet., 29 (Ex1005, Fig. 8 modified and annotated by Petitioners). Indeed, having read both the '661 Patent and Butler, a POSITA would have no justification in arbitrarily choosing an “incline” direction for the circular foregrip.

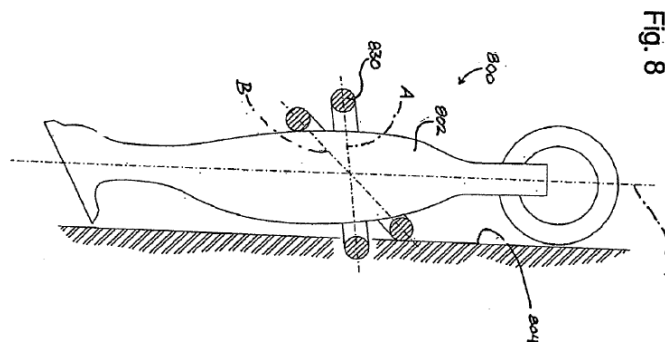
c. Butler's looped foregrips are not “provided on a sidewall at a rear portion of the hand vacuum cleaner body”

Even if a POSITA would consider Butler to disclose looped foregrips that are inclined forwardly as claimed, Petitioners failed to show they are “provided on a sidewall at a rear portion of the hand vacuum cleaner body.” As explained above, these foregrips have “a continuous loop-like shape that surrounds the vacuum cleaner housing 102.” Ex1005, 11:27–28. Because it “surrounds” the housing, the looped foregrip is not “provided on a sidewall” of the vacuum cleaner body. Although the foregrip is attached to the housing by “[o]ne or more radial posts” (Ex1005, 11:29), these posts are not themselves the claimed handle (*e.g.*, they are

not ever gripped by the user). Petitioners thus failed to show that a POSITA would consider the looped foregrip to be “provided on a sidewall.”

Furthermore, for several of these embodiments (including the Figure 8 embodiment with a pivotable looped foregrip), the foregrip is not “provided . . . at a rear portion of the hand vacuum cleaner body.” Butler discloses that a “foregrip” is “located on the housing between the rear grip and the air inlet.” Ex1005, 3:28–29. As the name “foregrip” suggests, it is a front handle. Butler further explains that the foregrip “should generally surround the device’s center of gravity CG.” *Id.*, 13:3–4. At least, nothing in Butler discloses or suggests that the “foregrip” is “provided on a sidewall at a rear portion of the hand vacuum cleaner body” as claimed.

Notably, Petitioners never attempt to show that the foregrip of the Figure 8 embodiment (the only looped foregrip that Petitioners contend is “inclined forwardly”) is “provided . . . at a rear portion.” As shown below, the looped foregrip of Figure 8 is not provided at a “rear” portion of the body—if anything, it is provided more towards the center of gravity of the vacuum cleaner.



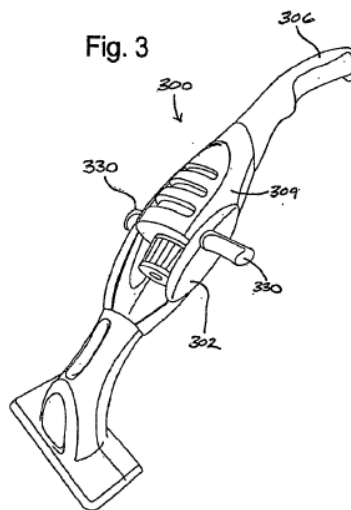
Ex1005, Fig. 8.

Petitioners argue that the disclosed foregrips become “provided on a sidewall at a rear portion of the hand vacuum cleaner body” when the rear grip is “pivot[ed].” Pet., 39. Again, this argument is not supported by any text of Butler. Nothing in Butler suggests that the boundary between the front portion and the rear portion changes when the rear grip folds.

Thus, no embodiment of Butler with a looped foregrip meets all “handle” limitations of claim 1 of the '661 Patent.

2. Butler's straight foregrips do not meet the “handle” limitations

A second embodiment of Butler (reproduced below) includes “two separate straight grips 330 that extend generally radially from the vacuum cleaner housing 302 at a location adjacent or just forward of the fan/motor chamber 309.” Ex1005, 19:18–22.



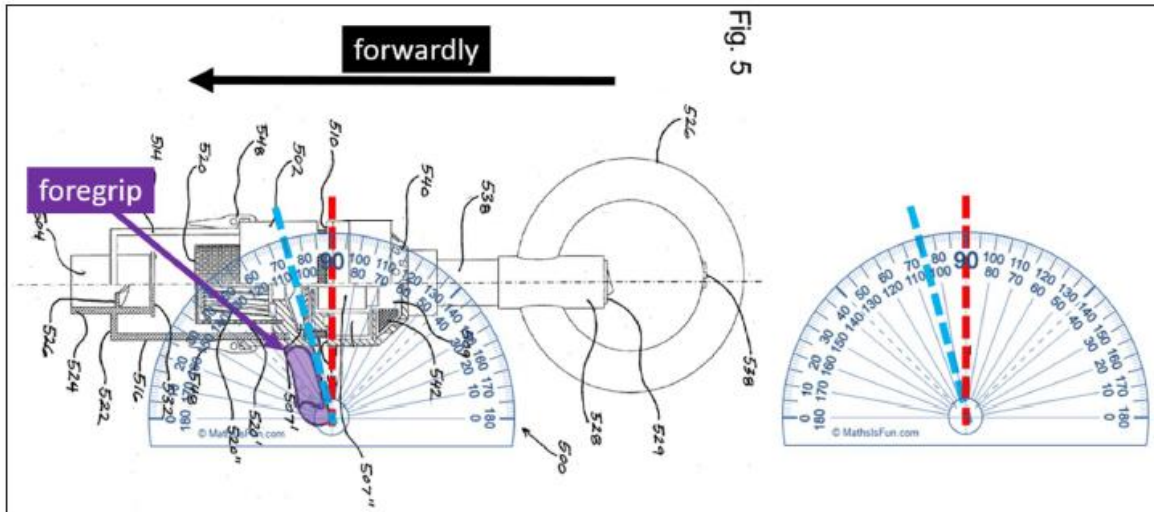
Id., Fig. 3. This embodiment too fails to meet all of the “handle”-related limitations.

a. Butler's straight foregrips are not "inclined forwardly at an angle that is between 10 and 80 degrees from a vertical axis"

Petitioners failed to show that the straight foregrips of Butler are "inclined forwardly at an angle that is between 10 and 80 degrees from a vertical axis." As explained above, the "straight" foregrips (330) extend radially outward from the housing. While the text of Butler does not state the angle of the foregrips with respect to the vertical axis, because they are "straight" and "extend generally radially," a POSITA would understand them not to be measurably inclined from the vertical axis. While Butler states that the straight foregrips 330 "may be provided with joints or pivots to allow them to be articulated into more desirable positions," Butler does not show any specific angles at which the straight foregrips are oriented with respect to the vertical axis.

To make up for a lack of disclosure in Butler and to attempt to "measure" an incline, Petitioners clip the straight foregrips of Figure 3 (which is a three-dimensional "perspective view"), rotate them, and paste them into a rotated Figure 5 (which is a "cut away side view"). As discussed above, measuring figures without textual support and taking the measurement as explicit disclosure is improper to begin with. *Hockerson-Halberstadt*, 222 F.3d at 956. Petitioners' "measurement" of the angle of the straight foregrips (reproduced below) is doubly meaningless because what Petitioners measured is the end result of Petitioners' own artistic

creation instead of Butler's disclosure. Indeed, as explained above, in the original perspective view of Figure 3, the disclosed foregrip are perpendicular to the longitudinal axis of the vacuum body and perpendicular to the vertical axis.

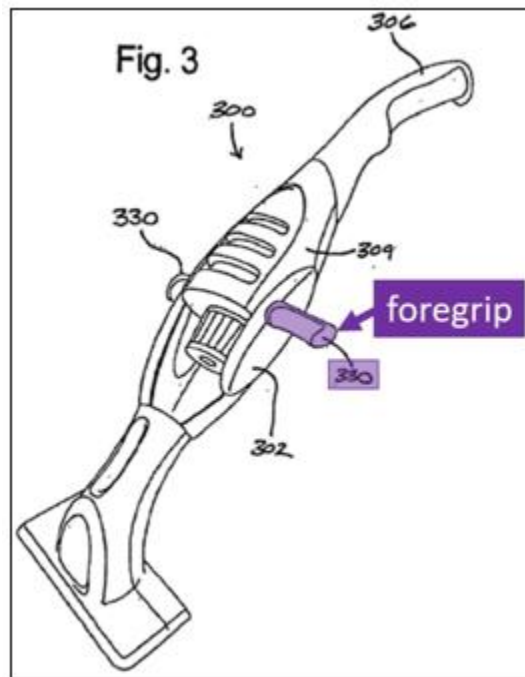


Pet., 30 (Ex1005, Fig. 5 modified by Petitioners with Fig. 3 foregrip and annotated).

It is improper to combine multiple embodiments (Figures 3 and 5 here) in an anticipation analysis to begin with, and Petitioners' arbitrary rotating of Figure 3's foregrip before plugging it into an arbitrary place only makes it worse. At most, Butler teaches that the foregrips disclosed in Figure 3 "may be provided with joints or pivots to allow them to be articulated into more desirable positions" (Ex1005, 19:26–28), but the teaching about joints and pivots is not disclosure that the foregrip is to be freely rotated and inserted arbitrarily as Petitioners have done here.

b. Butler's straight foregrips are not "provided on a sidewall at a rear portion of the hand vacuum cleaner body"

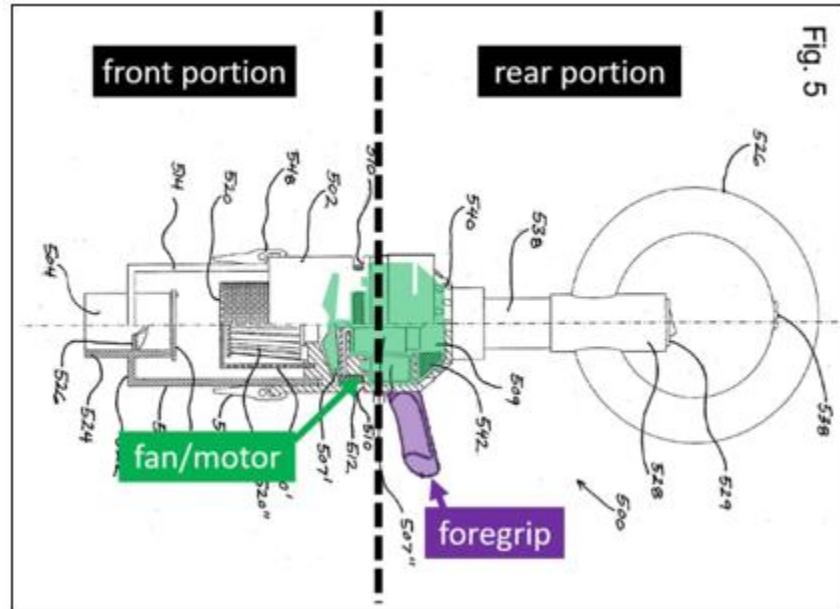
Petitioners also failed to show that the straight foregrips of Figure 3 are "provided . . . at a rear portion of the hand vacuum cleaner body." Notably, for this limitation, Petitioners do not rely on Figure 3 at all, which (as reproduced below) clearly shows foregrips 330 at the *center* of the vacuum cleaner body. Indeed, Butler states with respect to Figure 3 that straight grips 330 are "at a location adjacent or just forward of the fan/motor chamber 309." Ex1005, 19:18–22.



Pet., 16 (Ex1005, Fig. 3 annotated by Petitioners).

Instead of relying on Figure 3 (the actual disclosure of straight foregrips 330), Petitioners rely on a combination of Figures 3 and 5, and arbitrarily insert the straight foregrips towards the rear of the vacuum body. Not only is this not where the

foregrips are located in Figure 3, it is expressly contrary to the teachings of the Figure 3 embodiment. See Ex1005, 19:18–22.

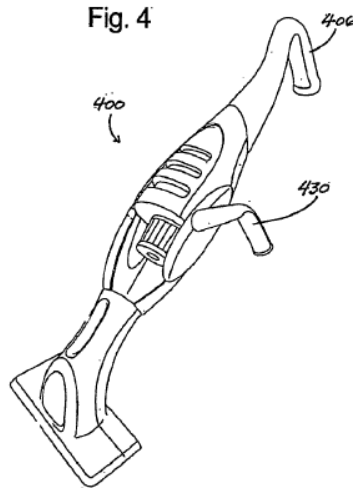


Pet., 38 (Ex1005, Fig. 5 modified by Petitioners with Fig. 3 foregrip and annotated).

Thus, Butler's straight foregrips embodiment fails to meet the "handle" limitations of claim 1 of the '661 Patent.

3. Butler's pistol grips do not meet the "handle" limitations

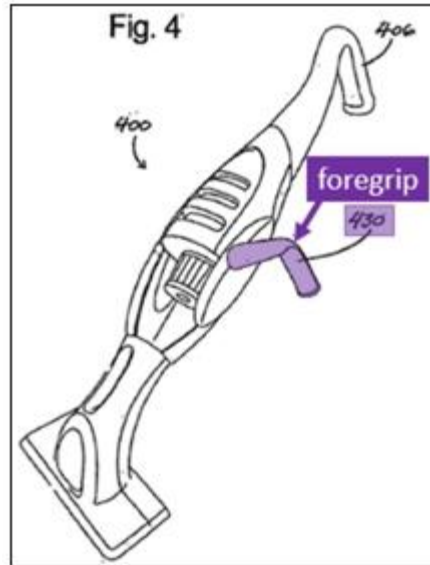
A third embodiment of Butler (reproduced below) includes "pistol-grip style foregrips 430 (only one of which is visible)." Ex1005, 19:22–24.



Id., Fig. 4. This embodiment too fails to meet all of the “handle”-related limitations.

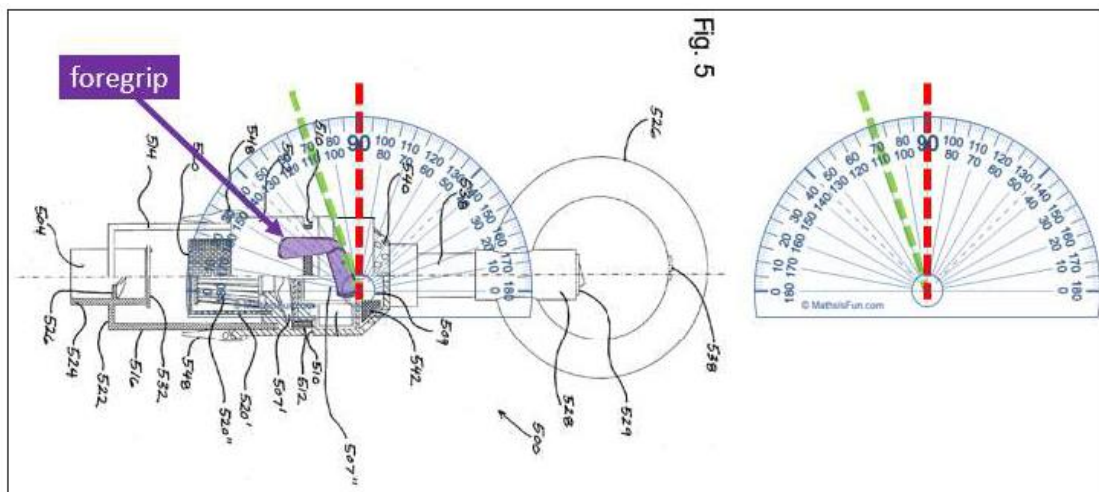
- a. **Butler’s straight foregrips are not “inclined forwardly at an angle that is between 10 and 80 degrees from a vertical axis”**

Petitioners failed to show that the pistol grips of Butler are “inclined forwardly at an angle that is between 10 and 80 degrees from a vertical axis.” As explained above, Figure 4 discloses a pistol-grip shaped foregrip. But from the perspective view of Figure 4 (reproduced below), the foregrip has a grip portion that is generally vertical (if the vacuum cleaner was positioned on a horizontal surface), as well as an upper portion that is generally horizontal. Again, at very least, no text suggests or discloses that either portion of the elbow-shaped foregrip is inclined in any way with respect to a vertical axis.



Pet., 16 (Ex1005, Fig. 4 annotated by Petitioners).

For this limitation, Petitioners again improperly combine multiple embodiments without justification. Only after extracting the pistol grips from a perspective view, arbitrarily rotating them, and placing them into a cross-sectional view do Petitioners attempt to “measure” the angle of the pistol grips.



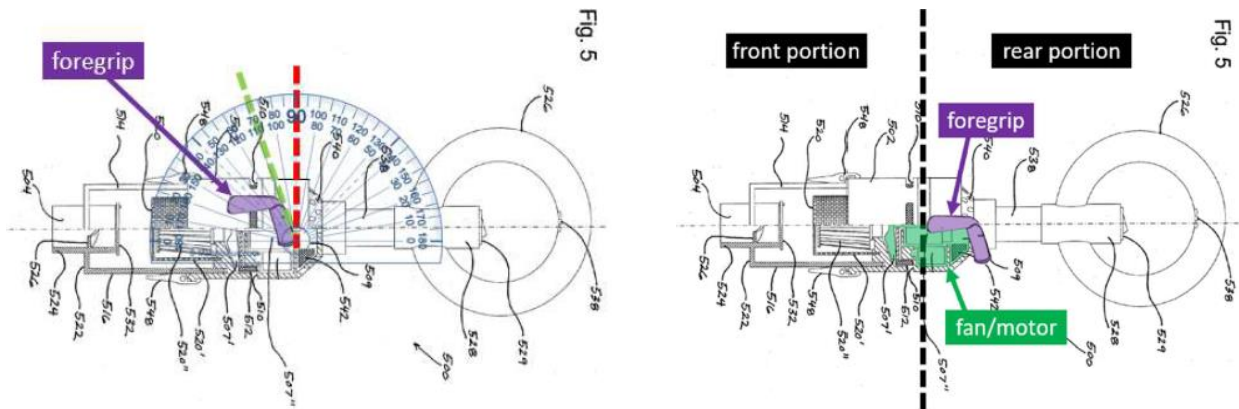
Pet., 30 (Ex1005, Fig. 5 modified by Petitioners with Fig. 4 foregrip and annotated).

It is improper to combine multiple embodiments (Figures 4 and 5 here) in an

anticipation analysis to begin with, and Petitioners cannot show any teaching or suggestion from Butler that the foregrip of Fig. 4 can be freely rotated and inserted into Fig. 5 as proposed. It is doubly improper to measure figures without textual support and taking the measurement as explicit disclosure as discussed above. Triply improper is that Petitioners measured their own artistic creation instead of Butler's disclosure.

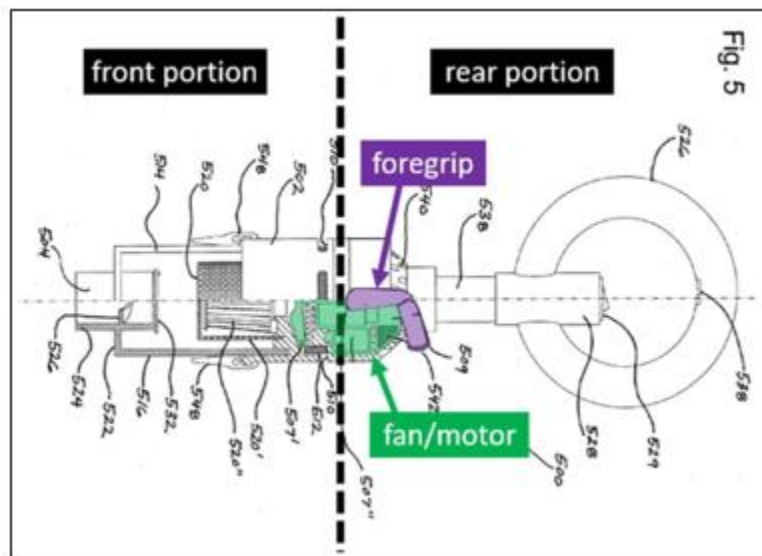
b. Butler's pistol grips are not "provided on a sidewall at a rear portion of the hand vacuum cleaner body"

Petitioners also failed to show that the pistol grips of Figure 4 are "provided . . . at a rear portion of the hand vacuum cleaner body." For this limitation, Petitioners do not rely on Figure 4 at all. Instead, Petitioners improperly rotate and insert these foregrips into Figure 5 without any textual support, as discussed above. Notably, in the modified for this limitation, Petitioners place the pistol grips at a *different* position than they do for the figure for element [1d] for purportedly measuring the angle of the pistol grips (*i.e.*, they are more forward in the annotated figure from page 30 of the Petition than they are in the figure from page 38 of the Petition).



Compare Pet., 30 (element [1d]), with Pet., 38 (element [1e]).

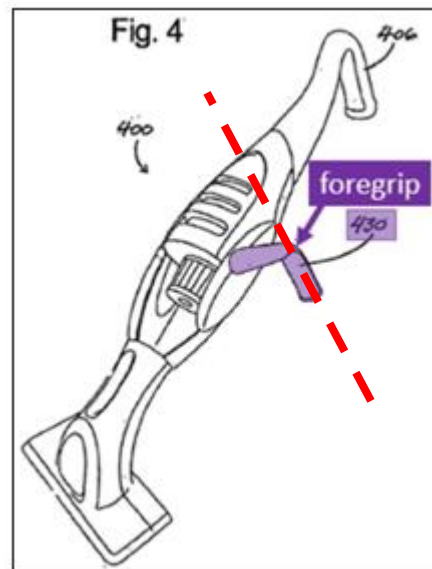
Furthermore, even with the arbitrary and free insertion, Petitioners yet again had to assign a large majority of the length of the combined figure to be the “rear portion” to try to cover the actual claim language.



Pet. 38 (Ex1005, Fig. 5 modified by Petitioners with Fig. 4 foregrip and annotated, and drawing a majority of the length to be “rear portion”).

c. Butler's pistol grips do not have a "handle axis that intersects the suction motor"

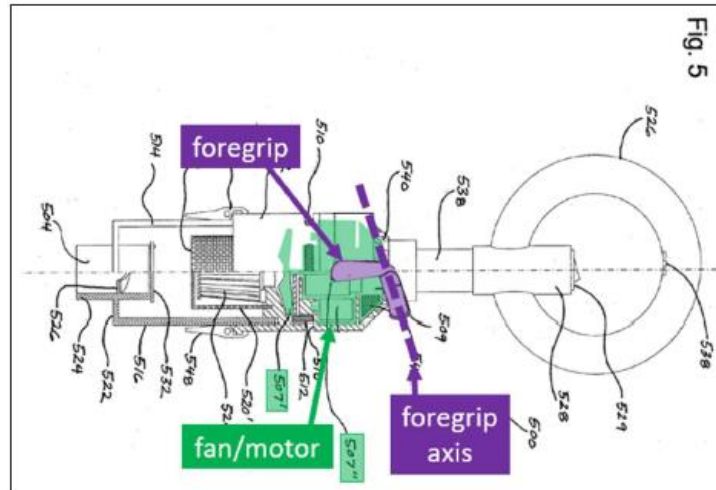
Element [1f] requires that "the handle has a handle axis that intersects the suction motor." Petitioners failed to show that the pistol grips of Figure 4 have an axis that intersects the suction motor. To the contrary, the handles of the pistol grips of Figure 4 (reproduced below) are generally vertical. That is, the hand grip portion of the handle is laterally space from the motor housing, such that its axis is also laterally spaced from the motor housing. Thus, the axes of the grips *do not* intersect the suction motor in the body of the vacuum cleaner.



Pet. 16 (Ex1005, Fig. 4 with purple annotation by Petitioners; red line by Patent Owner).

Petitioners provide the annotated image below, yet they do not explain how the purple annotated axis would intersect the suction motor. It does not. As explained above, the grip portion of the pistol grip laterally spaced from the housing

and is generally vertical, such that its axis extends up and down without intersecting any portion of the body of the vacuum cleaner.



Pet., 42 (Ex1005, Fig. 5 annotated by Petitioners).

Thus, Butler's pistol-grip embodiment fails to meet the "handle" limitations of claim 1 of the '661 Patent.

Because no embodiment of Butler discloses all claim limitations, Petitioners have failed to demonstrate a reasonable likelihood of success on any claim in Ground 1.

B. Petitioners Failed to Show that Butler Renders Obvious Challenged Claims 1–16 (Ground 2)

Tacitly acknowledging holes in its arguments based on Butler, Petitioners turn to the doctrine of obviousness to attempt to plug those holes. But Petitioners' arguments are driven by 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.”). In fact, in their obviousness arguments, Petitioners propose abandoning the specific two-handle structure of Butler (*i.e.*, a rear grip and a foregrip) and replacing them with a single pistol grip handle beneath the suction motor. As explained below, this proposed modification is inconsistent with every embodiment in Butler and directly contrary to the teachings and directions of Butler.

As discussed above, Butler fails to disclose any handle that meets all of the “handle”-related limitations of claim 1 of the '661 Patent. In an effort to move the foregrips around to better meet the claim limitations, Petitioners latch onto Butler's disclosure that the foregrip may be removable, pivotable, or slidable. Pet., 76–77.

But what Butler actually discloses is the following:

In either of these embodiments, it may be desirable to construct the foregrips 330, 430 such that they can be removed and inserted in various different locations on the housing. The foregrips 330, 430 also may be provided with joints or pivots to allow them to be articulated into more desirable positions.

Ex1005, 19:24–28. Thus, while there may be *some* flexibility in the placement of the foregrips of Butler, Butler does not teach that the foregrips can be inserted anywhere. Indeed, Butler immediately clarifies that “[w]hile the variations of Figures 3 and 4 do not allow unlimited hand positions on the foregrip, they still allow greater flexibility and control than grips on conventional vacuum cleaners.” Ex1005, 19:30–20:2. Thus, Petitioners are not free to move the foregrips anywhere they please in Butler under the guise of obviousness.

Petitioners argue that a “desirable position” for “foregrip[] 330” of Butler would have been underneath the suction motor. Pet., 77. In support of this argument, Petitioners show images of several prior art “hand vacuums having handles positioned directly underneath and/or adjacent the suction motor.” *Id.* Petitioners’ attempt to use this handle configuration in Butler is contrary to the teachings of Butler. Indeed, Butler contrasts its specific two-handle design from the prior art and, in doing so, disparages the design of a single handle beneath the center of gravity (which is exactly what Petitioners propose) as being “unstable”:

This prevents adverse situations often encountered in the prior art of upright and stick vacuums when users attempted to orient the inlets of such vacuums vertically. . . . When using these devices to clean vertical surfaces, the user was typically required to turn the device over and, if it was then possible, ***hold the provided grip with the center of gravity balanced above the user’s hand, typically leading to an unstable situation.***

Ex1005, 13:9–16 (emphasis added). Butler additionally teaches away from the “conventional single-grip design” because it “makes it difficult to address relatively high stairs,” which is against the very purpose of Butler’s vacuum. *Id.*, 25:23–27.

Petitioners’ proposed “benefits” of modifying the foregrip into a handle under the motor are all predicated on the handle being the sole handle of the vacuum cleaner body, as is the case in all “examples” of such handles. See Pet., 77–79. But, in no embodiment of Butler is there a single handle, let alone a single handle positioned *below* the body of the vacuum cleaner. To the contrary, the foregrip of Butler is intended as one of two handles working in conjunction with each other.

For example, the foregrip in Butler “is provided to provide a user with multiple hand positions around the perimeter of the housing.” Ex1005, 3:29–4:1. The embodiments of Butler are specifically designed to clean staircase surfaces, and advantageously, the foregrips are adapted to provide user to simultaneously grasp the rear grip and the one or more foregrips and clean staircase surfaces while remaining substantially upright. *Id.*, Abstract.

Butler explains that “[a]nother advantage of the present invention is that the user can apply a bending moment force to the vacuum cleaner housing 102 by pressing in opposite directions on the rear grip 106 and foregrip 130.” Ex1005, 12:17–24. With two handles, the user can “apply significant pressure between the inlet nozzle 104 and the surface being cleaned. Such pressure can be helpful to agitate the surface, scrub out deeply-embedded or clinging contaminants and dirt, remove entangled hair and fibers, and so on.” *Id.* Such advantages of Butler disappear if Butler’s dual-grip configuration is replaced with a single pistol grip, as argued.

Petitioners’ analysis completely ignores the context that the foregrip is designed to be held simultaneously as the rear grip and provide maneuverability specifically designed for staircase cleaning. Petitioners did not identify any reason to abandon the two-handle configuration as disclosed in Butler and to adapt a single pistol grip as proposed. Instead, if a POSITA would have to find a “desirable”

position for the foregrip, the POSITA would have spaced the foregrip and rear grip on the two sides of the center of gravity for better handling and maneuverability, instead of placing the foregrip near the motor. Because Butler teaches away and, indeed, disparages a single handle configured as proposed by Petitioners, and because a single handle would eliminate the numerous advantages of the dual foregrips espoused by Butler, a POSITA would *not* have been motivated to modify Butler as proposed by Petitioners. Ex1005, 13:9–16, 25:23–27.

Further, for this Ground, Petitioners do not cite a single reference (either as part of a combination with Butler or as a background reference) showing a handle inclined with the vertical axis at an angle between 10 and 80 degrees. 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 the incline of the handle, and Petitioners do not cite to any such details known in the art, Petitioners resort to improperly filling in these holes in Butler with improper hindsight.

As such, Petitioners failed to demonstrate a reasonable likelihood of success on any claim in Ground 2.

C. Petitioners Failed to Show that Martelliere in View of Tsukuji Renders Obvious Challenged Claims 1–5, 7–12, and 15–16 (Ground 3)

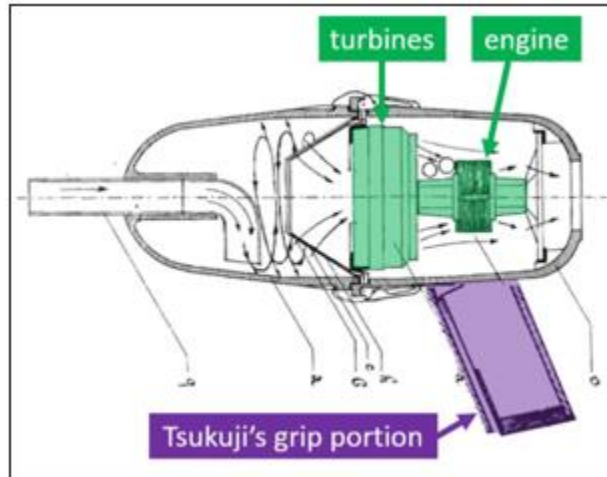
For Ground 3, Petitioners propose a combination of Martelliere (which discloses the separator of a “broom type” vacuum and does not disclose a handle at all) and Tsukuji (which discloses a small “desktop electric vacuum cleaner with the overall shape of a gun”). But this combination is in direct contradiction to the teachings of both references and ignores the differences in sizes and form factors of the references. Petitioners failed to establish that a POSITA would have been motivated to combine these two references to achieve the claimed invention.

For example, Petitioners provide conclusory statements about simple substitution and alleged advantages of modifying Martelliere based on Tsukuji’s disclosure without providing any explanation for such conclusory statements. For example, Petitioners claim that a POSITA “would have been motivated to modify Martelliere to achieve the benefits of Tsukuji’s handle” and “would have been motivated to modify Tsukuji to achieve the benefits of Martelliere’s cyclonic-separation system.” Pet., 83. The Board need not give any weight to Petitioners’ conclusory arguments on motivations to combine Martelliere and Tsukuji.

Even if Petitioners’ rationales to combine Martelliere and Tsukuji are substantively considered, Petitioners did not meet their burden of showing a motivation to combine the references. To the contrary, as explained below, a

POSITA would *not* have been motivated to combine the teachings of Martelliere and Tsukuji. A petitioner must show “whether there was an apparent reason to combine the known elements in the fashion claimed by the patents at issue.” *KSR Int’l*, 550 U.S. at 420 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Petitioners failed to do so here.

Martelliere and Tsukuji are directed to vastly different sizes and form factors. Martelliere discloses a separator for a broom vacuum. Ex1009, 1 (“The attached drawing gives all the information on the circuit imposed on the dust jet sucked up in a broom type vacuum cleaner model”). On the other hand, Tsukuji discloses a “small” desktop vacuum cleaner. Ex1007, 2 (“The present invention relates to a small electric vacuum cleaner with an overall gun shape used, for example, to remove pencil shavings from a desktop or dust from the interior of small electronic devices.”). Petitioners provide an illustration of what the combination would allegedly look like (reproduced below), but this illustration gravely misrepresents the relative size of the handle relative to the vacuum body:



Pet., 85 (Ex1009, Fig. 1 modified and annotated by Petitioners to show the proposed combination of Martelliere and Tsukiji.

For perspective, this is a typical size of a broom vacuum:

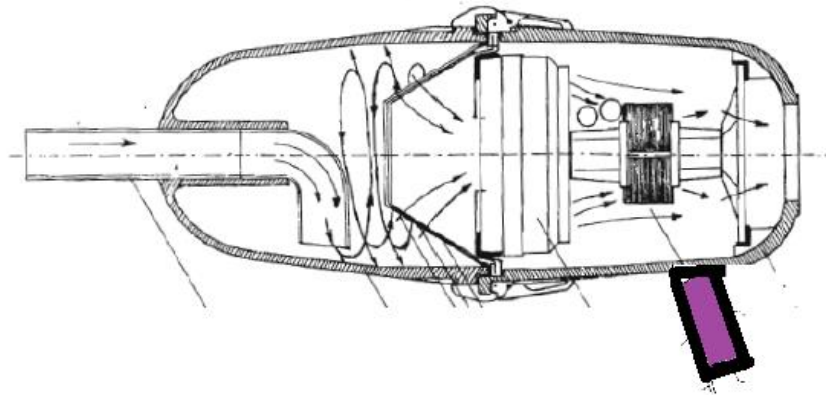


And, by contrast, this is a typical size of a desktop vacuum:

² <https://www.homedepot.com/p/Dirt-Devil-Broom-Vac-Bagless-Cordless-Replaceable-Filter-Lightweight-Hard-Floor-Vacuum-Cleaner-Wall-Mount-and-Charger-Included-BD45000V/328418781> (last accessed Nov. 12, 2024).



Thus, a combination of Martellier's broom vacuum and Tsukuji's desktop vacuum would—at best—look more like this:



Ex1009, Fig. 1 (modified to show the proportion of the handle according to Tsukuji). This combination is unwieldy, unbalanced, and practically inoperable. Furthermore, this combination assumes that a POSITA would have been motivated to position the handle so its axis intersects the suction motor, which is not a given. A broom vacuum, as Martelliere is, generally has a handle parallel to the longitudinal

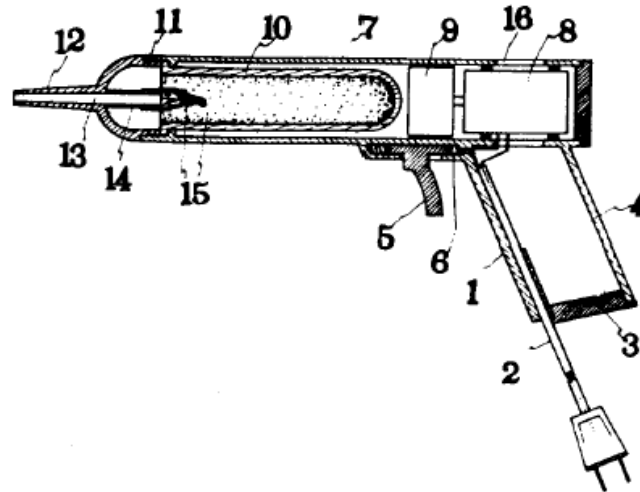
³ <https://www.amazon.com/Keyboard-Powerful-Rechargeable-Cordless-Vacuum-Cleaner/dp/B07BQRHF89> (last accessed Nov. 12, 2024).

axis of the separator (*e.g.*, extending from the end opposite the suction nozzle). Petitioners provide no explanation as to how or why a POSITA would have been motivated to make such a combination of different form factors and sizes, and to position the handle exactly as it did on a broom vacuum.

Furthermore, looking at the combination from the other direction, Petitioners do not provide any explanation of how a POSITA could have modified Tsukuji's separation filter to include Martellier's cyclonic separator, which is larger in diameter, heavier in weight, and longer in length than the original vacuum body according to Tsukuji. Petitioners did not identify any teachings of a thin cyclonic separator commensurate in size with Tsukuji's intended use of a desktop vacuum.

More importantly, both Martelliere and Tsukuji teach away from the proposed combination, including because the handle of Tsukuji and the separator of Martelliere are intended to be used in contradictory orientations. Martelliere's separator is intended to be used in a vertical or near vertical orientation. The broom type vacuum is one "where the device is held vertically or slightly inclined." Ex1009, 1. On the other hand, the handle of Tsukuji is intended to hold the body in a horizontal orientation. Tsukuji teaches that "reverse flow of dust and debris" toward the intake tube is a concern, and the handle is specifically provided to address that concern. Ex1007, 4–5. More specifically, "the present invention provides a vacuum cleaner with the overall shape of a gun, in which the grip can be **reliably**

grasped, the device used **in a relatively fixed orientation**. Because a grip portion is provided, **the device does not move much**, and a reverse flow preventing effect is achieved.” *Id.*, 5 (emphases added). Tsukuji’s only figure shows a fixed, horizontal orientation:



Ex1007, Fig. 1.

It is clear therefore that Martelliere requires its separator body to be in a vertical orientation, while Tsukuji’s handle keeps its separator body in a horizontal orientation. Petitioners’ proposed combination has Tsukuji’s handle in a perpendicular orientation with respect to Martelliere’s separator body, and therefore this combination is in direct contradiction to the teachings of either Martelliere or Tsukuji. The announced “benefits” of either Martelliere or Tsukuji cannot be achieved with this combination. Accordingly, the teachings of Martelliere and Tsukuji teach away from this combination proposed by Petitioners.

In view of this apparent contradiction, each of Petitioners' alleged rationales for combining Martelliere and Tsukuji are merely conclusory statements with no explanation for why the combination is a simple substitution, why the advantages of the alleged benefits of Tsukuji's handle apply to Martelliere, or why the alleged benefits of Martelliere's cyclonic separator apply to Tsukuji.

To support these alleged rationales, Petitioners cite the Declaration of Mr. Giachetti (Ex1002). However, these paragraphs also merely make conclusory statements about simple substitution and alleged advantages without providing any explanation for such conclusory statements. For example, neither Petitioners nor Mr. Giachetti address why a POSITA, reading Martelliere—which is explicitly disclosed to be a broom type vacuum without need for an additional handle to the preexisting broomstick—would have been motivated to implement an entirely additional feature such as a handle as taught by Tsukuji.

Thus, Petitioners have not met their burden of showing that the Challenged Claims were obvious in view of Martelliere in combination with Tsukuji under Ground 3.

D. Petitioners Failed to Show that Martelliere in View of Tsukuji and Wenjie Renders Obvious Challenged Claims 6, 13, and 14 (Ground 4)

As explained above, Martelliere in view of Tsukuji fails to render obvious independent claim 1. Petitioners do not rely on Wenjie to cure any of the defects

with respect to claim 1. Thus, the Martelliere, Tsukuji, and Wenjie combination fails to render obvious dependent claims 6, 13, and 14, which depend on independent claim 1. As such, Petitioners have failed to demonstrate a reasonable likelihood of success on any claim in 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.

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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 6,458, according to the word count tool in Microsoft Word.

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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 November 19, 2024, to the following email addresses of record:

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