

Petition for *Inter Partes* Review of U.S. Patent No. 11,389,038

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

PETITION FOR *INTER PARTES* REVIEW

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	STANDING (§42.104(a)).....	1
III.	RELIEF REQUESTED (§42.104(b))	2
IV.	OVERVIEW OF THE '038 Patent	3
A.	The Specification.....	3
B.	The Prosecution History	4
V.	OVERVIEW OF PRIOR ART.....	4
A.	Butler	4
B.	Lehmann.....	5
C.	Neroni	6
D.	Peng	7
VI.	LEVEL OF ORDINARY SKILL IN THE ART	9
VII.	CLAIM CONSTRUCTION.....	9
VIII.	THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	9
A.	Ground 1: Butler Renders Claims 1-15 Obvious	9
1.	[1]	9
2.	[2]/[5]	48
3.	[3]	50
4.	[4]	53
5.	[6]/[7]	55
6.	[8]/[9]	57
7.	[10]	58

8.	[11]	60
9.	[12]	62
10.	[13]	63
11.	[14]	64
12.	[15]	65
B.	Ground 2: Butler in Combination With Peng Renders Claims 1-15 Obvious	65
1.	Peng Teaches A Second Cyclone Stage That A POSA Would Have Been Motivated To Incorporate Into Butler (Limitation [1c.iii])	66
C.	Ground 3: Lehmann In Combination With Peng Renders Claims 1-15 Obvious	72
1.	Motivation to Combine Lehmann and Peng	72
2.	[1]	79
3.	[2]/[5]	99
4.	[3]	100
5.	[4]	100
6.	[6]/[7]	101
7.	[8]/[9]	102
8.	[10]	103
9.	[11]	104
10.	[13]	105
11.	[14]	106
12.	[15]	106

D.	Ground 4: Lehmann In Combination With Peng and Neroni Renders Claim 12 Obvious	107
1.	Neroni Teaches A Surface Cleaning Apparatus With A Releasably Engageable Electrical Connector That A POSA Would Have Been Motivated To Incorporate Into Lehmann (Claim 12)	107
IX.	DISCRETIONARY FACTORS FAVOR INSTITUTION	111
A.	§314(a)	111
B.	§325(d)	115
X.	Secondary Considerations	115
XI.	MANDATORY NOTICES UNDER 37 C.F.R. §42.8	115
A.	Real Parties-in-Interest	115
B.	Related Matters	115
C.	Lead and Backup Counsel, Service, and Power of Attorney	115
XII.	PAYMENT OF FEES UNDER 37 C.F.R. §42.103	116

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH,</i> IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020).....	115
<i>Apple Inc. v. Fintiv, Inc.,</i> IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020).....	111, 112, 113
<i>Dish Network v. Broadband iTV,</i> IPR2020-01280, Paper 17 (PTAB Feb. 4, 2021).....	112, 113
<i>Fusion Orthopedics, LLC v. Extremity Medical, LLC,</i> IPR2023-00894, Paper 15 (PTAB Nov. 17, 2023).....	114
<i>General Plastics Indus. Co., Ltd. v. Canon Kabushiki Kaisha,</i> IPR2016-01357, Paper 19 (PTAB Sept. 6, 2017).....	114
<i>iRobot Corp. v. SharkNinja Operating LLC et al.,</i> 19-cv-12125 (D. Mass.).....	113
<i>Samsung Electronics Co., Ltd. et al v. Staton Techiya, LLC,</i> IPR2022-00302, Paper 13.....	113
<i>SharkNinja Operating LLC v. Dyson, Inc.,</i> No. 1:23-cv-12372 (D. Mass.).....	<i>passim</i>
<i>SharkNinja Operating LLC v. Dyson, Inc.,</i> No. 1:23-cv-12372, Dkt. 58-1 (D. Mass.).....	115
<i>TSMC Ltd. v. Alidouble, Inc.,</i> IPR2023-00372, Paper 7 (PTAB July 13, 2023).....	112
<i>Wellman, Inc. v. Eastman Chem. Co.,</i> 642 F.3d 1355 (Fed. Cir. 2011)	9
Statutes	
35 U.S.C. §311	2

Other Authorities

37 C.F.R. §42.8(A)(1).....	115
37 C.F.R. §42.10(b)	116
37 C.F.R. §42.100(b)	9
37 C.F.R. §42.103	116

LIST OF EXHIBITS

Exhibit No.	Description
Ex1001	U.S. Patent No. 11,389,038 (“’038 Patent”)
Ex1002	Declaration of Robert Giachetti
Ex1003	<i>Curriculum Vitae</i> of Robert Giachetti
Ex1004	File History of U.S. 11,389,038 (App. No. 16/590, 972)
Ex1005	PCT Publication No. 2007/084543 to Butler et al. (“Butler”)
Ex1006	U.K. Patent No. GB194,963 to Lehmann (“Lehmann”)
Ex1007	U.S. Patent No. 4,473,923 to Neroni et al. (“Neroni”)
Ex1008	C.N. Patent No. CN 201958793 to Peng (“PengCN”)
Ex1009	Certified English Translation of CN 201958793 to Peng (“Peng”)
Ex1010	U.S. Publication No. 2007/0209335 to Conrad (“Conrad”)
Ex1011	French Patent No. 1,094,603 to Martelliere (“MartelliereFR”)
Ex1012	Certified English translation of French Patent No. 1,094,603 to Martelliere (“Martelliere”)
Ex1013	WO02/067753 to Vuijk (“Vuijk”)
Ex1014	Plaintiffs’ Infringement Contentions in <i>SharkNinja Operating LLC v. Dyson, Inc.</i> , No. 1:23-cv-12372 (D. Mass.)
Ex1015	U.S. Patent No. 7,828,866 to Courtney (“Courtney”)
Ex1016	WO 2014/174248A1 to Brook (“Brook”)
Ex1017	U.S. Publication No. 2006/0026788 to Fischer (“Fischer”)
Ex1018	Plaintiffs’ Infringement Contentions in <i>SharkNinja Operating LLC v. Dyson, Inc.</i> , No. 1:23-cv-12372 (D. Mass.), ’038 Infringement Contentions Ex. A-5

Petition for *Inter Partes* Review of U.S. Patent No. 11,389,038

Ex1019	Swiss Patent No. CH203,675 to Peter (“PeterCH”)
Ex1020	Certified English translation of Swiss Patent No. CH203,675 to Peter (“Peter”)
Ex1021	U.S. Patent No. 6,607,572 to Gammack et al. (“Gammack”)
Ex1022	U.S. Patent No. 9,402,516 to Pilch (“Pilch”)
Ex1023	U.S. Patent No. 3,226,758 to Brown (“Brown”)
Ex1024	National Judicial Caseload Profile https://www.uscourts.gov/sites/default/files/data_tables/fcms_na_distprofile1231.2023.pdf
Ex1025	The Parties’ Revised Proposed Schedule in <i>SharkNinja Operating LLC v. Dyson, Inc.</i> , No. 1:23-cv-12372 (D. Mass.)
Ex1026	Petitioners’ Stipulation
Ex1027	U.S. Patent No. 3,425,192 to Davis (“Davis”)
Ex1028	U.S. Patent No. 7,867,307 to Bates et al. (“Bates”)
Ex1029	U.S. Patent No. 8,051,531 to Brough et al. (“Brough”)
Ex1030	European Patent Specification No. EP1268076 B1 to Gammack (Gammack EP”)

LIST OF CHALLENGED CLAIMS

Reference Number	Claim Limitation
Claim 1	
[1pre]	A surface cleaning apparatus comprising:
[1a]	a surface cleaning head having a front end, a rear end, a dirt air inlet and a cleaning head air outlet;
[1b.1]	a rigid air flow conduit having a rigid wand inlet end having an air inlet in communicable with the cleaning head air outlet, a rigid wand outlet end and a longitudinally extending conduit axis,
[1b.2]	the rigid air flow conduit is moveably mountable to the surface cleaning head between an upper position and an in-use floor cleaning position in which the rigid air flow conduit extends at an angle to the vertical,
[1b.3]	the rigid wand outlet end having an air outlet; and,
[1c]	a hand vacuum cleaner removably mountable to the rigid wand outlet end, the hand vacuum cleaner having a front end, a rear end, an upper end, a lower end and a hand vacuum cleaner air inlet, the hand vacuum cleaner comprising:
[1c.i]	a main body comprising a handle and a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation,
[1c.i.1]	the handle having a hand grip portion, a first handle portion and a second handle portion, the first handle portion is mounted to the main body at the location of the suction motor and fan assembly;
[1c.ii]	a first cyclonic stage provided at the front end of the hand vacuum cleaner, the first cyclonic stage having a front end, a rear end and a cyclone axis of rotation extends between the front and rear ends of the first cyclonic stage; and,
[1c.iii]	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,
[1c.iii.1]	wherein the suction motor is positioned rearward of the first cyclonic stage,
[1c.iii.2]	and wherein, when the hand vacuum cleaner is mounted to the rigid wand outlet end, handle is drivingly connected to the surface cleaning head.

Reference Number	Claim Limitation
Claim 2	
[2]	The surface cleaning apparatus of claim 1 wherein the suction motor and fan assembly axis of rotation intersects the handle.
Claim 3	
[3]	The surface cleaning apparatus of claim 1 further comprising a finger receiving area positioned between the handle and the main body and a first portion of the finger receiving area is positioned rearward of the suction motor.
Claim 4	
[4]	The surface cleaning apparatus of claim 3 wherein a second portion of the finger receiving area is positioned above an upper end of the main body.
Claim 5	
[5]	The surface cleaning apparatus of claim 3 wherein the suction motor and fan assembly axis of rotation intersects the handle.
Claim 6	
[6]	The surface cleaning apparatus of claim 5 wherein when the hand vacuum cleaner is oriented such that the cyclone axis of rotation extends horizontally and the upper end of the hand vacuum cleaner above the lower end of the hand vacuum cleaner, the second handle portion is positioned above the suction motor.
Claim 7	
[7]	The surface cleaning apparatus of claim 1 wherein when the hand vacuum cleaner is oriented such that the cyclone axis of rotation extends horizontally and the upper end of the hand vacuum cleaner above the lower end of the hand vacuum cleaner, the second handle portion is positioned above the suction motor.
Claim 8	
[8]	The surface cleaning apparatus of claim 6 wherein the first portion of the handle is mounted to a rear end of the main body.
Claim 9	
[9]	The surface cleaning apparatus of claim 1 wherein the first portion of the handle is mounted to a rear end of the main body.
Claim 10	

Reference Number	Claim Limitation
[10]	The surface cleaning apparatus of claim 1 wherein the handle is also attached to a sidewall of the main body.
Claim 11	
[11]	The surface cleaning apparatus of claim 1 wherein handle is attached to the main body at two locations.
Claim 12	
[12]	The surface cleaning apparatus of claim 1 wherein the rigid wand outlet end has an outlet end electrical connector, the hand vacuum cleaner further comprises a hand vacuum cleaner electrical connector provided adjacent the hand vacuum cleaner air inlet, and the hand vacuum cleaner electrical connector is releaseably engageable with the outlet end electrical connector.
Claim 13	
[13]	The surface cleaning apparatus of claim 1 wherein when the hand vacuum cleaner is mounted to the rigid wand outlet end, the longitudinally extending conduit axis extends in a same direction as the suction motor axis of rotation.
Claim 14	
[14]	The surface cleaning apparatus of claim 1 wherein the front end of the second cyclonic stage is rearward of the rear end of the first cyclonic stage.
Claim 15	
[15]	The surface cleaning apparatus of claim 1 wherein the front face has the hand vacuum cleaner air inlet.

I. INTRODUCTION

The '038 Patent “relates to the field of surface cleaning apparatus[es],” and, specifically, to a hand/stick vacuum cleaner configuration. Ex1001, 1:18-22.

The '038 Patent identifies “limited dirt collection capacity” as a problem with existing hand vacuums and purports to solve this with a “supplemental bin” to “provide enhanced dirt collection capacity.” Ex1001, 1:36-37, 1:47-53. However, its claims do not relate to dirt collection capacity, but instead cobble together well-known configurations and features of vacuum cleaners, none of which purport to solve any problem or provide any technical benefit. That is because Patent Owner (“PO”) wrote its claims not to solve a technical problem, but in a failed attempt to read on Petitioners’ products accused in co-pending district court litigation. *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-cv-12372 (D. Mass.).

PO’s mish-mash of claimed configurations are nothing more than well-known arrangements of standard vacuum components such as suction motors, cyclones, and handles. The prior art in this Petition—none of which was before the Examiner—renders obvious each and every claim.

II. STANDING (§42.104(A))

Petitioners certify that the '038 Patent is available for IPR, and that Petitioners are not barred or estopped from requesting IPR to challenge the claims on the grounds herein.

III. RELIEF REQUESTED (§42.104(B))

Petitioners respectfully request review and cancellation under 35 U.S.C. §311 of claims 1-15 as follows¹:

Prior Art
PCT Publication No. 2007/084543 (“Butler”); published July 26, 2007; prior art under AIA 102(a)(1), 102(a)(2).
G.B. 194963A (“Lehmann”); published March 22, 1923; prior art under AIA 102(a)(1), 102(a)(2).
U.S. Patent No. 4,473,923 (“Neroni”); published October 2, 1984; prior art under AIA 102(a)(1), 102(a)(2).
CN 201958793U (“Peng”); published September 7, 2011; prior art under AIA 102(a)(1), 102(a)(2).

Grounds	Claim(s)	Basis
1	1-15	§103; Butler
2	1-15	§103; Butler and Peng
3	1-11 and 13-15	§103; Lehmann and Peng

¹ Petitioners do not concede that any claims satisfy other requirements for patentability that cannot be raised in IPR, including §§101 and 112.

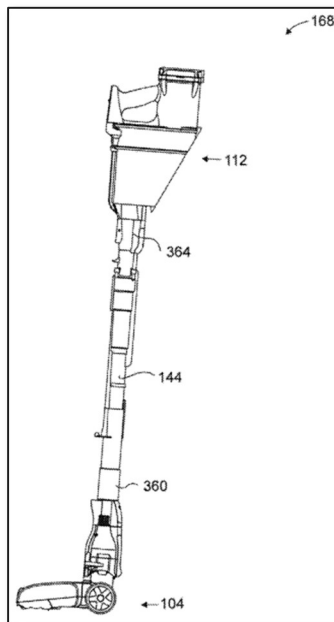
Grounds	Claim(s)	Basis
4	12	§103; Lehmann, Peng and Neroni

IV. OVERVIEW OF THE '038 PATENT

The '038 Patent, titled “Surface Cleaning Apparatus,” issued from U.S. Application No. 16/590,972, filed October 2, 2019 and claims priority to a U.S. provisional application filed December 17, 2014. Ex1001, Cover.

A. The Specification

The '038 Patent states that it “relates 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.” *Id.* at 1:18-20. Figure 41 illustrates one embodiment of the '038 Patent:



Ex1001, Fig. 41.

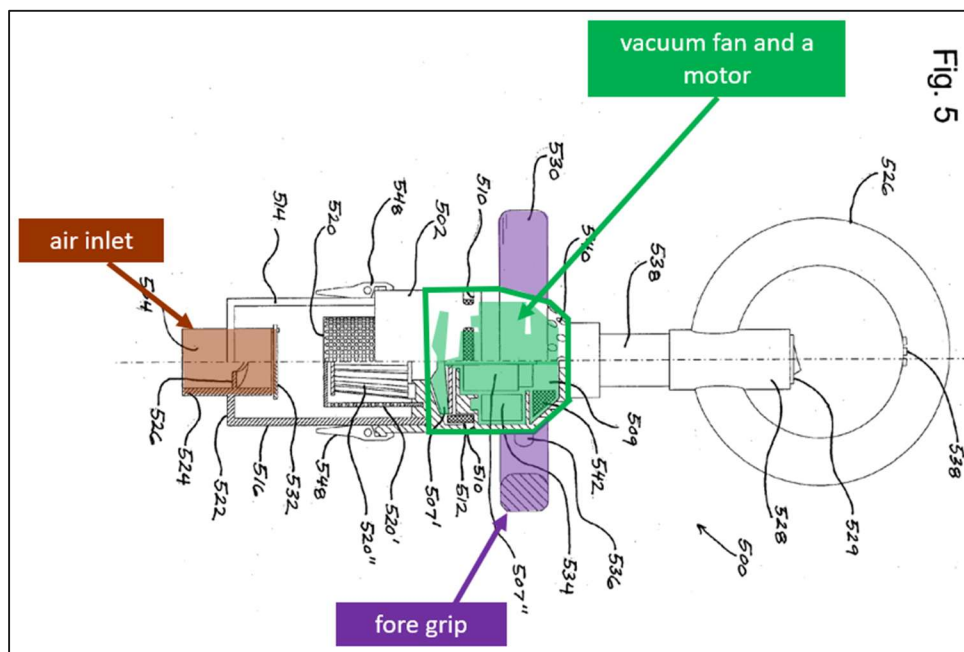
B. The Prosecution History

The pending claims were allowed without any rejections from the Examiner. Ex1004, 248-255 (Notice of Allowance). None of the art used in this Petition was before the Examiner in prosecution.

V. OVERVIEW OF PRIOR ART

A. Butler

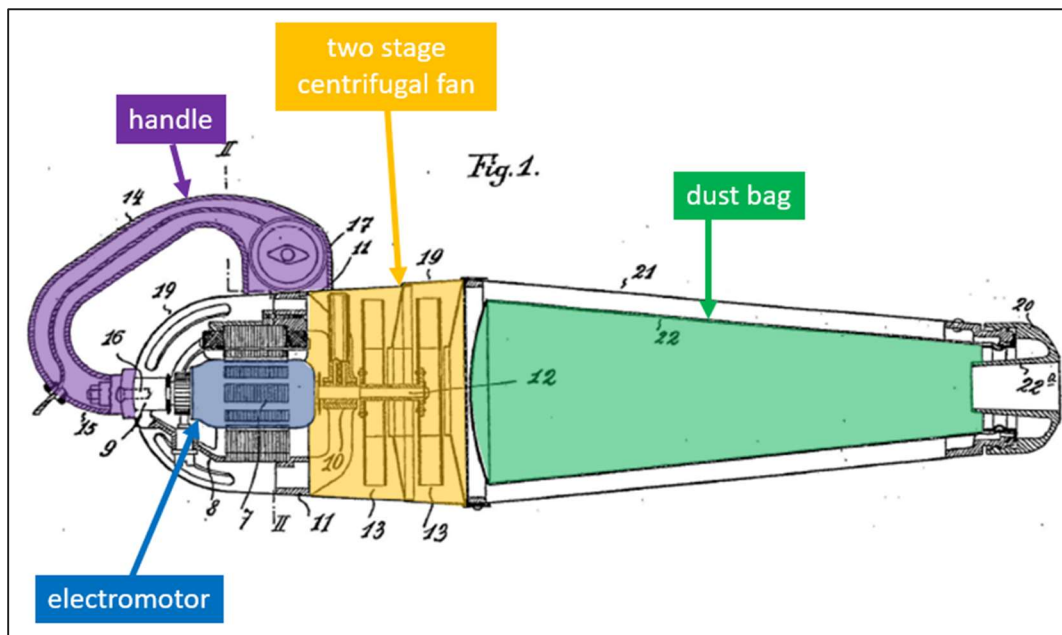
Butler is a 2007 PCT publication. Butler teaches “an improved vacuum cleaner for cleaning raised and vertical surfaces” wherein the cleaner comprises a “housing with a longitudinal axis,” “[a] **fore grip**,” “an **air inlet**” and “[a] **vacuum fan and a motor**” “adapted to remove particles from the working air flow”:



Ex1005 ¶10, Fig. 5². Butler further teaches various attachments that connect to the air inlet. *Id.* at 22:7-9; Ex1002 ¶¶56-60.

B. Lehmann

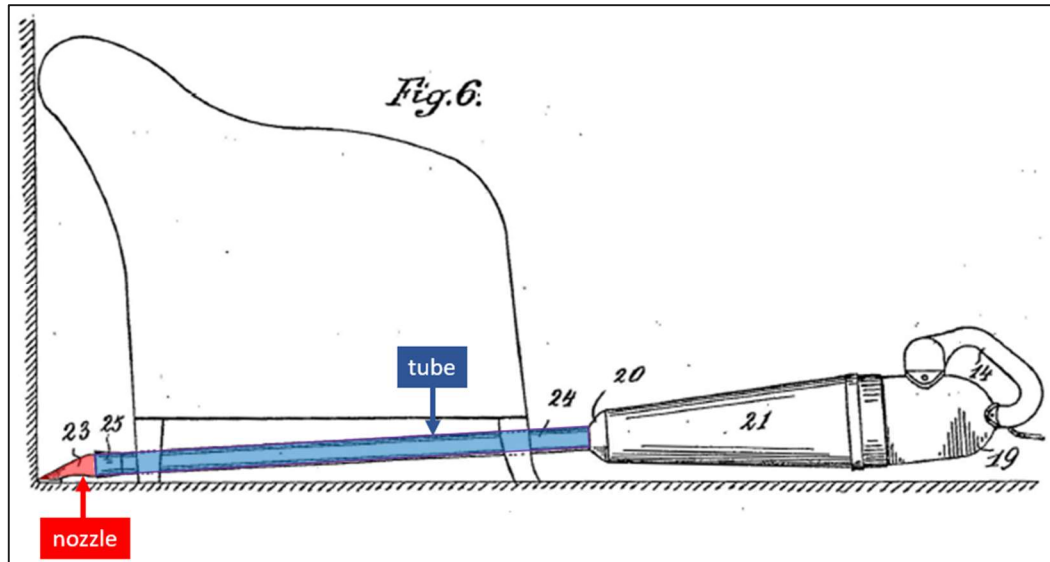
Lehmann is a published U.K. patent from 1922. Ex1006. Lehmann teaches a portable vacuum cleaner with an “**electromotor 7**,” a “**two stage centrifugal fan 13**,” and a “**dust bag 22**” arranged along the longitudinal axis, and an “**arched handle 14**.” Ex1006, Fig.1, 1:38-44, 1:63-73.



Ex1006, Fig.1, 1:38-44, 1:63-73, Claim 1. Ex1002 ¶¶65-66.

Lehmann teaches attachments, including “**nozzle 23**” and “**tube 24**”:

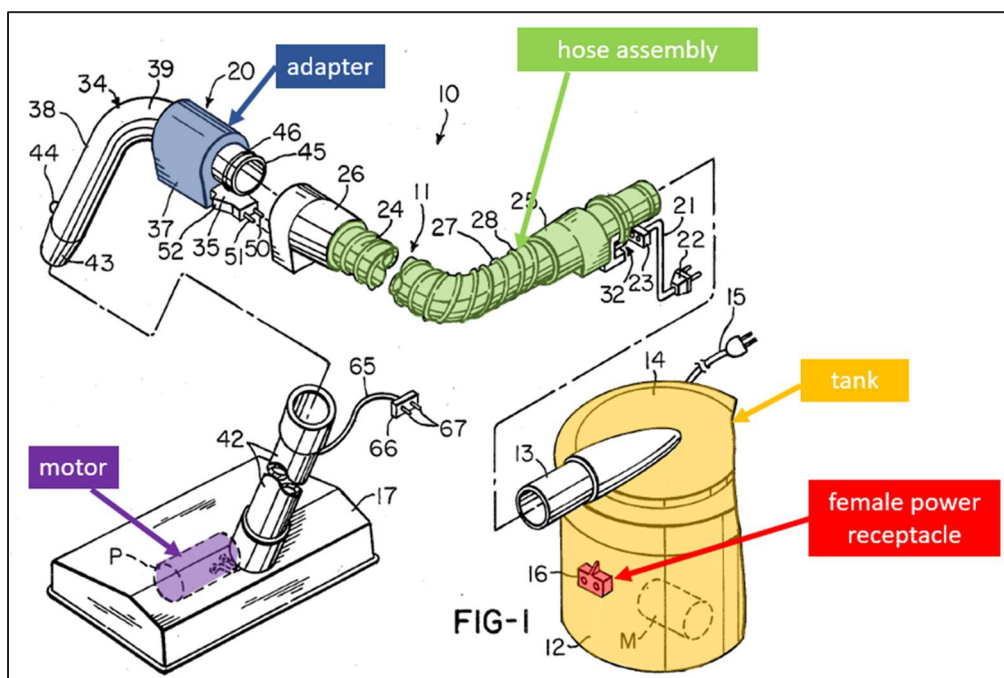
² All annotations added unless otherwise noted.



Ex1006, Fig. 5, Fig. 6, 2:7-24, 2:39-41.

C. Neroni

Neroni is a published U.S. Patent filed in 1982. Ex1007. It teaches “vacuum cleaning systems” that “provide electrical continuity” from a wall outlet through the vacuum and to a powered cleaning tool. *Id.*, Abstract, 1:66-2:2. Neroni has a “female power receptacle 16” on the outside surface of a tank 12. *Id.* at 3:34-36. “[R]eceptacle 16 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.* at 3:36-39.

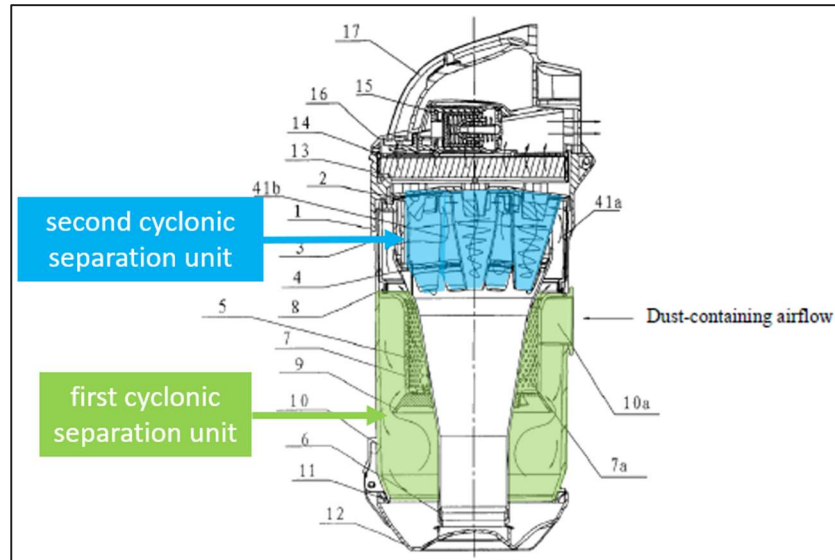


Ex1007, Fig. 1, 3:34-49. Ex1002 ¶¶63-64.

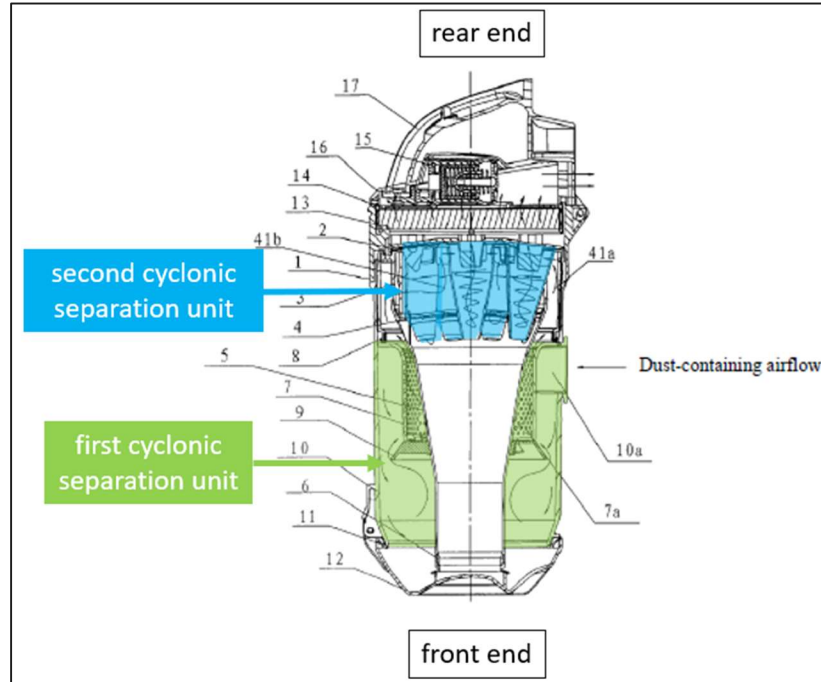
D. Peng³

Peng is a 2011 Chinese patent. Peng teaches a “cyclone separation device” that includes a **first cyclonic separation** unit and a **second cyclonic separation unit**. Ex1009 at 13.

³ Ex1009 is a certified English translation of Ex1008, originally published in Chinese.



Peng's two cyclonic stages are arranged with the first cyclonic stage provided at the vacuum cleaner's front end of the vacuum cleaner and the second cyclonic stage rearward of the first cyclonic stage:



Id., Fig. 3; Ex1002 ¶¶61-62.

VI. LEVEL OF ORDINARY SKILL IN THE ART

A POSA 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. Additional education could offset less experience and vice versa, and a POSA could have also obtained similar knowledge and experience through other means.

VII. CLAIM CONSTRUCTION

Petitioners are unaware of any “prior claim construction determination” related to the '038 Patent. 37 C.F.R. §42.100(b). “[C]laim terms need only be construed to the extent necessary to resolve the controversy.” *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011). Petitioners do not believe any claim construction is necessary to resolve the parties' controversy in this Petition, and the claims should be given their plain and ordinary meaning for purposes of this IPR. Petitioners and Patent Owner have submitted claim construction briefing for certain terms in the '038 patent. *See SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-cv-12372, Dkts. 117, 122 (D. Mass.).

VIII. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. Ground 1: Butler Renders Claims 1-15 Obvious

1. [1]

a. [1pre]⁴

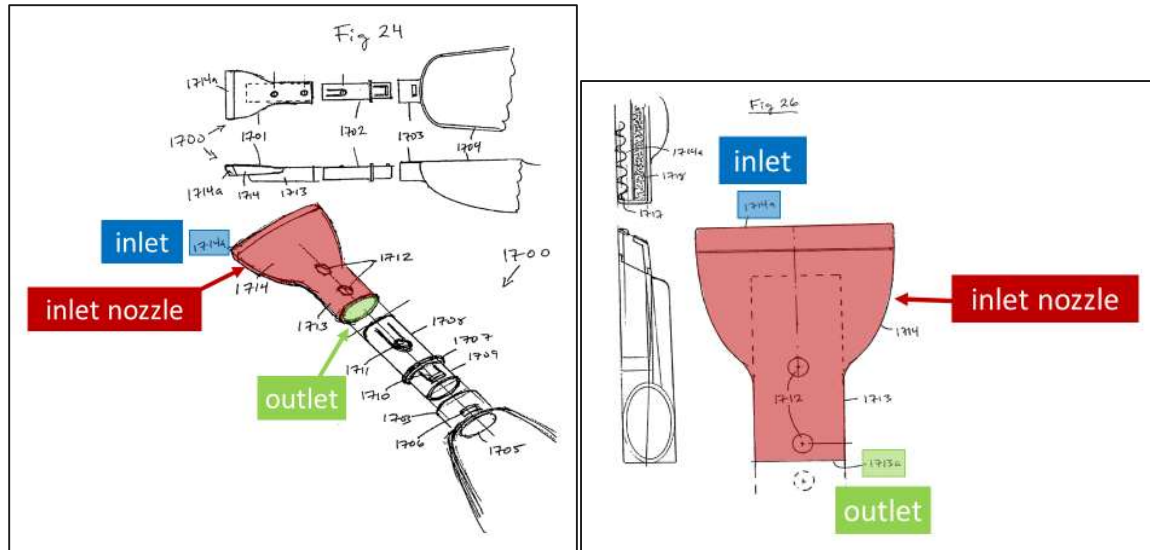
To the extent the preamble is limiting, Butler teaches a surface cleaning apparatus. Ex1002 ¶81. Butler teaches a “vacuum cleaner” for cleaning surfaces such as “floors and carpets,” and other “horizontal surfaces” and “vertical surfaces.” Ex1005, Title, 7:2-5; Ex1002 ¶¶82-83.

b. [1a]

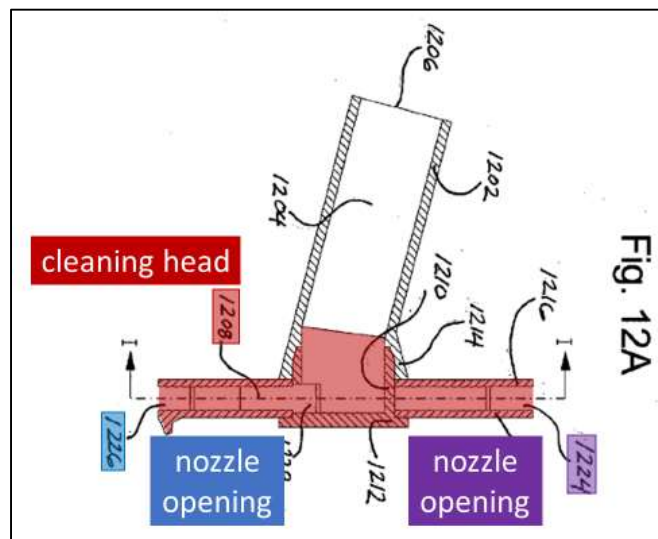
Butler teaches this limitation. Ex1002 ¶¶84-95. Butler teaches a variety of surface cleaning heads: “any type of cleaning device may be attached to the entry tube 524, such as an elongated cleaning head ... a crevice tool, a dusting attachment, a so-called powerhead having a rotating agitator” Ex1005, 22:7-9. Each of these “cleaning device[s],” including an elongated cleaning head, crevice tool, dusting attachment, and powerhead are surface cleaning heads because they are at the end of the vacuum and clean surfaces. Ex1002 ¶85.

Each of these surface cleaning heads has a front and rear end. Ex1002 ¶¶86-89. Because each of these surface cleaning heads are three-dimensional objects, each has a front and rear end. Ex1002 ¶86. For example, Butler teaches a surface cleaning head, “inlet nozzle 1701,” which has a front end, “inlet 1714a” and a rear end, “outlet 1713a”:

⁴ See LIST OF CHALLENGED CLAIMS.



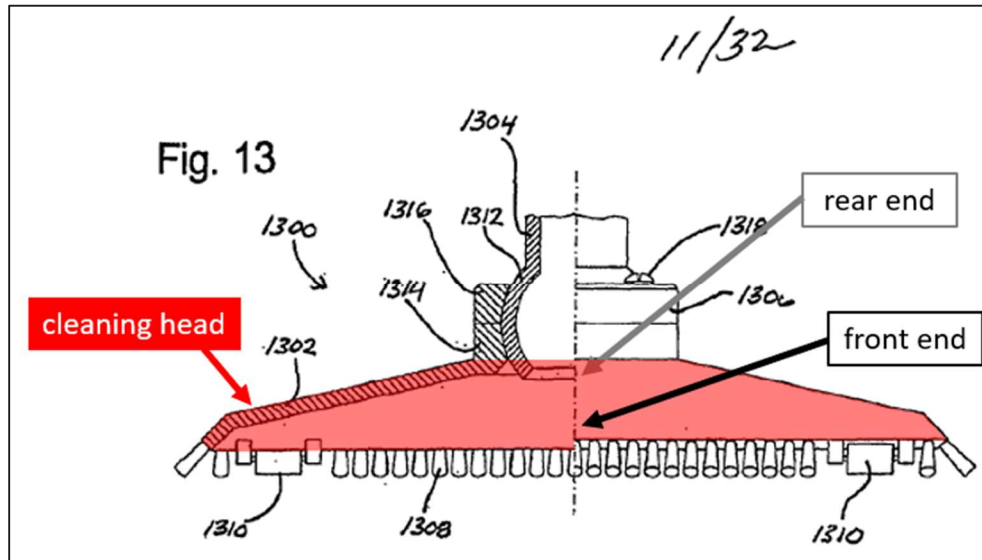
Ex1005, 42:6-9, Figs. 24, 26; Ex1002 ¶86. Further, Butler teaches another surface cleaning head, “**cleaning head 1208**” with a front end, “**nozzle opening 1226**” and a rear end, “**nozzle opening 1224**”:



Ex1005, 31:24-27, Fig. 12A; Ex1002 ¶87.

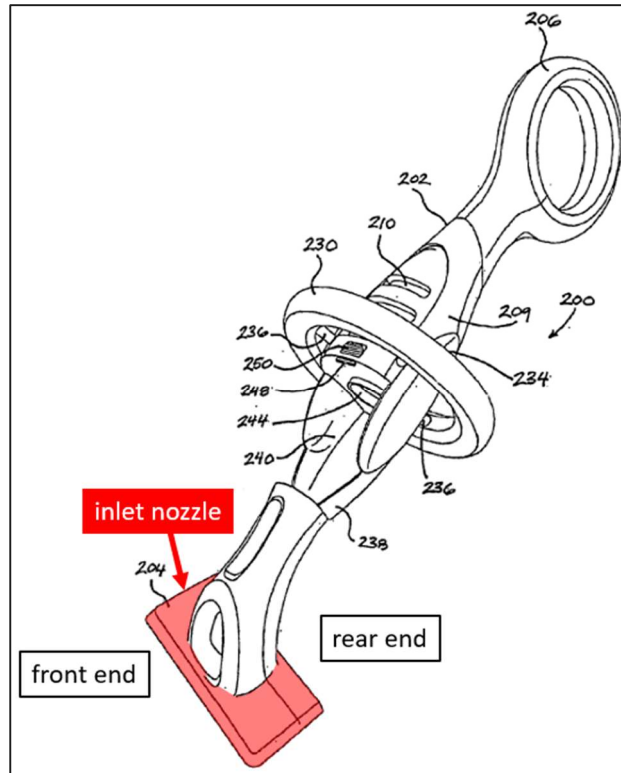
Butler teaches another “**cleaning head 1302**” that has “a generally rectangular body” with bristles extending downwards from the “outer perimeter of the **head**

1302.” A POSA would understand that the “**cleaning head 1302**” has a front end and rear end, as shown:



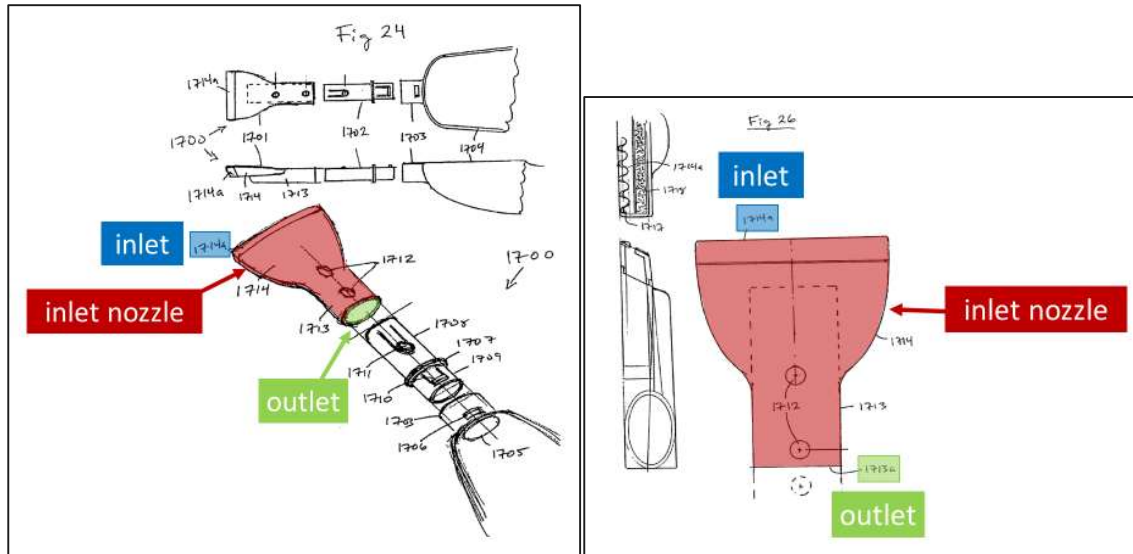
Id. at Fig. 13, 32:8-12; Ex1002 ¶88.

Butler teaches another “**inlet nozzle 204**.” A POSA would understand that “**inlet nozzle 204**” has a front end and a rear end as shown:



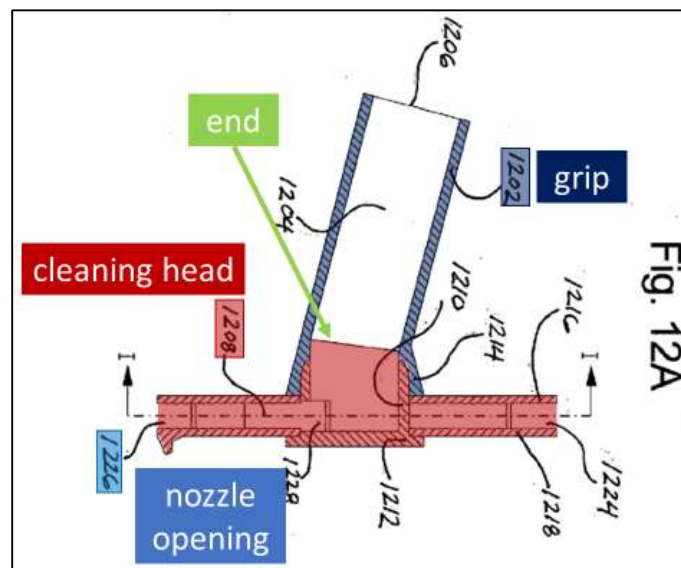
Ex1005, Fig. 2A, 15:19-22, 16:4-13; Ex1002 ¶89.

Each of Butler’s surface cleaning heads have a dirt air inlet and a cleaning head air outlet. A POSA would understand that each surface cleaning head has a dirt air inlet where dirty air enters the surface cleaning head, and a cleaning head air outlet to deliver that dirty air to the vacuum where the dirt can be separated from the air. Ex1002 ¶90. For example, Butler teaches that air flows into “**inlet nozzle 1701**” at “**inlet 1714a**” and exits “outlet duct 1713” at “**outlet 1713a** for the **inlet nozzle 1701**”:



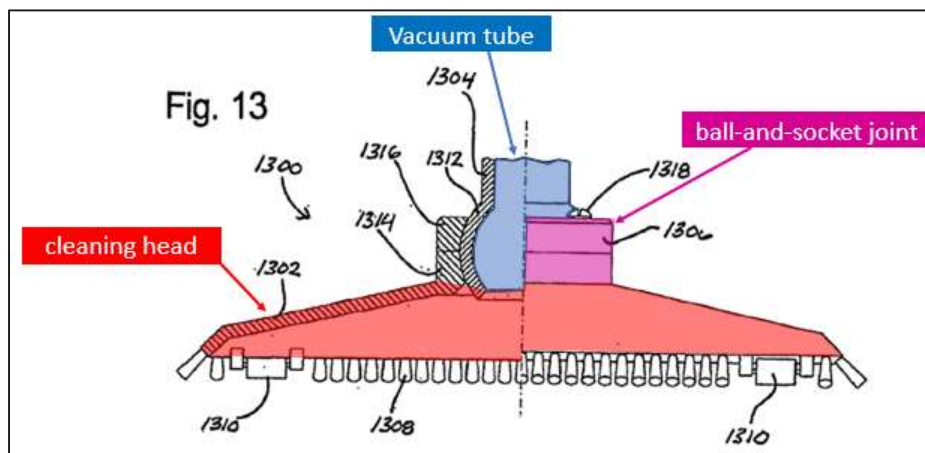
Ex1005, 42:6-9, Figs. 24, 26; Ex1002 ¶90. Butler’s “**inlet 1714a**” is a dirt air inlet and Butler’s “**outlet 1713a**” is a cleaning head air outlet. Ex1002 ¶91.

Similarly, for the surface cleaning head shown in Figure 12A, air flows into “nozzle opening 1226,” and the “cleaning head 1208,” to an “end to a cleaning head 1208” that is “attach[ed]” to “grip 1202”:



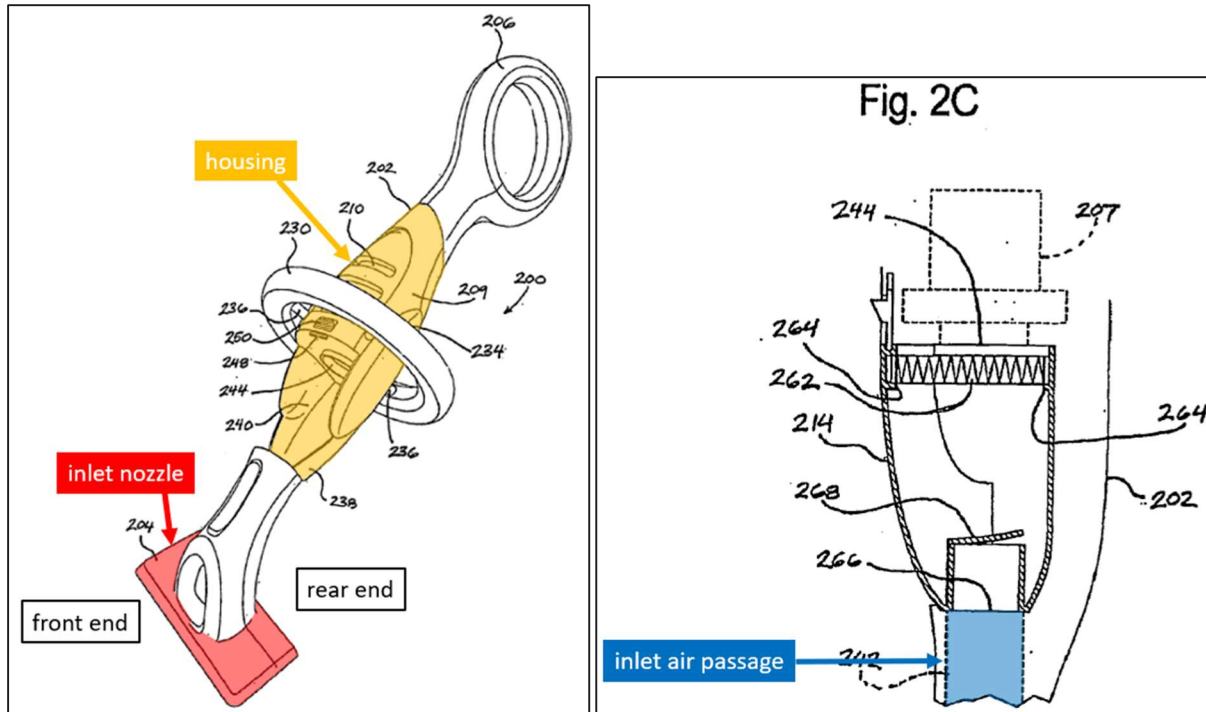
Ex1005, 31:6-27, Fig. 12A; Ex1002 ¶¶92. Butler's "**nozzle opening 1226**" is also a dirt air inlet and Butler's "**end**" is also a cleaning head air outlet. Ex1002 ¶¶92-93.

Further, Butler's "**cleaning head 1302**" has a dirt air inlet where the bristles are located, and a cleaning head air outlet where the "**cleaning head 1302**" attaches "**to a vacuum tube 1304**":



Id. at Fig. 13, 32:8-12; Ex1002 ¶¶94.

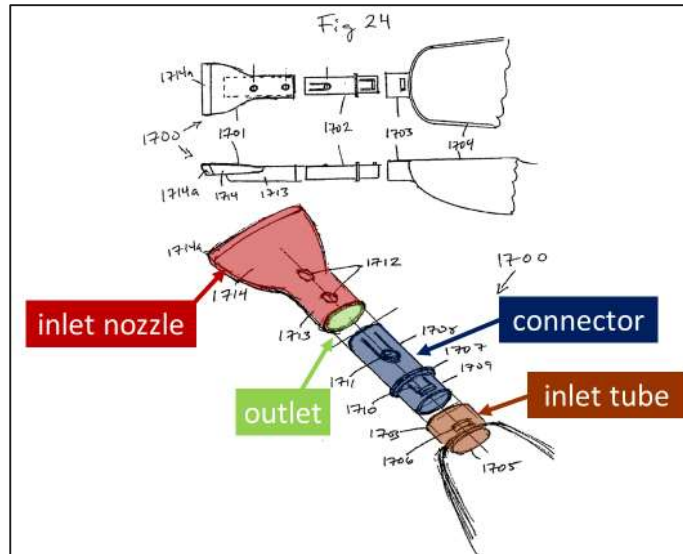
For the surface cleaning head shown in Figure 1, air flows into the "**inlet nozzle 204**" and exits into "**inlet air passage 242**" that attaches to "**housing 202**." The opening of the "**inlet nozzle 204**" facing the ground is a dirt air inlet and the area where air flows into the "**inlet air passage 242**" is the cleaning head air outlet:



Ex1005, Figs. 2A, 2C, 15:19-22, 16:4-13; Ex1002 ¶95.

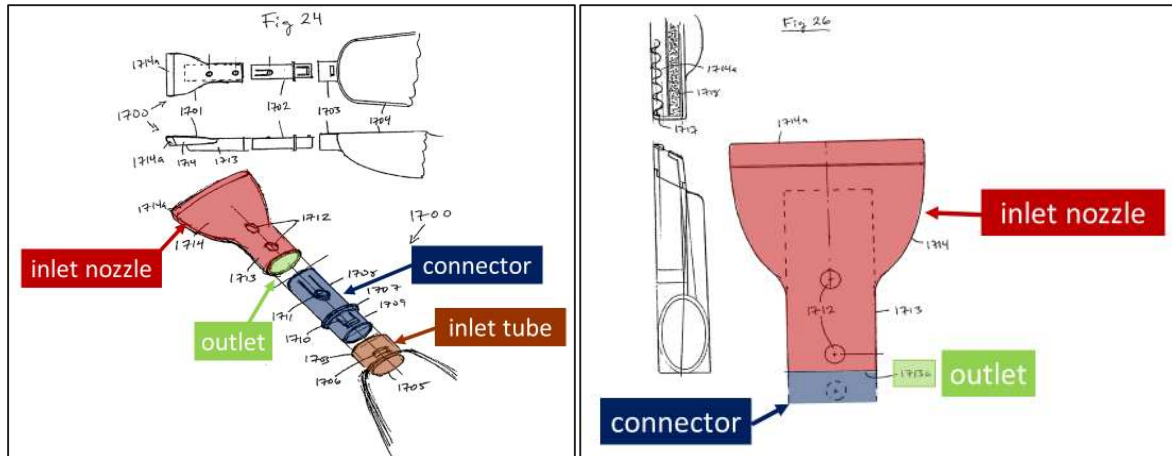
c. [1b.1]

Butler teaches this limitation. Ex1002 ¶¶96-102. Butler teaches rigid tubes, which are rigid airflow conduits as claimed. Ex1002 ¶¶96-102. For example, Butler’s “**nozzle connector 1702**” shown below is a rigid air flow conduit:



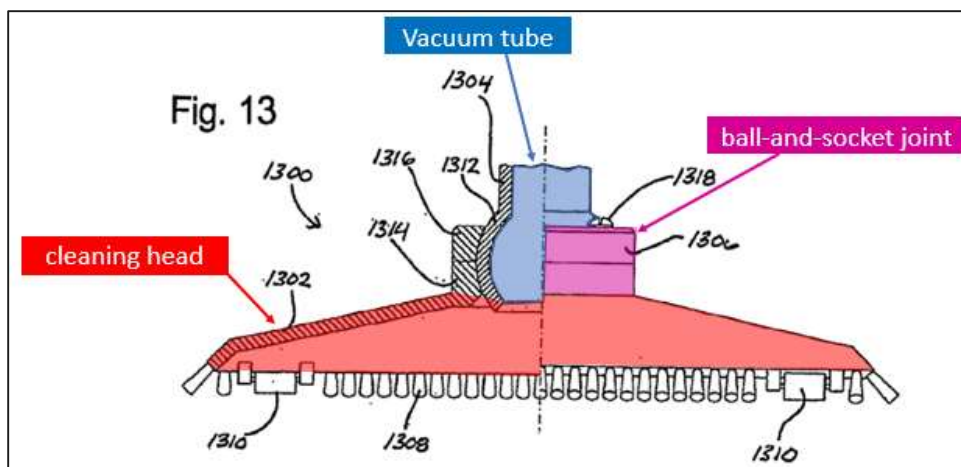
Ex1005, Fig. 24. Butler’s “connector” is a rigid air flow conduit because air passes through it, and a POSA would understand it is made of rigid material, such as a rigid plastic. Ex1002 ¶97. For example, Butler teaches that “any other part of the vacuum cleaner 100, may be made from any suitable material, such as ABS plastic ... other plastics, metal, and so on” and that “[p]lastics are generally preferred as a relatively inexpensive, moldable and structurally *rigid* material.” Ex1005, 11:3-6 (emphasis added).

Butler’s “connector” has a rigid wand inlet end, an air inlet that communicates with the cleaning head air outlet: the upstream end of the connector is a rigid wand inlet end with an air inlet because that is where air enters the connector from “**outlet 1713a** for the **inlet nozzle 1701**,” (the cleaning head air outlet) as shown:

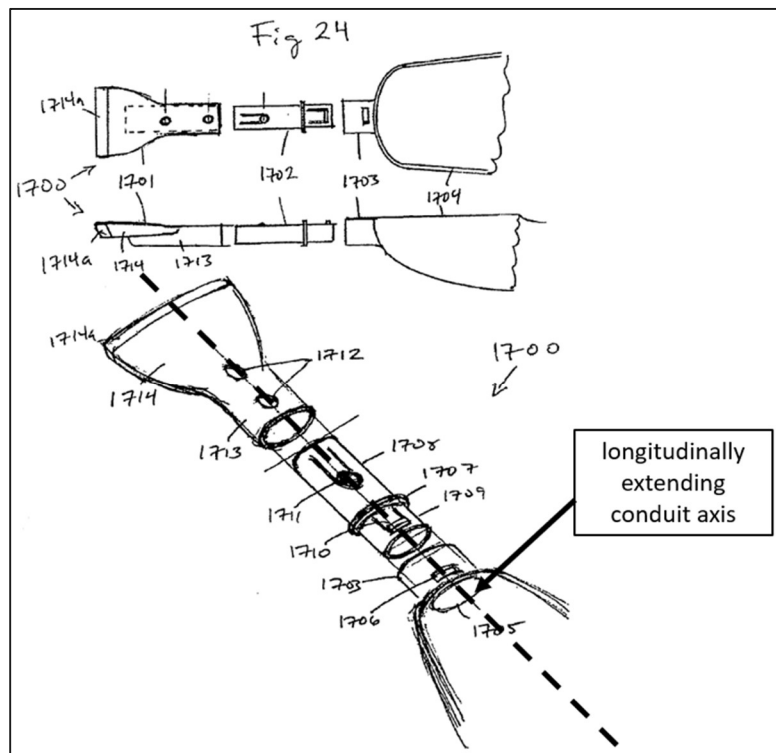
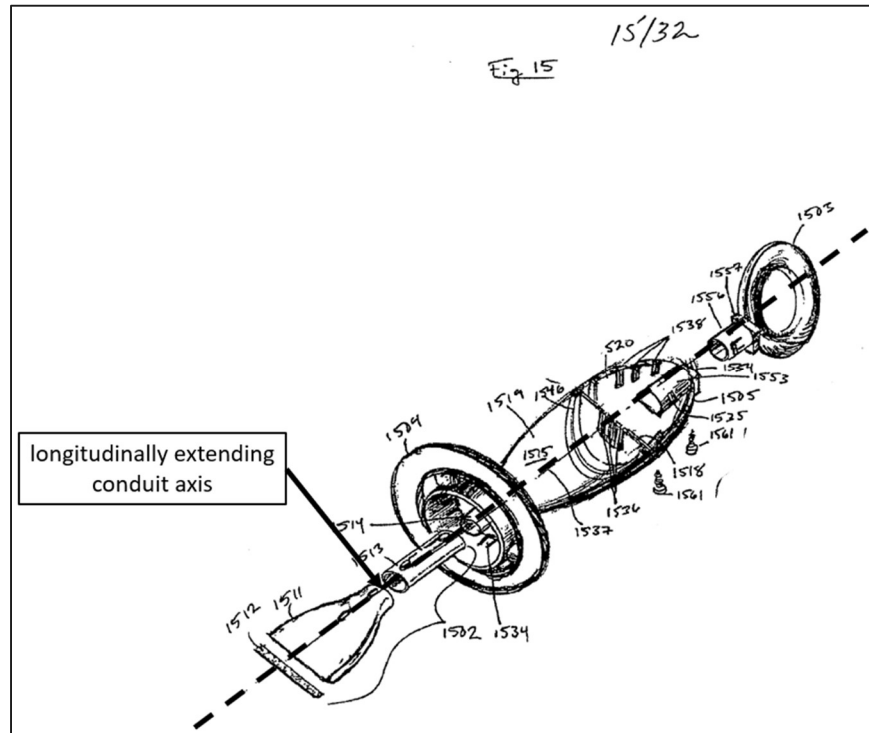


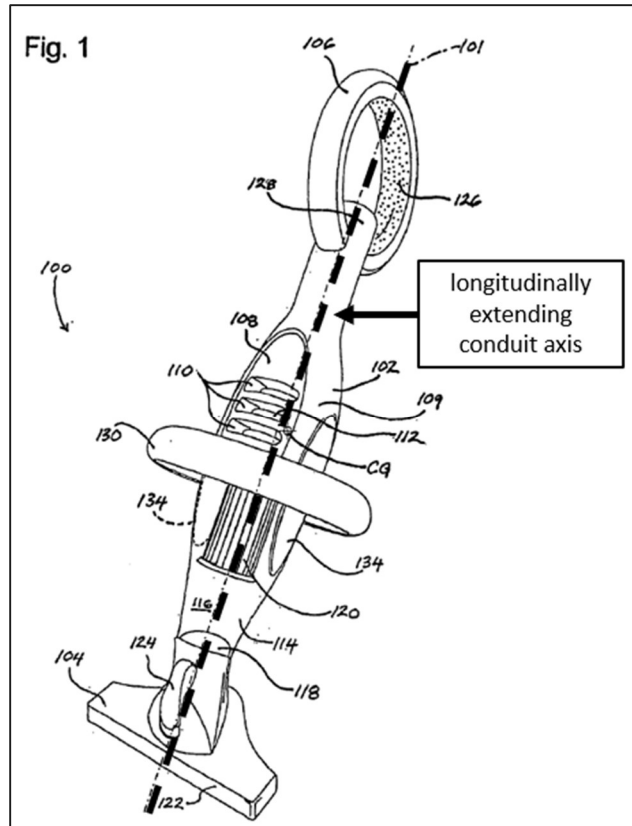
Ex1005, 41:8-29, Figs. 24, 26; Ex1002 ¶98. Butler’s connector has a rigid wand outlet end where it connects to the “inlet tube,” as shown above, because this is where air exits the connector. Ex1005, Fig. 24; Ex1002 ¶¶99-100.

Butler alternatively describes its connector as a “**vacuum tube 1304**” which is attached to a “**cleaning head 1302**.” Ex1005, 32:8-10. Butler’s “**vacuum tube 1304**” is a rigid air flow conduit that meets all of the limitations [1b.1], for the same reasons as when described as a “connector.” Ex1002 ¶101.



Butler's **connector/vacuum tube** has a longitudinally extending conduit axis
as shown:



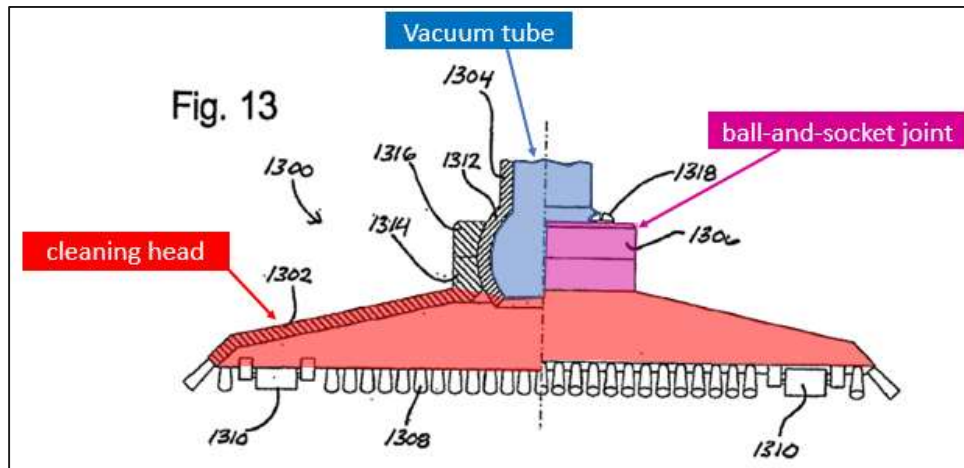


Ex1005, Figs. 1, 15, 24; Ex1002 ¶102.

d. [1b.2]

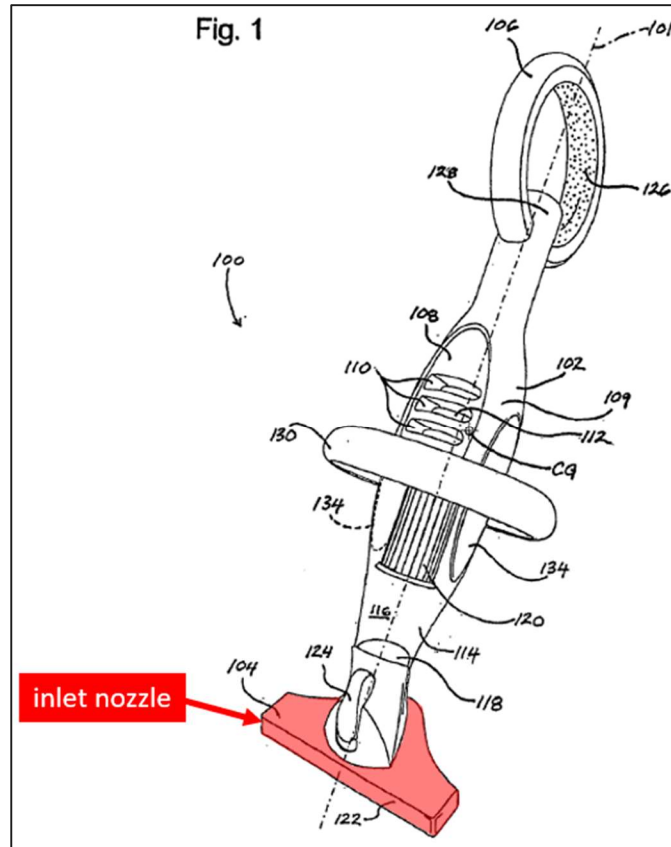
Butler teaches this limitation. Ex1002 ¶¶103-113. Butler’s rigid air flow conduit is moveably mountable to the surface cleaning head between an upper position and an in-use floor cleaning position in which the rigid air flow conduit extends at an angle to the vertical. *Id.*

Butler teaches that its connector/vacuum tube (the rigid air flow conduit) is moveably mounted to the surface cleaning head using a pivotable joint. Ex1002 ¶104. For example, Butler teaches “a **cleaning head 1302** that is pivotally attached to a **vacuum tube 1304** by a **ball-and-socket joint 1306**”:



Id. at Fig. 13, 32:8-10. “Using this construction, the vacuum tube 1304 can be rotated relative to the cleaning head 1302 in any direction” *Id.*, 32:21-22. This ball-and-socket joint is a moveable mount between the “**vacuum tube**” (the rigid air flow conduit) and the “**cleaning head**” (the surface cleaning head) because it allows the vacuum tube and cleaning head to pivot relative to each other. Ex1002 ¶¶104-105.

Butler teaches other moveable mounts between its surface cleaning head and rigid air flow conduit. For example, Butler teaches a “rotatable inlet nozzle,” including “**inlet nozzle 104**” (the surface cleaning head) which is “rotatably mounted to the housing” (via the rigid airflow conduit) to allow for movement between them that is “typically found in conventional upright vacuums”:



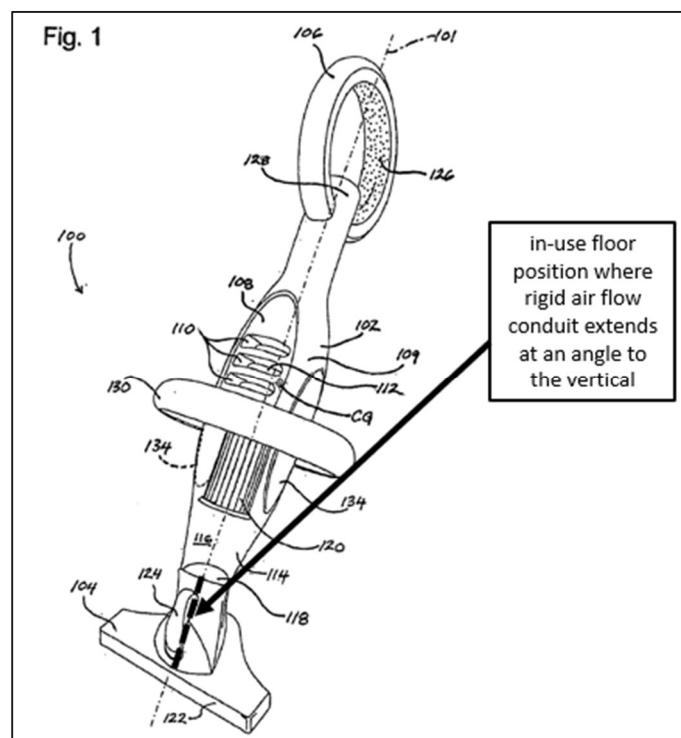
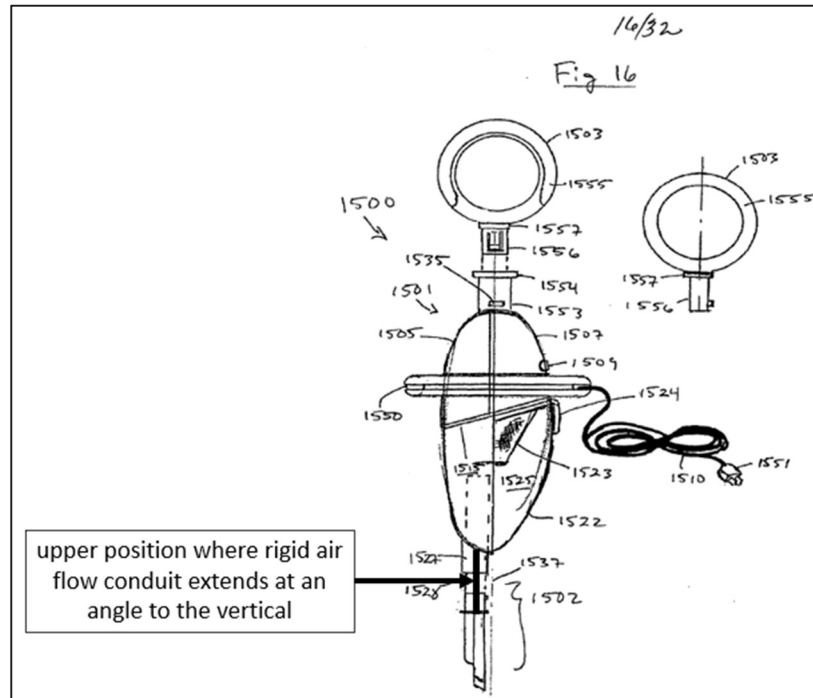
Id., 10:3-9, Fig. 1; Ex1002 ¶106. Butler further teaches that “various combinations of pivots” may be used for “more complex rotation capabilities,” which are known in the art. Ex1005, 10:3-15; Ex1002 ¶107. For example, Butler further teaches a “flexible tab” to moveably mount the rigid airflow conduit to the surface cleaning head. Butler teaches that “an inlet nozzle 1701” (the surface cleaning head)—and a “a nozzle connector 1702” (the rigid air flow conduit) may be connected using a “flexible nozzle-attaching tab 1711” that secures the “nozzle 1701 to the connector 1702” and an “operator can depress this tab 1711 to ... move the nozzle 1701 between multiple axial or radial positions on the connector 1702.” *Id.*, 41:8-11, 41:26-42:1; Ex1002 ¶108.

Butler teaches its rigid air flow conduit is moveably mountable to the surface cleaning head between an upper position and an in-use floor cleaning position in which the rigid air flow conduit extends at an angle to the vertical. Ex1002 ¶109. A POSA would understand that each of Butler's moveable mounts, including the "ball-and-socket joint 1306," "rotatable inlet nozzle," and "tab" would allow Butler's rigid air flow conduit to move between an upper position and the claimed in-use floor cleaning position. Butler teaches that the connector/vacuum tube can be "rotated relative to the cleaning head 1302 in any direction," and teaches a "rotatable inlet nozzle" which is "rotatably mounted to the housing," and the surface cleaning head can take "multiple axial or radial positions on the connector 1702." Ex1005, 10:3-9, 32:15-24, 41:8-11, 41:26-42:1. Butler further teaches that a user can "point the inlet nozzle 104 horizontally to clean surfaces such as stair treads, vertically to clean surfaces such as stair risers, or at any angle in between." Ex1005, 12:3-10. Because Butler teaches that its surface cleaning head can be attached using a ball-and-socket joint, can be "rotated," used in "multiple axial or radial positions" and at "any angle," including horizontally and vertically, Butler teaches a rigid air flow conduit at an upper position and the claimed in-use floor cleaning position in which the rigid air flow conduit extends at an angle to the vertical. Ex1002 ¶¶110-112.

Further, Figure 16 depicts an upper position, and a POSA would understand that the moveable mount would pivot to the claimed in-use floor cleaning position

in which the rigid air flow conduit extends at an angle to the vertical as seen in Figure

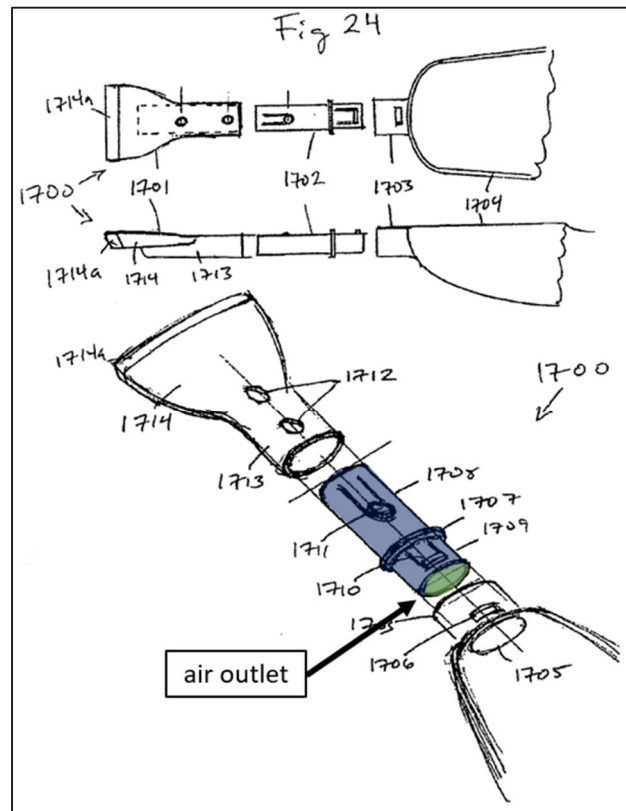
1:



Ex1005, Figs. 1, 16; Ex1002 ¶113.

e. [1b.3]

Butler teaches this limitation. Ex1002 ¶¶114-116. Butler's rigid wand outlet end has an air outlet where it connects to the hand vacuum, as shown:

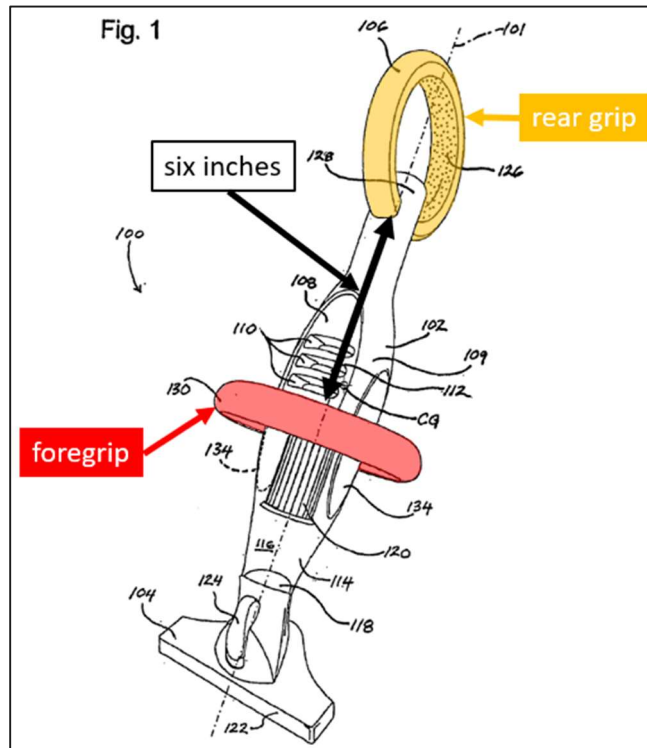


Ex1005, Fig. 24, 41:19-29; Ex1002 ¶115. A POSA would further understand that Butler's "vacuum tube" likewise includes a rigid wand outlet end having an air outlet, for the same reasons. Ex1002 ¶116.

f. [1c]

Butler teaches this limitation. Ex1002 ¶¶117-126. Butler teaches a "vacuum cleaner" that is designed to be used by hand and is a hand vacuum cleaner. Ex1005,

Title, Fig. 1. Butler's vacuum cleaner includes a “**rear grip**” and “one or more **foregrips**,” and Butler teaches a range of “compact” sizes, including a distance between the foregrip and the rear grip of six inches, and an overall vacuum length of eighteen inches:

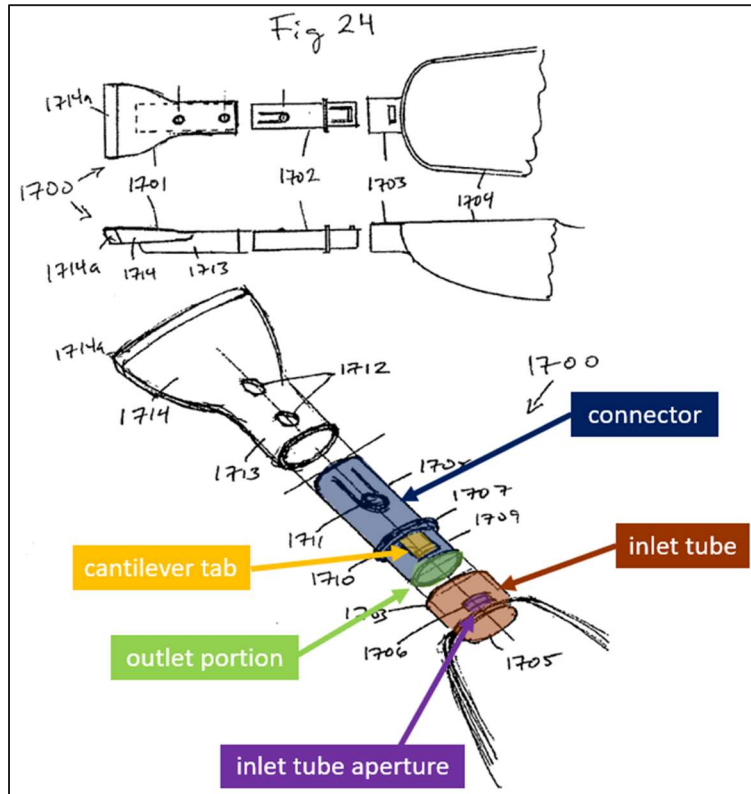


Ex1005, Abstract, 15:5-6, 26:1-10, Fig. 1; Ex1002 ¶119. Butler teaches that its “compact” and “maneuver[able]” design is “adapted for cleaning [] stairwells and other confined spaces,” and further teaches telescoping handgrip members and extension tubes to reach the floor. Ex1005, Abstract, 1:2-3, 26:1-5, 27:12-29. Moreover, Butler's vacuum cleaner is designed to have an optimal “center of gravity” and to “remov[e] excess weight,” Ex1005, 13:1-19, 15:12-18, which are

considerations that a POSA would understand apply to hand vacuum cleaners. Ex1002 ¶119. Butler therefore teaches a hand vacuum cleaner. *Id.*

Further, to the extent PO argues that Butler does not teach a “hand vacuum cleaner,” it would have been obvious for a POSA to further reduce Butler’s size. Ex1005, Abstract, 1:2-3, 13:1-19, 15:12-18, 26:1-10, 27:12-29; Ex1002 ¶¶119-120. As such, Butler’s cleaner would be even more “maneuver[able]” and “compact,” to achieve its purpose of cleaning “stairwells and other confined spaces.” Ex1002 ¶120. A POSA would have at least a reasonable expectation of success, because it would involve simply reducing the size of certain components, such as Butler’s “cylindrical housing 502,” “dirt receptacle 514,” “nozzle inlet 504,” which would make Butler’s cleaner smaller, and simply increasing the size of “connector 1702” to ensure a user could easily clean the floor and other surfaces while holding Butler’s cleaner. Ex1002 ¶120.

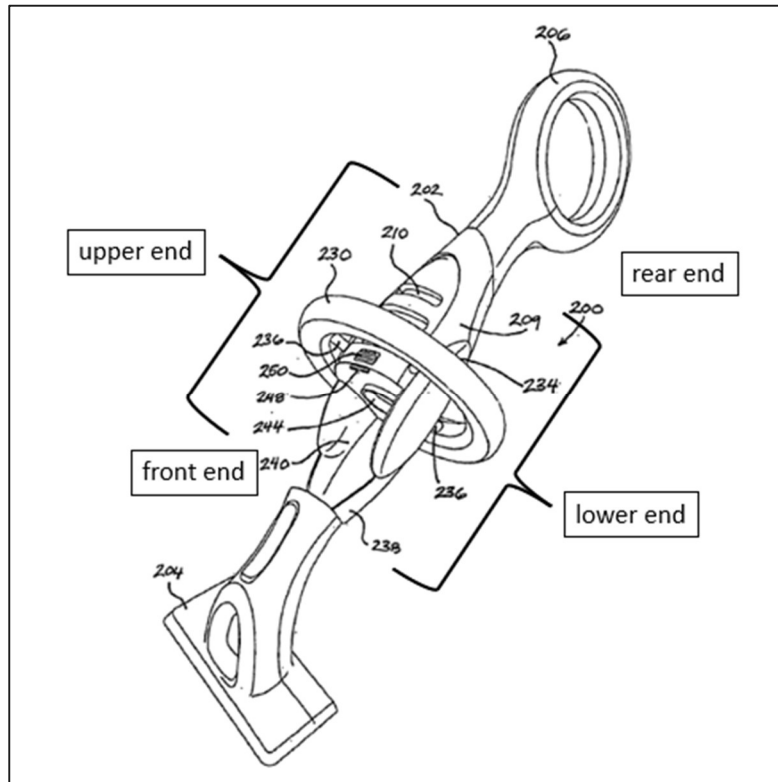
Butler teaches that its hand vacuum cleaner is removably mountable to the rigid wand outlet end via the hand vacuum cleaner’s “inlet tube,” as shown below:



Ex1005, Fig. 24, 41:19-29; Ex1002 ¶121.

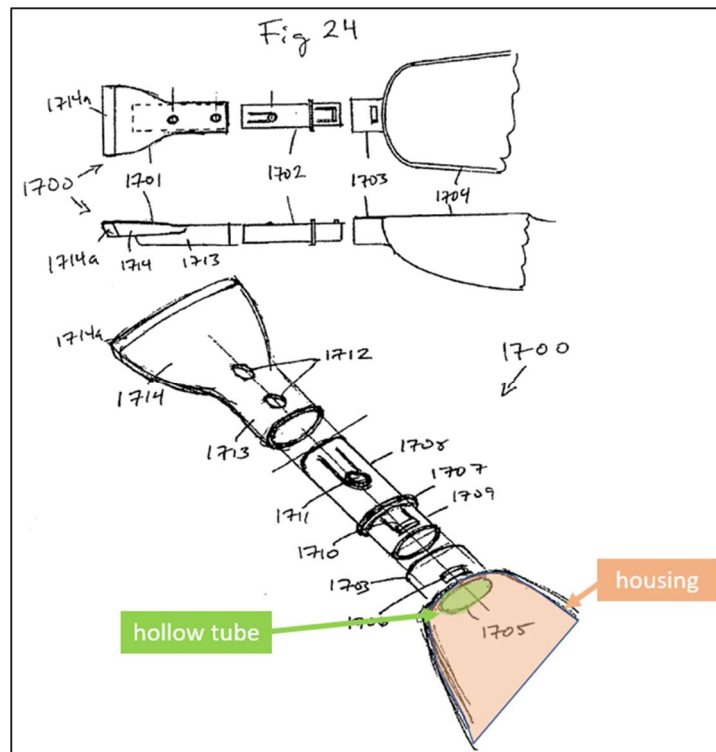
Butler teaches that “connector 1702”—its rigid air flow conduit—has “an inlet 1708 and an outlet portion 1709,” which is its outlet end, that is “telescopically received within or around the inlet tube 1703” of Butler’s hand vacuum cleaner. Ex1005, 41:21-25. This mounting is removeable: it “includes a cantilever tab 1710 that fits into the inlet tube aperture 1706” of the hand vacuum cleaner: a user can depress the “cantilever tab 1710” clicking it out of the “inlet tube aperture 1706” to remove the “connector 1702” from the hand vacuum cleaner. Ex1005, 41:19-29; Ex1002 ¶¶122-123. A POSA would understand that Butler’s “vacuum tube” satisfies these limitations for the same reasons. Ex1002 ¶¶122-123.

Butler's hand vacuum cleaner has a front end, a rear end, an upper end and a lower end:



Ex1005, Fig. 2A.; Ex1002 ¶124. Butler teaches its hand vacuum cleaner includes a “housing 102 having an inlet nozzle 104 at a first end of the housing 102,” which is at the front end, and “a rear grip 106 at a second end of the housing 102,” which is at the rear end of the hand vacuum cleaner. Ex1005, 7:15-17; Ex1002 ¶125. Further, a POSA would understand that because Butler’s hand vacuum cleaner is a three-dimensional object having front and rear ends, it would also have an upper end and a lower end as shown. Ex1002 ¶125.

Butler teaches that the hand vacuum cleaner has a hand vacuum cleaner air inlet. Butler teaches that the hand vacuum cleaner's "inlet tube 1703 comprises a hollow tube 1705," which is "preferably integrally formed with the housing 1704 and provides fluid communication between the vacuum dust receptacle ... and the rest of the nozzle assembly 1700."

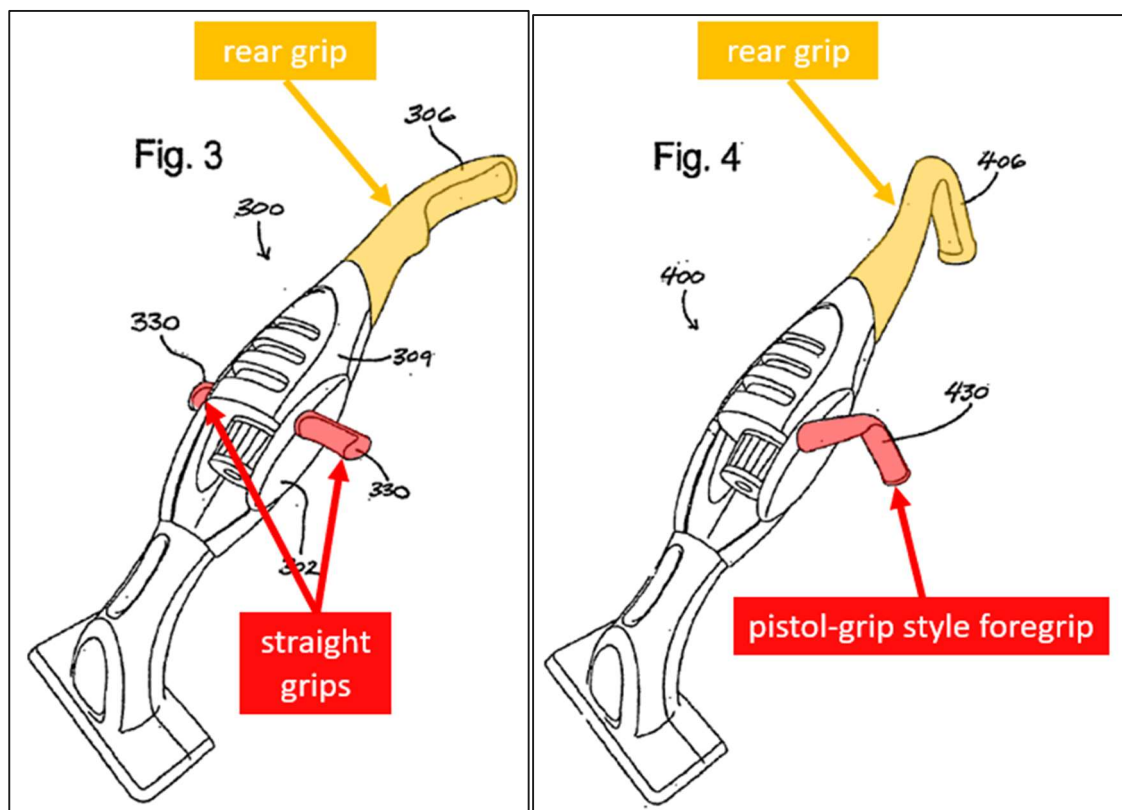


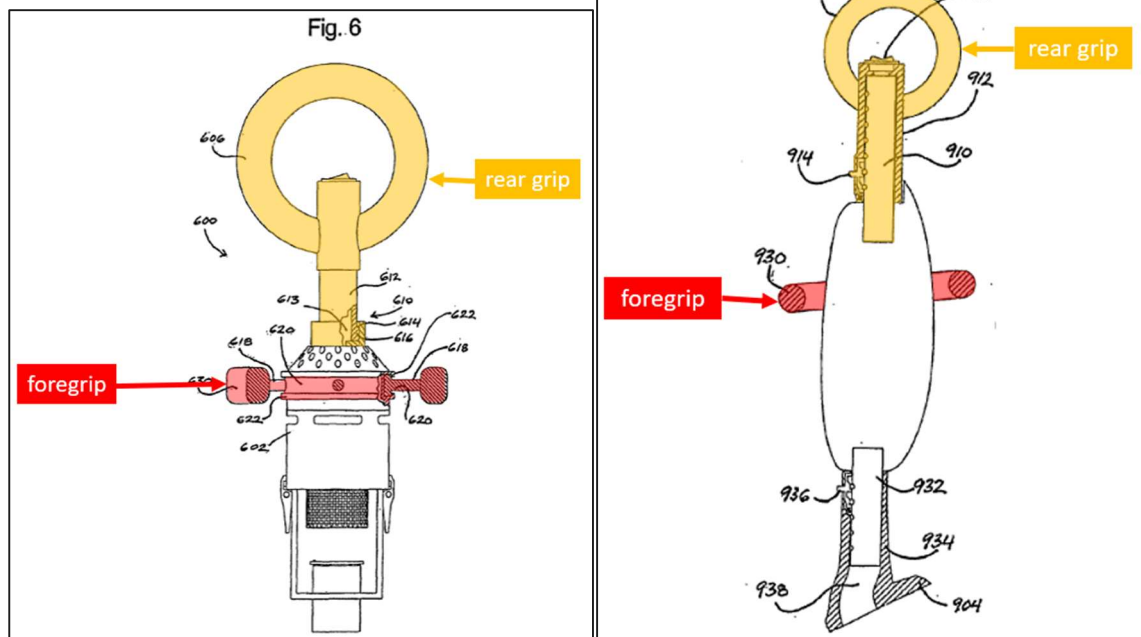
Ex1005, 41:15-18, Fig. 24; Ex1002 ¶126.

g. [1c.i]

Butler teaches this limitation. Ex1002 ¶¶127-134. Butler's hand vacuum cleaner has a main body comprising a handle and a suction motor fan assembly. *Id.* Butler teaches a main body, which includes a "housing."

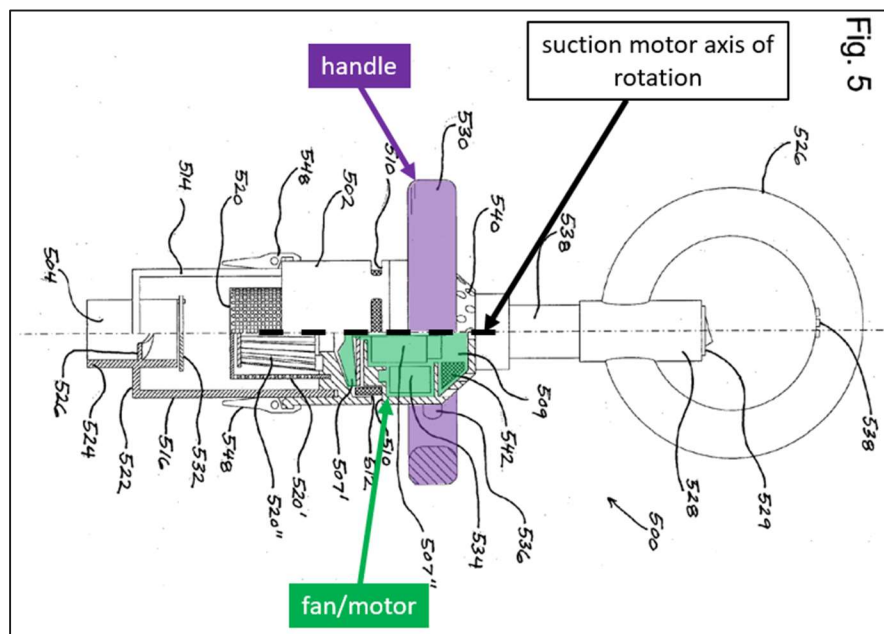
Butler teaches that the hand vacuum cleaner main body has a variety of handles. For example, Butler teaches and “one or more foregrips located on the housing,” which a POSA would understand is a handle because a user would hold the foregrip(s) to “handl[e] the device” when cleaning surfaces. Ex1005, Abstract, 3:28-4:1, 11:21-22, 12:3-13; Ex1002 ¶¶127-131. Butler teaches that its main body comprises other handles, including foregrips, including “straight grips 330,” “pistol-grip style foregrips 430,” and a “rotatable foregrip 630,” and rear grips as shown below:





Ex1005, Figs. 3-4, 6, 9A; Ex1002 ¶131.

Butler's main body further includes a suction motor and fan assembly, “fan/motor 507” which has a suction motor axis of rotation as shown:



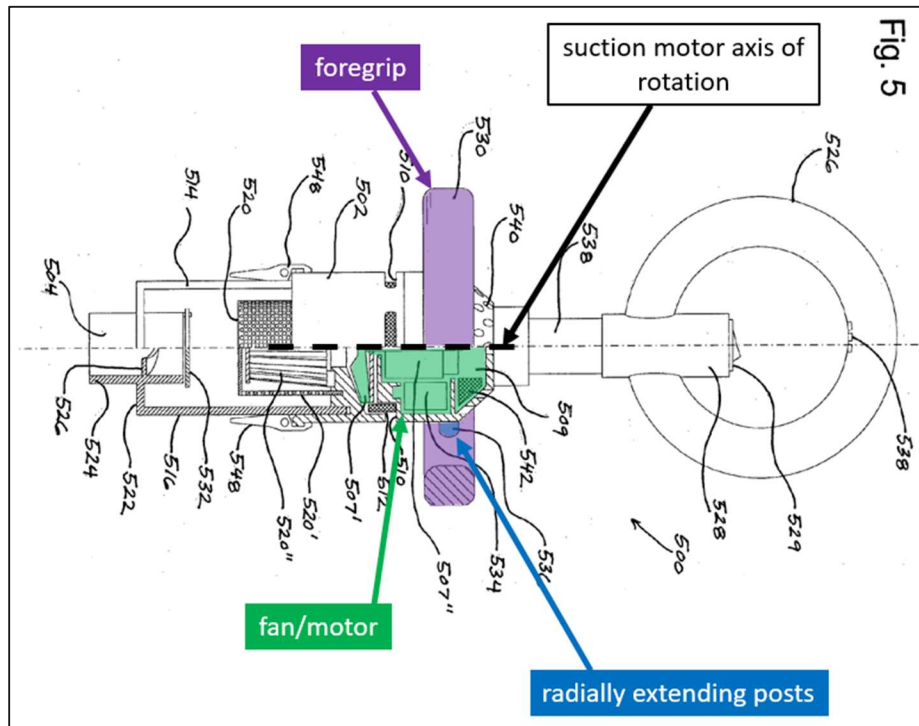
Id., Fig. 5, 20:12-20; Ex1002 ¶¶131-133. A POSA would understand that the suction motor axis of rotation rotates around the fan/motor along the center longitudinal axis of the vacuum, including because Butler teaches that the “fan/motor 1539” is “centered generally about the vacuum centerline 1537.” Ex1005, 37:3; Ex1002 ¶134.

h. [1c.i.1]

Butler teaches this limitation. Ex1002 ¶¶135-143. Butler teaches that the handle has a handgrip portion. Butler teaches that its handles may “include gripping surfaces or surface treatments to enhance the user’s grip and feel.” Ex1005, 12:3-7; 11:21-24, Figs. 1, 3-4, 10, 16. Butler’s handle “gripping surfaces” and “surface treatments” are hand grip portions. Ex1002 ¶136. Each of Butler’s handles has a first handle portion and a second handle portion, where first handle portion is mounted to the main body at the location of the suction motor and fan assembly.

Butler teaches a handle that is 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, 12:5-7. Butler explains that “it is likely that users will grasp the foregrip 130 in numerous different places at various times” indicating first, second, and “numerous” other handle portions. *Id.*, 13:20-14:3. As shown in Figure 5, this circular foregrip can be divided into any number of portions, each of which are located at a location of the suction

motor and fan assembly, including a first handle portion and a second handle portion, where the first handle portion is mounted to the main body at the location of the suction motor and fan assembly via “radially extending posts”:



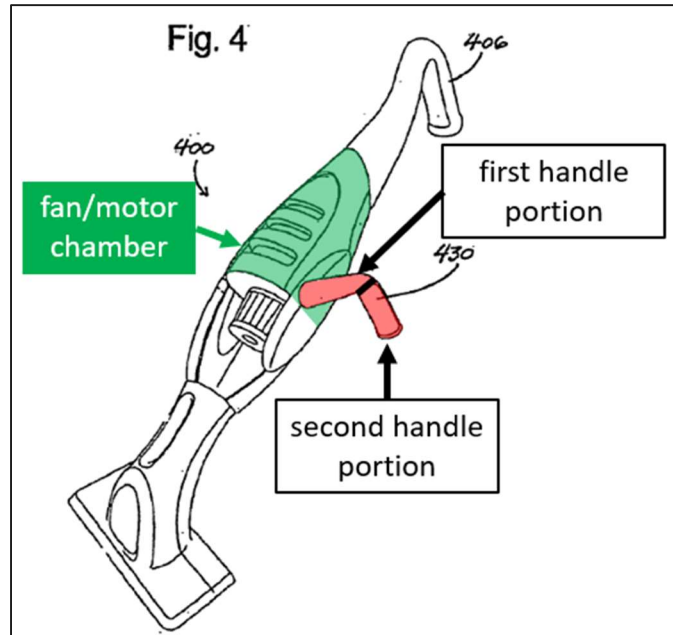
Ex1005, 19:18-20:2, Fig. 5; Ex1002 ¶¶137-139.

Butler’s “looped foregrip may also be formed as a partial loop to provide multiple hand positions around a portion of the vacuum cleaner housing.” *Id.*, 19:6-17. In such a “partial loop,” a POSA would understand that each end of the “partial loop” is one of the two portions of the handle, and each portion is mounted at the location of the suction motor and fan assembly. Ex1002 ¶140.

Butler also teaches that its foregrip may be “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, 19:18-20:2. As shown in Figure 3, Butler’s “grip[] 330” is a first handle portion that is mounted to the main body at the location of the suction motor and fan assembly and another “grip[] 330” is a second handle portion. Ex1002 ¶141.

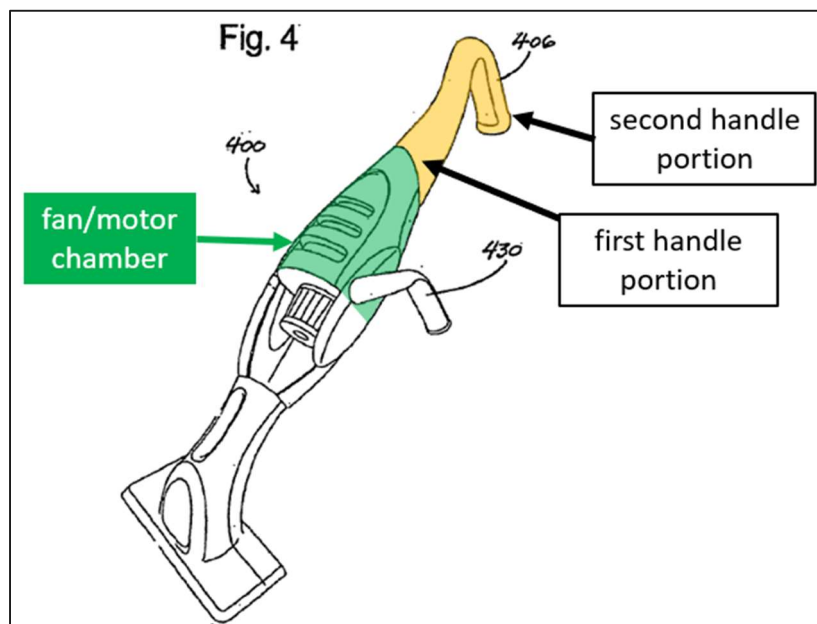
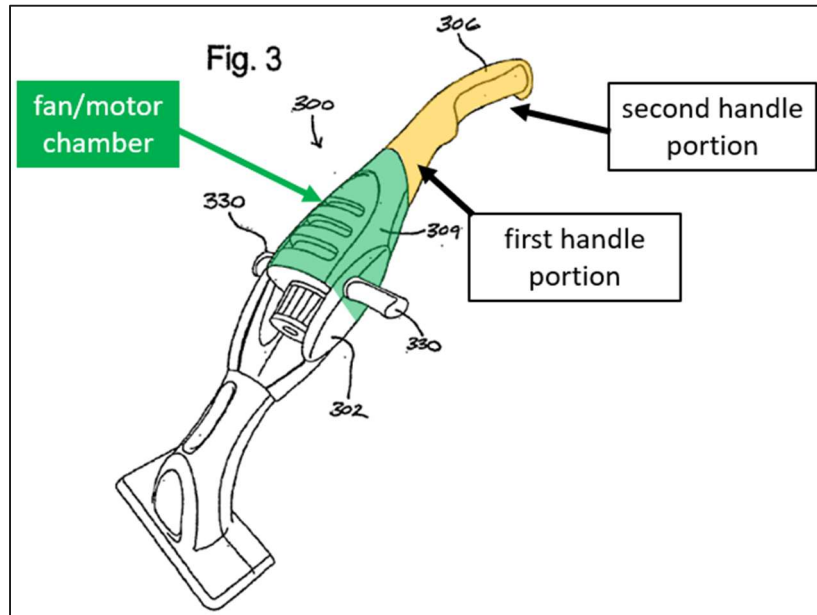
As shown in Figure 4, Butler’s handle has a first handle portion that is mounted to the main body at the location of the suction motor and fan assembly and a second handle portion that extends distally:

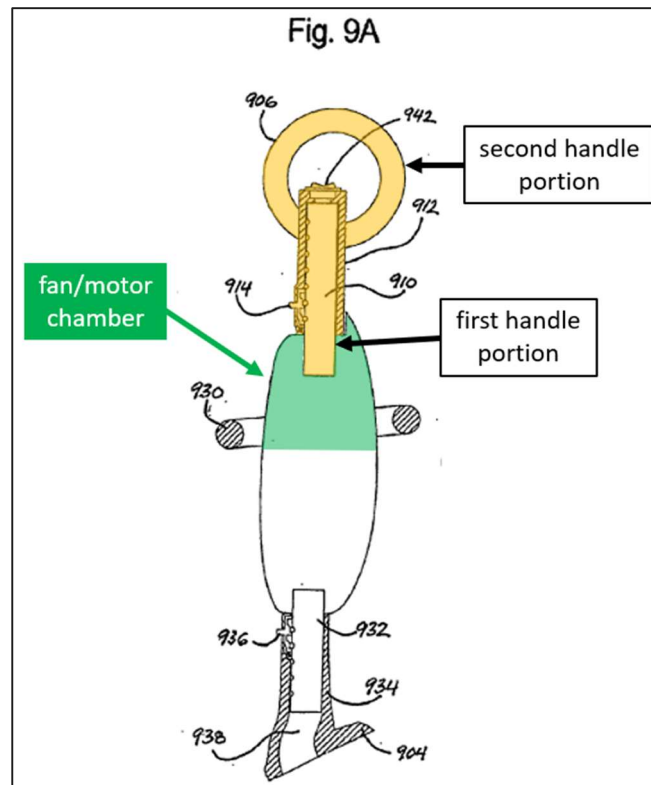


Ex1005, Fig. 4; *see also id.* at Fig. 3. Ex1002 ¶142.

Butler’s rear handles likewise have a first and second handle portions, where the first handle portion is mounted to the main body at the location of the suction motor and fan assembly. Ex1002 ¶143. Each of these handles have a first portion

that is mounted to the main body at the rear end of the suction motor and fan assembly:

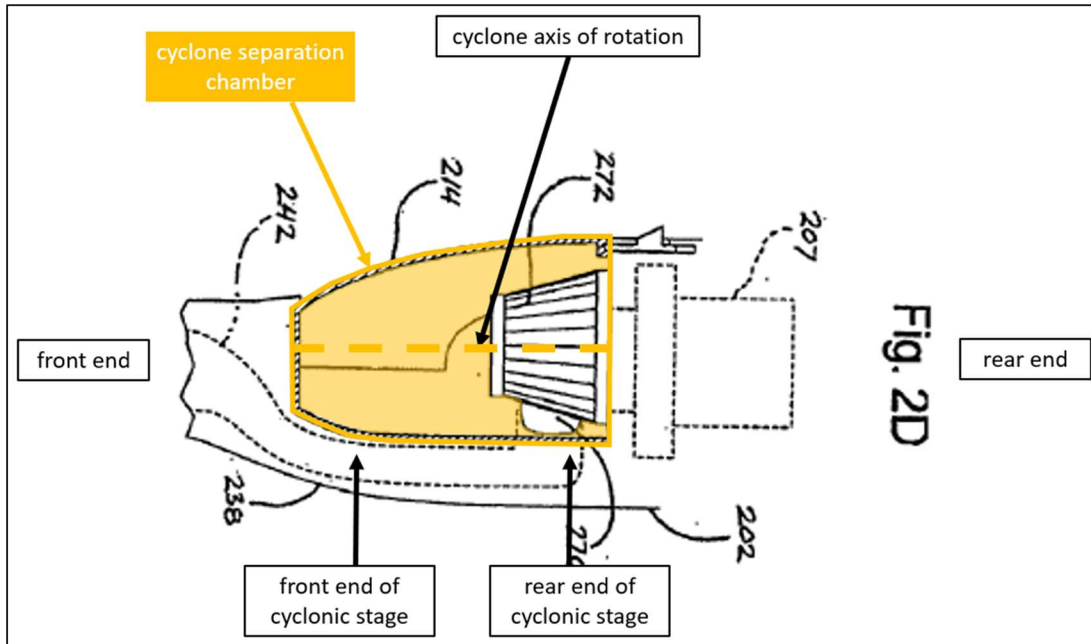




Ex1005, Figs. 3-4, 9A; Ex1002 ¶143.

i. [1c.ii]

Butler teaches this limitation. Ex1002 ¶¶143-150. Butler teaches a first cyclonic cleaning stage, a “cyclone separation chamber in which the working airflow is swirled to remove dirt and dust by centrifugal or cyclonic action.” Ex1005, 18:3-14, Fig. 2B-2D. Butler’s cyclone separation chamber is at the front of the hand vacuum cleaner, and has a front end, a rear end, and a cyclone axis of rotation that extends between its front and rear ends:



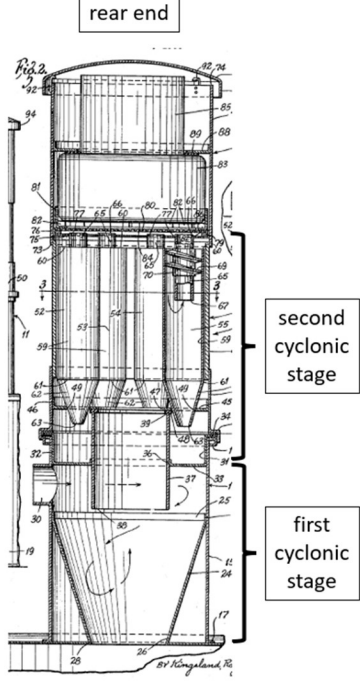
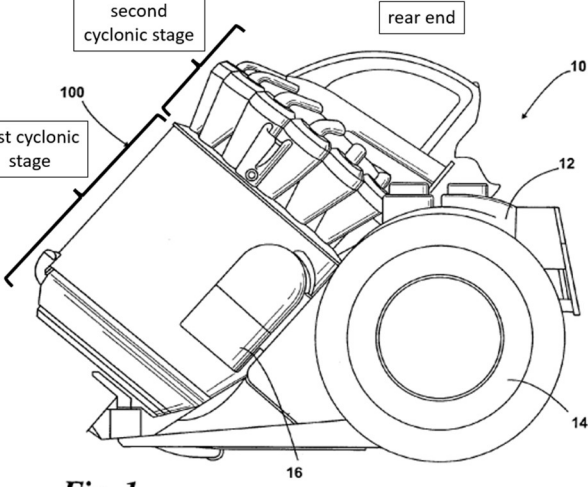
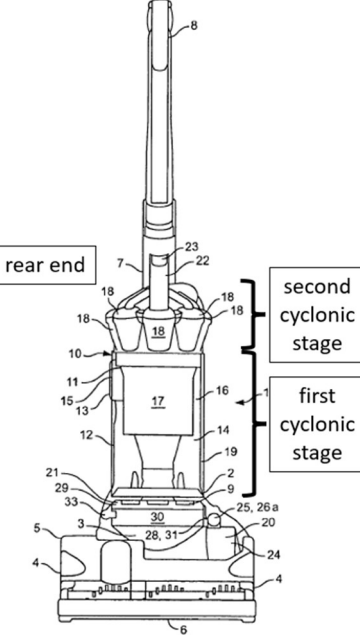
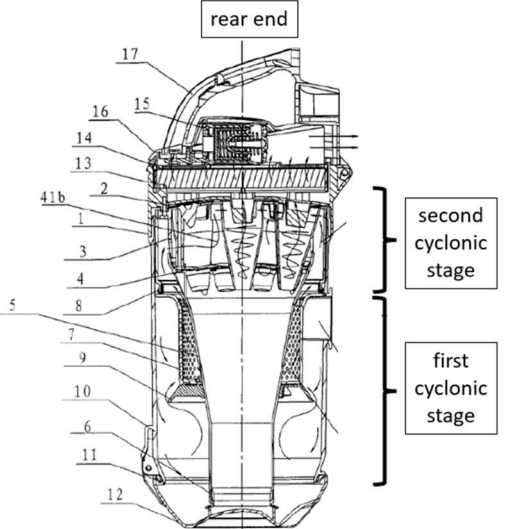
Ex1005, Fig. 2D; Ex1002 ¶145. A POSA would understand that Butler’s cyclone axis of rotation is as shown because “the inlet air passage 242 enters or terminates at an inlet port 270 through the dirt receptacle sidewall in a tangential or nearly tangential manner, which initiates a cyclonic flow therein.” Ex1005, 18:7-10; Ex1002 ¶¶146. A POSA would understand that air would flow cyclonically around the sidewalls, rotating about the central axis shown above. Ex1002 ¶147. Because a POSA would understand that such air flow would flow cyclonically around the entirety of such sidewalls, a POSA would understand that the cyclone axis of rotation extends between the front and rear ends of the first cyclonic stage. Ex1002 ¶¶148-150.

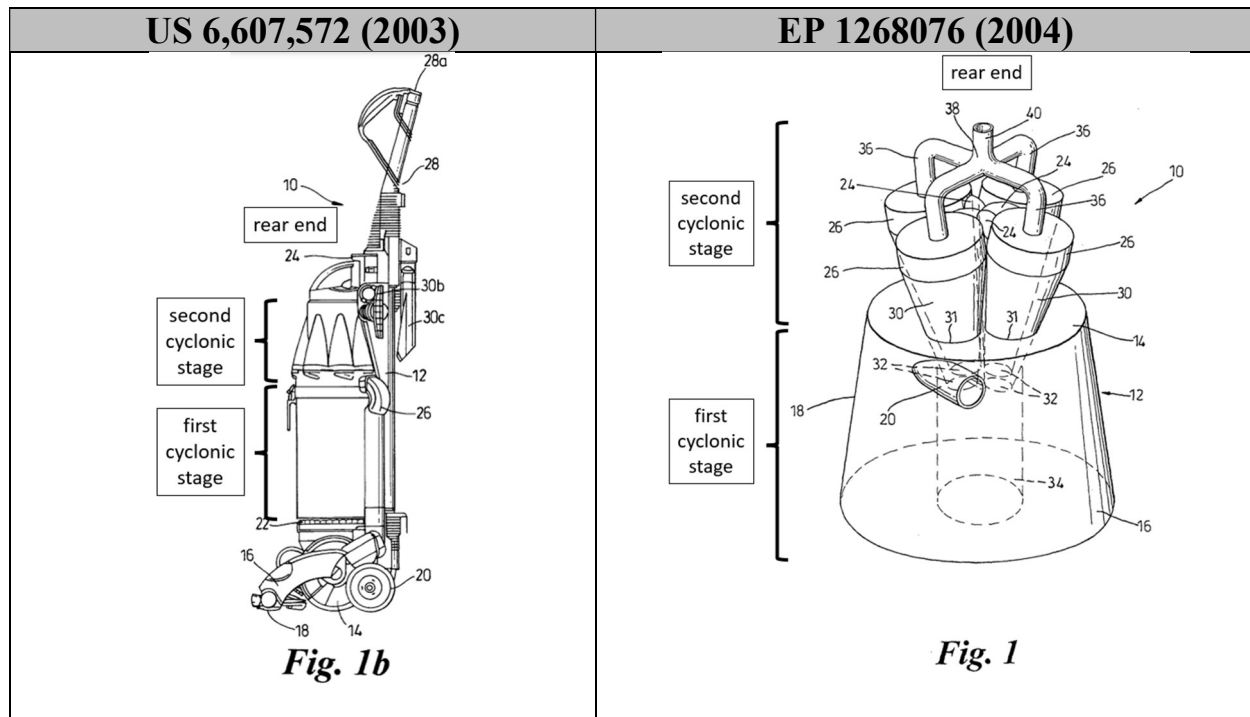
j. [1c.iii]

Butler renders this limitation obvious. Ex1002 ¶¶151-168. Butler renders obvious a second cyclonic cleaning stage as claimed. *Id.*

Butler expressly teaches and suggests that its dirt separation unit may be modified. Butler teaches that “the dirt receptacle 214 comprises a cyclone separation chamber in which the working airflow is swirled to remove dirt and dust by centrifugal or cyclonic action,” and that “various different types of dirt receptacle 214 may be used, and may be interchangeable with one another to provide the user with various cleaning options.” Ex1005, 15:26-29, 18:3-14. Butler further teaches that “other types of dirt separation system may alternatively be used, as will be appreciated by those of ordinary skill in the art” and that Butler may use “any type of dirt separation system using any theory of operation.” *Id.* at 22:23-25; *see also id.* at 15:25-26, 16:25-26. These express teachings and suggestions would have motivated a POSA to modify Butler to use other dirt separation systems. Ex1002 ¶¶151-154.

A POSA would have understood that second cyclonic stages were well-known in the art at the time of the '038 Patent, including with the claimed features and orientation of Limitation [1cii]. Ex1002 ¶155. For example, such second cyclone separators for vacuum cleaners have been known since the 1960s:

US 3,425,192 (1969)	US 7,867,307 (2011)
 rear end second cyclonic stage first cyclonic stage	 second cyclonic stage rear end first cyclonic stage Fig. 1
US 8,051,531 (2011)	CN 201958793 (2010)
 rear end second cyclonic stage first cyclonic stage FIG. 1	 rear end second cyclonic stage first cyclonic stage Fig. 3



Ex1027, Fig 2; Ex1028, Fig. 1; Ex1029, Fig. 1; Ex1009, Fig. 3; Ex1021, Fig. 1b; Ex1030, Fig. 1.

The art repeatedly describes this arrangement of the first and second cyclonic stages as “well-known.” For example, Courtney, which issued in 2010 explains that vacuum cleaners with “second cyclonic separating units” are “well-known”:

Vacuum cleaners which utilize cyclonic separating apparatus are well known. Examples of such vacuum cleaners are shown in EP 0042723, U.S. Pat. Nos. 4,373,228, 3,425,192, 6,607,572 and EP1268076. In each of these arrangements, first and second cyclonic separating units are provided with the incoming air passing sequentially through each

separating unit. In some cases, the second cyclonic separating unit includes a plurality of cyclones arranged in parallel with one another.

Ex1015 at 1:21-29. And another reference, Peng, which issued in 2011, states that “[a] **common** cyclone vacuum cleaner on the market is composed of two cyclone units connected in series” Ex1009 at [0005] (emphasis added). Ex1002 ¶¶155-157.

Further, it was well known in the art that two cyclonic stages provided additional filtration of the dirty air, which is an advantage over using a single cyclone. Ex1002 ¶158. For example, Peng states that the two stage cyclonic vacuums allow for “larger dirt in the air [to be] separated from a first-stage cyclone unit, and smaller particles are separated from the second-stage cyclone unit.” Ex1009 at [0005]. Ex1002 ¶158. By separating the larger dirt particles in the first cyclonic and the finer dust particles in the second cyclonic stage, a user would achieve greater “dust absorption function.” *Id.* at [0004]. Ex1002 ¶158.

Further, it was common to orient the first and second cyclonic stages such that where the front end of the second cyclonic stage is rearward of the rear end of the first cyclonic stage, including as shown above in US 7,867,307, US 8,051,531, and CN 201958793. Ex1002 ¶159.

A POSA would have been motivated modify Butler to add a second cyclone, and orient it as claimed, and with the front end of the second cyclonic stage is

rearward of the rear end of the first cyclonic stage, as was well-known in the art, and would have been motivated to do so based on Butler's express teachings and to achieve the well-known benefit of additional dust separation. Ex1002 ¶160.

For example, a POSA would have been motivated to take Butler's first cyclonic stage, and to use it a platform to add a second, smaller cyclonic stage immediately downstream of it. Ex1002 ¶161. Such an arrangement could have been accomplished by adding a more traditional, smaller, secondary cyclonic stage in a straightforward way to filter finer dust particles that was well understood in the art. *Id.* A POSA would understand that shortening the chamber of the first cyclonic stage to accommodate the additional of a second cyclonic stage within the main housing body would not affect the functionality, efficacy, or efficiency of the filtration system negatively due to the addition of the second stage. *Id.* A POSA would also understand that lengthening the main body housing with what is essentially a hollow space, by a few inches to accommodate a second cyclonic stage would also not substantially disrupt the ergonomic handling of the vacuum cleaner, nor would it affect the functionality, efficacy, or efficiency of the filtration system negatively. *Id.* Additionally, a POSA would also have been motivated to implement a vacuum cleaner with two cyclonic stages by replacing Butler's filtration system with a two-cyclone stage filtration system similar to the one found in Peng. *Id.*

A POSA would understand that each secondary cyclone would be smaller than the primary cyclone, but the secondary cyclonic stage taken as a whole would not necessarily need to be smaller than the primary cyclonic stage. Ex1002 ¶162. Nevertheless, a POSA would understand that a smaller secondary cyclonic stage may be preferred to keep the device as compact as possible to fit in a hand vacuum cleaner. *Id.* Adding a secondary cyclonic stage would have only involved combining prior art elements from Butler alone according to the known technique of using a second cyclonic cleaning stage, as was well-known in the art since the 1960s, to achieve the predictable and well-known benefit of efficiency and improved filtration of fine dust particles. *Id.*

Further, such an arrangement meets Limitation [1c.iii]. Limitations [1c.ii] and [1c.iii] are identical but for the elements that call for a second cyclonic stage where the second cyclonic stage is rearward of the rear end of the first cyclonic stage. As such, modifying Butler to add a second cyclonic stage with a structure that duplicates its first cyclonic cleaning stages teaches the identical elements in Limitation [1c.ii] for the same reasons. Regarding the remaining elements, it would have been obvious to a POSA to position Butler's second cyclone stage rearward of the first cyclonic cleaning stage, including because (1) Butler teaches that its airflow is from front-to-rear, (2) a POSA would have understood that a second cleaning stage for filtration of fine particles is most effective when positioned downstream of the first cyclonic

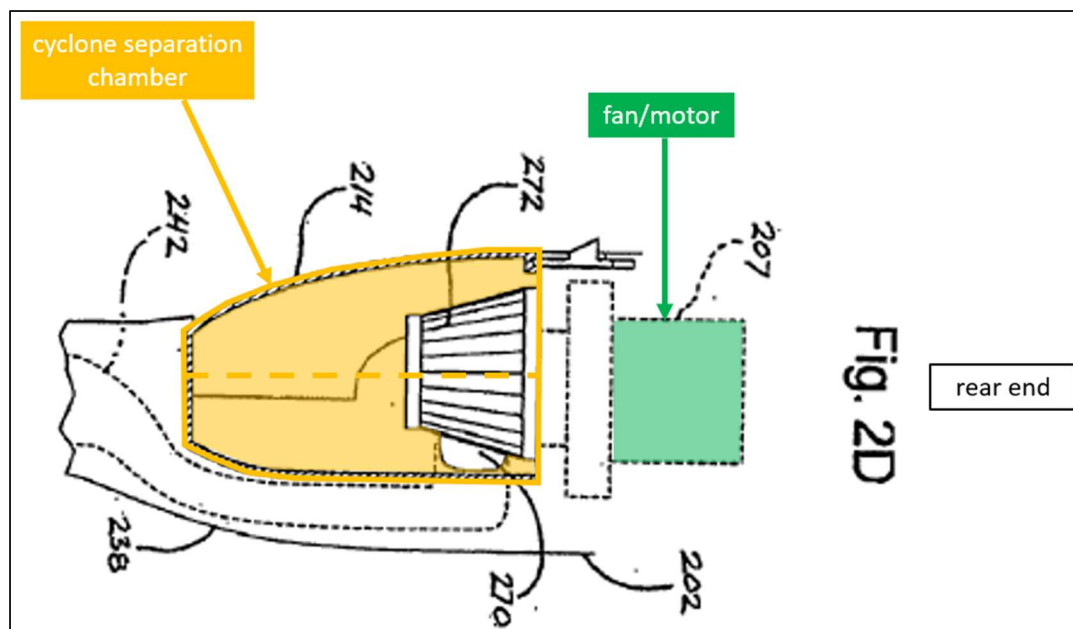
cleaning stage, and (3) such a technique was well-known in the art since the 1960s as described above. Ex1002 ¶163. It would have been obvious to a POSA that the secondary cyclonic stage is positioned after the first cyclonic stage because it would be illogical anywhere else. *Id.* A POSA would understand inefficiencies would be introduced if the second cyclonic stage were positioned anywhere else other than behind the first cyclonic stage to immediately capture the air that exits the first cyclonic stage. *Id.*

Furthermore, Butler expressly teaches that its various components are combinable and “may be interchangeable with one another to provide the user with various cleaning options,” Ex1005, 16:25-29, and that “the present invention includes embodiments in which the features described herein are used individually or in various other inventive combinations,” *id.* at 43:29-44:3; *see also id.* at 4:17-28, 18:22-28, 19:9-15, 34:12-13 (components are combinable). Combining Butler’s components would have been obvious, with at least a reasonable expectation of success, including based on these teachings. Ex1002 ¶164. A POSA 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. *Id.* at ¶¶165-166. Additionally, a hand vacuum cleaner with two cyclonic stages was known in the art, and applying a second cyclonic stage to Butler’s hand vacuum cleaner would improve Butler’s hand

vacuum cleaner in same way that similar other hand vacuum cleaners were improved—*i.e.*, better air filtration, including for fine particles. *Id.* at ¶167. Indeed, a POSA would have found it obvious to try to add a second cyclonic stage rearward of the first cyclonic stage for additional filtration of the air. *Id.* at ¶168.

k. [1c.iii.1]

Butler teaches this limitation. Ex1002 ¶¶169-170. Butler's **fan/motor 207** is positioned rearward of the **cyclone separation chamber**, *i.e.*, the first cyclonic stage. Ex1005, 16:3-21; Ex1002 ¶¶169-170.



Ex1005, Fig. 2D. Ex1002 ¶¶169-170.

l. [1c.iii.2]

Butler teaches this limitation. Ex1002 ¶¶171-176. Butler teaches that the hand vacuum cleaner can be mounted to the rigid wand outlet end of the rigid air flow conduit, for the same reasons as in Limitation [1c].

Butler teaches that when the hand vacuum cleaner so mounted, a/the⁵ handle is drivingly connected to the surface cleaning head. Ex1002 ¶171. Butler teaches this limitation regardless of whether the claims require “the handle” or “a handle” because each of its handles is drivingly connected to the surface cleaning head. Ex1002 ¶175.

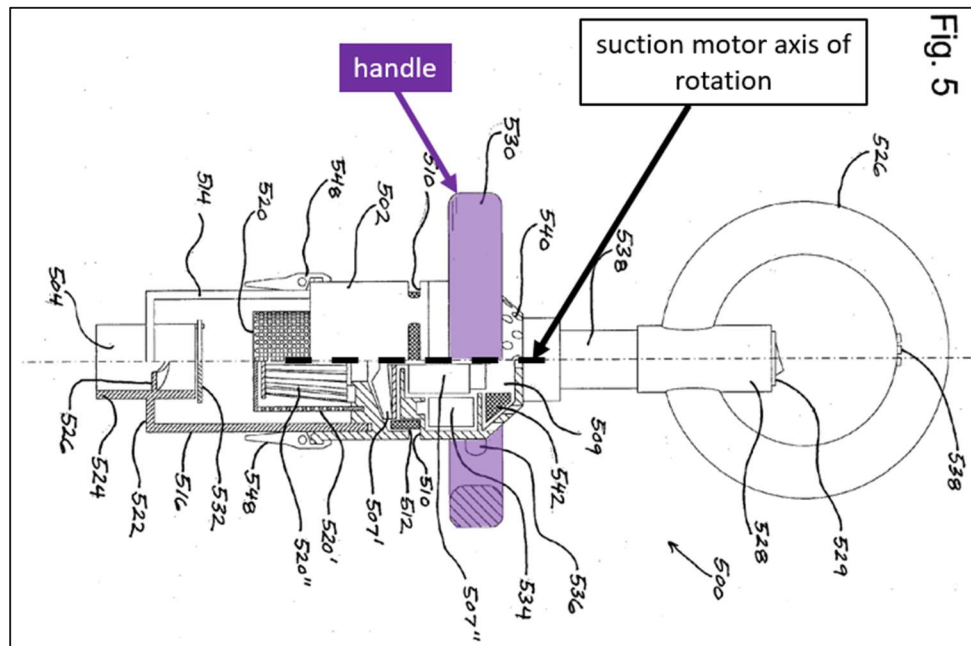
Butler teaches that, when the hand vacuum is mounted to the wand as claimed, each of Butler’s handles are drivingly connected to the surface cleaning head, because driving each of these handles drives the cleaner head. Ex1005, Figs. 2A, 3, 4, and 6; *see also id.* at 12:4-12, 14:4-10, 19:18-20:2. A POSA’s understanding that such handles are “drivingly connected” to the surface cleaning head is consistent with the ’038 Patent specification, which states that “[a]s used herein and in the claims, two or more parts are said to be ... ‘connected’ ... where the parts are joined or operate together either directly or indirectly (i.e., through one or more intermediate parts), so long as a link occurs” and distinguishes the term “directly connected,” stating that “[a]s used herein and in the claims, two or more parts are said to be ... ‘directly connected’ ... where the parts are connected directly in physical contact with each other,” and that “[n]one of the terms ... ‘connected’ ...

⁵ The ’038 Patent claims do not include a particle before the term “handle.” *See* Ex1001, Cl. 1.

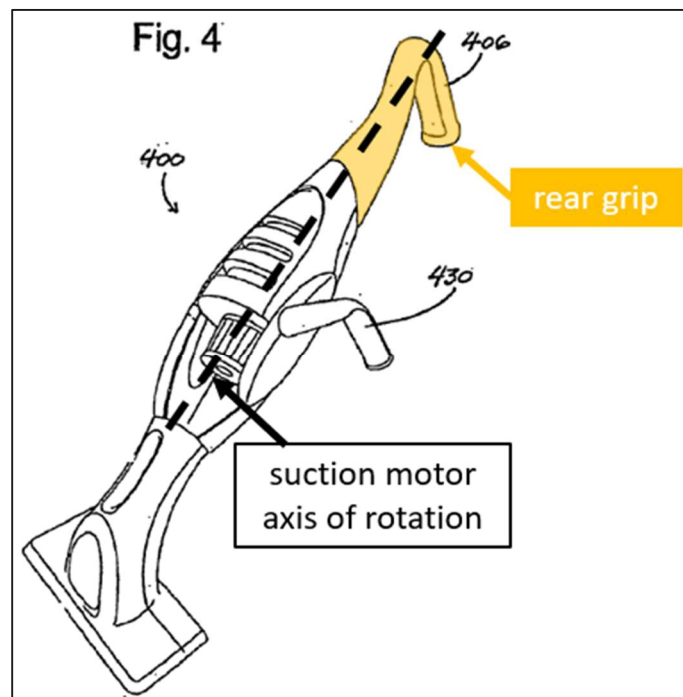
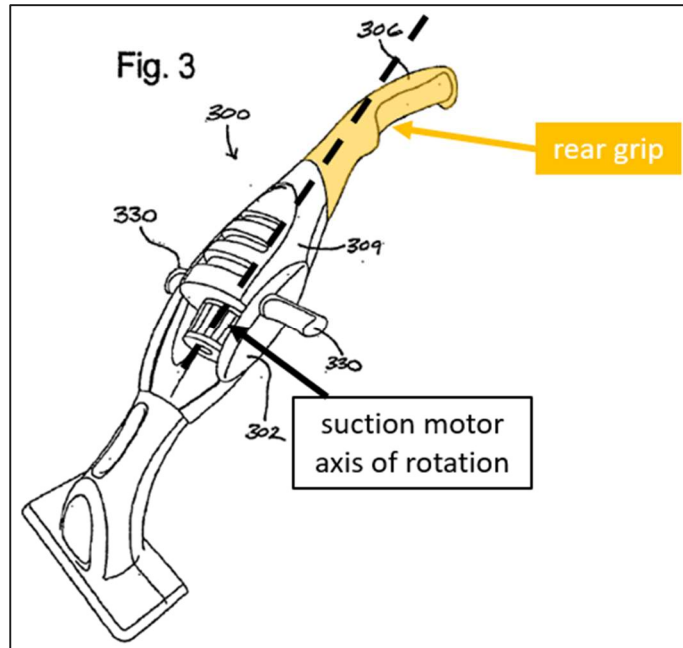
distinguish the manner in which two or more parts are joined together.” Ex1001, 9:38-52. Ex1002 ¶¶175-176.

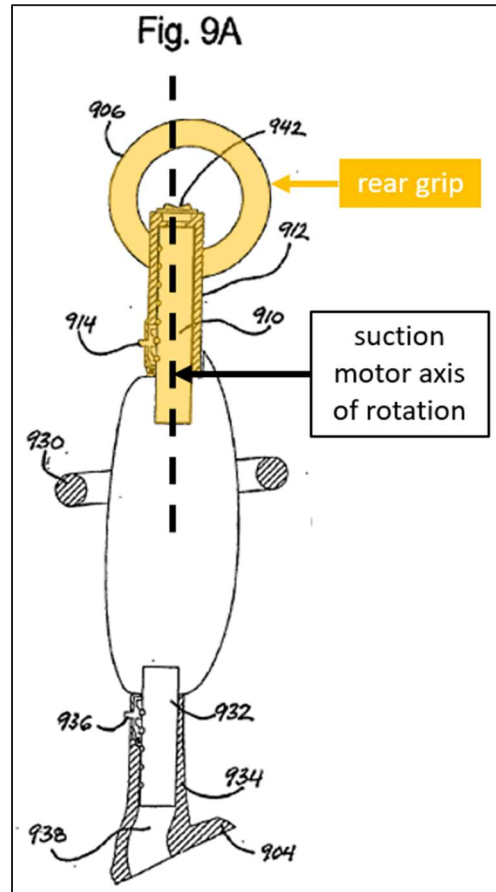
2. [2]/[5]

Butler renders claims 1 and 3 obvious and teaches the additional limitations of claims 2 and 5, respectively. Ex1002 ¶¶177-182; *see also* Claim 3. As explained in Limitation [1c.i] and [1c.i.1], Butler teaches a suction motor with a suction motor axis of rotation and various handles. A POSA would understand that the suction motor and fan assembly axis of rotation intersects the foregrip shown in Figure 5, because it goes through Butler’s foregrip as shown below:



Ex1005, Fig. 5. Further, Butler’s suction motor and fan assembly intersects its rear handles, as shown:

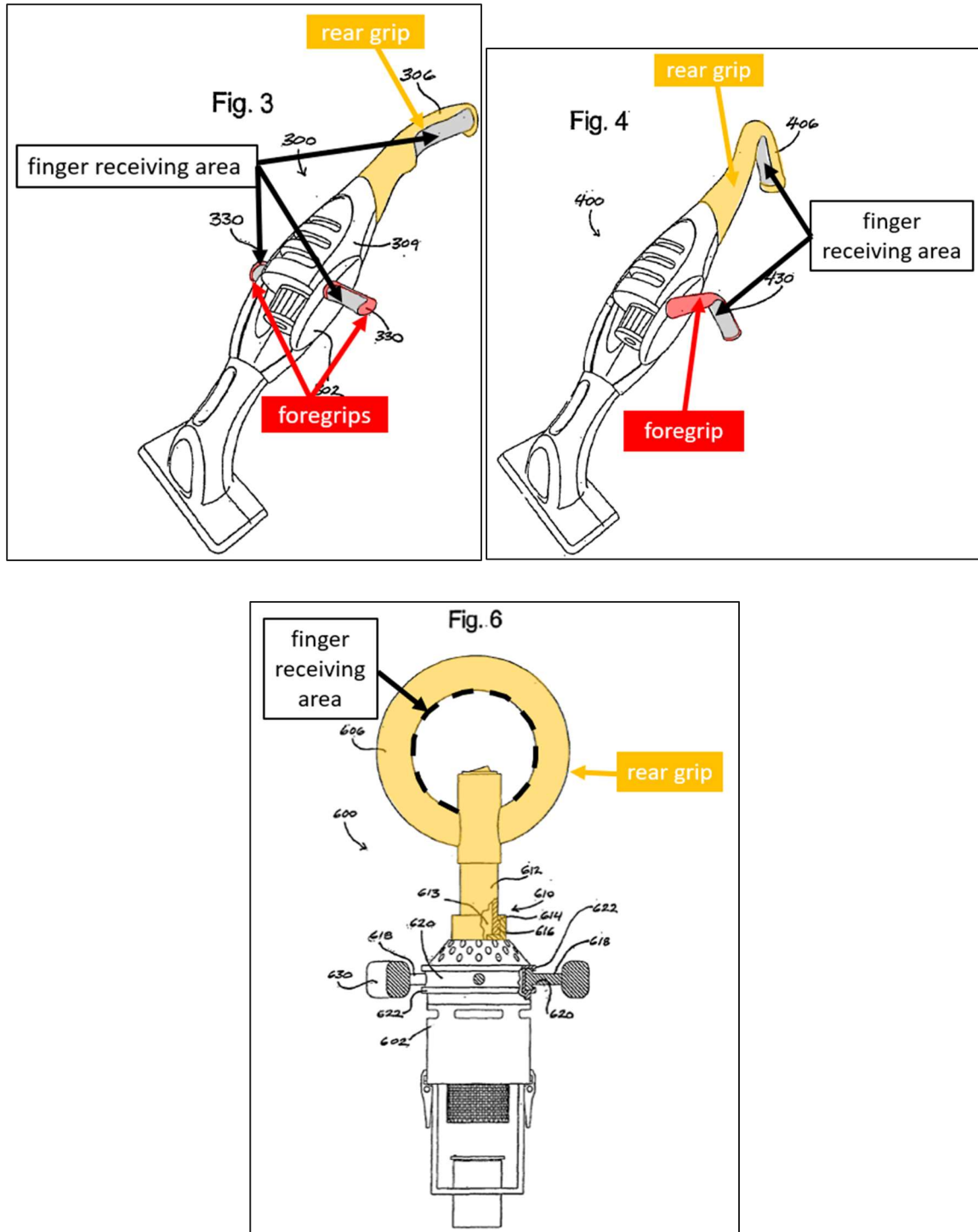




Ex1005, Figs. 3-4, 9A; Ex1002 ¶¶177-182.

3. [3]

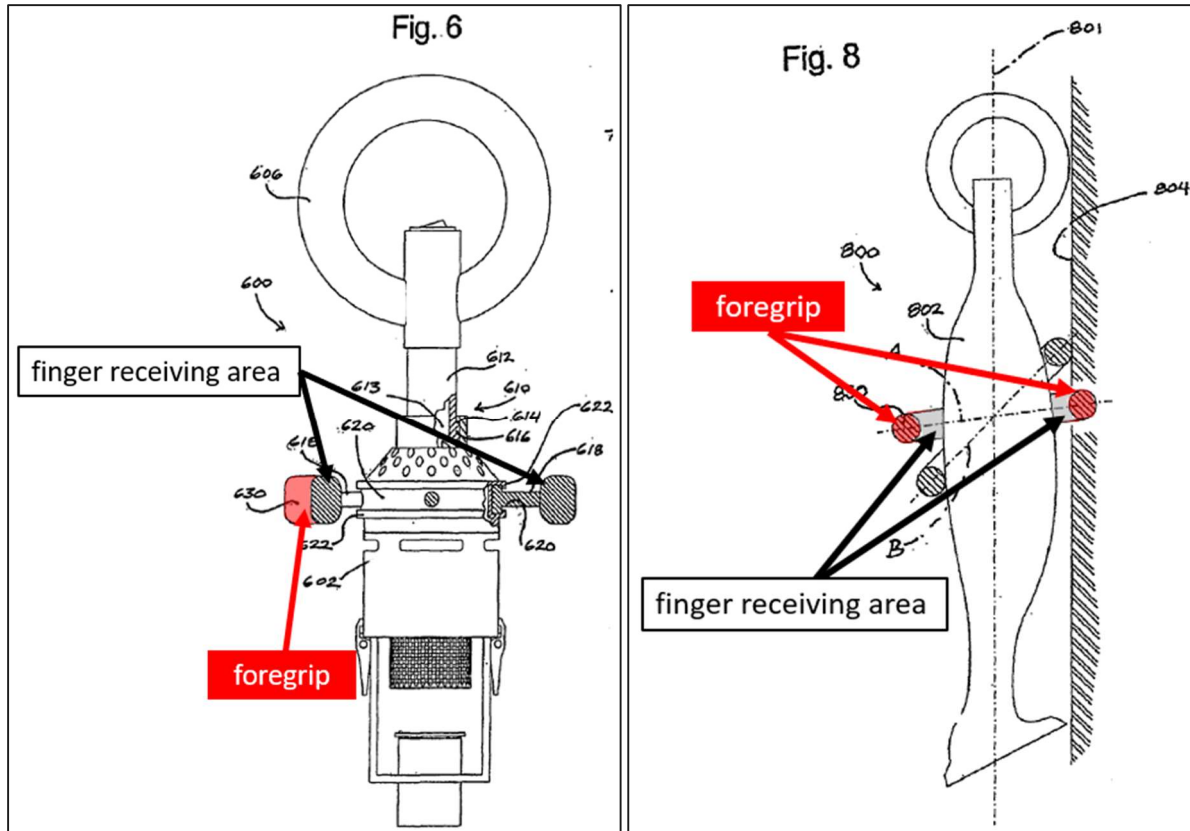
Butler renders obvious claim 1 and teaches the additional limitations of claim 3. Ex1002 ¶¶183-190. As explained in Limitations [1c.1] and [1c.i.1], Butler teaches a main body and various handles, respectively. A POSA would understand that any area of Butler's handles has a finger receiving area where the user's fingers would fall when gripping the handle. Ex1002 ¶¶184-186. Further, a POSA would understand that the finger receiving area for various handles is positioned between the handle and the main body, as shown in Figures 3, 4, and 6:



Ex1005, Figs. 3, 4, and 6. Ex1002 ¶187.

Butler further teaches that a first portion of the finger receiving area is positioned rearward of the suction motor. For example, Butler teaches that the

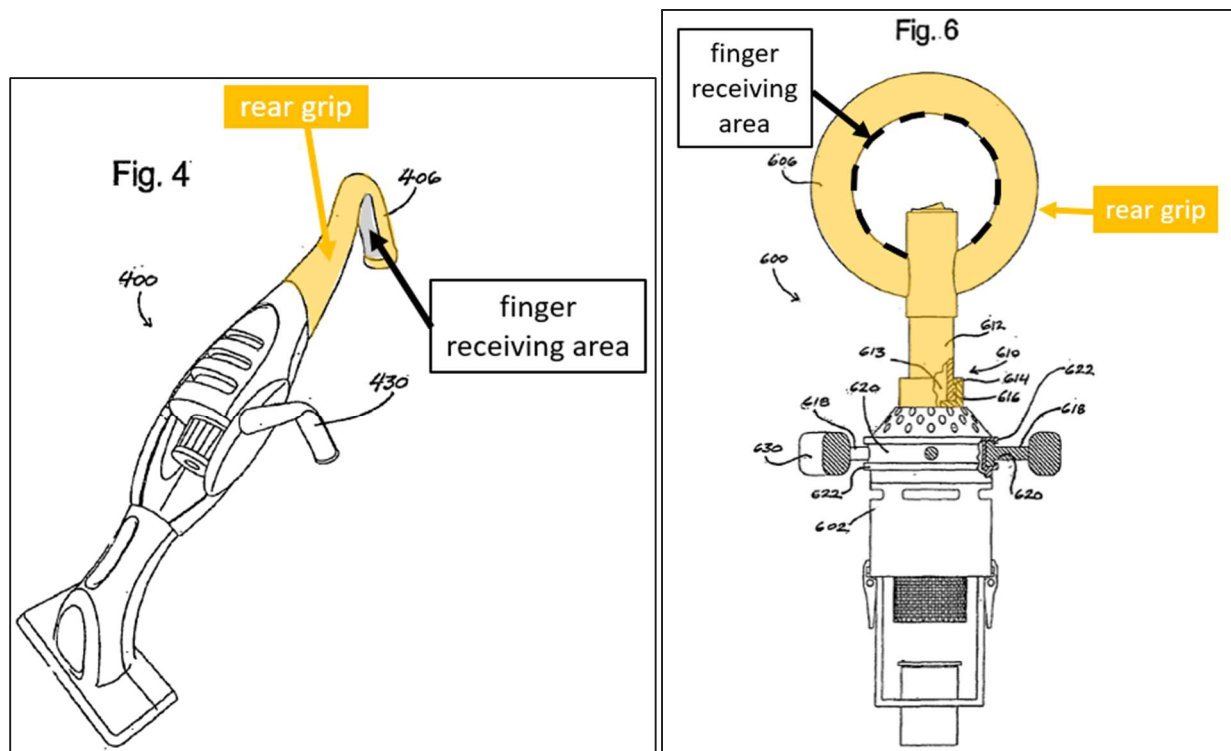
foregrip can pivot, such that a portion of the finger receiving area would be rearward of the suction motor: “**foregrip 830** comprises a loop-like device that is attached to the housing 802 of a vacuum cleaner 800” and is “pivotable about an axis generally perpendicular to the longitudinal axis 801 of the vacuum 800.” Ex1005, 24:26-25:8. A POSA would understand that, when the “foregrip” as shown in Figure 6 is pivoted according to the teachings in Figure 8, a first portion of the finger receiving area is positioned rearward of the suction motor, as shown:



Ex1005, Figs. 6 and 8. Ex1002 ¶¶188-189.

Further, Butler’s rear circular grip and rear pistol-style grip likewise have a first portion of the finger receiving area positioned rearward of the suction motor, as

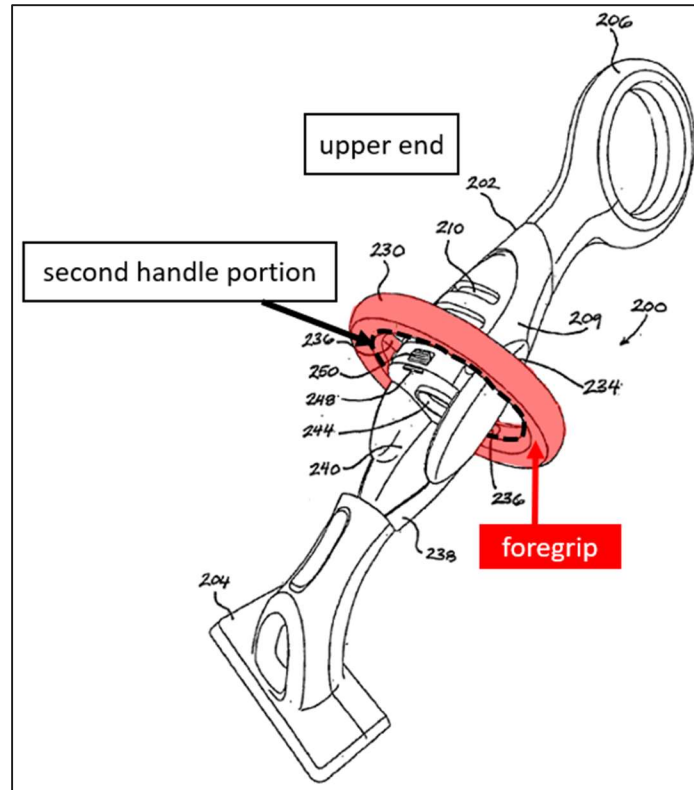
shown:



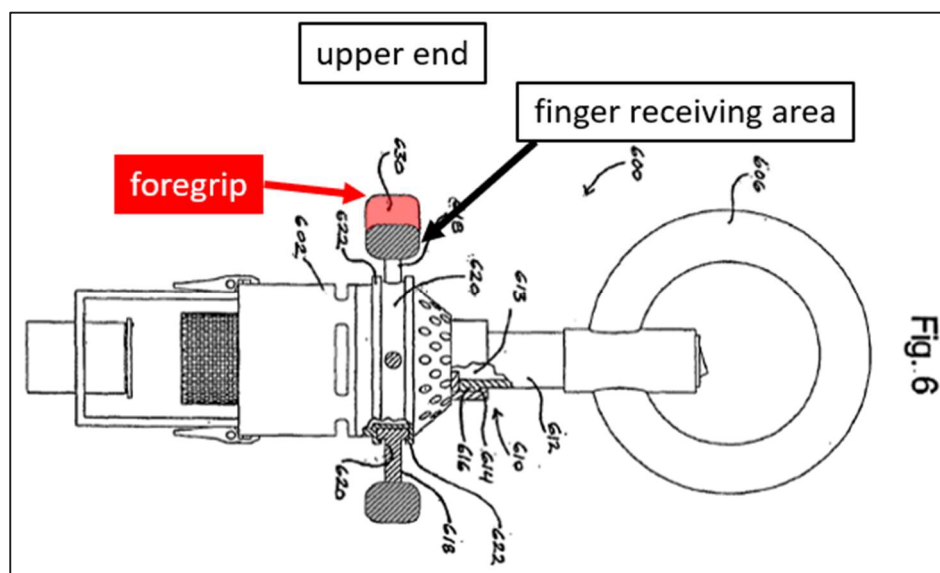
Ex1005, Figs. 4 and 6. Ex1002 ¶190.

4. [4]

Butler renders obvious claim 3 and teaches the remaining limitations of claim 4. Ex1002 ¶¶191-195. As explained in Limitation [1c], Butler teaches a hand vacuum cleaner that has an upper end. Furthermore, as explained in Claim 3, Butler teaches finger receiving areas, which are any graspable portions of the handle where the user's fingers fall when gripping the handle. Ex1002 ¶¶192-193. As seen Figure 1, when a user grips the **foregrip 230**, a second portion of the finger receiving area is positioned above the upper end of the main body.



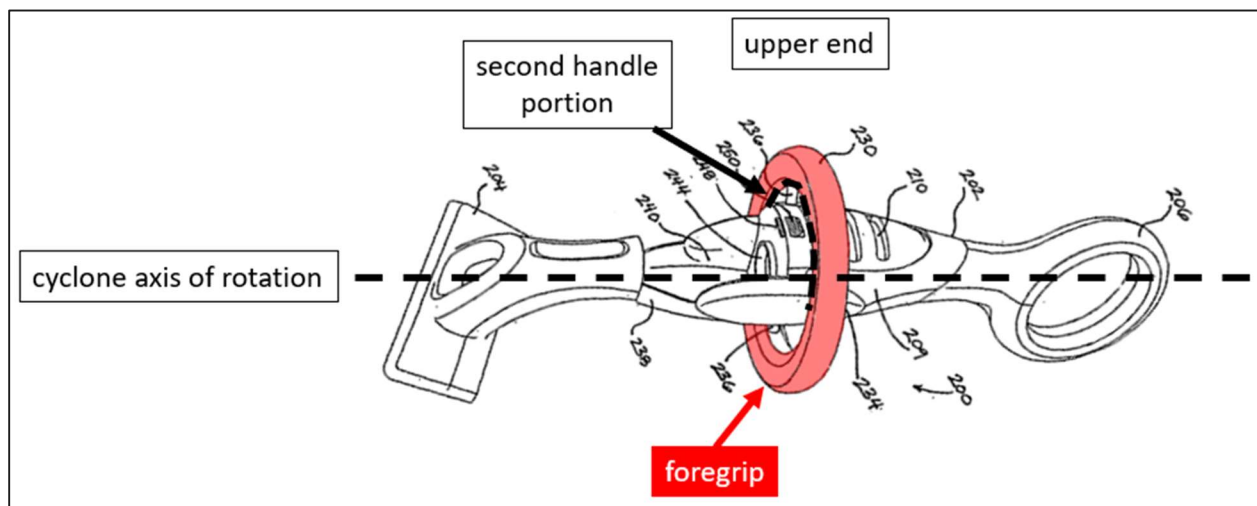
Ex1005, Fig. 2A. Ex1002 ¶¶194. Similarly, Butler teaches a second portion of the finger receiving area positioned above an upper end of the main body, as shown in Figure 6:



Ex1005, Fig. 6. Ex1002 ¶195.

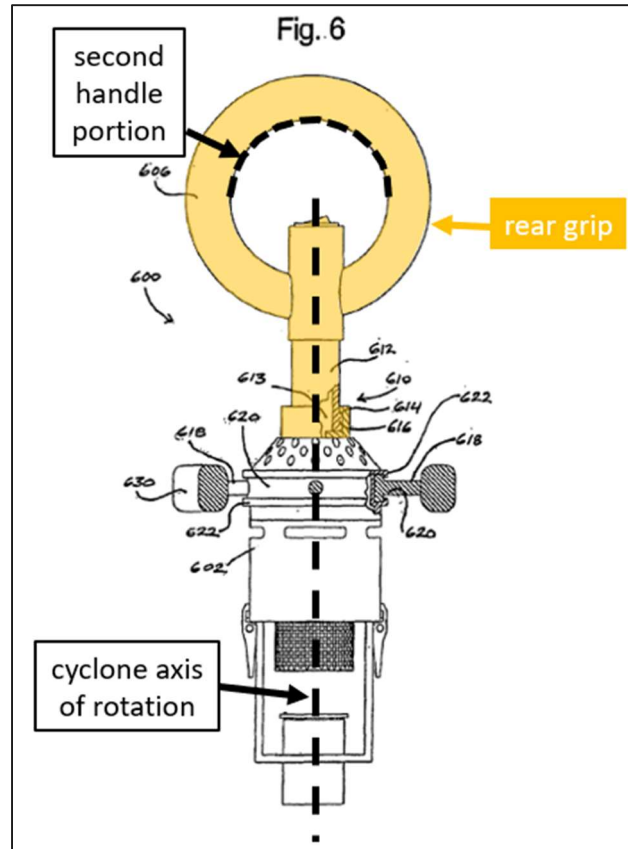
5. [6]/[7]

Butler renders obvious claims 1 and 5 and teaches the additional limitations of claims 6 and 7. Ex1002 ¶¶196-202. As seen in Figure 2A, when Butler's hand vacuum cleaner is oriented as claimed, a second handle portion is positioned above the suction motor.



Ex1005, Fig. 2A. Ex1002 ¶199.

Similarly, as seen in Figure 6, when oriented as claimed, a second handle portion of the rear grip is positioned above the suction motor:



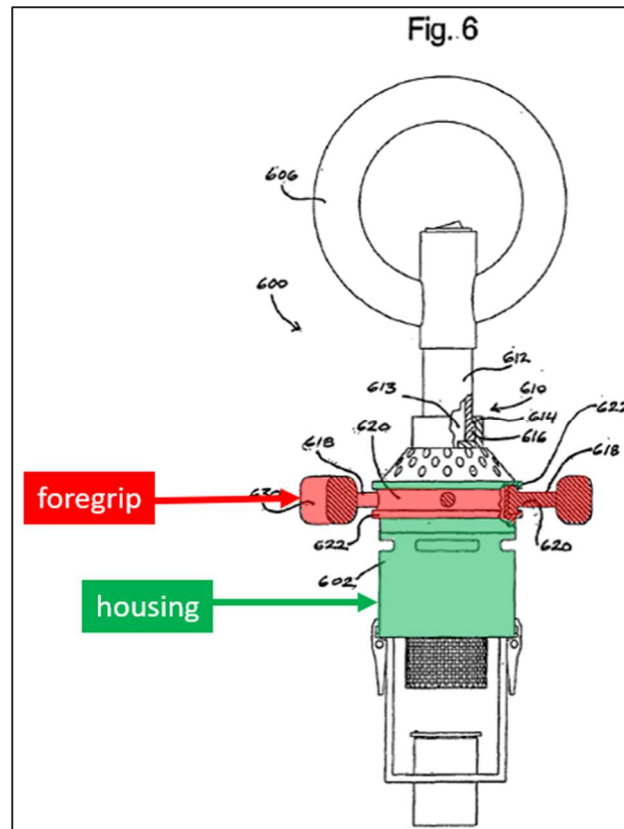
Ex1005, Fig. 6; Ex1002 ¶200.

Further, Butler teaches that “[t]he foregrips 330, 430 also may be provided with joints or pivots to allow them to be articulated into more desirable positions.” Ex1005, 19:18-20:2. Ex1002 ¶201. Additionally, Butler teaches that “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.” *Id.* Following Butler’s teaching, a POSA would find it obvious to pivot, rotate, or remove and insert the Butler’s handle, foregrip 330, 430, into different positions, so that when the hand vacuum cleaner is oriented such that the cyclone axis of rotation extends horizontally and the upper end of the hand vacuum cleaner above the lower end of the hand

vacuum cleaner, the handle is positioned above the suction motor the handle portion is positioned above the suction motor for easy maneuvering. *Id.* Ex1002 ¶¶201-202.

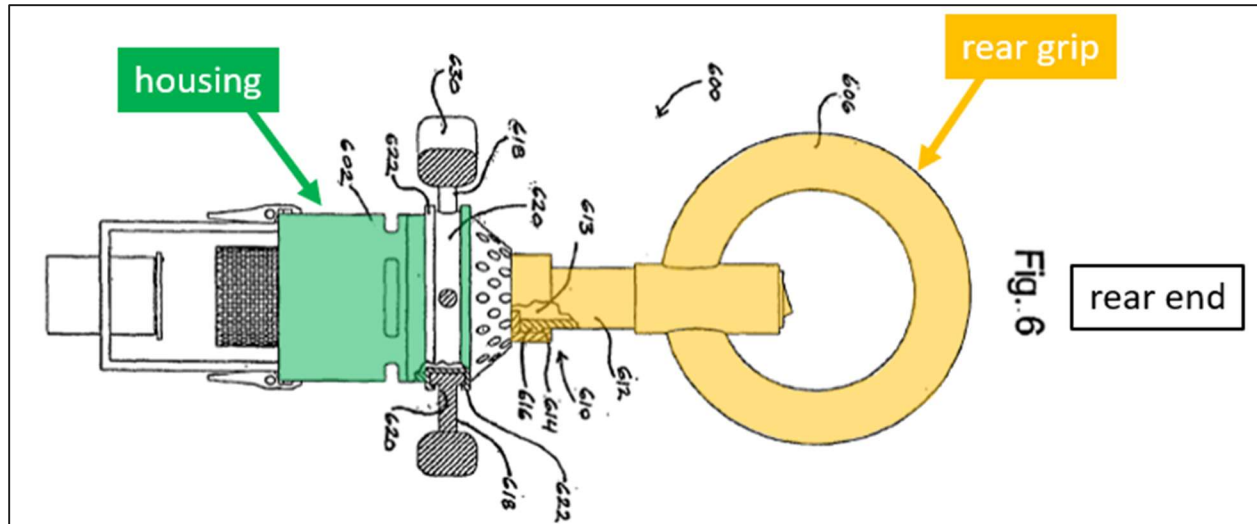
6. [8]/[9]

Butler renders obvious claims 1 and 6 and teaches the additional limitations of claims 8 and 9. Ex1002 ¶¶203-210. As seen in Figure 6, Butler's “**foregrip 630**” is mounted to the rear end of the main body. Ex1005, Fig. 6; Ex1002 ¶206.



Ex1005, Fig. 6.

Similarly, as seen in Figure 6, when oriented as claimed, the first portion of the handle is mounted to a rear end of the main body:



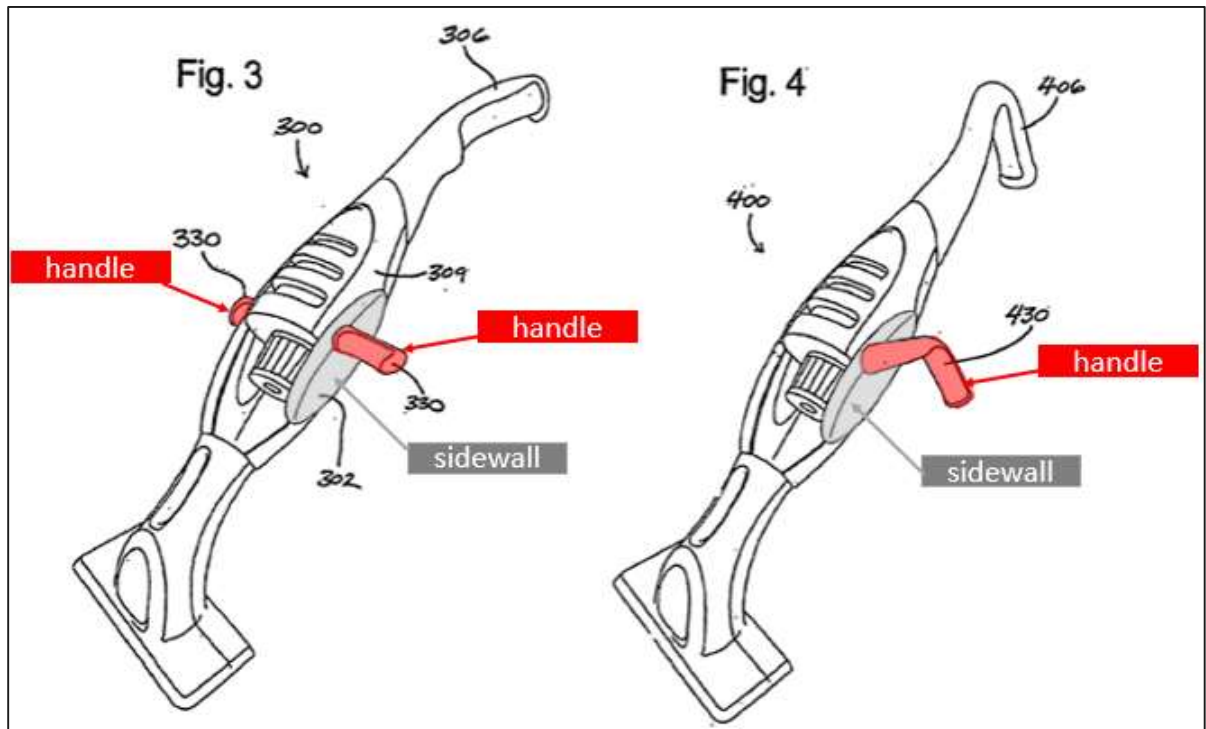
Ex1005, Fig. 6. Ex1002 ¶207.

Additionally, Butler teaches that “[t]he foregrips 330, 430 also may be provided with joints or pivots to allow them to be articulated into more desirable positions.” Ex1005 19:18-20:2. Butler teaches that “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.” *Id.* Following Butler’s teaching, a POSA would find it obvious to pivot, rotate, or remove and insert the Butler’s handle, foregrip 330, 430, into different positions, so that when the hand vacuum cleaner is oriented such that the first portion of the handle is mounted to a rear end of the main body. Ex1002 ¶¶208-210.

7. [10]

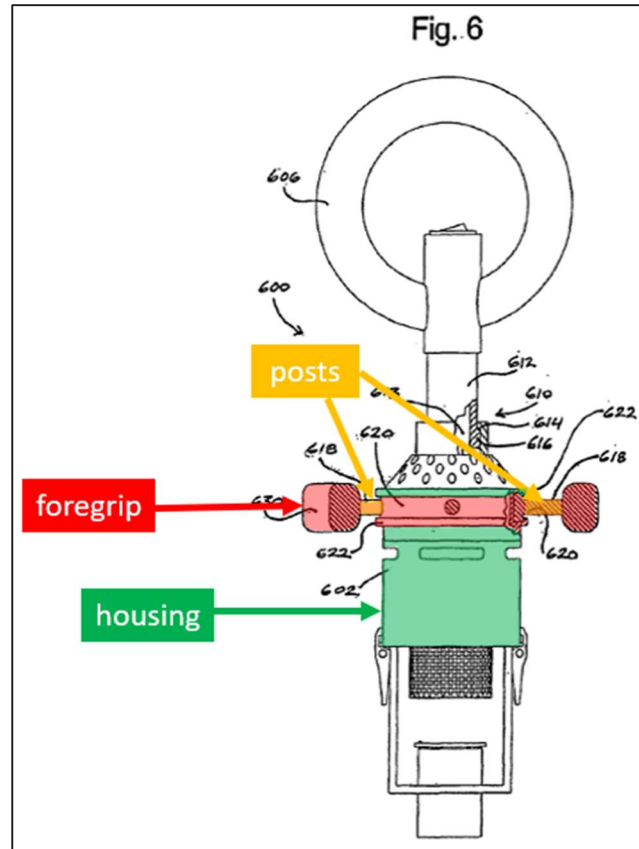
Butler renders obvious claim 1 and teaches the remaining limitations of claim 10. Ex1002 ¶¶211-214. Butler teaches several handles attached to the sidewall of its main body. For example, Figures 3 and 4 depict handles attached to the sidewall

of its main body:



Ex1005, Figs. 3 and 4.

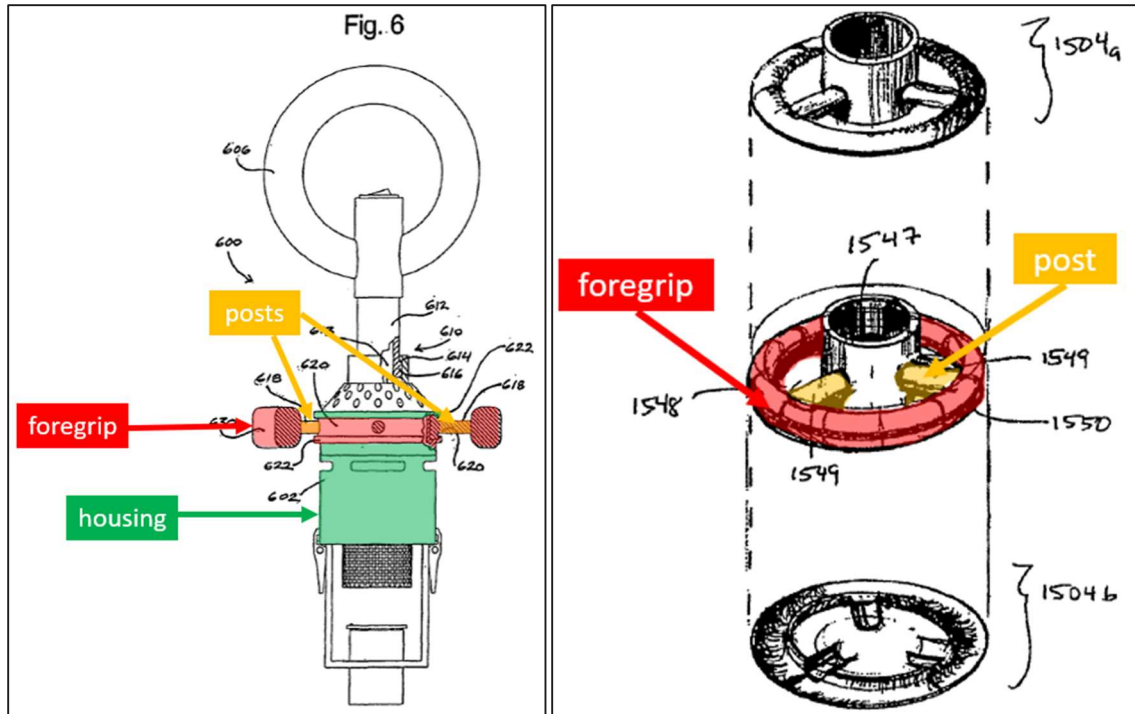
Butler further teaches that its “foregrip 630” is attached to a sidewall of the main body by “a number of radially-extending posts 618” as shown in Figure 6 below:



Ex1005, Fig. 6, Ex1005, 23:12-15. Ex1002 ¶¶211-214.

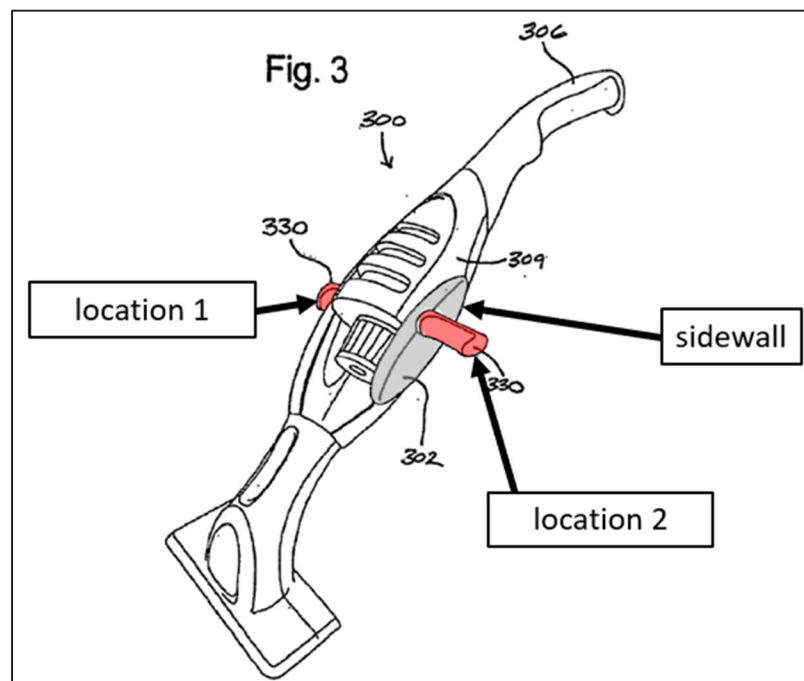
8. [11]

Butler renders obvious claim 1 and teaches the additional limitations of claim 11. Ex1002 ¶¶215-218. Butler teaches that its “foregrip” is attached to the main body at two locations: two of the three “posts” by which the foregrip is attached to the main body, as shown in Figures 6 and 18:



Ex1005, Figs. 6, 18.

Further, as shown in Figure 3, Butler teaches the handle attached to the main body and two locations:



Ex1005, Fig. 3; Ex1002 ¶¶215-218.

9. [12]

Butler renders obvious claim 1 and teaches the additional limitations of claim 12. Ex1002 ¶¶219-226. Butler teaches that the rigid wand outlet end has an outlet end electrical connector to deliver power to its motorized powerhead. **First**, Butler teaches a motorized powerhead with electrical leads: Butler teaches a “powerhead having a rotating agitator” and teaches that “[o]f course, if a powered attachment is provided, suitable power leads can be provided to connect the powered attachment to the electric circuit.” Ex1005, 22:6-11; Ex1002 ¶221. **Second**, Butler teaches electrical leads at the hand vacuum cleaner inlet: “leads may pass around or through the dirt receptacle, or may be integrated into the dirt receptacle body.” Ex1005, 22:11-13; Ex1002 ¶¶222. A POSA would understand that for the power leads to provide power to Butler’s powered attachments, the rigid wand outlet would have an outlet end electrical connector “to connect the powered attachment to the electrical circuit.” Ex1005, 22:5-11; Ex1002 ¶223. Butler’s “entry tube 524” includes an electrical connector adjacent to the hand vacuum cleaner air inlet to connect to “power leads” and provide power to Butler’s powered attachment. Ex1005, 22:6-11; Ex1002 ¶223. **Third**, as described in Limitation [1c], Butler’s connector/vacuum tube connects this powered attachment to the hand vacuum cleaner. A POSA would therefore understand that to do so, the connector/vacuum

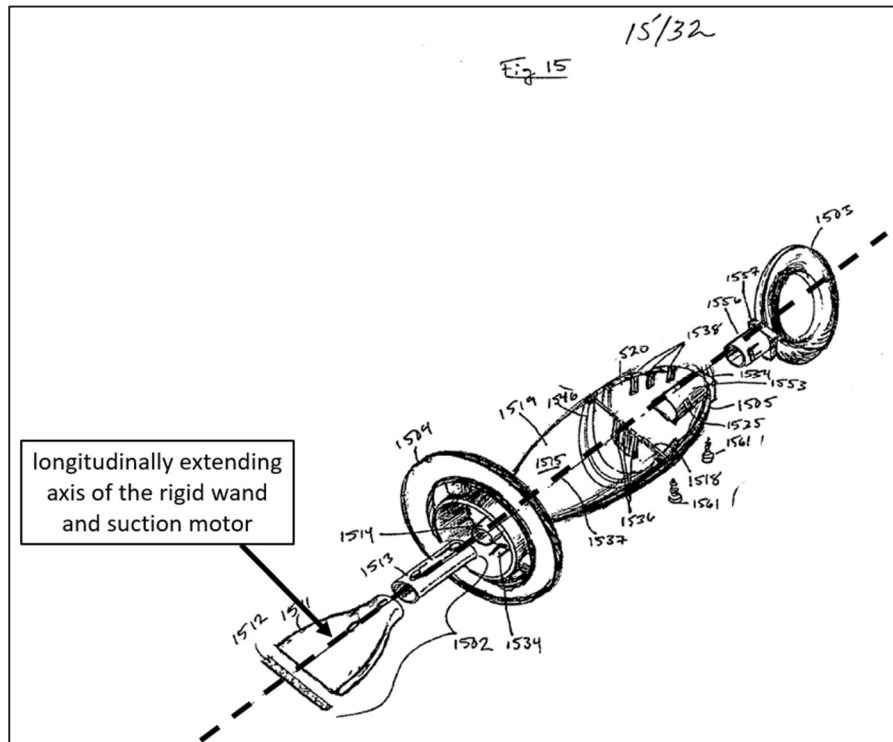
tube would have electrical connectors at both its inlet end (to connect to the electrical connectors of the motorized powerhead) and at its outlet end (to connect to the hand vacuum cleaner's electrical connector, located adjacent its air inlet). Ex1002 ¶224.

Additionally, Butler teaches a hand vacuum cleaner electrical connector provided adjacent to the vacuum cleaner air inlet. Ex1002 ¶225. Butler's "nozzle inlet 504 ... comprises an entry tube 524 that passes through the dirt receptacle bottom wall 522." Ex1005, 22:5-11. "[A]ny type of cleaning device may be attached to the entry tube 524," and if a "powered attachment is provided, suitable power leads can be provided to connect the powered attachment to the electric circuit." *Id.*; Ex1002 ¶225. Butler's "entry tube 524" includes an electrical connector adjacent to the hand vacuum cleaner air inlet to connect to "power leads" and provide power to Butler's powered attachment. Ex1005, 22:6-11; Ex1002 ¶225. Further, a POSA would understand that the hand vacuum cleaner electrical connector is releasably engageable with the rigid wand outlet end electrical connector to provide electrical circuitry to Butler's powered attachments, because Butler teaches a releasably engageable connector/vacuum tube, as described for Limitation [1c]. Ex1002 ¶226.

10. [13]

Butler renders obvious claim 1 and teaches the additional limitations of claim 13. Ex1002 ¶¶227-229. As explained in Limitation [1b.1], Butler teaches a hand

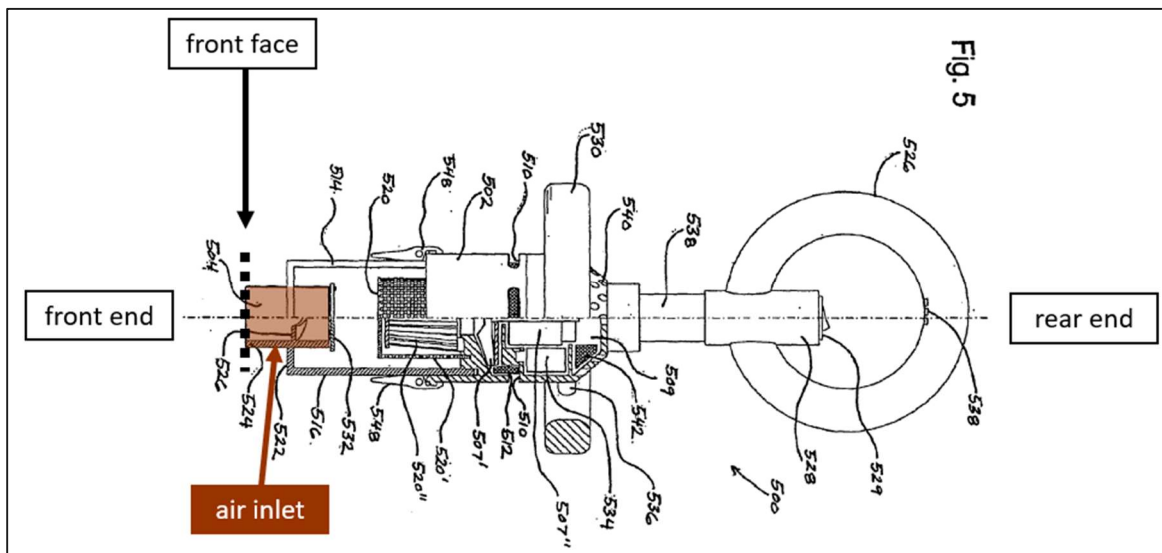
vacuum cleaner mounted to the rigid wand outlet end that has a longitudinally extending conduit axis. Further, as explained in Limitation [1c.i], Butler teaches a suction motor axis of rotation that extends in the same direction as the longitudinally extending axis of the rigid wand. *Id.*, see Ex1005, Fig. 15.



the front end of the second cyclonic stage is rearward of the rear end of the first cyclonic stage. Ex1002 ¶¶230-232.

12. [15]

Butler renders obvious claim 1 and teaches the additional limitations of claim 15. *See* Ground 1, Claim 1; Ex1002 ¶¶233-235. Claim 15 requires that “surface cleaning apparatus of claim 1 wherein the front face has the hand vacuum cleaner air inlet.” Ex1001 at Claim 15. While the claims do not previously refer to “a front face” or state the structure containing the claimed “front face,” Butler teaches that its hand vacuum cleaner has a front face that has the hand vacuum cleaner air inlet, as shown:



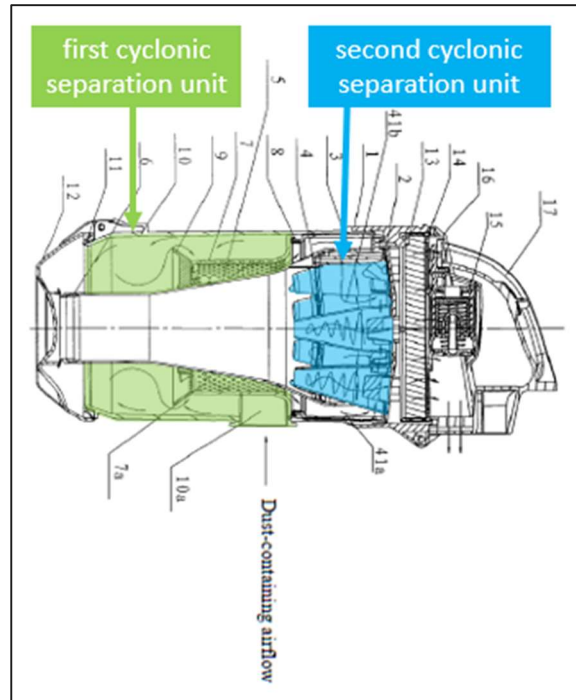
Ex1005, Fig. 5.

B. Ground 2: Butler in Combination With Peng Renders Claims 1-15 Obvious

1. Peng Teaches A Second Cyclone Stage That A POSA Would Have Been Motivated To Incorporate Into Butler (Limitation [1c.iii])

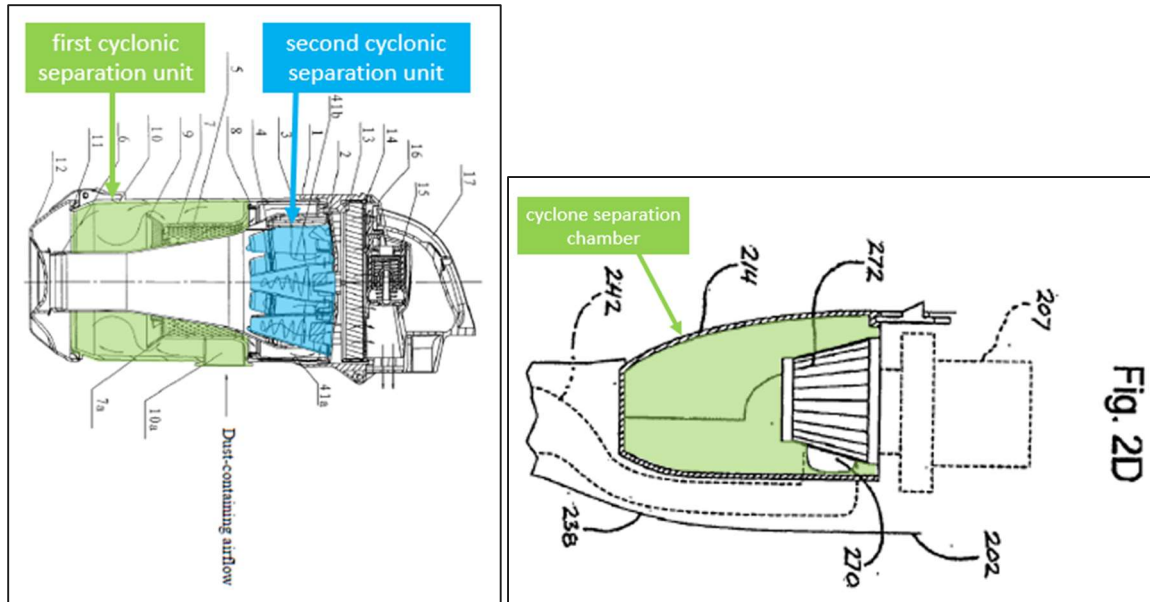
As explained in Ground 1, Limitation [1c.iii], Butler expressly teaches and suggests that its dirt separation unit may be modified with “other types of dirt separation system[s] ... appreciated by those of ordinary skill in the art.” Ex1005, 15:26-29, 16:25-26, 18:3-14, 22:23-25; Ex1002 ¶¶236-244. Butler teaches that “various different types of dirt receptacle 214 may be used, and may be interchangeable with one another to provide the user with various cleaning options.” Ex1005, 16:26-28. It would have been obvious to modify Butler’s hand vacuum cleaner to incorporate a two-stage cyclone separation system, including as taught by Peng, for the same reasons as explained in Ground 1, Limitation [1c.iii]. *See* Ground 1, Limitation [1c.iii]. Ex1002 ¶¶236-238.

Peng teaches a two-stage cyclone separation unit where its “second cyclone separation unit” is downstream and rearward of the “first cyclone separation unit”:



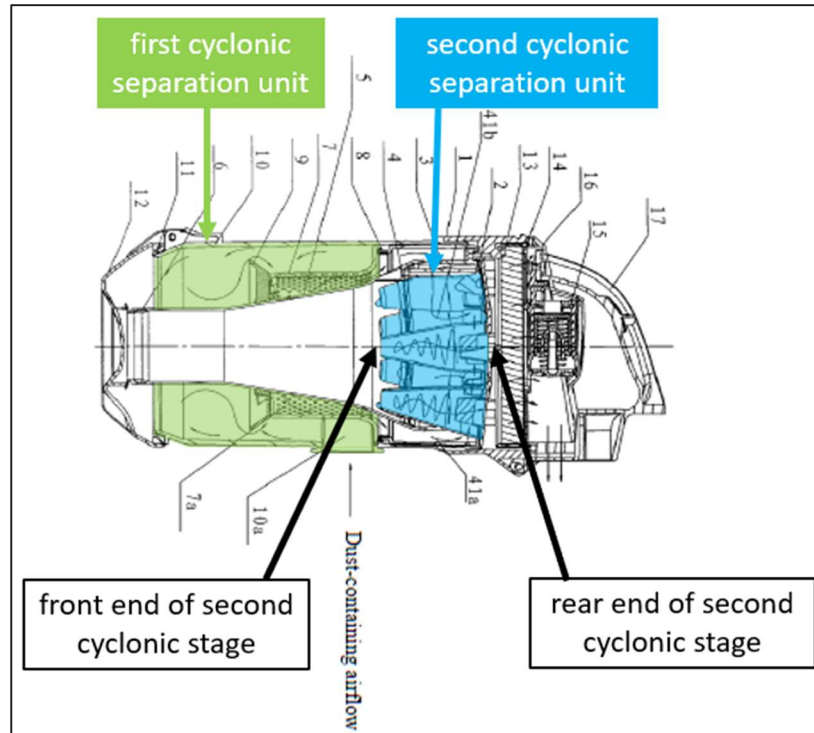
Ex1009, Fig. 3; Ex1002 ¶239.

A POSA would have been motivated to incorporate Peng’s second cyclonic separation unit immediately downstream of Butler’s first cyclonic stage, for the reasons given in Limitation [1ciii], and to match the orientation of their respective first cyclone stages, with the upstream side at the front, and the downstream side at the rear:



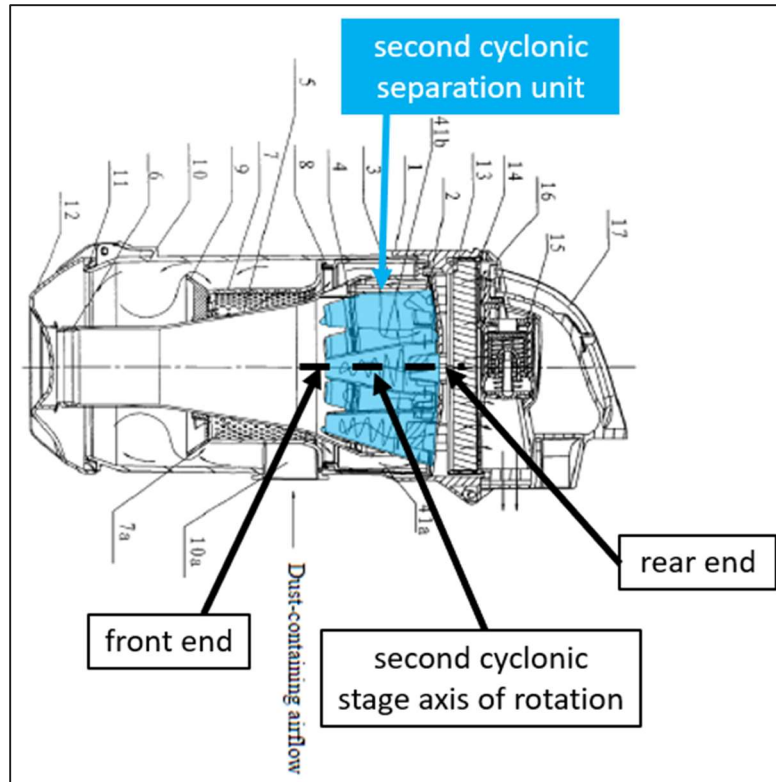
Ex1009, Fig. 3 (Peng); Ex1005, Fig. 2D (Butler); *see also* Ex1008 at [0005], [0008], [0010], [0012], [0059], [0060]; Ex1002 ¶240.

Butler in combination with Peng teaches a second cyclonic stage with a front end and a rear end, as shown:



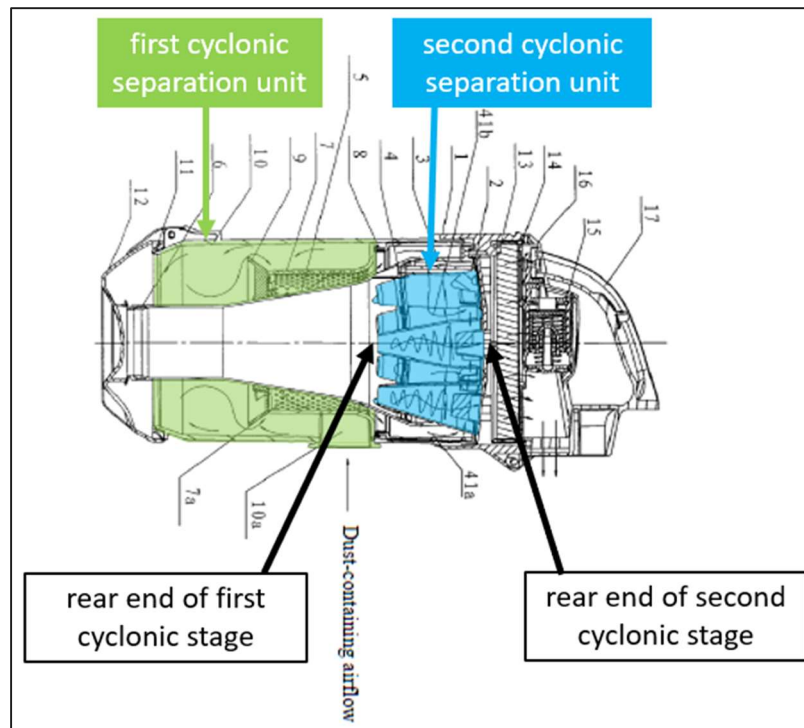
Ex1009, Fig. 3; Ex1002 ¶241.

Butler in combination with Peng teaches a second cyclonic stage with a cyclone axis of rotation that extends between the front and rear ends of the second cyclonic stage, as shown:



Ex1009, Fig. 3; Ex1002 ¶242.

Butler in combination with Peng teaches that the rear end of the second cyclonic cleaning stage is rearward of the rear end of the first cyclonic stage, as shown:



Ex1009, Fig. 3; Ex1002 ¶243.

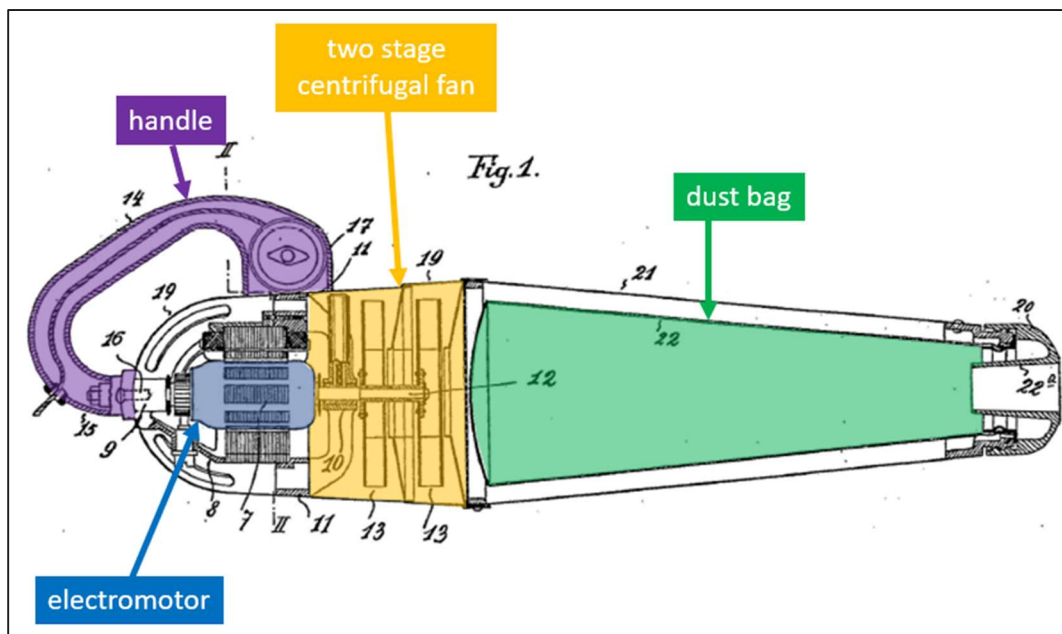
A POSA reading Butler would have been motivated to incorporate Peng's teachings. Ex1002 ¶244 A POSA would have been motivated to use a two-stage cyclonic separation unit with Butler by modifying the dirt receptacle comprising a single cyclone stage and to incorporate Peng's teachings of a second cyclone stage. Ex1002 ¶244. A POSA would have understood that hand vacuum cleaners with two cyclone stages were common, as Peng explains. Ex1009 at [0005], Ex1002 ¶244; *see also* Ground 1, Limitation [1c.iii]. A POSA would have understood that a two-stage cyclonic stage provides additional filtration of dirty air, which is an advantage over a single cyclone separation device. Ex1002 ¶245. A POSA would have been motivated to combine Butler with the teachings in Peng by adding a second cyclonic

stage immediately downstream to the first to achieve the well-known and predictable benefits of additional dust separation. Ex1002 ¶244.

C. Ground 3: Lehmann In Combination With Peng Renders Claims 1-15 Obvious

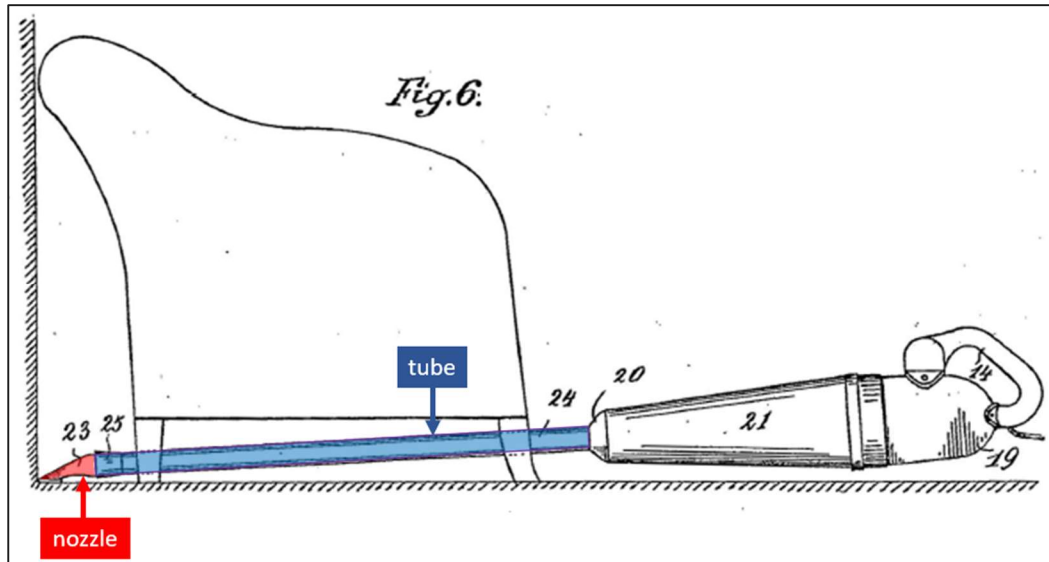
1. Motivation to Combine Lehmann and Peng

Lehmann teaches a portable vacuum cleaner from 1922 with an “**electromotor 7**,” a “**two stage centrifugal fan 13**,” and a “**dust bag 22**” arranged along the longitudinal axis, and an “**arched handle 14**.” Ex1006, Fig.1, 1:38-44, 1:63-73; Ex1002 ¶246.

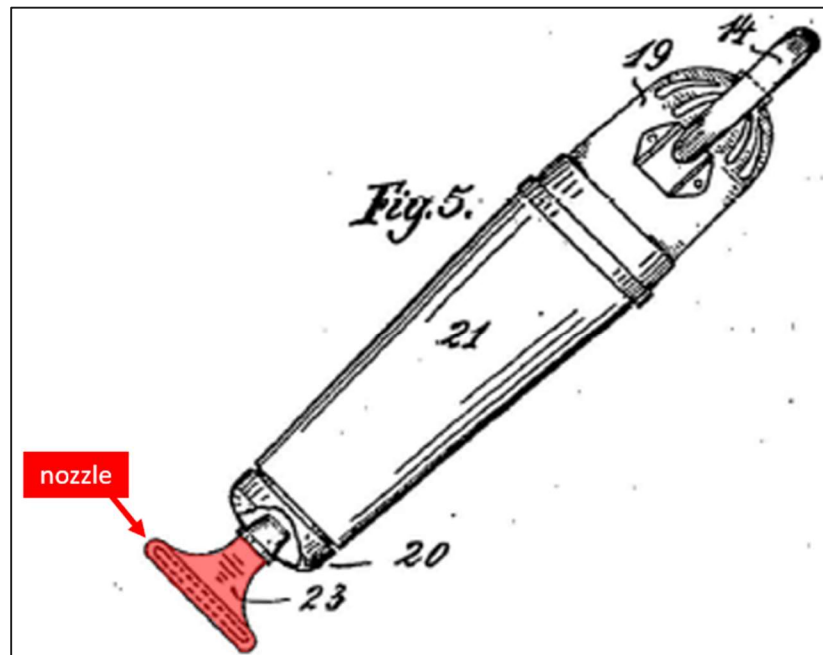


Ex1006, Fig.1, 1:38-44, 1:63-73, Claim 1. Ex1002 ¶245.

As shown in Figure 6, Lehmann teaches a “**tube 24**” that is “fitted to the appliance for cleaning carpets and articles beyond ordinary reach” such as “cleaning the floor under articles of furniture”:

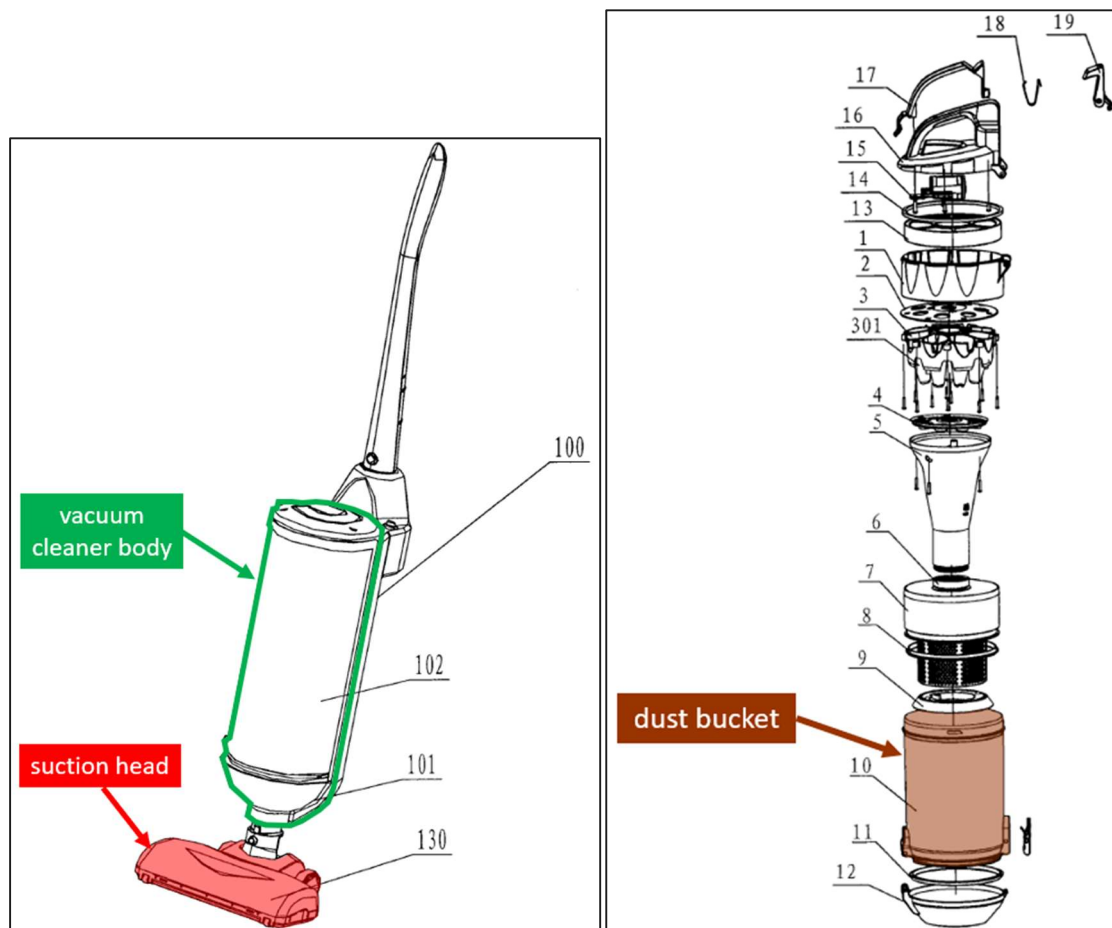


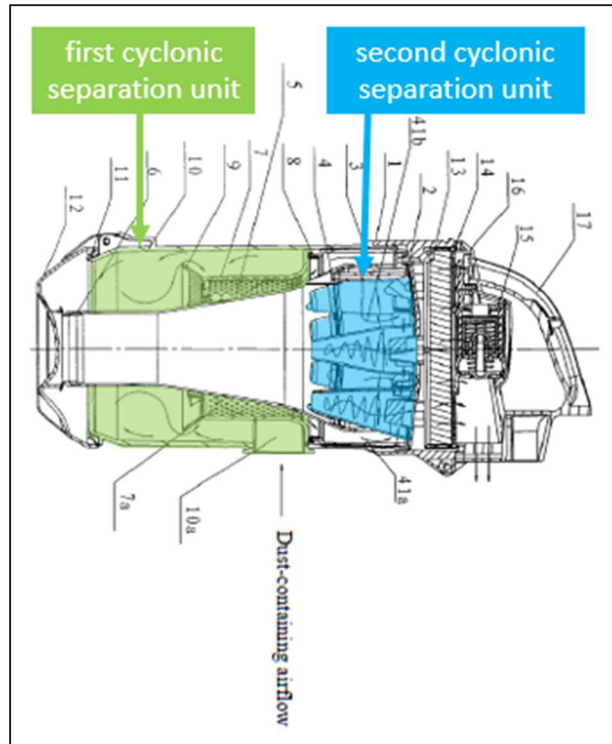
Ex1006, Fig 6, 2:7-24, 2:39-41. Ex1002 ¶¶246. Alternatively, as shown in Figure 5, a “**nozzle 23**” may be directly attached for “cleaning upholstery cushions and the like”:



Ex1006, Fig. 5, 2:14-17. Ex1002 ¶247.

Peng teaches a vacuum cleaner from 2010 with “a vacuum cleaner body,” “a suction head,” “a cyclone cylinder,” “a dust bucket” in a “vertical cyclone vacuum cleaner.” Ex1009 at [0029], [0041]-[0053]. Peng’s vacuum cleaner has “a first cyclone separation unit and a second cyclone separation unit.” Ex1009, Cl. 1, [0005], [0008]; *see* Ground 2.





Ex1009, Figs. 2-3, 7. Ex1002 ¶248.

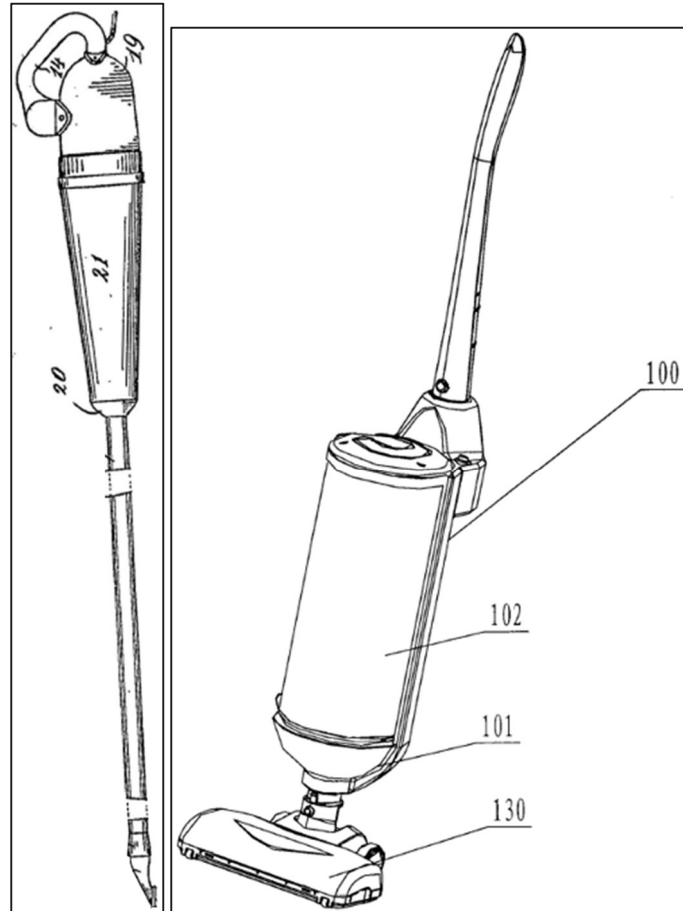
A POSA would have understood that hand vacuum cleaners with two cyclone stages were common, as Peng and other prior art teaches. Ex1009 at [0005], Ex1002 ¶249; *see also* Ground 1, Limitation 1c.iii; Ground 2. A POSA would have further understood that a two-stage cyclonic stage provides an efficient and high level of filtration of dirty air, without the loss of suction that occurs when dust accumulates in a dust bag, and without the need to purchase, change, or dispose of a dust bag as it becomes full. Ex1002 ¶250. The benefits of cyclonic separation over dust bags were well-known to a POSA, including as early as the 1950s. Martelliere taught these advantages in 1955: “By application of the ‘Whirlwind’ principle,” i.e., cyclonic filtration, “the materials are deposited in the bottom of the container, after

having separated from the air, before it passes through the filter screen,” which “prevent[s] clogging” and creates “stable suction,” and by using a transparent cyclonic chamber, “the user is able, when stopped, to see where the filling of the container is” and “can therefore better judge when it must be emptied.” Ex1012⁶, 1. These advantages were well-understood at the time of the ’038 Patent; as another example, in 2002, WO02/067753 to Vuijk explained that “so-called bagless vacuum cleaners,” or “cyclonic” cleaners, “are becoming increasingly popular” because they “avoid[ed] the use of a filter bag as the primary form of separation” and thus “maintain a consistently high level of suction, even as the collecting chamber fills with dirt.” Ex1013, 1:5-10; Ex1002 ¶250. As Conrad teaches, “[c]yclonic vacuum cleaners are known in the art,” and one “advantage” of Conrad’s design is that its chamber is transparent so, “when the dirt collection bin is full, a user ... will have a visual signal to empty the cyclonic stage.” Ex1010 ¶¶2,112. Ex1002 ¶250.

A POSA would have been motivated to substitute Lehmann’s dust separation unit (a dust bag) with Peng’s separation unit (a two-stage cyclonic separation unit) to achieve the well-known benefits of modern cyclonic separation, including as described above. Ex1002 ¶251.

⁶ Ex1012 is a certified English translation of Ex1011, originally published in French. Citations to Ex1011 are to the page, as the English translation does not include column or line numbers.

First, Lehmann and Peng are analogous art. Ex1002 ¶252. Both are vacuum cleaners, and have similar layouts:



Ex1006, Fig. 6; Ex1009, Fig. 7.

Second, this combination would have involved a simple substitution of known elements for others to obtain predictable results. Ex1002 ¶253. Lehmann teaches a cleaner having a dust-separation unit (a dust bag), and Peng teaches a two-stage cyclonic separation unit. Ex1006 1:38-44, 1:63-74, Fig. 1; Ex1009 at [0005], [0008], [0029], [0041]-[0053]; *see* Ground 2. A POSA would understand that the simple substitution of Peng's two-stage cyclonic separation unit in place of Lehmann's dust

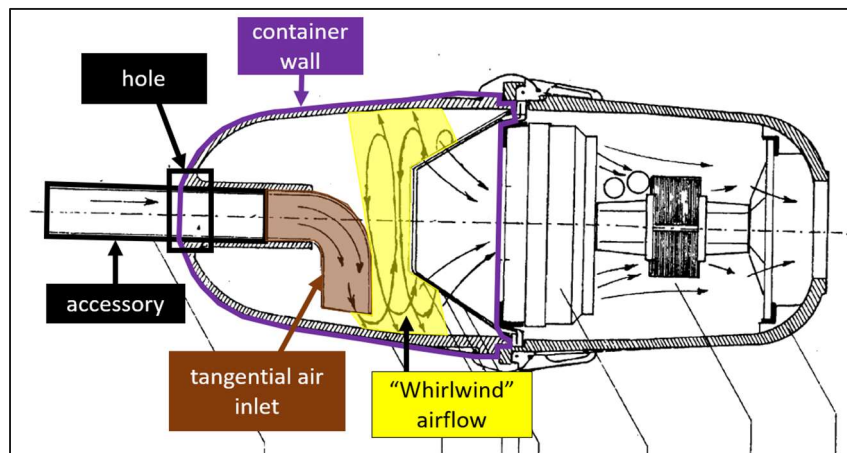
bag separation unit would achieve the predictable results of filtering air (with a high level efficiency, without loss of suction as the bag filled, without the need to purchase, change, or dispose of dust bags, and would allow a user to see how full the dust separation unit is). Ex1002 ¶253. Further, as depicted above, Lehmann and Peng are directed to vacuums having a similar orientation of separation unit along the longitudinal axis of the vacuum. Ex1006, Fig. 1; Ex1009, Figs. 3, 7; Ex1002 ¶253.

Third, it would have been at least obvious to try this combination. Ex1002 ¶254. A POSA would understand there are a finite number of identified dust-separation solutions, including dust bags (as Lehmann teaches) and cyclonic separators (as Peng teaches), and it would have been obvious to try to achieve the known benefits describe above. Ex1002 ¶254.

A POSA would have had a reasonable expectation of success substituting Lehmann's dust bag with Peng's cyclonic separator teachings. Ex1002 ¶255. A POSA would have understood that these two separation units could be used interchangeably, and would have further expected success for the reasons stated above, including because such modification involves a simple substitution of known elements that perform similar functions in similar ways. *Id.*

Further, a POSA would have had a reasonable expectation of success incorporating Peng's cyclonic-separation teachings into Lehmann because it was

well-known that front-located air inlets (such as Lehmann's) create cyclonic separation by using a tangential opening. As Peng explains, a "tangential air inlet" can create a cyclone. Ex1009 at [0010], [0055], Claim 1. Further, front-located tangential air inlets have been used for cyclonic cleaners since well before the '038 Patent. In 1955, Martelliere taught a "**tangential[]**" **air inlet** and removable **accessory** attached thereto through a **hole** in the "detachable" front "**wall of the ... container**" that created "the 'Whirlwind' principle," which a POSA understands is cyclonic airflow:



Ex1012, 1, Fig. 1; Ex1002 ¶256. A POSA would have understood that the same configuration would create cyclonic airflow in the combined teachings of Lehmann and Peng. Ex1002 ¶257.

2. [1]

a. [1pre]

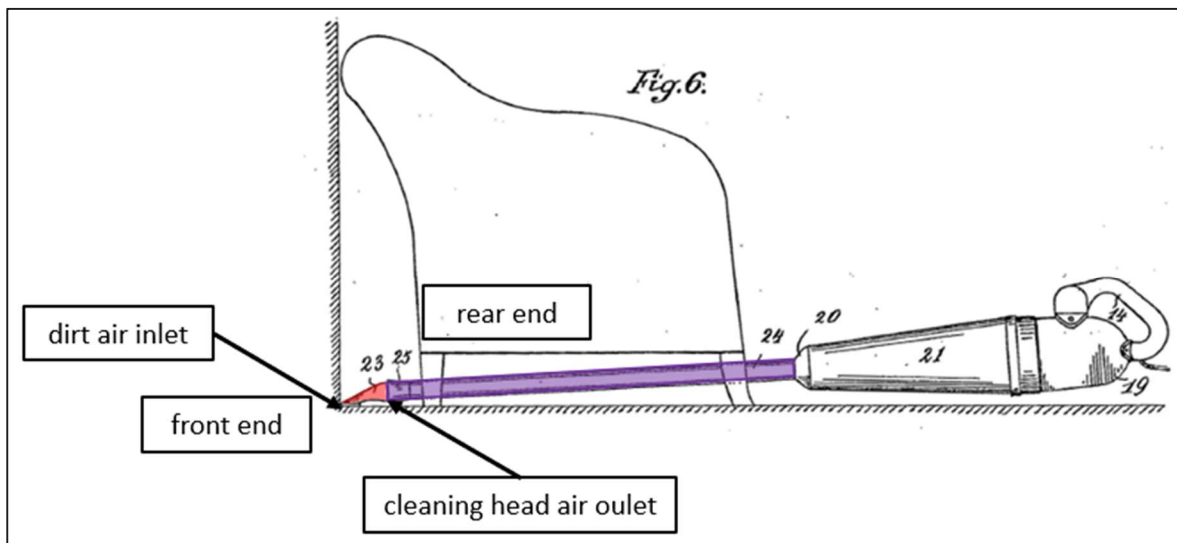
Lehmann teaches this limitation. Ex1002 ¶258. Lehmann teaches a "portable vacuum dusting and cleaning apparatus" for surfaces such as "carpets" and "the

floor.” Ex1006, 2:15-24, Cls. 1,2. Lehmann further teaches that its vacuum can be used on other surfaces, such as for “cleaning upholstery, cushions and the like”

Id.

b. [1a]

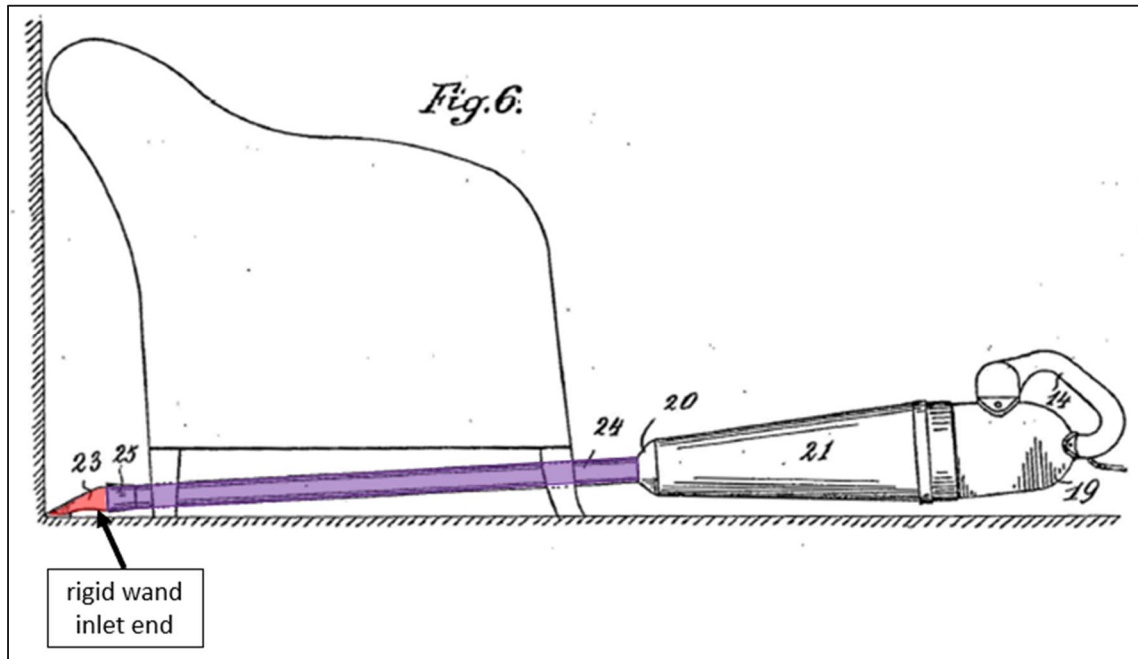
Lehmann teaches this limitation. Ex1002 ¶¶259-261. Lehmann’s vacuum cleaner includes a “**nozzle 23**,” which is a surface cleaning head with a front end, a rear end, a dirt air inlet and a cleaning air outlet. Ex1006, Figs. 1, 5 and 6. A POSA would understand that “**nozzle 23**” has a dirt air inlet where air enters the nozzle, and a cleaning head air outlet where the nozzle connects to “**tube 24**,” and a front end and rear end as shown:



Ex1002 ¶¶259-261; Ex1006, 2:7-20, Fig. 6.

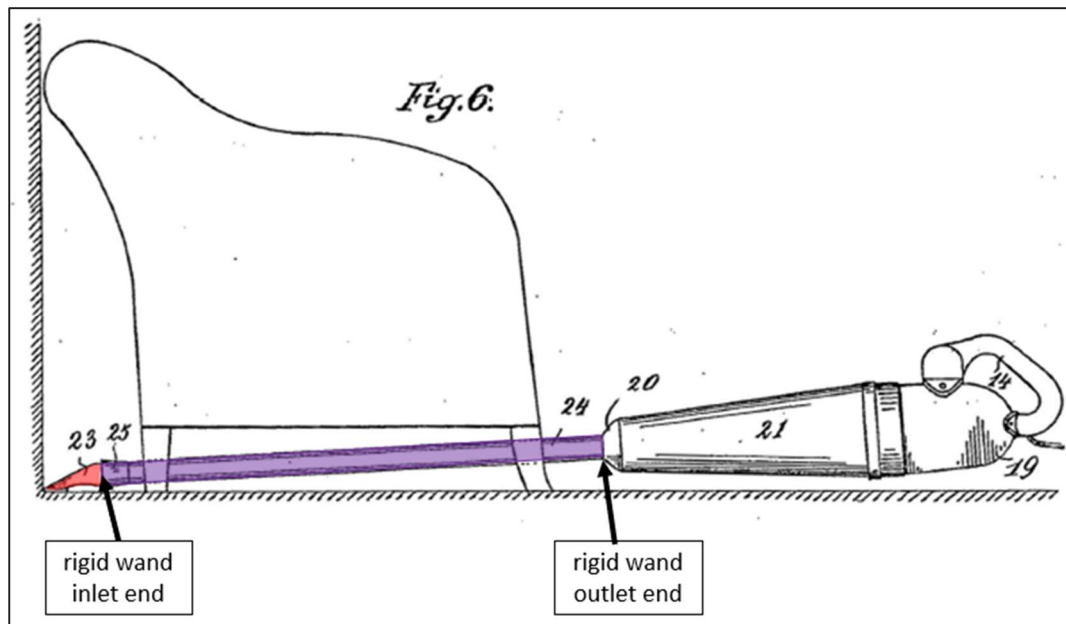
c. [1b.1]

Lehmann teaches this limitation. Ex1002 ¶¶262-267. Lehmann teaches a “**tube 24**,” which is a rigid air flow conduit:



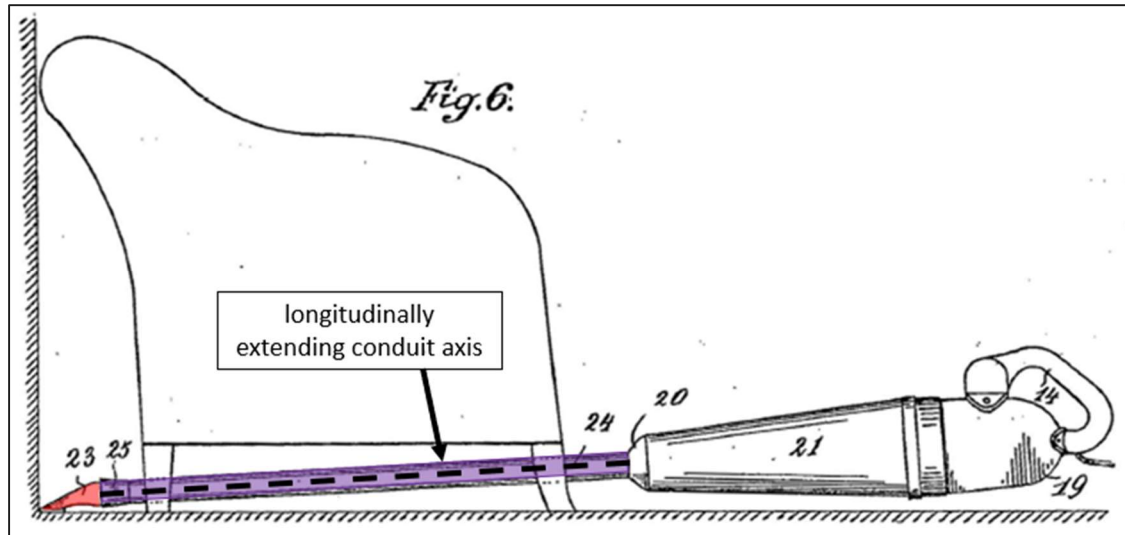
Ex1006, 2:7-20, Fig. 6. A POSA would understand that Lehmann’s tube is rigid, as shown in Figure 6. Ex1002 ¶263.

Lehmann’s “tube 24” has a rigid wand inlet end having an air inlet, located where air enters the tube from “nozzle 23,” as shown:



Ex1006, Fig. 6, 2 (“**tube 24** [has] at its forward end a socket 25 for the **nozzle 23**”). Because Lehmann’s “tube 24” connects to its “nozzle 23” to extend its range, a POSA would understand that the tube’s air inlet communicates with the cleaning head air outlet of “nozzle 23.” Ex1002 ¶¶264-266.

Lehmann further teaches that the tube has a rigid wand outlet end, as shown above: “**tube 24**,” has a rigid wand outlet end where it connects to the “cap 20,” which “makes a tight joint around the mouth of the dust bag” and has a “inwardly directed coned socket 22a, adapted to receive ... a **tube 24**” Ex1006, 2:7-14. Lehmann further teaches that its tube has a longitudinally extending conduit axis; “**tube 24**” has a longitudinally extending conduit axis as shown:



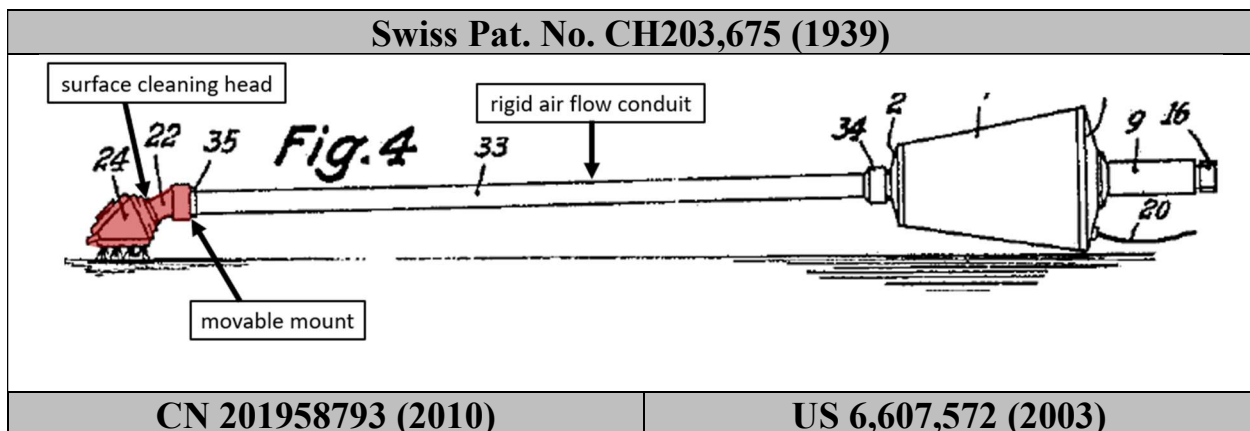
Ex1006, Fig. 6. Ex1002 ¶267.

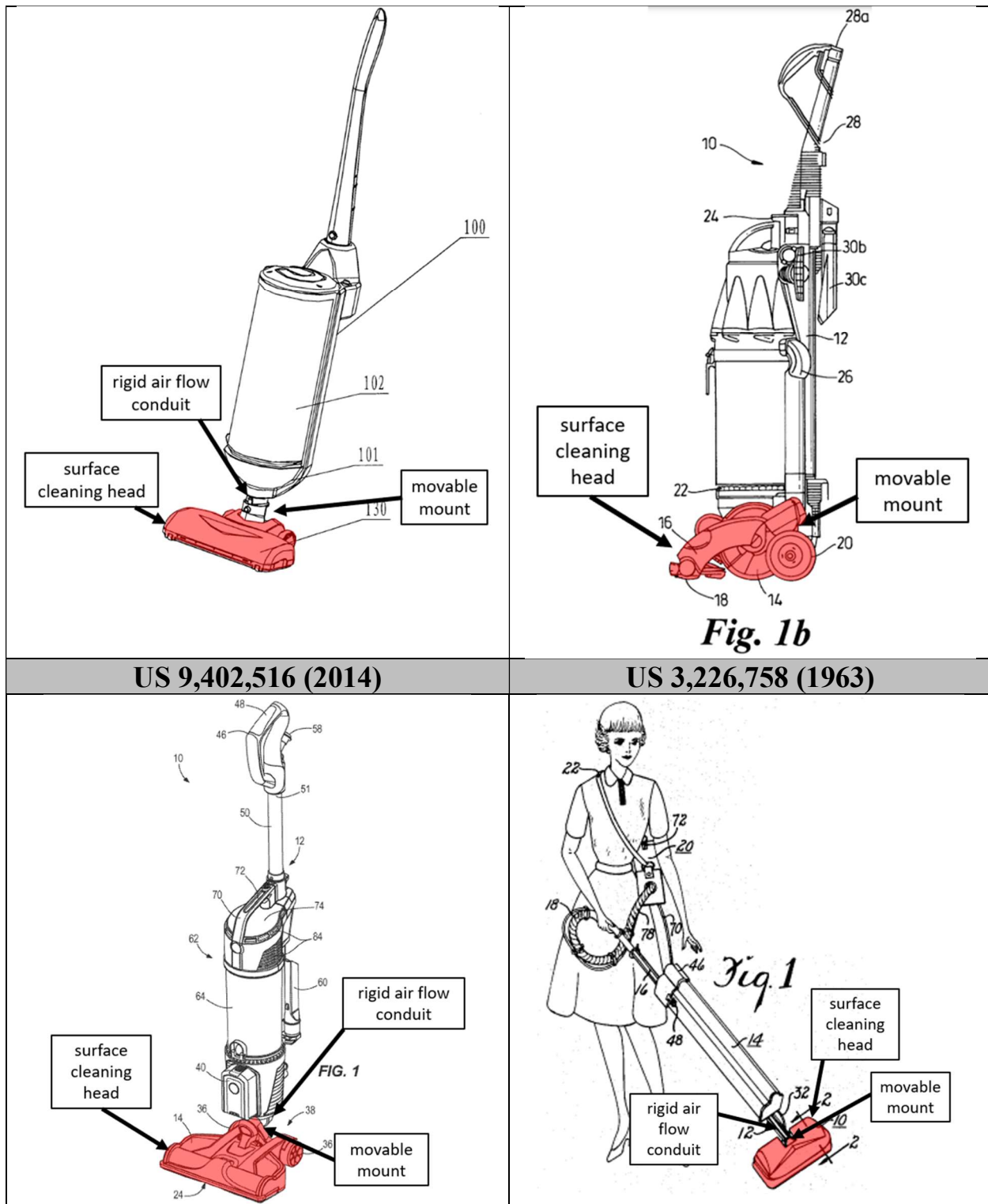
d. [1b.2]

Lehmann teaches and renders this limitation obvious. Ex1002 ¶¶268-278. Lehmann's "tube 24" (the rigid air flow conduit) is moveably mountable to the "nozzle 23" (the surface cleaning head) via "socket 25." A POSA would understand that, because Lehmann allows for cleaning at a variety of angles, including below low furniture as shown in Figure 6, that such a socket would permit the nozzle to pivot relative to the tube so that the nozzle remains flush with the floor at a variety of angles. Ex1006, Fig. 6, Ex1002 ¶¶268-270. Lehmann teaches that its vacuum cleaner may be used "for cleaning carpets and articles beyond ordinary reach" such as "for cleaning the floor under articles of furniture." Ex1006, 2:8-24. A POSA would understand that to be able to clean surfaces at all such angles, Lehmann's "nozzle 23" would be moveably mounted to the "tube 24." Ex1002 ¶¶271-272.

Otherwise, a user would have to manipulate Lehmann's vacuum in unnatural contortions, which goes against Lehmann's teaching that its vacuum "can be handled by a child if desired." Ex1002 ¶272; Ex1006, 1:30-31.

To the extent PO argues that Lehmann does not teach a moveably mounted rigid air flow conduit to the surface cleaning head, it would have been obvious to a POSA to modify Lehmann's "socket 25" to allow for pivoting to allow for better contact between the surface cleaning head and surfaces at a variety of angles, including when standing and when cleaning under furniture. Ex1002 ¶273. A moveably mounted rigid air flow conduit to a surface cleaning head was well known in the art at the time of the '038 patent. *Id.* For example, moveable mounts are disclosed in the art as early as 1939:



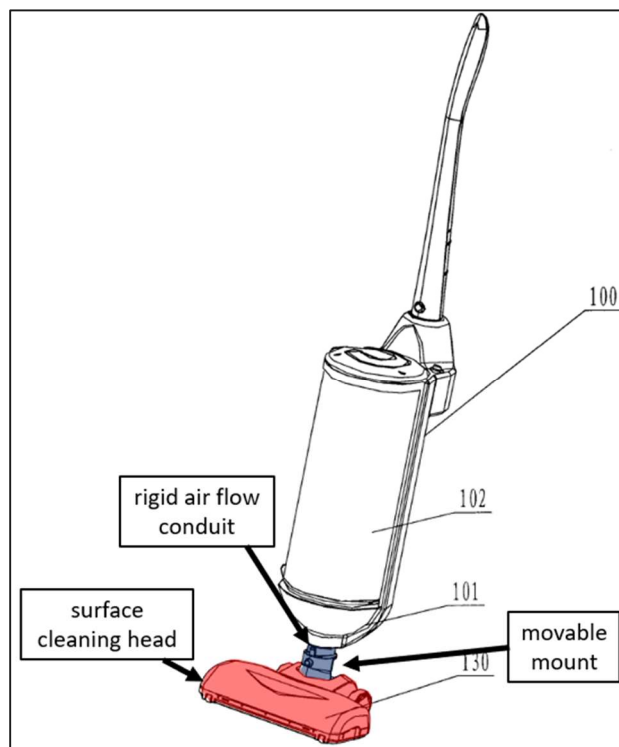


Ex1020⁷, Fig. 4; Ex1009, Fig. 7, Ex1021, Fig. 1b; Ex1022, Fig. 1; Ex1023, Fig. 1.

⁷ Ex1020 is a certified English translation of Ex1019, originally published in

A POSA would have been motivated to modify Lehmann’s “socket 25” such that it was a moveable mount between the surface cleaning head and the rigid air flow conduit. Ex1002 ¶274. Such an arrangement would have involved minimal modifications, and a POSA would have expected predictable results—*i.e.*, easier manipulation of the vacuum cleaner when cleaning at different angles—from the simple substitution. *Id.* By modifying the “socket 25” to be a moveable mount, a user would additionally achieve a more efficient suction of the dirt air because it would be possible for the surface cleaner head to lay flat against the surface it was cleaning. *Id.* Indeed, it would have been obvious for a POSA to try such modification to Lehmann’s vacuum cleaner so that a user could maximally achieve the stated goals of Lehmann’s apparatus: “[f]acility of manipulation,” “opera[ble] under and behind chairs and like furniture” and “[e]fficient suction, equal to that of stationary appliances.” Ex1006, 1:30-37. And in light of the numerous examples of pivotable mounts in the art between tubes and cleaner heads, a POSA would have had at least a reasonable expectation of success in making such a combination. Ex1002 ¶274.

Furthermore, a POSA would have been motivated to combine Lehmann with Peng for this limitation. Ex1002 ¶275. Lehmann and Peng are analogous art with similar configurations, which would have motivated a POSA to incorporate Peng's teachings. *Id.* A POSA would have understood that Peng has a pivoting joint between its suction head and tube so that it could be effectively used as an upright vacuum:



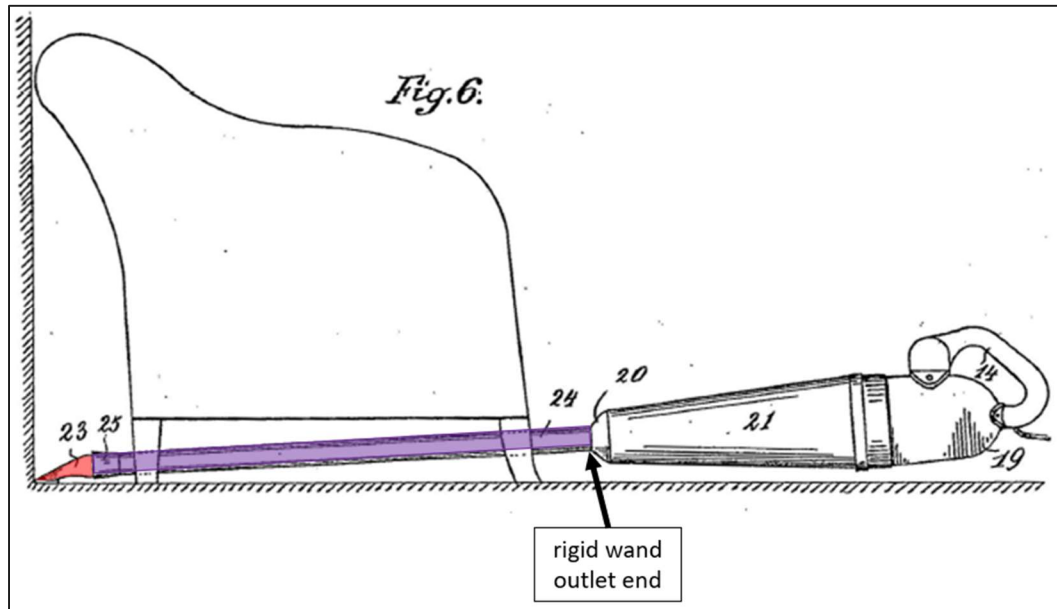
Ex1009, Fig. 7. Ex1002 ¶275. A POSA would have motivated to substitute Peng's pivotable joint into Lehmann to achieve the well-known benefits described above, including keeping the surface cleaning head flat against the surface to be cleaned at multiple angles, including when cleaning deep under furniture. Ex1002 ¶¶275-276.

Lehmann teaches that its cleaning apparatus can be used in an upper position. Ex1002 ¶277. Lehmann teaches that the “tube 24” may be fitted for cleaning carpets and other surfaces presumably while a user is standing, which is an upper position. Ex1006, 2:14-20; Ex1002 ¶277. Lehmann also teaches that the “tube 24” can be fitted to clean “articles beyond ordinary reach” including for “cleaning floors under articles of furniture,” which is an in-use floor position. *Id.* When cleaning such surfaces with the “tube 24” affixed to the body of Lehmann’s vacuum cleaner, a POSA would understand that the rigid air flow conduit would extend at an angle to the vertical. Ex1002 ¶278. Further, a POSA would understand that Lehmann, when modified to include a pivoting joint (including as taught by Peng), would likewise allow its tube to move between an upper position (including as shown in Peng’s Figure 7) and an in-use floor cleaning position in which the rigid air flow conduit extends at an angle to the vertical (such as that shown in Lehmann’s Figure 6). Ex1002 ¶278.

e. [1b.3]

Lehmann teaches this limitation. Ex1002 ¶¶279-281. As explained in Limitation [1b.2], Lehmann teaches a rigid air flow conduit, which has a rigid air flow outlet end. Lehmann further teaches that the “**tube 24**” is connected to the “cap 20,” which “makes a tight joint around the mouth of the dust bag” and has a “inwardly directed coned socket 22a, adapted to receive ... a **tube 24**” Ex1006,

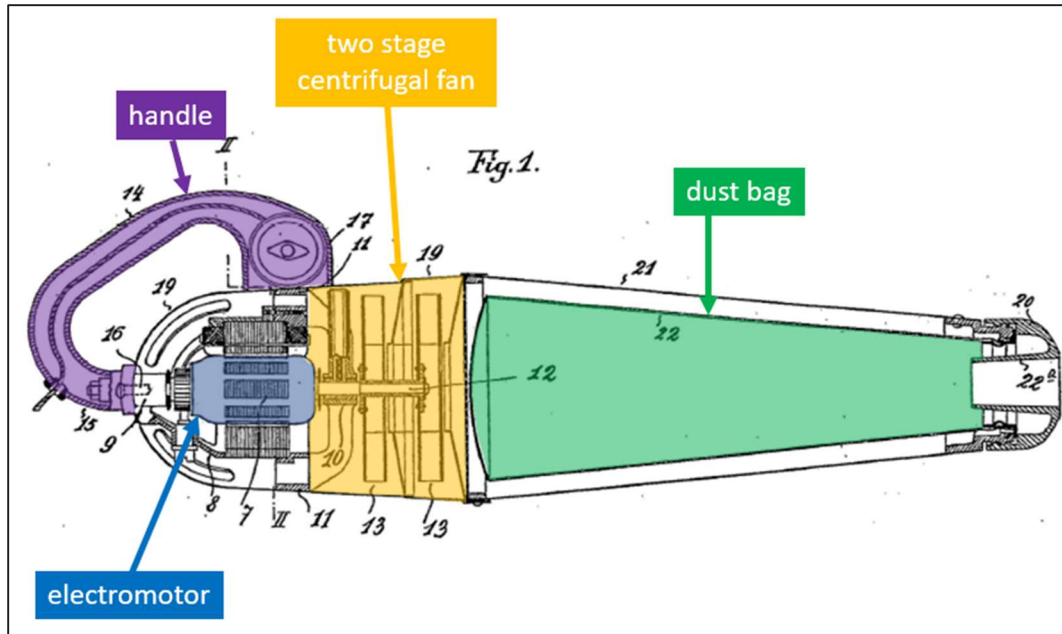
2:7-14. Ex1002 ¶¶281-282. A POSA would understand that air exits the tube at this location, and Lehmann therefore teaches that the rigid wand outlet end has an air outlet. Ex1002 ¶281.



Ex1006, Fig. 6. Ex1002 ¶281.

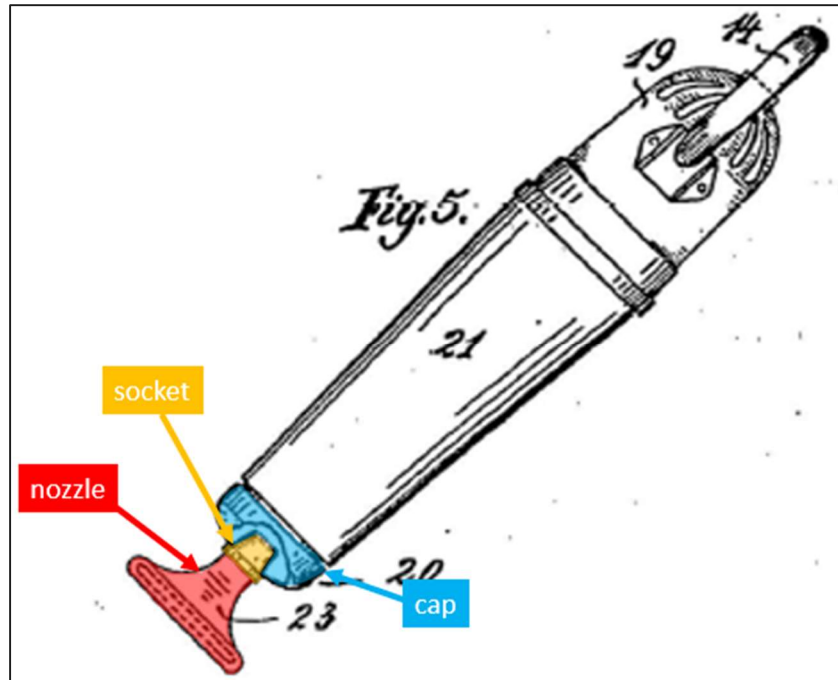
f. [1c]

Lehmann teaches this limitation. Ex1002 ¶¶282-285. Lehmann teaches a hand vacuum cleaner: its “portable vacuum dusting and cleaning apparatus comprising an electromotor, a centrifugal fan, a dust bag, a casing and an arched handle for manipulating the appliance.” Ex1006, Cl. 1; *see also id.* at 1:63-92.



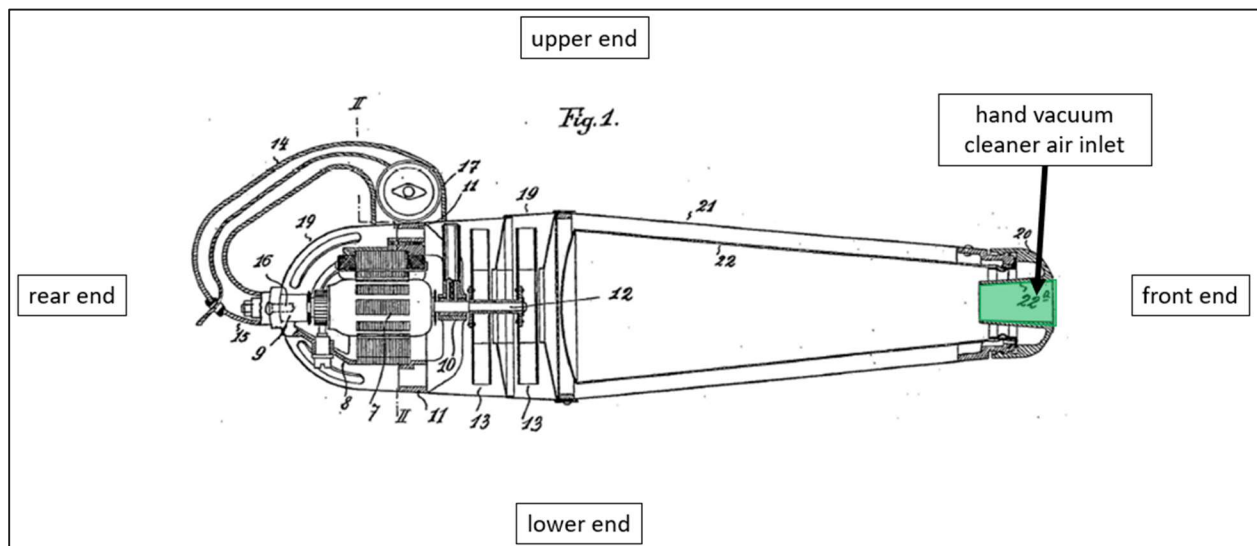
Ex1006, Fig. 1. Ex1002 ¶283.

Lehmann’s hand vacuum cleaner is removably mountable to the rigid wand outlet end. Lehmann’s hand vacuum includes a “cap 20” with a “socket 22a” for receiving the outlet end of “tube 24”: “inwardly directed coned socket 22a” is “adapted to receive ... a tube 24” and “cap 20” “makes a tight joint around the mouth of the dust bag.” Ex1006 at 2:7-14. Further, Lehmann teaches that this mounting is removeable, because Lehmann teaches dispensing the “tube 24” when cleaning upholstery cushions and affixing the “nozzle” to the “socket 22a” directly as shown in Figure 5:



Ex1006, Fig. 5.; Ex1002 ¶284.

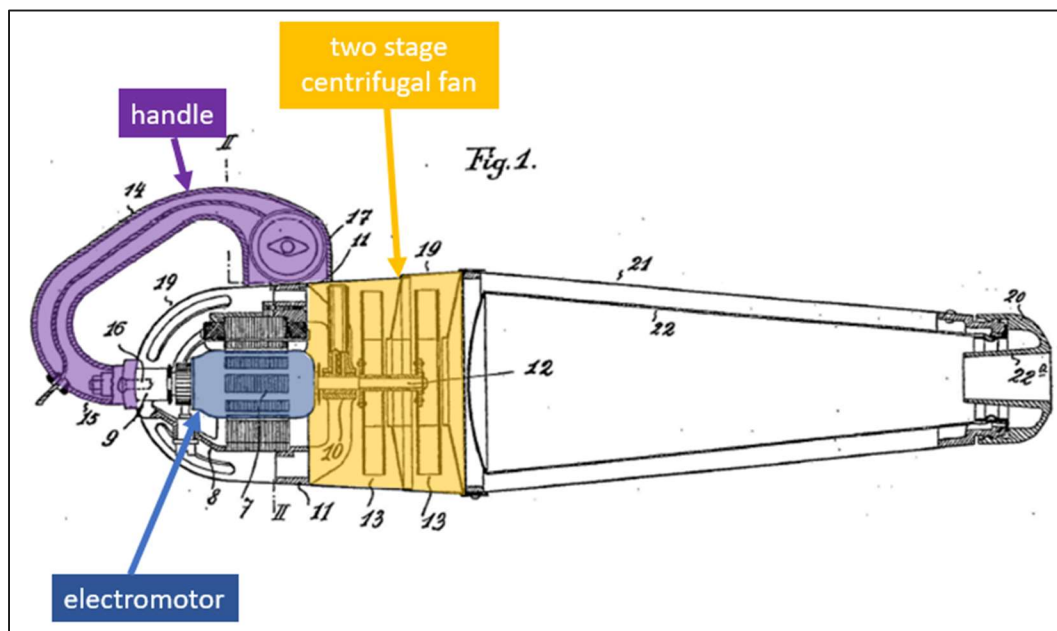
Lehmann's hand vacuum cleaner has a front end, rear end, upper end, and lower end, as shown, and a hand vacuum cleaner air inlet: “**socket 22a**,” where air enters the hand vacuum, as shown:



Ex1006, Fig. 1; Ex1002 ¶285.

g. [1c.i]

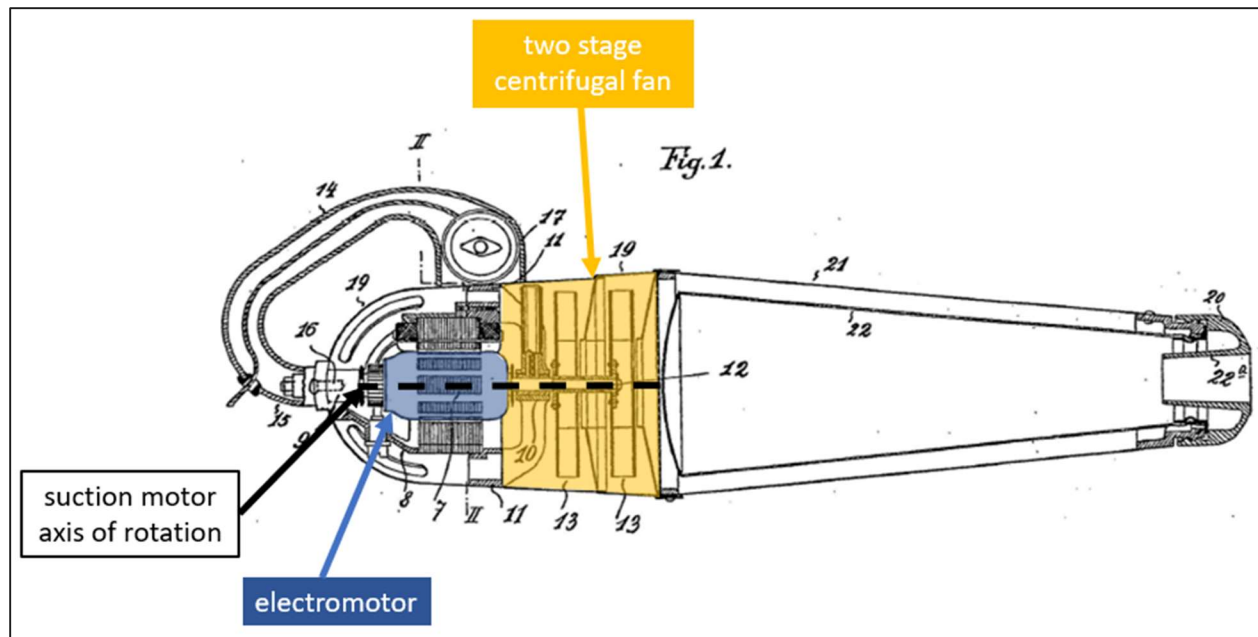
Lehmann teaches this limitation. Ex1002 ¶¶286-290. Lehmann's hand vacuum cleaner has a main body comprising a handle, and a suction motor and fan assembly. Lehmann teaches a "portable vacuum dusting and cleaning apparatus comprising an electromotor, a centrifugal fan ... and an arched handle for manipulating the appliance." Ex1006, Cl. 1; *see also id.* at 1:38-44, 1:63-82.



Ex1006, Fig. 1; Ex1002 ¶287.

Lehmann's "arched handle" is a handle, its "electromotor" is a suction motor, and its "centrifugal fan" is a fan assembly. Ex1002 ¶288.

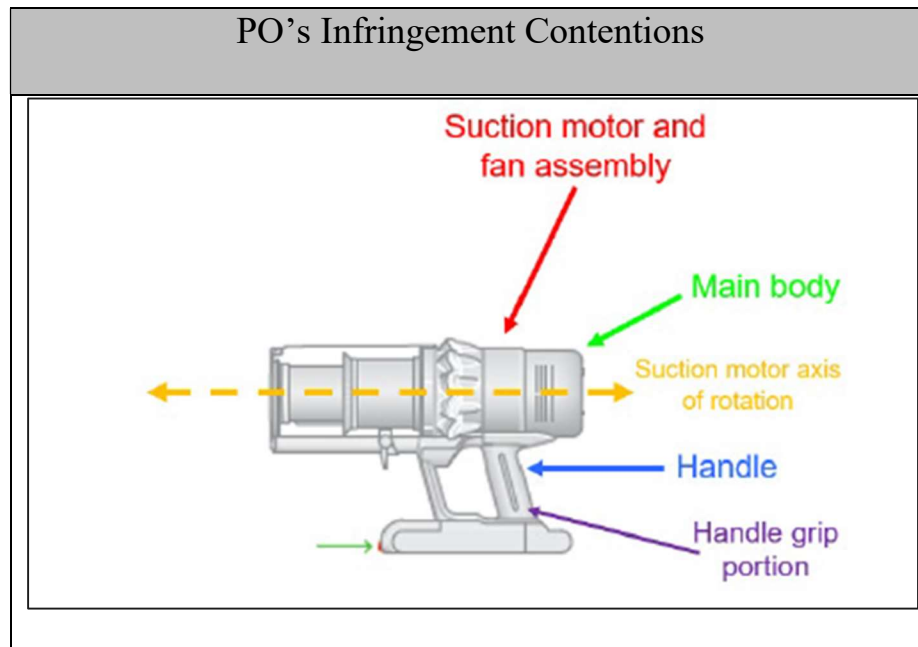
Lehmann's suction motor and fan assembly has a suction motor axis of rotation that runs through "motor shaft 12" as shown:



Ex1006, Fig. 1. A POSA would understand that the motor and fan rotate about this “motor shaft 12.” Ex1002 ¶¶289-290.

h. [1c.i.1]

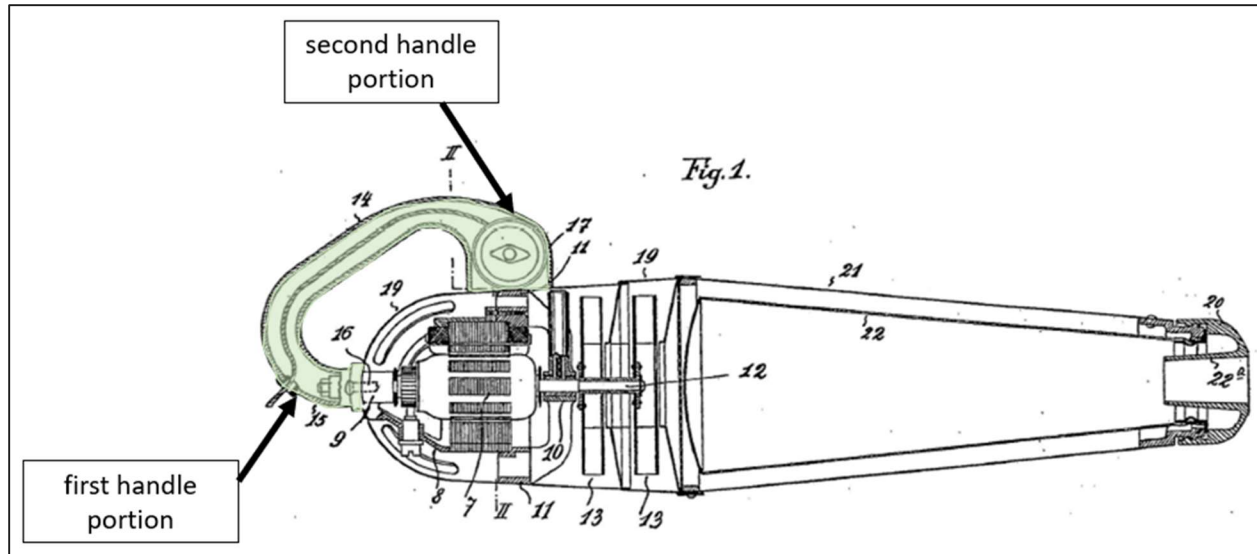
Lehmann teaches this limitation to the same extent as alleged by PO, and renders this limitation obvious. Ex1002 ¶¶291-296. Lehmann teaches a handle with a hand grip portion to the same extent PO has argued in its infringement contentions in the related district court matter that Petitioners’ products have a hand grip portion. *See e.g.*, Ex1018 (’038 Infringement Contentions Ex. A-5). Like the accused products, Lehmann’s handle has a smooth surface, which PO alleges is a “hand grip portion”:



Compare Ex1006, Fig. 1 *with* Ex1018, 21. Lehmann therefore teaches a “hand grip portion” to the same extent as alleged by PO. Ex1002 ¶¶292-293.

Additionally, it would have been obvious to a POSA to modify Lehmann’s handle with a textured surface to provide added gripping, which was well known in the art prior to the ’038 Patent. Ex1002 ¶294. For example, Butler teaches such a gripping surface. *See* Ground 2, Limitation [1c.i.1]. Indeed, it would have been obvious to a POSA that by adding a textured gripping surface to the handle where a user’s hand would normally grip the handle, to achieve the well-known benefit of prevent slippage and to allow for more secure handling of the vacuum cleaner. *Id.*, ¶¶292-294.

Lehmann further teaches a first handle portion and a second handle portion, as shown:

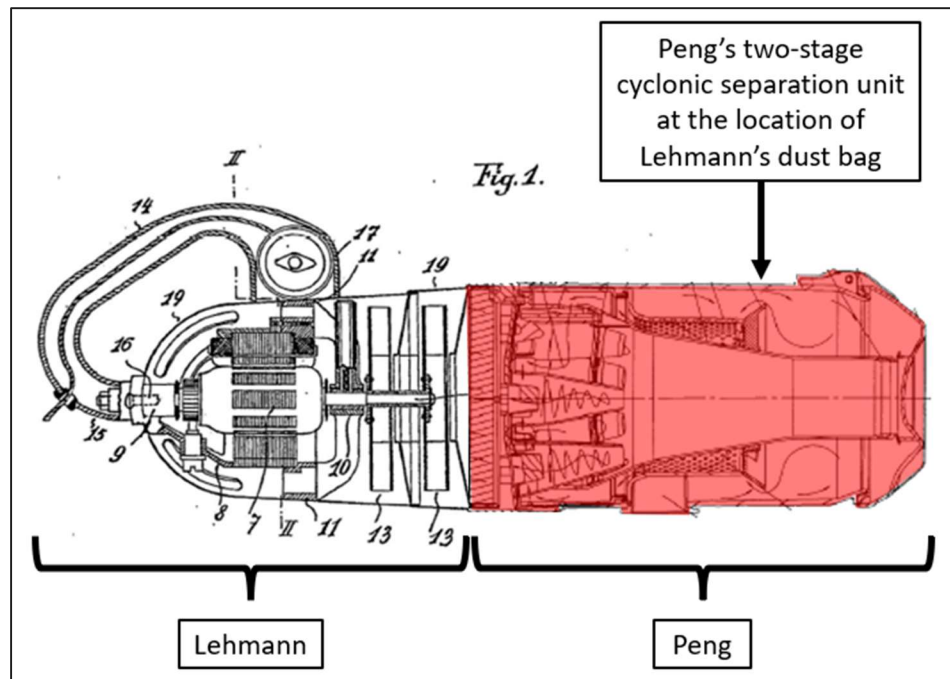


Ex1006, Fig. 1; Ex1002 ¶¶295-296; *see also* Ex1006, 1:38-44, 1:71-78.

As shown above, Lehmann teaches that its first handle portion is mounted to the main body at the location of the suction motor and fan assembly.

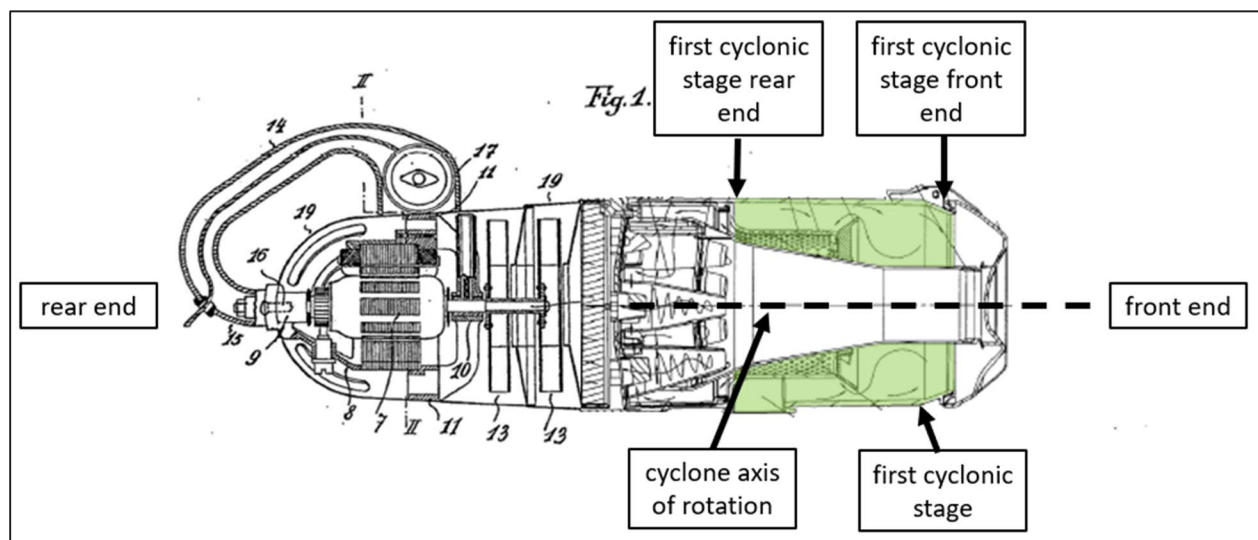
i. [1c.ii]

Lehmann in combination with Peng renders this limitation obvious. Ex1002 ¶¶297-299. As described above, a POSA would have been motivated to substitute Lehmann's dust bag with Peng's cyclonic separation unit, as shown:



Ex1006, Fig. 1 (as modified); Ex1009, Fig. 3; Ex1002 ¶298.

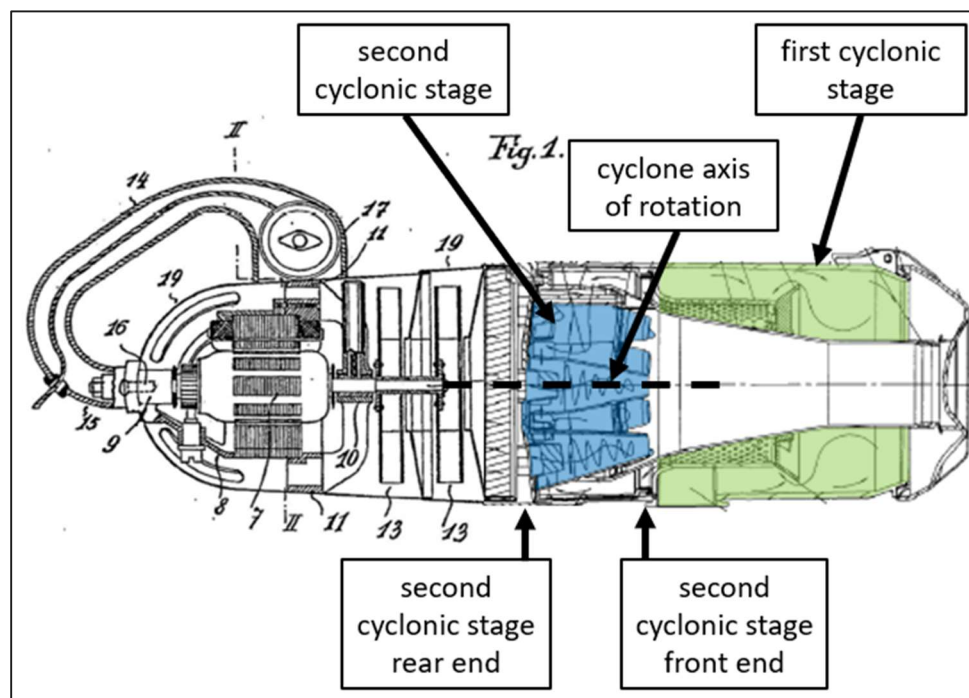
The combination of Lehmann and Peng teaches a first cyclonic stage provided at the front end of the hand vacuum cleaner, the first cyclonic stage having a front end, a rear end and a cyclone axis of rotation extends between the front and rear ends of the first cyclonic stage, as shown:



Ex1006, Fig. 1; Ex1009, Fig. 3; Ex1002 ¶299.

j. [1c.iii]

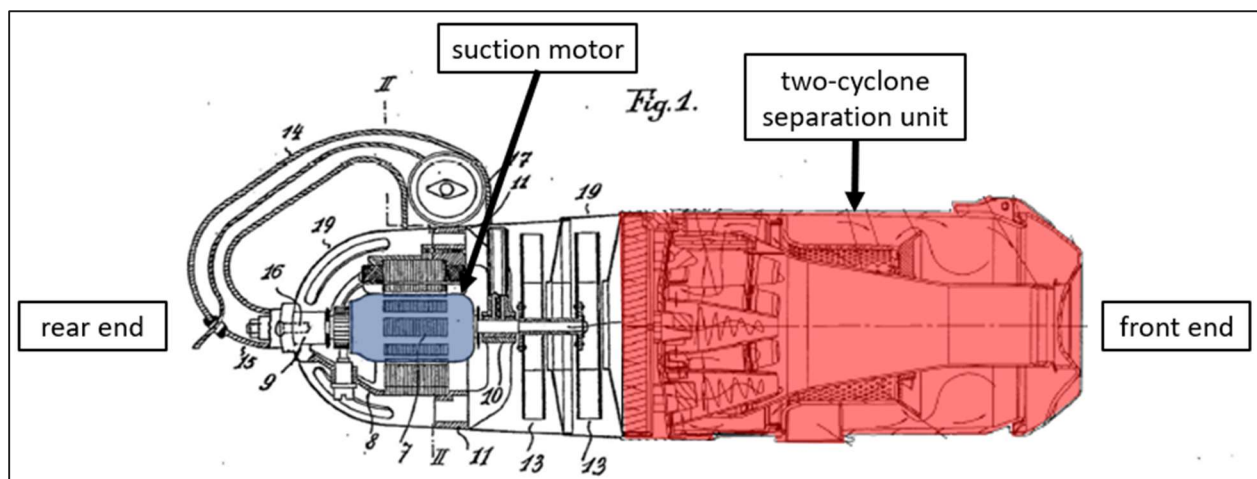
Lehmann in combination with Peng renders this limitation obvious. Ex1002 ¶¶300-302. As explained in Limitation [1c.ii], a POSA would have been motivated to combine Lehmann with Peng to modernize Lehmann's cleaning apparatus with other known filtration systems in the art such as one with two cyclonic stages. Ex1002 at ¶301. Further, Lehmann in combination with Peng meets this limitation for the same reasons described in Ground 1, Limitation [1c.iii]. The combination of Lehmann and Peng teaches a second cyclonic stage having a front end, a rear end and 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:



Ex1006, Fig. 1; Ex1009, Fig. 3; Ex1002 ¶302.

k. [1c.iii.1]

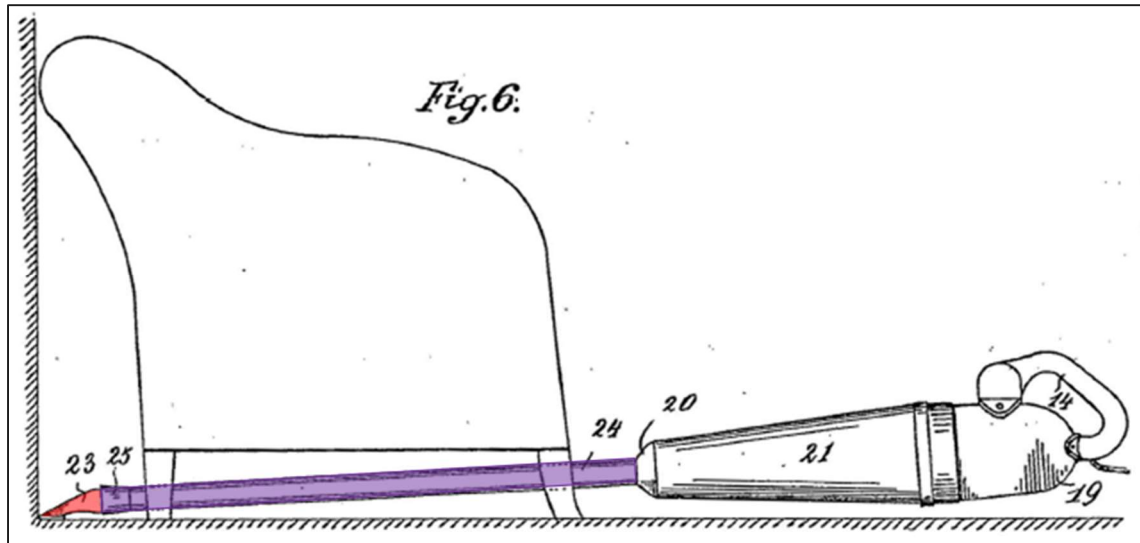
Lehmann in combination with Peng renders this limitation obvious. Ex1002 ¶¶303-304. Lehmann's section motor is positioned rearward of its dust bag, and in the combined teachings of Lehmann and Peng, where Peng's two-cyclone separation unit is substituted in place of Lehmann's dust bag, the suction motor is positioned rearward of the two-cyclone separation unit, as shown:



Ex1006 (as modified), Fig. 1. Ex1002 ¶304.

l. [1c.iii.2]

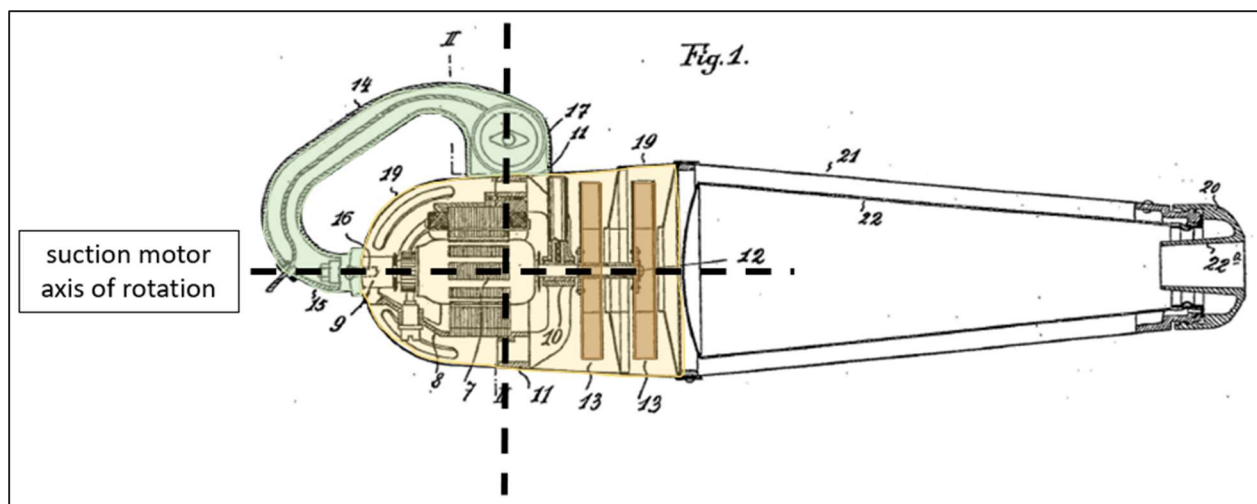
Lehmann teaches this limitation. Ex1002 ¶¶305-307. As explained in Limitation 1c, Lehmann teaches a hand vacuum cleaner that is mounted to the rigid wand outlet end of the “**tube 24.**” In this configuration, the handle is drivingly connected to the surface cleaning head because driving the handle drives the surface cleaning head, including as shown:



Ex1006 at Fig. 6; 2:14-20; Ex1002 ¶¶305-307.

3. [2]/[5]

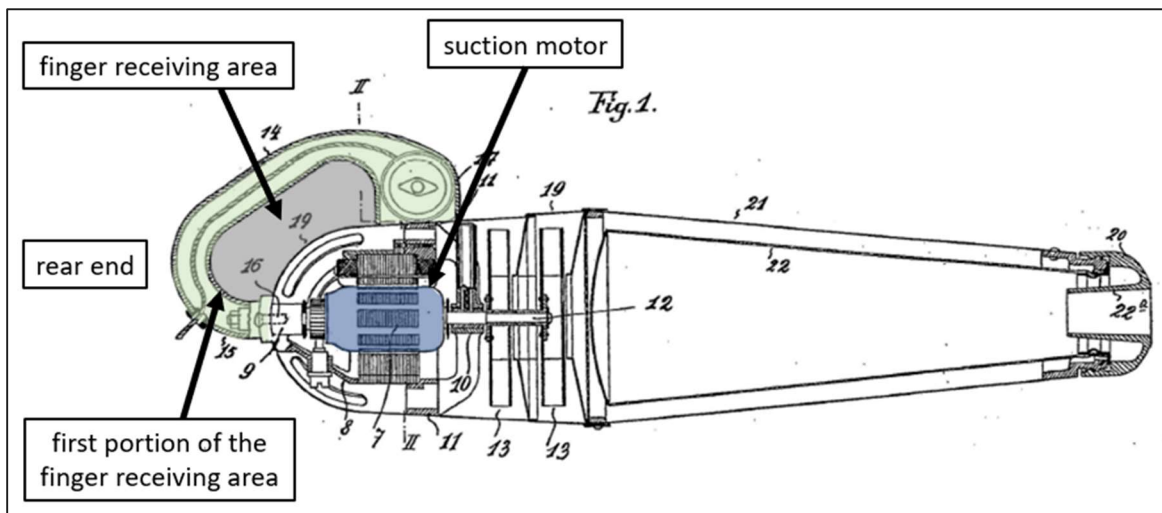
Lehmann in combination with Peng renders claims 1 and 3 obvious and teaches the additional limitations of claims 2 and 5, respectively. Ex1002 ¶¶308-311; *see* Ground 2, Claims 1, 3. Lehmann's suction motor fan assembly axis of rotation intersects the handle, as shown below:



Ex1006, Fig. 1, 1:38-44, 1:71-78; Ex1002 ¶¶308-311.

4. [3]

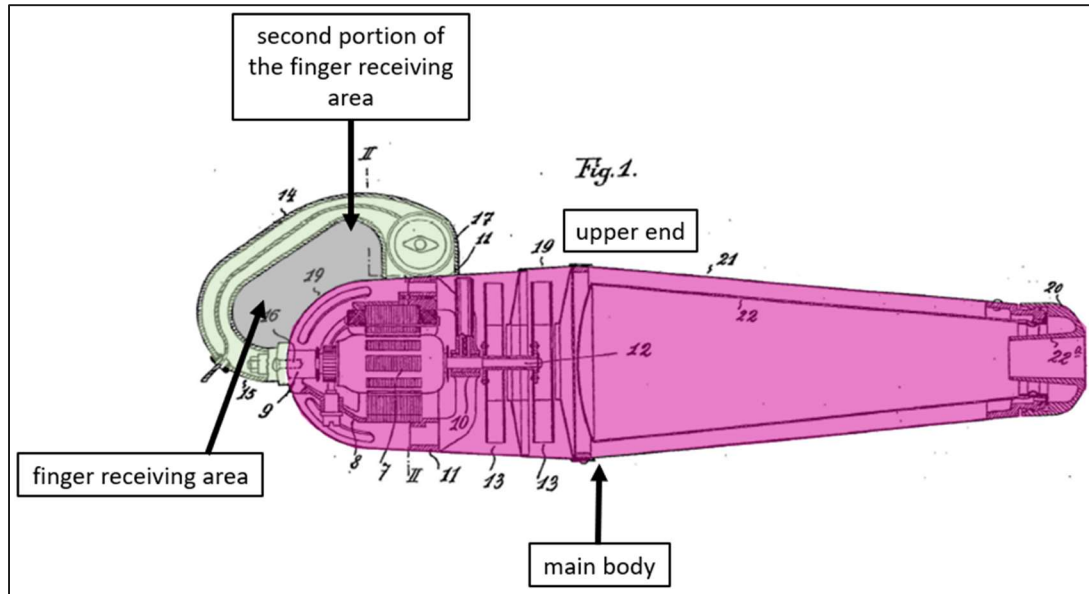
Lehmann in combination with Peng renders claim 1 obvious and teaches the additional limitations of claim 3. *See* Ground 2, Claim 1. Lehmann teaches the remaining limitations of this claim. Ex1002 ¶¶312-313. Lehmann teaches a finger receiving area positioned between the handle and the main body, where a first portion of the finger receiving area is positioned rearward of the suction motor, as shown:



Ex1006, Fig. 1, 1:38-44; Ex1002 ¶¶312-314.

5. [4]

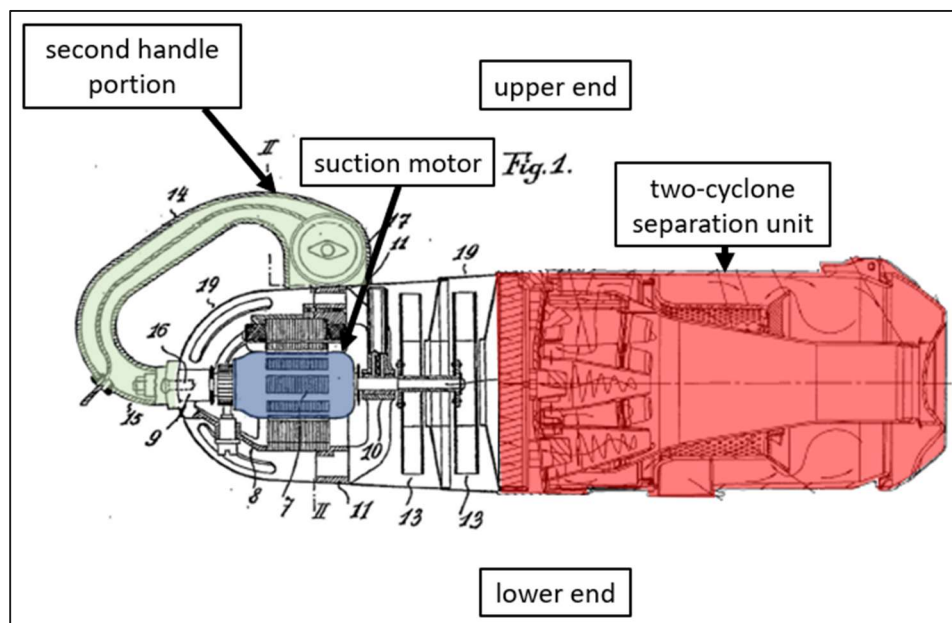
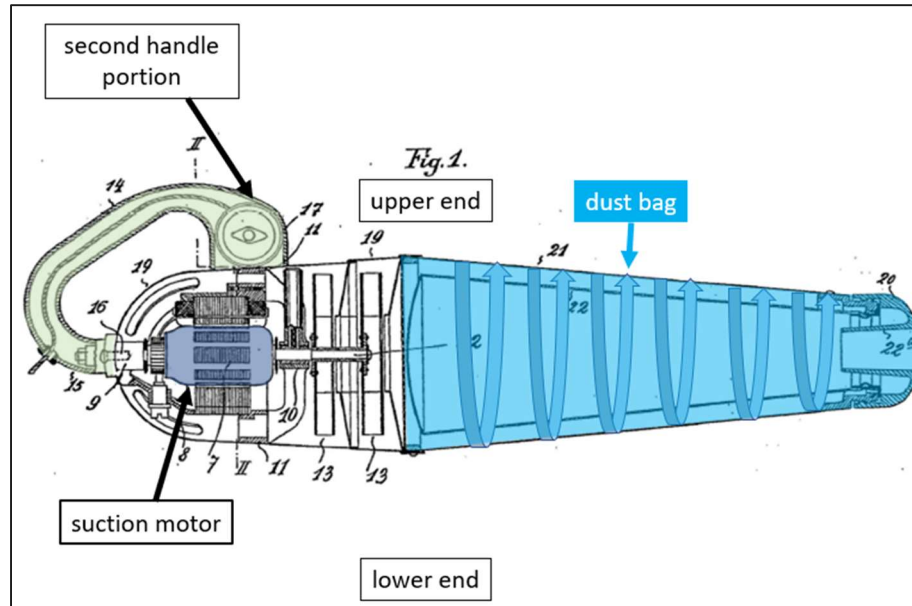
Lehmann in combination with Peng renders claims 1 and 3 obvious, and teaches the remaining limitations of claim 4. *See* Ground 2, Claims 1 and 3; Ex1002 ¶¶315-317. Lehmann teaches a second portion of the finger receiving area is positioned above an upper end of the main body.



Ex1006, Fig. 1; Ex1002 ¶¶315-317.

6. [6]/[7]

Lehmann in combination with Peng renders claims 1 and 5 obvious, and teaches the remaining limitations of claims 6 and 7, respectively. *See* Ground 2, Claims 1 and 5; Ex1002 ¶¶318-322. As explained in Limitations [1c.ii] and [1c.iii], Lehmann alone or in combination with Peng teaches a hand vacuum cleaner with a cyclone axis of rotation. Additionally, as explained in Limitation [1c.i.1], Lehmann teaches a second handle portion, which is at the location above the suction motor. *See also*, Ex1006, 1:71-78.

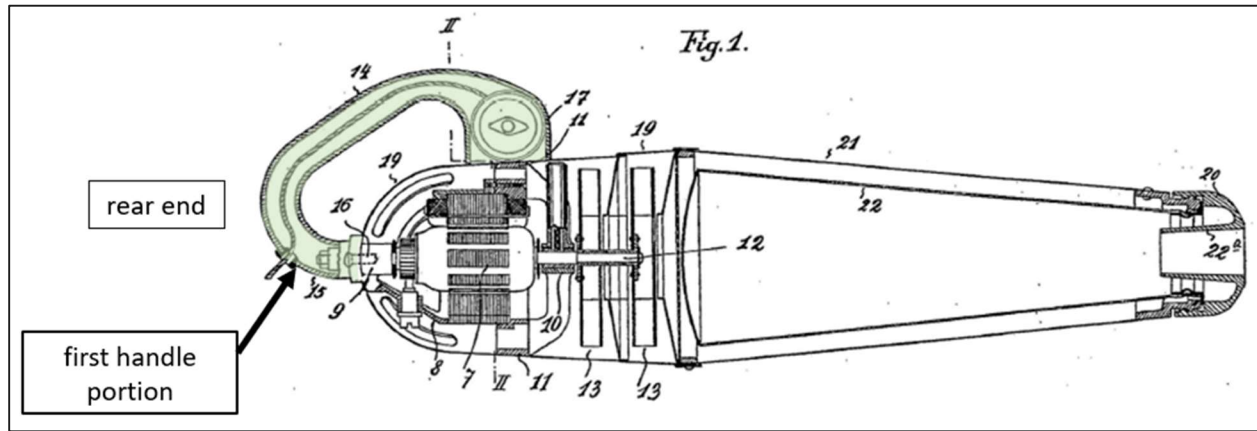


Ex1006, Fig. 1 (as modified); Ex1009, Fig. 3; Ex1002 ¶¶318-322.

7. [8]/[9]

Lehmann in combination with Peng renders Claims 1 and 6 obvious, and teaches the remaining limitations of claims 8 and 9, respectively. See Ground 2,

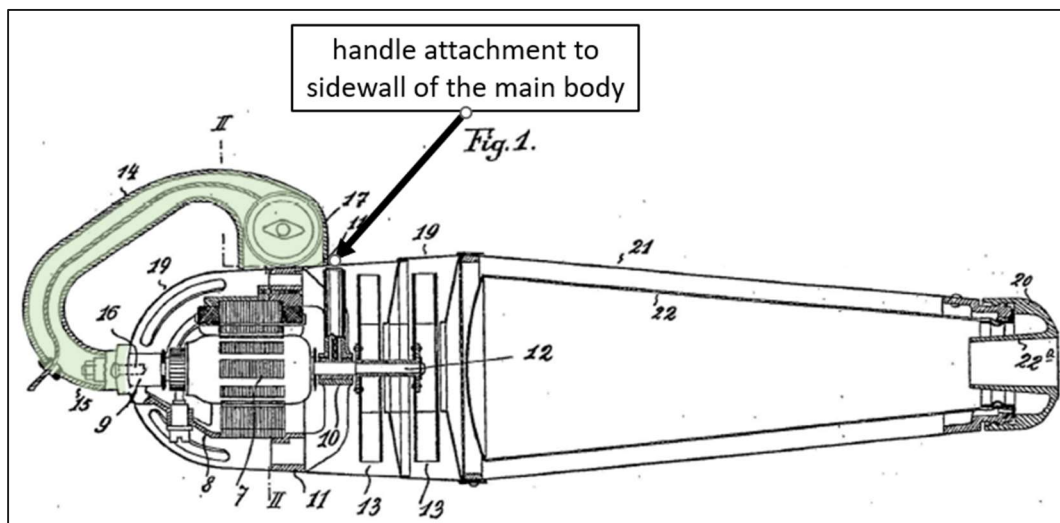
Claims 1 and 6; Ex1002 ¶¶323-325. Lehmann teaches that the first portion of the handle is mounted to the rear end of the main body, as shown:



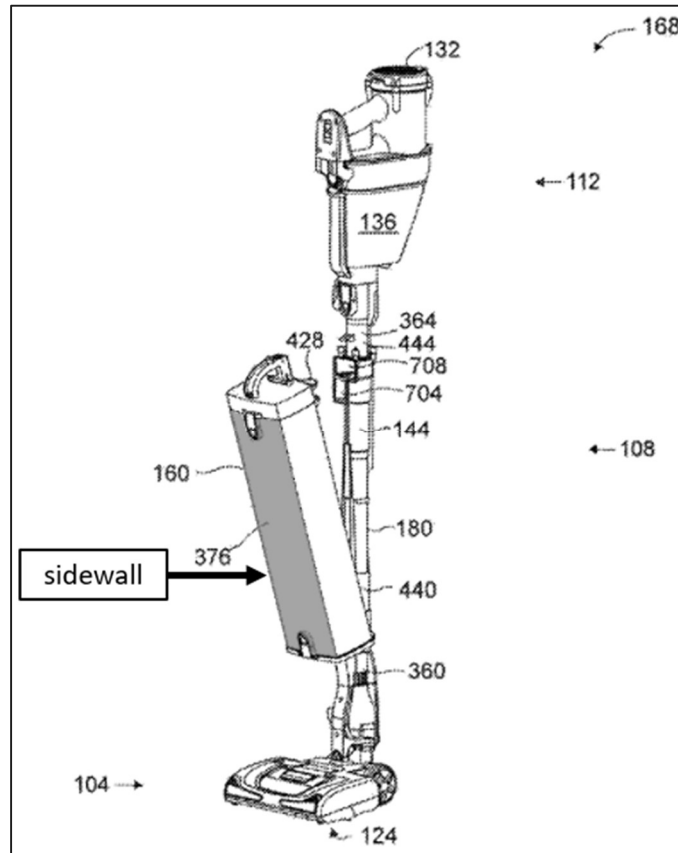
Ex1006, Fig. 1. Ex1002 ¶¶323-325.

8. [10]

Lehmann in combination with Peng renders Claim 1 obvious and teaches the remaining limitations of Claim 10. See Ground 2, Claim 1; Ex1002 ¶¶326-330. Lehmann teaches that the handle is also attached to a sidewall of the main body, as shown:



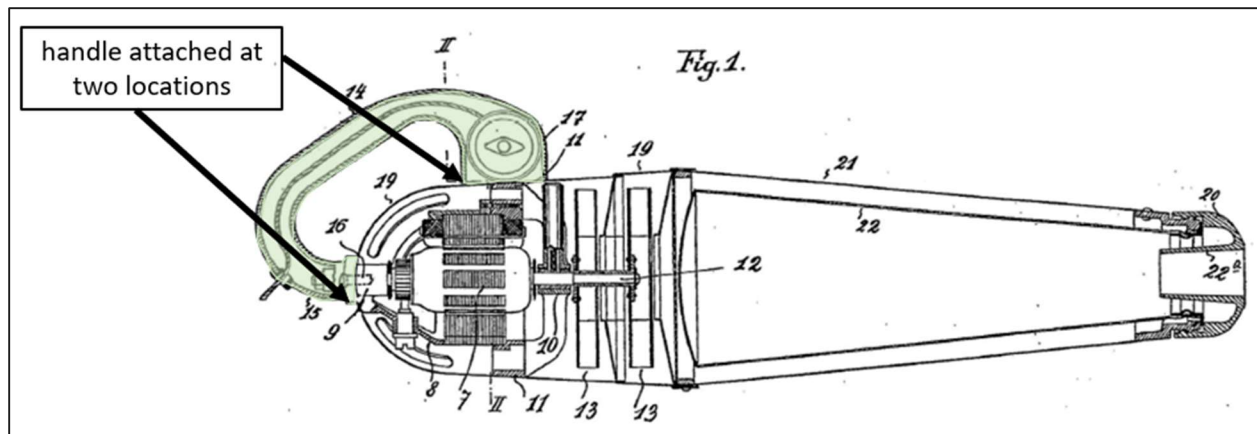
Ex1006, Fig. 1. The '038 patent describes a “sidewall” as including the face of the vacuum body that faces away from the user and toward the ceiling when in use:



Ex1001, Fig. 20. The '038 further teaches that its “sidewall” may be “substantially cylindrical.” *Id.*, 17:21-23. Ex1002 ¶¶326-330.

9. [11]

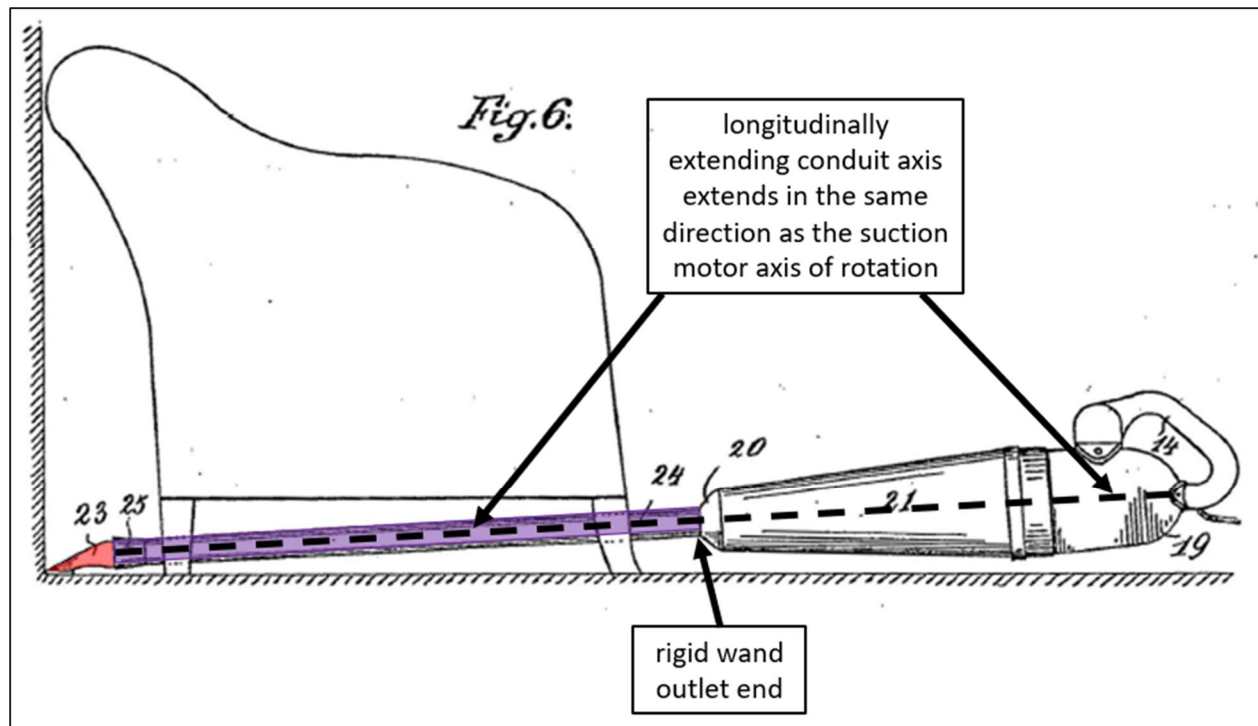
Lehmann in combination with Peng renders claim 1 obvious and teaches the remaining limitations of Claim 11. *See* Ground 2, Claim 1; Ex1002 ¶¶332-334. Lehmann teaches that its handle is attached to its main body at two locations, as shown:



Ex1006, Fig. 1; Ex1002 ¶¶332-334.

10. [13]

Lehmann in combination with Peng renders Claim 1 obvious and teaches the remaining limitations in Claim 13. *See* Ground 2, Claim 1; Ex1002 ¶¶334-336. When Lehmann's hand vacuum is mounted to the outlet end of its "tube 24," the longitudinally extending conduit axis extends in a same direction as the suction motor axis of rotation, as shown:



Ex1006, Fig. 6; *see also* Ground 2, Limitations [1b.1], [1b.3], [1c.i]. Ex1002 ¶¶334-336.

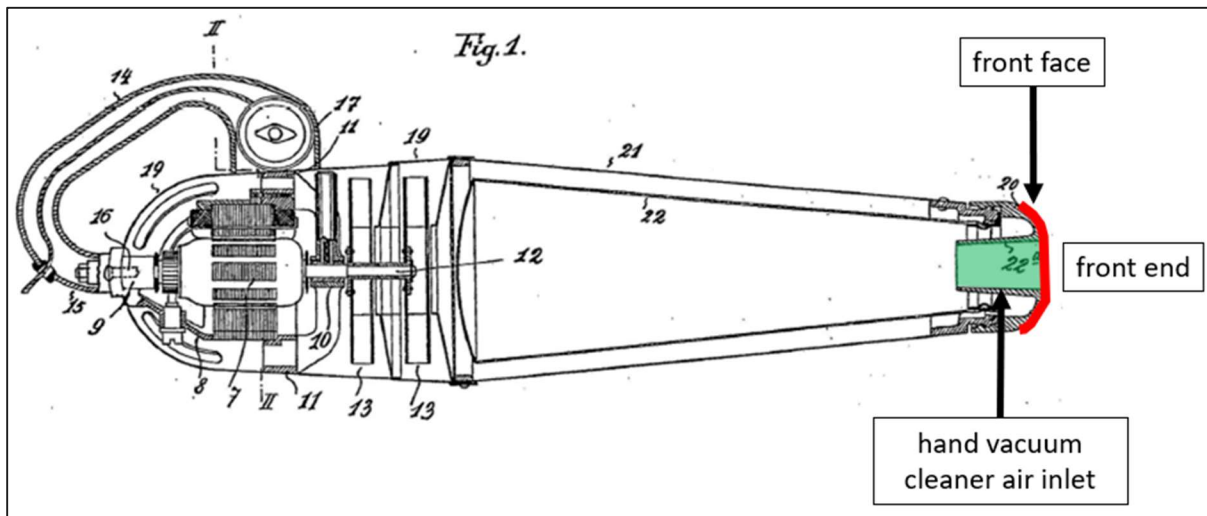
11. [14]

Lehmann in combination with Peng renders Claim 1 obvious and teaches the remaining limitations in Claim 14. *See* Ground 2, Claim 1; Ex1002 ¶¶337-339. As explained in Limitations [1c.ii] and [1c.iii], Lehmann in combination with Peng teaches two cyclonic stages where the front end of the second cyclonic stage is rearward of the rear end of the first cyclonic stage. *Id.*

12. [15]

Lehmann in combination with Peng renders Claim 1 obvious and teaches the remaining limitations in Claim 15. *See* Ground 2, Claim 1; Ex1002 ¶¶340-343.

While the claims do not previously refer to “a front face,” or state the structure containing the claimed front face, Lehmann teaches that its hand vacuum cleaner has a front face that has the hand vacuum cleaner air inlet, as shown:



Ex1006, Fig. 1; Ex1002 ¶¶342.

Further, regardless of how the claims are interpreted, Lehmann teaches this limitation at least to the same extent as interpreted by PO in its infringement contentions. Ex1018 at 36-37.

D. Ground 4: Lehmann In Combination With Peng and Neroni Renders Claim 12 Obvious

1. Neroni Teaches A Surface Cleaning Apparatus With A Releasably Engageable Electrical Connector That A POSA Would Have Been Motivated To Incorporate Into Lehmann (Claim 12)

Lehmann in combination with Peng renders claim 1 obvious. *See* Ground 2, Claim 1; Ex1002 ¶¶344-354. Lehmann and Neroni further teaches the remaining limitations of this claim. Ex1002 ¶344.

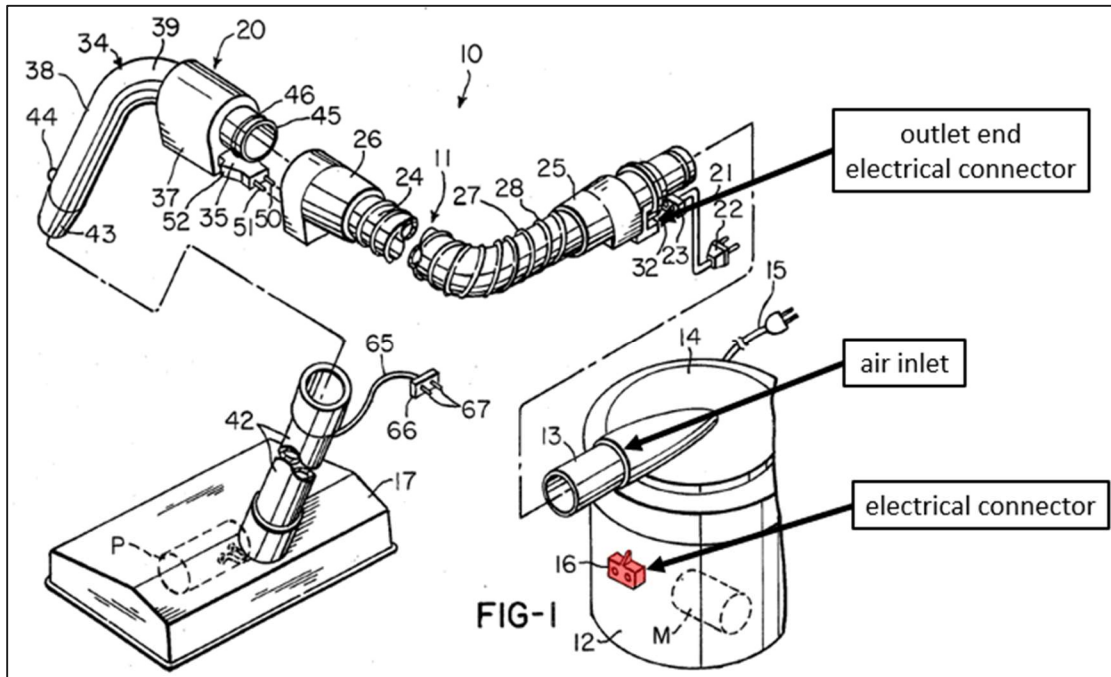
A POSA would have been motivated to combine Lehmann, Peng, and Neroni. Ex1002 ¶345. As described for Claim 1, the combination of Lehmann and Peng teaches a hand vacuum cleaner with an extension “tube” and “nozzle” for cleaning surfaces, including “carpets.” Ex1006, 2:14-20. A POSA would have been motivated to further combine Lehmann and Peng with Neroni, which teaches electrical connectors on a vacuum and its wand for powering a motorized floor tool. Ex1002 ¶345.

Neroni teaches a “means on the adapter for interlocking the adapter [sic] with an adjacent hose assembly to provide electrical continuity from the adapter, through the hose, and into the vacuum cleaner.” Ex1007, 1:66-2:2. Ex1002 ¶346. Neroni further teaches that “[t]he vacuum cleaner has a **female power receptacle 16** disposed on the outside surface of its tank 12 for ready access thereto. The **receptacle 16** 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 which is also operatively connected to the vacuum system itself through the adapter and the hose assembly, through tube 13 and into the vacuum cleaner 12.” Ex1007, 3:34-42. Ex1002 ¶346.

Neroni teaches several benefits of this configuration, including that the invention “provides the means to mechanically interlock with the hose and provide electrical continuity to be located in the cleaning tool adapter rather than being a

separate cord and plug device as in the prior art.” Ex1007, 2:18-24. Ex1002 ¶347.

Also, as seen in Figure 1, Neroni teaches that the hand vacuum cleaner electrical connector provided adjacent to the hand vacuum cleaner air inlet:



Ex1007, Fig. 1. Ex1002 ¶347.

A POSA would have been motivated to use a powered cleaning tool with Lehmann (either by modifying Lehmann’s “tube” and “nozzle,” or by using a separate powered cleaning tool) and to incorporate Neroni’s teachings of a power cleaning tool adaptor. Ex1002 ¶348. A POSA would have understood that powered cleaning tools were common, as Neroni explains. Ex1007, 1:17-49; Ex1002 ¶349. A POSA would have understood that powered cleaning tools can improve cleaning including by agitating the surface being cleaned, which frees dust that was otherwise trapped on that surface, including surfaces such as upholstery and carpet where dust

can accumulate in the upholstery/carpet fibers, which would further Lehmann’s stated purpose of cleaning “carpets,” “upholstery, cushions, and the like,” and would have reasonably expected success. Ex1006, 2:14-24; Ex1002 ¶350. For example, in 2006, US2006/0026788 to Fischer explained that “simple brushes or crevice tools without electrically powered features or accessories” are “limit[ed]” in “both their cleaning power and usefulness,” but “a powered cleaning tool attachment including a motor driven rotary agitator, a headlight and/or a booster fan” can provide benefits such as “additional cleaning power” and “greater cleaning efficiency,” including by “scrub[bing] and beat[ing] dirt and debris from the nap of an underlying carpet being cleaned.” Ex1017 ¶¶5, 6, 20, 22; Ex1002 ¶352. A POSA would have understood the well-known benefits of a powered floor tool and would have been motivated to incorporate Neroni’s electrical system into Lehmann to achieve these benefits. Ex1002 ¶352.

A POSA would have reasonably expected success incorporating Neroni’s teachings into Lehmann’s. Ex1002 ¶353. A POSA would understand that Neroni’s power cleaning tool adaptor teachings, including power leads and power connectors, were well-known, as Neroni explains (Ex1007, 1:17-49), that their incorporation would have simply required the addition of well-known parts—namely, Neroni’s “female power receptacle 16,” which “is used to supply electrical power” and “electrical cord assembly,” which is used to transfer electrical power and “which is

provided with a male fitting 22”—and that they would predictably result in delivering power to the surface cleaning tool. Ex1007, 3:34-49; Ex1002 ¶353. A POSA would have had a reasonable expectation of success modifying Lehmann’s “cap” and “tube” with Neroni’s teaching because similar modifications were well-known in the art, including as disclosed in WO2014174248A1, a 2013 Dyson patent that teaches an “electrical connecting arrangement [] provided to link electrical power from the vacuum cleaner to the wand 32 and, thus, also to the floor tool 34. The electrical connecting arrangement comprises a first pair of electrical terminals 56 provided on the air inlet nozzle 40 and a second pair of electrical terminals provided 58 on the wand connector 54.” Ex1002 ¶354; Ex1016, 7:14-19. Further, they would have been obvious to try as there were a finite number of predictable solutions for transferring power to a powered surface cleaning accessory. Ex1002 ¶354.

IX. DISCRETIONARY FACTORS FAVOR INSTITUTION

A. §314(a)

Fintiv should not be followed because it exceeds the Director’s authority, is arbitrary and capricious, was adopted without notice-and-comment rulemaking, violates the APA and AIA, and because “the PTAB will not rely on the *Fintiv* factors to discretionarily deny institution in view of parallel district court litigation where a petition presents compelling evidence of unpatentability,” and this petition presents

such compelling evidence. USPTO Interim Procedure For Discretionary Denials In AIA Post-Grant Proceedings With Parallel District Court Litigation, June 21, 2022, 2, 4-5 (the “Guidance”).

Nevertheless, *Fintiv* favors institution because each factor favors or is neutral for institution. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11.

Factor 1 is neutral: there is no evidence that the court will or will not grant a stay if IPR is instituted, and because no such stay motion has yet been filed, this factor is neutral. *See, e.g., TSMC Ltd. v. Alidouble, Inc.*, IPR2023-00372, Paper 7 at 10 (PTAB July 13, 2023).

Factor 2 favor institution: while the scheduled Litigation trial date is July 21, 2025—approximately 14 months away—any comparison of a projected FWD date against the scheduled trial date is speculative. *See Dish Network v. Broadband iTV*, IPR2020-01280, Paper 17 at 16 (PTAB Feb. 4, 2021) (“We cannot ignore the fact that the currently scheduled trial date is more than nine months away and much can change during this time”); Guidance at 8 (“Stakeholders correctly noted that scheduled trial dates are unreliable and often change[,]” and a “scheduled trial date ... is not by itself a good indicator of [when] the district court trial will occur.”). Instead, “when considering the proximity of the district court’s trial date to the date when the PTAB final written decision will be due, the PTAB will consider the median time from filing to disposition of the civil trial for the district in which the

parallel litigation resides.” *Id.* at 3. The median time to trial in the District of Massachusetts is 34.6 months according to Federal Court Management Statistics (December 31, 2023). Ex1024. The district court litigation was filed on August 15, 2023, when the ’038 Patent was added to an Amended Complaint in Case No. 23-cv-11277, and which indicates an expected trial date of approximately July 1, 2026, approximately seven and a half months after a FWD. Because the expected trial date is after the FWD deadline, this factor weighs in favor of institution. *Samsung Electronics Co., Ltd. et al v. Staton Techiya, LLC*, IPR2022-00302, Paper 13 at 10-12.

Factor 3 favors institution. “If, at the time of the institution decision, the district court has not issued orders related to the patent at issue in the petition, this fact weighs against exercising discretion to deny institution” *Apple Inc., v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 10 (PTAB Mar. 20, 2020) (precedential). No such substantive orders have issued with respect to the ’038 Patent, and none are expected prior to institution. A *Markman* hearing is scheduled for July 16, 2024, and a *Markman* order is not expected until several months after the hearing. *E.g.*, *iRobot Corp. v. SharkNinja Operating LLC et al.*, 19-cv-12125 (D. Mass.) (holding a *Markman* hearing on August 6, 2020 and issuing a *Markman* order on January 14, 2021). Further, the parties’ investments in co-pending litigation have been low and will remain low at the time of institution. In the co-pending litigation, PO added

the '038 Patent to an Amended Complaint on August 15, 2023 in Case No. 23-cv-11277, which the Court severed on October 13, 2023 as Case No. 23-cv-12372. On October 10, 2023, Dyson filed a motion to dismiss, which remains pending, and Dyson filed an Answer to the Complaint recently on May 10, 2024. Litigation, Dkts. 76, 123. Fact discovery began on October 30, 2023 and no depositions have been taken. Litigation, Dkts. 103–04. PO served its infringement contentions on December 15, 2023, and Petitioners filed this petition five months of those contentions. Ex1025.

Factor 4 favors institution because there is little overlap between the two proceedings. This Petition challenges 8 claims not at-issue in the Litigation, *see* Ex1014, 2; and Petitioners stipulate that, unless the Board denies or later vacates institution of this Petition, Petitioners will not seek resolution of invalidity in the co-pending litigation based on the specific grounds asserted in this Petition. Ex1026.

Factor 5 favors institution because although Petitioners and PO are also parties to the parallel litigations, the expected timing of the trial date favors institution. *Fusion Orthopedics, LLC v. Extremity Medical, LLC*, IPR2023-00894, Paper 15 at 32 (PTAB Nov. 17, 2023).

The *General Plastics* factors favor institution because this is the only petition against the '038 Patent. *General Plastics Indus. Co., Ltd. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 9-10.

B. §325(d)

The §325(d) factors favor institution. The relied-upon references were not previously before the Office, nor are they cumulative. *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 9-11 (PTAB Feb. 13, 2020) (precedential).

X. SECONDARY CONSIDERATIONS

Petitioners are unaware of any secondary considerations of non-obviousness.

XI. MANDATORY NOTICES UNDER 37 C.F.R. §42.8

A. Real Parties-in-Interest

Petitioners identify themselves as the real parties-in-interest.

B. Related Matters

To the best of Petitioners' knowledge, apart from the above-mentioned litigation, *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-cv-12372, Dkt. 58-1 at 3, 6 (D. Mass.), the '038 Patent has not been involved in any litigation, *inter partes* or post-grant review prior to this proceeding.

C. Lead and Backup Counsel, Service, and Power of Attorney

Lead Counsel	Back-Up Counsel
Christian Huehns Reg. No. 77,717 christian.huehns@kirkland.com <u>Postal and Hand-Delivery Address:</u> KIRKLAND & ELLIS LLP 333 West Wolf Point Plaza Chicago, IL 60654 Telephone: (312) 862-2000	Matthew Benjamin Hershkowitz Reg. No. 77,881 matt.hershkowitz@kirkland.com <u>Postal and Hand-Delivery Address</u> KIRKLAND & ELLIS LLP 601 Lexington Ave New York, NY 10022 Telephone: (212) 446-4800

Lead Counsel	Back-Up Counsel
Facsimile: (312) 862-2200	Facsimile: (212) 446-4900 Jay Emerick (<i>pro hac vice</i> motion forthcoming) jay.emerick@kirkland.com <u>Postal and Hand-Delivery Address:</u> KIRKLAND & ELLIS LLP 333 West Wolf Point Plaza Chicago, IL 60654 Telephone: (312) 862-2000 Facsimile: (312) 862-2200 Bryan S. Hales, P.C. (<i>pro hac vice</i> motion forthcoming) bhales@kirkland.com <u>Postal and Hand-Delivery Address:</u> KIRKLAND & ELLIS LLP 333 West Wolf Point Plaza Chicago, IL 60654 Telephone: (312) 862-2000 Facsimile: (312) 862-2200

Petitioners concurrently submit a Power of Attorney, 37 C.F.R. § 42.10(b), and consent to electronic service at DysonIPR@kirkland.com.

XII. PAYMENT OF FEES UNDER 37 C.F.R. §42.103

Petitioners concurrently electronically submit the required fees for this Petition. The Board is authorized to charge Deposit Account No. 506092 for any fee deficiency.

Date: May 17, 2024

Respectfully submitted,

/s/ Christian Huehns

Christian Huehns (Reg. No. 77,717)
Bryan S. Hales, P.C. (*pro hac* forthcoming)
Jay Emerick (*pro hac* forthcoming)
KIRKLAND & ELLIS LLP
333 West Wolf Point Plaza
Chicago, IL 60654
Telephone: (312) 862-2000
Facsimile: (312) 862-2200
christian.huehns@kirkland.com
bryan.hales@kirkland.com
jay.emerick@kirkland.com
DysonIPR@kirkland.com

Matthew B. Hershkowitz (Reg. No. 77,881)
KIRKLAND & ELLIS LLP
601 Lexington Ave.
New York, NY 10022
Telephone: (212) 446-4800
Facsimile: (212) 446-4900

Attorneys for Petitioners

CERTIFICATE OF COMPLIANCE

This Petition complies with the type-volume limitations as mandated in 37 C.F.R. § 42.24, totaling 13,528 words. Counsel has relied upon the word count feature provided by Microsoft Word.

/s/ Christian Huehns

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that a copy of the foregoing document with the accompanying Exhibits listed in Petitioner's Exhibit List was caused to be served by Federal Express, costs prepaid, to Patent Owner at the following address of record:

1059 – Bereskin & Parr LLP / S.E.N.C.R.L., srl.
40 King Street West
40th Floor
Toronto, ON
Canada

A copy was also served via electronic mail and FTP on the attorneys of record in the following related matter, SharkNinja Operating LLC et al. v. Dyson, Inc. et al., 1:23-cv-12372-ADB (D. Mass.):

GIBSON, DUNN & CRUTCHER LLP
SharkNinja-Dyson@gibsondunn.com
Brian A. Rosenthal
Benjamin Hershkowitz
Vivian Lu
Brian Buroker
Wendy W. Cai

WILMER CUTLER PICKERING HALE AND DORR LLP
WHSharkNinja-DysonService@wilmerhale.com
Joseph J. Mueller
Todd C. Zubler
Omar A. Khan
Jeffrey A. Dennhardt

/s/ Sheryl A. Brongiel
Sheryl A. Brongiel