Doc Code: ECOMM.AUTH/ECOMM.WTDW
Doc Description: Internet Communications Authorization/Internet Communications Authorization Withdrawal

PTO/SB/439 (11-15)

AUTHORIZATION FOR INTERNET COMMUNICATIONS IN A PATENT APPLICATION OR REQUEST TO WITHDRAW AUTHORIZATION FOR INTERNET COMMUNICATIONS		
	Application No.	
	Filing Date	June 2, 2022
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	n/a
	Examiner Name	n/a
	Practitioner Docket No.	10452-P46958US17

To: Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I. To authorize permission for Internet Communications.

☒ Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with the undersigned and practitioners in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via video conferencing, instant messaging, or electronic mail. I understand that a copy of these communications will be made of record in the application file. (MPEP 502.03)

II. To withdraw authorization for Internet Communications.

☐ The authorization given on _____, to the USPTO to communicate with the undersigned and any practitioner in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via Internet communications such as video conferencing, instant messaging, or electronic mail is hereby withdrawn. I understand that the withdrawal is effective when approved rather than when received.

I am the

☐ applicant.

☒ attorney or agent of record. Registration number 33,106.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/Philip C. Mendes da Costa/ — Signature

June 2, 2022 — Date

Philip C. Mendes da Costa — Typed or printed name

416.957.1695 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Juristic entities must be represented by a patent practitioner (see 37 CFR 1.31, which is applicable to any paper filed on or after September 16, 2012, that is presented on behalf of a juristic entity, regardless of application filing date). Submit multiple forms if more than one signature is required, see below*.

☐ * Total of _____ forms are submitted.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/AIA/01 (06-12)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	SURFACE CLEANING APPARATUS

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [■] The attached application, or
- [ ] United States application or PCT international application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Wayne Ernest Conrad Date (Optional): _____

Signature: Wayne Conrad

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

ABSTRACT

A surface cleaning apparatus comprises a hand vacuum cleaner, a surface cleaning head and a rigid air flow conduit removably mountable between the surface cleaning head air outlet and the dirty air inlet of the hand vacuum cleaner. The hand vacuum cleaner comprises a main body and a cyclone unit. The cyclone axis of rotation intersects the pistol grip handle. The cyclone axis of rotation is generally horizontal.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	SURFACE CLEANING APPARATUS
First Named Inventor/Applicant Name:	Wayne Ernest Conrad
Filer:	Philip C. Mendes da Costa/Snezana Lisowsky
Attorney Docket Number:	10452-P46958US17

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	320	320
UTILITY SEARCH FEE	1111	1	700	700
UTILITY EXAMINATION FEE	1311	1	800	800
Pages:				
UTILITY APPL SIZE FEE PER 50 SHEETS >100	1081	2	420	840
Claims:				
Miscellaneous-Filing:				
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**2660**

CLAIMS:

1. A surface cleaning apparatus comprising:

(a) a hand vacuum cleaner having a front end having a dirty air inlet, a rear end, a clean air outlet, an upper end, a lower end and a pistol grip handle, the hand vacuum cleaner comprising:

(i) a main body comprising an upper end, a lower end, a front end and a rear end, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation; and,

(ii) a cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end, an axially spaced apart rear end, a cyclone air inlet, and a cyclone air outlet provided at the rear end of the cyclone unit, wherein the cyclone axis of rotation intersects the pistol grip handle;

(b) a surface cleaning head having a front end, a rear end, a dirty air inlet and a surface cleaning head air outlet; and,

(c) a rigid air flow conduit extending between the surface cleaning head air outlet and the dirty air inlet of the hand vacuum cleaner, the rigid air flow conduit is removably mounted to the surface cleaning head,

wherein the dirty air inlet of the hand vacuum cleaner is removably drivingly mounted to a downstream end of the rigid air flow conduit whereby when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the pistol grip handle is a driving handle for the surface cleaning apparatus, and

wherein when the hand vacuum cleaner is positioned with the front end of the hand vacuum cleaner in front of the rear end of the hand vacuum cleaner, the cyclone axis of rotation is generally horizontal.

2. The surface cleaning apparatus of claim 1 wherein the cyclone unit is removably mounted to the main body.

3. The surface cleaning apparatus of claim 1 further comprising a dirt collection chamber that is exterior to the cyclone chamber and a forward end of the dirt collection chamber is openable.

4. The surface cleaning apparatus of claim 1 wherein the cyclone axis of rotation is generally parallel to the suction motor axis of rotation.

5. The surface cleaning apparatus of claim 1 wherein, when the hand vacuum cleaner is positioned with the front end of the hand vacuum cleaner in front of the rear end of the hand vacuum cleaner, the pistol grip handle extends upwardly and forwardly.

6. The surface cleaning apparatus of claim 1 wherein an enclosed finger grip area is provided on a forward side of the pistol grip handle.

7. The surface cleaning apparatus of claim 1 wherein the cyclone axis of rotation intersects the finger grip area.

8. The surface cleaning apparatus of claim 2 further comprising a pre-motor filter, wherein the pre-motor filter is accessible when the cyclone unit is removed from the main body.

9. The surface cleaning apparatus of claim 8 wherein the pre-motor filter has a height in a direction transverse to the cyclone axis and the height is larger than a diameter of the cyclone.

10. The surface cleaning apparatus of claim 9 further comprising a dirt collection chamber that is exterior to the cyclone chamber and a line that is parallel to the cyclone axis extends through the dirt collection chamber and the pre-motor filter.

11. A surface cleaning apparatus comprising:

(a) a hand vacuum cleaner comprising:

(i) a main body comprising a lower end, an upper end, a front end, a rear end and a pistol grip handle, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation, the pistol grip handle is provided at the rear end of the main body, extends upwardly and forwardly when the hand vacuum cleaner is positioned with the front end forward of the rear end; and,

(ii) a cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end and a rear end wherein air exits the cyclone chamber at the rear end of the cyclone chamber, wherein the suction motor axis of rotation is generally parallel to the cyclone axis of rotation;

(b) a surface cleaning head having a front end, a rear end, a dirty air inlet and a cleaning head air outlet; and,

(c) a rigid air flow conduit extending between the cleaning head air outlet and a hand vacuum cleaner air inlet, the rigid air flow conduit having a longitudinally extending conduit axis, and the rigid air flow conduit is removably mounted to the surface cleaning head,

wherein the hand vacuum cleaner is removably mountable to a downstream end of the rigid air flow conduit and, when the hand vacuum cleaner is

mounted to the downstream end of the rigid air flow conduit, the handle is a driving handle for the surface cleaning apparatus and the longitudinally extending conduit axis of the rigid air flow conduit is parallel to the cyclone axis of rotation, and

wherein a finger grip area is provided at a location that is forward of the pistol grip handle and rearward of the cyclone.

12. The surface cleaning apparatus of claim 11 further comprising a pre-motor filter, wherein the cyclone axis of rotation intersects the pre-motor filter.

13. The surface cleaning apparatus of claim 11 wherein the cyclone unit is removably mounted to the main body.

14. The surface cleaning apparatus of claim 11 further comprising a dirt collection chamber that is exterior to the cyclone chamber and a forward end of the dirt collection chamber is openable.

15. The surface cleaning apparatus of claim 11 further comprising a pre-motor filter, wherein the pre-motor filter is accessible when the cyclone unit is removed from the main body.

16. The surface cleaning apparatus of claim 15 wherein the pre-motor filter has a height in a direction transverse to the cyclone axis and the height is larger than a diameter of the cyclone.

17. The surface cleaning apparatus of claim 16 further comprising a dirt collection chamber that is exterior to the cyclone chamber and a line that is parallel to the cyclone axis extends through the dirt collection chamber and the pre-motor filter.

TITLE: SURFACE CLEANING APPARATUS

INVENTOR: WAYNE CONRAD

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of co-pending United States Patent Application No. 17/351,943, filed on June 18, 2021, which is still pending, which is a continuation-in-part of co-pending United States Patent Application No. 16/590,972 filed on October 2, 2019, which is a divisional of United States Patent Application No. 16/156,006 filed on October 10, 2018, now issued as United States Patent 10,478,030, which is a continuation of United States Patent Application No. 15/088,876 filed on April 1, 2016, now issued as United States Patent No. 10,219,662, which is a continuation of United States Patent Application No. 14/822,211, filed August 10, 2015, now issued as United States Patent No. 9,888,817, which claimed priority from United States Provisional Patent Application No. 62/093,189, filed December 17, 2014, the entirety of which are hereby incorporated by reference.

FIELD

[0002] This disclosure relates to the field of surface cleaning apparatus. In some aspects, this disclosure 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.

INTRODUCTION

[0003] Various types of surface cleaning apparatus are known. These include upright vacuum cleaner, stick vacuum cleaners, hand vacuum cleaners and canister vacuum cleaners. Stick vacuum cleaners and hand vacuum cleaners are popular as they tend to be smaller and may be used to clean a small area or when a spill has to be cleaned up. Hand vacuum cleaners or handvacs are advantageous as they are

lightweight and permit above floor cleaning and cleaning in hard to reach locations. However, they have a limited dirt collection capacity. Upright vacuum cleaners enable a user to clean a floor and may be have a pod that is removably attached for above floor cleaning. In such cases, the pod comprises, e.g., a cyclone, a dirt collection chamber and the suction motor for the upright vacuum cleaner. However, such the pods tend to be bulky since they comprise the total dirt collection capacity for the upright vacuum cleaner.

SUMMARY

[0004] In accordance with one aspect of this disclosure, an air treatment assembly for a surface cleaning apparatus, such as a hand vacuum cleaner has an air treatment chamber (such as a cyclone chamber) and an external dirt collection chamber wherein dirt separated in the air treatment chamber travels to the dirt collection chamber via a dirt outlet of the air treatment chamber. A sidewall of the air treatment chamber separates the air treatment chamber and the dirt collection chamber. An end of the air treatment assembly is openable (e.g., the front end of the air treatment assembly if the air treatment assembly is part of a hand vacuum cleaner). When the openable end is moved to the open position, both the air treatment chamber and the dirt collection chamber are opened and at least a portion of the sidewall separating the air treatment chamber and the dirt collection chamber is moved as part of the openable end. Optionally, a portion of the sidewall that extends to the dirt outlet is opened such that the dirt outlet is also opened when the openable end is moved to the open position is openable. An advantage of this design is that the air treatment chamber and the dirt collection chamber may be more easily emptied and any debris that may bridge the dirt outlet, and thereby partially or fully block the dirt outlet, may be more easily removed. For example, elongated debris such as hair that may be extend through the dirt outlet and be difficult to dislodge

from the dirt outlet may be more easily removed than if only the dirt collection chamber is opened.

[0005] In accordance with this aspect, there is provided a hand vacuum cleaner comprising:

(a) an air flow path extending from a dirty air inlet to a clean air outlet with a suction motor positioned in the air flow path;

(b) a main body comprising a handle and the suction motor; and,

(c) a cyclone bin assembly comprising a cyclone chamber positioned in the air flow path and a dirt collection chamber, the cyclone chamber has a cyclone air inlet, a cyclone air outlet, a dirt outlet, a cyclone chamber front end having a cyclone chamber front end wall, a cyclone chamber rear end having a cyclone chamber rear end wall and cyclone axis of rotation that extends between the cyclone chamber front end wall and the cyclone chamber rear end wall, the dirt collection chamber having a dirt collection chamber front end having a dirt collection chamber front end wall and an axially spaced apart dirt collection chamber rear end having dirt collection chamber rear end wall, a portion of the dirt collection chamber is spaced from the cyclone chamber in a direction transverse to the cyclone axis of rotation whereby the portion faces towards the cyclone chamber and is separated from the cyclone chamber by a sidewall,

wherein the front end of the cyclone bin assembly comprises at least a portion of the cyclone chamber, at least a portion of the dirt collection chamber and at least a portion of the sidewall, the front end of the cyclone bin assembly is rotationally mounted between a closed position and an open position in which the rear end of the cyclone chamber and the rear end of the dirt collection chamber are opened.

[0006] In some embodiments, the dirt outlet may be provided in the sidewall.

[0007] In some embodiments, the cyclone air inlet may be provided at the cyclone chamber front end and the cyclone air outlet may be provided at the cyclone chamber rear end.

[0008] In some embodiments, the dirt outlet may be provided in the sidewall.

[0009] In some embodiments, the dirt outlet may comprise an opening in the sidewall that extends axially inwardly into the cyclone chamber from the cyclone chamber rear end wall.

[0010] In some embodiments, the hand vacuum cleaner may further comprise an inlet conduit, the dirty air inlet may be located at an inlet end of the inlet conduit and the inlet conduit may be part of the front end of the cyclone bin assembly.

[0011] In some embodiments, the dirt collection chamber front end may be positioned axially forwardly from the cyclone chamber front end whereby the cyclone axis of rotation extends through a portion of the dirt collection chamber that is located axially outwardly from the cyclone chamber front end.

[0012] In some embodiments, the front end of the cyclone bin assembly may be rotationally mounted to a rear end of the cyclone bin assembly.

[0013] In some embodiments, the front end of the cyclone bin assembly may be rotationally mounted at a location of the rear end wall of the cyclone chamber.

[0014] In some embodiments, the front end of the cyclone bin assembly may be rotationally mounted to a rear end of the cyclone bin assembly at a location midway along an axial length of the cyclone bin assembly.

[0015] In accordance with this aspect, there is also provided a surface cleaning apparatus comprising:

(a) an air flow path extending from a dirty air inlet to a clean air outlet with a suction motor positioned in the air flow path; and,

(b) a cyclone bin assembly comprising a cyclone chamber positioned in the air flow path and a dirt collection chamber, the cyclone chamber has a cyclone air inlet, a cyclone air outlet, a dirt outlet, a cyclone chamber first end having a cyclone chamber first end wall, a cyclone chamber second end having a cyclone chamber second end wall and cyclone axis of rotation that extends between the cyclone chamber first end wall and the cyclone chamber second end wall, the dirt collection chamber having a dirt collection chamber first end having a dirt collection chamber first end wall and an axially spaced apart dirt collection chamber second end having dirt collection chamber second end wall, a portion of the dirt collection chamber is spaced from the cyclone chamber in a direction transverse to the cyclone axis of rotation whereby the portion faces towards the cyclone chamber and is separated from the cyclone chamber by a sidewall,

wherein the first end of the cyclone bin assembly comprises at least a portion of the cyclone chamber, at least a portion of the dirt collection chamber and at least a portion of the sidewall, the first end of the cyclone bin assembly is rotationally mounted between a closed position and an open position in which the second end of the cyclone chamber and the second end of the dirt collection chamber are opened.

[0016] In some embodiments, the dirt outlet may be provided in the sidewall.

[0017] In some embodiments, the cyclone air inlet may be provided at the cyclone chamber first end and the cyclone air outlet may be provided at the cyclone chamber second end.

[0018] In some embodiments, the dirt outlet may be provided in the sidewall.

[0019] In some embodiments, the dirt outlet may comprise an opening in the sidewall that extends axially inwardly into the cyclone chamber from the cyclone chamber second end wall.

[0020] In some embodiments, the surface cleaning apparatus may further comprise an inlet conduit, the dirty air inlet may be located at an inlet end of the inlet conduit and the inlet conduit may be part of the first end of the cyclone bin assembly.

[0021] In some embodiments, the dirt collection chamber first end may be positioned axially outwardly from the cyclone chamber first end whereby the cyclone axis of rotation extends through a portion of the dirt collection chamber that is located axially outwardly from the cyclone chamber first end.

[0022] In some embodiments, the front end of the cyclone bin assembly may be rotationally mounted to a rear end of the cyclone bin assembly.

[0023] In some embodiments, the front end of the cyclone bin assembly may be rotationally mounted at a location of the second end wall of the cyclone chamber.

[0024] In some embodiments, the front end of the cyclone bin assembly may be rotationally mounted to a rear end of the cyclone bin assembly at a location midway along an axial length of the cyclone bin assembly.

DRAWINGS

[0025] FIG. 1 is a front perspective view of a surface cleaning apparatus in accordance with at least one embodiment;

[0026] FIG. 2 is a rear perspective view of the apparatus of FIG. 1;

[0027] FIG. 3 is a side elevation view of the apparatus of FIG. 1;

[0028] FIG. 4 is a front perspective view of the apparatus of FIG. 1 with a supplemental dirt collection chamber partially removed;

[0029] FIG. 5 is a front perspective view of a surface cleaning apparatus in accordance with another embodiment;

[0030] FIG. 6 is a rear perspective view of the apparatus of FIG. 5;

[0031] FIG. 7 is a side elevation view of the apparatus of FIG. 5 with an electrical cord bag;

[0032] FIG. 8 is a front elevation view of the apparatus of FIG. 5;

[0033] FIG. 9 is a rear elevation view of the apparatus of FIG. 5;

[0034] FIG. 10 is a top plan view of the apparatus of FIG. 5;

[0035] FIG. 11 is a bottom plan view of the apparatus of FIG. 5;

[0036] FIG. 12 is an exploded front perspective view of the apparatus of FIG. 5;

[0037] FIG. 12a is an exploded front perspective view of an alternate apparatus of FIG. 5;

[0038] FIG. 13 is a front perspective view of a surface cleaning apparatus in accordance with another embodiment;

[0039] FIG. 14 is a rear perspective view of the apparatus of FIG. 13;

[0040] FIG. 15 is a side elevation view of the apparatus of FIG. 13;

[0041] FIG. 16 is a front elevation view of the apparatus of FIG. 13;

[0042] FIG. 17 is a rear elevation view of the apparatus of FIG. 13;

[0043] FIG. 18 is a top plan view of the apparatus of FIG. 13;

[0044] FIG. 19 is a bottom plan view of the apparatus of FIG. 13;

[0045] FIG. 20 is a front perspective view of the apparatus of FIG. 13 with a supplemental cyclone bin assembly partially removed;

[0046] FIG. 21 is a cross-sectional view taken along line 21-21 in FIG. 1;

[0047] FIG. 22 is a bottom perspective view of a handvac of the apparatus of FIG. 1;

[0048] FIG. 23 is a perspective cross-sectional view of a cyclone bin assembly of the handvac of FIG. 22 transverse to the cyclone axis;

[0049] FIG. 23a is a top plan view of the cross-section of FIG. 23;

[0050] FIG. 24 is a front perspective view of the supplemental dirt collection chamber of the apparatus of FIG. 1;

[0051] FIG. 25 is a cross-sectional view taken along line 25-25 in FIG. 5;

[0052] FIG. 26 is a cross-sectional view taken along line 26-26 in FIG. 13;

[0053] FIG. 27 is a front perspective view of the apparatus of FIG. 1 in a lightweight upright mode;

[0054] FIG. 28 is a rear perspective view of the apparatus of FIG. 1 in the lightweight upright mode of FIG. 27;

[0055] FIG. 29 is a side elevation view of the apparatus of FIG. 1 in the lightweight upright mode of FIG. 27;

[0056] FIG. 30 is a cross-sectional view taken along line 30-30 in FIG. 27;

[0057] FIG. 31 is a front perspective view of the apparatus of FIG. 1 in an above-floor cleaning mode;

[0058] FIG. 32 is a rear perspective view of the apparatus of FIG. 1 in the above-floor cleaning mode of FIG. 31;

[0059] FIG. 33 is a side elevation view of the apparatus of FIG. 1 in the above-floor cleaning mode of FIG. 31;

[0060] FIG. 34 is a front perspective view of the apparatus of FIG. 1 in a stair-cleaning mode;

[0061] FIG. 35 is a rear perspective view of the apparatus of FIG. 1 in the stair-cleaning mode of FIG. 34;

[0062] FIG. 36 is a side elevation view of the apparatus of FIG. 1 in in the stair cleaning mode of FIG. 34;

[0063] FIG. 36a is a front perspective view of the apparatus of FIG. 5 in an above-floor cleaning mode;

[0064] FIG. 37 is a front perspective view of the apparatus of FIG. 13 in a lightweight upright mode;

[0065] FIG. 38 is a rear perspective view of the apparatus of FIG. 13 in the lightweight upright mode of FIG. 37;

[0066] FIG. 39 is a front elevation view of the apparatus of FIG. 13 in the lightweight upright mode of FIG. 37;

[0067] FIG. 40 is a rear elevation view of the apparatus of FIG. 13 in the lightweight upright mode of FIG. 37;

[0068] FIG. 41 is a side elevation view of the apparatus of FIG. 13 in the lightweight upright mode of FIG. 37;

[0069] FIG. 42 is a top plan view of the apparatus of FIG. 13 in the lightweight upright mode of FIG. 37;

[0070] FIG. 43 is a bottom plan view of the apparatus of FIG. 13 in the lightweight upright mode of FIG. 37;

[0071] FIG. 44 is a cross-sectional view taken along line 44-44 in FIG. 37;

[0072] FIG. 44a is a perspective view of the apparatus of FIG. 13 in an above-floor cleaning mode;

[0073] FIG. 44b is another perspective view of the apparatus of FIG. 13 in the above-floor cleaning mode of FIG. 44a;

[0074] FIG. 45 is a rear perspective view of the supplemental dirt collection chamber of FIG. 24;

[0075] FIG. 46 is a side elevation view of the supplemental dirt collection chamber of FIG. 24;

[0076] FIG. 47 is a front perspective view of a surface cleaning apparatus in accordance with another embodiment;

[0077] FIG. 48 is a cross-sectional view taken along line 48-48 in FIG. 47;

[0078] FIG. 49 is a cross-section view taken along line 49-49 in FIG. 47;

[0079] FIG. 50 is a side elevation view of the apparatus of FIG. 47;

[0080] FIG. 51 is a front elevation view of the apparatus of FIG. 47;

[0081] FIG. 52 is a front perspective view of an upright section of the apparatus of FIG. 13 including a diversion valve in a closed position;

[0082] FIG. 53 is a front perspective view of the upright section of FIG. 52 with a cyclone bin assembly seated on a pedal of the diversion valve;

[0083] FIG. 54 is a front perspective view of the upright section of FIG. 52 with the cyclone bin assembly connected to a wand, and the diversion valve in the open position;

[0084] FIG. 55 is a cross-sectional view taken along line 55-55 in FIG. 52;

[0085] FIG. 56 is a cross-sectional view taken along line 56-56 in FIG. 53;

[0086] FIG. 57 is a cross-sectional view taken along line 57-57 in FIG. 54;

[0087] FIG. 58 is a front perspective view of an upright section of the apparatus of FIG. 13 including another diversion valve in a closed position

[0088] FIG. 59 is a front perspective view of the upright section of FIG. 58 with the cyclone bin assembly being connected to a wand, and the diversion valve in the closed position;

[0089] FIG. 60 is a front perspective view of the upright section of FIG. 58 with the cyclone bin assembly connected to the wand, and the diversion valve in the open position

[0090] FIG. 61 is a cross-sectional view taken along line 61-61 in FIG. 58;

[0091] FIG. 62 is a cross-sectional view taken along line 62-62 in FIG. 59;

[0092] FIG. 63 is a cross-sectional view taken along line 63-63 in FIG. 60;

[0093] FIG. 64 is a front perspective view of an upright section of the apparatus of FIG. 13 including another diversion valve in a closed position;

[0094] FIG. 65 is a front perspective view of the upright section of FIG. 64 with the diversion valve in a partially opened position;

[0095] FIG. 66 is a front perspective view of the upright section of FIG. 64 mounted to the wand with the diversion valve in an open position;

[0096] FIG. 67 is a cross-sectional view of the upright section of FIG. 64;

[0097] FIG. 68 is another cross-sectional view of the upright section of FIG. 64;

[0098] FIG. 69 is an enlarged view of a portion of FIG. 68;

[0099] FIG. 70 is a cross-sectional view taken along line 70-70 in FIG. 65;

[00100] FIG. 71 is a cross-sectional view taken along line 71-71 in FIG. 66;

[00101] FIG. 72 is a front perspective view of an upright section of the apparatus of FIG. 13 with another diversion valve in a closed position;

[00102] FIG. 73 is a front perspective view of the upright section of FIG. 72 being connected to the wand and with the diversion valve in a closed position;

[00103] FIG. 74 is a front perspective view of the upright section of FIG. 72 connected to the wand and with the diversion valve in an open position;

[00104] FIG. 75 is a cross-section view taken along line 75-75 in FIG. 72;

[00105] FIG. 76 is a cross-section view taken along line 76-76 in FIG. 73;

[00106] FIG. 77 is a cross-section view taken along line 77-77 in FIG. 74;

[00107] FIG. 78 is a side elevation view of the handvac of the apparatus of FIG. 1;

[00108] FIG. 79 is a side elevation view of the handvac of the apparatus of FIG. 5;

[00109] FIG. 80 is a side elevation view of the apparatus of FIG. 5 in an upright storage position with a surface cleaning head having rearwardly deployed wheels;

[00110] FIG. 81 is a side elevation view of the apparatus of FIG. 80 in a reclined in-use position with the rear wheels of the surface cleaning head retracted;

[00111] FIG. 82 is a front perspective view of the apparatus of FIG. 13 with a cyclone bin assembly in accordance with at least one embodiment;

[00112] FIG. 83 is a rear perspective view of the cyclone bin assembly of FIG. 82 in a closed position;

[00113] FIG. 84 is a side elevation view of the cyclone bin assembly of FIG. 82 in a closed position;

[00114] FIG. 85 is a front elevation view of the cyclone bin assembly of FIG. 82 in a closed position;

[00115] FIG. 86 is a front elevation view of the cyclone bin assembly of FIG. 82 with a cyclone chamber portion in an open position;

[00116] FIG. 87 is a front elevation view of the cyclone bin assembly of FIG. 82 with the cyclone chamber portion and a dirt collection portion in open positions;

[00117] FIG. 88 is a top perspective view of the cyclone bin assembly of FIG. 82 with the cyclone chamber portion and the dirt collection portion in open positions;

[00118] FIG. 89 is a front perspective view of the cyclone bin assembly of the apparatus of FIG. 13;

[00119] FIG. 90 is a rear perspective view of the cyclone bin assembly of FIG. 89;

[00120] FIG. 91 is a front elevation view of the cyclone bin assembly of FIG. 89;

[00121] FIG. 92 is a rear elevation view of the cyclone bin assembly of FIG. 89;

[00122] FIG. 93 is a side elevation view of the cyclone bin assembly of FIG. 89;

[00123] FIG. 94 is a top plan view of the cyclone bin assembly of FIG. 89;

[00124] FIG. 95 is a bottom plan view of the cyclone bin assembly of FIG. 89;

[00125] FIG. 95b is a front perspective view of the cyclone bin assembly of FIG. 89 with a bottom portion in an open position;

[00126] FIG. 95c is a front perspective view of the cyclone bin assembly of FIG. 89 with top and bottom portions in open positions;

[00127] FIG. 96 is a cross-sectional view taken along line 96-96 in FIG. 22;

[00128] FIG. 97a is a bottom perspective view of the handvac of the apparatus of FIG. 1;

[00129] FIG. 97b is a partial cross-sectional view taken along line 97b-97b of FIG. 97a;

[00130] FIG. 98a is a bottom perspective view of the handvac of the apparatus of FIG. 1 with an open door;

[00131] FIG. 98b a partial cross-sectional view taken along line 98b-98b of FIG. 98a;

[00132] FIG. 99 is a partial cross-sectional view of a surface cleaning apparatus having a handvac disconnected from the upright section, and a bypass valve in a first closed position;

[00133] FIG. 100 is a cross-sectional view of the surface cleaning apparatus of FIG. 99 having a handvac connected to the upright section and the bypass valve in the first closed position;

[00134] FIG. 101 is a cross-sectional view of the surface cleaning apparatus of FIG. 99 having the handvac connected to the upright section and a supplementary cyclone bin assembly, and the bypass valve in a second open position;

[00135] FIG. 102 is a cross-sectional view of a surface cleaning apparatus having a having a bypass airflow path and a pre-motor filter in a supplemental cyclone bin assembly;

[00136] FIG. 103 is a cross-sectional view of a surface cleaning apparatus having a clean air suction motor in a surface cleaning head;

[00137] FIG. 104a is a cross-sectional view of a surface cleaning apparatus having a having a clean air suction motor in a supplemental cyclone bin assembly;

[00138] FIG. 104b is a cross-sectional view of another surface cleaning apparatus having a clean air suction motor in a supplemental cyclone bin assembly;

[00139] FIG. 105a is a perspective view of a surface cleaning apparatus having a supplemental cyclone bin assembly disconnected from an upright section;

[00140] FIG. 105b is a perspective view of a surface cleaning apparatus having a cyclone chamber and dirt collection chamber disconnected from an upright section;

[00141] FIG. 106 is a side elevation view a surface cleaning apparatus in accordance with another embodiment;

[00142] FIG. 107 is a partial side elevation view of the apparatus of FIG. 106 with a handvac disconnected from an upright section;

[00143] FIG. 108 is a side elevation view of the apparatus of FIG. 106 in a reclined in-use position with an arm assembly in a first position;

[00144] FIG. 109 is a side elevation view of the apparatus of FIG. 106 in a steeply reclined in-use position with the arm assembly in a second position;

[00145] FIG. 110a is a rear perspective view of the handvac of the apparatus of FIG. 1 in an open position;

[00146] FIG. 110b is a front perspective view of the handvac of FIG. 110a in the open position;

[00147] FIG. 111 is a front perspective view of the dirt collection chamber of the apparatus of FIG. 1 in an open position;

[00148] FIG. 112 is a rear perspective view of the dirt collection chamber of FIG. 111 in the open position;

[00149] FIG. 113 is a side elevation view of the dirt collection chamber of FIG. 111 in the open position;

[00150] FIG. 114 is a front perspective view of the upright section of the apparatus of FIG. 5 with a cyclone bin assembly in a closed position;

[00151] FIG. 115 is a front perspective view of the upright section of FIG. 114 with the cyclone bin assembly in an open position;

[00152] FIG. 116 is a cross-sectional view of the handvac of the apparatus of FIG. 1 having a pre-motor filter chamber in an open position;

[00153] FIG. 117 is an exploded view of the handvac of FIG. 116;

[00154] FIG. 118 is a cross-sectional view of a surface cleaning apparatus having a plurality of cyclone chambers in parallel;

[00155] FIG. 119a is a cross-sectional view of a surface cleaning apparatus having a dirty air suction motor in a surface cleaning head in series with a clean air suction motor in a handvac;

[00156] FIG. 119b is a cross-sectional view of the surface cleaning apparatus of FIG. 119a with a supplemental cyclone bin assembly removed;

[00157] FIG. 120 is a cross-sectional view of a surface cleaning apparatus having a clean air suction motor in a surface cleaning head in series with a clean air suction motor in a handvac;

[00158] FIG. 121a is a cross-sectional view of a surface cleaning apparatus having a clean air suction motor in a supplemental cyclone bin assembly in series with a clean air suction motor in a handvac;

[00159] FIG. 121b is a cross-sectional view of the surface cleaning apparatus of FIG. 121a with a hose connecting the handvac suction motor and the suction motor of the supplemental cyclone bin assembly;

[00160] FIG. 122 is a cross-sectional view of a surface cleaning apparatus having an airflow which bypasses the handvac;

[00161] FIG. 123 is a perspective view of a surface cleaning apparatus in accordance with another embodiment;

[00162] FIG. 124 is an exploded perspective view of the surface cleaning apparatus of FIG. 123;

[00163] FIG. 125 is a cross-sectional view taken along line 125-125 in FIG. 123;

[00164] FIG. 126 is enlarged partial view of FIG. 125;

[00165] FIG. 127 is an enlarged partial view of FIG. 126;

[00166] FIG. 128 is a perspective view of a surface cleaning apparatus in accordance with another embodiment;

[00167] FIG. 129 is a cross sectional perspective view of the surface cleaning apparatus of FIG. 128;

[00168] FIG. 130 is a front perspective view of the surface cleaning apparatus of FIG. 128 with a front end open;

[00169] FIG. 131 is a bottom perspective view of the surface cleaning apparatus of FIG. 128 with the front end open;

[00170] FIG. 132 is a perspective view of a surface cleaning apparatus in accordance with another embodiment;

[00171] FIG 133 is a cross sectional perspective view of the surface cleaning apparatus of FIG. 132;

[00172] FIG. 134 is a rear perspective view of the surface cleaning apparatus of FIG. 132 with a front end open;

[00173] FIG. 135 is a front perspective view of the surface cleaning apparatus of FIG. 132 with the front end open;

[00174] FIG. 136 is a perspective cross sectional view of a surface cleaning apparatus in accordance with another embodiment; and,

[00175] FIG. 137 is a perspective cross sectional view of the surface cleaning apparatus of FIG. 136 with a front end open.

DESCRIPTION OF VARIOUS EMBODIMENTS

[00176] Numerous embodiments are described in this application, and are presented for illustrative purposes only. The described embodiments are not intended to be limiting in any sense. The invention is widely applicable to numerous embodiments, as is readily apparent from the disclosure herein. Those skilled in the art will recognize that the present invention may be practiced with modification and alteration without departing from the teachings disclosed herein. Although particular features of the present invention may be described with reference to one or more particular embodiments or figures, it should be understood that such features are not limited to usage in the one or more particular embodiments or figures with reference to which they are described.

[00177] The terms "an embodiment," "embodiment," "embodiments," "the embodiment," "the embodiments," "one or more embodiments," "some embodiments," and "one embodiment" mean "one or more (but not all) embodiments of the present invention(s)," unless expressly specified otherwise.

[00178] The terms "including," "comprising" and variations thereof mean "including but not limited to," unless expressly specified otherwise. A listing of items does not imply that any or all of the items are mutually exclusive, unless expressly specified otherwise. The terms "a," "an" and "the" mean "one or more," unless expressly specified otherwise.

[00179] As used herein and in the claims, two or more parts are said to be “coupled”, “connected”, “attached”, or “fastened” 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. As used herein and in the claims, two or more parts are said to be “directly coupled”, “directly connected”, “directly attached”, or “directly fastened” where the parts are connected directly in physical contact with each other. As used herein, two or more parts are said to be “rigidly coupled”, “rigidly connected”, “rigidly attached”, or “rigidly fastened” where the parts are coupled so as to move as one while maintaining a constant orientation relative to each other. None of the terms “coupled”, “connected”, “attached”, and “fastened” distinguish the manner in which two or more parts are joined together.

General Overview

[00180] Referring to FIGS. 1-3, a surface cleaning apparatus 100 is shown in accordance with a first embodiment. In the embodiment shown, the surface cleaning apparatus 100 is a type of upright vacuum cleaner which is referred to as a stick vacuum cleaner. As illustrated, surface cleaning apparatus 100 includes a surface cleaning head 104, an upright section 108, and a hand-carriable vacuum cleaner 112 (also referred to as handvac or hand vacuum cleaner 112).

[00181] Upright section 108 may be movably and drivingly connected to surface cleaning head 104. For example, upright section 108 may be permanently or removably connected to surface cleaning head 104 and moveably mounted thereto for movement from a storage position to an in use position, such as by a pivotable joint 116. Joint 116 may permit upright section 108 to pivot (i.e., rotate) with respect

to surface cleaning head 104 about a horizontal axis. Accordingly, upright section 108 may be rotatable rearwardly so as to be positionable in a plurality of reclined floor cleaning positions (see for example Figures 81 and 108).

[00182] Upright section 108 may also be steeringly connected to surface cleaning head 104 for maneuvering surface cleaning head 104. For example, joint 116 may be a swivel joint.

[00183] Handvac 112 may be removably connected to upright section 108. When mounted to upright section 108, a user may grasp handvac 112 to manipulate upright section 108 to steer surface cleaning head 104 across a surface to be cleaned. Accordingly, when handvac 112 is mounted to upright section 108, handle 484 is the drive handle of surface cleaning apparatus 100

[00184] Surface cleaning apparatus 100 has at least one dirty air inlet, one clean air outlet, and an airflow path extending between the inlet and the outlet. In the illustrated example, lower end 120 of surface cleaning head 104 includes a dirty air inlet 124, and a rear end 128 of handvac 112 includes a clean air outlet 132. An airflow path extends from dirty air inlet 124 through surface cleaning head 104, upright section 108, and handvac 112 to clean air outlet 132. As exemplified in Figures 128 to 135, the handvac 112 may include a main body 129 and a dirty air inlet 131, and an air flow path of the handvac 112 may extend from the dirty air inlet 131 to the clean air outlet 132 with the suction motor 204 positioned in the air flow path.

[00185] As exemplified, at least one suction motor, and preferably the only suction motor, and one air treatment member, which may be the only air treatment member, is provided in the handvac 112 to permit handvac 112 to operate independently when disconnected from surface cleaning head 104 and optionally from upright section 108. It will be appreciated that while at least one suction motor and at least one air treatment member are positioned in the airflow path to separate dirt and other debris from the airflow, that when used with other aspects disclosed

herein, each of the suction motor and the air treatment member may be provided in the surface cleaning head 104, the upright section 108, and/or the handvac 112.

[00186] The air treatment member may be any suitable air treatment member, including, for example, one or more cyclones, filters, and bags. The air treatment member may be an air treatment chamber wherein air is redirected to assist dirt being removed from an incoming air stream and is optionally a cyclone chamber. Preferably, at least one air treatment member is provided upstream of the suction motor to clean the dirty air before the air passes through the suction motor. In the illustrated embodiment, handvac 112 includes a cyclone bin assembly 136 including a cyclone chamber and a dirt collection region. In some embodiments, the dirt collection region may be a portion (e.g., a lower portion) of the cyclone chamber. In other embodiments, the dirt collection region may be a dirt collection chamber that is separated from the cyclone chamber by a dirt outlet of the cyclone chamber. The following description utilizes the exemplified embodiments set out in the drawings, which utilize a cyclone chamber. It will be appreciated that the aspects disclosed herein may be used with an air treatment member as discussed previously and, optionally, an air treatment chamber. It will also be appreciated that if the air treatment member is an air treatment chamber, then the cyclone bin assembly 136 may be referred to as an air treatment assembly.

Plurality of Dirt Collection Chambers

[00187] In accordance with one aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, a stick surface cleaning apparatus may have more than one dirt collection chamber. For example, the handvac may include a first dirt collection chamber, and the upright section may include a second dirt collection chamber. The second dirt collection chamber provides the surface cleaning apparatus with an enlarged dirt collection capacity in comparison with the dirt collection capacity of the handvac alone.

Accordingly, the surface cleaning apparatus may operate for longer intervals before one or more of the dirt collection chambers needs to be emptied.

[00188] In accordance with this aspect, and as exemplified in FIG. 4, upright section 108 may have an auxiliary dirt collection assembly 140, which may comprise or consist of an auxiliary dirt collection chamber 141. For example, the auxiliary dirt collection chamber 140 may be the only component provided in the auxiliary dirt collection assembly and therefore the auxiliary dirt collection chamber 140 may be the auxiliary dirt collection assembly. Alternately, as disclosed in alternate embodiments, the auxiliary dirt collection assembly may also include one or more of a pre-motor filter, one or more cyclone chambers that may have one or more associated dirt collection chambers and a suction motor.

[00189] As illustrated, up flow duct 144 (also referred to as a wand if removable for use, e.g., in an above floor cleaning mode as exemplified in Figures 33 and 44a) may define the airflow path between surface cleaning head 104 and handvac 112. Auxiliary dirt collection chamber 140 may be a supplemental dirt collection chamber that is selectively mounted to up flow duct 144 and augments the dirt collection capacity of surface cleaning apparatus 100 when mounted to upper section 108.

[00190] It will be appreciated that if up flow duct 144 is the member that supports handvac 112 when auxiliary dirt collection assembly 140 is removed, the up flow duct is designed to be load supporting and may be a rigid tube. Further if the up flow duct is removable to function as an above floor cleaning wand, then the up flow duct may also be a rigid tube. In other embodiments, e.g., the up flow duct is not a load supporting member, then all or a portion of up flow duct 144 may be flexible, such as a flexible hose.

[00191] As exemplified in FIGS. 1 and 21, the dirt collection assembly 140 of the upright section 108 may collect at least a portion of the dirt separated from the dirty airflow by the handvac 112. Accordingly, the dirt collection assembly 140 of the upright section 108 may be in communication with the dirt collection chamber of

handvac 112 all or a portion of the time when the handvac 112 is mounted to the upright section 108. For example, the dirt collection chamber of handvac 112 may have a door that automatically opens when handvac 112 is mounted to the upright section 108. Accordingly, dirt separated by handvac 112 may travel to the supplemental dirt collection assembly 140. Alternately, the door may be manually operable by a user. Accordingly, dirt may only be transferred to the supplemental dirt collection assembly 140 when a user elects to open the door. Alternately, the supplemental dirt collection assembly 140 may receive dirt from an auxiliary air treatment member, in which case the auxiliary dirt collection assembly may comprise a housing having both the auxiliary air treatment member and the auxiliary dirt collection chamber.

[00192] The dirt collection chamber of auxiliary dirt collection assembly 140 and handvac dirt collection chamber 188 may be of any suitable volumetric sizes. Preferably, the volumetric storage capacity of the dirt collection chamber of auxiliary dirt collection assembly 140 is at least equal to the volumetric storage capacity of handvac dirt collection chamber 188, and more preferably larger than the volumetric storage capacity of handvac dirt collection chamber 188. For example, the volumetric storage capacity of the dirt collection chamber of auxiliary dirt collection assembly 140 may be 1-20 times the volumetric storage capacity of handvac dirt collection chamber 188, more preferably 1.5-10 times, and most preferably 3-5 times. In alternative embodiments, the volumetric storage capacity of the dirt collection chamber of auxiliary dirt collection assembly 140 may be less than that of handvac dirt collection chamber 188.

[00193] As exemplified in FIG. 21, handvac 112 may include a cyclone bin assembly 136 including one or more cyclone chambers 184 and one or more dirt collection chambers 188. The cyclone chamber or chambers and the dirt collection chamber or chambers may be of any design. As exemplified, cyclone chamber 184 includes an air inlet 192 in fluid communication with wand 144, an air outlet 196 downstream of air inlet 192, and a dirt outlet 200 in fluid communication with dirt

collection chamber 188. Suction motor 204 or another suction source may draw dirty air to enter air inlet 192 and travel cyclonically across cyclone chamber 184 to dirt outlet 200 where dirt is ejected into dirt collection chamber 188. Afterwards, the air is discharged from cyclone chamber 184 at air outlet 196.

[00194] As exemplified in FIGS. 21-23, cyclone bin assembly 136 may include laterally opposed side walls 208, a top wall 212, a bottom wall 216, a first end wall 220, and a second end wall 224. As shown, a common interior wall 226 may divide cyclone chamber 184 from dirt collection chamber 188. For example, cyclone chamber 184 may be defined by top wall 212 and interior wall 226 which extend between end walls 220 and 224. Top wall 212 and interior wall 226 may be curved to define a substantially cylindrical or frustroconical sidewall of cyclone chamber 184. In alternative embodiments, cyclone chamber 184 may have a sidewall of any other suitable shape that is conducive to cyclonic flow. In some alternative embodiments, interior wall 226 of cyclone chamber 184 may be discrete from dirt collection chamber 188 instead of forming a common wall dividing cyclone chamber 184 from dirt collection chamber 188.

[00195] Dirt collection chamber 188 may be defined by bottom wall 216, side walls 208, and interior wall 226. In some embodiments, bottom wall 216 may be openable for fluidly connecting handvac dirt collection chamber 188 to supplemental dirt collection assembly 140 of upright section 108. This may permit dirt separated by cyclone chamber 184 and discharged through dirt outlet 200 to move through opened bottom wall 216 and collect in supplemental dirt collection assembly 140.

[00196] Optionally, when the auxiliary dirt collection assembly is mounted to upright section 108, dirt separated in the cyclone chamber is collectable in the dirt collection chamber of the auxiliary dirt collection assembly. The auxiliary dirt collection assembly may be selectively connectable in communication with the dirt collection region of the hand vacuum cleaner by, e.g., an openable door 228 (also referred to as a dumping door). The door may be manually openable, such as by a

handle, or automatically operated, such as when the auxiliary dirt collection assembly is mounted to upright section 108. In this case, dirt will collect in the handvac 112 and will remain there until door 228 is openable so as to allow the collected dirt to transfer to supplemental dirt collection assembly 140. In the latter case, supplemental dirt collection assembly 140 is automatically connected in communication with a dirt outlet of the cyclone chamber when the auxiliary dirt collection assembly is mounted to upright section 108. In this case, dirt will collect in the supplemental dirt collection assembly 140 when handvac 112 is mounted to the upright section 108.

[00197] In the illustrated example, bottom wall 216 includes a door 228, which may be a pivotally openable door 228. As shown, door 228 may be pivotally connected to dirt collection chamber 188 by a hinge 232 for rotation about a hinge axis 236. Door 228 may extend forwardly from a rear end 240 to a front end 244. Preferably, hinge 232 and hinge axis 236 are positioned at rear end 240 of door 228. In alternative embodiments, hinge 232 and hinge axis 236 may be positioned at front end 244 or intermediate front and rear ends 240 and 244.

[00198] Door 228 is preferably outwardly pivotal of dirt collection chamber 188. For example, door 228 may be movable between a closed position (FIG. 22) in which door 228 closes bottom wall 216, and an open position (FIG. 21) in which door 228 is rotated away from dirt collection chamber 188 for opening bottom wall 216 to permit dirt to move from handvac dirt collection chamber 188 to supplemental dirt collection assembly 140. As shown, in the open position front end 244 of door 228 may be moved away from handvac dirt collection chamber 188.

[00199] Hinge axis 236 may have any suitable orientation. In the illustrated example, hinge axis 236 extends laterally side-to-side of surface cleaning apparatus 100. Hinge axis 236 may be transverse to one or more of cyclone axis 248 of cyclone chamber 184, motor axis 252 of suction motor 204, or downstream direction 256 through air inlet 192. In the example shown, hinge axis 236 is perpendicular to cyclone axis 248, motor axis 252, and downstream direction 256. In alternative

embodiments, hinge axis 236 may be substantially parallel to one or more of cyclone axis 248, motor axis 252, or downstream direction 256.

[00200] In some embodiments, door 228 may extend upwardly and forwardly between rear end 240 and front end 244. For example, front end 244 may be positioned closer to cyclone chamber 184 and cyclone axis 248 than rear end 240. When door 228 is opened (FIG. 21), this may provide a bottom opening 260 having a transverse width 264 between cyclone chamber 184 and bottom wall 216.

[00201] Optionally, the dirt collection region (the dirt collection chamber) of the hand vacuum cleaner is positioned above the supplemental dirt collection assembly 140. Accordingly, dirt that is received in the dirt collection chamber of the hand vacuum cleaner may be transferred by due to gravity to the supplemental dirt collection assembly 140. Accordingly, for example, dirt outlet 200 may be positioned on a bottom end 268 of cyclone chamber 184 for discharging dirt toward bottom wall 216 and opening 260 to be delivered by gravity into supplemental dirt collection assembly 140 of upright section 108.

[00202] Reference is now made to FIGS. 21, 22, and 24. Preferably, when handvac 112 is connected to upright section 108, opening 260 is fluidly coupled to an inlet to dirt collection assembly 140. In the illustrated example, door 228 and opening 260 of cyclone bin assembly 136 align with an inlet 272 of dirt collection assembly 140. As shown, inlet 272 may be formed as an opening in an upper portion 276 of dirt collection assembly 140. In some embodiments, inlet 272 may include a door (not shown) which opens automatically and concurrently with door 228. Optionally, the door of inlet 272 may be biased (e.g., by a spring) to close inlet 272 and seal dirt collection assembly 140 when door 228 is closed or handvac 112 is disconnected from upright section 108.

[00203] Preferably, opening 260 and inlet 272 of upper portion 276 of dirt collection assembly 140 are sized and positioned to receive at least a portion of door

228 when door 228 is in the open position. This may permit door 228 to open outwardly into the open position as shown in FIG. 21.

[00204] If door 228 is moveable from the closed position to the open position automatically upon connecting handvac 112 to upright section 108, then handvac 112 may include an actuator drivingly connected to door 228 to move door 228 (e.g., pivot door 228 about hinge axis 236) to the open position when handvac 112 is connected to upright section 108. In the illustrated embodiment, door 228 includes an arm 280 pivotally connected at hinge 232. As shown, arm 280 may include a lever portion 284 which extends rearwardly of hinge 232, and which may be depressed to pivot door 228 to the open position. Further, dirt collection assembly 140 is shown including an engaging member 288 positioned to align with lever portion 284 of arm 280. In use, engaging member 288 may depress lever portion 284 of arm 280 upon connecting handvac 112 to upright section 108 to automatically pivot door 228 into the open position, whereby opening 260 may be fluidly connected to inlet 272 of supplemental dirt collection assembly 140. In one aspect, this may permit a user, who has used handvac 112 when disconnected from upright section 108, to automatically empty handvac dirt collection chamber 188 by connecting handvac 112 to upright section 108. Afterwards, handvac 112 may be disconnected from upright section 108 with an empty dirt collection chamber 188.

[00205] If door 228 is manually moveable from the closed position to the open position then, as exemplified in FIGS. 97a-b and 98a-b, door 228 may be provided with an actuator, e.g., a manually operable lever portion 284. Lever portion 284 may extend downwardly from door 228 such that lever portion 284 is user-accessible and user-operable while handvac 112 is mounted to upright section 108. As exemplified, lever portion 284 may protrude from the bottom wall 216 of cyclone bin assembly 136 to provide user-accessibility to lever portion 284.

[00206] As exemplified in FIGS. 21, 22, 24, 97a-b, and 98a-b, whether door 228 is manually or automatically operable, door 228 may be biased to the closed position.

For example, door 228 may be biased for rotation about hinge axis 236 toward the closed position by a biasing member (not shown), such as a torsion spring. This may permit door 228 to close automatically upon disconnecting handvac 112 from upright section 108, to prevent dirt from spilling from dirt collection chamber 188 and to permit immediate use of handvac 112 for cleaning. In alternative embodiments, door 228 may not be biased toward the closed position. For example, door 228 may remain in the open position upon disconnecting handvac 112 from upright section 108. In such a case, door 228 may remain open until manually closed. For example, referring to FIGS. 98a-b, door 228 may remain in the open position shown until lever portion 284 of arm 280 is user-activated to move door 228 to the closed position.

Removable Supplemental Dirt Collection Assembly

[00207] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, a surface cleaning apparatus has two or more dirt collection chambers wherein one of the dirt collection chambers is optionally removable, and the surface cleaning apparatus is operable when the removable dirt collection chamber has been removed. Accordingly, as discussed with respect to the previous embodiment, a supplemental dirt collection chamber may be provided on the up flow duct or wand of a stick vacuum cleaner and may be the main dirt collection chamber (e.g., it may collect most or all of the separated dirt when the stick vacuum cleaner is operated with the supplemental dirt collection chamber in position). This may be referred to as a large dirt capacity upright mode or a second upright mode of operation.

[00208] The supplemental dirt collection chamber may be removable for emptying and to reconfigure the vacuum to a light weight upright mode or a first upright mode of operation. Once removed, the vacuum cleaner may be operable to separate dirt and collect the separated dirt in another dirt collection chamber (e.g., the handvac dirt collection chamber). An advantage of the light weight upright mode is that the size and weight of the vacuum cleaner may be reduced by removal of the supplemental dirt collection chamber. This may be of assistance when the vacuum

cleaner is used to clean around and under furniture, and when the vacuum cleaner is to be carried upstairs.

[00209] As exemplified in FIGS. 1 and 4, dirt collection assembly 140 of upright section 108 may be removably connected to wand 144 and handvac 112. This may permit dirt collection assembly 140 to be removed for emptying, or to operate apparatus 100 in a light weight upright mode. It will be appreciated that, in alternate embodiments, wand 144 and dirt collection assembly 140 of upright section 108 may be integrally formed or permanently connected as a one piece assembly.

[00210] Dirt collection assembly 140 may be removably mounted to wand 144 in any suitable fashion. In the illustrated embodiment, a lower end 292 of dirt collection assembly 140 may be toed onto a lower end 296 of wand 144, and then dirt collection assembly 140 may be pivoted about lower end 292 toward wand 144 and held in position by a suitable releasable fastening mechanism.

[00211] In the illustrated embodiment, handvac 112 may remain in fluid communication with wand 144 and surface cleaning head 104 while supplemental dirt collection assembly 140 is disconnected from wand 144 and removed altogether from apparatus 100. This may permit dirt collection assembly 140 to be removed (e.g., for emptying or to operate apparatus 100 in a light weight upright mode) without disrupting the operation of apparatus 100.

Upstream Air Treatment Member

[00212] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, an upstream air treatment member may be provided. The upstream air treatment member may be removably connectable upstream of the handvac. For example, the supplemental dirt collection assembly may have one or more cyclone chambers associated therewith. Accordingly, when the supplemental dirt collection assembly is positioned on upright section 108 (e.g., up flow duct 144), a supplemental cyclone chamber assembly 160 may be connected in series or parallel with the cyclone

chamber of the handvac. Accordingly, when operated as an upright vacuum, the surface cleaning apparatus may be a dual cyclonic stage surface cleaning apparatus. When used in an above floor cleaning mode, the handvac may be a single cyclonic stage surface cleaning apparatus. Typically, the surface cleaning apparatus may be used as an upright vacuum cleaner (i.e., with the supplemental cyclonic bin assembly attached) for cleaning floors. This may represent the majority of area that is to be cleaned. Therefore, for a majority of the use of the surface cleaning apparatus, it may be used as a dual stage cyclonic surface cleaning apparatus.

[00213] In accordance with this aspect, the upright section may include a first air treatment member for separating at least large dirt particles from the airflow, and the air treatment member of the handvac may be positioned downstream of the first air treatment member for separating small dirt particles ("fines") from the airflow. In this case, the greatest volume of separated dirt may be collected in the dirt collection chamber of the upright section, and a lesser volume of fines may be collected in the dirt collection chamber of the handvac. This may reduce the rate at which the handvac dirt collection chamber may be filled, and reduce the frequency at which the handvac dirt collection chamber must be emptied. It will be appreciated that each cyclonic stage may be of any design and may be designed to remove any type of dirt.

[00214] It will be appreciated that, in some embodiments, dirt separated by the handvac may be collected in the supplemental dirt collection assembly. In such a case, the dirt collection region of the handvac may be in communication (automatically or manually selectively) with a dirt collection region in the supplemental dirt collection assembly, which region may be isolated from the dirt collection chamber for the cyclonic stage of the supplemental cyclone chamber assembly.

[00215] It will be appreciated that, if air travels through up flow duct 144 to handvac 112, when cyclone bin assembly 160 is connected to wand 144, air travelling through wand 144 may be diverted into cyclone bin assembly 160 and

returned to wand 144 from cyclone bin assembly 160 downstream of the diversion. Optionally, in accordance with another aspect with is discussed in more detail subsequently, and which is exemplified in the embodiment of FIGS. 20 and 26, in some embodiments the diversion may occur automatically upon mounting of the supplemental cyclone bin assembly 160 to upright section 108. For example, cyclone bin assembly 160 may include a diversion member 428 which may be positionable in the conduit of wand 144 between the upstream and downstream ends 364 and 360 of wand 144. As shown, diversion member 428 may divide wand 144 into an upstream wand portion 440 and a downstream wand portion 444. Diversion member 428 may form an air-tight seal inside wand 144 for redirecting substantially all air travelling through upstream wand portion 440 into air inlet 316 of cyclone bin assembly 160. In turn, air outlet 320 of cyclone bin assembly 160 may discharge into downstream wand portion 444 for travel downstream to handvac 112.

[00216] As exemplified in the embodiment of FIGS. 5, 12, and 25 supplemental cyclone bin assembly 160, 160 may be any suitable cyclone bin assembly and may include a cyclone chamber 308 and a dirt collection chamber 141. Cyclone chamber 308 may include an air inlet 316 for receiving dirty air from the surface cleaning head, e.g., via wand 144, an air outlet 320 for discharging air, e.g., to handvac 112, a dirt outlet 324 for discharging separated dirt into dirt collection chamber 141, a vortex finder 400 and a cyclone axis 392. Wand 144 may include an upstream end 360 connected to surface cleaning head 104, and a downstream end 364 connected to air inlet 316 of cyclone chamber 308.

[00217] From cyclone bin assembly 160, the airflow may flow downstream to handvac 112. Accordingly, handvac cyclone bin assembly 136 is positioned downstream of and in series with supplemental cyclone bin assembly 160. The air may be received in handvac cyclone bin assembly 136 where additional particulate matter may be further separated from the airflow and deposited into dirt collection chamber 188. In many cases, the additional particulate matter separated by cyclone bin assembly 136 may constitute less than 30% of the total volume of dirt separated

from apparatus 100, and may constitute all or a majority of the fines that are separated. Accordingly, dirt collection chamber 188 may be filled at a lower volumetric rate than supplemental dirt collection chamber 141. This may help to maintain dirt collection capacity in handvac 112.

[00218] In operation, air exiting air outlet 320 of cyclone bin assembly 160 may enter handvac 112 for a second stage of cleaning by cyclone bin assembly 136. As illustrated, handvac 112 may include a nozzle 412 having an upstream end 416 and a downstream end 420. When handvac 112 is connected to upright section 108, upstream end 416 may be fluidly connected with air outlet 320 of upright section 108, and downstream end 420 may be fluidly connected with inlet 192 of handvac cyclone chamber 184.

[00219] In operation, air may be drawn into dirty air inlet 124 and enter upstream wand portion 440. Diversion member 428 may redirect the air traveling through upstream wand portion 440 to enter air inlet 316 of cyclone chamber 308. Air may travel through air inlet 316 tangentially to sidewall 376 and spiral downwardly toward lower end wall 368, whereby dirt may be separated from the airflow and pass through dirt outlet 324 to accumulate in dirt collection chamber 141. The airflow may then travel downstream into vortex finder 400 and exit cyclone chamber 308 at air outlet 320 at downstream end 404 of vortex finder 400, into an outlet passage 476. Outlet passage 476 may have a downstream end fluidly connected to downstream wand portion 444. The air may travel through downstream wand portion 444 to downstream wand end 364 into handvac 112. In handvac 112, additional dirt may be separated from the airflow by cyclone bin assembly 136 before the air is discharged through clean air outlet 132.

[00220] It will be appreciated that, in accordance with this aspect, cyclone bin assembly 160 may be any suitable cyclone bin assembly. In the example shown in FIGS. 5, 12, and 25, cyclone chamber 308 includes a lower end wall 368, an upper end wall 372, and a sidewall 376 extending between the lower end wall 368 and the

upper end wall 372. Preferably, sidewall 376 is substantially cylindrical or frustroconical in accordance with conventional cyclone chamber design.

[00221] Dirt outlet 324 may be formed as an opening in sidewall 376 for directing separated dirt into dirt collection chamber 141. In some embodiments, at least a portion of sidewall 376 of cyclone chamber 308 may form a common dividing wall between cyclone chamber 308 and dirt collection chamber 141. In this case, dirt outlet 324 may be formed as an opening in the common portion of sidewall 376.

[00222] Dirt outlet 324 may be formed at any suitable position on sidewall 376. In the illustrated example, dirt outlet 324 is positioned at an upper end of cyclone chamber 308 proximate upper end wall 372. More particularly, the illustrated embodiment includes a dirt outlet 324 defined by a slot 380 in sidewall 376 bordered by upper end wall 372. This may increase the capacity of dirt collection chamber 141. More specifically, dirt may accumulate by gravity from the bottom of dirt collection chamber 141 upwardly. Thus, the capacity of the dirt collection chamber 141 may be defined at least in part by the position of dirt outlet 324. Dirt collection chamber 141 is full when the level of dirt in dirt collection chamber 141 rises to dirt outlet 324. Accordingly, the capacity of dirt collection chamber 141 is the volume of the dirt collection chamber 141 below dirt outlet 324. Thus, the capacity of dirt collection chamber 141 may be increased by positioning dirt outlet 324 in an uppermost position, such as proximate the upper end wall 372 of cyclone chamber 308 as shown.

[00223] Alternately, in some embodiments as exemplified in FIG 26, lower end wall 368 may comprise or be an arrester plate 1280 which separates cyclone chamber 308 from dirt collection chamber 141. In this case, dirt outlet 324 may be formed by a gap between arrester plate 1280 and sidewall 376, where dirt particles may fall by gravity into dirt collection chamber 141.

[00224] In accordance with another aspect which is discussed in more detail subsequently, as exemplified, cyclone chamber 308 may include an inlet passage

384 for redirecting axially-directed inlet air to flow tangentially to promote cyclonic action in cyclone chamber 308. An upstream end 388 of inlet passage 384 may face axially (i.e., substantially parallel to cyclone axis 392), and a downstream end (not shown) of inlet passage 384 may face tangentially to cyclone chamber 308. Air entering upstream end 388 of inlet passage 384 from air inlet 316 may travel along inlet passage 384 and exit downstream end (not shown) in a tangential direction. After spiraling upwardly around vortex finder 400 of cyclone chamber 308, the airflow may enter vortex finder 400 and exit cyclone chamber 308 through air outlet 320 at a downstream end 404 of vortex finder 400.

[00225] Handvac cyclone chamber 184 may be any suitable cyclone chamber. In some embodiments, cyclone chamber 184 is substantially similar to cyclone chamber 308. For example, cyclone chamber 184 may include an air inlet 192, an inlet passage 420, a dirt outlet 200, a vortex finder 424, a dirt outlet 200, an air outlet 196, and a cyclone axis 248. Air from upright section 108 may axially enter air inlet 192, be redirected to a tangential direction by inlet passage 420, spiral upwardly around vortex finder 424, deposit dirt into dirt outlet 200, and then exit cyclone chamber 184 through air outlet 196 at a downstream end of vortex finder 424.

Modes of Operation

[00226] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, the surface cleaning apparatus is reconfigurable to operate in a plurality of different modes of operation. For example, the surface cleaning apparatus may be operable in two or more of a handvac mode, a stair-cleaning mode, an above-floor cleaning mode, a large dirt capacity upright mode, a lightweight upright mode, or a dual motor upright mode. In some cases, the surface cleaning apparatus may be reconfigurable between different modes of operation with a single act of connection or disconnection. This may permit the surface cleaning apparatus to be quickly reconfigured with minimal interruption.

[00227] Referring to FIGS. 1, 5, and 13, surface cleaning apparatus 100, 152, and 168 are shown in a large dirt capacity upright cleaning mode. In the large dirt capacity upright cleaning mode, surface cleaning apparatus 100, 152, and 168 may include surface cleaning head 104, upright section 108 including wand 144 and supplemental dirt collection assembly 140, and handvac 112. The airflow path may extend from dirty air inlet 124 of surface cleaning head 104 downstream through wand 144 and then cyclone bin assembly 136 of handvac 112 to separate dirt from the airflow and deposit that dirt into dirt collection chamber 141 of upright section 108 and/or handvac dirt collection chamber 188. In apparatus 152 and 168, cyclone bin assembly 160 is also positioned in the airflow path for separating and collecting dirt from the airflow and cyclone bin assembly 136 of handvac 112 may optionally be bypassed as discussed subsequently.

[00228] As exemplified in FIGS. 12 and 12a one or more of the surface cleaning head 104, upright section 108, and handvac 112 may be removably connected to each other so as to be able to be assembled in a number of different combinations to provide apparatus 152 with a number of different modes of operation. In some embodiments, the wand 144 and supplemental assembly 140, 160 of upright section 108 may also be removably connected to each other to provide additional modes of operation. For example, in the large dirt capacity upright cleaning mode, surface cleaning head 104 may be connected to upstream end 360 of wand 144, downstream end 364 of wand 144 may be connected to an air inlet 316 of cyclone bin assembly 160, and air outlet 320 of cyclone bin assembly 160 may connected to upstream end 416 of handvac nozzle 412.

[00229] The large dirt capacity upright cleaning mode as shown may be particularly effective for cleaning large surface areas (e.g., the floor of one or more rooms). The user may grasp handvac handle 484 to steer surface cleaning head 104 across the surface to be cleaned (i.e., handle 484 may be a drive handle of the surface cleaning apparatus). The tall height 492 of apparatus 100, 152, and 168 provided in part by the interposition of wand 144 between surface cleaning head 104

and handvac 112 may permit apparatus 100 to be operated by a user standing upright. The large dirt capacity of dirt collection chamber 141 of upright section 108 may permit extended usage of apparatus 100 before the dirt collection chamber 141 becomes full and must be emptied.

[00230] As exemplified in FIGS. 4, 5, 12, 12a, 20 and 27-30, and 37-44 dirt collection assembly 140 or cyclone bin assembly 160 may be selectively disconnected from upright section 108 to reconfigure apparatus 100, 152, or 168 from the large dirt capacity upright mode to a light weight upright mode. Likewise, dirt collection assembly 140 or cyclone bin assembly 160 may be selectively reconnected to upright section 108 to reconfigure apparatus 100, 152, or 168 from a light weight mode to a large dirt capacity upright mode.

[00231] Preferably, reconfiguring the apparatus from the large dirt capacity upright mode to the light weight upright mode may require only a single user action (e.g., disconnecting the dirt collection assembly 140 or cyclone bin assembly 160 from the upright section 108 may automatically close a dumping door of the handvac if the dumping door is open and may also automatically close a diversion member if the vacuum cleaner includes a supplemental cyclone bin assembly 160).

[00232] As exemplified in apparatus 100, door 228 which may have been open in the large dirt capacity upright mode for connecting dirt collection chambers 188 and 141, may close automatically (i.e., without any further user interaction) upon disconnecting dirt collection chamber 141, to seal bottom wall 216 of dirt collection chamber 141. Exemplary mechanisms include a biasing member, such as a spring and a mechanical or electrical drive member drivingly connected to the door to close the door as supplemental assembly 140, 160 is removed.

[00233] As exemplified in apparatus 168, disconnecting cyclone bin assembly 160 from wand 144 may automatically reroute the airflow path to extend directly from upstream wand end 360 to downstream wand end 364 without the intermediary diversion to cyclone bin assembly 160. Therefore, the airflow path between surface

cleaning head 104 and handvac 112 is automatically reconfigured by disconnection of cyclone bin assembly 160 to reconfigure apparatus 168 to the light weight upright mode. Accordingly, apparatus 168 may be continually operated while being reconfigured.

[00234] In alternative embodiments, door 228 of apparatus 100 may be manually closed as another step before, during or after dirt collection assembly 140 is disconnected from upright section 108 to complete the reconfiguration to the light weight upright mode. For example, a user may manually close the door. In other embodiments, as described in more detail below, a diversion valve of apparatus 168 may require manual closure as another step after cyclone bin assembly 160 is disconnected from wand 144 to complete the reconfiguration to the light weight upright mode. Alternately, a single actuator may be manually operated to close the door and the diversion valve.

[00235] As exemplified in FIG. 4, apparatus 152 may be reconfigurable from the large dirt capacity upright mode to a light weight upright mode by disconnecting assembly 140, 160 from wand 144. In some cases, it may be desirable to momentarily reconfigure an apparatus to the lightweight upright mode to complete a task (e.g., clean under an article of furniture), and afterward reconfigure the apparatus to the large dirt capacity upright mode. In the illustrated example, the airflow path between surface cleaning head 104 and handvac 112 persists during and after reconfiguration of apparatus 100 from the large dirt capacity upright mode to the lightweight upright mode. This may permit apparatus 100,to be operated continuously (i.e., air to continue to travel between inlet 124 and outlet 132) before, during, and after reconfiguration to the lightweight upright mode. In turn, this may allow for a quick reconfiguration with little or no disruption. It will be appreciated that if a cyclone is provided in the supplemental assembly (e.g., assembly 160), there may be a short period during which the diversion valve is not closed during the transition.

[00236] In some cases, reconfiguring apparatus 100, 152, or 168 from the large dirt capacity upright mode to the lightweight upright mode may provide a reduction in weight (i.e., by the removal of dirt collection assembly 140 or cyclone bin assembly 160), and a more slender profile. Thus, the lightweight upright mode may make apparatus 100, 152, or 168 easier to lift (e.g., carry upstairs), and easier to maneuver under and around furniture and the like. However, in this mode, all of the dirt separated by cyclone bin assembly 136 in the lightweight upright mode is collected in dirt collection chamber 188. Thus, apparatus 100, 152, or 168 may have less dirt collection capacity in the lightweight upright mode as compared with the large dirt capacity upright mode.

[00237] Referring now to FIGS. 31-33, 44a, and 44b, apparatus 100 and 168 are shown in an above-floor cleaning mode. As illustrated, apparatus 100 and 168 in the above-floor cleaning mode include handvac 112 and wand 144. Apparatus 100, 152, and 168 may be reconfigured from the lightweight upright mode to the above-floor cleaning mode by disconnecting surface cleaning head 104 from wand 144. It will be appreciated that assembly 140,160 may be retained in an above floor cleaning mode if desired. However, this would add extra weight to the apparatus in the above floor cleaning mode.

[00238] Referring to FIG. 36a, apparatus 152 is shown in another above-floor cleaning mode. As shown, apparatus 152 in an above-floor cleaning mode may include handvac 112 and an accessory wand 145. Accessory wand 145 may be provided supplementary to wand 144 of upright section 108. For example, accessory wand 145 may be removably mountable to a sidewall of upright section 108, as shown in FIG. 5. Still referring to FIG. 36a, in the above-floor cleaning mode shown, upstream end 360 may provide the dirty air inlet, and downstream end 364 may be removably fluidly connected to handvac nozzle 412. Accessory wand 145 may have any suitable length 516. For example, wand 144 may have a length sufficient to permit apparatus 100 to be used as an upright vacuum cleaner in the configuration of Figure 5. Accordingly, wand 144 may be 2 – 4 feet long. In contrast, accessory wand

145 may be shorter than wand 144 (e.g., a user wants to be closer to the area to be cleaned in an above floor cleaning mode) and accordingly accessory wand 145 may be 6-18 inches.

[00239] In the above-floor cleaning mode, the upstream end 496 of wand 144 may provide the dirty air inlet of apparatus 100, 152, or 168. The above-floor cleaning mode may be well suited to cleaning surfaces above the floor, or more generally surfaces that are not substantially horizontal, and for cleaning in crevices which surface cleaning head 104 might be unable to access. The wand 144 may provide extended reach for distant cleaning surfaces (e.g., curtains, and ceilings). An auxiliary cleaning tool such as a crevice tool, brush or the like may be attached to the inlet end of the wand.

[00240] Preferably, apparatus 100, 152, or 168 may be reconfigured from the lightweight upright mode to the above-floor cleaning mode by a single user action – disconnection of surface cleaning head 104 from the upstream end 496 of wand 144. This may permit the apparatus to be quickly reconfigured with little or no disruption. For example, the apparatus may operate continuously before, during, and after reconfiguration from the lightweight upright mode to the above-floor cleaning mode. This may permit a user to conveniently reconfigure the apparatus to the above-floor cleaning mode to clean a surface inaccessible in the lightweight upright mode, and afterward reconfigure the apparatus to the lightweight upright mode to continue cleaning, e.g., the floor.

[00241] In some embodiments, the above-floor cleaning mode may further include dirt collection assembly 140. For example, a user may reconfigure apparatus 100, 152, or 168 from the large dirt capacity upright mode (FIGS. 1, 5, and 13) to the above-floor cleaning mode by disconnecting surface cleaning head 104 from wand 144, while maintaining dirt collection assembly 140 in place on wand 144. An above-floor cleaning mode of this configuration may provide apparatus 100 with the reach of the above-floor cleaning mode, and the storage capacity of the large dirt capacity

upright mode. In some embodiments, dirt collection assembly 140 may be a one piece assembly with the wand 144 (i.e., irremovably connected to wand 144), in which case the wand 144 may be an up flow duct.

[00242] Referring to FIG. 22, apparatus 100, 152, and 168 may be reconfigured to a handvac mode from any other mode of operation by disconnecting handvac 112 (e.g., from wand 144). As illustrated, the handvac mode may include handvac 112 alone. In the handvac mode, upstream end 416 of nozzle or inlet conduit 412 may provide the dirty air inlet 131. Optionally, one or more accessories (not shown), such as a brush, crevice tool, auxiliary wand 145 may be connected to nozzle 412. If a wand 144 is part of dirt collection assembly 140 then an accessory wand 145 may be provided which is connectable to nozzle 412.

[00243] The handvac mode of apparatus 100 may be lighter, smaller, and more agile than the other modes of operation. However, the handvac mode may have a smaller dirt collection capacity than the large dirt capacity upright mode (FIGS. 1, 5, and 13) for example.

[00244] In some cases, a user may wish to momentarily disconnect handvac 112 for use in the handvac mode (e.g., to clean a surface that is more accessible in the handvac mode), and then return the apparatus to the previous mode. For example, apparatus 100, 152, or 168 may be momentarily reconfigured from the large dirt capacity upright mode (FIGS. 1, 5, and 13) or from the lightweight upright mode (FIGS. 27 and 37) to the handvac mode be merely removing the handvac and afterward reconfigured again to the upright mode.

[00245] It may be beneficial for the dirt collection chamber 188 of handvac 112 to have capacity available for use in the handvac mode upon disconnecting handvac 112 from upright section 108. Further, it may be beneficial for dirt collection chamber 188 of handvac 112 to reclaim capacity after reconnecting handvac 112 to upright section 108. This may be achieved by having dirt collection chamber 188 empty into assembly 140, 160 continually while handvac 112 is attached to the assembly,

manually before removal of the handvac or upon removal of the handvac. The dirt capacity may be reclaimed by having dirt collection chamber 188 empty into assembly 140, 160 upon replacing handvac 112 to the assembly (either manually or automatically upon replacement).

[00246] An example of such a reconfiguration is discussed with respect to the embodiment of FIG. 21, In the illustrated example, handvac dirt collection chamber 188 has a bottom wall 216 that remains open to dirt collection assembly 140 while the handvac is attached to permit dirt from handvac dirt collection chamber 188 to transfer (e.g., by gravity) to dirt collection chamber 141 thereby preventing dirt collection chamber 188 from being filled while the apparatus is used in one of the upright operating modes. .

[00247] Apparatus 100 may be reconfigured from the handvac mode to the large dirt capacity upright mode by reconnecting handvac 112 to upright section 108. Preferably, reconnecting handvac 112 to upright section 108 automatically opens handvac dirt collection chamber 188 to dirt collection chamber 141 for transferring at least a portion of the dirt, collected while in the handvac mode, to dirt collection chamber 141 thereby emptying dirt collection chamber 188 so that dirt collection chamber 188 is not full when the handvac is once again used in the handvac mode.

[00248] In some embodiments, handvac dirt collection chamber 188 does not empty into assembly 140, 160 when attached to the assembly, manually or automatically. For example, FIGS. 25 and 26 show exemplary embodiments of apparatus 152 and 168 where assemblies 160 and 188 receive and store dirt separately at all times. As shown, upright dirt collection chamber 141 may receive and collect dirt separated by auxiliary cyclone bin assembly 160, and handvac dirt collection chamber 188 may separately receive and collect dirt separated by handvac cyclone bin assembly 136.

[00249] Turning now to FIGS. 123-126, apparatus 152 is shown in accordance with another embodiment. As exemplified, handvac cyclone bin assembly 136 may

include a plurality of cyclonic cleaning stages arranged in series. For example, and referring to FIGS. 125 and 126, cyclone bin assembly 136 may include a first cyclonic cleaning stage 640 arranged in series upstream from a second cyclonic cleaning stage 644. First cyclonic cleaning stage 640 may include one or more air outlet(s) 196a which discharge into air inlet(s) 192b of second cyclonic cleaning stage 644.

[00250] Referring now to FIG. 127, each cyclonic cleaning stage 640 and 644 may include one or more cyclone chambers 184 in parallel. For example, cyclonic cleaning stages 640 and 644 may each include one cyclone chamber 184, or may each include a plurality of cyclone chambers 184. Alternatively, one of cyclonic cleaning stages 640 and 644 may include one cyclone chamber 184 and the other stage may include a plurality of cyclone chambers 184. In the illustrated example, first cyclonic cleaning stage 640 includes one cyclone chamber 184a, and second cyclonic cleaning stage 644 includes a plurality of cyclone chambers 184b arranged in parallel. For example, second cyclonic cleaning stage 644 may include four or more cyclone chambers 184b arranged in parallel.

[00251] Second stage cyclone chamber(s) 184b may have any suitable orientation relative to first stage cyclone chamber(s) 184a. For example, each of second stage cyclone chamber(s) 184b may have an air inlet 192b and an air outlet 196b both positioned proximate a rear end 648 of the second cyclonic cleaning stage 644 (rearward with respect to the inlet of the handvac), or both positioned proximate a front end 652 of the second cyclonic cleaning stage 644. Alternatively, each of second stage cyclone chamber(s) 184b may have an air inlet 192 positioned proximate one of the front and rear ends 648 and 652, and an air outlet 196b positioned proximate the other of the front and rear ends 648 and 652. In the illustrated example, second stage cyclone chambers 184b are shown including air inlets 192b at front end 648 and air outlets at rear end 652. This may reduce directional changes in the airflow which may reduce backpressure developed through second stage cyclone chambers 184b for enhanced airflow efficiency. As shown,

axes 248b of second stage cyclone chamber 184b may be parallel to axis 248a of first stage cyclone chamber 184a.

[00252] Handvac cyclone bin assembly 136 may include one or more dirt collection regions 188. For example, cyclone chambers 184 of first and second cyclonic cleaning stages 640 and 644 may separate dirt into one common dirt collection region 188, or each cyclonic cleaning stage 640 and 644 may include a separate dirt collection region 188. In the latter case, all first stage cyclone chamber(s) 184a may discharge dirt into the first stage dirt collection region 188a, and all second stage cyclone chamber(s) 184b may discharge dirt into the second stage dirt collection region 188b. In the illustrated embodiment, handvac cyclone bin assembly 136 includes one first stage dirt collection region 188a, and a plurality of second stage dirt collection regions 188b, where each second sage dirt collection region 188b receives dirt discharged by a respective second stage cyclone chamber 184b.

[00253] Reference is now made to FIGS. 34-36, which show apparatus 100, 152, or 168 in a stair-cleaning mode of operation. As shown, apparatus 100, 152, or 168 in stair-cleaning mode may include handvac 112 directly connected to surface cleaning head 104. For example, nozzle 412 may be connected to pivot joint 116 of surface cleaning head 104.

[00254] The stair-cleaning mode of operation may be especially suitable for cleaning stairs and the like, where frequent lifting is required to clean the desired surface areas.

Handvac Center of Gravity in the Upright Modes

[00255] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, when the apparatus is in an upright mode and, in particular in a large dirt capacity upright mode, the center of gravity of the handvac may be located directly above the cyclone bin assembly (or dirt collection chamber) of the upright section.

[00256] As exemplified in FIGS. 21 and 25, apparatus 100 is shown in a large dirt capacity upright mode in a storage position. In the illustrated example, handvac 112 is shown including a handvac center of gravity 524. As shown, center of gravity 524 may be positioned vertically above dirt collection assembly 140/cyclone bin assembly 160 between the front and rear ends 532, 544 and 536, 548 of dirt collection assembly 140/cyclone bin assembly 160. Preferably, center of gravity 524 is positioned substantially centrally between front and rear ends 532, 544 and 536, 548 of dirt collection assembly 140/cyclone bin assembly and may be aligned with the wand.

[00257] Alternately, or in addition, as exemplified, center of gravity 524 is positioned between cyclone bin assembly 136 and suction motor 204, inside premotor filter chamber 556 of handvac 112.

Configuration of the Auxiliary Assembly

[00258] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, a surface cleaning apparatus may have an upright section with an auxiliary dirt collection assembly 140 or auxiliary cyclone bin assembly 160 sized, shaped, and positioned according any one of a plurality of different configurations relative to the wand of the upright section and the handvac.

[00259] In some embodiments, a surface cleaning apparatus is provided having an upright mode wherein the auxiliary assembly 140, 160 and the handvac are positioned on the same side of the wand. As exemplified in FIGS. 1, 21, 24, 45, and 46, auxiliary assembly 140, 160 and handvac dirt collection chamber 188 may both extend rearwardly of wand 144. Referring to FIG 21, rear end 536 of dirt collection assembly 140 is shown positioned a rearward distance 564 from wand axis 568. Bottom wall 216 of dirt collection chamber 188 is shown positioned a rearward distance 576 from wand axis 568. Preferably, distances 564 and 576 are substantially equal. In alternative embodiments, distances 564 and 576 may be

different. For example, distance 560 may be greater than distance 576, or distance 576 may be greater than distance 564. If rear end 536 is at an angle to the vertical as exemplified, then the handvac is preferable designed such that the rear end does not extend rearwardly past a projection of the line of rear end 536. Accordingly, the lowest extend to which upright section 108 may be pivoted rearwardly is determined by the auxiliary assembly and not the handvac.

[00260] In some embodiments, a surface cleaning apparatus is provided having an upright mode wherein the auxiliary assembly 140, 160 and the handvac are positioned on opposite sides of the wand. As exemplified in FIG. 26, dirt collection assembly 140 of upright section 108 is positioned forwardly of wand 144, and handvac dirt collection chamber 188 is positioned rearwardly of wand 144. An advantage of this design is that the weight of the auxiliary assembly 140, 160 is on the opposite side of wand 144 from the handvac and may assist in offsetting the hand weight of the handvac felt by a user holding the handle of the handvac.

[00261] In some embodiments, a surface cleaning apparatus is provided having an upright mode where the auxiliary assembly 140, 160 and handvac are positioned on opposite left and right sides of the wand. For example, in apparatus 168, cyclone bin assembly 160 may be mounted to one of the left or right sides of upright section 108, and handvac 112 may be oriented relative to the upright section 108 such that dirt collection chamber 188 extends to the other of the left or right sides of upright section 108.

[00262] In some embodiments, the auxiliary assembly 140, 160 of the upright section surrounds at least a portion of the wand. Referring to FIGS. 1, 21, 24, 45 and 46, apparatus 100 is shown including an upright section 108 having dirt collection assembly 140 which partially surrounds wand 144. In the illustrated example, dirt collection assembly 140 includes a channel 584 for receiving at least a portion of wand 144. As shown, channel 584 may extend the height 588 of dirt collection

assembly 140 between lower and upper ends 292 and 596. Channel 584 may also extend in depth from front end 532 rearwardly toward rear end 536.

[00263] As exemplified, dirt collection assembly 140 includes left and right portions 600 and 604 on opposite left and right sides of channel 584. In the upright mode of apparatus 100, wand 144 may be at least partially received in channel 584, whereby left and right portions 600 and 604 are positioned to the left and right sides of wand 144. As shown, a front end 532 of dirt collection assembly 140 may extend forwardly of wand 144, such that at least a portion of wand 144 is positioned between the front and rear ends 532 and 536 of dirt collection assembly 140.

[00264] In the illustrated embodiment, dirt collection assembly 140 may also surround at least a portion of handvac 112 in the upright mode of apparatus 100. In the illustrated embodiment, an outlet end 608 of wand 144 may be received in channel 584 of dirt collection assembly 140. Accordingly, a front portion of handvac 112 may extend into channel 584 for connection with outlet end 608 of wand 144. In the illustrated embodiment, nozzle 412 and inlet passage 420 of handvac 112 may be positioned inside channel 584 of dirt collection assembly 140 in the upright mode of apparatus 100.

Upright section with a Plurality of Cyclones

[00265] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, the supplemental cyclone bin assembly 160 may have a plurality of cyclones positioned in series and/or in parallel in the airflow path. The cyclones may be positioned to the same side of the upright section (e.g., front or back, left or right), or on different sides of the upright section (e.g., one front and one back or one on the right side and one on the left side).In one embodiment, the upright section may use two cyclones and the wand may be positioned between the two cyclones.

[00266] As exemplified in FIGS. 47-51,auxiliary cyclone assembly 160 comprises first and second supplemental cyclone bin assemblies 161, which may be

individual units or may be formed as a single unit or housing. Each cyclone bin assembly 161 is shown including a cyclone chamber 308 and a dirt collection chamber141. Dirt collection chambers 141 may be combined to form a common repository for dirt separated by both cyclone bin assemblies 161 or each cyclone bin assembly 161 may have a separate dirt collection chamber 141.

[00267] Each cyclone chamber 308 may be any suitable cyclone chamber and maybe the same or different. As shown, each cyclone chamber 308 may include a tangential air inlet 344 proximate upper end 374, and an axial air outlet 320 at a downstream end of vortex finder400.

[00268] Cyclone bin assemblies 161 may be positioned in parallel in the airflow path between surface cleaning head 104 and handvac 112. As exemplified, the airflow path may extend from surface cleaning head 104 through an upstream wand portion 440, diverge into the inlets 316 of cyclone chambers 308 through cyclone chambers 308 to their respective air outlets 320. Each cyclone bin assembly 161 may include an outlet passage 476 connecting air outlets 320 to downstream portion 444 of wand 144 where the airflow path converges. From downstream portion 444 of wand 144, the airflow path may extend through handvac 112 and exit out clean air outlet 132.

[00269] As exemplified, upstream and downstream portions 440 and 444 of wand 144 may be divided by a diversion member 712, which is described subsequently with respect to a further alternate aspect. Air traveling downstream through upstream portion 440 may contact diversion member 712 and be redirected laterally into air inlets 316 of cyclone chambers 308. Outlet passages 476 of cyclone bin assemblies 161 may converge to form a single airflow path in downstream portion 444 of wand 144 above diversion member 712.

Diversion Valve

[00270] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure,

a diversion valve is provided which diverts air travelling through upright section 108 (e.g., the wand 144) into the auxiliary assembly 160 (e.g., supplemental cyclone or cyclones 308). Preferably, the diversion valve operates automatically upon the auxiliary assembly 160 being disconnected from and/or connected to the surface cleaning apparatus.

[00271] As exemplified in FIG. 20, cyclone bin assembly 160 may be selectively connected to upright section 108 whereby the airflow path may be reconfigured to extend through cyclone bin assembly 160. Similarly, cyclone bin assembly 160 may be selectively disconnected from upright section 108 whereby the airflow path may be reconfigured to extend through wand 144 from end to end without diversion. Preferably, the airflow path reconfiguration is automatic upon connection and/or disconnection of cyclone bin assembly 160 to upright section 108.

[00272] In some embodiments, wand 144 may include a diversion outlet 704 and a diversion inlet 708 positioned between the upstream and downstream ends 360 and 364 of wand 144. The diversion outlet 704 and diversion inlet 708 may be selectively opened when connecting cyclone bin assembly 160 to upright section 108 to reconfigure the airflow path to divert into the cyclone bin assembly 160 at diversion outlet 704, and to return to the wand 144 from cyclone bin assembly 160 at diversion inlet 708. Upright section 108 may include a diversion valve for opening and closing diversion outlet 704 and inlet 708.

[00273] A diversion valve 712 according to a first embodiment is exemplified in FIGS. 52-57. As exemplified, diversion valve 712 may include a sleeve 716 positioned inside of wand 144, and a pedal 720 for moving sleeve 716 between an open position and a closed position.

[00274] Sleeve 716 may be a conduit for fluidly coupling upstream and downstream wand portions 440 and 444 in the closed position of diversion valve 712 (see FIGS. 52 and 55) to bypass diversion outlet and inlet 704 and 708. Preferably, sleeve 716 may be a rigid conduit. Alternatively, sleeve 716 may include flexible

and/or collapsible elements. Effectively, sleeve 716 may close diversion outlet and inlet 704 and 708 in the closed position of diversion valve 712. Optionally, diversion valve 712 may include one or more sealing members (e.g., O-rings) which may form an air-tight seal between sleeve 716 and upstream wand portion 440, and between sleeve 716 and downstream wand portion 444 to help prevent the escape of air through diversion outlet and inlet 704 and 708 in the closed position of diversion valve 712.

[00275] Sleeve 716 may be movable axially along wand 114 between the closed position (FIGS. 52 and 55) and the open position (FIGS. 54 and 57). Preferably, sleeve 716 is moved to the open position automatically by mounting cyclone bin assembly 160 to upright section 108 (e.g., connecting to wand 144), and/or moved to the closed position automatically by dismounting cyclone bin assembly 160 from upright section 108 (e.g., disconnecting from wand 144). In the illustrated embodiment, sleeve 716 is drivingly coupled to a pedal 720. Pedal 720 may be depressed to move sleeve 716 from the closed position of FIGS. 52 and 55 to the open position of FIGS. 54 and 57. As shown, pedal 720 may be positioned axially below sleeve 716 and extend outwardly of wand 144 to be depressed by cyclone bin assembly 160 when mounting cyclone bin assembly 160 to upright section 108. Pedal 720 and sleeve 716 may be integrally molded, or separately formed and connected, to move axially up and down as a unit.

[00276] As exemplified, pedal 720 and sleeve 716 may be movably mounted to wand 144 for axial movement between the open and closed position. As shown, pedal 720 and sleeve 716 may move downwardly from the closed position (FIGS. 52 and 55) to the open position (FIGS. 54 and 57). In the closed position, sleeve 716 may extend the airflow path directly across the threshold between the upstream and downstream wand portions 440 and 444. In the open position, sleeve 716 may be retracted into the upstream wand portion 440 to open diversion outlet 704 and inlet 708, and thereby permit the airflow path to be diverted through diversion outlet 704, cyclone bin assembly 160 and diversion inlet 708. As shown, diversion outlet 704

may be positioned at a downstream end 724 of upstream wand portion 440, and diversion inlet 708 may be positioned at an upstream end 728 of downstream wand portion 444.

[00277] In an alternative embodiment, sleeve 716 may have one or more openings which align with diversion outlet and inlet 704 and 708 in the open position of valve 712. In the closed position, the openings in sleeve 716 may be closed by alignment with solid wall portions of wand 144, and diversion outlet and inlet 704 and 708 may be closed by alignment with solid wall portions of sleeve 716. In this case, sleeve 716 may be positioned inside the upstream and downstream wand portions 440 and 444 in both the open and closed positions of valve 712.

[00278] Preferably, sleeve 716 is biased to the closed position. For example, valve 712 may include a biasing member which acts on sleeve 716 to bias sleeve 716 to the closed position. In the illustrated example, valve 712 includes a spring 732 which acts on pedal 720 to urge pedal 720 and sleeve 716 upwardly to the closed position. In alternative embodiments, sleeve 716 may not be biased to the closed position. For example, sleeve 716 may include an actuator, such as a switch or lever, which must be manually activated to move sleeve 716 to the closed position or is moved by assembly 160 when assembly 160 is removed.

[00279] Still referring to FIGS. 52-57, cyclone bin assembly 160 may include an engagement member for mating with pedal 720 to mount cyclone bin assembly 160 on pedal 720. In the illustrated example, a cavity 736 is formed in sidewall 376 of cyclone bin assembly 160 for receiving pedal 720. In use, cyclone bin assembly 160 may be set onto pedal 720 such that pedal 720 is received in cavity 736. Preferably, the weight of cyclone bin assembly 160 on pedal 720 is sufficient to overcome the bias of valve biasing member 732, and move pedal 720 and sleeve 716 downwardly to the open position. In alternative embodiments, additional downward force must be applied by the user to move pedal 720 and sleeve 716 downwardly against the bias of the biasing member 732 and/or an actuator, such as a foot pedal, may be utilized.

[00280] Cyclone bin assembly 160 may be toed onto pedal 720 (see e.g., FIGs 53, 56), and then pivoted on pedal 720 into position (see e.g., FIGs 54, 57) after pedal 720 and sleeve 716 have moved downwardly to the open position. In the illustrated example, cyclone bin assembly 160 may be set onto pedal 720 with cyclone axis 392 extending at a (non-zero) angle to wand axis 740, and then lowered with pedal 720 to move valve 712 to the open position, and finally pivoted about pedal 720 toward wand 144 to complete the connection of cyclone bin assembly 160 to wand 144. A locking member, such as a latch 744, which may be located at the end of the upper end or wand 144, may be provided to secure assembly 160 in position. In some embodiments, cyclone axis 392 may be substantially parallel to wand axis 740 when cyclone bin assembly 160 is connected to wand 144.

[00281] Cyclone bin assembly 160 may include a diversion member 428 for dividing wand 144 into upstream and downstream wand portions 440 and 444, and for diverting flow from the upstream wand portion 440 into cyclone bin assembly inlet 316. Diversion member 428 may take any suitable form. In the illustrated embodiment, diversion member 428 is a substantially flat plate which extends outboard of sidewall 376 for protruding into wand 144 through one of diversion outlet 704, diversion inlet 708, or another opening into wand 144. Alternatively, diversion member 428 may be curved to provide a less abrupt change in airflow direction, which may reduce the pressure drop across the diversion member 428. Optionally, diversion member 428 may include or interface with a sealing member (e.g., a deformable elastomeric seal) to form an airtight barrier between upstream and downstream wand portions 440 and 444. Alternately, the diversion member may be a separate member that is installed as a separate step when (i.e., before, during, and/or after) connecting cyclone bin assembly 160 to the wand 144.

[00282] As exemplified, when cyclone bin assembly 160 is mounted to wand 144, as shown in FIGS. 54 and 57, air inlet 316 of cyclone chamber 308 is connected to diversion outlet 704 for receiving air from upstream wand portion 440 into cyclone

chamber 308, and outlet passage 476 is connected to diversion inlet 708 for discharging air from cyclone bin assembly 160 into downstream wand portion 444.

[00283] Cyclone bin assembly 160 may be removably mounted to wand 144 by any suitable mechanism. In the illustrated embodiment, cyclone bin assembly 160 includes a latch 744 on handle 616 for engaging a tab 746 which extends outwardly of wand 144. Latch 744 may be user-operable by a user grasping handle 616 to release latch 744 from tab 746 for disconnecting cyclone bin assembly 160 from wand 144. Preferably, biasing member 732 of valve 712 automatically and immediately moves sleeve 716 to the closed position upon disconnection of cyclone bin assembly 160 to reconfigure the airflow pathway by closing diversion inlet and outlet 704 and 708.

[00284] A diversion valve 712 according to a second embodiment is exemplified in FIGS. 58-63. Diversion valve 712 is similar to diversion valve 712 of FIGS. 52-57 in many respects except, for example that sleeve 716 is embodied by a collapsible hose 716 instead of a more rigid conduit.

[00285] As exemplified, diversion valve 712 includes a collapsible sleeve 716 positioned inside of wand 144, and a pedal 720 for moving hose 716 been an open position and a closed position.

[00286] Sleeve 716 may be a collapsible conduit for fluidly coupling upstream and downstream wand portions 440 and 444 in the closed position of diversion valve 712 (see FIGS. 60 and 63) to bypass diversion inlet and outlet 708 and 712. Optionally, diversion valve 712 may include one or more seals (e.g., O-rings) which form an air-tight seal between sleeve 716 and upstream wand portion 440, and between sleeve 716 and downstream wand portion 444 to help prevent the escape of air through diversion inlet and outlet 704 and 708 in the closed position of diversion valve 716.

[00287] In the illustrated embodiment, sleeve 716 has a fixed-position upstream end 756 sealed to upstream wand portion 440, and a downstream end 760 axially

movable inside wand 144. Downstream end 760 may be movable toward upstream end 756 to the open position (FIG. 60 and 63) whereby sleeve 716 is partially collapsed with downstream end 760 positioned in the upstream wand portion 440 upstream of diversion outlet 704. Downstream end 760 may also be movable away from upstream end 756 to the closed position (FIGS. 58 and 61) whereby sleeve 716 is extended with downstream end 760 position in the downstream wand portion 444 downstream of diversion inlet 708.

[00288] As exemplified, pedal 720 may be drivingly coupled to downstream end 760 of sleeve 716. Pedal 720 may be depressed (e.g. by the weight of cyclone bin assembly 160) to move downstream end 760 into the upstream wand portion 440, collapsing sleeve 716 into the open position of FIGS. 60 and 63. Pedal 720 may also be raised (e.g. automatically by action of biasing member 732 upon release of pedal 720 or pulled upwardly by assembly 160) to move downstream end 760 into the downstream wand portion 444, extending sleeve 716 into the closed position of FIGS. 58 and 61. Alternately, a manual actuator may be used.

[00289] A diversion valve 712 according to a third embodiment is exemplified in FIGS. 64-71. As exemplified, diversion valve 712 may include a diversion outlet door 772 and a diversion inlet door 776. Doors 772 and 776 may be opened when cyclone bin assembly 160 is connected to wand 144 for reconfiguring the airflow path to extend through cyclone bin assembly 160. Doors 772 and 776 may also be closed when cyclone bin assembly 160 is disconnected from wand 144 for reconfiguring the airflow path to extend directly across the threshold between upstream and downstream wand portions 440 and 444.

[00290] In the illustrated embodiment, doors 772 and 776 are pivotally mounted to wand 144 for movement between a closed position (see FIGS. 64 and 67-69) in which doors 772 and 776 seal diversion outlet 704 and inlet 708 respectively, and an open position (see FIGS. 66 and 71) in which doors 772 and 776 are open to allow air to flow through doors 772 and 776 between wand 144 and cyclone bin assembly

160. Doors 772 and 776 may be pivotally mounted to wand 144 in any suitable manner. In the example shown, doors 772 and 776 are pivotally mounted to wand 144 by a common hinge 780. As shown, door 772 may pivot inwardly about hinge 780 toward a downstream direction, and door 776 may pivot inwardly about hinge 780 toward an upstream direction. In alternative embodiments, each of doors 772 and 776 may be pivotally mounted to wand 144 by a different hinge.

[00291] Preferably, doors 772 and 776 open automatically by connecting cyclone bin assembly 160 to wand 144. In the illustrated example, cyclone bin assembly 160 includes an inlet nose 784 for pushing open diversion outlet door 772, and an outlet nose 788 for pushing open diversion inlet door 776. As shown, noses 784 and 788 may extend outwardly of sidewall 376 for projecting through diversion outlet and inlet 704 and 708 respectively upon connecting cyclone bin assembly 160 to wand 144.

[00292] Preferably, when cyclone bin assembly 160 is connected to wand 144, an airflow path is formed between diversion outlet 704 and air inlet 316, and between diversion inlet 708 and air outlet 320, such that the airflow path from upstream wand portion 440 to downstream wand portion 444 is reconfigured to extend through cyclone bin assembly 160. In the illustrated example, connecting cyclone bin assembly 160 to wand 144 may include pushing noses 784 and 788 into diversion outlet and inlet 704 and 708 respectively to open doors 772 and 776.

[00293] Noses 784 and 788 may take any suitable form. As exemplified, nose 784 may be formed as a diversion member including an inlet passage having an upstream end 792 and a downstream end 796. Upstream end 792 may extend into wand 144 and form a seal with upstream wand portion 440 to redirect the airflow in upstream wand portion 440 to enter nose 784 toward downstream end 796. In the illustrated embodiment, upstream wand portion 440 includes a sealing ring 800 adjacent an upstream side 804 of diversion outlet door 772 onto which downstream end 796 may be seated for forming an airtight seal between upstream wand portion

440 and downstream end 796. Alternatively, or in addition, upstream side 804 may include a sealing member. Downstream end 796 of nose 784 may be integrally formed or otherwise connected with air inlet 316.

[00294] In the illustrated example, nose 788 is formed as a triangular plate which projects outwardly from air outlet 320. In other embodiments, nose 788 may have another suitable form for pushing diversion inlet door 776, such as a circular or rectangular plate or a rod for example. As shown, when cyclone bin assembly 160 is connected to wand 144, nose 788 projects into diversion inlet 708 pushing open diversion inlet door 776. This may permit air outlet 320 to sealingly abut diversion inlet 708 for forming an airflow path between air outlet 320 and downstream wand portion 444. Optionally, a seal 808 may be provided at the interface between air outlet 320 and diversion inlet 708 for enhancing the airtightness of the connection.

[00295] It will be appreciated that in alternative embodiments, nose 788 may be formed as an outlet passage, which may be curved similar to nose 784. This may make the change in airflow direction across nose 788 less abrupt, which may reduce pressure losses.

[00296] Preferably, when cyclone bin assembly 160 is disconnected from wand 144, doors 772 and 776 automatically close to reconfigure the airflow passage to extend directly from upstream wand portion 440 to downstream wand portion 444 without diversion through diversion outlet 704 or inlet 708. For example, doors 772 and 776 may be biased to the closed position by a biasing member, such as a spring. In the illustrated embodiment, diversion valve 712 includes a torsional spring 812. Spring 812 may be positioned to bias both of doors 772 and 776 to the closed position. In the illustrated embodiment, spring 812 is held in a spring housing 816 mounted to an inside face 820 of diversion outlet door 772. As shown, spring 812 may have an arm 824 connected to diversion inlet door 776, effectively biasing doors 772 and 776 away from each other to their respective closed positions. In alternative embodiments, each of doors 772 and 776 may have a separate biasing member.

[00297] A diversion valve 712 according to a fourth embodiment is exemplified in FIGS. 72-77. Diversion valve 712 is similar to diversion valve 712 of FIGS. 64-71 in many respects except, for example, the door which selectively closes diversion outlet 704 and inlet 708.

[00298] In the illustrated embodiment, diversion valve 712 includes a door 772. Door 772 may be movable between a closed position (FIGS. 72 and 75) in which door 772 seals diversion outlet 704 and inlet 708, and an open position (FIGS. 74 and 77) in which door 772 is unsealed from outlet 704 and inlet 708 to allow the airflow to pass through diversion outlet 704 and inlet 708. As exemplified, diversion valve 712 may include one door 772 for closing both of diversion outlet 704 and inlet 708, or separate doors 772 for diversion outlet 704 and inlet 708.

[00299] As shown, door 772 may be pivotally mounted to wand 144 in any suitable manner for movement between the open and closed positions. For example, door 772 may be pivotally mounted outside of wand 144 by a hinge 780. In the illustrated example, door 772 may pivot outwardly about hinge 780 away from wand 144 to the open position, and may pivot inwardly about hinge 780 toward wand 144 to the closed position. Preferably, door 772 is manually openable, whereby a user may grasp door 772 and manually move door 772 from the closed position to the open position. For example, door 772 may have a lever 840, a handle, or another gripping member for a user to grasp for manipulating the position of door 772.

[00300] Once door 772 is opened, as shown in FIGS. 73 and 76, cyclone bin assembly 160 may be connected to wand 144. In the illustrated embodiment, cyclone bin assembly 160 includes a diversion member 428 of the type describe above with reference to FIGS. 52-57. Diversion member 428 may be moved into wand 144 through diversion outlet 704, diversion inlet 708, or another opening in wand 144, for dividing wand 144 into an upstream portion 440 and a downstream portion 444, substantially as described above.

[00301] When cyclone bin assembly 160 is disconnected from wand 144, door 772 may be moved back into the closed position for reconfiguring the airflow path in wand 144 to extend directly from upstream portion 440 to downstream portion 444 without diversion. For example, door 772 may be manually moved from the open position to the closed position by hand, or door 772 may move automatically to the closed position by the bias of a biasing member (e.g., a spring).

[00302] In some embodiments, door 772 may be held in the closed position by the bias of a biasing member, or by a releasable locking mechanism (e.g., a latch). This may permit door 772 to form a tight seal against diversion outlet 704 and inlet 708.

[00303] In some embodiments, pedal 720 may be foot operable and may be located close to or on the surface cleaning head.

Angular Surface of Upright section

[00304] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, a surface cleaning apparatus is provided having an upright section with a dirt collection chamber or cyclone bin assembly having a side profile that tapers or narrows from top to bottom. For example, the rear wall of the supplemental dirt collection chamber or supplemental cyclone bin assembly may extend upwardly at an acute angle relative to the wand axis such that the rear wall is farther from the wand axis at the top end than at the bottom end of the dirt collection chamber or cyclone bin assembly. An advantage of this design is that the surface cleaning apparatus may extend under furniture while providing a large dirt collection capacity.

[00305] As exemplified in FIGS. 3 and 7, surface cleaning apparatus 100 and 152 include an upright section 108 having a dirt collection chamber 140 or cyclone bin assembly 160 that extends from a lower end 292, 856 proximate surface cleaning head 104 to an upper end 596, 860. A rear end 536, 548 of auxiliary assembly 140/160 may extend upwardly from lower end 292 or 856 at a (non-zero) acute angle

848 to wand axis 568. Angle 848 is preferably between 10 and 70 degrees, and more preferably between 20 and 40 degrees. For example, a distance 538 between wand axis 568 and rear end 536, 548, measured normal to wand axis 568, may increase continually or generally continuously from lower end 292, 856 upwardly. As shown, distance 538 is greater at upper end 596. 860 than at lower end 292, r 856.

Handvac with Angled Bottom Wall

[00306] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, a handvac may be provided having a bottom, such as a flat bottom wall, for supporting the handvac on a horizontal surface, and which extends at an acute angle (e.g., between 20 and 40 degrees) away from the inlet nozzle axis, and optionally at about the in-use orientation of the hand vac. This may provide the handvac with a resting orientation that is closer to or essentially at the in-use orientation of the handvac. For example, the in-use orientation of the handvac may normally have the inlet nozzle axis extending at a downward angle relative to a horizontal surface to be cleaned. Thus, a user may not have to substantially reorient the handvac upon grasping the handvac in the resting orientation to reposition the handvac into the in-use orientation.

[00307] Reference is now made FIG. 78, where handvac 112 is shown resting on a horizontal surface 876. As shown, nozzle axis 884 extends at an angle 880 to horizontal surface 876. Angle 880 may be an acute angle which may be between 10 and 80 degrees, and preferably between 25 and 65 degrees, more preferably between 35 and 55 degrees or between 20 and 40 degrees. It will be appreciated that handvac 112 may be stably supported in any suitable manner, with nozzle axis 884 extending at angle 880 to horizontal surface 876. For example, handvac 112 may include one or more support elements (e.g., a wall or feet) which collectively provide a support for handvac 112 on a horizontal planar surface at a desired acute angle, and a center of gravity 524 vertically aligned with or between the support

elements for stability when handvac 112 is so supported by the support element(s) on the horizontal surface.

[00308] As exemplified, bottom wall 216 of handvac 112 may extend at an angle 880 to inlet nozzle axis 884 of nozzle 412. Bottom wall 216 may be planar, and the plane of bottom wall 216 may intersect with nozzle axis 884 at angle 880. Bottom wall 216 may provide a flat planar surface for making broad contiguous contact with horizontal surface 876, or bottom wall 216 may include a plurality of discrete contact points or surfaces which collectively contact the horizontal surface 876 to support the handvac 112 (e.g., as in the feet of a tripod, or the wheels of a car). Preferably, handvac center of gravity 524 is preferably aligned vertically above bottom wall 216 when handvac 112 is supported on horizontal surface 876 by bottom wall 216. This may permit handvac 112 to rest stably (i.e., statically without tipping over) on horizontal surface 876 while supported solely by bottom wall 216.

[00309] Handvac 112 may have an in-use orientation relative to horizontal surface 876 at which a user may comfortably operate handvac 112 during cleaning. Typically, handvac 112 is most comfortably operated in an orientation that does not require an application of torque by the user's hands when the handvac 112 is held by handle 484. This may be the case where the center of gravity 524 of the handvac 112 is aligned vertically below the user's hand. Accordingly, the center of gravity 524 may be vertically aligned below handle 484 in comfortable in-use orientations of handvac 112.

[00310] Preferably, center of gravity 524 is aligned vertically below handle 484 when handvac 112 is supported on horizontal surface 876. In the illustrated embodiment, center of gravity 524 is aligned vertically below handle 484 when bottom wall 216 is horizontal and supporting handvac 112 on a horizontal surface 876. Thus, the resting orientation of handvac 112 supported by bottom wall 216 on a horizontal surface 876 may be substantially the same as the in-use orientation of handvac 112. Accordingly, when a user grasps handvac 112 by handle 484 and lifts

handvac 112, handvac 112 may already be in a balanced in-use position with the center of gravity 524 aligned below the user's hands.

[00311] In many cases, handvac 112 may be stored on a surface below a user's elbows. A user may angle their forearm downwardly to grasp handle 484 of handvac 112. In this case, the user's fingers and palm may be naturally aligned for grasping a handle which is angled forwardly of vertical. For example, to grasp a vertically oriented handle that is positioned below a user's elbow, a user may need to contort their wrist to conform to the orientation of the handle.

[00312] In the illustrated embodiment, handle axis 888 of handle 484 extends at a (non-zero) forward angle 892 to the vertical (e.g., e.g., when bottom wall 216 is horizontal). This may provide a comfortable handle alignment for grasping by a user when picking up handvac 112, and when using handvac 112 for cleaning surfaces below the user's elbows. Preferably, angle 892 is an acute angle of between 10 and 80 degrees, more preferably between 20 and 70 degrees and most preferably between 30 and 60 degrees.

[00313] Bottom wall 216 may be a wall of any component of handvac 112. In the illustrated embodiment, bottom wall 216 is a wall of cyclone bin assembly 136. Preferably, bottom wall 216 is a wall of dirt collection chamber 188. In the example shown, bottom wall 216 is an openable wall of dirt collection chamber 188. FIG. 79 shows another embodiment of handvac 112 where bottom wall 216 is not openable.

[00314] Referring to FIG. 78, bottom wall 216 of handvac 112 may include front wheels, rear wheels, or both. Wheels may provide rolling support for handvac 112 when cleaning under furniture, for example. In alternative embodiments, handvac 112 may not include wheels on bottom wall 216 as shown.

Handle Position

[00315] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, a floor cleaning apparatus is provided having a handvac with a handle, and an

upright section with a cyclone bin assembly or dirt collection chamber with a handle. Preferably, the handles are centrally aligned with a plane of symmetry of the apparatus. This may permit the handles to be grasped for a balanced control of the apparatus. For example, the handles may be parallel to the same plane of symmetry.

[00316] Alternately, as exemplified in FIG. 2, one handle may be parallel to a plane of symmetry and the other transverse thereto but positioned such that the plane of symmetry extends through the transversely oriented handle. In the illustrated example, handvac 112 includes a handle 484 which extends along a handle axis 888. As exemplified, handle axis 888 may lie in a vertical plane 1044, which is aligned centrally between left and right sides of apparatus 100 (i.e., a plane of symmetry). Turning to FIG. 78, handle 484 is shown extending in length between a first handle end 1048 at the upper end 1052 of handvac 112, and a second handle end 1056 intermediate the upper and lower ends 1052 and 1060 of handvac 112.

[00317] Returning to FIG. 2, assembly 140 is shown including a handle 1064. As illustrated, handle 1064 may have a handle axis 1068 which extends perpendicularly or transverse to plane 1044 and handle axis 888. Handle 1064 may be formed in a rear end 536 of assembly 140. For example, handle 1064 may be flush with rear end 536 and include a concave finger cavity 1072 to facilitate grasping handle 1064. Preferably, handle 1064 is positioned laterally centrally such that plane 1044 intersects handle 1064, and optionally bisects handle 1064 at a midpoint between handle ends 1076 and 1080.

[00318] Handles 484 and 1064 may be positioned on opposite sides of surface cleaning apparatus 100. For example, handle 484 is shown extending from an upper end 1052 proximate the front surface of apparatus 100, and handle 1064 is shown extending flush with a rear surface of apparatus 100.

[00319] Apparatus 100 may include one or more actuator controls (e.g., buttons, levers, or switches) for controlling various functionality such as opening or disconnected elements, or connecting power to elements. Preferably, at least some

of the actuator controls are positioned on or within finger reach of a handle to permit the control to be activated while grasping the handle. This may permit single handed operation of the function provided by the control.

[00320] Referring to FIG. 1, apparatus 100 is shown including a power switch 1084 located on upper end 1052 of handvac 112 proximate first handle end 1048 within finger-reach when grasping handvac handle 484. As illustrated, power switch 1084 may be laterally centrally positioned such that plane 1044 intersects and more preferably bisects power switch 1084.

[00321] Referring now to FIGS. 15 and 16, apparatus 168 is shown including an upright section 108 having a cyclone bin assembly 160 with a handle 616, and handvac 112 with handle 484. As shown, handle axis 1092 of handle 616, and handle axis 888 of handvac handle 484 may extend in a same plane 1096. Preferably, plane 1096 is a vertical plane positioned laterally centrally between left and right sides of apparatus 168 as shown. In the illustrated embodiment, plane 1096 bisects handles 616 and 484.

[00322] In the illustrated embodiment, handvac 112 includes a power switch 1084 located on upper end 1052 of handvac 112 which is bisected by plane 1044. Handle 616 of cyclone bin assembly 160 is also shown including a button 1100 for releasing latch 744 to disconnect cyclone bin assembly 160 from wand 144. As illustrated, button 1100 may be positioned laterally centrally between left and right sides of apparatus 168 such that button 1100 is bisected by plane 1096.

Handvac Axial Alignment

[00323] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, a plurality of airflow path segments in the handvac may extend in parallel. In some cases, this may reduce the number of bends in the airflow path through the handvac, which may reduce the pressure drop across the airflow path.

[00324] As exemplified in FIG. 96, handvac inlet nozzle 412 may extend in length from an inlet end or upstream nozzle end 416 (dirty air inlet 131) rearwardly along a nozzle axis 884, handvac cyclone chamber 184 may extend from an air inlet 192 along a cyclone axis 248 to an air outlet 196, and handvac suction motor 204 may extend from a motor inlet 1108 along a motor axis 252 to a motor outlet 1112.

[00325] In some embodiments, two or more of nozzle axis 884, cyclone axis 248, and motor axis 252 may be parallel. For example, in the illustrated embodiment, nozzle axis 884, cyclone axis 248, and motor axis 252 are parallel. In some embodiments, two or more of nozzle axis 884, cyclone axis 248, and motor axis 252 may be co-axial. For example, in the illustrated embodiment, nozzle axis 884 and cyclone axis 248 are co-axial. In other embodiments, nozzle axis 884, cyclone axis 248, and motor axis 252 may all be co-axial.

[00326] In the illustrated embodiment, handvac 112 may include an electrical connector 1116 for providing power to an upstream attachment (e.g., a surface cleaning head). As shown, connector 1116 may extend from a front connector end 1120 along a connector axis 1124 to a rear connector end 1128. In some embodiments, connector axis 1124 may be parallel to one or more of nozzle axis 884, cyclone axis 248, and motor axis 252. In the illustrated embodiment, connector axis 1124 is parallel to nozzle axis 884, cyclone axis 248, and motor axis 252.

[00327] In some embodiments, handvac 112 may include one or more electrical cables 1132 which extend from electrical connector 1116 rearwardly to electrically couple electrical connector 1116 with a source of power (not shown). In the illustrated embodiment, electrical cables 1132 extend from electrical connector 1116 rearwardly along vortex finder 1136 of cyclone chamber 184 toward motor housing 1138. As shown, at least the portion of electrical cables 1132 which along vortex finder 1136 across cyclone chamber 184 is parallel to cyclone axis 248.

Axial Cyclone Inlet

[00328] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, a handvac may be provided having a cyclone chamber with an axial inlet. That is, the inlet axis may be parallel to the cyclone axis, and more preferably co-axial with the cyclone axis. In some cases, this may reduce the bends in the airflow path through the cyclone, which may reduce the pressure drop across the cyclone for better pneumatic efficiency. Preferably, the cyclone is a uniflow cyclone wherein the air outlet is at the opposite end from the air inlet. Alternately, or in addition, the axial inlet includes a portion that converts the axial flow to a tangential flow wherein the portion is provided within the diameter of the cyclone chamber. Optionally, the axial inlet is parallel to and may be co-axial with the handvac air inlet.

[00329] As exemplified in FIG. 96, handvac cyclone chamber 184 includes an air inlet 192 and an air outlet 196. As shown, air inlet 192 may include an inlet axis 1140 which is parallel to cyclone axis 248. Air inlet 192 may have a circular section transverse to axis 1140 with an inlet diameter 1144, or rectangular with a side dimension 1144. Preferably, the cross-sectional area of air inlet 192 is approximately equal to the cross-sectional area of inlet nozzle 412. Preferably, the cross-sectional area of air inlet 192 is between 80%-125% of the cross-sectional area of the inlet nozzle 412, more preferably 90%-120%, and most preferably 100%-115%.

[00330] Preferably, inlet 192 is in fluid communication with an upstream end 388 of an inlet passage 384. Inlet passage 384 may redirect the axial flow through inlet 192 to a tangential flow for developing a cyclonic motion inside cyclone chamber 184. Referring to FIGS. 23 and 23a, inlet passage 384 may extend from upstream passage end 388 to downstream passage end396 across an arcuate angular extent 1148. Preferably angular extent 1148 is between 45 and 300°, more preferably between 60 and 250°, and most preferably between 90 and 200°.

[00331] Returning to FIG. 96, inlet passage 384 is shown having a width 1152, and a height 1108. In some embodiments, the cross-sectional area of inlet passage 384 may be approximately equal to the cross-sectional area of air inlet 192. Preferably, the cross-sectional area of inlet passage 384 is between 80%-125% of the cross-sectional area of the inlet passage 384, more preferably 90%-120%, and most preferably 100%-115%.

[00332] Vortex finder 1136 may define an outlet passage to air outlet 196 of cyclone chamber 184. As shown, vortex finder 1136 may be substantially cylindrical having a diameter 1160. In the illustrated embodiment, the cross-sectional area of vortex finder 1136 may be approximately equal to the cross-sectional area of inlet nozzle 412. For example, diameter 1160 may be approximately equal to diameter 1164 of inlet nozzle 412. Preferably, the cross-sectional area of vortex finder 1136 is between 80%-125% of the cross-sectional area of the inlet nozzle 412, more preferably 90%-120%, and most preferably 100%-115%.

Uniflow Cyclone

[00333] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, a handvac may be provided having a cyclone chamber wherein the air outlet is at the opposite end from the air inlet. In some cases, this may reduce the bends in the airflow path through the cyclone, which may reduce the pressure drop across the cyclone for better pneumatic efficiency. Optionally, the cyclone inlet is at the front or inlet end of the handvac and may be parallel to or co-axial with the handvac air inlet.

[00334] As exemplified in FIG. 96, handvac inlet 192 is shown positioned at a front end 220 of cyclone chamber 184, and outlet 196 is shown positioned at a rear end 224 of cyclone chamber 184. Inlet 192 may have an inlet axis 1140 that is parallel to the outlet axis 1168 of air outlet 196. In the illustrated embodiment, inlet axis 1140 is co-axial with outlet axis 1168.

[00335] Optionally, the suction motor axis may be parallel to or co-axial with axis 1140, 1168. Accordingly, air may travel in a generally uniform direction through the components of the handvac.

Handvac Cyclone Dirt Collection Chamber

[00336] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, the dirt collection chamber of the handvac may have a dirt inlet which is located at the upper end of the dirt collection chamber when the hand vac is oriented for cleaning a floor (see e.g., FIGS 81 and 103). In addition, the dirt collection chamber may be shaped to encourage dirt to collect at another end of the handvac away from the dirt outlet of the cyclone chamber (e.g., it may extend downwardly away from the dirt inlet). This may clear the dirt inlet to permit additional dirt to enter.

[00337] As exemplified in FIG. 96, dirt may enter dirt collection chamber 188 from cyclone chamber 184 through dirt outlet 200 of cyclone chamber 184. In the illustrated embodiment, dirt outlet 200 is at a rear end 224 of cyclone chamber 184. In use, handvac 112 may be normally oriented with the nozzle 412 at the front end oriented downwardly for cleaning a surface below. Accordingly, dirt entering dirt collection chamber 188 from dirt outlet 200 may fall by gravity toward front end 220 of dirt collection chamber 188 away from dirt outlet 200. This may help to keep dirt outlet 200 clear for subsequent dirt to move through dirt outlet 200 during use.

[00338] In the illustrated embodiment, handvac 112 may be supportable on a horizontal surface 876 by contact between dirt collection chamber 188 and the horizontal surface 876. For example, dirt collection chamber 188 may include a bottom wall 216 for supporting handvac 112 on horizontal surface 876. Preferably, as discussed previously, handvac 112 is inclined with nozzle 412 facing downwardly when handvac 112 is supported on horizontal surface 876 by bottom wall 216. In the illustrated embodiment, bottom wall 216 is angled downwardly between front end 220 and rear end 224 for orienting nozzle axis 884 downwardly to horizontal when

handvac 112 is supported on horizontal surface 876. As shown, this may provide dirt collection chamber 188 with a wedge-like shape having a height 1172 measured between upper and lower dirt collection chamber walls 226 and 216 which increases from the front end 220 to the rear end 224.

Pre-motor Filter Housing

[00339] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, a pre-motor filter housing may be provided in the airflow path between the cyclone bin assembly and the suction motor for directing the airflow through one or more pre-motor filters contained therein.

[00340] As exemplified in FIGS. 96 and 117, handvac 112 has a pre-motor filter chamber 556 containing pre-motor filters 1176 and 1180, and a suction motor housing 1138 containing suction motor 204. The airflow path from inlet nozzle 412 to clean air outlet 132 may extend downstream from cyclone bin assembly 136 to pre-motor filter chamber 556 to suction motor housing 1138. That is, cyclone bin assembly 136, pre-motor filter chamber 556, and suction motor housing 1138 may be positioned in the airflow path with pre-motor filter chamber 556 downstream of cyclone bin assembly 136 and suction motor housing 1138 downstream of pre-motor filter chamber 556.

[00341] In the illustrated example, pre-motor filter chamber 556 extends in height 1184 between an upper end 1188 to a lower end 1192 in the direction of pre-motor filter axis 560, and extends in depth 1216 between front wall 1220 and rear wall 1224. In some embodiments, cyclone axis 248 and motor axis 252 may be parallel and vertically offset as shown. For example, each of cyclone axis 248 and motor axis 252 may intersect pre-motor filter chamber 556 as shown. In some embodiments, outlet axis 1168 of cyclone chamber outlet 196 and, motor inlet axis 1196 of motor inlet 1108 may be parallel and vertically offset. For example, each of

outlet axis 1168 and motor inlet axis 1196 may intersect pre-motor filter chamber 556 as shown.

[00342] In some embodiments, cyclone chamber outlet 196 discharges air from cyclone chamber 184 into pre-motor filter chamber 556, and pre-motor filter chamber 556 discharges air into motor inlet 1108. For example, cyclone chamber outlet 196 may be positioned at the threshold between cyclone chamber 184 and pre-motor filter chamber 556, and motor inlet 1108 may be positioned at the threshold between pre-motor filter chamber 556 and suction motor housing 1138. In alternative embodiments, one or more conduits (not shown) may separate pre-motor filter chamber 556 from cyclone chamber outlet 196 and/or motor inlet 1108.

[00343] In the illustrated embodiment, pre-motor filter chamber 556 extends in length between a front end 1200 and a rear end 1204. As shown, pre-motor filter chamber 556 may hold pre-motor filters 1176 and 1180 in the airflow path between cyclone chamber outlet 196 and motor inlet 1108 for filtering residual dirt particles remaining in the airflow. In some embodiments, pre-motor filter chamber 556 may hold pre-motor filters 1176 and 1180 in spaced apart relation to front and rear ends 1200 and 1204. An upstream plenum 1208 may be provided in the space between upstream pre-motor filter 1176 and front end 1200. A downstream plenum 1212 may be provided in the space between downstream pre-motor filter 1176 and rear end 1204. Air entering upstream plenum 1208 from cyclone bin assembly 136 may distribute across the surface area of pre-motor filter 1176 for traversing filters 1176 and 1180 to downstream plenum 1212.

[00344] In the illustrated embodiment, cyclone chamber outlet 196 may direct air into an upper portion of upstream plenum 1208. For example, cyclone chamber outlet 196 may be connected to pre-motor filter chamber 556 proximate upper end 1188. In the illustrated embodiment, motor inlet 1108 may receive air from a lower portion of downstream plenum 1212. For example, motor inlet 1108 may be connected to pre-motor filter chamber 556 proximate lower end 1192. Accordingly,

pre-motor filter chamber 556 may be used to redirect the air from transversely to the cyclone and motor axis without requiring conduits having bends therein.

Battery Power

[00345] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, the surface cleaning head or upright section of the surface cleaning apparatus may include one or more batteries for powering the handvac when the handvac is connected to the surface cleaning head or upright section. The handvac may also include handvac batteries which may power the handvac when connected to or disconnected from the upright section and surface cleaning head (e.g., in an above-floor cleaning mode or handvac mode). When the handvac is electrically connected to the surface cleaning head, the batteries in the surface cleaning head may supplement the batteries in the handvac or be the sole power source.

[00346] As exemplified in FIG. 3, surface cleaning apparatus 100 (or any other surface cleaning apparatus embodiment disclosed herein) may include one or more handvac batteries 1268 mounted to the handvac 112, and one more supplemental batteries 1272. Supplemental batteries 1272 may be mounted to any other suitable component of apparatus 100 other than handvac 112. For example, supplemental batteries 1272 are shown mounted to surface cleaning head 104. Alternatively or additionally, supplemental batteries 1272 may be mounted to upright section 108.

[00347] As used herein, the plural term “batteries” means one or more batteries. For example, supplemental batteries 1272 may be one battery or a plurality of batteries. Similarly, handvac batteries 1268 may be one battery or a plurality of batteries. Batteries 1272 and 1268 may be any suitable form of battery such as NiCad, NiMH, or lithium batteries, for example. Preferably, batteries 1272 and 1268 are rechargeable, however, in alternative embodiments, one or both of batteries 1272 and 1268 may be non-rechargeable single-use batteries.

[00348] In the illustrated embodiment, when handvac 112 is connected to upright section 108, an electrical connection may be formed between supplemental batteries 1272 and handvac 112, e.g., for powering suction motor 204.

[00349] In some embodiments, supplemental batteries 1272 may provide handvac 112 with enhanced power for generating greater suction with suction motor 204. For example, suction motor 204 may operate in a high power consumption mode, drawing power from supplemental batteries 1272, or supplemental batteries 1272 and handvac batteries 1268 simultaneously.

[00350] In some embodiments, supplemental batteries 1272 may provide the handvac 112 with extra energy for prolonged cleaning time between charges. For example, supplemental batteries 1272 may have a greater energy capacity (e.g., measured in Watt-hours) than handvac batteries 1268, such that handvac 112 may be sustained by supplemental batteries 1272 for a longer operating time. In some embodiments, handvac 112 may draw power from both of supplemental batteries 1272 and handvac batteries 1268, which have a greater combined energy storage capacity than handvac batteries 1268 alone.

[00351] In some embodiments, supplemental batteries 1272 may supply power to the handvac in preference to the handvac batteries 1268 to delay or avoid draining the handvac batteries 1268. For example, handvac 112 may draw power from supplemental batteries 1272 until substantially depleted before drawing power from handvac batteries 1268. This may conserve power in handvac batteries 1268 for use when handvac 112 is disconnected from supplemental batteries 1272 (e.g., in an above-floor cleaning mode, or handvac mode of apparatus 100). In some embodiments, handvac 112 may never draw power from handvac batteries 1268 when handvac 112 is electrically connected to supplemental batteries 1272.

[00352] In some embodiments, handvac 112 may draw power from supplemental batteries 1272 to recharge handvac batteries 1268. This may help to ensure that handvac batteries 1268 are not depleted when handvac 112 is

disconnected from supplemental batteries 1272 (e.g., for use in an above-floor cleaning mode, or handvac mode of apparatus 100). In some cases, supplemental batteries 1272 may recharge handvac batteries 1268 only when apparatus 100 is not turned on.

[00353] In some embodiments, supplemental batteries 1272 may be recharged whenever the surface cleaning apparatus is connected to an external power outlet. In some cases, handvac batteries 1268 may be recharged when handvac 112 is electrically connected to an external power outlet (e.g., when surface cleaning head 104 or upright section 108 is connected to a power outlet by an electrical cord (not shown), and handvac 112 is connected to the surface cleaning head 104 or upright section 108).

[00354] In some embodiments, one or more of supplemental batteries 1272 and handvac batteries 1268 may be positioned in the airflow path. This may provide cooling for the batteries so positioned, which may help to prevent the batteries from overheating and may improve the performance of the batteries. In the illustrated example, handvac batteries 1268 are positioned in the airflow path inside motor housing 1138. For example, handvac batteries 1268 may be positioned inside motor housing 1138 between suction motor 204 and clean air outlet 132. The air passing over the handvac batteries 1268 may help to keep the batteries 1268 cool.

[00355] Supplemental batteries 1272 may be positioned in the airflow path to promote cooling of the batteries 1272. In the illustrated example, supplemental batteries 1272 are shown positioned inside surface cleaning head 104 in the airflow path between dirty air inlet 124 and downstream end 1240. The air passing over batteries 1272 may help to keep batteries 1272 cool.

[00356] In alternative embodiments, one or both of supplemental batteries 1272 and handvac batteries 1268 may be positioned outside of the airflow path (e.g., to be cooled passively).

Handvac Wheels

[00357] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, the handvac may be provided with one or more sets of wheels, and a handle which may articulate to facilitate different cleaning postures.

[00358] As exemplified in FIGS. 106-109, surface cleaning apparatus 1292 may include a surface cleaning head 104, an upright section 108 (which may receive any assembly 140, 160 discussed previously), and a handvac 112. An airflow path through apparatus 1292 may extend from dirty air inlet 124 in surface cleaning head 104, downstream through upright section 108 and then handvac 112 to clean air outlet 1304. Upright section 108 may include a wand 144 having an upstream end 360 drivingly connected to a pivot joint 116 of surface cleaning head 104, and a downstream end 364 connected to an inlet nozzle 412 of handvac 112.

[00359] Handvac 112 may include an air treatment member positioned in the airflow path between inlet nozzle 412 for separating dirt from the airflow. In the illustrated example, handvac 112 includes a cyclone bin assembly 136 including a cyclone chamber 184, and a dirt collection chamber 188. Optionally, a bottom wall 216 of dirt collection chamber 188 may be pivotally openable for emptying dirt collection chamber 188.

[00360] As exemplified, apparatus 1292 may be movable between an upright storage position (FIG. 106) in which handvac 112 is substantially vertically aligned above surface cleaning head 104 and wand 144 is substantially vertically oriented, and an in-use floor cleaning position (FIG. 108) in which surface cleaning head 104 is positioned behind surface cleaning head 104 and wand 144 extends at an angle to vertical.

[00361] In the illustrated example, apparatus 1292 may include a handle 1340. Handle 1340 may be connected to wand 144 by an arm assembly 1344. As shown, arm assembly 1344 may include a first arm 1348 joined to a second arm 1352 by an

articulating joint 1356. First arm 1348 may be connected to wand 144 and joint 1356, and second arm 1352 may be connected to handle 1340. Alternately, joint 1356 may be used to connect second arm 1352 to wand 144.

[00362] As shown, first arm 1348 may be rigidly connected to wand 144, and extend transversely to wand 144. For example, first arm 1348 may extend perpendicularly to wand 144. Second arm 1352 may be rotatable about joint 1356 between at least two positions. In the first position (FIG. 108), second arm 1352 may extend at an angle to first arm 1348 substantially in parallel with wand 144. In the second position (FIG. 109), second arm 1352 may extend substantially parallel to first arm 1348. An actuator (e.g., a button) 1358 may be provided on handle 1340 for toggle joint 1356 between an unlocked position in which second arm 1352 can move with respect to first arm 1348, and a locked position in which the position of second arm 1352 is fixed with respect to first arm 1348. Optionally, joint 1356 may be locked in a number of alternate positions. Alternately, joint 1356 may not be locked in the second bent position shown in FIG 109.

[00363] The first position (FIG. 108) may be suitable for cleaning open areas where vertical clearance is not an issue. The second position (FIG. 109) may be suitable for cleaning under furniture and the like, where wand 144 must be lowered to clear the furniture height. In the second position, the orientation of second arm 1352 may permit a user to grasp handle 1340 and lower wand 144 while conveniently standing upright.

[00364] In some embodiments, handvac 112 may include one or more front wheels 1364. Front wheel 1364 may be positioned to make rolling contact with a horizontal surface when wand 144 is lowered sufficiently. Thus, front wheel 1364 may assist with supporting the weight of handvac 112 and permit handvac 112 to roll across the horizontal surface. In the illustrated example, a front end 1360 of bottom wall 216 is provided with one or more front wheels 1364.

[00365] It will be appreciated that if rear end of assembly 140,160 is tapered as discussed previously, then assembly 140, 160 is configured to permit the vacuum cleaner to extend further under furniture than if the assembly 140,160 had the depth (front to back when in an upright storage position) as the upper end of the assembly 140, 160.

Openable Handvac Cyclone Bin Assembly

[00366] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, the cyclone bin assembly of the handvac may be opened to empty the cyclone chamber and/or the dirt collection chamber, to access the pre-motor filter or access a door to open the cyclone chamber and/or the dirt collection chamber by moving part or all of the cyclone bin assembly relative to a main body of the handvac which include the suction motor while the parts remain connected together. For example, the parts may be pivotally mounted to each other.

[00367] Referring to FIGS. 110a and 110b, front portion 1372 of the cyclone bin assembly 136 may be pivotally connected to rear portion 1376 of the cyclone bin assembly 136 for pivoting between the open position shown and a closed position. In the open position, cyclone bin assembly 136 may be accessible, e.g., for emptying or cleaning.

[00368] Front portion 1372 may be pivotally connected to rear portion 1376 in any suitable fashion. In the illustrated embodiment, front portion 1372 is pivotally connected to rear portion 1376 by a hinge 1380 for rotation about a hinge axis 1384 between the open and closed positions.

[00369] The openable portion (e.g., front portion 1372) may be mounted to (e.g., rotationally mounted) or removable from the remaining portion (e.g., rear portion 1376) at any suitable location. As illustrated in Figures 110a and 110b, the openable portion may be mounted to the remaining portion at the second end wall 224 of the cyclone chamber 184. As illustrated in Figures 128 to 135, the openable

portion may be mounted to the remaining portion at a location, such as midway along an axial length of the cyclone bin assembly 160. If the openable portion includes a portion of a sidewall separating the air treatment chamber (e.g., cyclone chamber 184) from dirt collection chamber 188, then opening an end of the cyclone assembly, including a portion of the sidewall (e.g., some or all of at least one wall extending parallel to a cyclone axis of rotation), rather than just a front door or wall may permit easier removal of debris (e.g., the material in the forward part of the dirt collection chamber can fall out when the end is a front end and is pivoted upwardly). Optionally, at least the portion of common interior wall 226 that divides cyclone chamber 184 from dirt collection chamber 188 that extends to dirt outlet 200 is moveable with the openable portion so as to open dirt outlet 200.

[00370] In the illustrated embodiment of Figures 110a and 110b, front portion 1372 and rear portion 1376 separate at the interface between cyclone bin assembly 136 and pre-motor filter chamber 556. For example, front portion 1372 may include cyclone bin assembly 136 except for second end wall 224, and rear portion may include pre-motor filter chamber 556 and second end wall 224 of cyclone bin assembly 136. Accordingly, in the open position, access may be provided to empty and clean dirt collection chamber 188 and cyclone chamber 184 of cyclone bin assembly 136.

[00371] Referring to FIG. 116, in some embodiments handvac 112 may include a handle assembly 300 including handle 484 and suction motor 204. As exemplified, handle assembly 300 and rear wall 1224 of pre-motor filter chamber 556 may be removable from (entirely, or pivotally connected to) pre-motor filter chamber 556 as a unit to access the pre-motor filters 1176 and 1180 inside pre-motor filter chamber 556, e.g., for cleaning or replacement. As shown in FIG. 117, in some embodiments, handle assembly 300 may also be removably connected to rear wall 1224. In alternative embodiments, handle assembly 300 may be permanently connected to rear wall 1224.

Openable Dirt Collection Chamber

[00372] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, the supplemental assembly may have a top and/or bottom openable portion.

[00373] As exemplified in FIGS. 111-113, dirt collection assembly 140 is shown including an upper portion 276 in an open position. Upper portion 276 may be moveably connected to (e.g., pivotally) or removable from dirt collection assembly 140 in any suitable manner. As exemplified, upper portion 276 may be connected to dirt collection chamber 140 by a hinge 1392 for rotation about a hinge axis 1(not shown) between the open and closed positions.

[00374] Upper portion 276 may be retained in the closed position in any suitable fashion. In the illustrated example, dirt collection chamber 140 includes a latch 1400 for securing upper portion 276 in the closed position. Latch 1400 may be user operable for selectively releasing upper portion 276 for movement to the open position.

[00375] As exemplified in FIGS. 114 and 115, upright section 108 of surface cleaning apparatus 152 is shown including a cyclone bin assembly 160. Cyclone bin assembly 160 is preferably openable for accessing cyclone chamber 308 and dirt collection chamber 141, e.g., for cleaning or emptying. Preferably, an upper and/or lower portion of cyclone bin assembly 160 may be openable. In the illustrated embodiment, upright section 108 includes an upper portion 1408 and a lower portion 1412. As shown, upper portion 1408 may be moveably connected to (e.g., pivotally connected to) or removable from lower portion 1412 for movement been a closed position (FIG. 114) and an open position (FIG. 115).

[00376] Upper portion 1408 may be pivotally connected to lower portion 1412 in any suitable manner. In the illustrated embodiment, lower portion 1412 is pivotally connected to lower portion 1412 by a hinge 1416 for rotation about a hinge axis 1420 between the closed and open positions.

[00377] Upper portion 1408 may be retained in the closed position in any suitable manner. For example, upper portion 108 may include a releasable catch for selectively securing upper portion 1408 to lower portion 1412 in the closed position.

Openable Dirt Outlet and/or Connecting the Cyclone and Dirt Collection Chamber Volumes

[00378] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, the dirt outlet from the cyclone chamber may be openable. For example, the dirt collection chamber may be an opening in a wall, e.g., a wall separating an air treatment chamber and a dirt collection chamber. The opening has an outer perimeter defined by the wall in which the dirt outlet is provided or the walls which abut the dirt outlet. During use, dirt may get trapped in the dirt outlet or bridge the dirt outlet. During an emptying operation, a wall or walls defining a first part of the perimeter of the dirt outlet may be moved relative to a wall or walls defining a second part of the dirt outlet thereby opening the dirt outlet.

[00379] The dirt outlet may be provided in a common wall dividing cyclone chamber 184 from dirt collection chamber 188. During an emptying operation, part of the common wall 226 may be moved. As a result, the portion of the cyclone chamber and the portion of the dirt collection chamber that are separated by the common wall 226 become a contiguous volume defined by the volume of the portion of the cyclone chamber and the volume of the portion of the dirt collection chamber that are separated by the common wall. If the part of the common wall 226 that is moved comprises part of the perimeter of the dirt outlet, then the dirt outlet is also opened when the openable portion of the cyclone bin assembly is opened.

[00380] It will be appreciated that the openable portion may comprise a part of (e.g., a front part or wall of) the cyclone chamber, and/or an end or portion of the surface cleaning apparatus or air treatment assembly and/or dirt collection chamber. Accordingly, the dirt outlet may be openable and/or part of the common wall 226

may be moveable when the cyclone chamber and/or an end or portion of the surface cleaning apparatus or air treatment assembly and/or dirt collection chamber is opened. For example, the sidewall 226 may be moved as part of opening the cyclone chamber and/or an end or portion of the surface cleaning apparatus or air treatment assembly and/or dirt collection chamber (e.g., to clean or empty debris from the cyclone chamber or another part of the surface cleaning apparatus).

[00381] Opening the dirt outlet may allow any debris (e.g., elongated debris such as hair) that is caught in the outlet (e.g., bridging the outlet) to come free or be more easily freed. Opening the dirt outlet when opening the cyclone chamber, opening an end or portion of the surface cleaning apparatus or air treatment assembly, and/or opening the dirt collection chamber may allow a user to more easily remove debris from the device.

[00382] As exemplified in Figures 128 to 135, the handvac 114 may include a front end 1402, a rear end 1404, a top end 1406, a bottom end 1410, a right lateral side 1414, and a left lateral side 1418.

[00383] The dirt outlet 200 may be opened when a portion or end, (e.g., front end 1402, a rear end 1404) of the surface cleaning apparatus (e.g., handvac 112) is opened. In the illustrated example, the dirt outlet 200 is opened when a front end 1372 of the cyclone bin assembly 136 is opened, although it will be understood that in other examples another end or portion of a surface cleaning apparatus may be opened (e.g., a rear portion). As in the illustrated example, the first end or portion of the handvac 112 may be a first end or portion of the cyclone assembly 136 (e.g., a front end and/or an end comprising an inlet conduit and/or dirty air inlet).

[00384] The dirt outlet 200 may be between the openable first end or portion 1372 and the remaining end or portion 1376 of the surface cleaning apparatus. Opening the first end or portion 1372 (e.g., removing the first end or rotating the first end) may open the dirt outlet by moving a wall or a portion of a wall defining an edge

or part of the perimeter of the dirt outlet 200 (e.g., a wall in which the dirt outlet 200 is formed or a wall that extends up to an edge of the dirt outlet 200).

[00385] The dirt outlet 200 may be at any position in the walls of the cyclone chamber 184. As exemplified, the dirt outlet 200 may be provided in a common wall that divides the cyclone chamber 184 from the dirt collection chamber 188. As in the illustrated example, at least a portion of the dirt collection chamber 188 may be spaced from the cyclone chamber 184 in a direction transverse to the cyclone axis of rotation 1371. The at least a portion of the dirt collection chamber 188 may face towards the cyclone chamber 184 and be separated from the cyclone chamber by a sidewall 226. As exemplified, the dirt outlet 200 may be in the sidewall 226.

[00386] The dirt outlet 200 may be at one end of the chamber 184 (e.g., at or adjacent an end wall) and/or adjacent the air inlet and/or air outlet of the chamber 184 (e.g., separated from the air inlet and/or air outlet by less than half the length of the chamber or less than a quarter of the length of the chamber). In the illustrated example, the dirt outlet 200 comprises an opening in the sidewall 226 that extends axially inwardly into the cyclone chamber 184 from the cyclone chamber second end wall 224.

[00387] At least a portion of the sidewall 226 is included in the openable first (e.g., front) end 1372, and moving the first end 1372 (e.g., including at least a portion of the cyclone chamber 184 and/or at least a portion of the dirt collection chamber 188) from a closed or cleaning position as exemplified in Figures 128, 129 132, 133 and 136 to the open or emptying position of Figures 130, 131, 134, 135 and 137 moves the portion of the sidewall 226 to open the dirt outlet 200, as exemplified in Figures 128 to 135. As exemplified in Figures 96, 110a, and 110b, in some examples, the entire sidewall 226 of the cyclone and dirt collection chambers may be part of the front end 1372 and/or the hinge 1380 may be at or adjacent an end (e.g., the rearward end) of the cyclone chamber 184 and/or the dirt collection chamber 188 (e.g., if the dirt collection chamber 188 and cyclone chamber 184 are not coextensive

along the cyclone axis of rotation). Alternately, as exemplified in Figures 130, 131, 134, 135 and 137, only a portion of the sidewall of the cyclone and/or dirt collection chambers may be opened. Alternately, it will be appreciated that the common wall 226 may be moveable with a front wall of the cyclone chamber (see for example Figure 137). In such an embodiment, it will be appreciated that the front end or front wall of the dirt collection chamber may not be opened. Similarly, it will be appreciated that the common wall 226 may be moveable with a front wall of the dirt collection chamber. In which case it will be appreciated that the front end or front wall of the cyclone chamber may not be opened.

Extended Dirt Collection Chamber

[00388] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, all or a portion of the dirt collection chamber may be positioned forward and/or rearward of the cyclone chamber. The dirt collection chamber may include at least a portion that is spaced from the cyclone chamber in a direction transverse to the cyclone axis of rotation and another portion that is forward and/or rearward of the cyclone chamber, e.g., that is intersected by the cyclone axis of rotation or through which a projection of the cyclone chamber extends.

[00389] Extending the dirt collection chamber to include a portion that is forward or rearward of the cyclone chamber may provide an additional volume in which to collect debris and/or allow the diameter of the dirt collection chamber, in a direction transverse to the cyclone axis of rotation, to be reduced. Accordingly, the volume of the dirt collection chamber may be increased without increasing the height of the surface cleaning apparatus in a direction transverse the cyclone axis of rotation. For example, if the cyclone chamber is a horizontally extending cyclone chamber, then extending the dirt collection chamber to include a portion that is forward or rearward of the cyclone chamber may allow a larger dirt collection volume without increasing

the height of the handvac and/or allow for a similar sized dirt collection chamber while decreasing the height of the collection chamber and cyclone chamber.

[00390] As exemplified in Figures 136 and 137, the dirt collection chamber 188 includes a first portion that is below the cyclone chamber and a second portion 1422 that is forward of the cyclone chamber 188. The first and second portions 1420, 1422 may be contiguous, in which case the dirt outlet may communicate with either the first portion 1420 or the second portion 1422. As exemplified, the lower end of the second portion 1422 communicates with a front end of the first portion 1420. Alternately, the first and second portions need not be contiguous, in which case a first dirt outlet may connect the cyclone chamber in air flow communication with first portion 1420 and a second dirt outlet may connect the cyclone chamber in air flow communication with second portion 1422.

[00391] In the exemplified embodiment, second portion 1422 is located between a first (e.g., front) end 1390 having a first (e.g., front) end wall 1394, which is spaced axially forward of the cyclone chamber first end 220, and cyclone chamber first end 220. As exemplified, the lower end of second portion 1422 may be radially spaced from the cyclone axis of rotation by at least the same distance as the lower end of first portion 1420 is radially spaced from the cyclone axis or rotation. Accordingly, as exemplified in Figure 136, the lower end of first portion 1420 may have a height H_1 that extends between the lower end of first portion 1420 and the cyclone axis of rotation that is the same as height H_2 that extends between the lower end of second portion 1422 and the cyclone axis of rotation. Alternately, H_1 may be greater or less than H_2.

[00392] Second portion 1420 has an axially spaced apart second (e.g., rear) end 1396 having a second (e.g., rear) end wall 1398. Accordingly, as exemplified, second portion 1420 may extend to the rear end of the cyclone chamber and may communicate with a dirt outlet 200 provided at the rear end of common wall 226.

Accordingly, as exemplified in Figure 137, when the front end is opened, the cyclone and the dirt chamber are concurrently opened and the dirt outlet is also opened.

[00393] It will be appreciated that, as in Figures 128-135, part or a majority of the sidewalls of the cyclone chamber and/or part or a majority of the sidewalls of the dirt collection chamber (in addition to common wall 226) may be moved when the front end is opened.

[00394] It will be appreciated that the height H_3 of second portion in a direction transverse to the cyclone axis of rotation may be the same as the height of the rest of the cyclone bin assembly. The height H_3 may be such that the cyclone axis of rotation 1371 extends through first portion 1422. In an alternate embodiment, the cyclone axis of rotation 1371 may not extend through first portion 1422 but a projection of a portion of the cyclone chamber may extend through second portion 1422. In a further alternate embodiment, the height H_3 may be such that a projection of all of the cyclone chamber may extend through second portion 1422.

Handvac Cyclone Bin Assembly Bypass

[00395] In accordance with another aspect of this disclosure, which may be used by itself or in combination with any one or more other aspects of this disclosure, the cyclonic air treatment member of the handvac may be bypassed when a supplemental cyclonic bin assembly is provided. This may prevent accumulation of dirt in the handvac so that the handvac may have more or all of its dirt collection capacity available when disconnected from the upright section. Alternately or in addition, a pre-motor filter of handvac 112 may be bypassed when a supplemental cyclonic bin assembly is provided. For example, the supplemental cyclonic bin assembly may be provided with a pre-motor filter. The pre-motor filter may have a larger surface area than the pre-motor filter of handvac 112. Accordingly, by bypassing the pre-motor filter of handvac 112, the pre-motor filter of handvac 112 may only be used in an above floor cleaning mode thereby extending the useable

time of the pre-motor filter of handvac 112 before cleaning or replacement may be needed.

[00396] Referring to FIGS. 99-101, handvac 112 may include a primary airflow path 1228 and a bypass airflow path 1232. As shown, primary airflow path 1228 may extend from air inlet 192 through cyclone bin assembly 136 to suction motor 204, and bypass airflow path 1232 may extend from air inlet 192 to suction motor 204 bypassing cyclone bin assembly 136. In some embodiments, bypass airflow path 1232 may extend through the pre-motor filters of pre-motor filter chamber 556, and in other embodiments, bypass airflow path 1232 may bypass pre-motor filters of pre-motor filter chamber 556. It will be appreciated that the cyclone and/or the pre-motor filter of the handvac may be bypassed. If both are bypassed, then the handvac may be used to provide some or all of the motive force to draw air through apparatus 168 but not any air treatment upstream of the suction motor.

[00397] In the illustrated embodiment, bypass airflow path 1232 is formed in part by a bypass passage 1236. Bypass passage 1236 may have an upstream end 1238 in airflow communication with handvac inlet 416, and a downstream end 1240 in airflow communication with motor inlet 1108. As exemplified by the embodiment illustrated in FIG. 101, upstream end 1238 may be formed in a sidewall of handvac nozzle 412, and downstream end 1239 may be formed in a wall of premotor filter chamber 556. In some embodiments, downstream end 1239 may direct air from bypass passage 1236 into upstream plenum 1208 for routing bypass airflow path 1228 through pre-motor filters 1176 and 1180 as shown. In alternative embodiments, downstream end 1239 may direct air from bypass passage 1236 into downstream plenum 1212 for bypassing pre-motor filters 1176 and 1180.

[00398] As exemplified, apparatus 168 may include a bypass valve 1240 for selectively opening and closing primary and bypass airflow paths 1228 and 1232. Bypass valve 1240 may be positioned in any one or more of handvac 112, wand 144, and supplemental cyclone bin assembly 160, and may take any suitable form. For

example, in some embodiments bypass valve 1240 may include components parts positioned in two or more of handvac 112, wand 144, and supplemental cyclone bin assembly 108 which cooperate and interact to open and close primary and bypass airflow paths 1228 and 1232.

[00399] In the illustrated embodiment bypass valve 1240 is positioned in inlet nozzle 412 of handvac 112. Bypass valve 1240 may be movable between a first position (FIGS. 99 and 100) in which bypass airflow path 1232 is closed and primary airflow path 1228 is open, and a second position (FIG. 101) in which bypass airflow path 1232 is open and primary airflow path 1228 is closed.

[00400] As exemplified in FIGS. 99-101, bypass valve 1240 may include a wheel 1242, a door 1244, and an actuator 1246. Wheel 1242 may be rotatably connected to nozzle 412 for rotation about its center. Door 1244 may be rigidly connected to wheel 1242 for rotation as one with wheel 1242. For example, door 1244 and wheel 1242 may rotate together as a unit. As shown, door 1244 and wheel 1242 may be rotatable between a first position (FIGS. 99 and 100) in which door 1244 seals an upstream end 1238 of bypass passage 1236, and a second position (FIG. 101) in which door 1244 seals an air inlet 192 of cyclone chamber 184.

[00401] As exemplified, actuator 1246 may include an upper end 1248 connected to wheel 1242 radially outboard of the center of wheel 1242. Actuator 1246 may be movable vertically between a lowered position (FIGS. 99 and 100), and a raised position (FIG. 101). As shown, moving actuator 1246 from the lowered position to the raised position may rotate wheel 1242 and door 1244 clockwise which may move door 1244 to the second position (FIG. 101) in which door 1244 seals air inlet 192 of cyclone chamber 184. Further, moving actuator 1246 from the raised position to the lowered may rotate wheel 1242 and door 1244 counter clockwise which may move door 1244 to the first position (FIGS. 99 and 100) in which door 1244 seals upstream end 1238 of bypass passage 1236.

[00402] In some embodiments, actuator 1246 may be biased to the lowered position (FIGS. 99 and 100). Consequently, door 1244 and wheel 1242 may be biased to the first position (FIGS. 99 and 100) in which door 1244 seals an upstream end 1238 of bypass passage 1236. Actuator 1246 may be biased in any suitable fashion, such as by a linear coil spring 1250. In alternative embodiments, wheel 1242 may be biased clockwise in a suitable manner, such as by a torsional spring.

[00403] Actuator 1246 may have a lower end 1252 which extends outside of the airflow path. Lower end 1252 may be acted upon to move actuator 1246 vertically from the lowered position to the raised position for opening bypass airflow path 1232 and closing primary airflow path 1228. As shown, when handvac 112 is disconnected from wand 144 (FIG. 99), bypass valve 1240 may close the bypass airflow path 1232 (e.g., under the bias of spring 1250). Further, when handvac 112 is connected to wand 144 without supplemental cyclone bin assembly 160 (FIG. 100), bypass valve 120 may also close the bypass airflow path 1232. In each of these cases, the air entering handvac 112 is directed through handvac cyclone bin assembly 136 to separate dirt from the airflow. This may permit handvac 112 to operate when disconnected from supplemental cyclone bin assembly 160.

[00404] As shown in FIG. 101, when handvac 112 and cyclone bin assembly 160 are both connected to wand 144, an upper end 1254 of cyclone bin assembly 160 (handle 1254 in the illustrated example) may push against actuator lower end 1252 thereby moving actuator 1246 upwardly. This may rotate wheel 1242 and door 1244 counter clockwise, opening bypass airflow path 1232 and closing primary airflow path 1228. As shown, air exiting cyclone bin assembly 160 may travel through bypass airflow path 1232 toward suction motor 204 bypassing cyclone chamber 184. This may permit supplemental cyclone bin assembly 160 to separate and collect dirt from the airflow path instead of handvac cyclone bin assembly 136. In turn, this may inhibit dirt accumulation in handvac dirt collection chamber 188, which may help to maximize the available dirt collection capacity of handvac dirt

collection chamber 188 when the user chooses to disconnect cyclone bin assembly 160.

[00405] In the illustrated example, lower end 1252 is sloped. This may permit supplemental bin assembly 160 to be toed into wand 144 and then rotated horizontally towards wand 144 to complete the connection with wand 144, whereby the upper end 1254 of supplemental bin assembly 160 may ride the slope of lower end 1252 to push actuator 1246 upwardly.

[00406] Accordingly, bypass valve 1240 may be actuated to reconfigure the airflow path through handvac 112 automatically upon connecting and disconnecting supplemental bin assembly 160 from airflow communication with handvac 112. For example, bypass valve 1240 may be biased to close bypass airflow path 1232 whenever handvac 112 is not in airflow communication with supplemental bin assembly 160 so that the air treatment member of handvac 112 may separate dirt from the airflow. Similarly, bypass valve 1240 may be configured to open bypass airflow path 1232 and close primary airflow path 1228 whenever handvac 112 is in airflow communication with supplemental bin assembly 160 so that the air treatment member of handvac 112 does not separate and store dirt from the airflow.

[00407] The following is a description of numerous embodiments of surface cleaning apparatus 168. In the figures associated with some embodiments, a bypass valve 1232 and/or a diversion valve 712 may be represented schematically. It will be appreciated that the embodiments may be practiced using the bypass valves 1232 and/or diversion valves 712 described above, or other suitable valves.

[00408] Referring to FIG. 102, in some embodiments supplemental cyclone bin assembly 160 may include one or more pre-motor filters 1256 (herein after referred to as pre-motor filter 1256 in the singular) positioned in the airflow path. Preferably, pre-motor filter 1256 is positioned downstream of cyclone chamber 308. As shown, pre-motor filter 1256 may be positioned between cyclone chamber air outlet 320 and outlet passage 476.

[00409] In some embodiments, pre-motor filter 1256 may separate fine dirt particles from the airflow in substitution for the pre-motor filters 1176 and 1180 of handvac 112. As shown, bypass valve 1232 may divert air from supplemental cyclone bin assembly 160 into a bypass airflow path which bypasses handvac cyclone bin assembly 136 and pre-motor filters 1176 and 1180. For example, downstream end of 1239 of bypass passage 1236 may direct the bypass airflow path 1232 to downstream plenum 1212 for bypassing pre-motor filters 1176 and 1180.

[00410] It will be appreciated that a pre-motor filter will have a certain filtering capacity of fine particles at which point the filter should be cleaned or replaced. By incorporating a pre-motor filter into the supplemental cyclone bin assembly 160, and using this filter whenever the supplemental cyclone bin assembly 160 is connected to the handvac, the filtering capacity of the handvac pre-motor filters may be preserved. This may permit extended use of the handvac pre-motor filters before they require cleaning or replacement.

[00411] It will also be appreciated that there will be a measurable pressure drop across a pre-motor filter placed in an airflow path. If positioned in series, too many filters may produce a pressure drop that materially reduces air flow at the dirty air inlet. By filtering the airflow alternately by the supplemental pre-motor filter 1256 and by the handvac pre-motor filter when the handvac is used without assembly 140, 160 attached the operational life of the handvac pre-motor filter may be extended.

[00412] As exemplified in the alternate embodiment of FIG. 103, surface cleaning head 104 may include a second suction motor 1258. Second suction motor 1258 may operate in parallel with or alternately instead of handvac suction motor 204 when handvac 112 is attached in flow communication with surface cleaning head 104. For example, a portion of air exiting supplemental cyclone bin assembly 160 may proceed to handvac suction motor 204 and a different portion may proceed to second suction motor 1258. In the illustrated embodiment, a second airflow path

1260 from diversion valve 712 to second suction motor 1258 is formed by an airflow conduit 1262 which connects diversion valve 712 to surface cleaning head 104.

[00413] As shown, when supplemental cyclone bin assembly 160 is in airflow communication with handvac 112, the airflow path extends through the air treatment member(s) of supplemental cyclone bin assembly 160 (e.g., cyclone chamber 308 and pre-motor filter 1256) and then divides into two parallel air flow paths 1232 and 1260. Bypass airflow path 1232 directs one portion of the airflow to the handvac suction motor 204 bypassing handvac cyclone chamber 184 (and optionally bypassing handvac pre-motor filters 1176 and 1180), and second airflow path 1260 directs a second portion of the airflow path to the second suction motor 1258 in head 104.

[00414] It will be appreciated that suction motors 1258 and 204 operating in parallel may generate greater suction at surface cleaning head 104 than any one of suction motors 1258 and 204 may generate operating alone. This may also permit supplemental cyclone bin 160 to include a pre-motor filter 1256 having greater surface area than the pre-motor filter of the handvac, where the additional pressure drop due to the use of two pre-motor filters may be compensated for by the enhanced suction generation of the parallel motors 1258 and 204.

[00415] As exemplified in the alternate embodiment of FIG. 104a, supplemental suction motor 160 may include a second suction motor 1258 which may operate in the same way as the embodiment of FIG 103. Second suction motor 1258 may operate in parallel with handvac suction motor 204. For example, a portion of air exiting supplemental cyclone chamber 160 may proceed to handvac suction motor 204 and a different portion may proceed to second suction motor 1258. In the illustrated embodiment, a second airflow path 1260 from outlet passage 478 to second suction motor 1258 is formed by an airflow conduit 1262.

[00416] As shown, when supplemental cyclone bin assembly 160 is in airflow communication with handvac 112, the airflow path extends through the air treatment

member(s) of supplemental cyclone bin assembly 160 (e.g., cyclone chamber 308 and pre-motor filter 1256) and then divides into two parallel air flow paths 1232 and 1260. Bypass airflow path 1232 directs one portion of the airflow to the handvac suction motor 204 bypassing handvac cyclone chamber 184 (and optionally bypassing handvac pre-motor filters 1176 and 1180), and second airflow path 1260 directs a second portion of the airflow path to the second suction motor 1258.

[00417] As shown, second suction motor 1258 may be positioned below dirt collection chamber 140 and cyclone chamber 308 of supplemental cyclone bin assembly 160, and second suction motor 1258 may be vertically aligned above surface cleaning head 104. This may help to lower the center of gravity of the apparatus 168 for enhanced stability against tipping.

[00418] In some embodiments, a pre-motor filter may be positioned in each of bypass airflow path 1232 and second airflow path 1260, as shown. For example, a pre-motor filter 1256 may be positioned in the second airflow path 1260 between outlet passage 478 and second suction motor 1258, and bypass airflow path 1232 may direct the airflow through handvac pre-motor filters 1176 and 1180. In the illustrated embodiment, pre-motor filter 1256 is shown positioned below dirt collection chamber 140 of supplemental cyclone bin assembly 160.

[00419] In alternative embodiments, air exiting cyclone chamber 308 may pass through a common pre-motor filter before dividing between the second airflow path 1260 and bypass airflow path 1232. For example, in FIG. 104b pre-motor filter 1256 is shown positioned downstream of cyclone chamber 308 and upstream of outlet passage 478. As shown, bypass airflow path 1232 may bypass handvac pre-motor filters 1176 and 1180. This may permit the filtration capacity of handvac pre-motor filters 1176 and 1180 to be preserved for use when supplemental cyclone bin assembly 160 is disconnected from airflow communication with handvac 112. In alternative embodiments, pre-motor filters 1176 and 1180 may be positioned in the bypass airflow path 1232.

[00420] As exemplified in FIG. 105a dirt collection chamber 140 and cyclone chamber 308 may be removable as a sealed unit from wand 144 and second suction motor 1258. For example, second suction motor 1258 may be mounted or removably mounted to wand 144 so that dirt collection chamber 140 and cyclone chamber 308 may be removed while second suction motor 1258 remains mounted to wand 144. This may permit cleaning and/or emptying of dirt collection chamber 140 and cyclone chamber 308 (e.g., carrying the same to a garbage bin to dump their contents) without having to carry second suction motor 1258 (which may have a non-trivial weight). Also, assembly 160 may be removable as a unit to convert the apparatus to a lightweight or above floor operating mode.

[00421] As exemplified in FIG. 118, the air treatment members of handvac 112 and supplementary cyclone bin assembly 160 may operate in parallel. For example, handvac 112 and supplementary cyclone bin assembly 160 may separate dirt from mutually exclusive portions of the airflow entering dirty air inlet 124.

[00422] In the illustrated example, wand 144 may define two airflow paths. A first airflow path 1428 may be formed by a first division of wand 144 and may direct airflow moving therein to supplemental cyclone bin assembly 160 for cleaning, and then from supplemental cyclone bin assembly 160 to bypass airflow path 1232 of handvac 112. A second airflow path 1432 may be formed by a second division of wand 144 and may direct airflow moving therein to primary airflow path 1228 of handvac 112 for cleaning by cyclone bin assembly 136.

[00423] As exemplified, dirty air entering dirty air inlet 124 may divide into two airflows at wand upstream end 360 and then travel through the first and second airflow paths 1428 and 1432. Dirt may be separated from each airflow stream by a different one of supplementary cyclone bin assembly 160 and handvac 112. In the illustrated embodiment, the two airflows may recombine in pre-motor filter chamber 556. For example, the two airflows may recombine at the upstream plenum 1208 so that both airflows pass through pre-motor filters 1176 and 1180 before exiting

through suction motor 204. In alternative embodiments, the two airflows may recombine at the downstream plenum 1212. For example, supplemental cyclone bin assembly 160 may have its own pre-motor filter for filtering the air of the first airflow path 1428.

[00424] In some embodiments, surface cleaning apparatus 168 may include two or more suction motors operating in series. In one aspect, this may enhance the suction at dirty air inlet 124 and/or compensate for suction loss from additional or higher efficiency air treatment members.

[00425] Referring to FIGS. 119a and 119b, a second suction motor 1258 may be positioned in the airflow path between dirty air inlet 124 and handvac 112. For example, second suction motor 1258 may be a dirty air suction motor positioned in surface cleaning head 104. As shown, dirty air entering dirty air inlet 124 may be drawn through second suction motor 1258 before the airflow is cleaned by supplemental dirt collection chamber 160 and/or handvac 112 and discharged through handvac suction motor 204.

[00426] Referring to FIG. 120, second suction motor 1258 may be a clean air motor positioned downstream of handvac suction motor 204. As exemplified, motor outlet 1112 of handvac suction motor 204 may be fluidly connected to second suction motor 1258 in surface cleaning head 104 by an airflow path 1436. As shown, airflow path 1436 may be formed by a conduit 1440.

[00427] Referring to FIG. 121a, in some embodiments second suction motor 1258 may be positioned in supplementary cyclone bin assembly 160. For example, second suction motor 1258 may be positioned below dirt collection chamber 140. As shown, airflow path 1436 from motor outlet 1112 may direct air from suction motor 204 to second suction motor 1258 in supplementary cyclone bin assembly 160. For example, conduit 1440 may extend from motor outlet 1112 to second suction motor 1258. Conduit 1440 may take any suitable form. For example, conduit 1440 may be

a rigid conduit as shown. Alternatively, FIG. 121b shows an embodiment where conduit 1440 is a flexible hose.

[00428] In some embodiments, when handvac is connected with supplement cyclone bin assembly 160, handvac 112 may not be positioned in the airflow path through the surface cleaning apparatus. For example, air entering the dirty air inlet 124 of the surface cleaning head may be cleaned by the supplementary cyclone bin assembly 160 and discharged without ever passing through handvac 112. In this way, handvac 112 may act as a handgrip for manipulating and steering surface cleaning apparatus 168 in the upright mode but not as an air cleaning implement.

[00429] In some embodiment, as exemplified in FIG. 122, , the handvac may be bypassed when assembly 160 is attached to upright section 108. As exemplified, air entering dirt air inlet 124 may move through wand 144 to supplemental cyclone bin assembly 160 and be discharged without moving through handvac 112. For example, the airflow path through surface cleaning apparatus 168 may direct all air from dirty air inlet 124 through wand 144 to cyclone chamber 308 to outlet passage 476 to second airflow path 1260 to suction motor 1258 of supplemental cyclone bin assembly 160, which may discharge the air to the outside environment.

[00430] Still referring to FIG. 122, in some embodiments there may be a plurality of suction motors in series. In the illustrated embodiment, surface cleaning head 104 includes a suction motor 1258 positioned in the airflow path between dirty air inlet 124 and wand 144. In alternative embodiments, suction motor 1258 may be the only suction motor in the airflow path.

[00431] While the above description provides examples of the embodiments, it will be appreciated that some features and/or functions of the described embodiments are susceptible to modification without departing from the spirit and principles of operation of the described embodiments. Accordingly, what has been described above has been intended to be illustrative of the invention and non-limiting and it will be understood by persons skilled in the art that other variants and

modifications may be made without departing from the scope of the invention as defined in the claims appended hereto. The scope of the claims should not be limited by the preferred embodiments and examples, but should be given the broadest interpretation consistent with the description as a whole.

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10452-P46958US17
	Application Number	
Title of Invention	SURFACE CLEANING APPARATUS	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Wayne	Ernest	Conrad	

Residence Information (Select One) US Residency ● Non US Residency Active US Military Service

City	Hampton	Country of Residence i	CA

Mailing Address of Inventor:

Address 1	9 King Lane
Address 2	

City	Hampton	State/Province	ON
Postal Code	L0B 1J0	Country i	CA

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	01059		
Email Address	pmdcosta@bereskinparr.com	Add Email	Remove Email

Application Information:

Title of the Invention	SURFACE CLEANING APPARATUS		
Attorney Docket Number	10452-P46958US17	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	140	Suggested Figure for Publication (if any)	96

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10452-P46958US17
	Application Number	
Title of Invention	SURFACE CLEANING APPARATUS	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	01059		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	17/351943	2021-06-18

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10452-P46958US17
	Application Number	
Title of Invention	SURFACE CLEANING APPARATUS	

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
17/351943	Continuation in part of	16/590972	2019-10-02
Prior Application Status	Patented		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD) / Patent Number / Issue Date (YYYY-MM-DD)
16/590972	Division of	16/156006	2018-10-10 / 10478030 / 2019-11-19
Prior Application Status	Patented		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD) / Patent Number / Issue Date (YYYY-MM-DD)
16/156006	Continuation of	15/088876	2016-04-01 / 10219662 / 2019-03-05
Prior Application Status	Patented		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD) / Patent Number / Issue Date (YYYY-MM-DD)
15/088876	Continuation of	14/822211	2015-08-10 / 9888817 / 2018-02-13
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
14/822211	Claims benefit of provisional	62/093189	2014-12-17

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10452-P46958US17
	Application Number	
Title of Invention	SURFACE CLEANING APPARATUS	

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10452-P46958US17
	Application Number	
Title of Invention	SURFACE CLEANING APPARATUS	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10452-P46958US17
	Application Number	
Title of Invention	SURFACE CLEANING APPARATUS	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☐

Prefix	Given Name	Middle Name	Family Name	Suffix

Mailing Address Information For Applicant:

Address 1	Omachron Intellectual Property Inc.		
Address 2			
City	Hampton	**State/Province**	ON
Country	CA	Postal Code	L0B 1J0
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10452-P46958US17
	Application Number	
Title of Invention	SURFACE CLEANING APPARATUS	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Philip C. Mendes da Costa/			Date (YYYY-MM-DD)	2022-06-02
First Name	Philip	Last Name	Mendes da Costa	Registration Number	33106

Additional Signature may be generated within this form by selecting the Add button. Add

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10452-P46958US17
	Application Number	
Title of Invention	SURFACE CLEANING APPARATUS	

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
Approved for use through 03/31/2021. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	
Filing Date	June 2, 2022
First Named Inventor	Wayne Ernest Conrad
Title	SURFACE CLEANING APPARATUS
Art Unit	N/A
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17

SIGNATURE of Applicant or Patent Practitioner

Signature	/Philip C. Mendes da Costa/	Date (Optional)	2022-06-02
Name	Philip C. Mendes da Costa	Registration Number	33106
Title (if Applicant is a juristic entity)	Vice-President and Agent of Record		
Applicant Name (if Applicant is a juristic entity)	Omachron Intellectual Property Inc.		

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 03/31/2021. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 01059

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Omachron Intellectual Property Inc.

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	/Philip C. Mendes da Costa/	Date (Optional)	June 2, 2022
Name	Philip C. Mendes da Costa		
Title	Vice President		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	45857498
Application Number:	17830529
International Application Number:	
Confirmation Number:	9687
Title of Invention:	SURFACE CLEANING APPARATUS
First Named Inventor/Applicant Name:	Wayne Ernest Conrad
Customer Number:	1059
Filer:	Philip C. Mendes da Costa/Snezana Lisowsky
Filer Authorized By:	Philip C. Mendes da Costa
Attorney Docket Number:	10452-P46958US17
Receipt Date:	02-JUN-2022
Filing Date:	
Time Stamp:	11:55:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$2660
RAM confirmation Number	E202262B55404330
Deposit Account	022095
Authorized User	Snezana Lisowsky

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	ADS_2022-06-02_P46958US17.pdf	2292445 edca554c66efd3af10a5fcd6674a7df5ee9c51c1	no	9
Warnings:					
Information:					
2	Specification	USPTO_Specification_2022-06-02_P46958US17.PDF	577490 e0d30fac898870a516547c3e47d5100984b14422	no	92
Warnings:					
Information:					
3	Claims	USPTO_17Claims_2022-06-02_P46958US17.PDF	133057 ab4fc68ac83357f86427cd35d2c28f8dd0068134	no	4
Warnings:					
Information:					
4	Abstract	USPTO_Abstract_2022-06-02_P46958US17.PDF	82588 8a99bb6c9f5fd22bfbef270cdf679e1532295eea	no	1
Warnings:					
Information:					
5	Drawings-only black and white line drawings	P46958US14_16_17_DRAWINGS_PART1_2022-06-02_Figs_1-66.pdf	14640686 dc9b584ab6ad97314b739cabecf5fc2ce00b73fb	no	63
Warnings:					
Information:					
6	Drawings-only black and white line drawings	P46958US14_16_17_DRAWINGS_PART2_2022-06-02_Figs_67-127.pdf	20922022 4bdd7b9af7093e6f1cdf83be22efe9d3673c5535	no	67
Warnings:					
Information:					

7	Drawings-only black and white line drawings	P46958US14_16_17_DRAWINGS_PART3_2022-06-02_Figs_128-137.pdf	496490 f82b5298e4c39f757a5a0b3c3c69d10fc23a6fbb	no	10
Warnings:					
Information:					
8	Internet Communications Authorization	Internet_2022-06-02_P46958US17.pdf	623836 494d45392dd4800ae45bd35d82222955075efa91	no	2
Warnings:					
Information:					
9	Oath or Declaration filed	USPTO_Declaration_2021-06-18_P46958US14.pdf	387497 042bc053950279234c1ccba545a829333e0477a8	no	1
Warnings:					
Information:					
10	Power of Attorney	POA_2022-06-02_P46958US17.pdf	802749 55ffb556e4788f78406c60a3767eb4fd60cbddff	no	2
Warnings:					
Information:					
11	Fee Worksheet (SB06)	fee-info.pdf	46634 d027e3b97246fa344b910ea48b2ec4f01063c0ac	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	41005494	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

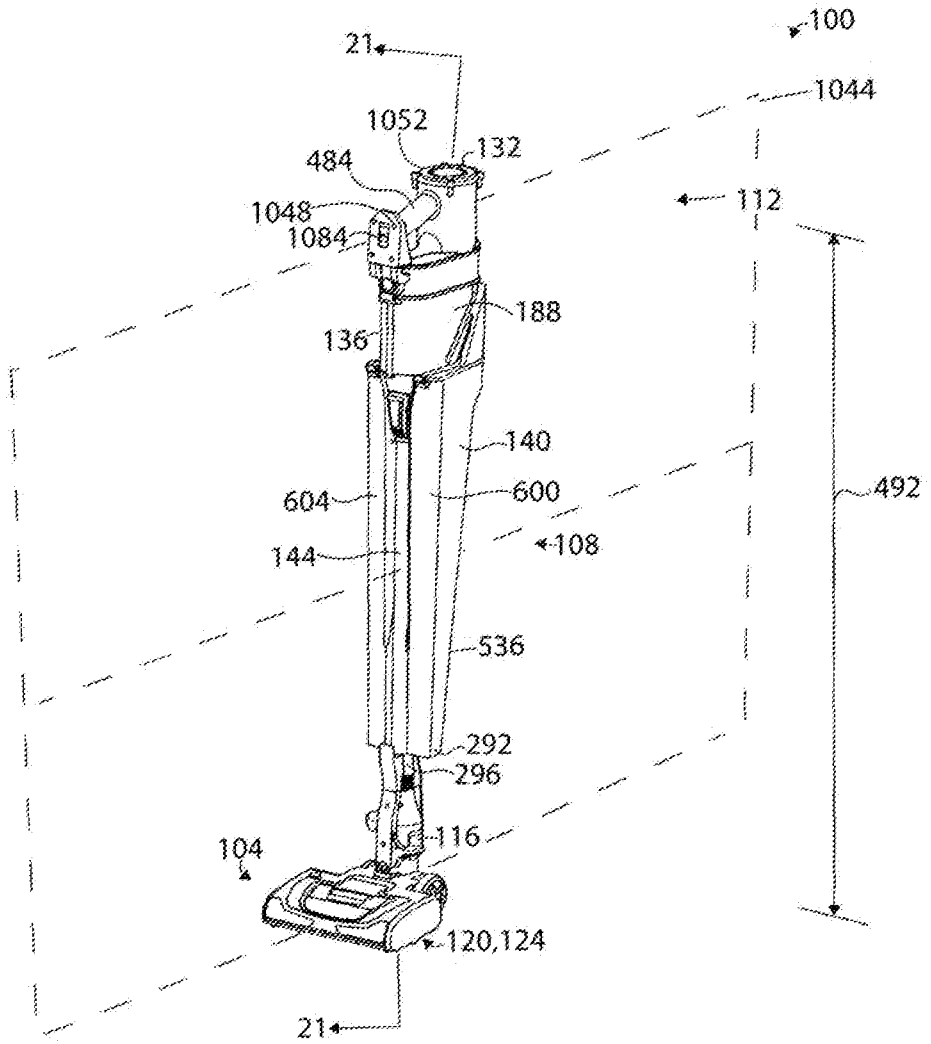

100
21
1044
1052
132
484
112
1048
1084
188
136
140
492
604
600
108
144
536
292
296
116
104
120,124
21

FIG. 1

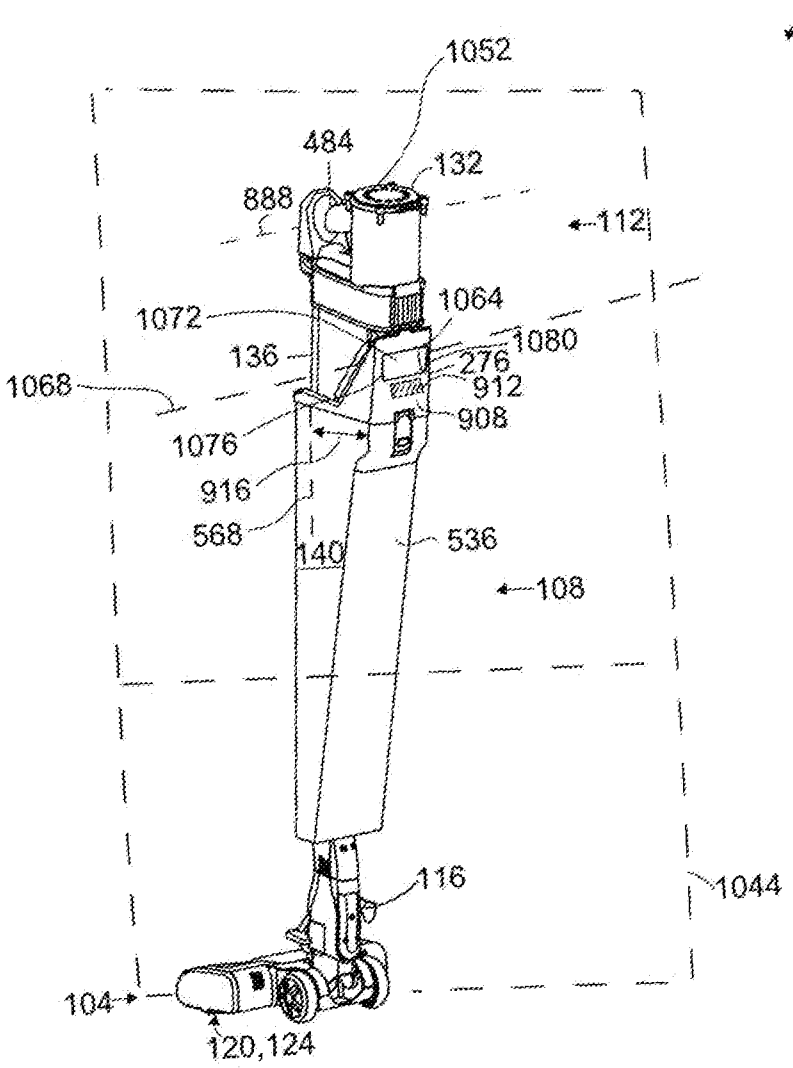

100
1052
484
132
888
112
1064
1072
1080
136
276
912
1068
908
1076
916
568
140
536
108
116
1044
104
120,124

FIG. 2

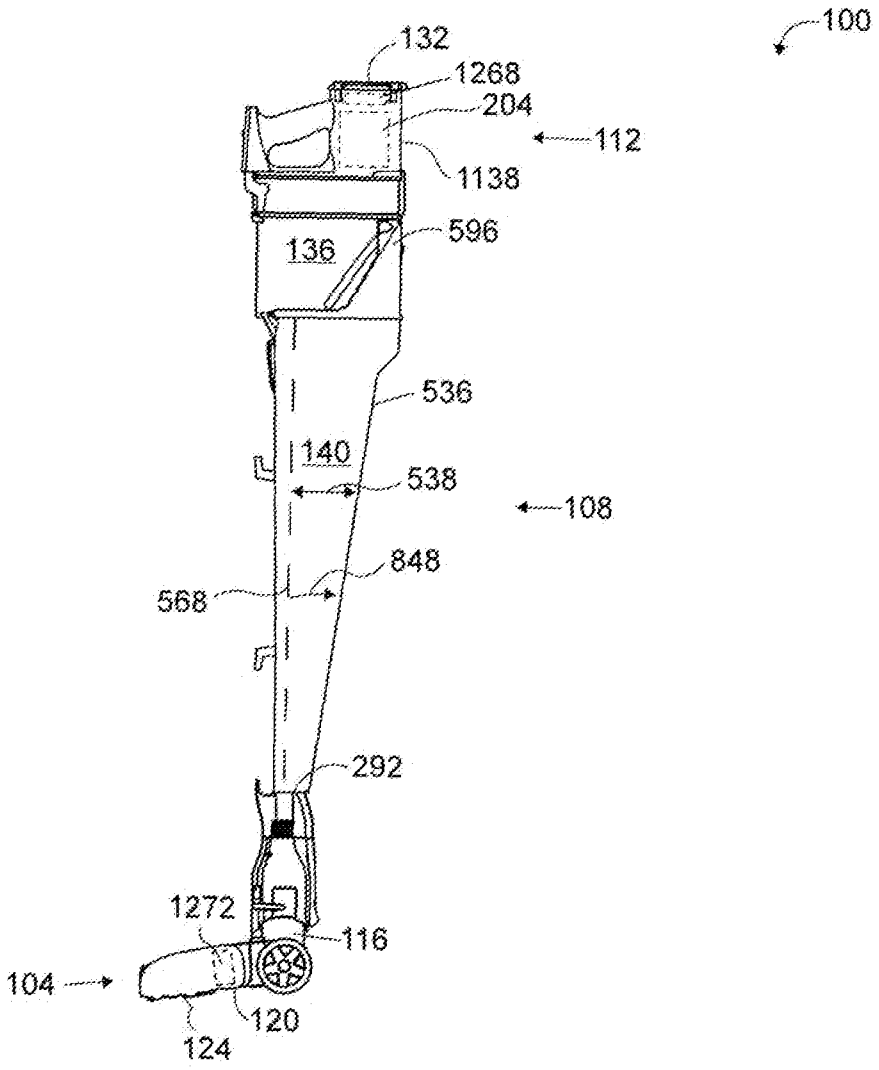

100
132
1268
204
112
1138
596
136
536
140
538
108
848
568
292
1272
116
104
120
124

FIG. 3

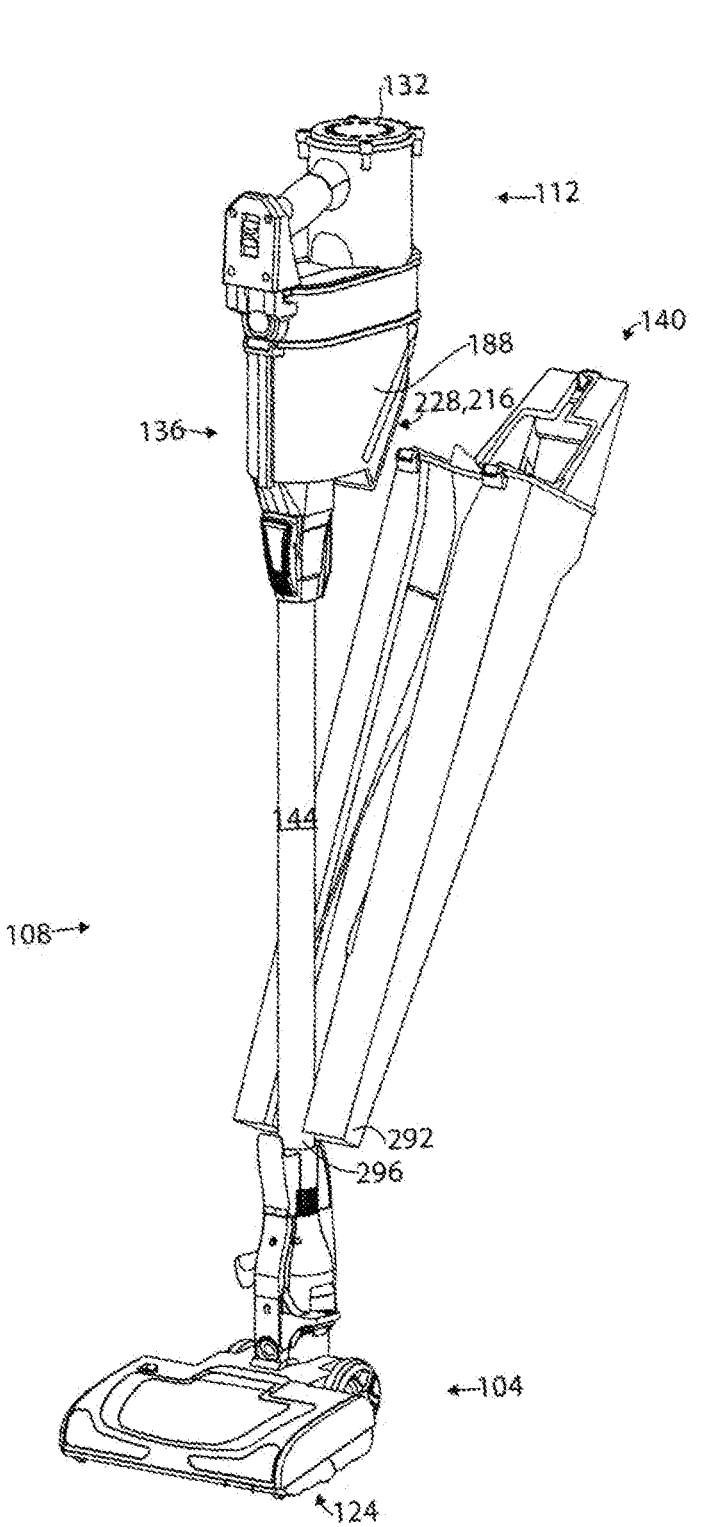


FIG. 4

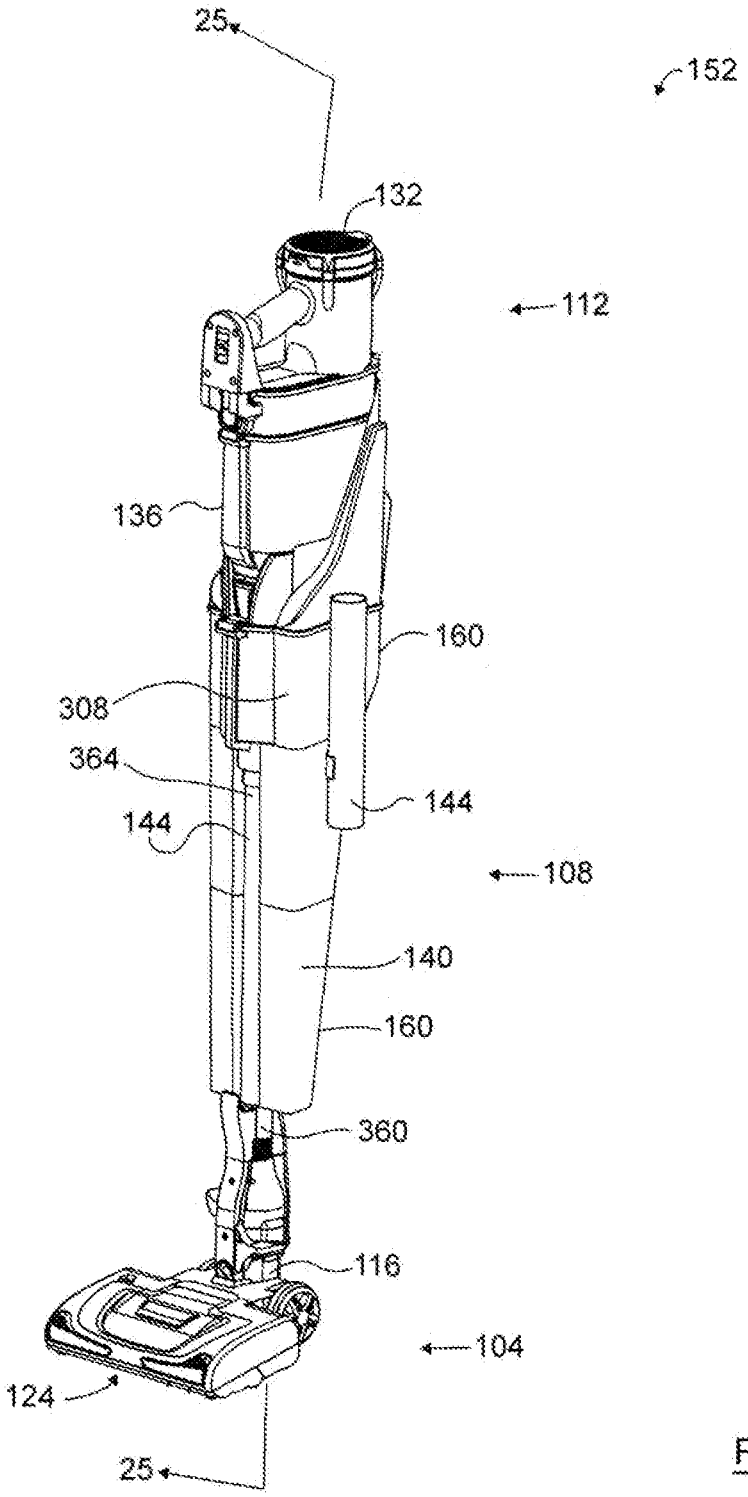

25
152
132
112
136
160
308
364
144
144
108
140
160
360
116
104
124
25

FIG. 5

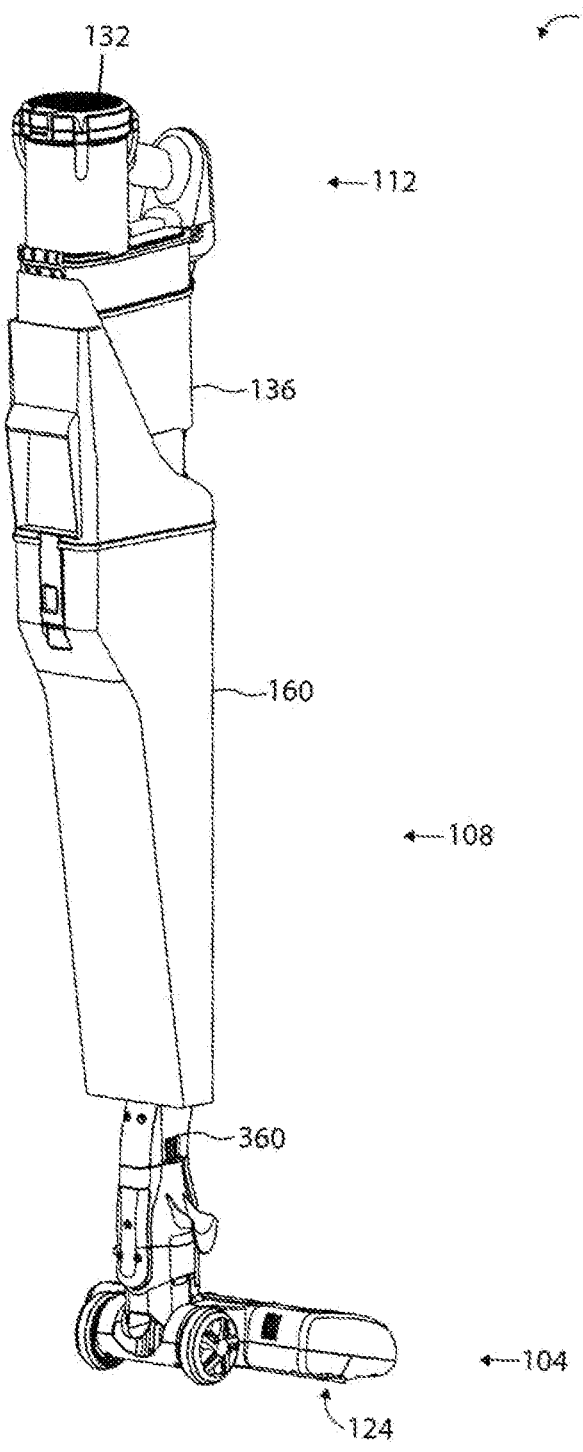


FIG. 6

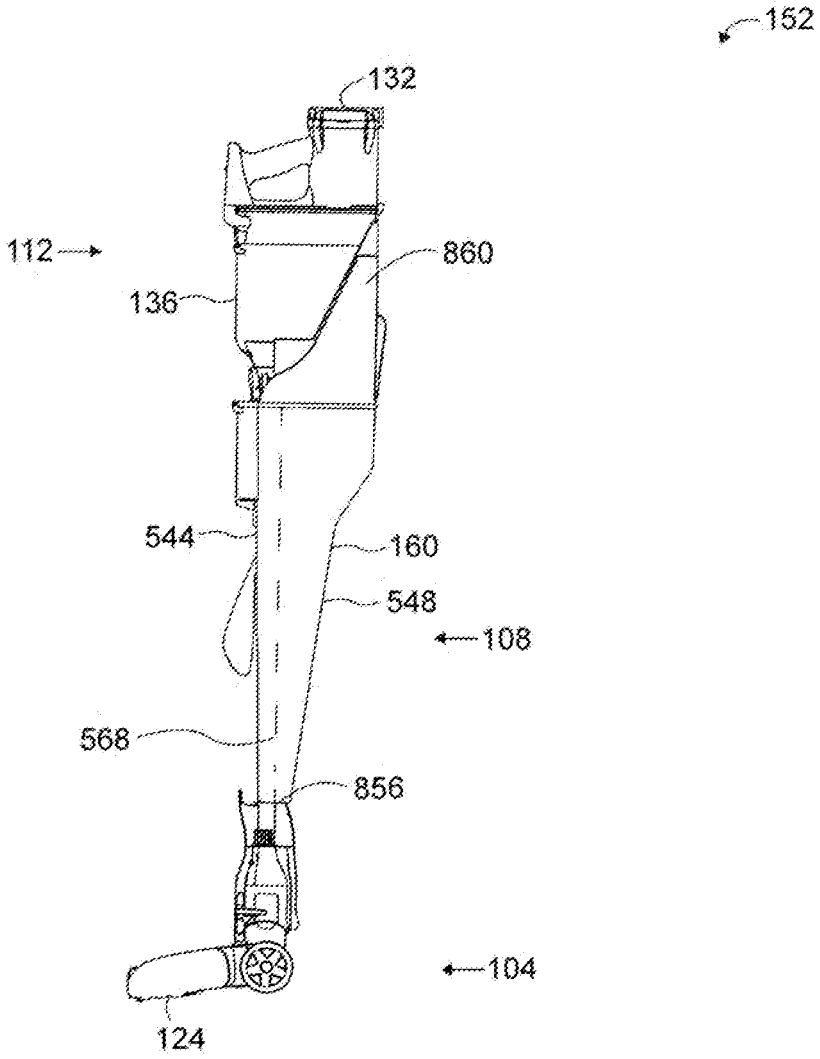


FIG. 7

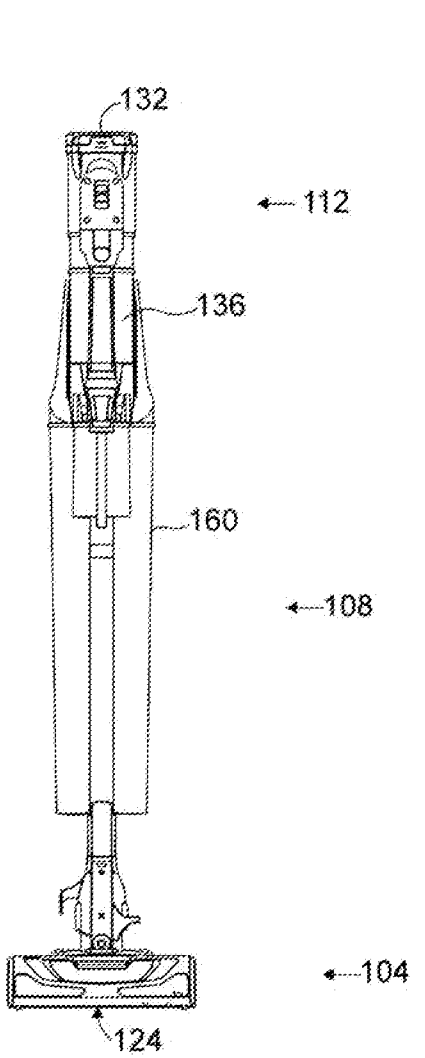


FIG. 8

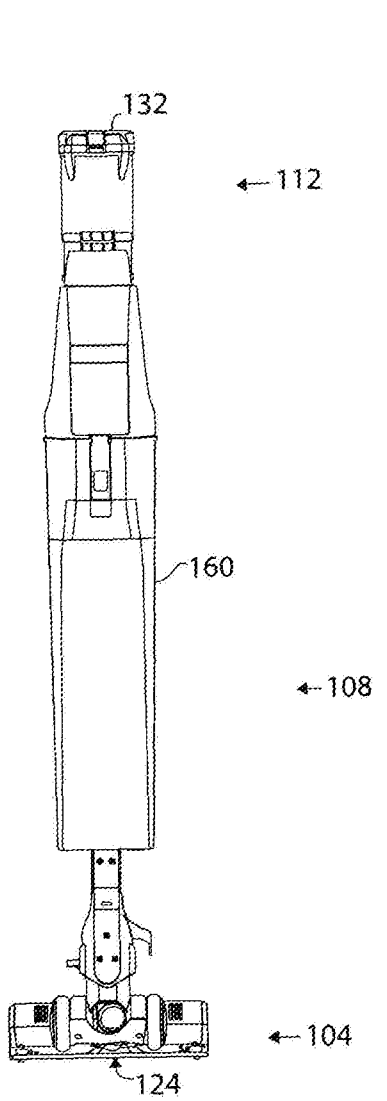


FIG. 9

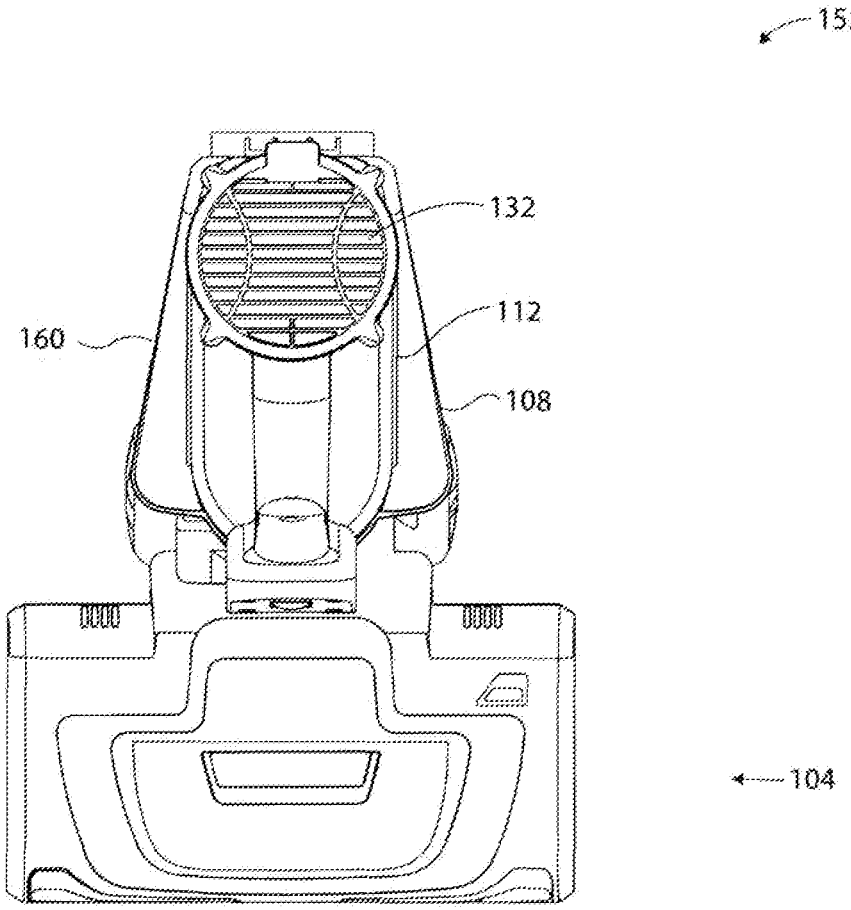


FIG. 10

Dyson Ex1004
Page 127

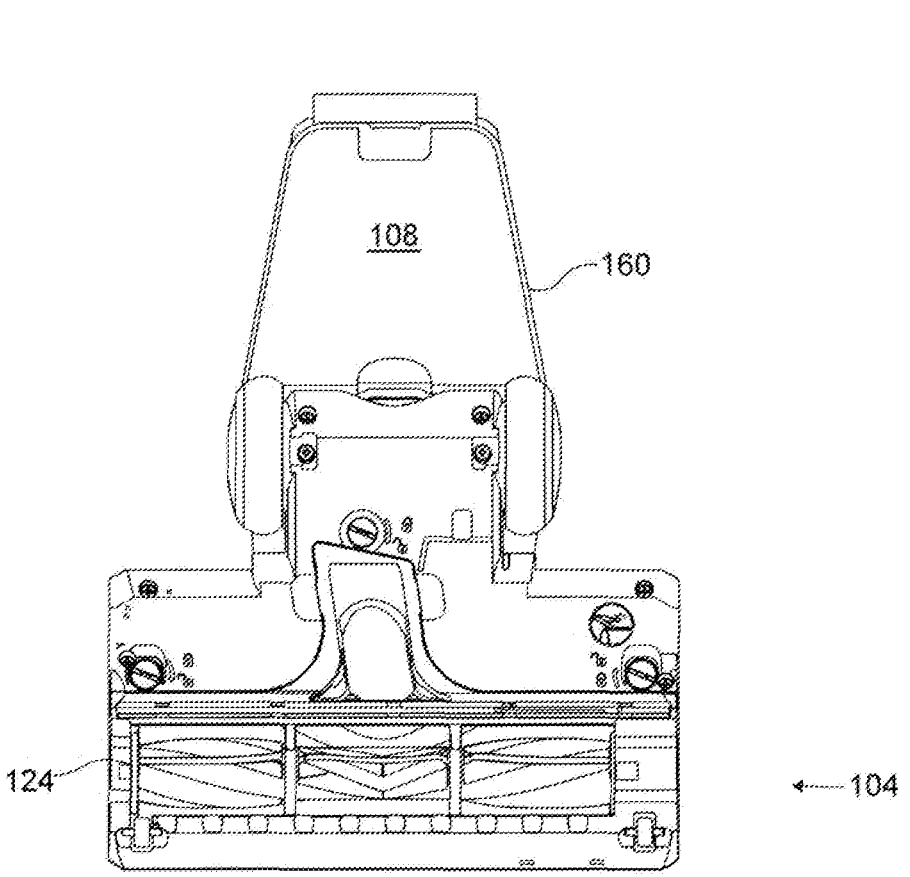


FIG. 11

Dyson Ex1004
Page 128

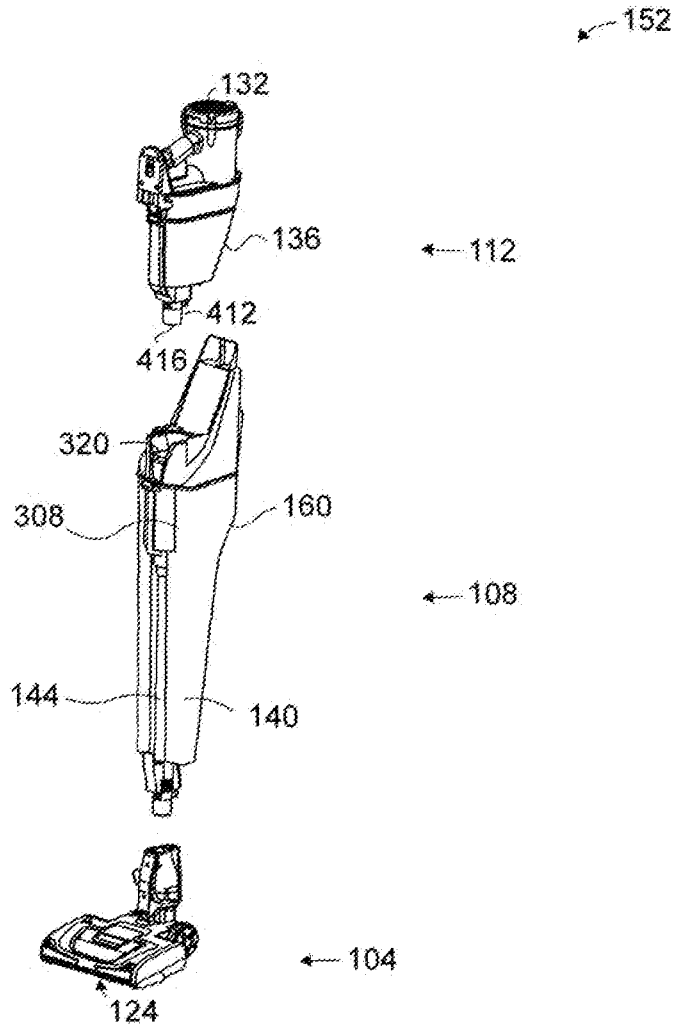


FIG. 12

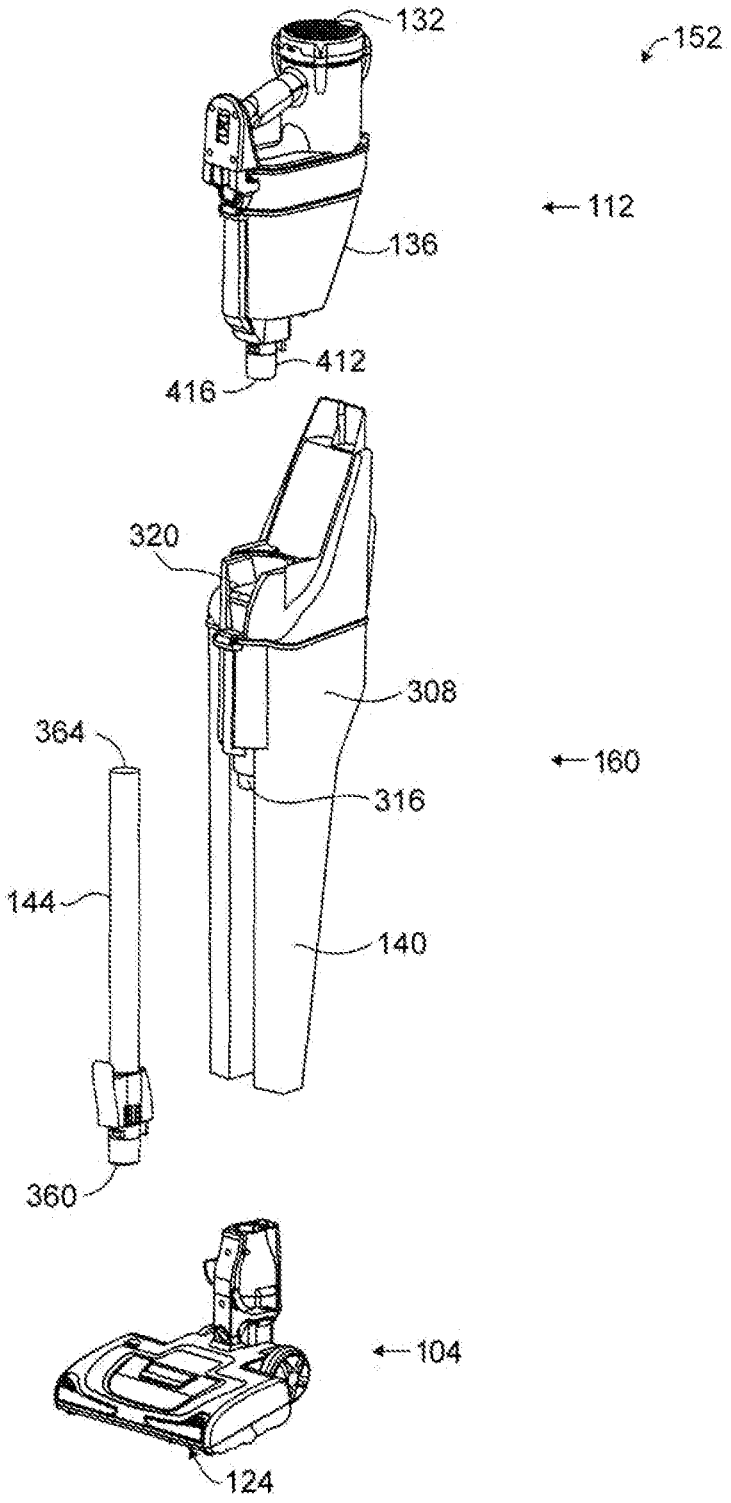


FIG. 12a

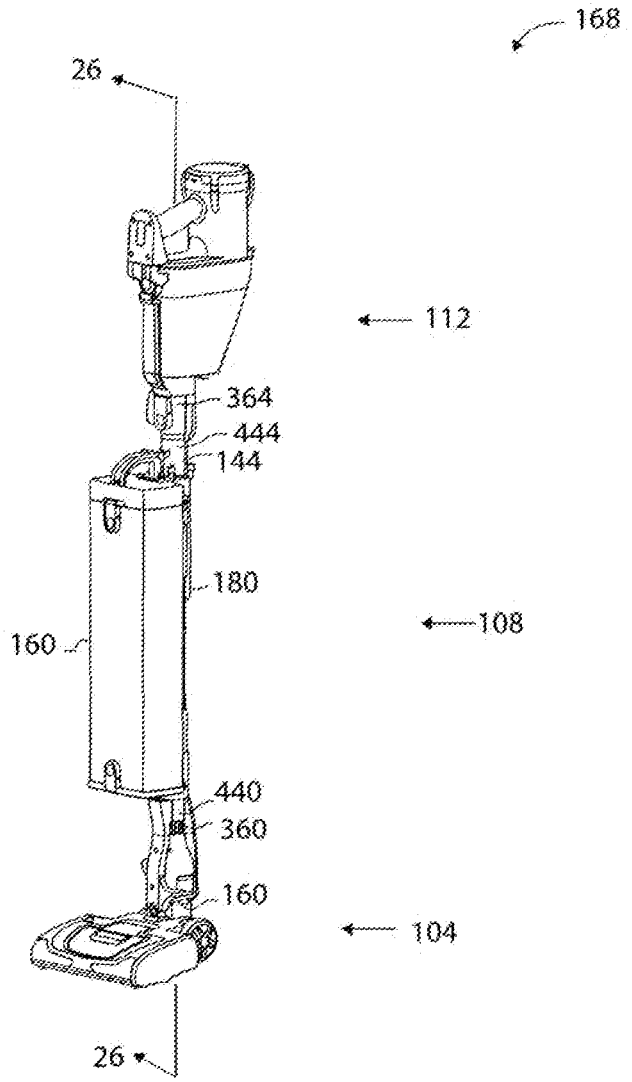


FIG. 13

FIG. 14

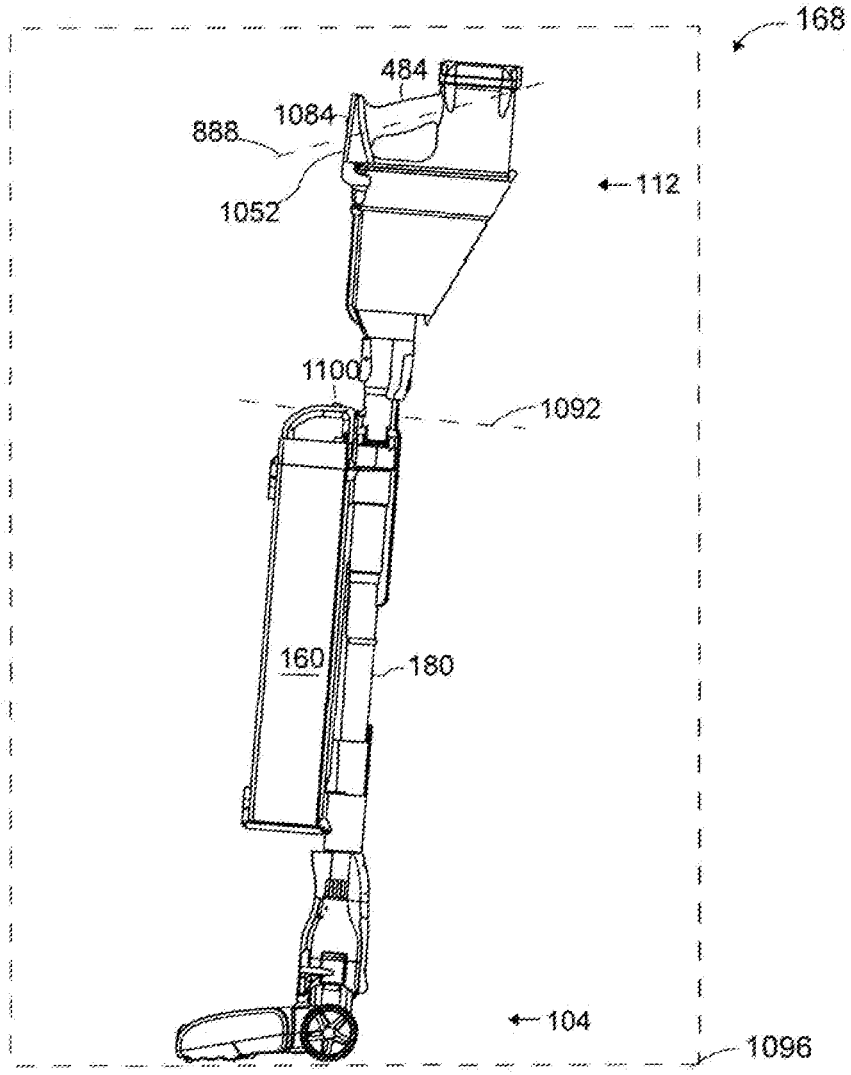


FIG. 15

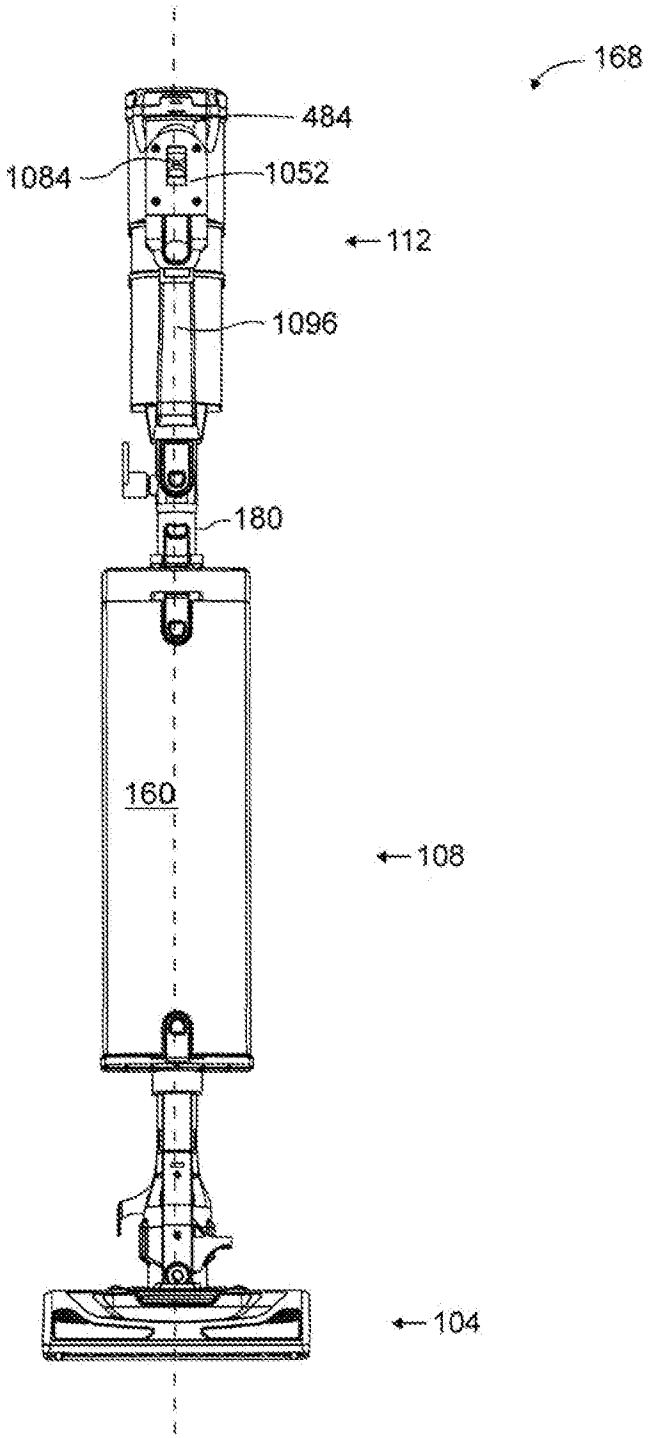


FIG. 16

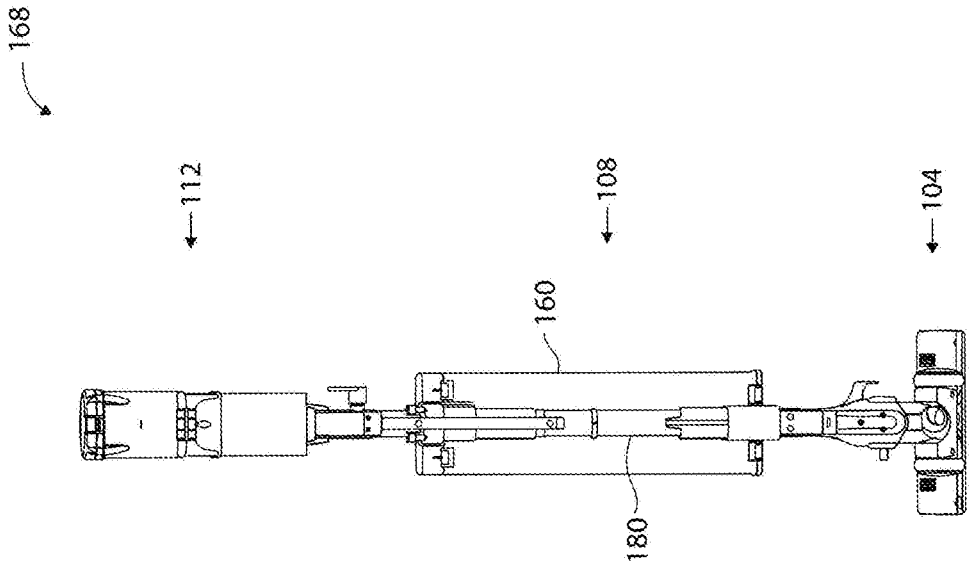


FIG. 17

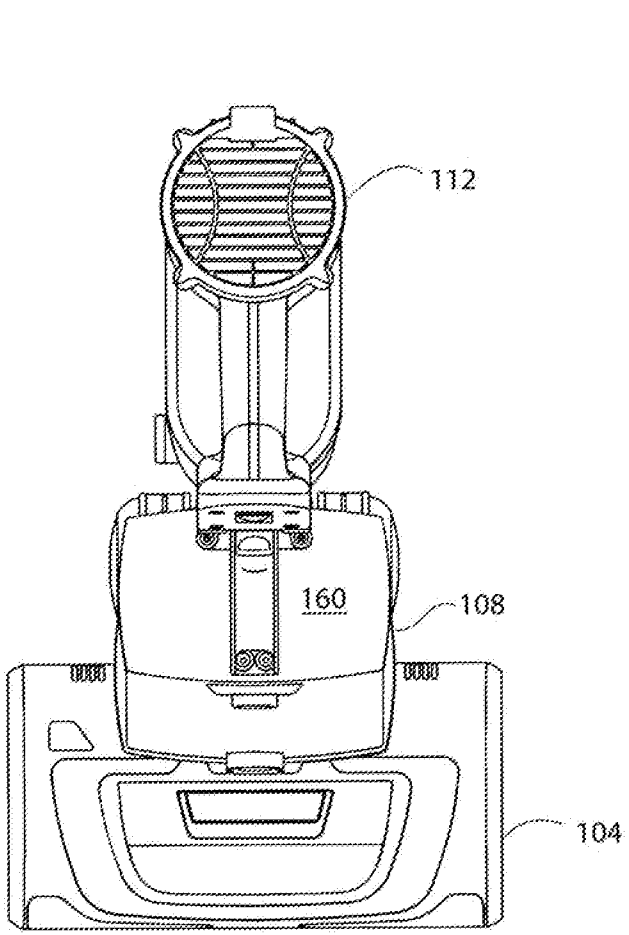


FIG. 18

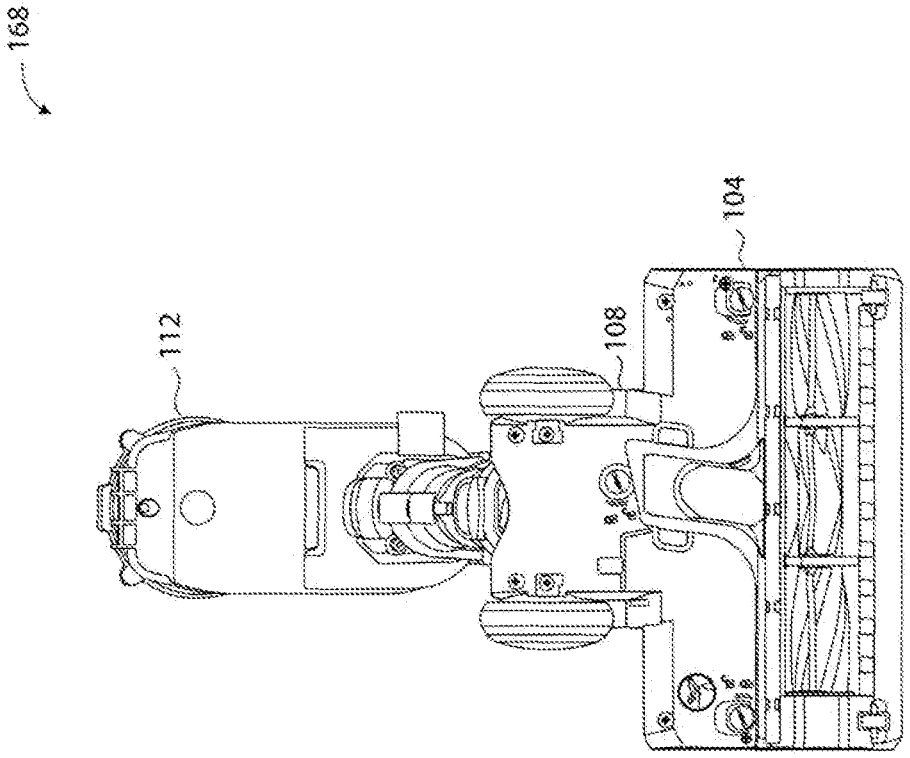


FIG. 19

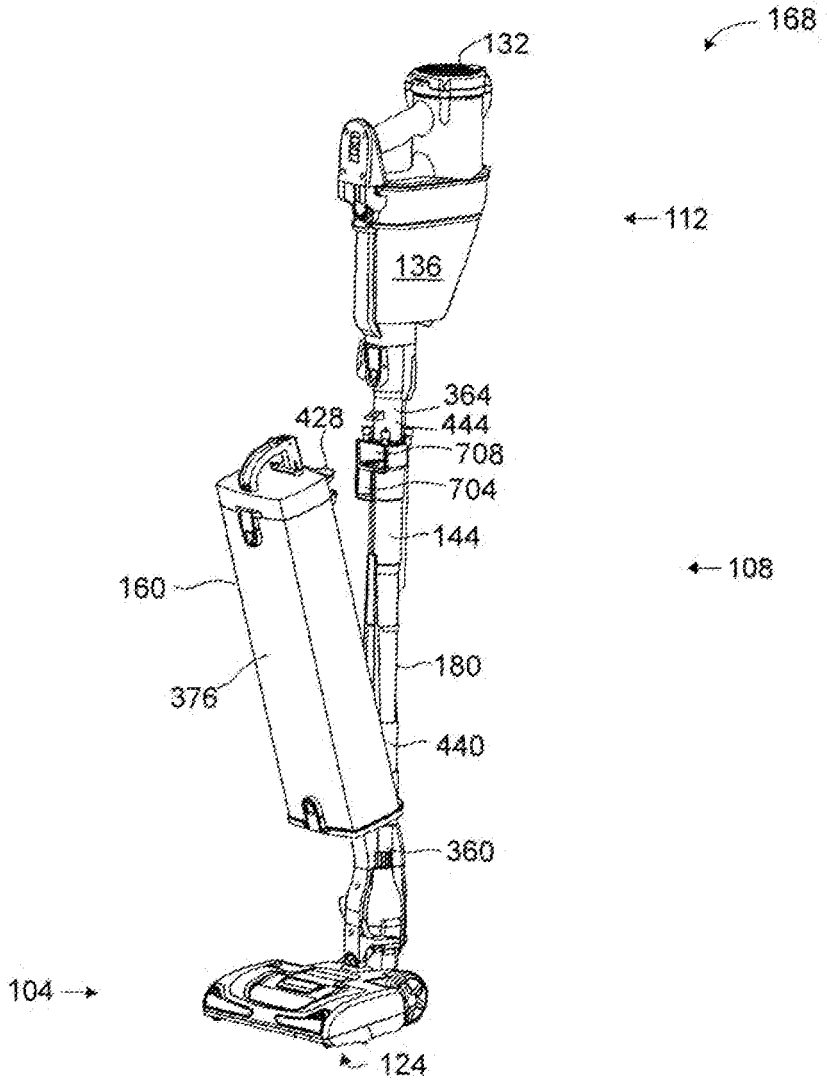

168
132
112
136
364
428
444
708
704
144
108
160
180
376
440
360
104
124

FIG. 20

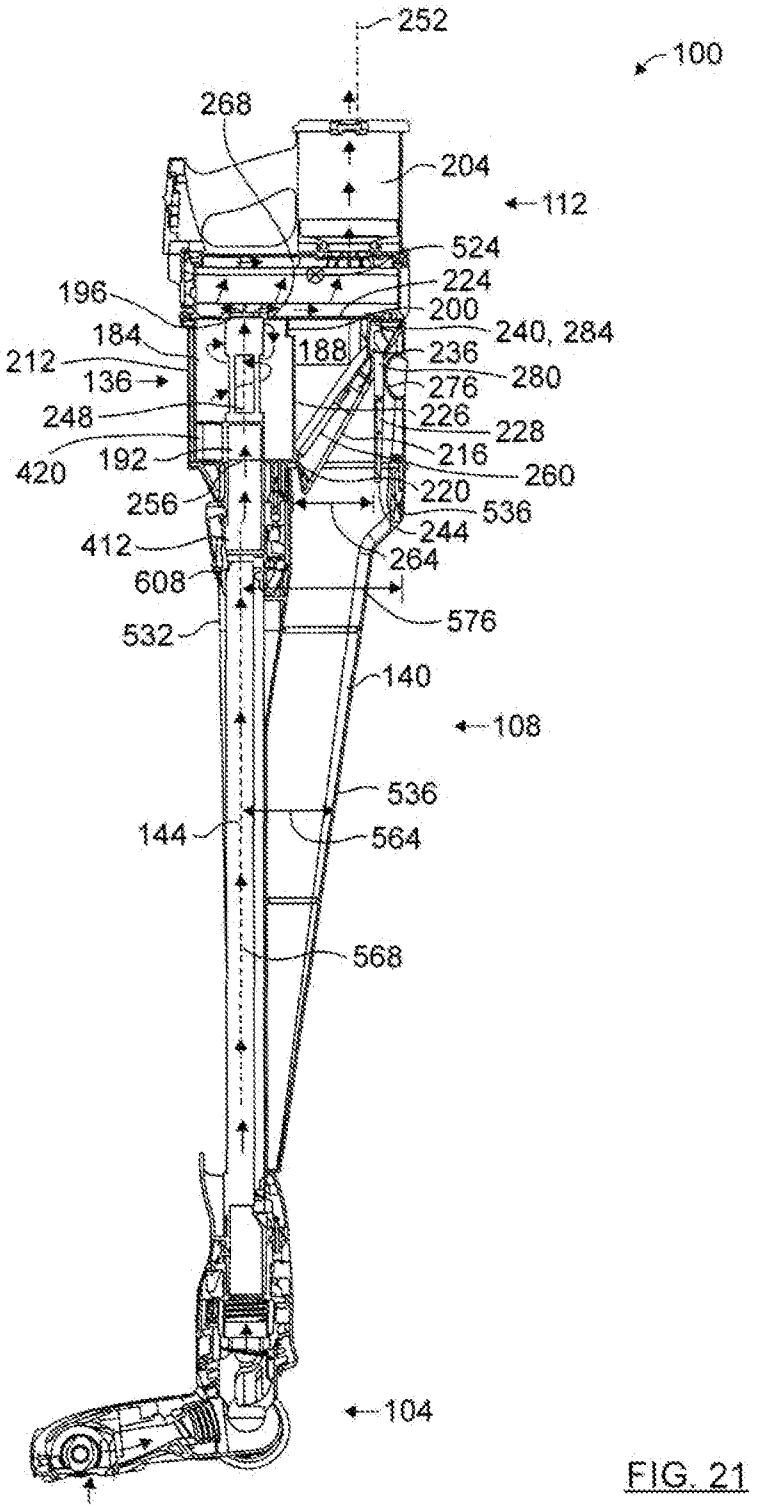

252
100
268
204
112
524
224
196
200
240, 284
184
188
236
212
280
136
276
248
226
228
216
420
192
260
220
256
536
244
412
264
608
576
532
140
108
536
144
564
568
104

FIG. 21

112
236
96
240, 284
236
280
216
188
208
228
260
96
212
136
244
416
412

FIG. 22

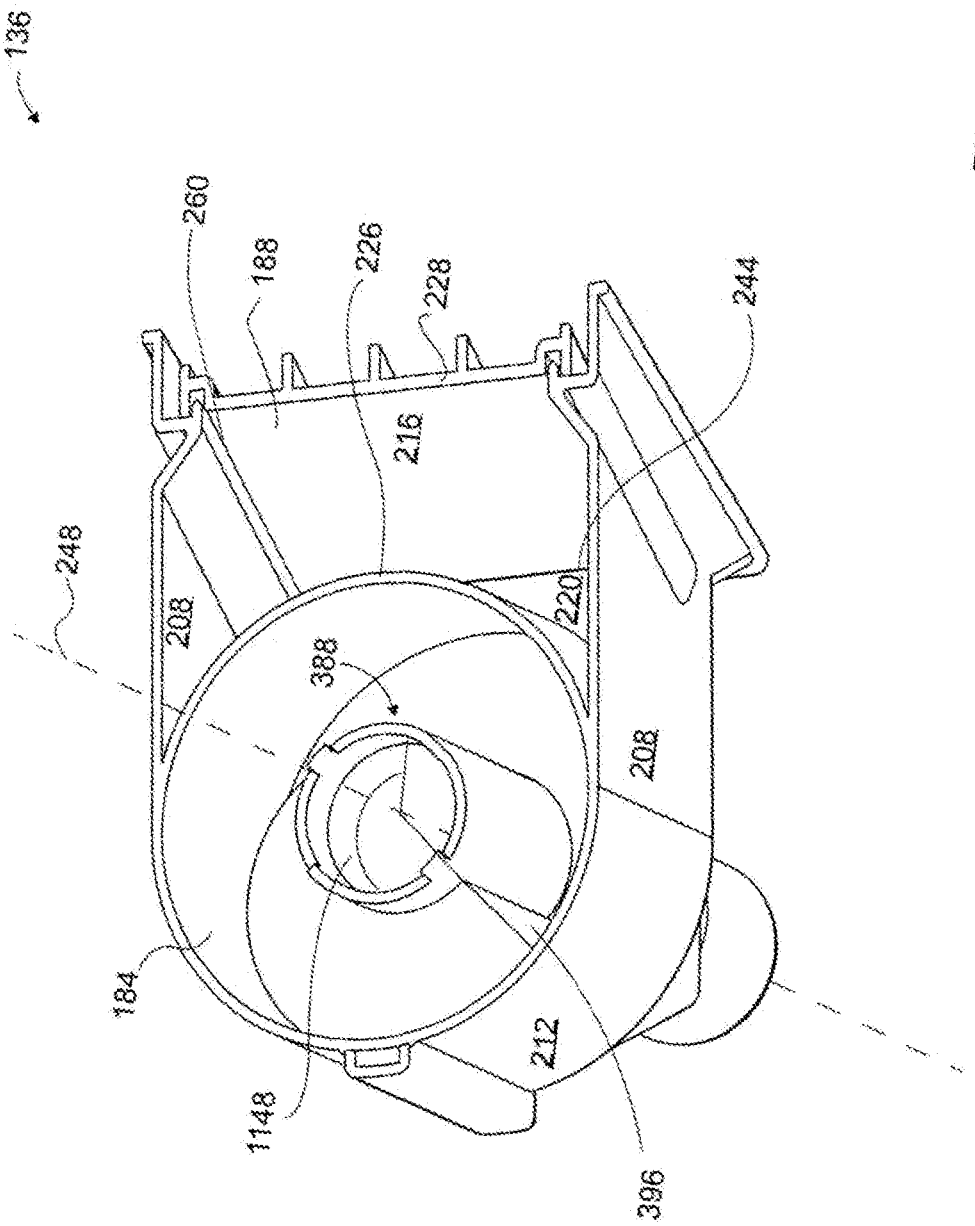


FIG. 23

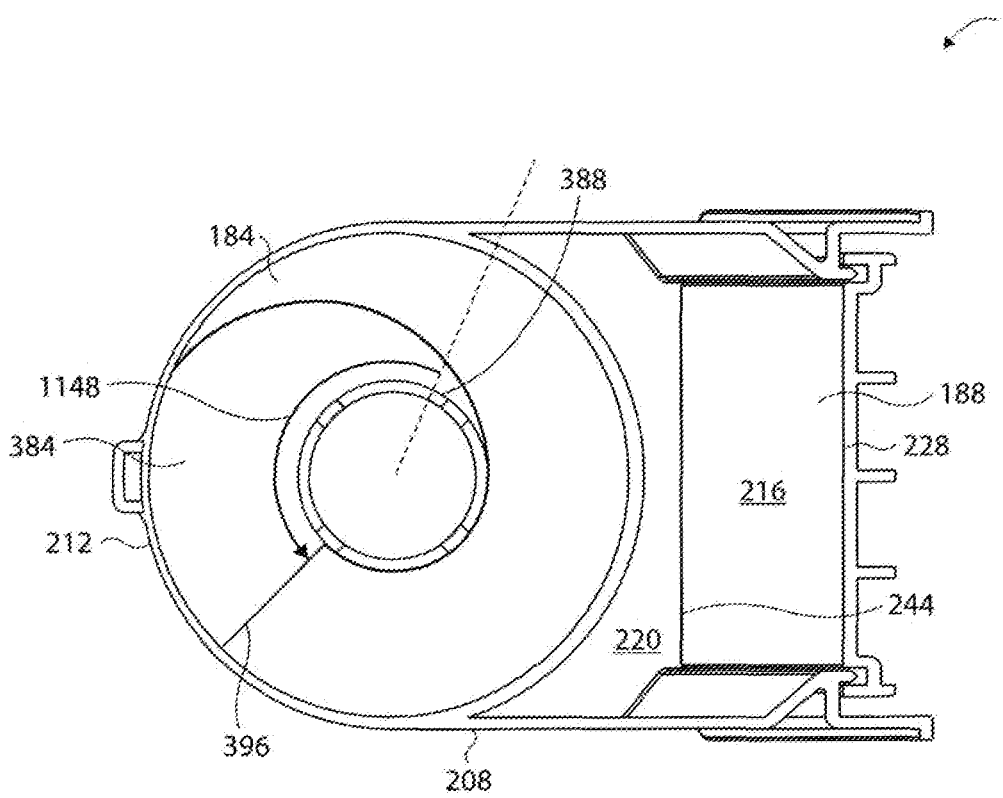


FIG. 23a

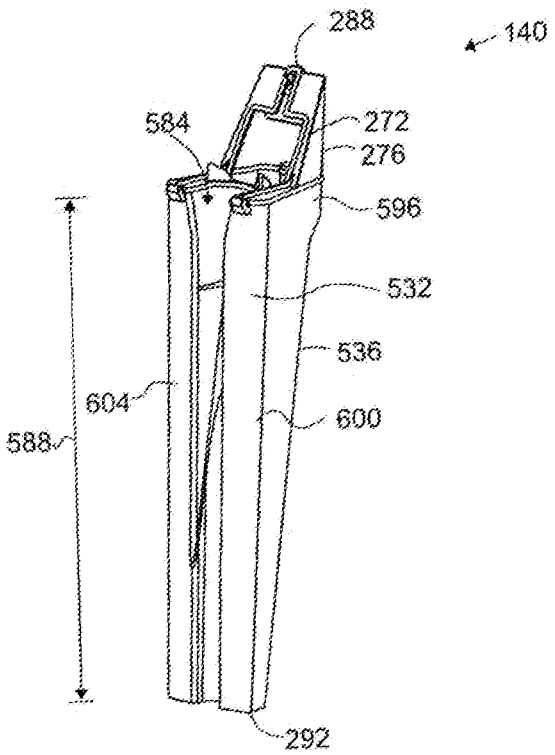


FIG. 24

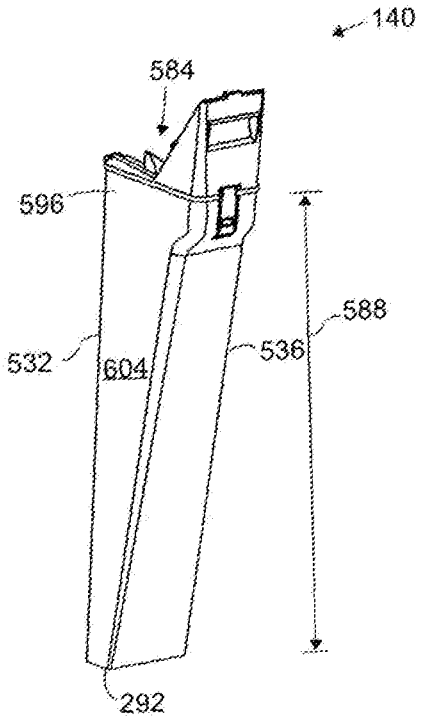


FIG. 45

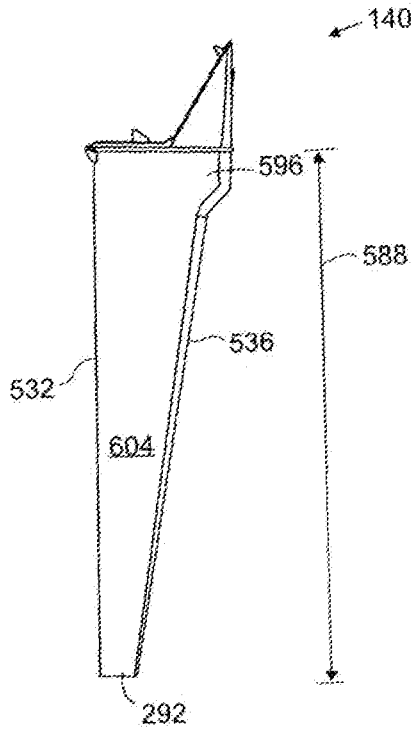


FIG. 46

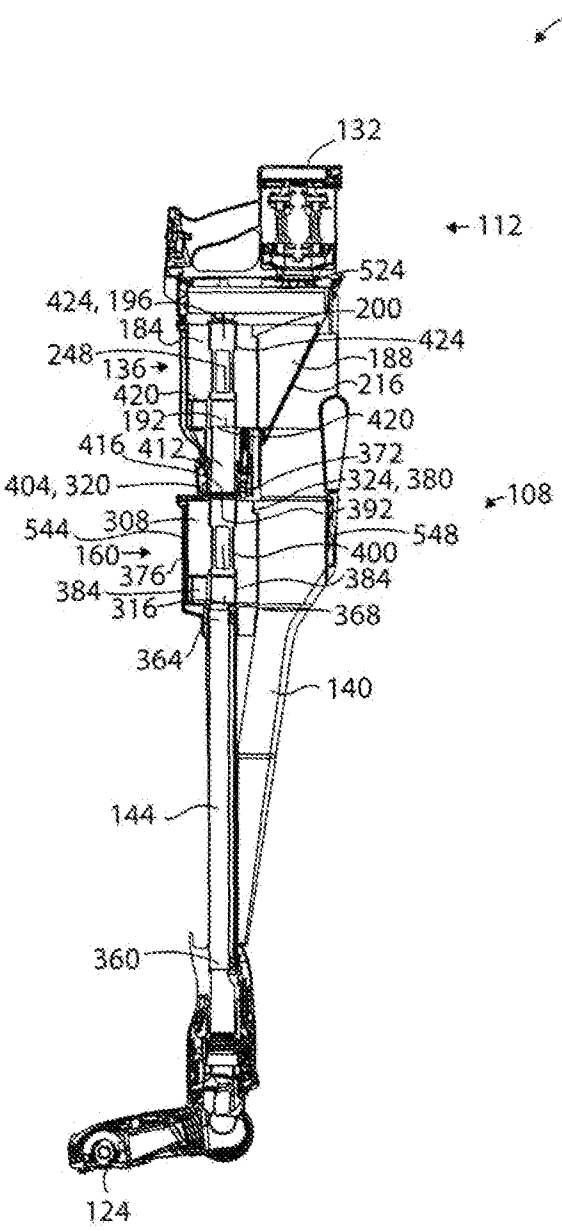

152
132
112
524
424, 196
200
184
424
248
188
136
216
420
192
420
416
412
372
404, 320
324, 380
108
392
544
308
548
160
400
376
384
384
316
368
364
140
144
360
124

FIG. 25

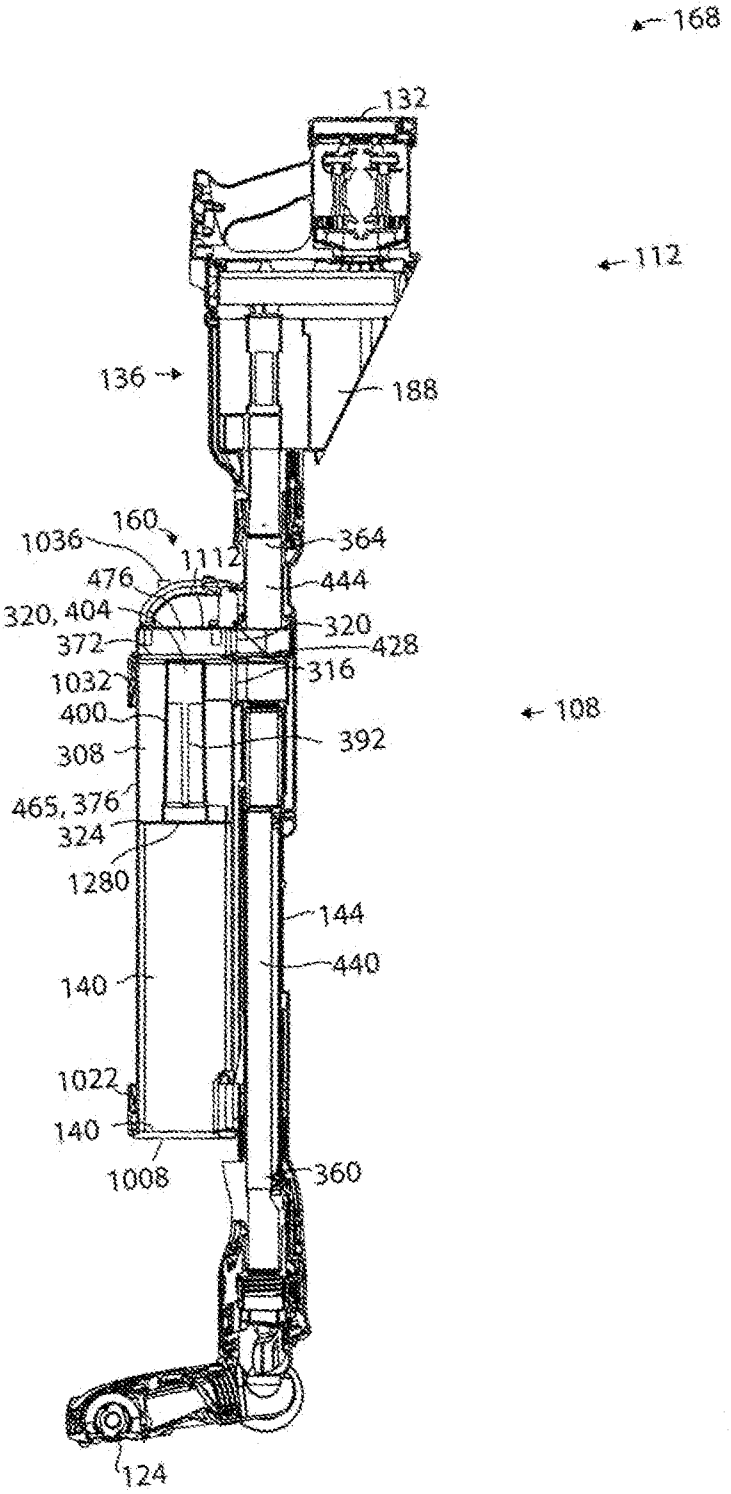

168
132
112
136
188
160
1036
1112
364
476
444
320, 404
320
372
428
1032
316
400
108
392
308
465, 376
324
1280
144
140
440
1022
140
1008
360
124

FIG. 26

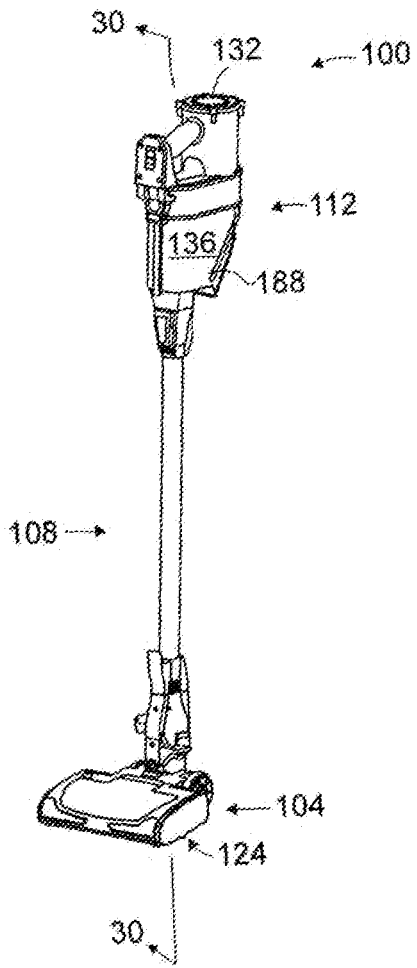


FIG. 27

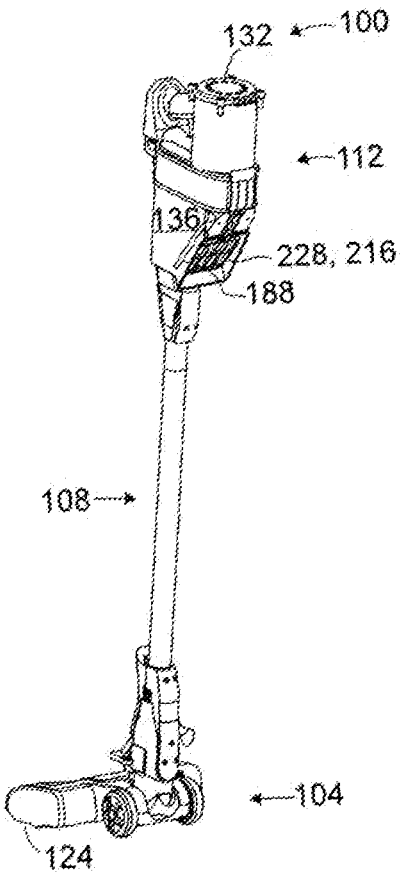


FIG. 28

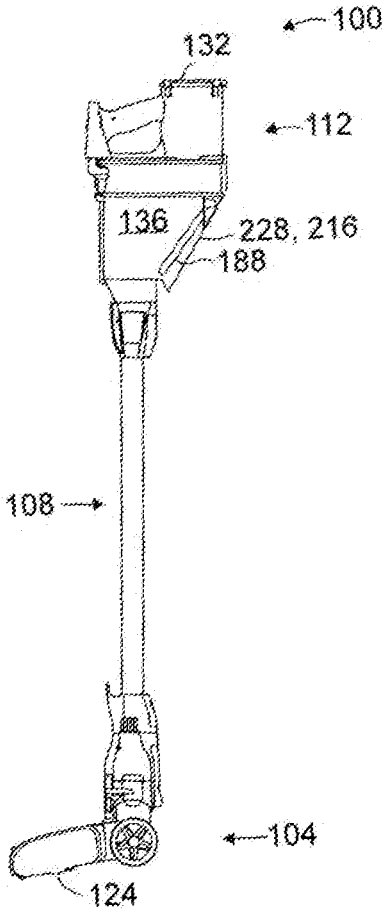


FIG. 29

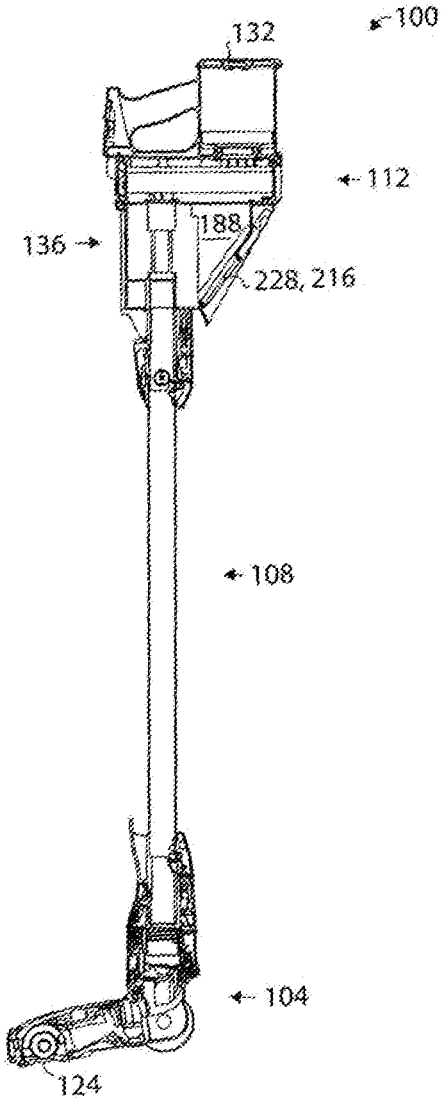


FIG. 30

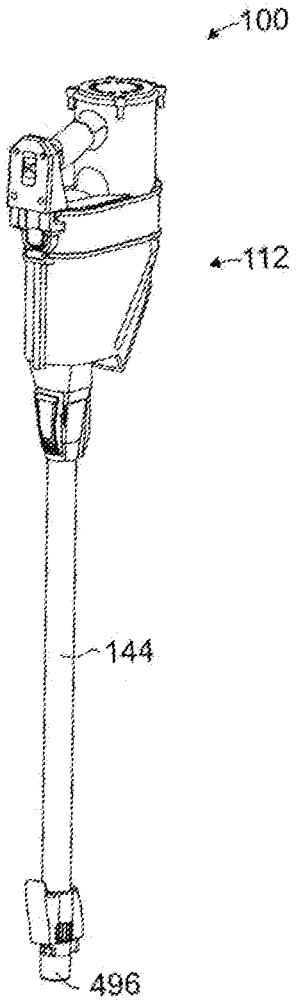


FIG. 31

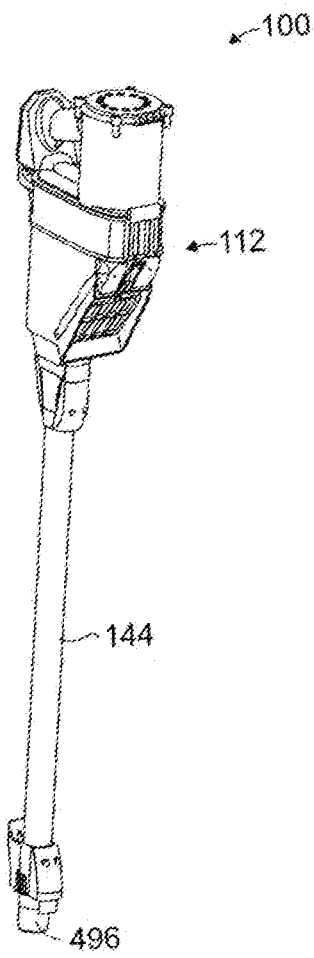


FIG. 32

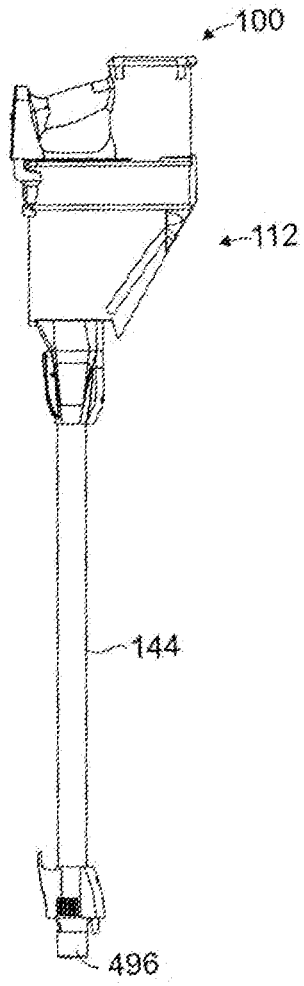


FIG. 33

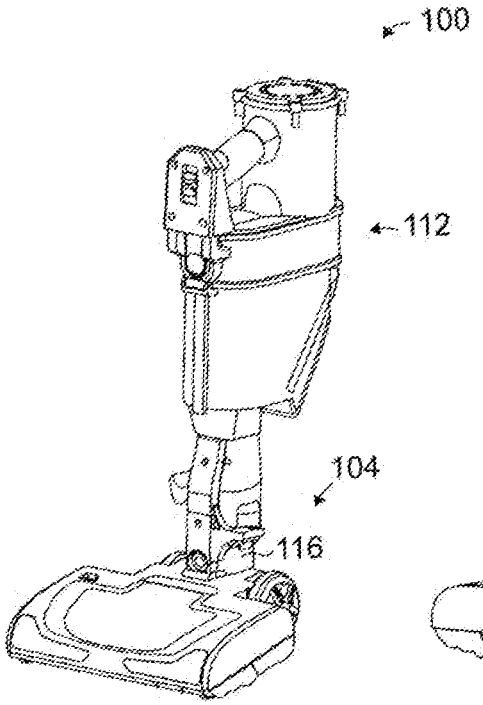


FIG. 34

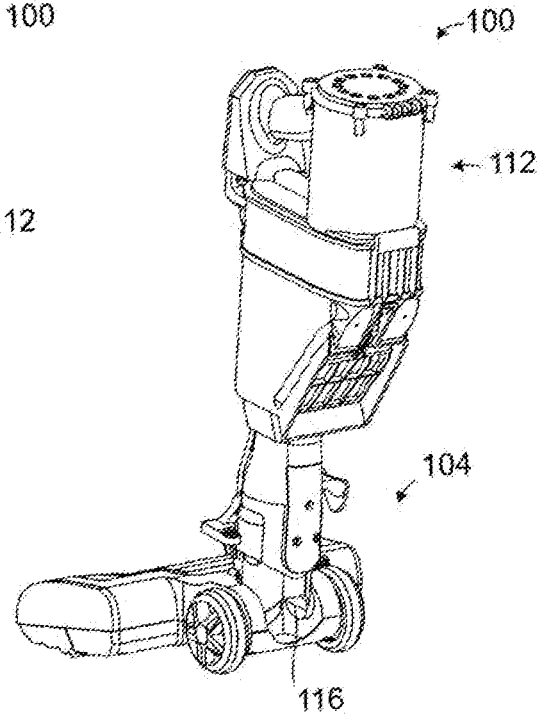


FIG. 35

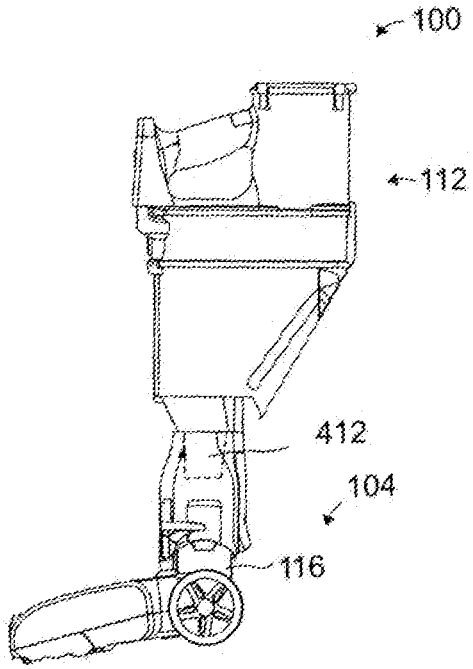


FIG. 36

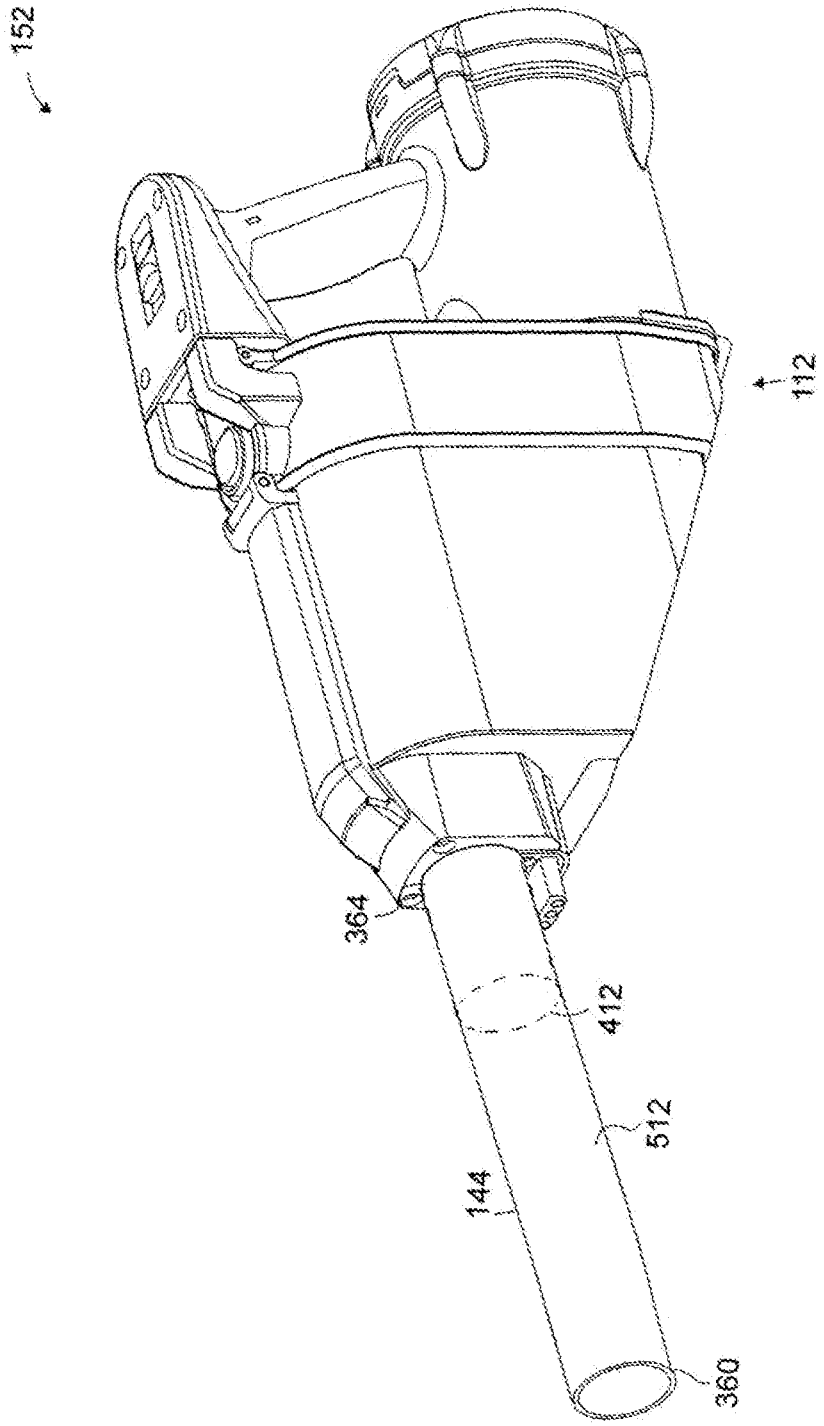


FIG. 36a

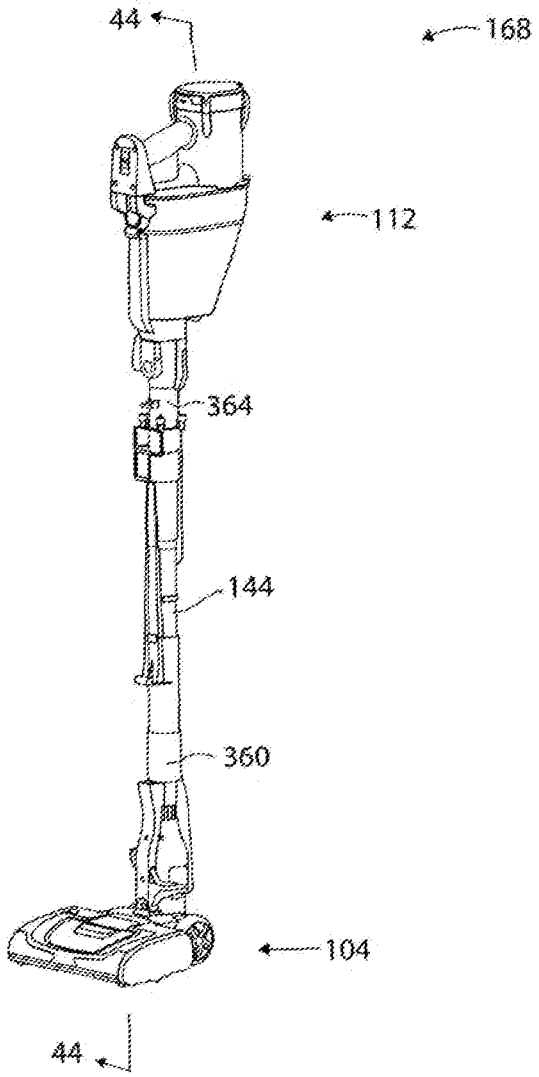


FIG. 37

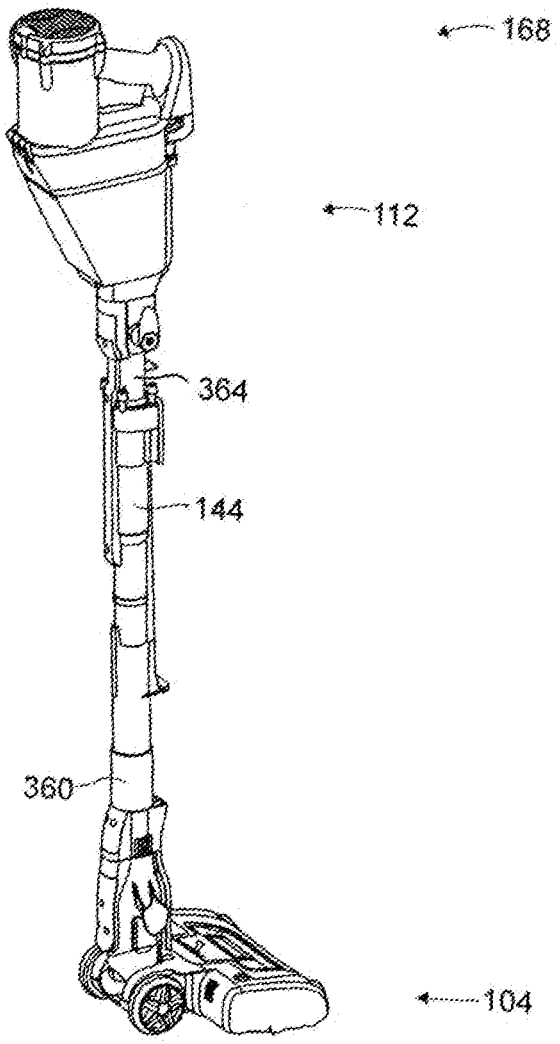


FIG. 38

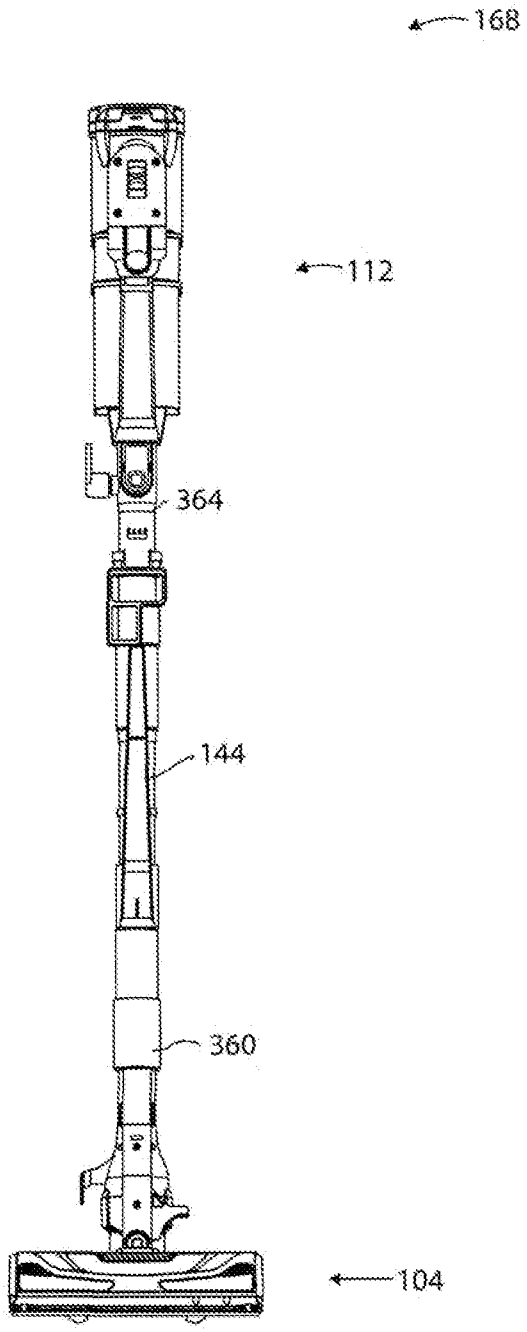


FIG. 39

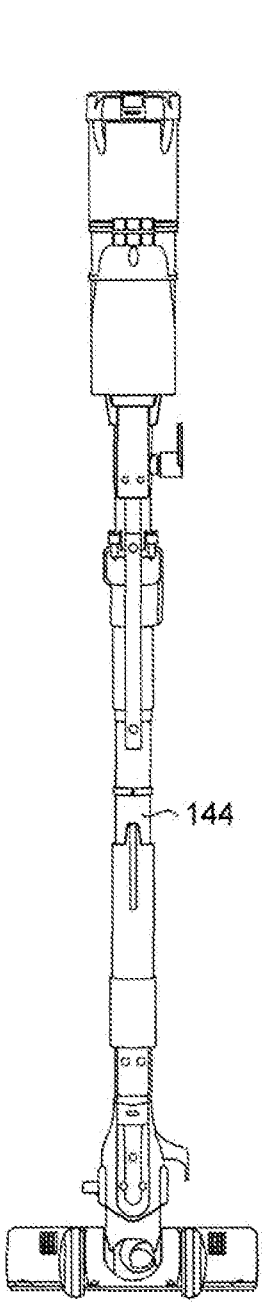


FIG. 40

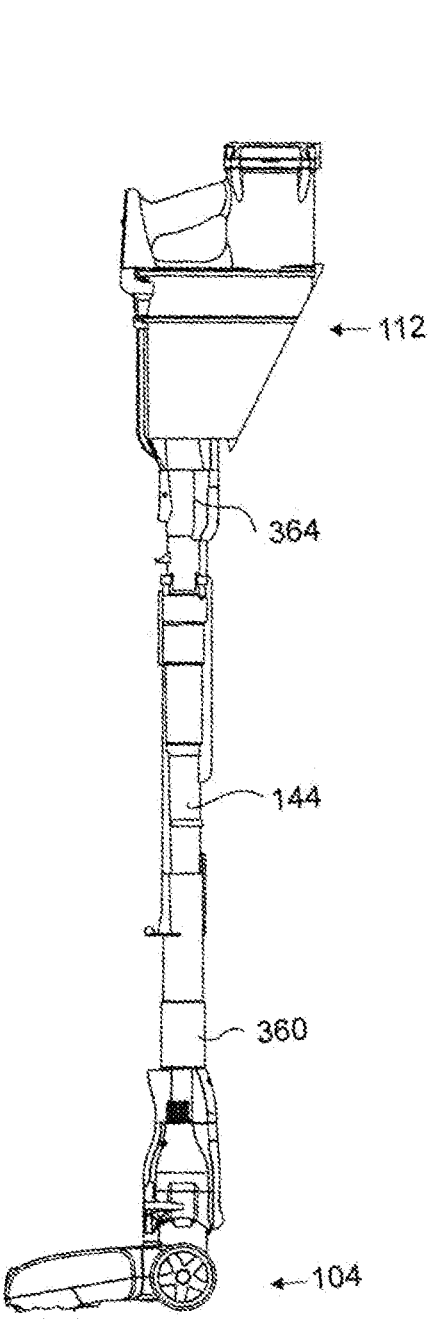


FIG. 41

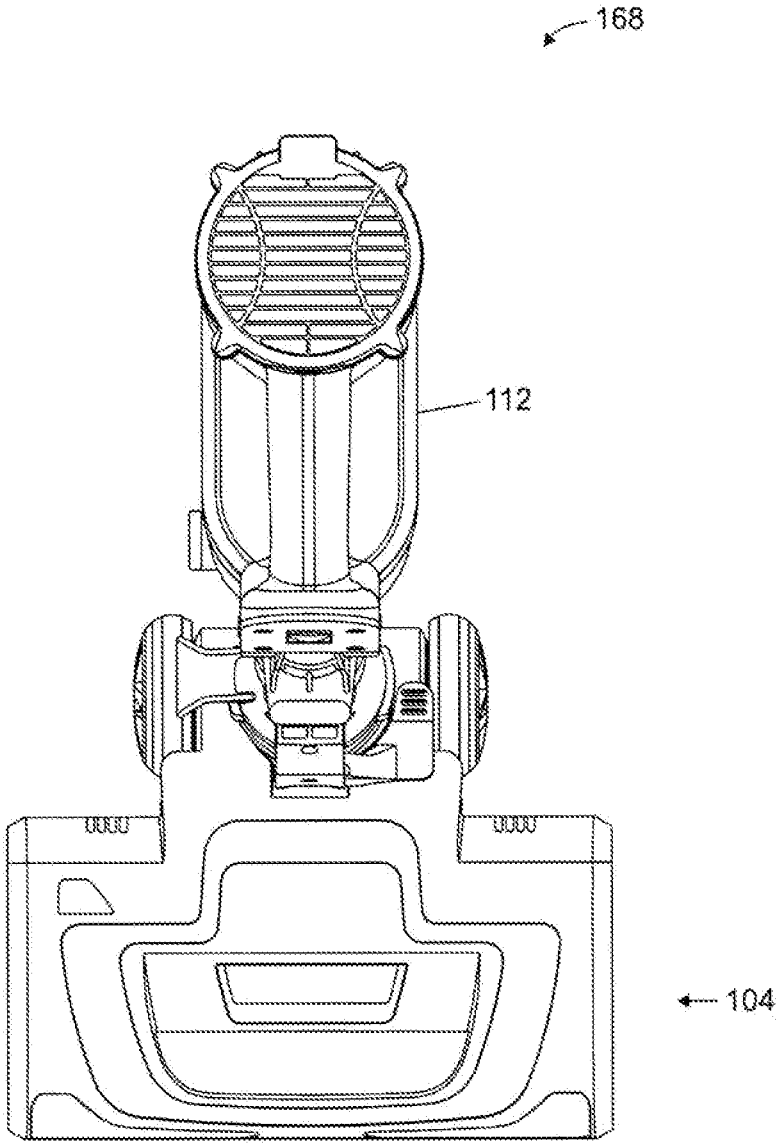


FIG. 42

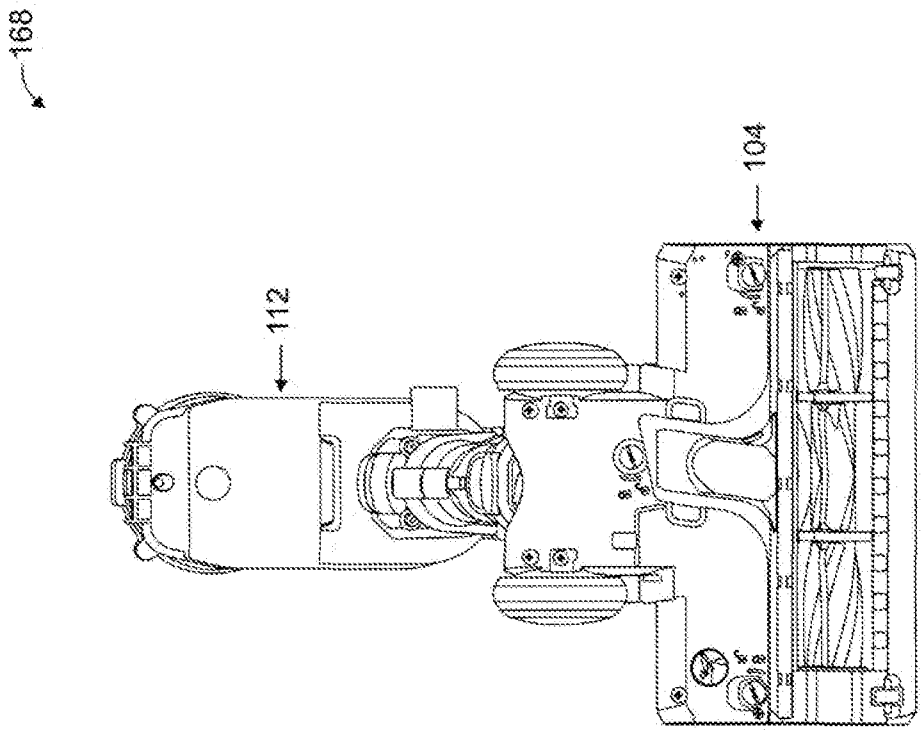


FIG. 43

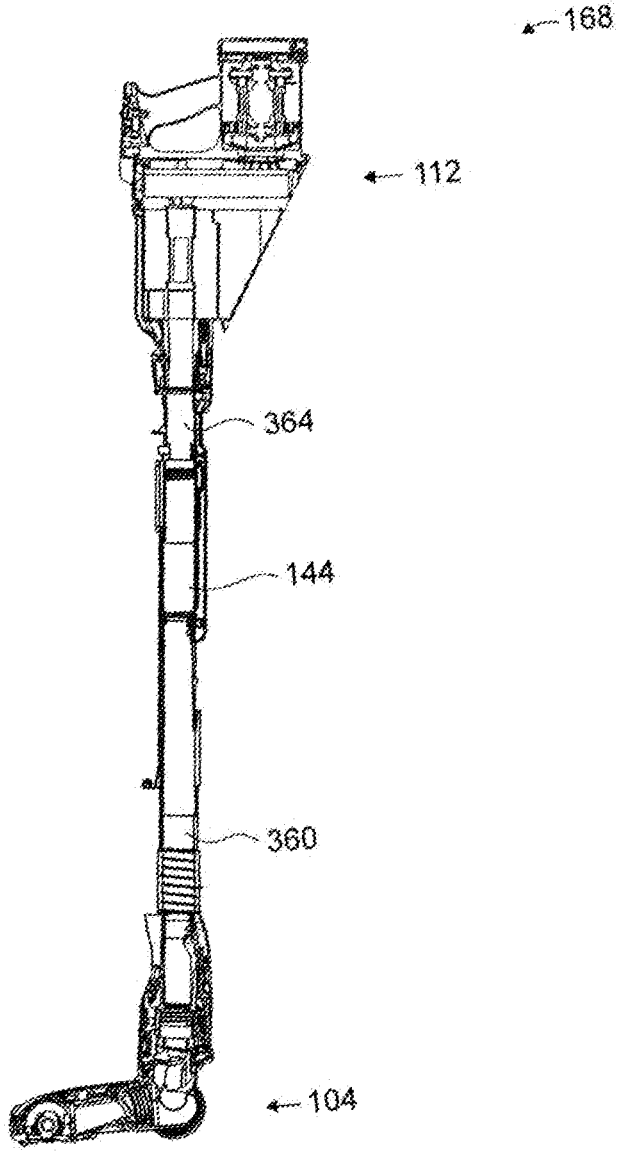


FIG. 44

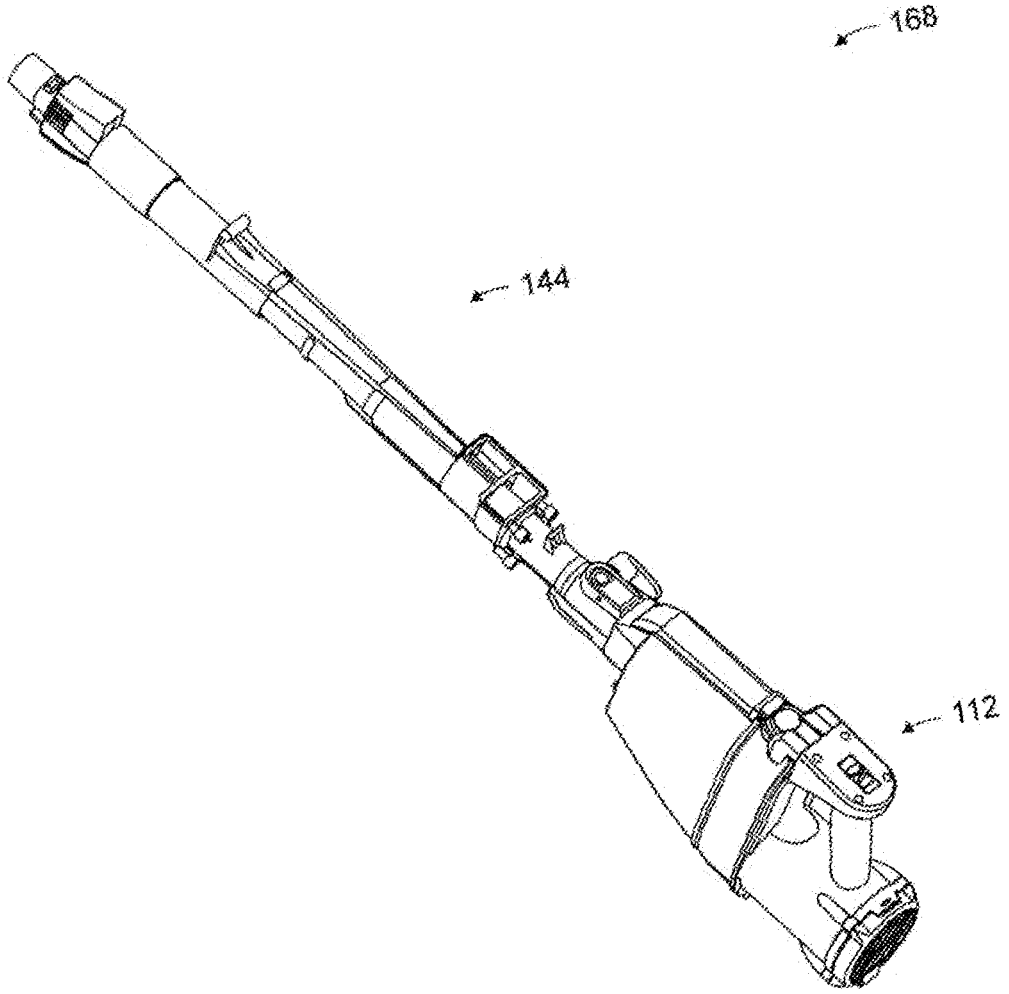


FIG. 44a

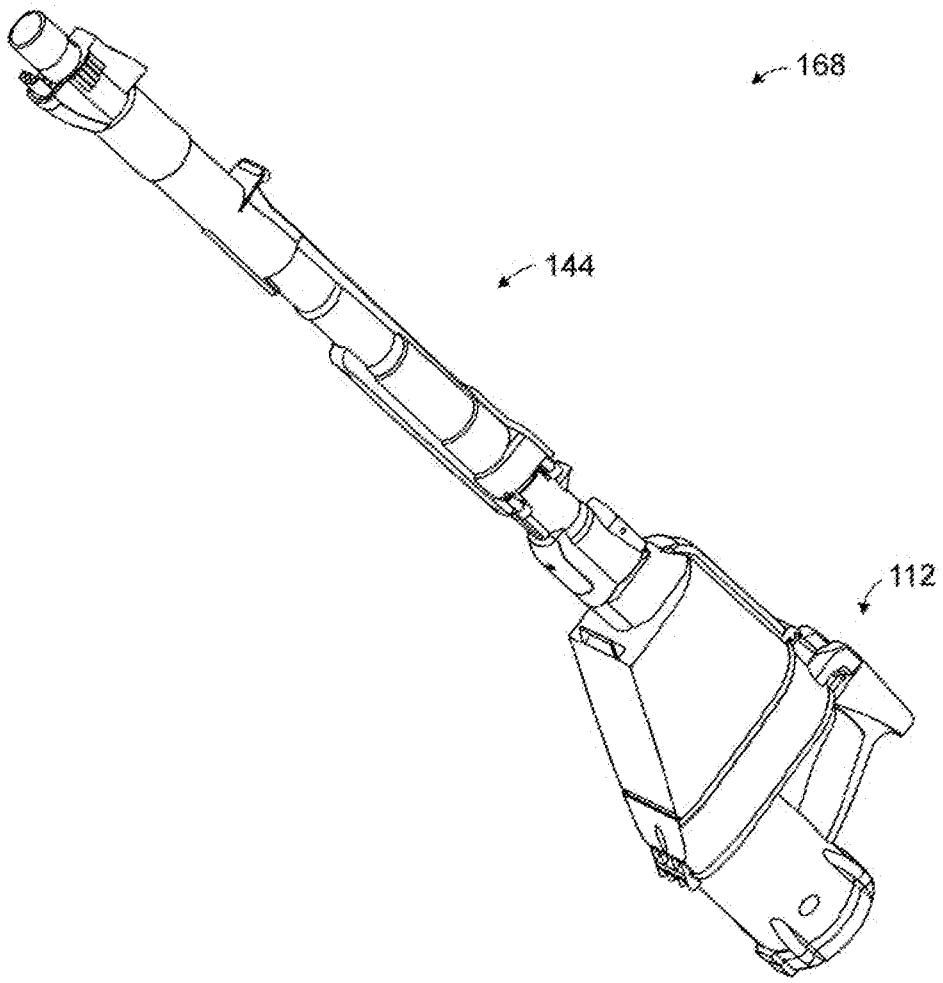


FIG. 44b

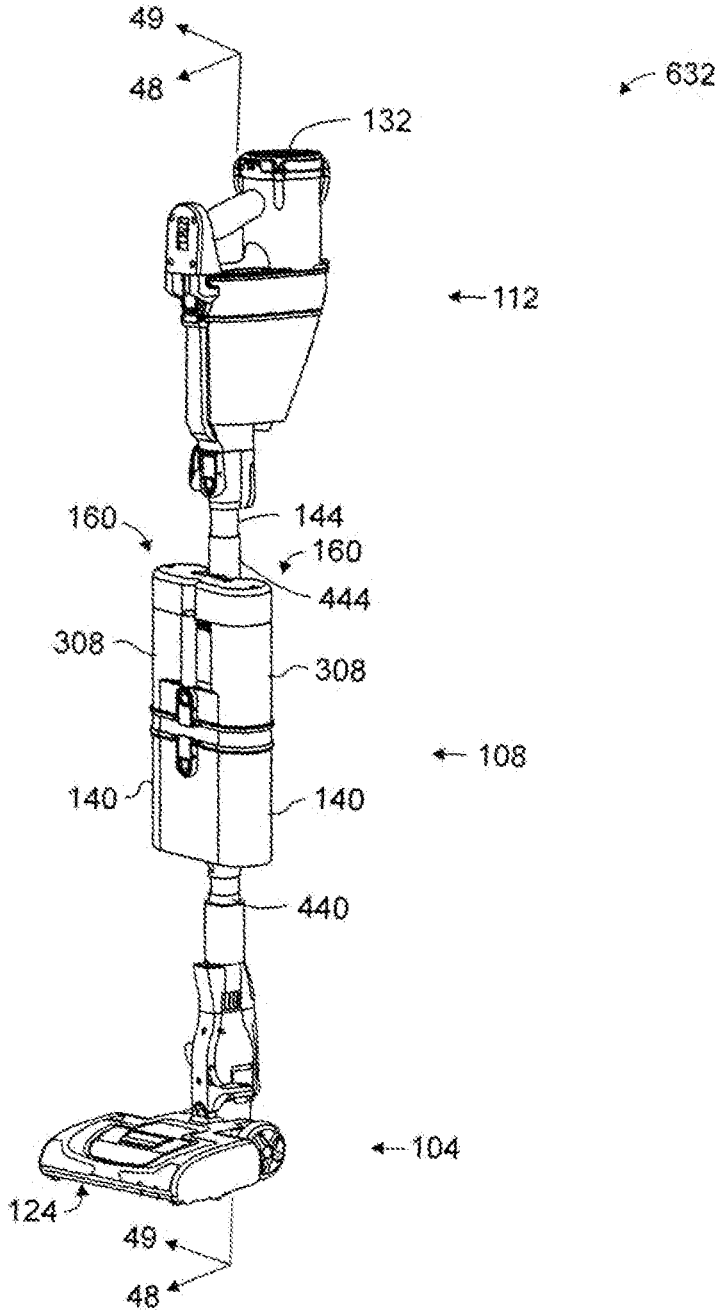

49
48
632
132
112
160
144
160
444
308
308
108
140
140
440
104
124
49
48

FIG. 47

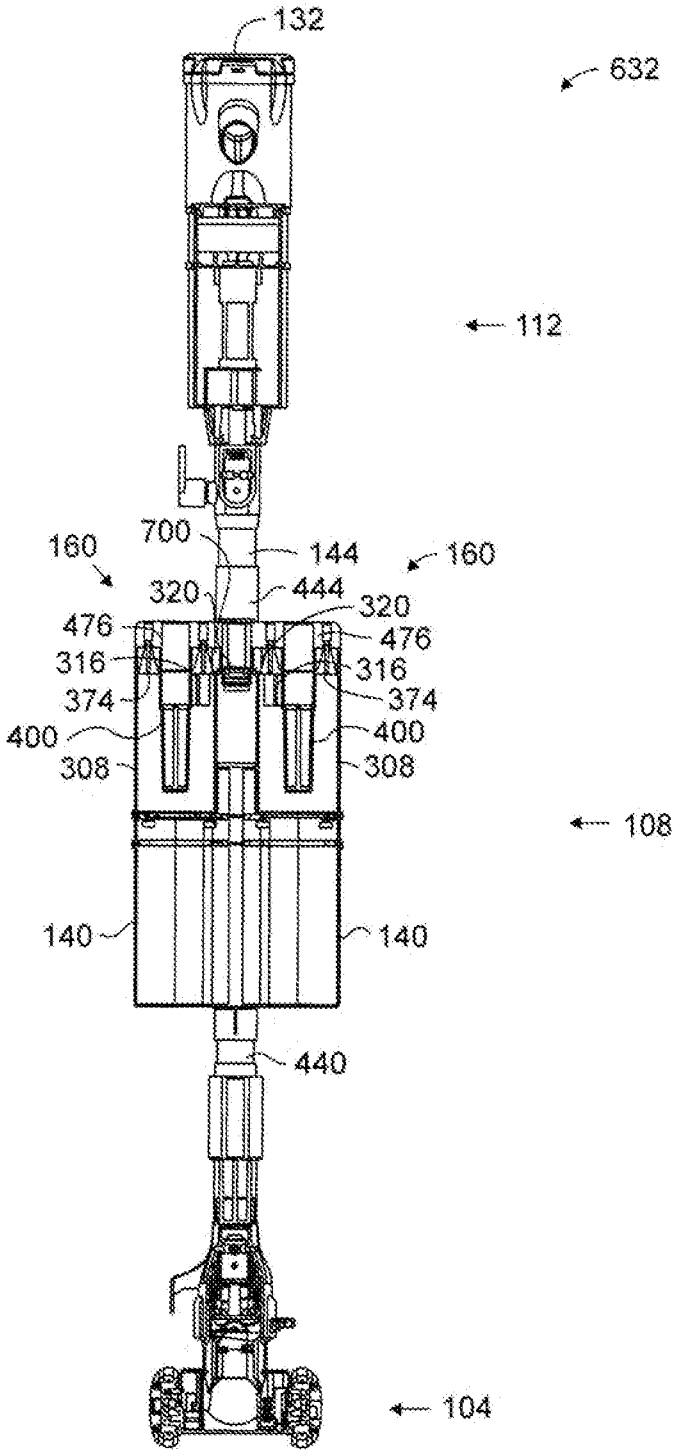

132
632
112
700
144
160
160
320
444
320
476
476
316
316
374
374
400
400
308
308
108
140
140
440
104

FIG. 48

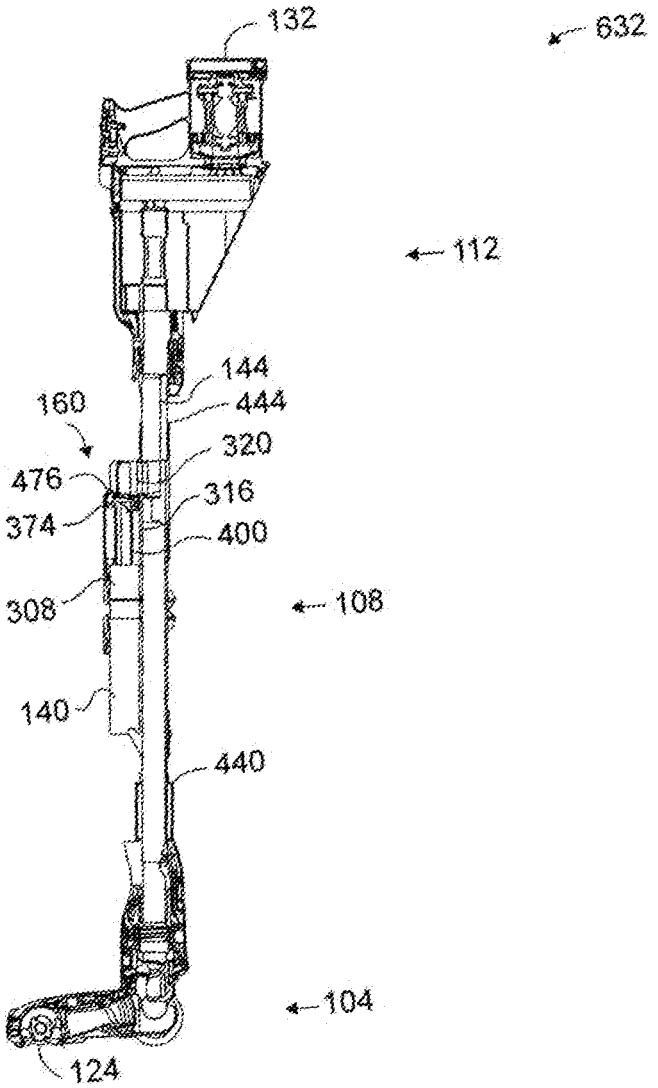

132
632
112
144
160
444
320
476
316
374
400
308
108
140
440
104
124

FIG. 49

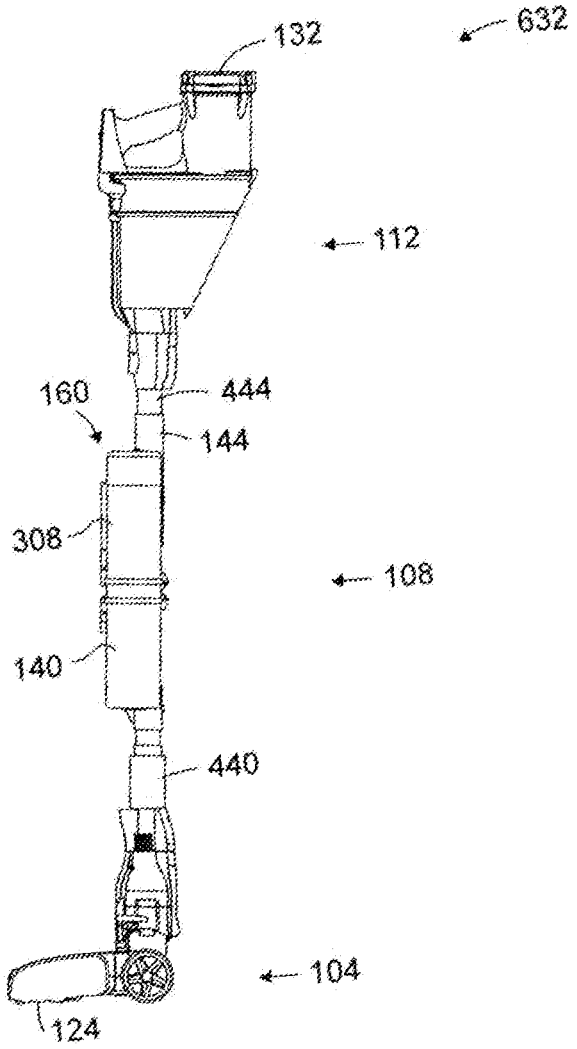


FIG. 50

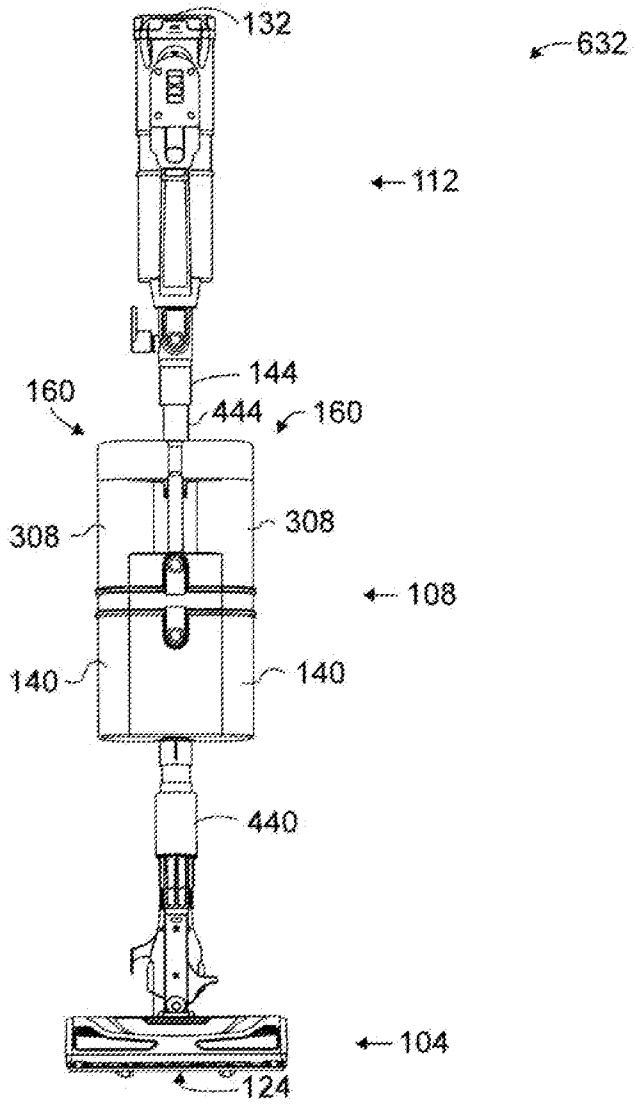


FIG. 51

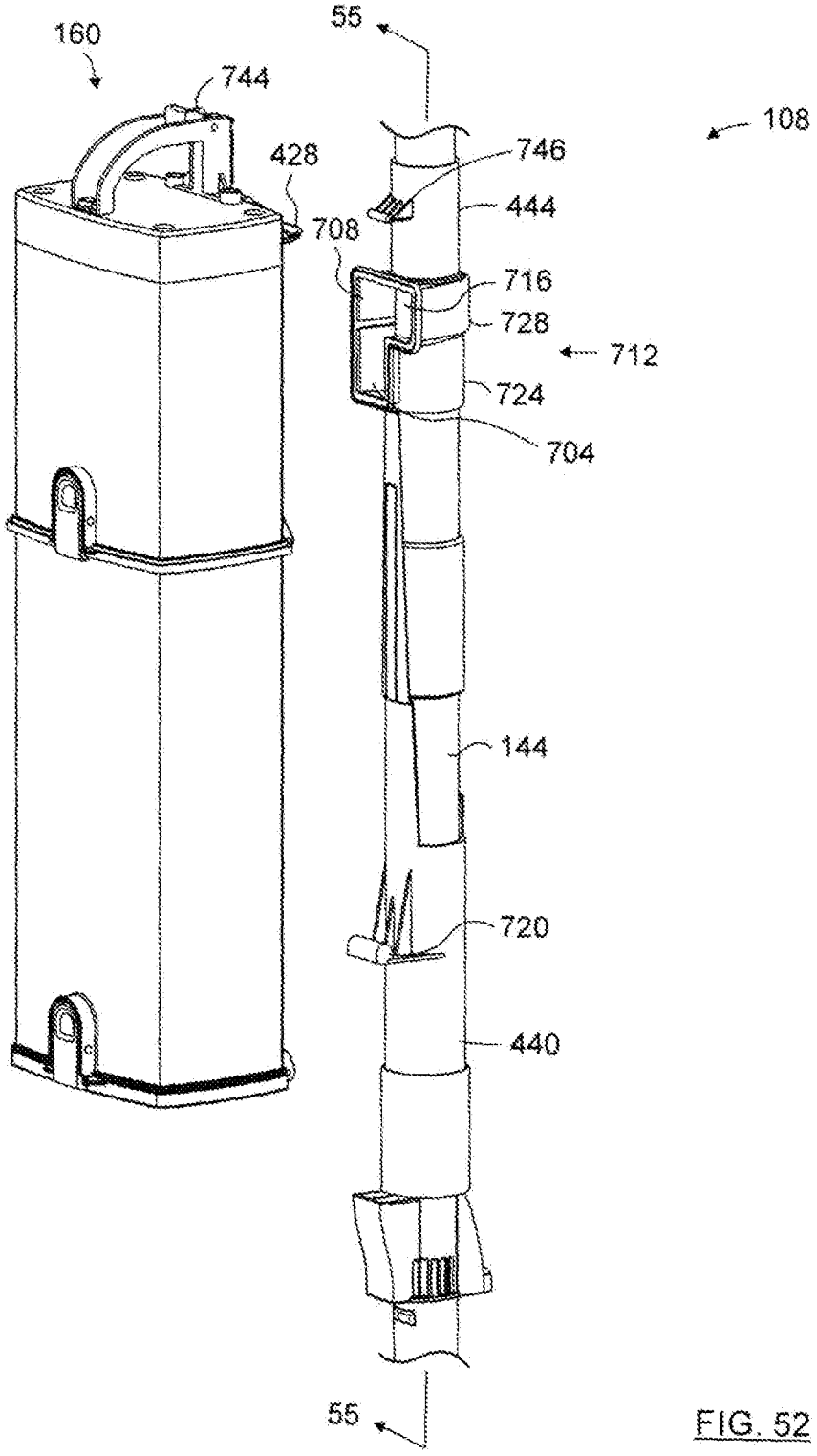


FIG. 52

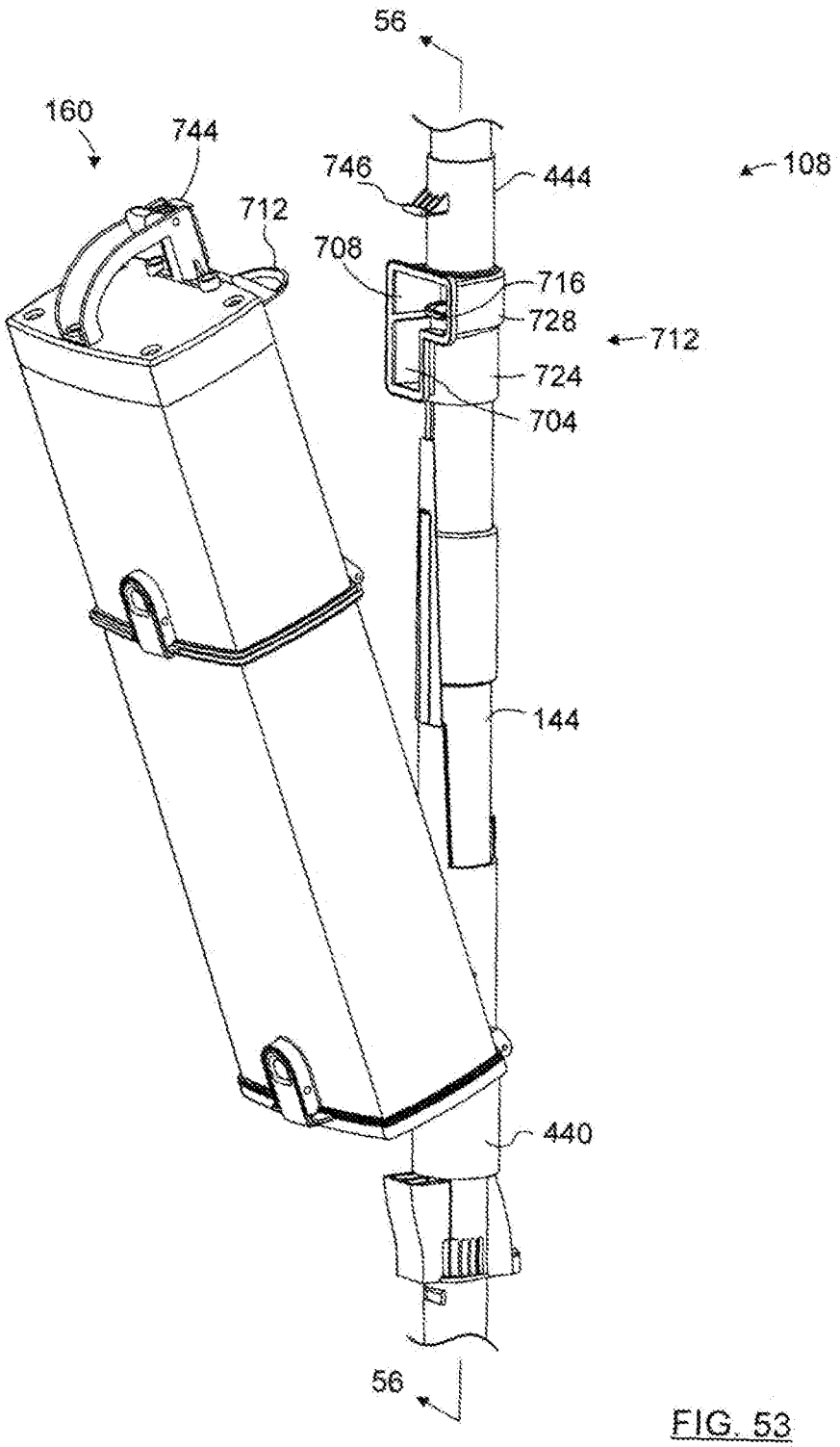


FIG. 53

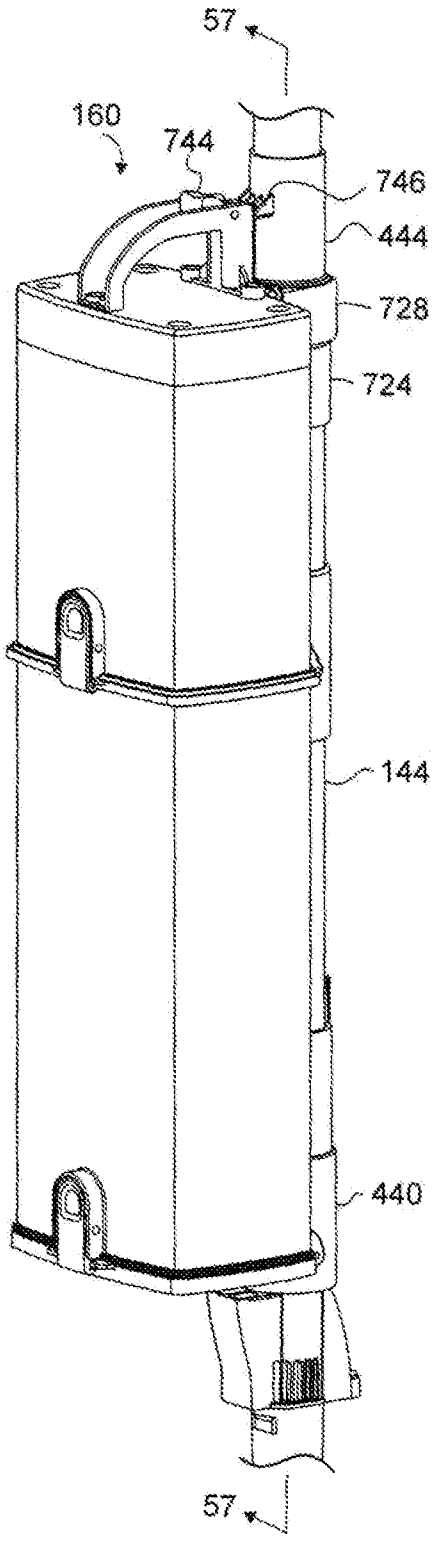


FIG. 54

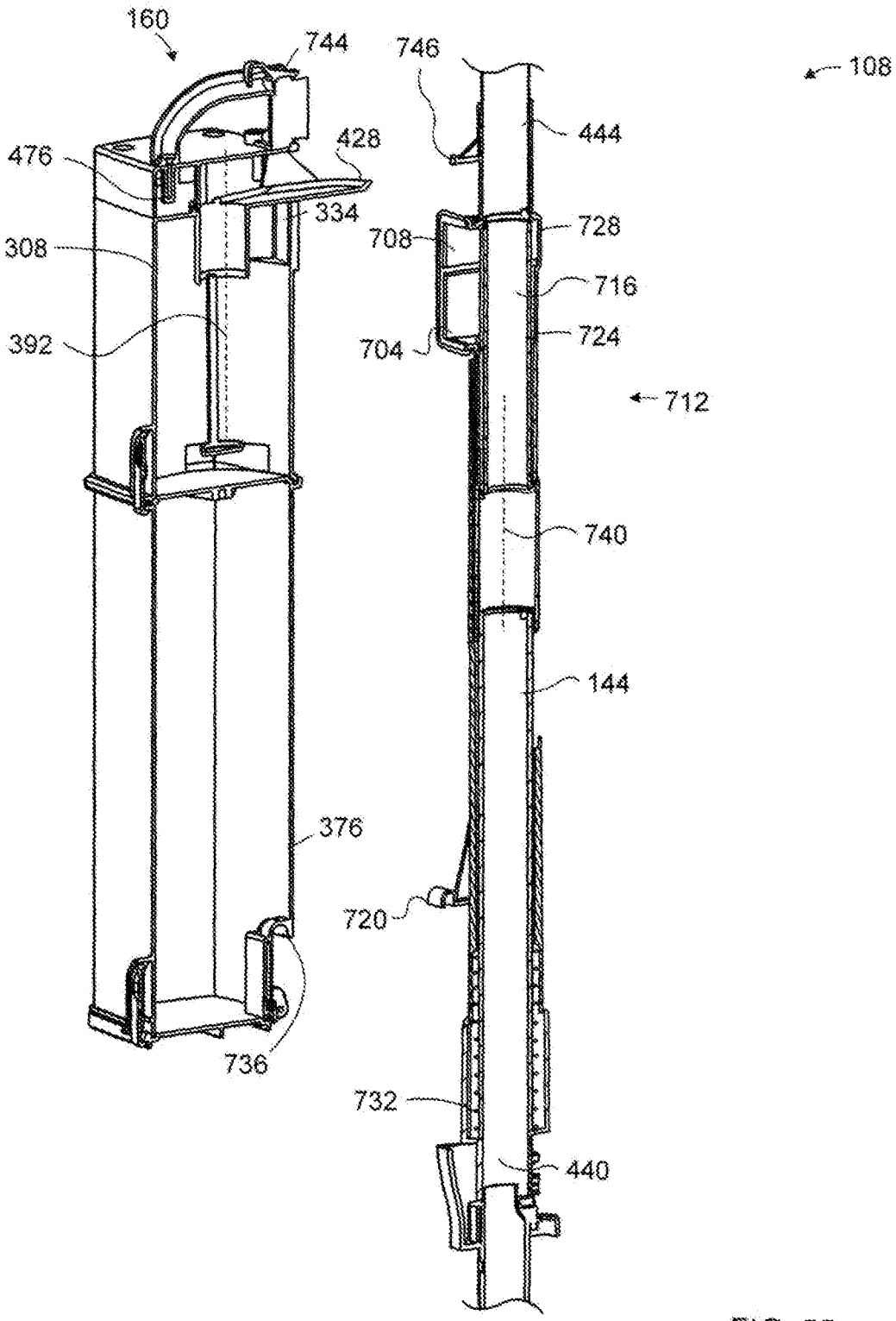

160
744
746
108
476
428
444
334
708
728
308
716
392
724
704
712
740
144
376
720
736
732
440

FIG. 55

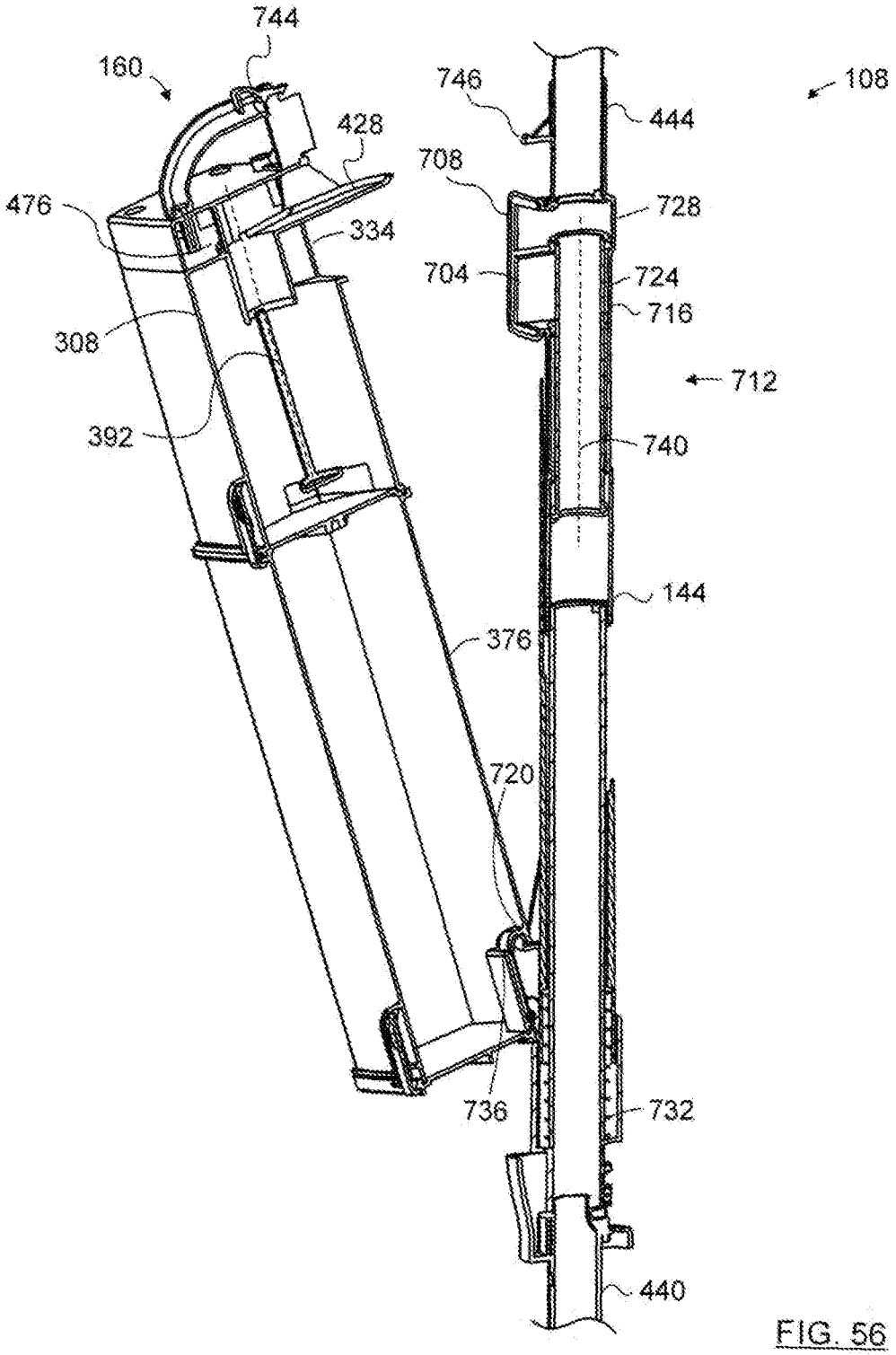

744
160
746
108
428
444
708
476
728
334
704
724
716
308
712
392
740
144
376
720
736
732
440

FIG. 56

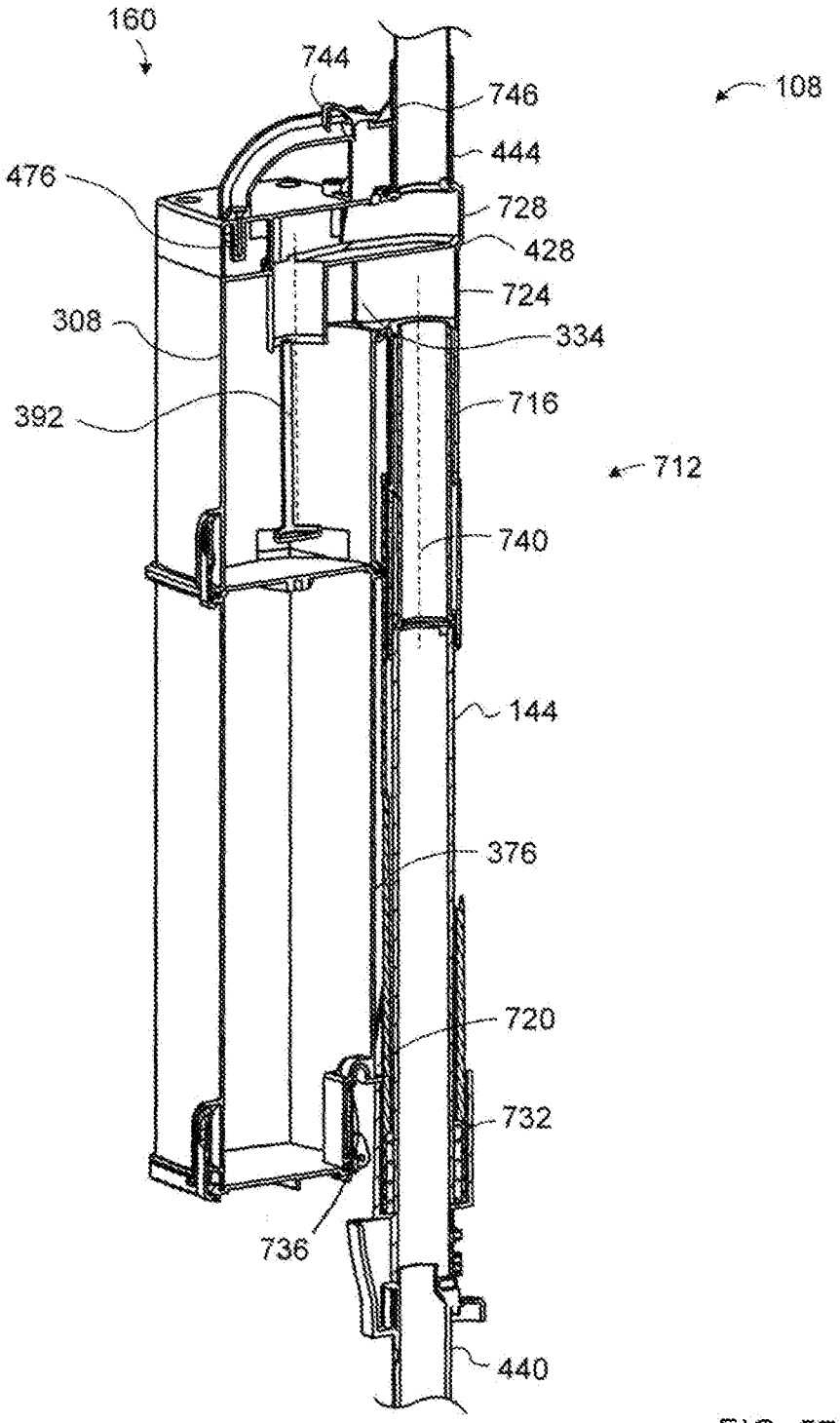

160
744
746
108
444
476
728
428
724
308
334
392
716
712
740
144
376
720
732
736
440

FIG. 57

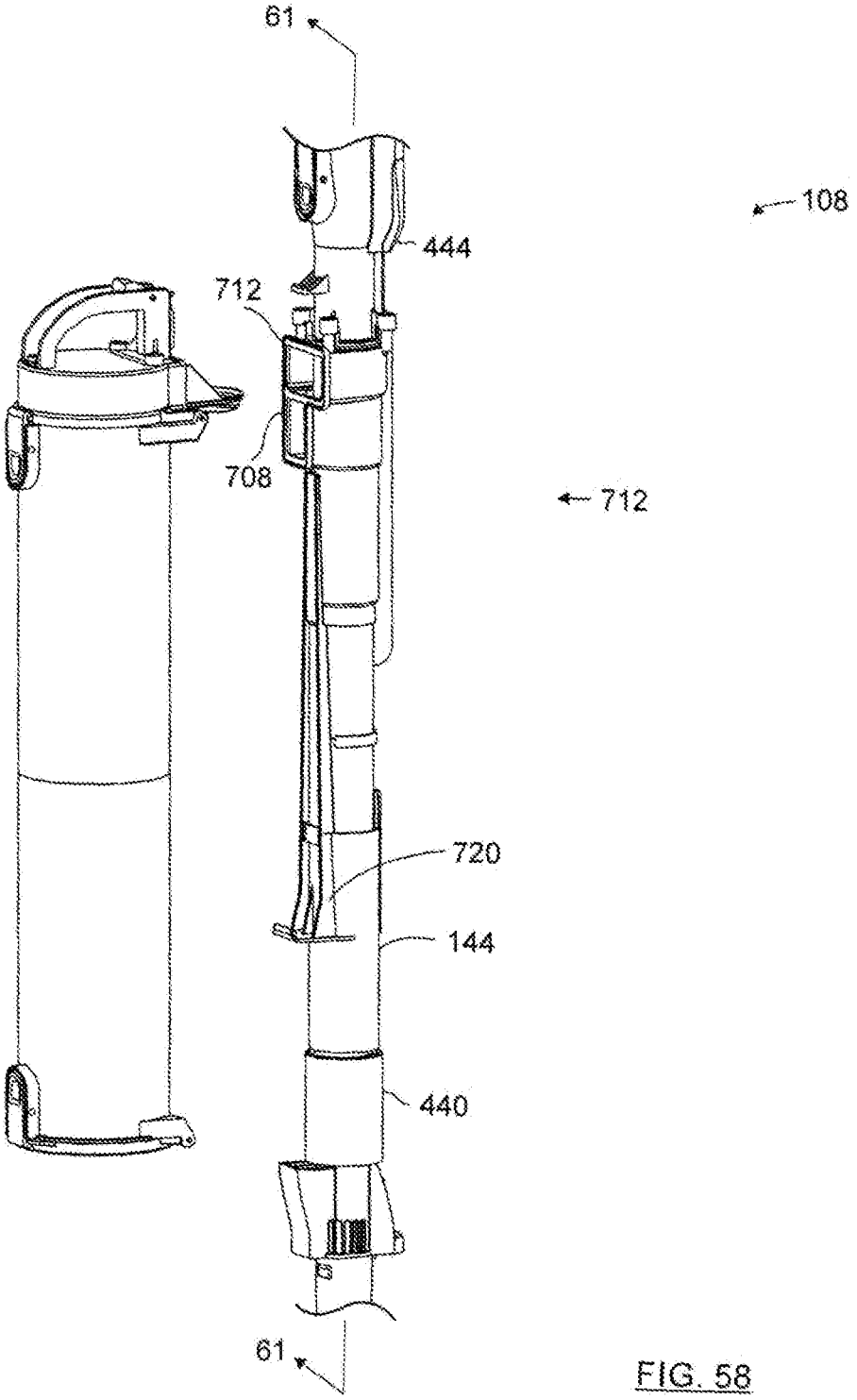


FIG. 58

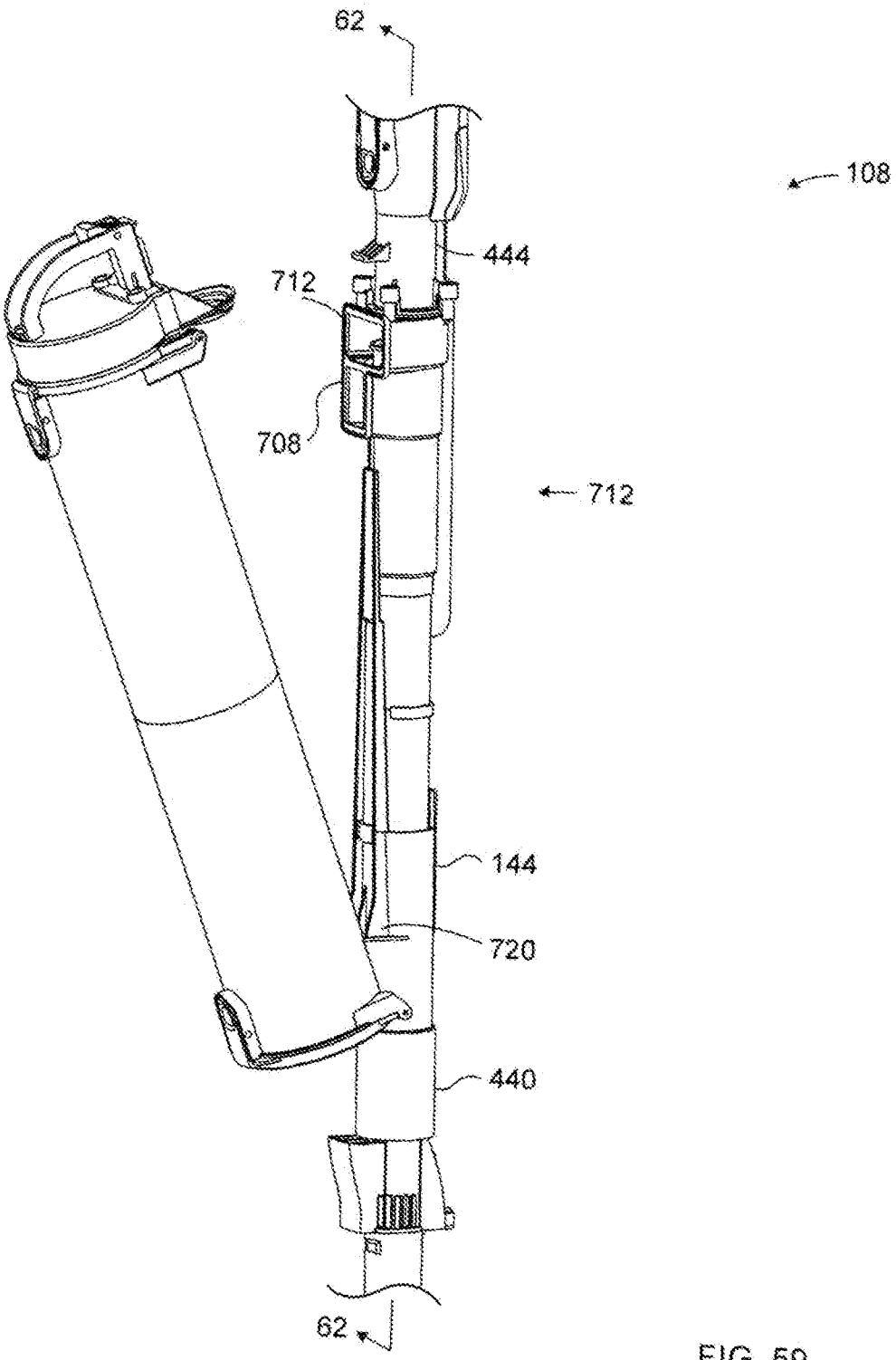


FIG. 59

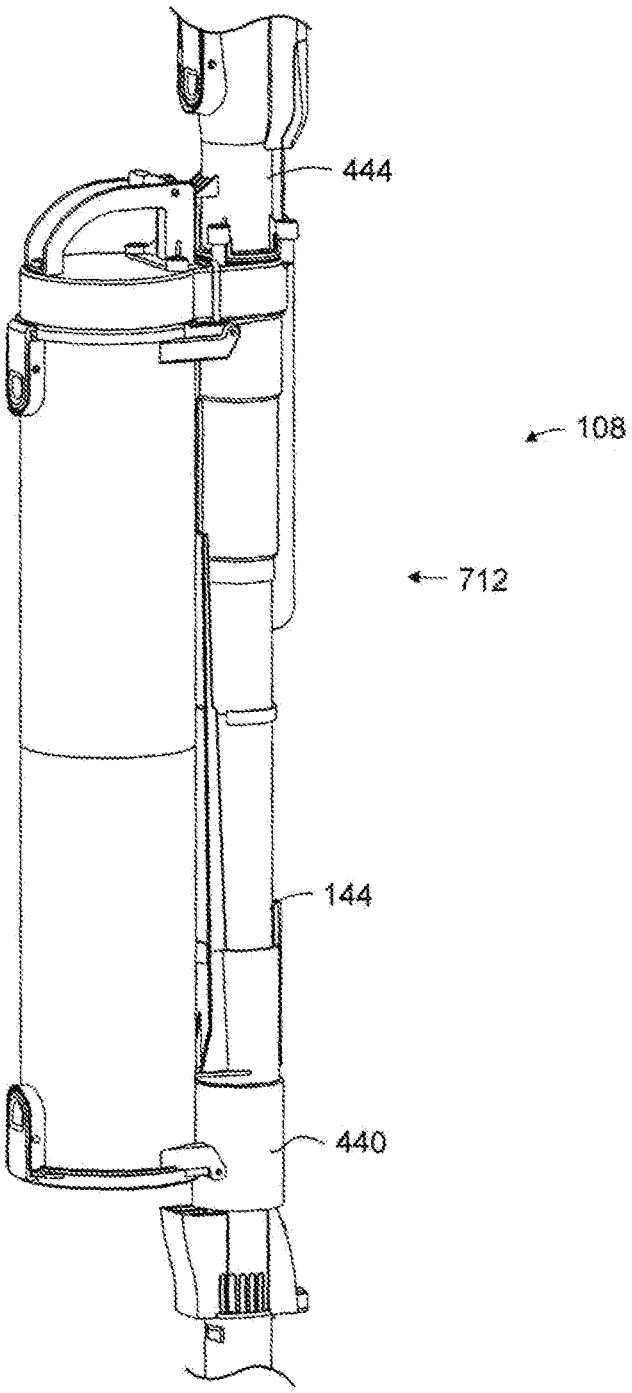


FIG. 60

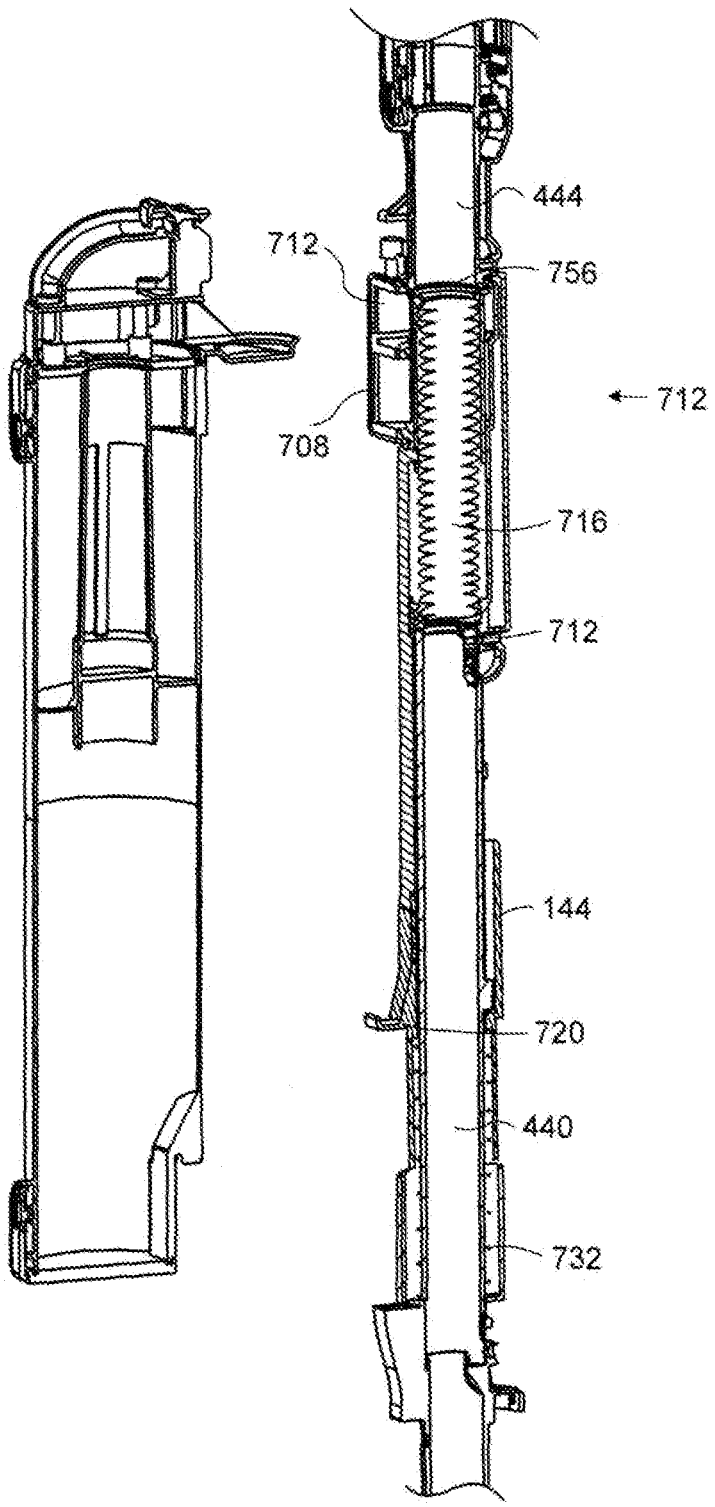


FIG. 61

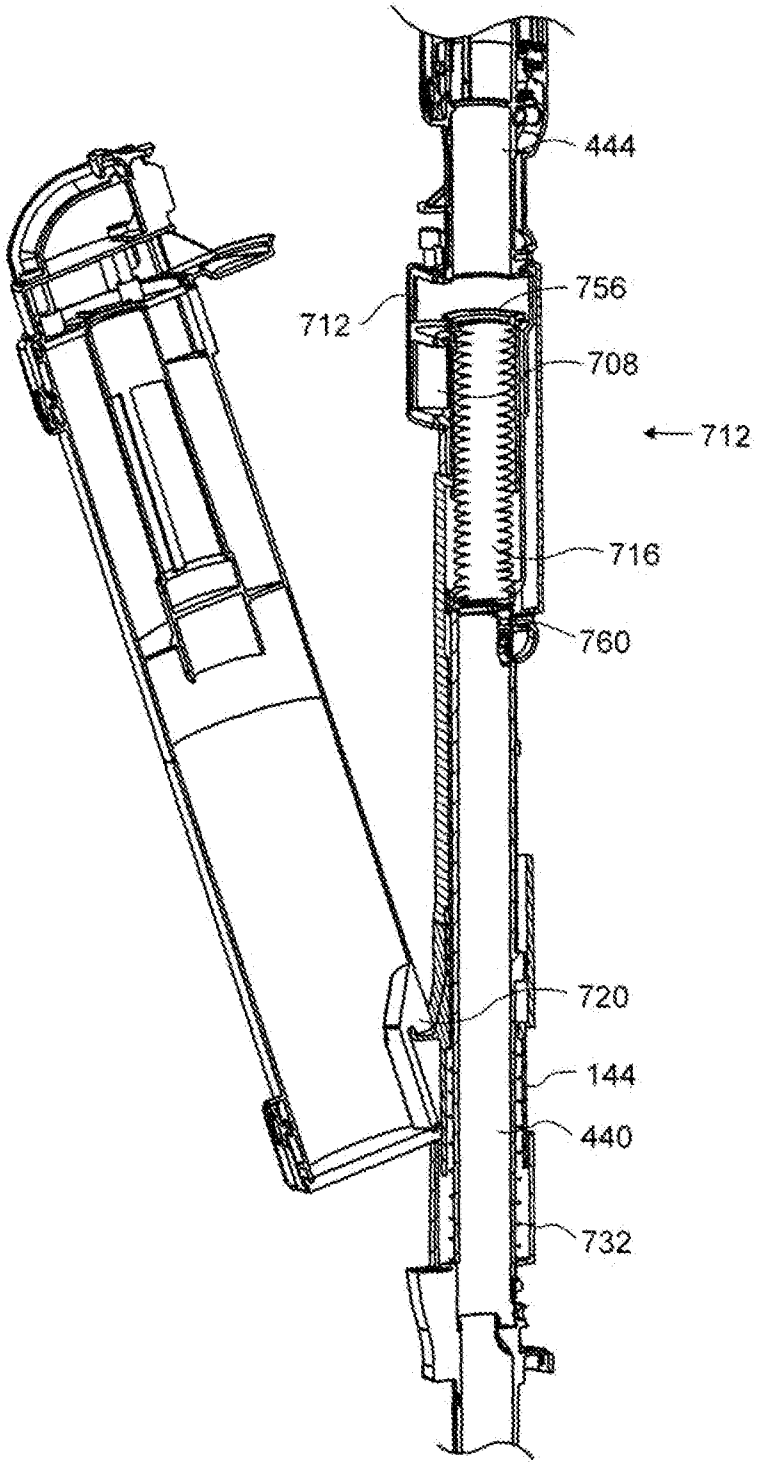


FIG. 62

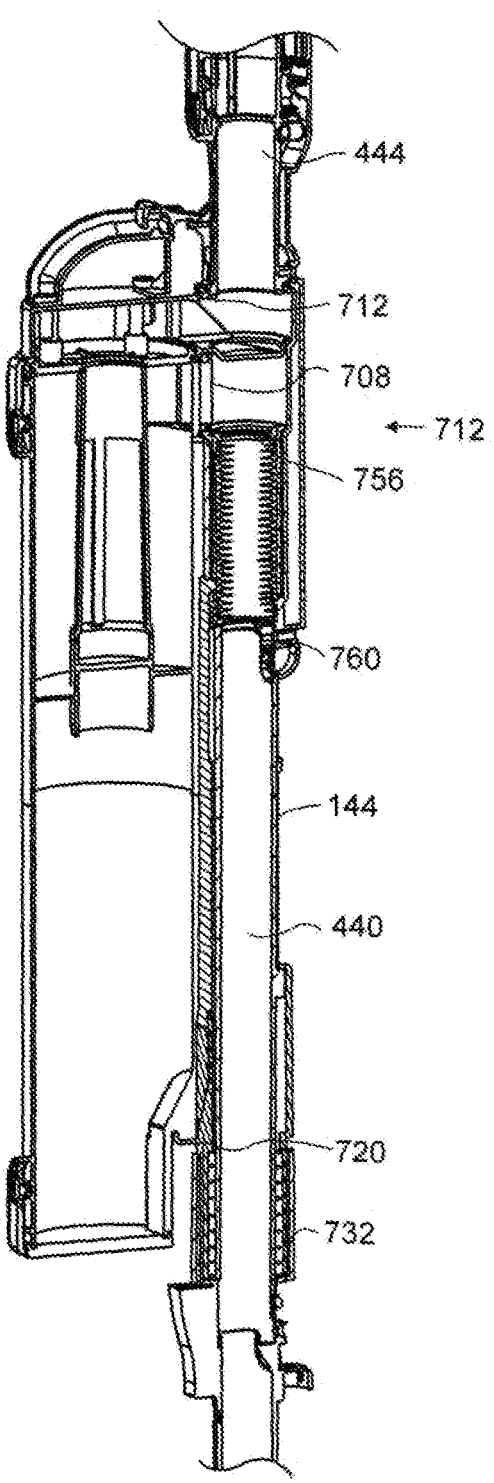


FIG. 63

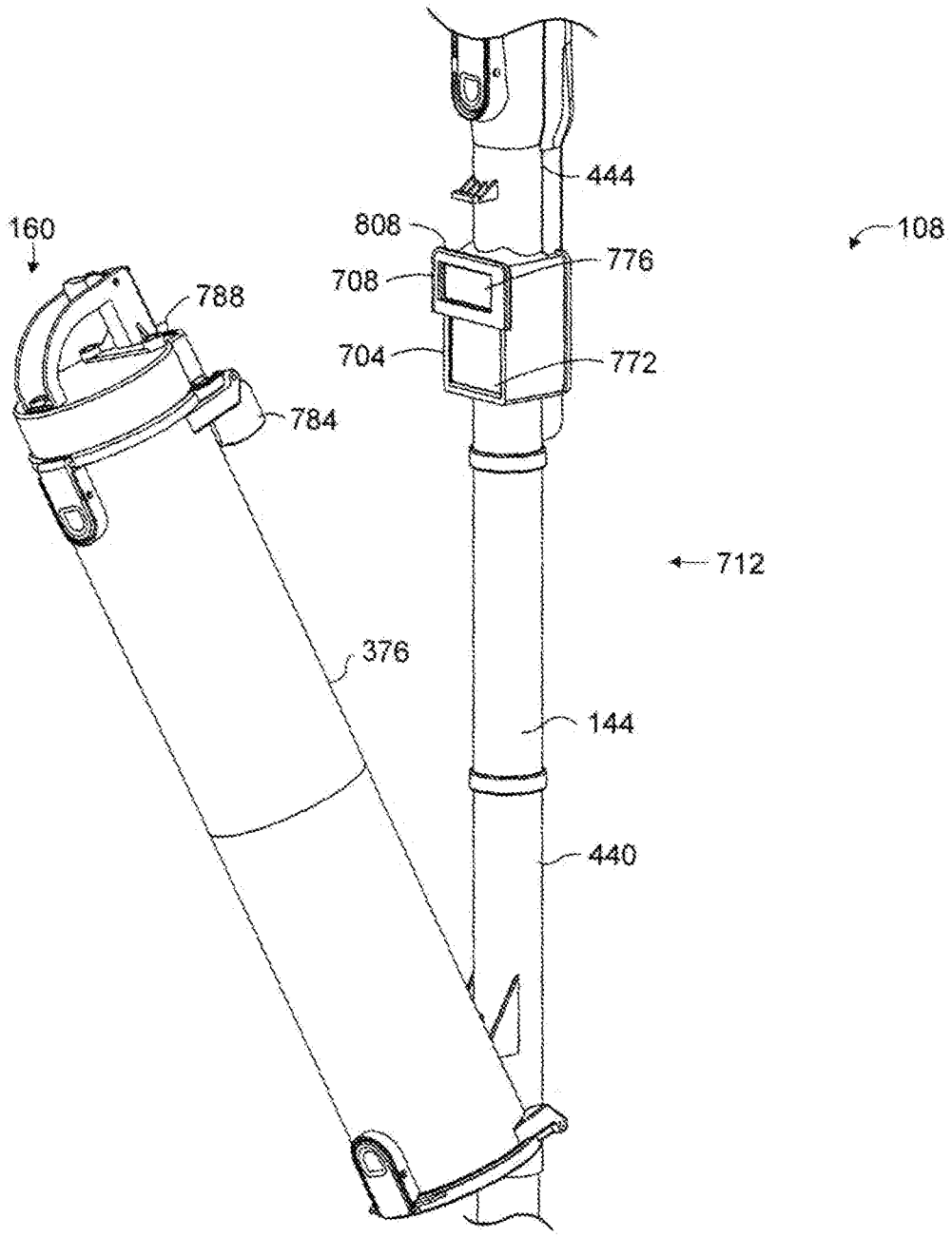


FIG. 64

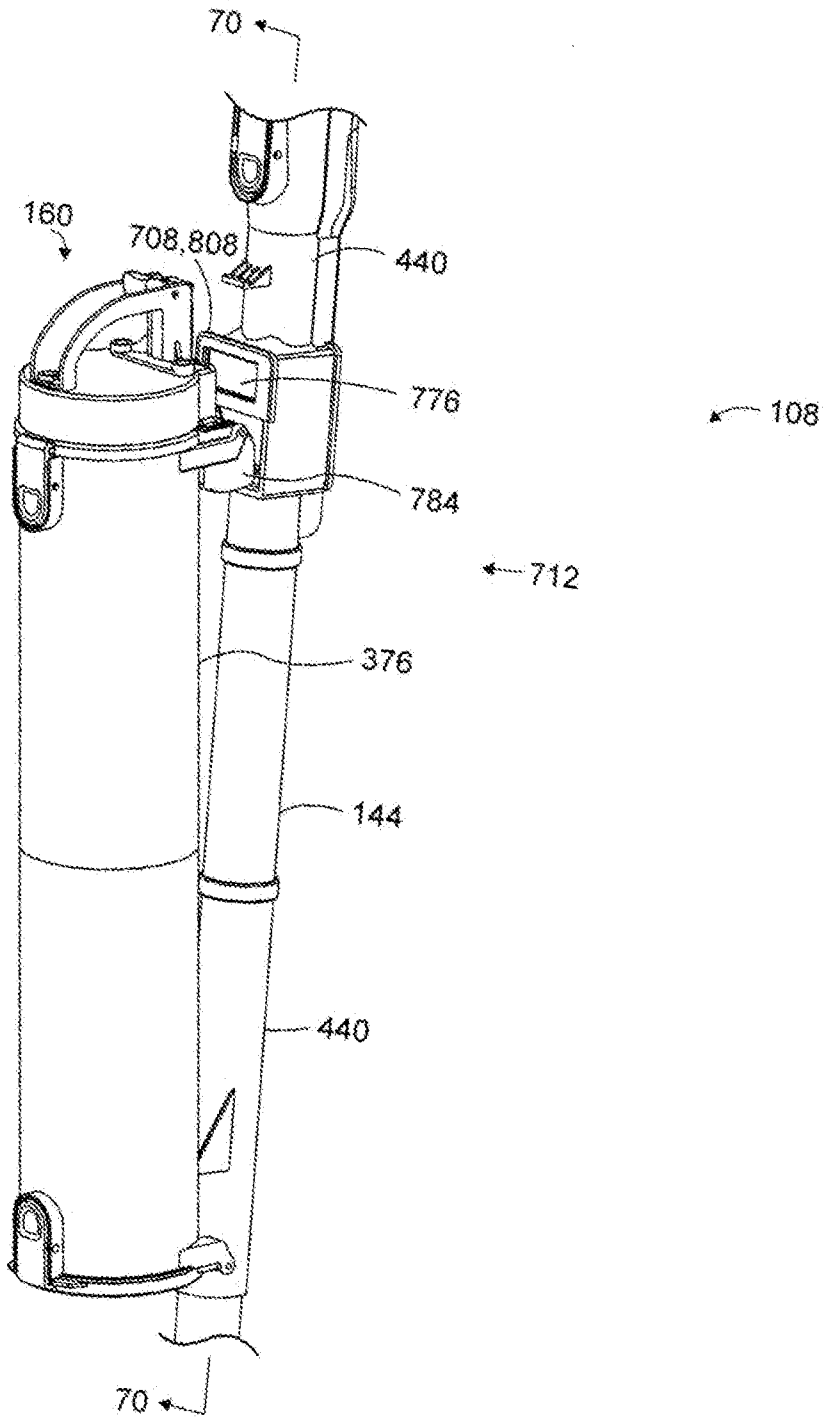


FIG. 65

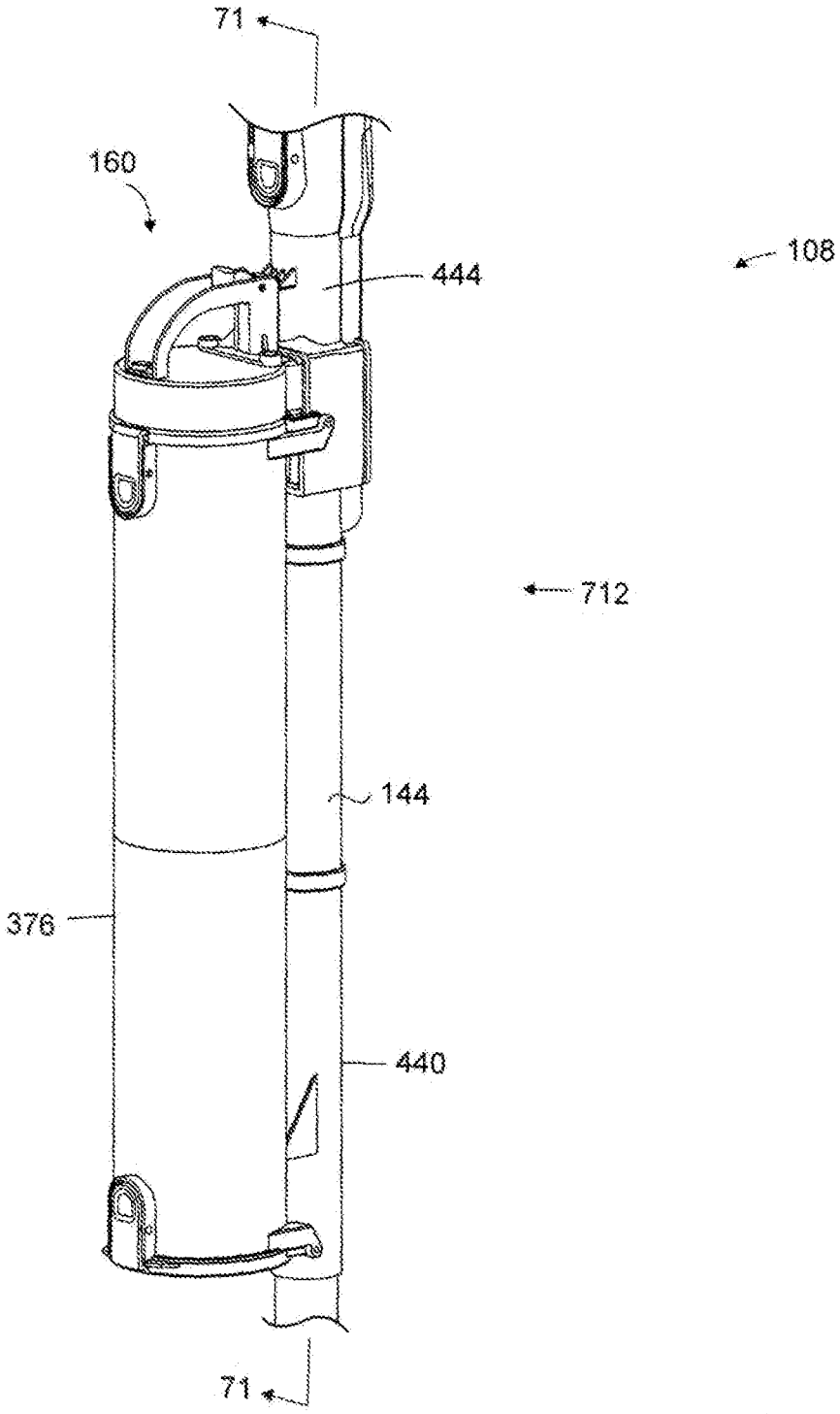


FIG. 66

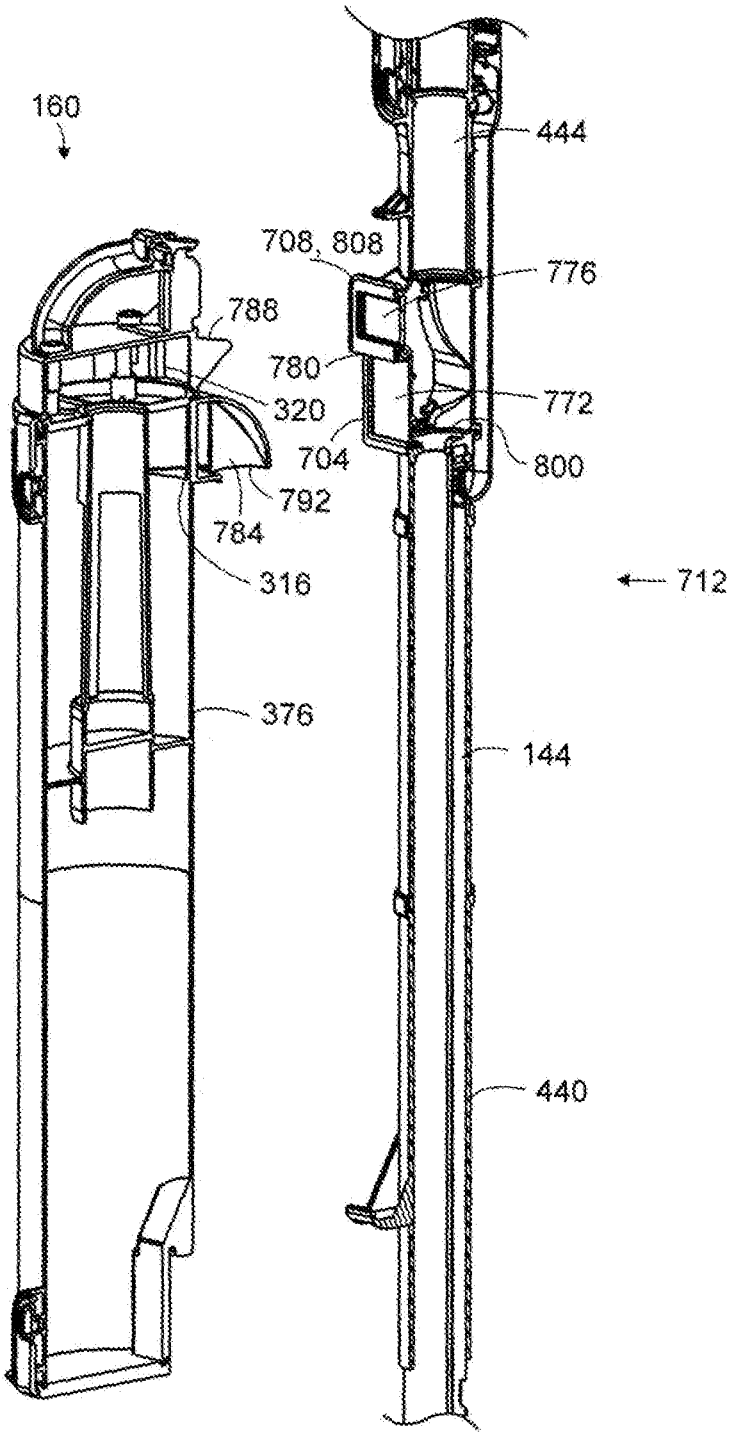

160
444
108
708, 808
776
788
780
772
320
704
800
792
784
712
316
376
144
440

FIG. 67

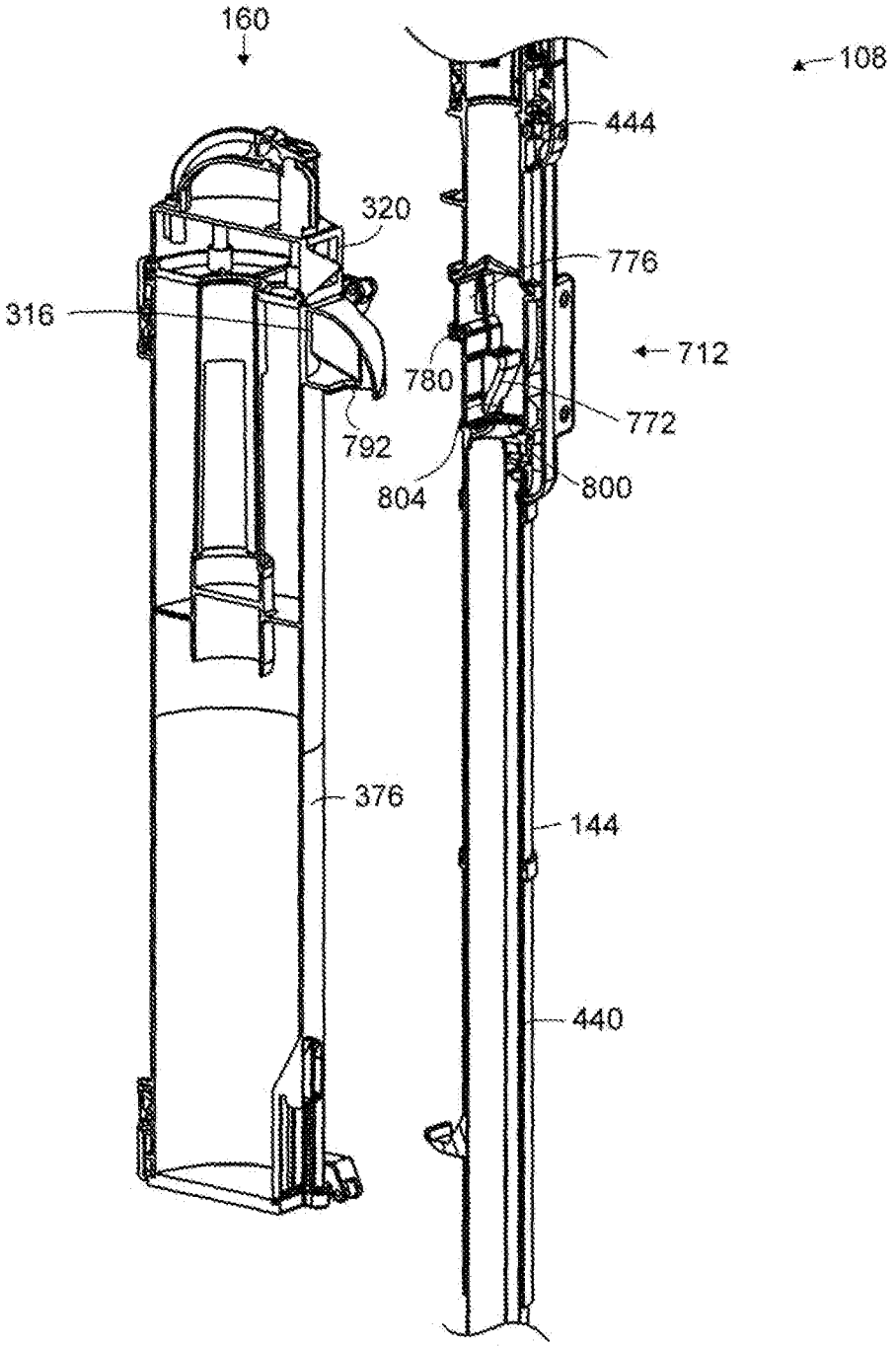


FIG. 68

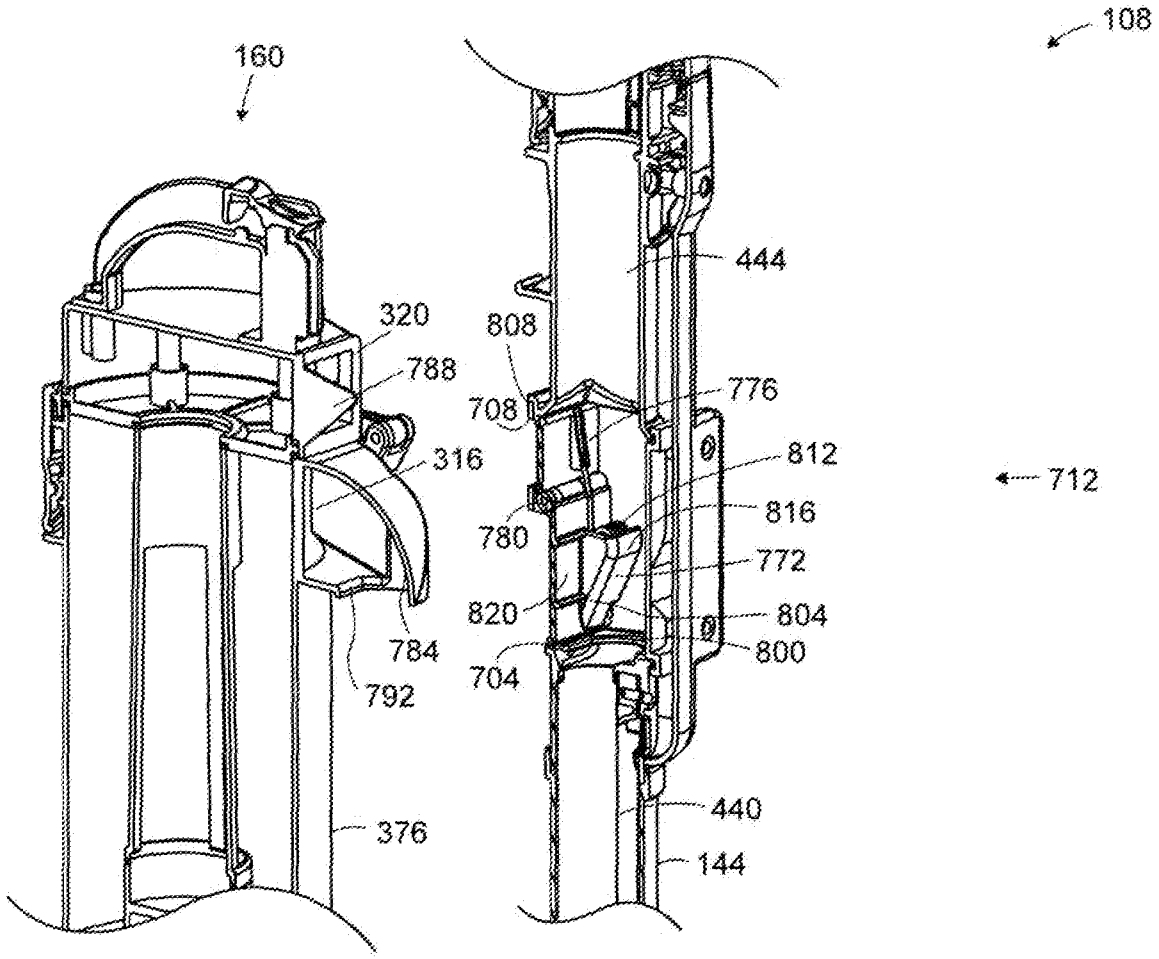

160
108
320
788
316
784
792
376
444
808
708
776
812
712
816
780
772
820
804
800
704
440
144

FIG. 69

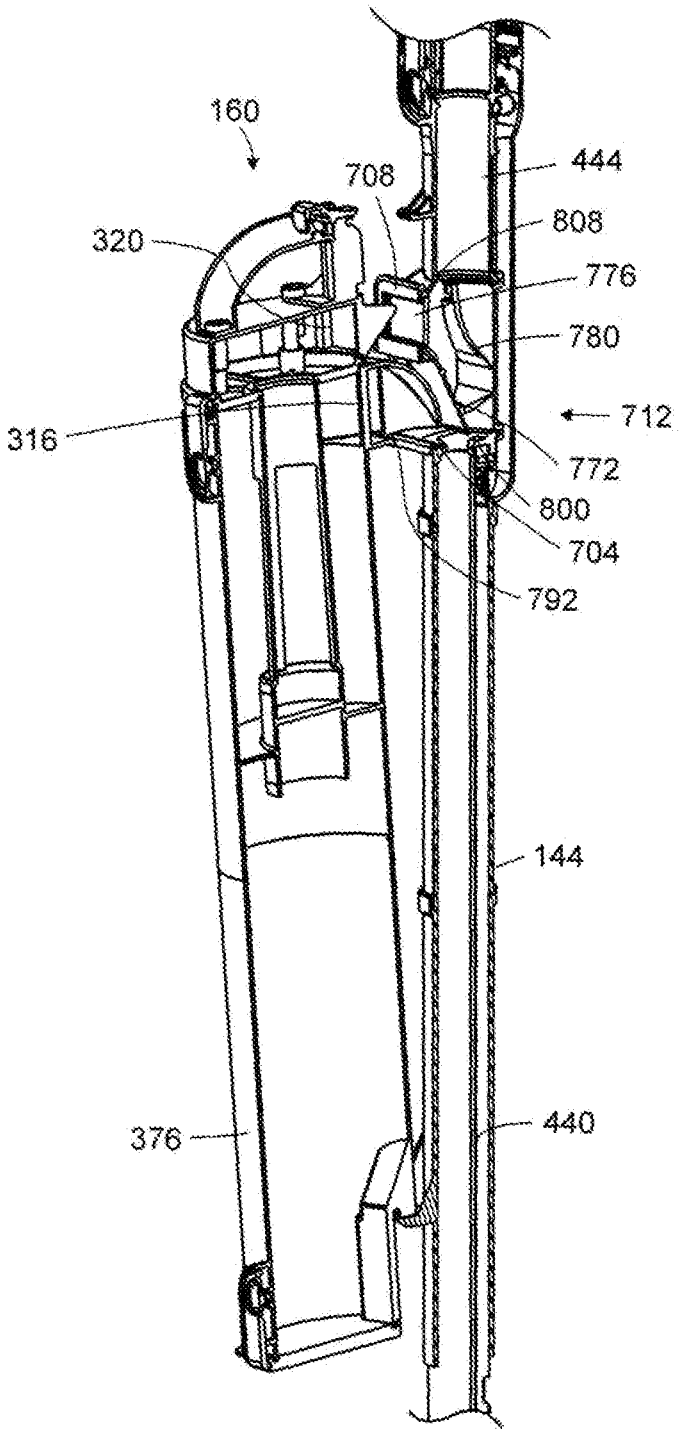

108
160
444
708
808
320
776
780
712
316
772
800
704
792
144
376
440

FIG. 70

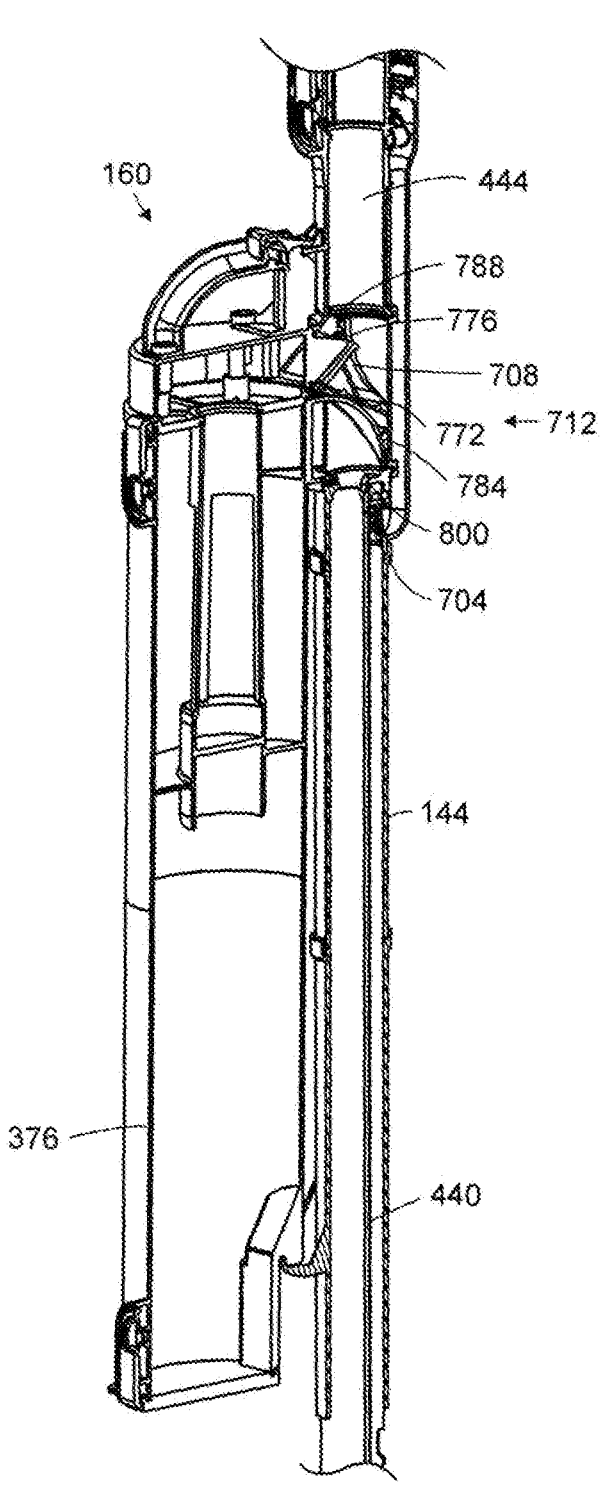


FIG. 71

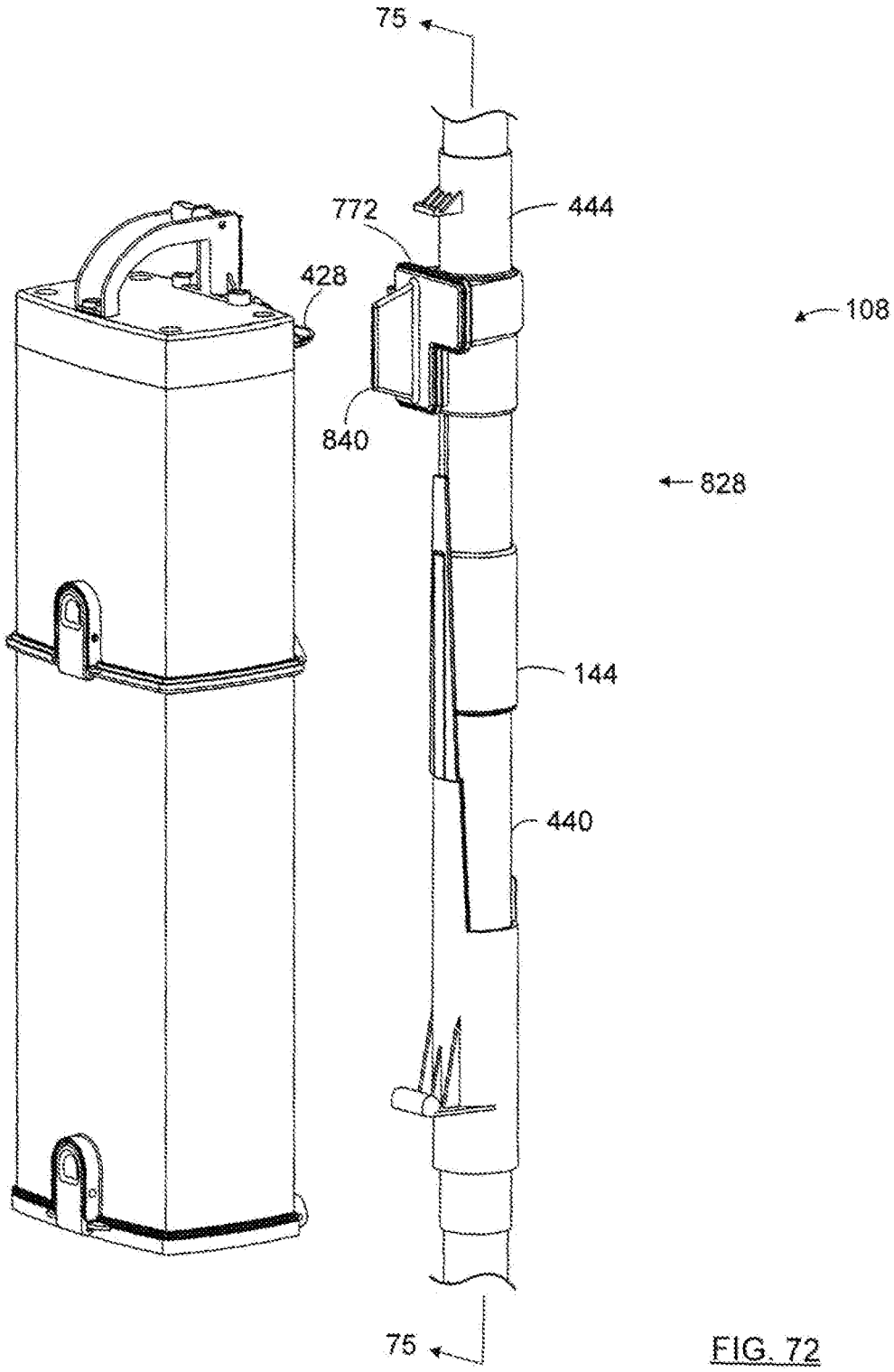


FIG. 72

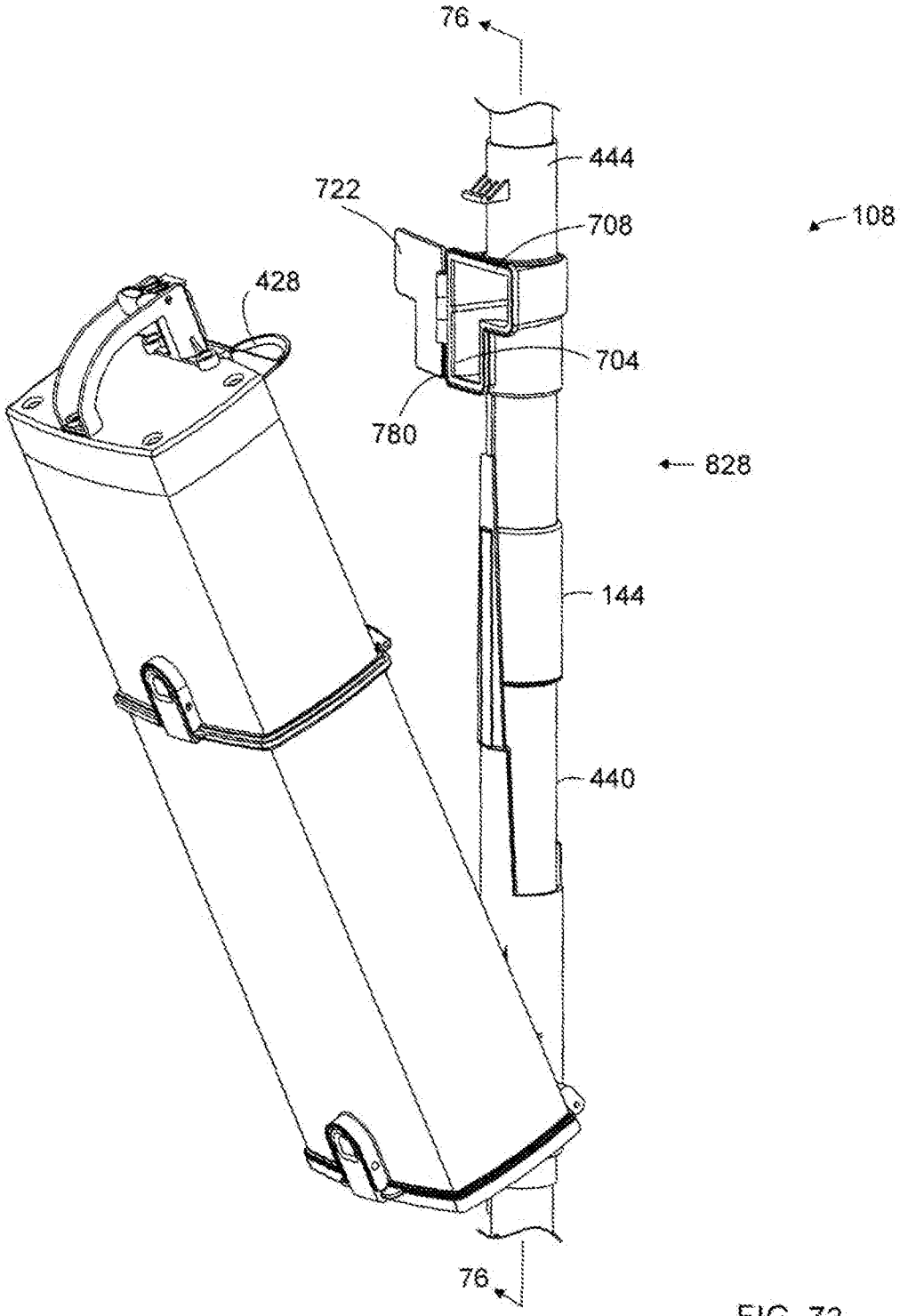


FIG. 73

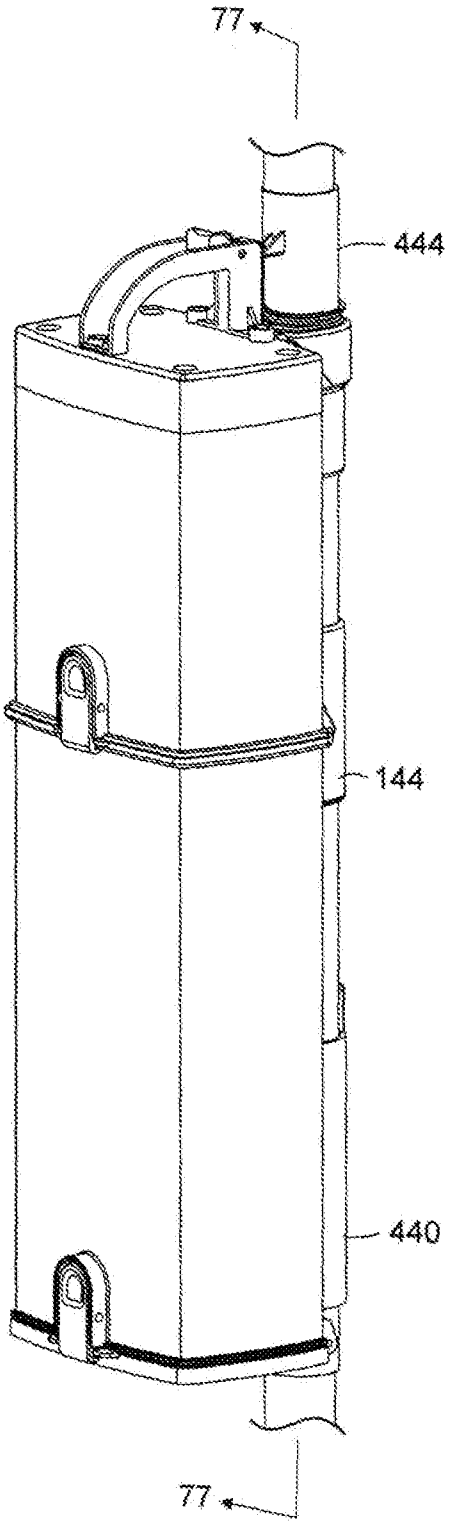


FIG. 74

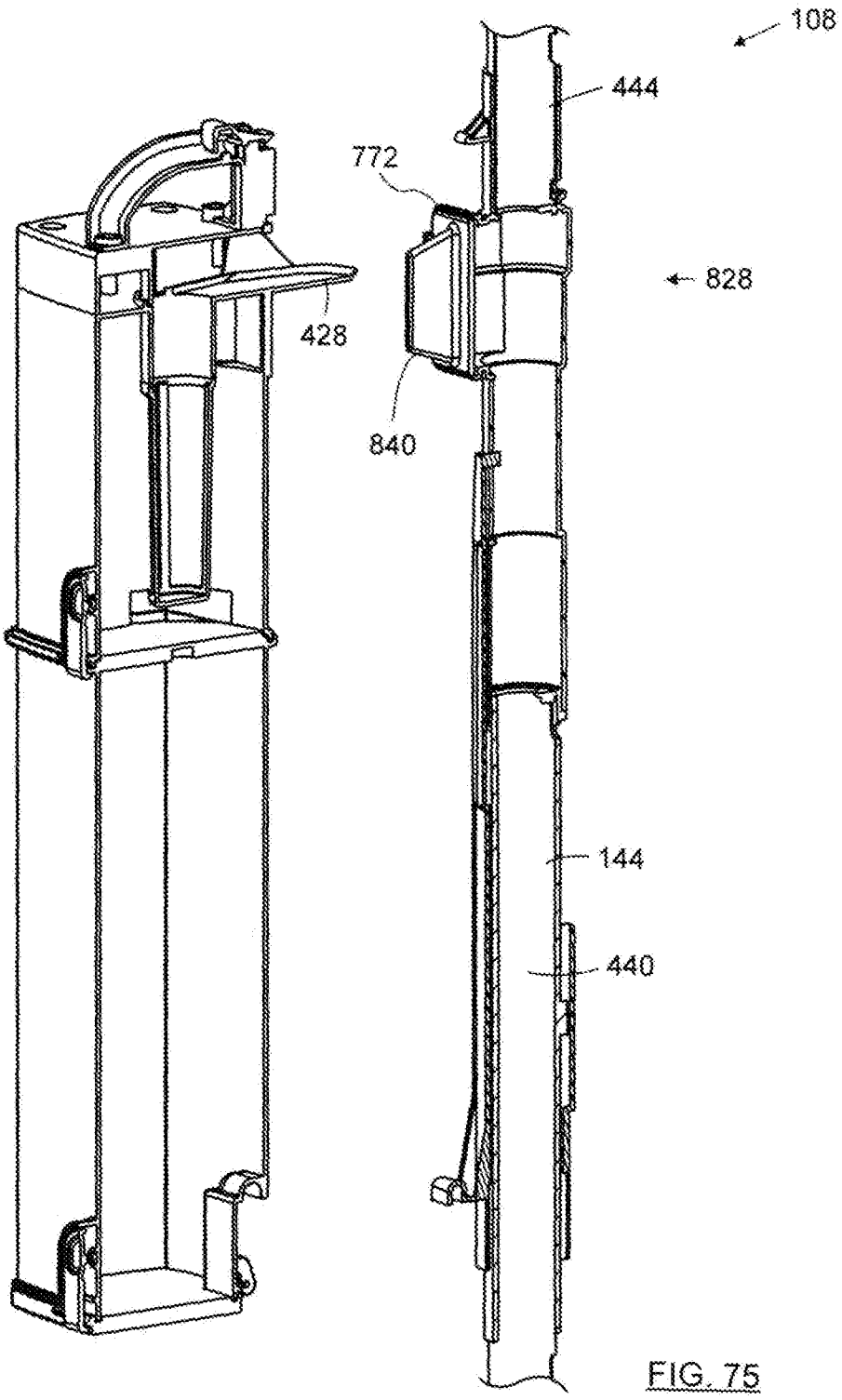


FIG. 75

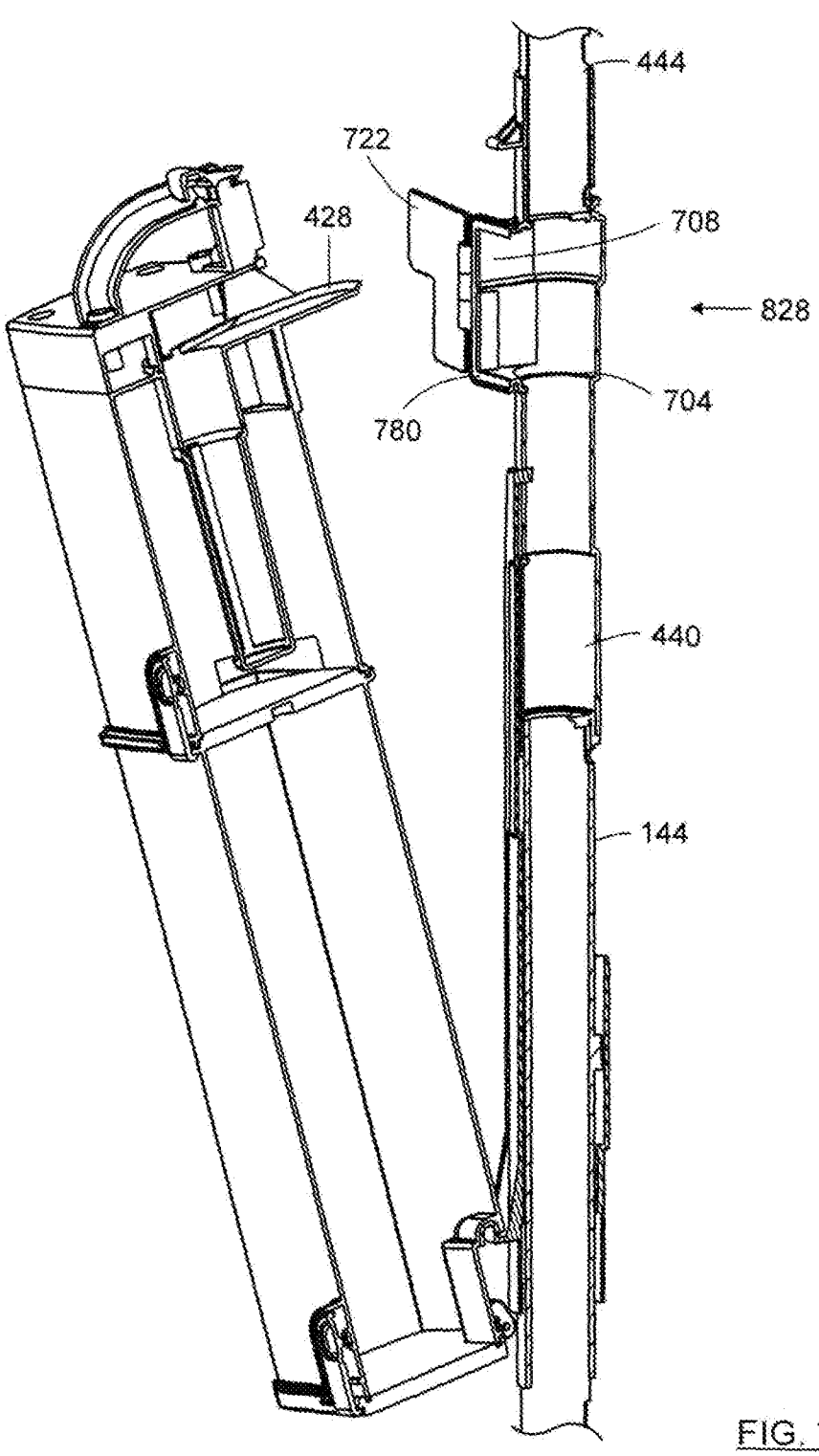


FIG. 76

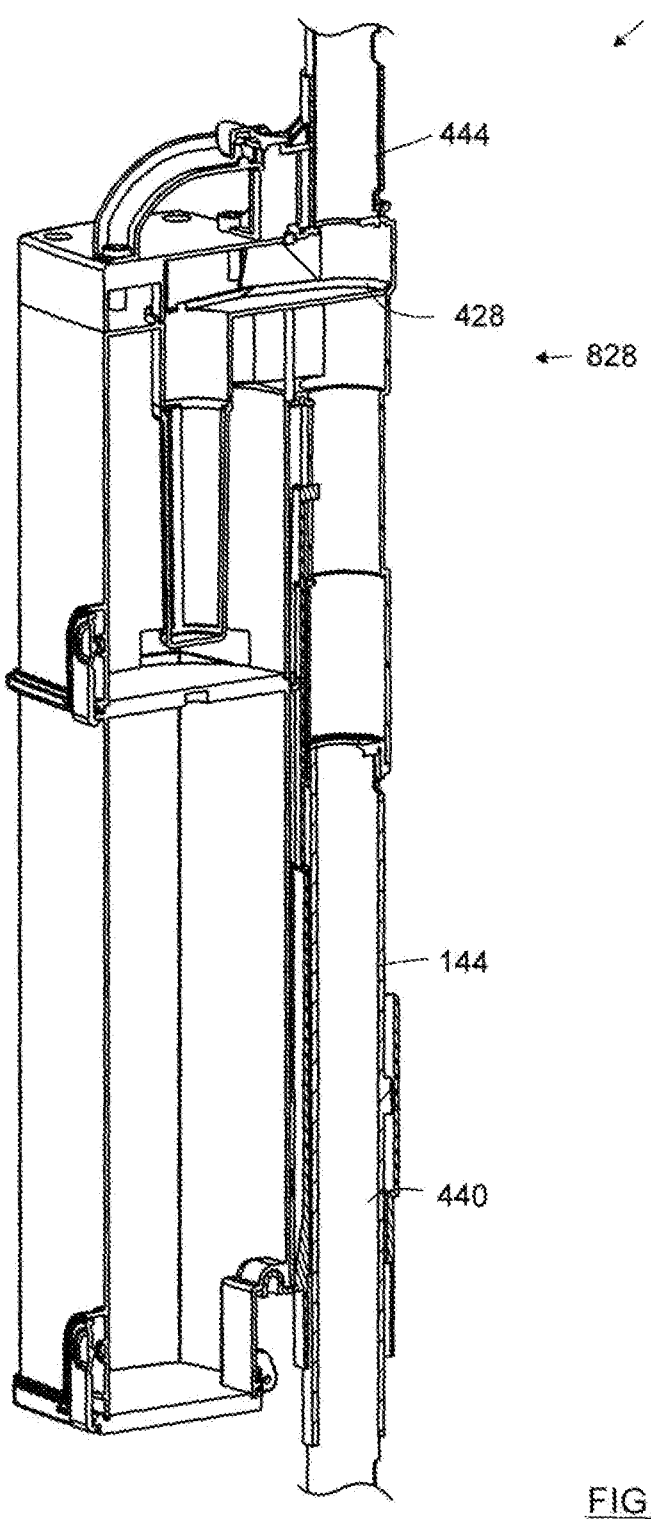


FIG. 77

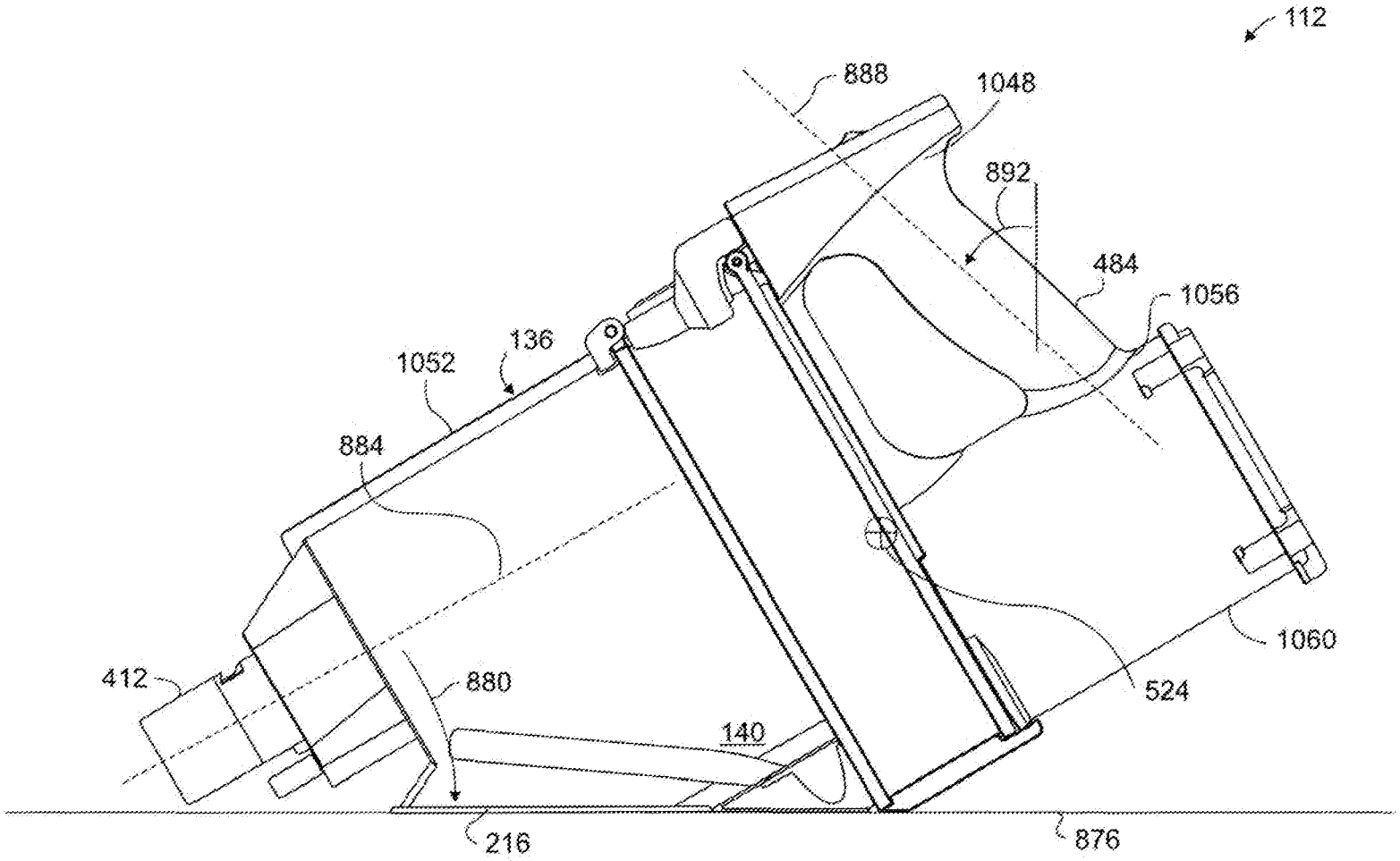

112
888
1048
892
484
1056
136
1052
884
412
880
140
524
1060
216
876

FIG. 78

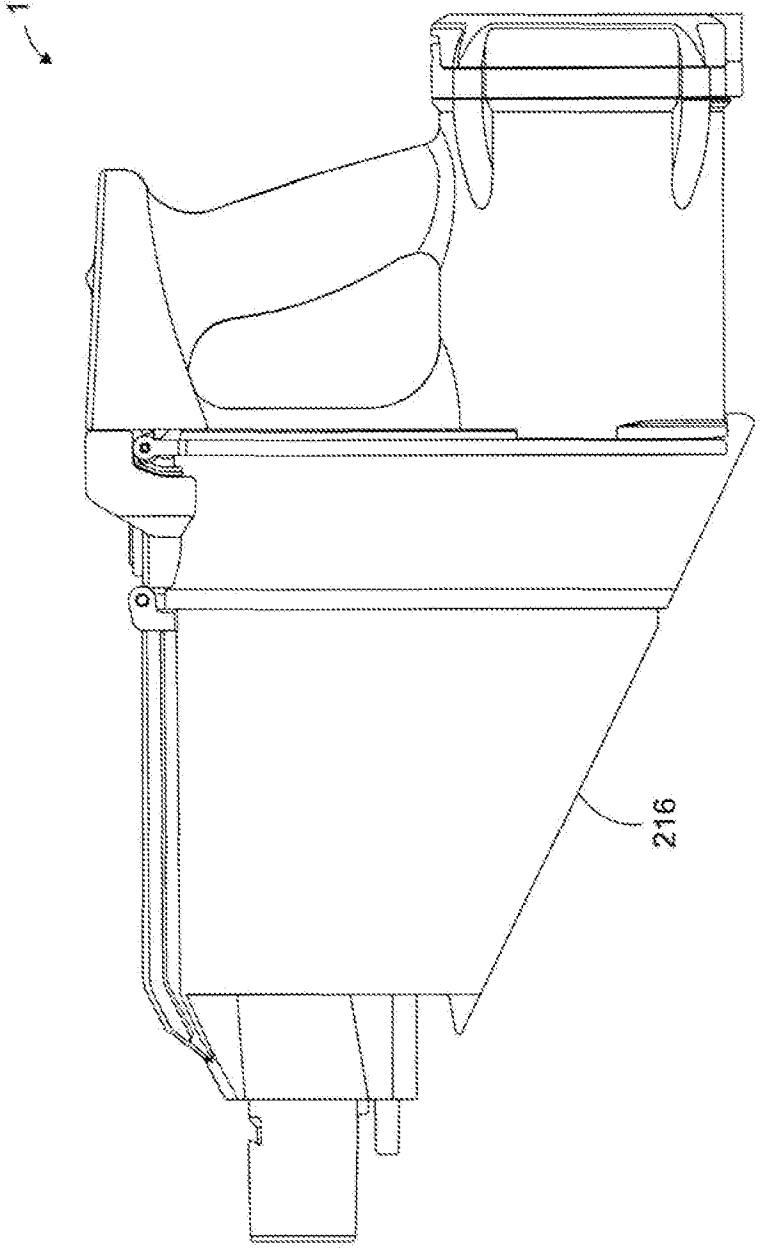


FIG. 79

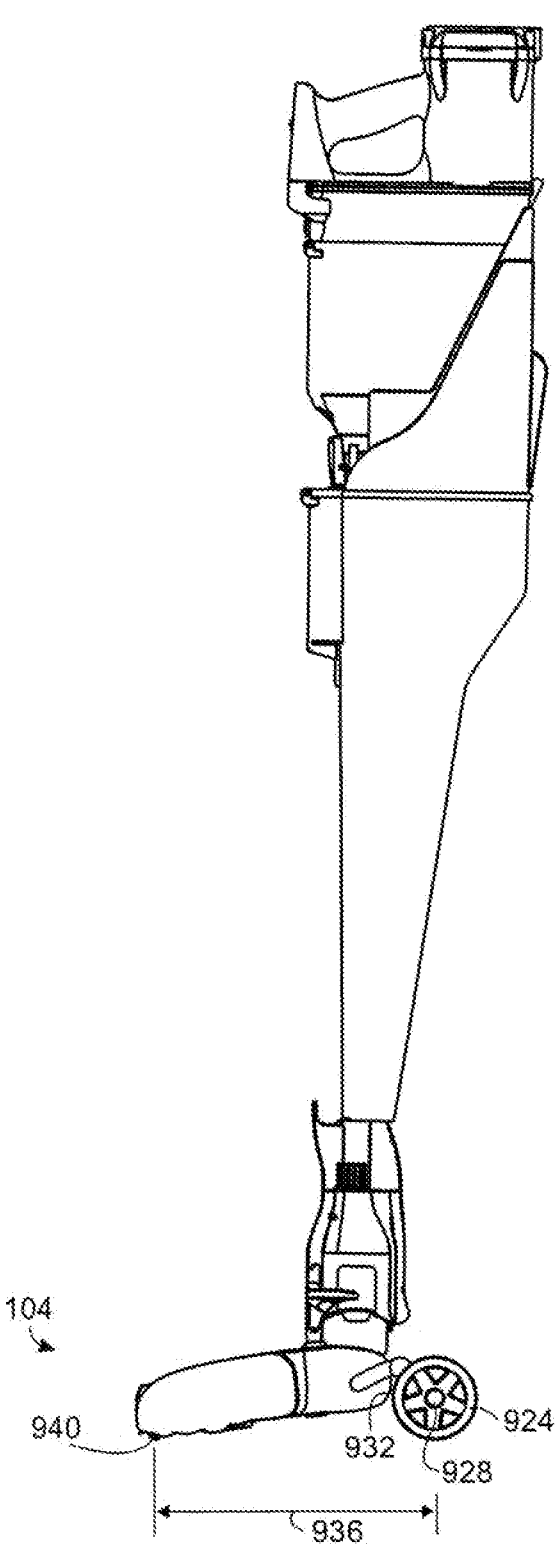


FIG. 80

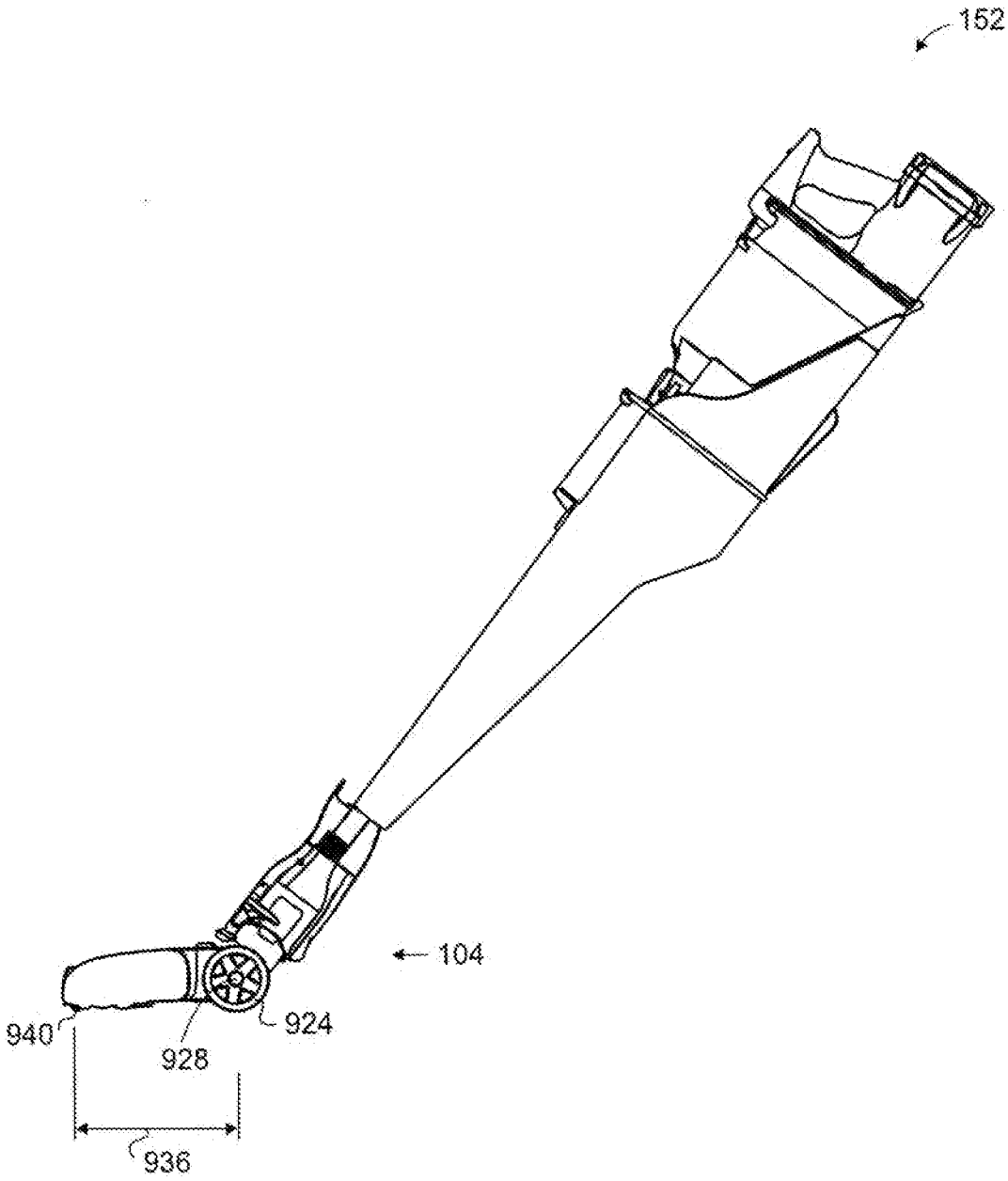


FIG. 81

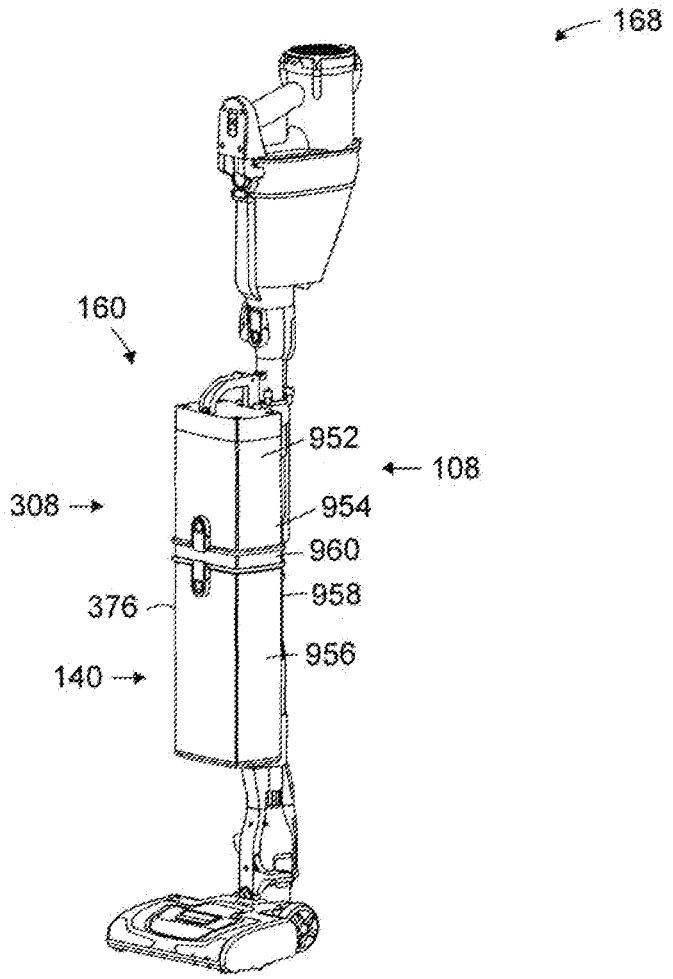


FIG. 82

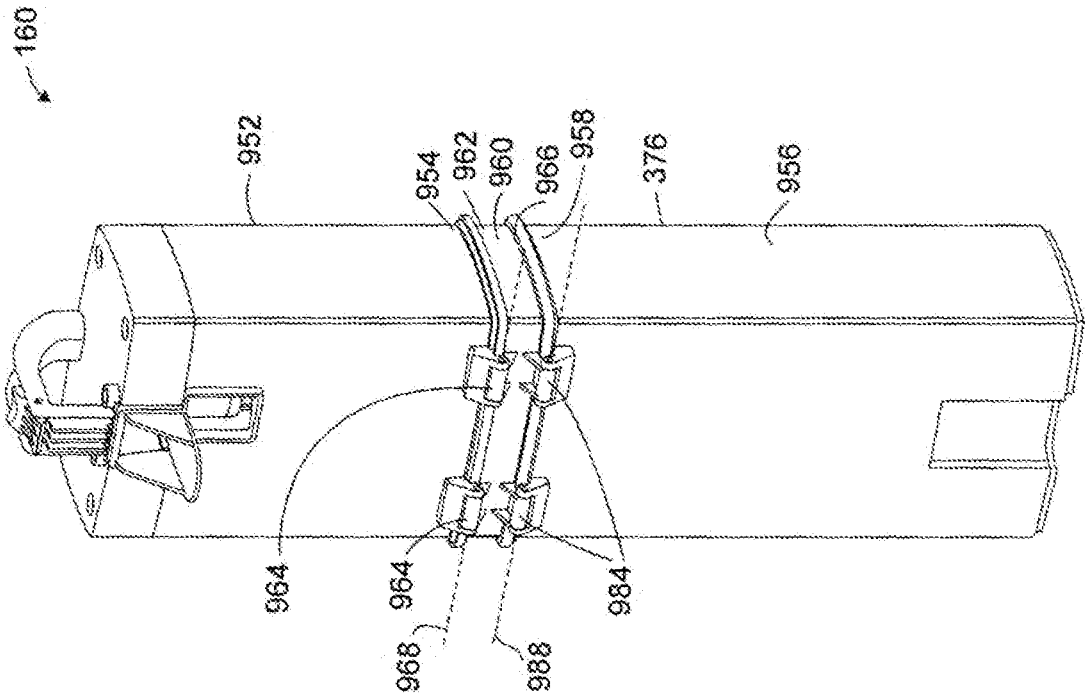


FIG. 83

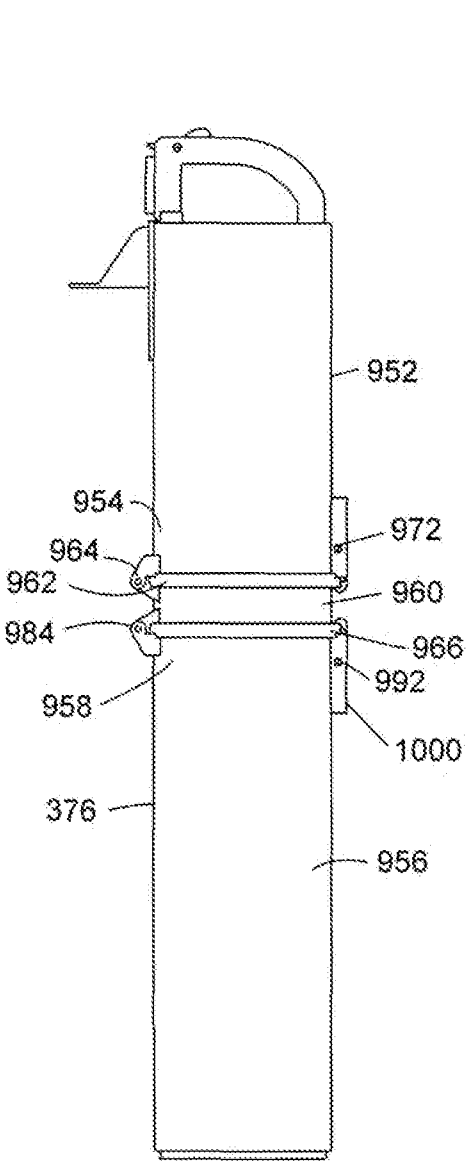


FIG. 84

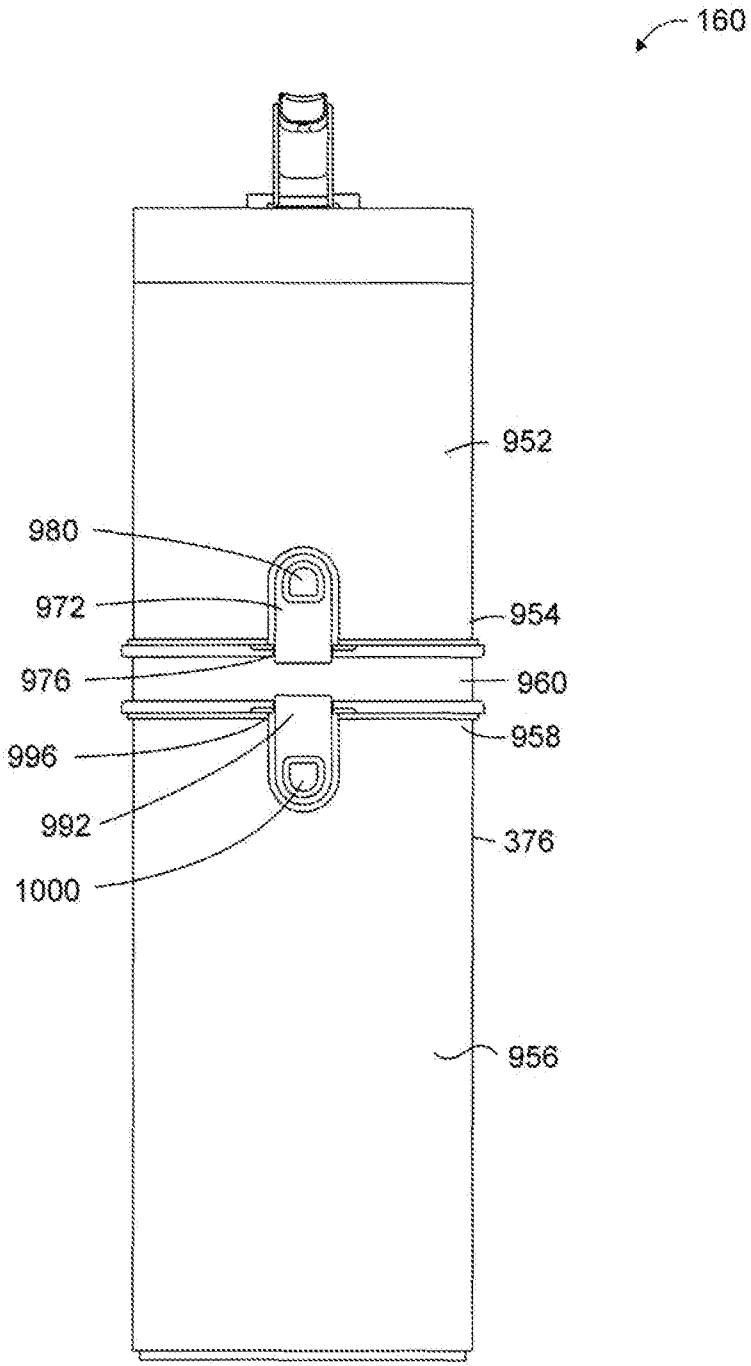


FIG. 85

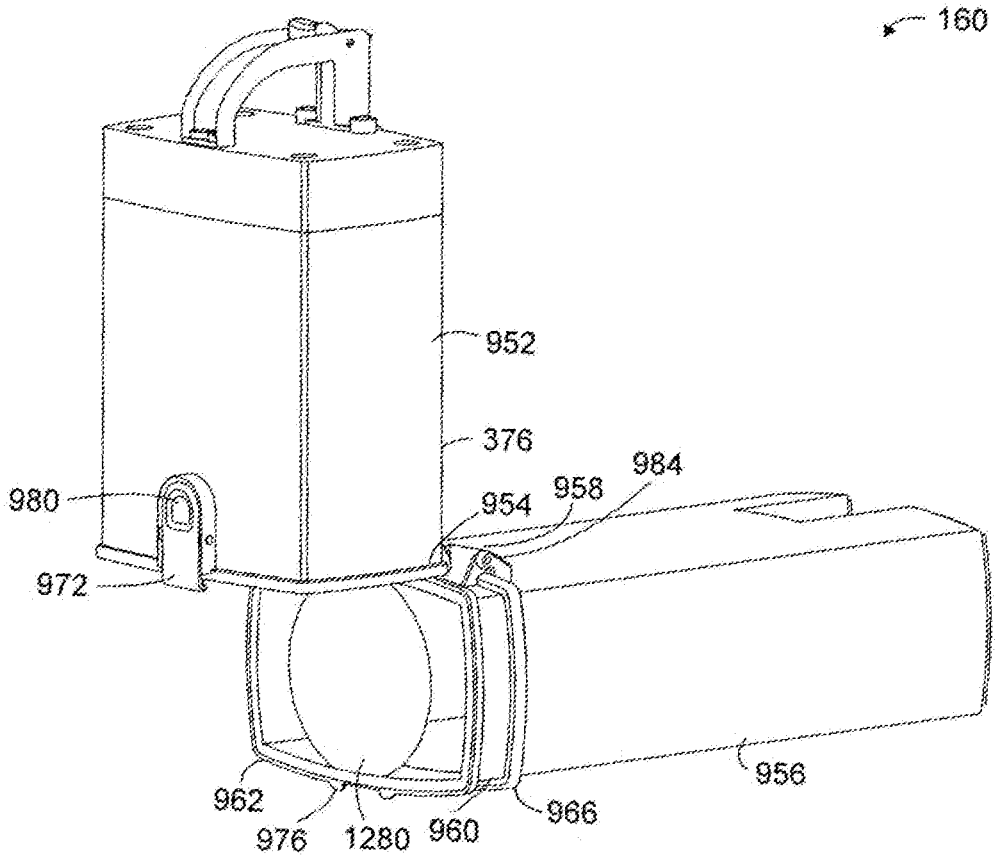


FIG. 86

Dyson Ex1004
Page 200

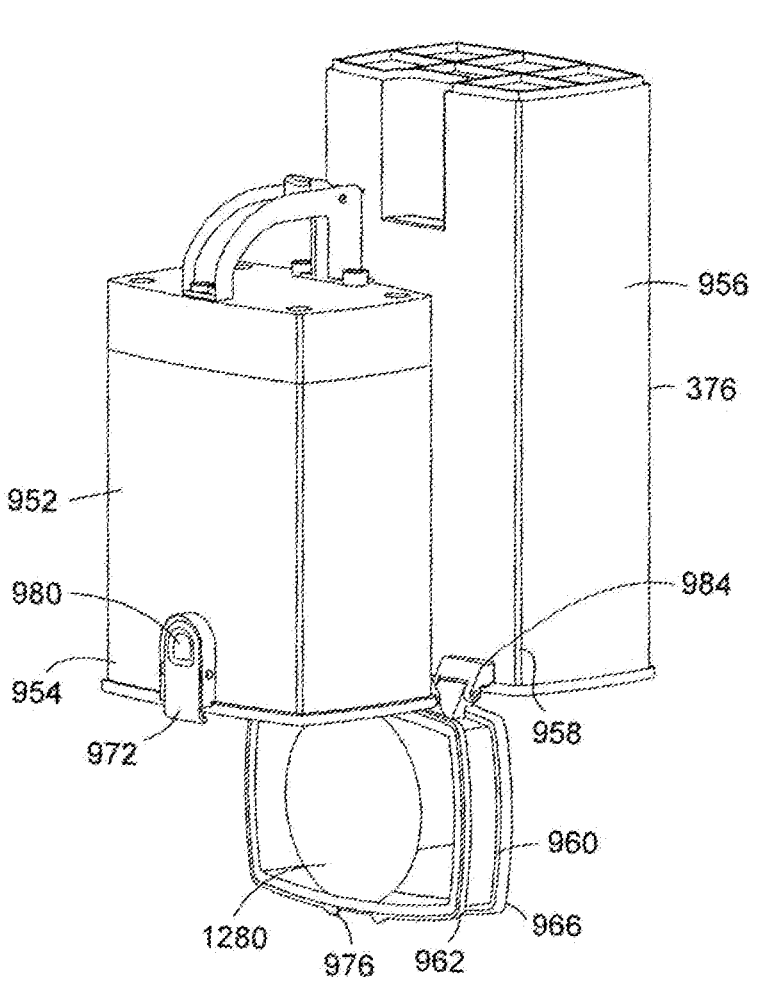


FIG. 87

Dyson Ex1004
Page 201

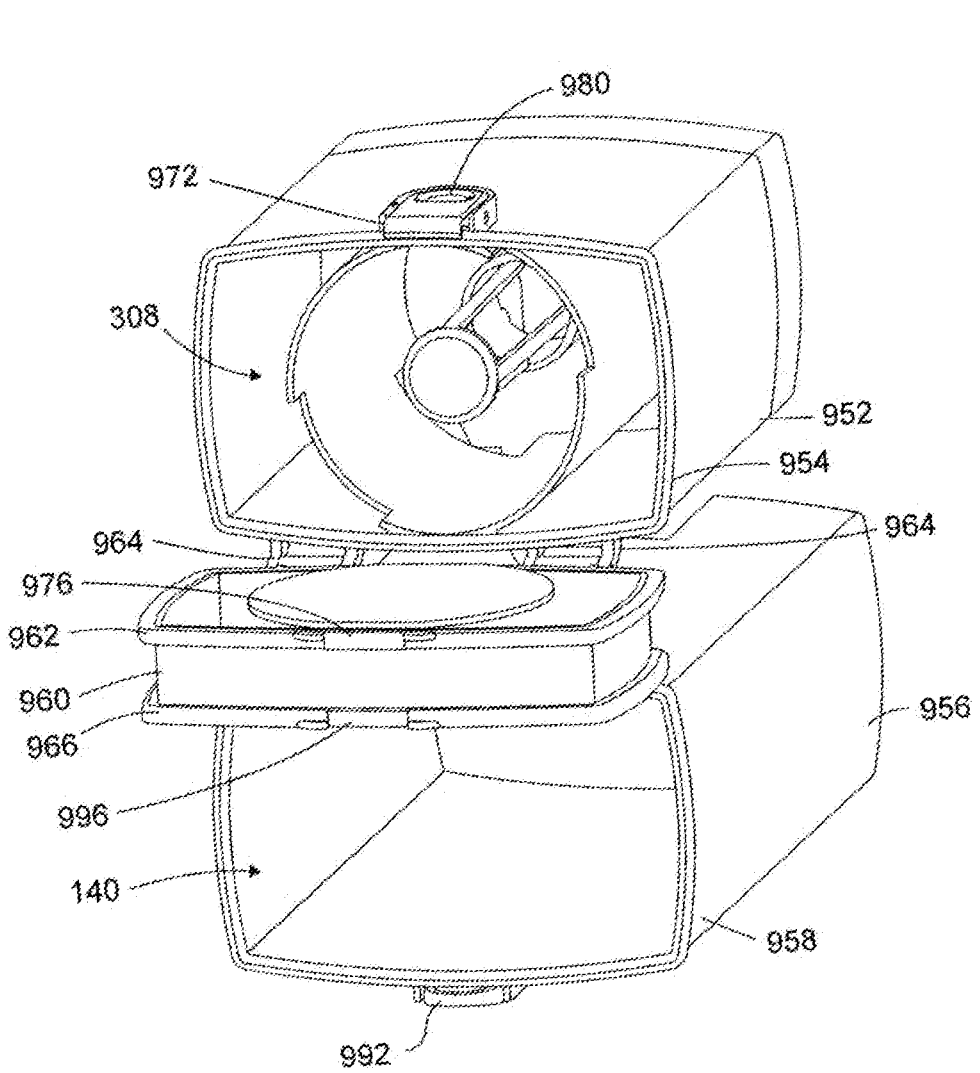


FIG. 88

Dyson Ex1004
Page 202

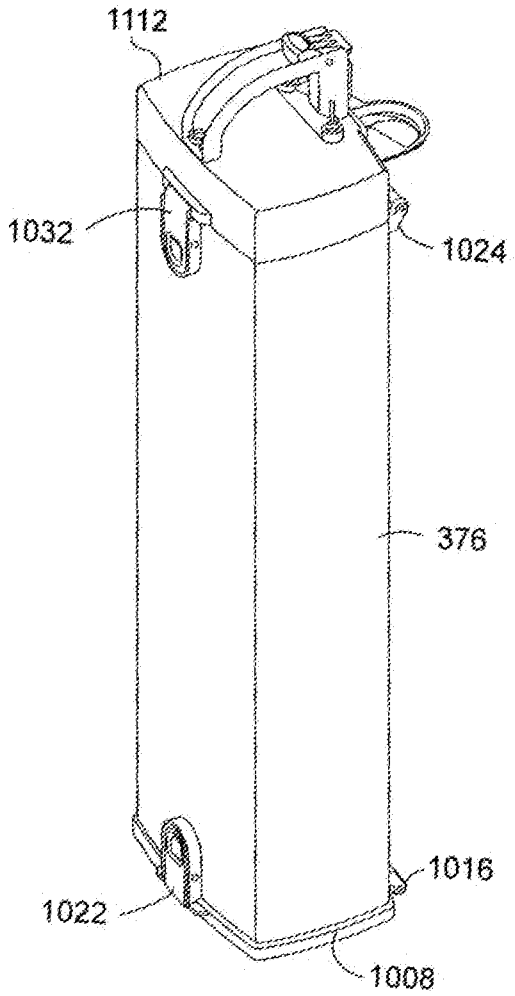


FIG. 89

Dyson Ex1004
Page 203

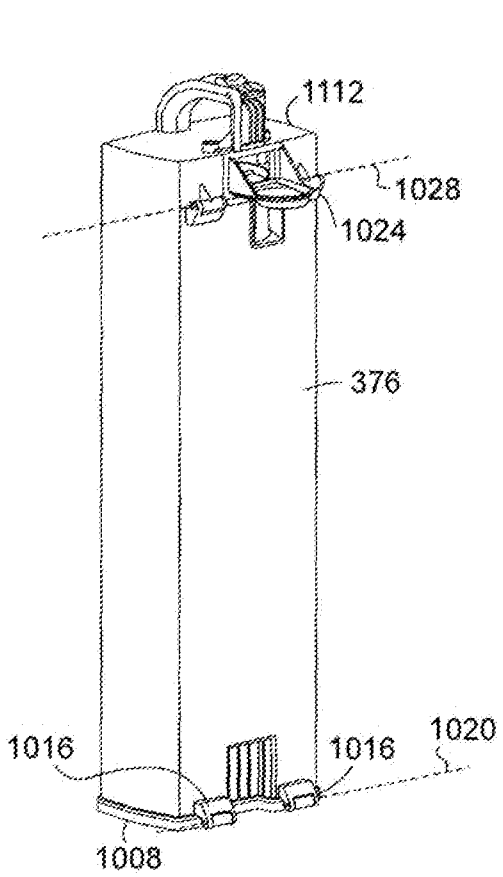


FIG. 90

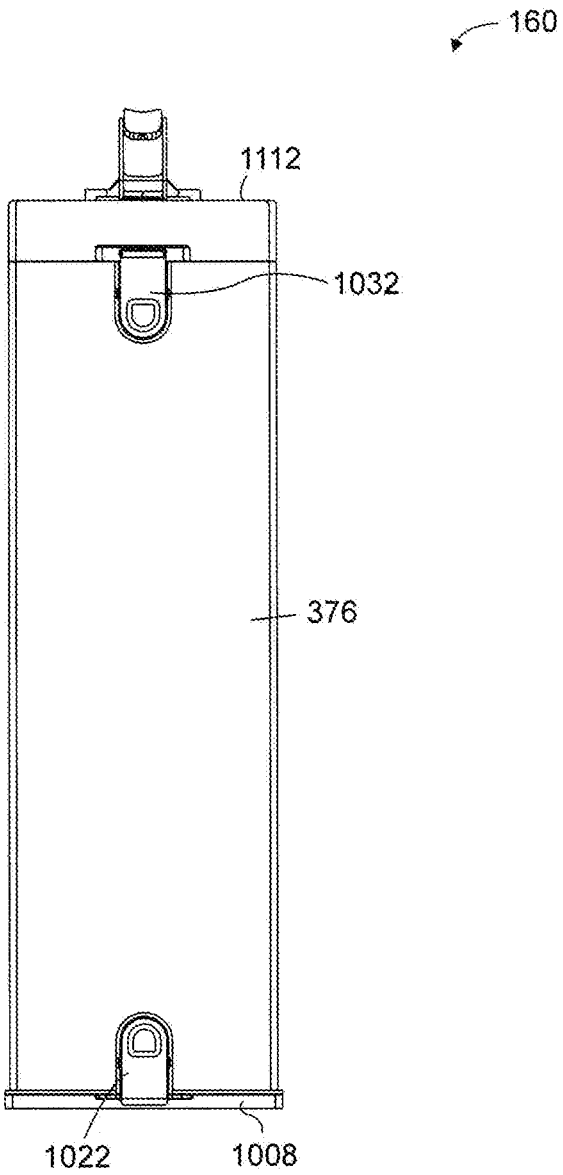


FIG. 91

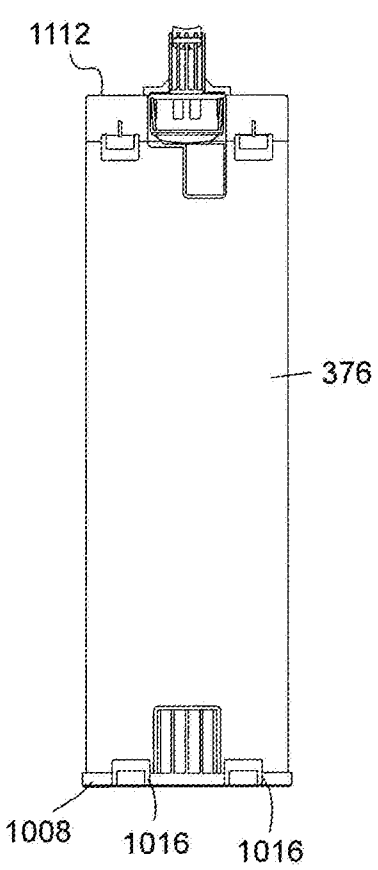


FIG. 92

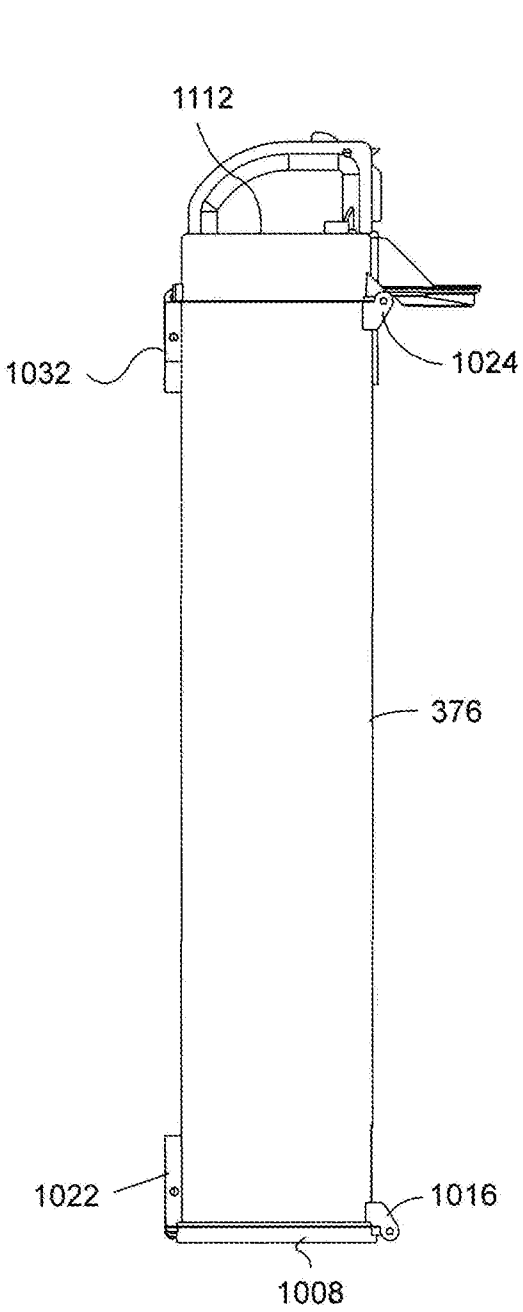


FIG. 93

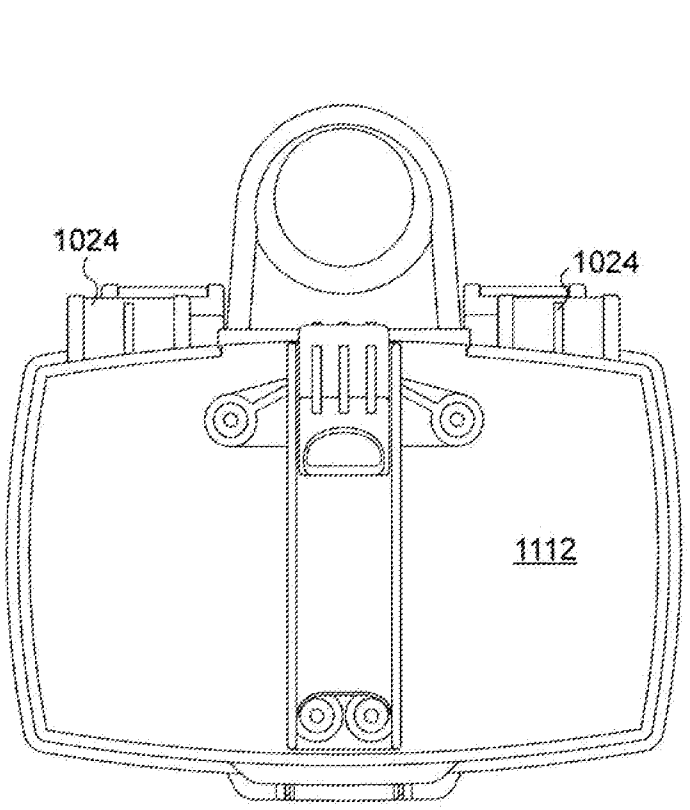


FIG. 94

Dyson Ex1004
Page 208

FIG. 95

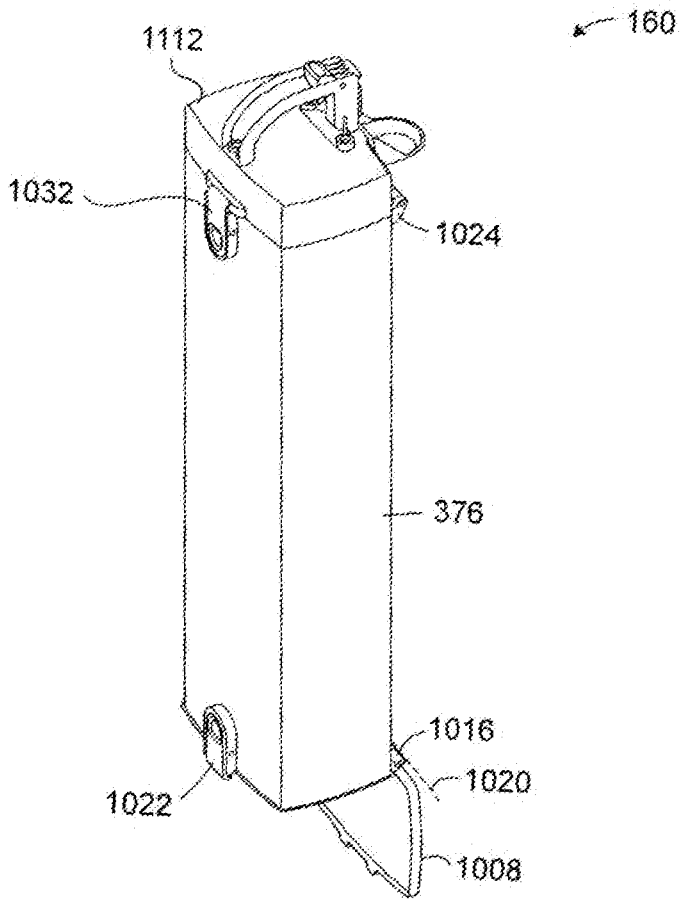


FIG. 95b

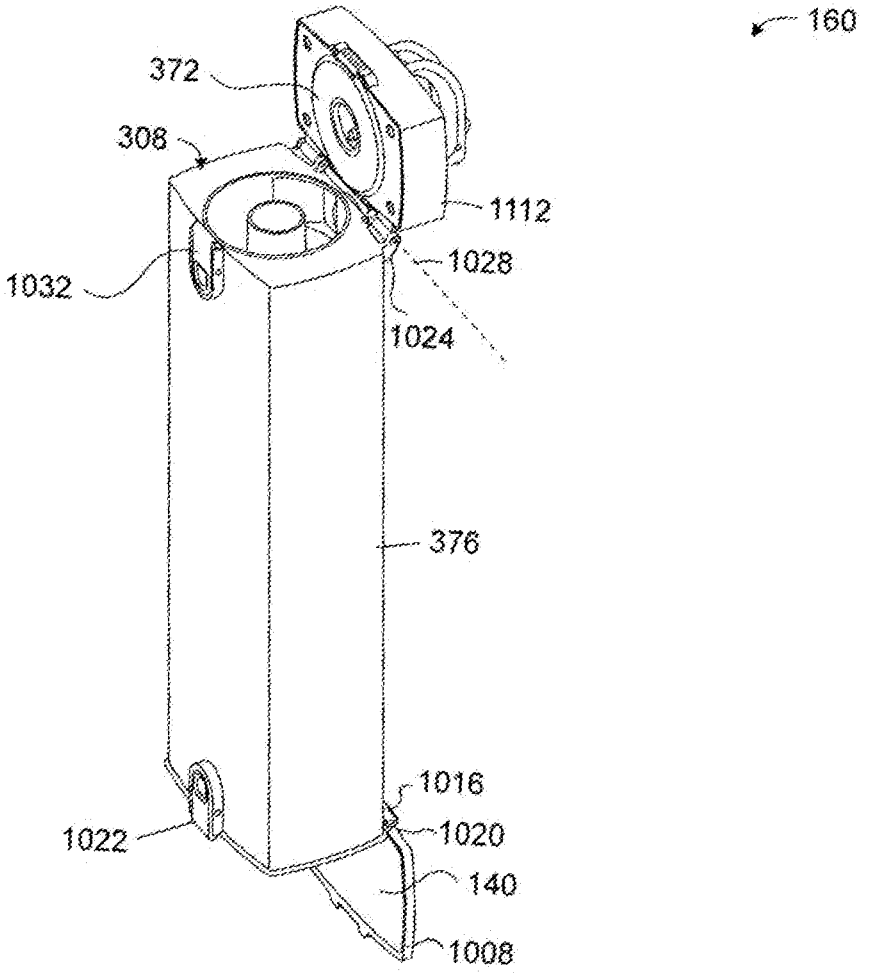


FIG. 95c

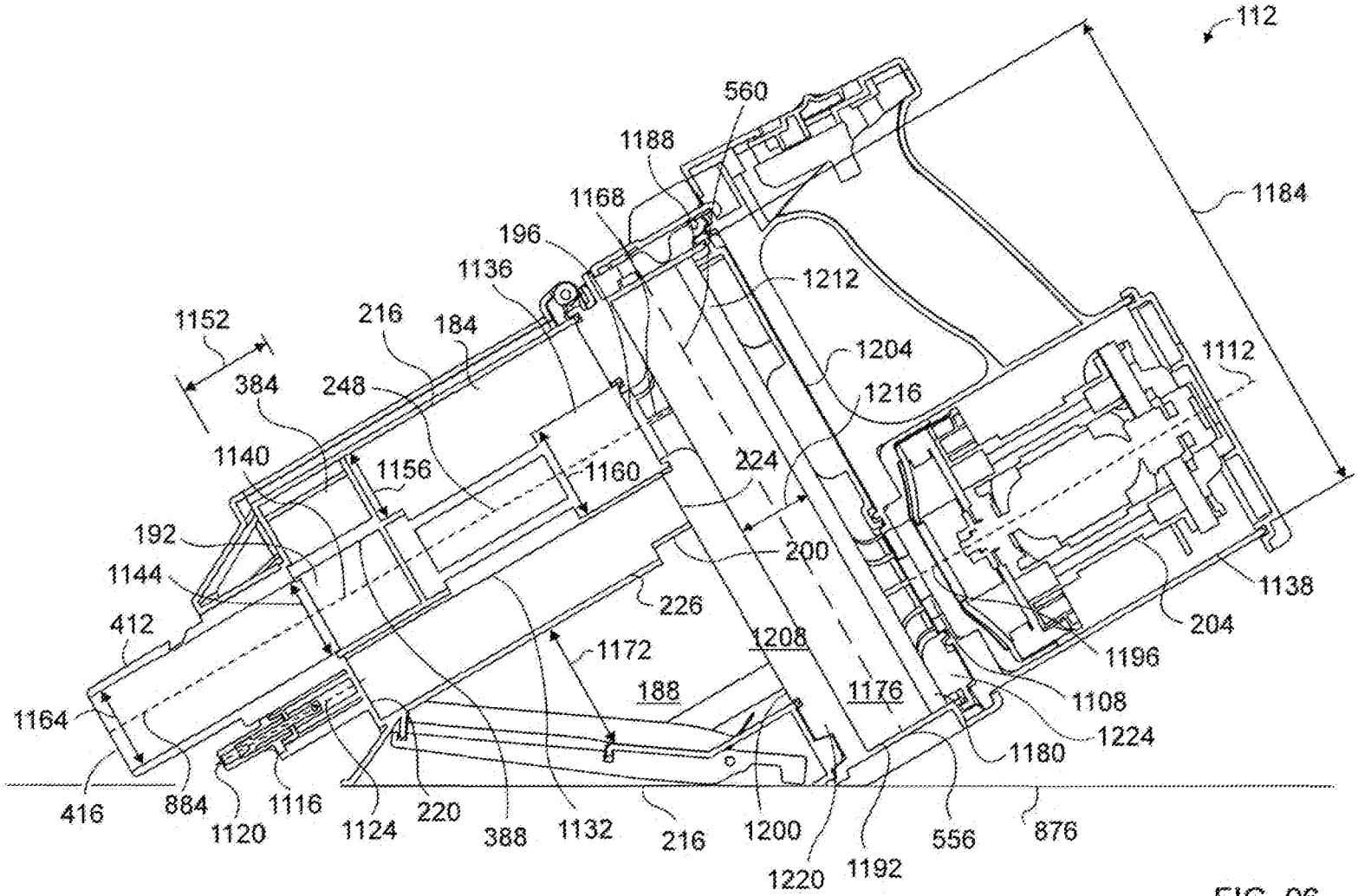

112
560
1188
1168
196
1136
1212
1184
1152
216
184
1204
1112
384
248
1216
1140
1156
1160
224
192
200
1144
226
1138
412
1172
1208
204
1196
188
1176
1108
1164
1224
1180
416
884
1120
1116
1124
220
388
1132
216
1200
1220
1192
556
876

FIG. 96

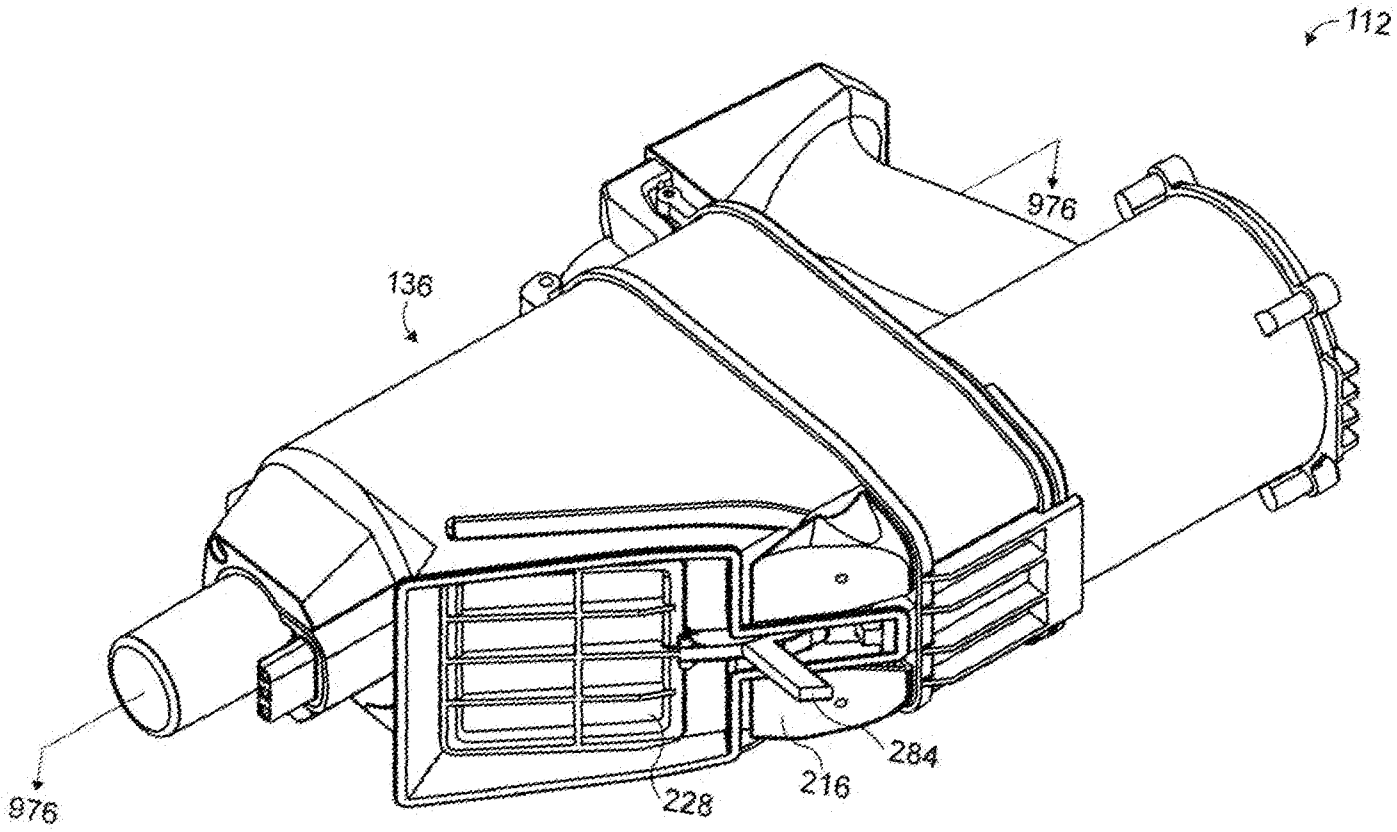


FIG. 97a

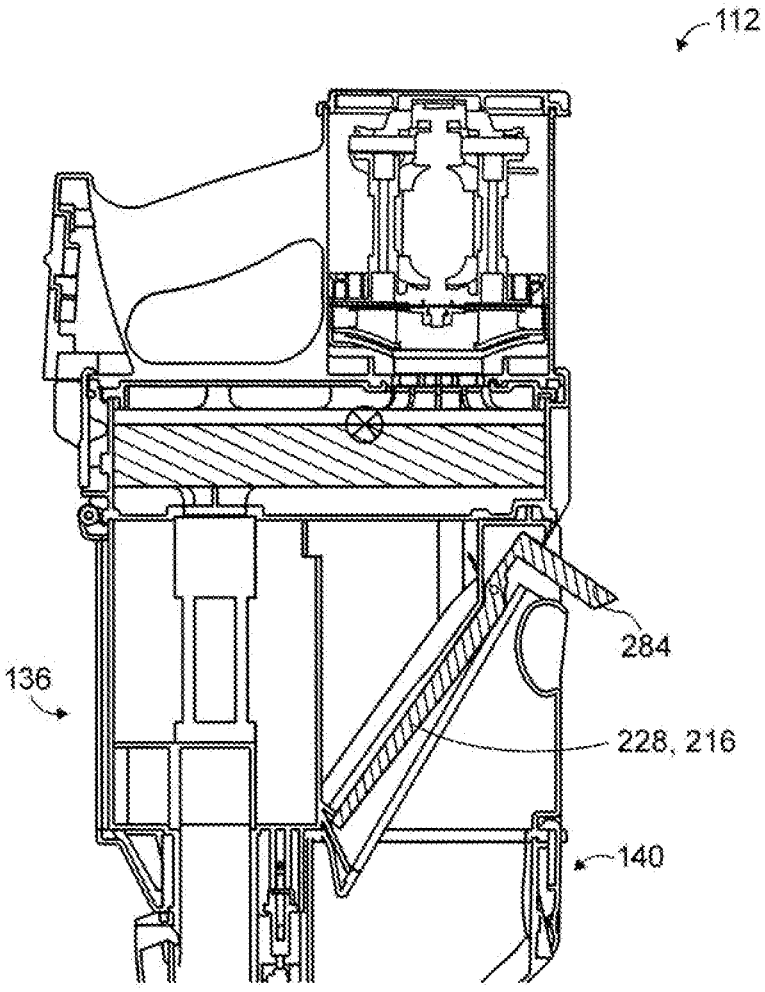


FIG. 97b

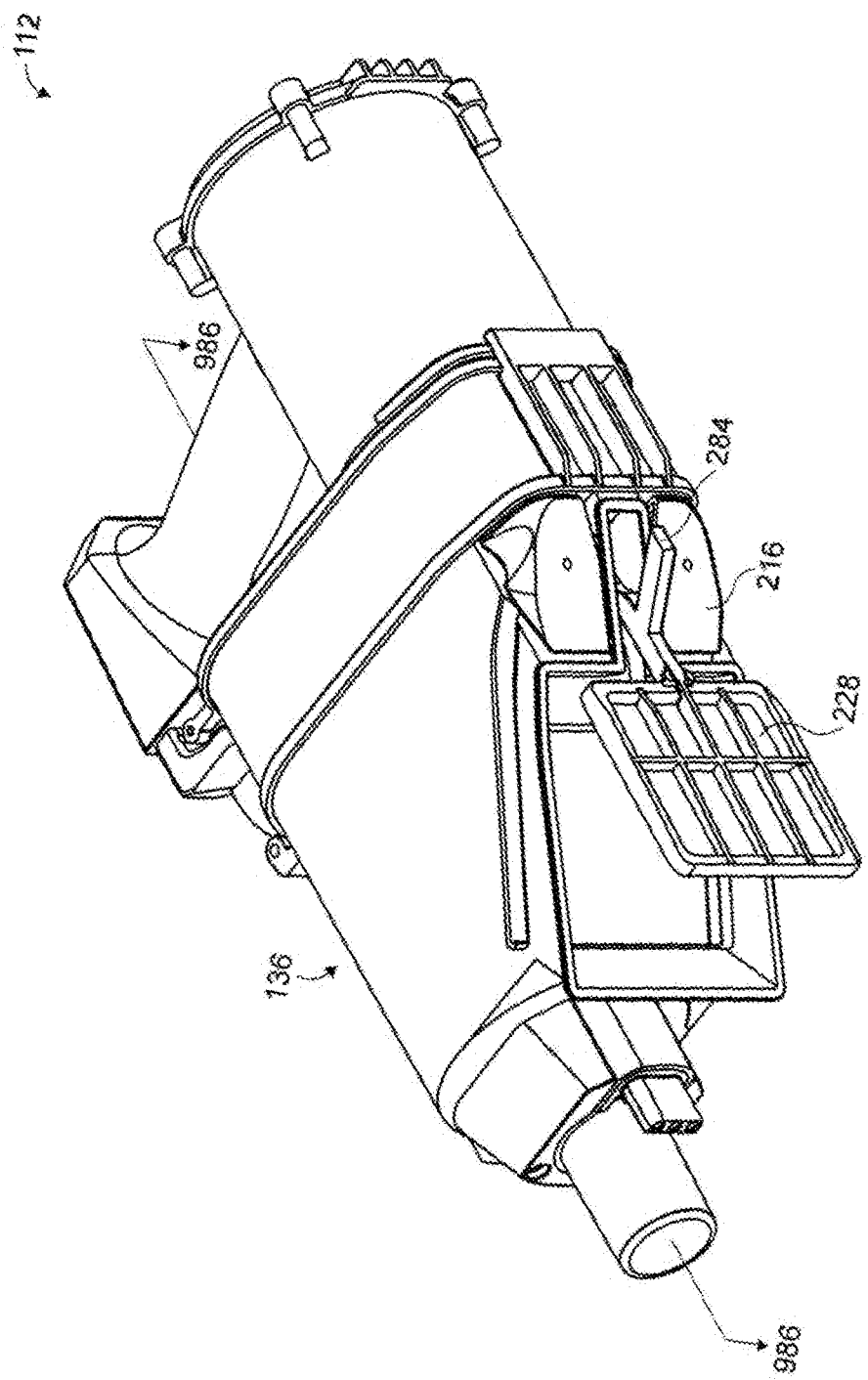


FIG. 98a

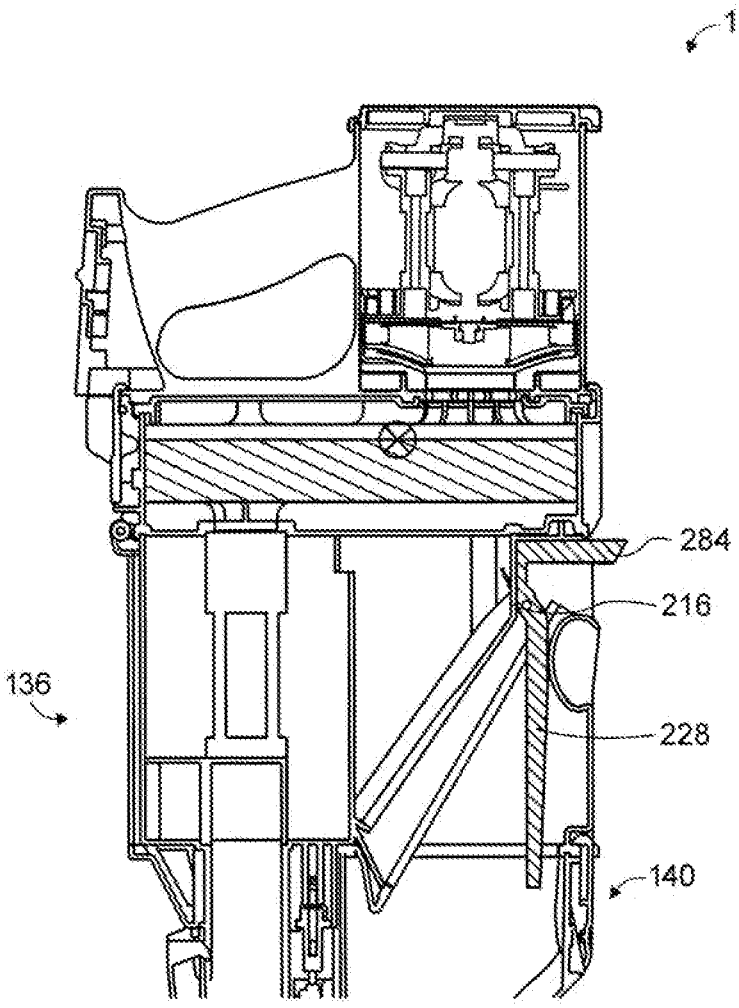


FIG. 98b

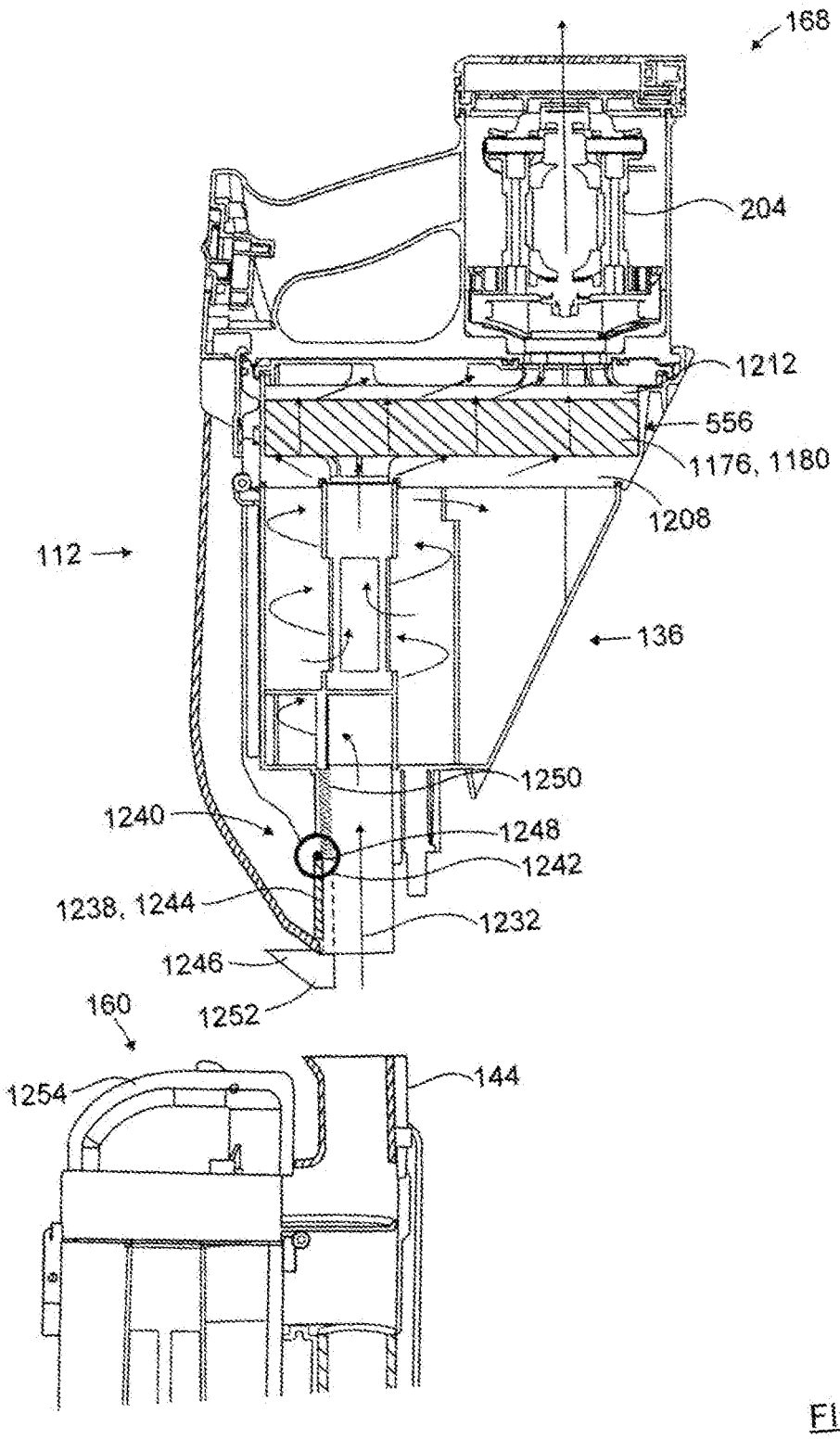

168
204
1212
556
1176, 1180
1208
112
136
1250
1240
1248
1242
1238, 1244
1232
1246
1252
160
1254
144

FIG. 99

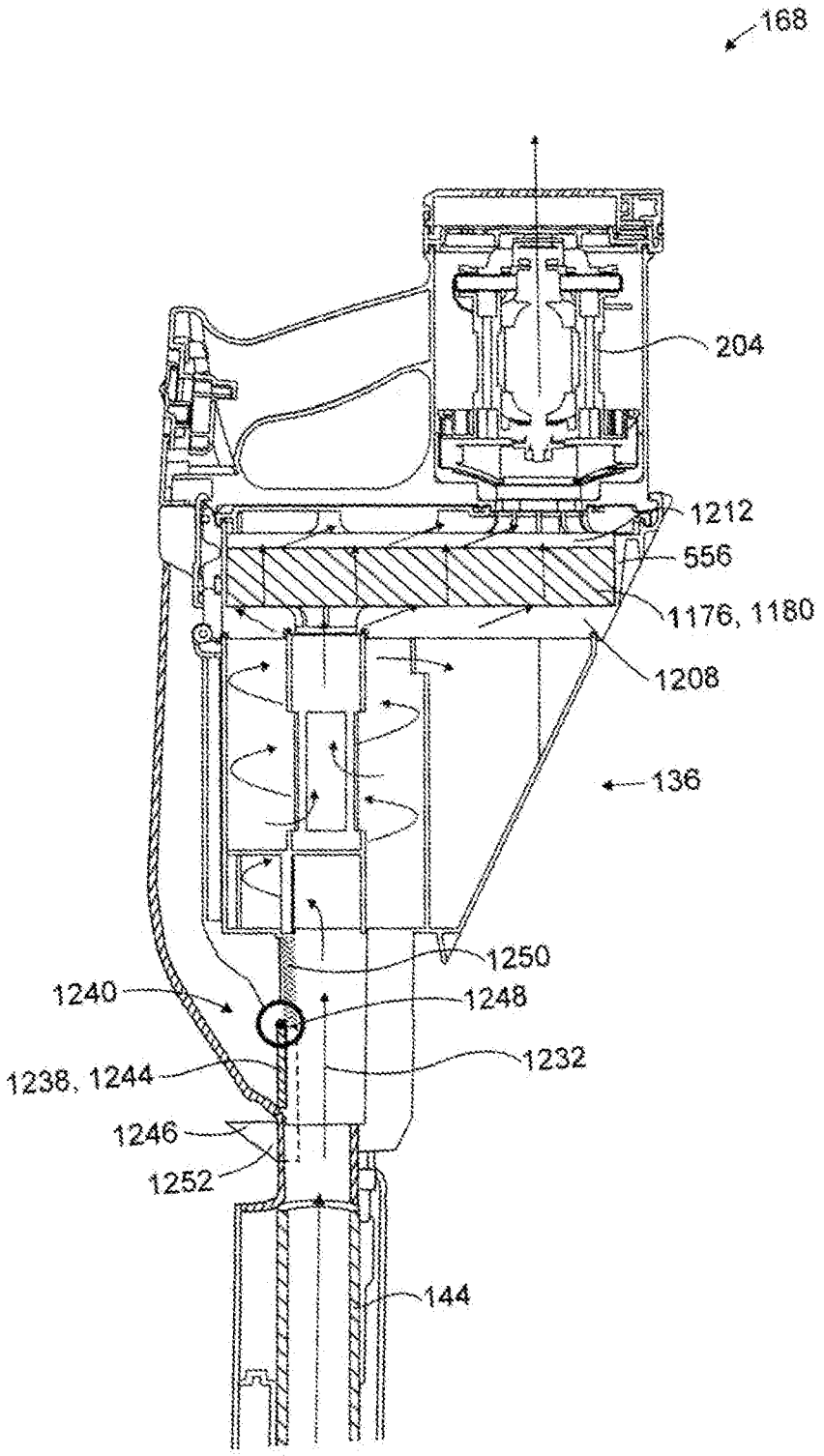

168
204
1212
556
1176, 1180
1208
136
1250
1240
1248
1232
1238, 1244
1246
1252
144

FIG. 100

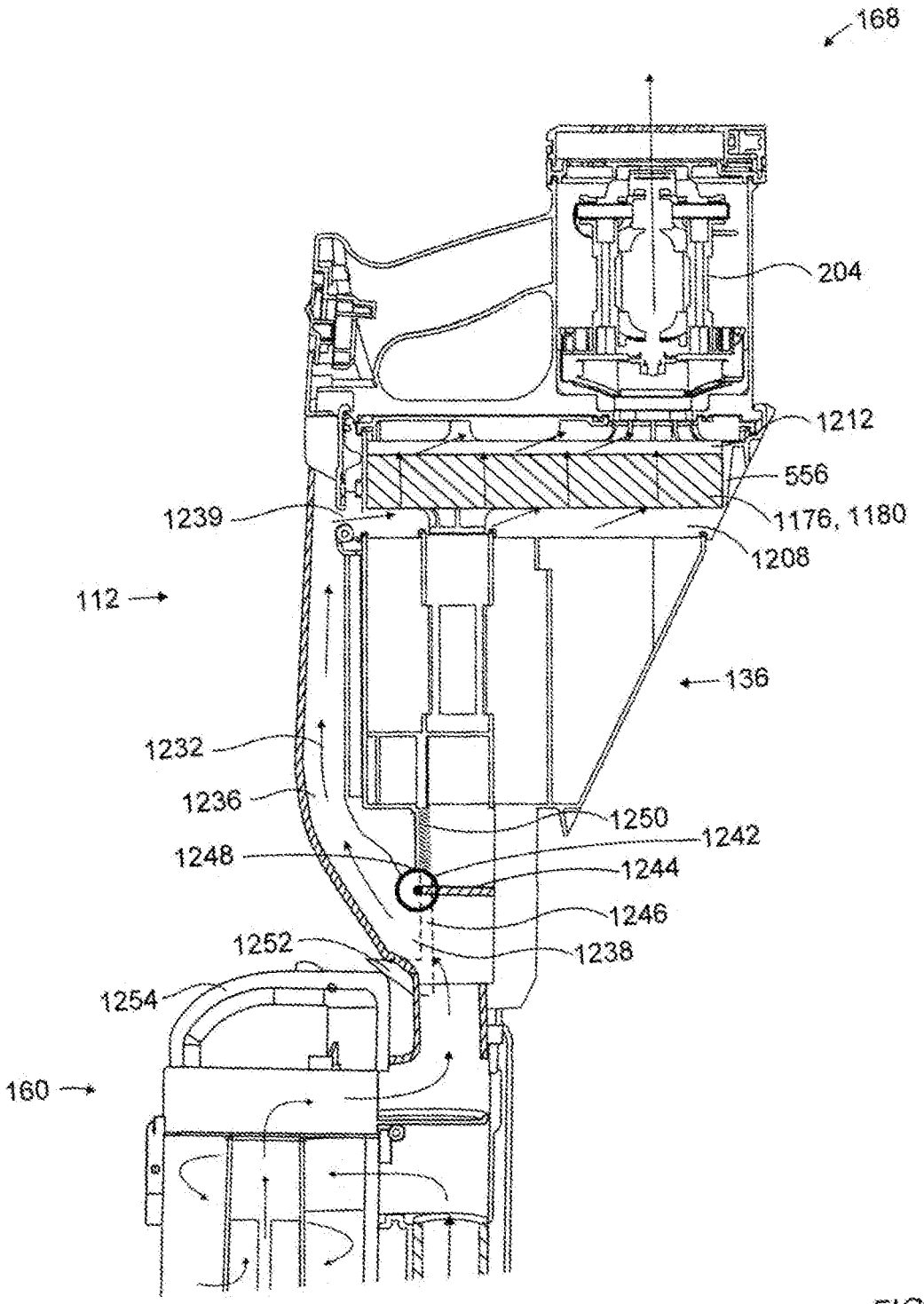

168
204
1212
556
1176, 1180
1208
1239
112
136
1232
1236
1250
1242
1248
1244
1246
1252
1238
1254
160

FIG. 101

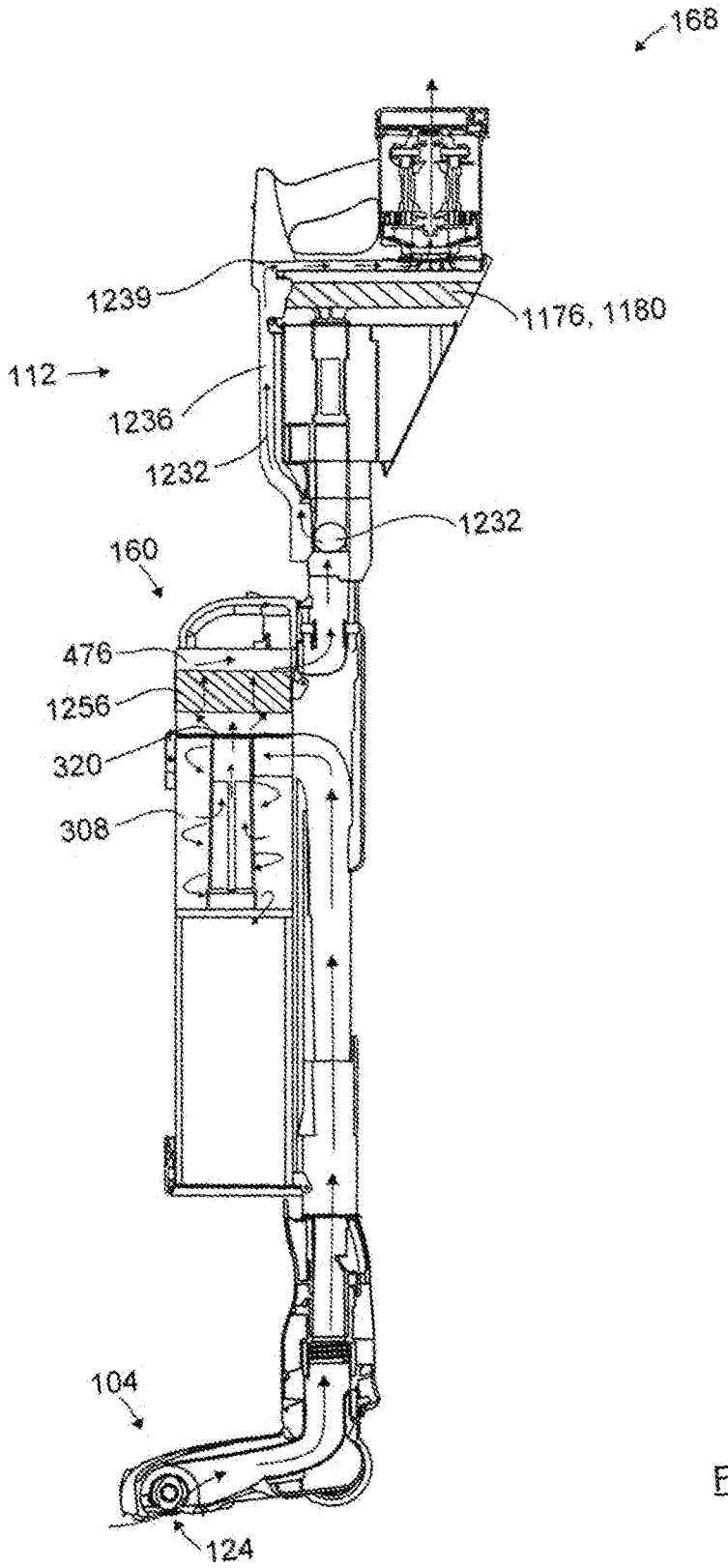

168
1239
1176, 1180
112
1236
1232
1232
160
476
1256
320
308
104
124

FIG. 102

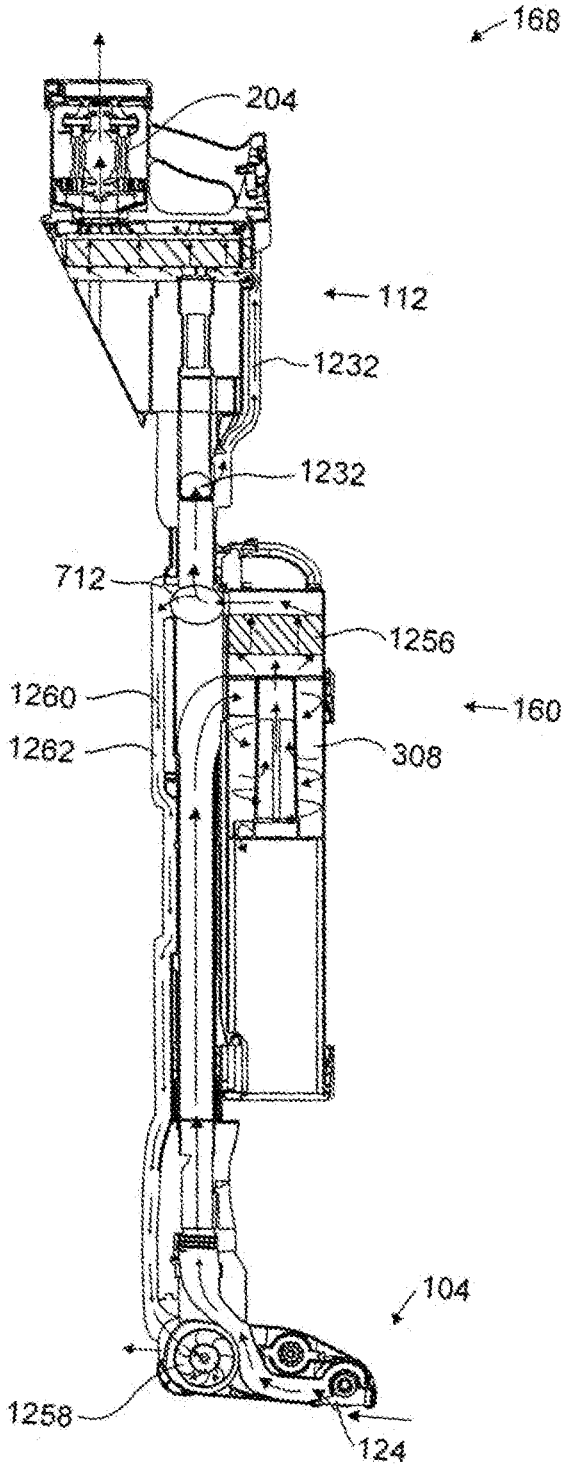


FIG. 103

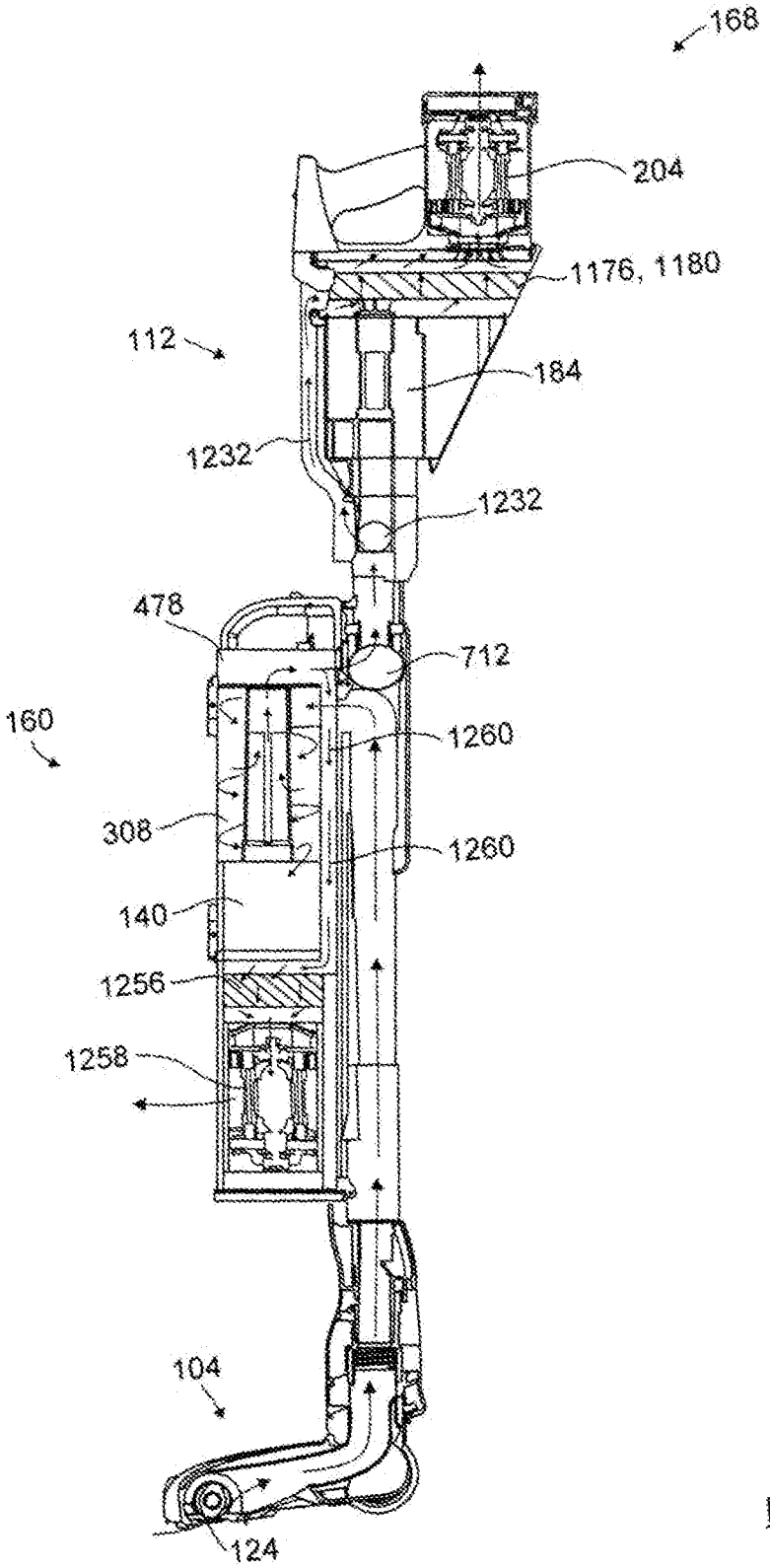

168
204
1176, 1180
112
184
1232
1232
478
712
160
1260
308
1260
140
1256
1258
104
124

FIG. 104a

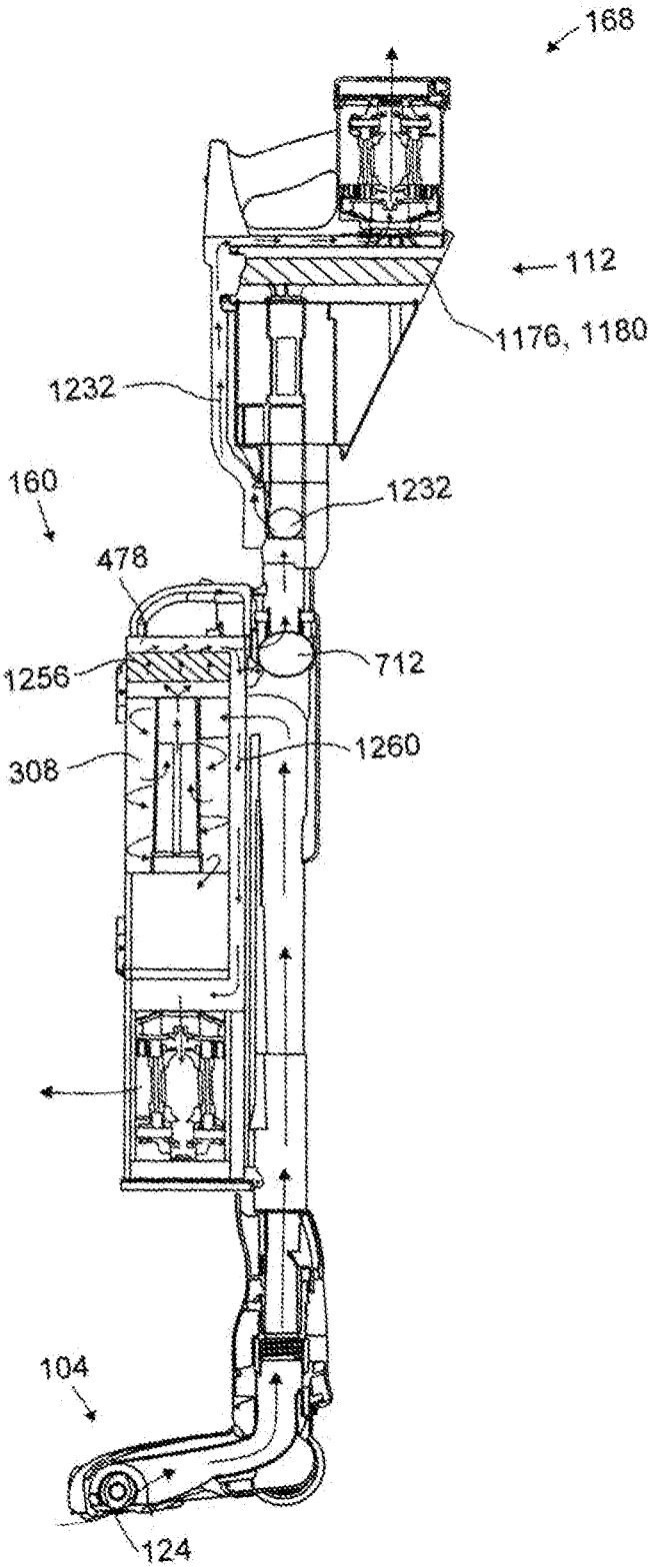


FIG. 104b

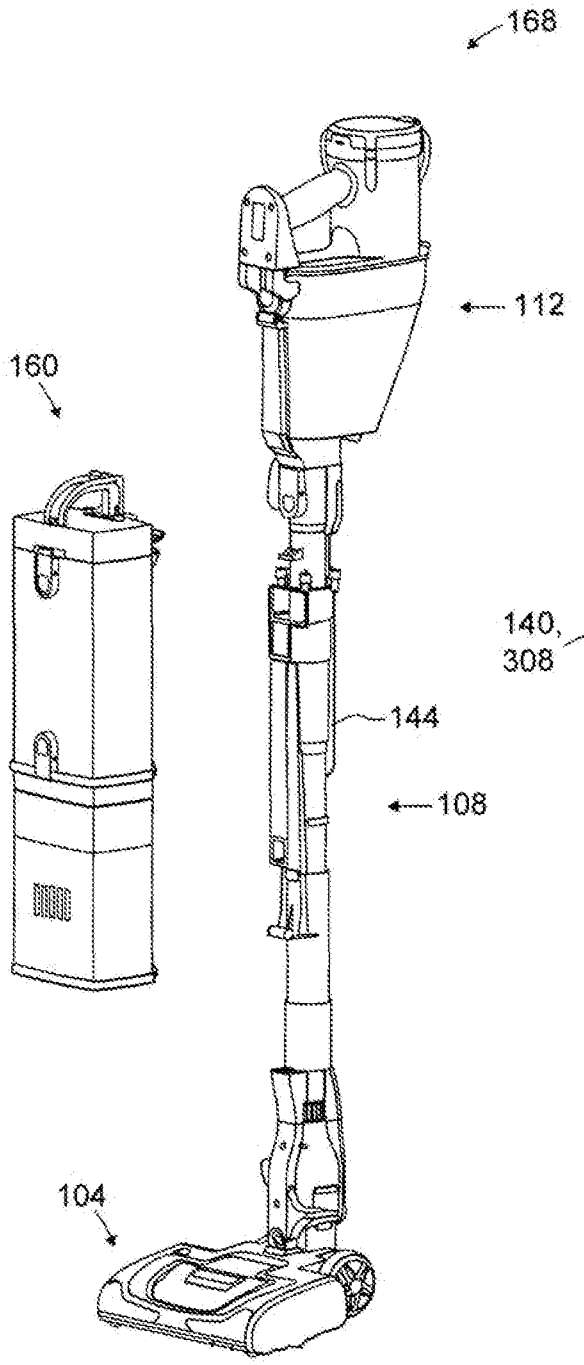


FIG. 105a

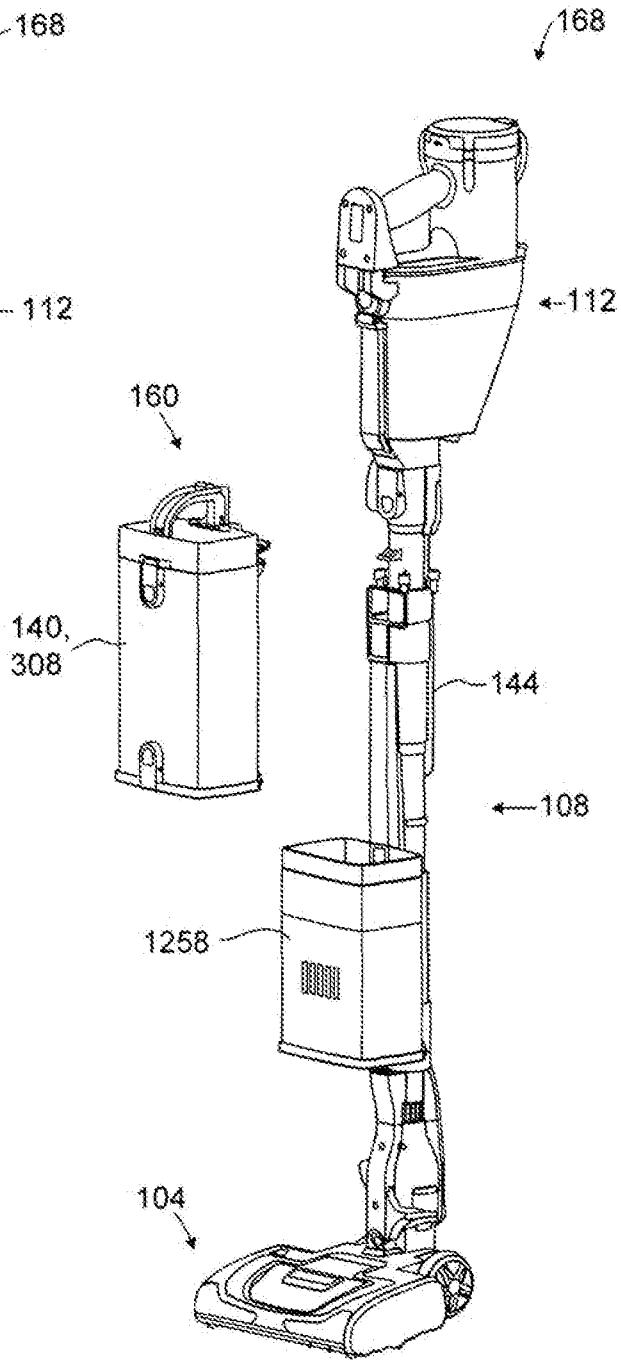


FIG. 105b

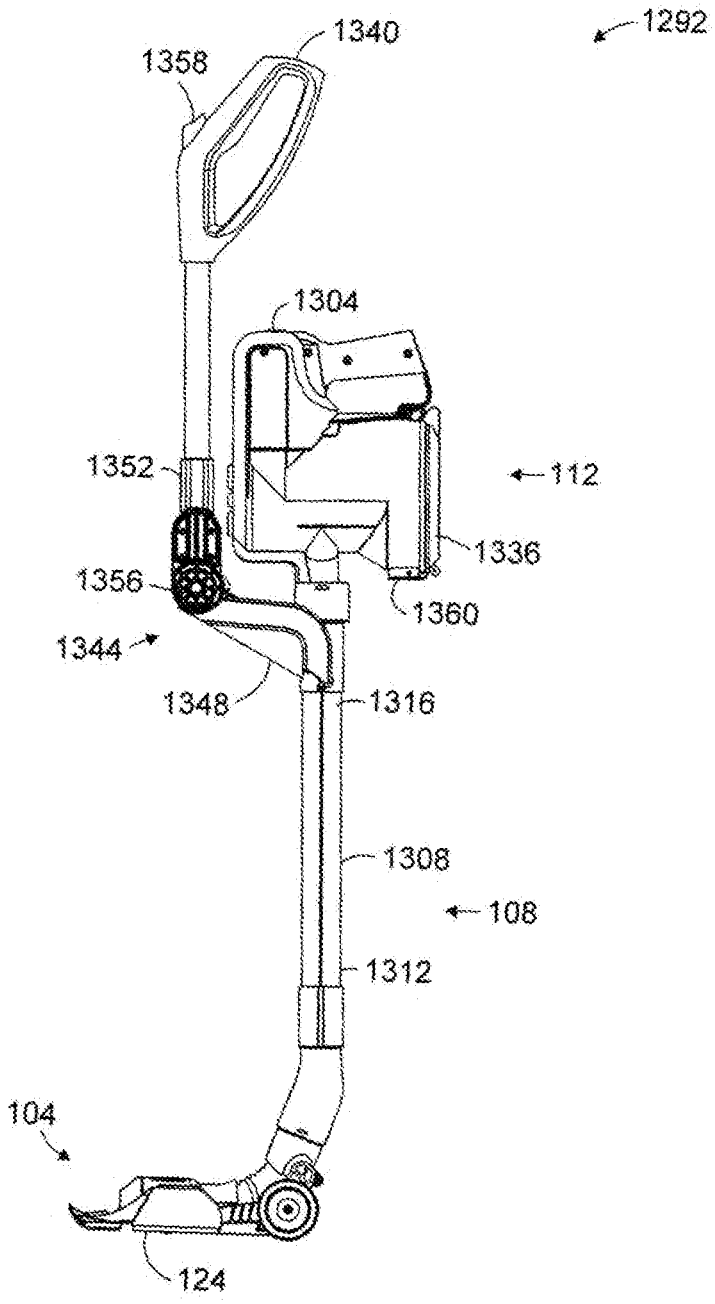

1292
1340
1358
1304
1352
112
1336
1356
1360
1344
1348
1316
1308
108
1312
104
124

FIG. 106

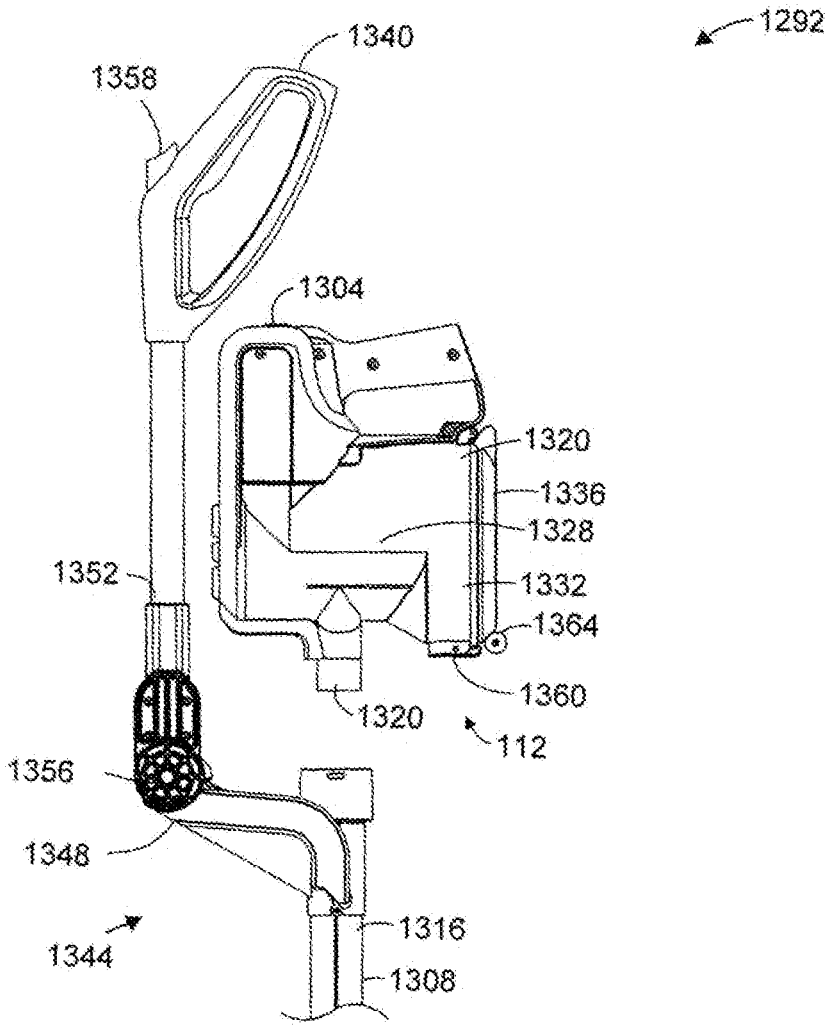

1292
1340
1358
1304
1320
1336
1328
1352
1332
1364
1360
1320
112
1356
1348
1316
1344
1308

FIG. 107

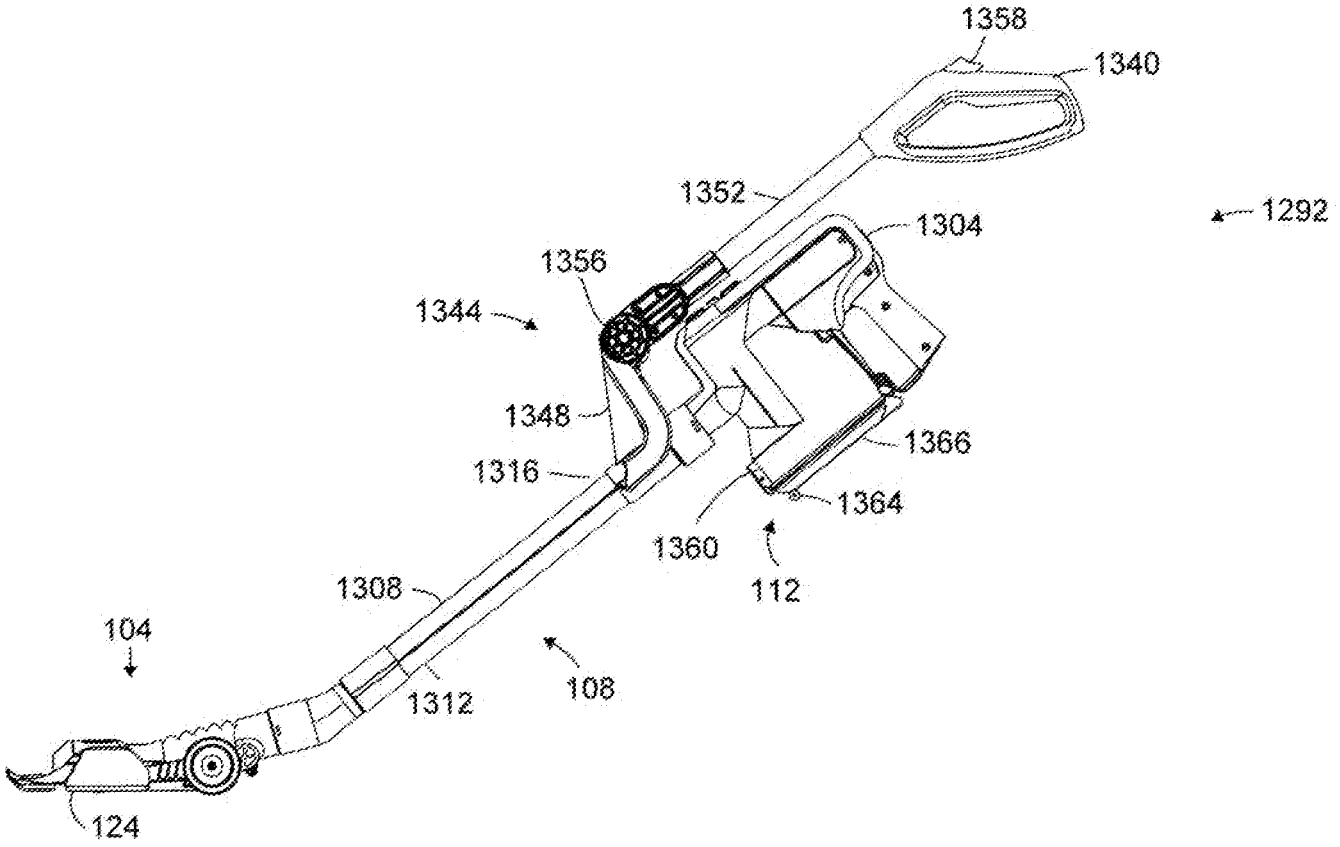

1358
1340
1352
1292
1304
1356
1344
1348
1366
1316
1364
1360
112
1308
104
108
1312
124

FIG. 108

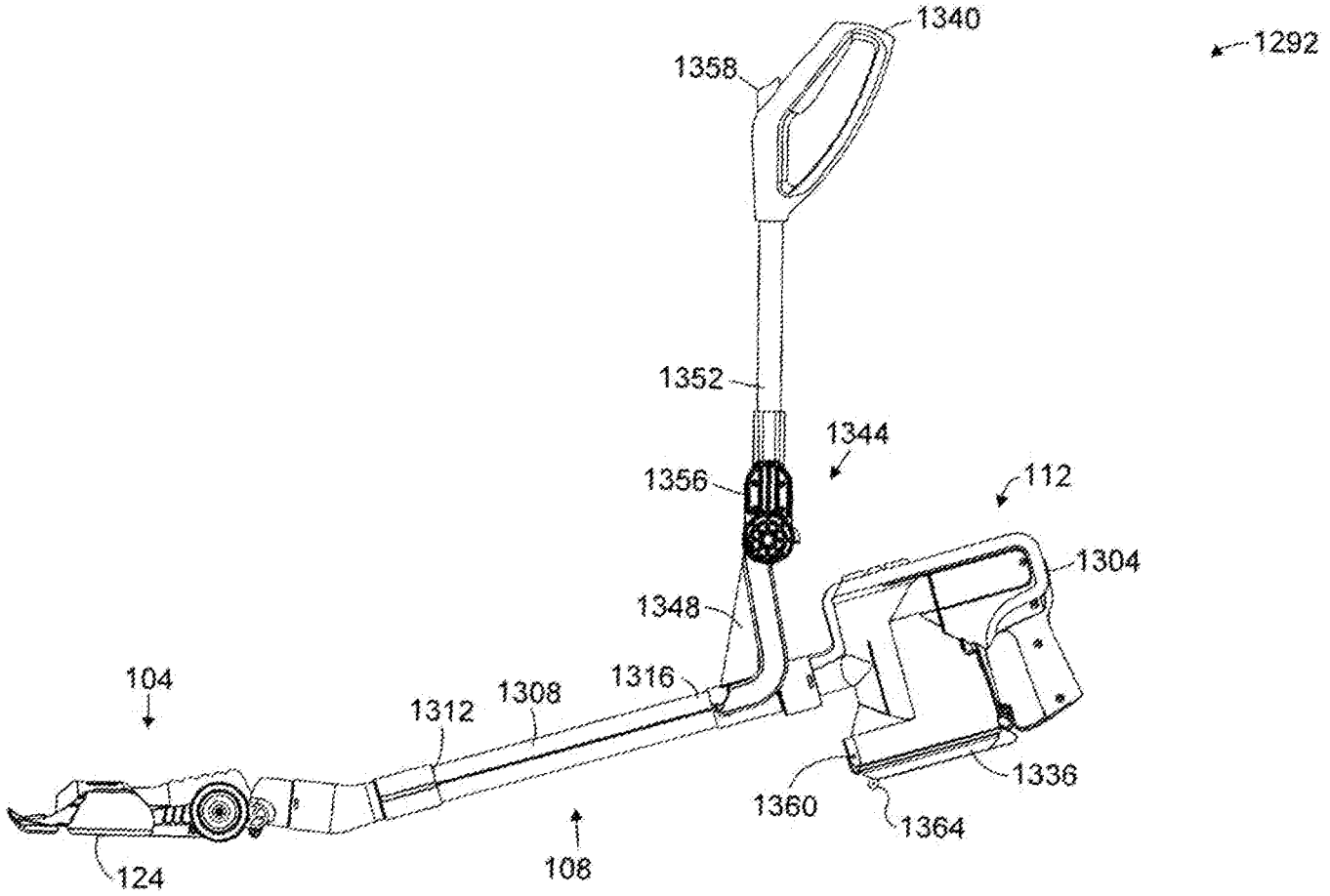

1340
1292
1358
1352
1344
1356
112
1304
1348
104
1312
1308
1316
1360
1336
1364
124
108

FIG. 109

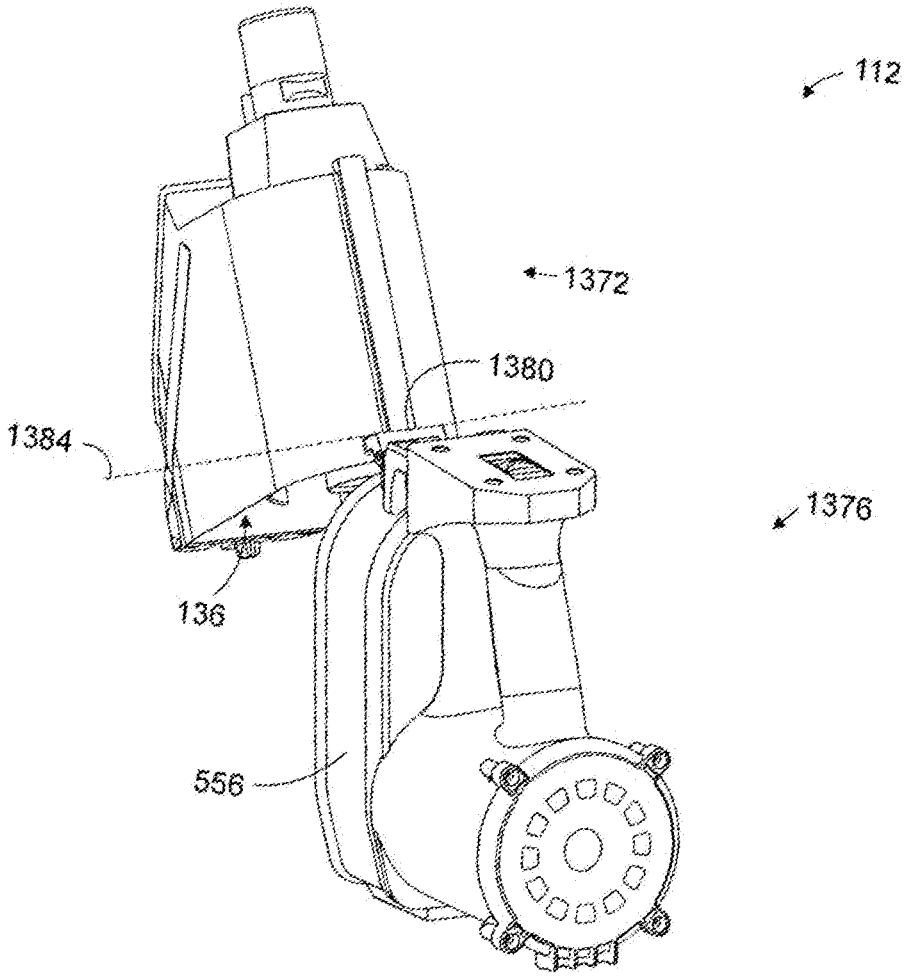


FIG. 110a

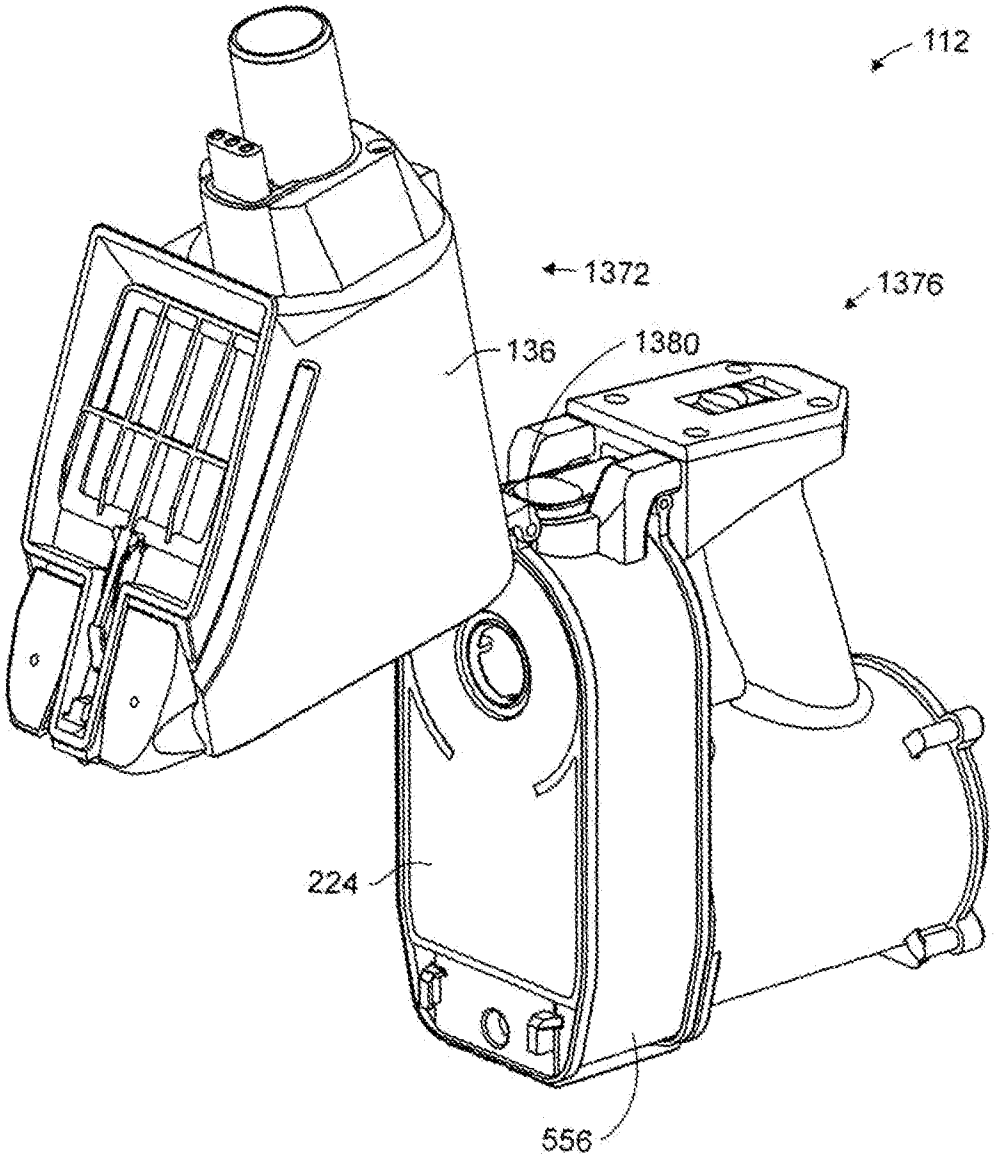


FIG. 110b

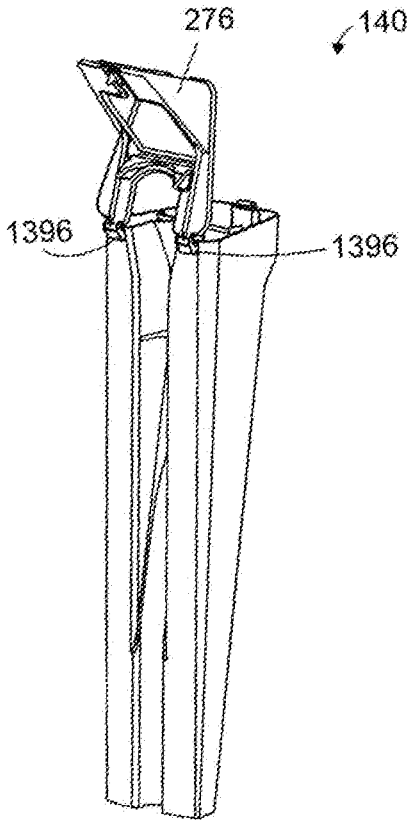


FIG. 111

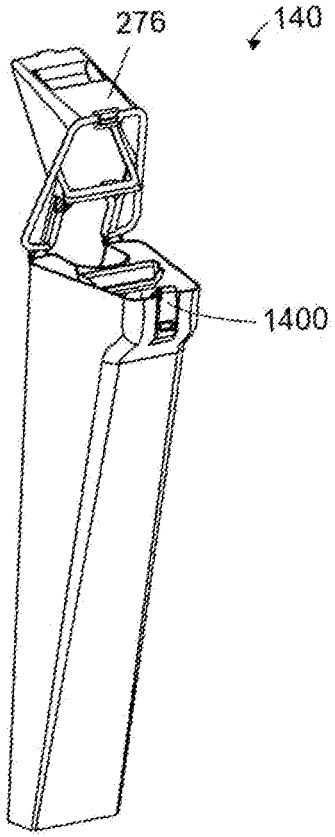


FIG. 112

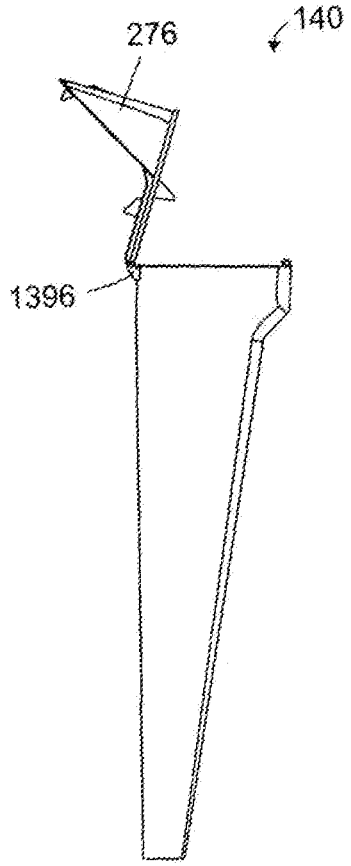


FIG. 113

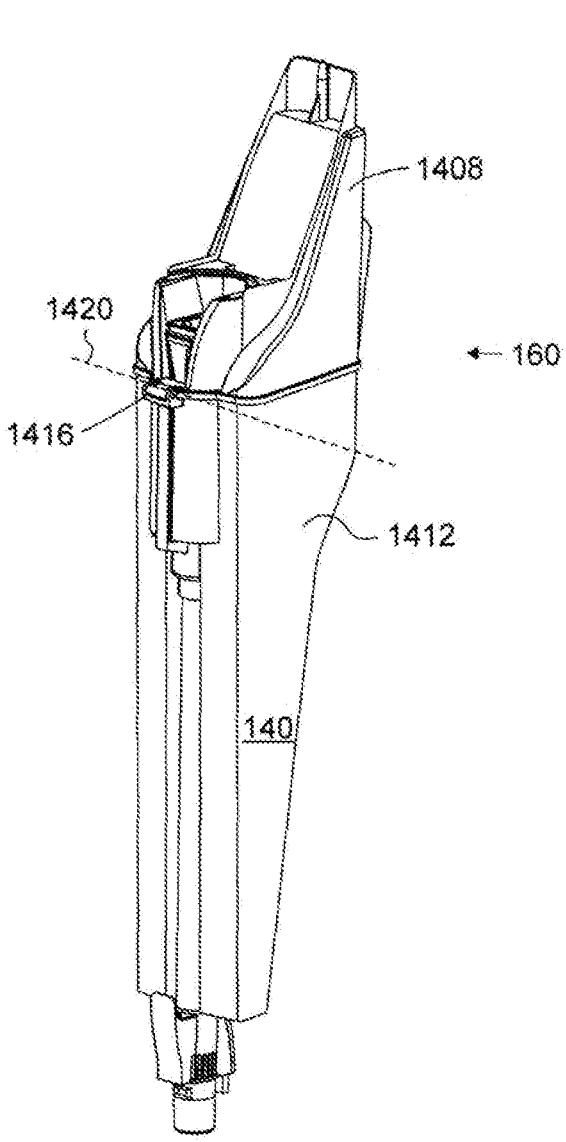


FIG. 114

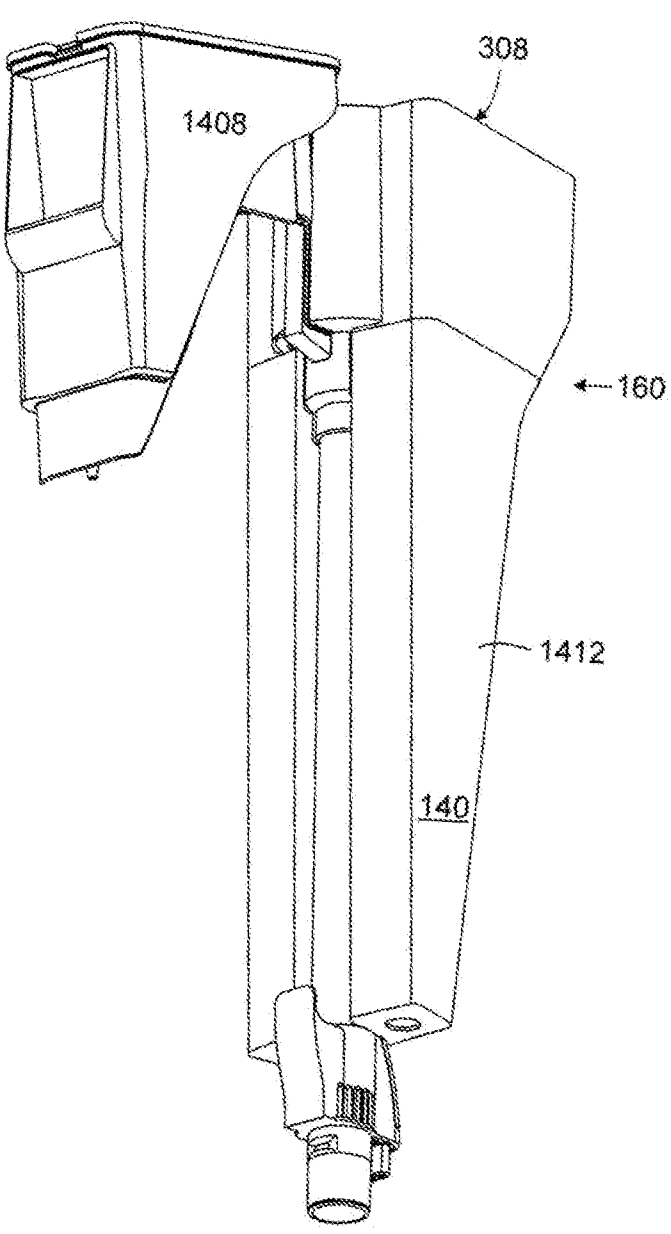


FIG. 115

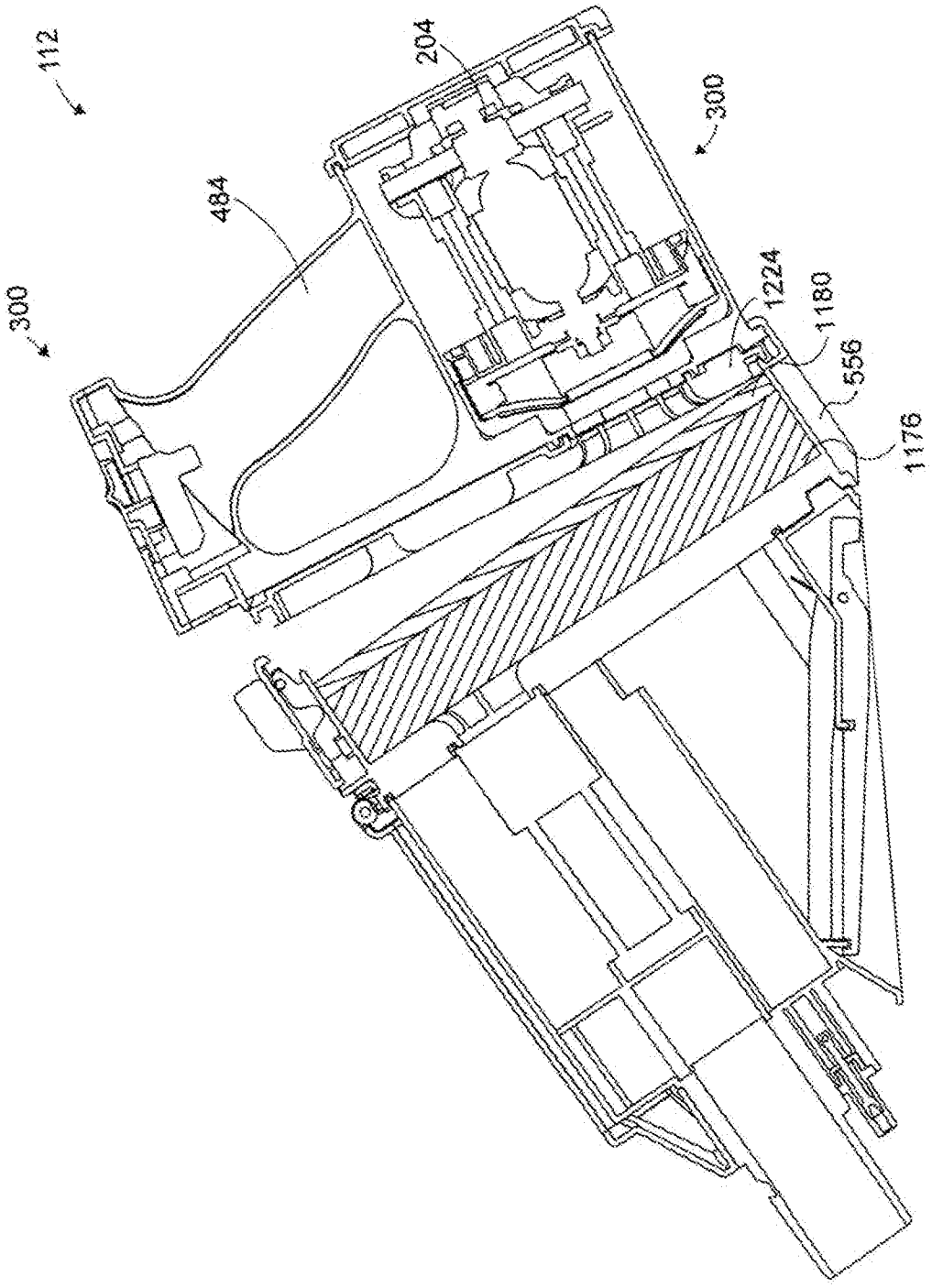


FIG. 116

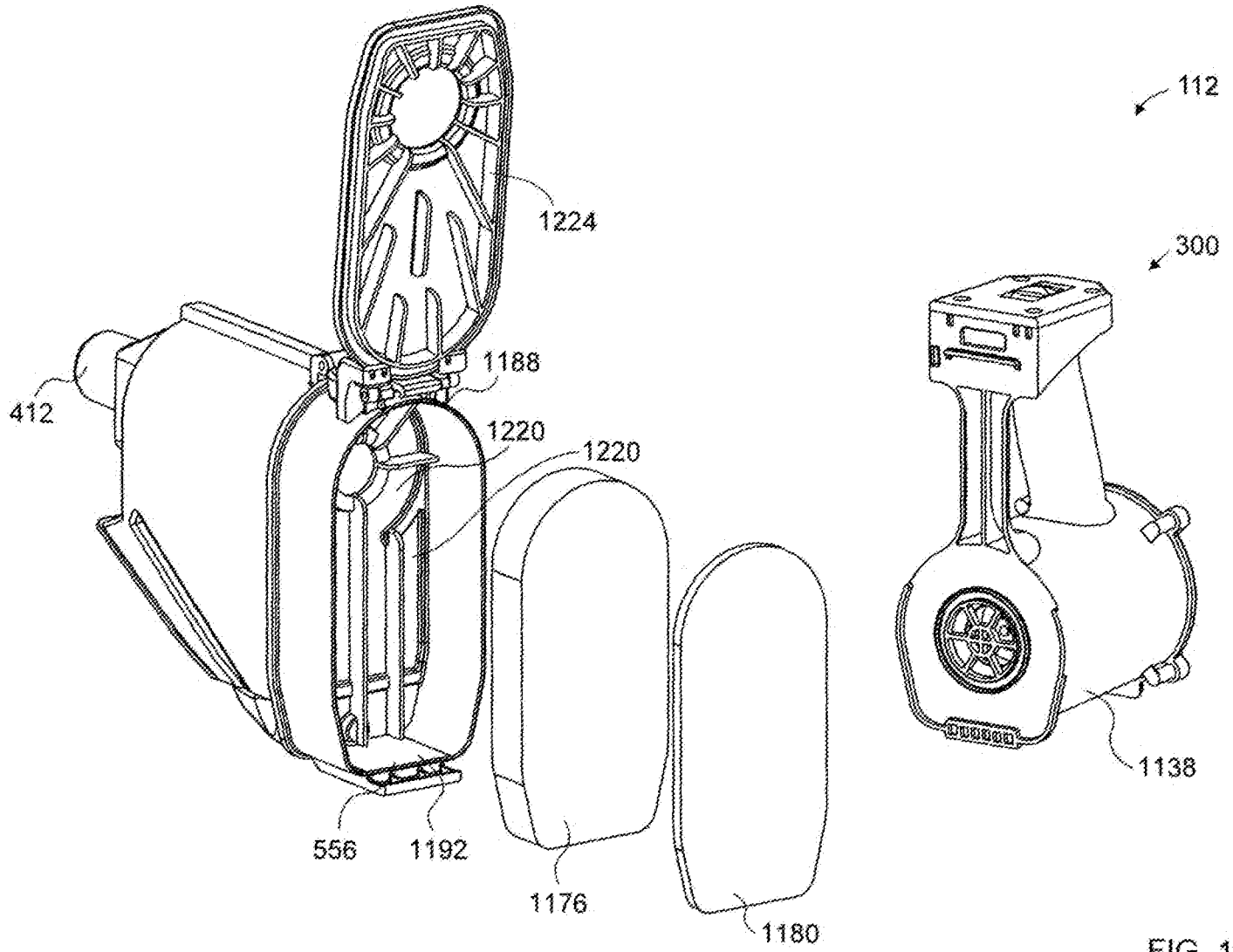


FIG. 117

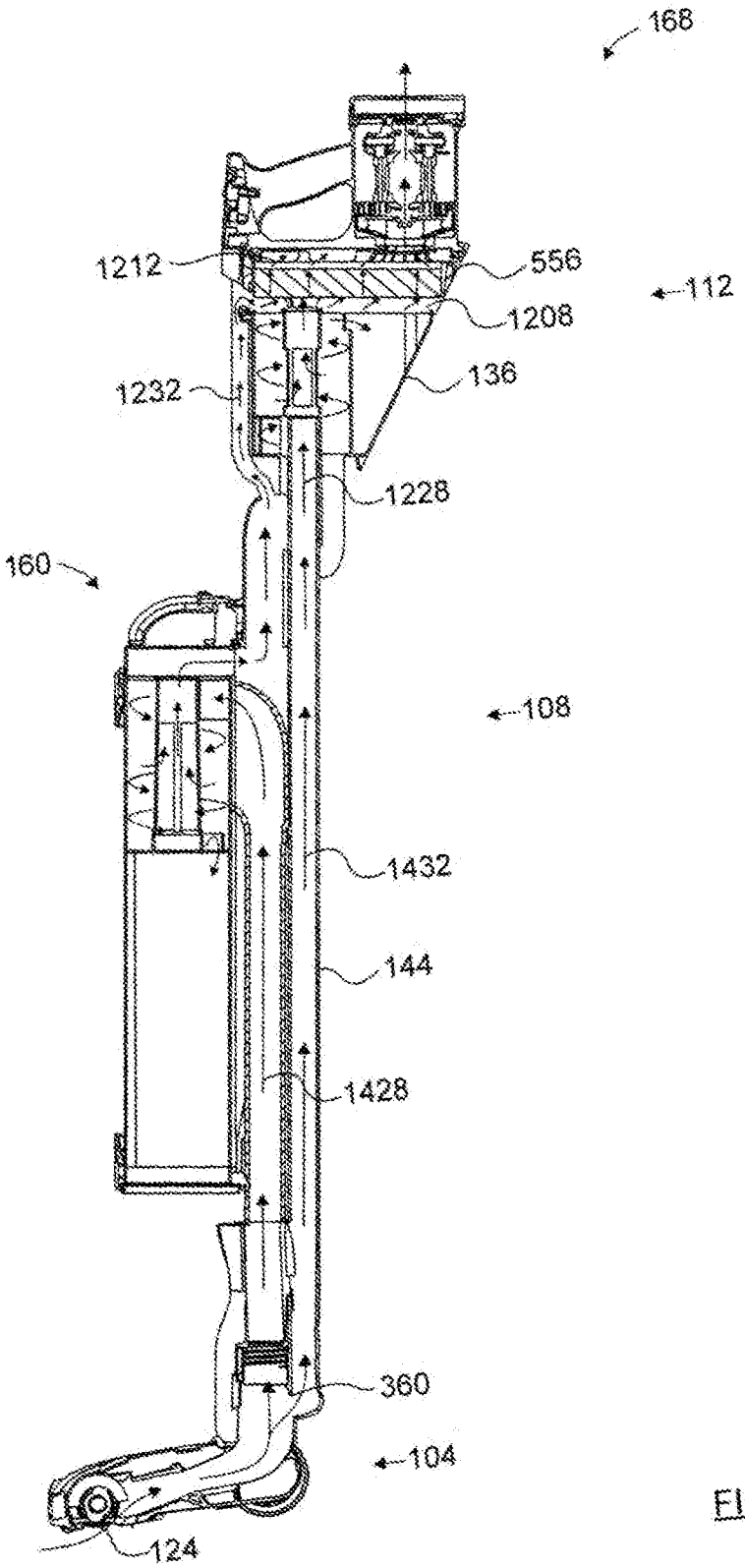

168
1212
556
112
1208
136
1232
1228
160
108
1432
144
1428
360
104
124

FIG. 118

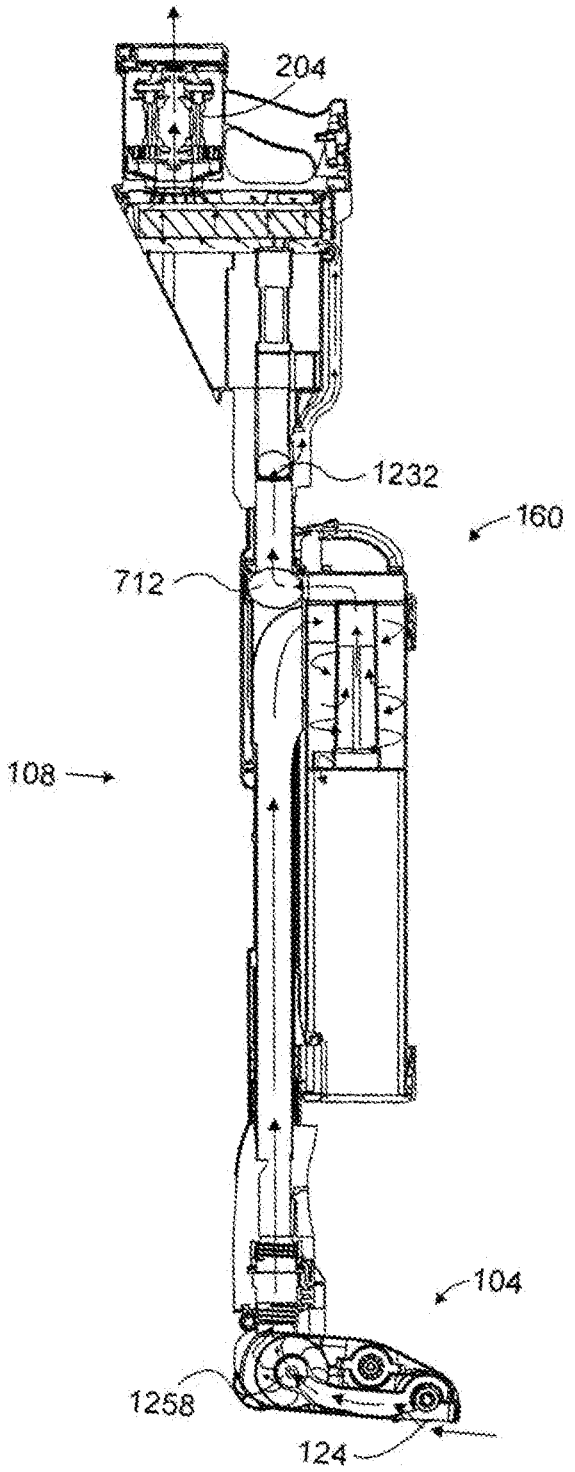


FIG. 119a

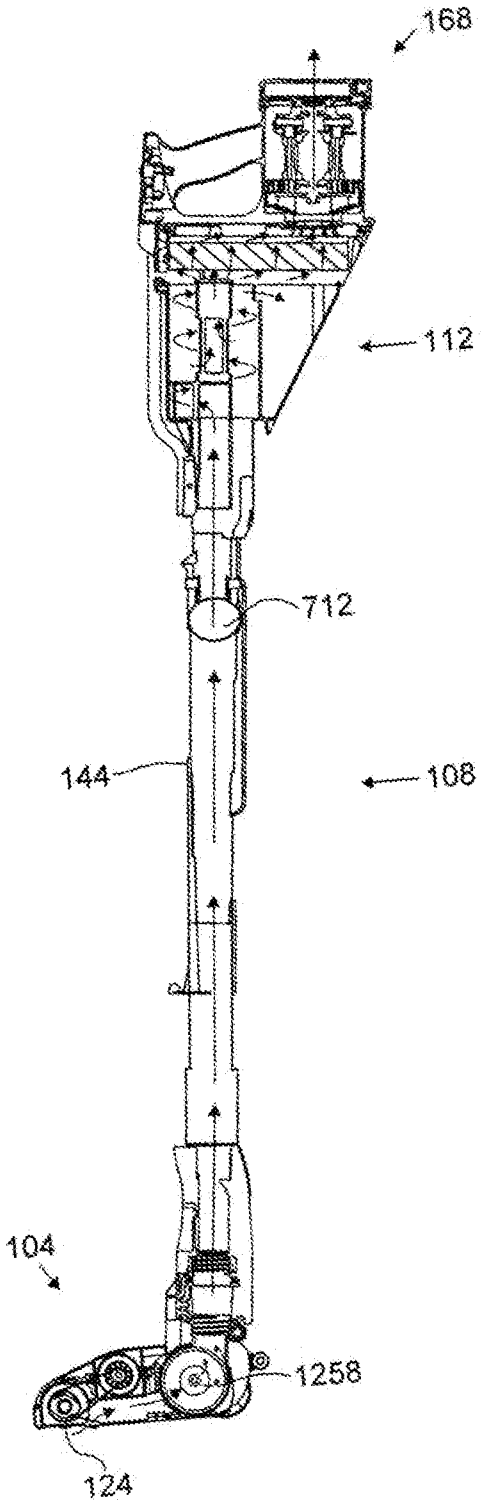


FIG. 119b

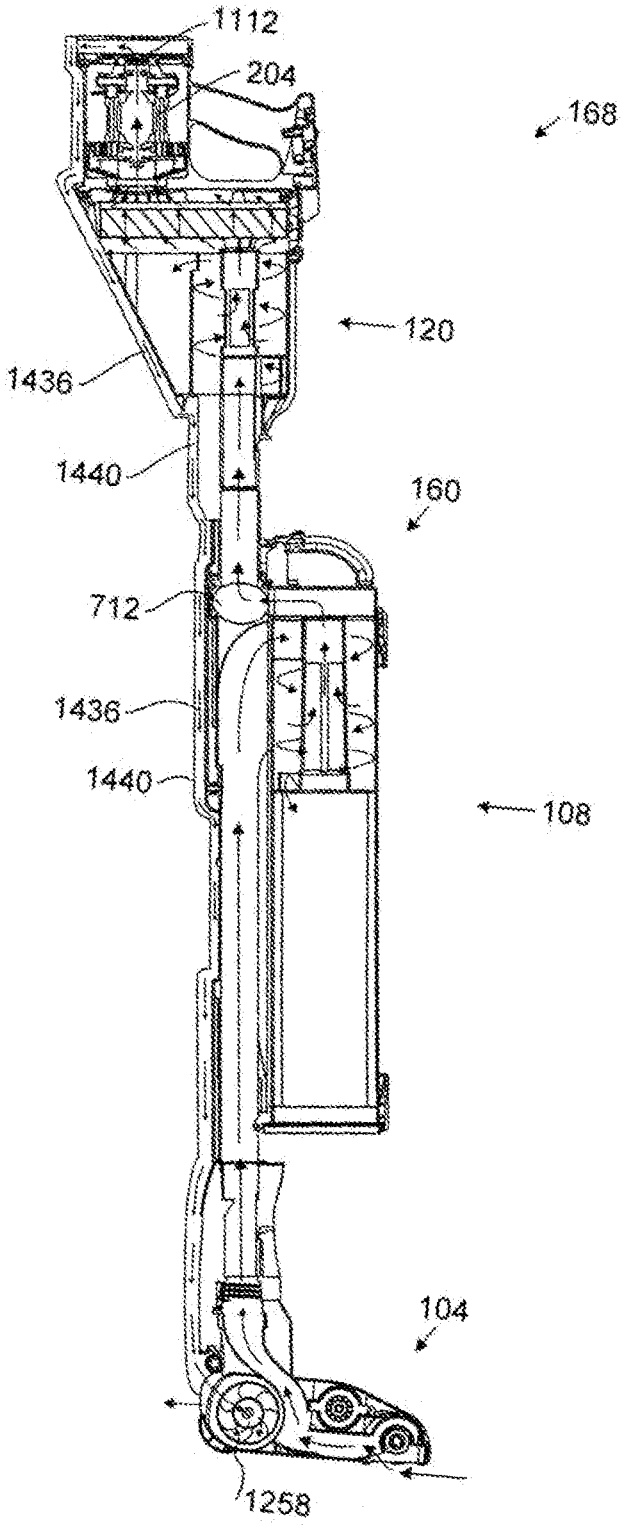


FIG. 120

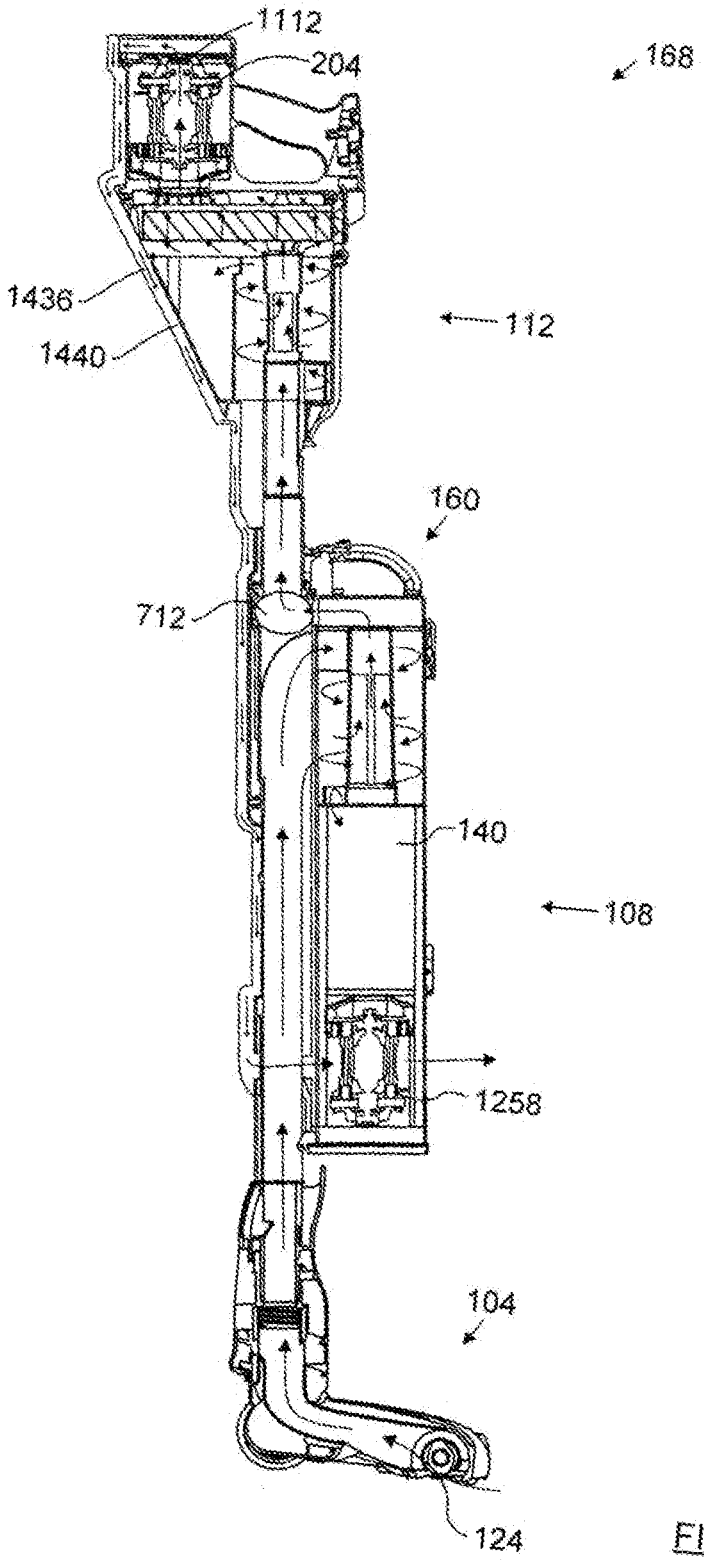


FIG. 121a

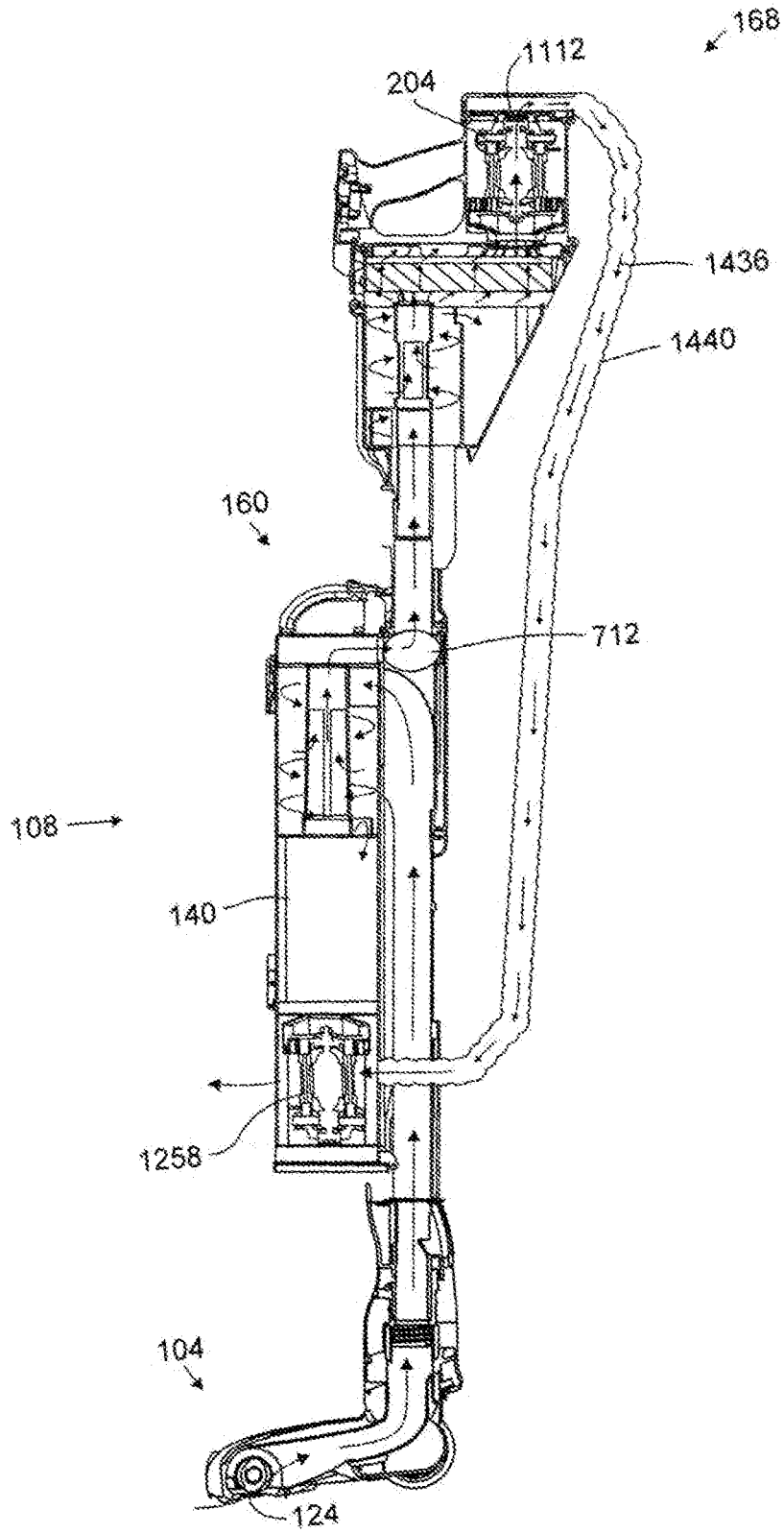


FIG. 121b

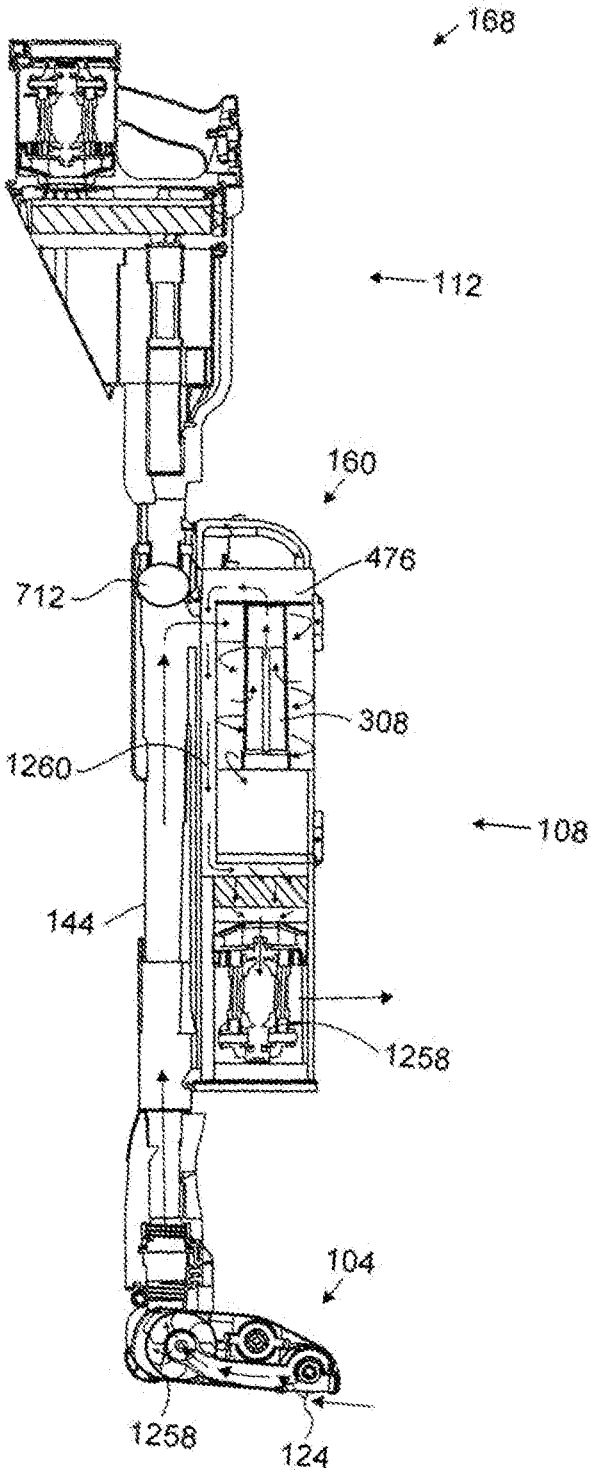


FIG. 122

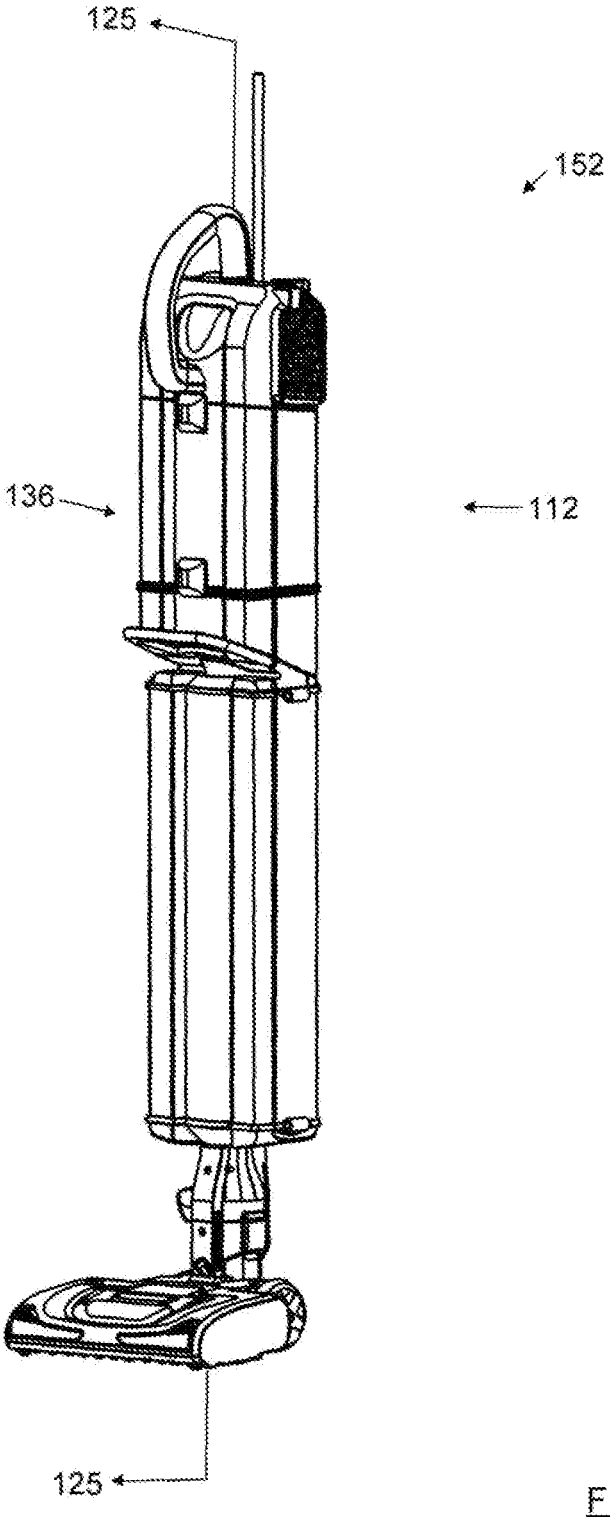


FIG. 123

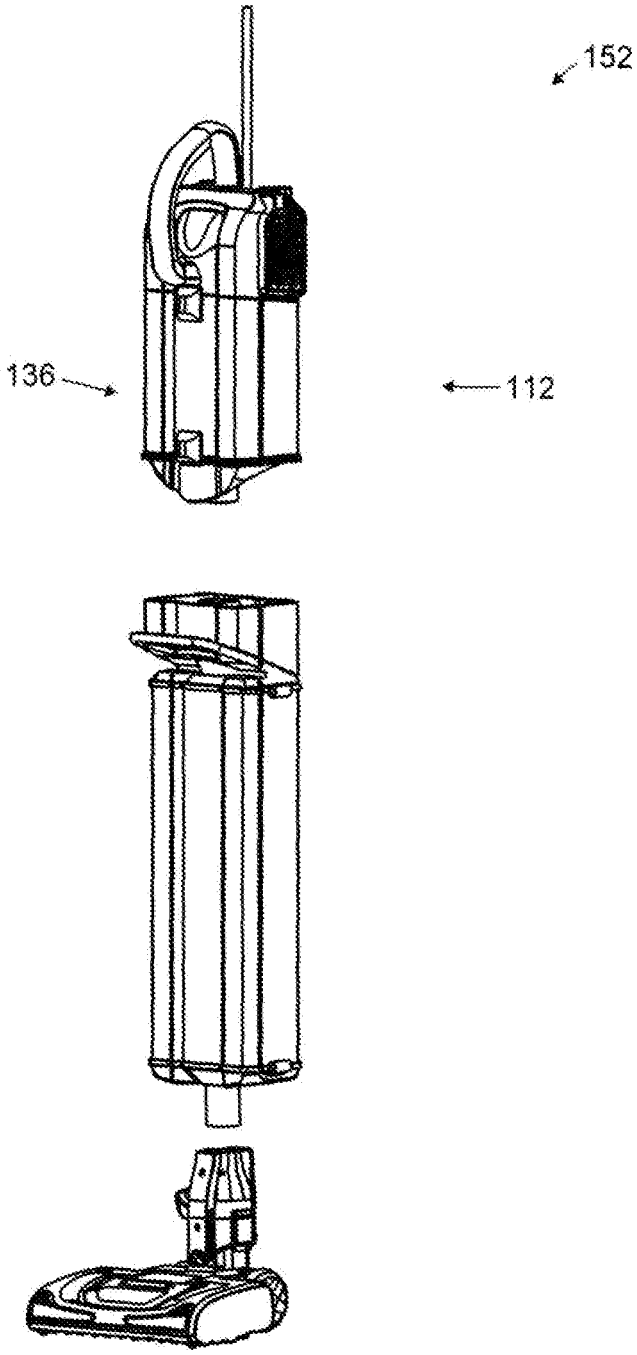


FIG. 124

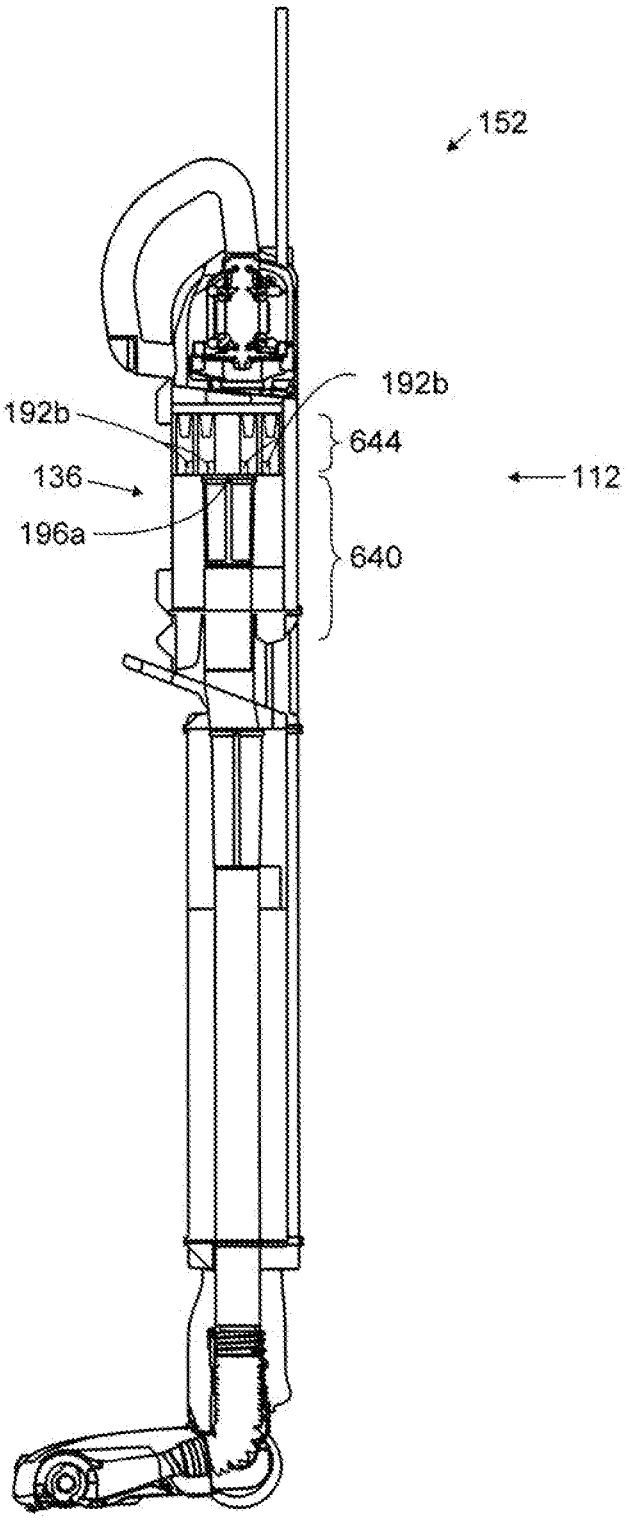


FIG. 125

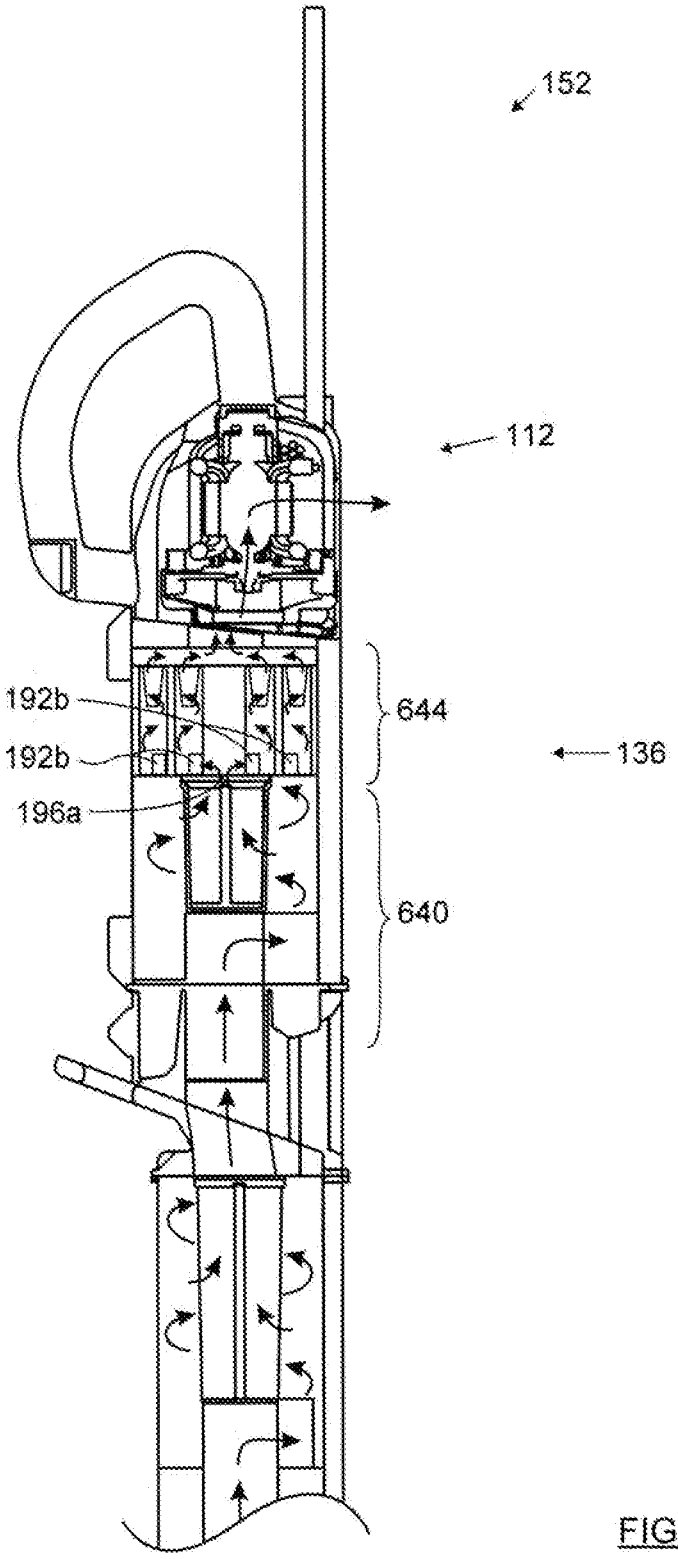


FIG. 126

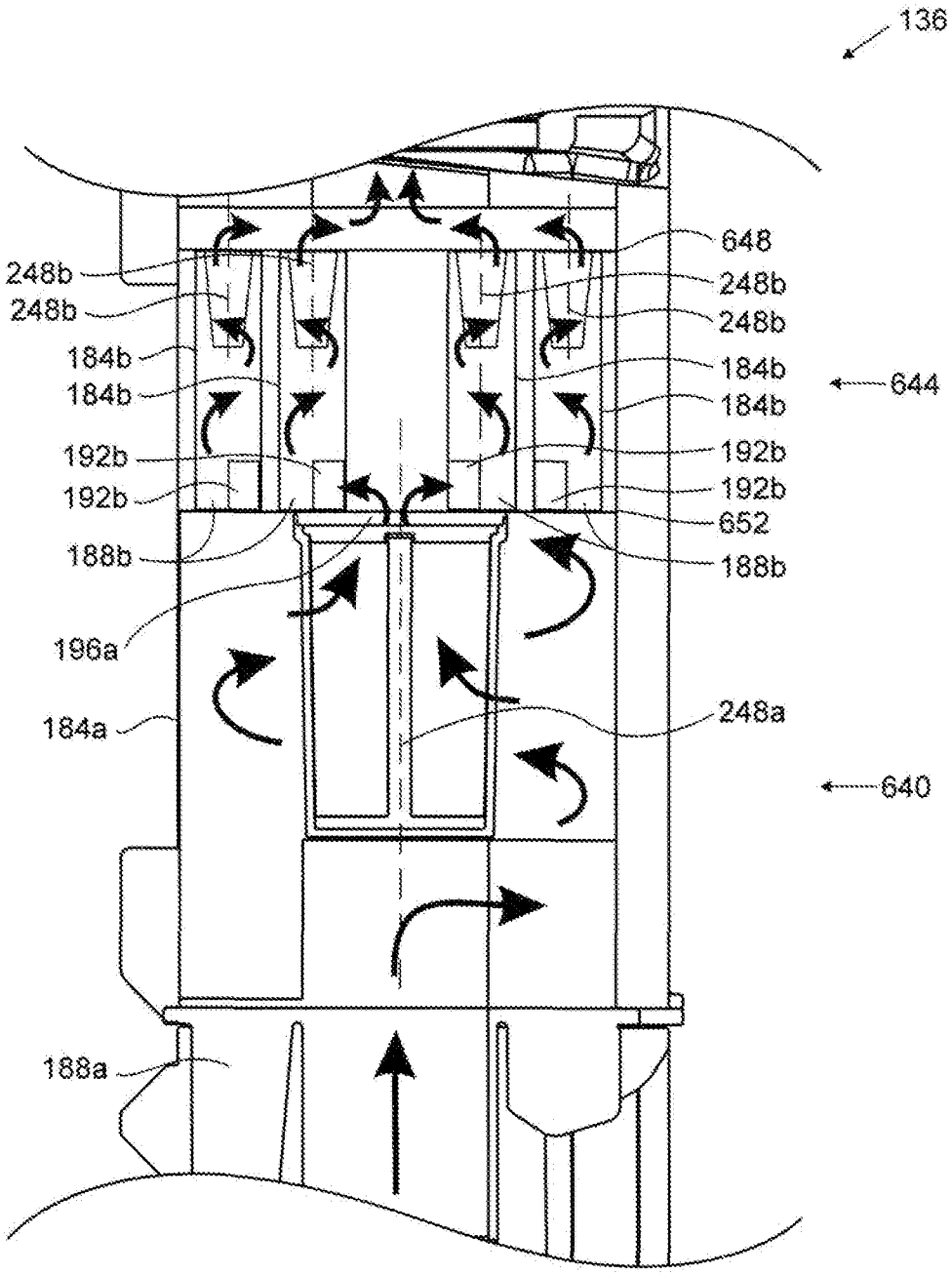

136
648
248b
248b
248b
248b
184b
184b
184b
184b
644
192b
192b
192b
192b
652
188b
188b
196a
184a
248a
640
188a

FIG. 127

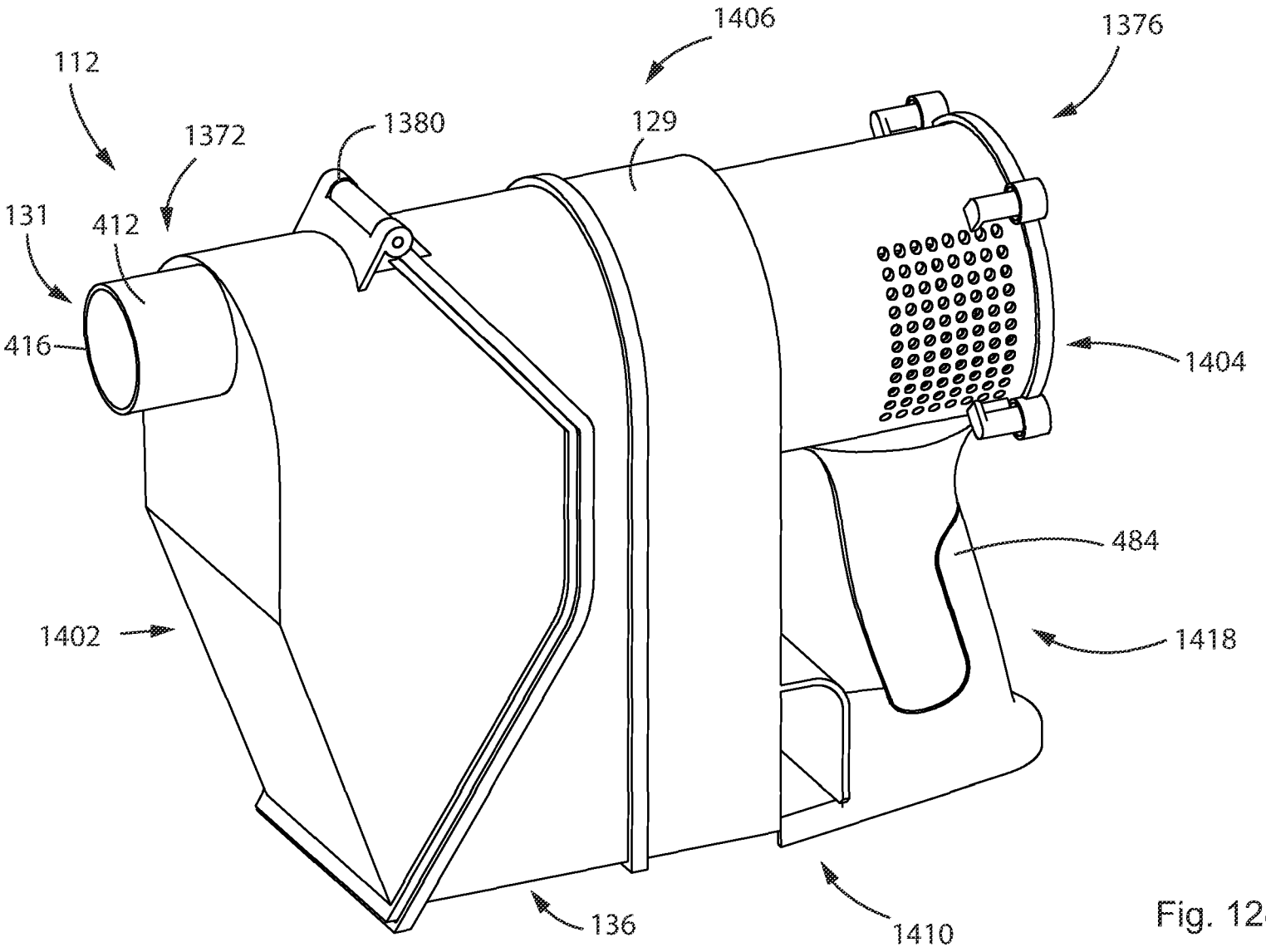

1406
1376
112
1372
1380
129
131
412
416
1404
484
1402
1418
136
1410

Fig. 128

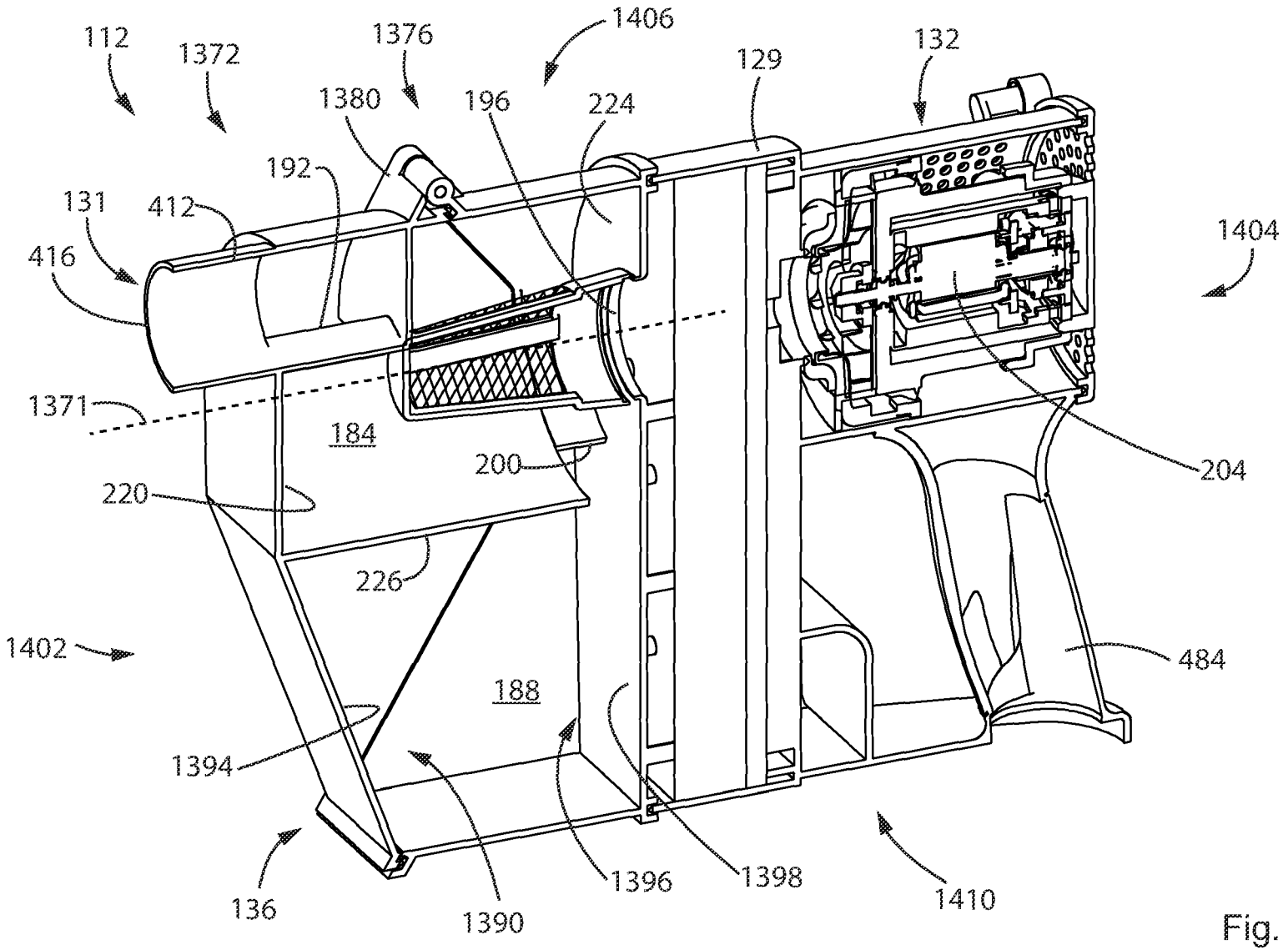

112
1372
1376
1406
1380
196
224
129
132
192
131
412
416
1404
1371
184
200
204
220
226
1402
484
188
1394
136
1390
1396
1398
1410

Fig. 129

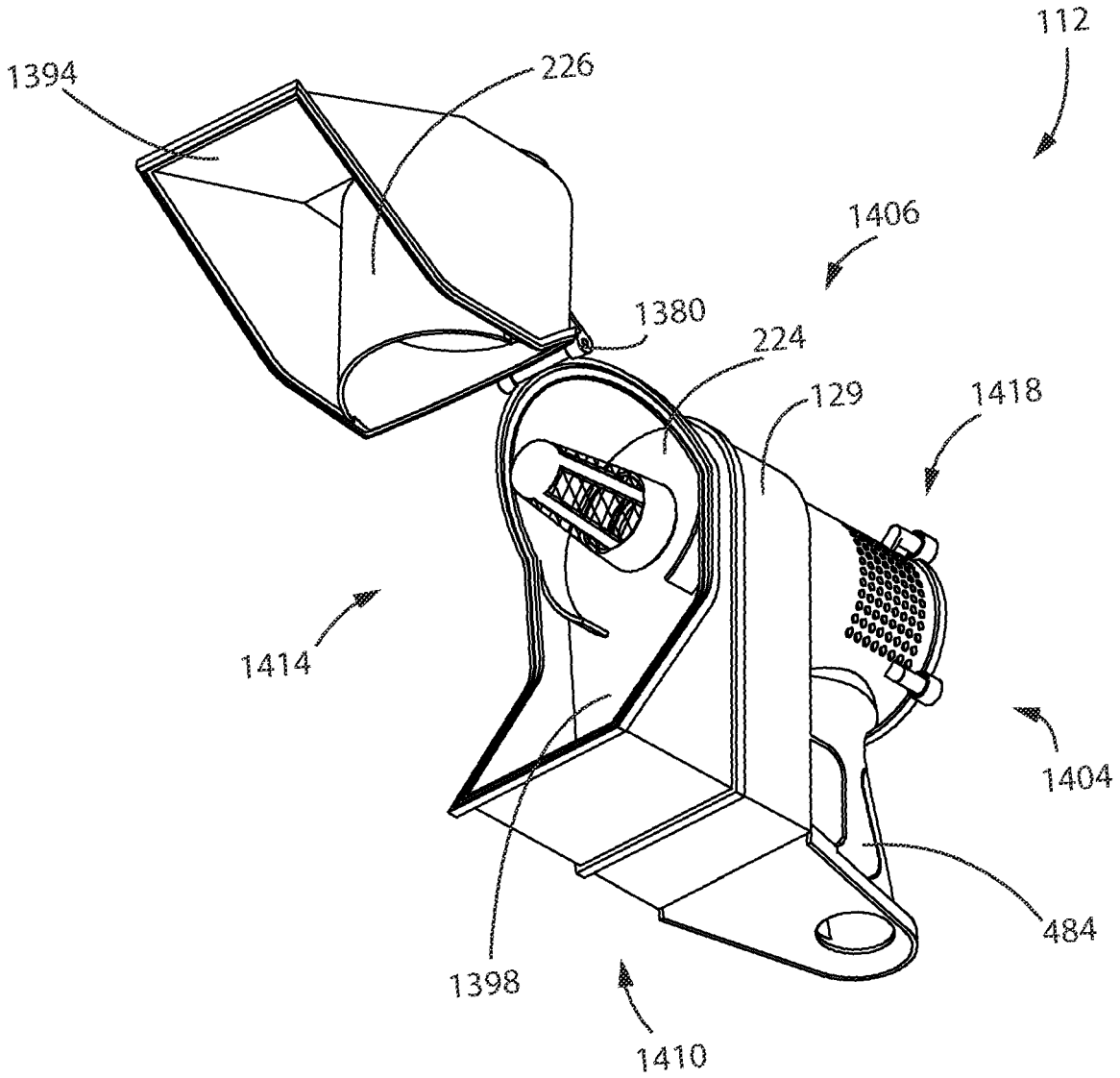


Fig. 130

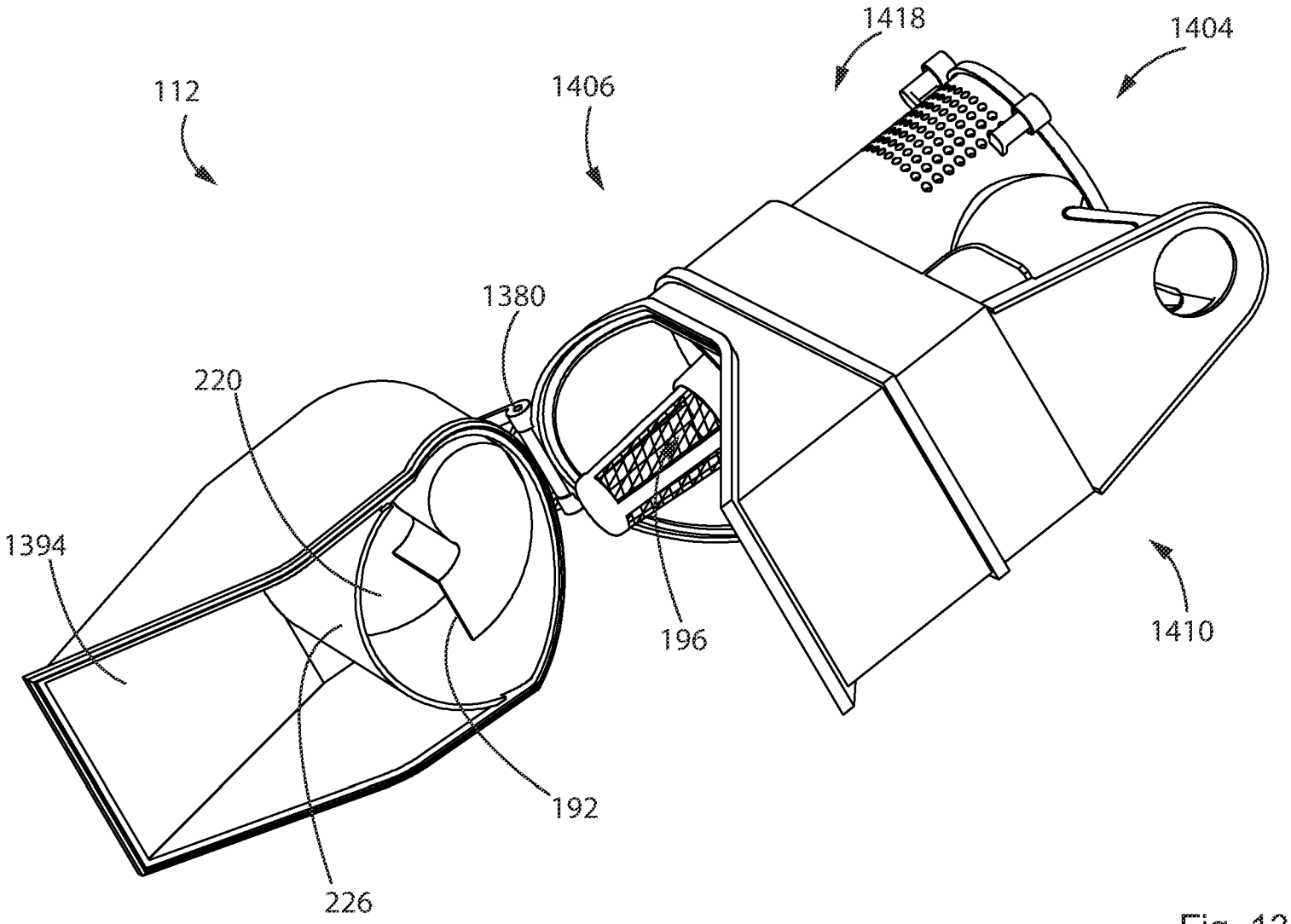


Fig. 131

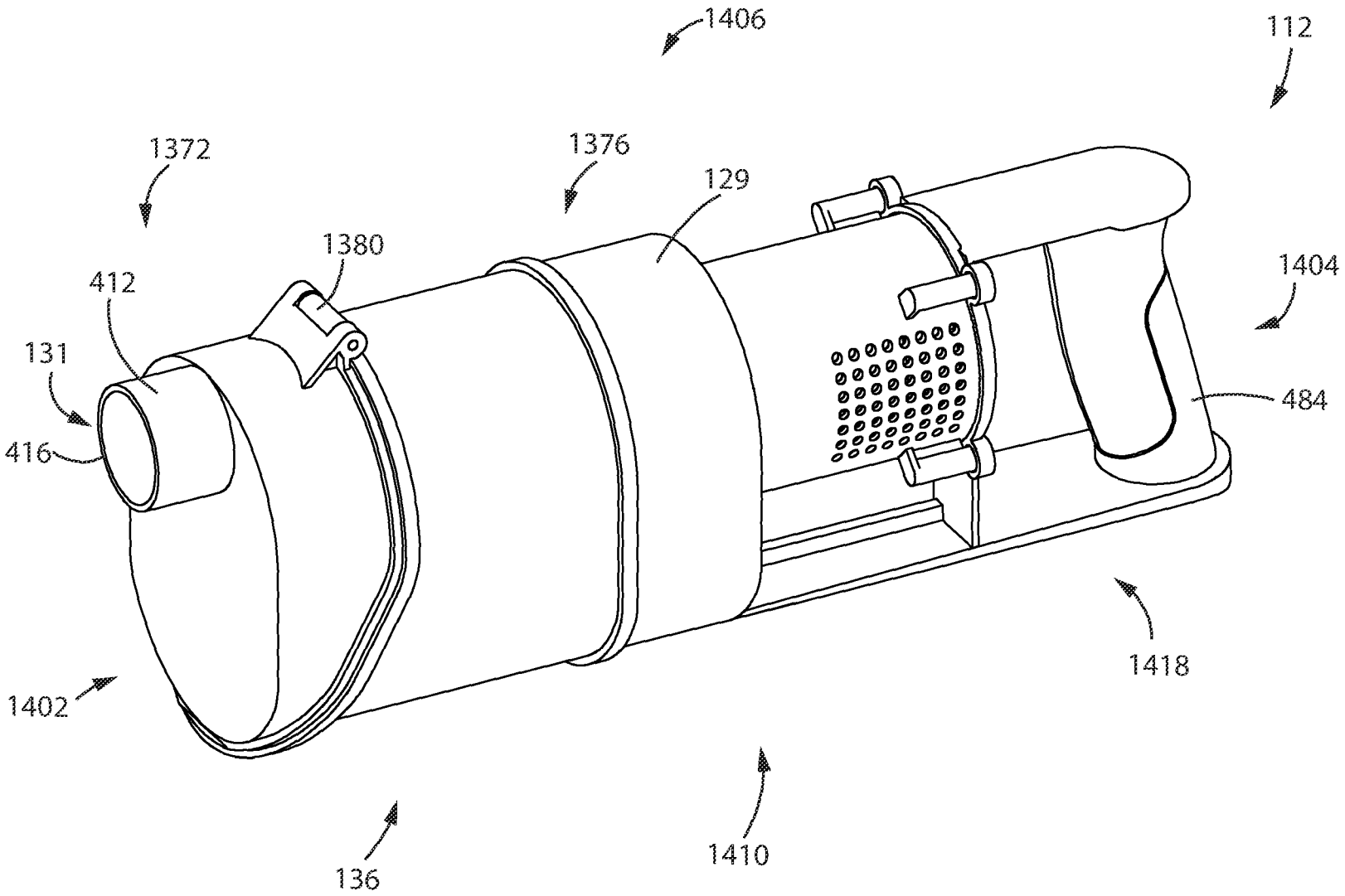

1406
112
1372
1376
129
1380
412
1404
131
484
416
1418
1402
136
1410

Fig. 132

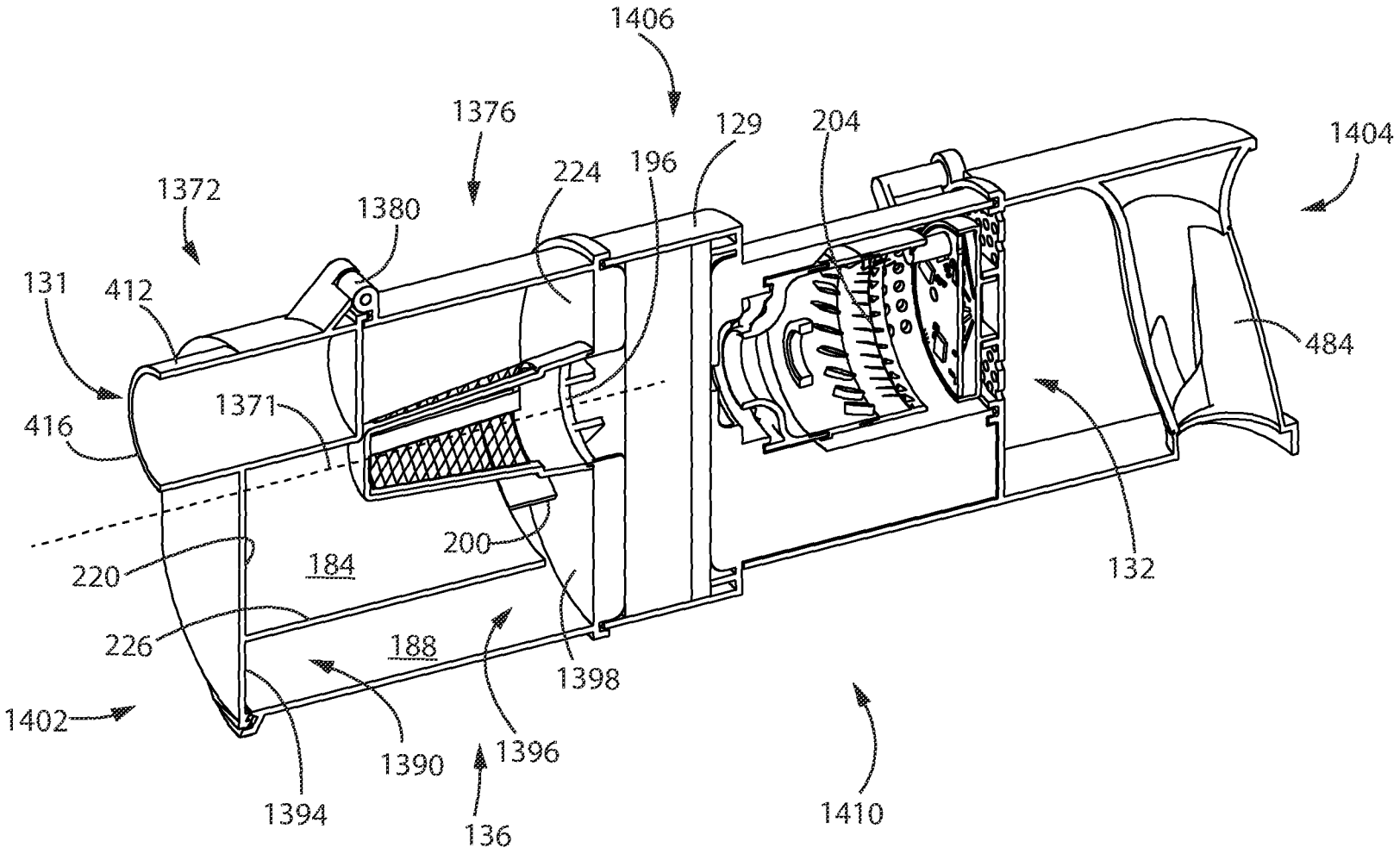

1406
1376
1372
1380
224
196
129
204
1404
131
412
484
1371
416
200
220
184
132
226
188
1398
1402
1390
1396
1394
136
1410

Fig. 133

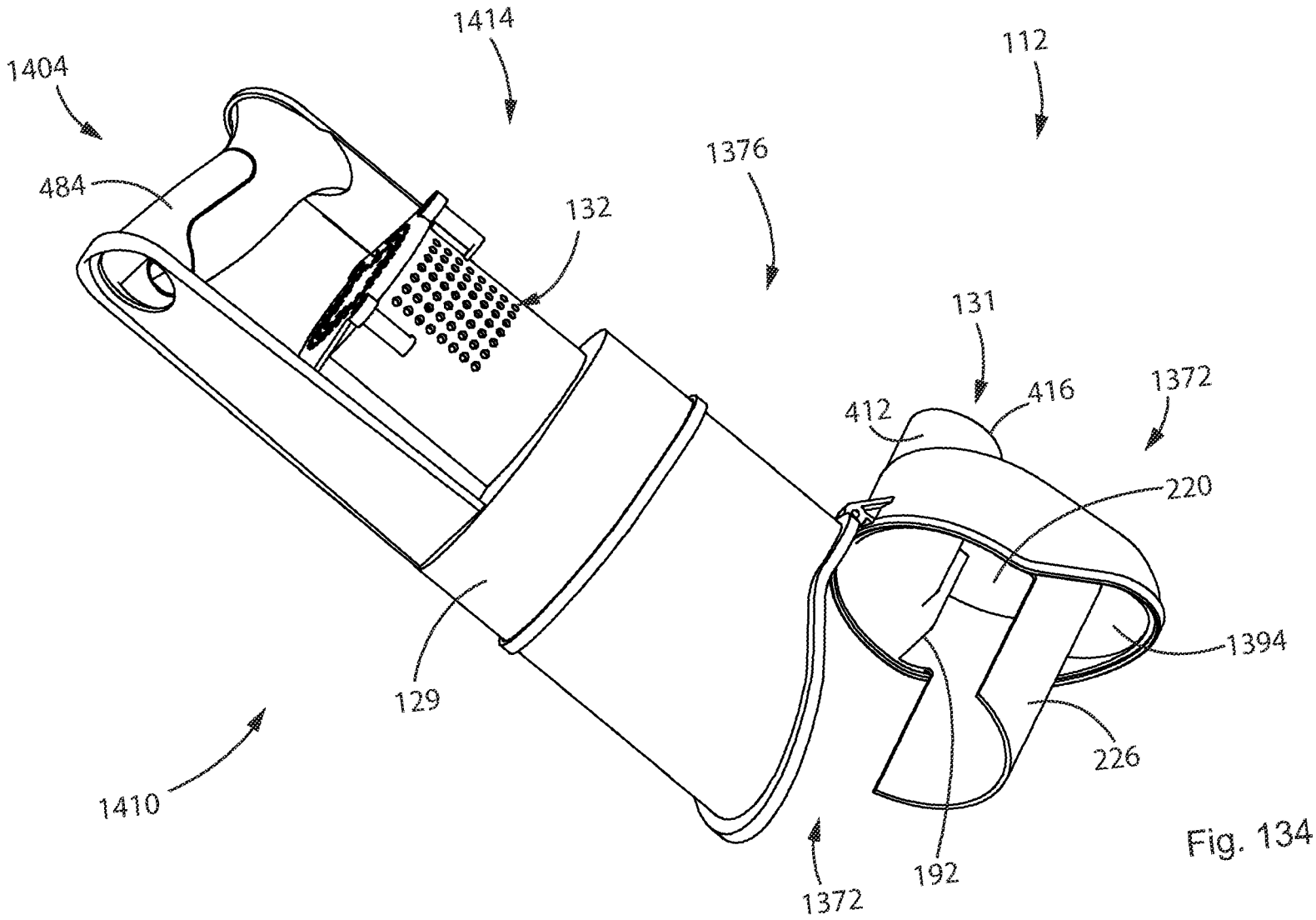

1414
112
1404
484
1376
132
131
1372
416
412
220
1394
129
226
1410
192
1372

Fig. 134

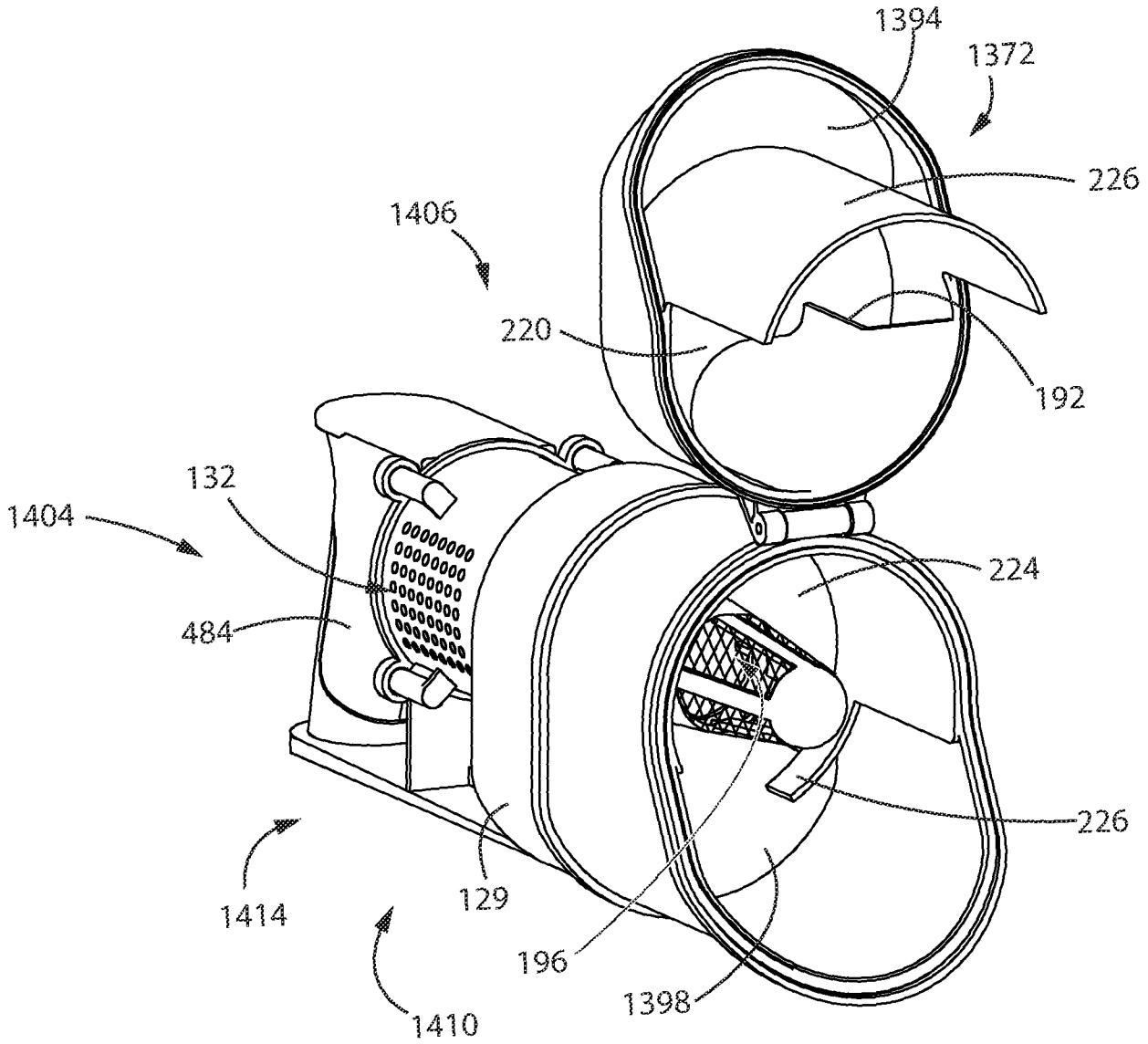

1394
1372
226
1406
220
192
132
1404
224
484
226
1414
129
196
1398
1410

Fig. 135

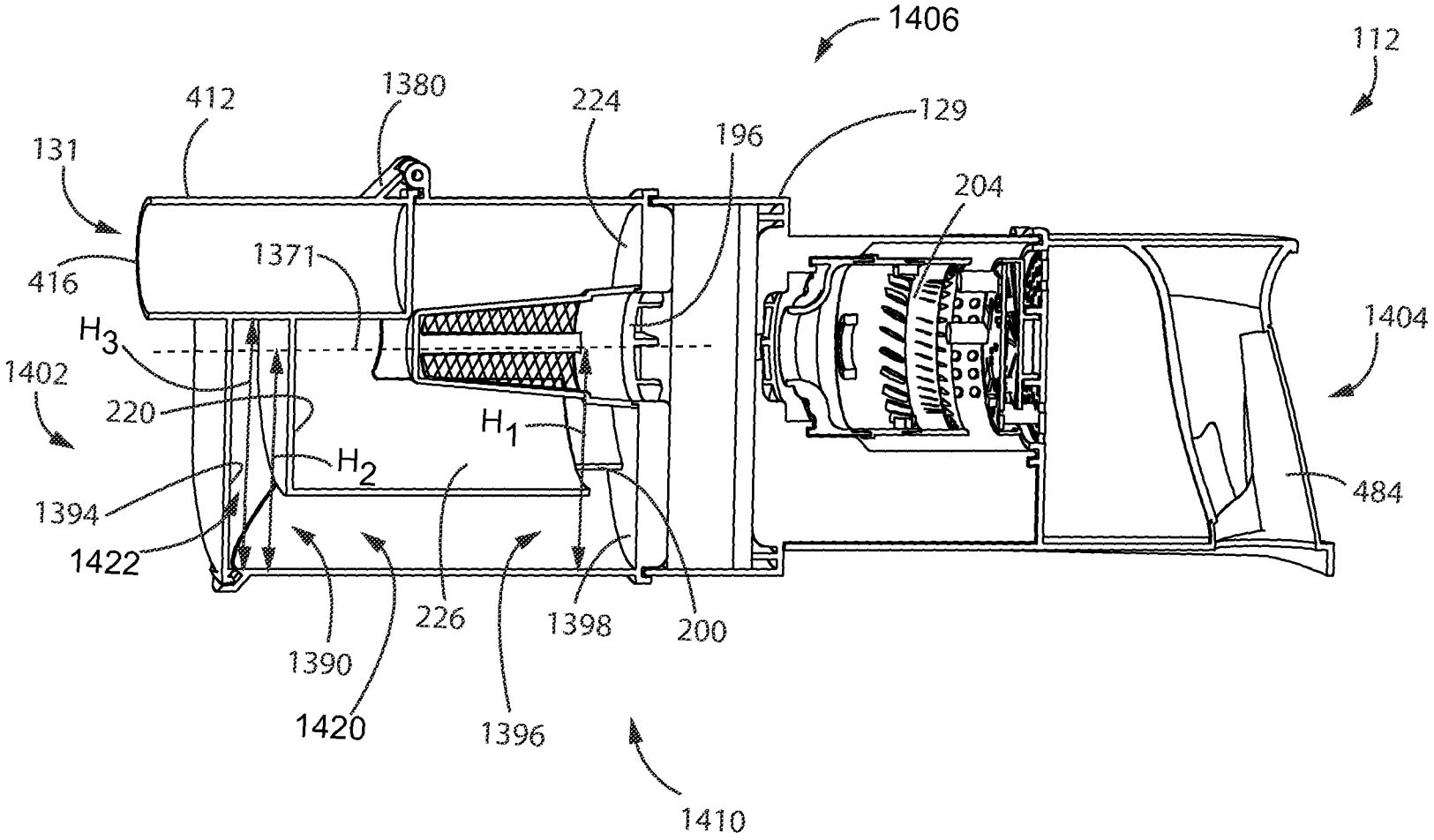

1406
112
412
1380
224
129
196
131
204
1371
416
1404
H_3
1402
220
H_1
H_2
484
1394
1422
226
1398
200
1390
1420
1396
1410

Fig. 136

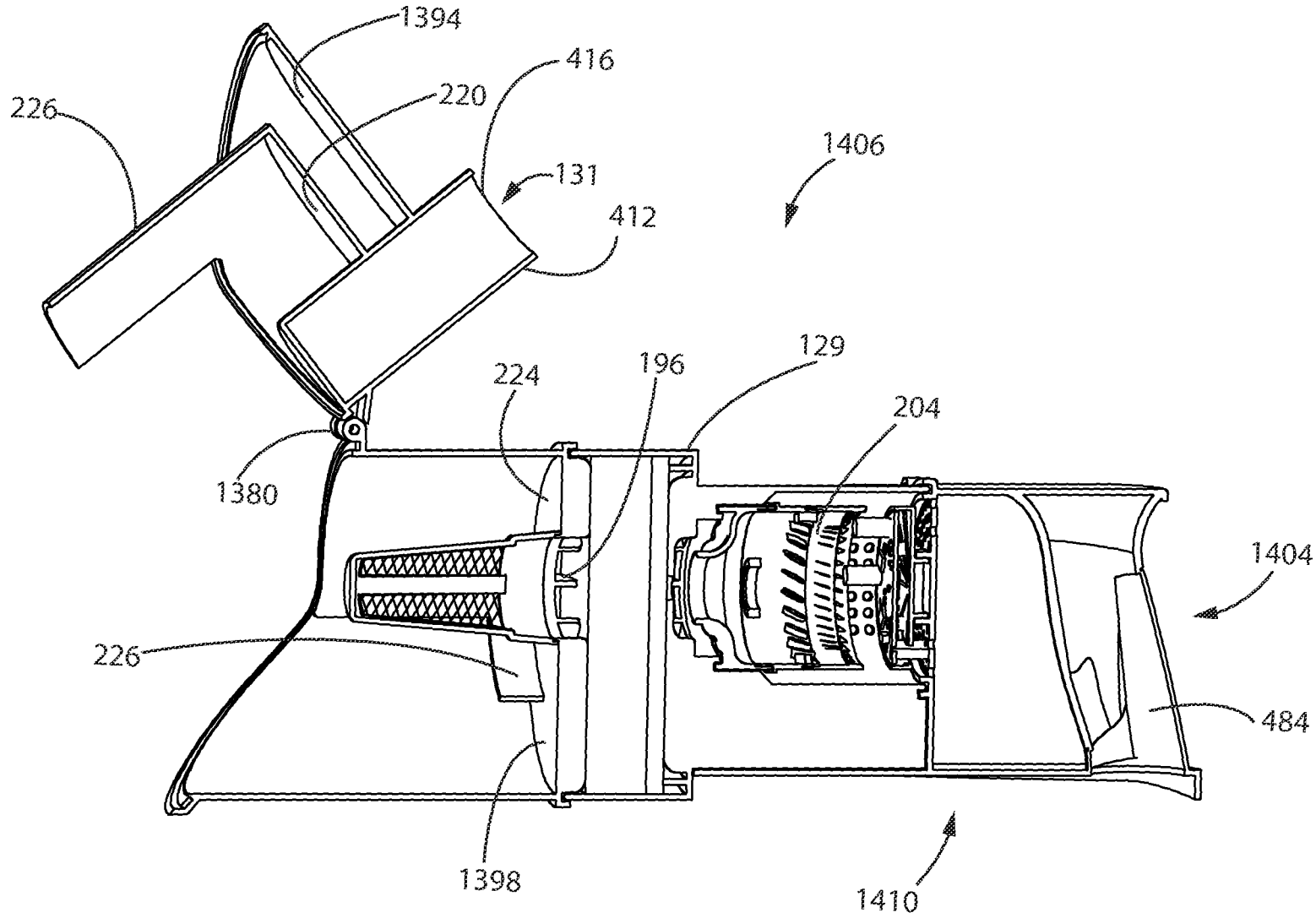

1394
416
220
226
1406
131
412
129
224
196
204
1380
1404
226
484
1398
1410

Fig. 137

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/830,529	06/02/2022	1776	2660	10452-P46958US17	17	2

CONFIRMATION NO. 9687

FILING RECEIPT

1059
BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40TH FLOOR
TORONTO, ON M5H 3Y2
CANADA

OC000000134400726

Date Mailed: 06/09/2022

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Wayne Ernest Conrad, Hampton, CANADA;

Applicant(s)

Wayne Ernest Conrad, Hampton, CANADA;

Power of Attorney: The patent practitioners associated with Customer Number 01059

Domestic Priority data as claimed by applicant

This application is a CON of 17/351,943 06/18/2021
which is a CIP of 16/590,972 10/02/2019
which is a DIV of 16/156,006 10/10/2018 PAT 10478030
which is a CON of 15/088,876 04/01/2016 PAT 10219662
which is a CON of 14/822,211 08/10/2015 PAT 9888817
which claims benefit of 62/093,189 12/17/2014

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 06/08/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/830,529**

Projected Publication Date: 09/15/2022

Non-Publication Request: No

Early Publication Request: No

Title

SURFACE CLEANING APPARATUS

Preliminary Class

055

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/830,529

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	320
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	700
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	800
TOTAL CLAIMS (37 CFR 1.16(i))	17 minus 20 =	*			OR	x 100 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*				x 480 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						840
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	2660

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/830,529	06/02/2022	Wayne Ernest Conrad	10452-P46958US17

CONFIRMATION NO. 9687

1059
BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40TH FLOOR
TORONTO, ON M5H 3Y2
CANADA

PUBLICATION NOTICE



Title:SURFACE CLEANING APPARATUS

Publication No.US-2022-0287520-A1
Publication Date:09/15/2022

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/830,529	**10/13/2022 09:46:53 PM ET**	**10452-P46958US17**

Title of Invention

SURFACE CLEANING APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	9687	FILED BY	Snezana Lisowsky
PATENT CENTER #	61065564	FILING DATE	06/02/2022
CUSTOMER #	1059	FIRST NAMED INVENTOR	Wayne Ernest Conrad
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Philip Mendes da Costa

Documents

TOTAL DOCUMENTS: 39

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
PART2_IDS_2022-10-13_P46958US17.pdf	13	Information Disclosure Statement (IDS) Form (SB08)	1244 KB
FR01_PART2_DE112010001135T5.pdf	20	Foreign Reference	729 KB
FR02_PART2_DE9216071U1.pdf	8	Foreign Reference	185 KB
FR03_PART2_WO2017046560A1.pdf	21	Foreign Reference	923 KB
FR04_PART2_WO2017046559A1.pdf	24	Foreign Reference	1033 KB

FR05_PART2_WO2017046557A1.pdf	25	Foreign Reference	1081 KB
FR06_PART2_WO2016065151A1.pdf	19	Foreign Reference	1045 KB
FR07_PART2_WO2015129387A1.pdf	19	Foreign Reference	594 KB
FR08_PART2_WO2012117231A1.pdf	28	Foreign Reference	1100 KB
FR09_PART2_WO2012042240A1.pdf	23	Foreign Reference	661 KB
FR10_PART2_WO2011054106A1.pdf	39	Foreign Reference	1421 KB
FR11_PART2_WO2010142971A1.pdf	27	Foreign Reference	901 KB
FR12_PART2_WO2010142970A1.pdf	29	Foreign Reference	1019 KB
FR13_PART2_WO2010142969A1.pdf	28	Foreign Reference	951 KB
FR14_PART2_WO2010142968A1.pdf	27	Foreign Reference	974 KB
FR15_PART2_WO2010102396A1.pdf	34	Foreign Reference	1145 KB
FR16_PART2_DE69907201T2.pdf	10	Foreign Reference	519 KB
FR17_PART2_DE60211663T2.pdf	13	Foreign Reference	726 KB
FR18_PART2_DE60201666T	15	Foreign Reference	779 KB

2.pdf			
FR19_PART2_DE4232382C1.pdf	6	Foreign Reference	244 KB
FR20_PART2_EP2848173A1.pdf	23	Foreign Reference	317 KB
FR21_PART2_FR2812531B1.pdf	20	Foreign Reference	694 KB
FR22_PART2_EP2308360A2.pdf	20	Foreign Reference	315 KB
FR23_PART2_EP1815777A1.pdf	9	Foreign Reference	302 KB
FR24_PART2_EP1676516B1.pdf	15	Foreign Reference	337 KB
FR25_PART2_EP1629758A3.pdf	3	Foreign Reference	164 KB
FR26_PART2_EP1594386B1.pdf	15	Foreign Reference	345 KB
FR27_PART2_EP1200196B1.pdf	37	Foreign Reference	1817 KB
FR28_PART2_DE875134C.pdf	4	Foreign Reference	250 KB
FR29_PART2_EP493950B1.pdf	14	Foreign Reference	670 KB
FR30_PART2_EP1779761B1.pdf	19	Foreign Reference	269 KB
NPL01_PART2_DE112010001135T5_English.pdf	44	Non Patent Literature	245 KB

NPL02_PART2_DE9216071U1_English.pdf	8	Non Patent Literature	174 KB
NPL03_PART2_DE69907201T2_English.pdf	17	Non Patent Literature	199 KB
NPL04_PART2_DE60211663T2_English.pdf	24	Non Patent Literature	215 KB
NPL05_PART2_DE60201666T2_English.pdf	24	Non Patent Literature	218 KB
NPL06_PART2_DE4232382C1_English.pdf	13	Non Patent Literature	196 KB
NPL07_PART2_FR28125311_English.pdf	18	Non Patent Literature	209 KB
NPL08_PART2_DE875134C_English.pdf	12	Non Patent Literature	192 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
PART2_IDS_2022-10-13_P46958US17.pdf	7DF15803A8C5FCD038639F97D7231647BF5C2B2095B8B26848FBD6EE59080EB21A4502376EA31964210B3F4587D6A745424E94EB00C0B2760129AE15129E78EB
FR01_PART2_DE112010001135T5.pdf	AC4A3C940FA6567DCAB5F5F08DE81F1255A501963AE35324F37EB6ACC05042DD8DAA4B8A44E6FED84F9B9E30F0CF6EA8CC42B3F2C6192DD9DC1B428CBA69C3E9
FR02_PART2_DE9216071U1.pdf	B3C116C36AED6B8F32BB6B996B16C244F4CDAC7E64CD6AFE61C0AE766C4E49C618340C91455A123F66A40761A5BE1419162E02E353E6E0B48A430490A8ABEB50
FR03_PART2_WO2017046560	763025EF2BCB1846B3CC5964639E573274B78620C651093586

A1.pdf	3F1440CD6466ECAB41C39EBC3A36C48C308AC97D1C558217 3424D74E50486790236E89078583F
FR04_PART2_WO2017046559 A1.pdf	D5471D1D44BC1F7B2451EF0B933F251E5B599F6E1709ED607 DF5915B1D686888777810967E1E883B7E036F5030C3614A376 E1B2AEFC088EA4EAA03BB4EB8CB9C
FR05_PART2_WO2017046557 A1.pdf	507E3454D06AA81CAD75C24DCA8741E21B6D450DAAF2B23A C1CC8F4A5B5DA01DA8E9D0D7007084AA047CF1D9A687CE48 F5D20E6FF5FE44139D2C13402E522B66
FR06_PART2_WO2016065151 A1.pdf	EEE99A325544B3A18B10A429A3868FD27A25912568DC0EF9A 4EC9EAB726004FD87F9471512D04D965B21E9E10F615324283 CF45409E8095E5281E5B7ACFD3856
FR07_PART2_WO2015129387 A1.pdf	79DB9D4F8C47F281BCC406035040435 4B94F2F7A08CD75C39 C5D623ED55B632020A610409C031556FA41217461A9FB1C23C 22C4321BF7368DCE9BF6CBBC9A8C8
FR08_PART2_WO2012117231 A1.pdf	597EEC29BEBC7FB0ACA8547906820827D000B8FB63C1D1245 787595D8D4B561E8831B2CC2E345AAB90E37AF0C8E9E57EC2 979A615BEBFAE663C7ABFDD721450D
FR09_PART2_WO2012042240 A1.pdf	43B8A14D7260D47C883FC8FF6E5038C7BF6F1356EBF30D651 F5D250218748BD7F0B90CB7341C0E35241EB1318F6471586DF B827DFF58A0E4C92E15C319C13E3B
FR10_PART2_WO2011054106 A1.pdf	2E71240F27FA50C9F4F6614628721A1464CF9BC4A1E838246B 089CA477C664C8BA662526AAA166380E41D33DD3126EB1103 498999D62FC2E3C4A755759F77629
FR11_PART2_WO2010142971 A1.pdf	6E20F3954134CE653F2859103802C45AD2DE065AB057605BEA 19AC5663DF77AF5F98FB88004B4DA942DB914DF4C56A5D5C2 4BFC8F5911593321EFBD538DE5E2D
FR12_PART2_WO2010142970 A1.pdf	3FEB78A5EDEC439CD4A77786558F94B4C736B35B4ED687246 3138B29AB69CC548ECD9E81531DF2D42DDE1700DF252BF574 C2857316F6C9E10575BF53DFD1351B
FR13_PART2_WO2010142969	226536BEB85D712159DC1A1CF913D4002757BC0D2FBCA161E

A1.pdf	A297B5601A9C1D8CC84D5C09F699CD45B31FA471F344DDB4479EEEF208EB3DE91129EDF210F4636
FR14_PART2_WO2010142968A1.pdf	0A73298AAA59099D325C4062B7D04F390369BF75EE022B22CCFC3990FA1D5AEC6E9D954A73792147E3D9C6029A7649171EFBE2AF89F5110D28CE3F31CC834E5B
FR15_PART2_WO2010102396A1.pdf	AE36B924503AA03873F0F9BB573C23ECD0CC8009B288CE4495C7E19ECAE3951A97F559C694C943648E02457A3A6FCE9EDE8438E706BD61C3E573769D21AD862C
FR16_PART2_DE69907201T2.pdf	CBB93692ECA25DD4589C243B3926DD0F8A5DDB6DC7597EC9454B7C9A8E45EED6BB730E264450027ABBF15D569DBA74D97AA5EA4B96702E764FD135F397C9F9CB
FR17_PART2_DE60211663T2.pdf	E4D8BB3F2878D310ACCA999E1DD6D8952D3A9C4F4B94CE92C1A885DABAABA4080EB1886ADE8AF46B74CA3A11A7DBE0F47746DE3E7AF0EC0AD583083D1E236EC4
FR18_PART2_DE60201666T2.pdf	C29C9E862F2DA30E453015AA58811CC4A3BDD0C60F7AC30EAFAFA9BC5B6357535CA42C6953163961062A5AAF015E8EC33A66A8996703C192AAA8758B166F0667
FR19_PART2_DE4232382C1.pdf	5D25563CDD90DAD1554BC374FE40B3F9A4ED80F09FACEC98F5D18555FCEF281CCD4298AAC3819B0DDE27E91355CEC037529E0D02C190F94379F075651401461D
FR20_PART2_EP2848173A1.pdf	D09BEB37427B67BD1670420E0BDC2B0C20DEE755A1BF0A335F8A38F48F27A92C6B2ECE1F09A8C9384FB83CF7456736BC80C84BDAADF269386D585869045A349D
FR21_PART2_FR2812531B1.pdf	46D817887C149DC4599F1CF1E0CE77ED7C45EABA0E6162807D7004D43EBA11C75CB0D14775B6F0D08A3C54B49AFE20F31CD780DE5EDE07BF2A2F88F54A2C949E
FR22_PART2_EP2308360A2.pdf	11A92652D726F227A73CB492BC4E22AEE88D615B2455349531EB4DCD718D7C149A493BC320FF295FAB1CAF4F82AAB9F4A773F201F820B7C2C59AC8AD166BD458
FR23_PART2_EP1815777A1.p	0EFE4DC30363629D456679B7D88E94E07A40835654E96DC172

df	945527127028EA223A463F49BB0E68BCA3D28246E5C921C5396F9DF292946E959CC7D5893BB5F4
FR24_PART2_EP1676516B1.pdf	AED5FFE31B2C7D938E9DCB2C1401BD23080C76F6D1886B14C36D3A71F902DF8413D9647BB52335806729 8B938F43781CA59D61159F12A24BEE96E07E5557E46E
FR25_PART2_EP1629758A3.pdf	419EA673A0B6877E197F92397668A0E60031122AC28B044EA14C84D19B3484145D3B4639A9E29F1B9497D58386FEECEC31118AF724ACB08849602F294750E2F8
FR26_PART2_EP1594386B1.pdf	2CBF73C326E6D80C512353A0E2C28C8EB2F03EDF7E4607C050D4576296D8C4981A949E4673F2EACBD6B556967ABCA4E5065FBF7468743C9EE4FC0D573D47A0A4
FR27_PART2_EP1200196B1.pdf	EB43C824AE56E1464E90CDB43935ADCB1A7DDB4E37D102EC400E7252AF5A2D166C04C8F62DC67D8261F17B3B515E739280E353A2A7A74A1973EEC390A3E7F20A
FR28_PART2_DE875134C.pdf	59210E53A7B896ADCFF2398FBCC8CD084BA0FABF6B437BA1DCA581833511018D3F5C5B55FC524B748A862C813F8092CDF35712A31DBF78510BFAE7E95FE6397A
FR29_PART2_EP493950B1.pdf	AF9133BA5C90395F6CDBDB45A965A4BDE94C9B99DB7962B4D370097B3FCD05B2AD4AD7AAAC504DC17C29F74EED75A70A5883CAFF750B0268362986A661A6F71B
FR30_PART2_EP1779761B1.pdf	50066F7F01166866DB964EEC58C7754A61A7744BB354A0CD406F662643AEFC9BC8C81208952930CE542BE8EC8886A5B8E0C0F31E56D15B66E1C06683922AD8E6
NPL01_PART2_DE112010001135T5_English.pdf	E6D5CE987BAF3F9052C31FAE5E56FB7FFE8ACE2B958BD25C91F9746AFBC1322F6DDE1326B1444B7656CBDF726C242A1FF53E96CA18BF88202CF6F0CC73CFB2DC
NPL02_PART2_DE9216071U1_English.pdf	5DB0CBF7F34092187FB48AC20D4574C5935C997468BF35B81E4FFED74F2AAE9816A37A756632B9629C2B774B847391B4C0FCE39EDC4FDA957E531F4011049864
NPL03_PART2_DE69907201T	7B5B98A65A2FC00ACD821A6218DCFFB9BF03CB967852CE5D

2_English.pdf	24F500C3A2D6D1BC82E28AFC6258C4EB9FD658B8AA9995A6128E946F73D47CA974E31806ADED7002
NPL04_PART2_DE60211663T2_English.pdf	B76C3A4C64F85869E0F1EB5B1E8F681E99C034E6252DAFD1D7E718691B33128B42305A875D39B66625D8FF4B8664A93883172A844E69A4E6A25DD21851C572D4
NPL05_PART2_DE60201666T2_English.pdf	C2CE5F4B10EEDFECCE2EF2EA851026F953885DE9E953B28B829D8626E47500F341EB0ACDE57CAA62BAC394A2D6CB4537B507CA3EABD0E60B81462A882E962BC2
NPL06_PART2_DE4232382C1_English.pdf	29283D9D5BCAC01DA5A9C25C30FB911D87B616FE4CCEA95C62A2CA0620B1ECC6BA6D8DD9F7B60FDDE4D5D5B160DB102814C37E4373604222C616F9EA39B5C579
NPL07_PART2_FR2812531B1_English.pdf	A318DCC8B5A4D79571F579CDB609BB6D8565F59953C2A6AC4B3C10E7DF687DAC3360E11AD90F3CB8C1CEB75996E917ED66647160EE50BB855EB541BE7D9FD8B2
NPL08_PART2_DE875134C_English.pdf	DF93617B4EBB279657A8C8693BAB05D0ADD0C8BD3F5DBE26FD745255322E09D9DB766F0638D29E380CCCE9CC8D35BE5F6625F878593DA8907A9F5B7D9125B7F4

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17830529
Filing Date	2022-06-02
First Named Inventor	Wayne Ernest Conrad
Art Unit	1776
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17 (PART 2)

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4944780	A	1990-07-31	Usmani Kal	
	2	4905342	A	1990-03-06	Ataka Yasukazu	
	3	4853111	A	1989-08-01	Macarthur James B et al.	
	4	4853011	A	1989-08-01	Dyson James	
	5	4853008	A	1989-08-01	Dyson James	
	6	4826515	A	1989-05-02	Dyson James	
	7	4803753	A	1989-02-14	Palmer	
	8	4778494	A	1988-10-18	Patterson John C	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

	9	4744958	A	1988-05-17	Pircon Ladislav J	
	10	4700429	A	1987-10-20	Martin William J et al.	
	11	4678588	A	1987-07-07	Shortt William C	
	12	4523936	A	1985-06-18	Disanza Jr William G	
	13	4494270	A	1985-01-22	Ritzau William P et al.	
	14	4486207	A	1984-12-04	Baillie Lloyd A	
	15	4409008	A	1983-10-11	Solymes Laszlo	
	16	4382804	A	1983-05-10	Mellor Fred	
	17	4373228	A	1983-02-15	Dyson James	
	18	4307485	A	1981-12-29	Dessig Iii William R	
	19	4236903	A	1980-12-02	Malmsten Sven O	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

	20	4218805	A	1980-08-26	Brazier Alan J	
	21	4187088	A	1980-02-05	Hodgson	
	22	4097381	A	1978-06-27	Ritzler Bo	
	23	3988133	A	1976-10-26	Schady Joseph L	
	24	3988132	A	1976-10-26	Oranje Leendert	
	25	3933450	A	1976-01-20	Percevaut Emile Henri Gabriel	
	26	3898068	A	1975-08-05	Mcneil John A	
	27	3822533	A	1974-07-09	Oranje L	
	28	3684093	A	1972-08-15	Kono Motomi et al.	
	29	3675401	A	1972-07-11	Cordes Ronald A	
	30	3582616	A	1971-06-01	Wrob Ronald M	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

	31	3561824	A	1971-02-09	Homan Virgil A	
	32	3543325	A	1970-12-01	Hamrick James C	
	33	3530649	A	1970-09-29	Porsch Fred W et al.	
	34	3518815	A	1970-07-07	Mcfarland Andrew R et al.	
	35	3426513	A	1969-02-11	Bauer Kurt	
	36	3372532	A	1968-03-12	Langdon Campbell Charles	
	37	3320727	A	1967-05-23	Farley Forney E et al.	
	38	3269097	A	1966-08-30	German Dale F	
	39	3217469	A	1965-11-16	Eckert John S	
	40	3204772	A	1965-09-07	Ruxton George S	
	41	3200568	A	1965-08-17	Mcneil Dalph C	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

	42	3130157	A	1964-04-21	Kelsall Denis F et al.	
	43	3085221	A	1963-04-09	Francis Kelly Joseph	
	44	3032954	A	1962-05-08	Racklyeft Carl E	
	45	2981369	A	1961-04-25	Yellott John I et al.	
	46	2952330	A	1960-09-13	Winslow Charles A	
	47	2946451	A	1960-07-26	Culleton John T	
	48	2942692	A	1960-06-28	August Benz	
	49	2942691	A	1960-06-28	Dillon Wendell M	
	50	2937713	A	1960-05-24	Stephenson Revis L et al.	
	51	2917131	A	1959-12-15	Evans Harry D	
	52	2913111	A	1959-11-17	Rogers Robert E	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

	53	2846024	A	1958-08-05	Theodor Bremi	
	54	2811219	A	1957-10-29	Josef Wenzl	
	55	2731102	A	1956-01-17	James William S	
	56	2678110	A	1954-05-11	Madsen Walter M	
	57	2542634	A	1951-02-20	Davis Archibald H et al.	
	58	2152114	A	1939-03-28	Tongeren Hermannus Van	
	59	D D0303173	S	1989-08-29	Miyamoto Isshin et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20070079585	A1	2007-04-12	Oh et al.	
	2	20080040883	A1	2008-02-21	Beskow et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

	3	20070289266	A1	2007-12-20	Oh	
	4	20070289089	A1	2007-12-20	Yacobi	
	5	20070271724	A1	2007-11-29	Hakan et al.	
	6	20070209335	A1	2007-09-13	Conrad	
	7	20070209334	A1	2007-09-13	Conrad	
	8	20070136984	A1	2007-06-21	Hsu	
	9	20070095029	A1	2007-05-03	Min et al.	
	10	20070095028	A1	2007-05-03	Kim et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	112010001135	DE	T5	2012-08-02	G.B.D. CORP.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

	2	9216071	DE	U1	1993-02-25	ELECTROSTAR SCHOETTLE		
	3	2017046560	WO	A1	2017-03-23	DYSON TECHNOLOGY LIMITED		
	4	2017046559	WO	A1	2017-03-23	DYSON TECHNOLOGY LIMITED		
	5	2017046557	WO	A1	2017-03-23	DYSON TECHNOLOGY LIMITED		
	6	2016065151	WO	A1	2016-04-28	TECHTRONIC INDUSTRIES CO.		
	7	2015129387	WO	A1	2015-09-03	MITSUBISH ELECTRIC CORPORATION	Abstract - English	X
	8	2012117231	WO	A1	2012-09-07	DYSON TECHNOLOGY LIMITED		☐
	9	2012042240	WO	A1	2012-04-05	DYSON TECHNOLOGY LIMITED		☐
	10	2011054106	WO	A1	2011-05-12	G.B.D. CORP.		☐
	11	2010142971	WO	A1	2010-12-16	DYSON TECHNOLOGY LIMITED		☐
	12	2010142970	WO	A1	2010-12-16	DYSON TECHNOLOGY LIMITED		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

	13	2010142969	WO	A1	2010-12-16	DYSON TECHNOLOGY LIMITED		☐
	14	2010142968	WO	A1	2010-12-16	DYSON TECHNOLOGY LIMITED		☐
	15	2010102396	WO	A1	2010-09-16	G.B.D. CORP.		☐
	16	69907201	DE	T2	2003-05-28	DYSON TECHNOLOGY LTD		☐
	17	60211663	DE	T2	2007-05-10	DYSON TECHNOLOGY LTD.		☐
	18	60201666	DE	T2	2006-06-01	DYSON TECHNOLOGY LTD.		☐
	19	4232382	DE	C1	1994-03-24	PBS PULVERBESCHICHTUNGS UND SP		☐
	20	2848173	EP	A1	2015-03-18	SAMSUNG ELECTRONICS CO.		☐
	21	2812531	FR	B1	2004-11-05	SAMSUNG KWANGJU ELECTRONICS CO.		☐
	22	2308360	EP	A2	2011-04-13	WAI, LAU YING		☐
	23	1815777	EP	A1	2007-08-08	TEAM INTERNATIONAL MARKETING SA		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

	24	1676516	EP	B1	2010-01-13	LG ELECTRONICS INC.		☐
	25	1629758	EP	A3	2010-02-17	LG ELECTRONICS, INC.		☐
	26	1594386	EP	B1	2009-04-15	AKTIEBOLAGET ELECTROLUX		☐
	27	1200196	EP	B1	2005-06-15	G.B.D. CORP.		☐
	28	875134	DE	C	1953-04-30	METALLGESELLSCHAFT AG		☐
	29	493950	EP	B1	1998-04-15	AHLSTROM MACHINERY OY		☐
	30	1779761	EP	B1	2013-06-26	SAMSUNG ELECTRONICS		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	English machine translation of DE112010001135T5, published on August 2, 2012	
	2	English machine translation of DE9216071, published on February 25, 1993	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

	3	English machine translation of DE69907201, published on May 28, 2003
	4	English machine translation of DE60211663, published on May 10, 2007
	5	English machine translation of DE60201666, published on June 1, 2006
	6	English machine translation of DE4232382, published on March 24, 1994
	7	English machine translation of FR2812531, published on November 5, 2004
	8	English machine translation of DE875134, published on April 30, 1953

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Philip C. Mendes da Costa/	Date (YYYY-MM-DD)	2022-10-13
Name/Print	Philip C. Mendes da Costa	Registration Number	33106

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/830,529	**10/13/2022 06:55:47 PM ET**	**10452-P46958US17**

Title of Invention

SURFACE CLEANING APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	9687	FILED BY	Snezana Lisowsky
PATENT CENTER #	61064633	FILING DATE	06/02/2022
CUSTOMER #	1059	FIRST NAMED INVENTOR	Wayne Ernest Conrad
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Philip Mendes da Costa

Documents

TOTAL DOCUMENTS: 51

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
P46958US17_IDS_PART1_2022-10-13.pdf	14	Information Disclosure Statement (IDS) Form (SB08)	1255 KB
FR01_PART1_DE102012211246A1.pdf	22	Foreign Reference	2991 KB
FR02_PART1_DE102007011457_A1.pdf	64	Foreign Reference	10907 KB
FR03_PART1_CN205671986_U.pdf	11	Foreign Reference	1488 KB
FR04_PART1_CN204363891_U.pdf	6	Foreign Reference	810 KB

FR05_PART1_CN202932850_U.pdf	6	Foreign Reference	602 KB
FR06_PART1_CN202739907_U.pdf	9	Foreign Reference	1531 KB
FR07_PART1_CN201290642_Y.pdf	16	Foreign Reference	2002 KB
FR08_PART1_CN105816104_A.pdf	79	Foreign Reference	11896 KB
FR09_PART1_CN101108110.pdf	20	Foreign Reference	2953 KB
FR10_PART2_CN101108106_A.pdf	21	Foreign Reference	2985 KB
FR11_PART1_CN212307697_U.pdf	7	Foreign Reference	987 KB
FR12_PART1_CN101108081_A.pdf	19	Foreign Reference	2580 KB
FR13_PART1_CN211459996.pdf	8	Foreign Reference	1762 KB
FR14_PART1_CN101061932.PDF	20	Foreign Reference	979 KB
FR15_PART1_DE10056935_C2.pdf	8	Foreign Reference	1284 KB
FR16_PART1_CA2659212_A1.pdf	57	Foreign Reference	6575 KB
FR17_PART1_CA2658014_A1.pdf	34	Foreign Reference	3660 KB
FR18_PART1_CA2484587_A	76	Foreign Reference	7456 KB

1.pdf			
FR19_PART1_CA2450450_A1.pdf	32	Foreign Reference	2673 KB
FR20_PART1_CA2438079_C.pdf	21	Foreign Reference	2464 KB
FR21_PART1_CN1887437_A.pdf	15	Foreign Reference	1296 KB
FR22_PART2_CN1875855_A.pdf	17	Foreign Reference	2265 KB
FR23_PART1_CN1875846_A.pdf	21	Foreign Reference	2687 KB
FR24_PART1_CN1493244_A.pdf	26	Foreign Reference	3577 KB
FR25_PART1_CN1434688_A.pdf	38	Foreign Reference	3851 KB
FR26_PART1_CN1336154_A.pdf	12	Foreign Reference	1500 KB
FR27_PART2_CA1218962_A1.pdf	30	Foreign Reference	3238 KB
FR28_PART1_CA1077412_A1.pdf	9	Foreign Reference	1079 KB
FR29_PART2_AU112778S.pdf	1	Foreign Reference	158 KB
FR30_PART2_CN108024674.pdf	14	Foreign Reference	10523 KB
NPL01_PART1_DE102012211246A1_English.PDF	32	Non Patent Literature	230 KB

NPL02_PART1_DE102007011457A1_English.pdf	86	Non Patent Literature	326 KB
NPL03_PART1_CN205671986U_English.pdf	17	Non Patent Literature	257 KB
NPL04_PART1_CN204363891U_English.pdf	11	Non Patent Literature	242 KB
NPL05_PART1_CN202932850U_English.pdf	10	Non Patent Literature	243 KB
NPL06_PART1_CN202739907U_English.pdf	18	Non Patent Literature	255 KB
NPL07_PART1_CN201290642Y_English.pdf	17	Non Patent Literature	255 KB
NPL08_PART1_CN105816104A_English.pdf	66	Non Patent Literature	343 KB
NPL09_PART1_CN101108110A_English.PDF	28	Non Patent Literature	271 KB
NPL10_PART1_CN101108106A_English.PDF	29	Non Patent Literature	273 KB
NPL11_PART1_CN212307697U_translation_Espacenet.pdf	9	Non Patent Literature	86 KB
NPL12_PART1_CN101108081_English.PDF	4	Non Patent Literature	162 KB
NPL13_PART1_CN211459996_English.pdf	9	Non Patent Literature	1057 KB
NPL14_PART1_CN101061932_English.pdf	4	Non Patent Literature	216 KB

NPL15_PART1_DE10056935C2_English.pdf	18	Non Patent Literature	194 KB
NPL16_PART1_CN1887437A_English.pdf	22	Non Patent Literature	269 KB
NPL17_PART1_CN1875855A_English.pdf	18	Non Patent Literature	264 KB
NPL18_PART1_CN1875846A_English.pdf	23	Non Patent Literature	270 KB
NPL19_PART1_CN1493244A_English.pdf	25	Non Patent Literature	272 KB
NPL20_PART1_CN1434688A_English.pdf	31	Non Patent Literature	286 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
P46958US17_IDS_PART1_2022-10-13.pdf	BB10FD9D72352A7FBB6339102 4B7AE5B1AF05C34FD807E3425BCB7910BD83C1CA76B28011F94074A4C754371BF85AE916698D8DE5734A6E8264B56A73DCA9DA2
FR01_PART1_DE102012211246A1.pdf	D6EE41D91867D47CC5FE14D1A425EDDF0E23014172960FFC7889A74E69D8AAE76A6744A05CFC2FB4C8BB58F61EB89EDD88E9E4A7B71898E04E08DB2CF5F2C6B6
FR02_PART1_DE102007011457_A1.pdf	7DAFDFBD80BE95AF26B7BB8765378C377A8D55C7B99443EEB02FF457A3741D4ED3955CBA8D01FB9713C40E9F144676ADB7CF2791FE754B8BB510622A59053EE2
FR03_PART1_CN205671986_U.pdf	0F693382175BA3F2A6692DB6F61944EE1B0225D13F22B29B8FE22B3437E114967DFC958B4F0ECADABCC56AF25FE5363F7E0618BE7D9B4D2F0CF0968D0B5FC79D

FR04_PART1_CN204363891_U.pdf	C427706630B2D007955AFD74BFEC4B80397639AFA345A5EC407CCDB2CE747EF070AF9162DCCBD81CC8326725F9FB00479549A565C6A0EFFED2106FFA5211F6BE
FR05_PART1_CN202932850_U.pdf	9068FE307479005974 8B45154AC973AF6B7907148BD33AE11982DF01A2EFDFCE27F347286B71496529D67C5389CA64598497A65BE178E6DDDF2B8A372E801509
FR06_PART1_CN202739907_U.pdf	045DC8F04F4107AF9F58131BEED9EE8B3398F22CDD03F0BA38387BB9C34EAB865BEE3F09D10A6A2EECD1A7956F4B77D8C925A63540B0ACC885749C869AA65CF6
FR07_PART1_CN201290642_Y.pdf	C3D5398E068911CD8A7F5A34E188AEA59EA33718D5BABEEA39EE7B225C8B093F756B321DCDF0ED2F41A5F778DFF3F61EBE3A9434C650C03E20ADD967FFE5032D
FR08_PART1_CN105816104_A.pdf	649C82B3E7C60527A6C0D43ECD5DB5C4CC0F4CF5B2D070128D7FFC9939632D2B852219F6AD23CF5CBA7C2C205F3ED78DEA7183E38C074085EA34F0EE33D871B2
FR09_PART1_CN101108110.pdf	8F549B25AC82C0D2496F9D43CF109EE027BECEAC30A8C50FFF92630E1B6CF39BAD951CE938BD68CC40B949303154ABBF9A50312D98531F29374B0608CC056777
FR10_PART2_CN101108106_A.pdf	D4F5FA8246DCAC84E5573B7C130170BB67271763ED12AB305852901E6DAFAA21C559AE0959B9A1DF9C94755319FBEAB5ADC66E027643F0EF1D7435ADAF605379
FR11_PART1_CN212307697_U.pdf	AB183224F514D0B5AD18BDF84B291BF76B34546F1A7C8C771294C2744CE96AE34E8A193BE619768179CE45FD799F9A1BFDE42C3F492F91F6396C3FDF71729A72
FR12_PART1_CN101108081_A.pdf	4B342D6D6736A66AB42DDE48ECFB65109183CCD8D599F9F5157B175C853E9B2F9A7B01011538584CBA69574FB1CCF84DF483F8A03C504CA31A1EE7043EF99341
FR13_PART1_CN211459996.pdf	5DC3428131163E1D29DCAD1F89C034FF1D0CBB1945781F62AB0585DA136719EAEDBB49B5EEFCBDAA7CE8CA4BB51E0C20213965166D608AD5964FDF95BCE7BB42

FR14_PART1_CN101061932.PDF	F78D040CE23D5FE428ED467C207D3FB544D4424AC7B4AE0424956CEB32950CE2F7DEF3B9A8E0CA3500093B5892E02CCCC6316D2BA330244FD3F0FEF290661D0F
FR15_PART1_DE10056935_C2.pdf	B10F67A08A1A300875AB99BEFCB442832333081AE6860936FE26DD8DA67BA9493F8D469EE443F749380EF9BC61F3C7C8D57C3BE7C6A147205D3494272E44F89E
FR16_PART1_CA2659212_A1.pdf	02D571A8E2DC8548E6BFC2BAAE79C0D35ACC77A1688E8F10CD81CE8647EF198883BF4D3FA35FE1AFE4158612A5A9FA9553EA6F431256DB1263BE9CED66AD0D31
FR17_PART1_CA2658014_A1.pdf	3DEBE0CDBA2AE7FE805E57E24F800D7B61A60140914E41537ACE47A804B7E449848CE4DE85C6D6FC2C04C7877DACEAA2DC5DAFE67F47E3FDFDD7C9FD252BE28B
FR18_PART1_CA2484587_A1.pdf	13397ECFE46F7D6F75DC3D8478111E34D46200EC1013475E4E06B1E83340BDD63A110B4D10E3D1B9D8F165DE471EF5331BDB26C5EBB1DBDF2E16A42C864A40B5
FR19_PART1_CA2450450_A1.pdf	1B300E87FB1BAD9B0CE254AFF985A8AC4A1654ACF1948ED18F0AB6E28BD5A0EE9DE5B0D52F32A9B98E39489085D54323D7EB160ED0953773E096A14C4EF54A32
FR20_PART1_CA2438079_C.pdf	592D8DE69128996367F260972481020 8A1242A29E14454B777FEF1573CFB286B3BDCD50A10B06A9B81CC4E51C7F89D4C9CE7F00E4F5C21BBA5917B836B858ECB
FR21_PART1_CN1887437_A.pdf	C2E00D5AA4C7A7586DE30206599583AA77E1C103BF4AB65922BC1BCA14480E6E6768FFC04031BD72FAF7961C3C287837E2CD3ED81CAF951F624258F08A20493F
FR22_PART2_CN1875855_A.pdf	27C8DF78C70C9D90B5CA7BF3712C9B1F6CCD5810A1D11B47E53DBB54AFC6E433AF13C19871B49431B75C56E631D727A38B8E7322B9710A816802963FB2FC60CA
FR23_PART1_CN1875846_A.pdf	16F2349CCBFD8836369BD0BF797BA41C34AFB14AF3987E7E6B825CF5B6F536F6DD9D71907015BA4E021AF0F8FF278051D84FB8CB3149BD0DBE5718B1F5F354FC

FR24_PART1_CN1493244_A.pdf	9A25B0012CEE82D196C19ABEE72245C3C89F4F4157C8A03ADC16C39DBF8222E3D867BF792F7BAE6736FC7F315F6A651FA6DDE419D141F4209B2A9682589FD26F
FR25_PART1_CN1434688_A.pdf	27CDF5FFAA7300621ED1ACAC765941A0C0BB390A5E62D9F70814F1B5A9405341954148CC9A94C053B6923C104B1F92E6595D7868158000458DF8291BC342766A
FR26_PART1_CN1336154_A.pdf	800AF6A2437BBA4248BE6F74093D1F7021CFF8815552934 77BB82A5A3DEE996600AA26F493B8758EB62CA62AB19361C16877961A05834580DD0202B04BA5B2D0
FR27_PART2_CA1218962_A1.pdf	85C718F6CE1C59FF0C255A86609695FBF99152DD9DC866FEFF11E141CF96F79565510ACA9B35505E1D18495AD1A2FB116289C9B82AC7F015688B7E69384DEB89
FR28_PART1_CA1077412_A1.pdf	40AEBA5BD984A5B9EEF4216E05896AE927A7BB3A805D50921855DBC32FF62D69A327F8F28B01CAD6427D289FC22C4B65E42AFE9A0C233DE23A10C0B7807B5193
FR29_PART2_AU112778S.pdf	3330481E9A6077E1F2EA3DFE03C8F4A312FCBF2546681A5CA582F9FF6A0B836F39E5865EF7F6580CC447A0BAF0F702747247CDEB4653AEBEF4C715BF23AE1FCA
FR30_PART2_CN108024674.pdf	7C96AA4BD3117D4B3A393760180917F5A0DD3B10ADD4EE3DF57687F71EFB868C7A890B694B560BBF36DE704C70665684FF5536851029979 2227F023E0CAA8AB2
NPL01_PART1_DE102012211246A1_English.PDF	9F6FCDB99D390EDCC5BAD9F9143CE5D587D103DFD644369A79058B7744D12A56E99873459FB63F42C939428D0DEEF251C3C0A2E6F949CD91960D1E146778202A
NPL02_PART1_DE102007011457A1_English.pdf	4353F058787E9028537ADC4F2C56D98E9D94F4DE4F159A77E0A0F9F64C6E096BDB4ADCCD3D57A843A76174458412C47BD587136D47CA16DEA00CDBD341AEFD71
NPL03_PART1_CN205671986U_English.pdf	A16DD186FAD34197BC497B884960CF361110FA92FA86C304507EC8A37966890B260E4B3A024F7B2D2E73EACF0957386999A7D84F2EF6D59AD4F168A832D93DB2

NPL04_PART1_CN204363891U_English.pdf	8249F3BC05F423ACAFBC87C6495BFF8BBFE6C9731AB044F09D162768F5E30291A8A6114D45908E99E321385EACBFDC3B4E2F71CAD9BD1AC3DC056B50B3DC01D9
NPL05_PART1_CN202932850U_English.pdf	F41E3E228C043F9D451F7E07515F1C9E2939792BA83BA43028F9FB3DC7540C6141752D24BC46066311FF0BE0530CFDDDC883E241E5890172FCA8996CE4B19595
NPL06_PART1_CN202739907U_English.pdf	B5A11F263B8843AE2FBBF739CD2A1B3E197233626B8E57BE75837EBB8AA9413D114269BEC03C5A7122D4894BB8949FE586BBF0EB0E83F76C1A77DA93D9282F34
NPL07_PART1_CN201290642Y_English.pdf	ADB4BC791BC7E3E15C93D872A0B39104CB659C62D10C49D64CDE9DE5E50980BC7D34F578A0E3CF5391B2A1841B6B4504B0C1F95366643874DBD829EB5D263BAC
NPL08_PART1_CN105816104A_English.pdf	1C6C9AC017B9B6BEE8FA002A0E670F78B9B341FB9D4A0BB1BA3229D02E0AC3EEE0A8B586CB5C61DD0479A0FA64D41589C6150CFE1F89F7A5E009DFF050DFA935
NPL09_PART1_CN101108110A_English.PDF	86942E5CF4293E0AA4E39714B73E1D44EA9F869C991FDD70AB2D1DF3AA87AB0CABD044FCAEFF193285967B58C3C0472A1F9B44C88B09AFDBF3B1F0A0E07194A4
NPL10_PART1_CN101108106A_English.PDF	84D02F099998B0A9457CBCBE0F27EE1F23ACD9BEAE9E597BF518115BFAA4EF32FB5EE85CE64F7C82236EB99D219578CEB4DCC5C7E0E11416C7CFFCA9DC54F10E
NPL11_PART1_CN212307697U_translation_Espacenet.pdf	1B089FE0E8FDE0F8D970775D16C90BA0F21C955B6E3636D97F94362BAB5EEFA209F18F63AA0DF1A68A9007EAF6A40A519756974E219100B665E348B78F6EE413
NPL12_PART1_CN101108081_English.PDF	B295FA119C10BEDAF6BAF3794A2452829C7F5FA553AF7A5A5F330E7F3FF8E31726A9B052B3D454A8F270B613C65996D5CCCC4E0B6DAA1E9660496C4ACB3D92E0
NPL13_PART1_CN211459996_English.pdf	AFED3E915DD3DDFF1AA4B6BCB8114EB78F8D364A5C19F30AC61486FA277E0385554ECA96D45B4DEC736B34602950FCE44C9F5D94C2D5EA55F31C8546515BEC0B

NPL14_PART1_CN101061932_English.pdf	F00598A8BD64BDBBDF8AEFC23F30C27A05D13EF04B9EA898660C419449FC955589DD3C24AD7C7EB432C0DA2D10A3096B62AD8368EB3B4C3C1DB2B65562813 8B4
NPL15_PART1_DE10056935C2_English.pdf	9E7BB2AA2AFBB7127EECBB91302B28FA914F2A84AEAB6AC36D349F7F45CA003265724 4BD3892EFA1E4C9C3A23BA2C1E40CF338F7562DA3ED58B668D2ECF8482E
NPL16_PART1_CN1887437A_English.pdf	E59CF4CF834FF50121985CA020B0B819C1D9E7254827CA0382C1FDC69DE41A61CE780C21EE274F5ADADE53F053645A6804EE64BA44F6DEC82323D0FBC22D42DF
NPL17_PART1_CN1875855A_English.pdf	6F2637ACC6C9E37F1B1CB2AA2C561662D96DED6259525122EE060ABE0DDC861202312D441CC408A45B5F48680D0CE1DB30AC99F2F8CD28759DFB87C581DE9D66
NPL18_PART1_CN1875846A_English.pdf	B48B088395A777E348DEA3E6ED13BB51CECB5856EF594A36FBBB1FEF95418F373FC780ABC29A84BADBF2342E37811D25CDB0CF6F5BE6381EE9697A05351F0068
NPL19_PART1_CN1493244A_English.pdf	651AF351ABCC7CE31F223050A3D54A604C0BAAE654451171ECFE4C9C3836E71CF2E7B34D50A6E240A039EE19727754F4F0A76393A471267F58EDD32EBF3E60E3
NPL20_PART1_CN1434688A_English.pdf	C1A587D3050DFBC424B5E72D3DC35C311E451BB7920D9CF9AE56D5B7A6FDB26137E2D15FC032A81A4B3B77D2E082BBD463C2677D52417B6F93858B295DB8EBFE

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an

international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17830529
Filing Date	2022-06-02
First Named Inventor	Wayne Ernest Conrad
Art Unit	1776
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17 (PART 1)

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	11382471	B2	2022-07-12	Kim et al.	
	2	11363928	B2	2022-06-21	Kim et al.	
	3	11357374	B2	2022-06-14	Cho et al.	
	4	11229339	B2	2022-01-25	Cho et al.	
	5	10973380	B2	2021-04-13	Seo et al.	
	6	10959589	B2	2021-03-30	Kim et al.	
	7	10660493	B2	2020-05-26	Kim et al.	
	8	10610075	B2	2020-04-07	Kim et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

	9	10561291	B2	2020-02-18	Kim et al.	
	10	10405719	B2	2019-09-10	Kim et al.	
	11	10299651	B2	2019-05-28	Kim et al.	
	12	1937765	A	1933-12-05	Ward Leathers	
	13	1898608	A	1933-02-21	William Alexander	
	14	1797812	A	1931-03-24	Horace Waring	
	15	1600762	A	1926-09-21	Gilbert Hawley Charles	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20070079473	A1	2007-04-12	Min et al.	
	2	20070077810	A1	2007-04-05	Gogel et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

	3	20070067944	A1	2007-03-29	Kitamura et al.	
	4	20060288516	A1	2006-12-28	Sawalski	
	5	20060278081	A1	2006-12-14	Han et al.	
	6	20060277711	A1	2006-12-14	Hong et al.	
	7	20060254226	A1	2006-11-16	Jeon	
	8	20060236663	A1	2006-10-26	Oh	
	9	20060230724	A1	2006-10-19	Han et al.	
	10	20060230723	A1	2006-10-19	Kim et al.	
	11	20060230715	A1	2006-10-19	Oh et al.	
	12	20060207231	A1	2006-09-21	Arnold	
	13	20060207055	A1	2006-09-21	Ivarsson et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

	14	20060168923	A1	2006-08-03	Lee et al.	
	15	20060168922	A1	2006-08-03	Oh	
	16	20060162299	A1	2006-07-27	North	
	17	20060162298	A1	2006-07-27	Oh et al.	
	18	20060156508	A1	2006-07-20	Khalil	
	19	20060137314	A1	2006-06-29	Conrad et al.	
	20	20060137309	A1	2006-06-29	Jeong et al.	
	21	20060137306	A1	2006-06-29	Jeong et al.	
	22	20060137304	A1	2006-06-29	Jeong et al.	
	23	20060123590	A1	2006-06-15	Fester et al.	
	24	20060090290	A1	2006-05-04	Lau	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

	25	20060042206	A1	2006-03-02	Arnold et al.	
	26	20060037172	A1	2006-02-23	Choi	
	27	20050252180	A1	2005-11-17	Oh et al.	
	28	20050252179	A1	2005-11-17	Oh et al.	
	29	20050198770	A1	2005-09-15	Jung et al.	
	30	20050198769	A1	2005-09-15	Lee et al.	
	31	20050132528	A1	2005-06-23	Yau	
	32	20050115409	A1	2005-06-02	Conrad	
	33	20050081321	A1	2005-04-21	Milligan et al.	
	34	20040216264	A1	2004-11-04	Shaver et al.	
	35	20040045126	A1	2004-03-11	Parker et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

	36	20040025285	A1	2004-02-12	Mccormick et al.	
	37	20040010885	A1	2004-01-22	Hitzelberger et al.	
	38	20030200736	A1	2003-10-30	Ni	
	39	20030159411	A1	2003-08-28	Hansen et al.	
	40	20030159238	A1	2003-08-28	Oh	
	41	20030106180	A1	2003-06-12	Tsen	
	42	20030066273	A1	2003-04-10	Choi et al.	
	43	20030046910	A1	2003-03-13	Lee et al.	
	44	20030037403	A1	2003-02-27	Lang	
	45	20020178699	A1	2002-12-05	Oh	
	46	20020178698	A1	2002-12-05	Oh et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

	47	20020178535	A1	2002-12-05	Oh et al.	
	48	20020134238	A1	2002-09-26	Conrad et al.	
	49	20020134059	A1	2002-09-26	Oh	
	50	20020112315	A1	2002-08-22	Conrad	
	51	20020088208	A1	2002-07-11	Lukac et al.	
	52	20020062531	A1	2002-05-30	Oh	
	53	20020011053	A1	2002-01-31	Oh	
	54	20020011050	A1	2002-01-31	Hansen et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	102012211246	DE	A1	2014-01-02	BSH HAUSGERAETE GMBH		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

	2	102007011457	DE	A1	2007-10-25	GBD CORP, ROYAL APPLIANCE		
	3	205671986	CN	U	2016-11-09	SUZHOU CHENGHE CLEANING		
	4	204363891	CN	U	2015-06-03	NINGBO ZHONGJIE HOME APPLIANCES		
	5	202932850	CN	U	2013-05-15	SUZHOU PROVAC ELECTRICAL CO.		
	6	202739907	CN	U	2013-02-20	NINGBO ZHONGJIE HOME APPLIANCES		
	7	201290642	CN	Y	2009-08-19	KINGCLEAN ELECTRIC		
	8	105816104	CN	A	2016-08-03	HITACHI APPLIANCES INC.		
	9	101108110	CN	A	2008-01-23	LG ELECTRONICS TIANJIN ELECTRIC APPLIANCE CO.		
	10	101108106	CN	B	2012-07-18	LG ELECTRONICS TIANJIN ELECTRIC APPLIANCE CO.		
	11	212307697	CN	U	2021-01-08	ZHUICHUANG TECH SUZHOU CO LTD		
	12	101108081	CN	B	2010-10-27	LG ELECTRONICS TIANJIN ELECTRIC APPLIANCE CO.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

	13	211459996	CN	U	2020-09-11	GREE ELECTRIC APPLIANCES INC.		
	14	101061932	CN	A	2007-10-31	KWONNIE ELECTRICAL PRODUCTS LTD		
	15	10056935	DE	C2	2003-01-16	SAMSUNG ELECTRONICS		
	16	2659212	CA	A1	2010-09-20	OMACHRON INTELLECTUAL PROPERTY INC.		
	17	2658014	CA	A1	2010-09-11	GBD CORP.		
	18	2484587	CA	A1	2005-04-15	BLACK & DECKER INC.		
	19	2450450	CA	A1	2004-12-26	SAMSUNG KWANGJU ELECTRONICS CO.		
	20	2438079	CA	C	2009-08-18	DYSON LIMITED		
	21	1887437	CN	A	2007-01-03	LG ELECTRONICS (TIANJIN) APPLIANCE CO. LTD.		
	22	1875855	CN	A	2006-12-13	LG ELECTRONICS (TIANJIN) APPLIANCE CO. LTD.		
	23	1875846	CN	A	2006-12-13	LG ELECTRONICS (TIANJIN) APPLIANCE CO. LTD.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

	24	1493244	CN	A	2004-05-05	VACUUM CLEANER CO		
	25	1434688	CN	A	2003-08-06	LG ELECTRONICS		
	26	1336154	CN	A	2002-02-20	SAMSUNG KWANGJU ELECTRONICS CO.		
	27	1218962	CA	A1	1987-03-10	UNIV KINGSTON		
	28	1077412	CA	A1	1980-05-13	SULZER AG		
	29	112778	AU	S	1991-11-06	GENERAL EQUITY LTD		
	30	108024674	CN		2018-05-11	DYSON TECHNOLOGY LTD.		

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5
	1	English machine translation of DE102012211246A1, published on January 2, 2014	
	2	English machine translation of DE102007011457, published on October 25, 2007	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

	3	English machine translation of CN205671986, published on November 9, 2016
	4	English machine translation of CN204363891, published on June 3, 2005
	5	English machine translation of CN202932850, published on May 15, 2013
	6	English machine translation of CN202739907, published on February 20, 2013
	7	English machine translation of CN201290642Y, published on August 19, 2009
	8	English machine translation of CN105816104A, published on August 3, 2016
	9	English machine translation of CN101108110A, published on January 23, 2008
	10	English machine translation of CN101108106B, published on July 18, 2012
	11	English machine translation of CN212307697U, published on January 8, 2021
	12	English machine translation of CN101108081B, published on October 27, 2010
	13	English machine translation of CN211459996, published on September 11, 2020

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

	14	English machine translation of CN101061932, published on October 31, 2007
	15	English machine translation of DE10056935, published on January 16, 2003
	16	English machine translation of CN1887437, published on January 3, 2007
	17	English machine translation of CN1875855, published on December 13, 2006
	18	English machine translation of CN1875846, published on December 13, 2006
	19	English machine translation of CN1493244, published on May 5, 2004
	20	English machine translation of CN1434688, published on August 6, 2003

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Philip C. Mendes da Costa/	Date (YYYY-MM-DD)	2022-10-13
Name/Print	Philip C. Mendes da Costa	Registration Number	33106

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PATENT COOPERATION TREATY

ADVANCE E-MAIL

PCT

NOTIFICATION CONCERNING TRANSMITTAL OF COPY OF INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (CHAPTER I OF THE PATENT COOPERATION TREATY)
(PCT Rule 44bis.1(c))

From the INTERNATIONAL BUREAU

RECEIVED
JUL 05 2017
BERESKIN & PARR LLP
LOCATION | DELIVER TO
593 | 595

To:

BERESKIN & PARR LLP/S.E.N.C.R.L., S.R.L.
Scotia Plaza
40 King Street West
40th Floor
Toronto, Ontario M5H 3Y2
CANADA

Date of mailing *(day/month/year)*
29 June 2017 (29.06.2017)

Applicant's or agent's file reference
P48958PC00

IMPORTANT NOTICE

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/CA2015/051332	16 December 2015 (16.12.2015)	17 December 2014 (17.12.2014)

Applicant
OMACHRON INTELLECTUAL PROPERTY INC.

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. +41 22 338 82 70

Authorized officer
Athina Nickitas-Etienne

e-mail: pct.team4@wipo.int

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference P46958PC00	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/CA2015/051332	International filing date *(day/month/year)* 16 December 2015 (16.12.2015)	Priority date *(day/month/year)* 17 December 2014 (17.12.2014)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant OMACHRON INTELLECTUAL PROPERTY INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☒	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 20 June 2017 (20.06.2017)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Athina Nickitas-Etienne e-mail: pct.team4@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
BERESKIN & PARR LLP/S.E.N.C.R.L.,S.R.L.
Scotia Plaza
40 King Street West, 40th Floor
TORONTO, Ontario
Canada, M5H 3Y2

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)* 7 March 2016 (07-03-2016)

Applicant's or agent's file reference
P46958PC00

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/CA2015/051332	16 December 2015 (16-12-2015)	17 December 2014 (17-12-2014)

International Patent Classification (IPC) or both national classification and IPC
IPC: ***A47L 11/00*** (2006.01)

Applicant
OMACHRON INTELLECTUAL PROPERTY INC.

1. This opinion contains indications relating to the following items:

- [x] Box No. I Basis of the opinion
- [ ] Box No. II Priority
- [ ] Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [x] Box No. IV Lack of unity of invention
- [x] Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI Certain documents cited
- [ ] Box No. VII Certain defects in the international application
- [ ] Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/CA	Date of completion of this opinion	Authorized officer
Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001-819-953-2476	08 March 2016 (08-03-2016)	Jarret Diggins (819) 639-7846

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/CA2015/051332

Box No. I **Basis of this opinion**

1. With regard to the **language**, this opinion has been established on the basis of:

☑ the international application in the language in which it was filed.

☐ a translation of the international application into which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

a. ☐ forming part of the international application as filed:

☐ in the form of an Annex C/ST.25 text file.

☐ on paper or in the form of an image file.

b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Dyson Ex1004
Page 313

Box No. IV **Lack of unity of invention**

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the applicable time limit:

   ☐ paid additional fees

   ☐ paid additional fees under protest and, where applicable, the protest fee

   ☐ paid additional fees under protest but the applicable protest fee was not paid

   ☐ not paid additional fees

2. ☑ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

   ☐ complied with.

   ☐ not complied with for the following reasons:

Groups A and B comprise the following which is well known in the art: a surface cleaning apparatus comprising: a surface cleaning head having a dirty air inlet; b. an upright section moveably mounted to the surface cleaning head, the upright section moveable between a plurality of reclined floor cleaning positions; a portable vacuum cleaner removably mounted to the upright section, the portable vacuum cleaner unit comprising an air treatment members:

Group A (Claims 1-24): further comprises an auxiliary dirt collection assembly removably mounted to the upright section wherein, in a first upright mode of operation, the auxiliary dirt collection assembly is removed from the upright section and the hand vacuum cleaner is in airflow communication with the dirty air inlet and, in a second upright mode of operation, the multimode surface cleaning apparatus is operable with the auxiliary dirt collection assembly mounted to the upright section.

Group B Claims 25-36: further comprises a portable unit suction motor in the air flow path; and, an upstream dirty-air/suction motor in the air flow path downstream from the dirty air inlet and upstream from the portable vacuum cleaner wherein the surface cleaning apparatus is operable in an upright mode in which the portable vacuum cleaner unit is mounted to the upright section and the portable vacuum cleaner unit is operable in a portable mode wherein the portable vacuum cleaner unit is detached from the upright section.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

   ☑ all parts.

   ☐ the parts relating to claim Nos.

Dyson Ex1004
Page 314

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/CA2015/051332

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-36	YES
	Claims	NONE	NO
Inventive step (IS)	Claims	1-36	YES
	Claims	NONE	NO
Industrial applicability (IA)	Claims	1-36	YES
	Claims	NONE	NO

2. Citations and explanations:

D1: WO9720492 (DOWNHAM et al.) 12 June 1997 (1997-06-12)

NOVELTY

Claims 1-36 are novel and do comply with Article 33(2) of the PCT. Document D1 teaches a surface cleaning apparatus comprising: a surface cleaning head (3) having a dirty air inlet (4); an upright section (16) moveably mounted to the surface cleaning head, the upright section moveable between a plurality of reclined floor cleaning positions; a portable vacuum cleaner (2) removably mounted to the upright section, the portable vacuum cleaner unit comprising an air treatment members, further comprising an auxiliary dirt collection assembly (20) removably mounted to the upright section wherein, further comprises a portable unit suction motor (22) in the air flow path; and, an upstream dirty-air/suction motor (11) in the air flow path downstream from the dirty air inlet; wherein the surface cleaning apparatus (2) is operable in an upright mode in which the portable vacuum cleaner unit is mounted to the upright section and the portable vacuum cleaner unit is operable in a portable mode wherein the portable vacuum cleaner unit is detached from the upright section.

The subject matter of claim 1 differs from the prior art in that in a first upright mode of operation, the auxiliary dirt collection assembly is removed from the upright section and the hand vacuum cleaner is in airflow communication with the dirty air inlet and, in a second upright mode of operation, the multimode surface cleaning apparatus is operable with the auxiliary dirt collection assembly mounted to the upright section.

The subject matter of claim 25 differs from the prior art in the upstream dirty-air/suction motor (11) is in the air flow path downstream from the dirty air inlet and upstream from the portable vacuum cleaner.

INVENTIVE STEP

Claims 1-36 do comply with Article 33(3) of the PCT.

The subject matter of claim 1 is considered to involve an inventive step since the prior art does not fairly suggest that in a first upright mode of operation, the auxiliary dirt collection assembly is removed from the upright section and the hand vacuum cleaner is in airflow communication with the dirty air inlet and, in a second upright mode of operation, the multimode surface cleaning apparatus is operable with the auxiliary dirt collection assembly mounted to the upright section.

The subject matter of claim 25 is considered to involve an inventive step since the prior art does not fairly suggest the upstream dirty-air/suction motor (11) is in the air flow path downstream from the dirty air inlet and upstream from the portable vacuum cleaner.

INDUSTRIAL APPLICABILITY

The subject matter of claims 1-36 is considered to be industrially applicable and thus complies with the requirements of Article 33(4) of the PCT.

Dyson Ex1004
Page 315

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17830529
Filing Date	2022-06-02
First Named Inventor	Wayne Ernest Conrad
Art Unit	1776
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17 (PART 4)

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	9711986	B2	2017-07-18	Sunderland et al.	
	2	9675218	B2	2017-06-13	Kim et al.	
	3	9516979	B2	2016-12-13	Gidwell	
	4	9192269	B2	2015-11-24	Conrad	
	5	8869344	B2	2014-10-28	Conrad	
	6	8673487	B2	2014-03-18	Churchill	
	7	8484799	B2	2013-07-16	Conrad	
	8	8225456	B2	2012-07-24	Hkan et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	9	8161599	B2	2012-04-24	Griffith et al.	
	10	8156609	B2	2012-04-17	Milne et al.	
	11	8152877	B2	2012-04-10	Greene	
	12	8151407	B2	2012-04-10	Conrad	
	13	8146201	B2	2012-04-03	Conrad	
	14	8117712	B2	2012-02-21	Dyson et al.	
	15	8101001	B2	2012-01-24	Qian	
	16	8100999	B2	2012-01-24	Ashbee et al.	
	17	8062398	B2	2011-11-22	Luo et al.	
	18	8021453	B2	2011-09-20	Howes	
	19	7996956	B2	2011-08-16	Wood et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	20	7979959	B2	2011-07-19	Courtney	
	21	7958598	B2	2011-06-14	Hwang et al.	
	22	7938871	B2	2011-05-10	Lloyd	
	23	7931716	B2	2011-04-26	Oakham	
	24	7922794	B2	2011-04-12	Morphey	
	25	7882593	B2	2011-02-08	Beskow et al.	
	26	7867308	B2	2011-01-11	Conrad	
	27	7811349	B2	2010-10-12	Nguyen	
	28	7805804	B2	2010-10-05	Loebig	
	29	7803207	B2	2010-09-28	Conrad	
	30	7779506	B2	2010-08-24	Kang et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	31	7776120	B2	2010-08-17	Conrad	
	32	7770256	B1	2010-08-10	Fester	
	33	7740676	B2	2010-06-22	Burnham et al.	
	34	7717973	B2	2010-05-18	Oh et al.	
	35	7691161	B2	2010-04-06	Oh et al.	
	36	7628831	B2	2009-12-08	Gomiciaga-Pereda et al.	
	37	7597730	B2	2009-10-06	Yoo et al.	
	38	7588616	B2	2009-09-15	Conrad et al.	
	39	7565853	B2	2009-07-28	Arnold et al.	
	40	7563298	B2	2009-07-21	Oh	
	41	7547338	B2	2009-06-16	Kim et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	42	7547337	B2	2009-06-16	Oh et al.	
	43	7488363	B2	2009-02-10	Jeong et al.	
	44	7485164	B2	2009-02-03	Jeong et al.	
	45	7449040	B2	2008-11-11	Conrad et al.	
	46	7448363	B1	2008-11-11	Rasmussen et al.	
	47	7429284	B2	2008-09-30	Oh et al.	
	48	7426768	B2	2008-09-23	Peterson et al.	
	49	7395579	B2	2008-07-08	Oh	
	50	7386915	B2	2008-06-17	Blocker et al.	
	51	7377953	B2	2008-05-27	Oh	
	52	7377007	B2	2008-05-27	Best	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	53	7370387	B2	2008-05-13	Walker et al.	
	54	7354468	B2	2008-04-08	Arnold et al.	
	55	7341611	B2	2008-03-11	Greene et al.	
	56	7278181	B2	2007-10-09	Harris et al.	
	57	7272872	B2	2007-09-25	Choi	
	58	7222393	B2	2007-05-29	Kaffenberger et al.	
	59	7198656	B2	2007-04-03	Maeda et al.	
	60	7175682	B2	2007-02-13	Nakai et al.	
	61	7162770	B2	2007-01-16	Davidshofer	
	62	7160346	B2	2007-01-09	Park	
	63	7128770	B2	2006-10-31	Oh et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	64	7113847	B2	2006-09-26	Chmura et al.	
	65	6976885	B2	2005-12-20	Lord	
	66	6968596	B2	2005-11-29	Oh et al.	
	67	6929516	B2	2005-08-16	Brochu et al.	
	68	6896719	B2	2005-05-24	Coates et al.	
	69	6874197	B1	2005-04-05	Conrad et al.	
	70	6868578	B1	2005-03-22	Kasper et al.	
	71	6833015	B2	2004-12-21	Oh et al.	
	72	6818036	B1	2004-11-16	Seaman	
	73	6810558	B2	2004-11-02	Lee	
	74	6782585	B1	2004-08-31	Conrad et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	75	6782583	B2	2004-08-31	Oh	
	76	6766558	B1	2004-07-27	Matsumoto et al.	
	77	6746500	B1	2004-06-08	Park et al.	
	78	6732403	B2	2004-05-11	Moore et al.	
	79	6712868	B2	2004-03-30	Murphy et al.	
	80	6648934	B2	2003-11-18	Choi et al.	
	81	6640385	B2	2003-11-04	Oh et al.	
	82	6625845	B2	2003-09-30	Matsumoto et al.	
	83	6623539	B2	2003-09-23	Lee et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	1	20160113460	A1	2016-04-28	Williams et al.	
	2	20150297050	A1	2015-10-22	Marsh et al.	
	3	20150230677	A1	2015-08-20	Andrikanish	
	4	20150135474	A1	2015-05-21	Gidwell	
	5	20140237956	A1	2014-08-28	Conrad	
	6	20140208538	A1	2014-07-31	Visel et al.	
	7	20140182080	A1	2014-07-03	Lee et al.	
	8	20140137364	A1	2014-05-22	Stickney et al.	
	9	20140137363	A1	2014-05-22	Wilson	
	10	20140137362	A1	2014-05-22	Smith	
	11	20130160232	A1	2013-06-27	Peace	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	12	20120222262	A1	2012-09-06	Conrad	
	13	20120222260	A1	2012-09-06	Conrad	
	14	20120222245	A1	2012-09-06	Conrad	
	15	20120216361	A1	2012-08-30	Millington et al.	
	16	20120079671	A1	2012-04-05	Stickney et al.	
	17	20120060322	A1	2012-03-15	Simonelli et al.	
	18	20120030896	A1	2012-02-09	Crouch et al.	
	19	20120023701	A1	2012-02-02	Lenkiewicz et al.	
	20	20110289719	A1	2011-12-01	Han et al.	
	21	20110219576	A1	2011-09-15	Conrad	
	22	20110168332	A1	2011-07-14	Bowe et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1020170126380	KR	A	2017-11-17	LG ELECTRONICS INC.		
	2	1020170126379	KR	A	2017-11-17	LG ELECTRONICS INC.		
	3	1020170126378	KR	A	2017-11-17	LG ELECTRONICS INC.		
	4	1020170126377	KR	A	2017-11-17	LG ELECTRONICS INC.		
	5	2017196028	WO	A1	2017-11-16	LG ELECTRONICS INC.	English Abstract	☒
	6	2017196004	WO	A1	2017-11-16	LG ELECTRONICS INC.	English Abstract	☒
	7	2009026709	WO	A1	2009-03-05	G.B.D. CORP.		☐
	8	2008135708	WO	A1	2008-11-13	DYSON TECHNOLOGY LIMITED		☐
	9	2008088278	WO	A2	2008-07-24	AKTIEBOLAGET ELECTROLUX		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	10	2008070973	WO	A1	2008-06-19	G.B.D. CORP.		☐
	11	2008035032	WO	A2	2008-03-27	DYSON TECHNOLOGY LIMITED		☐
	12	2008009891	WO	A1	2008-01-24	DYSON TECHNOLOGY LIMITED		☐
	13	2008009890	WO	A1	2008-01-24	DYSON TECHNOLOGY LIMITED		☐
	14	2008009888	WO	A1	2008-01-24	DYSON TECHNOLOGY LIMITED		☐
	15	2008009883	WO	A1	2008-01-24	DYSON TECHNOLOGY LIMITED		☐
	16	2007104238	WO	A1	2007-09-20	POSITEC POWER TOOLS (SUHOU) CO. LTD.	English Abstract	☒
	17	2006076363	WO	A2	2006-07-20	ROYAL APPLIANCE MFG. CO.		☐
	18	2006026414	WO	A3	2007-08-02	EURO-PRO OPERATING LLC		☐
	19	2004069021	WO	A1	2004-08-19	AKTIEBOLAGET ELECTROLUX		☐
	20	102405363	KR	B1	2022-06-07	LG ELECTRONICS INC.		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	21	101968588	KR	B1	2019-04-15	LG ELECTRONICS INC.		☐
	22	101952658	KR	B1	2019-02-27	LG ELECTRONICS INC.		☐
	23	101832328	KR	B1	2018-02-26	LG ELECTRONICS INC.		☐
	24	9843721	WO	A1	1998-10-08	KONINKLIJKE PHILIPS ELECTRONICS		☐
	25	9809121	WO	A1	1998-03-05	HYDROFUSER TECHNOLGIES INC.		☐
	26	9720492	WO	A1	1997-06-12	ELECTROLUX LTD		☐
	27	9627446	WO	A1	1996-09-12	NOTETRY LTD		☐
	28	8002561	WO	A1	1980-11-27	TEIJIN LTD		☐
	29	0217766	WO	A3	2003-02-13	ROYAL APPLIANCE MFG. CO.	English Abstract	☒
	30	0147247	WO	A3	2001-11-15	KONINKLIJKE PHILIPS ELECTRONICS		☐
	31	0107168	WO	A1	2001-02-01	G.B.D. CORP		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	32	212307697	CN	U	2021-01-08	ZHUICHUANG TECH SUZHOU CO LTD		☐
	33	211459996	CN	U	2020-09-11	GREE ELECTRIC APPLIANCES INC.		☐
	34	108024674	CN		2018-05-11	DYSON TECHNOLOGY LTD.		☐
	35	107343774	CN		2017-11-14	SUZHOU CHENGHE CLEANING EQUIPMENT CO. LTD.		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5
	1	English machine translation of KR101832328B1, published on February 26, 2019	
	2	English machine translation of KR101968588B1, published on April 15, 2019	
	3	English machine translation of KR101952658B1, published on February 27, 2019	
	4	English machine translation of KR1020170126380A, published on November 17, 2017	
	5	English machine translation of KR1020170126379A, published on November 17, 2017	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

	6	English machine translation of KR1020170126378A, published on November 17, 2017
	7	English machine translation of KR1020170126377A, published on November 17, 2017
	8	English machine translation of KR102405363B1, published on June 7, 2022
	9	International Preliminary Report on Patentability, received in connection to PCT/CA2015/051332, mailed on June 29, 2017.
	10	Espacenet: English machine translation of CN212307697U, publishe don January 8, 2021
	11	Espacenet: English machine translation of CN211459996U, published on September 11, 2020
	12	Espacenet: English machine translation of CN108024674A, published on May 11, 2018
	13	Google Patents: English machine translation of CN107343774, published on November 14, 2017

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Philip C. Mendes da Costa/	Date (YYYY-MM-DD)	2022-10-14
Name/Print	Philip C. Mendes da Costa	Registration Number	33106

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/830,529	**10/14/2022 11:14:53 AM ET**	**10452-P46958US17**

Title of Invention

SURFACE CLEANING APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	9687	FILED BY	Snezana Lisowsky
PATENT CENTER #	61065802	FILING DATE	06/02/2022
CUSTOMER #	1059	FIRST NAMED INVENTOR	Wayne Ernest Conrad
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Philip Mendes da Costa

Documents

TOTAL DOCUMENTS: 47

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
NPL20_PART3_JP2009261501_engtrans.PDF	7	Non Patent Literature	3218 KB
NPL23_PART3_JP2005040246_engtrans.PDF	10	Non Patent Literature	4893 KB
PART4_IDS_2022-10-14_P46958US17.pdf	17	Information Disclosure Statement (IDS) Form (SB08)	1265 KB
FR01_PART4_KR1020170126380A.pdf	20	Foreign Reference	6357 KB
FR02_PART4_KR1020170126379A.pdf	27	Foreign Reference	7866 KB

FR03_PART4_KR1020170126378A.pdf	25	Foreign Reference	8100 KB
FR05_PART4_WO2017196028A1.pdf	47	Foreign Reference	4839 KB
FR04_PART4_KR1020170126377A.pdf	28	Foreign Reference	9113 KB
FR06_PART4_WO2017196004A1.pdf	24	Foreign Reference	2319 KB
FR07_PART4_WO2009026709A1.pdf	38	Foreign Reference	4581 KB
FR08_PART4_WO2008135708A1.pdf	25	Foreign Reference	2879 KB
FR09_PART4_WO2008088278A2.pdf	28	Foreign Reference	3250 KB
FR10_PART4_WO2008070973A1.pdf	29	Foreign Reference	3127 KB
FR11_PART4_WO2008035032A2.pdf	17	Foreign Reference	1867 KB
FR12_PART4_WO2008009891A1.pdf	17	Foreign Reference	2153 KB
FR13_PART4_WO2008009890A1.pdf	21	Foreign Reference	2601 KB
FR14_PART4_WO2008009888A1.pdf	16	Foreign Reference	2032 KB
FR15_PART4_WO2008009883A1.pdf	18	Foreign Reference	2188 KB
FR16_PART4_WO20071042	18	Foreign Reference	2204 KB

38A1.pdf			
FR17_PART4_WO2006076363A2.pdf	30	Foreign Reference	4116 KB
FR18_PART4_WO2006026414A3.pdf	7	Foreign Reference	794 KB
FR19_PART4_WO2004069021A1.pdf	18	Foreign Reference	2222 KB
FR20_PART4_KR102405363B1.pdf	28	Foreign Reference	10496 KB
FR21_PART4_KR101968588B1.pdf	31	Foreign Reference	9873 KB
FR22_PART4_KR101952658B1.pdf	19	Foreign Reference	4638 KB
FR23_PART4_KR101832328B1.pdf	31	Foreign Reference	9873 KB
FR24_PART4_WO9843721A1.pdf	19	Foreign Reference	2742 KB
FR25_PART4_WO9809121A1.pdf	33	Foreign Reference	3447 KB
FR26_PART4_WO9720492A1.pdf	44	Foreign Reference	4224 KB
FR27_PART4_WO9627446A1.pdf	17	Foreign Reference	1569 KB
FR28_PART4_WO8002561A1.pdf	18	Foreign Reference	1607 KB
FR29_PART4_WO0217766A3.pdf	4	Foreign Reference	472 KB

FR30_PART4_WO0147247A3.pdf	3	Foreign Reference	368 KB
FR31_PART4_WO0107168A1.pdf	64	Foreign Reference	7047 KB
NPL01_PART4_KR101832328B1_English.pdf	36	Non Patent Literature	5378 KB
NPL02_PART4_KR101968588B1_English.pdf	38	Non Patent Literature	5483 KB
NPL03_PART4_KR101952658B1_English.pdf	22	Non Patent Literature	2458 KB
NPL04_PART4_KR1020170126380A_English.pdf	27	Non Patent Literature	3627 KB
NPL05_PART4_KR1020170126379A_English.pdf	30	Non Patent Literature	4319 KB
NPL06_PART4_KR1020170126378A_English.pdf	31	Non Patent Literature	4433 KB
NPL07_PART4_KR1020170126377A_English.pdf	34	Non Patent Literature	4964 KB
NPL08_PART4_KR102405363B1_English.pdf	32	Non Patent Literature	4455 KB
NPL09_PART4_P46958PC00_IPRP_2017-06-29.pdf	6	Non Patent Literature	5629 KB
CN212307697U_translation_Espacenet.pdf	9	Non Patent Literature	85 KB
CN211459996_English.pdf	9	Non Patent Literature	99 KB
CN108024674A_English.pdf	9	Non Patent Literature	139 KB

CN107343774_English.pdf	6	Non Patent Literature	263 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
NPL20_PART3_JP2009261501_engtrans.PDF	924D58E4D92750720391E456FC90D6A577B2B5871D52087FB4991A413085FF81236939F0395EE59BF347BF85731971C5CDC6208EDCD45BCDBDA183CDD6630793
NPL23_PART3_JP2005040246_engtrans.PDF	E6FCEBEBBE7651BB88025D032523980229601 8C0EC1801DEECC6A8FD28E470A4144057E894816B8D5EAF47B0B46C62538B85B87E67E6B902764B3DB01ADB2902
PART4_IDS_2022-10-14_P46958US17.pdf	CB02CBFE53D5DDA78C956351D3E827A80AADD43C5496AB39EC43A2C1E4A1D291C60CB1165C083C6B2152EF7E6075A990B1B6E058962BEBD76D3CB220A74EB389
FR01_PART4_KR102017012638 0A.pdf	D6337DA9A4B5EEB72A4E18696111130C08ABB7376D161C61254AC4FCD849C68001A02CC7121C444C94E942B6B28FE7B3479482B691BA8DBB44F9A32B9231C32B
FR02_PART4_KR102017012637 9A.pdf	28A12A8D6446EABBD8897DEB4824F971ACFC13A0C249A0C594BC69E14B75A6B3FE564DB428194C01BEDE49EF55D33ED38B0BCB800F3BEE07EF1A4F74BD5B7930
FR03_PART4_KR102017012637 8A.pdf	7BD9B3DF1362F229888E80E1175E6DACFD317BE8CD5EF11B170086FCB4D132B3DEF3B4F8D569B580B14DAC5954E5F23D7747D9C7BCAF479E9F9C48612A740D27
FR05_PART4_WO2017196028A1.pdf	6167FA24D412E80692017163FD197797F714781AE18375FEEE215D09B71C39015E5658F18A3B898FE310B356FC828AACB0F481D6131EF8510A41EE7DC40EA15F
FR04_PART4_KR102017012637 7A.pdf	A5432CFE69B7939CB310BB77688725A798E878E93A275FB094C657ADE01B9704120E7D48D7912DAC8D285A64EF7F1E5FBCC80B50E0F4579BCC26D1DCA5B2F36F

FR06_PART4_WO2017196004A1.pdf	696B6D6FA573319527A3F1735069254B295BB7C75AA750E328F92D05D9287B239695A8EFBFD71212A45DA160D46C8703844146D2F5D04A91A853ADBA08C7217C
FR07_PART4_WO2009026709A1.pdf	0760E145FF2F32AB66D185CA665B936B5391FE9468BF31B5807E31A9DFE147D164283C698E10DE6B5BFA8E9AAA23501BF2949D4A223E54D62D188E0480FB4697
FR08_PART4_WO2008135708A1.pdf	118F48B7F3A8302C1C36D14AA9F661B8AD9C6C83C12086CCEE7851BC0B860A1C436CE0CEDCA14F4F41C2840A192A94ADBD6C6A3C9C93B2D2C54EF9837E9CBECF
FR09_PART4_WO2008088278A2.pdf	B7B6EE60FC6C844B5062442CC06427F3270CE581117293CAE01C981510C9CC045CE1739652479BBA0D3A38A5AB91571B9BB7E0D20E364A4AD9A45EF1AF134A6F
FR10_PART4_WO2008070973A1.pdf	DA29624A35F47CFE5F4026F9F5F78C159896063347E940C4C07FB87CCF343E40E060F80347A52829A34D53FB789B5DBBFC945723E43E5278A7424F9CAFF32DD9
FR11_PART4_WO2008035032A2.pdf	55158BB2EE2128A968FE52C03E8A8D174FDE515A2176A2A4074DDEA3BDD803290816AFE52F1A96AA42D2C6E386B4485C3C2DC53E97B7438AC0A0F131EC280A2D
FR12_PART4_WO2008009891A1.pdf	552309EEF47BC9A8F8182128588DC3E671FAADBE1280A3B1FA754A9559D47230C9A70A09346B7B3DE6F749BC9DA7942D4E5BB52703F7E904ABFB717854033E74
FR13_PART4_WO2008009890A1.pdf	785316356BF99B4ED99BCFA174B1C8AE6E4B9C21EFB38337F1585770E3246482163F13228D99262F1C32A5959FE076BEC6135EF0568A7CDA59F35AE7209AA988
FR14_PART4_WO2008009888A1.pdf	75FDA35706681EE92ABD146F49443BF345F0FD3B6F29D0B1D590F90CB609AB7D81E48979588BAA71F75A96FDB42BDAB330BF87868A1D313C5642B3DFEB160406
FR15_PART4_WO2008009883A1.pdf	46E630E9E0C58DDAE9072 4B96574B60652ECD666DEC4EAE9EB57BD696042C147A655EB6C99AF94A45B13789CF8C25EC5465DEC6CF285A7044D651AC143EAD342

FR16_PART4_WO2007104238A1.pdf	F81787A8C16FE39CD84DDCCC5EBA023ECEC86266318E009BA5325F7A012A17B46B14F326D1E12477C495A29E023678DE7AFE3CBF5477DDDCE1948F6349F7D144
FR17_PART4_WO2006076363A2.pdf	1D658BC2F6C1B9367BBA97347AF20DD62CA206BCB78D38B16BF3FF7DC8E36D41404AD7A9B5FE8A4CDBEED75C0D023882472B07C07AA3C858DC6CDB3749B43C07
FR18_PART4_WO2006026414A3.pdf	024404B16532DBF009B693B0E4C1E5A081F410C8C82A7420C15DCB9C11CB057197C5DCBFFA6D3C86E2B1E718FD99F6D196A5ECCE9E14AAC8958CB107BD77033D
FR19_PART4_WO2004069021A1.pdf	B19BF785A4CEE6D96B99930543E7839D1F2B616658313FADEA3CCD934C9422C6E10E604199353A875EE11A5FC6FB1FC1C0CE3A9F546F684B520177DCB52540EE
FR20_PART4_KR102405363B1.pdf	840160ED5F90471B8D16F4D591F9F6452883CFF3A76932DAB73E24A7DF288698363DE8FB8BBA39A56DB1FBD055A65DD8BB1D2ACD11731A12A61D111304ED09C5
FR21_PART4_KR101968588B1.pdf	2D60E7945D4D0E838A1FD7544B2D4A32B7AC747EF511471B2FDBE5B56D7A75BF62BB09B53E645C4876308177CC917EEF1B75356CC41F818FB31A8FF8BCD9C0B2
FR22_PART4_KR101952658B1.pdf	DD35D7139C5CADB259FC3EC309DB19A718EEEAE28330578DD9F88B19EAB876DB4B8B3D68FFF89278BCF817027DF3B5198856C084E44A5CD83F562D62D8CCF4A5
FR23_PART4_KR101832328B1.pdf	196BC08896E755832CAC7406B6C955B1D74097C3113DBDFE898E7D863FC5CC002E6833BBF91C669F7094182715060C05FEBA569AF236A1F526C6E7D66BA3C43A
FR24_PART4_WO9843721A1.pdf	22F3FAD6ECD7D3EB2EABB610069759D21114DD1A8363C2F3B62DD3E92EFE58C1709AC4A7BF059F29A2DCABDAE4703AD222A66BACE43ABD038B7E5DE435F247D8
FR25_PART4_WO9809121A1.pdf	439BB840B9E7FBA8DDF7C0FAC7CD24FC3A2AA4088A0785EA50BC78F6C91C140C8DA24EE7E16A68CD102D7F6847556BD79B9286B59CD66B66A8246584AC02E221

FR26_PART4_WO9720492A1.pdf	B99B9393D6E145E971AA45A20F7C34B41DF7AE8A53EF4965CD028DBD1E865C72F3BD2EB307848EC70663406A633F61CB6037EDB060892573A95C90DF234A1398
FR27_PART4_WO9627446A1.pdf	470305A686034E051F265F13AFFC519BBAD2F1A5AC6E246BA50573799FCB97ECA976F17479C69861A881D011F50804E0918D559EC79F5A19A01B74628DA79069
FR28_PART4_WO8002561A1.pdf	D4303323CE710D6AC493FC039249F76FB8899ED1038271D64CDD274077D999AA7465C8158E5D1FE5B7BE9F14906E9DE5AE261CC643E9C2F9F64EB8828CA49E10
FR29_PART4_WO0217766A3.pdf	54D5A68867862729F2ED432DB12E93455DCABEA6813C53AEF96016EF18A259CD05313557088C63F179F6531907CC58F16CC1F338F7BB84B9298011C2449CB40A
FR30_PART4_WO0147247A3.pdf	0BCC40529931C5263E1327D2A5CA2B660F4A9510972BA6B22464CE22F35C2047787706D18A334A7C2C46C4175099503E8056A4F56552F49DBA76325212A6FEC7
FR31_PART4_WO0107168A1.pdf	E7B10A7E235BEB87122D1E5360A8B7563F8CEB45A69F793AF884D1BD48EFF4B1EAB6F4598A2E80304B2CB250C6E77632695AFC58B659245ABE37D11657307942
NPL01_PART4_KR101832328B1_English.pdf	4850040CA76165853FFE0F42032F96CF7A34C3FE2895EDA71D606E98F2A72E5F80886CB092924E6ADA1B8DC4D77618A3D3DAE7F986025843CB47404CF940691A
NPL02_PART4_KR101968588B1_English.pdf	51297A2267B4ED0A5013C4CE5A7379C97F62FFD25B0980FCA43D772BA16621D5BFE897D36939ED16B83DB4DCCF79511D3F5E59A0EF2191BF594C052F7FE123DE
NPL03_PART4_KR101952658B1_English.pdf	4A8F42FEC4BDC1164AD69E19C2186CD27EF8C57EBE60AB2B7817D93C1C8C752ECE4C353EDC2F53B5BF8A8725459F3F99AEF3490E6032AF15FAA689AECF11BB1B
NPL04_PART4_KR10201701260380A_English.pdf	5E79A36147773CB8AA9729CE90703ED3E7E62317926DA94CC6AC6336344AA5DC73FADB1B1C64741AEA5848F232495ECE9D57BF13396DAEAC7E010CBE1CB05A4A

NPL05_PART4_KR1020170126379A_English.pdf	024EA88EC9EF7A09FE3F3749DCFE570F7E2F4CC9D2950D754AFC4846033EA82482D176B4FE944AD28D9F151BD70A41D30CF6C2D1C073EE747D8B5119D811BD03
NPL06_PART4_KR1020170126378A_English.pdf	A0021B0BE7EC1C4251A3D4B79B9B63F66A0169A7ECE27929718024E5FD087099BA4DB74B3D776EC8D988F083535D53D13758E82057086DCEA596D9AF9AB4CA86
NPL07_PART4_KR1020170126377A_English.pdf	3E5DCBE644A85E57694D6FF551F225824A4571484EBE66BC1928E61F6D5337D87E1C09FB81FC74E60054E5C7669454873C3431742A9BDB8119F44506D3B1F0A0
NPL08_PART4_KR102405363B1_English.pdf	F68D0A503B3B47ECE7F79E57BB7AA7E7F38F1C672881BC187121A164A59CEF482B54BFFE76FAF2D552D5B896118A3DC22E0FEFBFCEE90D4B7687F068D7D7F8FA
NPL09_PART4_P46958PC00_IPRP_2017-06-29.pdf	30791A412227BCA34DEF1208FA49EEC35F60D630AAAE7558C2A105133515CA0781F92A7739034D3B1D99C0B13BB6DF21FE9980900EDFF6C38023765FD966906C
CN212307697U_translation_Espacenet.pdf	71C952ED60C3A252F0D2E7874ECD3747966B5C453DE95B1E48EC532580C2845EF31D736C5E44651ED0A5397FDFE9E3BBD302887DA807126A3DE2EB5645E25678
CN211459996_English.pdf	6FD78ECDB8FE1599C0769B1F9249EB42943A0EC807334765C9D873BB935E513FCBFD5A60651D8D9F6380C30D569BF71F3026BD3866A902E3CB72B7AAF2865E18
CN108024674A_English.pdf	EDC78F50D616C75098BDCE9D3B1CD999F7C015E75B1DEC0F5A5DC9CA1F883EEAD2D48D746785FA845C0EA60062AE5646F247417CCF3CCBA1C6FEB37541E228BD
CN107343774_English.pdf	15CF9B72CBFA71BE072ADF778945A831681367E02E7D8347A1980B90618E85E68F77D06B3BFE761489C50DCE48CB118FBDDD8B1E05B50603E9BBF647C1FCAED5

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/830,529	**10/14/2022 12:15:36 AM ET**	**10452-P46958US17**

Title of Invention

SURFACE CLEANING APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	9687	FILED BY	Snezana Lisowsky
PATENT CENTER #	61065798	FILING DATE	06/02/2022
CUSTOMER #	1059	FIRST NAMED INVENTOR	Wayne Ernest Conrad
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Philip Mendes da Costa

Documents

TOTAL DOCUMENTS: 9

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
NPL19_PART3_JP2010081968A_English.PDF	30	Non Patent Literature	282 KB
FR20_PART3_JP2009261501A.pdf	9	Non Patent Literature	1303 KB
NPL21_PART3_JP2008206613A_ENG.PDF	10	Non Patent Literature	140 KB
NPL22_PART3_JP2006102034A_ENG.PDF	6	Non Patent Literature	132 KB
FR23_PART3_JP2005040246A.pdf	12	Non Patent Literature	1554 KB

NPL24_PART3__JP2002085297A_Eng.pdf	6	Non Patent Literature	121 KB
NPL25_PART3__JP2002085297A_Eng.pdf	6	Non Patent Literature	121 KB
NPL26_PART3_JP2000140533_engtrans.pdf	4	Non Patent Literature	3922 KB
NPL27_PART3_JP61131720A_ENG.pdf	14	Non Patent Literature	2864 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
NPL19_PART3_JP2010081968A_English.PDF	29AC2B4098F0FB8849B811380B21600D30A83485239CC4AFEF1982C99DC4B49EA951A53781A01F7D78122A2ACB86044FA98764FE141C39608CDF5133BB39A4A8
FR20_PART3_JP2009261501A.pdf	235EBD2CAFAFEA4E968440933A2300C8BAF4ED2E45E2ACA4920C4A10258413C87185AA9E97B640474E317A2AE7722BE9A7F2B5E09EFB3FB56DB8C347783D5BFA
NPL21_PART3_JP2008206613A_ENG.PDF	E4F90F4E6BB27C25ED90B8A90679634FC04B53C67BE336BEF7DA573ABEB833CE411712F20C9D0ED97CEA6FDDEA94CEFC74345A3697ACADCBB974F4DA8ACE627F
NPL22_PART3_JP2006102034A_ENG.PDF	FDEA6C4FFF9BD41294A19DC5F954D281CE505C820F6D33958B652ED6E6FFC34154C1D3CE1E27615A0F18BF34363ED7F6BBBF48D05C69054404C899B5225A29F6
FR23_PART3_JP2005040246A.pdf	B0323C772FC3A678315A92FEC9282A7198CEB5894ACAD3DFFF3388415519FCE4C23254D21B411663267A4416E5CAFF188E9285D0F86F984004F709E81A279972
NPL24_PART3__JP2002085297A_Eng.pdf	1532083F278E4CA3B6A00E1616F541D1F73D9E56BDEAE8E97B7B3A27CD8985B20277D4F06E974789188C818BEF8C733F577

	0E50532F7FF544FE05B506B0E8705
NPL25_PART3__JP2002085297A_Eng.pdf	346639247E5A3F814365B2402735C449B70D7DC39A97CA2C9029F54C1A9EFFBD8592A6BEAA18088E7C75A16D3657ECE0B205E6192C0B3B74848913609BF641EE
NPL26_PART3_JP2000140533_engtrans.pdf	CB83EAF44FC3CD55991BEA16A85F48C506A7C2281835700CF14A271FFBF45D9169AAB6F0FFDA00C9C16A44AC8DC5A3A23C4CC39E586859C65DB7C1D41942D4A3
NPL27_PART3_JP61131720A_ENG.pdf	48A396C706195DD9D0A23B35CF42344F51568557A0A73C9CD9A474A648F2C66A6147E63953AAD6D7095C6AA3902B3533BED786C3D093711196E6252D2F14B55D

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/830,529	**10/13/2022 11:31:38 PM ET**	**10452-P46958US17**

Title of Invention

SURFACE CLEANING APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	9687	FILED BY	Snezana Lisowsky
PATENT CENTER #	61065641	FILING DATE	06/02/2022
CUSTOMER #	1059	FIRST NAMED INVENTOR	Wayne Ernest Conrad
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Philip Mendes da Costa

Documents

TOTAL DOCUMENTS: 60

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
IDS_PART3_2022-10-13_P46958US17.pdf	19	Information Disclosure Statement (IDS) Form (SB08)	1245 KB
FR01_PART3_KR1020100084127A.pdf	15	Foreign Reference	382 KB
FR02_PART3_KR1020060125954A.pdf	11	Foreign Reference	261 KB
FR03_PART3_KR1020060125952A.pdf	12	Foreign Reference	263 KB
FR04_PART3_KR1020060122249A.pdf	16	Foreign Reference	1539 KB

FR05_PART3_KR1020060118803A.pdf	16	Foreign Reference	438 KB
FR06_PART3_KR1020060118802A.pdf	25	Foreign Reference	1730 KB
FR07_PART3_KR1020060118800A.pdf	15	Foreign Reference	405 KB
FR08_PART3_KR1020060118795A.pdf	24	Foreign Reference	1775 KB
FR09_PART3_KR1020060008365A.pdf	15	Foreign Reference	307 KB
FR10_PART3_KR1020040050174A.pdf	12	Foreign Reference	222 KB
FR11_PART3_KR1020020085478A.pdf	11	Foreign Reference	232 KB
FR12_PART3_KR1020020067489A.pdf	36	Foreign Reference	625 KB
FR13_PART4_KR1020010045598A.pdf	10	Foreign Reference	1125 KB
FR14_PART3_JP2013086228_A.pdf	16	Foreign Reference	2351 KB
FR15_PART3_JP2011189133_A.pdf	17	Foreign Reference	2432 KB
FR16_PART3_JP2011001891A.pdf	6	Foreign Reference	829 KB
FR17_PART3_JP2010220632_A.pdf	12	Foreign Reference	1893 KB
FR18_PART3_JP2010178777	12	Foreign Reference	1652 KB

3A.pdf			
FR19_PART3_JP2010081968A.pdf	19	Foreign Reference	3087 KB
FR20_PART3_JP2009261501A.pdf	9	Foreign Reference	1303 KB
FR21_PART3_JP2008206613A.pdf	12	Foreign Reference	1867 KB
FR22_PART3_JP2006102034A.pdf	8	Foreign Reference	961 KB
FR23_PART3_JP2005040246A.pdf	12	Foreign Reference	1554 KB
FR24_PART3_JP2003135335A.pdf	9	Foreign Reference	1267 KB
FR25_PART3__JP2002085297A.pdf	5	Foreign Reference	913 KB
FR26_PART3_P2000140533A.pdf	4	Foreign Reference	437 KB
FR27_PART3_JP61131720A - Copy.pdf	7	Foreign Reference	1080 KB
FR28_PART3_GB2508035_A.pdf	61	Foreign Reference	6563 KB
FR29_PART3_GB2508035B.pdf	59	Foreign Reference	6273 KB
FR30_PART3_GB2466290B.pdf	16	Foreign Reference	1747 KB
FR31_PART3_GB2465781A.pdf	23	Foreign Reference	2306 KB

FR32_PART3_GB2441962B.pdf	17	Foreign Reference	1642 KB
FR33_PART3_GB2440111A.pdf	16	Foreign Reference	9685 KB
FR34_PART3_GB2365324B.pdf	12	Foreign Reference	1375 KB
FR35_PART4_GB2307849A.pdf	21	Foreign Reference	2033 KB
FR36_PART4_GB2282979B.pdf	20	Foreign Reference	1762 KB
FR37_PART4_GB2268875_A.pdf	35	Foreign Reference	4349 KB
FR38_PART4_GB2163703B.pdf	20	Foreign Reference	2956 KB
FR39_PART4_GB2035787B.pdf	7	Foreign Reference	3360 KB
FR40_PART4_GB1111074A.pdf	4	Foreign Reference	666 KB
FR41_PART4_GB700791A.pdf	4	Foreign Reference	737 KB
NPL01_PART3_KR1020100084127_English.PDF	5	Foreign Reference	164 KB
NPL02_PART3_KR1020060125954_english.pdf	8	Non Patent Literature	66 KB
NPL03_PART3__KR1020060125952_eng.PDF	8	Non Patent Literature	126 KB
NPL04_PART3_JP20110018	12	Non Patent Literature	1251 KB

91A_English.pdf			
NPL05_PART3_KR10200601 18803A_ENG.pdf	11	Non Patent Literature	2001 KB
NPL06_PART3_KR10200601 18802A_ENG.pdf	19	Non Patent Literature	3567 KB
NPL07_PART3_KR10200601 18800_English.pdf	4	Non Patent Literature	276 KB
NPL08_PART3_KR10200601 18795A_ENG.pdf	18	Non Patent Literature	182 KB
NPL09_PART3_KR10200600 08365A_English.pdf	28	Non Patent Literature	3022 KB
NPL10_PART3_KR10200400 50174_English.pdf	4	Non Patent Literature	204 KB
NPL11_PART3_KR10200200 85478A_English.pdf	19	Non Patent Literature	2014 KB
NPL12_PART3_KR10200200 67489_English.pdf	11	Non Patent Literature	1787 KB
NPL13_PART3_KR10200100 45598A_ENG.pdf	9	Non Patent Literature	1529 KB
NPL14_PART3_JP20130862 28_English.pdf	5	Non Patent Literature	337 KB
NPL15_PART3_JP20111891 33A_ENG.PDF	12	Non Patent Literature	150 KB
NPL16_PART3_JP20110018 91A_English.pdf	12	Non Patent Literature	1281 KB
NPL17_PART3_JP20102206 32A_ENG.PDF	10	Non Patent Literature	154 KB

NPL18_PART3_JP2010178773A_ENG.pdf	8	Non Patent Literature	1347 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
IDS_PART3_2022-10-13_P46958US17.pdf	2A0833DECB00A1FD09AB48B82803ABF28713860F1B622A29C75A08DE8813922E36D1ACD2AB8FBB9BC0DFF0FD2535A928F2DB24F988B94653E5F27B60810D3BB3
FR01_PART3_KR10201000841 27A.pdf	5F15E50769F119C738A62E867B7620C04274DF10CA61E892BB56A88081BFBE261ED59A1BD770EE1846812ACEE38459E16925681F01090D7554C1A48A81E88E6F
FR02_PART3_KR10200601259 54A.pdf	921D96C7D9FA441153CF33C13B9819CA002FE87560E438ED024A8121D58E317BB0B1D50717BA098D29DE86D78FF1973A9B19C2C8FE5EF1AE74DF8F7B367D7D1F
FR03_PART3_KR10200601259 52A.pdf	A972C586281D9653408AD650748E99D4410CB24668BD35683DFE95031ED92685F4549AE46962A6A0506BE8EC77C89FDD12C3F2DF5B4ED63622BCEB930AC42287
FR04_PART3_KR10200601222 49A.pdf	4EA4C6C85995801CB69DE714A7FE131B96D3D98B85AD56C34E6B4FD1C25CA3265BBAED6978552604 5D9F0D96C77672DF7CE511D33B510A400FF06EF333720A38
FR05_PART3_KR10200601188 03A.pdf	ADFB67C2AC8A36192B03FE7A08F41F8478FD81292E6FE6EA25AC2F6109123257265920F72675D304C4ADEA0664C5ED5DCBDAC40CDC79509B6B2B4EA4B26129CD
FR06_PART3_KR10200601188 02A.pdf	B5FF86889B325563C9031514EBA89F1D4E93F64D02C57EB02A4D63B7ED5BB62A97E78158194BD2CFA66030CDB416CD05F512C1A30C829338EAE18B3BDA7B3769
FR07_PART3_KR10200601188 00A.pdf	B868E8914709262DA13C92DEEF6AA4622FF7376E5DDC4064BB3B2D327EF6189A2BB029788C7427EB00BAE82395373A7D8F125E9AF552A0F72BFDDE857D888297

FR08_PART3_KR1020060118795A.pdf	0B726720EF48F7981DBF5EA893E634A4F010BA0623B7C244B092D45B053FC99B210FB279766669F0C2BED85317E49F788AE71ED71A757033CF2AB135DAD2DDC9
FR09_PART3_KR1020060008365A.pdf	DB34EBBEA3D311C10B452F8F320B11CA5733D63D03D85F52586B3090BFE61000ABE34AE5B17DFF739F76E80CBAB99ADB0863BFF598AF7A401123DE27357A61D4
FR10_PART3_KR1020040050174A.pdf	9C69AAFF1AC41A5B9EBFE18A6F9DE7B9E72E821C4333FB09991541A3987B078024AED2E2CEC4309B920360ABC5BBACFEB44DB73AA82D6A46E1B2A0FCFC607ACC
FR11_PART3_KR1020020085478A.pdf	7D22A75CB81788F5A0B7323B5A50071A060DFE91C695A34F15B292ED6644EB473186811E1EDE794D9521EE4300A429C3CD04904BFB82FDD768D52B8B4BB0683A
FR12_PART3_KR1020020067489A.pdf	FCCC57CA33593F89C2F4CD61F01451546AB4E446ECE612398A6679C7356E5E188947ECD7630ACD355C773A474310B7FC4843AD1D9B95F221A0FBFE711A26CB8B
FR13_PART4_KR1020010045598A.pdf	E6A72CB90120993EE6811A297ECEE27442ABEC0554DA239CE3D03028C8A07F6703D11F6C1DD8E19DBFC1C8A10671ABB0283F523AFAF67122CA5778AD345B7053
FR14_PART3_JP2013086228_A.pdf	0AEE4C00D37DB1D0467687D0C0BD47559CE8F7C1401E389FA127188E37C32ADCF90BE8FE3142DBA67511AFDCD1FA834AAA1C07E311FA671F45690D673D63B3BA
FR15_PART3_JP2011189133_A.pdf	ECF8673D446770B71FF43029C9876EE5020ABC3F4D4B076F25F1B46210011B6E31B9E9DEE794896F1E1E1055FC525BE955D78E20AADA1853173A5D22679DBA19
FR16_PART3_JP2011001891A.pdf	D359BFF215A49DD515D0D07072191A389E37427607D30D9CC8B5B78941B0CEE615ACAF45B1DCEAB09E5F8919D08EF8B1A3C8A20670F4F86476B6BCFEC3D6D22F
FR17_PART3_JP2010220632_A.pdf	7BAAF274A3FFFC70DA5FC50664F5FA884202092368075838A03F46B3653C91277FDE491BF4EEB91532A351C808482B9EF3487076FE41A8AC97D92B0227676452

FR18_PART3_JP2010178773A.pdf	AF7074132F425DB2C3B7CEC939F6E08AD41B499D17ED138A7ADBEBBA6F14CA312B9FB458471E35AD974FFC6C858DFFC09E7ABD3A8E1ABE5E08506AD310F34818
FR19_PART3_JP2010081968A.pdf	CFEA01F43990EA398FBC806B9F988AC647C31F6182DCF1E2A142183A0D8CD24021835A3314C9FCCEF76EAF41F06A46258FBB3999291B437EF4DF6527E40F5010
FR20_PART3_JP2009261501A.pdf	235EBD2CAFAFEA4E968440933A2300C8BAF4ED2E45E2ACA4920C4A10258413C87185AA9E97B640474E317A2AE7722BE9A7F2B5E09EFB3FB56DB8C347783D5BFA
FR21_PART3_JP2008206613A.pdf	27FA809569AFF3EB1BAE8A5BA44BD2A8C72BFB7072E55D4389015A19D03D5E7242A53FC2BBFC541D37B1FED14A56974A9F90F13D249A2F9CB561F75CEDCFC792
FR22_PART3_JP2006102034A.pdf	2C87496AE75F65D25B6E3A3132CD93EADC2CD26CC498F87F70936C90C5CC2DDF27FAB73A53F7619B80F406F16F20FF1DA812801AAA8104769A1929A7557487F5
FR23_PART3_JP2005040246A.pdf	B0323C772FC3A678315A92FEC9282A7198CEB5894ACAD3DFFF3388415519FCE4C23254D21B411663267A4416E5CAFF188E9285D0F86F984004F709E81A279972
FR24_PART3_JP2003135335A.pdf	E04121182FFA2D8EE0C123E46295F17ED7B9FA994AF4E82CF8038BA06B905F351F0E8FC60187D5EA606B1F9FFDEB081A77C4699CC743112E1687189385D561AC
FR25_PART3__JP2002085297A.pdf	B444D5A3E97CED1B9E7D4FD5A886872E9BB66285DE160F925568AEFC85B33D9CD5D4C8A8D193FA8A8FE0F2CE1BA56D90DDFCF9F7F35FBA664EC40A65C117CB58
FR26_PART3_P2000140533A.pdf	1DC80C5A1CE25A20F6E6BD4F8A1262E806D25A2CFF306240C9FC9FD7C51D73206FBF674BFECC816C9BCF7484971386476B7632ADDA1931E40CA36EE46450D3C0
FR27_PART3_JP61131720A - Copy.pdf	787CEECDFE7EB9B8DD3E60025A3C5158230E6E16F3724917C15DAADACFD11CAD9168EFB98653445DC6CB1DB156916DCA6E407F07765EAC112D3C722C9B6AF44F

FR28_PART3_GB2508035_A.pdf	ACDE5F2A7019AB0CEEFE57447CFC792BDAD85DF9814E8E2DE595A0D593F2FED30E227BC457D2F1CD8BB3F26B904675513C49ACEE836A60709F9F95E7F5E61BFA
FR29_PART3_GB2508035B.pdf	BDC52A9EF4CF50C742D0DCE72F6CB13AB0C9B63059D2FDA0C1C3064999F782A07C545989A6029D7924E63F78191BB02871323F4026AD7743162C7F95F5086D26
FR30_PART3_GB2466290B.pdf	1F272E865859FF41556526580F5924C73790E043BF3A91E0AC50CD5B257E3751A04676199F87A42CAFF141ED6FDF98132D0FA9E0907AD08D104CB47BC9A0D59C
FR31_PART3_GB2465781A.pdf	51C173D0E570B144177C9676C4CF13DC2507D1F4342BDC55D63396F78A1E247B86C8C77B97B4E967C9FE7C47472F2656838D3608B8E3BA55332E60FCD62CABB1
FR32_PART3_GB2441962B.pdf	884845157603F3BFCD7BF100A46149D4AC6E23C376EC6355DF917D20850C4972F52354F881FE2147C1A7D6C0F5B5718D0697CE0DAC9B045428EB5C4D3B6A95CF
FR33_PART3_GB2440111A.pdf	7979698012227E6B1E9DF499A974B1637B4D2E139121265A1E536ABE5EFC9C0632A3183D5617DC3CEE7C276257ED7EA8B8FC767A9428097C6CB817893873D108
FR34_PART3_GB2365324B.pdf	01ECA105DBC3815C2E18CD264D17EBD832FA2F9D462EDC28046E6FFE0ED63510B93FFE9B63FA29707286FD51423C3983723B88E358C67806E721B6701C31BADF
FR35_PART4_GB2307849A.pdf	D64CC2A3764F2E6F70D25154C1F05788D3966F3B0184723D3655C89101C1F2C3B9936C44043F16420D2068E384DB01C71B81811F5E0EA0E076A5D5BD8EF240F3
FR36_PART4_GB2282979B.pdf	4544E6C7418A5FEA1873F047CF16A17D1898F194FB77769AE76CBD7C346CFB97091F83030B6A7B67EE6C42626A7570ACA38DA82203A2B60417D0D51A33E666B4
FR37_PART4_GB2268875_A.pdf	008682BD85FA9F19DFC5A2F7222482735245AFEFB8D853CA0E4A75EBF0861980D31A402C0E6D2B9F1DD35E7BA9A52BB4B3C9045D4F9E22648B1D383CB76157F3

FR38_PART4_GB2163703B.pdf	8D352A1619C46E8B0534A0CFFA47C4ADD58D5941958648893916B4F9ACEC4BCC96212C4738BC0E81F783C986E35BAF75608A6CBE28496A3598B9942D410417EA
FR39_PART4_GB2035787B.pdf	570C49F6BBDE6162DFB9EDC50434879A4D5950EB1F585FA49B477C4D2486687A138BD65B10B783939C01A7B96B74CEEC0E6F34FEC900C610EB6AD3F3F9FCCD7A
FR40_PART4_GB1111074A.pdf	160DD8696C08E9F412A6F47D12C12C98212C60E2CC73E3987A52C6D1DFEC06C79B6D290DDF2AE220E5289A6EA6AF19C0EAD28B42D843A91C2A1A056C13F8C237
FR41_PART4_GB700791A.pdf	D40939059097AC7C68D19D335B66482789072D8F618D9494BFFBD9BEC0489638B06D0B10A5BB65F6C5BF95234F5050EB72561553CCFE8E5A2CDF83CE8F333AD4
NPL01_PART3_KR1020100084127_English.PDF	DB49A2A6289B6E53BC129ADFF1FBAE91036ED44D66EB321EB5A419ECFDF4AE7A65A936E407A7364B3F3B0A8023C22B50FE6BDE6CF401E14599B36C919C6460A0
NPL02_PART3_KR1020060125954_english.pdf	8722C96191C8A0A5C1BE2EB43B8143034520E61EF901F6EA492A14A2521EDE0ECE5471A4769FB035A7AA2791B572E39B3E9D4C548E4FC894B29EE2984384E891
NPL03_PART3__KR1020060125952_eng.PDF	A37019592619F0965765F1D9E00A6592CBB7739038F4665B0BA8B0ABFEFCF5297F86774117F20C23043157D44FF795FC7660F87B592C560C216EA166546E3516
NPL04_PART3_JP2011001891A_English.pdf	79F4D48386337125DA6D6F23AF6533E5AE26C8698E3D7150772C574B35A4C8386A008D4EECBADFB307F132C1985A9C3639118CD7C404D7C9C23D24F8BDDB1955
NPL05_PART3_KR1020060118803A_ENG.pdf	63CE06535F9BA0EB8A0F766D64D52637DF9E1FDF68842FBA17D72A00DB494B2FB6661EF26D4303668F3C68428A52E6F73AA0B9EF9AD6ED8C08EE0138BC75EACE
NPL06_PART3_KR1020060118802A_ENG.pdf	C377530DFA817E4C1475D1273FE21BB170DF1F96CC29D9816C431106DEBE20A7499763B403BC3D10FB9C6186741E6EDC998B223D518E124D42A7D04E9AB3C2EE

NPL07_PART3_KR1020060118800_English.pdf	8E4F9333055039080209 06C4C0D7EEC0629DB4D8C0E4D075FBC1F4D3EC9D76B60C314DFD1BEBB3B6E9275E2EA579346973EEA94A49E0C687A14A0DFD97D739D2
NPL08_PART3_KR1020060118795A_ENG.pdf	9CAD9CB7826D9EB336EC71FABBBD87D1655CC9E0A9D2A04C36C877F936D7BD871E9C73981D1B340D5866F42A47C320968518FB22F053F089C23F4ABE699D7FF7
NPL09_PART3_KR1020060008365A_English.pdf	6975AFFF28D49E97ECE4E1C75148B7A2C7F4F02C77C77596B6A4CFDAC2B2D8CDB346A83698F558FEEE7F9CBACF8E384D50CAAD572736B3E91E6BDB46C8169068
NPL10_PART3_KR1020040050174_English.pdf	39DB0785E8D2DF61DEA4870BDB8D84C6879CCEB27FA7D84F4B73A5F407FF1DDA2AEE5BDA8332A772185138BADD1B88F05EC449D3E731D6C39A993877AF83459D
NPL11_PART3_KR1020020085478A_English.pdf	62E745A701C60C3057024341F0BEEFC405E1BA5FDBA7C9AA6024874BE7316ACD6B8C832379409DD8B7065C3B79A69ACAAD05E1133057F111B8962FBB1AE24ABD
NPL12_PART3_KR1020020067489_English.pdf	67DCBB4E54FBE6733E8835A52F1026A2B4BC06CA5FE3BEC2EA26AA91334548593F738A0E1859C077A7FCBDA3F72B9225750EC636ADD232860ED84F3F81729351
NPL13_PART3_KR1020010045598A_ENG.pdf	18D211BF95BBBF4C6D8EBF1B6172246A94B42C5AD7784C036226A6DD42C701F853F9CAAAF02E61E67DC511355C6A19DB81A5166C5CEEC8133B58EEA9C0339541
NPL14_PART3_JP2013086228_English.pdf	57BDC67AA85813C5D41E39D7DE0C5B4AD40E08E38B7AEEF49B1C8A4FD49959C36CA04A772B8BEEC621C0199876CBBC238FA70503B3D7F4D441A05F3FA99F7E0B
NPL15_PART3_JP2011189133A_ENG.PDF	B9F8A4949212B290F3084AA3386A68C208467DFAAAF7D06EC6736F112F63DACBE229C7B66B5CA738C77C8BC257E84EAED512AC28F401954F21F121F60E344BE3
NPL16_PART3_JP2011001891A_English.pdf	2A71A679D75268AE6A5D11AAA1E44BA2FF49CCBEC9D8E5713D1A8C246D5EF7FEE9BB45A564A6659740F0F0022F4635FF8978E0D80D8214B0A5EB48F9221FF398

NPL17_PART3_JP2010220632A_ENG.PDF	66AA3527D8B69EB02EB200677DA26B45E2937F69D7C62F8EC263EA3C4154F1F03AF952A5ABEAF32E0F962B73ADA08496CDA44824203E618CA59E010664A8AEC3
NPL18_PART3_JP2010178773A_ENG.pdf	560B59AE9C2851DD58CD68CE866F3B587CECC4D5EB897C8C542D62004C3D48C514F462123CEFEA321CF2D9483A8EAD5FEFFECD09EFA48B853D11F0073FC99750

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17830529
Filing Date	2022-06-02
First Named Inventor	Wayne Ernest Conrad
Art Unit	1776
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17 (PART 3)

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6613316	B2	2003-09-02	Sun et al.	
	2	6599350	B1	2003-07-29	Rockwell et al.	
	3	6599338	B2	2003-07-29	Oh et al.	
	4	6581239	B1	2003-06-24	Dyson et al.	
	5	6560818	B1	2003-05-13	Hasko	
	6	6553613	B2	2003-04-29	Onishi et al.	
	7	6553612	B1	2003-04-29	Dyson et al.	
	8	6531066	B1	2003-03-11	Saunders et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	9	6519810	B2	2003-02-18	Kim	
	10	6502278	B2	2003-01-07	Oh et al.	
	11	6440197	B1	2002-08-27	Conrad et al.	
	12	6434785	B1	2002-08-20	Vandenbelt et al.	
	13	6406505	B1	2002-06-18	Oh et al.	
	14	6345408	B1	2002-02-12	Nagai et al.	
	15	6260234	B1	2001-07-17	Wright et al.	
	16	6251296	B1	2001-06-26	Conrad et al.	
	17	6231645	B1	2001-05-15	Conrad et al.	
	18	6228260	B1	2001-05-08	Conrad et al.	
	19	6221134	B1	2001-04-24	Conrad et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	20	6210469	B1	2001-04-03	Tokar	
	21	6122796	A	2000-09-26	Downham David et al.	
	22	6080022	A	2000-06-27	Shaberman Anthony J et al.	
	23	6071321	A	2000-06-06	Trapp Scott M et al.	
	24	6071095	A	2000-06-06	Verkaart Wesley H	
	25	5970572	A	1999-10-26	Thomas Paul-Gerhard	
	26	5950274	A	1999-09-14	Kilstroem Lars	
	27	5935279	A	1999-08-10	Kilstroem Lars	
	28	5893938	A	1999-04-13	Dyson James et al.	
	29	5858043	A	1999-01-12	Geise Hans-Ulrich	
	30	5858038	A	1999-01-12	Dyson James et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	31	5815881	A	1998-10-06	Sjoegreen Joergen	
	32	5815878	A	1998-10-06	Murakami Masaki et al.	
	33	5755096	A	1998-05-26	Holleyman John E	
	34	5709007	A	1998-01-20	Chiang Wayne	
	35	5599365	A	1997-02-04	Alday John H et al.	
	36	5515573	A	1996-05-14	Frey Robert A	
	37	5481780	A	1996-01-09	Daneshvar Yousef	
	38	5363535	A	1994-11-15	Rench Geoffrey B et al.	
	39	5347679	A	1994-09-20	Saunders Craig M et al.	
	40	5309601	A	1994-05-10	Hampton Leonard D et al.	
	41	5309600	A	1994-05-10	Weaver James M et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	42	5307538	A	1994-05-03	Rench Geoffrey B et al.	
	43	5287591	A	1994-02-22	Rench Geoffrey B et al.	
	44	5267371	A	1993-12-07	Soler Norman V et al.	
	45	5254019	A	1993-10-19	Noschese Rocco J	
	46	5230722	A	1993-07-27	Yonkers Robert A	
	47	5224238	A	1993-07-06	Bartlett Michael D	
	48	5129125	A	1992-07-14	Gamou Akira et al.	
	49	5090976	A	1992-02-25	Dyson James	
	50	5080697	A	1992-01-14	Finke Eugene W	
	51	5078761	A	1992-01-07	Dyson James	
	52	5054157	A	1991-10-08	Werner Kurt et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	53	4980945	A	1991-01-01	Bewley Wilbur C	
	54	D D0380033	S	1997-06-17	Theiss Scott M et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20110146024	A1	2011-06-23	Conrad	
	2	20110023261	A1	2011-02-03	Proffitt, Ii et al.	
	3	20100299866	A1	2010-12-02	Conrad	
	4	20100299865	A1	2010-12-02	Conrad	
	5	20100293745	A1	2010-11-25	Coburn	
	6	20100243158	A1	2010-09-30	Conrad	
	7	20100242210	A1	2010-09-30	Conrad	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	8	20100229328	A1	2010-09-16	Conrad	
	9	20100229324	A1	2010-09-16	Conrad	
	10	20100229321	A1	2010-09-16	Dyson et al.	
	11	20100224073	A1	2010-09-09	Oh et al.	
	12	20100212104	A1	2010-08-26	Conrad	
	13	20100175217	A1	2010-07-15	Conrad	
	14	20100154150	A1	2010-06-24	Mcleod	
	15	20100132319	A1	2010-06-03	Ashbee et al.	
	16	20100083459	A1	2010-04-08	Beskow et al.	
	17	20090313959	A1	2009-12-24	Gomiciaga-Pereda et al.	
	18	20090313958	A1	2009-12-24	Gomiciaga-Pereda et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	19	20090308254	A1	2009-12-17	Oakham	
	20	20090307864	A1	2009-12-17	Dyson	
	21	20090307863	A1	2009-12-17	Milne et al.	
	22	20090307564	A1	2009-12-10	Vedantham et al.	
	23	20090300875	A1	2009-12-10	Inge et al.	
	24	20090300874	A1	2009-12-10	Tran et al.	
	25	20090282639	A1	2009-11-19	Dyson et al.	
	26	20090265877	A1	2009-10-29	Dyson et al.	
	27	20090209666	A1	2009-08-20	Hellberg et al.	
	28	20090205298	A1	2009-08-20	Hyun et al.	
	29	20090205161	A1	2009-08-20	Conrad	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	30	20090205160	A1	2009-08-20	Conrad	
	31	20090165431	A1	2009-07-02	Oh	
	32	20090144932	A1	2009-06-11	Yoo	
	33	20090113659	A1	2009-05-07	Jeon et al.	
	34	20090100633	A1	2009-04-23	Bates et al.	
	35	20080301903	A1	2008-12-11	Cunningham et al.	
	36	20080196745	A1	2008-08-21	Conrad	
	37	20080196194	A1	2008-08-21	Conrad	
	38	20080190080	A1	2008-08-14	Oh et al.	
	39	20080178420	A1	2008-07-31	Conrad	
	40	20080178416	A1	2008-07-31	Conrad	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	41	20080134462	A1	2008-06-12	Jansen et al.	
	42	20080134460	A1	2008-06-12	Conrad	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1020100084127	KR	A	2010-07-23	SEB S.A.		
	2	1020060125954	KR	A	2006-12-07	LG ELECTRONICS		
	3	1020060125952	KR	A	2006-12-07	LG ELECTRONICS		
	4	1020060122249	KR	A	2006-11-30	LG ELECTRONICS		
	5	1020060118803	KR	A	2006-11-24	LG ELECTRONICS		
	6	1020060118802	KR	A	2006-11-24	LG ELECTRONICS		
	7	1020060118800	KR	A	2006-11-24	LG ELECTRONICS		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	8	1020060118795	KR	A	2006-11-24	LG ELECTRONICS INC.		
	9	1020060008365	KR	A	2006-01-26	LG ELECTRONICS		
	10	1020040050174	KR	A	2004-06-16	SAMSUNG ELECTRONICS		
	11	1020020085478	KR	A	2002-11-16	LG ELECTRONICS		
	12	1020020067489	KR	A	2002-08-22	SHARP KABUSHIKI KAISHAF		
	13	1020010045598	KR	A	2001-06-05	SAMSUNG ELECTRONICS		
	14	2013086228	JP	A	2013-05-13	HITACHI KOKI		
	15	2011189133	JP	A	2011-09-29	DYSON TECHNOLOGY LTD		
	16	2011001891	JP	A	2011-01-06	Fujii Kazuhiro		
	17	2010220632	JP	A	2010-10-07	MAKITA CORP.		
	18	2010178773	JP	A	2010-08-19	MAKITA CORP.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	19	2010081968	JP	A	2010-04-15	Inoue Teruhisa		
	20	2009261501	JP	A	2009-11-12	YAMADA ELECTRIC		
	21	2008206613	JP	A	2008-09-11	TSUIN BADO KOGYO		
	22	2006102034	JP	A	2006-04-20	Yuasa Yasuhiro et al.		
	23	2005040246	JP	A	2005-02-17	SANYO ELECTRIC		
	24	2003135335	JP	A	2003-05-13	Takemoto Ritsuo et al.		
	25	2002085297	JP	A	2002-03-26	Ohara Naoyuki		
	26	2000140533	JP	A	2000-05-23	SHINTOO FINE KK		
	27	61131720	JP	A	1986-06-19	TOKYO ELECTRIC CO. LTD		
	28	2508035	GB	A	2014-05-21	Wilson Hugo George		
	29	2508035	GB	B	2015-03-11	Wilson Hugo George		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	30	2466290	GB	B	2012-10-03	Mcleod David Andrew		
	31	2465781	GB	A	2010-06-02	Sutton John Scott et al.		
	32	2441962	GB	B	2011-03-02	Dyson James et al.		
	33	2440111	GB	A	2008-01-23	Milne William Frame et al.		
	34	2365324	GB	B	2002-07-31	Oh Jang-Keun et al.		
	35	2307849	GB	A	1997-06-11	ELECTROLUX LIMITED		
	36	2282979	GB	B	1997-10-08	Paul James * Huyton		
	37	2268875	GB	A	1994-01-26	BISSELL INC.		
	38	2163703	GB	B	1988-01-27	BONDICO INC		
	39	2035787	GB	B	1982-10-13	L & H DESIGNS LTD & MERRITT H M		
	40	1111074	GB	A	1968-04-24	SIEMENS-ELECTROGERAETE GESELLSCHAFT MIT BESCHRANKT		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	41	700791	GB	A	1953-12-09	ENGLISH ELECTRIC		

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5
	1	English machine translation of KR1020100084127, published on July 23, 2010	
	2	English machine translation of KR1020060125954., published on December 7, 2006	
	3	English machine translation of KR1020060125952, published on December 7, 2006	
	4	English machine translation of KR1020060122249, published on November 30, 2006	
	5	English machine Translation of KR1020060118803, published on November 24, 2006	
	6	English machine translation of KR1020060118802, published on November 24, 2006	
	7	English machine translation of KR1020060118800, published on November 24, 2006	
	8	English machine translation of KR1020060118795, published on November 24, 2006	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	9	English machine translation of KR1020060008365, published on January 26, 2006
	10	English machine translation of KR1020040050174, published on June 16, 2004
	11	English machine translation of KR1020020085478, published on November 16, 2002
	12	English machine translation of KR1020020067489, published on August 22, 2002
	13	English machine translation of KR1020010045598, published on June 5, 2001
	14	English machine translation of JP2013086228, published on May 13, 2013
	15	English machine translation of JP2011189133, published on September 29, 2011
	16	English machine translation of JP2011001891, published on January 6, 2011
	17	English machine translation of JP2010220632, published on October 7, 2010
	18	English machine translation of JP 2010178773, published on August 19, 2010
	19	English machine translation of JP2010081968, published on April 15, 2010

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

	20	English machine translation of JP2009261501, published on November 12, 2009
	21	English machine translation of JP2008206613, published on September 11, 2008
	22	English machine translation of JP2006102034, published on April 20, 2006
	23	English machine translation of JP2005040246, published on February 17, 2005
	24	English machine translation of JP2003135335, published on May 13, 2003
	25	English machine translation of JP2002085297, published on March 26, 2002
	26	English machine translation of JP2000140533, published on May 23, 2000
	27	English machine translation of JP61131720, published on June 19, 1986
	28	English machine translation of JP2508035, published on May 21, 2014

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Philip C. Mendes da Costa/	Date (YYYY-MM-DD)	2022-10-13
Name/Print	Philip C. Mendes da Costa	Registration Number	33106

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	1309	((("CONRAD") near3 ("Wayne"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/04/24 01:14 PM
L2	719	L1 AND (cyclone cyclonic).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/24 01:14 PM
L3	217	L2 AND (hand ADJ vacuum).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/24 01:15 PM
L4	46	((US-20140237757-A1 OR US-20160174787-A1 OR US-20160174786-A1 OR US-20160174785-A1 OR US-20170196428-A1 OR US-20170224181-A1 OR US-20170265696-A1 OR US-20170290481-A1 OR US-20170290478-A1 OR US-20170290479-A1 OR US-20170290476-A1 OR US-20170290477-A1 OR US-20180177356-A1 OR US-20180177366-A1 OR US-20180177355-A1 OR US-20180177353-A1 OR US-20180177352-A1 OR US-20180177354-A1 OR US-20190008348-A1 OR US-20190008341-A1 OR US-20190008339-A1 OR US-20190008342-A1 OR US-20190008340-A1 OR US-20190008338-A1 OR US-20190254492-A1 OR US-20190282048-A1 OR US-20190307301-A1 OR US-20190320863-A1 OR US-20200022546-A1 OR US-20200253437-A1 OR US-20200305671-A1 OR US-20200324302-A1 OR US-20200367708-A1 OR US-20210045605-A1	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/04/24 01:49 PM

		OR US-20210045596-A1).did. AND PGPB.dbnm.) OR ((US-9301666-B2 OR US-11160425-B2 OR US-10813510-B2 OR US-10426302-B2 OR US-10327610-B2 OR US-10244906-B2 OR US-10238249-B2 OR US-10165913-B2 OR US-10085604-B2 OR US-9980616-B2 OR US-9962047-B2).did. AND USPT.dbnm.)					
L5	3	(9888817; 10219662; 10478030;).pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/24 02:03 PM
L6	262	B05b11/00.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/26 09:35 AM
L7	46	L4	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/01 10:34 AM
L8	4	L7 AND (grip AND finger).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/01 10:35 AM
L9	4	L8	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:20 AM
L10	4	L8 AND (cyclone AND axis).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:23 AM
L11	518	L2 AND (cyclone cyclonic).clm. AND (axis).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:48 AM
L12	104	L11 AND (finger grip).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:48 AM
L13	80	L12 AND (cyclone ADJ axis).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:49 AM
L14	46	L13 AND (axis near2 intersects).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:50 AM
L15	11	L14 AND (pistol).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:52 AM
L16	3	cn-205625805-$.did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/22 11:33 AM

L17	3	cn-109330476-$.did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/22 11:33 AM
L18	7	(20190174984; 20160150923; 5035024; 20110289719; 20130227813; 10974258; "11571097").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 11:35 AM
L19	6	16 OR 17	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/22 11:35 AM
L20	7	L18	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 12:02 PM
L21	250	("20110168332" OR "20110219576" OR "20110289719" OR "20120023701" OR "20120030896" OR "20120060322" OR "20120079671" OR "20120216361" OR "20120222245" OR "20120222260" OR "20120222262" OR "20130160232" OR "20140137362" OR "20140137363" OR "20140137364" OR "20140182080" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 12:11 PM

		"20140208538" OR "20140237956" OR "20150135474" OR "20150230677" OR "20150297050" OR "20160113460" OR "6623539" OR "6625845" OR "6640385" OR "6648934" OR "6712868" OR "6732403" OR "6746500" OR "6766558" OR "6782583" OR "6782585" OR "6810558" OR "6818036" OR "6833015" OR "6868578" OR "6874197" OR "6896719" OR "6929516" OR "6968596" OR "6976885" OR "7113847" OR "7128770" OR "7160346" OR "7162770" OR "7175682" OR "7198656" OR "7222393" OR "7272872" OR "7278181" OR "7341611" OR "7354468" OR "7370387" OR "7377007" OR "7377953" OR "7386915" OR "7395579" OR "7426768" OR "7429284" OR "7448363" OR "7449040" OR "7485164" OR "7488363" OR "7547337" OR "7547338" OR "7563298" OR "7565853" OR "7588616" OR "7597730" OR "7628831" OR "7691161" OR "7717973" OR "7740676" OR "7770256" OR					

		"7776120" OR "7779506" OR "7803207" OR "7805804" OR "7811349" OR "7867308" OR "7882593" OR "7922794" OR "7931716" OR "7938871" OR "7958598" OR "7979959" OR "7996956" OR "8021453" OR "8062398" OR "8100999" OR "8101001" OR "8117712" OR "8146201" OR "8151407" OR "8152877" OR "8156609" OR "8161599" OR "8225456" OR "8484799" OR "8673487" OR "8869344" OR "9192269" OR "9516979" OR "9675218" OR "9711986" OR "10299651" OR "10405719" OR "10561291" OR "10610075" OR "10660493" OR "10959589" OR "10973380" OR "11229339" OR "11357374" OR "11363928" OR "11382471" OR "1600762" OR "1797812" OR "1898608" OR "1937765" OR "20020011050" OR "20020011053" OR "20020062531" OR "20020088208" OR "20020112315" OR "20020134059" OR "20020134238" OR "20020178535" OR "20020178698" OR "20020178699" OR "20030037403" OR "20030046910" OR					

		"20030066273" OR "20030106180" OR "20030159238" OR "20030159411" OR "20030200736" OR "20040010885" OR "20040025285" OR "20040045126" OR "20040216264" OR "20050081321" OR "20050115409" OR "20050132528" OR "20050198769" OR "20050198770" OR "20050252179" OR "20050252180" OR "20060037172" OR "20060042206" OR "20060090290" OR "20060123590" OR "20060137304" OR "20060137306" OR "20060137309" OR "20060137314" OR "20060156508" OR "20060162298" OR "20060162299" OR "20060168922" OR "20060168923" OR "20060207055" OR "20060207231" OR "20060230715" OR "20060230723" OR "20060230724" OR "20060236663" OR "20060254226" OR "20060277711" OR "20060278081" OR "20060288516" OR "20070067944" OR "20070077810" OR "20070079473" OR "20070079585" OR "20070095028" OR "20070095029" OR "20070136984" OR "20070209334" OR "20070209335" OR "20070271724" OR "20070289089" OR "20070289266" OR "20080040883" OR "20080134460" OR "20080134462" OR "20080178416" OR "20080178420" OR "20080190080" OR "20080196194" OR					

		"20080196745" OR "20080301903" OR "20090100633" OR "20090113659" OR "20090144932" OR "20090165431" OR "20090205160" OR "20090205161" OR "20090205298" OR "20090209666" OR "20090265877" OR "20090282639" OR "20090300874" OR "20090300875" OR "20090307564" OR "20090307863" OR "20090307864" OR "20090308254" OR "20090313958" OR "20090313959" OR "20100083459" OR "20100132319" OR "20100154150" OR "20100175217" OR "20100212104" OR "20100224073" OR "20100229321" OR "20100229324" OR "20100229328" OR "20100242210" OR "20100243158" OR "20100293745" OR "20100299865" OR "20100299866" OR "20110023261" OR "20110146024" OR "2152114" OR "2542634" OR "2678110" OR "2731102" OR "2811219" OR "2846024" OR "2913111" OR "2917131" OR "2937713" OR "2942691" OR "2942692" OR "2946451" OR "2952330" OR "2981369" OR "3032954" OR "3085221" OR "3130157" OR "3200568" OR "3204772" OR "3217469" OR "3269097" OR "3320727" OR				

		"3372532" OR "3426513").pn.					
L22	89	("3518815" OR "3530649" OR "3543325" OR "3561824" OR "3582616" OR "3675401" OR "3684093" OR "3822533" OR "3898068" OR "3933450" OR "3988132" OR "3988133" OR "4097381" OR "4187088" OR "4218805" OR "4236903" OR "4307485" OR "4373228" OR "4382804" OR "4409008" OR "4486207" OR "4494270" OR "4523936" OR "4678588" OR "4700429" OR "4744958" OR "4778494" OR "4803753" OR "4826515" OR "4853008" OR "4853011" OR "4853111" OR "4905342" OR "4944780" OR "4980945" OR "5054157" OR "5078761" OR "5080697" OR "5090976" OR "5129125" OR "5224238" OR "5230722" OR "5254019" OR "5267371" OR "5287591" OR "5307538" OR "5309600" OR "5309601" OR "5347679" OR "5363535" OR "5481780" OR "5515573" OR "5599365" OR "5709007" OR "5755096" OR "5815878" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 12:11 PM

		"5815881" OR "5858038" OR "5858043" OR "5893938" OR "5935279" OR "5950274" OR "5970572" OR "6071095" OR "6071321" OR "6080022" OR "6122796" OR "6210469" OR "6221134" OR "6228260" OR "6231645" OR "6251296" OR "6260234" OR "6345408" OR "6406505" OR "6434785" OR "6440197" OR "6502278" OR "6519810" OR "6531066" OR "6553612" OR "6553613" OR "6560818" OR "6581239" OR "6599338" OR "6599350" OR "6613316" OR "D303173" OR "D380033").pn.					
L23	2	(8769764; "20120030896").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 04:54 PM
L24	3	jp-2014083241-$.did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/22 04:57 PM
L25	187	L21 AND (cyclone cyclonic)	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 05:01 PM
L26	3	L24	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2023/05/22 05:07 PM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L27	1	("10219662").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/23 08:39 AM
L28	4	(20120030896; 20110289719; 20100083459; "20060090290").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/23 08:54 AM
L29	3	L24	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/23 08:59 AM
L30	250	L21	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/23 01:49 PM
L31	55016	(A47L5/225 or A47L5/24 or A47L5/28 or A47L9/16 or A47L9/1608 or A47L9/1625 or A47L9/1641 or A47L9/1683 or A47L9/1691 or A47L9/322 or A47L9/325 or A47L9/106 or A47L9/122).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/23 02:09 PM
L32	23477	(A47L5/225 OR A47L5/24 OR A47L5/28 OR A47L9/16 OR A47L9/1608 OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2023/05/23 02:10 PM

		A47L9/1625 OR A47L9/1641 OR A47L9/1683 OR A47L9/1691 OR A47L9/322 OR A47L9/325 OR A47L9/106 OR A47L9/122).cpc. AND (cyclone cyclonic)	CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L33	11873	(A47L5/225 OR A47L5/24 OR A47L5/28 OR A47L9/16 OR A47L9/1608 OR A47L9/1625 OR A47L9/1641 OR A47L9/1683 OR A47L9/1691 OR A47L9/322 OR A47L9/325 OR A47L9/106 OR A47L9/122).cpc. AND (battery)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/23 02:10 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/830,529	Conrad, Wayne Ernest
	Examiner	Art Unit
	DAVID A REDDING	3723

CPC - Searched*		
Symbol	Date	Examiner

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
For terms see notes	05/23/2023	DAR

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/David Redding/ Primary Examiner, Art Unit 3723	

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17830529
Filing Date	2022-06-02
First Named Inventor	Wayne Ernest Conrad
Art Unit	1776
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17 (PART 1)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	11382471	B2	2022-07-12	Kim et al.	
	2	11363928	B2	2022-06-21	Kim et al.	
	3	11357374	B2	2022-06-14	Cho et al.	
	4	11229339	B2	2022-01-25	Cho et al.	
	5	10973380	B2	2021-04-13	Seo et al.	
	6	10959589	B2	2021-03-30	Kim et al.	
	7	10660493	B2	2020-05-26	Kim et al.	
	8	10610075	B2	2020-04-07	Kim et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	9	10561291	B2	2020-02-18	Kim et al.	
	10	10405719	B2	2019-09-10	Kim et al.	
	11	10299651	B2	2019-05-28	Kim et al.	
	12	1937765	A	1933-12-05	Ward Leathers	
	13	1898608	A	1933-02-21	William Alexander	
	14	1797812	A	1931-03-24	Horace Waring	
	15	1600762	A	1926-09-21	Gilbert Hawley Charles	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20070079473	A1	2007-04-12	Min et al.	
	2	20070077810	A1	2007-04-05	Gogel et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	3	20070067944	A1	2007-03-29	Kitamura et al.	
	4	20060288516	A1	2006-12-28	Sawalski	
	5	20060278081	A1	2006-12-14	Han et al.	
	6	20060277711	A1	2006-12-14	Hong et al.	
	7	20060254226	A1	2006-11-16	Jeon	
	8	20060236663	A1	2006-10-26	Oh	
	9	20060230724	A1	2006-10-19	Han et al.	
	10	20060230723	A1	2006-10-19	Kim et al.	
	11	20060230715	A1	2006-10-19	Oh et al.	
	12	20060207231	A1	2006-09-21	Arnold	
	13	20060207055	A1	2006-09-21	Ivarsson et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	14	20060168923	A1	2006-08-03	Lee et al.	
	15	20060168922	A1	2006-08-03	Oh	
	16	20060162299	A1	2006-07-27	North	
	17	20060162298	A1	2006-07-27	Oh et al.	
	18	20060156508	A1	2006-07-20	Khalil	
	19	20060137314	A1	2006-06-29	Conrad et al.	
	20	20060137309	A1	2006-06-29	Jeong et al.	
	21	20060137306	A1	2006-06-29	Jeong et al.	
	22	20060137304	A1	2006-06-29	Jeong et al.	
	23	20060123590	A1	2006-06-15	Fester et al.	
	24	20060090290	A1	2006-05-04	Lau	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	25	20060042206	A1	2006-03-02	Arnold et al.	
	26	20060037172	A1	2006-02-23	Choi	
	27	20050252180	A1	2005-11-17	Oh et al.	
	28	20050252179	A1	2005-11-17	Oh et al.	
	29	20050198770	A1	2005-09-15	Jung et al.	
	30	20050198769	A1	2005-09-15	Lee et al.	
	31	20050132528	A1	2005-06-23	Yau	
	32	20050115409	A1	2005-06-02	Conrad	
	33	20050081321	A1	2005-04-21	Milligan et al.	
	34	20040216264	A1	2004-11-04	Shaver et al.	
	35	20040045126	A1	2004-03-11	Parker et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	36	20040025285	A1	2004-02-12	Mccormick et al.	
	37	20040010885	A1	2004-01-22	Hitzelberger et al.	
	38	20030200736	A1	2003-10-30	Ni	
	39	20030159411	A1	2003-08-28	Hansen et al.	
	40	20030159238	A1	2003-08-28	Oh	
	41	20030106180	A1	2003-06-12	Tsen	
	42	20030066273	A1	2003-04-10	Choi et al.	
	43	20030046910	A1	2003-03-13	Lee et al.	
	44	20030037403	A1	2003-02-27	Lang	
	45	20020178699	A1	2002-12-05	Oh	
	46	20020178698	A1	2002-12-05	Oh et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	47	20020178535	A1	2002-12-05	Oh et al.	
	48	20020134238	A1	2002-09-26	Conrad et al.	
	49	20020134059	A1	2002-09-26	Oh	
	50	20020112315	A1	2002-08-22	Conrad	
	51	20020088208	A1	2002-07-11	Lukac et al.	
	52	20020062531	A1	2002-05-30	Oh	
	53	20020011053	A1	2002-01-31	Oh	
	54	20020011050	A1	2002-01-31	Hansen et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	102012211246	DE	A1	2014-01-02	BSH HAUSGERAETE GMBH		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	2	102007011457	DE	A1	2007-10-25	GBD CORP, ROYAL APPLIANCE		
	3	205671986	CN	U	2016-11-09	SUZHOU CHENGHE CLEANING		
	4	204363891	CN	U	2015-06-03	NINGBO ZHONGJIE HOME APPLIANCES		
	5	202932850	CN	U	2013-05-15	SUZHOU PROVAC ELECTRICAL CO.		
	6	202739907	CN	U	2013-02-20	NINGBO ZHONGJIE HOME APPLIANCES		
	7	201290642	CN	Y	2009-08-19	KINGCLEAN ELECTRIC		
	8	105816104	CN	A	2016-08-03	HITACHI APPLIANCES INC.		
	9	101108110	CN	A	2008-01-23	LG ELECTRONICS TIANJIN ELECTRIC APPLIANCE CO.		
	10	101108106	CN	B	2012-07-18	LG ELECTRONICS TIANJIN ELECTRIC APPLIANCE CO.		
	11	212307697	CN	U	2021-01-08	ZHUICHUANG TECH SUZHOU CO LTD		
	12	101108081	CN	B	2010-10-27	LG ELECTRONICS TIANJIN ELECTRIC APPLIANCE CO.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	13	211459996	CN	U	2020-09-11	GREE ELECTRIC APPLIANCES INC.		
	14	101061932	CN	A	2007-10-31	KWONNIE ELECTRICAL PRODUCTS LTD		
	15	10056935	DE	C2	2003-01-16	SAMSUNG ELECTRONICS		
	16	2659212	CA	A1	2010-09-20	OMACHRON INTELLECTUAL PROPERTY INC.		
	17	2658014	CA	A1	2010-09-11	GBD CORP.		
	18	2484587	CA	A1	2005-04-15	BLACK & DECKER INC.		
	19	2450450	CA	A1	2004-12-26	SAMSUNG KWANGJU ELECTRONICS CO.		
	20	2438079	CA	C	2009-08-18	DYSON LIMITED		
	21	1887437	CN	A	2007-01-03	LG ELECTRONICS (TIANJIN) APPLIANCE CO. LTD.		
	22	1875855	CN	A	2006-12-13	LG ELECTRONICS (TIANJIN) APPLIANCE CO. LTD.		
	23	1875846	CN	A	2006-12-13	LG ELECTRONICS (TIANJIN) APPLIANCE CO. LTD.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	24	1493244	CN	A	2004-05-05	VACUUM CLEANER CO		
	25	1434688	CN	A	2003-08-06	LG ELECTRONICS		
	26	1336154	CN	A	2002-02-20	SAMSUNG KWANGJU ELECTRONICS CO.		
	27	1218962	CA	A1	1987-03-10	UNIV KINGSTON		
	28	1077412	CA	A1	1980-05-13	SULZER AG		
	29	112778	AU	S	1991-11-06	GENERAL EQUITY LTD		
	30	108024674	CN		2018-05-11	DYSON TECHNOLOGY LTD.		

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	English machine translation of DE102012211246A1, published on January 2, 2014	
	2	English machine translation of DE102007011457, published on October 25, 2007	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	3	English machine translation of CN205671986, published on November 9, 2016
	4	English machine translation of CN204363891, published on June 3, 2005
	5	English machine translation of CN202932850, published on May 15, 2013
	6	English machine translation of CN202739907, published on February 20, 2013
	7	English machine translation of CN201290642Y, published on August 19, 2009
	8	English machine translation of CN105816104A, published on August 3, 2016
	9	English machine translation of CN101108110A, published on January 23, 2008
	10	English machine translation of CN101108106B, published on July 18, 2012
	11	English machine translation of CN212307697U, published on January 8, 2021
	12	English machine translation of CN101108081B, published on October 27, 2010
	13	English machine translation of CN211459996, published on September 11, 2020

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 1)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	14	English machine translation of CN101061932, published on October 31, 2007
	15	English machine translation of DE10056935, published on January 16, 2003
	16	English machine translation of CN1887437, published on January 3, 2007
	17	English machine translation of CN1875855, published on December 13, 2006
	18	English machine translation of CN1875846, published on December 13, 2006
	19	English machine translation of CN1493244, published on May 5, 2004
	20	English machine translation of CN1434688, published on August 6, 2003

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/David Redding/ (05/23/2023)	Date Considered	05/23/2023

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17830529
Filing Date	2022-06-02
First Named Inventor	Wayne Ernest Conrad
Art Unit	1776
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17 (PART 1)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Philip C. Mendes da Costa/	Date (YYYY-MM-DD)	2022-10-13
Name/Print	Philip C. Mendes da Costa	Registration Number	33106

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17830529
Filing Date	2022-06-02
First Named Inventor	Wayne Ernest Conrad
Art Unit	1776
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6613316	B2	2003-09-02	Sun et al.	
	2	6599350	B1	2003-07-29	Rockwell et al.	
	3	6599338	B2	2003-07-29	Oh et al.	
	4	6581239	B1	2003-06-24	Dyson et al.	
	5	6560818	B1	2003-05-13	Hasko	
	6	6553613	B2	2003-04-29	Onishi et al.	
	7	6553612	B1	2003-04-29	Dyson et al.	
	8	6531066	B1	2003-03-11	Saunders et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	9	6519810	B2	2003-02-18	Kim	
	10	6502278	B2	2003-01-07	Oh et al.	
	11	6440197	B1	2002-08-27	Conrad et al.	
	12	6434785	B1	2002-08-20	Vandenbelt et al.	
	13	6406505	B1	2002-06-18	Oh et al.	
	14	6345408	B1	2002-02-12	Nagai et al.	
	15	6260234	B1	2001-07-17	Wright et al.	
	16	6251296	B1	2001-06-26	Conrad et al.	
	17	6231645	B1	2001-05-15	Conrad et al.	
	18	6228260	B1	2001-05-08	Conrad et al.	
	19	6221134	B1	2001-04-24	Conrad et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	20	6210469	B1	2001-04-03	Tokar	
	21	6122796	A	2000-09-26	Downham David et al.	
	22	6080022	A	2000-06-27	Shaberman Anthony J et al.	
	23	6071321	A	2000-06-06	Trapp Scott M et al.	
	24	6071095	A	2000-06-06	Verkaart Wesley H	
	25	5970572	A	1999-10-26	Thomas Paul-Gerhard	
	26	5950274	A	1999-09-14	Kilstroem Lars	
	27	5935279	A	1999-08-10	Kilstroem Lars	
	28	5893938	A	1999-04-13	Dyson James et al.	
	29	5858043	A	1999-01-12	Geise Hans-Ulrich	
	30	5858038	A	1999-01-12	Dyson James et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	31	5815881	A	1998-10-06	Sjoegreen Joergen	
	32	5815878	A	1998-10-06	Murakami Masaki et al.	
	33	5755096	A	1998-05-26	Holleyman John E	
	34	5709007	A	1998-01-20	Chiang Wayne	
	35	5599365	A	1997-02-04	Alday John H et al.	
	36	5515573	A	1996-05-14	Frey Robert A	
	37	5481780	A	1996-01-09	Daneshvar Yousef	
	38	5363535	A	1994-11-15	Rench Geoffrey B et al.	
	39	5347679	A	1994-09-20	Saunders Craig M et al.	
	40	5309601	A	1994-05-10	Hampton Leonard D et al.	
	41	5309600	A	1994-05-10	Weaver James M et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	42	5307538	A	1994-05-03	Rench Geoffrey B et al.	
	43	5287591	A	1994-02-22	Rench Geoffrey B et al.	
	44	5267371	A	1993-12-07	Soler Norman V et al.	
	45	5254019	A	1993-10-19	Noschese Rocco J	
	46	5230722	A	1993-07-27	Yonkers Robert A	
	47	5224238	A	1993-07-06	Bartlett Michael D	
	48	5129125	A	1992-07-14	Gamou Akira et al.	
	49	5090976	A	1992-02-25	Dyson James	
	50	5080697	A	1992-01-14	Finke Eugene W	
	51	5078761	A	1992-01-07	Dyson James	
	52	5054157	A	1991-10-08	Werner Kurt et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	53	4980945	A	1991-01-01	Bewley Wilbur C	
	54	D D0380033	S	1997-06-17	Theiss Scott M et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20110146024	A1	2011-06-23	Conrad	
	2	20110023261	A1	2011-02-03	Proffitt, Ii et al.	
	3	20100299866	A1	2010-12-02	Conrad	
	4	20100299865	A1	2010-12-02	Conrad	
	5	20100293745	A1	2010-11-25	Coburn	
	6	20100243158	A1	2010-09-30	Conrad	
	7	20100242210	A1	2010-09-30	Conrad	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	8	20100229328	A1	2010-09-16	Conrad	
	9	20100229324	A1	2010-09-16	Conrad	
	10	20100229321	A1	2010-09-16	Dyson et al.	
	11	20100224073	A1	2010-09-09	Oh et al.	
	12	20100212104	A1	2010-08-26	Conrad	
	13	20100175217	A1	2010-07-15	Conrad	
	14	20100154150	A1	2010-06-24	Mcleod	
	15	20100132319	A1	2010-06-03	Ashbee et al.	
	16	20100083459	A1	2010-04-08	Beskow et al.	
	17	20090313959	A1	2009-12-24	Gomiciaga-Pereda et al.	
	18	20090313958	A1	2009-12-24	Gomiciaga-Pereda et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	19	20090308254	A1	2009-12-17	Oakham	
	20	20090307864	A1	2009-12-17	Dyson	
	21	20090307863	A1	2009-12-17	Milne et al.	
	22	20090307564	A1	2009-12-10	Vedantham et al.	
	23	20090300875	A1	2009-12-10	Inge et al.	
	24	20090300874	A1	2009-12-10	Tran et al.	
	25	20090282639	A1	2009-11-19	Dyson et al.	
	26	20090265877	A1	2009-10-29	Dyson et al.	
	27	20090209666	A1	2009-08-20	Hellberg et al.	
	28	20090205298	A1	2009-08-20	Hyun et al.	
	29	20090205161	A1	2009-08-20	Conrad	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	30	20090205160	A1	2009-08-20	Conrad	
	31	20090165431	A1	2009-07-02	Oh	
	32	20090144932	A1	2009-06-11	Yoo	
	33	20090113659	A1	2009-05-07	Jeon et al.	
	34	20090100633	A1	2009-04-23	Bates et al.	
	35	20080301903	A1	2008-12-11	Cunningham et al.	
	36	20080196745	A1	2008-08-21	Conrad	
	37	20080196194	A1	2008-08-21	Conrad	
	38	20080190080	A1	2008-08-14	Oh et al.	
	39	20080178420	A1	2008-07-31	Conrad	
	40	20080178416	A1	2008-07-31	Conrad	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	41	20080134462	A1	2008-06-12	Jansen et al.	
	42	20080134460	A1	2008-06-12	Conrad	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1020100084127	KR	A	2010-07-23	SEB S.A.		
	2	1020060125954	KR	A	2006-12-07	LG ELECTRONICS		
	3	1020060125952	KR	A	2006-12-07	LG ELECTRONICS		
	4	1020060122249	KR	A	2006-11-30	LG ELECTRONICS		
	5	1020060118803	KR	A	2006-11-24	LG ELECTRONICS		
	6	1020060118802	KR	A	2006-11-24	LG ELECTRONICS		
	7	1020060118800	KR	A	2006-11-24	LG ELECTRONICS		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	8	1020060118795	KR	A	2006-11-24	LG ELECTRONICS INC.		
	9	1020060008365	KR	A	2006-01-26	LG ELECTRONICS		
	10	1020040050174	KR	A	2004-06-16	SAMSUNG ELECTRONICS		
	11	1020020085478	KR	A	2002-11-16	LG ELECTRONICS		
	12	1020020067489	KR	A	2002-08-22	SHARP KABUSHIKI KAISHAF		
	13	1020010045598	KR	A	2001-06-05	SAMSUNG ELECTRONICS		
	14	2013086228	JP	A	2013-05-13	HITACHI KOKI		
	15	2011189133	JP	A	2011-09-29	DYSON TECHNOLOGY LTD		
	16	2011001891	JP	A	2011-01-06	Fujii Kazuhiro		
	17	2010220632	JP	A	2010-10-07	MAKITA CORP.		
	18	2010178773	JP	A	2010-08-19	MAKITA CORP.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	19	2010081968	JP	A	2010-04-15	Inoue Teruhisa		
	20	2009261501	JP	A	2009-11-12	YAMADA ELECTRIC		
	21	2008206613	JP	A	2008-09-11	TSUIN BADO KOGYO		
	22	2006102034	JP	A	2006-04-20	Yuasa Yasuhiro et al.		
	23	2005040246	JP	A	2005-02-17	SANYO ELECTRIC		
	24	2003135335	JP	A	2003-05-13	Takemoto Ritsuo et al.		
	25	2002085297	JP	A	2002-03-26	Ohara Naoyuki		
	26	2000140533	JP	A	2000-05-23	SHINTOO FINE KK		
	27	61131720	JP	A	1986-06-19	TOKYO ELECTRIC CO. LTD		
	28	2508035	GB	A	2014-05-21	Wilson Hugo George		
	29	2508035	GB	B	2015-03-11	Wilson Hugo George		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	30	2466290	GB	B	2012-10-03	Mcleod David Andrew		
	31	2465781	GB	A	2010-06-02	Sutton John Scott et al.		
	32	2441962	GB	B	2011-03-02	Dyson James et al.		
	33	2440111	GB	A	2008-01-23	Milne William Frame et al.		
	34	2365324	GB	B	2002-07-31	Oh Jang-Keun et al.		
	35	2307849	GB	A	1997-06-11	ELECTROLUX LIMITED		
	36	2282979	GB	B	1997-10-08	Paul James * Huyton		
	37	2268875	GB	A	1994-01-26	BISSELL INC.		
	38	2163703	GB	B	1988-01-27	BONDICO INC		
	39	2035787	GB	B	1982-10-13	L & H DESIGNS LTD & MERRITT H M		
	40	1111074	GB	A	1968-04-24	SIEMENS-ELECTROGERAETE GESELLSCHAFT MIT BESCHRANKT		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	41	700791	GB	A	1953-12-09	ENGLISH ELECTRIC		

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5
	1	English machine translation of KR1020100084127, published on July 23, 2010	
	2	English machine translation of KR1020060125954., published on December 7, 2006	
	3	English machine translation of KR1020060125952, published on December 7, 2006	
	4	English machine translation of KR1020060122249, published on November 30, 2006	
	5	English machine Translation of KR1020060118803, published on November 24, 2006	
	6	English machine translation of KR1020060118802, published on November 24, 2006	
	7	English machine translation of KR1020060118800, published on November 24, 2006	
	8	English machine translation of KR1020060118795, published on November 24, 2006	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	9	English machine translation of KR1020060008365, published on January 26, 2006
	10	English machine translation of KR1020040050174, published on June 16, 2004
	11	English machine translation of KR1020020085478, published on November 16, 2002
	12	English machine translation of KR1020020067489, published on August 22, 2002
	13	English machine translation of KR1020010045598, published on June 5, 2001
	14	English machine translation of JP2013086228, published on May 13, 2013
	15	English machine translation of JP2011189133, published on September 29, 2011
	16	English machine translation of JP2011001891, published on January 6, 2011
	17	English machine translation of JP2010220632, published on October 7, 2010
	18	English machine translation of JP 2010178773, published on August 19, 2010
	19	English machine translation of JP2010081968, published on April 15, 2010

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	20	English machine translation of JP2009261501, published on November 12, 2009
	21	English machine translation of JP2008206613, published on September 11, 2008
	22	English machine translation of JP2006102034, published on April 20, 2006
	23	English machine translation of JP2005040246, published on February 17, 2005
	24	English machine translation of JP2003135335, published on May 13, 2003
	25	English machine translation of JP2002085297, published on March 26, 2002
	26	English machine translation of JP2000140533, published on May 23, 2000
	27	English machine translation of JP61131720, published on June 19, 1986
	28	English machine translation of JP2508035, published on May 21, 2014

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/David Redding/ (05/23/2023)	Date Considered	05/23/2023

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

EFS Web 2.1.18

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 3)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Philip C. Mendes da Costa/	Date (YYYY-MM-DD)	2022-10-13
Name/Print	Philip C. Mendes da Costa	Registration Number	33106

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17830529
Filing Date	2022-06-02
First Named Inventor	Wayne Ernest Conrad
Art Unit	1776
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17 (PART 2)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4944780	A	1990-07-31	Usmani Kal	
	2	4905342	A	1990-03-06	Ataka Yasukazu	
	3	4853111	A	1989-08-01	Macarthur James B et al.	
	4	4853011	A	1989-08-01	Dyson James	
	5	4853008	A	1989-08-01	Dyson James	
	6	4826515	A	1989-05-02	Dyson James	
	7	4803753	A	1989-02-14	Palmer	
	8	4778494	A	1988-10-18	Patterson John C	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	9	4744958	A	1988-05-17	Pircon Ladislav J	
	10	4700429	A	1987-10-20	Martin William J et al.	
	11	4678588	A	1987-07-07	Shortt William C	
	12	4523936	A	1985-06-18	Disanza Jr William G	
	13	4494270	A	1985-01-22	Ritzau William P et al.	
	14	4486207	A	1984-12-04	Baillie Lloyd A	
	15	4409008	A	1983-10-11	Solymes Laszlo	
	16	4382804	A	1983-05-10	Mellor Fred	
	17	4373228	A	1983-02-15	Dyson James	
	18	4307485	A	1981-12-29	Dessig Iii William R	
	19	4236903	A	1980-12-02	Malmsten Sven O	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	20	4218805	A	1980-08-26	Brazier Alan J	
	21	4187088	A	1980-02-05	Hodgson	
	22	4097381	A	1978-06-27	Ritzler Bo	
	23	3988133	A	1976-10-26	Schady Joseph L	
	24	3988132	A	1976-10-26	Oranje Leendert	
	25	3933450	A	1976-01-20	Percevaut Emile Henri Gabriel	
	26	3898068	A	1975-08-05	Mcneil John A	
	27	3822533	A	1974-07-09	Oranje L	
	28	3684093	A	1972-08-15	Kono Motomi et al.	
	29	3675401	A	1972-07-11	Cordes Ronald A	
	30	3582616	A	1971-06-01	Wrob Ronald M	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	31	3561824	A	1971-02-09	Homan Virgil A	
	32	3543325	A	1970-12-01	Hamrick James C	
	33	3530649	A	1970-09-29	Porsch Fred W et al.	
	34	3518815	A	1970-07-07	Mcfarland Andrew R et al.	
	35	3426513	A	1969-02-11	Bauer Kurt	
	36	3372532	A	1968-03-12	Langdon Campbell Charles	
	37	3320727	A	1967-05-23	Farley Forney E et al.	
	38	3269097	A	1966-08-30	German Dale F	
	39	3217469	A	1965-11-16	Eckert John S	
	40	3204772	A	1965-09-07	Ruxton George S	
	41	3200568	A	1965-08-17	Mcneil Dalph C	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	42	3130157	A	1964-04-21	Kelsall Denis F et al.	
	43	3085221	A	1963-04-09	Francis Kelly Joseph	
	44	3032954	A	1962-05-08	Racklyeft Carl E	
	45	2981369	A	1961-04-25	Yellott John I et al.	
	46	2952330	A	1960-09-13	Winslow Charles A	
	47	2946451	A	1960-07-26	Culleton John T	
	48	2942692	A	1960-06-28	August Benz	
	49	2942691	A	1960-06-28	Dillon Wendell M	
	50	2937713	A	1960-05-24	Stephenson Revis L et al.	
	51	2917131	A	1959-12-15	Evans Harry D	
	52	2913111	A	1959-11-17	Rogers Robert E	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	53	2846024	A	1958-08-05	Theodor Bremi	
	54	2811219	A	1957-10-29	Josef Wenzl	
	55	2731102	A	1956-01-17	James William S	
	56	2678110	A	1954-05-11	Madsen Walter M	
	57	2542634	A	1951-02-20	Davis Archibald H et al.	
	58	2152114	A	1939-03-28	Tongeren Hermannus Van	
	59	D D0303173	S	1989-08-29	Miyamoto Isshin et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20070079585	A1	2007-04-12	Oh et al.	
	2	20080040883	A1	2008-02-21	Beskow et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	3	20070289266	A1	2007-12-20	Oh	
	4	20070289089	A1	2007-12-20	Yacobi	
	5	20070271724	A1	2007-11-29	Hakan et al.	
	6	20070209335	A1	2007-09-13	Conrad	
	7	20070209334	A1	2007-09-13	Conrad	
	8	20070136984	A1	2007-06-21	Hsu	
	9	20070095029	A1	2007-05-03	Min et al.	
	10	20070095028	A1	2007-05-03	Kim et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	112010001135	DE	T5	2012-08-02	G.B.D. CORP.		

EFS Web 2.1.18

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	2	9216071	DE	U1	1993-02-25	ELECTROSTAR SCHOETTLE		
	3	2017046560	WO	A1	2017-03-23	DYSON TECHNOLOGY LIMITED		
	4	2017046559	WO	A1	2017-03-23	DYSON TECHNOLOGY LIMITED		
	5	2017046557	WO	A1	2017-03-23	DYSON TECHNOLOGY LIMITED		
	6	2016065151	WO	A1	2016-04-28	TECHTRONIC INDUSTRIES CO.		
	7	2015129387	WO	A1	2015-09-03	MITSUBISH ELECTRIC CORPORATION	Abstract - English	X
	8	2012117231	WO	A1	2012-09-07	DYSON TECHNOLOGY LIMITED		☐
	9	2012042240	WO	A1	2012-04-05	DYSON TECHNOLOGY LIMITED		☐
	10	2011054106	WO	A1	2011-05-12	G.B.D. CORP.		☐
	11	2010142971	WO	A1	2010-12-16	DYSON TECHNOLOGY LIMITED		☐
	12	2010142970	WO	A1	2010-12-16	DYSON TECHNOLOGY LIMITED		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	13	2010142969	WO	A1	2010-12-16	DYSON TECHNOLOGY LIMITED		☐
	14	2010142968	WO	A1	2010-12-16	DYSON TECHNOLOGY LIMITED		☐
	15	2010102396	WO	A1	2010-09-16	G.B.D. CORP.		☐
	16	69907201	DE	T2	2003-05-28	DYSON TECHNOLOGY LTD		☐
	17	60211663	DE	T2	2007-05-10	DYSON TECHNOLOGY LTD.		☐
	18	60201666	DE	T2	2006-06-01	DYSON TECHNOLOGY LTD.		☐
	19	4232382	DE	C1	1994-03-24	PBS PULVERBESCHICHTUNGS UND SP		☐
	20	2848173	EP	A1	2015-03-18	SAMSUNG ELECTRONICS CO.		☐
	21	2812531	FR	B1	2004-11-05	SAMSUNG KWANGJU ELECTRONICS CO.		☐
	22	2308360	EP	A2	2011-04-13	WAI, LAU YING		☐
	23	1815777	EP	A1	2007-08-08	TEAM INTERNATIONAL MARKETING SA		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	24	1676516	EP	B1	2010-01-13	LG ELECTRONICS INC.		☐
	25	1629758	EP	A3	2010-02-17	LG ELECTRONICS, INC.		☐
	26	1594386	EP	B1	2009-04-15	AKTIEBOLAGET ELECTROLUX		☐
	27	1200196	EP	B1	2005-06-15	G.B.D. CORP.		☐
	28	875134	DE	C	1953-04-30	METALLGESELLSCHAFT AG		☐
	29	493950	EP	B1	1998-04-15	AHLSTROM MACHINERY OY		☐
	30	1779761	EP	B1	2013-06-26	SAMSUNG ELECTRONICS		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	English machine translation of DE112010001135T5, published on August 2, 2012	
	2	English machine translation of DE9216071, published on February 25, 1993	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 2)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	3	English machine translation of DE69907201, published on May 28, 2003
	4	English machine translation of DE60211663, published on May 10, 2007
	5	English machine translation of DE60201666, published on June 1, 2006
	6	English machine translation of DE4232382, published on March 24, 1994
	7	English machine translation of FR2812531, published on November 5, 2004
	8	English machine translation of DE875134, published on April 30, 1953

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/David Redding/ (05/23/2023)	Date Considered	05/23/2023

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17830529
Filing Date	2022-06-02
First Named Inventor	Wayne Ernest Conrad
Art Unit	1776
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17 (PART 2)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Philip C. Mendes da Costa/	Date (YYYY-MM-DD)	2022-10-13
Name/Print	Philip C. Mendes da Costa	Registration Number	33106

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/830,529	06/02/2022	Wayne Ernest Conrad	10452-P46958US17	9687

1059 7590 05/30/2023

BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40TH FLOOR
TORONTO, ONTARIO M5H 3Y2
CANADA

EXAMINER	
REDDING, DAVID A	

ART UNIT	PAPER NUMBER
3723	

NOTIFICATION DATE	DELIVERY MODE
05/30/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipprocessingcentre@bereskinparr.com

Office Action Summary	Application No. 17/830,529	Applicant(s) Conrad, Wayne Ernest	
	Examiner DAVID A REDDING	Art Unit 3723	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-17 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-17 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 6/2/22 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

/David Redding/
Primary Examiner, Art Unit 3723

DETAILED ACTION

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Interpretation

The following is a quotation of 35 U.S.C. 112(f):

> (f) Element in Claim for a Combination. – An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The following is a quotation of pre-AIA 35 U.S.C. 112, sixth paragraph:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The claims in this application are given their broadest reasonable interpretation using the plain meaning of the claim language in light of the specification as it would be understood by one of ordinary skill in the art. The broadest reasonable interpretation of a claim element (also commonly referred to as a claim limitation) is limited by the description in the specification when 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is invoked.

As explained in MPEP § 2181, subsection I, claim limitations that meet the following three-prong test will be interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph:

(A) the claim limitation uses the term “means” or “step” or a term used as a substitute for “means” that is a generic placeholder (also called a nonce term or a non-

structural term having no specific structural meaning) for performing the claimed function;

(B) the term "means" or "step" or the generic placeholder is modified by functional language, typically, but not always linked by the transition word "for" (e.g., "means for") or another linking word or phrase, such as "configured to" or "so that"; and

(C) the term "means" or "step" or the generic placeholder is not modified by sufficient structure, material, or acts for performing the claimed function.

Use of the word "means" (or "step") in a claim with functional language creates a rebuttable presumption that the claim limitation is to be treated in accordance with 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph. The presumption that the claim limitation is interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is rebutted when the claim limitation recites sufficient structure, material, or acts to entirely perform the recited function.

Absence of the word "means" (or "step") in a claim creates a rebuttable presumption that the claim limitation is not to be treated in accordance with 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph. The presumption that the claim limitation is not interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is rebutted when the claim limitation recites function without reciting sufficient structure, material or acts to entirely perform the recited function.

Claim limitations in this application that use the word "means" (or "step") are being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, except as otherwise indicated in an Office action. Conversely, claim limitations in this

application that do not use the word "means" (or "step") are not being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, except as otherwise indicated in an Office action.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP § 2146 *et seq.* for

applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The filing of a terminal disclaimer by itself is not a complete reply to a nonstatutory double patenting (NSDP) rejection. A complete reply requires that the terminal disclaimer be accompanied by a reply requesting reconsideration of the prior Office action. Even where the NSDP rejection is provisional the reply must be complete. See MPEP § 804, subsection I.B.1. For a reply to a non-final Office action, see 37 CFR 1.111(a). For a reply to final Office action, see 37 CFR 1.113(c). A request for reconsideration while not provided for in 37 CFR 1.113(c) may be filed after final for consideration. See MPEP §§ 706.07(e) and 714.13.

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The actual filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/apply/applying-online/eterminal-disclaimer.

Claims 1-17 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-21 of U.S. Patent No. 10,219,662. Although the claims at issue are not identical, they are not patentably distinct from each other because the claims of the instant application are drafted more broadly and anticipated by the patented claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The factual inquiries for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim(s) 1,2,4-8,11-13,15 are rejected under 35 U.S.C. 103 as being unpatentable over Mori et al. (JP2014083241) in view of Lau (US 2006/0090290 A1).

Mori et al. disclose a surface cleaning apparatus 100 comprising: (a) a hand vacuum cleaner 1 having a front end having a dirty air inlet 5, a rear end, a clean air outlet 114, an upper end, a lower end and a pistol grip handle H1, the hand vacuum cleaner 1 comprising: (i) a main body 1 comprising an upper end, a lower end, a front end and a rear end, the main body housing a suction motor 12 and fan assembly 13, the suction motor 12 and fan assembly 13 having a suction motor axis of rotation; (b) a

surface cleaning head 22 having a front end, a rear end, a dirty air inlet and a surface cleaning head air outlet 221; and, (c) a rigid air flow conduit 21 extending between the surface cleaning head air outlet 221 and the dirty air inlet 5 of the hand vacuum cleaner 1, the rigid air flow conduit 21 is removably mounted to the surface cleaning head 22, wherein the dirty air inlet 5 of the hand vacuum cleaner 1 is removably drivingly mounted to a downstream end of the rigid air flow conduit 21 whereby when the hand vacuum cleaner 1 is mounted to the downstream end of the rigid air flow conduit 21, the pistol grip handle H1 is a driving handle for the surface cleaning apparatus 100, and wherein when the hand vacuum cleaner 1 is positioned with the front end of the hand vacuum cleaner in front of the rear end of the hand vacuum cleaner 1, the cyclone axis of rotation is generally horizontal.

Mori et al. does not teach a cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end, an axially spaced apart rear end, a cyclone air inlet, and a cyclone air outlet provided at the rear end of the cyclone unit, wherein the cyclone axis of rotation intersects the pistol grip handle.

Lau discloses a hand vacuum cleaner comprising a cyclone chamber 11 having a cyclone axis of rotation, a front end, an axially spaced apart rear end, a cyclone air inlet 19, and a cyclone air outlet provided at the rear end of the cyclone unit through the filter (see figure 3). Accordingly, it would have been obvious to one skilled in the art at the time of the invention to substitute the cyclone unit in Lau for the separation assembly in the hand vacuum cleaner in Mori et al. since the cyclone unit in Lau is used for the same purpose of separating dust particles from air as the separation assembly in Lau.

The substituted cyclone unit mounted on the hand cleaner in Lau would have an axis or rotation that intersects the pistol grip handle. **Claim 1**

Lau discloses that the cyclone chamber 11 is designed to be removable (para. 0040). **Claim 2**

The substituted cyclone unit mounted on the hand cleaner in Lau would have an axis or rotation that is generally parallel to the suction motor 12 axis of rotation. See figure 2 or 3 in Mori et al. **Claim 4**

The hand vacuum cleaner 1 is positioned with the front end of the hand vacuum cleaner 1 in front of the rear end of the hand vacuum cleaner 1, the pistol grip handle H1 extends upwardly and forwardly. See figures 2 and 3 in Mori et al. **Claim 5**

An enclosed finger grip area is provided on a forward side of the pistol grip handle H1 in Mori et al. See figure 2 and 3. **Claim 6**

The cyclone axis of rotation intersects the finger grip area H1 in Mori et al. **Claim 7**

The cyclone unit 11 in Lau further comprises a pre-motor filter 37, wherein the pre-motor filter 37 is accessible when the cyclone unit 11 is removed from the main body. See figure 4 in Lau. **Claim 8**

Mori et al. disclose a surface cleaning apparatus 100 comprising: (a) a hand vacuum cleaner 1 comprising: (i) a main body 1 comprising a lower end, an upper end, a front end, a rear end and a pistol grip handle H1, the main body 1 housing a suction motor and fan assembly, the suction motor 12 and fan assembly 13 having a suction motor 12 axis of rotation, the pistol grip handle H1 is provided at the rear end of the main body 1, extends upwardly and forwardly when the hand vacuum cleaner 1 is

positioned with the front end forward of the rear end (see figures 2 and 3); and a filtration assembly 14 for separating dust particles from the dirty air; and (b) a surface cleaning head 22 having a front end, a rear end, a dirty air inlet (bottom of head 22) and a cleaning head air outlet 221; and, (c) a rigid air flow conduit 21 extending between the cleaning head air outlet 221 and a hand vacuum cleaner air inlet 5, the rigid air flow conduit 21 having a longitudinally extending conduit axis, and the rigid air flow conduit 21 is removably mounted to the surface cleaning head 22, wherein the hand vacuum cleaner 1 is removably mountable to a downstream end of the rigid air flow conduit 21 and, when the hand vacuum cleaner 1 is mounted to the downstream end of the rigid air flow conduit 21, the handle H1 is a driving handle for the surface cleaning apparatus 100, and wherein a finger grip area is provided at a location that is forward of the pistol grip handle H1.

Mori et al. disclose a filtration filter 14, not a cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end and a rear end wherein air exits the cyclone chamber at the rear end of the cyclone chamber, wherein the suction motor axis of rotation is generally parallel to the cyclone axis of rotation; and the longitudinally extending conduit axis of the rigid air flow conduit 21 is parallel to the cyclone axis of rotation, and the finger grip area rearward of the cyclone.

Lau disclose a cyclone unit 11 comprising a cyclone chamber having a cyclone axis of rotation, a front end and a rear end wherein air exits the cyclone chamber at the rear end of the cyclone chamber (through the filter, fig.3).

Accordingly, it would have been obvious to one skilled in the art at the time of the invention to substitute the cyclone unit in Lau for the separation assembly in the hand

vacuum cleaner in Mori et al. since the cyclone unit in Lau is used for the same purpose of separating dust particles from air as the separation assembly in Lau. The substituted cyclone unit mounted on the hand cleaner in Lau would result in wherein the suction motor axis of rotation is generally parallel to the cyclone axis of rotation; and the longitudinally extending conduit axis of the rigid air flow conduit 21 is parallel to the cyclone axis of rotation, and the finger grip area rearward of the cyclone. **Claim 11**

Lau discloses a pre-motor filter 37, wherein the cyclone axis of rotation intersects the pre-motor filter 37 (shown in fig.3). **Claim 12**

Lau discloses that the cyclone chamber 11 is designed to be removable (para. 0040). **Claim 13**

Lau discloses a pre-motor filter 37, wherein the pre-motor filter 37 is accessible when the cyclone unit 11 is removed from the main body 1 (shown in fig.4). **Claim 15**

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID A REDDING whose telephone number is (571)272-1276. The examiner can normally be reached M-F 6:00-2:00 est.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Orlando E Aviles can be reached on 571-270-5531. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David Redding/
Primary Examiner, Art Unit 3723

Notice of References Cited	Application/Control No. 17/830,529	Applicant(s)/Patent Under Reexamination Conrad, Wayne Ernest	
	Examiner DAVID A REDDING	Art Unit 3723	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-10219662-B2	03-2019	Conrad; Wayne Ernest	A47L9/1683	1/1
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17830529
Filing Date	2022-06-02
First Named Inventor	Wayne Ernest Conrad
Art Unit	1776
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	9711986	B2	2017-07-18	Sunderland et al.	
	2	9675218	B2	2017-06-13	Kim et al.	
	3	9516979	B2	2016-12-13	Gidwell	
	4	9192269	B2	2015-11-24	Conrad	
	5	8869344	B2	2014-10-28	Conrad	
	6	8673487	B2	2014-03-18	Churchill	
	7	8484799	B2	2013-07-16	Conrad	
	8	8225456	B2	2012-07-24	Hkan et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	9	8161599	B2	2012-04-24	Griffith et al.	
	10	8156609	B2	2012-04-17	Milne et al.	
	11	8152877	B2	2012-04-10	Greene	
	12	8151407	B2	2012-04-10	Conrad	
	13	8146201	B2	2012-04-03	Conrad	
	14	8117712	B2	2012-02-21	Dyson et al.	
	15	8101001	B2	2012-01-24	Qian	
	16	8100999	B2	2012-01-24	Ashbee et al.	
	17	8062398	B2	2011-11-22	Luo et al.	
	18	8021453	B2	2011-09-20	Howes	
	19	7996956	B2	2011-08-16	Wood et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	20	7979959	B2	2011-07-19	Courtney	
	21	7958598	B2	2011-06-14	Hwang et al.	
	22	7938871	B2	2011-05-10	Lloyd	
	23	7931716	B2	2011-04-26	Oakham	
	24	7922794	B2	2011-04-12	Morphey	
	25	7882593	B2	2011-02-08	Beskow et al.	
	26	7867308	B2	2011-01-11	Conrad	
	27	7811349	B2	2010-10-12	Nguyen	
	28	7805804	B2	2010-10-05	Loebig	
	29	7803207	B2	2010-09-28	Conrad	
	30	7779506	B2	2010-08-24	Kang et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	31	7776120	B2	2010-08-17	Conrad	
	32	7770256	B1	2010-08-10	Fester	
	33	7740676	B2	2010-06-22	Burnham et al.	
	34	7717973	B2	2010-05-18	Oh et al.	
	35	7691161	B2	2010-04-06	Oh et al.	
	36	7628831	B2	2009-12-08	Gomiciaga-Pereda et al.	
	37	7597730	B2	2009-10-06	Yoo et al.	
	38	7588616	B2	2009-09-15	Conrad et al.	
	39	7565853	B2	2009-07-28	Arnold et al.	
	40	7563298	B2	2009-07-21	Oh	
	41	7547338	B2	2009-06-16	Kim et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	42	7547337	B2	2009-06-16	Oh et al.	
	43	7488363	B2	2009-02-10	Jeong et al.	
	44	7485164	B2	2009-02-03	Jeong et al.	
	45	7449040	B2	2008-11-11	Conrad et al.	
	46	7448363	B1	2008-11-11	Rasmussen et al.	
	47	7429284	B2	2008-09-30	Oh et al.	
	48	7426768	B2	2008-09-23	Peterson et al.	
	49	7395579	B2	2008-07-08	Oh	
	50	7386915	B2	2008-06-17	Blocker et al.	
	51	7377953	B2	2008-05-27	Oh	
	52	7377007	B2	2008-05-27	Best	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	53	7370387	B2	2008-05-13	Walker et al.	
	54	7354468	B2	2008-04-08	Arnold et al.	
	55	7341611	B2	2008-03-11	Greene et al.	
	56	7278181	B2	2007-10-09	Harris et al.	
	57	7272872	B2	2007-09-25	Choi	
	58	7222393	B2	2007-05-29	Kaffenberger et al.	
	59	7198656	B2	2007-04-03	Maeda et al.	
	60	7175682	B2	2007-02-13	Nakai et al.	
	61	7162770	B2	2007-01-16	Davidshofer	
	62	7160346	B2	2007-01-09	Park	
	63	7128770	B2	2006-10-31	Oh et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	64	7113847	B2	2006-09-26	Chmura et al.	
	65	6976885	B2	2005-12-20	Lord	
	66	6968596	B2	2005-11-29	Oh et al.	
	67	6929516	B2	2005-08-16	Brochu et al.	
	68	6896719	B2	2005-05-24	Coates et al.	
	69	6874197	B1	2005-04-05	Conrad et al.	
	70	6868578	B1	2005-03-22	Kasper et al.	
	71	6833015	B2	2004-12-21	Oh et al.	
	72	6818036	B1	2004-11-16	Seaman	
	73	6810558	B2	2004-11-02	Lee	
	74	6782585	B1	2004-08-31	Conrad et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	75	6782583	B2	2004-08-31	Oh	
	76	6766558	B1	2004-07-27	Matsumoto et al.	
	77	6746500	B1	2004-06-08	Park et al.	
	78	6732403	B2	2004-05-11	Moore et al.	
	79	6712868	B2	2004-03-30	Murphy et al.	
	80	6648934	B2	2003-11-18	Choi et al.	
	81	6640385	B2	2003-11-04	Oh et al.	
	82	6625845	B2	2003-09-30	Matsumoto et al.	
	83	6623539	B2	2003-09-23	Lee et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	1	20160113460	A1	2016-04-28	Williams et al.	
	2	20150297050	A1	2015-10-22	Marsh et al.	
	3	20150230677	A1	2015-08-20	Andrikanish	
	4	20150135474	A1	2015-05-21	Gidwell	
	5	20140237956	A1	2014-08-28	Conrad	
	6	20140208538	A1	2014-07-31	Visel et al.	
	7	20140182080	A1	2014-07-03	Lee et al.	
	8	20140137364	A1	2014-05-22	Stickney et al.	
	9	20140137363	A1	2014-05-22	Wilson	
	10	20140137362	A1	2014-05-22	Smith	
	11	20130160232	A1	2013-06-27	Peace	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	12	20120222262	A1	2012-09-06	Conrad	
	13	20120222260	A1	2012-09-06	Conrad	
	14	20120222245	A1	2012-09-06	Conrad	
	15	20120216361	A1	2012-08-30	Millington et al.	
	16	20120079671	A1	2012-04-05	Stickney et al.	
	17	20120060322	A1	2012-03-15	Simonelli et al.	
	18	20120030896	A1	2012-02-09	Crouch et al.	
	19	20120023701	A1	2012-02-02	Lenkiewicz et al.	
	20	20110289719	A1	2011-12-01	Han et al.	
	21	20110219576	A1	2011-09-15	Conrad	
	22	20110168332	A1	2011-07-14	Bowe et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17830529
Filing Date	2022-06-02
First Named Inventor	Wayne Ernest Conrad
Art Unit	1776
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1020170126380	KR	A	2017-11-17	LG ELECTRONICS INC.		
	2	1020170126379	KR	A	2017-11-17	LG ELECTRONICS INC.		
	3	1020170126378	KR	A	2017-11-17	LG ELECTRONICS INC.		
	4	1020170126377	KR	A	2017-11-17	LG ELECTRONICS INC.		
	5	2017196028	WO	A1	2017-11-16	LG ELECTRONICS INC.	English Abstract	☒
	6	2017196004	WO	A1	2017-11-16	LG ELECTRONICS INC.	English Abstract	☒
	7	2009026709	WO	A1	2009-03-05	G.B.D. CORP.		☐
	8	2008135708	WO	A1	2008-11-13	DYSON TECHNOLOGY LIMITED		☐
	9	2008088278	WO	A2	2008-07-24	AKTIEBOLAGET ELECTROLUX		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	10	2008070973	WO	A1	2008-06-19	G.B.D. CORP.		☐
	11	2008035032	WO	A2	2008-03-27	DYSON TECHNOLOGY LIMITED		☐
	12	2008009891	WO	A1	2008-01-24	DYSON TECHNOLOGY LIMITED		☐
	13	2008009890	WO	A1	2008-01-24	DYSON TECHNOLOGY LIMITED		☐
	14	2008009888	WO	A1	2008-01-24	DYSON TECHNOLOGY LIMITED		☐
	15	2008009883	WO	A1	2008-01-24	DYSON TECHNOLOGY LIMITED		☐
	16	2007104238	WO	A1	2007-09-20	POSITEC POWER TOOLS (SUHOU) CO. LTD.	English Abstract	☒
	17	2006076363	WO	A2	2006-07-20	ROYAL APPLIANCE MFG. CO.		☐
	18	2006026414	WO	A3	2007-08-02	EURO-PRO OPERATING LLC		☐
	19	2004069021	WO	A1	2004-08-19	AKTIEBOLAGET ELECTROLUX		☐
	20	102405363	KR	B1	2022-06-07	LG ELECTRONICS INC.		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	21	101968588	KR	B1	2019-04-15	LG ELECTRONICS INC.		☐
	22	101952658	KR	B1	2019-02-27	LG ELECTRONICS INC.		☐
	23	101832328	KR	B1	2018-02-26	LG ELECTRONICS INC.		☐
	24	9843721	WO	A1	1998-10-08	KONINKLIJKE PHILIPS ELECTRONICS		☐
	25	9809121	WO	A1	1998-03-05	HYDROFUSER TECHNOLGIES INC.		☐
	26	9720492	WO	A1	1997-06-12	ELECTROLUX LTD		☐
	27	9627446	WO	A1	1996-09-12	NOTETRY LTD		☐
	28	8002561	WO	A1	1980-11-27	TEIJIN LTD		☐
	29	0217766	WO	A3	2003-02-13	ROYAL APPLIANCE MFG. CO.	English Abstract	☒
	30	0147247	WO	A3	2001-11-15	KONINKLIJKE PHILIPS ELECTRONICS		☐
	31	0107168	WO	A1	2001-02-01	G.B.D. CORP		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	32	212307697	CN	U	2021-01-08	ZHUICHUANG TECH SUZHOU CO LTD		☐
	33	211459996	CN	U	2020-09-11	GREE ELECTRIC APPLIANCES INC.		☐
	34	108024674	CN		2018-05-11	DYSON TECHNOLOGY LTD.		☐
	35	107343774	CN		2017-11-14	SUZHOU CHENGHE CLEANING EQUIPMENT CO. LTD.		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5
	1	English machine translation of KR101832328B1, published on February 26, 2019	
	2	English machine translation of KR101968588B1, published on April 15, 2019	
	3	English machine translation of KR101952658B1, published on February 27, 2019	
	4	English machine translation of KR1020170126380A, published on November 17, 2017	
	5	English machine translation of KR1020170126379A, published on November 17, 2017	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17830529
	Filing Date	2022-06-02
	First Named Inventor	Wayne Ernest Conrad
	Art Unit	1776
	Examiner Name	N/A
	Attorney Docket Number	10452-P46958US17 (PART 4)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DR/

	6	English machine translation of KR1020170126378A, published on November 17, 2017
	7	English machine translation of KR1020170126377A, published on November 17, 2017
	8	English machine translation of KR102405363B1, published on June 7, 2022
	9	International Preliminary Report on Patentability, received in connection to PCT/CA2015/051332, mailed on June 29, 2017.
	10	Espacenet: English machine translation of CN212307697U, publishe don January 8, 2021
	11	Espacenet: English machine translation of CN211459996U, published on September 11, 2020
	12	Espacenet: English machine translation of CN108024674A, published on May 11, 2018
	13	Google Patents: English machine translation of CN107343774, published on November 14, 2017

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/David Redding/ (05/23/2023)	Date Considered	05/23/2023

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17830529
Filing Date	2022-06-02
First Named Inventor	Wayne Ernest Conrad
Art Unit	1776
Examiner Name	N/A
Attorney Docket Number	10452-P46958US17 (PART 4)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Philip C. Mendes da Costa/	Date (YYYY-MM-DD)	2022-10-14
Name/Print	Philip C. Mendes da Costa	Registration Number	33106

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	48485140
Application Number:	17830529
International Application Number:	
Confirmation Number:	9687
Title of Invention:	SURFACE CLEANING APPARATUS
First Named Inventor/Applicant Name:	Wayne Ernest Conrad
Customer Number:	1059
Filer:	Philip C. Mendes da Costa/Snezana Lisowsky
Filer Authorized By:	Philip C. Mendes da Costa
Attorney Docket Number:	10452-P46958US17
Receipt Date:	24-AUG-2023
Filing Date:	02-JUN-2022
Time Stamp:	11:36:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1610
RAM confirmation Number	E20238NB36565912
Deposit Account	022095
Authorized User	Snezana Lisowsky

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		USPTO_Response_2023-08-23_P46958US17.PDF	220849 684bc59ef9eeeb780066bd2076ab83d94f0f4f2c	yes	14
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Amendment/Request for Reconsideration-After Non-Final Rejection		1	1	
	Claims		2	9	
	Applicant Arguments/Remarks Made in an Amendment		10	14	
Warnings:					
Information:					
2	Terminal Disclaimer Filed	Terminal_Disclaimer_2023-08-24_P46958US17.PDF	318937 014fec42f5ee548a4cbd2926a435ee8ed1f614c9	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	40512 40bb191071070cb82b60263dd3c616031bbb2142	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	580298		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Patent Application Fee Transmittal

Application Number:	17830529
Filing Date:	02-Jun-2022
Title of Invention:	SURFACE CLEANING APPARATUS
First Named Inventor/Applicant Name:	Wayne Ernest Conrad
Filer:	Philip C. Mendes da Costa/Snezana Lisowsky
Attorney Docket Number:	10452-P46958US17

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
INDEPENDENT CLAIMS IN EXCESS OF 3	1201	3	480	1440
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
STATUTORY OR TERMINAL DISCLAIMER	1814	1	170	170
		Total in USD ($)		**1610**

PTO/AIA/26 (04-14)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	Docket Number (Optional) 10452-P46958US17

In re Application of: Omachron Intellectual Property Inc.

Application No.: 17/830529

Filed: June 2, 2022

For: SURFACE CLEANING APPARATUS

The applicant, Omachron Intellectual Property Inc., owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 10,219,662 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

expires for failure to pay a maintenance fee;
is held unenforceable;
is found invalid by a court of competent jurisdiction;
is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
has all claims canceled by a reexamination certificate;
is reissued; or
is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. ☑ The undersigned is an attorney or agent of record. Reg. No. 33,106

/Philip C. Mendes da Costa/ — Signature
August 24, 2023 — Date

Philip C. Mendes da Costa — Typed or printed name

Agent of Record — Title
416.957.1695 — Telephone Number

☑ Terminal disclaimer fee under 37 CFR 1.20(d) included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995, unless the information collection has a currently valid OMB Control Number. The OMB Control Number for this information collection is 0651-0031. Public burden for this form is estimated to average 12 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the Chief Administrative Officer, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 or email InformationCollection@uspto.gov. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **If filing this completed form by mail, send to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013). https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf

Routine uses of the information in this record may include disclosure to: 1) law enforcement, in the event that the system of records indicates a violation or potential violation of law; 2) a Federal, state, local, or international agency, in response to its request; 3) a contractor of the USPTO having need for the information in order to perform a contract; 4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record; 5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record; 6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations; 7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals; 8) another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)); 9) the Office of Personnel Management (OPM) for personnel research purposes; and 9) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

Additional Uses

Additional USPTO uses of the information in this record may include disclosure to: 1) the International Bureau of the World Intellectual Property Organization, if the record is related to an international application filed under the Patent Cooperation Treaty; 2) the public i) after publication of the application pursuant to 35 U.S.C. 122(b), ii) after issuance of a patent pursuant to 35 U.S.C. 151, iii) if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections, or an issued patent, or iv) without publication of the application or patent under the specific circumstances provided for by 37 CFR 1.14(a)(1)(v)-(vii); and/or 3) the National Archives and Records Administration, for inspection of records.

Bereskin & Parr

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	:	17/830,529
Title	:	SURFACE CLEANING APPARATUS
Applicant	:	Omachron Intellectual Property Inc.
Filed	:	June 2, 2022
Art Unit	:	3723
Examiner	:	REDDING, DAVID A.
Docket No.	:	10452-P46958US17
Conf. No.	:	9687
Cust. No.	:	01059

August 24, 2023

Mail Stop Amendments
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313–1450

AMENDMENT / RESPONSE

Sir:

This communication is in response to the Office Action of May 30, 2023. Please amend the above-noted application as follows:

Amendments to the Claims are reflected in the listing of claims, which begins on page 2 of this paper.

Remarks/Arguments begin on page 10 of this paper.

Bereskin & Parr LLP
Scotia Plaza, 40 King Street West, 40th Floor, Toronto, ON M5H 3Y2 Canada
Tel: 416.364.7311 Fax: 416.361.1398 bereskinparr.com

Amendments to the Claims

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A surface cleaning apparatus comprising:

(a) a hand vacuum cleaner having a front end having a dirty air inlet, a rear end, a clean air outlet, an upper end, a lower end and a pistol grip handle, the hand vacuum cleaner comprising:

(i) a main body comprising an upper end, a lower end, a front end and a rear end, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation; [[and,]]

(ii) a cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end, an axially spaced apart rear end, a cyclone air inlet, and a cyclone air outlet provided at the rear end of the cyclone unit, wherein the cyclone axis of rotation intersects the pistol grip handle; and

(iii) a dirt collection chamber that is exterior to the cyclone chamber and a forward end of the dirt collection chamber is openable;

(b) a surface cleaning head having a front end, a rear end, a dirty air inlet and a surface cleaning head air outlet; and,

(c) a rigid air flow conduit extending between the surface cleaning head air outlet and the dirty air inlet of the hand vacuum cleaner, the rigid air flow conduit is removably mounted to the surface cleaning head,

wherein the dirty air inlet of the hand vacuum cleaner is removably drivingly mounted to a downstream end of the rigid air flow conduit whereby when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the pistol grip handle is a driving handle for the surface cleaning apparatus, and

wherein when the hand vacuum cleaner is positioned with the front end of the hand vacuum cleaner in front of the rear end of the hand vacuum cleaner, the cyclone axis of rotation is generally horizontal.

2. (Previously Presented) The surface cleaning apparatus of claim 1 wherein the cyclone unit is removably mounted to the main body.

3. (Cancelled).

4. (Previously Presented) The surface cleaning apparatus of claim 1 wherein the cyclone axis of rotation is generally parallel to the suction motor axis of rotation.

5. (Previously Presented) The surface cleaning apparatus of claim 1 wherein, when the hand vacuum cleaner is positioned with the front end of the hand vacuum cleaner in front of the rear end of the hand vacuum cleaner, the pistol grip handle extends upwardly and forwardly.

6. (Previously Presented) The surface cleaning apparatus of claim 1 wherein an enclosed finger grip area is provided on a forward side of the pistol grip handle.

7. (Previously Presented) The surface cleaning apparatus of claim 1 wherein the cyclone axis of rotation intersects the finger grip area.

8. (Previously Presented) The surface cleaning apparatus of claim 2 further comprising a pre-motor filter, wherein the pre-motor filter is accessible when the cyclone unit is removed from the main body.

9. (Currently Amended) [[The]] A surface cleaning apparatus [[of claim 8]] comprising:

   (a) a hand vacuum cleaner having a front end having a dirty air inlet, a rear end, a clean air outlet, an upper end, a lower end and a pistol grip handle, the hand vacuum cleaner comprising:

(i) a main body comprising an upper end, a lower end, a front end and a rear end, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation; and,

(ii) a cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end, an axially spaced apart rear end, a cyclone air inlet, and a cyclone air outlet provided at the rear end of the cyclone unit, wherein the cyclone axis of rotation intersects the pistol grip handle;

(b) a surface cleaning head having a front end, a rear end, a dirty air inlet and a surface cleaning head air outlet; and,

(c) a rigid air flow conduit extending between the surface cleaning head air outlet and the dirty air inlet of the hand vacuum cleaner, the rigid air flow conduit is removably mounted to the surface cleaning head,

wherein the dirty air inlet of the hand vacuum cleaner is removably drivingly mounted to a downstream end of the rigid air flow conduit whereby when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the pistol grip handle is a driving handle for the surface cleaning apparatus, and

wherein when the hand vacuum cleaner is positioned with the front end of the hand vacuum cleaner in front of the rear end of the hand vacuum cleaner, the cyclone axis of rotation is generally horizontal,

wherein [[the]] a pre-motor filter has a height in a direction transverse to the cyclone axis and the height is larger than a diameter of the cyclone.

10. (Currently Amended) [[The]] A surface cleaning apparatus [[of claim 9]] comprising:

(a) a hand vacuum cleaner having a front end having a dirty air inlet, a rear end, a clean air outlet, an upper end, a lower end and a pistol grip handle, the hand vacuum cleaner comprising:

(i) a main body comprising an upper end, a lower end, a front end and a rear end, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation; and,

(ii) a cyclone unit comprising a cyclone chamber and a dirt collection chamber that is exterior to the cyclone chamber, the cyclone chamber having a cyclone axis of rotation, a front end, an axially spaced apart rear end, a cyclone air inlet, and a cyclone air outlet provided at the rear end of the cyclone unit, wherein the cyclone axis of rotation intersects the pistol grip handle and a line that is parallel to the cyclone axis extends through the dirt collection chamber and [[the]] a pre-motor filter;

(b) a surface cleaning head having a front end, a rear end, a dirty air inlet and a surface cleaning head air outlet; and,

(c) a rigid air flow conduit extending between the surface cleaning head air outlet and the dirty air inlet of the hand vacuum cleaner, the rigid air flow conduit is removably mounted to the surface cleaning head,

wherein the dirty air inlet of the hand vacuum cleaner is removably drivingly mounted to a downstream end of the rigid air flow conduit whereby when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the pistol grip handle is a driving handle for the surface cleaning apparatus, and

wherein when the hand vacuum cleaner is positioned with the front end of the hand vacuum cleaner in front of the rear end of the hand vacuum cleaner, the cyclone axis of rotation is generally horizontal.

11. (Currently Amended) A surface cleaning apparatus comprising:

(a) a hand vacuum cleaner comprising:

(i) a main body comprising a lower end, an upper end, a front end, a rear end and a pistol grip handle, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor

axis of rotation, the pistol grip handle is provided at the rear end of the main body[[,]] and extends upwardly and forwardly when the hand vacuum cleaner is positioned with the front end forward of the rear end; [[and,]]

(ii) a cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end and a rear end wherein air exits the cyclone chamber at the rear end of the cyclone chamber, wherein the suction motor axis of rotation is generally parallel to the cyclone axis of rotation; and

(b) a dirt collection chamber that is exterior to the cyclone chamber and a forward end of the dirt collection chamber is openable;

(c) a surface cleaning head having a front end, a rear end, a dirty air inlet and a cleaning head air outlet; and,

(d) a rigid air flow conduit extending between the cleaning head air outlet and a hand vacuum cleaner air inlet, the rigid air flow conduit having a longitudinally extending conduit axis, and the rigid air flow conduit is removably mounted to the surface cleaning head,

wherein the hand vacuum cleaner is removably mountable to a downstream end of the rigid air flow conduit and, when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the handle is a driving handle for the surface cleaning apparatus and the longitudinally extending conduit axis of the rigid air flow conduit is parallel to the cyclone axis of rotation, and

wherein a finger grip area is provided at a location that is forward of the pistol grip handle and rearward of the cyclone.

12. (Previously Presented) The surface cleaning apparatus of claim 11 further comprising a pre-motor filter, wherein the cyclone axis of rotation intersects the pre-motor filter.

13. (Previously Presented) The surface cleaning apparatus of claim 11 wherein the cyclone unit is removably mounted to the main body.

14. (Cancelled).

15. (Previously Presented) The surface cleaning apparatus of claim 11 further comprising a pre-motor filter, wherein the pre-motor filter is accessible when the cyclone unit is removed from the main body.

16. (Currently Amended) [[The]] A surface cleaning apparatus [[of claim 15]] comprising:

(a) a hand vacuum cleaner comprising:

(i) a main body comprising a lower end, an upper end, a front end, a rear end and a pistol grip handle, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation, the pistol grip handle is provided at the rear end of the main body and extends upwardly and forwardly when the hand vacuum cleaner is positioned with the front end forward of the rear end; and,

(ii) a cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end and a rear end wherein air exits the cyclone chamber at the rear end of the cyclone chamber, wherein the suction motor axis of rotation is generally parallel to the cyclone axis of rotation; and

(b) a surface cleaning head having a front end, a rear end, a dirty air inlet and a cleaning head air outlet; and,

(c) a rigid air flow conduit extending between the cleaning head air outlet and a hand vacuum cleaner air inlet, the rigid air flow conduit having a longitudinally extending conduit axis, and the rigid air flow conduit is removably mounted to the surface cleaning head,

wherein the hand vacuum cleaner is removably mountable to a downstream end of the rigid air flow conduit and, when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the handle is a driving handle for the surface cleaning apparatus and the longitudinally extending conduit axis of the rigid air flow conduit is parallel to the cyclone axis of rotation, and

wherein a finger grip area is provided at a location that is forward of the pistol grip handle and rearward of the cyclone, and

wherein [[the]] a pre-motor filter has a height in a direction transverse to the cyclone axis and the height is larger than a diameter of the cyclone.

17. (Currently Amended) [[The]] A surface cleaning apparatus [[of claim 16 further]] comprising:

(a) a hand vacuum cleaner comprising:

(i) a main body comprising a lower end, an upper end, a front end, a rear end and a pistol grip handle, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation, the pistol grip handle is provided at the rear end of the main body and extends upwardly and forwardly when the hand vacuum cleaner is positioned with the front end forward of the rear end; and,

(ii) a cyclone unit comprising a cyclone chamber and a dirt collection chamber that is exterior to the cyclone chamber, the cyclone chamber having a cyclone axis of rotation, a front end and a rear end wherein air exits the cyclone chamber at the rear end of the cyclone chamber, wherein the suction motor axis of rotation is generally parallel to the cyclone axis of rotation and a line that is parallel to the cyclone axis extends through the dirt collection chamber and [[the]] a pre-motor filter,

(b) a surface cleaning head having a front end, a rear end, a dirty air inlet and a cleaning head air outlet; and,

(c) a rigid air flow conduit extending between the cleaning head air outlet and a hand vacuum cleaner air inlet, the rigid air flow conduit having a longitudinally extending conduit axis, and the rigid air flow conduit is removably mounted to the surface cleaning head,

wherein the hand vacuum cleaner is removably mountable to a downstream end of the rigid air flow conduit and, when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the handle is a driving handle for the surface cleaning apparatus and the longitudinally extending conduit axis of the rigid air flow conduit is parallel to the cyclone axis of rotation, and

wherein a finger grip area is provided at a location that is forward of the pistol grip handle and rearward of the cyclone.

REMARKS/ARGUMENTS

Applicant submits that the Office Action of May 30, 2023 has been carefully considered.

It is believed that the amended pages submitted herewith and the following comments represent a complete response to the Examiner's rejections and place the present application in condition for allowance. Reconsideration of the application is respectfully requested.

Status of the Claims

Claims 1-17 were examined in the Office Action of May 30, 2023. Claims 1-17, of which claims 1, 9, 10, 11, 16, and 17 are independent claims, remain pending. Claims 3 and 14 have been cancelled.

Independent claim 1 has been amended to include the subject matter previously presented in former claim 3.

Independent claim 11 has been amended to include the subject matter previously presented in former claim 14.

Former dependent claims 9 and 10 have been recast as new independent claims and have been amended to include subject matter previously presented in former claim 1.

Former dependent claims 16 and 17 have been recast as new independent claims and have been amended to include subject matter previously presented in former claim 11.

Applicant submits that no new matter has been added by these amendments. Applicant also submits that the claim amendments have been made without prejudice and without acquiescing to the Examiner’s rejections but in an effort to advance prosecution.

Double Patenting Rejection:

The Examiner rejected claims 1-17 on the ground of non-statutory double patenting over claims 1-21 of U.S. Patent No. 10,219,662.

The Examiner stated that although the noted claims at issue are not identical, they are not patentably distinct from each other because the claims of the instant application are drafted more broadly and therefore anticipated by the patented claims.

For the purpose of expediting prosecution of the present application, and without prejudice, an e-Terminal Disclaimer and the $170.00 fee required under 37 CFR 1.20(d) are submitted contemporaneously with this response.

The filing of the Terminal Disclaimer to obviate the rejection based on non-statutory double patenting shall not to be taken as an admission of the propriety of the rejection. Withdrawal of the double patenting rejection is respectfully requested.

Claim Rejections – 35 U.S.C. § 103

In the Office Action, the Examiner has rejected claims 1, 2, 4-8, 11-13, and 15 under 35 U.S.C. § 103 as being unpatentable over JP 2014-083241 A to Mori et al. ("Mori") in view of US 2006/0090290 A1 to Lau ("Lau").

Discussion of the Patentability of Independent Claim 1

By this response, independent claim 1 has been amended to include subject matter previously presented in former claim 3.

Applicant notes that no prior art rejections were raised in the Office Action to the subject matter of former claim 3. Applicant submits that Mori and Lau, taken alone or in combination, fail to teach or suggest the subject matter of former claim 3.

Accordingly, the Applicant respectfully submits that the subject matter of amended independent claim 1, and the claims dependent directly or indirectly thereon, is non-obvious over the cited references and is therefore allowable.

Withdrawal of the rejections under pre-AIA 35 U.S.C. § 103 is respectfully requested.

Discussion of the Patentability of Independent Claim 11

By this response, independent claim 11 has been amended to include subject matter previously presented in former claim 14.

Applicant notes that no prior art rejections were raised in the Office Action to the subject matter of former claim 14. Applicant submits that Mori and Lau, taken alone or in combination, fail to teach or suggest the subject matter of former claim 14.

Accordingly, the Applicant respectfully submits that the subject matter of amended independent claim 11, and the claims dependent directly or indirectly thereon, is non-obvious over the cited references and is therefore allowable.

Withdrawal of the rejections under pre-AIA 35 U.S.C. § 103 is respectfully requested.

Discussion of the Patentability of New Independent Claims 9, 10, 15, and 16

By this response, former dependent claims 9 and 10 have been recast as new independent claims and have been amended to include subject matter previously presented in former claim 1. Former dependent claims 16 and 17 have been recast as new independent claims and have been amended to include subject matter previously presented in former claim 11.

Applicant notes that no prior art rejections were raised in the Office Action to the subject matter of former claims 9, 10, 16, and 17. Applicant submits that Mori and Lau, taken alone or in combination, fail to teach or suggest the subject matter of former claims 9, 10, 16, and 17.

Accordingly, the Applicant respectfully submits that the subject matter of new independent claims 9, 10, 16, and 17 is non-obvious over the cited references and is therefore allowable.

Discussion of the Patentability of the Dependent Claims

The rest of the rejected claims depend from claims 1 and 11 and further define additional technical features of the present invention. In view of the patentability of claims 1 and 11

and in further view of the additional technical features, Applicant respectfully submits that the dependent claims are patentable over the prior art.

Although Applicant has not addressed all the issues of the dependent claims, Applicant respectfully submits that Applicant does not necessarily agree with the characterization and assessments of the dependent claims made by the Examiner, and Applicant believes that each claim is patentable on its own merits. Applicant respectfully submits that the dependent claims incorporate by reference all the limitations of the claim to which they refer and include their own patentable features, and are therefore in condition for allowance. Therefore, Applicant respectfully requests the withdrawal of all claim rejections and prompts allowance of the claims.

Conclusion

In light of Applicant's amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present specification.

Applicant believes that no fees are due with the submission of the present response aside the requisite fee for three additional independent claims under 37 CFR 1.16(h) and Terminal Disclaimer fee under 37 CFR 1.20. Should the Applicant be mistaken, the Commissioner is hereby authorized to charge any deficiency in fees required to keep the present application in good standing (including any extension of time fees, excess claim fees, and request for continued examination fees) or credit any overpayment to our Deposit Account No. 02-2095.

Should the Examiner deem it beneficial to discuss the application in greater detail, the Examiner is kindly requested to contact Philip C. Mendes da Costa by telephone at 416-957-1695 at the Examiner's convenience.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

BERESKIN & PAR LLP/S.E.N.C.R.L., s.r.l.
Agent for the Applicant

/Philip C. Mendes da Costa/

By _____
Philip C. Mendes da Costa
Reg. No. 33,106
Tel: 416-957-1695

Application Number * 17/830,529 *	Application/Control No. 17/830,529	Applicant(s)/Patent under Reexamination Conrad, Wayne Ernest	
	Examiner REDDING, DAVID A	Art Unit 3723	

Document Code - DISQ	Internal Document - DO NOT MAIL

TERMINAL DISCLAIMER	☐ APPROVED	☑ DISAPPROVED
Date Filed: 24 August 2023	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:

/JEAN PROCTOR/

Technology Center: OPLC

Telephone: (571)272-1040

The terminal disclaimer identifies a party who is not the applicant (only for applications filed on or after September 16, 2012; See FP 14.26.10):

For cases filed on/after 9/16/12, 37 CFR 1.321 specifies that the applicant can disclaim, and the terminal disclaimer must specify the extent of the applicant's ownership.

A request under 37 CFR 1.46(c) to change the applicant needs to be filed, which is (1) a request, signed by a 1.33(b) party, (2) a corrected ADS (37 CFR 1.76(c)) that identifies the "new" applicant in the applicant information, and is underlined since it is new, and (3) a 3.73(c) statement showing chain of title to the new applicant. Along with the § 1.46(c) request we need a POA that gives power to the attorney who is signing the TD, along with another copy of the TD, unless they file a TD that is signed by the applicant.

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/830,529	Conrad, Wayne Ernest
	Examiner	**Art Unit**
	DAVID A REDDING	3723

CPC						
Symbol					**Type**	**Version**
A47L	/	5	/	225	F	2013-01-01
A47L	/	5	/	24	I	2013-01-01
A47L	/	9	/	1683	I	2013-01-01
A47L	/	9	/	1691	I	2013-01-01
A47L	/	9	/	1625	I	2013-01-01
A47L	/	9	/	1641	I	2013-01-01
A47L	/	9	/	325	I	2013-01-01
A47L	/	5	/	28	I	2013-01-01
A47L	/	9	/	322	I	2013-01-01
A47L	/	9	/	16	I	2013-01-01
A47L	/	9	/	1608	I	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	16	
/David Redding/ Primary Examiner, Art Unit 3723	11 October 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	96

U.S. Patent and Trademark Office — Part of Paper No.: 20231011

Dyson Ex1004
Page 488

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/830,529	Conrad, Wayne Ernest
	Examiner	**Art Unit**
	DAVID A REDDING	3723

INTERNATIONAL CLASSIFICATION				
CLAIMED				
A47L5/22	/	5	/	22
A47L5/24	/	5	/	24
A47L9/16	/	9	/	16
A47L9/32	/	9	/	32
A47L5/28	/	5	/	28

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	16	
/David Redding/ Primary Examiner, Art Unit 3723	11 October 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	96

U.S. Patent and Trademark Office — Part of Paper No.: 20231011

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/830,529	Conrad, Wayne Ernest
	Examiner	**Art Unit**
	DAVID A REDDING	3723

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☑ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	9	10												
2	2	10	11												
	3	11	12												
3	4	12	13												
4	5	13	14												
5	6	14	15												
6	7	15	16												
7	8	16	17												
8	9														

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 16	
/David Redding/ Primary Examiner, Art Unit 3723 (Primary Examiner)	11 October 2023 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 96

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	1309	((("CONRAD") near3 ("Wayne"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/04/24 01:14 PM
L2	719	L1 AND (cyclone cyclonic).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/24 01:14 PM
L3	217	L2 AND (hand ADJ vacuum).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/24 01:15 PM
L4	46	((US-20140237757-A1 OR US-20160174787-A1 OR US-20160174786-A1 OR US-20160174785-A1 OR US-20170196428-A1 OR US-20170224181-A1 OR US-20170265696-A1 OR US-20170290481-A1 OR US-20170290478-A1 OR US-20170290479-A1 OR US-20170290476-A1 OR US-20170290477-A1 OR US-20180177356-A1 OR US-20180177366-A1 OR US-20180177355-A1 OR US-20180177353-A1 OR US-20180177352-A1 OR US-20180177354-A1 OR US-20190008348-A1 OR US-20190008341-A1 OR US-20190008339-A1 OR US-20190008342-A1 OR US-20190008340-A1 OR US-20190008338-A1 OR US-20190254492-A1 OR US-20190282048-A1 OR US-20190307301-A1 OR US-20190320863-A1 OR US-20200022546-A1 OR US-20200253437-A1 OR US-20200305671-A1 OR US-20200324302-A1 OR US-20200367708-A1 OR US-20210045605-A1	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/04/24 01:49 PM

		OR US-20210045596-A1).did. AND PGPB.dbnm.) OR ((US-9301666-B2 OR US-11160425-B2 OR US-10813510-B2 OR US-10426302-B2 OR US-10327610-B2 OR US-10244906-B2 OR US-10238249-B2 OR US-10165913-B2 OR US-10085604-B2 OR US-9980616-B2 OR US-9962047-B2).did. AND USPT.dbnm.)					
L5	3	(9888817; 10219662; 10478030;).pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/24 02:03 PM
L6	262	B05b11/00.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/26 09:35 AM
L7	46	L4	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/01 10:34 AM
L8	4	L7 AND (grip AND finger).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/01 10:35 AM
L9	4	L8	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:20 AM
L10	4	L8 AND (cyclone AND axis).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:23 AM
L11	518	L2 AND (cyclone cyclonic).clm. AND (axis).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:48 AM
L12	104	L11 AND (finger grip).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:48 AM
L13	80	L12 AND (cyclone ADJ axis).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:49 AM
L14	46	L13 AND (axis near2 intersects).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:50 AM
L15	11	L14 AND (pistol).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 10:52 AM
L16	3	cn-205625805-$.did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/22 11:33 AM

L17	3	cn-109330476-$.did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/22 11:33 AM
L18	7	(20190174984; 20160150923; 5035024; 20110289719; 20130227813; 10974258; "11571097").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 11:35 AM
L19	6	16 OR 17	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/22 11:35 AM
L20	7	L18	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 12:02 PM
L21	250	("20110168332" OR "20110219576" OR "20110289719" OR "20120023701" OR "20120030896" OR "20120060322" OR "20120079671" OR "20120216361" OR "20120222245" OR "20120222260" OR "20120222262" OR "20130160232" OR "20140137362" OR "20140137363" OR "20140137364" OR "20140182080" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 12:11 PM

		"20140208538" OR "20140237956" OR "20150135474" OR "20150230677" OR "20150297050" OR "20160113460" OR "6623539" OR "6625845" OR "6640385" OR "6648934" OR "6712868" OR "6732403" OR "6746500" OR "6766558" OR "6782583" OR "6782585" OR "6810558" OR "6818036" OR "6833015" OR "6868578" OR "6874197" OR "6896719" OR "6929516" OR "6968596" OR "6976885" OR "7113847" OR "7128770" OR "7160346" OR "7162770" OR "7175682" OR "7198656" OR "7222393" OR "7272872" OR "7278181" OR "7341611" OR "7354468" OR "7370387" OR "7377007" OR "7377953" OR "7386915" OR "7395579" OR "7426768" OR "7429284" OR "7448363" OR "7449040" OR "7485164" OR "7488363" OR "7547337" OR "7547338" OR "7563298" OR "7565853" OR "7588616" OR "7597730" OR "7628831" OR "7691161" OR "7717973" OR "7740676" OR "7770256" OR				

		"7776120" OR "7779506" OR "7803207" OR "7805804" OR "7811349" OR "7867308" OR "7882593" OR "7922794" OR "7931716" OR "7938871" OR "7958598" OR "7979959" OR "7996956" OR "8021453" OR "8062398" OR "8100999" OR "8101001" OR "8117712" OR "8146201" OR "8151407" OR "8152877" OR "8156609" OR "8161599" OR "8225456" OR "8484799" OR "8673487" OR "8869344" OR "9192269" OR "9516979" OR "9675218" OR "9711986" OR "10299651" OR "10405719" OR "10561291" OR "10610075" OR "10660493" OR "10959589" OR "10973380" OR "11229339" OR "11357374" OR "11363928" OR "11382471" OR "1600762" OR "1797812" OR "1898608" OR "1937765" OR "20020011050" OR "20020011053" OR "20020062531" OR "20020088208" OR "20020112315" OR "20020134059" OR "20020134238" OR "20020178535" OR "20020178698" OR "20020178699" OR "20030037403" OR "20030046910" OR					

		"20030066273" OR "20030106180" OR "20030159238" OR "20030159411" OR "20030200736" OR "20040010885" OR "20040025285" OR "20040045126" OR "20040216264" OR "20050081321" OR "20050115409" OR "20050132528" OR "20050198769" OR "20050198770" OR "20050252179" OR "20050252180" OR "20060037172" OR "20060042206" OR "20060090290" OR "20060123590" OR "20060137304" OR "20060137306" OR "20060137309" OR "20060137314" OR "20060156508" OR "20060162298" OR "20060162299" OR "20060168922" OR "20060168923" OR "20060207055" OR "20060207231" OR "20060230715" OR "20060230723" OR "20060230724" OR "20060236663" OR "20060254226" OR "20060277711" OR "20060278081" OR "20060288516" OR "20070067944" OR "20070077810" OR "20070079473" OR "20070079585" OR "20070095028" OR "20070095029" OR "20070136984" OR "20070209334" OR "20070209335" OR "20070271724" OR "20070289089" OR "20070289266" OR "20080040883" OR "20080134460" OR "20080134462" OR "20080178416" OR "20080178420" OR "20080190080" OR "20080196194" OR				

		"20080196745" OR "20080301903" OR "20090100633" OR "20090113659" OR "20090144932" OR "20090165431" OR "20090205160" OR "20090205161" OR "20090205298" OR "20090209666" OR "20090265877" OR "20090282639" OR "20090300874" OR "20090300875" OR "20090307564" OR "20090307863" OR "20090307864" OR "20090308254" OR "20090313958" OR "20090313959" OR "20100083459" OR "20100132319" OR "20100154150" OR "20100175217" OR "20100212104" OR "20100224073" OR "20100229321" OR "20100229324" OR "20100229328" OR "20100242210" OR "20100243158" OR "20100293745" OR "20100299865" OR "20100299866" OR "20110023261" OR "20110146024" OR "2152114" OR "2542634" OR "2678110" OR "2731102" OR "2811219" OR "2846024" OR "2913111" OR "2917131" OR "2937713" OR "2942691" OR "2942692" OR "2946451" OR "2952330" OR "2981369" OR "3032954" OR "3085221" OR "3130157" OR "3200568" OR "3204772" OR "3217469" OR "3269097" OR "3320727" OR					

		"3372532" OR "3426513").pn.					
L22	89	("3518815" OR "3530649" OR "3543325" OR "3561824" OR "3582616" OR "3675401" OR "3684093" OR "3822533" OR "3898068" OR "3933450" OR "3988132" OR "3988133" OR "4097381" OR "4187088" OR "4218805" OR "4236903" OR "4307485" OR "4373228" OR "4382804" OR "4409008" OR "4486207" OR "4494270" OR "4523936" OR "4678588" OR "4700429" OR "4744958" OR "4778494" OR "4803753" OR "4826515" OR "4853008" OR "4853011" OR "4853111" OR "4905342" OR "4944780" OR "4980945" OR "5054157" OR "5078761" OR "5080697" OR "5090976" OR "5129125" OR "5224238" OR "5230722" OR "5254019" OR "5267371" OR "5287591" OR "5307538" OR "5309600" OR "5309601" OR "5347679" OR "5363535" OR "5481780" OR "5515573" OR "5599365" OR "5709007" OR "5755096" OR "5815878" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 12:11 PM

		"5815881" OR "5858038" OR "5858043" OR "5893938" OR "5935279" OR "5950274" OR "5970572" OR "6071095" OR "6071321" OR "6080022" OR "6122796" OR "6210469" OR "6221134" OR "6228260" OR "6231645" OR "6251296" OR "6260234" OR "6345408" OR "6406505" OR "6434785" OR "6440197" OR "6502278" OR "6519810" OR "6531066" OR "6553612" OR "6553613" OR "6560818" OR "6581239" OR "6599338" OR "6599350" OR "6613316" OR "D303173" OR "D380033").pn.					
L23	2	(8769764; "20120030896").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 04:54 PM
L24	3	jp-2014083241-$.did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/22 04:57 PM
L25	187	L21 AND (cyclone cyclonic)	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/22 05:01 PM
L26	3	L24	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2023/05/22 05:07 PM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L27	1	("10219662").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/23 08:39 AM
L28	4	(20120030896; 20110289719; 20100083459; "20060090290").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/23 08:54 AM
L29	3	L24	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/23 08:59 AM
L30	250	L21	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/23 01:49 PM
L31	55016	(A47L5/225 or A47L5/24 or A47L5/28 or A47L9/16 or A47L9/1608 or A47L9/1625 or A47L9/1641 or A47L9/1683 or A47L9/1691 or A47L9/322 or A47L9/325 or A47L9/106 or A47L9/122).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/23 02:09 PM
L32	23477	(A47L5/225 OR A47L5/24 OR A47L5/28 OR A47L9/16 OR A47L9/1608 OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2023/05/23 02:10 PM

		A47L9/1625 OR A47L9/1641 OR A47L9/1683 OR A47L9/1691 OR A47L9/322 OR A47L9/325 OR A47L9/106 OR A47L9/122).cpc. AND (cyclone cyclonic)	CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L33	11873	(A47L5/225 OR A47L5/24 OR A47L5/28 OR A47L9/16 OR A47L9/1608 OR A47L9/1625 OR A47L9/1641 OR A47L9/1683 OR A47L9/1691 OR A47L9/322 OR A47L9/325 OR A47L9/106 OR A47L9/122).cpc. AND (battery)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/23 02:10 PM
L34	55755	(A47L5/225 or A47L5/24 or A47L5/28 or A47L9/16 or A47L9/1608 or A47L9/1625 or A47L9/1641 or A47L9/1683 or A47L9/1691 or A47L9/322 or A47L9/325 or A47L9/106 or A47L9/122).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/10/11 07:33 PM
L35	756	(A47L5/225 OR A47L5/24 OR A47L5/28 OR A47L9/16 OR A47L9/1608 OR A47L9/1625 OR A47L9/1641 OR A47L9/1683 OR A47L9/1691 OR A47L9/322 OR A47L9/325 OR A47L9/106 OR A47L9/122).cpc. AND @pd>"20230523"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN,	OR	ON	ON	2023/10/11 07:37 PM

			WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	782	L34 AND (collection AND cyclone).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/11 07:38 PM
N2	155	N1 AND (conduit).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/11 07:39 PM

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/830,529	Conrad, Wayne Ernest
	Examiner	Art Unit
	DAVID A REDDING	3723

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☑ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/11/2023								
1	1	=								
2	2	=								
	3	-								
3	4	=								
4	5	=								
5	6	=								
6	7	=								
7	8	=								
8	9	=								
9	10	=								
10	11	=								
11	12	=								
12	13	=								
13	14	=								
14	15	=								
15	16	=								
16	17	=								

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

1059 7590 10/20/2023

BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40TH FLOOR
TORONTO, ONTARIO M5H 3Y2
CANADA

EXAMINER
REDDING, DAVID A

ART UNIT	PAPER NUMBER
3723	

DATE MAILED: 10/20/2023

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/830,529	06/02/2022	Wayne Ernest Conrad	10452-P46958US17	9687

TITLE OF INVENTION: SURFACE CLEANING APPARATUS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	01/22/2024

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PTOL-85 (Rev. 02/11)

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

1059 7590 10/20/2023

BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40TH FLOOR
TORONTO, ONTARIO M5H 3Y2
CANADA

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/830,529	06/02/2022	Wayne Ernest Conrad	10452-P46958US17	9687

TITLE OF INVENTION: SURFACE CLEANING APPARATUS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	01/22/2024

EXAMINER	ART UNIT	CLASS-SUBCLASS
REDDING, DAVID A	3723	015-344000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via Patent Center or EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

Dyson Ex1004
Page 505

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/830,529	06/02/2022	Wayne Ernest Conrad	10452-P46958US17	9687

1059 7590 10/20/2023

BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40TH FLOOR
TORONTO, ONTARIO M5H 3Y2
CANADA

EXAMINER	
REDDING, DAVID A	
ART UNIT	PAPER NUMBER
3723	

DATE MAILED: 10/20/2023

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 17/830,529	Applicant(s) Conrad, Wayne Ernest	
	Examiner DAVID A REDDING	Art Unit 3723	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to amendment filed 8/24/23.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-2 and 4-17 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information , please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/David Redding/
Primary Examiner, Art Unit 3723

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/830,529	Conrad, Wayne Ernest
	Examiner	Art Unit
	DAVID A REDDING	3723

CPC - Searched*		
Symbol	Date	Examiner
(A47L5/225 or A47L5/24 or A47L5/28 or A47L9/16 or A47L9/1608 or A47L9/1625 or A47L9/1641 or A47L9/1683 or A47L9/1691 or A47L9/322 or A47L9/325 or A47L9/106 or A47L9/122)	10/11/2023	DAR

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
For terms see notes	05/23/2023	DAR
(A47L5/225 or A47L5/24 or A47L5/28 or A47L9/16 or A47L9/1608 or A47L9/1625 or A47L9/1641 or A47L9/1683 or A47L9/1691 or A47L9/322 or A47L9/325 or A47L9/106 or A47L9/122)	10/11/2023	DAR

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	(A47L5/225 or A47L5/24 or A47L5/28 or A47L9/16 or A47L9/1608 or A47L9/1625 or A47L9/1641 or A47L9/1683 or A47L9/1691 or A47L9/322 or A47L9/325 or A47L9/106 or A47L9/122)	10/11/2023	DAR

/David Redding/ Primary Examiner, Art Unit 3723	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/830,529	Conrad, Wayne Ernest
	Examiner	Art Unit
	DAVID A REDDING	3723

/David Redding/ Primary Examiner, Art Unit 3723	

Bibliographic Data

Application No: 17/830,529

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /David Redding/ Examiner's Signature | Initials

Title: SURFACE CLEANING APPARATUS

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
06/02/2022	015	3723	10452-P46958US17
RULE			

APPLICANTS

INVENTORS

Wayne Ernest Conrad, Hampton, CANADA

CONTINUING DATA

This application is a CON of 17351943 06/18/2021

17351943 is a CIP of 16590972 10/02/2019 PAT 11389038

16590972 is a DIV of 16156006 10/10/2018 PAT 10478030

16156006 is a CON of 15088876 04/01/2016 PAT 10219662

15088876 is a CON of 14822211 08/10/2015 PAT 9888817

14822211 has PRO of 62093189 12/17/2014

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

06/08/2022

STATE OR COUNTRY

CANADA

ADDRESS

BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40TH FLOOR
TORONTO, ON M5H 3Y2
CANADA

FILING FEE RECEIVED

$2,660

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/830,529	06/02/2022	Wayne Ernest Conrad	10452-P46958US17	9687

1059 7590 11/08/2023

BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40TH FLOOR
TORONTO, ONTARIO M5H 3Y2
CANADA

EXAMINER	
REDDING, DAVID A	

ART UNIT	PAPER NUMBER
3723	

NOTIFICATION DATE	DELIVERY MODE
11/08/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipprocessingcentre@bereskinparr.com

Corrected ***Notice of Allowability***	**Application No.** 17/830,529	**Applicant(s)** Conrad, Wayne Ernest	
	Examiner DAVID A REDDING	**Art Unit** 3723	**AIA (FITF) Status** Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-2,4-13 and 15-17 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information , please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/David Redding/
Primary Examiner, Art Unit 3723

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/830,529	Conrad, Wayne Ernest
	Examiner	Art Unit
	DAVID A REDDING	3723

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☑ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/11/2023	11/02/2023							
1	1	=	=							
2	2	=	=							
	3	-	-							
3	4	=	=							
4	5	=	=							
5	6	=	=							
6	7	=	=							
7	8	=	=							
8	9	=	=							
9	10	=	=							
10	11	=	=							
11	12	=	=							
12	13	=	=							
	14	=	-							
13	15	=	=							
14	16	=	=							
15	17	=	=							

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/830,529	Conrad, Wayne Ernest
	Examiner	**Art Unit**
	DAVID A REDDING	3723

CPC						
Symbol					**Type**	**Version**
A47L	/	5	/	225	F	2013-01-01
A47L	/	5	/	24	I	2013-01-01
A47L	/	9	/	1683	I	2013-01-01
A47L	/	9	/	1691	I	2013-01-01
A47L	/	9	/	1625	I	2013-01-01
A47L	/	9	/	1641	I	2013-01-01
A47L	/	9	/	325	I	2013-01-01
A47L	/	5	/	28	I	2013-01-01
A47L	/	9	/	322	I	2013-01-01
A47L	/	9	/	16	I	2013-01-01
A47L	/	9	/	1608	I	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	15	
/David Redding/ Primary Examiner, Art Unit 3723	02 November 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	96

U.S. Patent and Trademark Office — Part of Paper No.: 20231102

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/830,529	Conrad, Wayne Ernest
	Examiner	**Art Unit**
	DAVID A REDDING	3723

INTERNATIONAL CLASSIFICATION				
CLAIMED				
A47L5/22	/	5	/	22
A47L5/24	/	5	/	24
A47L9/16	/	9	/	16
A47L9/32	/	9	/	32
A47L5/28	/	5	/	28

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	15	
/David Redding/ Primary Examiner, Art Unit 3723	02 November 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	96

U.S. Patent and Trademark Office — Part of Paper No.: 20231102

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/830,529	Conrad, Wayne Ernest
	Examiner	**Art Unit**
	DAVID A REDDING	3723

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☑ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	9	10												
2	2	10	11												
	3	11	12												
3	4	12	13												
4	5		14												
5	6	13	15												
6	7	14	16												
7	8	15	17												
8	9														

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 15	
/David Redding/ Primary Examiner, Art Unit 3723 (Primary Examiner)	02 November 2023 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 96

U.S. Patent and Trademark Office

Part of Paper No.: 20231102

Dyson Ex1004
Page 517

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A surface cleaning apparatus comprising:

(a) a hand vacuum cleaner having a front end having a dirty air inlet, a rear end, a clean air outlet, an upper end, a lower end and a pistol grip handle, the hand vacuum cleaner comprising:

(i) a main body comprising an upper end, a lower end, a front end and a rear end, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation;

(ii) a cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end, an axially spaced apart rear end, a cyclone air inlet, and a cyclone air outlet provided at the rear end of the cyclone unit, wherein the cyclone axis of rotation intersects the pistol grip handle; and

(iii) a dirt collection chamber that is exterior to the cyclone chamber and a forward end of the dirt collection chamber is openable;

(b) a surface cleaning head having a front end, a rear end, a dirty air inlet and a surface cleaning head air outlet; and,

(c) a rigid air flow conduit that is removably mountable to the surface cleaning head and, when attached to the hand vacuum cleaner and the surface cleaning head, extends ~~extending~~ between the surface cleaning head air outlet and the dirty air inlet of the hand vacuum cleaner~~, the rigid air flow conduit is removably mounted to the surface cleaning head~~,

wherein the dirty air inlet of the hand vacuum cleaner is removably drivingly mounted to a downstream end of the rigid air flow conduit whereby when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the pistol grip handle is a driving handle for the surface cleaning apparatus, and

wherein when the hand vacuum cleaner is positioned with the front end of the hand vacuum cleaner in front of the rear end of the hand vacuum cleaner, the cyclone axis of rotation is generally horizontal.

2. (Previously Presented) The surface cleaning apparatus of claim 1 wherein the cyclone unit is removably mounted to the main body.

3. (Cancelled).

4. (Previously Presented) The surface cleaning apparatus of claim 1 wherein the cyclone axis of rotation is generally parallel to the suction motor axis of rotation.

5. (Previously Presented) The surface cleaning apparatus of claim 1 wherein, when the hand vacuum cleaner is positioned with the front end of the hand vacuum cleaner in front of the rear end of the hand vacuum cleaner, the pistol grip handle extends upwardly and forwardly.

6. (Previously Presented) The surface cleaning apparatus of claim 1 wherein an enclosed finger grip area is provided on a forward side of the pistol grip handle.

7. (Previously Presented) The surface cleaning apparatus of claim 1 wherein the cyclone axis of rotation intersects the finger grip area.

8. (Previously Presented) The surface cleaning apparatus of claim 2 further comprising a pre-motor filter, wherein the pre-motor filter is accessible when the cyclone unit is removed from the main body.

9. (Currently Amended) A surface cleaning apparatus comprising:

(a) a hand vacuum cleaner having a front end having a dirty air inlet, a rear end, a clean air outlet, an upper end, a lower end and a pistol grip handle, the hand vacuum cleaner comprising:

(i) a main body comprising an upper end, a lower end, a front end and a rear end, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation; and,

(ii) a cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end, an axially spaced apart rear end, a cyclone air inlet, and a cyclone air outlet provided at the rear end of the cyclone unit, wherein the cyclone axis of rotation intersects the pistol grip handle;

(b) a surface cleaning head having a front end, a rear end, a dirty air inlet and a surface cleaning head air outlet; and,

(c) a rigid air flow conduit that is removably mountable to the surface cleaning head and, when attached to the hand vacuum cleaner and the surface cleaning head, extends ~~extending~~ between the surface cleaning head air outlet and the dirty air inlet of the hand vacuum cleaner~~, the rigid air flow conduit is removably mounted to the surface cleaning head~~,

wherein the dirty air inlet of the hand vacuum cleaner is removably drivingly mounted to a downstream end of the rigid air flow conduit whereby when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the pistol grip handle is a driving handle for the surface cleaning apparatus, and

wherein when the hand vacuum cleaner is positioned with the front end of the hand vacuum cleaner in front of the rear end of the hand vacuum cleaner, the cyclone axis of rotation is generally horizontal,

wherein a pre-motor filter has a height in a direction transverse to the cyclone axis and the height is larger than a diameter of the cyclone.

10. (Currently Amended) A surface cleaning apparatus comprising:

(a) a hand vacuum cleaner having a front end having a dirty air inlet, a rear end, a clean air outlet, an upper end, a lower end and a pistol grip handle, the hand vacuum cleaner comprising:

(i) a main body comprising an upper end, a lower end, a front end and a rear end, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation; and,

(ii) a cyclone unit comprising a cyclone chamber and a dirt collection chamber that is exterior to the cyclone chamber, the cyclone chamber having a cyclone axis of rotation, a front end, an axially spaced apart rear end, a cyclone air inlet, and a cyclone air outlet provided at the rear end of the cyclone unit, wherein the cyclone axis of rotation intersects the pistol grip handle and a line that is parallel to the cyclone axis extends through the dirt collection chamber and a location interior of a radial outer perimeter of a pre-motor filter;

(b) a surface cleaning head having a front end, a rear end, a dirty air inlet and a surface cleaning head air outlet; and,

(c) a rigid air flow conduit that is removably mountable to the surface cleaning head and, when attached to the hand vacuum cleaner and the surface cleaning head, extends ~~extending~~ between the surface cleaning head air outlet and the dirty air inlet of the hand vacuum cleaner~~, the rigid air flow conduit is removably mounted to the surface cleaning head~~,

wherein the dirty air inlet of the hand vacuum cleaner is removably drivingly mounted to a downstream end of the rigid air flow conduit whereby when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the pistol grip handle is a driving handle for the surface cleaning apparatus, and

wherein when the hand vacuum cleaner is positioned with the front end of the hand vacuum cleaner in front of the rear end of the hand vacuum cleaner, the cyclone axis of rotation is generally horizontal.

11. (Currently Amended) A surface cleaning apparatus comprising:

(a) a hand vacuum cleaner comprising:

(i) a main body comprising a lower end, an upper end, a front end, a rear end and a pistol grip handle, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation, the pistol grip handle is provided at the rear end of the main body and extends upwardly and forwardly when the hand vacuum cleaner is positioned with the front end forward of the rear end;

(ii) a cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end and a rear end wherein air exits the cyclone chamber at the rear end of the cyclone chamber, wherein the suction motor axis of rotation is generally parallel to the cyclone axis of rotation; and

(b) a dirt collection chamber that is exterior to the cyclone chamber and a forward end of the dirt collection chamber is openable;

(c) a surface cleaning head having a front end, a rear end, a dirty air inlet and a cleaning head air outlet; and,

(d) a rigid air flow conduit <u>that is removably mountable to the surface cleaning head and, when attached to the hand vacuum cleaner and the surface cleaning head, extends</u> ~~extending~~ between the cleaning head air outlet and a hand vacuum cleaner air inlet, the rigid air flow conduit having a longitudinally extending conduit axis~~, and the rigid air flow conduit is removably mounted to the surface cleaning head~~,

wherein the hand vacuum cleaner is removably mountable to a downstream end of the rigid air flow conduit and, when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the handle is a driving handle for the surface cleaning apparatus and the longitudinally extending conduit axis of the rigid air flow conduit is parallel to the cyclone axis of rotation, and

wherein a finger grip area is provided at a location that is forward of the pistol grip handle and rearward of the cyclone.

12. (Previously Presented) The surface cleaning apparatus of claim 11 further comprising a pre-motor filter, wherein the cyclone axis of rotation intersects the pre-motor filter.

13. (Previously Presented) The surface cleaning apparatus of claim 11 wherein the cyclone unit is removably mounted to the main body.

14. (Cancelled).

15. (Previously Presented) The surface cleaning apparatus of claim 11 further comprising a pre-motor filter, wherein the pre-motor filter is accessible when the cyclone unit is removed from the main body.

16. (Currently Amended) A surface cleaning apparatus comprising:

(a) a hand vacuum cleaner comprising:

(i) a main body comprising a lower end, an upper end, a front end, a rear end and a pistol grip handle, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation, the pistol grip handle is provided at the rear end of the main body and extends upwardly and forwardly when the hand vacuum cleaner is positioned with the front end forward of the rear end; and,

(ii) a cyclone unit comprising a cyclone chamber having a cyclone axis of rotation, a front end and a rear end wherein air exits the cyclone

chamber at the rear end of the cyclone chamber, wherein the suction motor axis of rotation is generally parallel to the cyclone axis of rotation; and

(b) a surface cleaning head having a front end, a rear end, a dirty air inlet and a cleaning head air outlet; and,

(c) a rigid air flow conduit that is removably mountable to the surface cleaning head and, when attached to the hand vacuum cleaner and the surface cleaning head, extends ~~extending~~ between the cleaning head air outlet and a hand vacuum cleaner air inlet, the rigid air flow conduit having a longitudinally extending conduit axis~~, and the rigid air flow conduit is removably mounted to the surface cleaning head~~,

wherein the hand vacuum cleaner is removably mountable to a downstream end of the rigid air flow conduit and, when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the handle is a driving handle for the surface cleaning apparatus and the longitudinally extending conduit axis of the rigid air flow conduit is parallel to the cyclone axis of rotation, and

wherein a finger grip area is provided at a location that is forward of the pistol grip handle and rearward of the cyclone, and

wherein a pre-motor filter has a height in a direction transverse to the cyclone axis and the height is larger than a diameter of the cyclone.

17. (Currently Amended) A surface cleaning apparatus comprising:

(a) a hand vacuum cleaner comprising:

(i) a main body comprising a lower end, an upper end, a front end, a rear end and a pistol grip handle, the main body housing a suction motor and fan assembly, the suction motor and fan assembly having a suction motor axis of rotation, the pistol grip handle is provided at the rear end of the

main body and extends upwardly and forwardly when the hand vacuum cleaner is positioned with the front end forward of the rear end; and,

(ii) a cyclone unit comprising a cyclone chamber and a dirt collection chamber that is exterior to the cyclone chamber, the cyclone chamber having a cyclone axis of rotation, a front end and a rear end wherein air exits the cyclone chamber at the rear end of the cyclone chamber, wherein the suction motor axis of rotation is generally parallel to the cyclone axis of rotation and a line that is parallel to the cyclone axis extends through the dirt collection chamber and a location interior of a radial outer perimeter of a pre-motor filter,

(b) a surface cleaning head having a front end, a rear end, a dirty air inlet and a cleaning head air outlet; and,

(c) a rigid air flow conduit that is removably mountable to the surface cleaning head and, when attached to the hand vacuum cleaner and the surface cleaning head, extends ~~extending~~ between the cleaning head air outlet and a hand vacuum cleaner air inlet, the rigid air flow conduit having a longitudinally extending conduit axis~~, and the rigid air flow conduit is removably mounted to the surface cleaning head~~,

wherein the hand vacuum cleaner is removably mountable to a downstream end of the rigid air flow conduit and, when the hand vacuum cleaner is mounted to the downstream end of the rigid air flow conduit, the handle is a driving handle for the surface cleaning apparatus and the longitudinally extending conduit axis of the rigid air flow conduit is parallel to the cyclone axis of rotation, and

wherein a finger grip area is provided at a location that is forward of the pistol grip handle and rearward of the cyclone.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/830,529	**12/27/2023 03:26:58 PM Z ET**	**10452-P46958US17**

Title of Invention

SURFACE CLEANING APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	9687	FILED BY	Snezana Lisowsky
PATENT CENTER #	63764302	FILING DATE	06/02/2022
CUSTOMER #	1059	FIRST NAMED INVENTOR	Wayne Ernest Conrad
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Philip Mendes da Costa

Documents

TOTAL DOCUMENTS: 3

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
Amendment_1312_2023-12-27_P46958US17.pdf		11	-	189 KB
Amendment_1312_2023-12-27_P46958US17-A.NA.pdf	(1-1)	1	Amendment after Notice of Allowance (Rule 312)	125 KB
Amendment_1312_2023-12-27_P46958US17-CLM.pdf	(2-9)	8	Claims	110 KB
Amendment_1312_2023-12-27_P46958US17-REM.pdf	(10-11)	2	Applicant Arguments/Remarks Made in an Amendment	92 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
Amendment_1312_2023-12-27_P46958US17.pdf	9E33291F02D9BBF7C93AEA63CFBBD79F800CB88B65081B93C75A5B46A02A0F142AB1A2FA201E0AD412809C53C293DE77EA5EAC31CFDC99A464B22C6FC2BCA836
Amendment_1312_2023-12-27_P46958US17-A.NA.pdf	3EB70B57DF22408C0D731CF6BF83075C30084B9F5E7F3D48D54AE2C9039985086FA753A19C16948FA9CB251557D46E43CD52255B1DBFE99811F26C942F18ECDE
Amendment_1312_2023-12-27_P46958US17-CLM.pdf	6D144210194C17E5332D902DABBDD130BF03F5BCCA7DBFFC827C616421D84A1A3BB14A06F1EDA1A7EC168F2C181B97BBD5D98F2C11AA1AEB245715567EAB8B4A
Amendment_1312_2023-12-27_P46958US17-REM.pdf	42A0AC1B03150E2C23B6541840B2DE62CD2D017EA8EEADDDF8CD726D74485B7F92AC3822C9FFD28C908A0E8722909DABD91DD0F744CBEDDC692308B72F4709CF

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

REMARKS/ARGUMENTS

Pursuant to Notice of Allowance of October 20, 2023 and Corrected Notice of Allowance of November 8, 2023, claims 1-2, 4-13 and 15-17 are allowed. Upon review of the allowed claims, the Applicant requests herein entry of the amendment under 1.312.

Since the rigid air flow conduit is not always attached to the surface cleaning head and the hand vacuum cleaner, independent claims 1, 9, 10, 11 and 16 have been amended to specify "a rigid air flow conduit that is removably mountable to the surface cleaning head and, when attached to the hand vacuum cleaner and the surface cleaning head, extends between the cleaning head air outlet and a hand vacuum cleaner air inlet, the rigid air flow conduit having a longitudinally extending conduit axis, and the rigid air flow conduit is removably mounted to the surface cleaning head".

Claim 10 has been amended to clarify that location of the cyclone axis of rotation. As amended, the claim now provides that "the cyclone axis of rotation intersects the pistol grip handle and a line that is parallel to the cyclone axis extends through the dirt collection chamber and a location interior of a radial outer perimeter of a pre-motor filter"

Support for these amendments is found within the claims and specification as originally filed. It is believed that no new matter has been introduced by these amendments. It is believed that this amendment merely brings clarity to the formal language of the claims which neither have changed the scope of the claims nor raised new issues for consideration with respect to the allowability of the claimed invention.

The Applicant respectfully submits that the noted amendment is in compliance with 37 CFR 1.121. No new matter has been added by this amendment. Entry of the amendment is respectfully requested.

Date: December 27, 2023

Respectfully submitted,

BERESKIN & PARR LLP/
S.E.N.C.R.L., s.r.l.

By /Philip C. Mendes da Costa/
Philip C. Mendes da Costa
Reg. No. 33,106
Tel: 416-957-1695

Bereskin
&Parr

Appl. No	:	17/830,529
Applicant	:	Omachron Intellectual Property Inc.
Filed	:	June 2, 2022
Title	:	SURFACE CLEANING APPARATUS
TC./A.U.	:	3723
Confirmation No.:		9687
Examiner	:	DAVID A REDDING
Docket No.	:	10452-P46958US17
Customer No.	:	01059

Mail Stop Publication
Honorable Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313–1450

December 27, 2023

AMENDMENT UNDER 37 CFR 1.312

Sir:

Further to Notice of Allowance of October 20, 2023 and Corrected Notice of Allowance of November 8, 2023, please amend the application as follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 10 of this paper.

Bereskin & Parr LLP
Scotia Plaza, 40 King Street West, 40th Floor, Toronto, ON M5H 3Y2 Canada
Tel: 416.364.7311 Fax: 416.361.1398 bereskinparr.com

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

1059 7590 10/20/2023
BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40TH FLOOR
TORONTO, ONTARIO M5H 3Y2
CANADA

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/830,529	06/02/2022	Wayne Ernest Conrad	10452-P46958US17	9687

TITLE OF INVENTION: SURFACE CLEANING APPARATUS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	01/22/2024

EXAMINER	ART UNIT	CLASS-SUBCLASS
REDDING, DAVID A	3723	015-344000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Philip C. Mendes da Costa
2 BERESKIN & PARR LLP/ S.E.N.C.R.L., s.r.l.
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Omachron Intellectual Property Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Hampton, Ontario, Canada

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☒ Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

☒ Electronic Payment via Patent Center or EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 022095

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

☐ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Philip c. Mendes da Costa/ Date 2024-01-08

Typed or printed name /Philip C. Mendes da Costa/ Registration No. 33106

PTOL-85 Part B (08-18) Approved for use through 01/31/2020 OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/830,529	01/08/2024 02:46:34 PM Z ET	10452-P46958US17

Title of Invention

SURFACE CLEANING APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	9687	FILED BY	Snezana Lisowsky
PATENT CENTER #	63873582	AUTHORIZED BY	Philip Mendes da Costa
CUSTOMER #	1059	FILING DATE	06/02/2022
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Wayne Ernest Conrad

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 8979	E202418E48166832	Snezana Lisowsky

PRE-AUTHORIZED ACCOUNT	PRE-AUTHORIZED CATEGORY
022095	37 CFR 1.16 (National application filing, search, and examination fees); 37 CFR 1.17 (Patent application and reexamination processing fees); 37 CFR 1.19 (Document supply fees); 37 CFR 1.20 (Post Issuance fees); 37 CFR 1.21 (Miscellaneous fees and charges)

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1501	UTILITY ISSUE FEE	1200.00	1	1200.00
			TOTAL AMOUNT:	$1,200.00

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement

Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Bereskin&Parr

Appl. No	:	17/830,529	Confirmation No.: 9687
Applicant	:	Omachron Intellectual Property Inc.	
Filed	:	June 2, 2022	
Title	:	SURFACE CLEANING APPARATUS	
TC./A.U.	:	3723	
Examiner	:	REDDING, David	
Docket No.	:	10452-P46958US17	
Customer No.	:	01059	

Mail Stop Issue Fee
Honorable Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313–1450

January 8, 2024

ISSUE FEES

This correspondence is responsive to the Notice of Allowance and Issue Fee Due dated October 20, 2023, which issued in the above-identified patent application. As required, we enclose herewith the Issue Fee transmittal form.

The government fee of $1200 is included. Please charge any deficiency or credit any overpayment to our deposit account no. 02-2095.

Respectfully submitted,

BERESKIN & PARR LLP/ S.E.N.C.R.L., s.r.l.

/Philip C. Mendes da Costa/

Name: Philip C. Mendes da Costa
Registration No. 33,106
416. 957.1695

Bereskin & Parr LLP
Scotia Plaza, 40 King Street West, 40th Floor, Toronto, ON M5H 3Y2 Canada
Tel: 416.364.7311 Fax: 416.361.1398 bereskinparr.com

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/830,529	**01/08/2024 02:46:34 PM Z ET**	**10452-P46958US17**

Title of Invention

SURFACE CLEANING APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	9687	FILED BY	Snezana Lisowsky
PATENT CENTER #	63873582	FILING DATE	06/02/2022
CUSTOMER #	1059	FIRST NAMED INVENTOR	Wayne Ernest Conrad
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Philip Mendes da Costa

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
PC_Issue_Fee_Transmittal_2023-01-08_P46958US17.pdf	1	Issue Fee Payment (PTO-85B)	746 KB
PC_Deposit_Authorization_2023-01-08_P46958US17.pdf	1	Miscellaneous Incoming Letter	98 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
PC_Issue_Fee_Transmittal_2023-01-08_P46958US17.pdf	53FBDD1447EF97FCFC802E50AAA68991C85A6E1975DD3A594478B968980770E8FA8966FC4DAEFE54C79E8A0BDDA1FF55E

DA50A1D772CBA6E2A395C2480417CE6

PC_Deposit_Authorization_2023-01-08_P46958US17.pdf	F4F819DA4C1B7BEDB43669AC5A8D8869A9B31EF923223A0E9E341A66F92FE8AAD3A10B6AA49D3ABDFDF50B95D87173D2F58977C85A8780B41E1A3BF88135A20

Dyson Ex 1004
Page 536

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/830,529	06/02/2022	Wayne Ernest Conrad	10452-P46958US17	9687

1059 7590 01/08/2024

BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40TH FLOOR
TORONTO, ONTARIO M5H 3Y2
CANADA

EXAMINER	
REDDING, DAVID A	

ART UNIT	PAPER NUMBER
3723	

NOTIFICATION DATE	DELIVERY MODE
01/08/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipprocessingcentre@bereskinparr.com

Response to Rule 312 Communication	Application No.	Applicant(s)	
	17/830,529	Conrad, Wayne Ernest	
	Examiner	Art Unit	AIA (FITF) Status
	DAVID A REDDING	3723	Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☑ The amendment filed on 27 December 2023 under 37 CFR 1.312 has been considered, and has been:
   a) ☑ entered.
   b) ☐ entered as directed to matters of form not affecting the scope of the invention.
   c) ☐ disapproved because the amendment was filed after the payment of the issue fee.
      Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.
   d) ☐ disapproved. See explanation below.
   e) ☐ entered in part. See explanation below.
   f) ☐ not entered because the supplemental or corrected Application Data sheet (ADS)
      ☐ was not accompanied by a petition to accept an unintentionally delayed claim under 37 CFR 1.55 or 27 CFR 1.78;
      ☐ did not identify the information being changed in accordance with 37 CFR 1.76(c)(2);
      ☐ was not properly signed in accordance with 37 CFR 1.76(e) (or 37 CFR 1.33(b) for applications filed prior to September 16, 2012).

/David Redding/
Primary Examiner, Art Unit 3723

Bereskin & Parr

Appl. No	:	17/830,529
Applicant	:	Omachron Intellectual Property Inc.
Filed	:	June 2, 2022
Title	:	SURFACE CLEANING APPARATUS
TC./A.U.	:	3723
Confirmation No.:		9687
Examiner	:	DAVID A REDDING
Docket No.	:	10452-P46958US17
Customer No.	:	01059

OK TO ENTER
DAR
1/2/24

Mail Stop Publication
Honorable Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313–1450

December 27, 2023

AMENDMENT UNDER 37 CFR 1.312

Sir:

Further to Notice of Allowance of October 20, 2023 and Corrected Notice of Allowance of November 8, 2023, please amend the application as follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 10 of this paper.

Bereskin & Parr LLP
Scotia Plaza, 40 King Street West, 40th Floor, Toronto, ON M5H 3Y2 Canada
Tel: 416.364.7311 Fax: 416.361.1398 bereskinparr.com

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/830,529	02/20/2024	11903546	10452-P46958US17	9687

1059 7590 01/31/2024

BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40TH FLOOR
TORONTO, ONTARIO M5H 3Y2
CANADA

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at https://certifiedcopycenter.uspto.gov/index.html. The Certified Copy Center may be reached at (800)972-6382.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Center (https://patentcenter.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional inventors):

Wayne Ernest Conrad, Hampton, CANADA;

APPLICANT(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional applicants):

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/830,529	06/02/2022	Wayne Ernest Conrad	10452-P46958US17	9687

1059 7590 02/20/2024

BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40TH FLOOR
TORONTO, ONTARIO M5H 3Y2
CANADA

EXAMINER	
REDDING, DAVID A	

ART UNIT	PAPER NUMBER
3723	

NOTIFICATION DATE	DELIVERY MODE
02/20/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipprocessingcentre@bereskinparr.com

APPLICATION NO.	ISSUE DATE	PATENT NO.
17/830,529	20-Feb-2024	11903546

BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
TORONTO, ON M5H 3Y2
CANADA

EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at https://patentcenter.uspto.gov

The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit https://www.uspto.gov/electronicgrants