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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	16697-48
First Inventor	CONRAD, Wayne Ernest
Title	CONFIGURATION OF A HAND VACUUM CLEANER
Express Mail Label No.	

APPLICATION ELEMENTS See MPEP chapter 600 concerning utility patent application contents.	ADDRESS TO: Commissioner for Patents P.O. Box 1450 Alexandria VA 22313-1450
1. ☐ Fee Transmittal Form (e.g., PTO/SB/17) (Submit an original and a duplicate for fee processing) 2. ☒ Applicant claims small entity status. See 37 CFR 1.27. 3. ☒ Specification [Total Pages 19] Both the claims and abstract must start on a new page (For information on the preferred arrangement, see MPEP 608.01(a)) 4. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 10] 5. Oath or Declaration [Total Sheets] a. ☒ Newly executed (original or copy) b. ☐ A copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 18 completed) i. ☐ DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) name in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b). 6. ☒ Application Data Sheet. See 37 CFR 1.76 7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix) ☐ Landscape Table on CD 8. Nucleotide and/or Amino Acid Sequence Submission (if applicable, items a. - c. are required) a. ☐ Computer Readable Form (CRF) b. Specification Sequence Listing on: i. ☐ CD-ROM or CD-R (2 copies); or ii. ☐ Paper c. ☐ Statements verifying identity of above copies	ACCOMPANYING APPLICATION PARTS 9. ☐ Assignment Papers (cover sheet & document(s)) Name of Assignee _____ 10. ☐ 37 CFR 3.73(b) Statement (when there is an assignee) ☐ Power of Attorney 11. ☐ English Translation Document (if applicable) 12. ☐ Information Disclosure Statement (PTO/SB/08 or PTO-1449) ☐ Copies of foreign patent documents, publications, & other information 13. ☐ Preliminary Amendment 14. ☐ Return Receipt Postcard (MPEP 503) (Should be specifically itemized) 15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed) 16. ☐ Nonpublication Request under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent. 17. ☐ Other: _____
18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76: ☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____ Prior application information: Examiner _____ Art Unit: _____	
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Name (Print/Type) Philip C. Mendes da Costa	Registration No. (Attorney/Agent) 33,106

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	16697-48
		Application Number	
Title of Invention	CONFIGURATION OF A HAND VACUUM CLEANER		
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.			

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Applicant 1					Remove
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	☐ Party of Interest under 35 U.S.C. 118
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 Residenceⁱ	CA		
Citizenship under 37 CFR 1.41(b)ⁱ	CA				
Mailing Address of Applicant:					
Address 1	9 King Lane				
Address 2					
City	Hampton	State/Province	ON		
Postal Code	L0B 1J0	Countryⁱ	CA		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					
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Email Address	pmdcosta@bereskinparr.com	Add Email	Remove Email

Application Information:

Title of the Invention	CONFIGURATION OF A HAND VACUUM CLEANER		
Attorney Docket Number	16697-48	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	10	Suggested Figure for Publication (if any)	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	16697-48
		Application Number	
Title of Invention	CONFIGURATION OF A HAND VACUUM CLEANER		

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.

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Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
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Application Number	Country ⁱ	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
2658019	CA	2009-03-11	☒ Yes ☐ No
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	16697-48
		Application Number	
Title of Invention	CONFIGURATION OF A HAND VACUUM CLEANER		

If the Assignee is an Organization check here. ☒			
Organization Name	G.B.D. CORP.		
Mailing Address Information:			
Address 1	Templeton Building		
Address 2	Lyford Cay, P.O. Box N-9204		
City	Nassau	State/Province	BS
Country ⁱ	BS	Postal Code	
Phone Number		Fax Number	
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Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.					
Signature	/Philip C. Mendes da Costa/			Date (YYYY-MM-DD)	2010-03-09
First Name	Philip C.	Last Name	Mendes da Costa	Registration Number	33106

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	Filing Date	
	First Named Inventor	Wayne Ernest Conrad
	Title	Configuration of a Hand Vacuum Cleaner
	Art Unit	
	Examiner Name	
	Attorney Docket Number	16697-48

I hereby revoke all previous powers of attorney given in the above-identified application.

☐ A Power of Attorney is submitted herewith.
OR

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01059

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City State Zip

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I am the:

☒ Applicant/Inventor.
OR

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) (Form PTO/SB/98) submitted herewith or filed on _____

SIGNATURE of Applicant or Assignee of Record

Signature	Date
Wayne Ernest Conrad	March 8, 2010
Name	Telephone
Wayne Ernest Conrad	905.263.2805
Title and Company	

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

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

Title of Invention	CONFIGURATION OF A HAND VACUUM CLEANER
As the below named inventor(s), I/we declare that: This declaration is directed to: ☒ The attached application, or ☐ Application No. _____ filed on _____ ☐ As amended on _____ (if applicable); I/we believe that I/we am/are the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought; I/we have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment specifically referred to above; I/we acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me/us to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application. 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. All statements made herein of my/our own knowledge are true, all statements made herein on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and may jeopardize the validity of the application or any patent issuing thereon.	
FULL NAME OF INVENTOR(S)	
Inventor one: _____	Date: March 8, 2010
Signature: <u>Wayne Ernest Conrad</u>	Citizen of: <u>Canada</u>
Inventor two: _____	Date: _____
Signature: _____	Citizen of: _____
☐ Additional inventors or a legal representative are being named on _____ additional form(s) attached hereto.	

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TITLE: CONFIGURATION OF A HAND VACUUM CLEANER

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of the filing date of Canadian Patent Application, No. 2658019, filed March 11, 2010 entitled CONFIGURATION OF A HAND VACUUM CLEANER.

FIELD

[0001] The specification relates to hand vacuum cleaners. More specifically, the specification relates to cyclonic hand vacuum cleaners having an openable door.

INTRODUCTION

[0002] The following is not an admission that anything discussed below is prior art or part of the common general knowledge of persons skilled in the art.

[0003] PCT publication WO 2008/009890 (Dyson Technology Limited) discloses a handheld cleaning appliance comprising a main body, a dirty air inlet, a clean air outlet and a cyclonic separator for separating dirt and dust from an airflow. The cyclone separator is located in an airflow path leading from the air inlet to the air outlet. The cyclonic separator is arranged in a generally upright orientation (i.e., the air rotates about a generally vertical axis in use). A base surface of the main body and a base surface of the cyclonic separator together form a base surface of the appliance for supporting the appliance on a surface. See also PCT publication WO 2008/009888 (Dyson Technology Limited) and PCT publication WO 2008/009883 (Dyson Technology Limited).

[0004] United States patent 7,370,387 (Black & Decker Inc.) discloses a hand-holdable vacuum cleaner that uses one or more filters and/or cyclonic separation device, and means for adjusting an angle of air inlet relative to a main axis of said vacuum cleaner. In particular, the vacuum cleaner further comprises a rigid, elongate nose having the air inlet at one end thereof, the nose being pivotal relative to a main axis of the vacuum cleaner through an angle of at least 135 degrees.

SUMMARY

[0005] The following introduction is provided to introduce the reader to the more detailed discussion to follow. The introduction is not intended to limit or define the claims.

[0006] According to one broad aspect, a hand vacuum cleaner is provided which has a door that is located towards the front of the hand vacuum cleaner and is openable and, preferably, is removably mounted. According to such a design, when a user wants to empty the vacuum cleaner, the user may open the door and then pour dirt out of, e.g., a dirt chamber. As the door is at the front of the vacuum cleaner, there is no impediment to the door being opened. Further, when the vacuum cleaner is inclined or inverted to empty the vacuum cleaner, no portion of the vacuum cleaner need be in front of the door. Accordingly, the dirt leaving the vacuum cleaner will not contact any portion of the vacuum cleaner when it is poured, e.g., into a garbage can.

[0007] . In some designs, the hand vacuum cleaner may comprise a front end, a rear end, and an air flow passage extending from a dirty air inlet to a clean air outlet. A first cyclone unit may be positioned in the air flow passage. The first cyclone unit may comprise at least one cyclone and at least one dirt collection chamber wherein the dirt collection chamber has an openable door positioned at the front end. A suction motor is positioned in the air flow passage.

[0008] In some examples, the at least one cyclone has a cyclone front end, a cyclone rear end, a cyclone air inlet and a cyclone air outlet, and the cyclone front end is at the front end of the hand vacuum cleaner.

[0009] In some examples, the cyclone front end has a dirt outlet and a separation plate is mounted in facing relation to the dirt outlet. In some examples, the separation plate is mounted to the door. Preferably, the dirt outlet is at the front of the hand vacuum cleaner. The dirt outlet is preferably at an end of the cyclone opposed to the end having one or both of the air inlet and the air outlet.

[0010] In some examples, the cyclone air inlet and the cyclone air outlet are at the same end. In some examples, the cyclone air inlet and the cyclone air outlet are at the cyclone rear end.

[0011] In some examples, the at least one cyclone has a cyclone axis extending longitudinally through the at least one cyclone, the hand vacuum cleaner has an axis extending from the front end to the rear end, and the cyclone axis is generally parallel to the axis of the hand vacuum cleaner. Accordingly to such an embodiment, the cyclone and the motor may be axially aligned and the motor air inlet may be proximate the cyclone outlet with, optionally, one or more pre-motor filters and optional cyclones positioned therebetween and, preferably, aligned such that the air flow therethrough travels generally linearly from component to component.

[0012] In some examples, the first cyclone unit is positioned forward of the suction motor.

[0013] In some examples, the door is openable when mounted to the hand vacuum cleaner. In some examples, the door is removable. In some examples, the door is pivotally mounted to the hand vacuum cleaner.

[0014] In some examples, the dirt collection chamber is removable from the hand vacuum cleaner. In some examples, the dirt collection chamber is removable from the surface cleaning apparatus as a sealed unit for emptying. In some examples, the first cyclone unit is sealed when removed from the hand vacuum cleaner other than fluid flow passages leading to and from the first cyclone unit. In some examples, the dirt collection chamber is removable from the hand vacuum cleaner with the first cyclone unit.

[0015] In some examples, the first cyclone unit has a single cyclone and a single dirt collection chamber. In some examples, the single dirt collection chamber is positioned exterior to the single cyclone. In some examples, the single cyclone and the single dirt collection chamber comprise a one-piece assembly. In some examples, the single cyclone and the single dirt collection chamber are integrally formed.

[0016] In some examples, the hand vacuum cleaner further comprises a suction motor housing, the suction motor is positioned in the suction motor housing and the first cyclone unit is removably mounted to the suction motor housing.

[0017] In some examples, the vacuum cleaner further comprises a second cyclone unit downstream from the first cyclone unit.

[0018] It will be appreciated that a hand vacuum cleaner may incorporate one or more of the features of each of these examples.

DRAWINGS

[0019] In the detailed description, reference will be made to the following drawings, in which:

[0020] Figure 1 is a side plan view of an example of a hand vacuum cleaner;

[0021] Figure 2 is a top plan view of the hand vacuum cleaner of Figure 1;

[0022] Figure 3 is a front plan view of the hand vacuum cleaner of Figure 1;

[0023] Figure 4 is a partially exploded rear perspective view of the hand vacuum cleaner of Figure 1;

[0024] Figure 5A is a front perspective view of the hand vacuum cleaner of Figure 1, showing a door in an open configuration;

[0025] Figure 5B is a front perspective view of the hand vacuum cleaner of Figure 1, showing a door removed from the hand vacuum cleaner;

[0026] Figure 6 is a cross section taken along line 6-6 in Figure 2; and

[0027] Figure 7A is a bottom perspective view of the hand vacuum cleaner of Figure 1;

[0028] Figure 7B is a rear perspective view of the hand-vacuum cleaner of Figure 1, showing the cyclone unit removed from the hand vacuum cleaner; and

[0029] Figure 8 is a cross section of an alternate example of a hand-vacuum cleaner.

DESCRIPTION OF VARIOUS EXAMPLES

[0030] Various apparatuses or methods will be described below to provide an example of each claimed invention. No example described below limits any claimed invention and any claimed invention may cover processes or apparatuses that are not described below. The claimed inventions are not limited to apparatuses or processes having all of the features of any one apparatus or process described below or to features common to multiple or all of the apparatuses described below. It is possible that an apparatus or process described below is not an embodiment of any claimed invention.

[0031] In the drawings attached hereto, the surface cleaning apparatus is exemplified as used in a hand vacuum cleaner that uses a single cyclone axially aligned with a longitudinal axis of the hand vacuum cleaner. It will be appreciated that the vacuum cleaner 100 may be of various configurations (e.g., different positioning and orientation of the cyclone unit and the suction motor and differing cyclone units that may comprise one or more cyclones and one or more filters).

[0032] Referring to Figures 1 to 7B, a first example of a vacuum cleaner 100 is shown. The vacuum cleaner 100 (also referred to herein cleaner 100) is a hand vacuum cleaner 100, and is movable along a surface to be cleaned by gripping and maneuvering handle 102. The vacuum cleaner 100 includes an upper portion 104, a lower portion 106, a front end 108, and a rear end 110. An axis 125 of the vacuum cleaner extends from the front end 108 to the rear end 110. In the example shown, handle 102 is provided at the upper portion 104. In alternate examples, handle 102 may be provided elsewhere on the vacuum cleaner 100, for example at the rear end 110, and may be of any design.

[0033] In the example shown, the vacuum cleaner 100 comprises a nozzle 112 and a cyclone unit 114, which together preferably form a surface cleaning head 116 of

the vacuum cleaner 100. In the example shown, the surface cleaning head 116 is preferably provided at the front end 108 of the vacuum cleaner 100.

[0034] Nozzle 112 engages a surface to be cleaned, and comprises a dirty air inlet 118, through which dirty air is drawn into the vacuum cleaner 100. An airflow passage extends from the dirty air inlet 118 to a clean air outlet 120 of the cleaner 100. In the example shown, clean air outlet 120 is at the rear end 110 of the cleaner 100.

[0035] Cyclone unit 114 is provided in the airflow passage, downstream of the dirty air inlet 118. Cyclone unit 114 may be any cyclone unit. In the example shown, the cyclone unit 114 is a one piece assembly comprising one cyclone 122, and one dirt collection chamber 124, which are preferably integrally formed. In alternate examples, the cyclone unit 110 may include more than one cyclonic stage, wherein each cyclonic stage comprising one or more cyclones and one or more dirt chambers. Accordingly, the cyclones may be arranged in parallel and/or in sequence. Further, in alternate examples, the cyclone 122 and dirt collection chamber 124 may be separately formed.

[0036] In the example shown, the nozzle 112 is positioned at the lower portion 106 of the vacuum cleaner 100. Preferably, as exemplified, nozzle 112 is positioned at the bottom of the vacuum cleaner 100, and, preferably, beneath the cyclone unit 114. However, it will be appreciated that nozzle 112 may be connected to the cyclone unit or dirt collection chamber at alternate locations.

[0037] Preferably, as exemplified, nozzle 112 may be on lower surface 157 of cyclone unit 114. In a particularly preferred design, the upper wall of the nozzle may be a lower wall of the cyclone unit 114. As shown in Figure 6, dirt chamber 124 surrounds the lower portion of cyclone 122. Accordingly, the upper wall of nozzle 112 may be part of the lower wall of the dirt chamber. It will be appreciated that if dirt chamber 124 does not extend around the lower portion of cyclone 122, then the upper wall of nozzle 112 may be part of a lower wall of cyclone 122. In alternate embodiments, nozzle 112 and cyclone 122 or dirt chamber 124 need not have a common wall.

[0038] Preferably, in the example shown, the nozzle 112 is fixedly positioned at the lower portion 106 of the vacuum cleaner 100. That is, the nozzle 112 is not movable (e.g., rotatable) with respect to the remainder of the vacuum cleaner 100, and is fixed at the lower portion 106 of the vacuum cleaner 100.

[0039] As shown in Figures 3 and 5, nozzle 112 has a width WN, and cyclone unit 114 has a width WC. In the example shown, WN, and WC are about the same. An advantage of this design is that the nozzle 112 may have a cleaning path that is essentially as wide as the hand vacuum itself.

[0040] Preferably, nozzle 112 comprises an airflow chamber 136 wherein at least a portion, and preferably a majority, of the lower surface of the chamber 136 is open. Such a design is exemplified in Figure 7A wherein nozzle 112 comprises an upper nozzle wall 126. In the example shown, the upper nozzle wall 126 comprises a portion 119 of a wall 115 of the cyclone unit. Accordingly, nozzle 112 is integral with cyclone unit 114.

[0041] In an alternate design as exemplified by Figure 8, nozzle 812 comprises a lower wall 837, which closes lower end 834. Accordingly, nozzle 112 may be of various designs and may be an open sided passage or a closed passage. In either embodiment, it will be appreciated that nozzle 112 may be mounted or provided on cyclone unit 114 and as exemplified on a lower portion of the dirt collection chamber so as to be removable with the dirt collection chamber.

[0042] Preferably, if nozzle 112 is an open sided passage, one or more depending walls 128 extend downwardly from the upper nozzle wall 126. The depending wall 128 is preferably generally U-shaped. In one embodiment, depending wall is provided rearward of opening 138. In other embodiments, depending walls may alternately or in addition be provided on the lateral sides of opening 138. It is preferred that depending walls are provided on each lateral side of opening 138 and rearward thereof. Further, depending walls 128 may extend a substantial distance to the front end 108 and, preferably, essentially all the way to front end 108. The depending wall 128

may be continuous to define a single wall as shown, or may be discontinuous. The depending wall 128 is preferably rigid (e.g., integrally molded with cyclone unit 114). However, they may be flexible (e.g., bristles or rubber) or moveably mounted to cyclone unit 114 (e.g., hingedly mounted).

[0043] Preferably, the lower end 132 of depending wall 128 is spaced above the surface being cleaned when the hand vacuum cleaner is placed on a surface to be cleaned. As exemplified in Figure 6, when vacuum cleaner 100 is placed on a floor F, lower end 132 of depending wall 128 is spaced a distance H above the floor. Preferably distance H is from 0.01 inches to 0.175 inches, more preferably from 0.04 to 0.08 inches.

[0044] The height of the depending wall (between upper nozzle wall 126 and lower end 132) may vary. In some examples, the depending wall may have a height of between about 0.05 and about 0.875 inches, preferably between about 0.125 and about 0.6 inches and more preferably between about 0.2 and about 0.4 inches. The height of depending wall may vary but is preferably constant.

[0045] As exemplified, the open end of the U-shape defines an open side 130 of the nozzle 114, and forms the dirty air inlet 118 of the cleaner 100. In the example shown, the open side 130 is provided at the front of the nozzle 114. In use, when optional wheels 135 are in contact with a surface, the open side 130 sits above and is adjacent a surface to be cleaned (e.g. floor F). As mentioned hereinabove, preferably, lower end 132 of depending walls 128 is spaced above floor F. Accordingly, some air may enter nozzle 114 by passing underneath depending wall 132. In such a case, the primary air entry to nozzle 114 is via open side 130 so that dirty air inlet 118 is the primary air inlet, with a secondary air inlet being under depending wall 128.

[0046] In the example shown, the lower end 132 of the depending wall 128 defines an open lower end 134 of the nozzle 114. The open lower end 134 preferably extends to the front 108 of the cleaner 108, and merges with the open side 130. In use, the exemplified nozzle has an open lower end 134 that faces a surface to be cleaned.

[0047] In the example shown, a plurality of wheels 135 are mounted to the depending wall 128, and extend lower than the lower end 132 of the depending wall 128. Accordingly, in use, when wheels 135 are in contact with a surface, the lower end 132 of the depending wall 128 is spaced from the surface to be cleaned, and the space between the lower end of the depending wall 128 and the surface to be cleaned forms the secondary dirty air inlet to the vacuum cleaner 100. It will be appreciated that wheels 135 are optional. Preferably, wheels 135 are positioned exterior to the airflow path through nozzle 112, e.g., laterally outwardly from depending wall 128. Preferably a pair of front wheels 135 are provided. Preferably, the wheels are located adjacent front 108. Optionally, one or more rear wheels 108 may be provided. In an alternate embodiment, no wheels may be provided.

[0048] The upper nozzle wall 126, depending wall 128, and open lower end 134 of the nozzle 112 define the open sided airflow chamber 136 of the nozzle. In use, when wheels 135 are in contact with a horizontal surface, the nozzle 112 and the airflow chamber 136 extend generally horizontally, and preferably linearly along a nozzle axis 113 (see Figure 7A).

[0049] An opening 138 is provided in the upper nozzle wall 126, and is in communication with the airflow chamber 136. Opening 138 may be of any size and configuration and at various locations in upper nozzle wall 126. In use, when wheels 135 are in contact with a surface, the opening 138 faces a surface to be cleaned, air enters the dirty air inlet 118, passes horizontally through the airflow chamber 136, and passes into the opening 138. Opening 138 is in communication with a cyclone inlet passage 139, which is in communication with a cyclone air inlet 140 of cyclone 122.

[0050] Cyclone 122 may be of any configuration and orientation. Preferably, cyclone 122 comprises a chamber wall 142, which in the example shown, is cylindrical. The cyclone chamber is located inside chamber wall 142. The cyclone 122 extends along an axis 123, which, in the example shown, is preferably parallel to the nozzle axis 113 and the cleaner axis 125, and, and preferably extends generally horizontally when cleaner 100 is in use and wheels 135 are seated on a surface. Cyclone 122 has a front end

196, which is towards, and preferably at the front end 108 of the hand vacuum cleaner, and a rear end 198. Accordingly, in a preferred embodiment as exemplified, the front end of cyclone unit 112 is part of or forms the front or leading wall of the vacuum cleaner 100. Accordingly, for example, other than a nozzle, no operating component of the vacuum cleaner 100 is preferably in front of the openable portion.

[0051] Preferably, the cyclone air inlet and the cyclone air outlet are at the same end of the cyclone 122 and the dirt outlet is at an opposed end. The cyclone air outlet may be covered by a screen or shroud or filter as is known in the art. As exemplified, the cyclone air inlet 140 is defined by an aperture in the chamber wall 142, and is at the rear 198 of the cyclone 122. As can be seen in Figure 5, the inlet passage 139 is configured such that air enters the cyclone 122 in a tangential flow path, e.g., passage 139 may be arcuate. The air travels in a cyclonic path in the cyclone, and dirt in the air is separated from the air. The air exits the cyclone via an outlet passage 144, through outlet 145. Outlet 145 is defined in a rear wall 179 of the cyclone unit 114. Accordingly, as exemplified, cyclone inlet 140 and outlet 145 are at the same end, and more particularly, the rear end 198, of the cyclone 122.

[0052] As exemplified in Figure 6, a plate 174 may be provided adjacent outlet passage 144, spaced from and facing the inlet 176 to outlet passage 144. Plate 174 may be mounted to cyclone 122 via legs 178. In the example shown, plate 174, and legs 178 form an assembly 182 that is removably mounted in cyclone 122. In some examples, a screen may be mounted around legs 178.

[0053] The dirt that is separated from the air exits the cyclone via dirt outlet 146, and enters dirt collection chamber 124. Dirt collection chamber 124 may be any dirt collection chamber. Preferably, as exemplified, dirt outlet is at the front 196 of the cyclone 122, and further, is at the front end 108 of the cleaner 100. The dirt collection chamber may be internal or external to the cyclone chamber 122. Preferably, as exemplified, the dirt collection chamber is external. The dirt collection chamber may be in communication with the cyclone chamber by any means known in the art. Accordingly, one or more dirt outlets may be provided.

[0054] In the example shown, dirt collection chamber 124 preferably comprises two portions. A first portion 148 is provided immediately adjacent the dirt outlet 146, and is at the front end 108 of the cleaner 100. A second portion 150 is concentric with the cyclone 122. A lower portion 152 of the second portion 150 is below the cyclone. As exemplified, nozzle 112 is positioned below first portion 148, and lower portion 152. Accordingly, dirt chamber 124 may comprise an annular chamber surrounding the cyclone 122.

[0055] A separation plate 154 may be provided in the dirt collection chamber 124, adjacent the dirt outlet 146, and in facing relation to the dirt outlet. The separation plate 154 aids in preventing dirt in dirt collection chamber 124 from re-entering cyclone 122. Preferably, plate 154 is spaced from dirt outlet 146. Plate 154 may be mounted by any means to any component in cyclone unit 114. As exemplified, the separation plate is mounted on an arm 156, which extends from a front wall 158 at the front 108 of the cleaner 100.

[0056] Cyclone unit 114 may be emptied by an openable door positioned at the front end of the vacuum cleaner and preferably comprises a front wall thereof. The door may be opened while the cyclone unit is mounted to the vacuum cleaner. Alternately, or in addition, the door may be opened when the cyclone unit has been removed from the vacuum cleaner. The door may be openably mounted to the cyclone unit or another portion of vacuum cleaner 100 by any means. For example, one or more latches 159 may secure the door in position. Alternately, the door may be opened, e.g., pivoted open, and then optionally removable.

[0057] For example, one of the ends of the cyclone unit 114 may be openable. As exemplified in Figures 4 and 5A, in the example shown, front wall 158 is pivotally mounted to the cyclone unit wall 115 at pivots 177 and serves as an openable door 158 of the dirt chamber 124, such that dirt collection chamber 124 is openable, and dirt collection chamber 124 may be emptied.

[0058] The door is preferably provided at the front of the vacuum cleaner, or on a surface that does not face another component of the vacuum cleaner. Accordingly, the dirt collection chamber is openable both when the dirt collection chamber is mounted to the hand vacuum cleaner, or when it is removed. When door 158 is pivoted away from the remainder of the cyclone unit 114, separation plate 154 and arm 156 also preferably pivot away or removed from the remainder of the cyclone unit. A latch 159 is provided, which secures door 158 to wall 115.

[0059] Further, referring to Figure 5B, in the example shown, openable door 158 is removably mounted to cyclone unit wall 115. That is, openable door 158 may be removed from vacuum cleaner 100 by a user, and may be re-mounted to vacuum cleaner 100. Openable door 100 may be removably mounted by any means known in the art. For example, pivots 177 may be releasable from door 158 or wall 115, or may be separable into two portions as shown. In alternate embodiments, a plurality of mechanical fasteners, such as latches 159, may be used.

[0060] The rear portion of the dirt collection chamber 124 may be closed by wall 179.

[0061] The clean air exiting cyclone 122 passes through outlet 145 of outlet passage 144, exits surface cleaning head 116, and passes into the cleaner body 160. In the example shown, the cleaner body 160 is positioned rearward of the surface cleaning head 116. The cleaner body comprises a suction motor housing 168, which houses an optional pre-motor filter 162, a suction motor 164 and may house an optional post-motor filter 166.

[0062] In the example shown, suction motor housing 168 further houses a pre-motor filter 162. Pre-motor filter 162 is provided in the airflow path preferably adjacent and downstream of the outlet passage 144, and facing the outlet 145. Pre-motor filter 162 serves to remove remaining particulate matter from air exiting the cyclone 122, and may be any type of filter, such as a foam filter. One or more filters may be used. In the exemplified embodiments, the vacuum cleaner has a linear configuration. If the vacuum

cleaner is of a non-linear configuration, then pre-motor filter 162 need not be located adjacent outlet passage 144.

[0063] Suction motor 164 is provided in the airflow path preferably adjacent and downstream of the pre-motor filter 162. The suction motor 164 may be any type of suction motor. The suction motor draws air into the dirty air inlet 118 of the cleaner 100, through the airflow path past the suction motor 164, and out of the clean air outlet 120. The suction motor 164 has a motor axis 165. In the example shown, the motor axis 165 and the cyclone axis 123 preferably extend in the same direction and are preferably generally parallel. In the exemplified embodiments, the vacuum cleaner has a linear configuration. If the vacuum cleaner is of a non-linear configuration, then motor 164 need not be located adjacent pre-motor filter 162.

[0064] The cleaner body 160 further preferably comprises a post-motor filter housing 170. A post motor filter 166 is provided in the post-motor filter housing 170. The post motor filter 166 is provided in the airflow path downstream of, and preferably adjacent, the suction motor 164. Post motor filter 166 serves to remove remaining particulate mater from air exiting the cleaner 100. Post-motor filter 166 may be any type of filter, such as a HEPA filter. If the vacuum cleaner is of a non-linear configuration, then post motor filter 166 need not be located adjacent suction motor 164

[0065] Clean air outlet 120 is provided downstream of post-motor filter 166. Clean air outlet 120 may comprise a plurality of apertures formed in housing 170.

[0066] Referring to Figure 7B, the dirt collection chamber 124 is preferably removable from the hand vacuum cleaner 100, and in the example shown, is removable as a sealed unit for emptying. In the example shown, the cyclone unit 114 comprises the dirt collection chamber 124. Accordingly, the cyclone unit 114 is removable from the hand vacuum cleaner. As the cyclone unit 114 is integral with nozzle 112 and airflow chamber 136, nozzle 112 and airflow chamber 136 are removable from the cleaner 100 with cyclone unit 114.

[0067] As can be seen in Figure 7B, when the cyclone unit 114 is removed from the hand vacuum cleaner, and particularly from motor housing 168, it is sealed, except for the fluid flow passages leading to and from the first cyclone unit (i.e. opening 138 and outlet 145). That is, wall 179 and front wall 158 seal the cyclone unit 114. In order to empty the dirt collection chamber 124, the front wall 158 may be opened, and the dirt may be emptied from dirt chamber 124.

[0068] As exemplified, in order to remove cyclone unit 114 from the surface cleaning apparatus, the cyclone unit comprises a first mounting member 173, and the suction motor housing 168 has a second mounting member 175. The first 173 and second 175 mounting members are releasably engageable with each other. In the example shown, the first 173 and second 175 mounting members comprise a bayonet mount. In alternate examples, the first and second mounting members may be another type of mounting member, such as mating screw threads, magnets, mechanical members such as screws or any other type of mounting members.

[0069] One or more additional wheels 180 may be mounted to housing 161, preferably at lower portion 106, and may be used in conjunction with wheels 135. Preferably, a single rear wheel 180 is provided. Preferably, rear wheel 180 is located on a centre line of the vacuum cleaner and rearward of the depending wall 128.

[0070] Referring now to Figure 8, in which like numerals refer to like features, with the first digit incremented to 8 to refer to the figure number, an alternate example of a hand vacuum cleaner 800 is shown. As discussed previously, nozzle 812 comprises a lower wall 837, which closes lower end 834..

[0071] Cleaner 800 further comprises a second cyclone unit 851 downstream of the first cyclone unit 814, between first cyclone unit 814 and pre-motor filter 862. Second cyclone unit 851 may be any cyclone unit. In the example shown, the second cyclone unit 851 comprises a plurality of cyclones in parallel, a second cyclone unit inlet 853, and a plurality of second cyclone unit outlets 853. Each of the plurality of cyclones is parallel to the first cyclone axis 823.

[0072] In the example shown, first cyclone unit 814 is removably mounted to second cyclone unit 851, and second cyclone unit 851 is removably mounted to cyclone unit 114.

CLAIMS:

1. A hand vacuum cleaner comprising:
 - a) a front end and a rear end;
 - b) an air flow passage extending from a dirty air inlet to a clean air outlet;
 - c) a first cyclone unit positioned in the air flow passage, the first cyclone unit comprising at least one cyclone and at least one dirt collection chamber;
 - d) the dirt collection chamber having an openable door positioned at the front end; and,
 - e) a suction motor positioned in the air flow passage.
2. The hand vacuum cleaner of claim 1 wherein the at least one cyclone has a cyclone front end, a cyclone rear end, a cyclone air inlet and a cyclone air outlet and the cyclone front end is at the front end of the hand vacuum cleaner.
3. The hand vacuum cleaner of claim 1 wherein the cyclone front end has a dirt outlet and a separation plate is mounted in facing relation to the dirt outlet.
4. The hand vacuum cleaner of claim 3 wherein the separation plate is mounted to the door.
5. The hand vacuum cleaner of claim 2 wherein the cyclone air inlet and the cyclone air outlet are at the same end.
6. The hand vacuum cleaner of claim 5 wherein the cyclone air inlet and the cyclone air outlet are at the cyclone rear end.
7. The hand vacuum cleaner of claim 1 wherein the at least one cyclone has a cyclone axis extending longitudinally through the at least one cyclone, the hand vacuum cleaner has an axis extending from the front end to the rear end and the cyclone axis is generally parallel to the axis of the hand vacuum cleaner.

8. The hand vacuum cleaner of claim 1 wherein the first cyclone unit is positioned forward of the suction motor.
9. The hand vacuum cleaner of claim 1 wherein the door is openable when mounted to the hand vacuum cleaner.
10. The hand vacuum cleaner of claim 1 wherein the door is removable.
11. The hand vacuum cleaner of claim 1 wherein the door is pivotally mounted to the hand vacuum cleaner.
12. The hand vacuum cleaner of claim 1 wherein the dirt collection chamber is removable from the hand vacuum cleaner.
13. The hand vacuum cleaner of claim 1 wherein the dirt collection chamber is removable from the surface cleaning apparatus as a sealed unit for emptying.
14. The hand vacuum cleaner of claim 13 wherein the first cyclone unit is sealed when removed from the hand vacuum cleaner other than fluid flow passages leading to and from the first cyclone unit.
15. The hand vacuum cleaner of claim 1 wherein the dirt collection chamber is removable from the hand vacuum cleaner with the first cyclone unit.
16. The hand vacuum cleaner of claim 1 wherein the first cyclone unit has a single cyclone and a single dirt collection chamber.
17. The hand vacuum cleaner of claim 16 wherein the single dirt collection chamber is positioned exterior to the single cyclone.
18. The hand vacuum cleaner of claim 17 wherein the single cyclone and the single dirt collection chamber comprise a one-piece assembly.

19. The hand vacuum cleaner of claim 18 wherein the single cyclone and the single dirt collection chamber are integrally formed.

20. The hand vacuum cleaner of claim 1 wherein the hand vacuum cleaner further comprises a suction motor housing, the suction motor is positioned in the suction motor housing and the first cyclone unit is removably mounted to the suction motor housing.

21. The hand vacuum cleaner of claim 1 further comprising a second cyclone unit downstream from the first cyclone unit.

ABSTRACT

A hand vacuum cleaner comprises at least one cyclone and at least one dirt collection chamber. The dirt collection chamber has an openable door positioned at the front end of the vacuum cleaner.

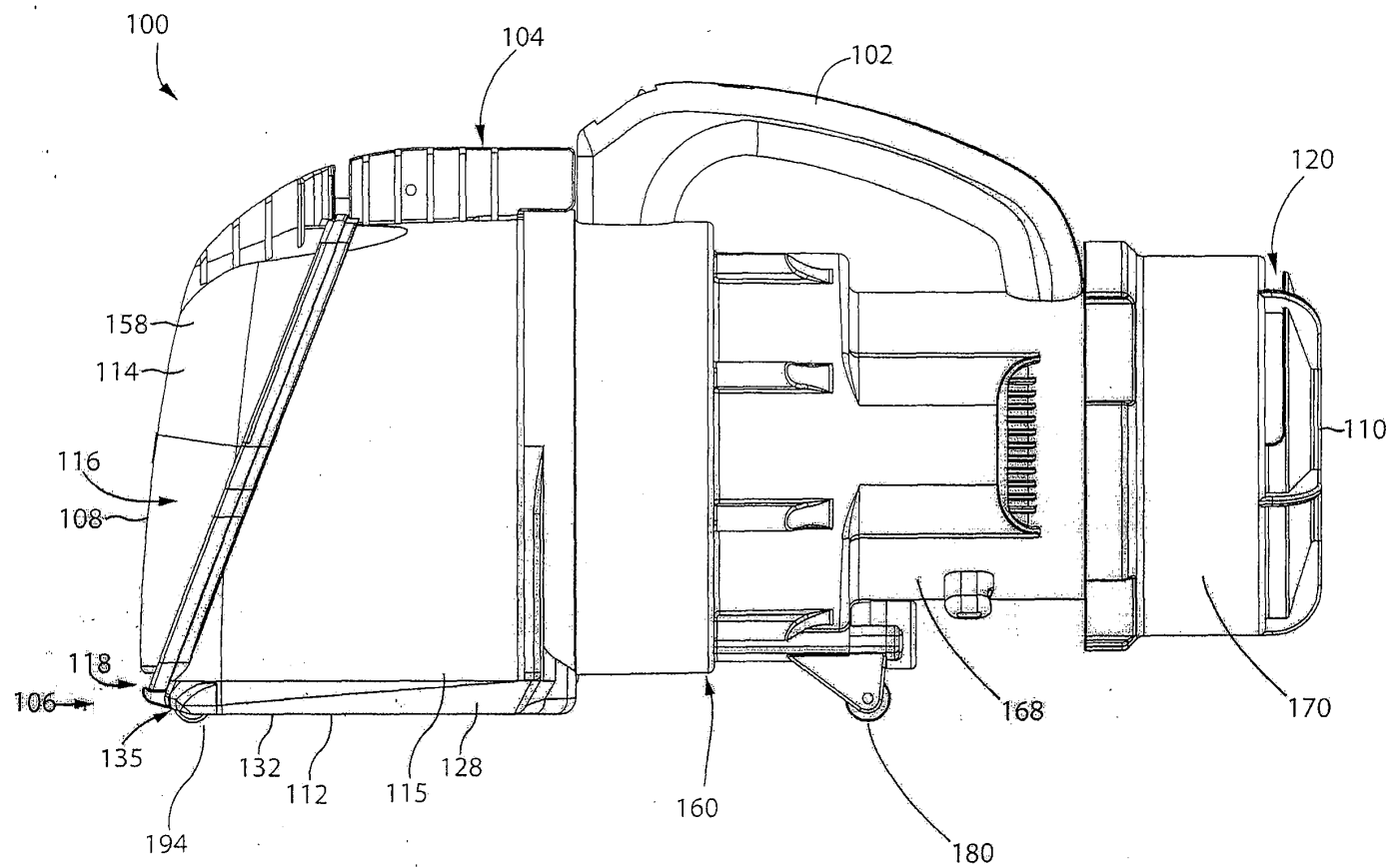


Fig. 1

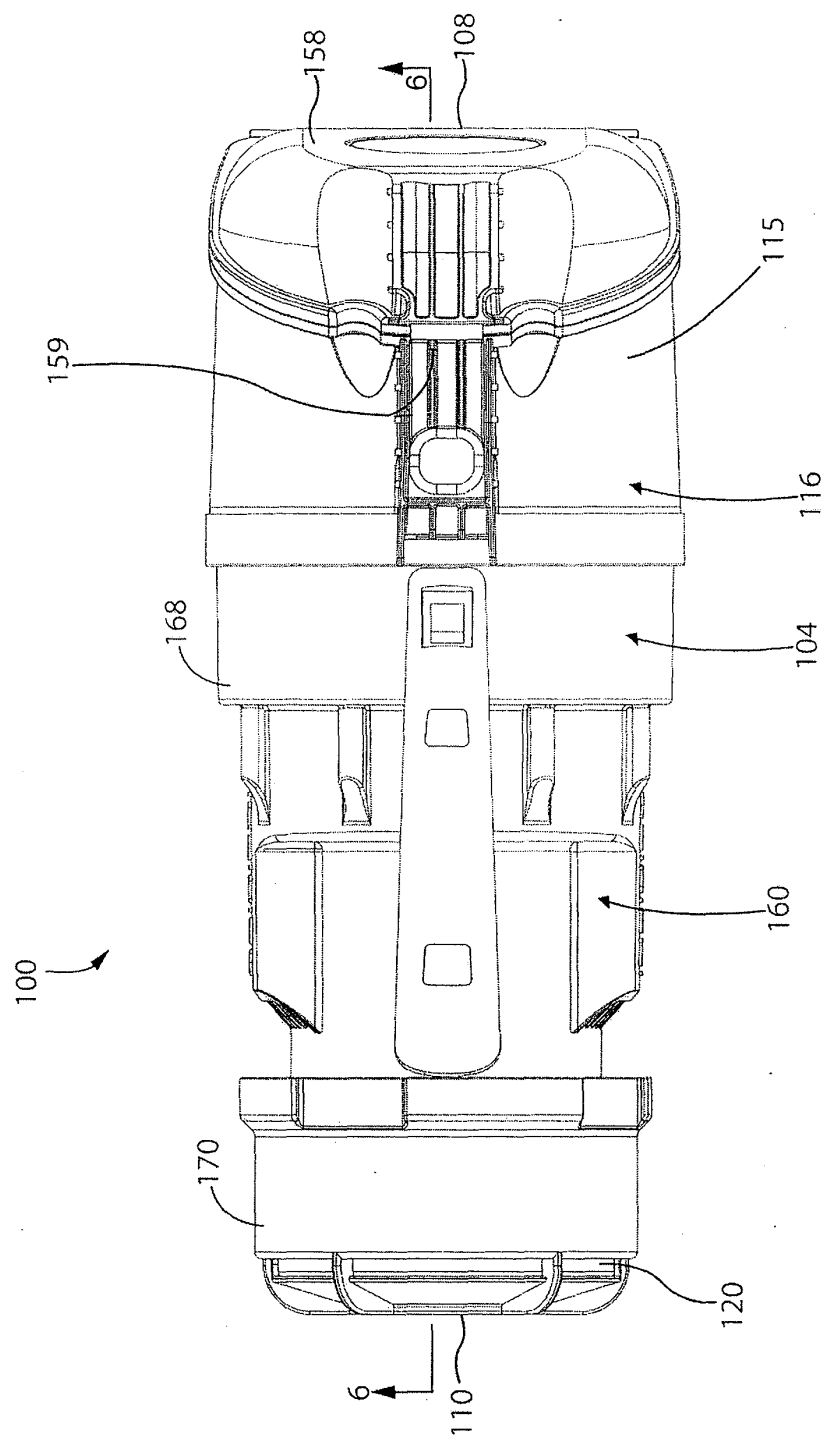


Fig. 2

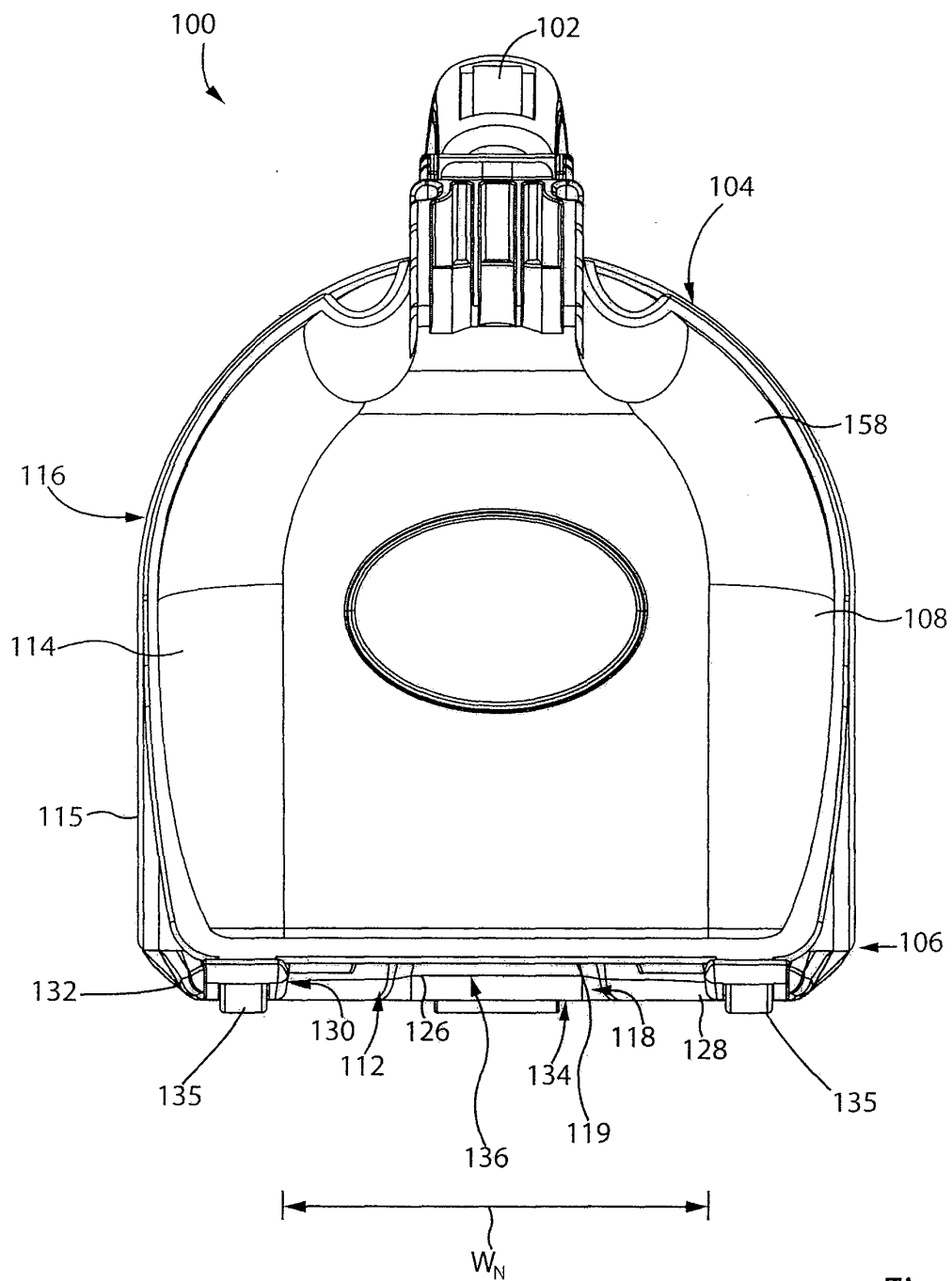


Fig. 3

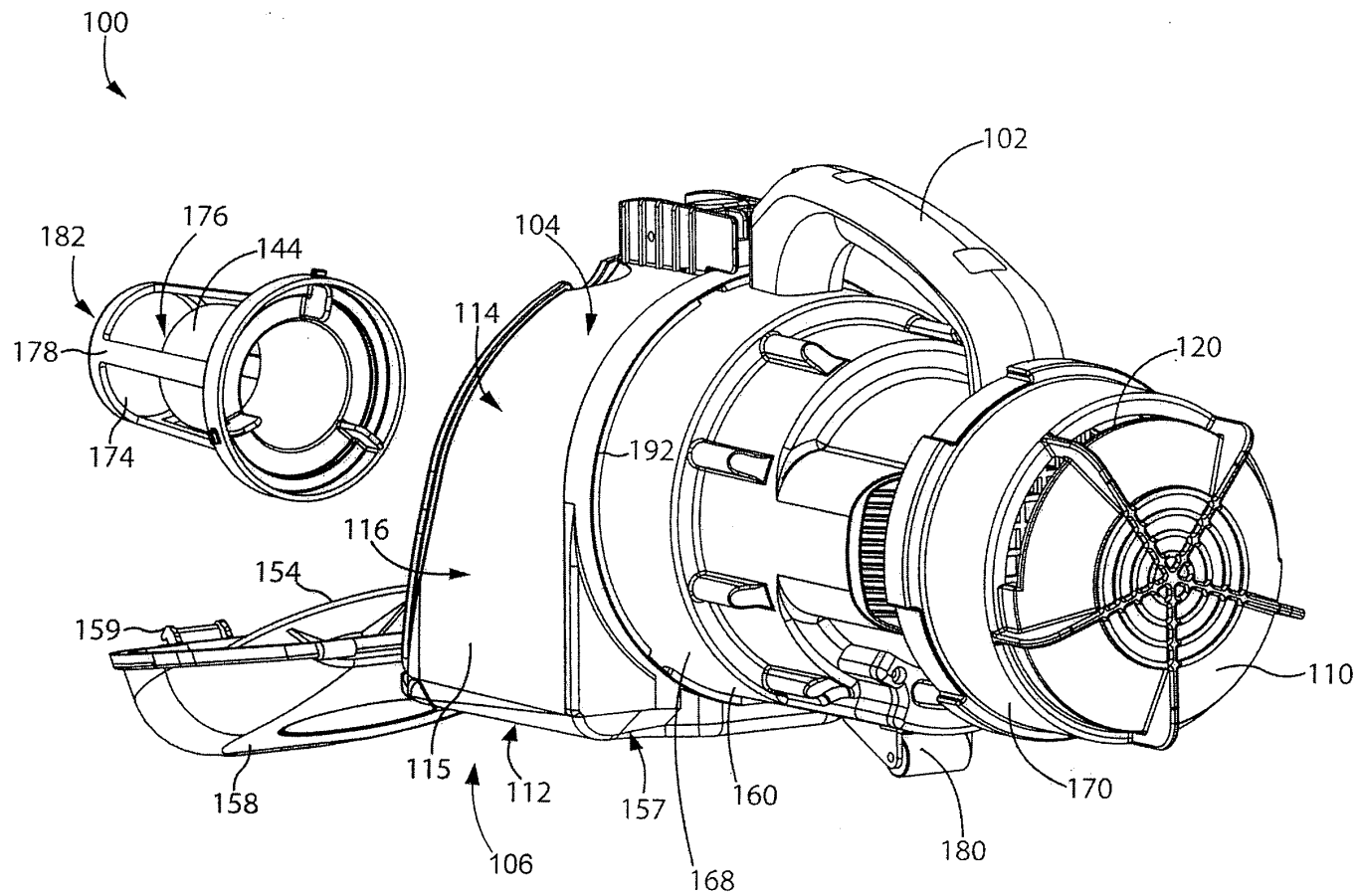


Fig. 4

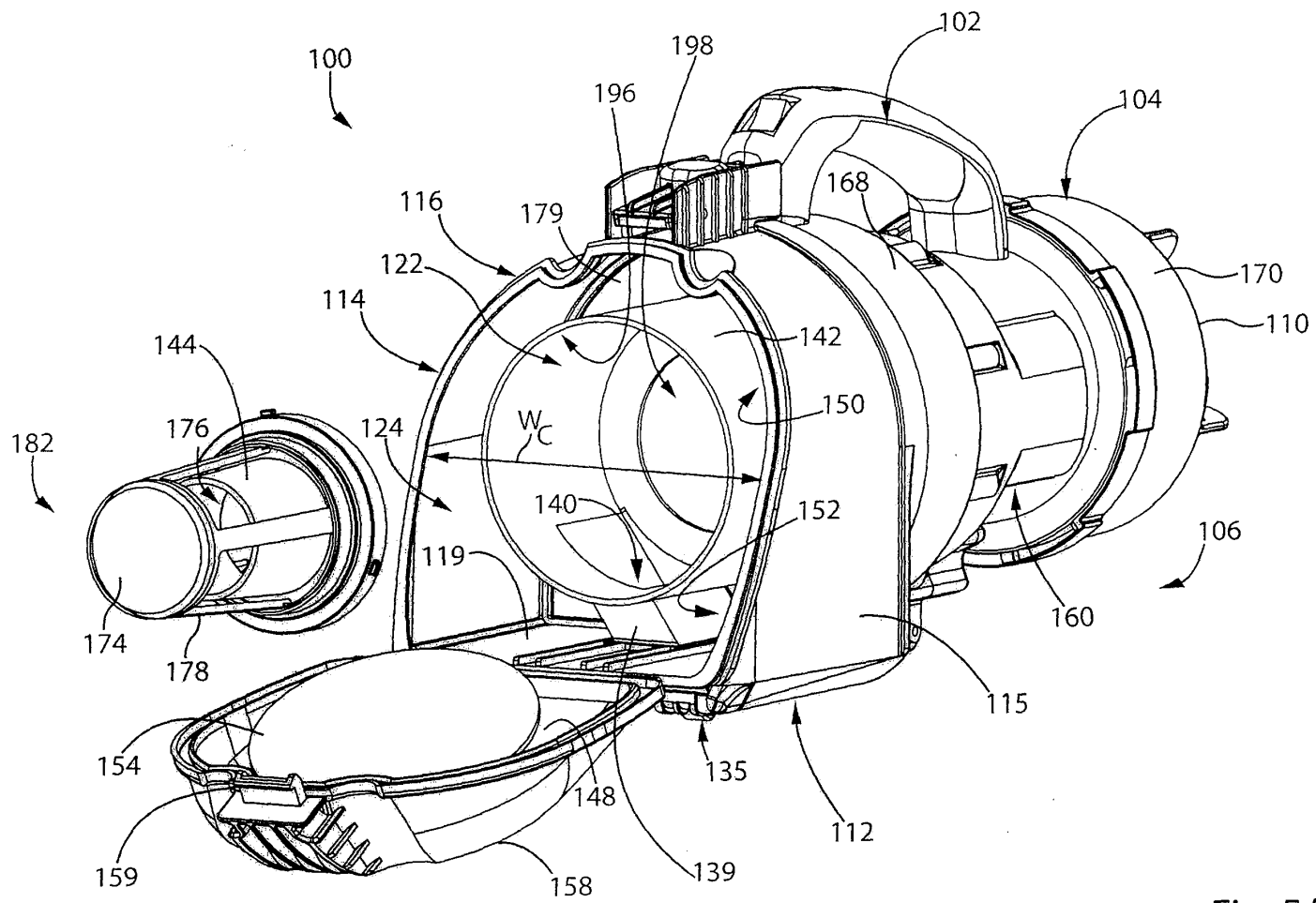


Fig. 5A

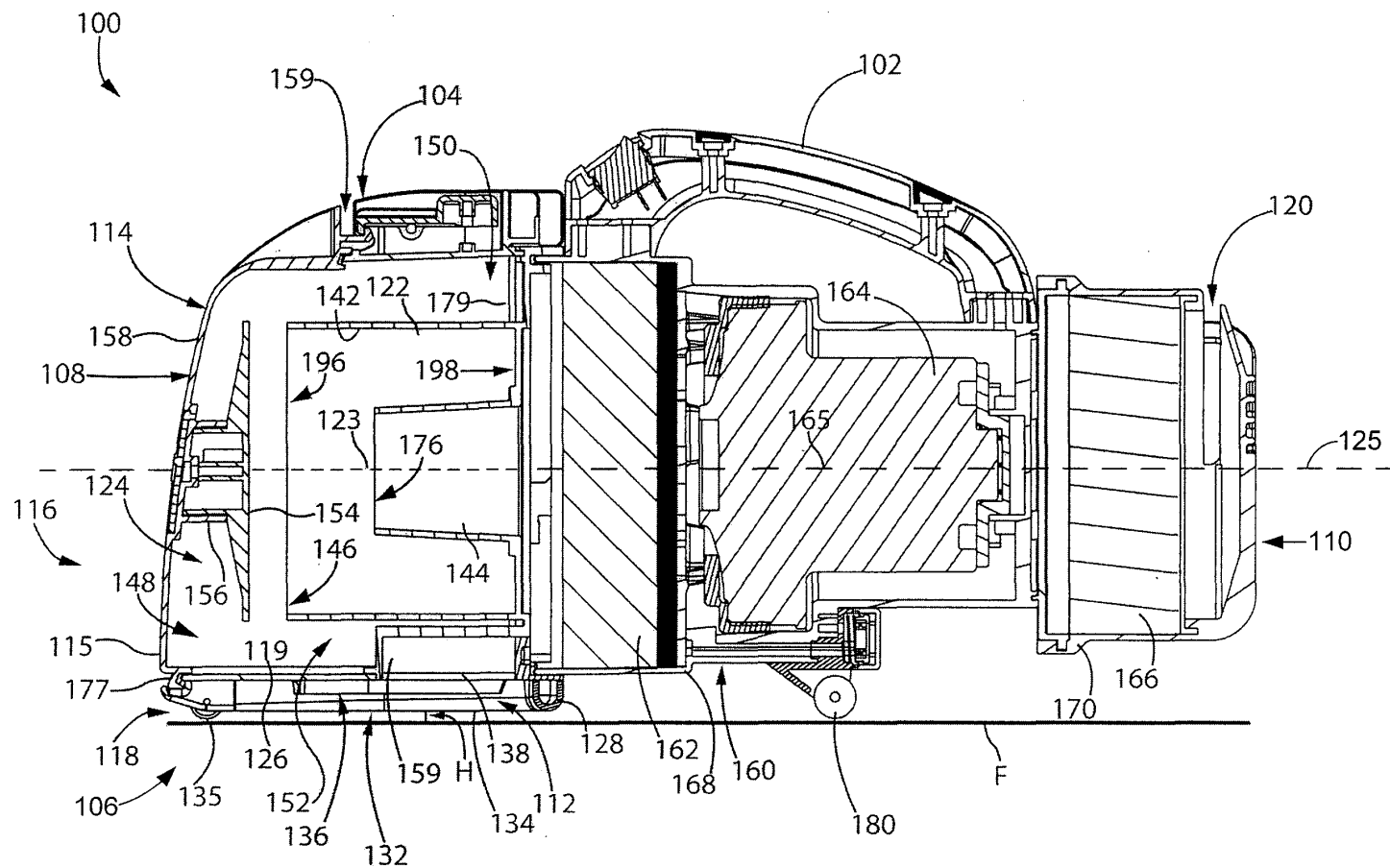


Fig. 6

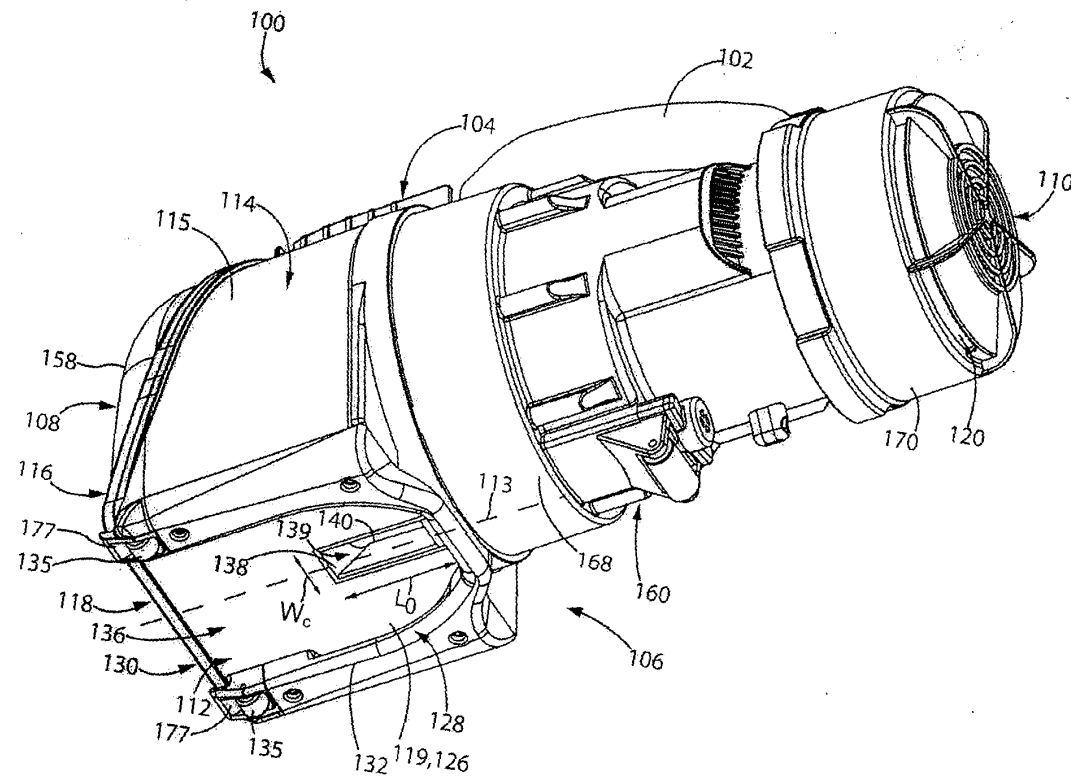


Fig. 7a

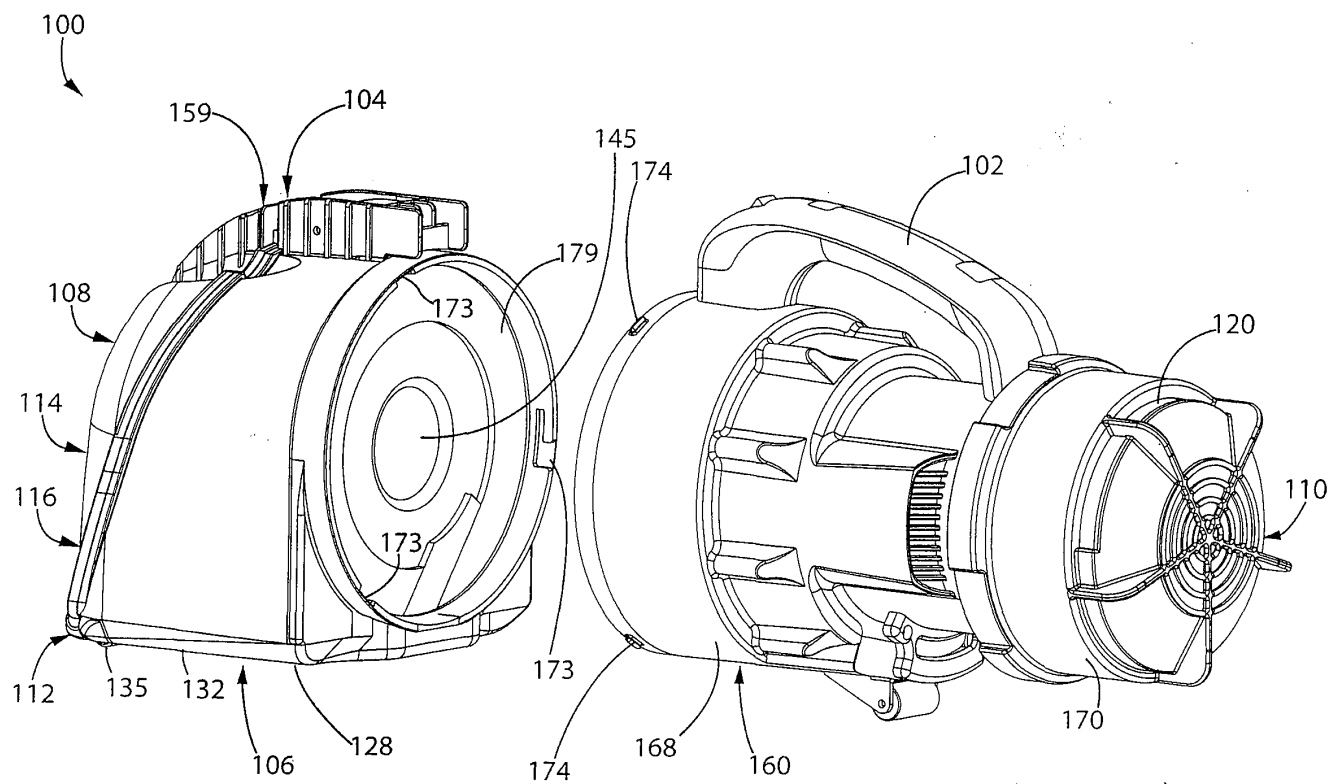


Fig. 7b

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		CONFIGURATION OF A HAND VACUUM CLEANER		
First Named Inventor/Applicant Name:		Wayne Ernest Conrad		
Filer:		Philip C. Mendes da Costa/Snezana Lisowsky		
Attorney Docket Number:		16697-48		
Filed as Small Entity				
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Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	82	82
Utility Search Fee	2111	1	270	270
Utility Examination Fee	2311	1	110	110
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
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Post-Allowance-and-Post-Issuance:				
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Total in USD (\$)				462

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First Named Inventor/Applicant Name:	Wayne Ernest Conrad
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Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	48Transmittal.PDF	119491	no	1
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Warnings:					
Information:					
2	Application Data Sheet	48ADS.pdf	1089112	no	4
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Electronic Patent Application Fee Transmittal				
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Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				26

Electronic Acknowledgement Receipt	
EFS ID:	7175852
Application Number:	12720484
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Confirmation Number:	9161
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Filer Authorized By:	Philip C. Mendes da Costa
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Payment Type	Deposit Account
Payment was successfully received in RAM	\$26
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Authorized User	
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (PTO-875)	fee-info.pdf	30189	no	2
			2f66a390074bca4311d3228dd0d98381b14bddd		

Warnings:

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30189

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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.

Date: 03/09/10

Approved for use through 7/31/2006. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/720,484																															
APPLICATION AS FILED – PART I																																				
(Column 1)		(Column 2)		SMALL ENTITY		OR																														
OTHER THAN SMALL ENTITY																																				
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)																														
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	82	N/A																															
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	270	N/A																															
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	110	N/A																															
TOTAL CLAIMS (37 CFR 1.16(i))	21	minus 20 = 1	x\$26	26	x\$52																															
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1	minus 3 = *	x\$110		x\$220																															
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$260 (\$130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR																																			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			195		390																															
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* If the difference in column 1 is less than zero, enter "0" in column 2.																																				
APPLICATION AS AMENDED – PART II																																				
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
12/720,484	03/09/2010	3723	488	16697-48	21	1

CONFIRMATION NO. 9161

FILING RECEIPT



1059
BERESKIN AND PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
BOX 401
TORONTO, ON M5H 3Y2
CANADA

Date Mailed: 03/18/2010

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Applicant(s)

Wayne Ernest Conrad, Hampton, CANADA;

Assignment For Published Patent Application

G.B.D. CORP., Nassau, BAHAMAS

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

Domestic Priority data as claimed by applicant

Foreign Applications

CANADA 2658019 03/11/2009

If Required, Foreign Filing License Granted: 03/17/2010

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/720,484**

Projected Publication Date: 09/16/2010

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

CONFIGURATION OF A HAND VACUUM CLEANER

Preliminary Class

015

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/720,484	03/09/2010	Wayne Ernest Conrad	16697-48

CONFIRMATION NO. 9161

POA ACCEPTANCE LETTER

1059
BERESKIN AND PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
BOX 401
TORONTO, ON M5H 3Y2
CANADA



Date Mailed: 03/18/2010

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

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The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/Itaba/

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	12720484
	Filing Date	2010-03-09
	First Named Inventor	CONRAD, Wayne Ernest
	Art Unit	
	Examiner Name	
	Attorney Docket Number	16697-48

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	2	2008009888	WO	A1	2008-01-24	Dyson Technologies Limited		☐
	3	2008009883	WO	A1	2008-01-24	Dyson Technologies Limited		☐

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	Filing Date	2010-03-09
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	Art Unit	
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	Attorney Docket Number	16697-48

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	12720484
	Filing Date	2010-03-09
	First Named Inventor	CONRAD, Wayne Ernest
	Art Unit	
	Examiner Name	
	Attorney Docket Number	16697-48

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☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

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Signature	/Philip C. Mendes da Costa/	Date (YYYY-MM-DD)	2010-06-16
Name/Print	Philip C. Mendes da Costa	Registration Number	33106

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(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
24 January 2008 (24.01.2008)

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0618492.3 20 September 2006 (20.09.2006) GB
- (71) Applicant (for all designated States except US): **DYSON TECHNOLOGY LIMITED** [GB/GB]; Tetbury Hill, Malmesbury Wiltshire SN16 0RP (GB).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **DYSON, James** [GB/GB]; c/o Dyson Technology Limited, Tetbury Hill, Malmesbury Wiltshire SN16 0RP (GB).
- (74) Agents: **SMITH, Gillian Ruth** et al.; Dyson Technology Limited, Intellectual Property Department, Tetbury Hill, Malmesbury Wiltshire SN16 0RP (GB).

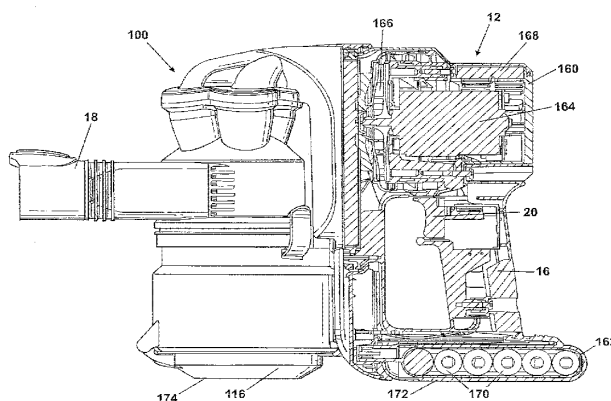
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Published:
— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HANDHELD CLEANING APPLIANCE



(57) Abstract: The invention provides a handheld cleaning appliance (10) comprising a main body (12), a dirty air inlet (18), a clean air outlet (24) and a cyclonic separator (100) for separating dirt and dust from an airflow located in an airflow path leading from the air inlet (18) to the air outlet (24). The cyclonic separator (100) is arranged in a generally upright orientation. A base surface (172) of the main body (12) and a base surface (174) of the cyclonic separator (100) together form a base surface of the appliance (10) for supporting the appliance (10) on a surface. By providing a base surface of the appliance (10), which is made up of the base surface (172) of the main body (12) and the base surface (174) of the cyclonic separator (100), the appliance (10) is provided with a substantial base surface on which the appliance (10) can be stably and reliably supported. This is also achieved without substantially increasing the size of the appliance (10) as a whole.

WO 2008/009890 A1

Handheld Cleaning Appliance

The invention relates to a handheld cleaning appliance particularly, but not exclusively,
5 to a handheld vacuum cleaner. More particularly, the invention relates to a handheld
cleaning appliance having a cyclonic separator.

Handheld vacuum cleaners are well known and have been manufactured and sold by
various manufacturers for several years. Typically, a handheld vacuum cleaner
10 comprises a casing which houses a motor and fan unit for drawing air into the cleaner
via an inlet, and a separation device such as a filter or bag for separating dirt and dust
from the incoming airflow. An example of such a vacuum cleaner is shown in
GB1207278.

15 Handheld vacuum cleaners have more recently been developed to incorporate cyclonic
separation systems which are capable of removing larger items of debris from the
airflow before removing finer particles using a filter or other barrier means. An
example of such a device is sold by Black & Decker under the trade name
DUSTBUSTER®. These vacuum cleaners are generally elongate in shape with a
20 handle at or near a first end and a dirty air inlet located at the end remote from the
handle. The cyclonic separator is therefore commonly arranged generally in a
horizontal direction. This can affect the performance of the cyclonic separator or its
capacity to collect dirt and dust.

25 A further example of a handheld vacuum cleaner incorporating a cyclonic separator is
shown in GB2035787A. In this arrangement, the cyclonic separator is arranged in an
upright configuration and has a base surface on which the appliance can be supported.
However, the base surface of the cyclonic separator is relatively small in comparison to
the appliance as a whole and the appliance is therefore relatively unstable when
30 balanced on the base surface of the cyclonic separator.

It is therefore an object of the present invention to provide a handheld cleaning appliance incorporating a cyclonic separator which is oriented in a generally upright configuration for improved capacity and performance, the appliance being more convenient and stable to store on a flat surface.

5

The invention provides a handheld cleaning appliance comprising a main body, a dirty air inlet, a clean air outlet and a cyclonic separator for separating dirt and dust from an airflow located in an airflow path leading from the air inlet to the air outlet, the cyclonic separator being arranged in a generally upright orientation, wherein a base surface of the main body and a base surface of the cyclonic separator together form a base surface of the appliance for supporting the appliance on a surface.

10

By providing a base surface of the appliance, which is made up of a base surface of the main body and a base surface of the cyclonic separator, the appliance is provided with a substantial base surface on which the appliance can be stably and reliably supported. This is also achieved without substantially increasing the size of the appliance as a whole.

15

Preferably, the base surface of the main body and the base surface of the cyclonic separator are each substantially planar. More preferably, the base surface of the main body lies adjacent the base surface of the cyclonic separator. Still more preferably, the base surface of the main body lies in the plane of the base surface of the cyclonic separator.

20

In a preferred embodiment, the main body includes a motor and/or battery unit arranged above the base surface of the main body. In this arrangement, the centre of gravity of the motor and/or battery unit passes through the base surface of the main body which enhances the stability of the main body when it is supported on the base surface thereof. More preferably, the motor and/or battery unit is arranged immediately above the base surface of the main body for further enhancing the stability of the main body.

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It is also preferred that the width of the base surface of the main body is at least one half of the width of the cyclonic separator. This provides further increased stability of the base surface of the appliance.

- 5 An embodiment of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 shows a handheld cleaning appliance according to the invention;

- 10 Figure 2 is a side view of the appliance of Figure 1;

Figure 3 is a longitudinal cross section through the cyclonic separating apparatus forming part of the appliance of Figure 1;

- 15 Figure 4 is a side view similar to Figure 2 but with the main body shown in section; and

Figure 5 is a rear view of the appliance of Figure 1.

- Figures 1 and 2 show a handheld vacuum cleaner 10. The handheld vacuum cleaner 10
20 has a main body 12 which houses a motor and fan unit (not shown). The main body 12 also includes a power source 14 such as a battery. A handle 16 is provided on the main body 12 for manipulating the handheld vacuum cleaner 10 in use. A cyclonic separator 100 is attached to the main body 12. A dirty air inlet 18 extends from a portion of the cyclonic separator 100 remote from the main body 12. A brush tool 22 is slidably
25 mounted on the distal end of the dirty air inlet 18. A set of exhaust vents 24 are provided on the main body 12 for exhausting air from the handheld vacuum cleaner 10.

- The cyclonic separator 100 is located between the main body 12 and the dirty air inlet 18. Consequently, the cyclonic separator 100 is located between the handle 16 and the
30 dirty air inlet 18. The cyclonic separator 100 has a longitudinal axis 26 which extends

in a generally upright direction so that the axis 26, and therefore the cyclonic separator 100, lies substantially parallel to the direction in which the handle 16 extends.

5 The orientation of the handle 16 is such that, when the user grips the handle 16, the user's hand forms a fist in a manner similar to that adopted when gripping a saw. This ensures that the user's wrist is not strained more than necessary when manipulating the handheld vacuum cleaner 10 for cleaning purposes. The cyclonic separator 100 is positioned close to the handle 16 which also reduces the moment applied to the user's wrist when the handheld vacuum cleaner 10 is in use. The handle 16 carries an on/off
10 switch 20 in the form of a trigger for turning the vacuum cleaner motor on and off.

The cyclonic separating apparatus 100 forming part of the handheld vacuum cleaner 10 is shown in more detail in Figure 3. The cyclonic separating apparatus 100 comprises a first cyclone 102 which has a longitudinal axis X-X and a collector 105 having a wall
15 104. An inlet 110 is formed in the upper portion of the wall 104. The inlet 110 is in communication with the dirty air inlet 18 and forms a communication path between the dirty air inlet 18 and the interior of the first cyclone 102. The air inlet 110 is arranged tangentially to the first cyclone 102 so that the incoming air is forced to follow a helical path around the interior of the first cyclone 102.

20 A base 116 closes the collector 105 at one end of the first cyclone 102. The base 116 is pivotably mounted on the lower end of the wall 104 by means of a hinge 118. The base 116 is retained in a closed position (as shown Figures 1, 2 and 3) by means of a catch 120 which interengages with a lip 150 located on the wall 104. When the catch 120 is
25 released, the base 116 will drop away from the wall 104.

A shroud 121 is located inwardly of the wall 104 of the first cyclone 102. The shroud 121 comprises a part-cylindrical, part-frustoconical wall 122 having a plurality of through-holes 123. The shroud 121 surrounds an outlet 124 from the first cyclone 102.
30 The outlet 124 provides a communication path between the first cyclone 102 and a second cyclone assembly 126. A lip 128 is provided at the base of the shroud 121. The

lip 128 has a plurality of through-holes 129 which are designed to allow air to pass through but to capture dirt and dust.

5 The second cyclone assembly 126 comprises a plurality of second cyclones 130 arranged in parallel with one another. In this embodiment, six second cyclones 130 are provided. The second cyclones 130 are arranged around the axis X-X of the first cyclone 102. The arrangement of the second cyclones 130 is such that the second cyclones 130 are spaced equi-angularly around the axis X-X. Each second cyclone 130 has a tangentially-arranged air inlet and an air outlet (not shown) located at a first end of
10 the respective second cyclone 130. A cone opening 136 is located at a second end of each second cyclone 130. The plane of the cone opening 136 of each second cyclone 130 is inclined with respect to a longitudinal axis (not shown) of the respective further cyclone 130. The cone opening 136 of each of the second cyclones 130 is in communication with a passageway 138 defined by a wall 140 located inwardly of the
15 shroud 121.

A collector 142 is located at the lower end of the passageway 138. The collector 142 comprises a frustoconical first portion 144 and a cylindrical second portion 146. The interior of the collector 142 is delimited by the base 116 and the sides of the first and
20 second portions 144, 146 of the collector 142.

Each of the air outlets of the second cyclones 130 is in communication with a duct 150. The duct 150 provides an airflow path from the cyclonic separating apparatus 100 into other parts of the handheld vacuum cleaner 10. Located at the downstream end of the
25 duct 150 is a pre-motor filter 152. The pre-motor filter 152 comprises a porous material such as foam and can also include a fine filter material. The pre-motor filter 152 is designed to prevent any fine dust particles from entering the motor and causing damage thereto.

30 In use, when the on/off switch 20 is depressed, the motor and fan unit draws a flow of dirt-laden air into the dirty air inlet 18 and then into the cyclonic separator 100. Dirt-

laden air enters the cyclonic separator 100 through the inlet 110. Due to the tangential arrangement of the inlet 110, the airflow is forced to follow a helical path around the interior of the wall 104. Larger dirt and dust particles are separated by cyclonic motion around the wall 104. These particles are then collected at the base 116 of the first cyclone 102.

The partially-cleaned airflow then flows back up the interior of the first cyclone 102 and exits the first cyclone 102 via the through-holes 123 in the shroud 121. Once the airflow has passed through the shroud 121, it enters the outlet 124 and from there is divided between the tangential inlets of each of the second cyclones 130. Each of the second cyclones 130 has a diameter which is smaller than that of the first cyclone 102. Therefore, the second cyclones 130 are able to separate smaller particles of dirt and dust from the partially-cleaned airflow than the first cyclone 102. Separated dirt and dust exits the second cyclones 130 via the cone openings 136. Thereafter, the separated dirt and dust passes down the passageway 138 and into the collector 142. The separated dirt and dust eventually settles at the bottom of the collector 142 on the base 116.

Cleaned air then flows back up the second cyclones 130, exits the second cyclones 130 through the air outlets and enters the duct 150. The cleaned air then passes from the duct 150 sequentially through the pre-motor filter 152, the motor and fan unit, and a post-motor filter before being exhausted from the vacuum cleaner 10 through the air vents 24.

The first cyclone 102 and the collector 142 can be emptied simultaneously by releasing the catch 120 to allow the base 116 to pivot about the hinge 118 so that the separated dirt and dust can fall away from the cyclonic separator 100. By positioning the cleaning appliance 10 above a suitable dirt receptacle such as a dustbin, the dirt and dust collected in the cyclonic separator can be efficiently and reliably emptied. The user may close the cyclonic separator 100 by moving the base 116 back into the closed position shown in Figures 1 and 2 by hand.

Figure 4 shows the vacuum cleaner 10 in side view with the main body 12 in section. The remainder of the appliance is as shown in Figure 2 except that the distal end of the dirty air inlet 18 and the brush tool 22 have been omitted. The main body 12 includes the handle 16 (which carries the on/off switch 20), an upper portion 160 and a lower portion 162. The upper portion 160 houses the motor 164 and fan 166 by means of which dirty air is drawn into the appliance when the on/off switch is depressed. A post-motor filter 168 is also provided between the air outlet of the motor and the exhaust vents 24. The lower portion 162 houses a plurality of battery cells 170 for powering the motor 164 when the on/off switch 20 is depressed. Suitable connections between the switch 20, the batteries 170 and the motor 164 are provided within the main body 12.

The lower portion 162 is shaped so as to include a base surface 172 which is planar and faces downwardly away from the handle 16 and away from the upper portion 164. The lower portion 162 is also generally rectangular in shape as can be seen from Figure 1. The base surface 172 of the lower portion 164 forms a base surface of the main body 12. The motor 164 is positioned so that it lies vertically above the base surface 172 and the battery cells 170 are positioned immediately above the base surface 172.

The cyclonic separator 100 also has a base surface 174 which is formed by the lowermost extremity of the base 116. This base surface 174 of the cyclonic separator 100 in this embodiment is shaped as an annular ring as can be seen in Figure 3. The annular ring defines the planar base surface 174. Naturally, the base 116 could have been shaped so that the area inside the annular ring forming the base surface 174 was planar but this makes no difference to the invention.

As can be seen in Figure 4, the base surface 172 of the main body 12 and the base surface 174 of the cyclonic separator 100 lie in the same plane. Together they comprise a base surface of the handheld vacuum cleaner 10. The base surface 172 of the main body 12 lies adjacent the base surface 174 of the cyclonic separator 100 as can also be seen in Figure 4.

The base surface of the handheld vacuum cleaner 10 provides the vacuum cleaner 10 with a surface on which the appliance can be placed at intervals between periods of use or for storage. Because the base surface extends beyond the area of one or the other of the base surface 172 and the base surface 174, the base surface provided for the entire machine is more stable than would otherwise be the case. This is important because the handheld cleaning appliance 10 has a height which exceeds that of many known handheld vacuum cleaners due to the upright configuration of the cyclonic separator 100.

10 The positioning of one or the other of the motor 164 and the battery cells 170 vertically above the base surface 172 of the main body 12 enhances the stability of the handheld vacuum cleaner 10 when it is placed on the base surface. This is because the centre of gravity of the motor 164 and/or the battery cells 170, which are relatively heavy components of the handheld vacuum cleaner 10, passes through the base surface 172 of
15 the main body.

The rectangular shape of the lower portion 162 also assists in enhancing the stability of the vacuum cleaner when it is supported on the base surface formed by the base surface 172 of the main body 12 and the base surface 174 of the cyclonic separating apparatus
20 100. This is because an inadvertent knock to the vacuum cleaner 10 need not cause the vacuum cleaner 10 to topple over if the width of the lower portion 162 is sufficiently wide to provide stability. As can be seen in Figure 5, the width b of the lower portion 172 is approximately two thirds of the width B of the widest part of the cyclonic separator 100, which is the collector 105. The width b of the lower portion 172 can be
25 as little one half of the width B of the cyclonic separator 100 if preferred.

The invention is not limited to the precise details of the embodiment described above. For example, the number of first and second cyclones can be varied, as can the detail of their design, such as their cone angle, axis inclination and cone opening inclination.
30 The shape of the collector and base can be altered, as can the precise location of the hinge and catch and the location of the actuator. The location of the on/off switch may

also be varied. What is important is the presence of a base surface on each of the cyclonic separator and the main body which together form a base surface for the handheld vacuum cleaner in a manner which allows the vacuum cleaner to be placed stably on a surface.

CLAIMS

1. A handheld cleaning appliance comprising a main body, a dirty air inlet, a clean air outlet and a cyclonic separator for separating dirt and dust from an airflow located in an airflow path leading from the air inlet to the air outlet, the cyclonic separator being arranged in a generally upright orientation, wherein a base surface of the main body and a base surface of the cyclonic separator together form a base surface of the appliance for supporting the appliance on a surface.
2. A handheld cleaning appliance as claimed in claim 1, wherein the base surface of the main body is substantially planar and the base surface of the cyclonic separator is also substantially planar.
3. A handheld cleaning appliance as claimed in claim 2, wherein the base surface of the main body lies in the plane of the base surface of the cyclonic separator.
4. A handheld cleaning appliance as claimed in any one of claims 1 to 3, wherein the base surface of the main body lies adjacent the base surface of the cyclonic separator.
5. A handheld cleaning appliance as claimed in any one of the preceding claims, wherein the main body includes a motor and/or a battery unit.
6. A handheld cleaning appliance as claimed in claim 5, wherein the motor and/or battery unit is arranged above the base surface of the main body.
7. A handheld cleaning appliance as claimed in claim 6, wherein the battery unit is arranged immediately above the base surface of the main body.
8. A handheld cleaning appliance as claimed in any one of the preceding claims, wherein the base surface of the main body is substantially rectangular in shape.

9. A handheld cleaning appliance as claimed in any one of the preceding claims, wherein the width of the base surface of the main body is at least one half of the width of the cyclonic separator.

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10. A handheld cleaning appliance substantially as hereinbefore described with reference to the accompanying drawings.

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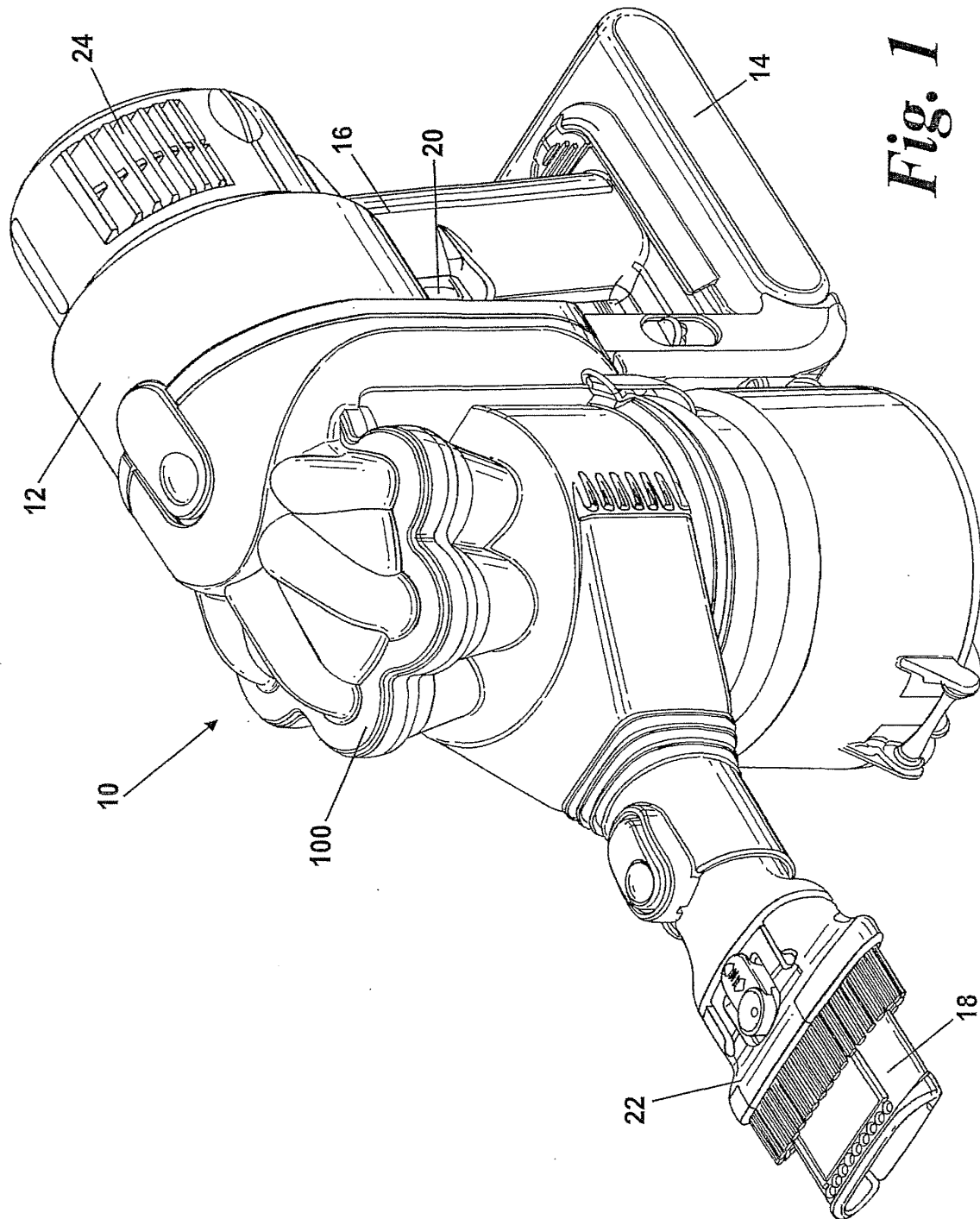


Fig. 1

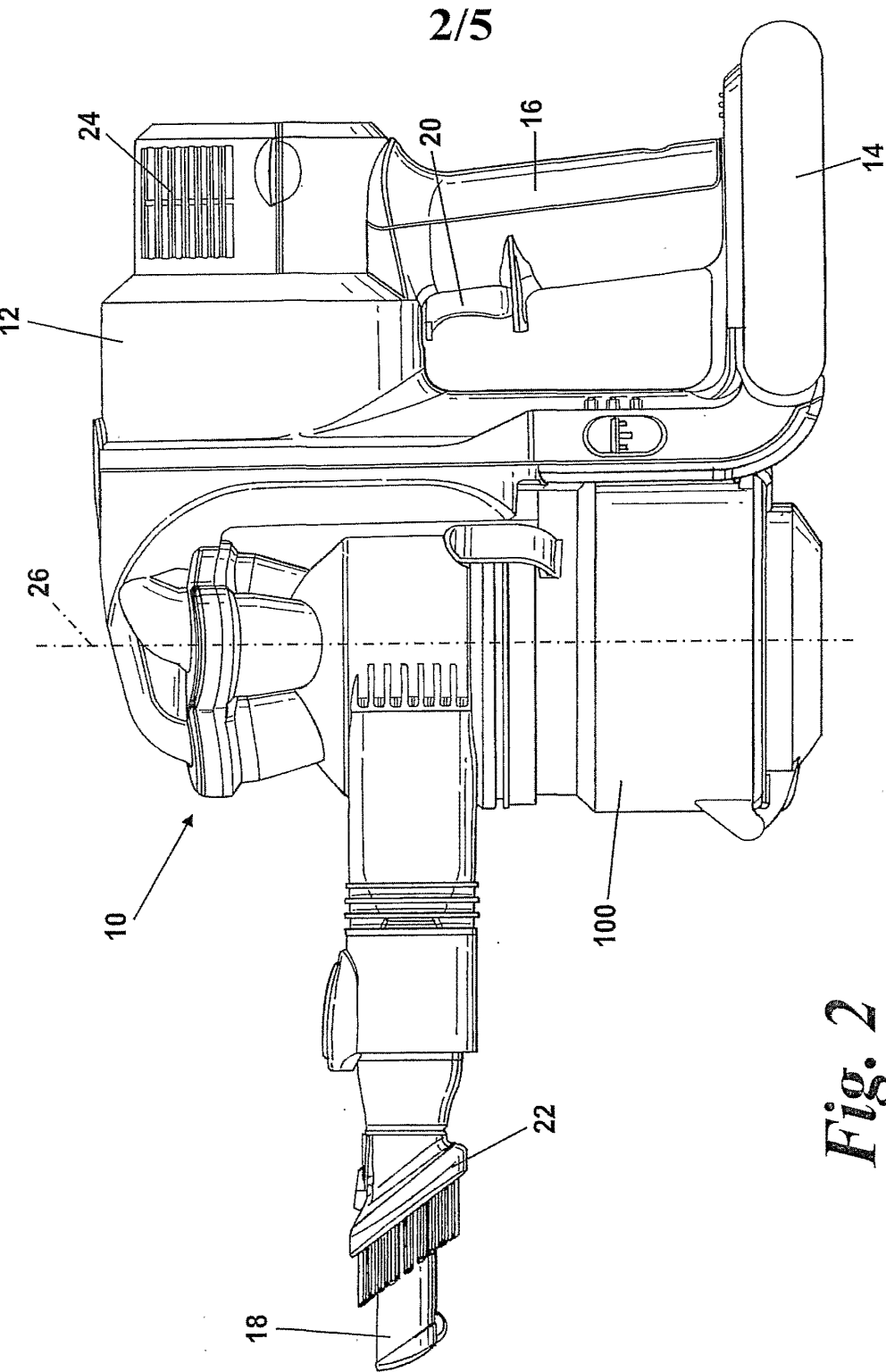


Fig. 2

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X

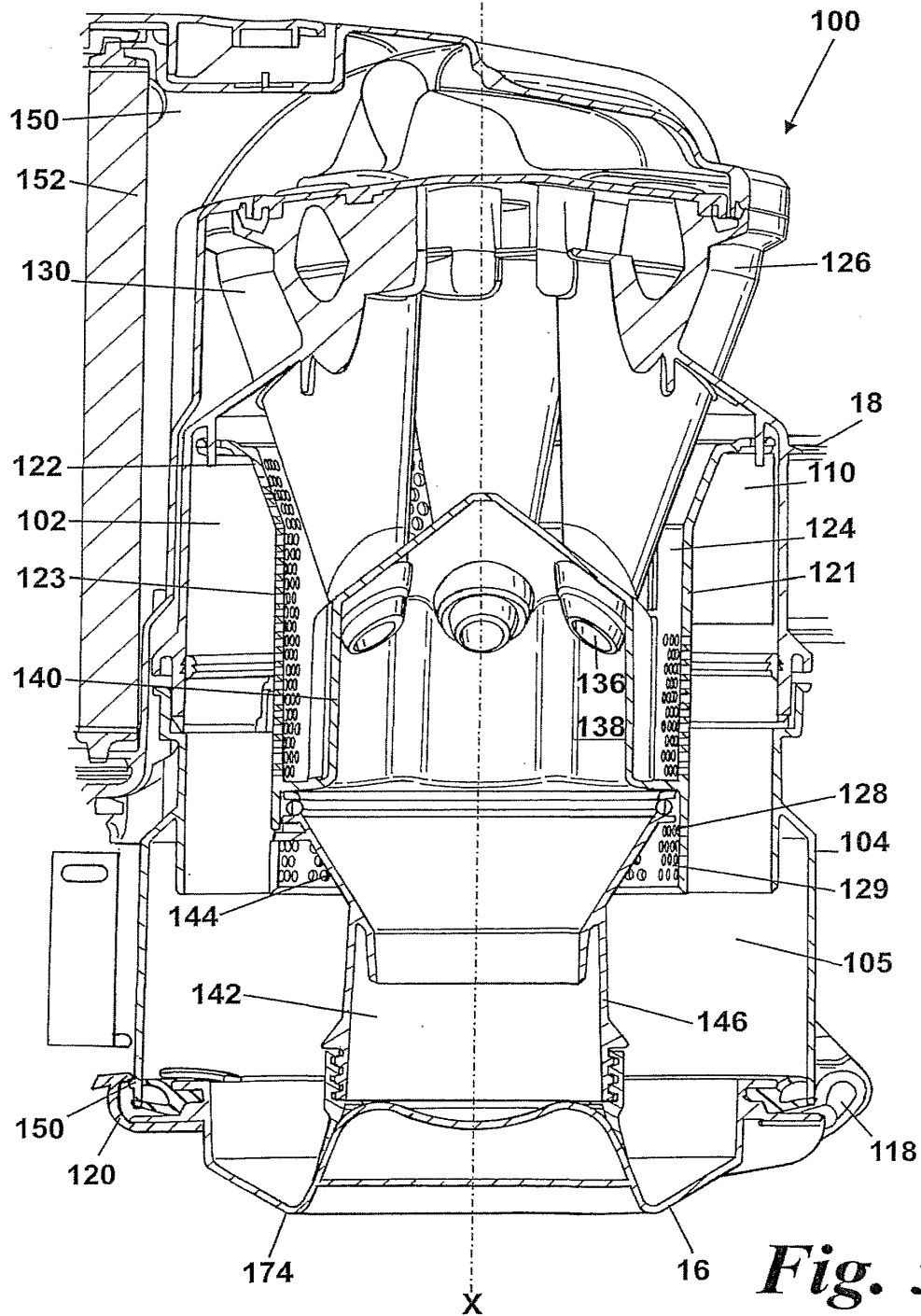


Fig. 3

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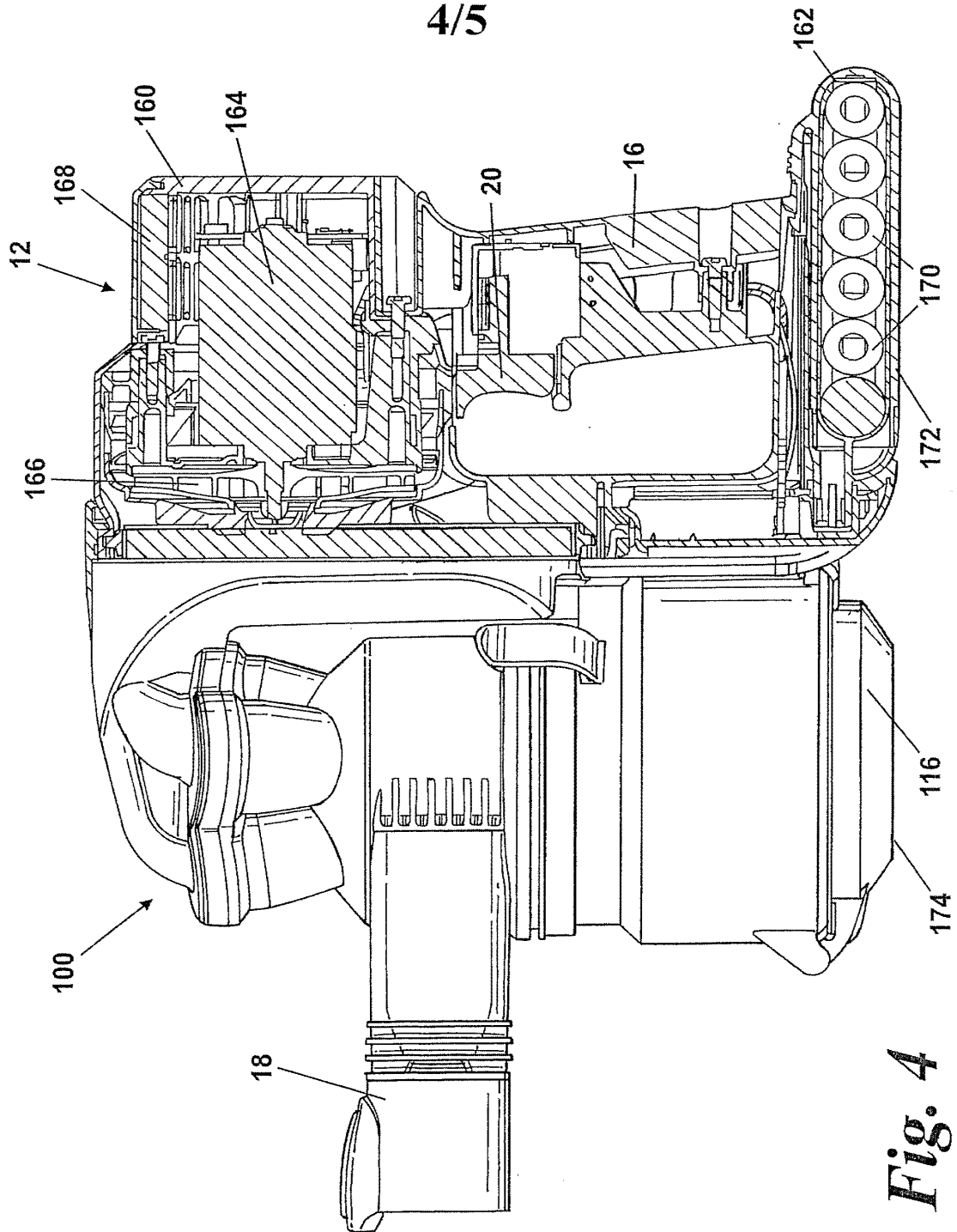


Fig. 4

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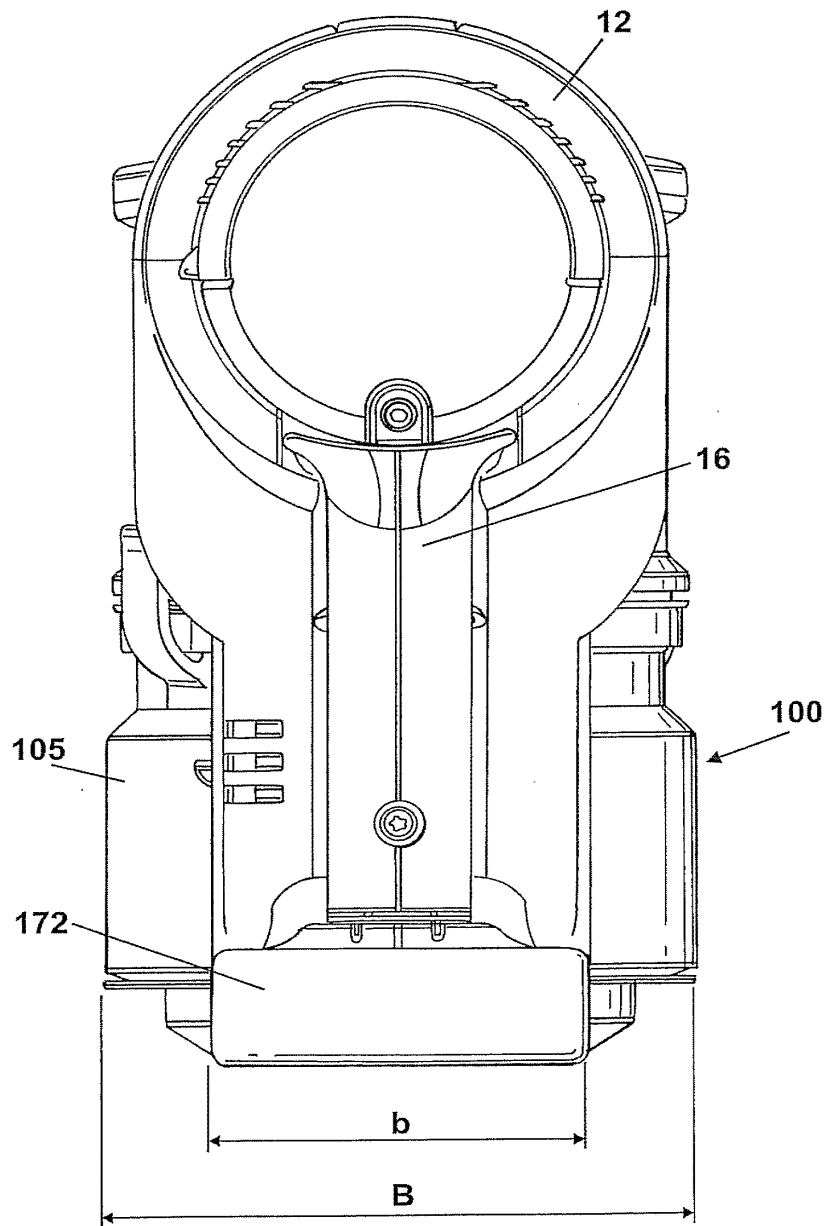


Fig. 5

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2007/002540

A. CLASSIFICATION OF SUBJECT MATTER

INV. A47L5/24 A47L9/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 035 787 A (L & H DESIGNS LTD & MERRITT H) 25 June 1980 (1980-06-25) cited in the application the whole document	1, 2, 4-9
A	US 2002/189048 A1 (MARUYAMA KANAME [JP] ET AL) 19 December 2002 (2002-12-19) paragraphs [0006] - [0014]	1-9
A	US 5 367 740 A (MCCRAY KIMOTHY R [US]) 29 November 1994 (1994-11-29) column 1, line 37 - column 2, line 15	1-9
A	US 2006/137132 A1 (ORUBOR LAWRENCE [CA]) 29 June 2006 (2006-06-29) paragraphs [0021] - [0047]	1-9

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

* & * document member of the same patent family

Date of the actual completion of the international search

18 September 2007

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2007/002540

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 10
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 10

The general references to the description and drawings used in claim 10 are vague and unclear and leave the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of said claim so unclear (Article 6 PCT) that no meaningful search can be carried out for said claim.

Furthermore, according to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2007/002540

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2035787	A	25-06-1980	NONE	
US 2002189048	A1	19-12-2002	JP 3674031 B2 JP 2003000497 A	20-07-2005 07-01-2003
US 5367740	A	29-11-1994	NONE	
US 2006137132	A1	29-06-2006	AU 2005321766 A1 WO 2006069436 A1	06-07-2006 06-07-2006

Form PCT/ISA/210 (patent family annex) (April 2005)

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PCT

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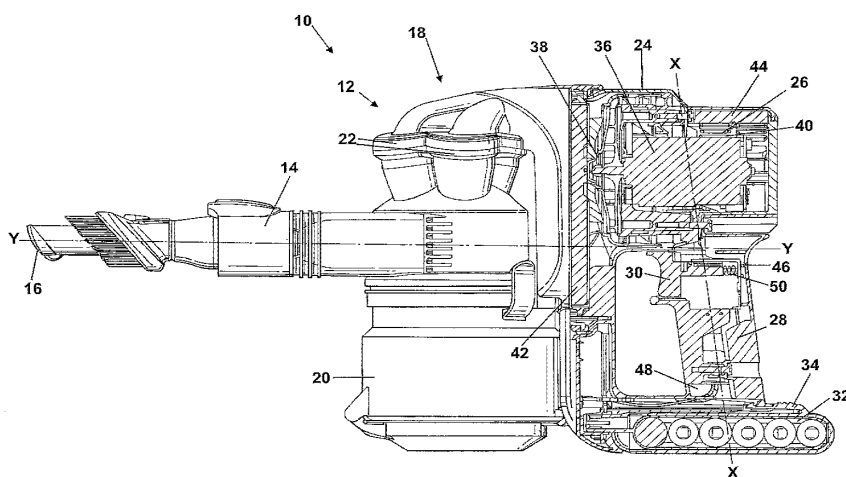
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Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A HAND-HELD CLEANING APPLIANCE



(57) Abstract: The invention provides a hand-held cleaning appliance (10) comprising a suction conduit (14) having a longitudinal axis (Y-Y), an airflow generator (36) for generating an airflow along the suction conduit (14), separating apparatus (18) arranged in communication with the suction conduit (14) for separating dirt and dust from the airflow, a power source (32) for supplying power to the airflow generator (36) and an elongate handle (28) disposed between the airflow generator (36) and the power source (32). The elongate handle (28) is dimensioned and arranged to be gripped by a user's hand and the elongate handle (28) lies transverse to the longitudinal axis (Y-Y) of the suction conduit. By providing a hand-held vacuum cleaner (10) with such an arrangement, the hand-held vacuum cleaner (10) is easier and more comfortable to manipulate in use.

WO 2008/009888 A1

A Cleaning Appliance

The invention relates to a hand-held cleaning appliance. More particularly, the invention
5 relates to a hand-held vacuum cleaner.

Hand-held vacuum cleaners are known from, for example, GB 1 207 278. This document discloses a hand-held vacuum cleaner having an elongate main body with an air inlet, a suction conduit and a dust bag for separating dirt and dust from an airflow. A
10 motor and fan assembly is provided in the main body together with a power source. A handgrip is located on the upper part of the hand-held vacuum cleaner. The handgrip extends parallel to the elongate main body at a shallow angle to the suction conduit, and both the airflow generator and the power source are located in the main body underneath the handgrip. JP 2004-041760 discloses a hand-held vacuum cleaner having
15 a similar handgrip arrangement. However, in this case, the motor and fan assembly and the power source of the hand-held vacuum cleaner are arranged so that the centre of gravity of the machine is located at the centre of the handgrip.

An alternative arrangement of handgrip is shown in US 1,871,624. This document
20 discloses a hand-held vacuum cleaner having a cylindrical main body and a handgrip arranged at one end. A curved suction conduit is located at an end opposite to the handgrip. The handgrip is arranged transversely to the longitudinal axis of the cylindrical main body and approximately parallel to the suction conduit. This arrangement may give the user a stronger wrist position in use than the handgrip
25 arrangements disclosed in GB 1 207 278 and JP 2004-041760. However, the heavy components of the vacuum cleaner (for example, the motor and fan assembly) are located forwardly of the handgrip relative to a user's hand when the vacuum cleaner is in use. Therefore, the centre of mass of the respective hand-held vacuum cleaner will be located forwardly of the handgrip. This may result in the hand-held vacuum cleaner
30 described above being tiring and uncomfortable to use because the user will have to

exert additional effort in order to maintain the hand-held vacuum cleaner in a fixed orientation.

It is an object of the present invention to provide a hand-held vacuum cleaner which is easier to manipulate in use than known arrangements. It is a further object of the present invention to provide a hand-held vacuum cleaner in which the arrangement of the handgrip, the motor and fan assembly and the power source allow the hand-held vacuum cleaner to be manipulated easily and comfortably.

The invention provides a hand-held cleaning appliance comprising a suction conduit having a longitudinal axis, an airflow generator for generating an airflow along the suction conduit, separating apparatus arranged in communication with the suction conduit for separating dirt and dust from the airflow, a power source for supplying power to the airflow generator and an elongate handle disposed between the airflow generator and the power source and dimensioned and arranged to be gripped by a user's hand, wherein the elongate handle lies transverse to the longitudinal axis of the suction conduit. By providing a hand-held cleaning appliance with such an arrangement, a user is able to maintain a comfortable wrist position and movement of the hand-held vacuum cleaner feels comfortable.

20

Preferably, the elongate handle lies at an angle to the longitudinal axis in the range of 80 to 90°. More preferably, the elongate handle lies at an angle to the longitudinal axis which is close to a right angle.

Preferably, the separating apparatus is located between the suction conduit and the elongate handle. This arrangement improves the weight balance of the hand-held vacuum cleaner.

Preferably, the suction conduit has a suction opening and the longitudinal axis passes through the suction opening. This arrangement feels natural for a user and is easy to use.

30

An embodiment of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is an isometric view of a hand-held vacuum cleaner according to the invention;

Figure 2 is a partially cut-away side view of the hand-held vacuum cleaner of Figure 1; and

Figure 3 is a plan view of the hand-held vacuum cleaner of Figure 1.

Figure 1 shows a hand-held vacuum cleaner 10. The hand-held vacuum cleaner 10 comprises a main body 12. The main body 12 includes a suction conduit 14 having a suction opening 16. The main body 12 also includes cyclonic separating apparatus 18 for separating dirt and dust from an airflow drawn in through the suction opening 16. The cyclonic separating apparatus 18 is in communication with the suction conduit 14 and the suction opening 16. The cyclonic separating apparatus 18 comprises an upstream cyclone 20 and a plurality of downstream cyclones 22 but further detail is not material to the invention and therefore will not be described.

The main body 12 further includes a motor housing 24 having a plurality of exhaust vents 26 formed therein. A flowpath extends from the suction opening 16, through the suction conduit 14, the cyclonic separating apparatus 18 and the motor housing 24 to the exhaust vents 26. A handgrip 28 is located below the motor housing 24 for manipulating the hand-held vacuum cleaner 10 when in use. The handgrip 28 is arranged so that the cyclonic separating apparatus 18 is located between the handgrip 28 and the suction opening 16. The handgrip 28 includes a trigger switch 30 which is positioned on the side of the handgrip 28 closest to the suction opening 16 such that the trigger switch 30 can be manipulated by a user's index finger. A power source 32 is connected to the handgrip 28 through a mounting portion 34.

Figure 2 shows the hand-held vacuum cleaner 10 in more detail. An airflow generator 36 is located in the motor housing 24. In this embodiment, the airflow generator 36 takes the form of a motor and fan assembly. The airflow generator 36 has an inlet 38 and an outlet 40. A pre-motor filter 42 is located upstream of the inlet 38 for filtering fine particulates from the airflow. A post-motor filter 44 is located downstream of the outlet 40. The pre-motor filter 42 and the post-motor filter 44 are located in the flowpath.

The handgrip 28 takes the form of an elongate handle and has a first end 46, a second end 48 and an axis X-X. The first end 46 of the handgrip 28 is connected to the motor housing 24. The airflow generator 36 is located adjacent the first end 46 of the handgrip 28. In this embodiment, the handgrip 28 and the airflow generator 36 are arranged such that the axis X-X of the handgrip 28 passes through at least a part of the airflow generator 36.

The mounting portion 34 removably receives the power source 32. When fitted to the hand-held vacuum cleaner 10, the power source 32 is located directly adjacent the second end 48 of the handgrip 28. In this embodiment, the power source 32 and the handgrip 28 are arranged so that the axis X-X passes through at least a part of the power source 32.

In other words, the handgrip 28 is arranged to lie between the airflow generator 36 and the power source 32. In this embodiment, the axis X-X passes through at least a part of each of the airflow generator 36 and the power source 32. Further, the axis X-X of the handgrip 28 lies transverse to a longitudinal axis Y-Y of the suction conduit 12. The longitudinal axis Y-Y passes through the suction opening 16. In this embodiment, the axis X-X is arranged at an angle to the longitudinal axis Y-Y which is close to 90°. This arrangement feels comfortable for a user.

The trigger switch 30 is located towards the first end 46 of the handgrip 28. The trigger switch 30 is located between the power source 32 and the airflow generator 36 and is

capable of switching the airflow generator 36 on or off. The trigger switch has on and off positions. The trigger switch moves from left to right as seen in Figure 2. The off position is located to the left, and the on position to the right. In the off position the trigger switch 30 is in an open state and the airflow generator 36 will be switched off. In the on position the trigger switch 30 will be closed and the airflow generator 36 will be switched on. The trigger switch 30 includes a spring 50 which biases the trigger switch 30 towards a normally open state. This arrangement allows the trigger switch 30 to be operated easily by a user's index finger. This in turn allows the hand-held vacuum cleaner 10 to be operated with one hand.

In use, a user grips the handgrip 28 to manipulate the hand-held vacuum cleaner 10 in use. When the user squeezes the trigger switch 30, the airflow generator 36 operates. The user must maintain pressure on the trigger switch 30 in order to keep the airflow generator 36 operating. This means that the user is likely to release the trigger switch 30 when he or she does not require a cleaning action, e.g. when moving from one room to another. If the user releases the trigger switch 30, the spring 50 will bias the trigger switch 30 to the off position and operation of the airflow generator 36 will cease. This reduces unnecessary use of the airflow generator 36 and results in a saving of battery life and motor life.

When operating, the airflow generator 36 draws a flow of dirt- and dust-laden air into the suction opening 16, through the suction conduit 14 and into the cyclonic separating apparatus 18. Dirt- and dust-laden air enters the upstream cyclone 20 and larger dirt and dust particles are separated by cyclonic motion. These particles are then collected in the upstream cyclone 20.

The partially-cleaned airflow then enters the plurality of downstream cyclones 22. The downstream cyclones 22 are able to separate smaller particles of dirt and dust from the partially-cleaned airflow than the upstream cyclone 20. The cleaned air exits the cyclonic separating apparatus 16 and passes sequentially through the pre-motor filter 42,

the airflow generator 36 and the post-motor filter 44 before being exhausted from the hand-held vacuum cleaner 10 through the exhaust vents 26.

5 In use, a user may wish to clean a variety of surfaces which may be orientated at different angles. Therefore, a user will need to lift and move the hand-held vacuum cleaner 10 into a variety of positions and orientations in order to clean effectively. The location of the handgrip 28 between the airflow generator 36 and the power source 32 allows the hand-held vacuum cleaner 10 to be manipulated easily in use. This is because the user's hand will be located between the two heaviest components of the hand-held vacuum cleaner 10. This results in a "dumbbell-like" configuration in which the weight of the hand-held vacuum cleaner 10 is distributed on both sides of the user's hand.

15 The transverse arrangement of the longitudinal axis Y-Y of the suction conduit 14 with respect to the axis X-X of the handgrip 28 results in the suction conduit 12 forming a substantially straight extension of the user's forearm when the user's wrist is essentially straight. This arrangement feels comfortable for the user, especially when the hand held vacuum cleaner 10 is used for a period of time. Further, the location of the longitudinal axis Y-Y of the suction conduit 14 close to the centre of the hand-held vacuum cleaner 10 means that the longitudinal axis Y-Y of the suction conduit 14 will be coincident, or close to, the longitudinal axis of rotation of the user's forearm. This results in little or no axial displacement of the suction opening 14 when the hand-held vacuum cleaner 10 is rotated.

25 The invention is not limited to the features of the specific embodiment described above. Variations will be apparent to the person skilled in the art. For example, the specific locations of the airflow generator or power source may be varied. The airflow generator may lie directly adjacent the first end of the handgrip. The airflow generator may lie above or below the handgrip. Additionally, the power source may lie directly adjacent the second end of the handgrip. The power source may lie above or below the handgrip. 30 What is important is that the airflow generator lies adjacent a first end of the handgrip and the power source lies adjacent a second end of the handgrip.

The angular relationship between the longitudinal axis of the suction conduit and the axis of the handgrip can be varied. It is preferred that the angle between the longitudinal axis of the suction conduit and the axis of the handgrip is in the range of 80 to 90°.

5 However, what is important is that these axes are transverse to one another such that the manipulation of the hand-held vacuum cleaner by a user feels comfortable.

A cyclonic separating unit need not be used. Other separating apparatus such as a bag-type filter could be used. Further, the hand-held vacuum cleaner need not be fitted with
10 a rechargeable power source. Standard batteries or a power lead could be used. Further, the invention is not limited to hand-held vacuum cleaners. Other types of hand-held cleaning appliances could be used, for example, carpet shampooers, wet and dry machines or blower vacuum devices.

15

CLAIMS

1. A hand-held cleaning appliance comprising a suction conduit having a longitudinal axis, an airflow generator for generating an airflow along the suction conduit,
5 separating apparatus arranged in communication with the suction conduit for separating dirt and dust from the airflow, a power source for supplying power to the airflow generator and an elongate handle disposed between the airflow generator and the power source and dimensioned and arranged to be gripped by a user's hand, wherein the elongate handle lies transverse to the longitudinal axis of the suction
10 conduit.
2. A hand-held cleaning appliance according to claim 1, wherein the elongate handle lies at an angle to the longitudinal axis in the range of 80 to 90°.
- 15 3. A hand-held cleaning appliance according to claim 1 or 2, wherein the elongate handle lies at an angle to the longitudinal axis which is close to a right angle.
4. A hand-held cleaning appliance according to claim any one of claims 1 to 3, wherein the separating apparatus is located between the suction conduit and the
20 elongate handle.
5. A hand-held cleaning appliance according to any one of the preceding claims, wherein the suction conduit has a suction opening and the longitudinal axis passes through the suction opening.
25
6. A hand-held cleaning appliance according to claim 5, wherein the suction opening is remote from the elongate handle.
7. A hand-held cleaning appliance according to any one of the preceding claims,
30 wherein a trigger switch is located on the elongate handle for switching the airflow generator on or off.

8. A hand-held cleaning appliance according to claim 6 and 7, wherein the trigger switch is located on the side of the elongate handle which is closest to the suction opening.
- 5
9. A hand-held cleaning appliance according to claim 7 and 8, wherein the trigger switch includes resilient means for biasing the trigger switch into an off position.
10. A hand-held cleaning appliance according to any one of the preceding claims, wherein the separating apparatus comprises a cyclonic separator.
- 10
11. A hand-held cleaning appliance according to any one of the preceding claims, wherein the hand-held cleaning appliance is a hand-held vacuum cleaner.
- 15
12. A hand-held cleaning appliance substantially as hereinbefore described with reference to the accompanying drawings.

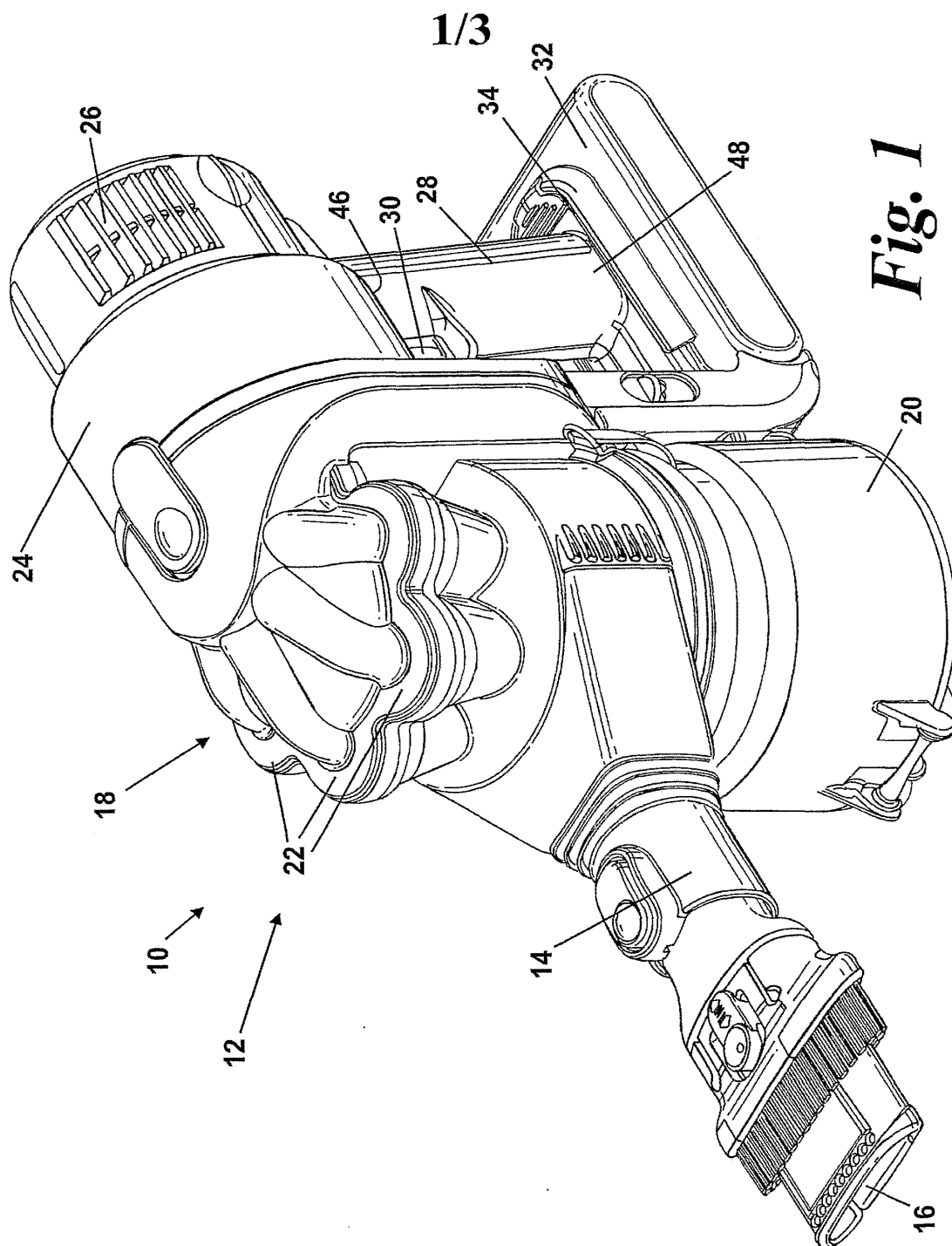


Fig. 1

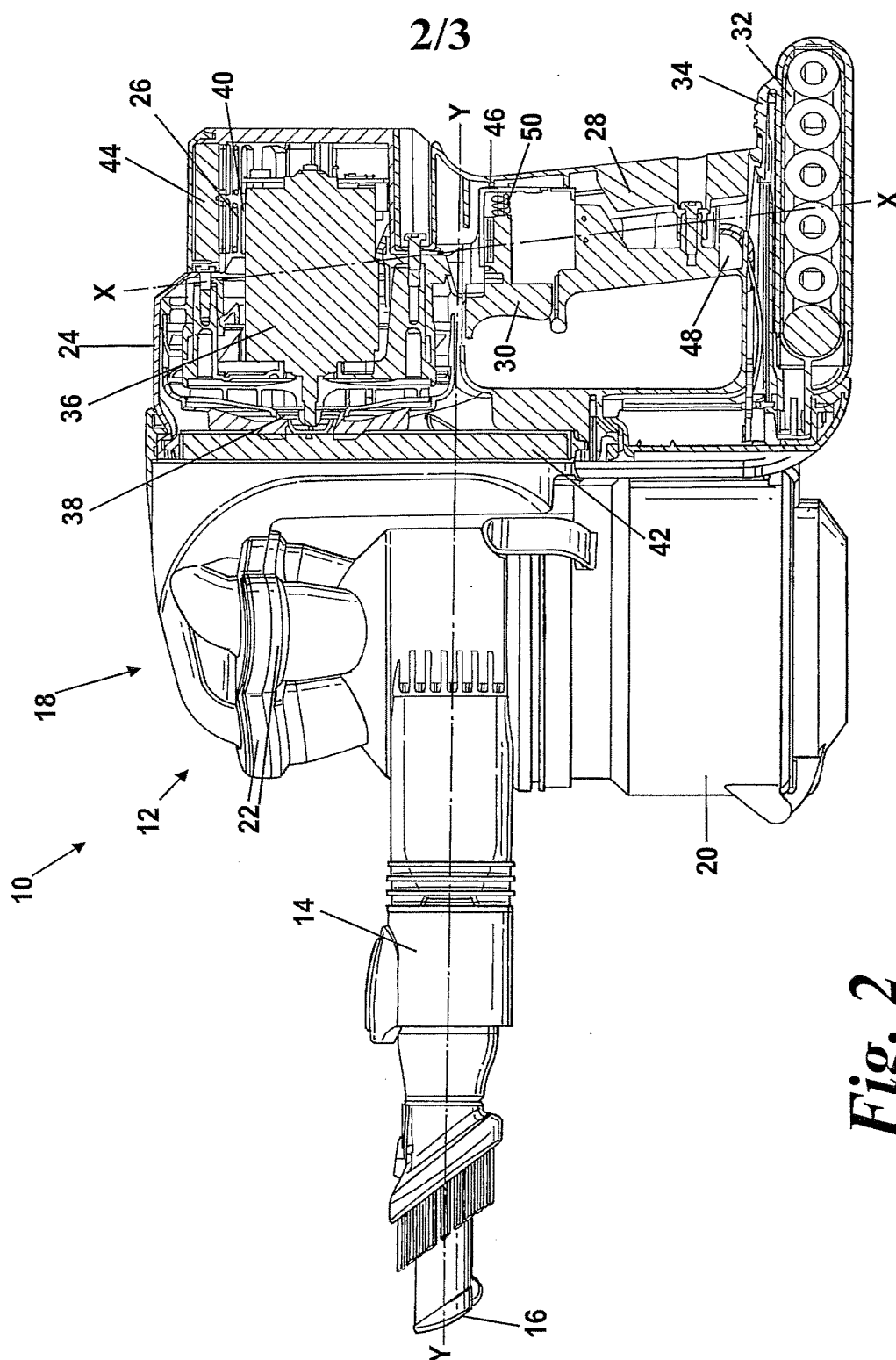


Fig. 2

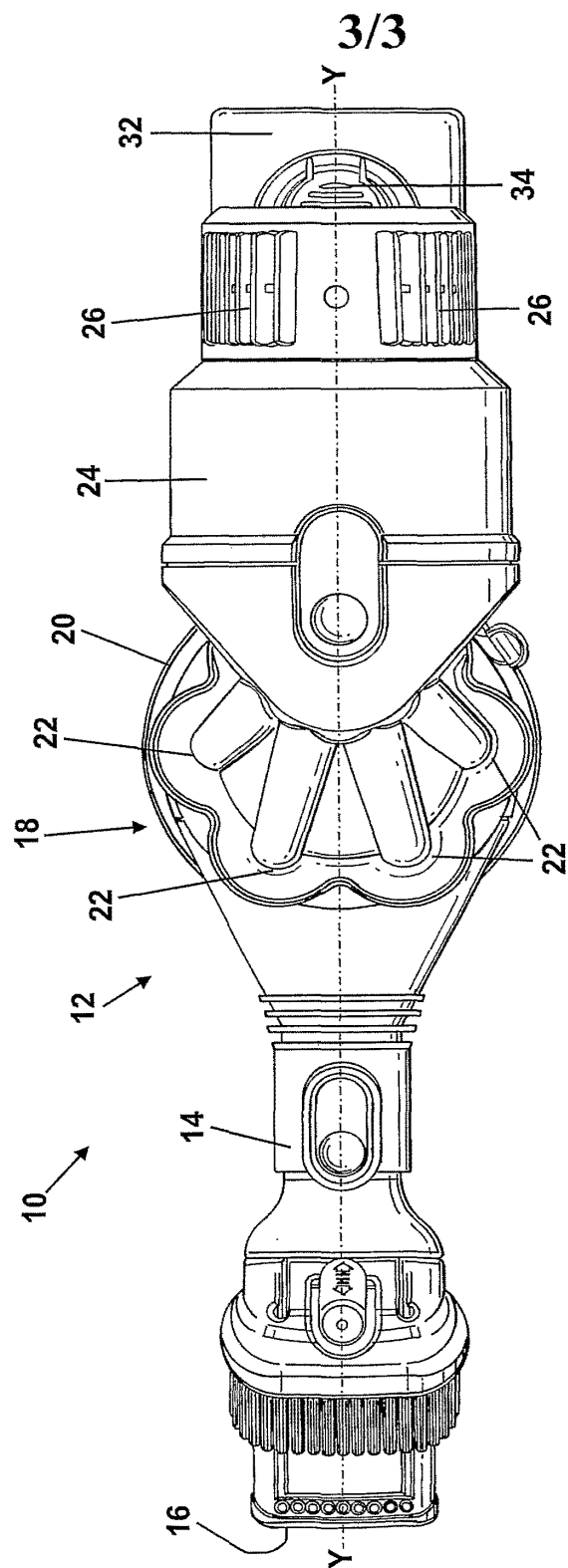


Fig. 3

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
INV. A47L5/24

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47L B60S B25F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 914 820 A (HANKEL ROBERT WILLIAM) 28 October 1975 (1975-10-28) figures 1,3,5	1-7,11, 12
Y		9
X	FR 1 508 452 A (MOBES NACHF W) 5 January 1968 (1968-01-05) the whole document	1-3,5-8, 11,12
X	JP 2004 041760 A (MATSUSHITA ELECTRIC IND CO LTD) 12 February 2004 (2004-02-12) cited in the application abstract; figure 1	1,4,11, 12
Y		10
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☒ Further documents are listed in the continuation of Box C.

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X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2007/002536

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 1 207 278 A (NEMEJANSKI ARIANE SABINE [FR]) 30 September 1970 (1970-09-30) cited in the application page 1, lines 32-45 page 2, lines 63-111; figures -----	9
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Form PCT/ISA/210 (continuation of second sheet) (April 2005)

page 2 of 2

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Information on patent family members

International application No

PCT/GB2007/002536

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(72) Inventors; and

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(74) Agents: **SMITH, Gillian, Ruth** et al.; Dyson Technology Limited, Intellectual Property Department, Tetbury Hill, Malmesbury, Wiltshire SN16 0RP (GB).

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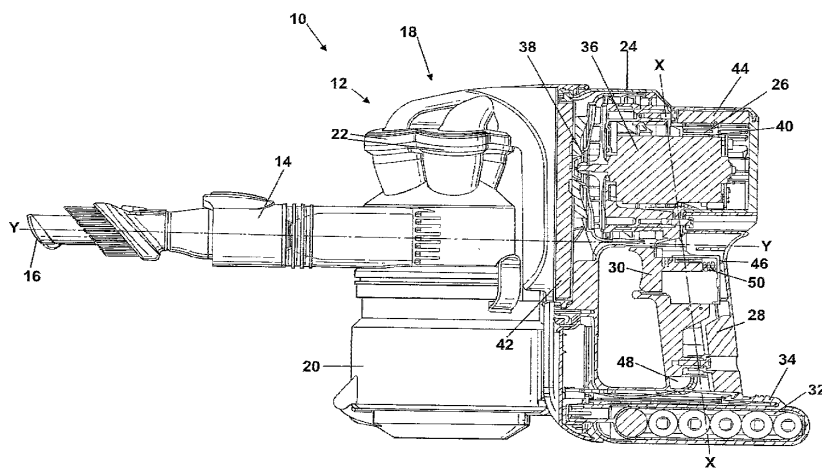
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A CLEANING APPLIANCE



(57) Abstract: The invention provides a hand-held cleaning appliance (10) comprising a suction conduit (14), an airflow generator (36) for generating an airflow along the suction conduit (14), separating apparatus (18) in communication with the suction conduit (14) for separating dirt and dust from the airflow, a power source (32) for supplying power to the airflow generator (36) and a handgrip (28) for enabling a user to manoeuvre the hand-held cleaning appliance. The handgrip (28) has a first end (46) and a second end (48). The airflow generator (36) is arranged directly adjacent the first end (46) of the handgrip (28) and the power source (32) is arranged adjacent the second end (48) of the handgrip (28). By providing a hand-held vacuum cleaner (10) with such an arrangement, the hand-held vacuum cleaner (10) is easier and more comfortable to manipulate in use.

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A Cleaning Appliance

The invention relates to a hand-held cleaning appliance. More particularly, the invention
5 relates to a hand-held vacuum cleaner.

Hand-held vacuum cleaners are known from, for example, GB 1 207 278. This document discloses a hand-held vacuum cleaner having an elongate main body with an air inlet, a suction conduit and a dust bag for separating dirt and dust from an airflow. A
10 motor and fan assembly is provided in the main body together with a power source. A handgrip is located on the upper part of the hand-held vacuum cleaner. The handgrip extends parallel to the elongate main body at a shallow angle to the suction conduit, and both the airflow generator and the power source are located in the main body underneath the handgrip. JP 2004-041760 discloses a hand-held vacuum cleaner having
15 a similar handgrip arrangement. However, in this case, the motor and fan assembly and the power source of the hand-held vacuum cleaner are arranged so that the centre of gravity of the machine is located at the centre of the handgrip.

An alternative arrangement of handgrip is shown in US 1,871,624. This document
20 discloses a hand-held vacuum cleaner having a cylindrical main body and a handgrip arranged at one end. A curved suction conduit is located at an end opposite to the handgrip. The handgrip is arranged transversely to the longitudinal axis of the cylindrical main body and approximately parallel to the suction conduit. This arrangement may give the user a stronger wrist position in use than the handgrip
25 arrangements disclosed in GB 1 207 278 and JP 2004-041760. However, the heavy components of the vacuum cleaner (for example, the motor and fan assembly) are located forwardly of the handgrip relative to a user's hand when the vacuum cleaner is in use. Therefore, the centre of mass of the respective hand-held vacuum cleaner will be located forwardly of the handgrip. This may result in the hand-held vacuum cleaner
30 described above being tiring and uncomfortable to use because the user will have to

exert additional effort in order to maintain the hand-held vacuum cleaner in a fixed orientation.

It is an object of the present invention to provide a hand-held vacuum cleaner which is easier to manipulate in use than known arrangements. It is a further object of the present invention to provide a hand-held vacuum cleaner in which the arrangement of the handgrip, the motor and fan assembly and the power source allow the hand-held vacuum cleaner to be manipulated easily and comfortably.

10 The invention provides a hand-held cleaning appliance comprising a suction conduit, an airflow generator for generating an airflow along the suction conduit, separating apparatus in communication with the suction conduit for separating dirt and dust from the airflow, a power source for supplying power to the airflow generator and a handgrip for enabling a user to manoeuvre the hand-held cleaning appliance, the handgrip having a first end and a second end, wherein the airflow generator is arranged directly adjacent the first end of the handgrip and the power source is arranged adjacent the second end of the handgrip. By providing such an arrangement, when a user grips the handgrip, the small resulting moment between the centre of mass of each of these components and the user's hand results in a hand-held vacuum cleaner which is easier to manipulate in use.

20

Preferably, the power source is arranged directly adjacent the second end of the handgrip. This arrangement allows the hand-held vacuum cleaner to be used easily and comfortably by a user.

25 Preferably, the handgrip has a longitudinal axis which passes through at least a part of the airflow generator. More preferably, the handgrip has a longitudinal axis which passes through at least a part of the power source.

Preferably, the suction conduit has a suction opening which is located remote from the handgrip. More preferably, the separating apparatus is located between the suction opening and the handgrip. Such an arrangement is compact and convenient to use.

30

An embodiment of the invention will now be described with reference to the accompanying drawings, in which:

5 Figure 1 is an isometric view of a hand-held vacuum cleaner according to the invention;

Figure 2 is a partially cut-away side view of the hand-held vacuum cleaner of Figure 1; and

10 Figure 3 is a plan view of the hand-held vacuum cleaner of Figure 1.

Figure 1 shows a hand-held vacuum cleaner 10. The hand-held vacuum cleaner 10 comprises a main body 12. The main body 12 includes a suction conduit 14 having a suction opening 16. The main body 12 also includes cyclonic separating apparatus 18
15 for separating dirt and dust from an airflow drawn in through the suction opening 16. The cyclonic separating apparatus 18 is in communication with the suction conduit 14 and the suction opening 16. The cyclonic separating apparatus 18 comprises an upstream cyclone 20 and a plurality of downstream cyclones 22 but further detail is not material to the invention and therefore will not be described.

20

The main body 12 further includes a motor housing 24 having a plurality of exhaust vents 26 formed therein. A flowpath extends from the suction opening 16, through the suction conduit 14, the cyclonic separating apparatus 18 and the motor housing 24 to the exhaust vents 26. A handgrip 28 is located below the motor housing 24 for manipulating
25 the hand-held vacuum cleaner 10 when in use. The handgrip 28 is arranged so that the cyclonic separating apparatus 18 is located between the handgrip 28 and the suction opening 16. The handgrip 28 includes a trigger switch 30 which is positioned on the side of the handgrip 28 closest to the suction opening 16 such that the trigger switch 30 can be manipulated by a user's index finger. A power source 32 is connected to the
30 handgrip 28 through a mounting portion 34.

Figure 2 shows the hand-held vacuum cleaner 10 in more detail. An airflow generator 36 is located in the motor housing 24. In this embodiment, the airflow generator 36 takes the form of a motor and fan assembly. The airflow generator 36 has an inlet 38 and an outlet 40. A pre-motor filter 42 is located upstream of the inlet 38 for filtering fine particulates from the airflow. A post-motor filter 44 is located downstream of the outlet 40. The pre-motor filter 42 and the post-motor filter 44 are located in the flowpath.

The handgrip 28 takes the form of an elongate handle and has a first end 46, a second end 48 and an axis X-X. The first end 46 of the handgrip 28 is connected to the motor housing 24. The airflow generator 36 is located adjacent the first end 46 of the handgrip 28. In this embodiment, the handgrip 28 and the airflow generator 36 are arranged such that the axis X-X of the handgrip 28 passes through at least a part of the airflow generator 36.

The mounting portion 34 removably receives the power source 32. When fitted to the hand-held vacuum cleaner 10, the power source 32 is located directly adjacent the second end 48 of the handgrip 28. In this embodiment, the power source 32 and the handgrip 28 are arranged so that the axis X-X passes through at least a part of the power source 32.

In other words, the handgrip 28 is arranged to lie between the airflow generator 36 and the power source 32. In this embodiment, the axis X-X passes through at least a part of each of the airflow generator 36 and the power source 32. Further, the axis X-X of the handgrip 28 lies transverse to a longitudinal axis Y-Y of the suction conduit 12. The longitudinal axis Y-Y passes through the suction opening 16. In this embodiment, the axis X-X is arranged at an angle to the longitudinal axis Y-Y which is close to 90°. This arrangement feels comfortable for a user.

The trigger switch 30 is located towards the first end 46 of the handgrip 28. The trigger switch 30 is located between the power source 32 and the airflow generator 36 and is

capable of switching the airflow generator 36 on or off. The trigger switch has on and off positions. The trigger switch moves from left to right as seen in Figure 2. The off position is located to the left, and the on position to the right. In the off position the trigger switch 30 is in an open state and the airflow generator 36 will be switched off. In the on position the trigger switch 30 will be closed and the airflow generator 36 will be switched on. The trigger switch 30 includes a spring 50 which biases the trigger switch 30 towards a normally open state. This arrangement allows the trigger switch 30 to be operated easily by a user's index finger. This in turn allows the hand-held vacuum cleaner 10 to be operated with one hand.

In use, a user grips the handgrip 28 to manipulate the hand-held vacuum cleaner 10 in use. When the user squeezes the trigger switch 30, the airflow generator 36 operates. The user must maintain pressure on the trigger switch 30 in order to keep the airflow generator 36 operating. This means that the user is likely to release the trigger switch 30 when he or she does not require a cleaning action, e.g. when moving from one room to another. If the user releases the trigger switch 30, the spring 50 will bias the trigger switch 30 to the off position and operation of the airflow generator 36 will cease. This reduces unnecessary use of the airflow generator 36 and results in a saving of battery life and motor life.

When operating, the airflow generator 36 draws a flow of dirt- and dust-laden air into the suction opening 16, through the suction conduit 14 and into the cyclonic separating apparatus 18. Dirt- and dust-laden air enters the upstream cyclone 20 and larger dirt and dust particles are separated by cyclonic motion. These particles are then collected in the upstream cyclone 20.

The partially-cleaned airflow then enters the plurality of downstream cyclones 22. The downstream cyclones 22 are able to separate smaller particles of dirt and dust from the partially-cleaned airflow than the upstream cyclone 20. The cleaned air exits the cyclonic separating apparatus 16 and passes sequentially through the pre-motor filter 42,

the airflow generator 36 and the post-motor filter 44 before being exhausted from the hand-held vacuum cleaner 10 through the exhaust vents 26.

5 In use, a user may wish to clean a variety of surfaces which may be orientated at different angles. Therefore, a user will need to lift and move the hand-held vacuum cleaner 10 into a variety of positions and orientations in order to clean effectively. The location of the handgrip 28 between the airflow generator 36 and the power source 32 allows the hand-held vacuum cleaner 10 to be manipulated easily in use. This is because the user's hand will be located between the two heaviest components of the hand-held vacuum cleaner 10. This results in a "dumbbell-like" configuration in which the weight of the hand-held vacuum cleaner 10 is distributed on both sides of the user's hand.

15 The transverse arrangement of the longitudinal axis Y-Y of the suction conduit 14 with respect to the axis X-X of the handgrip 28 results in the suction conduit 12 forming a substantially straight extension of the user's forearm when the user's wrist is essentially straight. This arrangement feels comfortable for the user, especially when the hand held vacuum cleaner 10 is used for a period of time. Further, the location of the longitudinal axis Y-Y of the suction conduit 14 close to the centre of the hand-held vacuum cleaner 10 means that the longitudinal axis Y-Y of the suction conduit 14 will be coincident, or close to, the longitudinal axis of rotation of the user's forearm. This results in little or no axial displacement of the suction opening 14 when the hand-held vacuum cleaner 10 is rotated.

25 The invention is not limited to the features of the specific embodiment described above. Variations will be apparent to the person skilled in the art. For example, the specific locations of the airflow generator or power source may be varied. The airflow generator may lie above or below the handgrip. Additionally, the power source may lie directly adjacent the second end of the handgrip. The power source may lie above or below the handgrip. What is important is that the airflow generator lies directly adjacent a first end of the handgrip and the power source lies adjacent a second end of the handgrip.

30

The angular relationship between the longitudinal axis of the suction conduit and the axis of the handgrip can be varied. It is preferred that the angle between the longitudinal axis of the suction conduit and the axis of the handgrip is in the range of 80 to 90°. However, what is important is that these axes are transverse to one another such that the manipulation of the hand-held vacuum cleaner by a user feels comfortable.

A cyclonic separating unit need not be used. Other separating apparatus such as a bag-type filter could be used. Further, the hand-held vacuum cleaner need not be fitted with a rechargeable power source. Standard batteries or a power lead could be used. Further, the invention is not limited to hand-held vacuum cleaners. Other types of hand-held cleaning appliances could be used, for example, carpet shampooers, wet and dry machines or blower vacuum devices.

CLAIMS

1. A hand-held cleaning appliance comprising a suction conduit, an airflow generator for generating an airflow along the suction conduit, separating apparatus in communication with the suction conduit for separating dirt and dust from the airflow, a power source for supplying power to the airflow generator and a handgrip for enabling a user to manoeuvre the hand-held cleaning appliance, the handgrip having a first end and a second end, wherein the airflow generator is arranged directly adjacent the first end of the handgrip and the power source is arranged adjacent the second end of the handgrip.
2. A hand-held cleaning appliance according to claim 1, wherein the power source is arranged directly adjacent the second end of the handgrip.
3. A hand-held cleaning appliance according to claim 1 or 2, wherein the handgrip has a longitudinal axis which passes through at least a part of the airflow generator.
4. A hand-held cleaning appliance according to any one of claims 1 to 3, wherein the handgrip has a longitudinal axis which passes through at least a part of the power source.
5. A hand-held cleaning appliance according to any one of the preceding claims, wherein the airflow generator is arranged above the handgrip and the power source is arranged below the handgrip.
6. A hand-held cleaning appliance according to any one of the preceding claims, wherein the suction conduit has a suction opening which is located remote from the handgrip.
7. A hand-held cleaning appliance according to claim 6, wherein the separating apparatus is located between the suction opening and the handgrip.

8. A hand-held cleaning appliance according to any one of the preceding claims, wherein a trigger switch is located on the handgrip for switching the airflow generator on or off.
- 5
9. A hand-held cleaning appliance according to claims 6 and 8, wherein the trigger switch is located on the side of the handgrip which is closest to the suction opening.
- 10
10. A hand-held cleaning appliance according to claim 8 or 9, wherein the trigger switch includes resilient means for biasing the trigger switch into an off position.
11. A hand-held cleaning appliance according to any one of the preceding claims, wherein the power source is removably attached to the second end of the handgrip.
- 15
12. A hand-held cleaning appliance according to any one of the preceding claims, wherein the separating apparatus comprises a cyclonic separator.
13. A hand-held cleaning appliance according to any one of the preceding claims, wherein the hand-held cleaning appliance is a hand-held vacuum cleaner.
- 20
14. A hand-held cleaning appliance substantially as hereinbefore described with reference to the accompanying drawings.

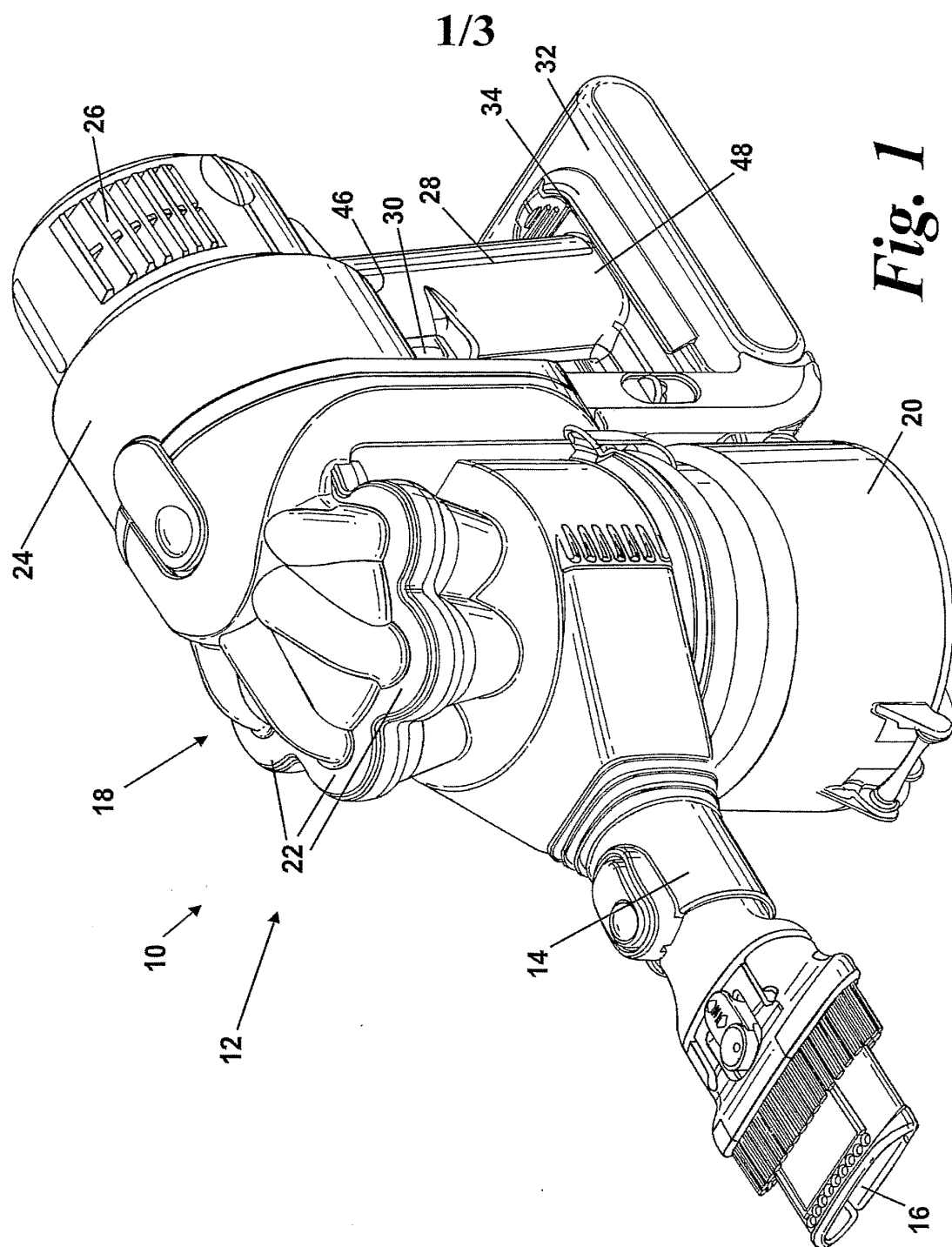
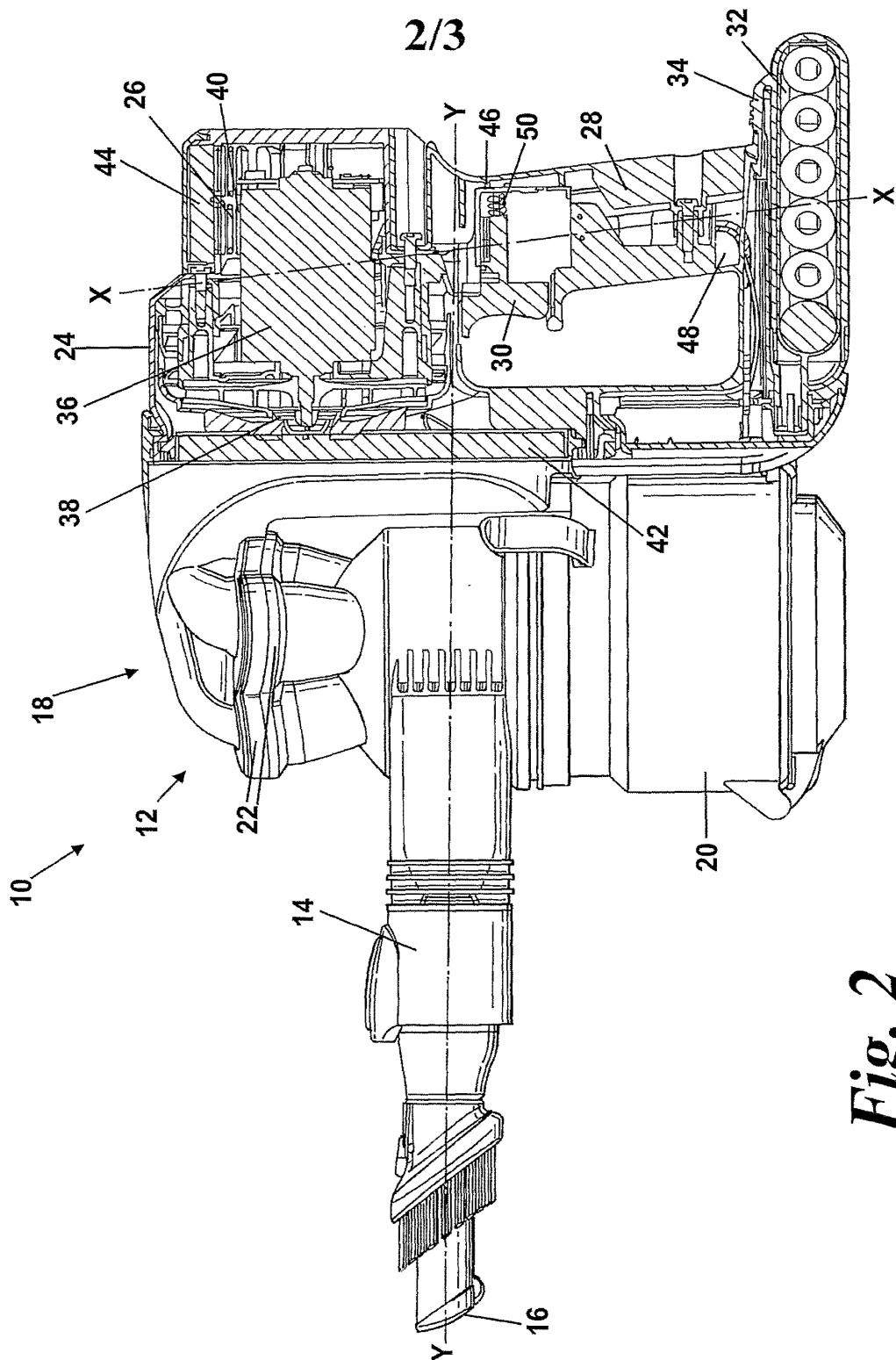


Fig. 1



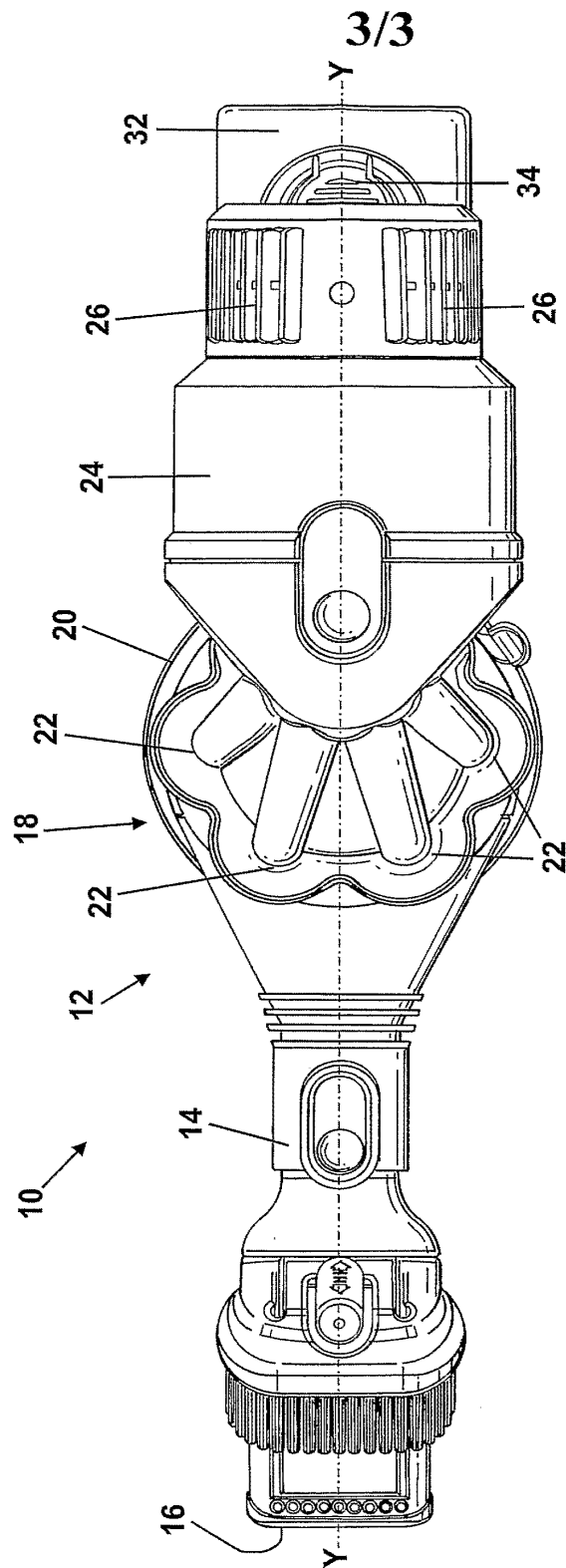


Fig. 3

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2007/002524

A. CLASSIFICATION OF SUBJECT MATTER

INV. A47L5/24 A47L9/22 A47L9/28 A47L9/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 795 118 A (SALO DAVID RAND) 14 May 1958 (1958-05-14) page 1, line 90 - page 3, line 111 -----	1,2,6-8, 11-13
X	JP 2004 041760 A (MATSUSHITA ELECTRIC IND CO LTD) 12 February 2004 (2004-02-12) cited in the application abstract; figure 8 -----	1,2,4-7, 11,13
X	JP 63 296718 A (TOKYO ELECTRIC CO LTD) 2 December 1988 (1988-12-02) the whole document -----	1-4,6-10
X	JP 05 192270 A (MATSUSHITA ELECTRIC IND CO LTD) 3 August 1993 (1993-08-03) abstract -----	1
-/-		

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

4 September 2007

Date of mailing of the international search report

19/09/2007

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

MARTIN GONZALEZ, G

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2007/002524

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 62 290431 A (TOKYO ELECTRIC CO LTD) 17 December 1987 (1987-12-17) the whole document -----	1-3
A	GB 2 276 311 A (LOZENSTAR CORP [JP]) 28 September 1994 (1994-09-28) page 2, line 6 - page 3, line 7 -----	1-13

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

page 2 of 2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2007/002524

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 14
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (2)) (January 2004)

FURTHER INFORMATION CONTINUED FROM PCT/SA/ 210

Continuation of Box II.2

Claims Nos.: 14

The general references to the description and drawings used in claim 14 are vague and unclear and leave the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of said claim so unclear (Article 6 PCT) that no meaningful search can be established.

Furthermore, according to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2007/002524

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 795118	A	14-05-1958	FR 1170439 A	14-01-1959
JP 2004041760	A	12-02-2004	NONE	
JP 63296718	A	02-12-1988	NONE	
JP 5192270	A	03-08-1993	NONE	
JP 62290431	A	17-12-1987	JP 1825242 C	28-02-1994
GB 2276311	A	28-09-1994	CN 1100617 A	29-03-1995
			JP 2511565 Y2	25-09-1996
			JP 6068654 U	27-09-1994

Form PCT/ISA/210 (patent family annex) (April 2005)

Electronic Acknowledgement Receipt	
EFS ID:	7829189
Application Number:	12720484
International Application Number:	
Confirmation Number:	9161
Title of Invention:	CONFIGURATION OF A HAND VACUUM CLEANER
First Named Inventor/Applicant Name:	Wayne Ernest Conrad
Customer Number:	01059
Filer:	Philip C. Mendes da Costa/Snezana Lisowsky
Filer Authorized By:	Philip C. Mendes da Costa
Attorney Docket Number:	16697-48
Receipt Date:	16-JUN-2010
Filing Date:	09-MAR-2010
Time Stamp:	17:23:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	48Commissioner.pdf	50584 8fb8704870277f53eb431bccf8c4573ebe3cfa2a	no	2

Warnings:

Information:

2	Information Disclosure Statement (IDS) Filed (SB/08)	48updated_IDS.PDF	611879 5626e94d94081b9a88b2457fb09d3ac5925c3af	no	4
Warnings:					
Information:					
3	Foreign Reference	WO08009890.pdf	907658 55608d97e8441446e166dd8bff4474942256e8e	no	21
Warnings:					
Information:					
4	Foreign Reference	WO08009888.pdf	719229 8e1b144dfd22d6ea67c3e7ec3c5077c185943a8a	no	16
Warnings:					
Information:					
5	Foreign Reference	WO08009883.pdf	771281 db5a8916a4a1d1610cf75b5df02e836bbc5d31e9	no	18
Warnings:					
Information:					
Total Files Size (in bytes):			3060631		
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> 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

INTELLECTUAL PROPERTY LAW

June 16, 2010

Philip C. Mendes da Costa B.Sc. (Chem. Eng.), LL.B.
416 957 1695 pmdcosta@bereskinparr.com

Your Reference: 12/720,484
Our Reference: 16697-48

INFORMATION DISCLOSURE STATEMENT UNDER CFR.1.56 and CFR 1.97(b)

The Commissioner of Patents
and Trademarks
Washington, D.C.
U.S.A 20231

Dear Sir:

Re: United States Patent Application No. 12/720,484
Filed: March 9, 2010
Title: CONFIGURATION OF A HAND VACUUM CLEANER
Applicant: Wayne Ernest Conrad

In accordance with 37 CFR 1.97 and 1.98, and in recognition of the duty of disclosure set forth in 37 CFR 1.56, the applicant hereby submits an Information Disclosure Statement including a listing of patents and other publications of which the applicant is aware on PTO Form SB08a.

In accordance with the requirements of 1.97(b)(1) and (3), this Information Disclosure Statement is filed within three months of the filing date of the application and before the mailing date of a first Office Action on the merits.

Since all the enclosures are in English an explanation of relevance is neither required nor provided.

(A) List of References

A list of the patents and other publications of which the applicant is aware is set out in the PTO Form SB08a which is attached hereto.

(B) Copies of References

Copies of the foreign references are enclosed.

Accordingly, the applicant submits that the Information Disclosure Statement is properly considered at this time.

Respectfully submitted,

BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.



Philip C. Mendes da Costa
Registration No. 33,106
/sl
Encls.



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/720,484	03/09/2010	Wayne Ernest Conrad	16697-48

CONFIRMATION NO. 9161

1059

BERESKIN AND PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
BOX 401
TORONTO, ON M5H 3Y2
CANADA

PUBLICATION NOTICE



Title:CONFIGURATION OF A HAND VACUUM CLEANER

Publication No.US-2010-0229324-A1

Publication Date:09/16/2010

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 Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, 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 <http://pair.uspto.gov/>. 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 Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/720,484	03/09/2010	Wayne Ernest Conrad	16697-48	9161
1059 7590 11/12/2010 BERESKIN AND PARR LLP/S.E.N.C.R.L., s.r.l. 40 KING STREET WEST BOX 401 TORONTO, ON M5H 3Y2 CANADA			EXAMINER NGUYEN, DUNG V	
			ART UNIT 3723	PAPER NUMBER
			MAIL DATE 11/12/2010	DELIVERY MODE PAPER

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.

Office Action Summary	Application No.		Applicant(s)	
	12/720,484		CONRAD, WAYNE ERNEST	
	Examiner		Art Unit	
	Dung Van Nguyen		3723	

-- 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 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, 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 ____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ 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

4) ☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) ____ is/are withdrawn from consideration.

5) ☐ Claim(s) ____ is/are allowed.

6) ☒ Claim(s) 1-21 is/are rejected.

7) ☐ Claim(s) ____ is/are objected to.

8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 09 March 2010 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).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

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).

a) ☐ All b) ☐ Some * c) ☒ None of:

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) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>6/16/2010</u> .	4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____. 5) ☐ Notice of Informal Patent Application 6) ☐ Other: _____.
---	--

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: typo errors, paragraph [0060], line 5, "Openable door 100" should be "Openable door 158", paragraph 70, line 2, "housing 161" should be "housing 160". Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Beskow et al (US PUB 2008/0040883). Beskow et al discloses a hand vacuum cleaner 104 comprising a front end, a rear end, an air flow passage extending from a dirty air inlet 114 to a clean air outlet, a first cyclone unit 1006 positioned in the air flow passage, the first cyclone unit 1006 comprising a cyclone 1032 and a dirt collection chamber, the dirt collection chamber having an openable, removable door 1012 positioned at the front end, a suction motor 910 positioned in the air flow passage, wherein the cyclone has a cyclone air inlet and outlet, wherein the cyclone axis generally parallel to the axis of the hand vacuum cleaner 104, wherein the cyclone unit is positioned forward of the suction motor 910, wherein the door 1012 is openable, removable and pivotally mounted to the hand vacuum cleaner 104, wherein the dirt collection chamber is removable from the

hand vacuum cleaner 104 as a sealed unit for empty, wherein the dirt collection chamber is removable from the hand vacuum cleaner 104 with the cyclone unit 1006, wherein the single dirt collection chamber is positioned exterior to the single cyclone, wherein the hand vacuum cleaner 104 further comprising a suction motor housing, the suction motor is positioned in the suction motor housing and the first cyclone unit 1006 is removably mounted to the suction motor housing (note Fig. 9-11, paragraphs [0089]-0114].

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beskow et al (US PUB 2008/0040883) in view of Oh et al (US PUB 2008/0190080). Beskow et al discloses the claimed invention except a second cyclone unit downstream from the first cyclone unit. Oh et al discloses a vacuum cleaner having a second cyclone unit downstream from the first cyclone unit (note Fig. 1, paragraph [0040]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the vacuum cleaner of Beskow et al with the second cyclone unit disclosed by Oh et al in order to remove fine contaminants more effectively.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Van Nguyen whose telephone number is 571-272-4490. The examiner can normally be reached on PHP Program.
8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph J. Hail can be reached on 571-272-4485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dung Van Nguyen/
Primary Examiner, Art Unit 3723

Notice of References Cited	Application/Control No. 12/720,484	Applicant(s)/Patent Under Reexamination CONRAD, WAYNE ERNEST	
	Examiner Dung Van Nguyen	Art Unit 3723	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,406,505 B1	06-2002	Oh et al.	55/337
*	B	US-6,740,144 B2	05-2004	Conrad et al.	96/57
*	C	US-2008/0040883 A1	02-2008	BESKOW et al.	015/329
*	D	US-2008/0190080 A1	08-2008	Oh et al.	55/343
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	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.

Receipt date: 06/16/2010

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

12720484 - GAU: 3723

Approved for use through 07/31/2012. 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		12720484	
	Filing Date		2010-03-09	
	First Named Inventor	CONRAD, Wayne Ernest		
	Art Unit			
	Examiner Name			
	Attorney Docket Number		16697-48	

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	7370387	B2	2008-05-13	WALKER et al.		

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

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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	
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FOREIGN PATENT DOCUMENTS								Remove
Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² j	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	2008/009890	WO	A1	2008-01-24	Dyson Technologies Limited		☐
	2	2008009888	WO	A1	2008-01-24	Dyson Technologies Limited		☐
	3	2008009883	WO	A1	2008-01-24	Dyson Technologies Limited		☐

Receipt date: 06/16/2010 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		12720484 12720484 - GAU: 3723
	Filing Date		2010-03-09
	First Named Inventor	CONRAD, Wayne Ernest	
	Art Unit		
	Examiner Name		
	Attorney Docket Number		16697-48

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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		☐	
If you wish to add additional non-patent literature document citation information please click the Add button				Add
EXAMINER SIGNATURE				
Examiner Signature	/Dung Van Nguyen/		Date Considered	11/05/2010
*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.				

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DVN/

Search Notes 	Application/Control No. 12720484	Applicant(s)/Patent Under Reexamination CONRAD, WAYNE ERNEST
	Examiner Dung V Nguyen	Art Unit 3723

SEARCHED			
Class	Subclass	Date	Examiner
15	37, 352, 353, 344, 350, 327.7	11/5/2010	DVN
55	337, 328, 329, Dig. 3	11/5/2010	DVN

SEARCH NOTES		
Search Notes	Date	Examiner
See Search History (inventor name search, citation searches)	11/5/2010	DVN

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	3	"720484".ap.	US-PGPUB	OR	ON	2010/11/04 11:05
S2	276	conrad with wayne.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 11:07
S3	193	S2 and clean\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 11:07
S4	137	S3 and cyclone	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 11:07
S5	1	("7370387").PN.	US-PGPUB; USPAT	OR	OFF	2010/11/04 11:29
S6	1202	(15/347).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/04 13:31
S7	1989	(15/352,353).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/04 13:52
S8	812	(15/344).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/04 14:32
S9	335	(15/350).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/04 14:55
S10	1134	(55/337).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/04 15:11
S11	156	(55/328,329).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/04 15:47
S12	867	(55/dig.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/04 15:49
S13	3	S6 and cyclone and receptacle same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 16:53
S14	8	S7 and cyclone and receptacle same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 16:54

S15	0	S8 and cyclone and receptacle same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 16:56
S16	3	S9 and cyclone and receptacle same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 16:56
S17	7	S10 and cyclone and receptacle same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 16:56
S18	1	S11 and cyclone and receptacle same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 16:57
S19	3	S12 and cyclone and receptacle same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 16:58
S20	87786	("15").CLAS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/04 16:58
S21	36429	("55").CLAS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/04 16:58
S22	12	S20 and cyclone and receptacle same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 16:59
S23	15	S21 and cyclone and receptacle same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 16:59
S24	110	S21 and cyclone and chamber same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 17:04
S25	92	S20 and cyclone and chamber same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 17:12
S26	1147	dyson.as.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 17:22
S27	0	S26 and cyclone and receptacle same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 17:22
S28	1	S26 and cyclone and chamber same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 17:22
S29	3	S26 and front same chamber same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 17:24
S30	112	S20 and front same chamber same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 17:24

S31	142	S21 and front same chamber same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 17:27
S32	16	S21 and front same receptacle same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 17:31
S33	46	S20 and front same receptacle same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 17:32
S34	49	S20 and front same door and cyclone	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 17:36
S35	35	S21 and front same door and cyclone	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 17:45
S36	483	S20 and cyclone and chamber same open\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/04 18:08
S37	0	("000015\$").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/05 09:45
S38	87786	("15").CLAS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/05 09:45
S39	36429	("55").CLAS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/05 09:45
S40	64	S38 and front same door same container	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/05 09:46
S41	37	S39 and front same door same container	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/05 09:49
S42	181	(15/327.7).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/05 09:50
S43	13	S42 and cyclone	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/05 09:57
S44	396	S38 and cyclone and horizon\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/05 10:07
S45	171	S38 and cyclone and door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/05 10:58

S46	8	((("4,621,390") or ("20040216263") or ("5,584,095") or ("5,524,321") or ("6,839,934") or ("4,573,237") or ("6,094,775") or ("3,199,138"))).PN.	US-PGPUB; USPAT	OR	OFF	2010/11/05 11:14
S47	6	((("4,545,089") or ("4,421,964") or ("5,819,364") or ("6,839,934") or ("4,467,493") or ("6,108,864"))).PN.	US-PGPUB; USPAT	OR	OFF	2010/11/05 11:31
S48	87786	("15").CLAS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/05 14:40
S49	262	S48 and cyclone same parallel	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/05 14:40
S50	182	S49 and downstream	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/05 14:43
S51	200	S48 and cyclone with downstream	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/05 14:52
S52	77	S48 and second with cyclone with downstream	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/05 15:06
S53	25	S48 and second adj cyclone with downstream	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/05 15:13
S54	36429	("55").CLAS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/11/05 15:17
S55	45	S54 and second adj cyclone with downstream	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2010/11/05 15:17

11/5/2010 4:11:49 PM

H:\Workspaces\12720484.wsp

<i>Index of Claims</i> 	Application/Control No. 12720484	Applicant(s)/Patent Under Reexamination CONRAD, WAYNE ERNEST
	Examiner Dung V Nguyen	Art Unit 3723

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant
 ☐ CPA
 ☐ T.D.
 ☐ R.1.47

CLAIM		DATE								
Final	Original	11/05/2010								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
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	17	✓								
	18	✓								
	19	✓								
	20	✓								
	21	✓								

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		12720484	
	Filing Date		2010-03-09	
	First Named Inventor	CONRAD, Wayne Ernest		
	Art Unit	3723		
	Examiner Name	NGUYEN, Dung V		
	Attorney Docket Number	10452-428		

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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	6434785	B1	2002-08-20	Vandenbelt et al.			
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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	20060090290	A1	2006-05-04	Lau			
	2	20070271724	A1	2007-11-29	Hakan et al.			
	3	20080040883	A1	2008-02-21	Beskow et al.			
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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							☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	12720484
	Filing Date	2010-03-09
	First Named Inventor	CONRAD, Wayne Ernest
	Art Unit	3723
	Examiner Name	NGUYEN, Dung V
	Attorney Docket Number	10452-428

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	1			☐
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*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	12720484
	Filing Date	2010-03-09
	First Named Inventor	CONRAD, Wayne Ernest
	Art Unit	3723
	Examiner Name	NGUYEN, Dung V
	Attorney Docket Number	10452-428

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)	2011-02-14
Name/Print	Philip C. Mendes da Costa	Registration Number	33,106

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:

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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 Patent Application Fee Transmittal				
Application Number:		12720484		
Filing Date:		09-Mar-2010		
Title of Invention:		CONFIGURATION OF A HAND VACUUM CLEANER		
First Named Inventor/Applicant Name:		Wayne Ernest Conrad		
Filer:		Philip C. Mendes da Costa/Snezana Lisowsky		
Attorney Docket Number:		16697-48		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	4	26	104
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				104

Electronic Acknowledgement Receipt	
EFS ID:	9441373
Application Number:	12720484
International Application Number:	
Confirmation Number:	9161
Title of Invention:	CONFIGURATION OF A HAND VACUUM CLEANER
First Named Inventor/Applicant Name:	Wayne Ernest Conrad
Customer Number:	01059
Filer:	Philip C. Mendes da Costa/Snezana Lisowsky
Filer Authorized By:	Philip C. Mendes da Costa
Attorney Docket Number:	16697-48
Receipt Date:	14-FEB-2011
Filing Date:	09-MAR-2010
Time Stamp:	17:22:18
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$104
RAM confirmation Number	4363
Deposit Account	022095
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Response.pdf	345949	yes	8
			ccb6ff1062dc209ef93fe04ac232bb981191861b		
	Multipart Description/PDF files in .zip description				
	Document Description	Start	End		
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1		
	Specification	2	2		
	Claims	3	5		
	Applicant Arguments/Remarks Made in an Amendment	6	8		
Warnings:					
Information:					
2	Transmittal Letter	Commissioner_ReIDS_14Feb2011.PDF	119989	no	2
			4f8229e464ecb34c7a8f632d7b7ae87edf19a2d8		
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Filed (SB/08)	10452-428-IDS-02-10-2011.pdf	612559	no	4
			c4adb8f63421dc8c0b8208de73f4a1984be6eaa3		
Warnings:					
Information:					
4	Fee Worksheet (PTO-875)	fee-info.pdf	30256	no	2
			5c055fb14d1472b99bc55dcc766fe1d84cd0881a		
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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.

Bereskin & Parr

INTELLECTUAL PROPERTY LAW

Appl. No : 12/720,484 Confirmation No.: 9161
Applicant : Wayne Ernest Conrad
Filed : March 9, 2010
Title : CONFIGURATION OF A HAND VACUUM CLEANER
TC./A.U. : 3723
Examiner : Dung Van Nguyen

Docket No. : 10452-428
Customer No. : 001059

Honorable Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313-1450

February 14, 2011

AMENDMENT

Sir:

In response to the Office Action of November 12, 2010, please amend the above-identified application as follows:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims, which begins on page 3 of this paper.

Remarks/Arguments begin on page 6 of this paper.

Bereskin & Parr LLP
Scotia Plaza, 40 King Street West, 40th Floor, Toronto, Ontario, Canada M5H 3Y2
Tel: 416.364.7311 Fax: 416.361.1398 www.bereskinparr.com
TORONTO MISSISSAUGA WATERLOO MONTRÉAL



Amendments to the Specification:

Please replace paragraph [0059], with the following amended paragraph:

[0059] Further, referring to Figure 5B, in the example shown, openable door 158 is removably mounted to cyclone unit wall 115. That is, openable door 158 may be removed from vacuum cleaner 100 by a user, and may be re-mounted to vacuum cleaner 100. Openable door ~~400~~158 may be removably mounted by any means known in the art. For example, pivots 177 may be releasable from door 158 or wall 115, or may be separable into two portions as shown. In alternate embodiments, a plurality of mechanical fasteners, such as latches 159, may be used.

Please replace paragraph [0069], with the following amended paragraph:

[0069] One or more additional wheels 180 may be mounted to housing ~~464~~160, preferably at lower portion 106, and may be used in conjunction with wheels 135. Preferably, a single rear wheel 180 is provided. Preferably, rear wheel 180 is located on a centre line of the vacuum cleaner and rearward of the depending wall 128.

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 hand vacuum cleaner comprising:
 - a) a front end having a front wall and a rear end;
 - b) an air flow passage extending from a dirty air inlet to a clean air outlet;
 - c) a first cyclone unit positioned in the air flow passage, the first cyclone unit comprising at least one cyclone and at least one dirt collection chamber;
 - d) the dirt collection chamber having an openable door positioned, the front wall comprising the openable door at the front end; and,
 - e) a suction motor positioned in the air flow passage.
2. (Original) The hand vacuum cleaner of claim 1 wherein the at least one cyclone has a cyclone front end, a cyclone rear end, a cyclone air inlet and a cyclone air outlet and the cyclone front end is at the front end of the hand vacuum cleaner.
3. (Original) The hand vacuum cleaner of claim 1 wherein the cyclone front end has a dirt outlet and a separation plate is mounted in facing relation to the dirt outlet.
4. (Original) The hand vacuum cleaner of claim 3 wherein the separation plate is mounted to the door.
5. (Original) The hand vacuum cleaner of claim 2 wherein the cyclone air inlet and the cyclone air outlet are at the same end.

6. (Original) The hand vacuum cleaner of claim 5 wherein the cyclone air inlet and the cyclone air outlet are at the cyclone rear end.
7. (Original) The hand vacuum cleaner of claim 1 wherein the at least one cyclone has a cyclone axis extending longitudinally through the at least one cyclone, the hand vacuum cleaner has an axis extending from the front end to the rear end and the cyclone axis is generally parallel to the axis of the hand vacuum cleaner.
8. (Original) The hand vacuum cleaner of claim 1 wherein the first cyclone unit is positioned forward of the suction motor.
9. (Original) The hand vacuum cleaner of claim 1 wherein the door is openable when mounted to the hand vacuum cleaner.
10. (Original) The hand vacuum cleaner of claim 1 wherein the door is removable.
11. (Original) The hand vacuum cleaner of claim 1 wherein the door is pivotally mounted to the hand vacuum cleaner.
12. (Original) The hand vacuum cleaner of claim 1 wherein the dirt collection chamber is removable from the hand vacuum cleaner.
13. (Original) The hand vacuum cleaner of claim 1 wherein the dirt collection chamber is removable from the surface cleaning apparatus as a sealed unit for emptying.
14. (Original) The hand vacuum cleaner of claim 13 wherein the first cyclone unit is sealed when removed from the hand vacuum cleaner other than fluid flow passages leading to and from the first cyclone unit.
15. (Original) The hand vacuum cleaner of claim 1 wherein the dirt collection chamber is removable from the hand vacuum cleaner with the first cyclone unit.

16. (Original) The hand vacuum cleaner of claim 1 wherein the first cyclone unit has a single cyclone and a single dirt collection chamber.
17. (Original) The hand vacuum cleaner of claim 16 wherein the single dirt collection chamber is positioned exterior to the single cyclone.
18. (Original) The hand vacuum cleaner of claim 17 wherein the single cyclone and the single dirt collection chamber comprise a one-piece assembly.
19. (Original) The hand vacuum cleaner of claim 18 wherein the single cyclone and the single dirt collection chamber are integrally formed.
20. (Original) The hand vacuum cleaner of claim 1 wherein the hand vacuum cleaner further comprises a suction motor housing, the suction motor is positioned in the suction motor housing and the first cyclone unit is removably mounted to the suction motor housing.
21. (Original) The hand vacuum cleaner of claim 1 further comprising a second cyclone unit downstream from the first cyclone unit.
22. (New) The hand vacuum cleaner of claim 1 wherein the at least one cyclone has a cyclone axis extending longitudinally through the at least one cyclone and the dirt collection chamber has a perimeter at the front end and the openable door has a perimeter that is generally the same as the perimeter of the dirt collection chamber.
23. (New) The hand vacuum cleaner of claim 1 wherein the front wall is the openable door.
24. (New) The hand vacuum cleaner of claim 1 wherein the dirt collection chamber has a front end and the front wall covers the front end of the dirt collection chamber.
25. (New) The hand vacuum cleaner of claim 1 wherein the dirt collection chamber has a rear end and the rear end is non-removably mounted to the first cyclone unit.

REMARKS/ARGUMENTS

This is in response to the Office Action dated November 12, 2010. Accordingly, it is respectfully submitted that this response is timely filed.

By this response, the Applicant has amended claim 1 and inserted new claims 22-25. No additional changes have been made to the claims. Please charge our deposit account No. 022095 in the amount of \$104 for the four additional dependent claims (namely \$26 per claim at the small entity rate).

In the Office Action, the Examiner objected to paragraphs [0060] and [0070] as containing typographical errors. The Applicant assumes that the Examiner meant to refer to paragraphs [0059] and [0069] and not paragraphs [0060] and [0070]. The Applicant has corrected the typographical errors in paragraphs [0059] and [0069].

In the Office Action, the Examiner rejected claims 1-20 as being anticipated by Beskow et al. (U.S. Pub. 2008/0040883). The Examiner noted that Beskow has an openable removable door 1012 positioned at the front end. The Applicant notes that openable removable door 1012 is positioned on a sidewall of unit 1006 and not on the front wall thereof.

By this response, the Applicant has amended claim 1 to specify that the front end has a front wall and that the front wall comprises the openable door. This is in contrast to Beskow et al. wherein the openable door 1012 is provided not on the front wall but on a sidewall. Accordingly, it is respectfully submitted that claim 1 is not anticipated by Beskow et al.

Claim 3 specifies that that the cyclone front end has a dirt outlet and a separation plate is mounted in facing relation to the dirt outlet. This is exemplified in

Figures 5b and 6 of the present application. The Applicant respectfully submits that the Examiner has not issued a full and complete rejection of claim 3. In particular, the Examiner has not explained how Beskow et al. discloses all of the features of claim 3. Accordingly, it is respectfully submitted that claim 3 is allowable over Beskow et al.

Claim 17 specifies that the dirt collection chamber is positioned exterior to the cyclone. The Applicant respectfully submits that Beskow et al. does not disclose such an arrangement. In particular, as best understood by the Applicant, the dirt collection chamber of Beskow et al. is in the same contiguous space as the air that travels therein. Accordingly, a separate exterior dirt collection chamber is not disclosed. The Applicant respectfully submits that the Examiner has not pointed out how all of the limitations of claim 17 are shown in Beskow et al. Accordingly, it is respectfully submitted that rejection of claim 17 over Beskow et al. should be withdrawn.

The Applicant has inserted new claim 22. New claim 22 specifies that the at least one cyclone has a cyclone axis extending longitudinally through the at least one cyclone and the dirt collection chamber has a perimeter at the front end. The openable door has a perimeter that is generally the same as the perimeter of the dirt collection chamber. The Applicant points out that door 1012 of Beskow et al. reveals a small opening 1010. This is an auxiliary dirt outlet. The main dirt outlet comprises open end 1008 (see Figure 10). Accordingly, Beskow et al. does not disclose a door that has a perimeter that is generally the same as the perimeter of the dirt collection chamber at the front end of the vacuum cleaner. Accordingly, it is respectfully submitted that claim 22 is allowable over Beskow et al.

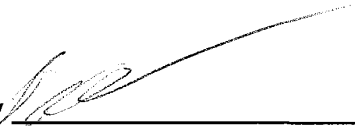
The Applicant has also inserted new claim 25. New claim 25 specifies that the dirt collection chamber has a rear end and that rear end is not removably mounted to the first cyclone unit. This contrasts to Beskow et al. wherein the rear end of unit 1006 is openable by the removal of element 1032. Accordingly, in order to empty the

dirt collection chamber of the vacuum cleaner Beskow et al., number 1032 is removed so as to allow a user to invert 1006 to empty the dirt therein. Accordingly, it is respectfully submitted that claim 25 is allowable over Beskow et al.

In view of the forgoing, it is respectfully submitted that the application is in condition for allowance. Favourable consideration is respectfully requested.

Respectfully submitted,

BERESKIN & PARR LLP

By 
Philip C. Mendes da Costa
Reg. No. 33,106
Tel: 416-957-1695

February 14, 2011

Philip C. Mendes da Costa B.Sc. (Chem. Eng.), LL.B.
416 957 1695 pmdcosta@bereskinparr.com

Our Reference: 10452-428

**INFORMATION DISCLOSURE
STATEMENT UNDER CFR.1.56 and CFR 1.97(c)(1) and (e)(2)**

The Commissioner of Patents
and Trademarks
Washington, D.C.
U.S.A 20231

Dear Sir:

Re: United States Patent Application No. 12/720,484
Title: CONFIGURATION OF A HAND VACUUM CLEANER
Applicant: Wayne Ernest Conrad
Filed: March 9, 2010

In accordance with 37 CFR 1.97 and 1.98, and in recognition of the duty of disclosure set forth in 37 CFR 1.56, the applicant hereby submits an Information Disclosure Statement including a listing of patents and other publications of which the applicant is aware on PTO form SB08a.

In accordance with the requirements of 1.97(c)(1) and (e)(2), this Information Disclosure Statement is filed before the mailing date of a final Office Action, a notice of allowance, or an action that otherwise closes prosecution in the application.

Certification Under 37 CFR 1.97(e)(2)

The references set out in the Information Disclosure Statement were cited by the Examiner during the prosecution of the corresponding U.S. Application No. 12/720,901.

It is hereby certified 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 more than three months prior to the filing of the information disclosure statement.

A list of the patents and other publications of which the applicant is aware is set out in the attached PTO Form SB08a which is attached hereto.

Accordingly, the applicant submits that the Information Disclosure Statement is properly considered at this time.

Respectfully submitted,

BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.



Philip C. Mendes da Costa
Registration No. 33,106

/jm
Encl.

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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/720,484		Filing Date 03/09/2010		☐ To be Mailed			
APPLICATION AS FILED – PART I												
(Column 1)			(Column 2)			SMALL ENTITY ☒ OR		OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)		RATE (\$)	FEE (\$)					
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A						
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A						
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A						
TOTAL CLAIMS (37 CFR 1.16(i))	21 minus 20 =	* 1	X \$26 =	26		X \$ =						
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	* 0	X \$110 =	0		X \$ =						
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 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).											
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))												
* If the difference in column 1 is less than zero, enter "0" in column 2.												
APPLICATION AS AMENDED – PART II												
(Column 1)			(Column 2)			(Column 3)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY	
AMENDMENT	02/14/2011	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	* 25	Minus	** 21	= 4	X \$26 =	104		X \$ =			
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0	X \$110 =	0		X \$ =			
	☐ Application Size Fee (37 CFR 1.16(s))											
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))											
						TOTAL ADD'L FEE	104		TOTAL ADD'L FEE			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =			X \$ =			
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =			X \$ =			
	☐ Application Size Fee (37 CFR 1.16(s))											
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))											
						TOTAL ADD'L FEE			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 number found in the appropriate box in column 1.												

Legal Instrument Examiner:
/GERALDINE STANLEY/

This collection of information is required by 37 CFR 1.16. 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 12 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.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/720,484	03/09/2010	Wayne Ernest Conrad	16697-48	9161

1059 7590 04/27/2011
BERESKIN AND PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
BOX 401
TORONTO, ON M5H 3Y2
CANADA

EXAMINER

NGUYEN, DUNG V

ART UNIT	PAPER NUMBER
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3723

MAIL DATE	DELIVERY MODE
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04/27/2011

PAPER

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.

Office Action Summary	Application No.		Applicant(s)	
	12/720,484		CONRAD, WAYNE ERNEST	
	Examiner		Art Unit	
	Dung Van Nguyen		3723	

-- 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 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, 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 14 February 2011.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ 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

4) ☒ Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-25 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 09 March 2010 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).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

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).

a) ☐ All b) ☐ Some * c) ☐ None of:

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) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>2/14/2011</u> .	4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____. 5) ☐ Notice of Informal Patent Application 6) ☐ Other: _____.
--	--

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding claim 1, the phrase "an openable door positioned" renders the claim indefinite because it is unclear where the position of the openable door.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 1-21 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beskow (US PUB 2008/004880). Beskow et al discloses a hand vacuum cleaner 104 comprising a front end, a rear end, an air flow passage extending from a dirty air inlet 114 to a clean air outlet, a first cyclone unit 1006 positioned in the air flow passage, the first cyclone unit 1006 comprising a cyclone 1032 and a dirt collection chamber, the dirt collection chamber having an openable, removable door 1012 positioned at the front end, a suction motor 910 positioned in the air flow passage, wherein the cyclone has a cyclone air inlet and outlet, wherein the cyclone axis generally parallel to the axis of the hand vacuum cleaner 104, wherein the cyclone unit is positioned forward of the suction motor 910, wherein the door 1012 is openable,

removable and pivotally mounted to the hand vacuum cleaner 104, wherein the dirt collection chamber is removable from the hand vacuum cleaner 104 as a sealed unit for empty, wherein the dirt collection chamber is removable from the hand vacuum cleaner 104 with the cyclone unit 1006, wherein the single dirt collection chamber is positioned exterior to the single cyclone, wherein the hand vacuum cleaner 104 further comprising a suction motor housing, the suction motor is positioned in the suction motor housing and the first cyclone unit 1006 is removably mounted to the suction motor housing (note Fig. 9-11, paragraphs [0089]-0114]. Beskow et al does not disclose the door positioned at the front wall of the front end. It would have been obvious to one having ordinary skill in the art at the time the invention was made to position the door at the front wall, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. Please note that in the instant application, paragraph [0032], applicant has not disclosed any criticality for the claimed limitations.

6. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beskow et al (US PUB 2008/0040883) in view of Oh et al (US PUB 2008/0190080). Beskow et al discloses the claimed invention except a second cyclone unit downstream from the first cyclone unit. Oh et al discloses a vacuum cleaner having a second cyclone unit downstream from the first cyclone unit (note Fig. 1, paragraph [0040]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the vacuum cleaner of Beskow et al with the second cyclone unit disclosed by Oh et al in order to remove fine contaminants more effectively.

Response to Arguments

7. Applicant's arguments with respect to claims 1-25 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

9. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Van Nguyen whose telephone number is 571-272-4490. The examiner can normally be reached on PHP Program.

11. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph J. Hail can be reached on 571-272-4485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dung Van Nguyen/
Primary Examiner, Art Unit 3723

<i>Index of Claims</i> 	Application/Control No. 12720484	Applicant(s)/Patent Under Reexamination CONRAD, WAYNE ERNEST
	Examiner Dung V Nguyen	Art Unit 3723

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant				☐ CPA		☐ T.D.		☐ R.1.47	
CLAIM		DATE							
Final	Original	11/05/2010	04/22/2011						
	1	✓	✓						
	2	✓	✓						
	3	✓	✓						
	4	✓	✓						
	5	✓	✓						
	6	✓	✓						
	7	✓	✓						
	8	✓	✓						
	9	✓	✓						
	10	✓	✓						
	11	✓	✓						
	12	✓	✓						
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	14	✓	✓						
	15	✓	✓						
	16	✓	✓						
	17	✓	✓						
	18	✓	✓						
	19	✓	✓						
	20	✓	✓						
	21	✓	✓						
	22		✓						
	23		✓						
	24		✓						
	25		✓						

Search Notes 	Application/Control No. 12720484	Applicant(s)/Patent Under Reexamination CONRAD, WAYNE ERNEST
	Examiner Dung V Nguyen	Art Unit 3723

SEARCHED			
Class	Subclass	Date	Examiner
15	37, 352, 353, 344, 350, 327.7	11/5/2010	DVN
55	337, 328, 329, Dig. 3	11/5/2010	DVN
	updated	4/22/2011	DVN

SEARCH NOTES		
Search Notes	Date	Examiner
See Search History (inventor name search, citation searches)	11/5/2010	DVN
See Search History	4/22/2011	DVN

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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Receipt date: 02/14/2011

12720484 - GAU: 3723

Doc code: IDS

PTO/SB/08a (01-10)

Doc description: Information Disclosure Statement (IDS) Filed

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	12720484
	Filing Date	2010-03-09
	First Named Inventor	CONRAD, Wayne Ernest
	Art Unit	3723
	Examiner Name	NGUYEN, Dung V
	Attorney Docket Number	10452-428

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	6434785	B1	2002-08-20	Vandenbelt et al.		

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	1	20060090290	A1	2006-05-04	Lau		
	2	20070271724	A1	2007-11-29	Hakan et al.		
	3	20080040883	A1	2008-02-21	Beskow et al.		

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

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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							☐

Receipt date: 02/14/2011 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		12720484 12720484 - GAU: 3723
	Filing Date		2010-03-09
	First Named Inventor	CONRAD, Wayne Ernest	
	Art Unit	3723	
	Examiner Name	NGUYEN, Dung V	
	Attorney Docket Number	10452-428	

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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	
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Examiner Signature	/Dung Van Nguyen/		Date Considered	04/22/2011
*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.				

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DVN/

EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L3	3841	(15/344,347,350,352,353).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/04/22 09:29
L4	1971	(55/328,329,337,dig.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/04/22 09:30
L5	181	(15/327.7).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/04/22 09:30
L6	42930	"1" and vacuum and door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/04/22 09:31
L7	405	3 and vacuum and door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/04/22 09:31
L8	97	3 and vacuum and front with door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/04/22 09:34
L9	22	4 and vacuum and front with door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/04/22 09:39
L10	2	5 and vacuum and front with door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/04/22 09:40
L11	137	3 and hand with vacuum and door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/04/22 09:40
L12	29	4 and hand with vacuum and door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/04/22 09:44
L13	4	5 and hand with vacuum and door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/04/22 09:45
L14	4	((("6434784") or ("20060090290") or ("20070271724") or ("20080040883")).PN.	US-PGPUB; USPAT	OR	OFF	2011/04/22 09:46
L15	1	("6434785").PN.	US-PGPUB; USPAT	OR	OFF	2011/04/22 09:48

4/ 22/ 2011 9:49:32 AM**H:\ Workspaces\ 12720484.wsp**

Doc code: RCEX

Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)

Approved for use through 07/31/2012. OMB 0851-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL **(Submitted Only via EFS-Web)**

Application Number	12720484	Filing Date	2010-03-09	Docket Number (if applicable)	10452-428	Art Unit	3723
First Named Inventor	Wayne Ernest Conrad			Examiner Name	NGUYEN, Dung V		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.

Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☒ Amendment/Reply

☐ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____.
 (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

Doc code: RCEX

Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Signature of Registered U.S. Patent Practitioner			
Signature	/Philip C. Mendes da Costa/	Date (YYYY-MM-DD)	2011-07-26
Name	Philip C. Mendes da Costa	Registration Number	33106

This collection of information is required by 37 CFR 1.114. 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 12 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.

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

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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 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.
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Bereskin & Parr

INTELLECTUAL PROPERTY LAW

Appl. No : 12/720,484 Confirmation No.: 9161
Applicant : Wayne Ernest Conrad
Filed : March 9, 2010
Title : CONFIGURATION OF A HAND VACUUM CLEANER
TC./A.U. : 3723
Examiner : Dung Van Nguyen

Docket No. : 10452-428
Customer No. : 001059

Honorable Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313-1450

July 26, 2011

Amendment and Request For Continued Examination

Sir:

In response to the Office Action of April 27, 2010, please amend the above-identified 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 7 of this paper.

Bereskin & Parr LLP
Scotia Plaza, 40 King Street West, 40th Floor, Toronto, Ontario, Canada M5H 3Y2
Tel: 416.364.7311 Fax: 416.361.1398 www.bereskinparr.com
TORONTO MISSISSAUGA WATERLOO MONTREAL

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 hand vacuum cleaner comprising:
 - a) a front end having a front wall and a rear end;
 - b) an air flow passage extending from a dirty air inlet to a clean air outlet;
 - c) a first cyclone unit positioned in the air flow passage, the first cyclone unit comprising at least one cyclone and at least one dirt collection chamber external to the cyclone chamber;
 - d) the cyclone and the dirt collection chamber having an openable door positioned, the front wall comprising the openable door, whereby, when the door is in an open position, both the cyclone and the dirt collection chamber are opened; and,
 - e) a suction motor positioned in the air flow passage.
2. (Original) The hand vacuum cleaner of claim 1 wherein the at least one cyclone has a cyclone front end, a cyclone rear end, a cyclone air inlet and a cyclone air outlet and the cyclone front end is at the front end of the hand vacuum cleaner.
3. (Original) The hand vacuum cleaner of claim 1 wherein the cyclone front end has a dirt outlet and a separation plate is mounted in facing relation to the dirt outlet.
4. (Original) The hand vacuum cleaner of claim 3 wherein the separation plate is mounted to the door.

5. (Original) The hand vacuum cleaner of claim 2 wherein the cyclone air inlet and the cyclone air outlet are at the same end.
6. (Original) The hand vacuum cleaner of claim 5 wherein the cyclone air inlet and the cyclone air outlet are at the cyclone rear end.
7. (Original) The hand vacuum cleaner of claim 1 wherein the at least one cyclone has a cyclone axis extending longitudinally through the at least one cyclone, the hand vacuum cleaner has an axis extending from the front end to the rear end and the cyclone axis is generally parallel to the axis of the hand vacuum cleaner.
8. (Original) The hand vacuum cleaner of claim 1 wherein the first cyclone unit is positioned forward of the suction motor.
9. (Currently Amended) ~~The A~~ hand vacuum cleaner ~~of claim 1~~ comprising:
- a) a front end having a front wall and a rear end;
 - b) an air flow passage extending from a dirty air inlet to a clean air outlet;
 - c) a first cyclone unit positioned in the air flow passage, the first cyclone unit comprising at least one cyclone and at least one dirt collection chamber;
 - d) the dirt collection chamber having an openable door, the front wall comprising the openable door; and,
 - e) a suction motor positioned in the air flow passage
wherein the door is openable when the dirt collection chamber is mounted to the hand vacuum cleaner.
10. (Original) The hand vacuum cleaner of claim 1 wherein the door is removable.
11. (Original) The hand vacuum cleaner of claim 1 wherein the door is pivotally mounted to the hand vacuum cleaner.

12. (Original) The hand vacuum cleaner of claim 1 wherein the dirt collection chamber is removable from the hand vacuum cleaner.
13. (Original) The hand vacuum cleaner of claim 1 wherein the dirt collection chamber is removable from the surface cleaning apparatus as a sealed unit for emptying.
14. (Original) The hand vacuum cleaner of claim 13 wherein the first cyclone unit is sealed when removed from the hand vacuum cleaner other than fluid flow passages leading to and from the first cyclone unit.
15. (Original) The hand vacuum cleaner of claim 1 wherein the dirt collection chamber is removable from the hand vacuum cleaner with the first cyclone unit.
16. (Original) The hand vacuum cleaner of claim 1 wherein the first cyclone unit has a single cyclone and a single dirt collection chamber.
17. (Original) The hand vacuum cleaner of claim 16 wherein the single dirt collection chamber is positioned exterior to the single cyclone.
18. (Original) The hand vacuum cleaner of claim 17 wherein the single cyclone and the single dirt collection chamber comprise a one-piece assembly.
19. (Original) The hand vacuum cleaner of claim 18 wherein the single cyclone and the single dirt collection chamber are integrally formed.
20. (Original) The hand vacuum cleaner of claim 1 wherein the hand vacuum cleaner further comprises a suction motor housing, the suction motor is positioned in the suction motor housing and the first cyclone unit is removably mounted to the suction motor housing.
21. (Original) The hand vacuum cleaner of claim 1 further comprising a second cyclone unit downstream from the first cyclone unit.

22. (Previously Presented) The hand vacuum cleaner of claim 1 wherein the at least one cyclone has a cyclone axis extending longitudinally through the at least one cyclone and the dirt collection chamber has a perimeter at the front end and the openable door has a perimeter that is generally the same as the perimeter of the dirt collection chamber.

23. (Previously Presented) The hand vacuum cleaner of claim 1 wherein the front wall is the openable door.

24. (Currently Amended) A hand vacuum cleaner of claim 1 comprising:

- a) a front end having a front wall and a rear end;
- b) an air flow passage extending from a dirty air inlet to a clean air outlet;
- c) a first cyclone unit positioned in the air flow passage, the first cyclone unit comprising at least one cyclone and at least one dirt collection chamber;
- d) the dirt collection chamber having an openable door, the front wall comprising the openable door; and,
- e) a suction motor positioned in the air flow passage

~~wherein the dirt collection chamber has a front end and the front wall~~
openable door covers the front an end of the dirt collection chamber.

25. (Currently Amended) A hand vacuum cleaner of claim 1 comprising:

- a) a front end having a front wall and a rear end;
- b) an air flow passage extending from a dirty air inlet to a clean air outlet;
- c) a first cyclone unit positioned in the air flow passage, the first cyclone unit comprising at least one cyclone and at least one dirt collection chamber;
- d) the dirt collection chamber having an openable door, the front wall comprising the openable door; and,
- e) a suction motor positioned in the air flow passage

wherein the dirt collection chamber has a rear end and the rear end is non-removably mounted to the first cyclone unit.

REMARKS/ARGUMENTS

This is in response to the Office Action dated April 27, 2011. This Response is accompanied by a Request for Continued Examination. Accordingly, it is respectfully submitted that this response is timely filed.

In the Office Action, the Examiner rejected all of the claims as being unpatentable over Beskow (US PUB 2008/004880). The Applicant assumes the Examiner was referring to Beskow US 2008/0040883 and has prepared a response based upon this understanding.

At the end of paragraph 5 on page 3 of the detailed action, the Examiner acknowledged that Beskow does not disclose the door positioned at the front wall of the front end. The Examiner stated it would have been obvious to one having ordinary skill in the art at the time the invention was made to position the door at the front wall since rearranging parts of an invention involves only a routine skill. Further, the Examiner has noted that the Applicant has not disclosed any criticality to the claimed limitations.

By this response, the Applicant has amended claim 1. Claim 1 as amended specifies that the dirt collection chamber is external to the cyclone chamber. Further, claim 1 as amended now specifies that when the door is in an open position, both the cyclone and the dirt collection chamber are opened. In Beskow, the cyclone chamber is located between dirt collection chamber 1006 and cyclone insert 1032. Accordingly, the dirt collects in the same chamber as the cyclone. Contrary to claim 1 as amended, Beskow does not disclose a dirt collection chamber which is external to the cyclone chamber. Door 1012 is provided to cover opening 1010. When the doors open, the lower portion of the cyclone chamber (which functions as a dirt collection space when the dirt collection chamber 1006 is in the orientation found in Figure 10) is accessible. To empty dirt collection chamber 1006, the dirt collection chamber may be

fluidly connected to an external vacuum source (see U.S. Patent Application Serial No. 10/544,927 which is incorporated into the cited reference at paragraph 102). Accordingly, Beskow discloses using opening 1010 as a “secondary emptying opening that is adapted to be fluidly connected to an external vacuum source via a connection” (see claim 1 of US 10/544,927 as published).

In contrast, as set out in claim 1, the door, when it opens, opens both the cyclone and the dirt collection chamber. Accordingly, when opened, dirt that has accumulated in both the cyclone and the dirt collection chamber may be emptied at the same time. This differs from the structure shown in Beskow. Further, this structure is not a mere rearrangement of parts since Beskow does not suggest utilizing a separate external dirt collection chamber. Accordingly, it is respectfully submitted that claim 1 as amended is allowable.

The Applicant has amended claim 9 by combining therein limitations from former claim 1. Claim 9 specifies that the door is openable when the dirt collection chamber is mounted to the hand vacuum cleaner. Further, it is provided that the front wall comprises the openable door. In order to provide door 1012 at the front wall, a person skilled in the art would have to move the door forwardly and position it at the front of the vacuum cleaner (e.g. at about the level of reference numeral 1014 in Figure 10 and transverse to the axis of cyclone insert 1032). The Applicant submits that such a structure could not be developed utilizing the teaching of Beskow. As shown in Figure 9 of Beskow, protruding surface 962 is provided to direct the dirt collection assembly 100 towards the fan cover 924 as the dirt collection chamber 1006 is installed. This assists in providing an airtight seal between the dirt collection chamber 1006 and the fan motor's inlet. See paragraph [0099]. Accordingly, protruding surface 962 abuts against the front of the hand vacuum cleaner of Beskow. Accordingly, a person skilled in the art would not be able to adapt Beskow to include a front door that can be opened when dirt collection chamber 1006 is attached to the hand vacuum cleaner without

removing protruding surface 962 of Beskow. As this surface is stated to be utilized to provide an airtight seal, it is submitted that a substantial modification would be required to Beskow to provide a front openable door on the front wall as claimed in claim 9. Once again, the Applicant respectfully submits that this is not a mere arrangement of parts and is inventive.

The Applicant has also amended claim 24 by inserting therein limitations from former claim 1. Claim 24 accordingly requires that the openable door covers an open end of the dirt collection chamber. An advantage of this design is that dirt may easily exit from the dirt collection chamber. As exemplified in Figures 5A and 5B of the application, when the front door is opened, dirt may fall out from all parts of the dirt collection chamber because the front end of the dirt collection chamber is opened. In contrast, in Beskow, a portion of a sidewall of the dirt collection chamber 1006 is opened. Large clumps of debris (e.g. a hairball or the like) could block opening 1010 requiring manual intervention by a user to empty the dirt collection chamber 1006 via opening 1010. This provides a substantial advantage and is not a matter of a routine rearranging of parts. Accordingly, the Applicant respectfully submits that claim 24 is allowable over Beskow.

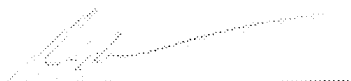
The Applicant has also amended claim 25 by inserting therein limitations from claim 1. Claim 25 specifies that the dirt collection chamber has a rear end and the rear end is non-removably mounted to the first cyclone unit. In Beskow, the rear end of the dirt collection unit comprises upper flange 1036 of cyclone insert 1032. As shown in Figure 10, cyclone insert 1036 is removable from the rear end of dirt collection chamber 1006. The Applicant submits that, when removed, open end 1008 of direct collection chamber 1006 comprises the main emptying opening. This opens all of an end of the dirt collection chamber and permits the dirt collection chamber to be easily emptied by inverting it. In contrast, claim 25 specifies that the rear end is non-removably mounted to the first cyclone unit. Accordingly, claim 25 is directed at a structure which is not

disclosed by the embodiment of Figure 10 of Beskow. If the Examiner believes that this embodiment is disclosed or suggested by Beskow, the Examiner is respectfully requested to advise the Applicant where this teaching is contained in Beskow.

In view of the forgoing, favourable consideration of the application is respectfully requested.

Respectfully submitted,

BERESKIN & PARR LLP

By 
Philip C. Mendes da Costa
Reg. No. 33,106
Tel: 416-957-1695

Electronic Patent Application Fee Transmittal				
Application Number:		12720484		
Filing Date:		09-Mar-2010		
Title of Invention:		CONFIGURATION OF A HAND VACUUM CLEANER		
First Named Inventor/Applicant Name:		Wayne Ernest Conrad		
Filer:		Philip C. Mendes da Costa/Julia McRandall		
Attorney Docket Number:		10452-428		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Request for continued examination	1801	1	810	810
Total in USD (\$)				810

Electronic Acknowledgement Receipt	
EFS ID:	10600925
Application Number:	12720484
International Application Number:	
Confirmation Number:	9161
Title of Invention:	CONFIGURATION OF A HAND VACUUM CLEANER
First Named Inventor/Applicant Name:	Wayne Ernest Conrad
Customer Number:	01059
Filer:	Philip C. Mendes da Costa/Julia McRandall
Filer Authorized By:	Philip C. Mendes da Costa
Attorney Docket Number:	10452-428
Receipt Date:	26-JUL-2011
Filing Date:	09-MAR-2010
Time Stamp:	16:20:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$810
RAM confirmation Number	2998
Deposit Account	022095
Authorized User	
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1	Request for Continued Examination (RCE)	RCE.pdf	797982	no	3
			a2f06b0cf3c1a34d6783e99b91aacad54533bed		

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Information:

2	Amendment Submitted/Entered with Filing of CPA/RCE	428_Response.pdf	684633	no	10
			9f5c17a423765cf2e536948427c8e99ade515c9		

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3	Fee Worksheet (SB06)	fee-info.pdf	30348	no	2
			e1a06b2c9c2e394e42a9d0934f26bc78a776f4c8		

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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.

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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 Acknowledgement Receipt	
EFS ID:	10600925
Application Number:	12720484
International Application Number:	
Confirmation Number:	9161
Title of Invention:	CONFIGURATION OF A HAND VACUUM CLEANER
First Named Inventor/Applicant Name:	Wayne Ernest Conrad
Customer Number:	01059
Filer:	Philip C. Mendes da Costa/Julia McRandall
Filer Authorized By:	Philip C. Mendes da Costa
Attorney Docket Number:	10452-428
Receipt Date:	26-JUL-2011
Filing Date:	09-MAR-2010
Time Stamp:	16:20:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$810
RAM confirmation Number	2998
Deposit Account	022095
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

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1	Request for Continued Examination (RCE)	RCE.pdf	797982	no	3
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/720,484		Filing Date 03/09/2010		☐ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)			SMALL ENTITY ☒ OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =		OR	X \$ =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =			X \$ =				
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 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).									
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
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APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	07/26/2011	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 24	Minus	** 25	= 0	X \$26 =	0	OR	X \$ =	
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0	X \$110 =	0	OR	X \$ =	
☐ Application Size Fee (37 CFR 1.16(s))										
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
TOTAL ADD'L FEE						0	OR	TOTAL ADD'L FEE		
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)		
	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))										
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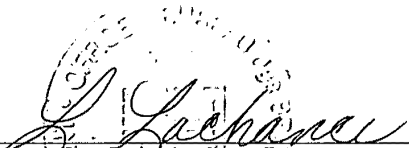
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Specification and Drawings, as originally filed, with Application for Patent Serial No:
CA 2658019, on March 11, 2009, by **G.B.D. CORP.**, assignee of Wayne Ernest Conrad,
for "Configuration of a Hand Vacuum Cleaner"


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ABSTRACT

A hand vacuum cleaner comprises at least one cyclone and at least one dirt collection chamber. The dirt collection chamber has an openable door positioned
5 at the front end of the vacuum cleaner.

TITLE: CONFIGURATION OF A HAND VACUUM CLEANER

FIELD

The specification relates to hand vacuum cleaners. More specifically, the specification relates to cyclonic hand vacuum cleaners having an openable door.

INTRODUCTION

The following is not an admission that anything discussed below is prior art or part of the common general knowledge of persons skilled in the art.

PCT publication WO 2008/009890 (Dyson Technology Limited) discloses a handheld cleaning appliance comprising a main body, a dirty air inlet, a clean air outlet and a cyclonic separator for separating dirt and dust from an airflow. The cyclone separator is located in an airflow path leading from the air inlet to the air outlet. The cyclonic separator is arranged in a generally upright orientation (i.e., the air rotates about a generally vertical axis in use). A base surface of the main body and a base surface of the cyclonic separator together form a base surface of the appliance for supporting the appliance on a surface. See also PCT publication WO 2008/009888 (Dyson Technology Limited) and PCT publication WO 2008/009883 (Dyson Technology Limited).

United States patent 7,370,387 (Black & Decker Inc.) discloses a hand-holdable vacuum cleaner that uses one or more filters and/or cyclonic separation device, and means for adjusting an angle of air inlet relative to a main axis of said vacuum cleaner. In particular, the vacuum cleaner further comprises a rigid, elongate nose having the air inlet at one end thereof, the nose being pivotal relative to a main axis of the vacuum cleaner through an angle of at least 135 degrees.

SUMMARY

The following introduction is provided to introduce the reader to the more detailed discussion to follow. The introduction is not intended to limit or define the claims.

According to one broad aspect, a hand vacuum cleaner is provided
5 which has a door that is located towards the front of the hand vacuum cleaner and is openable and, preferably, is removably mounted. According to such a design, when a user wants to empty the vacuum cleaner, the user may open the door and then pour dirt out of, e.g., a dirt chamber. As the door is at the front of the vacuum cleaner, there is no impediment to the door being opened. Further,
10 when the vacuum cleaner is inclined or inverted to empty the vacuum cleaner, no portion of the vacuum cleaner need be in front of the door. Accordingly, the dirt leaving the vacuum cleaner will not contact any portion of the vacuum cleaner when it is poured, e.g., into a garbage can.

In some designs, the hand vacuum cleaner may comprise a front
15 end, a rear end, and an air flow passage extending from a dirty air inlet to a clean air outlet. A first cyclone unit may be positioned in the air flow passage. The first cyclone unit may comprise at least one cyclone and at least one dirt collection chamber wherein the dirt collection chamber has an openable door positioned at the front end. A suction motor is positioned in the air flow passage.

20 In some examples, the at least one cyclone has a cyclone front end, a cyclone rear end, a cyclone air inlet and a cyclone air outlet, and the cyclone front end is at the front end of the hand vacuum cleaner.

In some examples, the cyclone front end has a dirt outlet and a separation plate is mounted in facing relation to the dirt outlet. In some
25 examples, the separation plate is mounted to the door. Preferably, the dirt outlet is at the front of the hand vacuum cleaner. The dirt outlet is preferably at an end of the cyclone opposed to the end having one or both of the air inlet and the air outlet.

In some examples, the cyclone air inlet and the cyclone air outlet are at the same end. In some examples, the cyclone air inlet and the cyclone air outlet are at the cyclone rear end.

5 In some examples, the at least one cyclone has a cyclone axis extending longitudinally through the at least one cyclone, the hand vacuum cleaner has an axis extending from the front end to the rear end, and the cyclone axis is generally parallel to the axis of the hand vacuum cleaner. Accordingly to such an embodiment, the cyclone and the motor may be axially aligned and the motor air inlet may be proximate the cyclone outlet with, optionally, one or more
10 pre-motor filters and optional cyclones positioned therebetween and, preferably, aligned such that the air flow therethrough travels generally linearly from component to component.

In some examples, the first cyclone unit is positioned forward of the suction motor.

15 In some examples, the door is openable when mounted to the hand vacuum cleaner. In some examples, the door is removable. In some examples, the door is pivotally mounted to the hand vacuum cleaner.

In some examples, the dirt collection chamber is removable from the hand vacuum cleaner. In some examples, the dirt collection chamber is
20 removable from the surface cleaning apparatus as a sealed unit for emptying. In some examples, the first cyclone unit is sealed when removed from the hand vacuum cleaner other than fluid flow passages leading to and from the first cyclone unit. In some examples, the dirt collection chamber is removable from the hand vacuum cleaner with the first cyclone unit.

25 In some examples, the first cyclone unit has a single cyclone and a single dirt collection chamber. In some examples, the single dirt collection chamber is positioned exterior to the single cyclone. In some examples, the single cyclone and the single dirt collection chamber comprise a one-piece

assembly. In some examples, the single cyclone and the single dirt collection chamber are integrally formed.

In some examples, the hand vacuum cleaner further comprises a suction motor housing, the suction motor is positioned in the suction motor housing and the first cyclone unit is removably mounted to the suction motor housing.

In some examples, the vacuum cleaner further comprises a second cyclone unit downstream from the first cyclone unit.

It will be appreciated that a hand vacuum cleaner may incorporate one or more of the features of each of these examples.

DRAWINGS

In the detailed description, reference will be made to the following drawings, in which:

Figure 1 is a side plan view of an example of a hand vacuum cleaner;

Figure 2 is a top plan view of the hand vacuum cleaner of Figure 1;

Figure 3 is a front plan view of the hand vacuum cleaner of Figure 1;

Figure 4 is a partially exploded rear perspective view of the hand vacuum cleaner of Figure 1;

Figure 5A is a front perspective view of the hand vacuum cleaner of Figure 1, showing a door in an open configuration;

Figure 5B is a front perspective view of the hand vacuum cleaner of Figure 1, showing a door removed from the hand vacuum cleaner;

Figure 6 is a cross section taken along line 6-6 in Figure 2; and

Figure 7A is a bottom perspective view of the hand vacuum cleaner of Figure 1;

Figure 7B is a rear perspective view of the hand-vacuum cleaner of Figure 1, showing the cyclone unit removed from the hand vacuum cleaner; and

5 Figure 8 is a cross section of an alternate example of a hand-vacuum cleaner.

DESCRIPTION OF VARIOUS EXAMPLES

Various apparatuses or methods will be described below to provide an example of each claimed invention. No example described below limits any
10 claimed invention and any claimed invention may cover processes or apparatuses that are not described below. The claimed inventions are not limited to apparatuses or processes having all of the features of any one apparatus or process described below or to features common to multiple or all of the apparatuses described below. It is possible that an apparatus or process
15 described below is not an embodiment of any claimed invention.

In the drawings attached hereto, the surface cleaning apparatus is exemplified as used in a hand vacuum cleaner that uses a single cyclone axially aligned with a longitudinal axis of the hand vacuum cleaner. It will be appreciated that the vacuum cleaner 100 may be of various configurations (e.g., different
20 positioning and orientation of the cyclone unit and the suction motor and differing cyclone units that may comprise one or more cyclones and one or more filters).

Referring to Figures 1 to 7B, a first example of a vacuum cleaner 100 is shown. The vacuum cleaner 100 (also referred to herein cleaner 100) is a hand vacuum cleaner 100, and is movable along a surface to be cleaned by
25 gripping and maneuvering handle 102. The vacuum cleaner 100 includes an upper portion 104, a lower portion 106, a front end 108, and a rear end 110. An axis 125 of the vacuum cleaner extends from the front end 108 to the rear end 110. In the example shown, handle 102 is provided at the upper portion 104. In

alternate examples, handle 102 may be provided elsewhere on the vacuum cleaner 100, for example at the rear end 110, and may be of any design.

In the example shown, the vacuum cleaner 100 comprises a nozzle 112 and a cyclone unit 114, which together preferably form a surface cleaning head 116 of the vacuum cleaner 100. In the example shown, the surface cleaning head 116 is preferably provided at the front end 108 of the vacuum cleaner 100.

Nozzle 112 engages a surface to be cleaned, and comprises a dirty air inlet 118, through which dirty air is drawn into the vacuum cleaner 100. An airflow passage extends from the dirty air inlet 118 to a clean air outlet 120 of the cleaner 100. In the example shown, clean air outlet 120 is at the rear end 110 of the cleaner 100.

Cyclone unit 114 is provided in the airflow passage, downstream of the dirty air inlet 118. Cyclone unit 114 may be any cyclone unit. In the example shown, the cyclone unit 114 is a one piece assembly comprising one cyclone 122, and one dirt collection chamber 124, which are preferably integrally formed. In alternate examples, the cyclone unit 110 may include more than one cyclonic stage, wherein each cyclonic stage comprising one or more cyclones and one or more dirt chambers. Accordingly, the cyclones may be arranged in parallel and/or in sequence. Further, in alternate examples, the cyclone 122 and dirt collection chamber 124 may be separately formed.

In the example shown, the nozzle 112 is positioned at the lower portion 106 of the vacuum cleaner 100. Preferably, as exemplified, nozzle 112 is positioned at the bottom of the vacuum cleaner 100, and, preferably, beneath the cyclone unit 114. However, it will be appreciated that nozzle 112 may be connected to the cyclone unit or dirt collection chamber at alternate locations.

Preferably, as exemplified, nozzle 112 may be on lower surface 157 of cyclone unit 114. In a particularly preferred design, the upper wall of the

nozzle may be a lower wall of the cyclone unit 114. As shown in Figure 6, dirt chamber 124 surrounds the lower portion of cyclone 122. Accordingly, the upper wall of nozzle 112 may be part of the lower wall of the dirt chamber. It will be appreciated that if dirt chamber 124 does not extend around the lower portion of
5 cyclone 122, then the upper wall of nozzle 112 may be part of a lower wall of cyclone 122. In alternate embodiments, nozzle 112 and cyclone 122 or dirt chamber 124 need not have a common wall.

Preferably, in the example shown, the nozzle 112 is fixedly positioned at the lower portion 106 of the vacuum cleaner 100. That is, the
10 nozzle 112 is not movable (e.g., rotatable) with respect to the remainder of the vacuum cleaner 100, and is fixed at the lower portion 106 of the vacuum cleaner 100.

As shown in Figures 3 and 5, nozzle 112 has a width W_N , and cyclone unit 114 has a width W_C . In the example shown, W_N and W_C are about
15 the same. An advantage of this design is that the nozzle 112 may have a cleaning path that is essentially as wide as the hand vacuum itself.

Preferably, nozzle 112 comprises an airflow chamber 136 wherein at least a portion, and preferably a majority, of the lower surface of the chamber 136 is open. Such a design is exemplified in Figure 7A wherein nozzle 112
20 comprises an upper nozzle wall 126. In the example shown, the upper nozzle wall 126 comprises a portion 119 of a wall 115 of the cyclone unit. Accordingly, nozzle 112 is integral with cyclone unit 114.

In an alternate design as exemplified by Figure 8, nozzle 812 comprises a lower wall 837, which closes lower end 834. Accordingly, nozzle 112
25 may be of various designs and may be an open sided passage or a closed passage. In either embodiment, it will be appreciated that nozzle 112 may be mounted or provided on cyclone unit 114 and as exemplified on a lower portion

of the dirt collection chamber so as to be removable with the dirt collection chamber.

Preferably, if nozzle 112 is an open sided passage, one or more depending walls 128 extend downwardly from the upper nozzle wall 126. The depending wall 128 is preferably generally U-shaped. In one embodiment, depending wall is provided rearward of opening 138. In other embodiments, depending walls may alternately or in addition be provided on the lateral sides of opening 138. It is preferred that depending walls are provided on each lateral side of opening 138 and rearward thereof. Further, depending walls 128 may extend a substantial distance to the front end 108 and, preferably, essentially all the way to front end 108. The depending wall 128 may be continuous to define a single wall as shown, or may be discontinuous. The depending wall 128 is preferably rigid (e.g., integrally molded with cyclone unit 114). However, they may be flexible (e.g., bristles or rubber) or moveably mounted to cyclone unit 114 (e.g., hingedly mounted).

Preferably, the lower end 132 of depending wall 128 is spaced above the surface being cleaned when the hand vacuum cleaner is placed on a surface to be cleaned. As exemplified in Figure 6, when vacuum cleaner 100 is placed on a floor F, lower end 132 of depending wall 128 is spaced a distance H above the floor. Preferably distance H is from 0.01 inches to 0.175 inches, more preferably from 0.04 to 0.08 inches.

The height of the depending wall (between upper nozzle wall 126 and lower end 132) may vary. In some examples, the depending wall may have a height of between about 0.05 and about 0.875 inches, preferably between about 0.125 and about 0.6 inches and more preferably between about 0.2 and about 0.4 inches. The height of depending wall may vary but is preferably constant.

As exemplified, the open end of the U-shape defines an open side 130 of the nozzle 114, and forms the dirty air inlet 118 of the cleaner 100. In the example shown, the open side 130 is provided at the front of the nozzle 114. In use, when optional wheels 135 are in contact with a surface, the open side 130 sits above and is adjacent a surface to be cleaned (e.g. floor F). As mentioned hereinabove, preferably, lower end 132 of depending walls 128 is spaced above floor F. Accordingly, some air may enter nozzle 114 by passing underneath depending wall 132. In such a case, the primary air entry to nozzle 114 is via open side 130 so that dirty air inlet 118 is the primary air inlet, with a secondary air inlet being under depending wall 128.

In the example shown, the lower end 132 of the depending wall 128 defines an open lower end 134 of the nozzle 114. The open lower end 134 preferably extends to the front 108 of the cleaner 108, and merges with the open side 130. In use, the exemplified nozzle has an open lower end 134 that faces a surface to be cleaned.

In the example shown, a plurality of wheels 135 are mounted to the depending wall 128, and extend lower than the lower end 132 of the depending wall 128. Accordingly, in use, when wheels 135 are in contact with a surface, the lower end 132 of the depending wall 128 is spaced from the surface to be cleaned, and the space between the lower end of the depending wall 128 and the surface to be cleaned form the secondary dirty air inlet to the vacuum cleaner 100. It will be appreciated that wheels 135 are optional. Preferably, wheels 135 are positioned exterior to the airflow path through nozzle 112, e.g., laterally outwardly from depending wall 128. Preferably a pair of front wheels 135 are provided. Preferably, the wheels are located adjacent front 108. Optionally, one or more rear wheels 108 may be provided. In an alternate embodiment, no wheels may be provided.

The upper nozzle wall 126, depending wall 128, and open lower end 134 of the nozzle 112 define the open sided airflow chamber 136 of the

nozzle. In use, when wheels 135 are in contact with a horizontal surface, the nozzle 112 and the airflow chamber 136 extend generally horizontally, and preferably linearly along a nozzle axis 113 (see Figure 7A).

5 An opening 138 is provided in the upper nozzle wall 126, and is in communication with the airflow chamber 136. Opening 138 may be of any size and configuration and at various locations in upper nozzle wall 126. In use, when wheels 135 are in contact with a surface, the opening 138 faces a surface to be cleaned, air enters the dirty air inlet 118, passes horizontally through the airflow chamber 136, and passes into the opening 138. Opening 138 is in
10 communication with a cyclone inlet passage 139, which is in communication with a cyclone air inlet 140 of cyclone 122.

Cyclone 122 may of any configuration and orientation. Preferably, cyclone 122 comprises a chamber wall 142, which in the example shown, is cylindrical. The cyclone chamber is located inside chamber wall 142. The cyclone
15 122 extends along an axis 123, which, in the example shown, is preferably parallel to the nozzle axis 113 and the cleaner axis 125, and, and preferably extends generally horizontally when cleaner 100 is in use and wheels 135 are seated on a surface. Cyclone 122 has a front end 196, which is towards, and preferably at the front end 108 of the hand vacuum cleaner, and a rear end 198.
20 Accordingly, in a preferred embodiment as exemplified, the front end of cyclone unit 112 is part of or forms the front or leading wall of the vacuum cleaner 100. Accordingly, for example, other than a nozzle, no operating component of the vacuum cleaner 100 is preferably in front of the openable portion.

Preferably, the cyclone air inlet and the cyclone air outlet are at the
25 same end of the cyclone 122 and the dirt outlet is at an opposed end. The cyclone air outlet may be covered by a screen or shroud or filter as is known in the art. As exemplified, the cyclone air inlet 140 is defined by an aperture in the chamber wall 142, and is at the rear 198 of the cyclone 122. As can be seen in Figure 5, the inlet passage 139 is configured such that air enters the cyclone 122

in a tangential flow path, e.g., passage 139 may be arcuate. The air travels in a cyclonic path in the cyclone, and dirt in the air is separated from the air. The air exits the cyclone via an outlet passage 144, through outlet 145. Outlet 145 is defined in a rear wall 179 of the cyclone unit 114. Accordingly, as exemplified, cyclone inlet 140 and outlet 145 are at the same end, and more particularly, the rear end 198, of the cyclone 122.

As exemplified in Figure 6, a plate 174 may be provided adjacent outlet passage 144, spaced from and facing the inlet 176 to outlet passage 144. Plate 174 may be mounted to cyclone 122 via legs 178. In the example shown, plate 174, and legs 178 form an assembly 182 that is removably mounted in cyclone 122. In some examples, a screen may be mounted around legs 178.

The dirt that is separated from the air exits the cyclone via dirt outlet 146, and enters dirt collection chamber 124. Dirt collection chamber 124 may be any dirt collection chamber. Preferably, as exemplified, dirt outlet is at the front 196 of the cyclone 122, and further, is at the front end 108 of the cleaner 100. The dirt collection chamber may be internal or external to the cyclone chamber 122. Preferably, as exemplified, the dirt collection chamber is external. The dirt collection chamber may be in communication with the cyclone chamber by any means known in the art. Accordingly, one or more dirt outlets may be provided.

In the example shown, dirt collection chamber 124 preferably comprises two portions. A first portion 148 is provided immediately adjacent the dirt outlet 146, and is at the front end 108 of the cleaner 100. A second portion 150 is concentric with the cyclone 122. A lower portion 152 of the second portion 150 is below the cyclone. As exemplified, nozzle 112 is positioned below first portion 148, and lower portion 152. Accordingly, dirt chamber 124 may comprise an annular chamber surrounding the cyclone 122.

A separation plate 154 may be provided in the dirt collection chamber 124, adjacent the dirt outlet 146, and in facing relation to the dirt outlet. The separation plate 154 aids in preventing dirt in dirt collection chamber 124 from re-entering cyclone 122. Preferably, plate 154 is spaced from dirt outlet 146.

5 Plate 154 may be mounted by any means to any component in cyclone unit 114. As exemplified, the separation plate is mounted on an arm 156, which extends from a front wall 158 at the front 108 of the cleaner 100.

Cyclone unit 114 may be emptied by an openable door positioned at the front end of the vacuum cleaner and preferably comprises a front wall

10 thereof. The door may be opened while the cyclone unit is mounted to the vacuum cleaner. Alternately, or in addition, the door may be opened when the cyclone unit has been removed from the vacuum cleaner. The door may be openably mounted to the cyclone unit or another portion of vacuum cleaner 100 by any means. For example, one or more latches 159 may secure the door in

15 position. Alternately, the door may be opened, e.g., pivoted open, and then optionally removable.

For example, one of the ends of the cyclone unit 114 may be openable. As exemplified in Figures 4 and 5A, in the example shown, front wall 158 is pivotally mounted to the cyclone unit wall 115 at pivots 177 and serves as

20 an openable door 158 of the dirt chamber 124, such that dirt collection chamber 124 is openable, and dirt collection chamber 124 may be emptied.

The door is preferably provided at the front of the vacuum cleaner, or on a surface that does not face another component of the vacuum cleaner. Accordingly, the dirt collection chamber is openable both when the dirt collection

25 chamber is mounted to the hand vacuum cleaner, or when it is removed. When door 158 is pivoted away from the remainder of the cyclone unit 114, separation plate 154 and arm 156 also preferably pivot away or removed from the remainder of the cyclone unit. A latch 159 is provided, which secures door 158 to wall 115.

Further, referring to Figure 5B, in the example shown, openable door 158 is removably mounted to cyclone unit wall 115. That is, openable door 158 may be removed from vacuum cleaner 100 by a user, and may be re-mounted to vacuum cleaner 100. Openable door 100 may be removably
5 mounted by any means known in the art. For example, pivots 177 may be releasable from door 158 or wall 115, or may be separable into two portions as shown. In alternate embodiments, a plurality of mechanical fasteners, such as latches 159, may be used.

The rear portion of the dirt collection chamber 124 may be closed
10 by wall 179.

The clean air exiting cyclone 122 passes through outlet 145 of outlet passage 144, exits surface cleaning head 116, and passes into the cleaner body 160. In the example shown, the cleaner body 160 is positioned rearward of the surface cleaning head 116. The cleaner body comprises a suction motor
15 housing 168, which houses an optional pre-motor filter 162, a suction motor 164 and may house an optional post-motor filter 166.

In the example shown, suction motor housing 168 further houses a pre-motor filter 162. Pre-motor filter 162 is provided in the airflow path preferably adjacent and downstream of the outlet passage 144, and facing the outlet 145.
20 Pre-motor filter 162 serves to remove remaining particulate matter from air exiting the cyclone 122, and may be any type of filter, such as a foam filter. One or more filters may be used. In the exemplified embodiments, the vacuum cleaner has a linear configuration. If the vacuum cleaner is of a non-linear configuration, then pre-motor filter 162 need not be located adjacent outlet
25 passage 144.

Suction motor 164 is provided in the airflow path preferably adjacent and downstream of the pre-motor filter 162. The suction motor 164 may be any type of suction motor. The suction motor draws air into the dirty air inlet

118 of the cleaner 100, through the airflow path past the suction motor 164, and out of the clean air outlet 120. The suction motor 164 has a motor axis 165. In the example shown, the motor axis 165 and the cyclone axis 123 preferably extend in the same direction and are preferably generally parallel. In the
5 exemplified embodiments, the vacuum cleaner has a linear configuration. If the vacuum cleaner is of a non-linear configuration, then motor 164 need not be located adjacent pre-motor filter 162.

The cleaner body 160 further preferably comprises a post-motor filter housing 170. A post motor filter 166 is provided in the post-motor filter
10 housing 170. The post motor filter 166 is provided in the airflow path downstream of, and preferably adjacent, the suction motor 164. Post motor filter 166 serves to remove remaining particulate mater from air exiting the cleaner 100. Post-motor filter 166 may be any type of filter, such as a HEPA filter. If the vacuum cleaner is of a non-linear configuration, then post motor filter 166 need
15 not be located adjacent suction motor 164

Clean air outlet 120 is provided downstream of post-motor filter 166. Clean air outlet 120 may comprise a plurality of apertures formed in housing 170.

Referring to Figure 7B, the dirt collection chamber 124 is preferably
20 removable from the hand vacuum cleaner 100, and in the example shown, is removable as a sealed unit for emptying. In the example shown, the cyclone unit 114 comprises the dirt collection chamber 124. Accordingly, the cyclone unit 114 is removable from the hand vacuum cleaner. As the cyclone unit 114 is integral with nozzle 112 and airflow chamber 136, nozzle 112 and airflow chamber 136
25 are removable from the cleaner 100 with cyclone unit 114.

As can be seen in Figure 7B, when the cyclone unit 114 is removed from the hand vacuum cleaner, and particularly from motor housing 168, it is sealed, except for the fluid flow passages leading to and from the first cyclone

unit (i.e. opening 138 and outlet 145). That is, wall 179 and front wall 158 seal the cyclone unit 114. In order to empty the dirt collection chamber 124, the front wall 158 may be opened, and the dirt may be emptied from dirt chamber 124.

As exemplified, in order to remove cyclone unit 114 from the surface cleaning apparatus, the cyclone unit comprises a first mounting member 173, and the suction motor housing 168 has a second mounting member 175. The first 173 and second 175 mounting members are releasably engageable with each other. In the example shown, the first 173 and second 175 mounting members comprise a bayonet mount. In alternate examples, the first and second mounting members may be another type of mounting member, such as mating screw threads, magnets, mechanical members such as screws or any other type of mounting members.

One or more additional wheels 180 may be mounted to housing 161, preferably at lower portion 106, and may be used in conjunction with wheels 135. Preferably, a single rear wheel 180 is provided. Preferably, rear wheel 180 is located on a centre line of the vacuum cleaner and rearward of the depending wall 128.

Referring now to Figure 8, in which like numerals refer to like features, with the first digit incremented to 8 to refer to the figure number, an alternate example of a hand vacuum cleaner 800 is shown. As discussed previously, nozzle 812 comprises a lower wall 837, which closes lower end 834..

Cleaner 800 further comprises a second cyclone unit 851 downstream of the first cyclone unit 814, between first cyclone unit 814 and pre-motor filter 862. Second cyclone unit 851 may be any cyclone unit. In the example shown, the second cyclone unit 851 comprises a plurality of cyclones in parallel, a second cyclone unit inlet 853, and a plurality of second cyclone unit outlets 853. Each of the plurality of cyclones is parallel to the first cyclone axis 823.

In the example shown, first cyclone unit 814 is removably mounted to second cyclone unit 851, and second cyclone unit 851 is removably mounted to cyclone unit 114.

5

CLAIMS:

1. A hand vacuum cleaner comprising:
 - a) a front end and a rear end;
 - b) an air flow passage extending from a dirty air inlet to a clean
5 air outlet;
 - c) a first cyclone unit positioned in the air flow passage, the first cyclone unit comprising at least one cyclone and at least one dirt collection chamber;
 - d) the dirt collection chamber having an openable door
10 positioned at the front end; and,
 - e) a suction motor positioned in the air flow passage.
2. The hand vacuum cleaner of claim 1 wherein the at least one cyclone has a cyclone front end, a cyclone rear end, a cyclone air inlet and a cyclone air outlet and the cyclone front end is at the front end of the hand vacuum cleaner.
- 15 3. The hand vacuum cleaner of any of claims 1-2 wherein the cyclone front end has a dirt outlet and a separation plate is mounted in facing relation to the dirt outlet.
4. The hand vacuum cleaner of claim 3 wherein the separation plate is mounted to the door.
- 20 5. The hand vacuum cleaner of any of claims 2-5 wherein the cyclone air inlet and the cyclone air outlet are at the same end.
6. The hand vacuum cleaner of claim 5 wherein the cyclone air inlet and the cyclone air outlet are at the cyclone rear end.
7. The hand vacuum cleaner of any of claims 1-6 wherein the at least one
25 cyclone has a cyclone axis extending longitudinally through the at least one

cyclone, the hand vacuum cleaner has an axis extending from the front end to the rear end and the cyclone axis is generally parallel to the axis of the hand vacuum cleaner.

8. The hand vacuum cleaner of any of claims 1-7 wherein the first cyclone unit is positioned forward of the suction motor.

9. The hand vacuum cleaner of any of claims 1-8 wherein the door is openable when mounted to the hand vacuum cleaner.

10. The hand vacuum cleaner of any of claims 1-9 wherein the door is removable.

10 11. The hand vacuum cleaner of any of claims 1-9 wherein the door is pivotally mounted to the hand vacuum cleaner.

12. The hand vacuum cleaner of any of claims 1-11 wherein the dirt collection chamber is removable from the hand vacuum cleaner.

15 13. The hand vacuum cleaner of any of claims 1-12 wherein the dirt collection chamber is removable from the surface cleaning apparatus as a sealed unit for emptying.

14. The hand vacuum cleaner of claim 13 wherein the first cyclone unit is sealed when removed from the hand vacuum cleaner other than fluid flow passages leading to and from the first cyclone unit.

20 15. The hand vacuum cleaner of any of claims 1-14 wherein the dirt collection chamber is removable from the hand vacuum cleaner with the first cyclone unit.

16. The hand vacuum cleaner of any of claims 1-15 wherein the first cyclone unit has a single cyclone and a single dirt collection chamber.

17. The hand vacuum cleaner of claim 16 wherein the single dirt collection chamber is positioned exterior to the single cyclone.
18. The hand vacuum cleaner of claim 17 wherein the single cyclone and the single dirt collection chamber comprise a one-piece assembly.
- 5 19. The hand vacuum cleaner of claim 18 wherein the single cyclone and the single dirt collection chamber are integrally formed.
20. The hand vacuum cleaner of any of claims 1-19 wherein the hand vacuum cleaner further comprises a suction motor housing, the suction motor is positioned in the suction motor housing and the first cyclone unit is removably
10 mounted to the suction motor housing.
21. The hand vacuum cleaner of any of claims 1-20 further comprising a second cyclone unit downstream from the first cyclone unit.

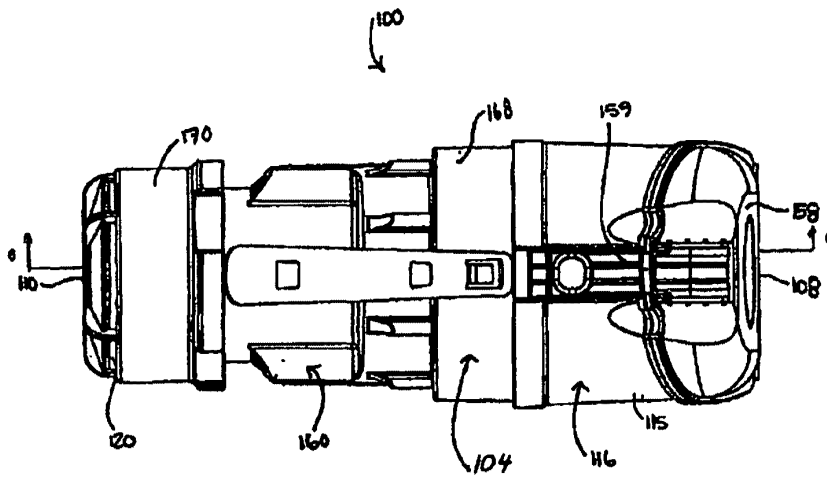


Fig. 2

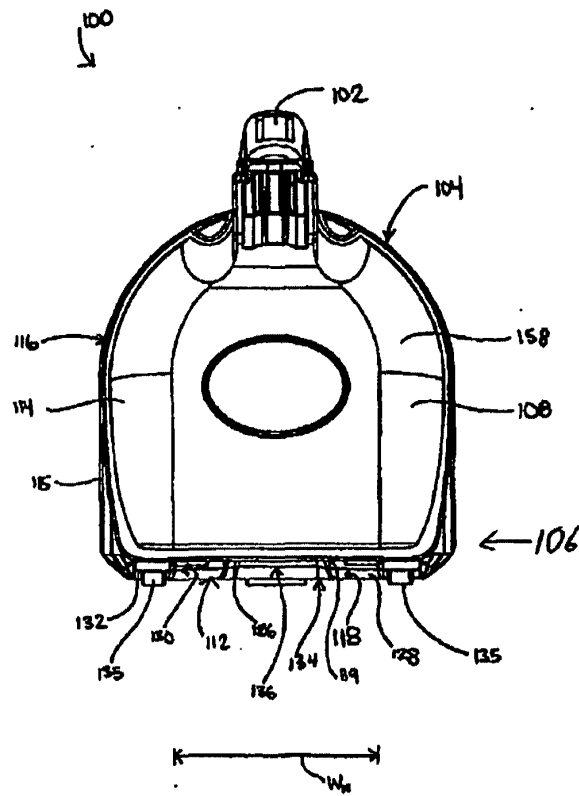


FIG 3

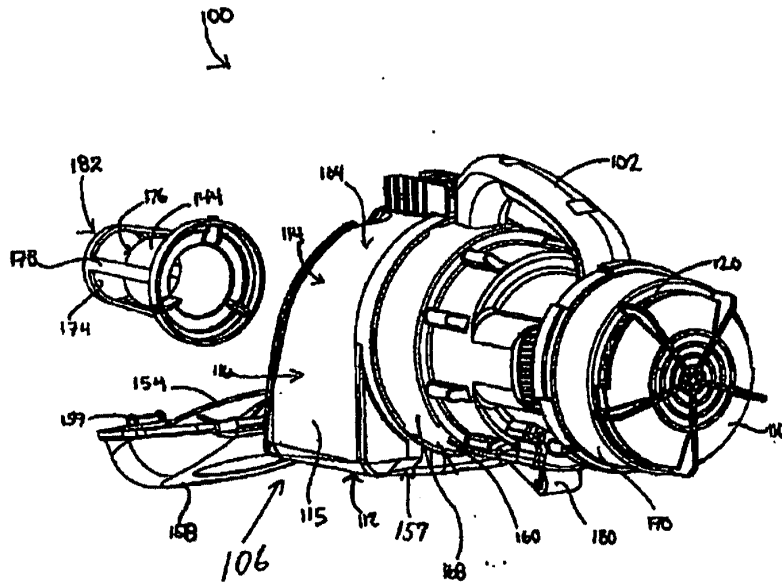


FIG. 4

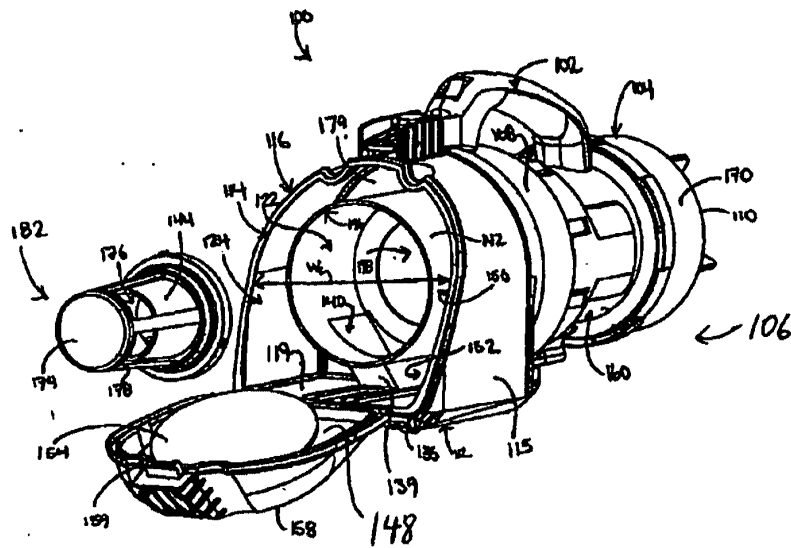
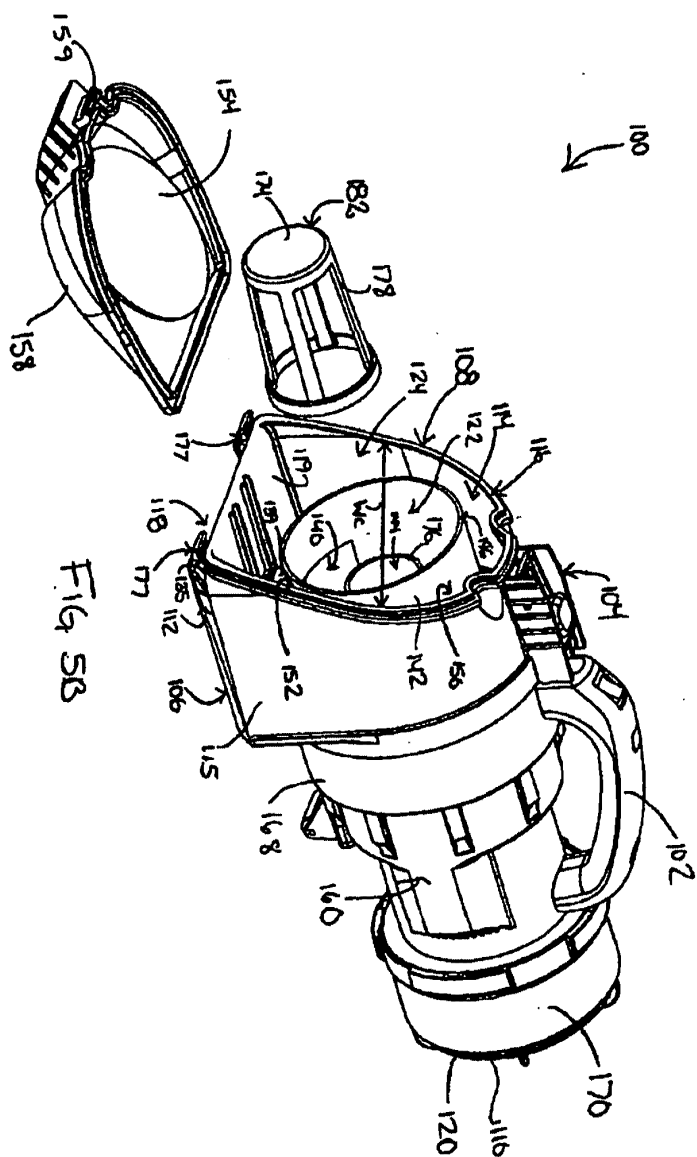
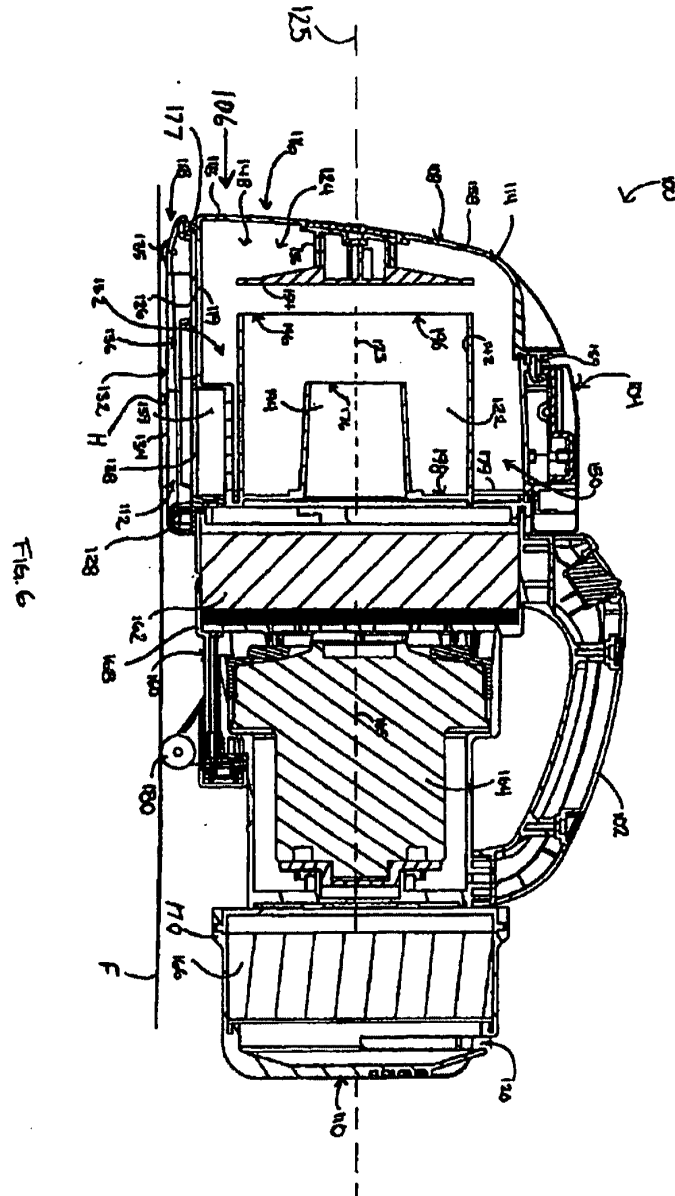


FIG. 5A





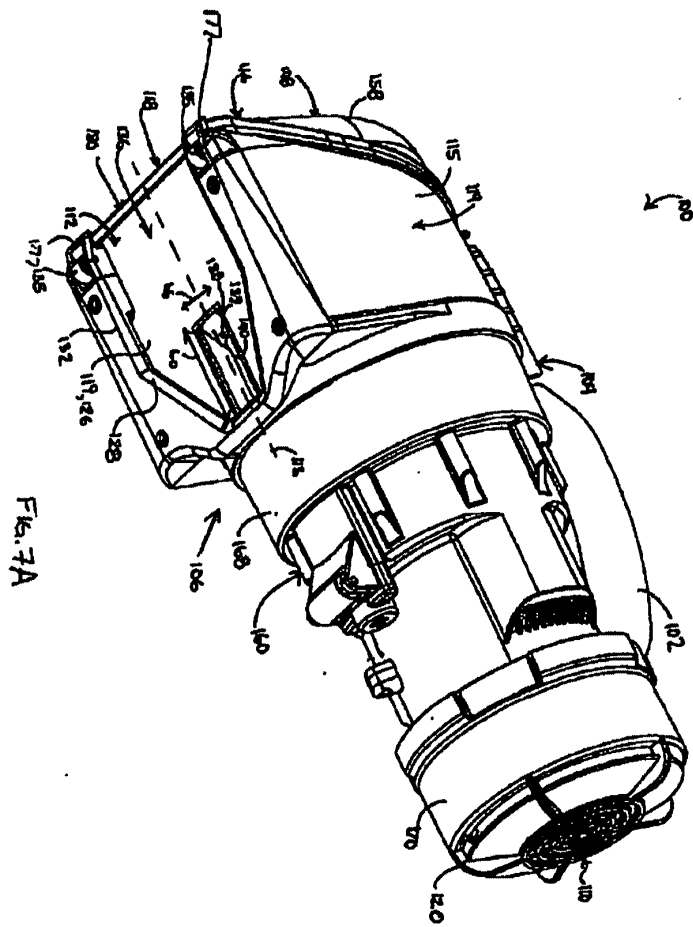
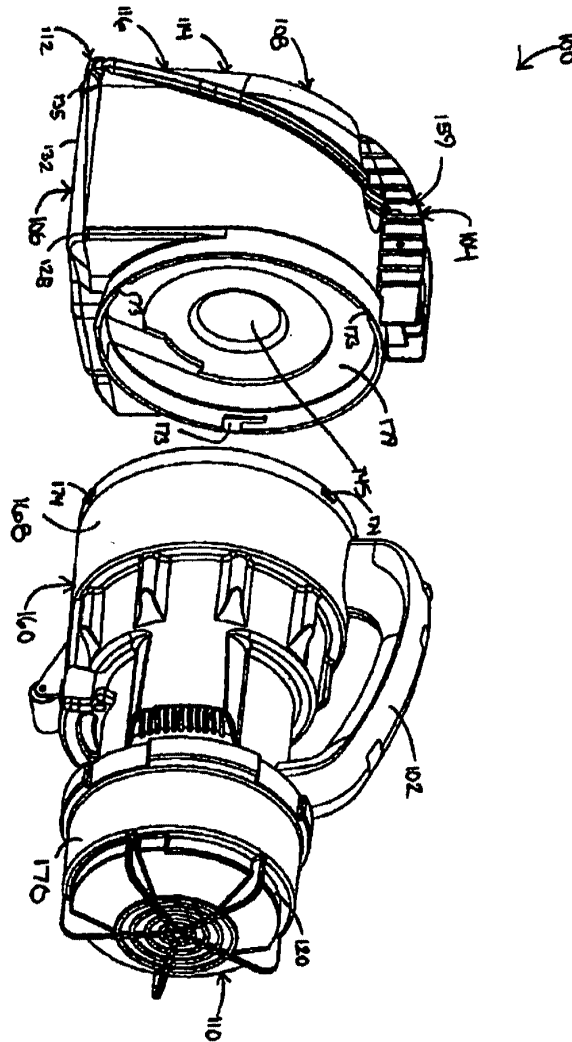
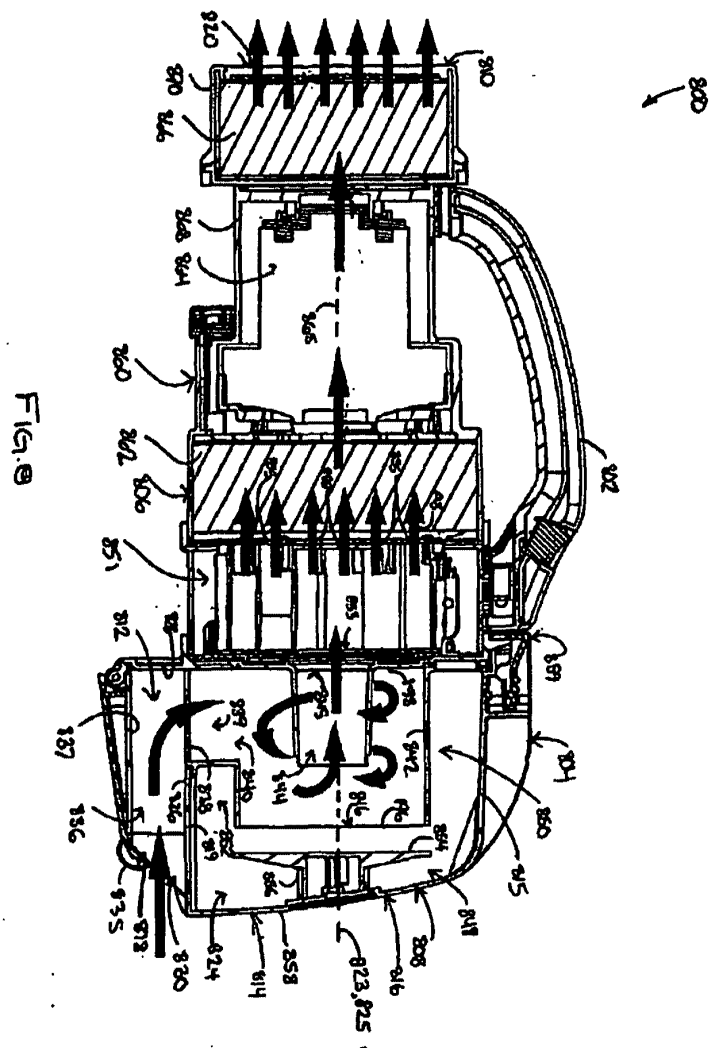


FIG. 7A

Fig. 7B





Bereskin & Parr

INTELLECTUAL PROPERTY LAW



Appl. No : 12/720,484
Applicants : Wayne Ernest Conrad
Filed : March 09, 2010
Title : CONFIGURATION OF A HAND VACUUM CLEANER
TC./A.U. : 3723
Examiner : NGUYEN, DUNG V
Docket No. : 10452-P34332US00 (formerly 10452-428)
Customer No. : 01059

Confirmation No.: 9161

Honorable Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313-1450

January 2, 2013

CERTIFIED COPY OF PRIORITY DOCUMENT

As required, we enclose herewith a certified copy of Canadian Patent Application No. 2,658,019, filed on March 11, 2009.

Respectfully submitted,
BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.

By P. Mendes da Costa

Philip C. Mendes da Costa
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TORONTO MISSISSAUGA WATERLOO MONTRÉAL



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UNITED STATES DEPARTMENT OF COMMERCE
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NOTICE OF ALLOWANCE AND FEE(S) DUE

1059 7590 08/21/2013
BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40th Floor
TORONTO, ON M5H 3Y2
CANADA

EXAMINER

NGUYEN, DUNG V

ART UNIT

PAPER NUMBER

3723

DATE MAILED: 08/21/2013

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/720,484	03/09/2010	Wayne Ernest Conrad	10452-428	9161

TITLE OF INVENTION: CONFIGURATION OF A HAND VACUUM CLEANER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$890	\$300	\$0	\$1190	11/21/2013

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 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity 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 and an extra copy of the form should be submitted. 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: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or **Fax (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 including the Patent, advance orders and notification of maintenance fees 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.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

1059 7590 08/21/2013
BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40th Floor
TORONTO, ON 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 facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/720,484	03/09/2010	Wayne Ernest Conrad	10452-428	9161

TITLE OF INVENTION: CONFIGURATION OF A HAND VACUUM CLEANER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$890	\$300	\$0	\$1190	11/21/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, DUNG V	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/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form 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, 1 _____
- (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. 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 has been filed for recordation as set forth in 37 CFR 3.11. 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. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see form PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

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.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information 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 12 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.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/720,484	03/09/2010	Wayne Ernest Conrad	10452-428	9161

EXAMINER
NGUYEN, DUNG V

ART UNIT	PAPER NUMBER
3723	

1059 7590 08/21/2013
BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40th Floor
TORONTO, ON M5H 3Y2
CANADA

DATE MAILED: 08/21/2013

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 632 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 632 day(s).

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 Application Information Retrieval (PAIR) WEB site (<http://pair.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 Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

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. 12/720,484	Applicant(s) CONRAD, WAYNE ERNEST	
	Examiner Dung Van Nguyen	Art Unit 3723	AIA (First Inventor to File) Status No

-- 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 RCE filed 26 July 2011.
☐ 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 1-25. 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)	5. ☐ Examiner's Amendment/Comment
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	7. ☐ Other _____
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____	

/Dung Van Nguyen/ Primary Examiner, Art Unit 3723	
--	--

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 26 July 2011 has been entered.

REASONS FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance: prior art of record considered as a whole alone or in combination neither anticipates nor renders obvious, the cyclone and dirt collection chamber having an openable door, the front wall comprising the openable door, when the door is in open position, both the cyclone and the dirt collection chamber are opened, in combination with the rest of the limitations in claim 1; prior art of record considered as a whole alone or in combination neither anticipates nor renders obvious, the dirt collection chamber having an openable door, the front wall comprising the openable door, when the door is openable when the dirt collection chamber is mounted to the hand vacuum cleaner, in combination with the rest of the limitations in claim 9; prior art of record considered as a whole alone or in combination neither anticipates nor renders obvious, the dirt collection chamber having an openable door, the front wall comprising the openable door, wherein the openable door covers the end of the dirt collection chamber, in combination with the rest of the

limitations in claim 24; prior art of record considered as a whole alone or in combination neither anticipates nor renders obvious, , the dirt collection chamber having an openable door, the front wall comprising the openable door, wherein the dirt collection chamber has a rear end and the rear end is non-removably mounted to the first cyclone unit, in combination with the rest of the limitations in claim 25.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Van Nguyen whose telephone number is (571)272-4490. The examiner can normally be reached on PHP Program.

5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph J. Hail can be reached on 571-272-4485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

Application/Control Number: 12/720,484

Page 4

Art Unit: 3723

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dung Van Nguyen/
Primary Examiner, Art Unit 3723

Search Notes 	Application/Control No. 12720484	Applicant(s)/Patent Under Reexamination CONRAD, WAYNE ERNEST
	Examiner Dung V Nguyen	Art Unit 3723

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
15	347,352, 353, 350, 344,327.7	11/5/2010	DVN
55	337, 328, 329, Dig. 3	11/5/2010	DVN
	updated	4/22/2011	DVN
	updated	8/16/2013	DVN

SEARCH NOTES		
Search Notes	Date	Examiner
See Search History (inventor name search, citation searches)	11/5/2010	DVN
See Search History	4/22/2011	DVN
See Search History	8/16/2013	DVN

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	See Search History	8/16/2013	DVN

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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

BIB DATA SHEET

CONFIRMATION NO. 9161

SERIAL NUMBER 12/720,484	FILING or 371(c) DATE 03/09/2010 RULE	CLASS 015	GROUP ART UNIT 3723	ATTORNEY DOCKET NO. 10452-428		
APPLICANTS Wayne Ernest Conrad, Hampton, CANADA; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** CANADA 2658019 03/11/2009 ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED *** SMALL ENTITY ** 03/17/2010						
Foreign Priority claimed ☒ Yes ☐ No 35 USC 119(a-d) conditions met ☒ Yes ☐ No Verified and Acknowledged <u>/DUNG V NGUYEN/</u> Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY CANADA	SHEETS DRAWINGS 10	TOTAL CLAIMS 21	INDEPENDENT CLAIMS 1
ADDRESS BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l. 40 KING STREET WEST 40th Floor TORONTO, ON M5H 3Y2 CANADA						
TITLE CONFIGURATION OF A HAND VACUUM CLEANER						
FILING FEE RECEIVED 592	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit			

Issue Classification 	Application/Control No. 12720484	Applicant(s)/Patent Under Reexamination CONRAD, WAYNE ERNEST
	Examiner DUNG V NGUYEN	Art Unit 3723

US ORIGINAL CLASSIFICATION						INTERNATIONAL CLASSIFICATION														
CLASS		SUBCLASS				CLAIMED					NON-CLAIMED									
15		344				A	4	7	L	5 / 24 (2006.01.01)										
CROSS REFERENCE(S)																				
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)																			
15	347																			

NONE		Total Claims Allowed:	
		25	
(Assistant Examiner)	(Date)		
/DUNG VAN NGUYEN/ Primary Examiner.Art Unit 3723	8/16/2013	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification 	Application/Control No. 12720484	Applicant(s)/Patent Under Reexamination CONRAD, WAYNE ERNEST
	Examiner DUNG V NGUYEN	Art Unit 3723

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	16	17												
2	2	17	18												
5	3	18	19												
6	4	19	20												
3	5	20	21												
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23	9	25	25												
9	10														
10	11														
11	12														
12	13														
13	14														
14	15														
15	16														

NONE		Total Claims Allowed:	
(Assistant Examiner)		25	
(Date)			
/DUNG VAN NGUYEN/ Primary Examiner.Art Unit 3723	8/16/2013	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	4516	(15/344,347,350,352,353).OCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2013/08/16 07:30
L2	2208	(55/328,329,337,dig.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2013/08/16 07:30
L3	195	(15/327.7).OCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2013/08/16 07:30
L4	0	("1andcycloneandchamberanddoor").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2013/08/16 07:31
L5	177	1 and cyclone and chamber and door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2013/08/16 07:31
L6	95	2 and cyclone and chamber and door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2013/08/16 07:33
L7	2	3 and cyclone and chamber and door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2013/08/16 07:35
L8	95080	("15").CLAS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2013/08/16 07:36
L9	40483	("55").CLAS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2013/08/16 07:36
L10	55	8 and cyclone and chamber and front same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2013/08/16 07:39
L11	29	9 and cyclone and chamber and front same door	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2013/08/16 07:41
L12	0	((hand with cleaner) and front and rear and passage and inlet and outlet and cyclone and chamber and (open\$4 with door) and wall and motor).clm.	US-PGPUB; USPAT	OR	ON	2013/08/16 07:44

8/ 16/ 2013 7:46:24 AM

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
 or **Fax (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 including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block J, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FILE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block I for any change of address)

1059 7590 08/21/2013
 BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
 40 KING STREET WEST
 40th Floor
 TORONTO, ON 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 facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/720,484	03/09/2010	Wayne Ernest Conrad	10452-428	9161

TITLE OF INVENTION: CONFIGURATION OF A HAND VACUUM CLEANER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$890	\$300	\$0	\$1190	11/21/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, DUNG V	3723	015-344000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.303).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form 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.

BERESKIN & PARR LLP/S.E.N.C.R.L.,

1. s.r.l.

2. Philip C. Mendes da Costa

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 has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

G.B.D. Corp

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Nassau, Bahamas

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☒ Issue Fee
- ☒ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 022095 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☒ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see form PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

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.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date November 18, 2013

Typed or printed name Philip C. Mendez da Costa

Registration No. 33,106

This collection of information 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. 132 and 37 CFR 1.34. This collection is estimated to take 12 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.

Electronic Patent Application Fee Transmittal				
Application Number:		12720484		
Filing Date:		09-Mar-2010		
Title of Invention:		CONFIGURATION OF A HAND VACUUM CLEANER		
First Named Inventor/Applicant Name:		Wayne Ernest Conrad		
Filer:		Philip C. Mendes da Costa/Lisette Escobar		
Attorney Docket Number:		10452-428		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	1501	1	1780	1780
Publ. Fee- Early, Voluntary, or Normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				2080

Electronic Acknowledgement Receipt	
EFS ID:	17430854
Application Number:	12720484
International Application Number:	
Confirmation Number:	9161
Title of Invention:	CONFIGURATION OF A HAND VACUUM CLEANER
First Named Inventor/Applicant Name:	Wayne Ernest Conrad
Customer Number:	1059
Filer:	Philip C. Mendes da Costa/Lisette Escobar
Filer Authorized By:	Philip C. Mendes da Costa
Attorney Docket Number:	10452-428
Receipt Date:	18-NOV-2013
Filing Date:	09-MAR-2010
Time Stamp:	15:50:45
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$2080
RAM confirmation Number	2830
Deposit Account	022095
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 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	Miscellaneous Incoming Letter	USPTO_LTR18Nov13.pdf	33922	no	1
			9230a72d48d2f294a3f798310ae76129f9759b02		

Warnings:

Information:

2	Issue Fee Payment (PTO-85B)	USPTO_IssueFeePayment_18Nov13.pdf	142607	no	2
			41242b6a5e0798e41cd55a7cc90c124ad0e73ac		

Warnings:

Information:

3	Fee Worksheet (SB06)	fee-info.pdf	31822	no	2
			9d15c77633fb9aa9b02a9270fac0755f053f386d		

Warnings:

Information:

Total Files Size (in bytes): 208351

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.

Bereskin & Parr

INTELLECTUAL PROPERTY LAW

Appl. No : 12/720,484 Confirmation No.: 9161
Applicant : Wayne Ernest Conrad
Filed : March 9, 2010
Title : CONFIGURATION OF A HAND VACUUM CLEANER
TC./A.U. : 3723
Examiner : Dung Van Nguyen
Docket No. : 10452-428
Customer No. : 001059

Honorable Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313-1450

November 18, 2013

ISSUE FEE PAYMENT

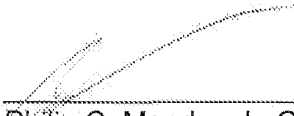
Sir:

This correspondence is responsive to the Notice of Allowance and Issue Fee Due dated August 21 2013, issued in the above-identified patent application. As required, we enclose herewith the Issue Fee transmittal form.

The government fee of \$2080 is included. Please charge any deficiency or credit any overpayment to our deposit account no. 02-2095.

Respectfully submitted,

BERESKIN & PARR LLP

By 
Philip C. Mendes da Costa
Reg. No. 33,106
Tel: 416-957-1695

Bereskin & Parr LLP
Scotia Plaza, 40 King Street West, 40th Floor, Toronto, Ontario, Canada M5H 3Y2
Tel: 416.364.7311 Fax: 416.361.1398 www.bereskinparr.com
TORONTO MISSISSAUGA WATERLOO MONTRÉAL



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Alexandria, Virginia 22313-1450
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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/720,484	12/17/2013	8607407	10452-428	9161

1059 7590 11/26/2013
BERESKIN & PARR LLP/S.E.N.C.R.L., s.r.l.
40 KING STREET WEST
40th Floor
TORONTO, ON M5H 3Y2
CANADA

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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 632 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 Application Information Retrieval (PAIR) WEB site (<http://pair.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 Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Wayne Ernest Conrad, Hampton, CANADA;

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