UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/269,430	10/08/2019	10433687	424662105900	6526

25227 7590 09/18/2019

MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

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 253 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):

Dyson Technology Limited, Wiltshire, UNITED KINGDOM;
Stephen Robert DIMBYLOW, Swindon, UNITED KINGDOM;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322
Page 1 of 1677

Electronic Patent Application Fee Transmittal

Application Number:	15269430
Filing Date:	19-Sep-2016
Title of Invention:	VACUUM CLEANER
First Named Inventor/Applicant Name:	Stephen Robert DIMBYLOW
Filer:	Christopher Elmose Gloria/Nicole Jones
Attorney Docket Number:	424662105900

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPL ISSUE FEE	1501	1	1000	1000
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1000**

Electronic Acknowledgement Receipt

EFS ID:	36999497
Application Number:	15269430
International Application Number:	
Confirmation Number:	6526
Title of Invention:	VACUUM CLEANER
First Named Inventor/Applicant Name:	Stephen Robert DIMBYLOW
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Nicole Jones
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662105900
Receipt Date:	28-AUG-2019
Filing Date:	19-SEP-2016
Time Stamp:	15:57:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1000
RAM confirmation Number	E20198RF57202261
Deposit Account	
Authorized User	

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

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Web85b.pdf	46044 efbbc079055f180792513498a9654a0f3c75bebc	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32034 d026efe999ad66a62cc1de53f6fcf3fb51a69a47	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	78078		

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.

Document Description: Issue Fee Payment (PTO-85B)

Issue Fee Transmittal Form

Application Number	Filing Date	First Named Inventor	Atty. Docket No.	Confirmation No.
15269430	19-Sep-2016	Stephen DIMBYLOW	424662105900	6526

TITLE OF INVENTION :

VACUUM CLEANER

Entity Status	Application Type	Art Unit	Class - Subclass	EXAMINER
Regular Undiscounted	Utility under 35 USC 111(a)	3723	353000	MARC CARLSON

Issue Fee Due	Publication Due	Total Fee(s) Due	Date Due	Prev. Paid Fee
$1000	$0	$1000	12-Sep-2019	$0

1.Change of Correspondence Address and/or Indication Of Fee Address (37 CFR 1.33 & 1.363)

Current Correspondence Address:	Current Indicated Fee Address :
25227 MORRISON & FOERSTER LLP 1650 TYSONS BOULEVARD SUITE 400 MCLEAN VA 22102 UNITED STATES 650-813-5841 EOfficeVA@mofo.com	
☐ Change of correspondence address requested, system generated AIA/122-EFS form attached	☐ Fee Address indication requested, system generated SB/47-EFS form attached

2.Entity Status

Change in Entity Status

○ Applicant certifying micro entity status; system generated Micro Entity certification form attached. See 37 CFR 1.29.
Note: Absent a valid certification of micro entity status, issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. If this box is checked, you will be prompted to choose a micro entity status on the gross income basis (37 CFR 1.29(a)) or the institution of higher education basis (37 CFR 1.29(d)), and make the applicable certification online.

○ Applicant asserting small entity status. See 37 CFR 1.27.
Note: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

◉ Applicant changing to regular undiscounted fee status.
Note: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322

Document Description: Issue Fee Payment (PTO-85B)

3.The Following Fee(s) Are Submitted:

☒ Issue Fee

☐ I authorize USPTO to apply my previously paid issue fee to the current fees due

☐ Publication Fee

☐ The Director is hereby authorized to apply my previously paid issue fee to the current fee due and to charge deficient fees to Deposit Account Number _____

☐ Advance Order - # of copies _____

☒ If **in addition to** the payment of the issue fee amount submitted with this form, there are any discrepancies in any amount(s) due, the Director is authorized to charge any deficiency or credit any overpayment, to Deposit Account Number 03-1952 . The **issue fee must be submitted** with this form. **If payment of the issue fee does not accompany this form, checking this box and providing a deposit account number will NOT be effective to satisfy full payment of the fee(s) due.**

4.Firm and/or Attorney Names To Be Printed

NOTE: If no name is listed, no name will be printed
For printing on the patent front page, list to be displayed as entered

1. Morrison & Foerster LLP
2.
3.

5.Assignee Name(s) and Residence Data To Be Printed

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.

Name	City	State	Country	Category
Dyson Technology Limited	Malmesbury, Wiltshire		united kingdom	corporation

6.Signature

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application. I also certify that this Fee(s) Transmittal form is being transmitted to the USPTO via EFS-WEB on the date indicated below.

Signature	/christopher gloria/	**Date**	08-28-2019
Name	Christopher Elmose Gloria	**Registration Number**	71907

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/269,430	09/19/2016	Stephen Robert DIMBYLOW	424662105900	6526

25227 7590 08/26/2019

MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

EXAMINER	
CARLSON, MARC	

ART UNIT	PAPER NUMBER
3723	

NOTIFICATION DATE	DELIVERY MODE
08/26/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

EOfficeVA@mofo.com
PatentDocket@mofo.com
pair_mofo@firsttofile.com

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Supplemental ***Notice of Allowability***	**Application No.** 15/269,430	**Applicant(s)** DIMBYLOW, Stephen Robert	
	Examiner MARC CARLSON	**Art Unit** 3723	**AIA (FITF) Status** Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to IDS received after NOA.
   ☐ 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 1-11 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☑ All b) ☐ Some *c) ☐ None of the:

   1. ☑ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 6/10/2019.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/MARC CARLSON/
Primary Examiner, Art Unit 3723

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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322
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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. 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	15269430
Filing Date	2016-09-19
First Named Inventor	Stephen Robert DIMBYLOW
Art Unit	3723
Examiner Name	Marc Carlson
Attorney Docket Number	42466-21059.00

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					

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/M.C/	1	20080271284	A1	2008-11-06	Wood et al.	
/M.C/	2	20140366495	A1	2014-12-18	Stickney et al.	

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

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
/M.C/	1	102525349	CN		2012-07-04	Jiangsu Midea Chunhua Electric Appliance Co., Ltd.	Machine Translation	☒
/M.C/	2	2004-89241	JP		2004-03-25	MATSUSHITA ELECTRIC IND CO LTD	Machine Translation	☒

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.C/

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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15269430
Filing Date	2016-09-19
First Named Inventor	Stephen Robert DIMBYLOW
Art Unit	3723
Examiner Name	Marc Carlson
Attorney Docket Number	42466-21059.00

/M.C/	3	2005-261963	JP		2005-09-29	SANYO ELECTRIC CO LTD	Machine Translation	☒
/M.C/	4	48-107459	JP		1973-12-12		Partial Machine Translation	☒
/M.C/	5	54-27573	JP		1979-03-01		Partial Machine Translation	☒

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

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
/M.C/	1	First Office Action dated August 31, 2018, directed to CN Application No. 2016108303641; 16 pages.	☒
/M.C/	2	Notice of Reasons for Rejection mailed September 3, 2018, directed to JP Application No. 2016-175409; 6 pages.	☒

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

EXAMINER SIGNATURE

Examiner Signature	/MARC CARLSON/	Date Considered	08/21/2019

*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. /M.C/

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15269430
Filing Date	2016-09-19
First Named Inventor	Stephen Robert DIMBYLOW
Art Unit	3723
Examiner Name	Marc Carlson
Attorney Docket Number	42466-21059.00

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	/christopher gloria/	Date (YYYY-MM-DD)	2019-06-10
Name/Print	Christoher Gloria	Registration Number	71,907

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.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.C/

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
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Privacy Act Statement

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

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

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

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

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

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

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

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

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

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

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

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.C/

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SharkNinja et al. v. Dyson Technology Limited,
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Page 13 of 1677

Docket No. 42466-21059.00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Stephen Robert DIMBYLOW

Application No.: 15/269,430 | Confirmation No.: 6526

Filed: September 19, 2016 | Art Unit: 3723

For: VACUUM CLEANER | Examiner: Marc Carlson

REQUEST FOR CONSIDERATION OF INFORMATION DISCLOSURE STATEMENT

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

Dear Commissioner:

Applicants thank the Examiner for the Notice of Allowance of June 12, 2019. Applicants respectfully request that the Examiner consider the Information Disclosure Statement, which was timely filed on June 10, 2019, and once again allow this application. Applicants attach a copy of the Information Disclosure Statement as filed with this application for the Examiner's easy reference.

In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, Applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. **42466-21059.00**. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: July 19, 2019

Respectfully submitted,

Electronic Signature: /christopher gloria/
Christopher Gloria
Registration No.: 71,907
MORRISON & FOERSTER LLP
1650 Tysons Blvd, Suite 400
McLean, Virginia 22102
(703) 760-7389

va-541550

Electronic Acknowledgement Receipt

EFS ID:	36255255
Application Number:	15269430
International Application Number:	
Confirmation Number:	6526
Title of Invention:	VACUUM CLEANER
First Named Inventor/Applicant Name:	Stephen Robert DIMBYLOW
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Nicole Jones
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662105900
Receipt Date:	10-JUN-2019
Filing Date:	19-SEP-2016
Time Stamp:	17:32:29
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	Foreign Reference	CN_102525349.pdf	2153838 16c3a28f7e5e7e74aa05db928e3748ca7b6ef70c	no	21

Warnings:

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322

Information:					
2	Foreign Reference	JP_2005_261963.pdf	4018193 07a180856d4229b654989e9735eb6120b5c49460	no	45
Warnings:					
Information:					
3	Foreign Reference	JP_48_107459.pdf	375798 5bec6bb997a4f2a7f12bc690eb95bf4cb4bf2b39	no	8
Warnings:					
Information:					
4	Foreign Reference	JP_54_027573.pdf	592242 f8c8f8a07c59c99101d99d504a27188f0e77449e	no	12
Warnings:					
Information:					
5	Non Patent Literature	CNOA_201610830364_08-31-2018.pdf	1108308 56dc151cb1562eef1994983eecaab89b16ad0c2	no	16
Warnings:					
Information:					
6	Non Patent Literature	JPOA_2016175409_09-03-2018.pdf	230734 5c4c4d95ddea2ddd181e09aa55a38ac39f9a2205	no	6
Warnings:					
Information:					
7	Information Disclosure Statement (IDS) Form (SB08)	IDS_424662105900.pdf	1077190 3e37d127b15173661c14caec2b0de5da8bf1f1d5	no	4
Warnings:					
Information:					
8	Foreign Reference	JP_2004_89241pdf.pdf	1005887 aba56aae81bd0745a0ea6878393a56232879b3dc	no	30
Warnings:					
Information:					
		Total Files Size (in bytes):	10562190		

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.

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. 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	15269430
Filing Date	2016-09-19
First Named Inventor	Stephen Robert DIMBYLOW
Art Unit	3723
Examiner Name	Marc Carlson
Attorney Docket Number	42466-21059.00

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					

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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
	1	20080271284	A1	2008-11-06	Wood et al.	
	2	20140366495	A1	2014-12-18	Stickney et al.	

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

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	102525349	CN		2012-07-04	Jiangsu Midea Chunhua Electric Appliance Co., Ltd.	Machine Translation	☓
	2	2004-89241	JP		2004-03-25	MATSUSHITA ELECTRIC IND CO LTD	Machine Translation	☒

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15269430
	Filing Date	2016-09-19
	First Named Inventor	Stephen Robert DIMBYLOW
	Art Unit	3723
	Examiner Name	Marc Carlson
	Attorney Docket Number	42466-21059.00

	3	2005-261963	JP		2005-09-29	SANYO ELECTRIC CO LTD	Machine Translation	☒
	4	48-107459	JP		1973-12-12		Partial Machine Translation	☒
	5	54-27573	JP		1979-03-01		Partial Machine Translation	☒

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

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	First Office Action dated August 31, 2018, directed to CN Application No. 2016108303641; 16 pages.	☒
	2	Notice of Reasons for Rejection mailed September 3, 2018, directed to JP Application No. 2016-175409; 6 pages.	☒

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

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

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

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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322
Page 19 of 1677

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15269430
	Filing Date	2016-09-19
	First Named Inventor	Stephen Robert DIMBYLOW
	Art Unit	3723
	Examiner Name	Marc Carlson
	Attorney Docket Number	42466-21059.00

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	/christopher gloria/	Date (YYYY-MM-DD)	2019-06-10
Name/Print	Christoher Gloria	Registration Number	71,907

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.**

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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322
Page 20 of 1677

Privacy Act Statement

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

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

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

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

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

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

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

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

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

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

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

Electronic Acknowledgement Receipt

EFS ID:	36634168
Application Number:	15269430
International Application Number:	
Confirmation Number:	6526
Title of Invention:	VACUUM CLEANER
First Named Inventor/Applicant Name:	Stephen Robert DIMBYLOW
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Nicole Jones
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662105900
Receipt Date:	19-JUL-2019
Filing Date:	19-SEP-2016
Time Stamp:	11:43:29
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	Post Allowance Communication - Incoming	Request_for_Consideration_of_IDS_42466-21059_00.pdf	295378 0b9aec0b2ee00f74e2c5082e40a2b69dea6b5f31	no	8

Warnings:

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Information:	
Total Files Size (in bytes):	295378

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New Applications Under 35 U.S.C. 111

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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.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S2	4	"20120079671"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:17
S3	14	"203724037"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:18
S5	6	"2009144931"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:29
S6	3	"20090144931"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:30
S7	14	"203724037"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:31
S8	18	"2004089241"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:32
S9	6	"101449948"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:35
S10	10	"2007104238"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:37
S11	3	"20120266576"	US-PGPUB; USPAT;	ADJ	ON	2018/05/29 13:46

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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322

			USOCR; FPRS; EPO; JPO; DERWENT			
S12	0	"201400137363"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:50
S13	5	"20140137363"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:50
S14	3	"20170071426"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:53
S15	4	"20160128527"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:55
S16	8	"20160113455"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 14:01
S18	5	"15269426"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 14:05
S19	51	"2484146"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 17:04
S20	0	"15283021"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 11:25
S21	5	"15269426"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 12:18
S22	21273	(A47L5/24 OR A47L5/28 OR A47L9/1616 OR A47L9/1625 OR A47L9/1641 OR	US-PGPUB; USPAT;	ADJ	ON	2018/06/05 12:20

		A47L9/165 OR A47L9/1666 OR A47L9/1683 OR A47L9/24 OR A47L9/242).CPC.	USOCR; FPRS; EPO; JPO; DERWENT			
S23	7475	(A47L5/24 OR A47L5/28 OR A47L9/1616 OR A47L9/1625 OR A47L9/1641 OR A47L9/165 OR A47L9/1666 OR A47L9/1683 OR A47L9/24 OR A47L9/242).CPC. and (cyclon$4 or vort$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 12:20
S24	27	("20090144931" | "20120079671" | "20120266576" | "20140137363" | "20160113455" | "20170071426" | "20170079489" | "20170079491" | "9826868").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 12:55
S25	1	"15269420"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 06:52
S26	521	(A47L9/00 OR A47L9/1616).CPC. and (cyclon$4 or vort$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 06:55
S27	42	"8156609"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 07:50
S28	62	"2508035"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 08:01
S29	51	"2484146"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 08:03
S30	1	"15269430"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2019/02/06 09:58
S32	5374	(A47L5/24 OR A47L5/28 OR A47L9/00 OR A47L9/1616 OR A47L9/1683 OR A47L9/24).CPC. AND (CYCLON$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2019/02/06 09:59
S33	17	(US-20170079491-$ or US-20120079671-$ or US-20170079490-$ or US-	US-PGPUB; USPAT;	ADJ	OFF	2019/02/06 13:57

		20090144931-$ or US-20120266576-$ or US-20140137363-$ or US-20170071426-$ or US-20160113455-$ or US-20170079489-$ or US-20160174787-$).did. or (US-9826868-$ or US-8156609-$).did. or (CN-203724037-$ or WO-2007104238-$).did. or (CN-203724037-$ or JP-2004089241-$ or DE-102008044184-$).did.	FPRS; DERWENT			
S34	17	(US-20170079491-$ or US-20120079671-$ or US-20170079490-$ or US-20090144931-$ or US-20120266576-$ or US-20140137363-$ or US-20170071426-$ or US-20160113455-$ or US-20170079489-$ or US-20160174787-$).did. or (US-9826868-$ or US-8156609-$).did. or (CN-203724037-$ or WO-2007104238-$).did. or (CN-203724037-$ or JP-2004089241-$ or DE-102008044184-$).did.	US-PGPUB; USPAT; FPRS; DERWENT	ADJ	OFF	2019/02/06 13:57
S35	15	(US-20120079671-$ or US-20170079490-$ or US-20090144931-$ or US-20120266576-$ or US-20140137363-$ or US-20170071426-$ or US-20160113455-$ or US-20170079489-$).did. or (US-9826868-$ or US-8156609-$).did. or (CN-203724037-$ or WO-2007104238-$).did. or (CN-203724037-$ or JP-2004089241-$ or DE-102008044184-$).did.	US-PGPUB; USPAT; FPRS; DERWENT	ADJ	OFF	2019/02/06 13:57
S36	0	S34 not S35	USPAT	ADJ	OFF	2019/02/06 13:57
S37	2	S34 not S35	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	OFF	2019/02/06 13:58
S38	9	"9888817"	USPAT	ADJ	OFF	2019/05/15 14:18

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	1	(handheld and cyclonic separating unit and end portion).clm.	US-PGPUB; USPAT	ADJ	ON	2019/05/31 07:31
L3	3	(handheld and cyclonic separating unit and degrees).clm.	US-PGPUB; USPAT	ADJ	ON	2019/05/31 07:32
L4	1	(handheld and cyclonic separating unit and pistol).clm.	US-PGPUB; USPAT	ADJ	ON	2019/05/31 07:32

5/31/2019 7:33:20 AM
C:\Users\mcarlson\Documents\EAST\Workspaces\15269430.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/269,430	DIMBYLOW, Stephen Robert
	Examiner	Art Unit
	MARC CARLSON	3723

CPC - Searched*		
Symbol	Date	Examiner
A47L5/24; A47L5/28; A47L9/1616; A47L9/1625; A47L9/1641; A47L9/165; A47L9/1666; A47L9/1683	6/6/2018	M.C.
A47L9/00, A47L9/1616, A47L/24, A47L9/242	6/6/2018	M.C.

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
See East search history	6/6/2018	M.C.
Search updated	02/06/2019	M.C.
Search updated	05/31/2019	M.C.

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	Text search of all classes and subclasses	05/31/2019	M.C.

/MARC CARLSON/ Primary Examiner.Art Unit 3723	

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SharkNinja et al. v. Dyson Technology Limited,
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Page 28 of 1677

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NOTICE OF ALLOWANCE AND FEE(S) DUE

25227 7590 06/12/2019
MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

EXAMINER
CARLSON, MARC

ART UNIT	PAPER NUMBER
3723	

DATE MAILED: 06/12/2019

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/269,430	09/19/2016	Stephen Robert DIMBYLOW	424662105900	6526

TITLE OF INVENTION: VACUUM CLEANER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0.00	$0.00	$1000	09/12/2019

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

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PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence 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)

25227 7590 06/12/2019
MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/269,430	09/19/2016	Stephen Robert DIMBYLOW	424662105900	6526

TITLE OF INVENTION: VACUUM CLEANER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0.00	$0.00	$1000	09/12/2019

EXAMINER	ART UNIT	CLASS-SUBCLASS
CARLSON, MARC	3723	015-353000

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 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

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

4a. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required) ❑ Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ 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 forms 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: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/269,430	09/19/2016	Stephen Robert DIMBYLOW	424662105900	6526

25227 7590 06/12/2019

MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

EXAMINER	
CARLSON, MARC	
ART UNIT	PAPER NUMBER
3723	

DATE MAILED: 06/12/2019

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

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SharkNinja et al. v. Dyson Technology Limited,
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OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

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

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

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

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Notice of Allowability	Application No. 15/269,430	Applicant(s) DIMBYLOW, Stephen Robert	
	Examiner MARC CARLSON	Art Unit 3723	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to amendments filed 5/13/2019.
   ☐ 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 1-11 . 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 areply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☑ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/MARC CARLSON/
Primary Examiner, Art Unit 3723

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The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Christopher Gloria on May 22, 2019.

a. Regarding Claim 1, the claim is modified as follows:

1. (Currently Amended) A handheld vacuum cleaner comprising:

a handle by which the vacuum cleaner is supported during normal use;

a cyclonic separating unit having a longitudinal axis and a dirt collector at one end of the cyclonic separating unit, the cyclonic separating unit comprising an end ~~**portion**~~ **wall** having a closed configuration in which dirt is retained within the dirt collector by the end ~~**portion**~~ **wall** and an open configuration for the removal of dirt from the dirt collector, wherein ~~**at least part of the end portion moves across**~~ **the end wall is movable relative to the longitudinal axis and, when the end wall is in the closed configuration,** the longitudinal axis ~~**when the end portion moves from the closed configuration to the open configuration**~~ **extends through a region bounded by a perimeter of the end wall**, wherein the handle has a pistol grip configuration in which

the handle is inclined with respect to the cyclonic separating unit to form an angle of not less than 85 degrees and not greater than 140 degrees between a handle axis and the longitudinal axis of the cyclonic separating unit, and wherein the handle axis and the longitudinal axis intersect within the vacuum cleaner.

b. Regarding Claim 3, the claim is modified as follows:

3. (Currently Amended) The handheld vacuum cleaner of claim 1, wherein the end ~~**portion**~~ **wall** comprises an end wall of the cyclonic separating unit.

c. Regarding Claim 4, the claim is modified as follows:

4. (Currently Amended) The handheld vacuum cleaner of claim 1, wherein the end ~~**portion**~~ **wall** is arranged to pivot between the closed configuration and the open configuration.

d. Regarding Claim 5, the claim is modified as follows:

5. (Currently Amended) The handheld vacuum cleaner of claim 1, wherein the cyclonic separating unit comprises a dirty air inlet through the end ~~**portion**~~ **wall**.

e. Regarding Claim 6, the claim is modified as follows:

6. (Currently Amended) The handheld vacuum cleaner of claim 1, further comprising a connector and a cleaning tool connectable to the connector, wherein the cleaning tool is configured such that when the end ~~**portion**~~ **wall** is in the closed configuration and the cleaning tool is connected to connector movement of the end ~~**portion**~~ **wall** from the closed configuration into the open configuration is prevented.

f. Regarding Claim 7, the claim is modified as follows:

7. (Currently Amended) The handheld vacuum cleaner of claim 6, wherein the cleaning tool comprises a collar which abuts the end ~~portion~~ **wall** in order to hold the end ~~portion~~ **wall** in the closed configuration.

REASONS FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance:

The instant invention is neither anticipated nor rendered obvious for additional reason below in concert with applicant remarks:

Allowable Subject Matter

3. **The Applicant presented claims which were modified by Examiner's Amendment to place the application into condition for allowance.** The Applicant presented an application received May 13, 2019. Claims 1 and 3-7 were modified by Examiner's Amendment to place Claims 1-11 into final condition for allowance.

4. The following is a statement of reasons for the indication of previously mentioned allowable subject matter:

a. Regarding Claims 1-11, a search of the prior art does not teach or reasonably suggest the device as claimed in the context of the entire scope of the claims for the foregoing reasons, the instant invention is neither anticipated nor rendered obvious by the prior art because the device is not taught nor

suggested as set forth in the entire context of the claims with the amendments above.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARC CARLSON whose telephone number is (571)272-9963. The examiner can normally be reached on Monday-Thursday 6:30am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph 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.

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.

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."

/Marc Carlson/

Primary Examiner, Art Unit 3723

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/269,430	DIMBYLOW, Stephen Robert
	Examiner	**Art Unit**
	MARC CARLSON	3723

CPC						
Symbol					**Type**	**Version**
A47L	/	5	/	24	F	2013-01-01
A47L	/	5	/	28	I	2013-01-01
A47L	/	9	/	00	I	2013-01-01
A47L	/	9	/	1616	I	2013-01-01
A47L	/	9	/	1683	I	2013-01-01
A47L	/	9	/	24	I	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	11	
/MARC CARLSON/ Primary Examiner, Art Unit 3723	31 May 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/269,430	DIMBYLOW, Stephen Robert
	Examiner	**Art Unit**
	MARC CARLSON	3723

INTERNATIONAL CLASSIFICATION				
CLAIMED				
A47L	/	5	/	24
A47L	/	9	/	24
A47L	/	9	/	16

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE (Assistant Examiner) (Date)	**Total Claims Allowed:** 11	
/MARC CARLSON/ Primary Examiner, Art Unit 3723 (Primary Examiner) 31 May 2019 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 2

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SharkNinja et al. v. Dyson Technology Limited,
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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/269,430	DIMBYLOW, Stephen Robert
	Examiner	**Art Unit**
	MARC CARLSON	3723

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

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	11	
/MARC CARLSON/ Primary Examiner, Art Unit 3723	31 May 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

Electronic Acknowledgement Receipt

EFS ID:	36255255
Application Number:	15269430
International Application Number:	
Confirmation Number:	6526
Title of Invention:	VACUUM CLEANER
First Named Inventor/Applicant Name:	Stephen Robert DIMBYLOW
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Nicole Jones
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662105900
Receipt Date:	10-JUN-2019
Filing Date:	19-SEP-2016
Time Stamp:	17:32:29
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	Foreign Reference	CN_102525349.pdf	2153838 16c3a28f7e5e7e74aa05db928e3748ca7b6ef70c	no	21

Warnings:

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322

Information:					
2	Foreign Reference	JP_2005_261963.pdf	4018193 07a180856d4229b654989e9735eb6120b5c49460	no	45
Warnings:					
Information:					
3	Foreign Reference	JP_48_107459.pdf	375798 5bec6bb997a4f2a7f12bc690eb95bf4cb4bf2b39	no	8
Warnings:					
Information:					
4	Foreign Reference	JP_54_027573.pdf	592242 f8c8f8a07c59c99101d99d504a27188f0e77449e	no	12
Warnings:					
Information:					
5	Non Patent Literature	CNOA_201610830364_08-31-2018.pdf	1108308 56dc151cb1562eef1994983eecaab89b16ad0c2	no	16
Warnings:					
Information:					
6	Non Patent Literature	JPOA_2016175409_09-03-2018.pdf	230734 5c4c4d95ddea2ddd181e09aa55a38ac39f9a2205	no	6
Warnings:					
Information:					
7	Information Disclosure Statement (IDS) Form (SB08)	IDS_424662105900.pdf	1077190 3e37d127b15173661c14caec2b0de5da8bf1f1d5	no	4
Warnings:					
Information:					
8	Foreign Reference	JP_2004_89241pdf.pdf	1005887 aba56aae81bd0745a0ea6878393a56232879b3dc	no	30
Warnings:					
Information:					
		Total Files Size (in bytes):	10562190		

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.

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. 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	15269430
Filing Date	2016-09-19
First Named Inventor	Stephen Robert DIMBYLOW
Art Unit	3723
Examiner Name	Marc Carlson
Attorney Docket Number	42466-21059.00

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
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	1	102525349	CN		2012-07-04	Jiangsu Midea Chunhua Electric Appliance Co., Ltd.	Machine Translation	☒
	2	2004-89241	JP		2004-03-25	MATSUSHITA ELECTRIC IND CO LTD	Machine Translation	☒

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15269430
	Filing Date	2016-09-19
	First Named Inventor	Stephen Robert DIMBYLOW
	Art Unit	3723
	Examiner Name	Marc Carlson
	Attorney Docket Number	42466-21059.00

	3	2005-261963	JP		2005-09-29	SANYO ELECTRIC CO LTD	Machine Translation	☒
	4	48-107459	JP		1973-12-12		Partial Machine Translation	☒
	5	54-27573	JP		1979-03-01		Partial Machine Translation	☒

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	1	First Office Action dated August 31, 2018, directed to CN Application No. 2016108303641; 16 pages.	☒
	2	Notice of Reasons for Rejection mailed September 3, 2018, directed to JP Application No. 2016-175409; 6 pages.	☒

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Art Unit	3723
	Examiner Name	Marc Carlson
	Attorney Docket Number	42466-21059.00

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

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Signature	/christopher gloria/	Date (YYYY-MM-DD)	2019-06-10
Name/Print	Christoher Gloria	Registration Number	71,907

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DESCRIPTION JPS5427573

BRIEF DESCRIPTION OF THE DRAWINGS FIG. 1 is a perspective view of the present invention, FIG. 2 is a sectional view, FIG. 3 is a front view of a fuselage, and FIG. 4 is a front view of a spiral impeller. 25

[Detailed description of the invention] This invention is a small-sized, hand-held cleaning device 4I used to clean narrow places such as furniture and automobiles. About Ivc. This kind of conventional hand-held vacuum cleaner is small and lightweight as a whole, but it is mounted on the upper part of one cylinder as well as the handle which is common to the cylinder type chisel 1 vacuum cleaner on the handle. It is not easy to clean up at high places by upward work, and it is difficult to clean up high places with upward movement, especially in the narrow places often found in automobiles. 7 to 7 down 72-again arm is evil T! It's difficult to clean up when it's t. A heavy duty device improves the conventional upper Ell point, and in particular, it is intended to use a hand-held cleaning paper that can easily clean the four parts of high places and narrow ridges. Inside, the suction mechanism by the vortex spring type impeller and motor inside, and the blowout opening in the back, so that it crosses the motion PTK of the handlebar body at the lower side of the cylinder face. It is at the point where it is set up in a row. Will the following discussion be implemented? If I is described based on FIG. A, in the case of I, (1) it is a round plastic body made of plastic, this curved portion (2) is opened to a large diameter and the # part (3) is closed. Leaded and aft facing wall surface (4) K of the open front (2) is an open mouth [5]. + 61 ij Plastic trumpet shape The suction port mounting hole (8) is opened at an eccentric position shifted from the center of the closed front wall (7). Is rotatably and removably fitted onto the open front (2) of the (10) is a dust collecting bag made of cloth. This opening (in order to connect the opening 111 to the suction port mounting hole (8), the inside of the front lid (61 ※ 3 front wall surface (7) can be removed freely h) Ru. 02) is a spiral impeller, with a central suction opening (1? Opening m-plate (141) with: a swirl vane Q61 '! Between it and the blind disc (15) opposed integrally with it. = A book having an integral configuration h arranged radially and such that this impeller 1121 opening m plate 04) faces the rear of the dust collection bag (IO), the central part of the blind country #FIQ 51 Built in fi + and fixed to the run motor (axis f + 81 h of 1 n), the inside of the enclosure @ part (2) is closed. (I9) is a cancerous disc having an opening (2) at the center, and it is interposed between the spiral type blades * (121 and the dust bag (10) 7) in the body 11 (2) The entire circumference of the blade i * f + 21 and the bend (an inner space of the fuselage front portion (21 is fitted and fixed so as to reach the entire space in front of the gap between the inner surface of the 61).

The gap between the shielding disc f19) and the spiral impeller (opening disc 04 of I21) is formed as narrowly as possible VC as possible without causing any hindrance to the rotation of I21. (21) is a plastic cylindrical handle, and this handle axis L-L intersects with the axis S-8 of the body ii + and is integrally attached downward to the circumference of the integral (1) is there. Inside the handle 121) is inserted an i @ motor (a cord @ extended from 171), and a motor inch (23) ImA is protrusively provided. The plug is a plug attached to the end of the cord. With the suction port all brushed in at the tip, the above-mentioned front cover (the suction port mounting hole of 61 (removably attached to 81). Although various suction holes are prepared, the diameters of the respective rear ridges 1 are all formed to be the same diameter and are commonly fitted into a suction hole attachment hole (8) of a fixed diameter. Anger is a check valve made of rubber or the like, and is attached to the inside of the front lid (in the suction port attachment hole (8) of the front lid 61). In the above configuration, when the spiral impeller Q21 directly connected to the motor Qir is rotated at high speed (b), the air inside the machine is released to the machine 1A from the air outlet (air pressure inside the iron 1 becomes lower than atmospheric pressure. As a result, a strong suction force is generated, and air in the vicinity of the suction port CG is sucked into the yield bag (10) together with dust. In this way, a hand-held pusher capable of suction and dust collection projects downward at the bottom of the open surface of the body ill so that it crosses the axis S-8 of the body +11, so there is no so-called pistol strike Therefore, if the handle (21 + is held by hand, the arm can be used to easily carry the suction recess 1 of the front Nn 6 to the surface to be cleaned at eye level or higher) Can be cleaned easily even in the upturn position. In addition, since the arm holding the handle (21) can be in the form of (1) seven parallel horizontal states r, the recess K (especially in a car, especially in a car) K is also an arm. (It is possible to easily take the suction port (2 + ii, without cleaning the part). Dust accumulated in the dust collection bag (10) can be discarded by opening

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the front lid (6) and removing the dust collection bag (IO) from the front lid + 61. Attach the suction port outside to the eccentric position # of the front wall (7) of the front cover (61) as in the case of the above 4 practice, and if the edge between the front wall (7) of the front cover 1 is the surface to be cleaned It is easy to use because it can be rubbed on the whole surface to be cleaned only on the suction brush 1-the brush on the tip of 1 as much as possible.

In addition, when the front M (61 is rotatably attached to the front of the I body ill, the same angle of the suction port C9 is changed by changing the same direction of the suction port C9 by turning the front lid (6) in the same direction. . Furthermore, if the shielding disk o9) is installed as in the upper one example I 1 Ib 6 letters +-t, the spiral impeller (the air sucked by 121 is between the whole question of this car Q21 and the old book (61 inner surface It is brave enough to prevent the dust bag from jumping back to the 101 side from the air gap. In the spiral impeller (12) of LOL I above, the blade Q on the inner peripheral edge of the suction opening 03 of the opening disk 04) is shown in FIG. If you cut in the same way, the suction between the blades (16) and the blades 06) (the size of the opening of the 111 is enlarged by the size of the four notches to obtain a large suction amount for the small size of the impeller 02) You are gone. In addition, the plug f21k at the end of the cord (b) extended from the handle 211 is inserted in a household household outlet or a cigarette lighter outlet of an automobile, etc. A battery may be used to rotate the motor θη. In this case, the battery may be accommodated in the internal space of the handlebar 11. Alternatively, the air outlet (5) may be open at the rear (31) of the maternity leave (1). It is also possible to attach a hanging tool t3IJ + all handle 11 or a part of the torso ill to a hanging diversion vessel, etc. As mentioned above, the wooden structure has a simple structure in which the lower part of the hand-held cleaning rod -7 phase lower part of the handle is integrated with the axis of the handle and has a simple structure and protrudes in particular. The recesses are also very easy to clean and convenient, and are of great benefit.

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CLAIMS JPS5427573

[Utility model registration request] In the lower part of the circumferential surface of the cylindrical fuselage which has a suction port on the front, a suction mechanism by a spiral impeller and a motor on the inside, and an air outlet on the back A hand-held type vacuum cleaner characterized by projecting downward so as to cross the axis.

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収入印紙 3,000円

(3000)

実用新案登録願

昭和 52 年 7 月 27 日

特許庁長官 [redacted] 殿

1. 考案の名称 [redacted]

2. 考案者

住所 [redacted]

氏名 [redacted]

3. 実用新案登録出願人

[redacted]

(国籍)

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(782) 6917番

氏名 (6174) 弁理士 安田敏雄

5. 添附書類の目録

(1)	明細書	1通
(2)	図面	1通
(3)	願書副本	1通
(4)	委任状	1通
(5)	出願審査請求書	1通

52 101553 54-27573

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明　細　書

1. 考案の名称

手持型掃除機

2. 実用新案登録請求の範囲

1. 前面に吸込口を、内部に渦巻型羽根車およびモータによる吸込み機構を、背部に吹出口をそれぞれ具有する筒形胴体の周面下部にハンドルを胴体の軸線に対し交叉するよう下向きに突設して成るを特徴とする手持型掃除機。

3. 考案の詳細な説明

本考案は、小型で家具や自動車の中などの狭い所を掃除するのに使用される手持型掃除機に関する。

この種従来の手持型掃除機は全体が小型、軽量化されていても、ハンドルは普通のシリンダー型掃除機に多いC形ハンドルと同様に、胴の上部に取付けられていて手にさげて持つ手提げ型式のものばかりであり、この手提げ型式のものでは上向き作業による高所の掃除が容易でなく、また、特に自動車の中に多い狭い所の凹部にはハンドルを下げ

2本線削入

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た腕が邪魔になつて掃除しにくい等の問題があつた。

本考案は従来の上記難点を改善し、特に高所並びに狭い所の凹部も容易に掃除できる手持型掃除機を提供しようとするものであり、その特徴とする処は、前面に吸込口を、内部に渦巻型羽根車およびモータによる吸込み機構を、背部に吹出口をそれぞれ具有する筒形胴体の周面下部にハンドルを胴体の軸線に対し交叉するよう下向きに突設して成る点にある。

以下本考案の実施例を図面に基き説明すれば、図面において、(1)はプラスチック製の円筒形胴体で、この前部(2)は径大に開放され、かつ後部(3)は閉鎖され、開放前部(2)の後向壁面(4)には吹出口(5)を開口してある。(6)はプラスチック製のラッパ形状をした前蓋で、この閉鎖形前壁面(7)の中心よりずれた偏心位置に吸込口取付孔(8)を開口し、開放後部(9)は胴体(1)の開放前部(2)に回転自在にかつ脱着自在に外嵌される。(10)は布製の集塵袋で、この開放口(11)を吸込口取付孔(8)に連通すべく前蓋(6)の

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前壁面(7)の内側に取外自在に内装される。(12)は渦巻型羽根車で、中央に吸込開口部(13)をもつ開口円板(14)と、これに一体に対向する盲円板(15)との間に渦巻羽根(16)を放射状に列設して一体構成されたものであり、そしてこの羽根車(12)は開口円板(14)が集塵袋(10)の後部に対面するごとく、盲円板(15)の中心部を胴体(1)に内蔵したモータ(17)の軸(18)上に固着することにより胴体前部(2)の内部におさめられる。(19)は中央に開口部(20)をもつ遮へい円板で、胴体前部(2)内の渦巻型羽根車(12)と集塵袋(10)との間に介装されてその羽根車(12)の全周と前蓋(6)の内面との間の空隙前方を塞ぐべく胴体前部(2)に内嵌固着されている。この遮へい円板(19)と渦巻型羽根車(12)の開口円板(14)との間の隙間は、羽根車(12)の回転に支障なき程度に可及的に狭く形成される。(21)はプラスチック製の円筒形のハンドルで、このハンドル軸線L－Lが胴体(1)の軸線S－Sに対し交叉するように胴体(1)の円周下部に下向きに一体に取付けてある。このハンドル(21)の内部にはモータ(17)から延出したコード(22)が通され、またモータスイッチ(23)

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を突設してある。(24)はコード(22)の端に取付けたプラグである。(25)は先端に剛毛(26)を植設した吸込口で、上記前蓋(6)の吸込口取付孔(8)に着脱自在に取付けられる。この吸込口(25)は各種形状のものが用意されるが、各々の後部(27)の径は全て同一径に形成されて一定口径の吸込口取付孔(8)に共通してはめ込みうるようにされる。(28)はゴム等による逆止弁で、前蓋(6)の吸込口取付孔(8)の内側に取付けられている。

上記構成において、モータ(17)に直結された渦巻型羽根車(12)を高速回転させると、機内部の空気は吹出口(5)より機外に放出され、内部の気圧が大気圧より低くなつて強い吸引力を起こし、吸込口(25)の付近の空気は塵埃とともに収塵袋(10)の中に吸込まれる。

このように吸引集塵可能とする手持型掃除機はハンドル(21)を胴体(1)の周面下部に胴体(1)の軸線S－Sに対し交叉するよう下向きに突設し、いわゆるピストル型になしてあるので、そのハンドル(21)を手に持つた場合は腕をのばすことにより、前面

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の吸込口(25)を目の高さ又はこれ以上の高い所の被掃除面にも容易にもつてゆくことができ、上向き姿勢でも容易に掃除できる。また、このハンドル(21)を握つた腕は胴体(1)と平行な水平状態にすることができるため、特に狭い所の凹部（特に自動車の中においてこのような所が多い）にも腕を邪魔とすることなく吸込口(25)を容易にもつて行くことができ、この部分の清掃も容易に行なわれる。

集塵袋(10)の中にためられた塵埃は、前蓋(6)を取外し、集塵袋(10)を前蓋(6)から取出すことにより、廃棄することができる。

上記実施例のように吸込口(25)を前蓋(6)の前壁面(7)の偏心位置に取付けておいた場合は、前蓋(6)の前壁面(7)の周縁を被掃除面にできるだけ触れることのないよう、吸込口(25)先端の刷毛(26)のみを被掃除面上に摺擦させることができて使い易い。また、前蓋(6)を胴体(1)の前部に回転自在に装着した場合は、この前蓋(6)を回転させることにより吸込口(25)の向きを好みの方向に変えることができる。

さらに又、上記実施例の如く薄へい円板(19)を設

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けた場合は、渦巻型羽根車(12)により吸込んだ空気がこの車(12)の全周と前蓋(6)内面との間の空隙より集塵袋(10)の方へ舞戻るのを防止することができる。

上記実施例の渦巻型羽根車(12)に於て、開口円板(14)の吸込開口部(13)の内周縁上における羽根(16)と羽根(16)との間を第4図に示す様に切込んでおくと、羽根(16)と羽根(16)間の吸込側の開口大きさをその切込み(29)だけ拡大できて、羽根車(12)の小型の割に大きい吸込量を得ることができる。

なお、上記実施例ではハンドル(21)から延出するコード(22)の先端のプラグ(24)を一般家庭のコンセント、あるいは自動車のシガレットライターのコンセントなどに差込んで使用できるようにしてあるが、電池を使用してモータ(17)を回転できるようにしてもよい。この場合、電池はハンドル(21)の内部空間に収めるようにすればよい。また、吹出口(5)は胴体(1)の後部(3)に開口してもよい。更に吊下げ可能に吊具(30)をハンドル(21)あるいは胴体(1)の一部などに取付けておいてもよい。

本考案は以上のように、手持型掃除機の胴体の

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周面下部にハンドルを胴体の軸線に対し交叉するより下向きに突設するという簡単な構造で高所並びに特に狭い所の凹部も極めて容易に掃除できる便利なものであり、実益効果大なるものである。

4. 図面の簡単な説明

第1図は本案の斜視図、第2図は断面図、第3図は胴体の正面図、第4図は渦巻型羽根車の正面図である。

(26)…吸込口、(12)…渦巻型羽根車、(17)…モータ、(1)…胴体、(21)…ハンドル。

実用新案登録出願人　東和工業株式会社

代理人弁理士　安田敏雄

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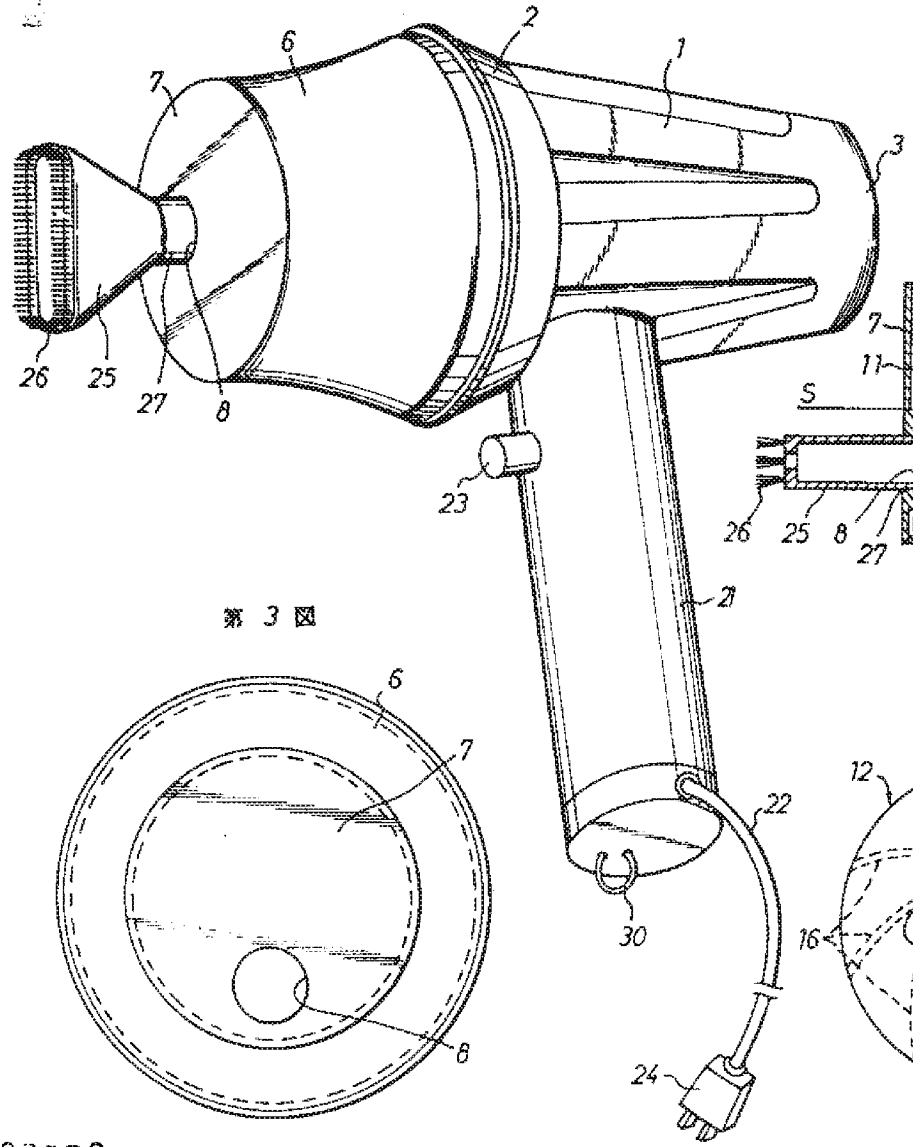
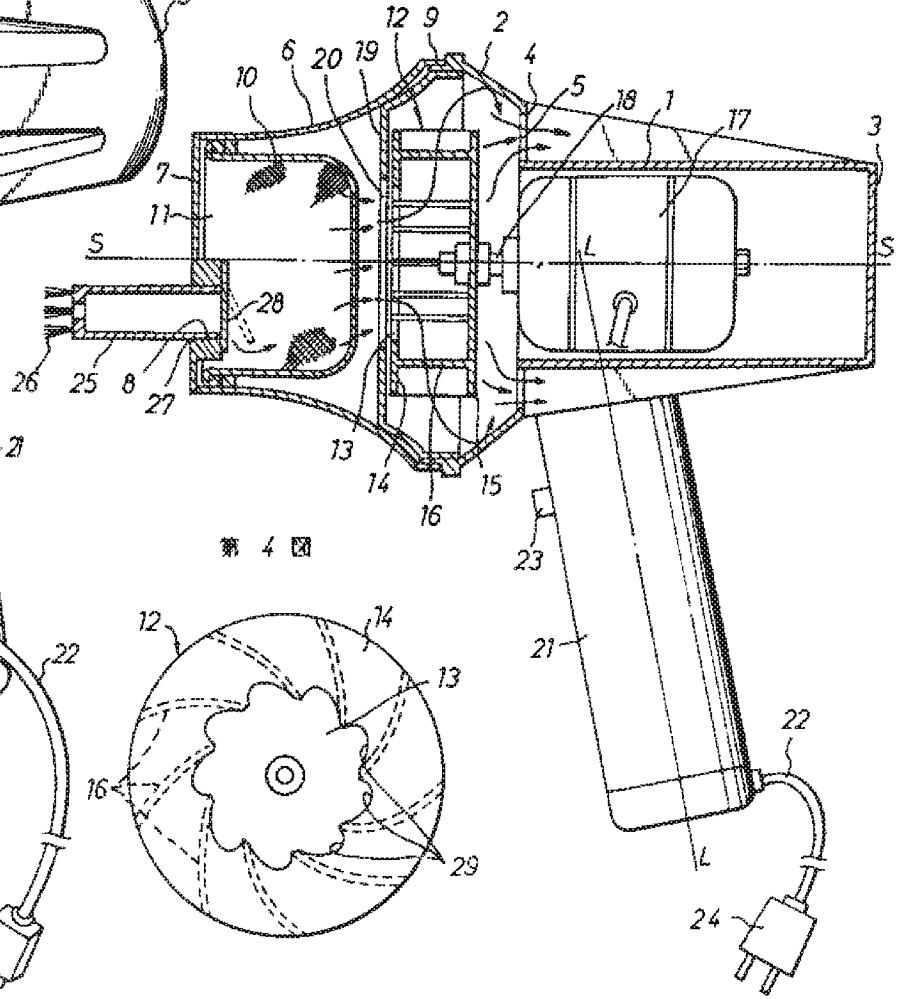
第 1 図



第 2 図



第 3 図

第 4 図

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DESCRIPTION JPS48107459

BRIEF DESCRIPTION OF THE DRAWINGS FIG. 1 is a side sectional view of an essential part showing an example of the present invention, and the symbols shown in the drawing mean 1 is a grip 9 part, 2 is a lead, 3 is a lid, and <4 is an auxiliary Equipment chamber, 5: trigger, 6: switch part, 7: barrel part, 8: motor, 9: pump, 10: filter, 11: screw part, 12: suction pipe, 13: guiding hole, 14: conduit, 15 Is a cylinder, and 16 is an exhaust hole. ? 1 "; . ■E-1 4 1-

[Detailed description of the invention] The present invention is a tabletop dust removal, lead scraping (not to clean the dust inside the small electronic equipment, etc. In addition, the gist is that the whole form is a pistol type and the lead from the battery or power supply is provided in the part, and the trigger is a switch. The main body is placed from the rear end of the barrel toward the front end in the order of motor, pump and filter suction pipe, and the suction pipe 48-107459-02-2 guiding hole is protruded and introduced into the inside and the back end is fixed to the inner end. A valve is provided and will be described below with the drawings. The taking 1111 is arranged with the lead 2 from the power supply ↓ 3 to make the auxiliary operation type 4 and the trigger S is used to detect the switch section 6 and the motor 8, the pump 9 and the filter 10 are juxtaposed to the barrel portion 7 Install and remove the suction pipe U at the end with the screw part n at a screw hole n, introduce and guide the suction pipe n of the suction pipe n inside the conduit 14 and bend it irregularly at all times, Shaping time 01 in the flow of air! The cylindrical body 15 made of a flexible rubber thin film is joined. Positive is the exhaust hole. In this way, the table is described to be in the 4111 state to be swept using this, hold the grip portion 1 and pull the trigger 6 with the finger (and the switch portion 6 is in contact and the current from the lead 2 is in the motor 8 The cooper-ane of the Ae pump 9 is rotated, so the air in the molecule of the barrel is exhausted from the exhaust hole which has failed around the motor 8, and the air in the air duct of the suction pipe n is also sucked. The cylinder 15 is shaped into a substantially cylindrical shape and opened O by the flow force, and dust and dirt are sucked into the filter 10 together with the empty 48-107459-03 barrier, and air and dirt are collected by the filter 10 Dust is accumulated for a minute w1. It should be noted that the suction pipe 12 may be short and may be used by supporting an appropriate suction aid stored in the support 4. In the case where the power source is a battery, the battery is housed in the winding portion I Be done. The portable vacuum cleaner as in the present invention is small and small enough to take into consideration the wrinkles that can be used on the table, sometimes the whole is rolled without any difference between the upper and lower, so the waste accumulated inside is a suction pipe It is more important to note that there is a risk of backflow and dissipation as compared with the normal T-course electric cleaning (is. Also, although small and high-performance batteries and motors have been developed in recent years, air must be taken in and out of the air through the fill-up, and the amount of air taken in and out must be relatively weak. There is a point of caution as mentioned above to avoid disturbing the energy, and simply by providing a valve body structure such as a cut valve, a ball valve, etc., dust is drawn between t and valve There is a risk that the dust 48-107459-0.4 block 4 will come out of the part and there is also a considerable air resistance.

From the above, as described above, the present invention is a pistol type in its entire form, so it is sugar-free to be able to hold palm twist securely, and the posture when using this machine is almost constant, and there is a grip part It is effective in preventing the reverse discharge of waste without rolling, and further, since a check valve is provided at the end of the conduit into which the suction pipe is introduced, there is also an advantage that the risk of waste becoming even smaller is less likely. R is also a pretense interest.

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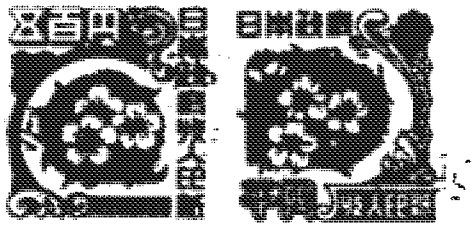
CLAIMS JPS48107459

【Practical model registration request】 In the table-top electric vacuum cleaner, the entire form is a pistol type, and the lead from the battery or power supply is in the grip part and the trigger is a switch. A pistol type table-top electric vacuum cleaner characterized in that a motor, a pump, a filter, and a suction pipe are housed in this order and the suction pipe guide hole is introduced with a conduit projecting inside and a check valve is provided at the inner end.



¥1,500

実用新案登録願1（正）

昭和 47 年 3 月 15 日

特許庁長官　　殿

1、考案の名称

ガタ タク ジョウデン キ ソウ ジ キ
ピストル 型 卓 上 電 気 [illegible] 機

2、考案者　実用新案登録出願人に同じ

3、実用新案登録出願人

ミ エ ケン タ キ グン オオ ダイ チョウ オオ アザ サ ハラ
住所 三 [illegible] 県 [illegible] 気 郡 大 台 町 大 字 [illegible]

ツ ジ タ カ シ　　477 ⓪ 1
氏名 辻 隆

4、添付書類の目録

① 明細書　1 通
② 図面　1 通
③ [illegible]　1 [illegible]

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明　細　書

1 考案の名称

ピストル型卓上電気掃除機

2 実用新案登録請求の範囲

卓上電気掃除機において、全形をピストル型とし握り部分に電池又は電源よりの導線を備え引金をスイッチとし本体を銃身部分後端より先端に向つてモーター、ポンプ、フイルター、吸入管の順に納め該吸入管導孔を内部に導管を突設して導入し内端に逆止弁を設けた事を特徴とするピストル型卓上電気掃除機。

3 考案の詳細な説明

本考案は、卓上にて消ごむくず、鉛筆しん削りくず、小型電子機器内部のほこり等を掃除する如くした小形な電気掃除機の全形をピストル型とし、又吸入されたごみが散逸しない様にしたもので、要旨は、全形をピストル型とし握り部分に電池又は電源よりの導線を備え、引金をスイッチとし本体を銃身部分後端より先端に向つてモーター、ポンプ、フイルター吸入管の順に納め、該吸入管

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導孔を内部に導管を突設して導入し内端に逆止弁を設けたものであり以下図面と共に説明する。

握り部1は電源よりの導線2を配したる3にて補助具置4とし、引金5にてスイッチ部6の接切を行ない、銃身部分7にモーター8、ポンプ9、フィルター10を並設し、先端にネジ部11にて吸入管12を着脱自在とし、吸入管12の導孔13を導管14にて内部に導入突設し、常態において不整形に屈曲し吸気時の空気の流動にて整形開口される柔軟なゴム薄膜にて製した筒体15をかん合したものである。

16は排気孔である。

この様に製し今これを用いて掃除をする様態を述べると、握り部1を持ち食指にて引金5を引くと、スイッチ部6が接し導線2よりの電流がモーター8に通じポンプ9のターボファンを回転せしむるので、銃身部分7内の空気はモーター8周囲にがい設した排気孔16より排出せられ、吸入管12の導孔13から空気は吸入され、その流動力にて筒体15はほぼ筒状に整形せられて開口しており、空

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気と共にごみほこりはフイルター10内に吸入され、フイルター10にて空気とごみほこりは分離され集積される。

尚吸入管12を短かく設け補助具置4に収納した適当な吸入用補助具をかん着して用うる場合も有り、電源を電池とする場合には握り部1内に電池は収納される。

本考案の如きポータブルな電気掃除機は、小形であり卓上で用うる事を考慮に入れると、上下の別無く取扱はれ全体が転動する事もあり、従つて内部に集積したごみが吸入管より逆流して散逸する恐れが有る事が通常の家庭用電気掃除機と比し留意の要ある所である。

又近年小形で高性能な電池、モーターが開発せられているとはいえ、フイルターを介して空気を吸排せねばならずその吸排気力は比較的弱くなる事必定であり、出来得るだけ吸排気力を妨げる事を避けて上記の如き留意の要が有り、単に舌弁、球弁の如き弁体構造のものを設けるのみにては、弁と弁座の間にごみがはさまり吸入部分よりごみ

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ほこりが逆出する恐れもあり相当の空気抵抗もある。

以上の事から本考案は前述の通り、全形がピストル型であるので確実な本握保持が出来るは無論であり、本機を使用時の姿勢がほぼ一定し、又握り部分が有るので転動せずごみの逆出防止に効果があり、更に吸入管を内部に導入した導管の先端に逆止弁を設けたから、ごみがはきまり逆出する恐れも一層少ない利点もあり、意匠的にも興味有るものである。

4 図面の簡単な説明

図面は本考案の一例を示す要部側断面図であり、図中示した記号の意味は、1は握り部、2は導線、3はふた、4は補助具室、5は引金、6はスイッチ部、7は鉸身部分、8はモーター、9はポンプ、10はフイルター、11はネジ部、12は吸入管、13は導孔、14は導管、15は筒体、16は排気孔である。

実用新案登録出願人　辻　　隆

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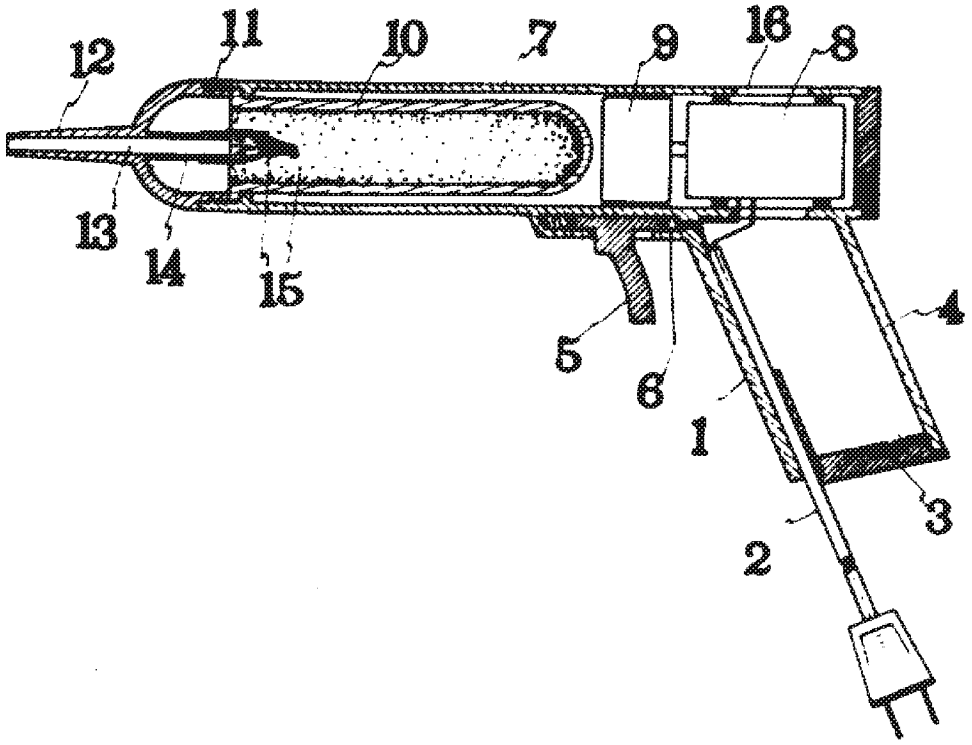

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Espacenet

Bibliographic data: JP2005261963 (A) — 2005-09-29

DUST COLLECTOR FOR CLEANER AND UPRIGHT CLEANER

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Applicant(s): SANYO ELECTRIC CO ± (SANYO ELECTRIC CO LTD)

Classification: **- international:** ***A47L5/28; A47L9/00; A47L9/10; A47L9/16;*** (IPC1-7): A47L5/28; A47L9/00; A47L9/10; A47L9/16

- cooperative:

Application number: JP20050135699 20050509 Global Dossier

Priority number(s): JP20050135699 20050509

Abstract of JP2005261963 (A)

PROBLEM TO BE SOLVED: To provide a dust collector for a cleaner and an upright cleaner using this dust collector for surely opening a cover body by simple operation without performing troublesome and insanitary work such as directly opening the cover body by hand. ;SOLUTION: This dust collector 20 for the cleaner has the cover body 32 openably-closably installed by a hinge 31 in a dust collecting case 21 for storing dust and dirt, a discharge port 36 capable of discharging the dust and dirt stored in the dust collecting case 21 when opening the cover body 32, and a lock mechanism 33 for locking the cover body 32 in a closing state. The dust collector 20 is provided with a cover body opening arm 35 moved by operation of an operation part 35a. When moving the cover body opening arm 35, the cover body opening arm 35 releases the lock mechanism 33, and forcibly opens the cover body 32. ;COPYRIGHT: (C)2005,JPO&NCIPI

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DESCRIPTION JP2005261963

PROBLEM TO BE SOLVED: To provide a dust collector for a vacuum cleaner capable of reliably opening a lid by a simple operation without performing troublesome and unsanitary work such as opening the lid directly by hand, and an upright type cleaning using the same Provide a machine. A lid (32) attached to a dust collection case (21) for accumulating dust by a hinge (31) so as to be able to open and close, and the dust collection case (21) when the lid (32) is opened A dust collection device (20) for a vacuum cleaner comprising a discharge port (36) capable of discharging accumulated dust and a lock mechanism (33) for locking the lid (32) in a closed state; The dust collector (20) is provided with a lid opening arm (35) which is moved by the operation of the operation unit (35a), and the lid opening arm (35) is moved when the lid opening arm (35) is moved.) Unlocks the locking mechanism (33) and forcibly opens the lid (32). [Selected figure] Figure 1

Dust collector for vacuum cleaner and upright type vacuum cleaner

[0001]

The present invention discharges the dust accumulated in the dust collection case when the dust collection case which accumulates the dust sucked from the suction tool, the lid attached to the dust collection case so as to be able to open and close with a hinge, and the lid is opened. The present invention relates to a dust collector for a vacuum cleaner having a discharge port that can be used and a lock mechanism that locks a lid in a closed state, and an upright cleaner using the same.

[0002]

Conventional vacuum cleaners, especially upright (vertical) vacuum cleaners, do not use disposable dust collection paper packs, but have a cylindrical shape in a dust collection case that is detachably mounted on the suction path of the cleaner body. It is known to use a dust collection device which is provided with a filter of this type so that dust filtered by this filter can be accumulated in a dust collection case and the accumulated dust can be discharged by opening a lid.

This dust collector is more economical because it can be used semi-permanently by maintenance of the filter as compared to disposable paper packs.

[0003]

As a prior art of this kind, there is one disclosed in JP-A-2000-342492 (A47L 9/10).

[0004]

In this prior art, the dust accumulated in the dust collection case is accumulated with the weight of the lid by releasing the closed state by operating the lever of the clamp hook that locks the lid closed. The cover is opened by the weight of dust and dirt.

Unexamined-Japanese-Patent No. 2000-342492

[0005]

By the way, in this type, packing for sealing is attached to the periphery of the lid in order to prevent leakage of dust and it is necessary to increase sealing pressure of the packing in order to improve the sealing performance. It does not. However, if the sealing pressure of the packing is increased, the operation of opening the lid becomes heavy. Further, when the amount of dust accumulated in the dust collection case increases, the dust is compressed and closely attached to the inner wall of the dust

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collection case, so that the weight of the dust is not added to the lid. Due to these factors, the lid may not open simply by releasing the lock hook by the clamp hook. In this case, it is necessary to open the cover forcibly by hand. Met.

[0006]

Therefore, the present invention has been made to solve such problems. In order to improve the sealing performance of the lid, the sealing pressure of the packing is increased or dust in the dust collection case is compressed and collected. Even if the dust case is in close contact with the inner wall of the dust case and the weight of dust does not get applied to the lid, the lid can be securely operated by a simple operation without performing the cumbersome and unsanitary work such as opening the lid directly by hand It is an object of the present invention to provide a dust collector for a vacuum cleaner that can be opened and an upright vacuum cleaner using the same.

[0007]

In order to achieve the above object, the present invention provides a dust collection case for accumulating dust sucked from a suction tool, a lid attached to the dust collection case so as to be openable and closable by a hinge, and the lid A dust collection device for a cleaner comprising: a discharge port capable of discharging dust accumulated in the dust collection case at the time of opening; and a lock mechanism for locking the lid closed. The cover opening arm is moved by the operation of the operation unit, and when the cover opening arm is moved, the cover opening arm releases the lock mechanism and forcibly pushes the cover. It is characterized by opening.

[0008]

Also, a dust collection case for accumulating dust sucked from the suction tool, a lid attached to the dust collection case by a hinge so as to be openable and closable, and dust accumulated in the dust collection case when the lid is opened Dust collection for a cleaner comprising a discharge port which can be discharged, a packing between the lid and the outlet opening edge of the dust collection case, and a lock mechanism which locks the lid in a closed state. In the apparatus, the dust collection device is provided with a lid opening arm that moves by the operation of the operation unit, and when the lid opening arm is moved, the lid opening arm releases the lock mechanism, and And the cover is forcibly opened.

[0009]

Also, a dust collection case for accumulating dust sucked from the suction tool, a lid attached to the bottom of the dust collection case by a hinge so as to be openable and closable, and a lock mechanism for locking the lid in a closed state In the dust collection device for a vacuum cleaner, the dust collection device is provided with a lid opening arm that moves by the operation of the operation unit, and when the operation unit is pushed down, the lid opening arm has the lock mechanism. And the lid is pushed downward to forcibly open the bottom of the dust collection case.

[0010]

Furthermore, the dust collection case is made of a transparent resin, and a cylindrical filter is provided inside.

[0011]

Furthermore, the locking mechanism is characterized in that it is located near the periphery of the lid and opposite to the hinge.

[0012]

Further, a suction tool provided at the lower part of the vertical vacuum cleaner body, a handle for operating the main body provided at the upper portion of the vacuum cleaner body, and a dust collector detachably mounted on the vacuum cleaner body In the upright vacuum cleaner, the dust collection device includes a dust collection case for accumulating dust sucked from the suction tool, a lid attached to the dust collection case so as to be openable and closable by a hinge, and the lid It consists of the discharge port which can discharge the dust accumulated in the dust collection case at the time of opening the body, and the lock mechanism which locks the lid in the closed state, and moves to the dust collection device by the operation of the operation unit The cover opening arm is provided, and when the cover opening arm is moved, the cover opening arm releases the lock mechanism and forcibly opens the cover. It is a thing.

[0013]

Further, a suction tool provided at the lower part of the vertical vacuum cleaner body, a handle for operating the main body provided at the upper portion of the vacuum cleaner body, and a dust collector detachably mounted on the vacuum cleaner body In the upright vacuum cleaner, the dust collection device includes a dust collection case for accumulating dust sucked from the suction tool, a lid attached to the dust collection case so as to be openable and closable by a hinge, and the lid A discharge port

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capable of discharging the dust accumulated in the dust collection case at the time of opening the body, a packing between the lid and the outlet opening edge of the dust collection case, and the lid closed. The dust collecting apparatus is provided with a lid opening arm that moves by the operation of the operation unit, and when the lid opening arm is moved, the lid opening arm is locked by the locking mechanism. Release the mechanism and the lid It is characterized in that the forcibly opened.

[0014]

Further, a suction tool provided at the lower part of the vertical vacuum cleaner body, a handle for operating the main body provided at the upper portion of the vacuum cleaner body, and a dust collector detachably mounted on the vacuum cleaner body In the upright type vacuum cleaner, the dust collection device includes a dust collection case for accumulating dust sucked from the suction tool, a lid attached to a bottom portion of the dust collection case so as to be opened and closed by a hinge. A lock mechanism for locking the lid in a closed state, and the dust collecting apparatus is provided with a lid opening arm that is moved by the operation of the operation unit, and when the operation unit is pushed down, the lid is opened The arm is characterized in that the lock mechanism is released and the lid is pushed downward to forcibly open the bottom of the dust collection case.

[0015]

Furthermore, the dust collection case is made of a transparent resin, and a cylindrical filter is provided inside.

[0016]

Furthermore, the locking mechanism is characterized in that it is located near the periphery of the lid and opposite to the hinge.

[0017]

Further, in the dust collection case, the dust sucked with the air from the suction tool flows from the suction hole and turns.

[0018]

Furthermore, air from which dust has been filtered by the dust collection device is taken out to the outside of the dust collection case, and then taken into an electric blower, and from the electric blower through an exhaust filter from the exhaust port of the cleaner main body. It is characterized in that it is discharged.

[0019]

According to the present invention, the dust collecting apparatus is provided with the lid opening arm that moves by the operation of the operation unit, and when the lid opening arm is moved, the lid opening arm releases the lock mechanism, and Since the lid is forcibly opened, the sealing pressure of the packing is increased to improve the sealing performance of the lid, and the dust in the dust collection case is compressed and closely attached to the inner wall of the dust collection case, and the weight of the dust Even when the lid is not added to the lid, the lid can be reliably opened with a simple operation without performing the cumbersome and unsanitary work such as opening the lid directly by hand.

[0020]

Hereinafter, an embodiment of the present invention will be described in detail with reference to FIGS. 1 to 9.

[0021]

In this embodiment, the present invention is applied to a dust collecting apparatus of an upright type (vertical type) vacuum cleaner, and in the upright type vacuum cleaner, as shown in FIGS. 2 and 3, a vertical type vacuum cleaner A floor suction tool 2 is integrally provided at a lower portion of the main body 1 and a main body operating handle 3 is integrally provided at an upper portion.

The main body operation handle 3 extends upward from the back side of the cleaner body 1 and has a grip portion 3a which is projected at the upper end in a substantially triangular shape to the front side.

[0022]

The floor suction tool 2 has a suction port 4 on the bottom side, and the rotary brush 5 is built in so as to face the suction port 4.

The rotating brush 5 is connected to a rotating shaft of an electric blower (not shown) built in the lower part of the cleaner body 1 by a belt or the like and is rotationally driven.

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Further, a pair of left and right front wheels 7 is attached to the bottom surface side front of the floor suction tool 2, and a pair of left and right rear wheels 8 are attached to the lower rear of the cleaner body 1.

[0023]

Further, a hose connection portion 9 communicating with the bottom side suction port 4 is formed on one side back surface of the floor suction tool 2, and the tip end portion of the hose 10 is detachably connected to the hose connection portion 9. It has become.

The hose 10 is rotated to the back side of the cleaner body 1 through the holding portion 11 provided on the back side of the main body operation handle 3 and is provided on the suction cylinder 12 provided to be shifted to one side from the center on the back side. It is connected.

[0024]

On the other hand, the dust collecting apparatus (dust collecting unit) 20 according to the present invention is detachably mounted on the front center side of the cleaner body 1.

[0025]

In the dust collecting apparatus 20, a cylindrical prefilter 22 is mounted inside a dust collecting case 21 formed in a substantially cylindrical shape of a transparent resin or the like, and a substantially cylindrical main filter 23 is further mounted inside the dust collecting case 21 It is a structure.

[0026]

The dust collection case 21 has a circular arc such that it is continuous with the main body operation handle 3 as shown in FIGS. 2 and 3 on the upper surface side inclined to face the front when mounted on the cleaner body 1. A handle 24 is formed.

[0027]

Further, on the back side of the handle 24, a handle 26 for turning the pre-filter 22 is attached.

The filter turning handle 26 of the present embodiment is a cap-like member, and when the dust collecting apparatus 20 is attached to the cleaner body 1, it does not appear outside and hides and can not be touched. 26 can not be operated.

[0028]

Further, although not shown, the dust collection case 21 is provided with the suction cylinder 12 mounted on the back side of the main body 1 at a position shifted to one side of the back side when mounted on the vacuum cleaner main body 1. A suction hole closely communicating with the inner opening via a packing or the like is formed in the inner opening.

As described above, by forming the suction hole of the dust collection case 21 offset to one side from the center, the air including the dust sucked from the suction hole is swirled in the dust collection case 21.

[0029]

Further, a lid 32 configured to be openable and closable by a hinge (fulcrum for opening and closing) 31 provided below the handle 24 is attached to the bottom of the dust collection case 20.

The cover 32 is a cover by hooking a clamp hook 33a formed at the lower end of the clamp lever 33 provided at the lower part of the dust collection case 21 opposite to the handle 24 to the projection 32a at the periphery of the cover 32. 32 is locked in the closed state.

[0030]

The support shaft 33b is rotatably attached to the ribs 34 formed on both sides of the clamp lever 33, and the coil spring 33c is mounted on the upper side of the support shaft 33b, and the hook 33a at the lower end is the lid 32 It is biased to the side.

[0031]

And in this embodiment, the arm 35 for lid opening is attached so that vertical movement between the clamp lever 33 and the dust collection case 21 is possible.

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A coil spring 35b for biasing the arm 35 upward is attached to the operation portion 35a at the upper end of the lid opening arm 35, and the arm for lid opening is mounted at the position of the coil spring 33c of the clamp lever 33. A vertically elongated hole 35c is formed so as not to hit the coil spring 33c even when the 35 moves up and down.

[0032]

Further, at the lower side position of the support shaft 33b of the clamp lever 33, a convex portion 35d which protrudes outward is formed corresponding to the inward inclined surface 33d of the clamp lever 33, and the convex portion 35d when depressed When 35d abuts on the inclined surface 33d of the clamp lever 33 and pushes it outward, it is possible to release the hooking of the clamp hook 33a to the lid side protrusion 32a.

[0033]

Further, the tip end 35e of the lid opening arm 35 hits the projection 32a on the lid 32 side at the time of pressing, and is pushed downward to forcibly open the lid 32 from which the clamp hook 33a is detached, as shown in FIG. Thus, the discharge port 36 of the dust collection case 21 is configured to be opened.

The projection 32a on the lid 32 side can be closed without operating the clamp lever 33 when the lid 32 is closed, so that the tip upper surface is inclined 32b corresponding to the inclination 33e of the clamp hook 33a. The tip portion 35e of the lid opening arm 35 does not slip on the inclined surface 32b of the projecting portion 32a as the upper convex portion 35d is pushed inward by the clamp lever 33 when it is depressed. The protrusion 32a can be pushed down.

[0034]

On the other hand, a packing 37 for closely contacting the opening edge of the dust collection case 21 is attached to the outer peripheral edge of the lid 32.

Further, a convex portion 38 fitted on the inner periphery of the lower opening of the pre-filter 22 is formed on the upper surface of the lid 32 so as to prevent lateral displacement of the lower end portion due to the rotation of the pre-filter 22.

A packing 39 for close contact with the upper surface of the lid 32 is attached to the open end of the prefilter 22.

[0035]

A suction hole 41 communicating with the outside of the dust collection case 21 is formed inside the upper surface of the convex portion 38 of the lid 32 by fitting the lower opening side of the cylindrical body 40 forming the air passage from the main filter 23. A packing 42 for closely contacting the open end of the cylindrical body 40 of the main filter 23 is attached to the inner peripheral edge of the suction hole 41.

[0036]

The main filter 23 is attached to the top of the top plate 43 of the dust collection case 21 by a mounting shaft 44 formed so as to project upward from the central portion thereof.

Between the top plate 43 of the dust collection case 21 and the upper surface of the main filter 23, there is mounted a cylindrical rotation shaft 45 of the pre-filter 22 with the mounting shaft 44 of the main filter 23 as a sliding shaft.

[0037]

At an upper end portion of the cylindrical rotation shaft 45 of the pre-filter 22, an annular gear 47 which is engaged with a disk-shaped gear 46 attached to the rotation shaft 27 of the filter rotation handle 26 is attached. As a result, the pre-filter 22 is pivoted corresponding to the direction in which the filter pivoting handle 26 is turned.

With this configuration, the pre-filter 22 can be reliably rotated with a relatively simple configuration.

Packings 48 and 49 for bringing the top plate 43 of the dust collection case 21 and the upper partition plate 22a of the prefilter 22 into close contact with each other are attached to the outer peripheral edge on the upper end side of the prefilter 22 and main filter 23. Dust and the like do not intrude into the prefilter rotation mechanism.

[0038]

Further, at the lower part of the cylindrical rotation shaft 45 of the pre-filter 22, there is formed an elastic protrusion 50 which protrudes outward and hits a pleated tip of the inner peripheral side of the main filter 23 described later.

With such a configuration, since the inner surface side of the main filter 23 to which fine dust adheres is repelled, the adhered dust can be efficiently removed.

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[0039]

The lower side of the prefilter 22 is a mesh 51, and the mesh 51 filters relatively large dust (coarse dust).

As described above, the mesh 51 which is the filter portion of the pre-filter 22 is formed at a lower position in the dust collection case 21 so that the air together with air from the suction hole (not shown) above the dust collection case 21 is formed. The entered dust is pushed downward while turning at high speed, and is deposited in a pressed state from the bottom surface (cover 32) of the dust collection case 21.

[0040]

Furthermore, a spiral rib 52 is formed on the outer periphery of the pre-filter 22 in the vertical direction.

The spiral rib 52, when the filter turning handle 26 described above is turned clockwise, discharges dust accumulated in the dust collection case 21 and compressed as shown in FIG. It is formed to be pushed out in the direction of the outlet 36.

[0041]

On the other hand, the main filter 23 is a cylindrically arranged filter paper filter folded in a pleated (bellows-like) shape so as to surround the tubular body 40 serving as an air passage of filtered air. The mounting shaft 44 formed at the upper portion is fitted in the mounting hole 53 formed at the upper portion of the top plate 43 of the dust collection case 21 and fixed so as not to rotate with the rotation of the prefilter 22 .

[0042]

The inner end of the pleated end of the main filter 23 is covered with a resin 54 in order to prevent contact wear due to the elastic projection 50 formed on the lower portion of the cylindrical rotating shaft 45 of the prefilter 22.

[0043]

Although the air from which dust has been filtered by the dust collection device 20 comes out of the dust collection case 21 from the lower side opening 41 of the cylindrical body 40 of the main filter 23, it is not shown, but through the filter. The air is taken into the electric blower and discharged from the electric blower through an exhaust filter from an exhaust port 58 formed at the lower front of the cleaner body 1 to the outside.

[0044]

In the upright vacuum cleaner of the present embodiment configured as described above, the dust scraped up by the rotating brush 5 of the floor suction tool 2 passes through the hose 10 to one side from the center on the back side of the main body 1 The dust enters the dust collection case 21 from the suction cylinder 12 at the shifted position, and flows downward while swirling along the inner wall, and large dust (coarse dust) accumulates on the bottom.

[0045]

At this time, since the mesh 51 of the pre-filter 22 into which air is sucked is formed at a lower position in the dust collection case 21, as described above, it enters with the air from the suction hole above the dust collection case 21. Dust is pushed downward while turning at high speed, and is deposited in a pressed state from the bottom surface (lid 32) of the dust collection case 21.

In particular, in the case of cotton waste, the effect is large, and the compression ratio is several times larger than that of, for example, a general cyclone separation type.

Thus, since the compression rate of dust increases, a large amount of dust can be collected even with the same dust collection volume.

[0046]

Also, small dust (fine dust) passes through the mesh 51 provided below the pre-filter 22 and enters the inside of the pre-filter 22, is filtered by the pleated main filter 23, and only clean air is inside the main filter 23. , And flows downward through the electric blower and is discharged to the outside from the exhaust port 58.

[0047]

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As described above, in the cylindrical prefilter 22 provided in the dust collection device 20 of the present embodiment, the pleated front end portion (resin 54) of the main filter 23 in the lower part of the cylindrical rotation shaft 45 An elastic projection 50 is provided to hit.

Further, a spiral rib 52 is provided on the outer peripheral surface.

Further, the cylindrical rotation shaft 45 of the prefilter 22 is interlocked with the filter rotation handle 26 by the gears 46 and 47.

[0048]

Therefore, by turning the filter turning handle 26 in an arbitrary direction, the pre-filter 22 is turned in the corresponding direction via the gears 46 and 47 and the turning shaft 45.

When the pre-filter 22 pivots, the elastic projection 50 at the lower part of the pivot shaft 45 repels the pleated tip (resin 54) inside the main filter 23, so it adheres to the surface of the main filter 23 by its vibration. Fine dust is shaken off and falls downward.

In addition, large dust (coarse dust) accumulated in a compressed state in the dust collection case 21 functions to wipe fine dust adhering to the outer peripheral surface of the pre-filter 22.

Therefore, it is possible to effectively prevent the reduction of the dust collection efficiency due to the adhesion of dust to the main filter 23 and the pre-filter 22.

[0049]

In addition, large dust (coarse dust) accumulated in the dust collection case 21 gradually closes the mesh 51 formed below the pre-filter 22, but the rotation of the pre-filter 22 described above causes its outer periphery to Since the formed spiral rib 52 moves up and down, it acts to form a gap (air passage) between the mesh 51 of the prefilter 22 and the dust.

Accordingly, also in this point, it is possible to prevent the reduction of the dust collection efficiency.

[0050]

On the other hand, when the dust accumulated in the dust collection case 21 is discharged, the dust collection case 21 is held by holding the handle 24 of the dust collection case 21 and pulling out the operation button 28 located on the upper side thereof. Remove from 1.

[0051]

Then, as shown in FIGS. 6 and 7, when the operation portion 35a of the lid opening arm 35 is pushed down, the convex portion 35d formed therebelow abuts against the inclined surface 33d of the clamp lever 33 and is pushed outward. The lever 33 pivots and the clamp hook 33a at the lower end is disengaged from the projection 32a on the lid 32 side.

When the operating portion 35a of the lid opening arm 35 is further depressed, the tip 35e of the arm 35 abuts on the projecting portion 32a on the lid 32 side, and the lid 32 is forced downward as shown in FIG. The dust accumulated in the dust collection case 21 can be discharged from the discharge port 36 by being opened.

[0052]

Therefore, the sealing pressure of the packing 37 is increased to improve the sealing performance of the lid 32, and the dust in the dust collection case 21 is compressed and closely attached to the inner wall of the dust collection case 21. Even when it does not join, the lid 32 can be reliably opened with a relatively simple configuration and operation without performing the cumbersome and unsanitary work such as opening the lid 32 directly by hand.

[0053]

In this manner, the lid 32 can be opened to discharge the dust accumulated in the dust collection case 21. In particular, cotton dust and the like are compressed and closely attached to the inner wall of the dust collection case 21. It does not leave easily as it is.

Here, when the pre-filter 22 is rotated in a predetermined direction by turning the handle 26 in a predetermined direction (here, clockwise), the helical rib 52 provided on the outer periphery of the pre-filter 22 becomes compressed dust such as cotton dust Since it acts to push out, it can be easily discharged.

[0054]

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In addition, since the hinge 31 (fulcrum for opening and closing) of the lid 32 is provided on the same side as the handle 24 of the dust collection case 21, discharging when the lid 32 is opened by holding the handle 24 (see FIG. 8) Since the lid 32 can prevent the dust to be collected from coming to the user who has the handle 24, it is possible to prevent such a problem that the user is dusted.

[0055]

Further, at the time of dust discharge described above, the above-described dust removing action works with the rotation of the pre-filter 22. Therefore, even if the user is not particularly aware of the dust removal of the filter, dust is removed every time dust is discharged. Therefore, it is possible to prevent the decrease in the dust collection efficiency without being particularly aware.

[0056]

As described above, the present embodiment is economical because it can be used semipermanently without using a disposable paper pack, and in the past, it has been improved that it was not easy to use compared to the paper pack. Therefore, the usabiiiity is improved significantly.

[0057]

Further, such a dust collecting apparatus 20 is particularly suitable for application to an upright type vacuum cleaner which is vertical and can sufficiently secure a mounting space and has a large dust collecting capacity.

[0058]

Furthermore, in the upright type vacuum cleaner of the present embodiment, as shown in FIG. 3, the main body operating handle 3 extends upward from the rear side of the vacuum cleaner main body 1, but in the upper end portion in a substantially triangular shape on the front side Since the grip portion 3a which is made to overhang is formed, even when lying down at a large angle and cleaning the main body 1 under the bed or the like, the grip portion 3a front side of the handle 3 for operating the main body is held There is no need to bend the waist so much because the grip is at a high position, which makes cleaning easy.

[0059]

10 to 19 show another embodiment of the present invention, in which the same reference numerals as in the above embodiment denote the same or corresponding parts.

The upright cleaner body 1 is the same as in FIGS. 2 and 3 of the above embodiment.

Moreover, although illustration was abbreviate | omitted in the said embodiment, as shown in the rear view of FIG.12, FIG.16, FIG.18, it mounts | wears with the cleaner main body 1 shown to the said FIG. 2, FIG. At a position shifted to one side of the rear side of the body, a suction hole 30 is formed in close communication with the inner opening of the suction cylinder 12 mounted on the rear side of the main body 1 via a packing or the like.

[0060]

The present embodiment differs from the above-described embodiment in the configuration of the opening mechanism of the lid 32, and the other components have the same configuration and operation as the above-described embodiment.

[0061]

In the above embodiment, as the lid opening mechanism, the lid opening arm 35 is provided on the dust collection case 21 side, but in the present embodiment, the lid opening lever 60 is provided on the lid 32 side. .

[0062]

That is, as the lock mechanism, as in the embodiment described above, the lid 32 is attached to the dust collection case 21 located on the opposite side of the hinge (fulcrum for opening and closing) 31, and the projection 32 a of the rim of the lid 32 is formed at the lower end. The clamp lever 33 is provided with a hook 33a to be hooked, but as an opening mechanism, it is attached at a position corresponding to the clamp lever 33 on the lower surface opposite to the hinge 31 of the lid 32 and the dust collection case 21 side is It is provided with a lid opening lever 60 biased in a pushing direction.

[0063]

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As shown in FIGS. 12 to 14 and the like, the lid opening lever 60 protrudes on both sides of its tip to press the lower ends of the ribs 34 on both sides to which the support shaft 33 b of the clamp lever 33 is attached. The pressing portion 60a is formed.

That is, in the lid opening lever 60, the coil spring 60c is mounted on the opposite side of the support shaft 60b, and the pressing portions 60a formed on both sides of the tip urge the lower ends of the ribs 34 on both sides. It is done.

[0064]

Further, a protrusion 60 d located between the ribs 34 on both sides is formed at the tip of the lid opening lever 60.

The clamp hook 33a side of the projection 60d is, as enlarged in FIG. 11, an inclined surface 60e that matches the inclined surface 33e of the clamp hook 33a so as not to interfere with the locking of the clamp hook 33a.

[0065]

In the above configuration, when the dust accumulated in the dust collection case 21 is discharged, the clamp hook 33a at the lower end is closed by pushing the operation portion 33f of the clamp lever 33 as shown in FIGS. It comes off from the projection 32 a on the body 32 side.

[0066]

When the locked state of the lid 32 by the clamp hook 33a is released, the reaction against the pressing force on the lower end of both ribs 34 on the dust collection case 21 side by the pressing portions 60a formed on both ends of the tip of the lid opening lever 60 Works on the lid 32 so that the lid 32 is forcibly opened to the position shown in FIGS.

Since the packing 37 for sealing is also separated from the opening edge of the dust collection case 21 when opened up to this point, the dust collection case is naturally opened as shown in FIGS. 18 and 19 by the weight of the lid 32 afterward. The dust accumulated in 21 can be discharged.

[0067]

Therefore, as in the embodiment described above, the sealing pressure of the packing 37 is increased to improve the sealing performance of the lid 32, or the dust in the dust collection case 21 is compressed and closely attached to the inner wall of the dust collection case 21 Even when the weight is not applied to the lid 32, the lid 32 can be surely opened with a simple configuration and operation without performing the troublesome and unsanitary work such as opening the lid 32 directly by hand. it can.

[0068]

Further, in the present embodiment, the ribs 34 on both sides of the clamp lever 33 to which the support shaft 33b is attached are effectively used to press the lower end thereof, so a new configuration is provided on the dust collection case 21 side. There is no need to add it, and the operation can be realized at low cost as it is.

[0069]

Further, since the projections 60d located between the ribs 34 on both sides are formed at the tip of the lid opening lever 60, positioning when closing the lid 32 after discharging the dust becomes easy.

[0070]

BRIEF DESCRIPTION OF THE DRAWINGS The side sectional view which shows the dust collector for vacuum cleaners which concerns on one Embodiment of this invention.

The front view which shows one Embodiment of the upright type vacuum cleaner using the said dust collector for vacuum cleaners.

Similarly, a side view.

The principal part expanded sectional view of the said FIG.

Furthermore, the principal part expanded sectional view of the said FIG.

The sectional side view which shows the state which the clamp hook of the said FIG. 1 remove | deviated.

The principal part expanded sectional view of the said FIG.

The sectional side view which shows the state which the lid of the said FIG. 1 opened.

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The principal part expanded sectional view of the said FIG. The sectional side view which shows the dust collector for vacuum cleaners which concerns on other embodiment of this invention. The principal part expanded sectional view of the said FIG. The rear view of the said FIG. The principal part enlarged view of the said FIG. AA sectional drawing of the said FIG. The clamp hook of the said FIG. 10 remove | deviates, The side sectional view which shows the state which the lever for lid open | released acted and the lid began to open. Similarly, the rear view of FIG. The principal part expanded sectional view of the said FIG. The rear view which shows the state which the lid further opened. The said 16 enlarged view of a principal part.

Explanation of sign

[0071]

DESCRIPTION OF SYMBOLS 1 Vacuum cleaner body 2 Suction tool for floor 3 Handle for main body operation 20 Dust collection device 21 Dust collection case 31 Hinge 32 Lid body 36 Discharge port 33 Locking mechanism 35a Operation part 35 Arm for lid opening

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CLAIMS JP2005261963

1.

A dust collection case for accumulating dust sucked from a suction tool, a lid attached to the dust collection case so as to be opened and closed by a hinge, and dust accumulated in the dust collection case when the lid is opened A dust collecting device for a vacuum cleaner comprising a discharge port capable of discharging and a lock mechanism for locking the lid in a closed state, wherein the dust A dust collecting device for a cleaner, wherein the lid opening arm releases the lock mechanism and forcibly opens the lid when the lid opening arm moves.

2.

A dust collection case for accumulating dust sucked from a suction tool, a lid attached to the dust collection case so as to be opened and closed by a hinge, and dust accumulated in the dust collection case when the lid is opened A dust collection device for a vacuum cleaner comprising: a discharge port that can be used; a packing that is between the lid and the outlet opening edge of the dust collection case; and a lock mechanism that locks the lid in a closed state. The dust collecting apparatus is provided with a lid opening arm that moves by the operation of the operation unit, and when the lid opening arm is moved, the lid opening arm releases the lock mechanism, and A dust collector for a vacuum cleaner characterized by forcibly opening a lid.

3.

A dust collection case for accumulating dust sucked from a suction tool, a lid attached to the bottom of the dust collection case so as to be openable and closable by a hinge, and a lock mechanism for locking the lid in a closed state In the dust collection device for a vacuum cleaner, the dust collection device is provided with a lid opening arm that moves by the operation of the operation unit, and when the operation unit is pressed down, the lid opening arm releases the lock mechanism. And the cover is pushed downward to forcibly open the bottom of the dust collection case.

4.

The dust collection device for a cleaner according to any one of claims 1 to 3, wherein the dust collection case is made of a transparent resin, and a cylindrical filter is provided inside.

5.

The dust collecting apparatus for a vacuum cleaner according to any one of claims 1 to 3, wherein the lock mechanism is located near the periphery of the lid and opposite to the hinge.

6.

A suction tool provided at a lower portion of a vertical cleaner body, a handle for operating the main body provided at an upper portion of the cleaner body, and a dust collector detachably mounted on the cleaner body In the upright type vacuum cleaner, the dust collection device includes a dust collection case for accumulating dust sucked from the suction tool, a lid attached to the dust collection case so as to be able to open and close by a hinge, and the lid. The cover comprises a discharge port capable of discharging the dust accumulated in the dust collection case at the time of opening, and a lock mechanism for locking the lid in a closed state, and the lid moved by the operation of the operation unit to the dust collection device. There is

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provided an arm for opening the body, and when the arm for opening the lid is moved, the arm for opening the lid releases the lock mechanism and forcibly opens the lid. Type vacuum cleaner.

7.

A suction tool provided at a lower portion of a vertical cleaner body, a handle for operating the main body provided at an upper portion of the cleaner body, and a dust collector detachably mounted on the cleaner body In the upright type vacuum cleaner, the dust collection device includes a dust collection case for accumulating dust sucked from the suction tool, a lid attached to the dust collection case so as to be able to open and close by a hinge, and the lid. A discharge port capable of discharging dust accumulated in the dust collection case at the time of opening, a packing between the lid and the discharge port opening edge of the dust collection case, and the lid locked in a closed state The dust collecting apparatus is provided with a lid opening arm that moves by the operation of the operation unit, and the lid opening arm moves the locking mechanism when the lid opening arm is moved. Release the lid and Upright vacuum cleaner, characterized in that the open control manner.

8.

A suction tool provided at a lower portion of a vertical cleaner body, a handle for operating the main body provided at an upper portion of the cleaner body, and a dust collector detachably mounted on the cleaner body In the upright type vacuum cleaner, the dust collection device includes a dust collection case for accumulating dust sucked from the suction tool, a lid attached to a bottom portion of the dust collection case so as to be opened and closed by a hinge, and The dust collecting apparatus is provided with a lid opening arm that moves by the operation of the operation unit, and when the operation unit is depressed, the lid opening arm is configured to lock the lid in the closed state. The upright vacuum cleaner according to any one of the preceding claims, wherein the lock mechanism is released, and the lid is pushed downward to forcibly open the bottom of the dust collection case.

9.

The upright type vacuum cleaner according to any one of claims 6 to 8, wherein the dust collection case is made of a transparent resin, and a cylindrical filter is provided inside.

10.

The upright type vacuum cleaner according to any one of claims 6 to 8, wherein the locking mechanism is located near the periphery of the lid and opposite to the hinge.

11.

The upright cleaner according to any one of claims 6 to 8, wherein in the dust collection case, the dust sucked in with the air from the suction tool flows from the suction hole and swirls.

12.

The air from which dust is filtered by the dust collection device is taken out of the dust collection case, taken into an electric blower, and exhausted from the exhaust port of the cleaner body to the outside through the exhaust filter from the electric blower. The upright vacuum cleaner according to any one of claims 6 to 8, characterized in that:

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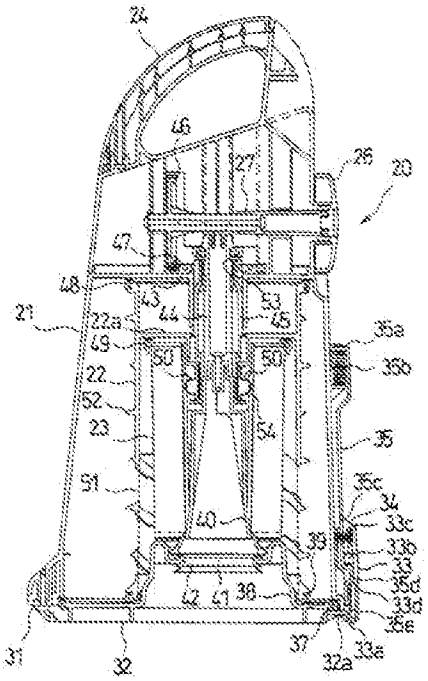
最終頁に続く

(54)【発明の名称】掃除機用集塵装置及びアップライト型掃除機

(57)【要約】
【課題】蓋体を手で直接開けるような煩わしく不衛生な作業を行うことなく、簡単な操作で確実に蓋体を開けることができる掃除機用集塵装置及びそれを用いたアップライト型掃除機を提供する。
【解決手段】塵埃を蓄積する集塵ケース（２１）にヒンジ（３１）により開閉自在に取り付けられた蓋体（３２）と、前記蓋体（３２）の開放時に前記集塵ケース（２１）に蓄積された塵埃を排出することができる排出口（３６）と、前記蓋体（３２）を閉鎖状態にロックするロック機構（３３）とを備えた掃除機用集塵装置（２０）において、前記集塵装置（２０）に、操作部（３５ａ）の操作により移動する蓋体開放用アーム（３５）を設け、前記蓋体開放用アーム（３５）の移動時、前記蓋体開放用アーム（３５）は、前記ロック機構（３３）を解除し、且つ、前記蓋体（３２）を強制的に開放する。
【選択図】　図１



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【特許請求の範囲】
【請求項１】
吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、該集塵ケースにヒンジにより開閉自在に取り付けられた蓋体と、前記蓋体の開放時に前記集塵ケースに蓄積された塵埃を排出することができる排出口と、前記蓋体を閉鎖状態にロックするロック機構とを備えた掃除機用集塵装置において、
前記集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、
前記蓋体開放用アームの移動時、前記蓋体開放用アームは、前記ロック機構を解除し、且つ、前記蓋体を強制的に開放することを特徴とする掃除機用集塵装置。
【請求項２】
吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、該集塵ケースにヒンジにより開閉自在に取り付けられた蓋体と、前記蓋体の開放時に前記集塵ケースに蓄積された塵埃を排出することができる排出口と、前記蓋体と前記集塵ケースの排出口開口縁との間にあるパッキンと、前記蓋体を閉鎖状態にロックするロック機構とを備えた掃除機用集塵装置において、
前記集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、
前記蓋体開放用アームの移動時、前記蓋体開放用アームは、前記ロック機構を解除し、且つ、前記蓋体を強制的に開放することを特徴とする掃除機用集塵装置。
【請求項３】
吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、該集塵ケースの底部に、ヒンジにより開閉自在に取り付けられた蓋体と、該蓋体を閉鎖状態にロックするロック機構とを備えた掃除機用集塵装置において、
前記集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、
前記操作部を押し下げた時、前記蓋体開放用アームは、前記ロック機構を解除し、且つ、前記蓋体を下方に押し下げて前記集塵ケースの底部から強制的に開放することを特徴とする掃除機用集塵装置。
【請求項４】
前記集塵ケースは、透明樹脂製であり、内側に円筒状フィルタが設けられていることを特徴とする請求項１～３に記載の掃除機用集塵装置。
【請求項５】
前記ロック機構は、前記蓋体の周縁付近であって前記ヒンジの反対側に位置することを特徴とする請求項１～３に記載の掃除機用集塵装置。
【請求項６】
縦型の掃除機本体の下部に設けられた吸込具と、前記掃除機本体の上部に設けられた本体操作用ハンドルと、前記掃除機本体に着脱自在に装着された集塵装置とを備えたアップライト型掃除機において、
前記集塵装置は、前記吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、該集塵ケースにヒンジにより開閉自在に取り付けられた蓋体と、前記蓋体の開放時に前記集塵ケースに蓄積された塵埃を排出することができる排出口と、前記蓋体を閉鎖状態にロックするロック機構とからなり、
前記集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、
前記蓋体開放用アームの移動時、前記蓋体開放用アームは、前記ロック機構を解除し、且つ、前記蓋体を強制的に開放することを特徴とするアップライト型掃除機。
【請求項７】
縦型の掃除機本体の下部に設けられた吸込具と、前記掃除機本体の上部に設けられた本体操作用ハンドルと、前記掃除機本体に着脱自在に装着された集塵装置とを備えたアップライト型掃除機において、
前記集塵装置は、前記吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、該集塵ケースにヒンジにより開閉自在に取り付けられた蓋体と、前記蓋体の開放時に前記集塵ケースに蓄積された塵埃を排出することができる排出口と、前記蓋体と前記集塵ケースの排出

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口開口縁との間にあるパッキンと、前記蓋体を閉鎖状態にロックするロック機構とからなり、

前記集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、

前記蓋体開放用アームの移動時、前記蓋体開放用アームは、前記ロック機構を解除し、且つ、前記蓋体を強制的に開放することを特徴とするアップライト型掃除機。

【請求項８】

縦型の掃除機本体の下部に設けられた吸込具と、前記掃除機本体の上部に設けられた本体操作用ハンドルと、前記掃除機本体に着脱自在に装着された集塵装置とを備えたアップライト型掃除機において、

前記集塵装置は、前記吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、該集塵ケースの底部に、ヒンジにより開閉自在に取り付けられた蓋体と、該蓋体を閉鎖状態にロックするロック機構とからなり、

前記集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、前記操作部を押し下げた時、前記蓋体開放用アームは、前記ロック機構を解除し、且つ、前記蓋体を下方に押し下げて前記集塵ケースの底部から強制的に開放することを特徴とするアップライト型掃除機。

【請求項９】

前記集塵ケースは、透明樹脂製であり、内側に円筒状フィルタが設けられていることを特徴とする請求項６～８に記載のアップライト型掃除機。

【請求項１０】

前記ロック機構は、前記蓋体の周縁付近であって前記ヒンジの反対側に位置することを特徴とする請求項６～８に記載のアップライト型掃除機。

【請求項１１】

前記集塵ケース内では、前記吸込具から空気とともに吸い込まれた塵埃が吸気孔から流入して旋回することを特徴とする請求項６～８に記載のアップライト型掃除機。

【請求項１２】

前記集塵装置で塵埃が濾過された空気は、前記集塵ケース外に出た後、電動送風機に取り込まれ、そして前記電動送風機から排気フィルタを介して前記掃除機本体の排気口から外部へ排出されることを特徴とする請求項６～８に記載のアップライト型掃除機。

【発明の詳細な説明】

【技術分野】

【０００１】

本願発明は、吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、集塵ケースにヒンジにより開閉自在に取り付けられた蓋体と、蓋体の開放時に集塵ケースに蓄積された塵埃を排出することができる排出口と、蓋体を閉鎖状態にロックするロック機構とを備えた掃除機用集塵装置及びそれを用いたアップライト型掃除機に関するものである。

【背景技術】

【０００２】

従来の電気掃除機、特にアップライト型（縦型）掃除機には、使い捨ての集塵用紙パックを用いずに、掃除機本体の吸引経路に着脱自在に装着される集塵ケース内に筒状のフィルタを備えて、このフィルタにより濾過された塵埃を集塵ケース内に蓄積し、蓄積された塵埃を蓋体を開いて排出できるようにした集塵装置を用いたものが知られている。この集塵装置は、使い捨ての紙パックに比べて、フィルタのメンテナンスにより半永久的に使用できるので、経済的である。

【０００３】

この種の従来技術としては、特開２０００－３４２４９２号公報（Ａ４７Ｌ　９／１０）に開示されたものがある。

【０００４】

この従来技術においては、集塵ケースに溜まった塵埃を、その蓋体を閉じた状態にロックしているクランプフックのレバーを操作して閉鎖状態を解除することにより、蓋体の自

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重と蓄積された塵埃の重みで蓋体を開ける構成になっている。
【特許文献１】特開２０００－３４２４９２号公報
【発明の開示】
【発明が解決しようとする課題】
【０００５】
ところで、この種のものにおいては、塵埃の漏れを防ぐため蓋体の周縁にはシール用のパッキンが装着されており、そのシール性を良くするためには、パッキンのシール圧を高くしなければならない。しかし、パッキンのシール圧を高くすれば、蓋体が開く動作が重くなる。また、集塵ケース内に蓄積される塵埃の量が多くなると塵埃が圧縮されて集塵ケース内壁に密着するため、塵埃の重みが蓋体に加わらなくなる。このような要因により、クランプフックによるロック状態を解除しただけでは、蓋体が開かないことがあり、この場合には、手で強制的に開けなければならないので、その作業が煩わしく、また不衛生であった。
【０００６】
そこで、本願発明はこのような課題を解決するためになされたものであり、蓋体のシール性を良くするためにパッキンのシール圧を高くしたり、集塵ケース内の塵埃が圧縮されて集塵ケース内壁に密着し、塵埃の重みが蓋体に加わらないようになった場合でも、蓋体を手で直接開けるような煩わしく不衛生な作業を行うことなく、簡単な操作で確実に蓋体を開けることができる掃除機用集塵装置及びそれを用いたアップライト型掃除機を提供することを目的とするものである。
【課題を解決するための手段】
【０００７】
上記のような目的を達成するために、本願発明は、吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、該集塵ケースにヒンジにより開閉自在に取り付けられた蓋体と、前記蓋体の開放時に前記集塵ケースに蓄積された塵埃を排出することができる排出口と、前記蓋体を閉鎖状態にロックするロック機構とを備えた掃除機用集塵装置において、前記集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、前記蓋体開放用アームの移動時、前記蓋体開放用アームは、前記ロック機構を解除し、且つ、前記蓋体を強制的に開放することを特徴とするものである。
【０００８】
また、吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、該集塵ケースにヒンジにより開閉自在に取り付けられた蓋体と、前記蓋体の開放時に前記集塵ケースに蓄積された塵埃を排出することができる排出口と、前記蓋体と前記集塵ケースの排出口開口縁との間にあるパッキンと、前記蓋体を閉鎖状態にロックするロック機構とを備えた掃除機用集塵装置において、前記集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、前記蓋体開放用アームの移動時、前記蓋体開放用アームは、前記ロック機構を解除し、且つ、前記蓋体を強制的に開放することを特徴とするものである。
【０００９】
また、吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、該集塵ケースの底部に、ヒンジにより開閉自在に取り付けられた蓋体と、該蓋体を閉鎖状態にロックするロック機構とを備えた掃除機用集塵装置において、前記集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、前記操作部を押し下げた時、前記蓋体開放用アームは、前記ロック機構を解除し、且つ、前記蓋体を下方に押し下げて前記集塵ケースの底部から強制的に開放することを特徴とするものである。
【００１０】
さらに、前記集塵ケースは、透明樹脂製であり、内側に円筒状フィルタが設けられていることを特徴とするものである。
【００１１】
さらに、前記ロック機構は、前記蓋体の周縁付近であって前記ヒンジの反対側に位置することを特徴とするものである。

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【００１２】
また、縦型の掃除機本体の下部に設けられた吸込具と、前記掃除機本体の上部に設けられた本体操作用ハンドルと、前記掃除機本体に着脱自在に装着された集塵装置とを備えたアップライト型掃除機において、
前記集塵装置は、前記吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、該集塵ケースにヒンジにより開閉自在に取り付けられた蓋体と、前記蓋体の開放時に前記集塵ケースに蓄積された塵埃を排出することができる排出口と、前記蓋体を閉鎖状態にロックするロック機構とからなり、前記集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、前記蓋体開放用アームの移動時、前記蓋体開放用アームは、前記ロック機構を解除し、且つ、前記蓋体を強制的に開放することを特徴とするものである。
【００１３】
また、縦型の掃除機本体の下部に設けられた吸込具と、前記掃除機本体の上部に設けられた本体操作用ハンドルと、前記掃除機本体に着脱自在に装着された集塵装置とを備えたアップライト型掃除機において、前記集塵装置は、前記吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、該集塵ケースにヒンジにより開閉自在に取り付けられた蓋体と、前記蓋体の開放時に前記集塵ケースに蓄積された塵埃を排出することができる排出口と、前記蓋体と前記集塵ケースの排出口開口縁との間にあるパッキンと、前記蓋体を閉鎖状態にロックするロック機構とからなり、前記集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、前記蓋体開放用アームの移動時、前記蓋体開放用アームは、前記ロック機構を解除し、且つ、前記蓋体を強制的に開放することを特徴とするものである。
【００１４】
また、縦型の掃除機本体の下部に設けられた吸込具と、前記掃除機本体の上部に設けられた本体操作用ハンドルと、前記掃除機本体に着脱自在に装着された集塵装置とを備えたアップライト型掃除機において、前記集塵装置は、前記吸込具から吸い込まれた塵埃を蓄積する集塵ケースと、該集塵ケースの底部に、ヒンジにより開閉自在に取り付けられた蓋体と、該蓋体を閉鎖状態にロックするロック機構とからなり、前記集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、前記操作部を押し下げた時、前記蓋体開放用アームは、前記ロック機構を解除し、且つ、前記蓋体を下方に押し下げて前記集塵ケースの底部から強制的に開放することを特徴とするものである。
【００１５】
さらに、前記集塵ケースは、透明樹脂製であり、内側に円筒状フィルタが設けられていることを特徴とするものである。
【００１６】
さらに、前記ロック機構は、前記蓋体の周縁付近であって前記ヒンジの反対側に位置することを特徴とするものである。
【００１７】
さらに、前記集塵ケース内では、前記吸込具から空気とともに吸い込まれた塵埃が吸気孔から流入して旋回することを特徴とするものである。
【００１８】
さらに、前記集塵装置で塵埃が濾過された空気は、前記集塵ケース外に出た後、電動送風機に取り込まれ、そして前記電動送風機から排気フィルタを介して前記掃除機本体の排気口から外部へ排出されることを特徴とするものである。
【発明の効果】
【００１９】
本願発明によれば、集塵装置に、操作部の操作により移動する蓋体開放用アームを設け、蓋体開放用アームの移動時、蓋体開放用アームは、ロック機構を解除し、且つ、蓋体を強制的に開放するので、蓋体のシール性を良くするためにパッキンのシール圧を高くしたり、集塵ケース内の塵埃が圧縮されて集塵ケース内壁に密着し、塵埃の重みが蓋体に加わらないようになった場合でも、蓋体を手で直接開けるような煩わしく不衛生な作業を行うことなく、簡単な操作で確実に蓋体を開けることができる。

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【発明を実施するための最良の形態】

【００２０】

以下、本願発明の一実施形態を図１～図９を参照して詳細に説明する。

【００２１】

本実施形態は、本願発明をアップライト型（縦型）掃除機の集塵装置に適用したもので、アップライト型掃除機には、図２，図３に示すように、縦型の掃除機本体１の下部に床用吸込具２が、上部に本体操作用ハンドル３が一体に備えられている。この本体操作用ハンドル３は、掃除機本体１の背面側から上方に伸びると共に、上端部に略三角形状に前側に張り出させたグリップ部３ａが形成されている。

【００２２】

上記床用吸込具２は底面側に吸込口４を有すると共に、この吸込口４に臨ませて回転ブラシ５を内蔵している。この回転ブラシ５は、掃除機本体１の下部に内蔵された図示しない電動送風機の回転軸にベルト等により連結されて回転駆動されるようになっている。また、この床用吸込具２の底面側前方には左右一対の前輪７が取り付けられており、掃除機本体１の下部後方には左右一対の後輪８が取り付けられている。

【００２３】

また、上記床用吸込具２の片側背面には、底面側吸込口４に連通するホース接続部９が形成され、このホース接続部９に、ホース１０の先端部が着脱自在に接続されるようになっている。このホース１０は、本体操作用ハンドル３の背面側に設けられた保持部１１を介して掃除機本体１の背面側に回され、背面側の中央より片側にずらして設けられた吸込筒１２に連結されている。

【００２４】

一方、掃除機本体１の前面側中央部には、本願発明による集塵装置（集塵ユニット）２０が着脱自在に装着される。

【００２５】

上記集塵装置２０は、透明樹脂等で略円筒状に形成された集塵ケース２１の内側に円筒状のプレフィルタ２２が装着され、さらにその内側に略円筒状のメインフィルタ２３が装着された構成となっている。

【００２６】

上記集塵ケース２１には、掃除機本体１に装着したときに前面を向くように傾斜させた上面側に、図２，図３に示すように本体操作用ハンドル３の下方に連続する如く円弧を成す取手２４が形成されている。

【００２７】

また、上記取手２４の背面側には、上記プレフィルタ２２を回動するためのハンドル２６が取り付けられている。本実施形態のフィルタ回動用ハンドル２６はキャップ状のもので、集塵装置２０が掃除機本体１に装着されると外部に現れないで隠れ、触ることができないので、子供などが不用意にハンドル２６を操作することができないようになっている。

【００２８】

また、この集塵ケース２１には、図示はしないが、掃除機本体１に装着したときに奥側となる面の片側にずらした位置に、前記本体１背面側に取り付けられた吸込筒１２の内側開口にパッキン等を介して密接して連通する吸込孔が形成されている。このように、集塵ケース２１の吸込孔を中央より片側にずらして形成することにより、吸込孔から吸引される塵埃を含んだ空気が集塵ケース２１内で旋回するようになる。

【００２９】

さらに、上記集塵ケース２０の底部には、取手２４の下方に位置して設けられたヒンジ（開閉用支点）３１により開閉自在に構成された蓋体３２が取り付けられている。この蓋体３２は、取手２４とは反対側の集塵ケース２１下部に設けられたクランプレバー３３の下端に形成されたクランプフック３３ａを蓋体３２周縁の突出部３２ａに引っ掛けることにより、蓋体３２が閉じた状態にロックされるようになっている。

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【００３０】
上記クランプレバー３３は、その両側に形成されたリブ３４に支軸３３ｂが回動自在に取り付けられており、支軸３３ｂの上側にコイルバネ３３ｃが装着されて、下端部のフック３３ａが蓋体３２側に付勢されている。
【００３１】
そして、本実施形態においては、上記クランプレバー３３と集塵ケース２１間を上下動可能に蓋体開放用アーム３５が取り付けられている。この蓋体開放用アーム３５の上端の操作部３５ａには、当該アーム３５を上方に付勢するコイルバネ３５ｂが装着されており、また、前記クランプレバー３３のコイルバネ３３ｃ位置には蓋体開放用アーム３５が上下動してもコイルバネ３３ｃに当たらないように縦長の孔３５ｃが形成されている。
【００３２】
また、前記クランプレバー３３の支軸３３ｂの下側位置には、クランプレバー３３の内側への傾斜面３３ｄに対応して、外側に突出する凸部３５ｄが形成されており、押し下げ時に当該凸部３５ｄがクランプレバー３３の傾斜面３３ｄに当接して外側に押し退けることにより、クランプフック３３ａの蓋体側突出部３２ａへの引っ掛かりを解除できるようになっている。
【００３３】
さらに、この蓋体開放用アーム３５の先端部３５ｅは、押し下げ時に蓋体３２側の突出部３２ａに当たって下方に押し下げ、クランプフック３３ａの外れた蓋体３２を強制的に開いて、図８に示すように集塵ケース２１の排出口３６を開放するように構成されている。なお、蓋体３２側の突出部３２ａは、蓋体３２を閉じる時にクランプレバー３３を操作することなく閉じることができるように、クランプフック３３ａの傾斜面３３ｅに対応して先端上面が傾斜面３２ｂとなっているが、蓋体開放用アーム３５の先端部３５ｅは、その上側の凸部３５ｄが押し下げ時にクランプレバー３３によって内側に押圧されることにより、突出部３２ａの傾斜面３２ｂを滑ることなく突出部３２ａを押し下げることができる。
【００３４】
一方、蓋体３２の外周縁には、集塵ケース２１の開口縁と密接するためのパッキン３７が装着されている。また、蓋体３２の上面には、プレフィルタ２２の下部開口内周に嵌合する凸部３８が形成され、プレフィルタ２２の回動による下端部の横ぶれを防ぐようになっている。このプレフィルタ２２の開口端には蓋体３２上面と密接するためのパッキン３９が装着されている。
【００３５】
上記蓋体３２の凸部３８の上面内側には、メインフィルタ２３からの通気路を形成する筒状体４０の下部開口側が嵌合して集塵ケース２１外に連通する吸引孔４１が形成されており、この吸引孔４１の内周縁には、上記メインフィルタ２３の筒状体４０開口端と密接するためのパッキン４２が装着されている。
【００３６】
上記メインフィルタ２３は、その中央部から上方に突出して形成した取付軸４４によって集塵ケース２１の天板４３上部に取り付けられている。これら集塵ケース２１の天板４３とメインフィルタ２３上面との間には、上記メインフィルタ２３の取付軸４４を摺動軸とするプレフィルタ２２の筒状回動軸４５が装着されている。
【００３７】
上記プレフィルタ２２の筒状回動軸４５の上端部には、前記フィルタ回動用ハンドル２６の回動軸２７に取り付けられた円盤状の歯車４６と噛合する環状の歯車４７が取り付けられており、これによりフィルタ回動用ハンドル２６を回す方向に対応してプレフィルタ２２が回動するようになっている。このように構成することにより、比較的簡単な構成で、プレフィルタ２２を確実に回動することができる。上記プレフィルタ２２やメインフィルタ２３の上端側の外周縁には、集塵ケース２１の天板４３やプレフィルタ２２の上部仕切板２２ａと密接するためのパッキン４８，４９が装着されており、上述したプレフィル

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タ回動機構内に塵埃等が侵入しないように構成されている。

【００３８】

また、プレフィルタ２２の筒状回動軸４５の下部には、外側に突出して後述するメインフィルタ２３の内周側のプリーツ状先端部に当たる弾性突起５０が形成されている。このように構成することにより、細塵が付着するメインフィルタ２３の内面側を弾くので、付着した塵埃を効率的に除去することができるようになっている。

【００３９】

また、このプレフィルタ２２は、下部側が網目５１となっており、この網目５１で比較的大きな塵埃（粗塵）を濾過するようになっている。このようにプレフィルタ２２のフィルタ部分である網目５１が集塵ケース２１内の下方に位置して形成されていることにより、集塵ケース２１の上方にある吸込孔（図示せず）から空気と共に入った塵埃が高速で旋回しながら下方に押しやられ、集塵ケース２１の底面（蓋体３２）よりプレスされた状態で堆積する。

【００４０】

さらに、このプレフィルタ２２の外周には、上下方向に螺旋状のリブ５２が形成されている。この螺旋状のリブ５２は、前述したフィルタ回動用ハンドル２６を右回りに回したときに、集塵ケース２１内に蓄積し圧縮された塵埃を図８に示すように蓋体３２が開いた排出口３６方向に押し出す向きに形成されている。

【００４１】

一方、メインフィルタ２３は、濾過された空気の通気路となる筒状体４０を囲むように、プリーツ状（蛇腹状）に折り畳まれた濾紙フィルタを筒状に配設したものであり、その中央上部に形成された取付軸４４を集塵ケース２１の天板４３上部に形成された取付孔５３に嵌合すると共に、前記プレフィルタ２２の回動に伴って回動しないように固定してある。

【００４２】

上記メインフィルタ２３の内側のプリーツ状先端部は、プレフィルタ２２の筒状回動軸４５下部に形成された弾性突起５０による接触摩耗を防ぐため樹脂５４で覆われている。

【００４３】

なお、上記集塵装置２０で塵埃が濾過された空気は、上記メインフィルタ２３の筒状体４０の下部側開口４１より集塵ケース２１外に出てから、図示はしないが、フィルタを介して電動送風機に取り込まれ、電動送風機から排気フィルタを介して掃除機本体１の前面下部に形成された排気口５８から外部へ排出されるようになっている。

【００４４】

以上のように構成された本実施形態のアップライト型掃除機では、床用吸込具２の回転ブラシ５により掻き揚げられた塵埃が、ホース１０を通って、本体１背面側の中央より片側にずらした位置にある吸込筒１２から集塵ケース２１内に入り、その内壁に沿って旋回しながら下方へ流れ、大きな塵埃（粗塵）は底に堆積する。

【００４５】

このとき、空気が吸い込まれるプレフィルタ２２の網目５１が集塵ケース２１内の下方に位置して形成されているので、前述したように、集塵ケース２１の上方にある吸込孔から空気と共に入った塵埃が高速で旋回しながら下方に押しやられ、集塵ケース２１の底面（蓋体３２）よりプレスされた状態で堆積する。特に綿ごみの場合は、その効果は大で、例えば一般的なサイクロン分離式のものに比べて圧縮率は数倍大きくなる。このように塵埃の圧縮率が大きくなるため、同じ集塵容積でも、たくさんの塵埃を捕集することができる。

【００４６】

また、小さな塵埃（細塵）はプレフィルタ２２の下方に設けられた網目５１を通ってプレフィルタ２２の内側に入り、プリーツ状のメインフィルタ２３にて濾過され、きれいな空気のみメインフィルタ２３の内側に入って下方へと流れ、電動送風機を通って排気口５８より外部に排出される。

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【００４７】
本実施形態の集塵装置２０に備えられた円筒状プレフィルタ２２には、前述したように、その筒状回動軸４５の下部に、メインフィルタ２３の内側のプリーツ状先端部（樹脂５４）に当たる弾性突起５０が設けられている。また、その外周面には螺旋状のリブ５２が設けられている。さらに、プレフィルタ２２の筒状回動軸４５は、歯車４６，４７にてフィルタ回動用ハンドル２６に連動している。

【００４８】
従って、フィルタ回動用ハンドル２６を任意の方向に回すことにより、歯車４６，４７及び回動軸４５を介して、プレフィルタ２２が対応する方向に回動する。プレフィルタ２２が回動すると、その回動軸４５下部の弾性突起５０がメインフィルタ２３の内側のプリーツ状先端部（樹脂５４）を弾くため、その振動によりメインフィルタ２３の表面に付着している細塵が振り落されて下方に落下する。また、集塵ケース２１内に圧縮された状態で堆積した大きな塵埃（粗塵）がプレフィルタ２２の外周面に付着している細塵を拭く働きをする。従って、メインフィルタ２３及びプレフィルタ２２への塵埃の付着による集塵効率の低下を効果的に防ぐことができる。

【００４９】
また、集塵ケース２１内に堆積する大きな塵埃（粗塵）は、プレフィルタ２２の下方に形成された網目５１を徐々に塞いでゆくが、上述したプレフィルタ２２の回動により、その外周に形成された螺旋状のリブ５２が上下動するため、プレフィルタ２２の網目５１と塵埃との間に隙間（通気路）を形成するように作用する。従って、この点においても、集塵効率の低下を防ぐことができる。

【００５０】
一方、集塵ケース２１内に溜まった塵埃を排出するときは、集塵ケース２１の取手２４を持って、その上側にある操作ボタン２８を押しながら引き出すことにより、集塵ケース２１を掃除機本体１から取り外す。

【００５１】
そして、図６，図７に示すように、蓋体開放用アーム３５の操作部３５ａを押し下げると、その下方に形成された凸部３５ｄがクランプレバー３３の傾斜面３３ｄに当たって外側に押し退けるので、当該レバー３３が回動して下端のクランプフック３３ａが蓋体３２側の突出部３２ａから外れる。蓋体開放用アーム３５の操作部３５ａを更に押し下げると、当該アーム３５の先端部３５ｅが蓋体３２側の突出部３２ａに当たって下方に押し下げるので、図８に示すように蓋体３２が強制的に開放されて排出口３６から集塵ケース２１内に蓄積された塵埃を排出することができる。

【００５２】
従って、蓋体３２のシール性を良くするためにパッキン３７のシール圧を高くしたり、集塵ケース２１内の塵埃が圧縮されて集塵ケース２１内壁に密着し、塵埃の重みが蓋体３２に加わらないようになった場合でも、蓋体３２を手で直接開けるような煩わしく不衛生な作業を行うことなく、比較的簡単な構成及び操作で確実に蓋体３２を開けることができる。

【００５３】
このようにして、蓋体３２を開放し集塵ケース２１内に蓄積された塵埃を排出することができるが、特に綿ごみ等は圧縮されて集塵ケース２１の内壁に密着しているため、そのままでは容易に離脱しない。ここでハンドル２６を所定方向（ここでは右回り）に回しプレフィルタ２２を所定方向に回動させると、プレフィルタ２２の外周に設けられた螺旋状のリブ５２が綿ごみ等の圧縮された塵埃を押し出すように作用するので、容易に排出することができる。

【００５４】
また、蓋体３２のヒンジ３１（開閉用支点）が集塵ケース２１の取手２４と同一側に設けられているので、取手２４を持って蓋体３２を開けた時（図８参照）、排出される塵埃が取手２４を持った使用者の方に来るのを蓋体３２で防ぐことができるため、使用者に塵

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埃がかかるような不具合を防ぐことができる。

【００５５】

また、上述した塵埃排出時には、プレフィルタ２２の回動に伴って前述した除塵作用が働くので、使用者は特別にフィルタの除塵を意識しなくても、塵埃の排出の度に除塵も行われるため、特に意識することなく集塵効率の低下を防ぐことができる。

【００５６】

以上のように、本実施形態のものでは、使い捨ての紙パックを用いずに半永久的に使えるので経済的であると共に、従来、どうしても紙パックに比べて使い勝手が良くなかった点が改善されているため、使い勝手が格段に向上したものが得られる。

【００５７】

また、このような集塵装置２０は、縦型で装着スペースが十分に確保でき、集塵容量も大きなアップライト型掃除機に適用して特に好適である。

【００５８】

さらに、本実施形態のアップライト型掃除機では、図３に示すように、本体操作用ハンドル３が掃除機本体１の後側から上方に伸びているが、上端部に略三角形状に前側に張り出させたグリップ部３ａが形成されているので、ベットの下など、本体１を後方に大きな角度で寝かして掃除をするときにも、本体操作用ハンドル３のグリップ部３ａ前側を持って行うことにより握り部が高い位置にくるため、あまり腰をかがめる必要がなく、楽な姿勢で掃除ができる。

【００５９】

図１０～図１９は、本願発明の他の実施形態を示し、前記実施形態と同一符号は同一又は相当部分を示している。なお、アップライト型の掃除機本体１は前記実施形態の図２，図３と同様である。また、前記実施形態では図示を省略したが、図１２，図１６，図１８の背面図に示すように、集塵ケース２１には、前記図２，図３に示した掃除機本体１に装着したときに奥側となる面の片側にずらした位置に、本体１背面側に取り付けられた吸込筒１２の内側開口にパッキン等を介して密接して連通する吸込孔３０が形成されている。

【００６０】

本実施形態において前記実施形態と異なる点は、蓋体３２の開放機構の構成であり、その他は前記実施形態と同様な構成及び作用を有するものである。

【００６１】

前記実施形態では、蓋体開放機構として、集塵ケース２１側に蓋体開放用アーム３５を設けたが、本実施形態では、蓋体３２側に蓋体開放用レバー６０を設けたものである。

【００６２】

すなわち、ロック機構としては、前記実施形態同様、蓋体３２のヒンジ（開閉用支点）３１の反対側に位置する集塵ケース２１側に取り付けられて、下端に蓋体３２周縁の突出部３２ａを引っ掛けるフック３３ａが形成されたクランプレバー３３を備えているが、開放機構としては、蓋体３２のヒンジ３１の反対側下面で、クランプレバー３３と対応した位置に取り付けられて集塵ケース２１側を押す方向に付勢された蓋体開放用レバー６０を備えたものである。

【００６３】

上記蓋体開放用レバー６０には、図１２～図１４等に示すように、その先端の両側に突出して、前記クランプレバー３３の支軸３３ｂが装着される両側のリブ３４の下端を押圧する押圧部６０ａが形成されている。すなわち、この蓋体開放用レバー６０は、その支軸６０ｂの反対側にコイルバネ６０ｃが装着されて、先端の両側に形成された上記押圧部６０ａで両側のリブ３４下端を押圧する方向に付勢されている。

【００６４】

さらに、上記蓋体開放用レバー６０の先端部には、上記両側のリブ３４間に位置する突起６０ｄが形成されている。この突起６０ｄのクランプフック３３ａ側は、図１１に拡大図示したように、クランプフック３３ａのロック時の妨げとならないように、クランプフック３３ａの傾斜面３３ｅに合わせた傾斜面６０ｅとなっている。

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【００６５】
以上の構成において、集塵ケース２１内に溜まった塵埃を排出するときは、図１５～図１７に示すように、クランプレバー３３の操作部３３ｆを押すことにより、その下端のクランプフック３３ａが蓋体３２側の突出部３２ａから外れる。
【００６６】
クランプフック３３ａによる蓋体３２のロック状態が解除されることにより、蓋体開放用レバー６０の先端両側に形成された押圧部６０ａによる集塵ケース２１側の両リブ３４下端への押圧力に対する反作用が蓋体３２に働くので、蓋体３２が強制的に図１５～図１７に示す位置まで開放される。ここまで開放すると、シール用のパッキン３７も集塵ケース２１の開口縁から離れるので、後は蓋体３２の自重で図１８，図１９に示すように自然に開放してゆくため、集塵ケース２１内に蓄積された塵埃を排出することができる。
【００６７】
従って、前記実施形態同様、蓋体３２のシール性を良くするためにパッキン３７のシール圧を高くしたり、集塵ケース２１内の塵埃が圧縮されて集塵ケース２１内壁に密着し、塵埃の重みが蓋体３２に加わらないようになった場合でも、蓋体３２を手で直接開けるような煩わしく不衛生な作業を行うことなく、簡単な構成及び操作で確実に蓋体３２を開けることができる。
【００６８】
また、本実施形態では、クランプレバー３３の支軸３３ｂが装着される両側のリブ３４を有効利用して、その下端を押圧するようにしているので、集塵ケース２１側には新たな構成を追加する必要がなく、操作も従来のまま、低コストで実現することができる。
【００６９】
また、蓋体開放用レバー６０の先端部には、上記両側のリブ３４間に位置する突起６０ｄが形成されているので、塵埃の排出後に蓋体３２を閉じるときの位置合わせが容易となる。
【図面の簡単な説明】
【００７０】
【図１】本願発明の一実施形態に係る掃除機用集塵装置を示す側断面図。
【図２】上記掃除機用集塵装置を用いたアップライト型掃除機の一実施形態を示す正面図。
【図３】同じく、側面図。
【図４】上記図１の要部拡大断面図。
【図５】更に、上記図４の要部拡大断面図。
【図６】上記図１のクランプフックが外れた状態を示す側断面図。
【図７】上記図６の要部拡大断面図。
【図８】上記図１の蓋体が開いた状態を示す側断面図。
【図９】上記図８の要部拡大断面図。
【図１０】本願発明の他の実施形態に係る掃除機用集塵装置を示す側断面図。
【図１１】上記図１０の要部拡大断面図。
【図１２】上記図１０の背面図。
【図１３】上記図１２の要部拡大図。
【図１４】上記図１３のＡ－Ａ断面図。
【図１５】上記図１０のクランプフックが外れ蓋体開放用レバーが作用して蓋体が開き始めた状態を示す側断面図。
【図１６】同じく、図１５の背面図。
【図１７】上記図１５の要部拡大断面図。
【図１８】蓋体がさらに開いた状態を示す背面図。
【図１９】上記１８の要部拡大図。
【符号の説明】
【００７１】

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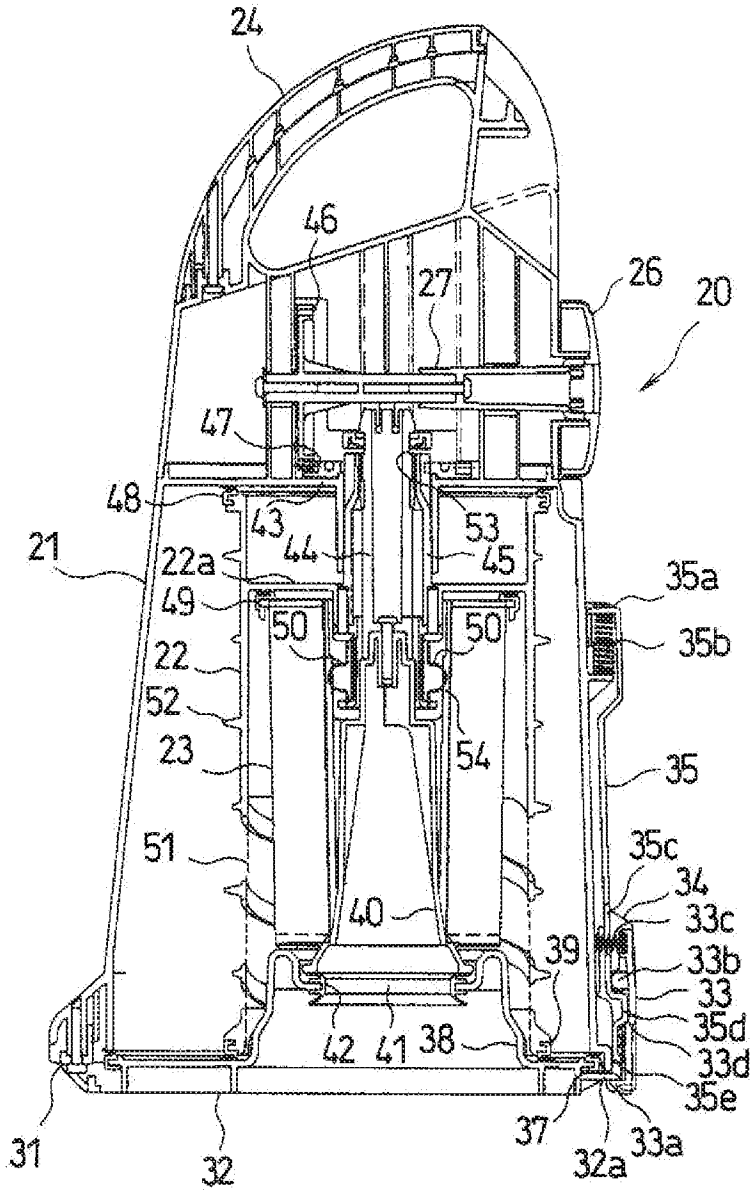
１	掃除機本体
２	床用吸込具
３	本体操作用ハンドル
２０	集塵装置
２１	集塵ケース
３１	ヒンジ
３２	蓋体
３６	排出口
３３	ロック機構
３５ａ	操作部
３５	蓋体開放用アーム

【図１】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35
51
35c
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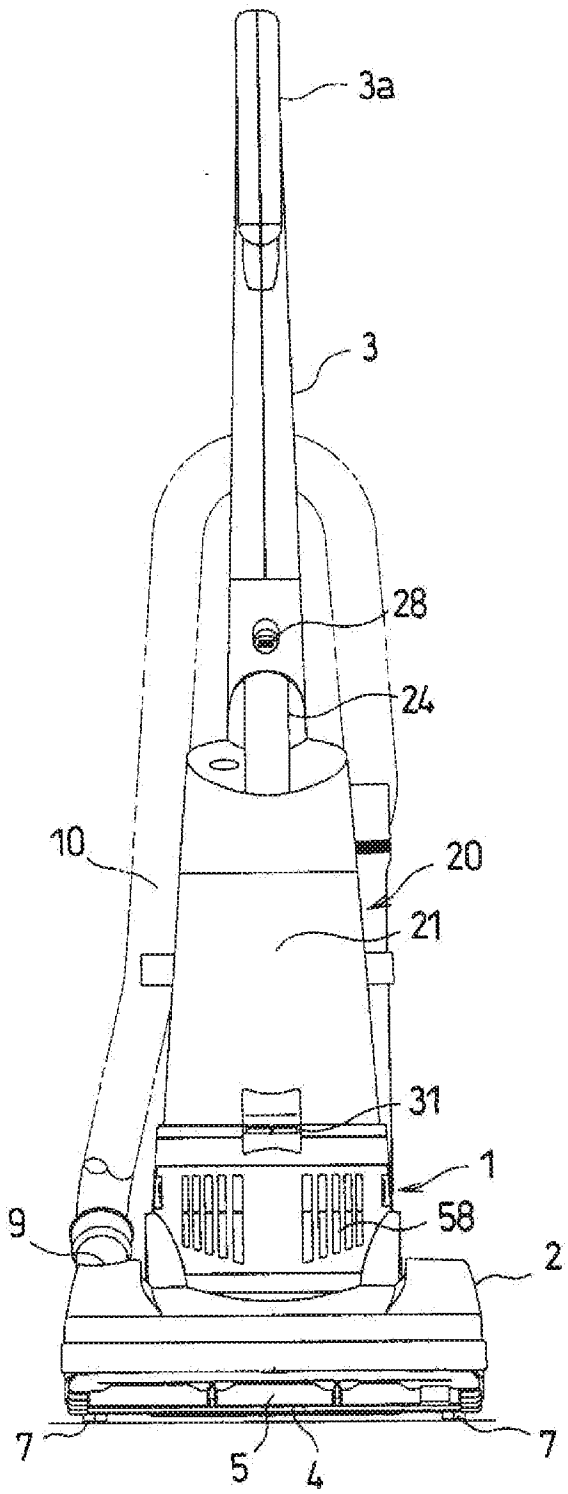
37
32a
33a

【図２】



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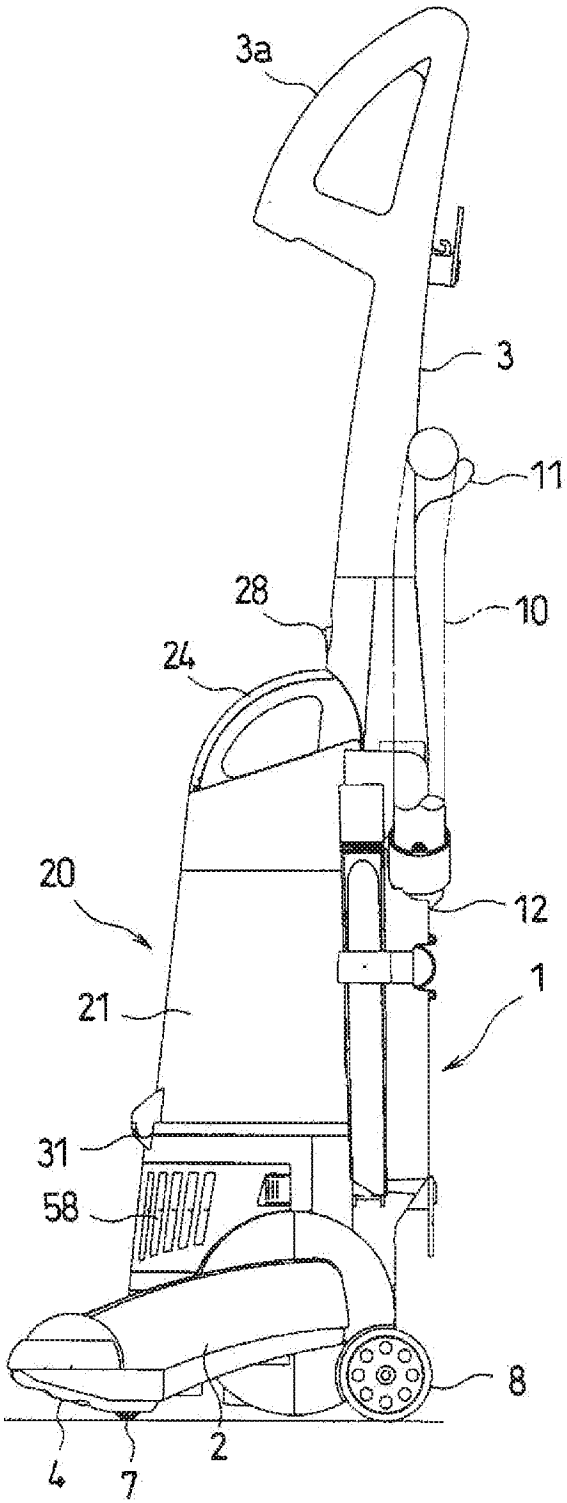
【図３】



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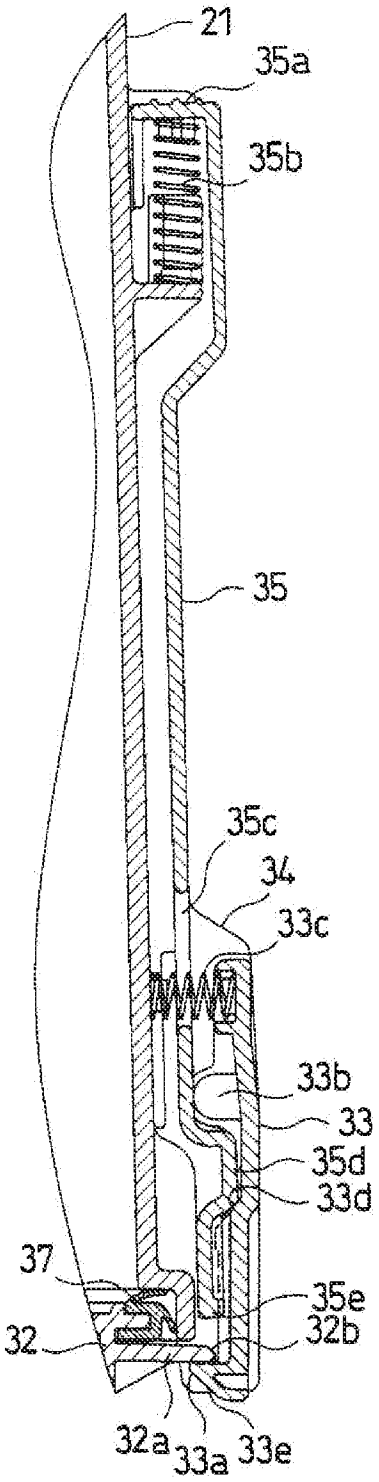
【図４】



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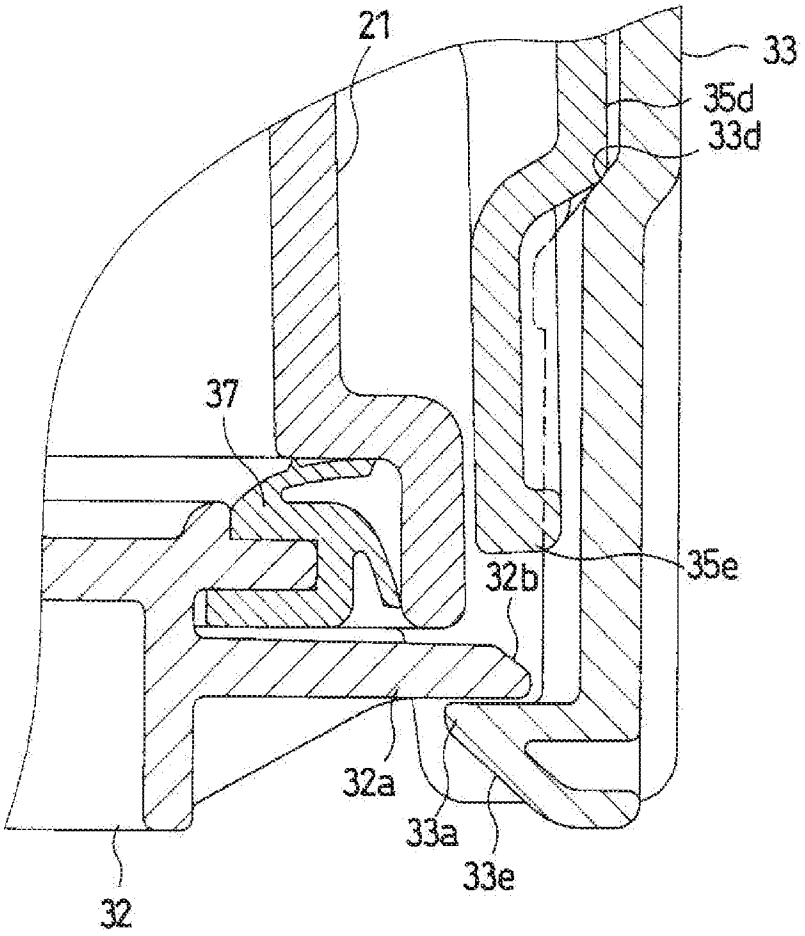

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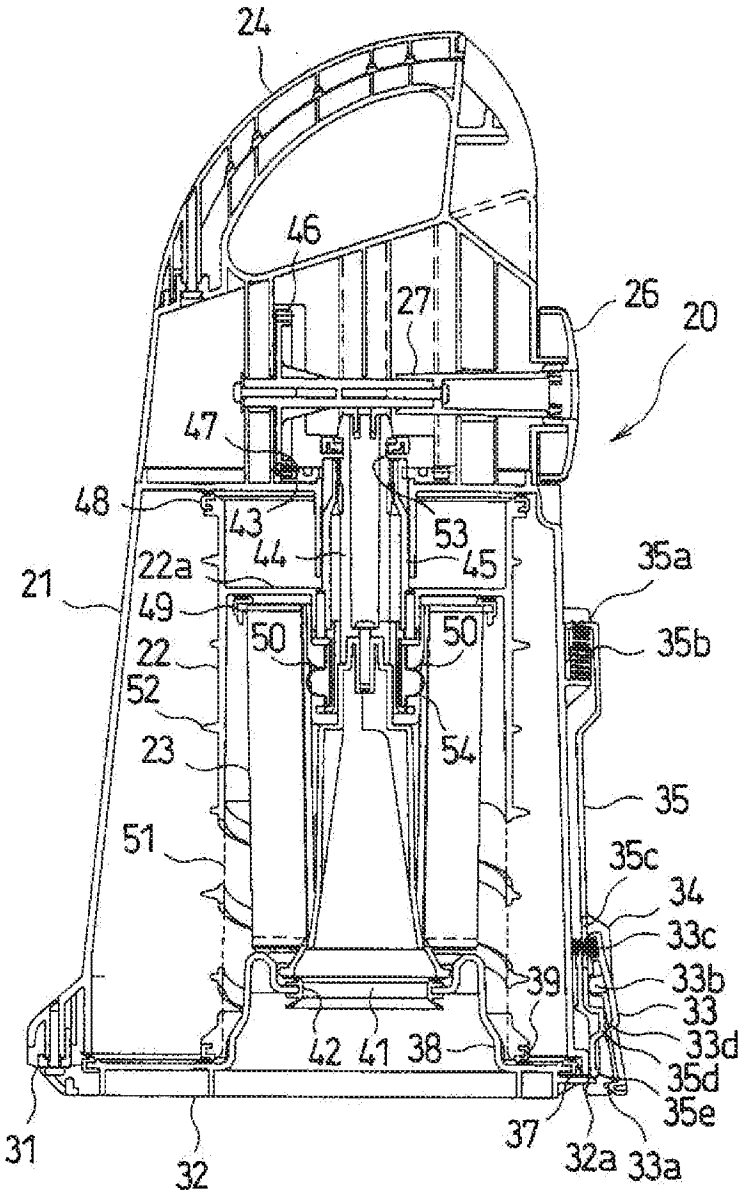
【図６】



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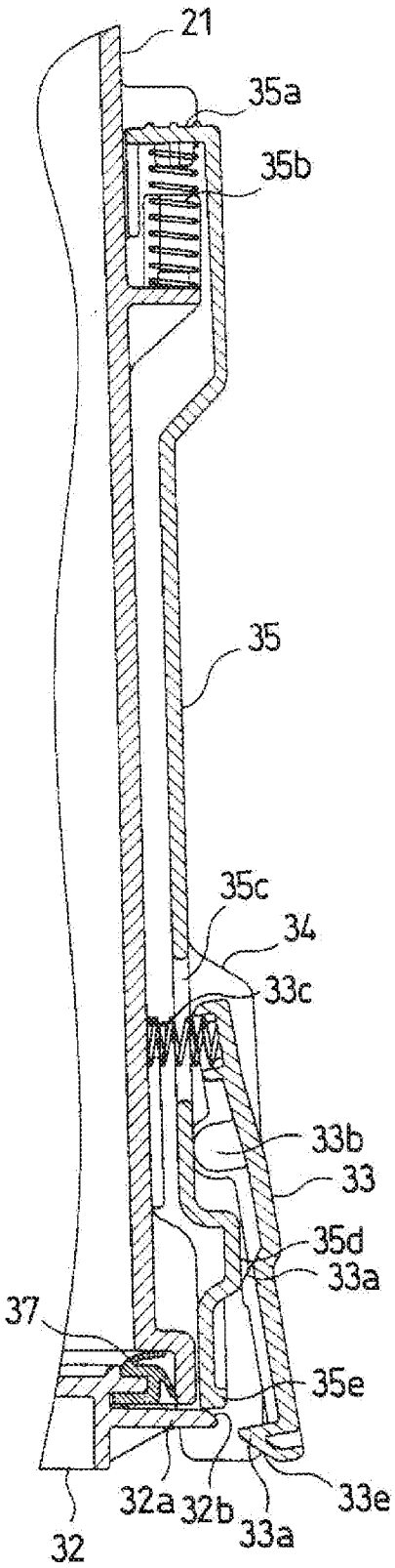
【図７】



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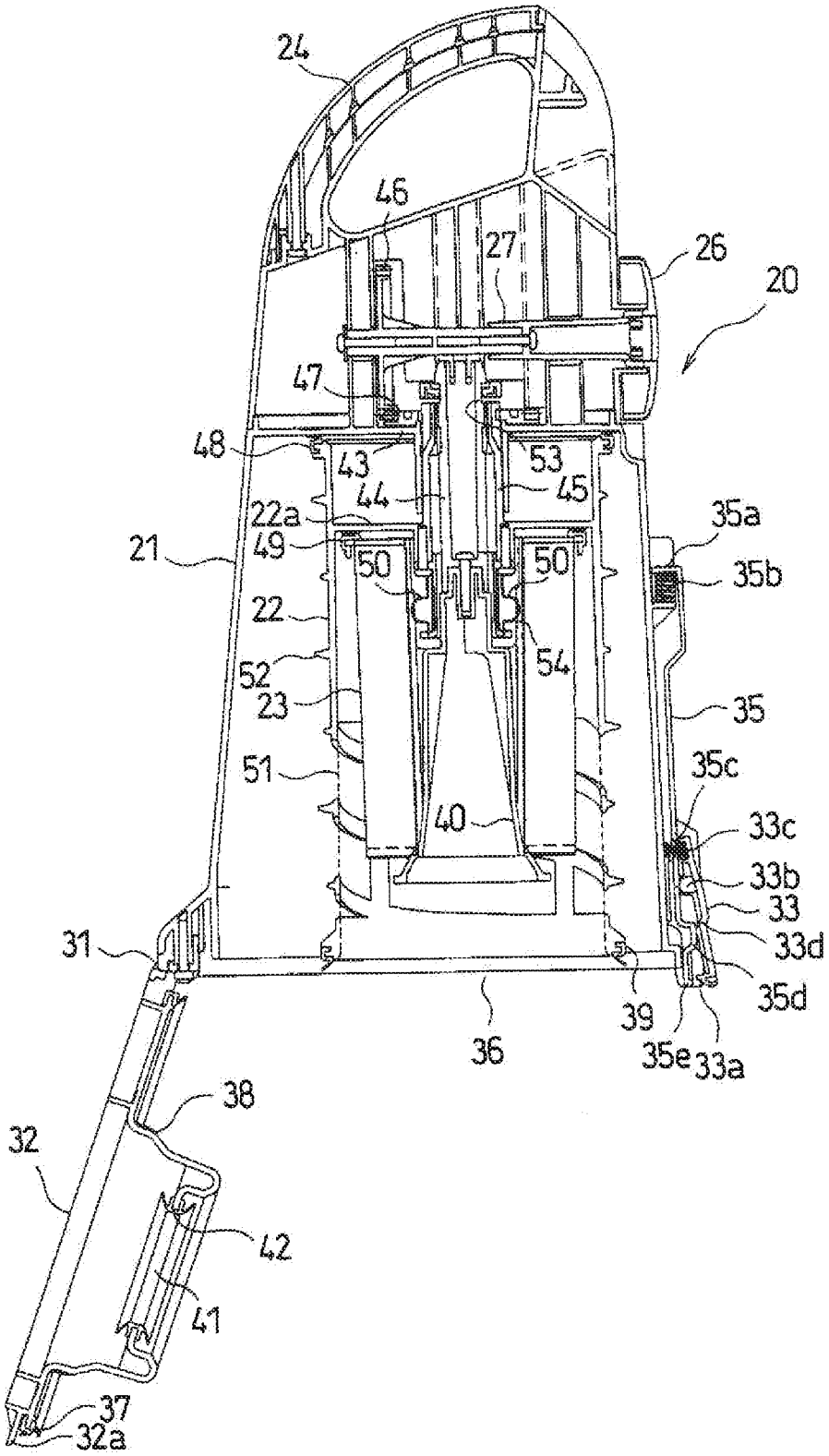

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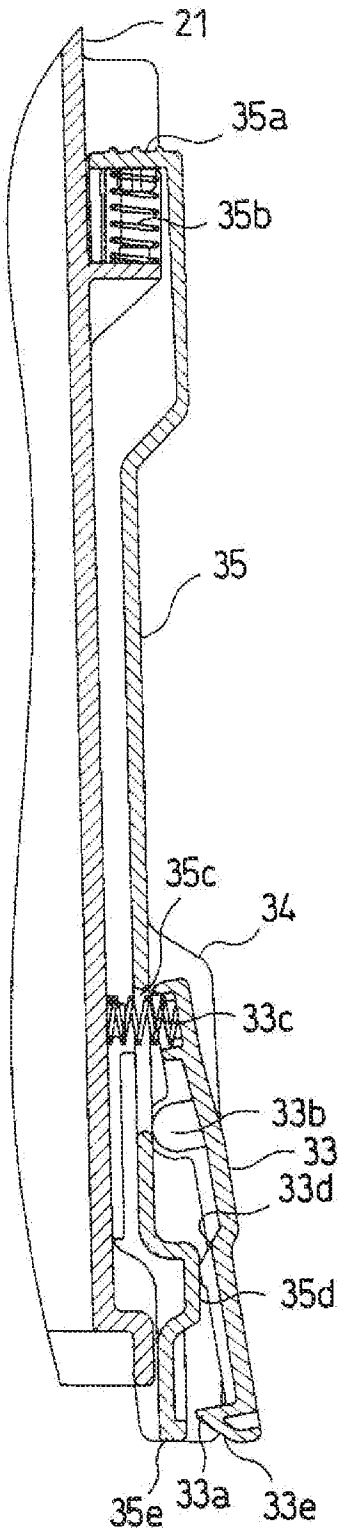
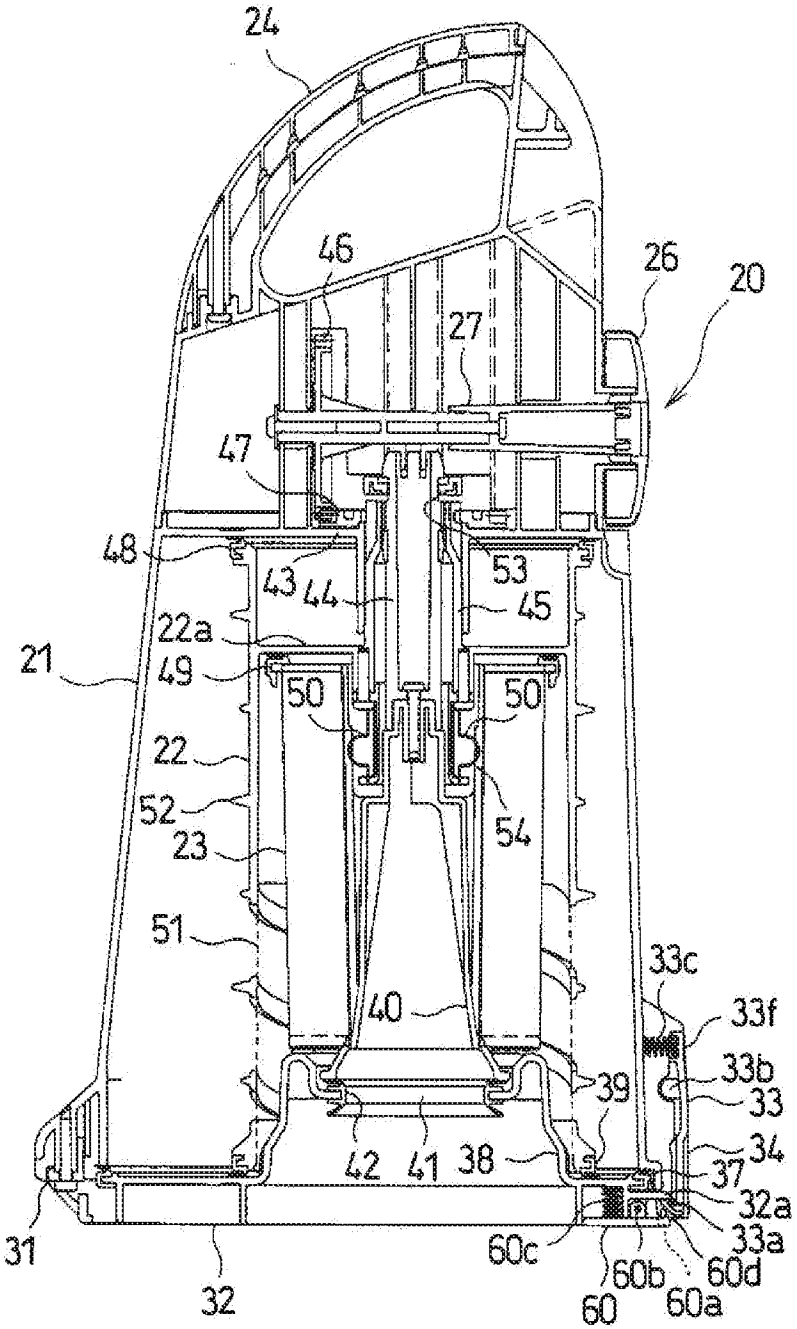
【図９】



【図１０】



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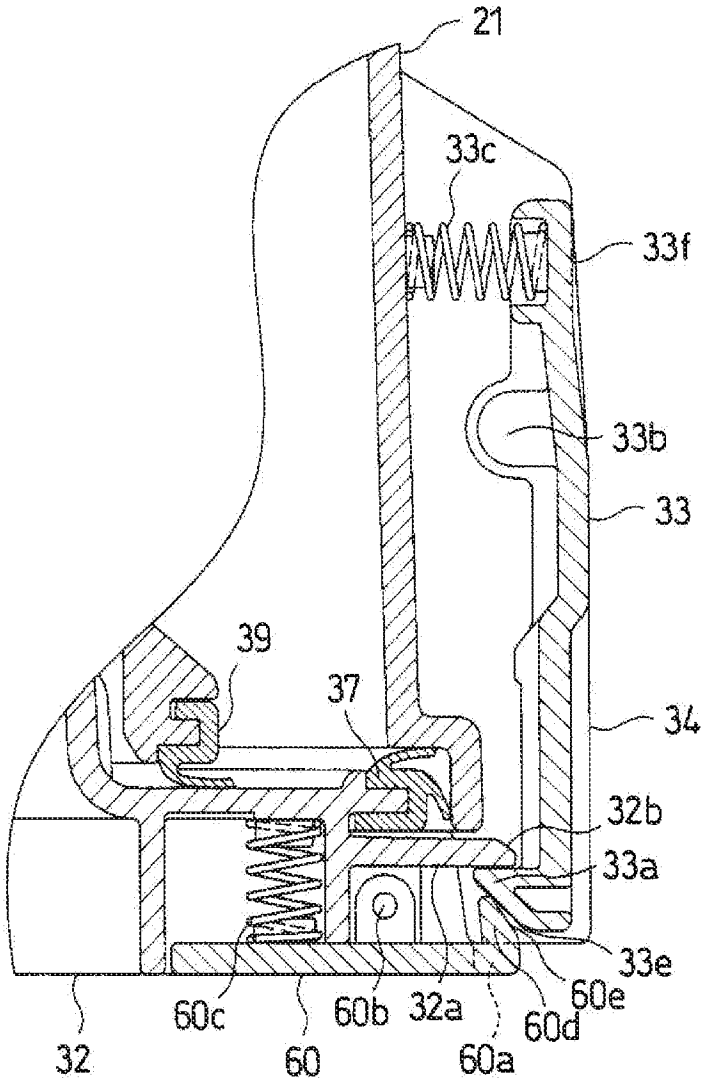
【図１１】



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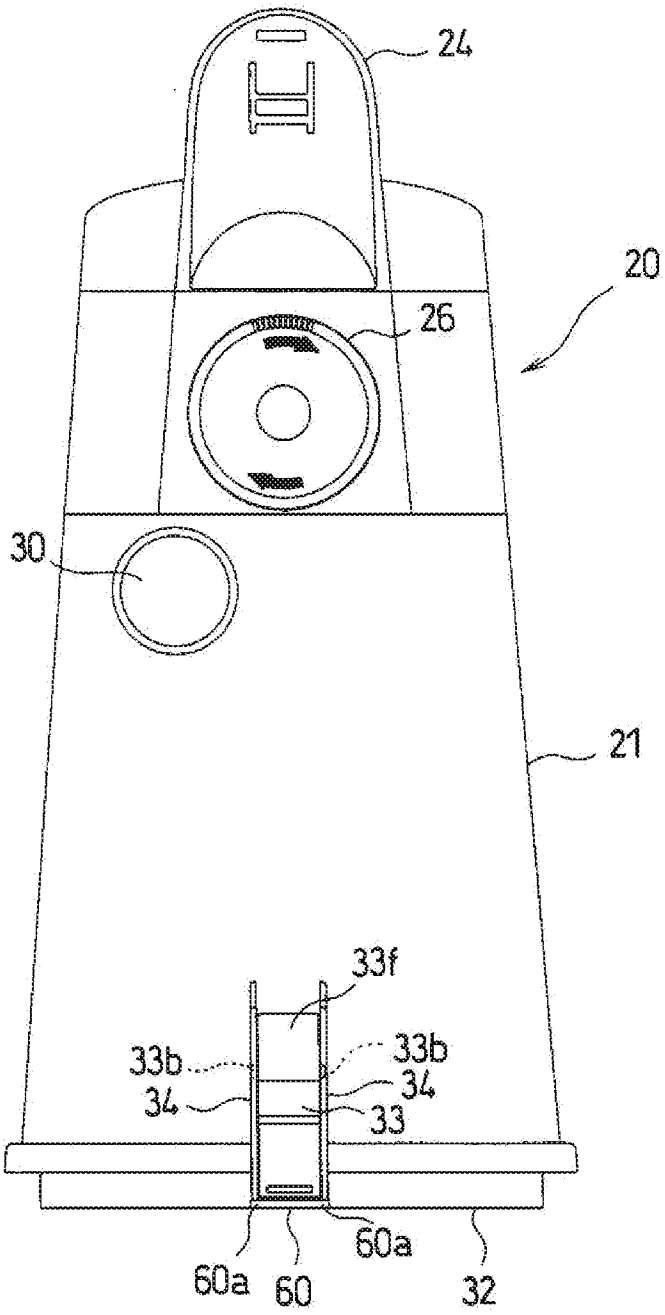
【図１２】



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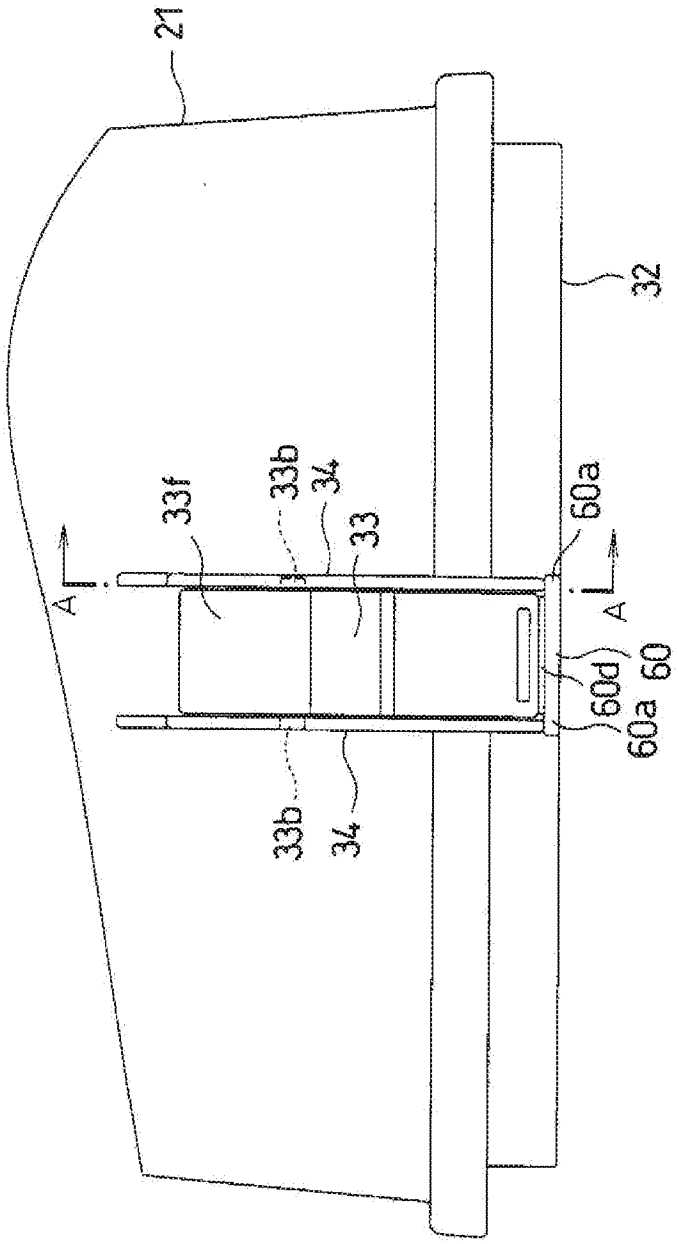
【図１３】



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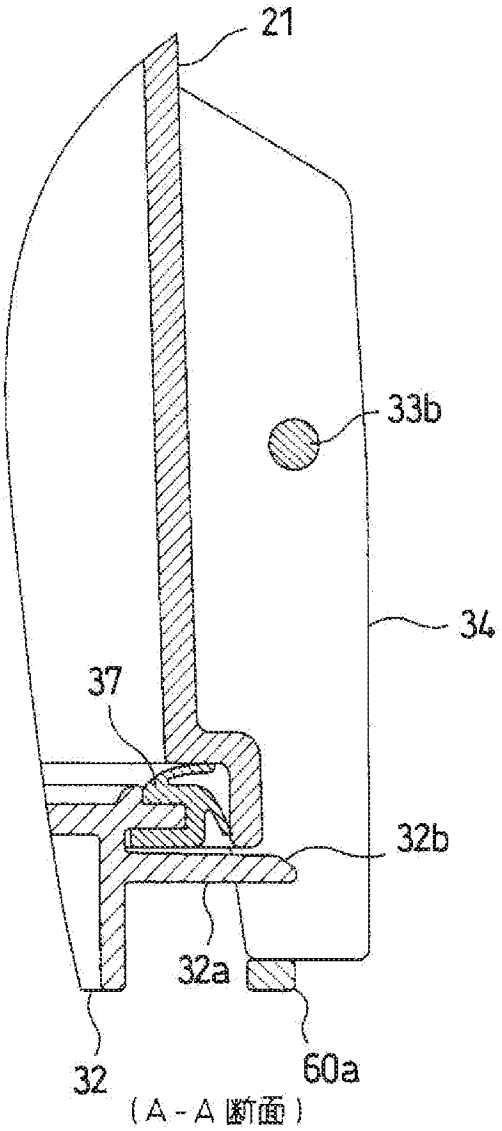
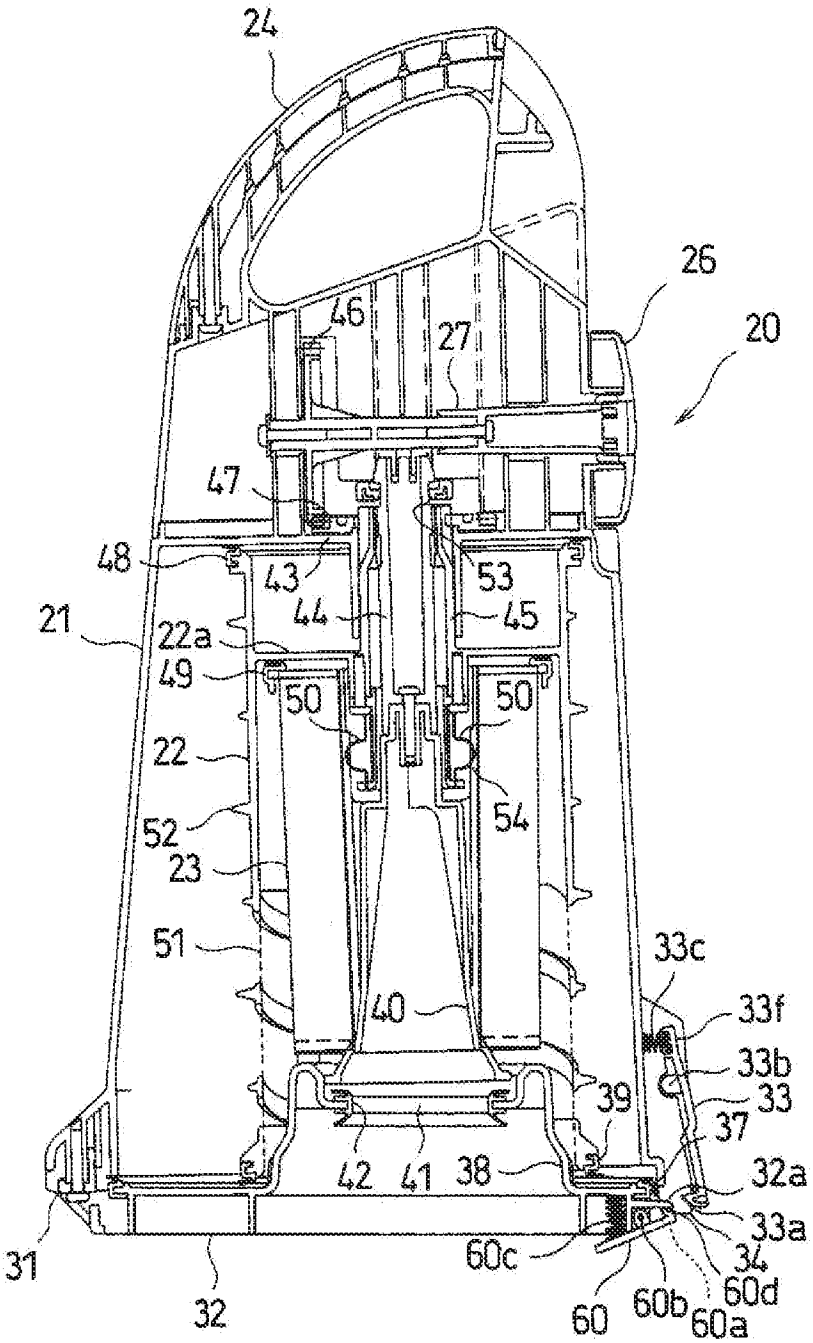
【図１４】



（A－A 断面）

【図１５】



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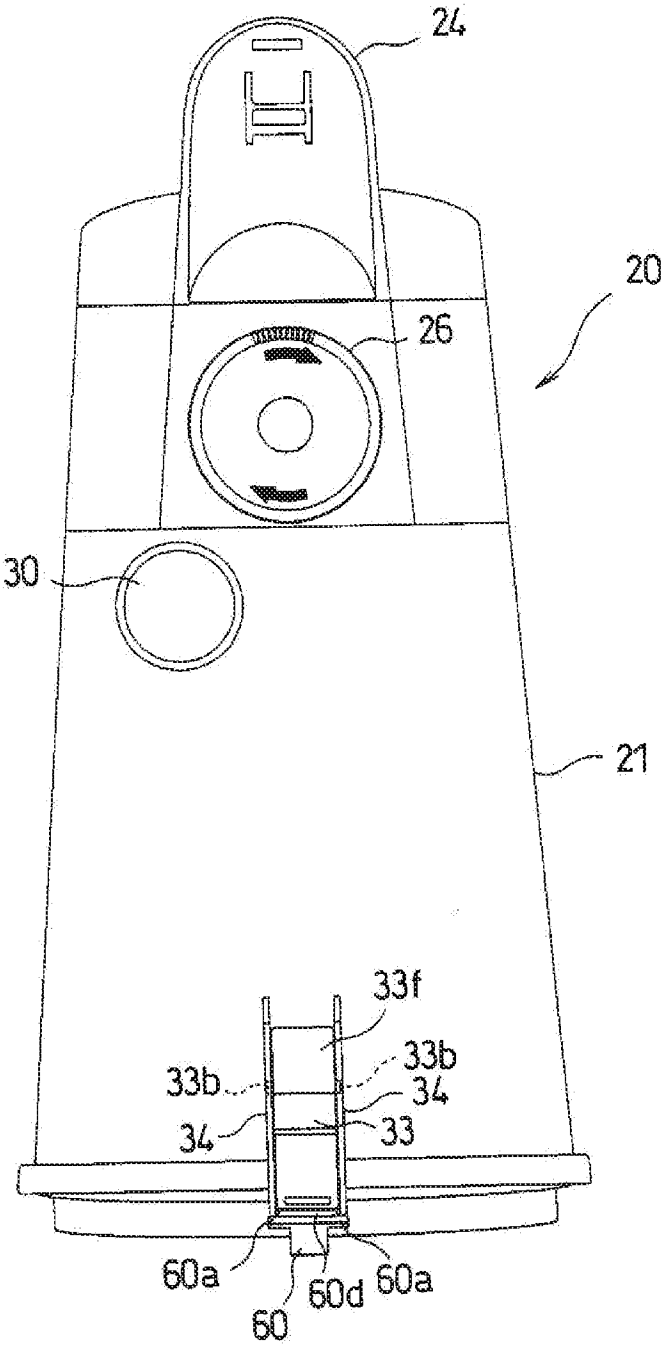
【図１６】



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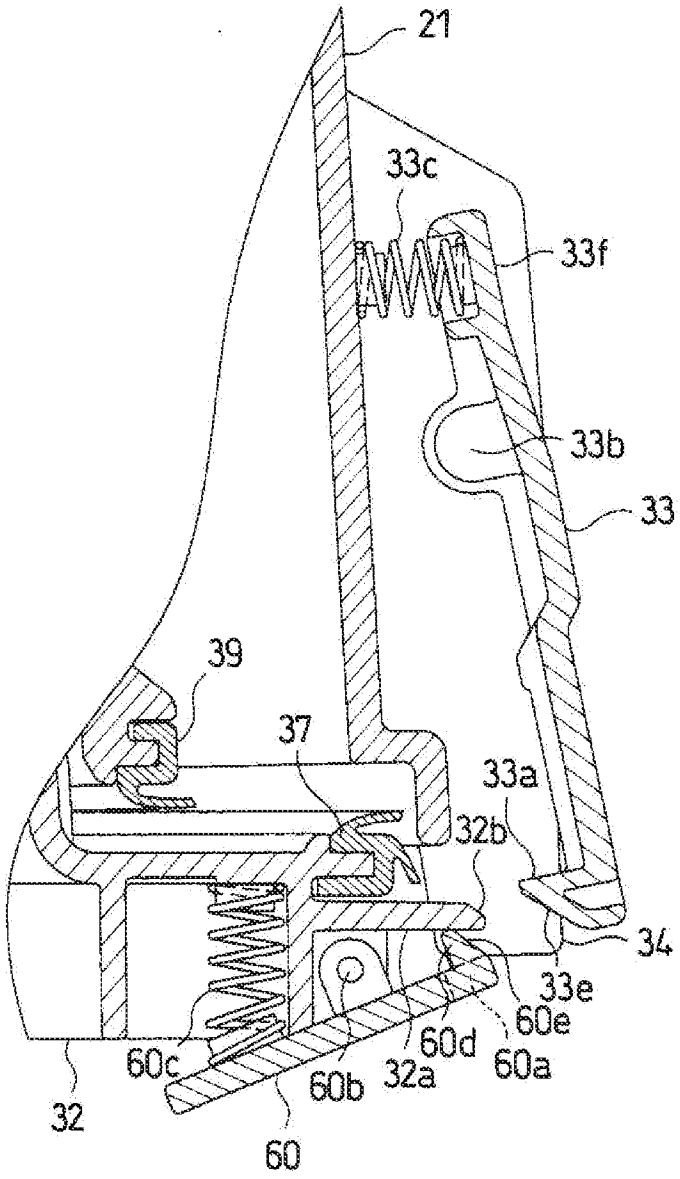
【図１７】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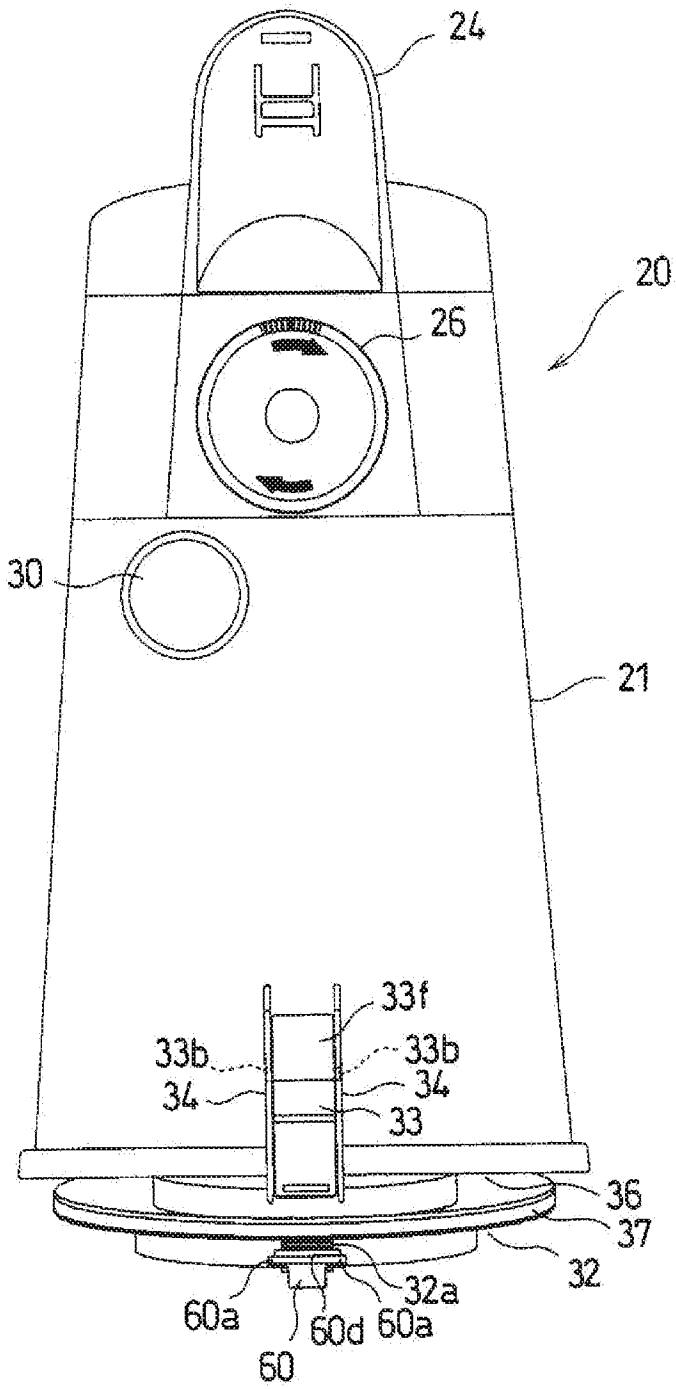
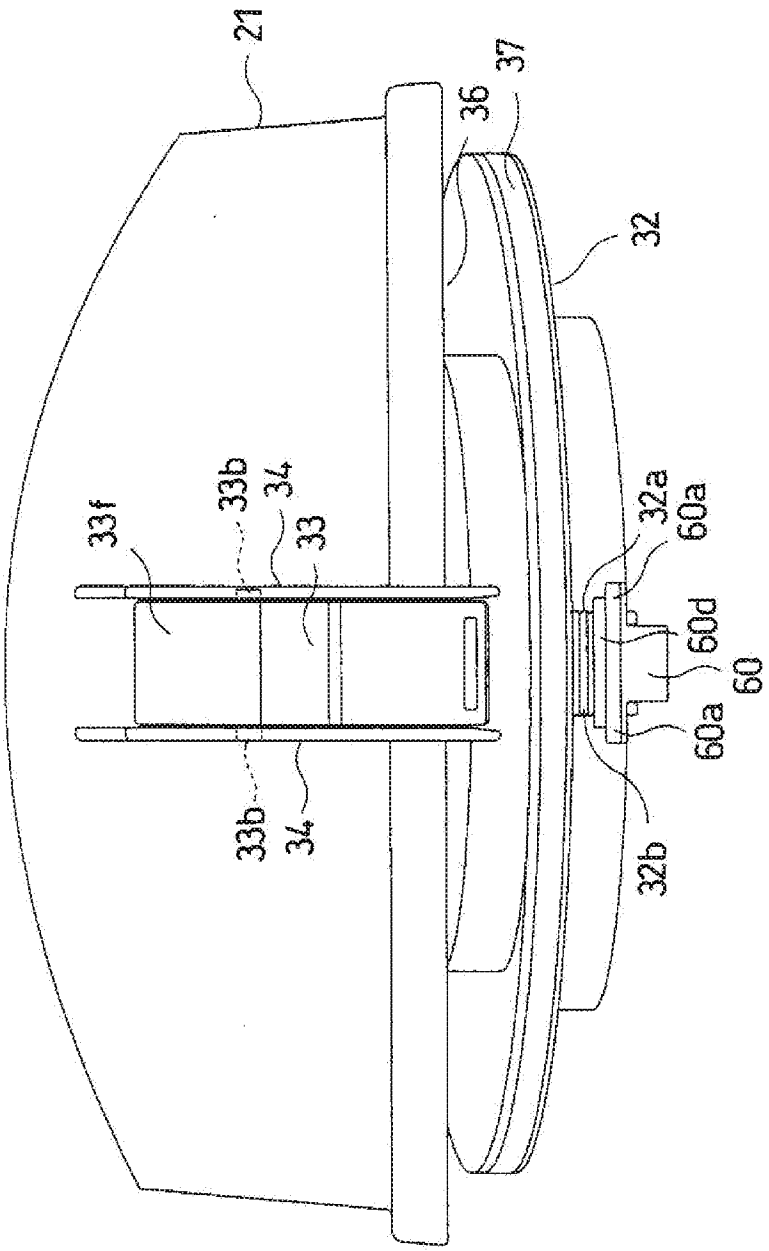
【図１８】



【図１９】



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Ｆターム(参考) 3B006 DA01 DA03 DA06
3B062 AH02

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CN102525349A 2012-07-04 Vacuum cleaner (en)

English Abstract:

The patent refers to the field of 'domestic washing or cleaning; suction cleaners'. The invention relates to a vacuum cleaner, which is provided with an upstream cyclone separation unit and a downstream cyclone separation unit comprising a plurality of cyclone separators connected in parallel, each cyclone separator comprises a separator body, the interior of the separator body is provided with a cyclone separation chamber, the separator body is provided with an inlet, an exhaust outlet and a dust outlet, the cyclone separation chamber consists of an upper cyclone separation chamber and a lower cyclone separation chamber, which are connected with each other, the dust outlet is located on the lower end of the lower cyclone separation chamber, the exhaust outlet is located on the upper end of the upper cyclone separation chamber, airflow is whirled along a first axis in the upper cyclone separation chamber and a second axis in the lower cyclone separation chamber, the first axis is a straight line, and the second axis and the first axis are located on the same plane, and intersect each other at a point. Because the axes of the cyclone separators of the vacuum cleaner are bent or curved, dust goes away from the airflow field after being separated, the heights of the separators are reduced, and thereby the structure of the whole vacuum cleaner is more compact.

Standardized Assignees: JIANGSU MIDEA CHUNHUA ELECTRIC APPLIANCE

Original Assignees: Jiangsu Midea Chunhua Electric Appliance Co., Ltd., People's Republic of China

Current Assignees: Jiangsu Midea Chunhua Electric Appliance Co., Ltd., CN

Inventors: QUNLI ZHAO

Application Number: CN201210022253

Application/Filing Date: 2012-02-01

Priority Number and Date: CN201210022253 2012-02-01

Classifications:
IPC[8]: A47L9/16 (2006-01-01; A, F, I, 2012-11-12; B, H, CN)

Patent References Cited-Backward:

Publication Number	Cited By
CN202537407U	Originates from the search report
CN101862165A	Originates from the search report
CN1927469A	Originates from the search report
CN101301640A	Originates from the search report
DE1058470B	Originates from the search report
KR100536506B1	Originates from the search report
CN201275508Y	Originates from the search report

English Description:

Technical Field

The invention relates to a vacuum cleaner.

Background Art

The separation of the dust from the **cyclone separating gas in the vacuum cleaner has been widely applied to, through the cyclone separating dust (that is, solid substance) is accumulated into the dust collecting tub, is convenient to clean dust, at the same time reduces the dust leakage of the airflow caused by the filtering material drop in pressure, thereby prolonging the interval of filter material to clean. European Patent EP0042723B discloses an upstream cyclone separation level adopts the 1st, 2nd-stage separating the downstream cone of the cyclone separating structure of the multi-stage cyclone separating the vacuum cleaner, the vacuum cleaner separated structure, its separation efficiency is not high, can not be truly realized without loss of the cyclone separating suction (suction force is not reduced) effect. Chinese Patent ZL01807570.3 discloses a method for separating particles from a fluid flow apparatus, the equipment of the upstream cyclone separating device to a cyclone separator, downstream 2nd-stage separation, a plurality of cyclone separation structure of the cyclone separator, a plurality of 2nd stage cyclone separator at least partially inserted into the 1st stage cyclone separator, the guard solves the problem that the vacuum cleaner cyclone barrel in the height direction of the space problem, however, since the 2nd stage cyclone separator is inserted into the 1st stage cyclone separator in the whole device will affect the problem size in the direction of the diameter, space layout influence of the vacuum cleaner. Chinese Patent ZL200610139423.7 downstream also discloses a 2nd-stage separation, a plurality of cyclone separation awl cleaner cyclone separation barrel, its 2nd-stage cyclone separation is the awl is slanting lying above the 1st stage cyclone separator, cyclone separation barrel also solves the problem of in the height direction, in the diameter direction, however, would be correspondingly larger, impact on spatial layout of the whole dust collector. Patent ZL200620073309.4, discloses a downstream 2nd-stage separation, a plurality of cyclone separation awl cleaner cyclone separation barrel, its 2nd stage cyclone separation awl is completely in parallel above the 1st stage cyclone separator, its opening is faces of the dust collecting tub structure, such a structure may the space to the direction of the diameter is relatively large, however, the occupied space in the height direction is relatively large. As shown in Figure 1, is the inner diameter gradually becomes smaller from top to bottom of the inverted cone shape of the separator main body, in other words the cyclone separation chamber is larger, the shape of the small lower, dusty air flow (1) when the downward movement of the bottom end of the cyclone separation chamber, the higher the concentration of dust, the bottom end of the cyclone separation chamber, the shorter the radial distance, the radial airstream (2) the more intense, lead to small particles, small centrifugal force (5) produce the secondary entrained dust, the efficiency of separation impact; and the close to the bottom end of the cyclone separation chamber, the higher the concentration of dust, the dust in the course of the rotation (5) more easily in the separator the rebound on the inner wall of the main body, because of the inverted cone-shaped structure, is the direction of rebound dust (6) along the direction of the exhaust port, (3) more easily taken out by the rising gas stream, to produce the secondary entrained dust, affect the separating efficiency. Furthermore, the above-mentioned structure in the cyclone separator of the central line of the air outlet opening and the braking are located in the same line, the dust from the dust outlet (4), there is no rapid air away from the cyclone separator (in fact, in the cyclone separator, in the truck is in the air flow at the lower end of the diffraction phenomenon), back to the part of the, entering the downstream, affect the separating efficiency.**

Content of the invention

Against the above-mentioned problem, the purpose of this invention is to provide a structure and the space of the gas-solid separation performance of the vacuum cleaner can be improved.

Purpose of the invention in order to realize the above, the invention adopts the following technical scheme: a vacuum cleaner, has upstream cyclone separation device and includes a plurality of connected in parallel downstream of the cyclone separator is of the cyclone separating device, a cyclone separating device is located downstream of the upstream separating the upper part of the device, each of the cyclone separator comprises a separator body, the interior of the separator main body with the dust in the gas stream with entrained internal rotary cyclone separation chamber, said separator main body is used for the dust entrained by the air flow introduced into the inlet of the cyclone for separating, in the dust is cyclone separated from the the air flow into the cyclone separation of the exhaust opening of the chamber, the dust and the dust is cyclone separated from the cyclone separator wherein of the chamber, the inlet, exhaust outlet, and wherein the cyclone separator is communicated with the inside of the cavity, the cyclone separation chamber includes a cyclone for separating the upper part of the cyclone and the lower part of the separating chamber, the upper cyclone separation chamber and the lower part of the transfer of the two cyclone separation chamber, said dust port is located in the lower part of the lower end of the cyclone separation chamber, the exhaust port is arranged in the cyclone at the upper part of the upper end of the separation cavity, the dust entrained in the airstream passing through the inlet, the upper cyclone separating chamber, the lower cyclone separating chamber, the upper part of the gas flow in the cyclone separating cavity 1st around the axis of rotation a, in the lower part of the cyclone separation chamber axis of rotation around the 2nd, 1st axis of the pipe is a straight line, the of the axis and the 2nd 1st axis is arranged in the same plane and both intersects at one point.

In the above-mentioned technological scheme, the 2nd axis is preferably a straight line or broken line or curve.

In the above-mentioned technological scheme, preferably, the 1st and 2nd 2nd axis or the axis of the tangent of the axis is larger than the intersection point 90 is less than the included angle of 180°. Wherein, the 1st 2nd 2nd axis or the axis of the intersection point is greater than the tangent of less than 130° included angle of 160°.

In the above-mentioned technological scheme, preferably, the 2nd through the axis of the truck is the plane of the end face, the dust of the axis and the 2nd of the plane of the end face of is the intersection point of the 10° included angle of 90°.

In the above-mentioned technological scheme, preferably, the upper cyclone separating cavity with the cavity wall of the cyclone separating chamber at the lower part of the cavity wall of the smooth transition at the joint.

In the above-mentioned technological scheme, preferably, the inner diameter of the upper cyclone separation chamber is gradually reduced from top to bottom of the truncated cone shaped

In the above-mentioned technological scheme, preferably, the vacuum cleaner with the downstream cavity of the lower part of, the downstream cyclone separating device is is useful in the separation of the dust is introduced into the ash channel downstream of the cavity, each of the cyclone separator with the biogas is connected

with the ash channel. Further preferably, the ash channel is located in the upstream of the periphery of the cyclone separation device, each of the the lower part of the lower end portion of the cyclone separation chamber is arranged on the outer side of the dust and the mouth towards; or, the ash channel is located in the upstream of the inside of the cyclone separation device, each of the the lower part of the lower end portion of the cyclone separation chamber toward the inside, the truck is provided.

In the above-mentioned technological scheme, preferably, a plurality of said cyclone separator are arranged along a circumferential direction, the circumference of this circle with the center line of the upper part of the 1st axis of the cyclone separation chamber is between the included angle between 0-180 °.

In the above-mentioned technological scheme, preferably, a plurality of cyclone separator is completely located in the upstream of the upper part of the cyclone separation device.

The elaborate on the downstream of the cyclone separation device in the working principle of cyclone separator of the: as shown in Figure 6, when the downward movement of the dust-contained air flow I in the bottom of the cyclone separation chamber, the higher the concentration of dust, the bottom end of the cyclone separation chamber, the shorter the radial distance, the more violent radial air flow II, dust in the V in the course of the rotation of the separator main body to rebound on the inner wall of, the cyclone separating chamber at the lower part of the cyclone separation chamber relative to one side of the upper part of the "bending", rebound dust will be in the direction of VI along falls the ash mouth direction, which is easy to be from the truck is therefore as the dust is discharged together from the IV, III and also the upwardly rising gas stream is discharged from exhaust outlet.

Compared with the prior art, the present invention, has the following advantages: because the cyclone separator of the cyclone separating chamber at the lower part of the 2nd axis relative to the upper part of the cyclone separation chamber 1st axis curved or bent, because the 1st and 2nd is intersected with the axis of the axis, such outlet pipe and an ash port direction of the direction of a certain angle, after the separated dust, the cyclone separating chamber at the lower part of the bending of the changing-direction, away from the cyclone separating chamber in the gas-solid separation in the slices to be discharged from the exhaust port, so as to reduce the secondary air flow entrained dust; in addition, because the cyclone separating chamber at the lower part of the "bending", cyclone separator height in the axial direction is reduced, at the same time, because the axis intersects at 1st 2nd axis, thereby greatly the possibility of the cyclone for separating the lower part of the space, so that the height and the diameter direction of the layout of the vacuum cleaner to provide a space, on the whole structure more compact.

Description of drawings

Figure 1 is the conical cyclone separator in Background Art the working principle of the Figure;

Figure 2 is the front view of the vacuum cleaner of the invention schematic involute helicoids;

Figure 3 is of the cyclone separator of the invention schematic structure;

Figure 4 is of the cyclone separator of the present invention another kind of structure schematically;

Figure 5 is of the cyclone separator of the invention schematic structure 3rd;

Figure 6 is of the cyclone separator of the present invention working principle drawing;

The accompanying diagram, 100, vacuum cleaner; 1, the upstream cyclone separation device; 11, cyclone barrel; 12, cyclone chamber; 13, mesh filter cover; 14, the upstream cavity; 15, an air outlet channel; 2, downstream cyclone separation device; 20, a cyclone separator; 21, separator main body; 22, cyclone separation chamber; 221, the upper cyclone separating chamber; 222, the lower cyclone separating chamber; 223, 1st axis; 224, 2nd axis; 23, inlet; 24, ash port; 25, an exhaust port; 26, leads the ash column ; 27, an ash passage; 28, downstream cavity; 29, line; 3, filter; 4, the upper cover; 5, a bottom cover; 6, handle; 7, the total air outlet.

Mode of execution

In order to make the the purpose of this invention, the technical scheme more clearly and advantages, of the present invention is combined with the further detailed description of:

As Figure 2 the vacuum cleaner as shown in 100, which belongs to the structure of the two-stage cyclone separation vacuum cleaner, is arranged along the flow direction upstream of the cyclone separating device 1, downstream cyclone separating device 2 and the filter 3. The upper dust collector, are respectively provided at the lower end of the upper cover 4 and a bottom cover 5, the upper cover 4 is also arranged on the whole dust collector for the user of the handle 6.

The upstream cyclone separation device 1 comprises a cylindrical cyclone barrel 11, cyclone barrel 11 of a cyclone chamber upstream of the inner cavity 12. Cyclone chamber 12 is internally provided with a mesh filter cover 13, cyclone chamber 12 of the upstream cavity of a lower bottom 14, a bottom cover 5 can be opened and closed mounted in the upstream cavity 14 below of. Cyclone barrel 11 should also be used for dust-containing gas stream enters the cyclone chamber 12 of the air inlet (not shown in the Figure), the mesh filter cover 13 from the gas stream at the inner side of the cyclone is provided with 12 discharge the air outlet channel 15. Dusty air flow from the air inlet into the cyclone chamber 12 to rotate the first, upstream of the dust into the lower part of the cavity 14 in, after the preliminary separation, the gas stream containing fine particles from the mesh filter cover 13 after the mesh, the air outlet channel 15 discharging.

Downstream cyclone separating device 2 includes a plurality of parallel arranged cyclone separator 20, a plurality of cyclone separator 20 are located on the upstream cyclone separation device 1 the upper part of the, they are arranged along a circumference, and the center line of the circumference of this circle 29 and the upper cyclone separation 1st axis of the cavity 223 parallel between, in fact, can also be between the two is greater than 0 degrees and less than 180 degrees of included angle, the cyclone separator 21 is tilted or lying, this arrangement can further reduce the height of the dust collector as a whole.

As shown in Figure 3 the cyclone separator 20, which comprises a separator body 21, separator body 21 of the dust entrained with the air flow of the internal rotating cyclonic separating chamber 22, separator main body 21 is used for the dust entrained by the air flow introduced into the inlet of cyclone separating cavity 23, the dust is cyclone separated from the the air flow into the cyclone separation of the exhaust opening of the chamber 25, and after the cyclone separation of the dust from the dust cyclone separation chamber 22 of the braking valve 24, inlet 23, the exhaust

outlet 25, ash port 24 of the cyclone separation chamber 22 is communicated with the interior of the. In this embodiment, cyclonic separating chamber 22 includes the upper cyclone separation chamber 221 and the lower part of the cyclone separation chamber 222, the upper cyclone separation chamber 221 is gradually becomes smaller from top to bottom the inner diameter of the truncated cone, the upper cyclone separation chamber 221 and the lower part of the cyclone separation chamber 222 the transfer of the two, and the cavity wall the two smooth transition at the joint. The exhaust outlet 25 of the cyclone separating chamber at the upper part 221 the upper end, the truck port 24 located in the lower cyclone separating chamber 222 the lower end part of the, air flow in the upper cyclone separation chamber 221 around the 1st the axis 223 rotating, the lower cyclone separating chamber 222 around the 2nd axis in 224 rotating, 1st axis 222 is a straight line and, 2nd axis 224 and 1st axis 224 are positioned on the same plane and both intersects at one point. In this embodiment, a 2nd axis can be a straight line or broken line or curve, and 1st axis 223 and 2nd axis 224 or 2nd axis 224 is greater than the tangent of which is the intersection point 90 is less than the included angle a of 180 °, embodiment, 2nd axis 224 is a straight line, 1st axis 223 and 2nd axis 224 a is the included angle of 135 °, 2nd axis 224 through the biogas 24 of the plane of the end face, and the 2nd axis 224 and the dust port 24 in the end face of the plane of the intersection point b is the included angle of 80°. The structure of the cyclone separator 20 roughly "J" -shaped, can be called a J-shaped cyclone separator.

From an air outlet channel 15 escaping containing fine particle dust in the gas stream entering the downstream cyclone separation device, sequentially through the inlet 23, the upper cyclone separation chamber 221, the lower cyclone separating chamber 222, wherein after the separation of dust from 24 Cascaded, clean gas stream after separation from the exhaust outlet 25 is discharged, and then through the downstream filter 3 after further filtered from the total air outlet 7 to exclude outside the organism. Filter 3 can be made of conventional sea handkerchief filter. The lower part of the vacuum cleaner with the downstream cavity 28, cyclone barrel 11 along the axial direction of the center portion is provided with a the downstream cyclone separating device 2 after the separation of braking dust from 24 is poured into the lower part of the ash storage downstream of the dust collector 28 hollow leads the ash column 26, leads the ash column 26 ash formed inside the channel 27, downstream cavity 28 is located in an ash channel 27 below, each of the cyclone separator 21 wherein of 24 with the ash channel 27 is connected with the. This embodiment, because the leads the ash column 26 is arranged in the cyclone barrel 11 on the inner side of the, braking so as to be convenient for 24 of the dust, the lower cyclone separating chamber 222 wherein the lower end portion of the 24 is arranged toward the inside. If changed leads the ash column 26 set position, will be provided in the cyclone barrel 11 the peripheral, the lower cyclone separating cavity towards the bottom of the under is arranged on the outer side of the truck is the best. The cyclone separator 21 in the working process, when the dust from the inlet 23 into the upper cyclone separation chamber 221 the rear, in the separating space generate swirling motion, the outside of the cyclone (outside whirlpool), the lower part of the gas down cyclone separation cavity 222 is motion, the upward movement and at the center (inner vortex), while at the same time, by the presence of a gas in the radial motion of the vortex to outside whirlpool , the dust separated in the cavity wall, to the outside of the area wherein the air flow 24. Because the lower cyclone separating chamber 222 "bending" of the structure, so that the exhaust outlet 25 direction and biogas 24 direction is not in a straight line, so that after the separated dust, the cyclone separator by centrifugal force the lower part of the cavity 222 "bending" of the change the direction, away from the gas flow and radial flow in whirlpool , entrained

air stream can be reduced, at the same time reduces the cyclone separator 21 and the height of the space, when the cyclone separator in the design more compact structure can be obtained.

As shown in Figure 4, the cyclone separator of the 20 [...] and Figure 3 the cyclone separator shown in the 20 substantially the same as the structure of the, 2nd axis is the 224 [...] is a broken line. The cyclone separator 20 the 1st axis in [...] 223 the 2nd axis with [...] the 224 is also the intersection point [...] an included angle of 135° a ', 2nd axis 224 the biogas [...] through the 24 [...] of the plane of the end face, and the 2nd axis 224 the truck is [...] and the 24 [...] the plane of the end of the included angle of the intersection point b' is 80°.

As shown in Figure 5, the cyclone separator of the embodiment of the invention 20 in [...] , 2nd axis 224 the fold line is also a [...] , 1st axis 223 the 2nd axis with [...] the 224 [...] is also the intersection point of a 135° included angle ", 2nd axis 224 the biogas [...] through the 24 [...] of the plane of the end face, and the 2nd axis 224 the truck is [...] and the 24 [...] the plane of the end of the included angle of the intersection point b" to 57°.

The present invention is used as **the above detailed description of the, its purpose is to make those familiar with this technical field can understand the content of the invention and implemented, not to limit the scope of protection of this invention, where under the spirit of this invention the substance of the equivalent change or modification made, should be covered in the protection scope of this invention.**

Number of Claims: 12

ENGLISH CLAIMS:

1. A vacuum cleaner, has upstream cyclone separation device and includes a plurality of connected in parallel downstream of the cyclone separator is of the cyclone separating device, a cyclone separating device is located downstream of the upstream separating the upper part of the device, each of the cyclone separator comprises a separator body, the interior of the separator main body with the dust in the gas stream with entrained internal rotary cyclone separation chamber, said separator main body is used for the dust entrained by the air flow introduced into the inlet of the cyclone for separating, in the dust is cyclone separated from the the air flow into the cyclone separation chamber and the exhaust port of the cyclone after the separation of the dust from the dust cyclone separation of the braking of the chamber, the inlet, exhaust outlet, and wherein the cyclone separator is communicated with the inside of the cavity, characterized in that the cyclone separation chamber includes a cyclone for separating the upper part of the cyclone and the lower part of the separating chamber, the upper cyclone separation chamber and the lower part of the transfer of the two cyclone separation chamber, said dust port is located in the lower part of the lower end of the cyclone separation chamber, the exhaust port is arranged in the cyclone at the upper part of the upper end of the separation cavity, the dust entrained in the airstream passing through the inlet, the upper cyclone separating chamber, the lower cyclone separating chamber, the upper part of the gas flow in the cyclone separating cavity 1st around the axis of rotation a, in the lower part of the cyclone separation chamber axis of rotation around the 2nd, 1st axis of the pipe is a straight line, the of the axis and the 2nd 1st axis is arranged in the same plane and both intersects at one point.

2. The vacuum cleaner according to Claim 1, characterized in that the 2nd axis as the line or the broken line or curve.

3. The vacuum cleaner according to Claim 1, characterized in that the the 1st 2nd 2nd axis or the axis of the tangent of the axis is larger than the intersection point 90 is less than the included angle of 180°.

4. The vacuum cleaner according to Claim 3, characterized in that the stated 1st 2nd 2nd axis or the axis of the intersection point is greater than the tangent of less than 130° included angle of 160°.

5. The vacuum cleaner according to Claim 1, characterized in that the 2nd through the axis of the truck is the plane of the end face, the dust of the axis and the 2nd of the plane of the end face of is the intersection point of the 10° included angle of 90°.

6. The vacuum cleaner according to Claim 1, characterized in that the upper cyclone separating cavity with the cavity wall of the cyclone separating chamber at the lower part of the cavity wall of the smooth transition at the joint.

7. The vacuum cleaner according to Claim 1, characterized in that the cyclone separation cavity of the upper part of the inner diameter becomes small gradually from top to bottom of the truncated cone shaped.

8. The vacuum cleaner according to Claim 1, characterized in that the vacuum cleaner with the downstream cavity of the lower part of, the downstream cyclone separating device is is useful in the separation of the dust is introduced into the ash channel downstream of the cavity, each of the cyclone separator with the biogas is connected with the ash channel.

9. The vacuum cleaner according to Claim 8, characterized in that the ash channel is located in the upstream of the periphery of the cyclone separation device, each of the the lower part of the lower end portion of the cyclone separation chamber the truck is arranged toward the outer side.

10. The vacuum cleaner according to Claim 8, characterized in that the ash channel is located in the upstream of the inside of the cyclone separation device, each of the the lower part of the lower end portion of the cyclone separation chamber toward the inside, the truck is provided.

11. The vacuum cleaner according to Claim 1, characterized in that a plurality of said cyclone separator are arranged along a circumferential direction, the circumference of this circle with the center line of the upper part of the 1st axis of the cyclone separation chamber is between the included angle between 0-180 °.

12. The vacuum cleaner according to Claim 1, characterized in that a plurality of cyclone separator is completely located in the upstream of the upper part of the cyclone separation device

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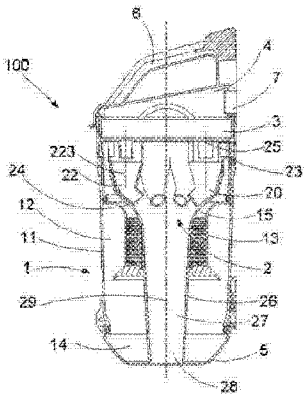
(54)发明名称

真空吸尘器

(57)摘要

本发明涉及一种真空吸尘器，具有上游旋风分离装置和包含多个相并联设置的旋风分离器的下游旋风分离装置，各个旋风分离器包括分离器本体，分离器本体内部具有旋风分离腔，分离器本体上设置入口、排气口、落灰口，旋风分离腔包括上部、下部旋风分离腔，上部、下部旋风分离腔两者交接，落灰口位于下部旋风分离腔的下端部，排气口位于上部旋风分离腔的上端部，气流在上部旋风分离腔内绕着第一轴线旋转、在下部旋风分离腔内绕着第二轴线旋转，第一轴线为一直线，第二轴线与第一轴线位于同一平面上并且两者相交于一点。该吸尘器由于旋风分离器的轴线发生弯折或弯曲，灰尘经分离后将远离气流场，降低了分离器的高度，使得整个吸尘器的结构更加紧凑。



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1. 一种真空吸尘器，具有上游旋风分离装置和包含多个相并联设置的旋风分离器的下游旋风分离装置，所述的下游旋风分离装置位于所述的上游分离装置的上部，各个所述的旋风分离器包括分离器本体，所述的分离器本体的内部具有能使夹带有灰尘的气流在内部旋转的旋风分离腔，所述的分离器本体上设置有用于将夹带有灰尘的气流引入至所述的旋风分离腔的入口、在灰尘被旋风分离后将气流从所述的旋风分离腔排出的排气口以及在灰尘被旋风分离后将灰尘从所述的旋风分离腔排出的落灰口，所述的入口、排气口、落灰口均与所述的旋风分离腔的内部连通，其特征在于：所述的旋风分离腔包括上部旋风分离腔和下部旋风分离腔，所述的上部旋风分离腔与所述的下部旋风分离腔两者交接，所述的落灰口位于所述的下部旋风分离腔的下端部，所述的排气口位于所述的上部旋风分离腔的上端部，夹带有灰尘的气流依次经过所述的入口、上部旋风分离腔、下部旋风分离腔，气流在所述的上部旋风分离腔内绕着第一轴线旋转、在所述的下部旋风分离腔内绕着第二轴线旋转，所述的第一轴线为一直线，所述的第二轴线与所述的第一轴线位于同一平面上并且两者相交于一点。

2. 根据权利要求 1 所述的真空吸尘器，其特征在于：所述的第二轴线为一直线或折线或曲线。

3. 根据权利要求 1 所述的真空吸尘器，其特征在于：所述的第一轴线与第二轴线或第二轴线的切线在相交处呈大于 90 小于 180° 的夹角。

4. 根据权利要求 3 所述的真空吸尘器，其特征在于：所述的第一轴线与第二轴线或第二轴线的切线在相交处呈大于 130° 小于 160° 的夹角。

5. 根据权利要求 1 所述的真空吸尘器，其特征在于：所述的第二轴线穿过所述的落灰口的端面所在的平面，所述的第二轴线与所述的落灰口的端面所在的平面在相交处呈 10° 到 90° 的夹角。

6. 根据权利要求 1 所述的真空吸尘器，其特征在于：所述的上部旋风分离腔的腔壁与所述的下部旋风分离腔的腔壁在相交接处光滑过渡。

7. 根据权利要求 1 所述的真空吸尘器，其特征在于：所述的上部旋风分离腔呈内径至上而下逐渐变小的圆台形。

8. 根据权利要求 1 所述的真空吸尘器，其特征在于：所述的真空吸尘器的下部具有下游储灰室，所述的下游旋风分离装置上设置有用于将其分离的灰尘导入到所述的下游储灰室的导灰通道，各个所述的旋风分离器的落灰口均与所述的导灰通道相连通。

9. 根据权利要求 8 所述的真空吸尘器，其特征在于：所述的导灰通道位于所述的上游旋风分离装置的外围，各个所述的下部旋风分离腔下端部的落灰口朝向外侧设置。

10. 根据权利要求 8 所述的真空吸尘器，其特征在于：所述的导灰通道位于所述的上游旋风分离装置的内侧，各个所述的下部旋风分离腔下端部的落灰口朝向内侧设置。

11. 根据权利要求 1 所述的真空吸尘器，其特征在于：多个所述的旋风分离器沿着一圆周方向排布，此圆周所在的中心线与所述的上部旋风分离腔的第一轴线之间呈 0~180° 的夹角。

12. 根据权利要求 1 所述的真空吸尘器，其特征在于：多个所述的旋风分离器完全位于所述的上游旋风分离装置的上方。

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真空吸尘器

技术领域

[0001] 本发明涉及一种真空吸尘器。

背景技术

[0002] 旋风分离式气灰分离方式在真空吸尘器中已经被广泛应用到，通过旋风分离后的灰尘(即固体物质)积集到集尘桶，便于清理灰尘，同时减少了灰尘泄露到过滤材料上造成的气流压力下降，延长了吸尘器清理过滤材料的间隔。欧洲专利 EP0042723B 公开了一种上游第一级采用旋风分离、下游第二级分离采用单锥旋风分离结构的多级旋风分离式真空吸尘器，这种分离结构的真空吸尘器，其分离效率不高，无法真正实现旋风分离吸力无损耗(即吸尘器吸力不下降)的效果。中国专利 ZL01807570.3 公开了一种用于从流体流中分离颗粒的设备，该设备中上游旋风分离装置采用给一个旋风分离器，下游第二级分离采用多个旋风分离器的旋风分离结构，其多个第二级旋风分离器至少部分地插入到第一级旋风分离器，该防范解决了吸尘器旋风桶在高度方向上的空间问题，但由于第二级旋风分离器插入到第一级旋风分离器中会影响到整个设备在直径方向的尺寸问题，影响吸尘器的空间布局。中国专利 ZL200610139423.7 也公开了一种下游第二级分离采用多个旋风分离锥的吸尘器旋风分离桶，其第二级旋风分离锥斜躺着置于第一级旋风分离器上方，同样解决了旋风分离桶在高度方向的问题，但在直径方向上会相应地变大，影响整个吸尘器的空间布局。专利 ZL200620073309.4，公开了一种下游第二级分离采用多个旋风分离锥的吸尘器旋风分离桶，其第二级旋风分离锥完全并列地置于第一级旋风分离器上方，其开口是正对着集尘桶结构的，这种结构可能直径方向的空间余量比较大，但在高度方向占空间比较大。如图 1 所示，呈内径至上而下逐渐变小的倒锥状的分离器本体，即旋风分离腔是呈上大下小的形状，含尘气流①向下运动时在旋风分离腔的越底端，灰尘浓度越高，旋风分离腔的越底端，径向距离越短，径向气流②越剧烈，导致颗粒小，离心力小的灰尘⑤产生二次夹带，影响分离效率；而且越靠近旋风分离腔的底端，灰尘浓度越高，灰尘⑤在旋转的过程中越容易在分离器本体的内壁上反弹，由于上大下小的倒锥状结构，反弹灰尘⑥的方向是沿排气口方向的，更容易被上升气流③带出，导致灰尘产生二次夹带，影响分离效率。另外，上述结构的旋风分离器中的排气口和落灰口的中心线位于同一直线上，灰尘④从落灰口排出后，没有迅速远离旋风分离器的气场(事实上，在旋风分离器中，在落灰口下端存在气流衍射现象)，部分被带回，进入下游，影响分离效率。

发明内容

[0003] 针对上述问题，本发明的目的是提供一种在空间结构和气固分离性能上都能得到改善的真空吸尘器。

[0004] 为了实现上述发明目的，本发明采用如下技术方案：一种真空吸尘器，具有上游旋风分离装置和包含多个相并联设置的旋风分离器的下游旋风分离装置，所述的下游旋风分离装置位于所述的上游分离装置的上部，各个所述的旋风分离器包括分离器本体，所述的

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分离器本体的内部具有能使夹带有灰尘的气流在内部旋转的旋风分离腔，所述的分离器本体上设置有用于将夹带有灰尘的气流引入至所述的旋风分离腔的入口、在灰尘被旋风分离后将气流从所述的旋风分离腔排出的排气口、以及在灰尘被旋风分离后将灰尘从所述的旋风分离腔排出的落灰口，所述的入口、排气口、落灰口均与所述的旋风分离腔的内部连通，所述的旋风分离腔包括上部旋风分离腔和下部旋风分离腔，所述的上部旋风分离腔与所述的下部旋风分离腔两者交接，所述的落灰口位于所述的下部旋风分离腔的下端部，所述的排气口位于所述的上部旋风分离腔的上端部，夹带有灰尘的气流依次经过所述的入口、上部旋风分离腔、下部旋风分离腔，气流在所述的上部旋风分离腔内绕着第一轴线旋转、在所述的下部旋风分离腔内绕着第二轴线旋转，所述的第一轴线为一直线，所述的第二轴线与所述的第一轴线位于同一平面上并且两者相交于一点。

[0005] 上述技术方案中，所述的第二轴线优选为一直线或折线或曲线。

[0006] 上述技术方案中，优选地，所述的第一轴线与第二轴线或第二轴线的切线在相交处呈大于 90 小于 180° 的夹角。其中，所述的第一轴线与第二轴线或第二轴线的切线在相交处呈大于 130° 小于 160° 的夹角。

[0007] 上述技术方案中，优选地，所述的第二轴线穿过所述的落灰口的端面所在的平面，所述的第二轴线与所述的落灰口的端面所在的平面在相交处呈 10° 到 90° 的夹角。

[0008] 上述技术方案中，优选地，所述的上部旋风分离腔的腔壁与所述的下部旋风分离腔的腔壁在相交接处光滑过渡。

[0009] 上述技术方案中，优选地，上部旋风分离腔呈内径至上而下逐渐变小的圆台形

上述技术方案中，优选地，所述的真空吸尘器的下部具有下游储灰室，所述的下游旋风分离装置上设置有用于将其分离的灰尘导入到所述的下游储灰室的导灰通道，各个所述的旋风分离器的落灰口均与所述的导灰通道相连通。进一步优选，所述的导灰通道位于所述的上游旋风分离装置的外围，各个所述的下部旋风分离腔下端部的落灰口朝向外侧设置；或者，所述的导灰通道位于所述的上游旋风分离装置的内侧，各个所述的下部旋风分离腔下端部的落灰口朝向内侧设置。

[0010] 上述技术方案中，优选地，多个所述的旋风分离器沿着一圆周方向排布，此圆周所在的中心线与所述的上部旋风分离腔的第一轴线之间呈 0~180° 的夹角。

[0011] 上述技术方案中，优选地，多个所述的旋风分离器完全位于所述的上游旋风分离装置的上方。

[0012] 下面阐述一下上述的下游旋风分离装置中的旋风分离器的工作原理：如图 6 所示，含尘气流 I 向下运动时在旋风分离腔的越底端，灰尘浓度越高，旋风分离腔的越底端，径向距离越短，径向气流 II 越剧烈，灰尘 V 在旋转的过程中越容易在分离器本体的内壁上反弹，由于下部旋风分离腔相对于上部旋风分离腔相一侧“弯曲”，反弹灰尘 VI 的方向将是沿落灰口方向，使其容易从落灰口随着灰尘 IV 从落灰口一起排出，而上升气流 III 也将向上从排气口排出。

[0013] 本发明与现有技术相比，具有如下优点：由于旋风分离器的下部旋风分离腔的第二轴线相对于上部旋风分离腔的第一轴线发生弯曲或弯折，由于第一轴线与第二轴线相交，这样出风管方向和排灰口方向成一定的角度，灰尘经过分离后，随下部旋风分离腔的弯曲而改变方向，远离旋风分离腔在气固分离后从排气口排出的上升气流场，从而减少灰尘

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气流二次夹带；另外，由于下部旋风分离腔发生“弯曲”，旋风分离器在轴向方向上高度得到降低，同时由于第二轴线相交于第一轴线，这样大大让出了下部旋风分离腔的空间，这样在高度和直径方向上给真空吸尘器的布局提供了空间，整体结构上更加紧凑。

附图说明

[0014] 附图 1 为背景技术中的锥形旋风分离器的工作原理图；

附图 2 为本发明的真空吸尘器的主视剖视示意图；

附图 3 为本发明的旋风分离器的结构示意图；

附图 4 为本发明的旋风分离器的另一种结构示意图；

附图 5 为本发明的旋风分离器的第二种结构示意图；

附图 6 为本发明的旋风分离器的工作原理图；

附图中，100、真空吸尘器；1、上游旋风分离装置；11、旋风桶；12、旋风室；13、网孔过滤罩；14、上游储灰室；15、出气通道；2、下游旋风分离装置；20、旋风分离器；21、分离器本体；22、旋风分离腔；221、上部旋风分离腔；222、下部旋风分离腔；223、第一轴线；224、第二轴线；23、入口；24、落灰口；25、排气口；26、导灰柱；27、导灰通道；28、下游储灰室；29、中心线；3、过滤器；4、上盖；5、底盖；6、把手；7、总出气口。

具体实施方式

[0015] 为使本发明的目的、技术方案和优点更加清楚，下面结合附图对本发明作进一步的详细描述：

如附图 2 所示的真空吸尘器 100，它属于两级旋风分离结构的吸尘器，沿着气流流动方向设置有上游旋风分离装置 1、下游旋风分离装置 2 以及过滤器 3。吸尘器的上、下端分别设置上盖 4 和底盖 5，上盖 4 上还设置有用于用户将整个吸尘器提起的把手 6。

[0016] 上游旋风分离装置 1 包括一个圆柱状的旋风桶 11，旋风桶 11 的内腔构成上游的旋风室 12。旋风室 12 内部设置有网孔过滤罩 13，旋风室 12 的下底部构成上游储灰室 14，底盖 5 可开合的安装在上游储灰室 14 的下方。旋风桶 11 还应设置有供含尘气流进入旋风室 12 的进气口（图中未示出），网孔过滤罩 13 的内侧具有将气流从旋风时 12 排出的出气通道 15。含尘气流从进气口进入旋风室 12 内首先进行旋转，灰尘落入下部的上游储灰室 14 内，经过初步分离后的、含细小颗粒的气流从网孔过滤罩 13 的网孔经过后，由出气通道 15 排出。

[0017] 下游旋风分离装置 2 包括多个并联设置的旋风分离器 20，多个旋风分离器 20 均位于上游旋风分离装置 1 的上部，它们沿着一圆周排布，并且此圆周所在的中心线 29 与上部旋风分离腔的第一轴线 223 之间平行，其实二者之间也可呈大于 0 度小于 180 度的夹角，即将旋风分离器 21 倾斜或躺着设置，这种设置能进一步降低整个吸尘器的高度。

[0018] 如图 3 所示的旋风分离器 20，它包括分离器本体 21，分离器本体 21 的内部具有能使夹带有灰尘的气流在内部旋转的旋风分离腔 22，分离器本体 21 上设置有用于将夹带有灰尘的气流引入至旋风分离腔的入口 23、在灰尘被旋风分离后将气流从所述的旋风分离腔排出的排气口 25、以及在灰尘被旋风分离后将灰尘从旋风分离腔 22 排出的落灰口 24，入口 23、排气口 25、落灰口 24 均与旋风分离腔 22 的内部连通。该实施例中，旋风分离腔 22 包括

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上部旋风分离腔 221 和下部旋风分离腔 222，上部旋风分离腔 221 呈内径至上而下逐渐变小的圆台形，上部旋风分离腔 221 与下部旋风分离腔 222 两者交接，并且二者腔壁在相交接处光滑过渡。排气口 25 位于上部旋风分离腔 221 的上端部，落灰口 24 位于下部旋风分离腔 222 的下端部，气流在上部旋风分离腔 221 内绕着第一轴线 223 旋转、在下部旋风分离腔 222 内绕着第二轴线 224 旋转，第一轴线 222 为一直线，第二轴线 224 与第一轴线 224 位于同一平面上并且两者相交于一点。该实施例中，第二轴线可以为一直线或折线或曲线，并且第一轴线 223 与第二轴线 224 或第二轴线 224 的切线在相交处呈大于 90 小于 180° 的夹角 a，实施例中，第二轴线 224 为一直线，第一轴线 223 和第二轴线 224 的夹角 a 为 135°，第二轴线 224 穿过落灰口 24 的端面所在的平面，并且第二轴线 224 与落灰口 24 的端面所在的平面在相交处的夹角 b 为 80°。该结构的旋风分离器 20 大致呈“J”形，可以称之为 J 型旋风分离器。

[0019] 从出气通道 15 逸出的含细小颗粒灰尘的气流在进入下游旋风分离装置后，依次经过入口 23、上部旋风分离腔 221、下部旋风分离腔 222，分离后的灰尘从落灰口 24 落下、分离后的干净气流从排气口 25 排出，而后经过下游的过滤器 3 进一步过滤后从总出气口 7 排除机体外。过滤器 3 可以选用常规的海帕过滤器。真空吸尘器的下部具有下游储灰室 28，旋风桶 11 的中心部沿着轴向设有一个将下游旋风分离装置 2 分离后的灰尘从落灰口 24 倒入到吸尘器下部的下游储灰室 28 的中空导灰柱 26，导灰柱 26 内部形成导灰通道 27，下游储灰室 28 位于导灰通道 27 的正下方，各个旋风分离器 21 的落灰口 24 均与导灰通道 27 相连通。该实施例中，由于导灰柱 26 设置在旋风桶 11 的内侧，因此便于落灰口 24 的落灰，各个下部旋风分离腔 222 下端部的落灰口 24 朝向内侧设置。如果变换一下导灰柱 26 的设置位置，将其设置在旋风桶 11 的外围，则各个下部旋风分离腔下底部的落灰口朝向外侧设置为佳。在旋风分离器 21 的工作过程中，当灰尘从入口 23 进入上部旋风分离腔 221 后，在分离空间产生旋流运动，在旋流的外部（外旋涡），气体向下的下部旋风分离腔 222 处运动，并在中心处向上运动（内旋涡），与此同时，气体还存在一个由内旋涡到外旋涡的径向运动，分离到腔壁的灰尘，被外部区域的气流带到落灰口 24。由于下部旋风分离腔 222 的“弯曲”结构，使得排气口 25 方向和落灰口 24 方向不在一条直线上，这样灰尘经过分离后，利用离心力随下部旋风分离腔 222 的“弯曲”而改变方向，远离气流的内旋涡和径向流，减少气流夹带，同时降低了旋风分离器 21 的高度和空间，在设计时旋风分离器时可以获得更加紧凑的结构。

[0020] 如图 4 所示，该旋风分离器 20’与附图 3 所示的旋风分离器 20 的结构大体相同，不同点在于第二轴线 224’为一折线。该旋风分离器 20’中的第一轴线 223’与第二轴线 224’在相交处也呈 135° 的夹角 a’，第二轴线 224’穿过落灰口 24’的端面所在的平面，并且第二轴线 224’与落灰口 24’的端面所在的平面在相交处的夹角 b’也为 80°。

[0021] 如图 5 所示，该实施例的旋风分离器 20”中，第二轴线 224”也为一折线，第一轴线 223”与第二轴线 224”在相交处也呈 135° 的夹角 a”，第二轴线 224”穿过落灰口 24”的端面所在的平面，并且第二轴线 224”与落灰口 24”的端面所在的平面在相交处的夹角 b”为 57°。

[0022] 以上对本发明做了详尽的描述，其目的在于让熟悉此领域技术的人士能够了解本发明的内容并加以实施，并不能以此限制本发明的保护范围，凡根据本发明的精神实质所

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作的等效变化或修饰，都应涵盖在本发明的保护范围内。

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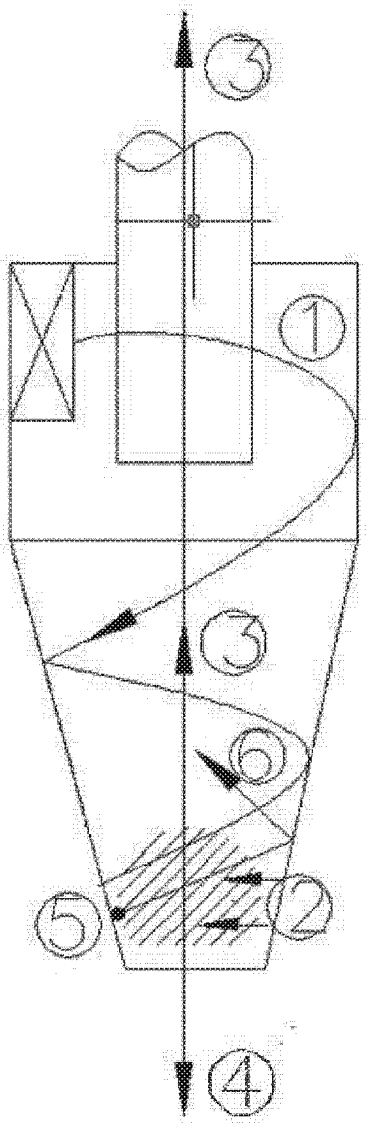

图 1

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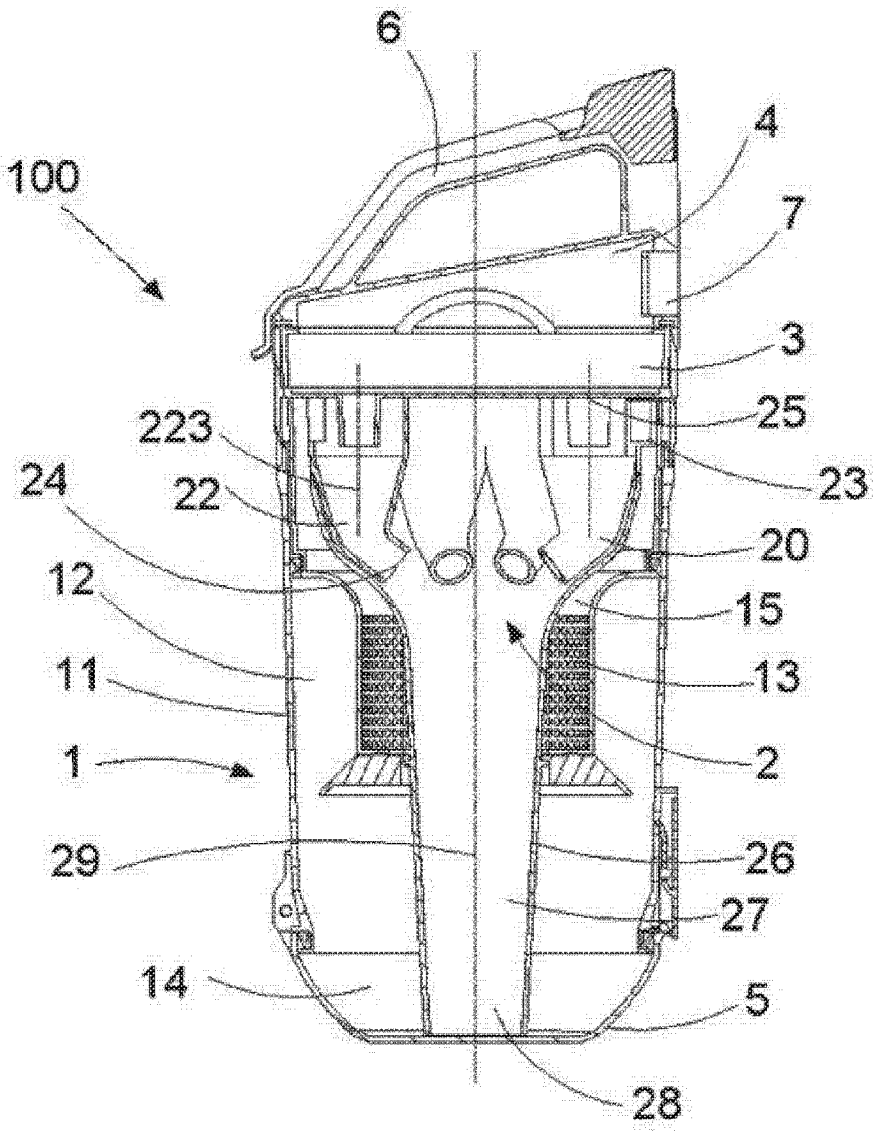

图 2

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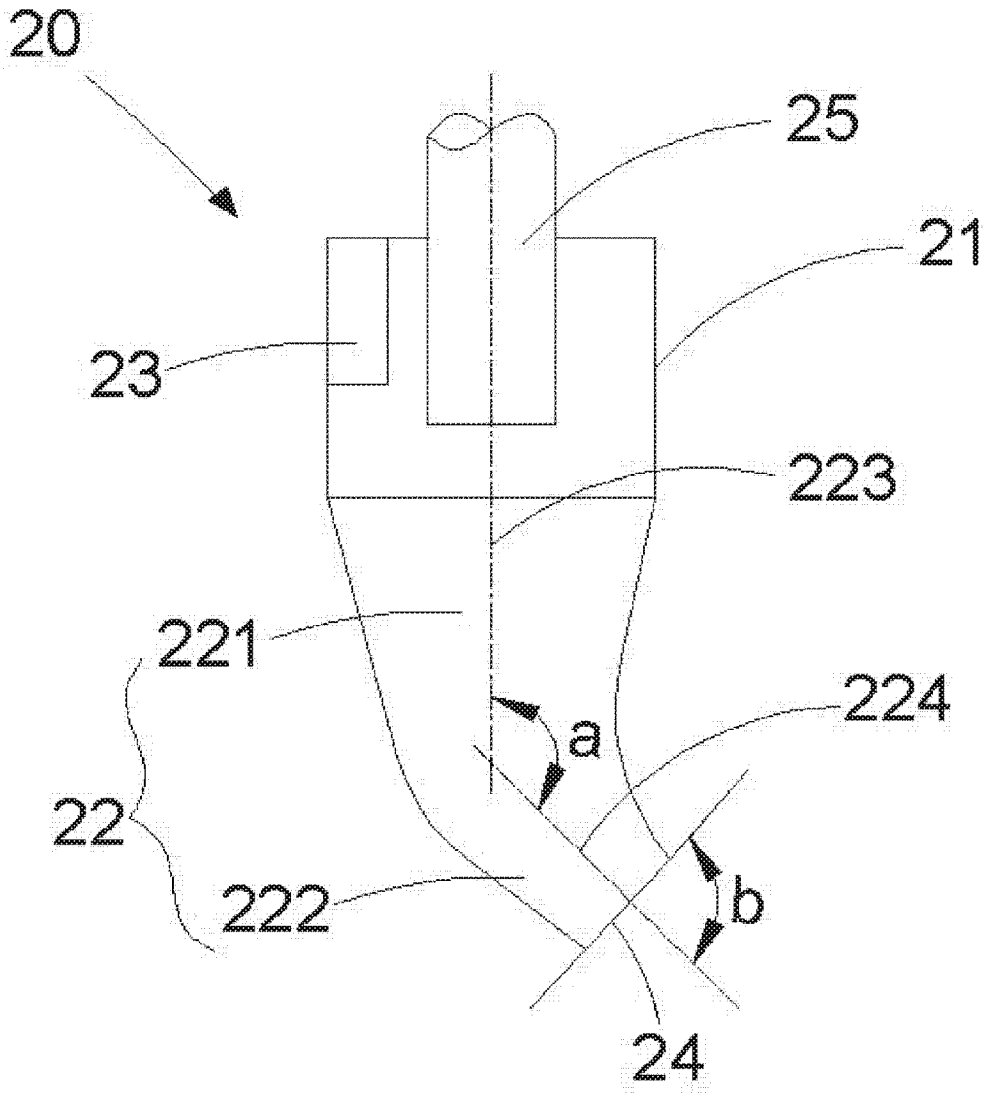

图 3

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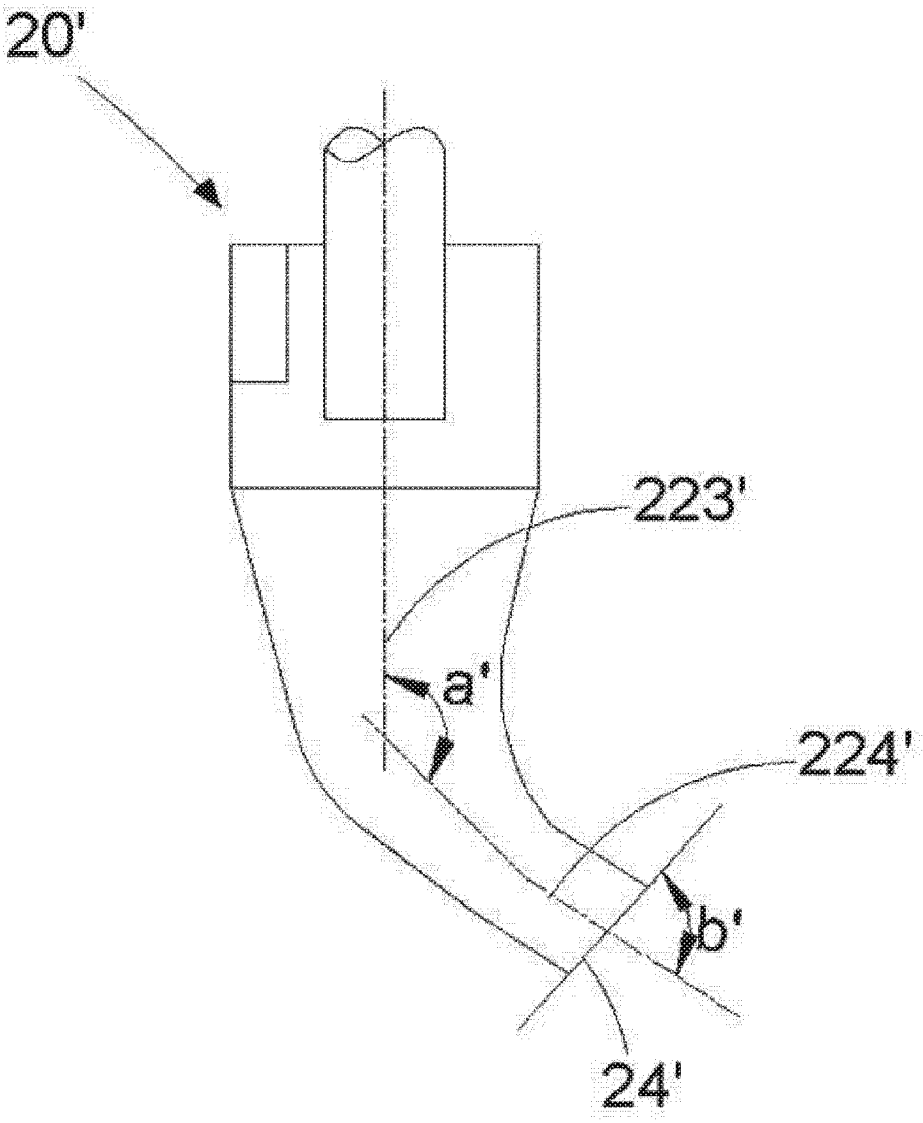

图 4

SharkNinja Ex. 1002
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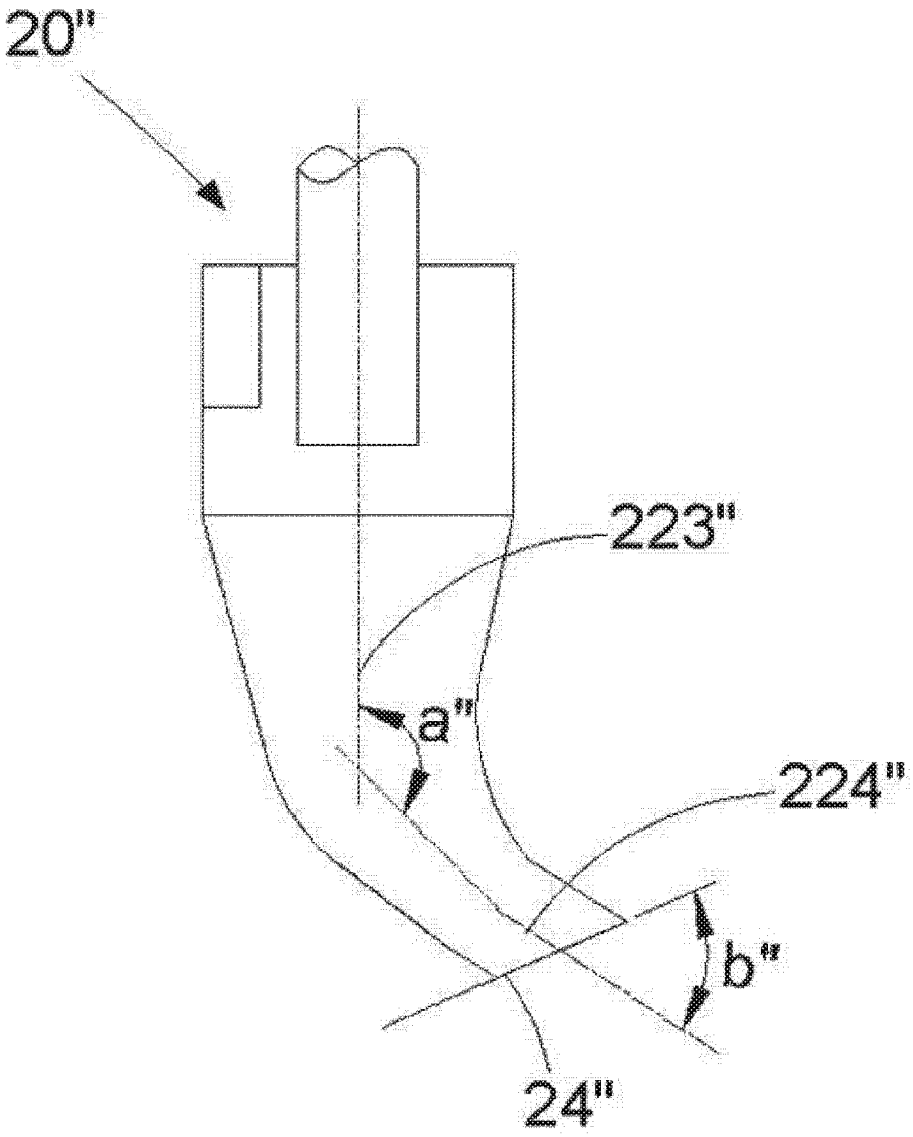

图 5

SharkNinja Ex. 1002
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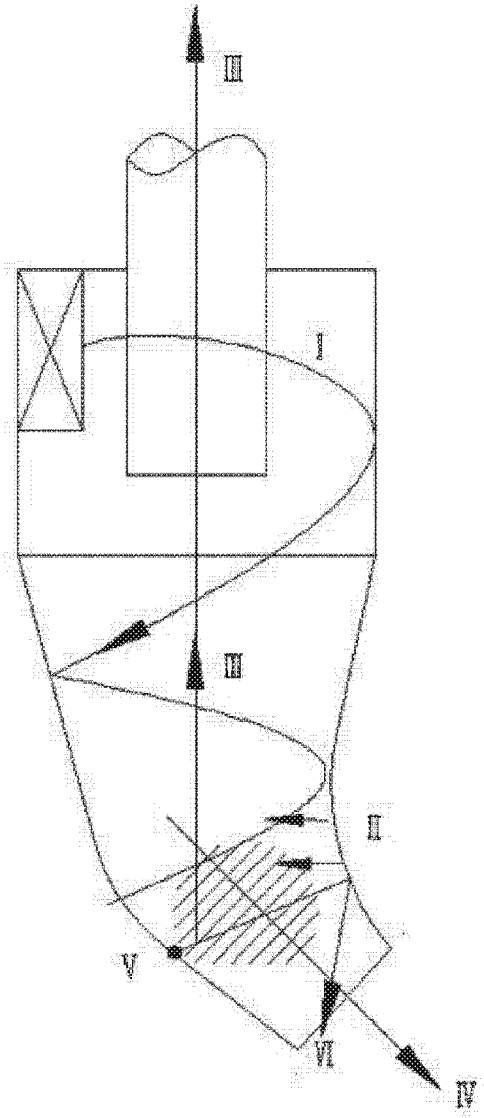

图 6

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
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JP2004089241A 2004-03-25 VACUUM CLEANER (en)

English Abstract:

PROBLEM TO BE SOLVED: To improve the usability of an electric vacuum cleaner having a vacuum cleaner body equipped with two suction functions.

SOLUTION: This vacuum cleaner is equipped with a first vacuum cleaner body 1, a second vacuum cleaner body 14, and a hollow pipe 13 which detachably connects the first vacuum cleaner body 1 and the second vacuum cleaner body 14. In this case, the first vacuum cleaner body 1 has a first electric blower 7 which communicates with a suction unit 5 and generates suction air, and a first dust collecting chamber 10 which collects sucked dust and dirt. The second vacuum cleaner body 14 has a grip part 15 for operation, and comprises a second electric blower 17 and a second dust collecting chamber 16. The hollow pipe 13 is constituted to communicates the first dust collecting chamber with the second dust collecting chamber 16, and the accumulation of dust and dirt in the second dust collecting chamber 16 having a smaller tolerance, and a processing step can be eliminated. Thus, labor and burden for a user can be reduced.

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Patent References Cited-Forward:

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JP2008073221A
WO2014001502A1

English Description:

0001 :

[Belongs to the technical field of the invention]

The present invention, a vacuum cleaner.

0002 :

Prior art:

Conventionally, this kind of the vacuum cleaner as shown in the official gazettes [...] patent Number 62-142531 in a simple configuration. Below, the explanation about by referring to drawings. Fig. 12 in, picks up the surface 101 of the dust suction part incorporating a rotary brush 107, 102 of the first electric blower 108 1 1 is incorporated in the second in the cleaner body 102, the rear part of the suction part 101 is rotatably supported. 103 of the body 102 of the first 1 detachably attached to the top of the cleaner body 2 of a first, upper end of the second body 103 104 2 for operating the grip part 112 is formed of a first body 104 at 2, 2 in the inside of the second intake port 110, filter 109, a second electric blower 111 2 built therein. When used, the cleaner body 104 having a first 2 2 1 of the cleaner body 103 is removed from the cleaner body 102 also can be used as the second cleaner, moreover, first the cleaner body 102 1 attached to a conventional cleaner and also as a cleaner.

0003 :

Problems to be solved by the invention:

In the constitution of the conventional sakurako, first to second body 103 2 1 is removed from the cleaner body 102 when used as a second cleaner, dust sucked into the inside of the cleaner body 104 2 stored in a small space and therefore be housed, allowing less dust without processing must be frequently, the cleaner body 102 1 further by adding treatment of dust, becomes very high frequencies and increase in the labor of a user.

0004 :

In the present invention to solve the above-mentioned problem, 2 having the function of suction in the vacuum cleaner having a cleaner body, and used to improve.

0005 :

Means for solving the problems:

In order to solve the problem in the present invention, the suction part and communicating with a first electric fan for generating suction air 1 and 1 are collected dust sucked by a dust collecting chamber and having a body 1, a first grip part 2 for operation of the first electric blower and has a dust collecting chamber 2 of the cleaner body 2 and of a second, the second and the first of the cleaner body 2 1 of the cleaner body having detachably connected to the hollow tube, the hollow tube 1 and the second of the first collecting chamber 2 and a dust collecting chamber configured to communicate.

0006 :

Therefore, the second cleaner body 2 1 is removed from the first body when used as a second cleaner, the cleaner body 2 of dust and temporarily stored in the, cleaner 2 after the end of the main body of the cleaner body attached to the first by returning the 1, 1 of the body of the first dust collecting chamber and is communicated with the result, first by the operation of the cleaner main body 1 of the cleaner body 2 is sucked from the dust collecting chamber, the dust is collected and is conveyed. As a result, a small amount of tolerance in the cleaner body part 2 of the first accumulation of dust and processing can be made to the process, and to a user and to reduce the labor burden.

0007 :

Embodiments of the invention:

The invention of claim 1 of the present invention, the suction air suction part 1 and communicating with the first electric blower and which emits a first sucking dust collecting chamber 1 1 of the cleaner body and having a first, a second grip part 2 for operation of the first electric blower and has a dust collecting chamber 2 of the cleaner body 2 and of a second, the second and the first of the cleaner body 2 1 of the cleaner body having detachably connected to the hollow tube, the hollow tube 1 and the second of the first collecting chamber 2 and a dust collecting chamber communicating with a constitution, first the cleaner body 2 1 is removed from the cleaner body when used as a second cleaner, dust collecting chamber of the housing 2, even temporarily, the cleaner body 2 after the end of the cleaner to the cleaner body attached to the first by returning the 1, 1 of the first dust collecting chamber and is communicated with the result, first by the operation of the cleaner body 1 2 is sucked from the dust collecting chambers, a dust collecting chamber 1 of the dust is collected and transferred to it. As a result, a small amount of tolerance of the first dust collecting chamber 2 and the accumulation of dust in the treatment process can be eliminated, and burden to the user and to reduce labor.

0008 :

The invention of claim 2 of the present invention, in the first of the cleaner body 1 1 and a dust collecting chamber which has an intake passage communicating the hollow tube, the hollow tube mounted to an intake passage and removed by the operation of opening and closing valve, a first detachably provided in a state of detaching the cleaner body 2 of the body 1 of the first in a single state, the opening of the intake passage is closed by the opening/closing valve, the second dust chamber of the vacuum cleaner 1 of the degree of vacuum is maintained and so that, first detaching the cleaner body 2 in a state in which a first body 1 and be separately used, than to use the expansion of working conditions can be improved.

0009 :

The invention of claim 3 of the present invention, the first hollow tube cleaner body 2 through a cleaner body 1 when connected to, a predetermined time, the cleaner body 1 having a first electric blower is operated for 1, 2 of the first dust collecting chamber of dust from the dust collecting chamber 1 is transferred, to improve operability can be improved.

0010 :

The invention of claim 4 of the present invention, the first hollow tube cleaner body 2 opposite the end section of the grip part is provided with an inclined part on the one, first body 1 for detaching the cleaner body 2 than when used as a second cleaner, upright to a cleaning surface toward an intake port in a state without, the cleaner body 2 has a first operating time, naturally occurring in the intake port is inclined state close to parallel to the surface to be cleaned easily, in a single diameter, a hollow tube in the intake port, which is easily made and enlargement of the opening area, used in a comfortable position for the user can provide a cleaner, improving the operability can be improved.

0011 :

The invention of claim 5 of the present invention, wherein the expandable and hollow tube, the hollow pipe of different outer diameters by overlapping, sliding action is obtained and therefore, it is possible to freely expand and contract, increasing operability of the use conditions can be improved.

0012 :

The invention of claim 6 of the present invention, the wall of the hollow tube into the hollow tube having a support part is provided with a check valve, the hollow tube to follow the direction of air flow changes in the passage and operates to open and close, the reversal of flow of the air stream and thereby constituting the intake passage, the intake passage having such an action can be realized even in commercial refuse leakage can be improved.

0013 :

The invention of claim 7 of the present invention, a grip portion of a volume within the range from the center radius 10cm, 2 of the first electric blower is driven by a secondary battery is mounted, the second center of gravity of the weight 2 and approaching the grip of the cleaner

body becomes, to a user of the grip, and the grip position to reduce the bending moment generated by the gravity weight by reducing a burden on a user's wrist.

0014 :

The invention of claim 8 of the present invention, the suction part and communicating with a first electric fan for generating suction air 1 and 1 are collected dust sucked by a dust collecting chamber and having a body 1, a first grip part 2 for operation of the first electric blower and has a dust collecting chamber 2 of the cleaner body 2 and first, second and third electric fan 3 of the first dust collecting chamber 3 of the body 1 and a charger, the cleaner body 2 and the first charger having detachably connected to the hollow tube, the hollow tube 2 of the first and the second collecting chamber 3 and a dust collecting chamber communicating with a constitution, first the cleaner body 2 1 is removed from the cleaner body when used as a second cleaner, 2 of dust and temporarily stored in a dust collecting chamber even if, after the end of the cleaner, the cleaner body 2 first by returning the charger attached to, a first of the charger 3 provided in the dust collecting chamber and is communicated with the result, the first is sucked from the dust collecting chamber 3, and the dust is collected and transferred so that, as a result, a small amount of tolerance of the first dust collecting chamber 2 and the accumulation of dust in the treatment process can be eliminated, and the labor burden to the user can be reduced.

0015 :

The invention of claim 9 of the present invention, the power source has a transformer, a second electric blower 3 of the exhaust so as to abut on the power transformer, causing the exothermic power transformer and so that the exhaust air is blown, to improve the cooling action simultaneously improving the quality of the product performance.

0016 :

The present invention of claim 10 of the invention, a first of the charger 3 of a dust collecting chamber 3 provided in the intake passage of a motor-driven blower, a charger similarly provided and connected to a power transformer by a housing part, which brings the intake air heating effect that blows a power transformer and therefore, improved cooling means, at the same time improving the quality of the product performance.

0017 :

[Embodiment]

(Embodiment 1)

Figs. 1, 2 of the first embodiment of the present invention of a vacuum cleaner 1 in cross section. 1 2 in the upper part of the second body unit 2 is detachably provided, below the intake port 4 and scraped up by the rotary brush 3 is provided having a suction part 5, generating suction air blower 6 is mounted on the body 1 1.

0018 :

1 provided in the first body 1 and is explained as a motor-driven blower 6, suction air flow and for generating a fan section 7, the power source battery 8 or from a power source and a power source for supplying power to the electric wires 9, for storing the collected dust and 1 of a dust collecting chamber 10.

0019 :

Next, the constitution of the present invention of a first 1 and second 2 of the body 1 about the cleaner body unit 2, in more detail. 13 has, above the body 1 1 of the first locking parts 11 and detachably locking part 12 for coupling a hollow pipe, and having, its inside and dust can pass. 14 to be gripped by the user when in use with an approximately cylindrical reduced diameter having a grip portion 15 of the cleaner body 2. The inside of the cleaner body 14 2, similar to the first and second main body 1 2 1 of the cleaner body 14 and a single suction so that dust, hollow tube 13 and the first end of the locking part 12 of the dust and opened so that the intake port 2, in the order of 2 communicating with the first and second dust chamber 16 and 1 1 of the first electric blower 7 for controlling the operation of a motor-driven blower 7 and a battery 19 and a power switch 18 are arranged.

0020 :

In addition to the next in the cleaner body 1, 2 of the first body 14 for removably mounting the locking part 11 is provided above, the locking part 11 of the body 14 of the second pass 2 and dust and a hollow tube 13 is formed into a hollow interior in the same manner, and the second when 2 the cleaner body 14 is so constituted as to communicate. The locking part 11 of the body 1 1 of the first dust collecting chamber 10 provided in the intake air passage 69 and are connected by and enabling the passage of dust and a constitution.

0021 :

As described above, in a vacuum cleaner, the cleaner body 14 1 2 of the first to the second of the second cleaner is removed from the cleaner body 1 when used as a, 2 of dust and temporarily stored in the dust collecting chamber 16 even if, after completion of the cleaner, the cleaner body 14 1 2 of the first to the second attached to body 1 by returning, the cleaner body 1 1 of the first 1 and second dust collecting chamber 10 is communicated with the result, first the operation of the cleaner body 1 1 2 by the operation of the first dust collecting chamber 16 of the dust from the dust collecting chamber 10 1 is transferred by suction, dust is collected and transferred so that, as a result, a small amount of tolerance in the cleaner body 14 of the first 2 and accumulation of dust can be achieved and the process is eliminated, and the labor burden to the user can be reduced.

0022 :

(Embodiment 2)

Fig. 3 is a cross-sectional view of a first embodiment of a vacuum cleaner of the present invention in 2. 1 2 of the body 1 of the second body 14 of the second locking part 11 and of the first collecting chamber 2 (not shown) and an intake passage 69 communicates at one end within, the cleaner body 14 of the second fitting 2 is closed by a, spring 21 by rotating shaft 22 energyzingly energized by closing valve 23, which is detachably equipped 2 of the first body 14 is removed, the cleaner body 1 1 second in single use state, the opening of the intake passage 24 is closed by closing valve 23, the cleaner body 1 1 1 of the first dust collecting chamber 10 and so that the degree of vacuum maintained, 2 of the first body 14 even in a state of removing a first body 1 and can be used independently, to expand more use conditions can be improved.

0023 :

(Embodiment 3)

Fig. 4 of a second embodiment of the present invention is 3 in sectional diagram showing the constitution of a vacuum cleaner. The first body 14 when the 2, 2 of the first end section 25 of the body 14 in the intake passage 24 by a spring 21 being energized, rotating shaft 22 by closing valve 23 provided on the rear end portion 26 of the interlocking, the open-close valve 23 by the operation of opening and closing of the intake device 6 of the body 1 1 to control the conduction of the switching means and sensing means or parts 27 are provided, at first in the cleaner body 14 2, optionally set 1 only the time of suction operation of first main body 1.

0024 :

Therefore, the operation of the first body 1 1 without properly, the cleaner body 1 1 of the first to the second of the cleaner body unit 2 2 automatically recognizes the mounted, is used as a second cleaner, 2 of the first dust collecting chamber 16 is temporarily stored in a dust, the cleaner body 1 1 1 of the first dust collecting chamber 10 is collected and transported.

0025 :

As a result, any second cleaner user to confirm the amount of dust captured by the, first the cleaner body 1 1 1 of the first dust collecting chamber 10 and transfer without a driving operation, and so as to eliminate, to improve operability can be improved.

0026 :

(Embodiment 4)

Fig. 5 in the first embodiment of the present invention the first 4 of the cleaner body 2 is a sectional diagram showing the configuration of the unit. The other end of the first end 2 of the

body 14 is provided with an inclined portion 31 and therefore, the cleaner body 1 2 1 from the first body 14 is removed for use as a second cleaner, a cleaning surface 32 to upright toward intake port 33 in a state without a, 2 of the first body 14 when the operation is performed, an intake port 33 naturally occurring in the inclined state close to parallel to the surface 32 is facilitated, and also in a single diameter, a hollow tube 13 in the intake port 33, which are easily made and enlargement of the opening area, used in a comfortable position for the user can provide a cleaner, improving the operability can be improved.

0027 :

(Embodiment 5)

Fig. 6 shows the cross section of the hollow tube 5 of the first embodiment of the present invention in a configuration. The first body 14 is constituted of a hollow pipe 13 of large diameter at 2, and the relay, a holding part 45 is provided for rotating the hollow pipe 13 are formed on the outer circumference. The holding part 45 and the rotary part 47 and tightening part 46 and the screw part 48, and is rotated in one direction by pressure contact of the taper, the hollow tube 13 held in close contact with and fixed so as to establish a, large diameter sliding in relation to the hollow tube 13, is adjusted at an arbitrary length, can be set to the optimum length, it is possible to improve the operability.

0028 :

(Embodiment 6)

Fig. 7 is a cross-sectional diagram showing the constitution of a cleaner body 2 in which a first embodiment of the present invention in a first of the 6. 2 formed of a first hollow pipe 13 of the intake passage 41 in the inside of the cleaner body 14, has a cantilever rotation support body 42 is provided with a check valve 43, the change in the air flow direction of the intake passage 41 and operates to open and close to follow, flowing of air flow is reversed and in general comprises an intake passage, the intake passage having such an action is in general commercial refuse leakage can be improved.

0029 :

(Embodiment 7)

Figs. 8, 9 of the first embodiment of the present invention 7 in the cleaner body 2 and a sectional diagram showing a change in the configuration of the moment. 2 formed in the first body 14 in the operating grip 15, and the length in the longitudinal direction of the grip portion 15 in the thickness direction of the length dimensions of the center 51 1/2 calculated from the dimensions set (vol. center), than the center 51 within the range of such radial 10cm weight parts of the intake device 52 (or secondary battery-driven blower) is disposed, the second center of gravity of the weight 2 approaches the grip portion 15 of the body 14 and so that, with respect to the user's grip, and the grip position to reduce the bending moment generated by the gravity of the weight and the wrist of the user so as to reduce the load applied.

0030 :

(Embodiment 8)

Fig. 10 of the first embodiment of the present invention is 8 in sectional diagram showing the constitution of a vacuum cleaner. The suction section 5 is coupled with the first and second electric blower 6 1 1 except for a dust collecting chamber 10 and a secondary battery 8, and a first charging terminal 61 of the cleaner body 1 and 1, the charging terminal 61 is connected to the terminal portion 62 and charger 63, first and second intake port 2 2 of the first electric blower 17 is disposed in the cleaner body 14 2 2 having a cleaner body 14 is detachably provided in a charging type cleaner, the charger 63 of the first and second main body 1 1 2 2 provided in the main body 14 of one of the electric dust collecting chamber and 2 except the one blower, a second blower 64 made of 3 and 3 and consists of a first and a dust collecting chamber 65.

0031 :

Furthermore, the first body 1 1 2 is detached from the first body 14 of the charger 63 can be housed in and fixed, the first body 14 2 2 provided in the dust collecting chamber 16 and a

second charger 63 3 and a dust collecting chamber 65 and communicates by a, 1 2 of the first body 14 is removed from the cleaner body 1 when it is used as the second cleaner, 2 of dust and temporarily stored in the dust collecting chamber 16 even if, after completion of the cleaner, the cleaner body 14 and a second charger 63 2 mounted by returning, 2 of the first dust collecting chamber 16 and a second charger 63 3 and a dust collecting chamber 65 communicating, 2 of the first dust in the dust collecting chamber 16 of the first dust collecting chamber 65 is sucked from the 3, dust is collected and transferred so that, as a result, a small amount of tolerance in the cleaner body 14 of the first 2 and accumulation of dust can be achieved and the process is eliminated, and the labor burden to the user can be reduced.

0032 :

(Embodiment 9)

Fig. 10 is a sectional view showing the constitution of a vacuum cleaner in which a first embodiment of the present invention in a 9. A charging base 63 formed in the dust collecting chamber 65 3 3 provided in the exhaust passage 66 of a motor-driven blower, and similarly the charger 63 which is provided to a power transformer 67 housing part 68 by communicating, power transformer 67 brings the heating action, and so that the exhaust air is blown, to improve the cooling action, at the same time improving the quality of the product performance.

0033 :

(Embodiment 10)

Fig. 11 is a cross-sectional diagram showing the constitution of a first embodiment of a vacuum cleaner of the present invention at 10. 3 of the charger 63 formed in the dust collecting chamber 65 of the first electric blower 3 provided in the intake passage 69 which, similarly to the charger 63 which is provided to a power transformer 67 housing part 68 and communicating by a constitution, power transformer 67 to bring the heating action, and so that the intake air is blown, improved cooling means, at the same time improving the quality of the product performance.

0034 :

[Effect of the invention]

According to the present invention, in a vacuum cleaner having a cleaner body 2 is provided with two suction function, use can be improved.

Brief description of the drawings:

[Fig. 1] 1 of the first embodiment of the present invention showing a side sectional view of a vacuum cleaner

[Fig. 2] 2 first side sectional view of the cleaner body unit

[Fig. 3] 2 of the first embodiment of the present invention showing a side sectional view of the cleaner body 1

[Fig. 4] 3 of the present invention showing a first embodiment of a side sectional view of the cleaner body 1

[Fig. 5] 4 of the present invention showing a first embodiment of the cleaner body 2 of a side sectional view of the unit

[Fig. 6] 5 of the present invention showing a first embodiment of the cleaner body 2 of a side sectional view of the unit

[Fig. 7] 6 of the present invention showing a first embodiment of a side sectional view of the cleaner body 2

[Fig. 8] 7 of the first embodiment of the present invention showing the cleaner body 2 in the vicinity of a side sectional view of the grip part

[Fig. 9] (a) the first grip part of the cleaner body 2 when gripping the explanation of fig.

(B) said first grip part of the cleaner body 2 when gripping the other explanatory drawing

[Fig. 10] 9 of the present invention showing an embodiment of a first side sectional view of a vacuum cleaner

[Fig. 11] 10 of the first embodiment of the present invention showing a side sectional view of a vacuum cleaner

[Fig. 12] a side sectional view of a conventional vacuum cleaner
Description of the symbols:
1 1 of the first body
5 suction part
7 of the first electric blower 1
10 of the first dust collecting chamber 1
13 hollow tube
14 of first body 2
15 grip
16 of the first dust collecting chamber 2
17 of the first electric blower 2

Number of Claims: 10

ENGLISH CLAIMS:

Communicating with the suction section and the second electric blower generating suction air 1 and 1 are collected dust sucked by a dust collecting chamber and having a body 1, a first grip part 2 for operation of the first electric blower and has a dust collecting chamber 2 of the cleaner body 2 and of a second, the second and the first of the cleaner body 2 1 of the cleaner body having detachably connected to the hollow tube, the hollow tube 1 and the second of the first collecting chamber 2 and a dust collecting chamber is communicated with a vacuum cleaner constitution.

1 1 of the second body in the first hollow tube and a dust collecting chamber which has an intake passage communicating, and hollow tube mounted to an intake passage of the removal operation is provided by opening and closing the valve as described in claim 1.

When connected to the cleaner body 2 of the body 1 of the first hollow tube through a first, predetermined time, vacuum cleaner motor blower of claim 1 or 2 of the first described 1 1 having a first operation of the cleaner body.

The reaction of the first hollow tube cleaner body 2 of the end section of the grip part is provided with an inclined part on any one of claim 1 to claim 1-3 described.

A hollow tube of claim 1-4 freely expansible and 1 described in any one of the vacuum cleaner.

The side wall of the hollow tube into the hollow tube and a check valve is provided having a support portion of either claim 1-5 cleaner described in claim 1.

A grip portion of a volume within the range from the center radius 10cm, 2 for driving a second electric blower mounted with a secondary battery as described in claim 4.

Communicating with the suction section and the second electric blower generating suction air 1 and 1 are collected dust sucked by a dust collecting chamber and having a body 1, a first grip part 2 for operation of the first electric blower and has a dust collecting chamber 2 of the cleaner body 2 and first, second and third electric fan 3 of the first dust collecting chamber 3 of the body 1 and a charger, the cleaner body 2 and the first charger having detachably connected to the hollow tube, the hollow tube 2 of the first and the second collecting chamber 3 constituting a dust collecting chamber and is communicated with a vacuum cleaner.

The charger has a power transformer, a second electric blower 3 of the power transformer to be applied to the exhaust as described in claim 8.

The power transformer having a charger, an air stream passing through the hollow tube to the power transformer so as to abut on the cleaner of claim 8 described.

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VACUUM CLEANER

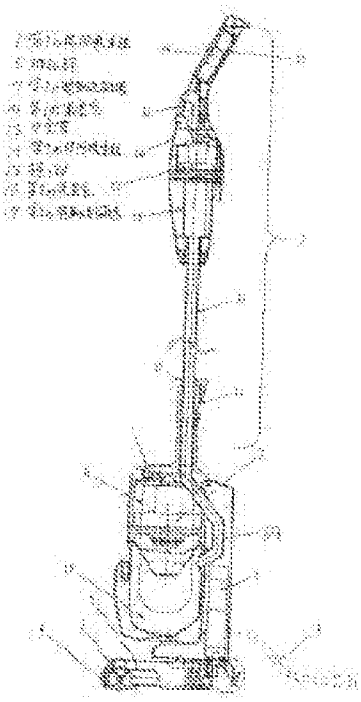
Page bookmark	JP2004089241 (A) - VACUUM CLEANER
Inventor(s):	TSUCHIYA NORIHIRO; MORI HIROSHI ±
Applicant(s):	MATSUSHITA ELECTRIC IND CO LTD ±
Classification:	- international: ***A47L5/24; A47L5/28;*** (IPC1-7): A47L5/24; A47L5/28
	- cooperative:
Application number:	JP20020250908 20020829
Priority number(s):	JP20020250908 20020829

Abstract of JP2004089241 (A)

Translate this text into

Albanian

PROBLEM TO BE SOLVED: To improve the usability of an electric vacuum cleaner having a vacuum cleaner body equipped with two suction functions. ;SOLUTION: This vacuum cleaner is equipped with a first vacuum cleaner body 1, a second vacuum cleaner body 14, and a hollow pipe 13 which detachably connects the first vacuum cleaner body 1 and the second vacuum cleaner body 14. In this case, the first vacuum cleaner body 1 has a first electric blower 7 which communicates with a suction unit 5 and generates suction air, and a first dust collecting chamber 10 which collects sucked dust and dirt. The second vacuum cleaner body 14 has a grip part 15 for operation, and comprises a second electric blower 17 and a second dust collecting chamber 16. The hollow pipe 13 is constituted to communicates the first dust collecting chamber with the second dust collecting chamber 16, and the accumulation of dust and dirt in the second dust collecting chamber 16 having a smaller tolerance, and a processing step can be eliminated. Thus, labor and burden for a user can be reduced. ;COPYRIGHT: (C)2004,JPO



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DESCRIPTION JP2004089241

[0001] [Field of the Invention The present invention relates to a vacuum cleaner. [0002] Background of the Invention Conventional, vacuum cleaner of this kind of configuration as shown in JP-A-62-142531 were common. Hereinafter, it will be described with reference to the accompanying drawings that configuration. 12, 101 is a suction unit with a built-in rotary brush 107 to raise scraped dust of the cleaning surface, 102 is a first cleaner main body 102 that incorporates a first electric blower 108 inside, the rear portion of the suction unit 101 It is rotatably supported on. 103 The second of the cleaner body that is detachably attached to the upper portion of the first cleaner main body 102, 104 and the second cleaning forming the operating grip portion 112 to the second of the cleaner body 103 upper portion in the machine body 104, the second intake port 110 to the inside, has a built-in filter 109, the second electric blower 111. In use, the second of the cleaner body 103 having the second of the cleaner body 104 is detached from the first of the cleaner body 102 can be used as a second vacuum cleaner, also, the first cleaner body 102 it was but also made it possible to clean as a vacuum cleaner of the installed remains conventional configuration to. [0003] An object of the invention is to provide a However in the conventional configuration, when using the second of the cleaner body 103 as a second vacuum cleaner is detached from the first of the cleaner body 102, accumulates the aspirated dust to the second of the cleaner body 104 inside the small space will be housed, must be the allowable less frequently dust processing, also dust processing of the first of the cleaner body 102 also is added, become a very increase in the time and effort of the frequency is increased user which was. [0004] The present invention is intended to solve the above problems, in an electric vacuum cleaner having a cleaner body provided with two suction function, it is an object to improve the usability. [0005] In order to solve the problem] In the present invention in order to solve the above problems, a first of the cleaner body having a first dust collection

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chamber for dust collecting dust sucked to the first electric blower which generates a suction air in communication with the suction unit, the operation a second cleaner body of a second electric blower and a second dust chamber has a grip portion of the use, connecting the first of the cleaner body and the second of the cleaner body detachably comprising a hollow tube, said hollow tube is obtained by a structure for communicating the second dust collection chamber and the first dust chamber. [0006] Thereby, when used as a second cleaner of the second cleaner body is detached from the first of the cleaner body, even if the dust is temporarily housed within a second of the cleaner body, the after cleaning completion 2 of by the cleaner body back attached to the first body, the first cleaner main body dust collecting chamber and communicated to it being the result of, the running operation of the first vacuum cleaner body of the second cleaner body is sucked from the dust collecting chamber, the dust is intended to be transferred are aggregated.

As a result, achieved it is possible to abolish the accumulation of dust in the allowable amount less the second cleaner body portion processing step, and that reduces the burden and trouble to the user. [0007] DETAILED DESCRIPTION OF THE INVENTION Invention described in claim 1 of the present invention includes: a first cleaner body having a first dust collection chamber for dust collecting dust sucked to the first electric blower which generates a suction air in communication with the suction unit, the operation a second cleaner body of a second electric blower and a second dust chamber has a grip portion of the use, connecting the first of the cleaner body and the second of the cleaner body detachably comprising a hollow tube, said hollow tube is obtained by a structure for communicating the second dust collection chamber and the first dust collection chamber, a second of the cleaner body detached from the first cleaner body on when it is used as a second vacuum cleaner, even when the dust is temporarily stored in the second dust collecting chamber, by the second of the cleaner body back attached to a first cleaner body after cleaning ends, the first 1 dust collecting chamber and communicated to it are a result, the running operation of the first cleaner body is sucked from the second dust collecting chamber, the dust is transported into the first dust collecting chamber becomes to be aggregated . As a result, achieved it is possible to abolish the accumulation of dust in the second dust collecting chamber less allowance treatment step, and that reduces the burden and trouble to the user. [0008] The invention described in claim 2 of the present invention, the first cleaner main body having an intake passage communicating with the first dust collecting chamber and the hollow tube, the attachment and removal of the hollow tube to the intake passage which was provided with a closing valve for opening and closing operation by the operation, closed at a first cleaner main body alone state in a state of removing the second cleaner main body equipped removably, the opening of the intake passage by the opening and closing valve is, it is assumed that the dust collecting chamber vacuum of the first vacuum cleaner body is maintained, a first since also the cleaner body alone becomes possible in a state of removing the second cleaner body, use it is possible to improve the usability from the enlargement of the condition. [0009] The invention described in claim 3 of the present invention, when the second of the cleaner body is connected

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to a first of the cleaner body via a hollow tube, a predetermined time, the first having a first cleaner body in which the electric blower is operated, the second dust collecting chamber can dust transfer into the first dust collecting chamber, it is possible to improve improve usability. [0010] The invention described in claim 4 of the present invention has provided a grip portion having an inclined portion at an end portion of the anti hollow tube connection side of the second cleaner main body, a first of the cleaner body than a second when using the cleaner body as a removable second cleaner, without directing the air inlet in a state of upright to cleaning surface, when performing the operation with the second of the cleaner body, an inlet in inclined naturally results can be easily be made parallel state close to the cleaning surface, the intake port formed in the hollow pipe in a single diameter, easily become that expansion of the opening areas can be achieved, in a comfortable position for the user cleaning can be provided, it can be improved to improve the operability.

[0011] Invention of claim 5, wherein of the present invention, which has hollow tube and a retractable, by overlapping the different hollow pipe having inner and outer diameters, it is assumed that the sliding operation is obtained, telescopically can be configured , it is possible to improve operability means that increased usage conditions. [0012] The invention described in claim 6 of the present invention has provided a check valve having a support portion on the side wall of the hollow tube hollow tube, following the air flow direction is changed by passage of said hollow tube open works allows arrangement in an intake passage in which the air flow stream is reversed, it is possible to improve the product properties can be realized dust leakage countermeasure in the intake passage having such effect. [0013] Invention of claim 7, wherein the present invention is within a radius of 10cm range than the volume center of the grip portion, which was equipped with a secondary battery for driving the second electric blower, said second cleaner and the weight center of gravity it shall be close to the grip portion of the main body, to grip the user, it is possible to reduce the burden on a user's wrist or the like by reducing the bending moment occurring at the gripping position and the weight center of gravity. [0014] Invention of claim 8, wherein the present invention includes: a first cleaner body having a first dust collection chamber for dust collecting dust sucked to the first electric blower which generates a suction air in communication with the suction unit, the operation a second cleaner body of a second electric blower and a second dust chamber has a grip portion of use, the result from the third electric blower and a third dust collecting chamber first cleaner body a charger for charging the said second of the cleaner body and having a hollow tube for removably connecting the charger, the hollow tube and the third dust collecting chamber and the second dust collecting chamber which was a configuration for communicating the, when used as a second cleaner of the second cleaner body is detached from the first of the cleaner body, even if the dust is temporarily housed inside the second dust collection chamber after cleaning completion, by returning attach the second cleaner main body in the charger, the third dust collecting chamber and communicated to it and the results provided in the charger, is sucked from the third dust collecting chamber and wherein the dust is assumed to be aggregated are transported, as a

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result, achieved is possible to abolish the capacity less the second accumulation process of dust in the dust collecting chamber, the burden and trouble to the user it can be reduced. [0015] Invention of claim 9, wherein of the present invention, the charger comprises a power transformer, the evacuation of the third electric blower those to apply to the power transformer, blowing the exhaust wind power transformer that provides an exothermic effect it shall shed, improve the cooling effect can be achieved the quality improvement in product performance at the same time.

[0016] Invention of claim 10, wherein of the present invention includes a structure for coupling the power transformer housing portion which includes an intake passage, the same charger third electric blower provided on the third dust collecting chamber formed in the battery charger by, it is assumed that shed blow the intake air to the power transformer that provides an exothermic effect, the cooling means is improved, thereby achieving a quality improvement in product performance at the same time. [0017] 【Example】 (Example 1) 1, FIG. 2 is a cross-sectional view of a vacuum cleaner according to a first embodiment of the present invention. 1 the second of the cleaner body unit 2 is detachably attached to the upper, provided with a suction unit 5 having a rotary brush 3 and the intake port 4 to raise scraped dust of the floor surface downward, emitting a suction air electric blower 6 is the first of the cleaner body 1 mounted. [0018] Referring to the electric blower 6 provided on the first of the cleaner body 1, a fan unit 7 for generating a suction airflow, and a power supply wire 9 for supplying electric power from the power supply battery 8 or power, it was collected those composed of a first dust collecting chamber 10 for storing dust. [0019] Next the vacuum cleaner body unit 2 first of the cleaner body 1 and a second implementing the configuration of the present invention will be described in detail. 13 is a hollow tube having an engaging portion 12 for detachably coupling the first cleaner engaging portion 11 provided above the main body 1, dust sucking therein passes It is made to it possible. 14 is the second of the cleaner body having a generally cylindrical grip portion 15 which is reduced in diameter for user grips during use. Further wherein the interior of the second of the cleaner body 14, the first of the cleaner body 1 and so as to allow the dust suction in similar second of the cleaner body 14 alone, the hollow tube 13 distal end and engaging switch the locking portion 12 is open such that the second inlet of the dust, it performs sequentially the second dust collecting chamber 16 the operation control of the first electric blower 7 and the first electric blower 7 which communicates 18 a power source and comprising a battery 19 and is disposed. [0020] Further then in the first of the cleaner body, the second of the cleaner body 14 engaging portion 11 upwardly for mounting detachably a provided, dust of the engaging portion 11 is the second of the cleaner body 14 hollow to form an internal as well as hollow tubes 13 which is can pass through, it was and is configured so as to communicate at the second of the cleaner body 14 attached. Further the engaging portion 11 is obtained by a structure obtained by allowing the passage of the dust are coupled by a first dust collecting chamber 10 both an intake passage 69 provided in the first of the cleaner body.

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[0021] In the produced electric vacuum cleaner as described above, when using the second of the cleaner body 14 as a first cleaner Second vacuum cleaner detached from the main body 1, temporarily dust inside the second dust collecting chamber 16 even manner is accommodated, after the cleaning completion, by returning attach the second cleaner body 14 to the first cleaner main body 1, and the first cleaner first dust collecting chamber 10 of the main body 1 the results are communicated by a first operating operating the cleaner body 1 dust second dust collecting chamber 16 is sucked transferred from the first dust collecting chamber 10, it is assumed that dust is aggregated being transported, as a result, achieved is possible to abolish the accumulation of dust in the second of the cleaner body 14 less allowance treatment step, it is possible to reduce the burden and trouble to the user. [0022] (Example 2) FIG 3 is a cross-sectional view of a vacuum cleaner according to a second embodiment of the present invention. The first second cleaner engaging portion 11 and the second dust collecting chamber of the body 14 (not shown) and the intake passage 69 in one end communicated with the cleaner main body 1, the second of the cleaner body 14 opened and closed by a mounting, the first cleaner body by forming an opening and closing valve 23 provided by the rotary shaft 22 is biased by the spring 21, in a state of removing the second of the cleaner body 14 equipped detachably in one single use state, the opening of the intake passage 24 is closed by the opening and closing valve 23, it is assumed that the vacuum degree of the first cleaner first dust collecting chamber 10 of the main body 1 is maintained, the second cleaner since it becomes possible solely using the first cleaner body in a state of removing the body 14, it is possible to improve the usability from the enlargement of the use conditions. [0023] (Example 3) FIG 4 is a sectional view showing the configuration of an electric vacuum cleaner of the third embodiment of the present invention. The during attachment and detachment of the two of the cleaner body 14, the distal portion 25 of the second cleaner body 14 to energize the intake passage 24 to the spring 21, the rear end portion of the rotary shaft 22 on-off valve 23 provided by the in conjunction with 26, a first cleaner part 27, which becomes conductive switching means or detecting means performs the operation control of the intake system 6 of the main body 1 by opening and closing operation of the on-off valve 23 is provided, the second of the cleaner body 14 during mounting, and performs a first suction operation of the vacuum cleaner main body 1 only time set arbitrarily. [0024] Thus, even if not appropriate to perform the first of the running operation cleaner body 1, the first second of the cleaner body unit 2 trims to the cleaner body 1 automatically recognizes, as a second vacuum cleaner use, the dust that has been temporarily stored in the second dust collecting chamber 16, was transferred to the first of the vacuum cleaner the first dust collecting chamber 10 of the main body 1 made shall be aggregated.

[0025] As a result, to confirm the captured amount of dust at any time the user is in a second cleaning, also without driving operation for the purpose of dust transport to the first vacuum cleaner the first dust collecting chamber 10 of the main body 1, to eliminate It becomes things can improve improve operability. [0026] (Example 4) FIG 5 is a sectional view showing a

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configuration of a second cleaner body unit according to the fourth embodiment of the present invention. With that the inclined portions 31 provided at the other end tip of the second cleaner main body 14, when used from the first of the cleaner body 1 and the second of the cleaner body 14 as removable second cleaner, cleaning without directing the air intake port 33 in an upright position to the surface 32, when performing an operation with the second of the cleaner body 14, a state nearly parallel to the cleaning surface 32 an inlet 33 in the inclined naturally results can be easily be, also in the intake port 33 which is formed of a hollow tube (13) in a single size, easy expansion of the aperture area is assumed that attained, can be provided to clean in a comfortable position for the user, to improve the operability can be improved. [0027] (Example 5) FIG 6 is a sectional view showing the hollow tube configuration in a fifth embodiment of the present invention. In the larger and smaller diameter of the hollow pipe 13 constitute a second cleaner main body 14, and to the relay, the holding part 45 to rotate is provided in the hollow tube 13 outer circumference is provided. The holding part 45 is constituted by the interference portion 46 and the rotary portion 47 and the threaded portion 48, the internal taper is pressed against turning in one direction, it is assumed that held fixed in close contact with the hollow tube 13 has been established, the hollow tube 13 which slides in the larger and smaller diameter relationship, are then adjusted in arbitrary length can be set to the optimum length, thereby improving the operability. [0028] (Example 6) 7 is a sectional view showing a first of the 6 second cleaner main body in the embodiment of the configuration of the present invention. In the second of the cleaner body 14 inside of the intake passage 41 formed in the hollow tube 13, by providing a check valve 43 having a rotary support member 42 cantilevered, air flow changes in said intake passage 41 and opening and closing operation so as to follow the direction, the air flow of the flow becomes configurable general intake passage to reverse, it is possible to improve marketability can be realized dust leakage countermeasure in general intake passage having such effect . [0029] (Example 7) 8, FIG. 9 is a sectional view showing a seventh configuration and moment change of the second of the cleaner body in the embodiment of the present invention. In operation grip part 15 formed on the second of the cleaner body 14, to set the longitudinal length and the center was calculated from half the dimension of the dimension in the thickness direction length 51 (volume center) of the grip portion 15, by was disposed a suction device 52 such as a weight parts (electric blower and a secondary battery) to a range within a radius of 10cm from the center 51, the weight center of gravity to the grip portion 15 of the second cleaner body 14 closer as the result, with respect to the grip of the user, it is possible to reduce the burden on the grip position and becomes that of reducing the resulting bending moment in weight centroid user's wrist or the like.

[0030] (Example 8) FIG 10 is a cross-sectional view showing a vacuum cleaner structure in the eighth embodiment of the present invention. A first electric blower 6 and the first dust collecting chamber 10 than to the secondary battery 8 to bind the suction portion 5 first and cleaner body 1 which gave the charging terminal 61, the charging terminal 61 a charger 63 having a terminal portion 62 which is connected, detachably to the second of the cleaner body 14 having a second

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cleaner body 14 is disposed a second inlet port and the second electric blower 17 in the rechargeable vacuum cleaner is provided, in addition to the first cleaner main body 1 and two dust collection chamber provided in the second of the cleaner body 14 and two electric blower to the charger 63, the third electric which the blower 64 and to form what will become the third dust collecting chamber 65. [0031] Moreover, the second cleaner with the body 14 can be stored fixed to the charger 63, the charger and the second dust collecting chamber 16 provided in the second cleaner main body 14 is detached from the first of the cleaner body 1 by the third dust collecting chamber 65 provided in 63 is configured to communicate, when it is used as a second cleaner of the second of the cleaner body 14 by removing from the first of the cleaner body 1, the dust first be temporarily housed inside the second dust collecting chamber 16, after the cleaning completion, by returning attach the second cleaner body 14 in the charger 63, the charger and the second dust collecting chamber 16 63 by communicating the third dust collecting chamber 65 provided in the dust in the second dust collecting chamber 16 is sucked from the third dust collecting chamber 65, dust is aggregated been transferred becomes ones, as a result, achieved is possible to abolish the accumulation of dust in the second of the cleaner body 14 less allowance treatment step, it is possible to reduce the burden and trouble to the user. [0032] (Example 9) FIG 10 is a cross-sectional view showing a vacuum cleaner structure of the ninth embodiment of the present invention. By the third electric blower of the exhaust passage 66 provided in the third dust collecting chamber 65 formed in the charging stand 63, and also communicates with the power transformer 67 receiving portion 68 which is provided in the charger 63, an exothermic effect a power transformer 67 that results, it is assumed that shed blow the exhaust air, thereby improving the cooling effect, it is possible to achieve a quality improvement in product performance at the same time. [0033] (Example 10) FIG 11 is a sectional view showing the configuration of an electric vacuum cleaner in a tenth embodiment of the present invention. With the structure for communicating the intake path 69 of the third electric blower provided on the third dust collecting chamber 65 formed in the battery charger 63, similarly to the power transformer 67 housing portion 68 which is provided in the charger 63, the heat generation a power transformer 67 which is an effect, it is assumed that shed blow the intake air, the cooling means is improved, thereby achieving a quality improvement in product performance at the same time.

[0034] Effect of the Invention According to the present invention, in an electric vacuum cleaner having a cleaner body provided with two suction function, it can be improved usability. BRIEF DESCRIPTION OF THE DRAWINGS Side cross-sectional view of an electric cleaner showing a first embodiment of the present invention; FIG FIG. 2 is a side cross-sectional view of the second of the cleaner body unit Sectional side view of a first cleaner body of a second embodiment of the present invention; FIG Third side cross-sectional view of the first of the cleaner body showing an embodiment of the present invention; FIG FIG. 5 is a side cross-sectional view of a second of the cleaner body unit showing a fourth embodiment of the present invention [6] The fifth side cross-sectional view of a second of the cleaner body unit showing an embodiment of the present

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invention [7] sixth side cross-sectional view of a second of the cleaner body showing an embodiment of the present invention [8] seventh side cross-sectional view of the grip the vicinity of the second of the cleaner body showing an embodiment of the present invention FIG. 9 is an explanatory view when holding the grip of the (a) the second of the cleaner body Another illustration of when (b) holding the grip portion of the second of the cleaner body 9 side cross-sectional view of the vacuum cleaner showing an embodiment of FIG. 10 of the present invention [11] The 10 side cross-sectional view of the vacuum cleaner showing an embodiment of the present invention FIG. 12 is a side cross-sectional view of a conventional vacuum cleaner Description of the code] 1 The first of the cleaner body 5 the suction part 7 the first electric blower 10 the first dust collecting chamber 13 hollow tube 14 Chapter 2 of the cleaner body 15 handful section 16 second dust collecting chamber 17 second electric blower

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CLAIMS JP2004089241

A first cleaner body having a first dust collection chamber for dust collecting dust sucked to the first electric blower which generates a suction air in communication with the suction unit, a second electric having a grip portion for operating comprising a second cleaner body of the blower and a second dust collecting chamber, a hollow tube is detachably connected to the said first of the cleaner body second cleaner body, wherein the hollow tube configuration and the vacuum cleaner for communicating the second dust collection chamber and the first dust chamber. Having an intake passage communicating with the first dust collecting chamber and the hollow tube to the first vacuum cleaner body, provided with a closing valve which opens and closes the mounting and removal operations of the hollow tube to the intake passage claims claim 1 vacuum cleaner described. When the second of the cleaner body is connected to a first of the cleaner body via a hollow tube, a predetermined time period, according to claim 1 or 2, first electric blower having a first cleaner body is operated vacuum cleaner described. The vacuum cleaner according to any one of claims 1 to 3 having a grip portion having an inclined portion at an end portion of the anti hollow tube connection side of the second cleaner body. The hollow tube is retractable and electric vacuum cleaner according to any one of claims 1 to 4. The vacuum cleaner according to any one of claims 1 to 5 in which a check valve having a support portion into the hollow tube to the sidewall of the hollow tube. Within a radius 10cm range than the volume center of the grip portion, the electric vacuum cleaner according to claim 4 equipped with a secondary battery for driving the second electric blower. A first cleaner body having a first dust collection chamber for dust collecting dust sucked to the first electric blower which generates a suction air in communication with the suction unit, a second electric having a grip portion for operating a second cleaner body of the blower and a second dust collecting chamber, and a third electric blower and a charger for charging a third of the first cleaner body consists

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dust collecting chamber, the second comprising a hollow tube for removably connecting the cleaner body and the battery charger, the electric vacuum cleaner wherein the hollow tube that is configured to communicate said third dust collecting chamber and the second dust chamber. Charger having a power transformer, an electric vacuum cleaner according to claim 8, wherein the exhaust of the third electric blower was set to apply to the power transformer. Charger having a power transformer, an electric vacuum cleaner according to claim 8, wherein the air flow through the hollow tube and to apply to said power transformer.

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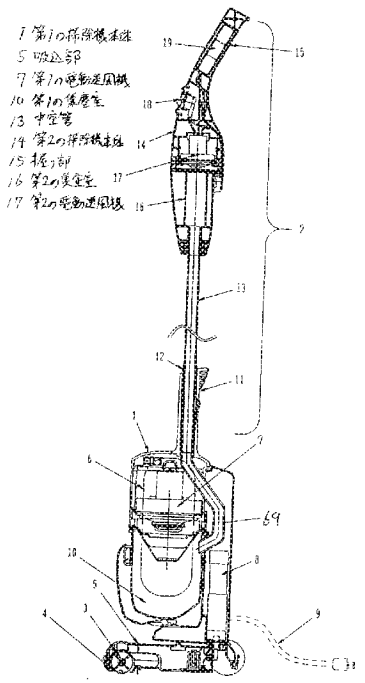
(54)【発明の名称】電気掃除機

(57)【要約】
【課題】２個の吸引機能を備えた掃除機本体を有する電気掃除機において、使用性を向上することを目的とするものである。
【解決手段】吸込部５と連通する吸引風を発する第１の電動送風機７と吸引した塵埃を集塵する第１の集塵室１０を有する第１の掃除機本体１と、操作用の握り部１５を有し第２の電動送風機１７と第２の集塵室１６からなる第２の掃除機本体１４と、前記第１の掃除機本体１と前記第２の掃除機本体１４を着脱自在に接続する中空管１３を備え、前記中空管１３は前記第１の集塵室１０と前記第２の集塵室１６を連通させる構成としたもので、許容量の少ない第２の集塵室１６での塵埃の蓄積と処理工程を廃止させることが達成でき、使用者への手間と負担を低減させるものとなる。
【選択図】　図１



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【特許請求の範囲】
【請求項１】
吸込部と連通する吸引風を発する第１の電動送風機と吸引した塵埃を集塵する第１の集塵室を有する第１の掃除機本体と、操作用の握り部を有し第２の電動送風機と第２の集塵室からなる第２の掃除機本体と、前記第１の掃除機本体と前記第２の掃除機本体を着脱自在に接続する中空管を備え、前記中空管は前記第１の集塵室と前記第２の集塵室を連通させる構成とした電気掃除機。
【請求項２】
第１の掃除機本体内に第１の集塵室と中空管を連通する吸気通路を有し、前記吸気通路への中空管の取付けおよび取り外し動作により開閉動作する開閉弁を設けた請求項１記載の電気掃除機。
【請求項３】
第２の掃除機本体が中空管を介して第１の掃除機本体に接続されているとき、所定時間、第１の掃除機本体が有する第１の電動送風機が運転する請求項１または２記載の電気掃除機。
【請求項４】
第２の掃除機本体の反中空管接続側の端部に傾斜部を有する握り部を設けた請求項１～３のいずれか１項に記載の電気掃除機。
【請求項５】
中空管は伸縮自在とした請求項１～４のいずれか１項に記載の電気掃除機。
【請求項６】
中空管内に前記中空管の側壁に支持部を有する逆止弁を設けた請求項１～５のいずれか１項に記載の電気掃除機。
【請求項７】
握り部の体積中心より半径１０ｃｍ範囲以内に、第２の電動送風機を駆動させる二次電池を搭載した請求項４記載の電気掃除機。
【請求項８】
吸込部と連通する吸引風を発する第１の電動送風機と吸引した塵埃を集塵する第１の集塵室を有する第１の掃除機本体と、操作用の握り部を有し第２の電動送風機と第２の集塵室からなる第２の掃除機本体と、第３の電動送風機と第３の集塵室からなり前記第１の掃除機本体を充電する充電器と、前記第２の掃除機本体と前記充電器を着脱自在に接続する中空管を備え、前記中空管は前記第２の集塵室と前記第３の集塵室を連通させる構成とした電気掃除機。
【請求項９】
充電器は電源トランスを有し、第３の電動送風機の排気を前記電源トランスにあてるようにした請求項８記載の電気掃除機。
【請求項１０】
充電器は電源トランスを有し、中空管内を通過する空気流を前記電源トランスにあてるようにした請求項８記載の電気掃除機。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】
本発明は、電気掃除機に関するものである。
【０００２】
【従来の技術】
従来、この種の電気掃除機は特開昭６２－１４２５３１号公報に示すような構成が一般的であった。以下、その構成について図面を参照して説明する。図１２において、１０１は掃除面の塵埃をかき上げる回転ブラシ１０７を内蔵した吸込部、１０２は内部に第１の電動送風機１０８を内蔵した第１の掃除機本体１０２で、前記吸込部１０１の後部に回動自在に軸支されている。１０３は前記第１の掃除機本体１０２の上部に着脱自在に取り付け

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られた第２の掃除機本体、１０４は第２の掃除機本体１０３上端部に操作用握り部１１２を形成した第２の掃除機本体１０４で、その内部に第２の吸気口１１０、フィルター１０９、第２の電動送風機１１１を内蔵している。使用する際には、第２の掃除機本体１０４を持ち第２の掃除機本体１０３を第１の掃除機本体１０２より取り外してセカンド掃除機として使用もでき、また、第１の掃除機本体１０２に取り付けたまま従来構成の掃除機として掃除することも可能としたものであった。

【０００３】

【発明が解決しようとする課題】

しかしながら上記従来の構成では、第２の掃除機本体１０３を第１の掃除機本体１０２より取り外してセカンド掃除機として使用した際、吸引した塵埃を第２の掃除機本体１０４内部の小スペースに蓄積収納することとなり、許容が少なく頻繁に塵埃処理をしなければならず、また第１の掃除機本体１０２の塵埃処理も加えることで、非常にその頻度が高くなり使用者の手間の増大となっていた。

【０００４】

本発明は上記課題を解決するもので、２個の吸引機能を備えた掃除機本体を有する電気掃除機において、使用性を向上することを目的とするものである。

【０００５】

【課題を解決するための手段】

上記課題を解決するために本発明では、吸込部と連通する吸引風を発する第１の電動送風機と吸引した塵埃を集塵する第１の集塵室を有する第１の掃除機本体と、操作用の握り部を有し第２の電動送風機と第２の集塵室からなる第２の掃除機本体と、前記第１の掃除機本体と前記第２の掃除機本体を着脱自在に接続する中空管を備え、前記中空管は前記第１の集塵室と前記第２の集塵室を連通させる構成としたものである。

【０００６】

これによって、第２の掃除機本体を第１の掃除機本体より取り外してセカンド掃除機として使用した際、塵埃を第２の掃除機本体内部に一時的に収納させても、掃除終了後に第２の掃除機本体を第１の本体に取りつけ戻すことにより、前記第１の掃除機本体の集塵室と連通させている結果、第１の掃除機本体の運転動作により第２の掃除機本体の集塵室より吸引され、前記塵埃が移送され集約されるものとなる。その結果、許容量の少ない第２の掃除機本体部での塵埃の蓄積と処理工程を廃止させることが達成でき、使用者への手間と負担を低減させるものとなる。

【０００７】

【発明の実施の形態】

本発明の請求項１記載の発明は、吸込部と連通する吸引風を発する第１の電動送風機と吸引した塵埃を集塵する第１の集塵室を有する第１の掃除機本体と、操作用の握り部を有し第２の電動送風機と第２の集塵室からなる第２の掃除機本体と、前記第１の掃除機本体と前記第２の掃除機本体を着脱自在に接続する中空管を備え、前記中空管は前記第１の集塵室と前記第２の集塵室を連通させる構成としたもので、第２の掃除機本体を第１の掃除機本体より取り外してセカンド掃除機として使用した際、塵埃を第２の集塵室に一時的に収納させても、掃除終了後に第２の掃除機本体を第１の掃除機本体に取りつけ戻すことにより、前記第１の集塵室と連通させている結果、第１の掃除機本体の運転動作により第２の集塵室より吸引され、前記塵埃が第１の集塵室へ移送され集約されるものとなる。その結果、許容量の少ない第２の集塵室での塵埃の蓄積と処理工程を廃止させることが達成でき、使用者への手間と負担を低減させるものとなる。

【０００８】

本発明の請求項２記載の発明は、第１の掃除機本体内に第１の集塵室と中空管を連通する吸気通路を有し、前記吸気通路への中空管の取付けおよび取り外し動作により開閉動作する開閉弁を設けたもので、着脱自在に具備した第２の掃除機本体を取り外した状態での第１の掃除機本体単独状態において、前記吸気通路の開口が開閉弁により閉鎖され、第１の掃除機本体の集塵室の真空度が保たれるものとなり、第２の掃除機本体を取り外した状態

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での第１の掃除機本体単独使用も可能となることから、使用条件の拡大より使用性を向上させることができる。

【０００９】

本発明の請求項３記載の発明は、第２の掃除機本体が中空管を介して第１の掃除機本体に接続されているとき、所定時間、第１の掃除機本体が有する第１の電動送風機が運転するもので、第２の集塵室から第１の集塵室への塵埃移送ができ、使用性を改善向上させることができる。

【００１０】

本発明の請求項４記載の発明は、第２の掃除機本体の反中空管接続側の端部に傾斜部を有する握り部を設けたもので、第１の掃除機本体より第２の掃除機本体を取り外しセカンド掃除機として使用する際、掃除面へ直立させた状態で吸気口を向けなくとも、第２の掃除機本体を持って操作を行なう際、自然に生ずる傾斜において吸気口を掃除面に対し平行に近い状態にすることが容易にでき、単一径における中空管で形成した吸気口においては、容易に開口面積の拡大がはかれるものとなり、使用者にとっては楽な姿勢での掃除が提供でき、操作性を改善し向上させることができる。

【００１１】

本発明の請求項５記載の発明は、中空管は伸縮自在としたもので、内外径の異なる中空パイプを重ねることにより、摺動動作が得られるものとなり、伸縮自在に構成させることができ、使用条件の拡大が図れ操作性を向上させることができる。

【００１２】

本発明の請求項６記載の発明は、中空管内に前記中空管の側壁に支持部を有する逆止弁を設けたもので、前記中空管内の通路にて変化する気流方向に追従して開閉動作し、気流の流れが逆転する吸気通路に構成可能となり、このような作用を有した吸気通路においてもゴミもれ対策が実現でき商品性を向上させることができる。

【００１３】

本発明の請求項７記載の発明は、握り部の体積中心より半径１０ｃｍ範囲以内に、第２の電動送風機を駆動させる二次電池を搭載したもので、その重量重心を前記第２の掃除機本体の握り部に近づくものとなり、使用者の握りに対し、握り位置と重量重心で生ずる曲げモーメントを低減することにより使用者の手首等にかかる負担を軽減することができる。

【００１４】

本発明の請求項８記載の発明は、吸込部と連通する吸引風を発する第１の電動送風機と吸引した塵埃を集塵する第１の集塵室を有する第１の掃除機本体と、操作用の握り部を有し第２の電動送風機と第２の集塵室からなる第２の掃除機本体と、第３の電動送風機と第３の集塵室からなり前記第１の掃除機本体を充電する充電器と、前記第２の掃除機本体と前記充電器を着脱自在に接続する中空管を備え、前記中空管は前記第２の集塵室と前記第３の集塵室を連通させる構成としたもので、第２の掃除機本体を第１の掃除機本体より取り外してセカンド掃除機として使用した際、塵埃を第２の集塵室内部に一時的に収納させても、掃除終了後、第２の掃除機本体を充電器に取りつけ戻すことにより、前記充電器に設けられた第３の集塵室と連通させている結果、前記第３の集塵室より吸引され、且つ前記塵埃が移送されて集約されるものとなり、その結果、許容量の少ない第２の集塵室での塵埃の蓄積と処理工程を廃止させることが達成でき、使用者への手間と負担を低減することができる。

【００１５】

本発明の請求項９記載の発明は、充電器は電源トランスを有し、第３の電動送風機の排気を前記電源トランスにあてるようにしたもので、発熱作用をもたらす電源トランスに排気風を吹き当てるものとなり、冷却作用を向上させ同時に製品性能の品質的向上を達成させることができる。

【００１６】

本発明の請求項１０記載の発明は、充電器に形成した第３の集塵室に設けた第３の電動送風機の吸気通路を、同じく充電器に具備した電源トランス収納部に連結する構成とするこ

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とにより、発熱作用をもたらす電源トランスに吸気風を吹き当てるものとなり、冷却手段を向上させ、同時に製品性能の品質的向上を達成させることができる。

【００１７】

【実施例】

（実施例１）

図１、図２は本発明の第１の実施例における電気掃除機の断面図である。１は上部に第２の掃除機本体ユニット２が着脱自在に設けられ、下方に床面の塵埃を掻き上げる回転ブラシ３と吸気口４を有する吸込部５を具備し、吸引風を発する電動送風機６が搭載された第１の掃除機本体１である。

【００１８】

前記第１の掃除機本体１に設けた電動送風機６について説明すると、吸引の気流を発生させるためのファン部７と、電源電池８または電源より電力を供給するための電源電線９と、収集した塵埃を蓄積する第１の集塵室１０とで構成されたものである。

【００１９】

次に本発明の構成を実施する第１の掃除機本体１ならびに第２の掃除機本体ユニット２について、詳しく説明する。１３は、第１の掃除機本体１の上方に設けられた係止部１１と着脱自在に結合するための係止部１２を有した中空管であり、その内部を吸引した塵埃が通過することを可能とさせている。１４は使用者が使用時に握るための小径化させた略円筒形の握り部１５を有する第２の掃除機本体である。また前記第２の掃除機本体１４の内部には、前記第１の掃除機本体１と同様第２の掃除機本体１４単体での塵埃吸引が可能となるように、中空管１３先端および係止部１２を塵埃の第２の吸気口となるように開口し、それに連通する順に第２の集塵室１６と第１の電動送風機７と前記第１の電動送風機７の運転制御を行うスイッチ１８と電源となる電池１９を配設させている。

【００２０】

また次に第１の掃除機本体において、前記第２の掃除機本体１４を着脱自在に取り付けるため上方に係止部１１を設け、この係止部１１は前記第２の掃除機本体１４の塵埃通過可能とさせた中空管１３と同様に内部を中空に形成し、且つ前記第２の掃除機本体１４取り付け時に連通するように構成させた。また前記係止部１１は第１の掃除機本体に設けた第１の集塵室１０とも吸気通路６９により連結され塵埃の通過を可能とさせた構成としたものである。

【００２１】

以上のように構成された電気掃除機において、第２の掃除機本体１４を第１の掃除機本体１より取り外してセカンド掃除機として使用した際、塵埃を第２の集塵室１６内部に一時的に収納させても、前記掃除終了後、第２の掃除機本体１４を第１の掃除機本体１に取りつけ戻すことにより、前記第１の掃除機本体１の第１の集塵室１０と連通させている結果、第１の掃除機本体１の運転動作により第２の集塵室１６の塵埃は第１の集塵室１０より吸引移送され、塵埃が移送されて集約されるものとなり、その結果、許容量の少ない第２の掃除機本体１４での塵埃の蓄積と処理工程を廃止させることが達成でき、使用者への手間と負担を低減することができる。

【００２２】

（実施例２）

図３は本発明の第２の実施例における電気掃除機の断面図である。第１の掃除機本体１の第２の掃除機本体１４の係止部１１および第２の集塵室（図示せず）と連通する吸気通路６９内一端に、第２の掃除機本体１４の装着により開閉し、バネ２１に附勢させ回転軸２２により設けた開閉弁２３を構成することにより、着脱自在に具備した第２の掃除機本体１４を取り外した状態での第１の掃除機本体１単独使用状態において、前記吸気通路２４の開口が開閉弁２３により閉鎖され、第１の掃除機本体１の第１の集塵室１０の真空度が保たれるものとなり、第２の掃除機本体１４を取り外した状態でも第１の掃除機本体の単独使用も可能となることから、使用条件の拡大より使用性を向上させることができる。

【００２３】

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（実施例３）
図４は本発明の第３の実施例における電気掃除機の構成を示す断面図である。第２の掃除機本体１４の着脱時に、前記第２の掃除機本体１４の先端部２５が吸気通路内２４をバネ２１に附勢させ、回転軸２２により設けられた開閉弁２３の後方一端部２６に連動し、前記開閉弁２３の開閉動作により第１の掃除機本体１の吸気装置６の運転制御を行なう導通切替え手段もしくは検知手段となる部品２７を設け、第２の掃除機本体１４の取付け時において、任意に設定した時間のみ第１の掃除機本体１の吸引運転を行なうものである。
【００２４】
これにより、第１の掃除機本体１の運転動作を適宜に行なわなくても、第１の掃除機本体１への第２の掃除機本体ユニット２の取付きを自動認識し、セカンド掃除機として使用し、第２の集塵室１６に一時的に収納させていた塵埃を、前記第１の掃除機本体１の第１の集塵室１０に移送し集約されるものとなる。
【００２５】
その結果、随時使用者がセカンド掃除で捕獲した塵埃量を確認し、また第１の掃除機本体１の第１の集塵室１０への塵埃移送を目的とした運転操作することなく、排除するものとなり、操作性を改善向上させることができる。
【００２６】
（実施例４）
図５は本発明の第４の実施例における第２の掃除機本体ユニットの構成を示す断面図である。第２の掃除機本体１４の他端先端に傾斜部３１を設けたものとすることにより、第１の掃除機本体１より第２の掃除機本体１４を取り外しセカンド掃除機として使用する際、掃除面３２へ直立させた状態で吸気口３３を向けなくとも、第２の掃除機本体１４を持って操作を行なう際、自然に生ずる傾斜において吸気口３３を掃除面３２に対し平行に近い状態にすることが容易にでき、また単一径における中空管１３で形成した吸気口３３においては、容易に開口面積の拡大がはかれるものとなり、使用者にとっては楽な姿勢での掃除が提供でき、操作性を改善し向上させることができる。
【００２７】
（実施例５）
図６は本発明の第５の実施例における中空管構成を示す断面図である。大小径の中空パイプ１３で第２の掃除機本体１４を構成し、且つその中継には、中空管１３外周に具備され回動する保持部品４５が設けられている。この保持部品４５は締まり部４６と回転部４７とネジ部４８とで構成され、一方向に回すと内部のテーパーが圧接し、中空管１３に密着して保持固定が確立されるものとなり、大小径の関係で摺動する中空管１３を、任意の長さで調整させられ、最適長さに設定することができ、操作性を向上させることができる。
【００２８】
（実施例６）
図７は本発明の第６の実施例における第２の掃除機本体の構成を示す断面図である。中空管１３で形成した第２の掃除機本体１４内部の吸気通路４１において、片持ちの回動支持体４２を有した逆止弁４３を設けることにより、前記吸気通路４１内の変化する気流方向に追従して開閉動作し、気流の流れが逆転する一般吸気通路に構成可能となり、このような作用を有した一般吸気通路においてもゴミもれ対策が実現でき商品性を向上させることができる。
【００２９】
（実施例７）
図８、図９は本発明の第７の実施例における第２の掃除機本体の構成及びモーメント変化を示す断面図である。第２の掃除機本体１４に形成した操作用握り部１５において、前記握り部１５の長手方向長さと厚み方向長さの寸法の１／２寸法より算出した中心５１（容積中心）を設定し、前記中心５１より半径１０ｃｍ以内の範囲に吸気装置５２等の重量部品（電動送風機や二次電池）を配設させたことにより、その重量重心を前記第２の掃除機本体１４の握り部１５に近づくものとなり、使用者の握りに対し、握り位置と重量重心で

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生ずる曲げモーメントを低減するものとなり使用者の手首等にかかる負担を軽減することができる。

【００３０】

（実施例８）

図１０は本発明の第８の実施例における電気掃除機の構成を示す断面図である。吸込部５を結合させ第１の電動送風機６及び第１の集塵室１０以外に二次電池８と充電用端子６１を持たせた第１の掃除機本体１と、前記充電用端子６１に接続される端子部６２を有した充電器６３と、第２の吸気口及び第２の電動送風機１７を配設した第２の掃除機本体１４を有した第２の掃除機本体１４を着脱自在に具備させた充電式掃除機において、前記充電器６３に第１の掃除機本体１及び第２の掃除機本体１４に設けた２つの集塵室並びに２つの電動送風機以外に、第３の電動送風機６４となるものと第３の集塵室６５となるものを形成させる。

【００３１】

また、第１の掃除機本体１より取り外された第２の掃除機本体１４が充電器６３に収納固定できるとともに、第２の掃除機本体１４に設けた第２の集塵室１６と充電器６３に設けた第３の集塵室６５とが連通する構成とすることにより、第２の掃除機本体１４を第１の掃除機本体１より取り外してセカンド掃除機として使用した際、塵埃を第２の集塵室１６内部に一時的に収納させても、前記掃除終了後、第２の掃除機本体１４を充電器６３に取りつけ戻すことにより、前記第２の集塵室１６と充電器６３に設けられた第３の集塵室６５とを連通させることで、前記第２の集塵室１６内の塵埃が前記第３の集塵室６５より吸引され、塵埃が移送されて集約されるものとなり、その結果、許容量の少ない第２の掃除機本体１４での塵埃の蓄積と処理工程を廃止させることが達成でき、使用者への手間と負担を低減することができる。

【００３２】

（実施例９）

図１０は本発明の第９の実施例における電気掃除機の構成を示す断面図である。充電台６３に形成した第３の集塵室６５に設けた第３の電動送風機の排気通路６６を、同じく充電器６３に具備した電源トランス６７収納部６８に連通させたことにより、発熱作用をもたらす電源トランス６７に、排気風を吹き当てるものとなり、冷却作用を向上させ、同時に製品性能の品質的向上を達成させることができる。

【００３３】

（実施例１０）

図１１は本発明の第１０の実施例における電気掃除機の構成を示す断面図である。充電器６３に形成した第３の集塵室６５に設けた第３の電動送風機の吸気通路６９を、同じく充電器６３に具備した電源トランス６７収納部６８に連通する構成とすることにより、発熱作用をもたらす電源トランス６７に、吸気風を吹き当てるものとなり、冷却手段を向上させ、同時に製品性能の品質的向上を達成させることができる。

【００３４】

【発明の効果】

本発明によれば、２個の吸引機能を備えた掃除機本体を有する電気掃除機において、使用性を向上できる。

【図面の簡単な説明】

【図１】本発明の第１の実施例を示す電気掃除機の側断面図

【図２】同第２の掃除機本体ユニットの側断面図

【図３】本発明の第２の実施例を示す第１の掃除機本体の側断面図

【図４】本発明の第３の実施例を示す第１の掃除機本体の側断面図

【図５】本発明の第４の実施例を示す第２の掃除機本体ユニットの側断面図

【図６】本発明の第５の実施例を示す第２の掃除機本体ユニットの側断面図

【図７】本発明の第６の実施例を示す第２の掃除機本体の側断面図

【図８】本発明の第７の実施例を示す第２の掃除機本体の握り部近傍の側断面図

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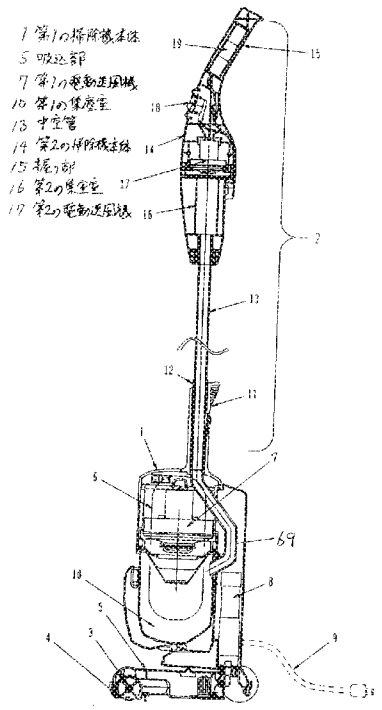
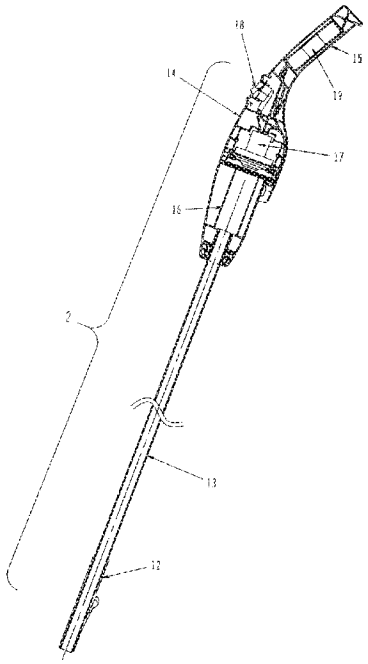
【図９】（ａ）同第２の掃除機本体の握り部を握ったときの説明図
（ｂ）同第２の掃除機本体の握り部を握ったときの他の説明図
【図１０】本発明の第９の実施例を示す電気掃除機の側断面図
【図１１】本発明の第１０の実施例を示す電気掃除機の側断面図
【図１２】従来の電気掃除機の側断面図
【符号の説明】
１　第１の掃除機本体
５　吸込部
７　第１の電動送風機
１０　第１の集塵室
１３　中空管
１４　第２の掃除機本体
１５　握り部
１６　第２の集塵室
１７　第２の電動送風機

【図１】



【図２】



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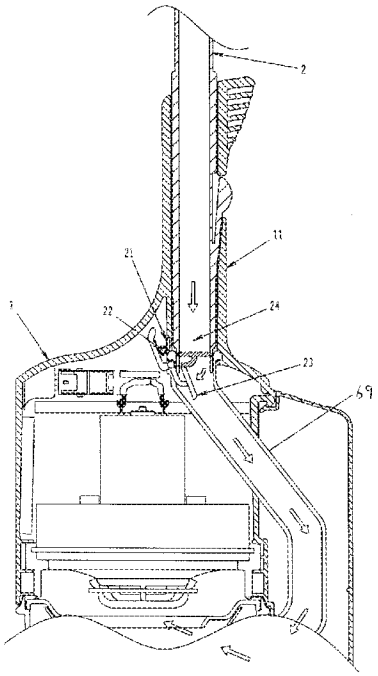
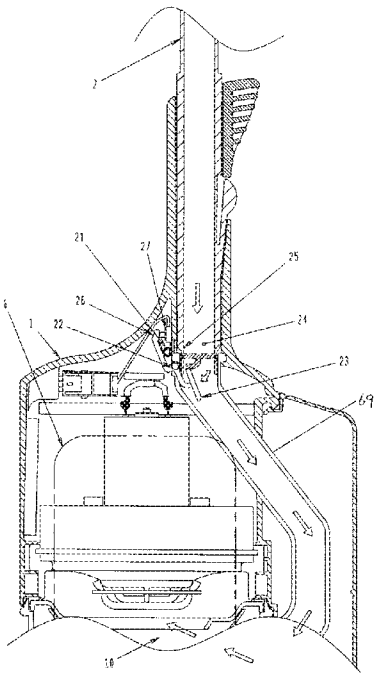
【図３】


2
11
21
22
24
23
69

【図４】


2
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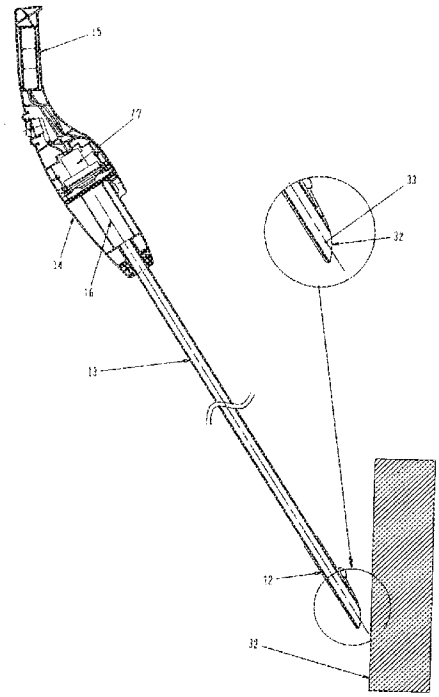
【図５】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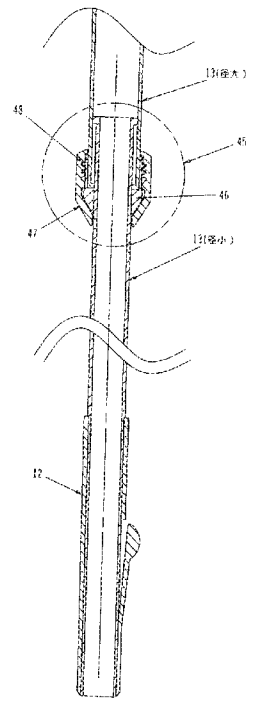
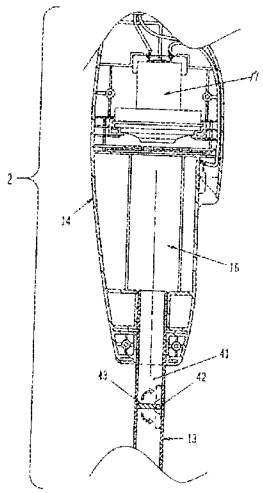
32

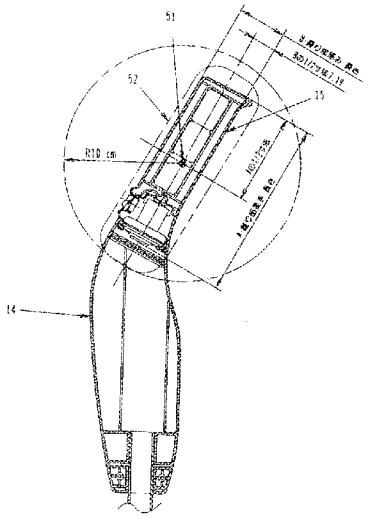
【図６】


13(径大)
48
45
46
47
13(径小)
12

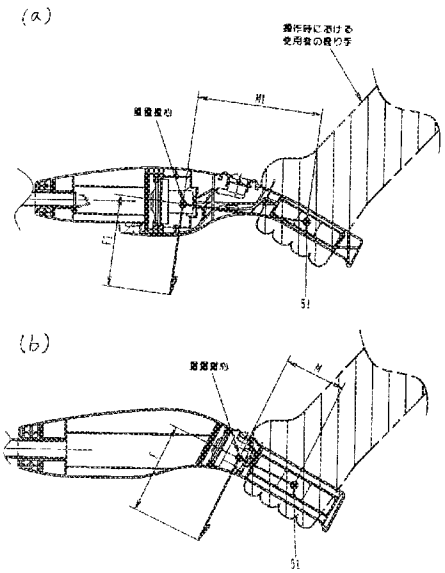
【図７】



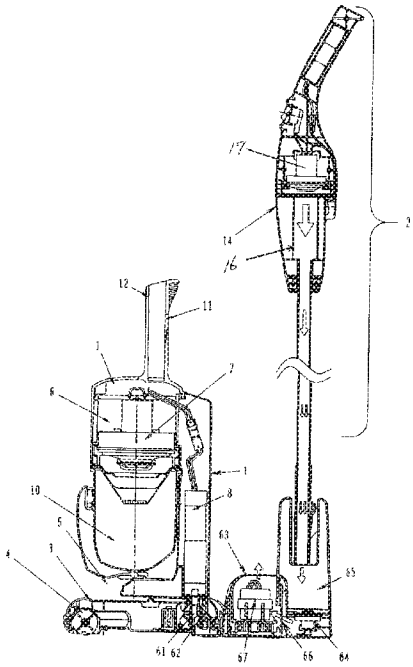
【図８】



【図９】



【図１０】



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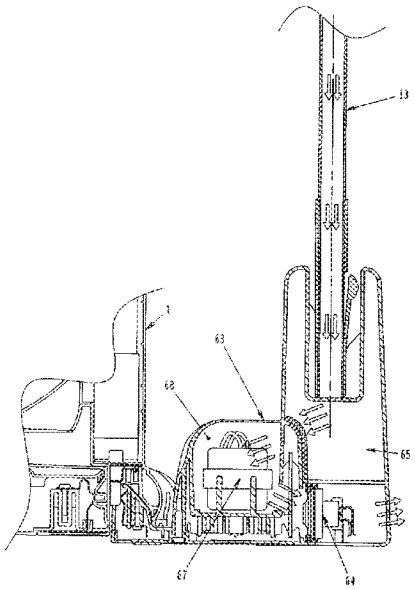
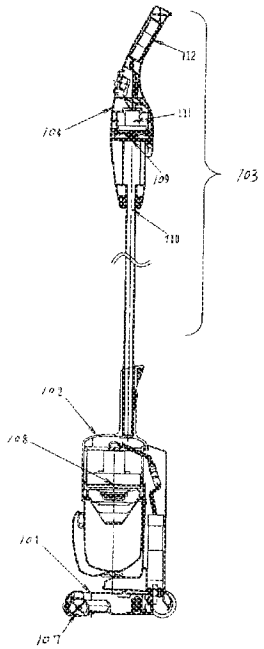
【図１１】



【図１２】



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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/269,430	Filing Date 09/19/2016	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $80 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $420 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	05/13/2019	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 11	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/JAMES ELLIOTT/
*** 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.	

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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Electronic Patent Application Fee Transmittal

Application Number:	15269430
Filing Date:	19-Sep-2016
Title of Invention:	VACUUM CLEANER
First Named Inventor/Applicant Name:	Stephen Robert DIMBYLOW
Filer:	Christopher Elmose Gloria/Nicole Jones
Attorney Docket Number:	424662105900

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
RCE- 1ST REQUEST	1801	1	1300	1300
		Total in USD ($)		**1300**

REMARKS

Applicant notes with appreciation the Examiner's indication of allowable subject matter in claims 6 and 7.

Claim 1 has been amended and claim 11 has been added. Support for the amendment and new claim is found, at least, in Figures 2 and 8 of the application. No new matter has been added.

With respect to any claim amendments and/or cancellations made herein, Applicant has not dedicated to the public or abandoned any unclaimed subject matter. Any amendments and/or cancellations have been made only in the interest of progressing the prosecution of this application and do not indicate that any amendments and/or cancellations are necessary for patentability. Moreover, Applicant has not acquiesced to any rejections and/or objections made by the Patent Office. Applicant reserves the right to pursue prosecution of any presently excluded claim embodiments in a future continuation and/or divisional application.

Claims 1-5 and 8-10 are rejected under 35 USC 102(a)(2) as being anticipated by Conrad (US-2016/0174787). These rejections are respectfully traversed.

Claim 1 has been amended to recite that at least part of the end portion moves across the longitudinal axis when the end portion moves from the closed configuration to the open configuration [for the removal of dirt from the dirt collector]." Conrad fails to disclose or suggest this feature.

Conrad discloses a dirt collection chamber 188 that has a bottom wall 216 that pivots open for emptying the dirt collection chamber 188. The bottom wall 216 is located to one side of the cyclone chamber 184 with respect to the longitudinal axis 248 of the cyclone chamber 184 and pivots away from the cyclone chamber. No part of the bottom wall 216 moves across the longitudinal axis 248 when the dirt collection chamber 188 is emptied. Thus, Conrad fails to

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disclose or suggest that "at least part of the end portion moves across the longitudinal axis when the end portion moves from the closed configuration to the open configuration [for the removal of dirt from the dirt collector]," as recited in amended claim 1.

Accordingly, the rejection of claim 1, as amended, should be withdrawn. The rejection of dependent claims 2-5 and 8-10 should be withdrawn at least for the respective dependencies of the claims.

If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, Applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. **42466-21059.00**. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: May 13, 2019

Respectfully submitted,

By: /christopher gloria/
Christopher Gloria
Registration No.: 71,907
MORRISON & FOERSTER LLP
1650 Tysons Blvd, Suite 400
McLean, Virginia 22102
(703) 760-7389

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Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	15/269,430	Filing Date	2016-09-19	Docket Number (if applicable)	42466-21059.00	Art Unit	3723
First Named Inventor	Stephen Robert DIMBYLOW			Examiner Name	Marc Carlson		

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 Deposit Account No 03-1952

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

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Signature of Registered U.S. Patent Practitioner			
Signature	/christopher gloria/	Date (YYYY-MM-DD)	2019-05-13
Name	Christopher Gloria	Registration Number	71907

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.

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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.

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Electronic Acknowledgement Receipt

EFS ID:	35994978
Application Number:	15269430
International Application Number:	
Confirmation Number:	6526
Title of Invention:	VACUUM CLEANER
First Named Inventor/Applicant Name:	Stephen Robert DIMBYLOW
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Nicole Jones
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662105900
Receipt Date:	13-MAY-2019
Filing Date:	19-SEP-2016
Time Stamp:	16:58:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1300
RAM confirmation Number	051419INTEFSW00004679031952
Deposit Account	
Authorized User	

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

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	RCE_42466-21059_00.pdf	697483 67c0d13508339acabcbcc5f156bdc1fff204e973	no	3
Warnings:					
Information:					
2		42466-21059_00_Amendment.pdf	109506 0e9c118083b146fd208828e031169daafc4044e2	yes	5

Multipart Description/PDF files in .zip description

Document Description	Start	End
Applicant Arguments/Remarks Made in an Amendment	4	5
Claims	2	3
Amendment Submitted/Entered with Filing of CPA/RCE	1	1

Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30614 4cbf15fee4327770bb5322d314e581d41900ea0c	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	837603		

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.

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A handheld vacuum cleaner comprising:

a handle by which the vacuum cleaner is supported during normal use;

a cyclonic separating unit having a longitudinal axis and a dirt collector at one end of the cyclonic separating unit, the cyclonic separating unit comprising an end portion having a closed configuration in which dirt is retained within the dirt collector by the end portion and an open configuration for the removal of dirt from the dirt collector, wherein at least part of the end portion moves across the longitudinal axis when the end portion moves from the closed configuration to the open configuration, wherein the handle has a pistol grip configuration in which the handle is inclined with respect to the cyclonic separating unit to form an angle of not less than 85 degrees and not greater than 140 degrees between a handle axis and the longitudinal axis of the cyclonic separating unit, and wherein the handle axis and the longitudinal axis intersect within the vacuum cleaner.

2. (Previously Presented) The handheld vacuum cleaner of claim 1, wherein the handle is inclined with respect to the cyclonic separating unit to form an angle of not less than 100 degrees and not greater than 125 degrees between the handle axis and the longitudinal axis of the cyclonic separating unit.

3. (Original) The handheld vacuum cleaner of claim 1, wherein the end portion comprises an end wall of the cyclonic separating unit.

4. (Original) The handheld vacuum cleaner of claim 1, wherein the end portion is arranged to pivot between the closed configuration and the open configuration.

5. (Original) The handheld vacuum cleaner of claim 1, wherein the cyclonic separating unit comprises a dirty air inlet through the end portion.

6. (Original) The handheld vacuum cleaner of claim 1, further comprising a connector and a cleaning tool connectable to the connector, wherein the cleaning tool is configured such that when the end portion is in the closed configuration and the cleaning tool is connected to the

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connector movement of the end portion from the closed configuration into the open configuration is prevented.

7. (Original) The handheld vacuum cleaner of claim 6, wherein the cleaning tool comprises a collar which abuts the end portion in order to hold the end portion in the closed configuration.

8. (Original) The handheld vacuum cleaner of claim 1, wherein the dirt collector is disposed forward of the handle.

9. (Original) The handheld vacuum cleaner of claim 1, wherein the longitudinal axis of the cyclonic separating unit extends in a plane which is located above the handle.

10. (Previously Presented) The handheld vacuum cleaner of claim 1, wherein the cyclonic separating unit comprises a cyclonic separator having an axis that defines the longitudinal axis of the cyclonic separating unit.

11. (New) The handheld vacuum cleaner of claim 1, wherein the handle axis and the longitudinal axis intersect at a location that is within the vacuum cleaner and spaced from the handle.

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Docket No. 42466-21059.00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Stephen Robert DIMBYLOW

Application No.: 15/269,430	Confirmation No.: 6526
Filed: September 19, 2016	Art Unit: 3723
For: VACUUM CLEANER	Examiner: Marc Carlson

AMENDMENT UNDER 37 C.F.R. 1.111

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

Dear Commissioner:

In response to the final Office Action dated February 11, 2019, and pursuant to action on the Request for Continued Examination filed concurrently herewith, please amend this application as follows.

Amendments to the Claims begin on page 2.

Remarks begin on page 4.

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	17	(US-20170079491-$ or US-20120079671-$ or US-20170079490-$ or US-20090144931-$ or US-20120266576-$ or US-20140137363-$ or US-20170071426-$ or US-20160113455-$ or US-20170079489-$ or US-20160174787-$).did. or (US-9826868-$ or US-8156609-$).did. or (CN-203724037-$ or WO-2007104238-$).did. or (CN-203724037-$ or JP-2004089241-$ or DE-102008044184-$).did.	US-PGPUB; USPAT; FPRS; DERWENT	ADJ	OFF	2019/02/06 13:57
L3	17	(US-20170079491-$ or US-20120079671-$ or US-20170079490-$ or US-20090144931-$ or US-20120266576-$ or US-20140137363-$ or US-20170071426-$ or US-20160113455-$ or US-20170079489-$ or US-20160174787-$).did. or (US-9826868-$ or US-8156609-$).did. or (CN-203724037-$ or WO-2007104238-$).did. or (CN-203724037-$ or JP-2004089241-$ or DE-102008044184-$).did.	US-PGPUB; USPAT; FPRS; DERWENT	ADJ	OFF	2019/02/06 13:57
L4	15	(US-20120079671-$ or US-20170079490-$ or US-20090144931-$ or US-20120266576-$ or US-20140137363-$ or US-20170071426-$ or US-20160113455-$ or US-20170079489-$).did. or (US-9826868-$ or US-8156609-$).did. or (CN-203724037-$ or WO-2007104238-$).did. or (CN-203724037-$ or JP-2004089241-$ or DE-102008044184-$).did.	US-PGPUB; USPAT; FPRS; DERWENT	ADJ	OFF	2019/02/06 13:57
L5	0	l3 not l4	USPAT	ADJ	OFF	2019/02/06 13:57
L6	2	l3 not l4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	OFF	2019/02/06 13:58
S2	4	"20120079671"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:17
S3	14	"203724037"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	ADJ	ON	2018/05/29 13:18

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			DERWENT			
S5	6	"2009144931"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:29
S6	3	"20090144931"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:30
S7	14	"203724037"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:31
S8	18	"2004089241"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:32
S9	6	"101449948"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:35
S10	10	"2007104238"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:37
S11	3	"20120266576"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:46
S12	0	"201400137363"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:50
S13	5	"20140137363"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:50
S14	3	"20170071426"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	ADJ	ON	2018/05/29 13:53

			DERWENT			
S15	4	"20160128527"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:55
S16	8	"20160113455"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 14:01
S18	5	"15269426"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 14:05
S19	51	"2484146"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 17:04
S20	0	"15283021"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 11:25
S21	5	"15269426"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 12:18
S22	21273	(A47L5/24 OR A47L5/28 OR A47L9/1616 OR A47L9/1625 OR A47L9/1641 OR A47L9/165 OR A47L9/1666 OR A47L9/1683 OR A47L9/24 OR A47L9/242).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 12:20
S23	7475	(A47L5/24 OR A47L5/28 OR A47L9/1616 OR A47L9/1625 OR A47L9/1641 OR A47L9/165 OR A47L9/1666 OR A47L9/1683 OR A47L9/24 OR A47L9/242).CPC. and (cyclon$4 or vort$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 12:20
S24	27	("20090144931" | "20120079671" | "20120266576" | "20140137363" | "20160113455" | "20170071426" | "20170079489" | "20170079491" | "9826868").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 12:55
S25	1	"15269420"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	ADJ	ON	2018/06/06 06:52

			DERWENT			
S26	521	(A47L9/00 OR A47L9/1616).CPC. and (cyclon$4 or vort$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 06:55
S27	42	"8156609"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 07:50
S28	62	"2508035"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 08:01
S29	51	"2484146"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 08:03
S30	1	"15269430"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2019/02/06 09:58
S32	5374	(A47L5/24 OR A47L5/28 OR A47L9/00 OR A47L9/1616 OR A47L9/1683 OR A47L9/24).CPC. AND (CYCLON$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2019/02/06 09:59

EAST Search History (Interference)

< This search history is empty>

2/ 6/ 2019 2:10:08 PM
C:\ Users\ mcarlson\ Documents\ EAST\ Workspaces\ 15269430.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/269,430	DIMBYLOW, Stephen Robert
	Examiner	Art Unit
	MARC CARLSON	3723

CPC - Searched*		
Symbol	Date	Examiner
A47L5/24; A47L5/28; A47L9/1616; A47L9/1625; A47L9/1641; A47L9/165; A47L9/1666; A47L9/1683	6/6/2018	M.C.
A47L9/00, A47L9/1616, A47L/24, A47L9/242	6/6/2018	M.C.

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
See East search history	6/6/2018	M.C.
Search updated	02/06/2019	M.C.

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/MARC CARLSON/ Primary Examiner.Art Unit 3723	

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/269,430	09/19/2016	Stephen Robert DIMBYLOW	424662105900	6526

25227 7590 02/11/2019

MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

EXAMINER	
CARLSON, MARC	

ART UNIT	PAPER NUMBER
3723	

NOTIFICATION DATE	DELIVERY MODE
02/11/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

EOfficeVA@mofo.com
PatentDocket@mofo.com
pair_mofo@firsttofile.com

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Office Action Summary	Application No. 15/269,430	Applicant(s) DIMBYLOW, Stephen Robert	
	Examiner MARC CARLSON	Art Unit 3723	AIA Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 11/27/2018.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-10 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-5 and 8-10 is/are rejected.

8) ☑ Claim(s) 6-7 is/are objected to.

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

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

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

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The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. The following is a Final Office Action on the merits.

Response to Amendment

2. Acknowledgement is made to the amendment received November 27, 2018, amending Claims 1, 2, and 10. No new claims were added by this amendment. No claims were cancelled by this amendment.

Claim Rejections - 35 USC § 102

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 –

(a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of

rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

3. As necessitated by amendment, Claims 1-5 and 8-10 are rejected under 35 U.S.C. 102(a)(2) as being anticipated by Conrad US 2016/0174787 (hereafter Conrad).

a. Regarding Amended Claim 1, Conrad anticipates:

A handheld vacuum cleaner (handvac 112) comprising:

a handle (handle 484) by which the vacuum cleaner is supported during normal use (Paragraph [0234]);

a cyclonic separating unit (cyclone bin assembly 160) having a longitudinal axis (axis 248a and labeled in attached Figure 96 below) and a dirt collector (dirt collection region 188) at one end of the cyclonic separating unit (Figure 96), the cyclonic separating unit comprising an end portion (labeled in attached Figure 96 below) having a closed configuration (door 228 closed) in which dirt is retained within the dirt collector by the end portion and an open configuration (door 228 opened) for the removal of dirt from the dirt collector, wherein the handle has a pistol grip configuration (shown in Figure 96) in which the handle is inclined with respect to the cyclonic separating unit to form an angle (labeled in attached Figure 96 below) of not less than 85 degrees and not greater than 140 degrees between ~~the~~ a handle axis (labeled in attached Figure 96 below) and the longitudinal axis of the cyclonic separating unit (approximately 108 degrees as shown in attached Figure 96 below), and wherein the handle axis and the longitudinal axis intersect within the vacuum cleaner (shown in attached Figure 96 below).

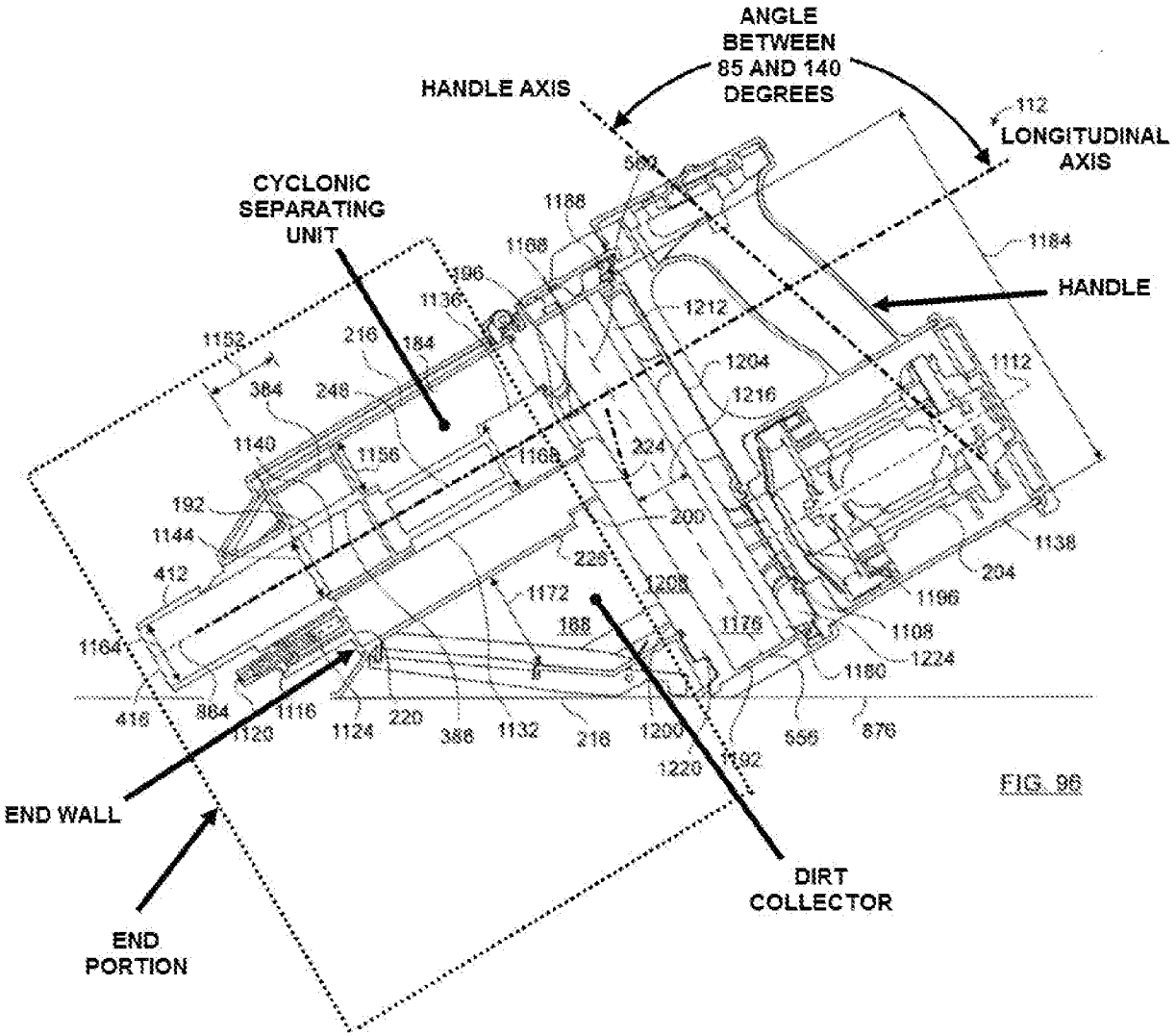

FIG. 96

b. Regarding <u>Amended</u> Claim 2, Conrad anticipates:

The handheld vacuum cleaner of claim 1, wherein the handle (handle 484) is inclined with respect to the cyclonic separating unit (cyclone bin assembly 160) to form an angle of not less than 100 degrees and not greater than 125 degrees (approximately 108 degrees as shown in attached Figure 96 below) between the handle <u>axis (labeled in attached Figure 96 below)</u> and the longitudinal axis (axis 248a and labeled in attached Figure 96 below) of the cyclonic separating unit.

c. Regarding Claim 3, Conrad anticipates:

The handheld vacuum cleaner of claim 1, wherein the end portion (labeled in attached Figure 96 above) comprises an end wall (labeled in attached Figure 96 above) of the cyclonic separating unit (cyclone bin assembly 160).

d. Regarding Claim 4, Conrad anticipates:

The handheld vacuum cleaner of claim 1, wherein the end portion (labeled in attached Figure 96 above) is arranged to pivot (door 228 of end portion is arranged to pivot about hinge axis 236, and optionally bottom wall 216 may be pivotally operable) between the closed configuration and the open configuration (Paragraph [0202]).

e. Regarding Claim 5, Conrad anticipates:

The handheld vacuum cleaner of claim 1, wherein the cyclonic separating unit (cyclone bin assembly 160) comprises a dirty air inlet (upstream end 416) through the end portion (shown in attached Figure 96 above – dirty air flows through the cyclone and into the pre-motor filter 1176).

f. Regarding Claim 8, Conrad anticipates:

The handheld vacuum cleaner of claim 1, wherein the dirt collector (dirt collection region 188) is disposed forward of the handle (handle 484)(shown in attached Figure 96 above).

g. Regarding Claim 9, Conrad anticipates:

The handheld vacuum cleaner of claim 1, wherein the longitudinal axis (axis 248a and labeled in attached Figure 96 below) of the cyclonic separating unit (cyclone bin assembly 160) extends in a plane which is located above the handle (extends above at least half of the handle as shown in Figure 96 above).

h. Regarding Claim 10, Conrad anticipates:

The handheld vacuum cleaner of claim 1, wherein the cyclonic separating unit (cyclone bin assembly 160) comprises a cyclonic ~~separation~~ separator (cyclone chamber 184) having an axis (axis 248a) that defines the longitudinal axis of the cyclonic separating unit (shown in attached Figure 96 above).

Allowable Subject Matter

4. Claims 6 and 7 are objected to as being dependent upon a rejected base claim but it would be allowable if rewritten to overcome the rejection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Rejections Under 35 U.S.C. 102 and 35 U.S.C. 103

Applicant's arguments with amendments, filed November 27, 2018, with respect to the 35 U.S.C. 102(a)(2) and 35 U.S.C. 103 rejections of Claims 1-10 under Krebs et al. US 2017/0071426 have been fully considered and are persuasive. Therefore, the rejections of Claims 1-10 have been withdrawn.

Applicant's arguments with respect to Claims 1-10 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Conclusion

6. 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).

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.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARC CARLSON whose telephone number is (571)272-9963. The examiner can normally be reached on Monday-Thursday 6:30am-3:30pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph 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.

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.

/MARC CARLSON/
Primary Examiner, Art Unit 3723

Notice of References Cited	Application/Control No. 15/269,430	Applicant(s)/Patent Under Reexamination DIMBYLOW, Stephen Robert	
	Examiner MARC CARLSON	Art Unit 3723	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20160174787-A1	06-2016	Conrad; Wayne Ernest	A47L5/24	15/329
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/269,430	Filing Date 09/19/2016	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $80 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $420 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	11/27/2018	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 10	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/DEBORAH A POLLARD/
*** 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.	

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.**

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

REMARKS

Applicant notes with appreciation the Examiner's indication of allowable subject matter in claim 7.

Claims 1, 2, and 10 have been amended. Support for the amendments is found, at least, in FIG. 2 of the application. No new matter has been added.

With respect to any claim amendments and/or cancellations made herein, Applicant has not dedicated to the public or abandoned any unclaimed subject matter. Any amendments and/or cancellations have been made only in the interest of progressing the prosecution of this application and do not indicate that any amendments and/or cancellations are necessary for patentability. Moreover, Applicant has not acquiesced to any rejections and/or objections made by the Patent Office. Applicant reserves the right to pursue prosecution of any presently excluded claim embodiments in a future continuation and/or divisional application.

Claims 1, 3-6, 8, and 10 are rejected under 35 USC 102(a)(2) as being anticipated by Krebs et al. (US-2017/0071426). Claims 2 and 9 are rejected under 35 USC 103 as being unpatentable over Krebs et al. These rejections are respectfully traversed.

As amended, claim 1 recites:

> a handle by which the vacuum cleaner is supported during normal use;
> a cyclonic separating unit having a longitudinal axis and a dirt collector at one end of the cyclonic separating unit, the cyclonic separating unit comprising an end portion having a closed configuration in which dirt is retained within the dirt collector by the end portion and an open configuration for the removal of dirt from the dirt collector, wherein the handle has a pistol grip configuration in which the handle is inclined with respect to the cyclonic separating unit to form an angle of not less than 85 degrees and not greater than 140 degrees between a handle axis and the longitudinal axis of the cyclonic separating unit, and wherein the handle axis and the longitudinal axis intersect within the vacuum cleaner.

The references fail to disclose or suggest "the handle has a pistol grip configuration in which the handle is inclined with respect to the cyclonic separating unit to form an angle of not less than 85 degrees and not greater than 140 degrees between a handle axis and the longitudinal

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axis of the cyclonic separating unit , and wherein the handle axis and the longitudinal axis intersect within the vacuum cleaner," as recited in amended claim 1. As indicated in the Examiner's annotation of FIG. 4 of Krebs on page 5 of the Action, the axes intersection that the Examiner relies upon as disclosing the 85-140 degree angle of claim 1 is located externally to the vacuum cleaner. Claim 1 has been amended to recite that the intersection between the handle axis and the longitudinal axis is "within the vacuum cleaner." Krebs fails to disclose or suggest this limitation.

Accordingly, the rejection of claim 1, as amended, should be withdrawn. The rejections of dependent claims 2-6 and 8-10 should be withdrawn at least for the respective dependencies of the claims.

If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, Applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. **42466-21059.00**. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: November 27, 2018

Respectfully submitted,

By: /christopher gloria/
Christopher Gloria
Registration No.: 71,907
MORRISON & FOERSTER LLP
1650 Tysons Blvd, Suite 400
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(703) 760-7389

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Electronic Acknowledgement Receipt

EFS ID:	34400921
Application Number:	15269430
International Application Number:	
Confirmation Number:	6526
Title of Invention:	VACUUM CLEANER
First Named Inventor/Applicant Name:	Stephen Robert DIMBYLOW
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Laura Razzuri
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662105900
Receipt Date:	27-NOV-2018
Filing Date:	19-SEP-2016
Time Stamp:	10:52:11
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		Amendment_424662105900.pdf	98116 7223c77546d1a5817a259c6446e9860ee4ce4d81	yes	5

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	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	3
	Applicant Arguments/Remarks Made in an Amendment	4	5
Warnings:			
Information:			
	Total Files Size (in bytes):	98116	

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.

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A handheld vacuum cleaner comprising:

a handle by which the vacuum cleaner is supported during normal use;

a cyclonic separating unit having a longitudinal axis and a dirt collector at one end of the cyclonic separating unit, the cyclonic separating unit comprising an end portion having a closed configuration in which dirt is retained within the dirt collector by the end portion and an open configuration for the removal of dirt from the dirt collector, wherein the handle has a pistol grip configuration in which the handle is inclined with respect to the cyclonic separating unit to form an angle of not less than 85 degrees and not greater than 140 degrees between ~~the~~ a handle axis and the longitudinal axis of the cyclonic separating unit , and wherein the handle axis and the longitudinal axis intersect within the vacuum cleaner.

2. (Currently Amended) The handheld vacuum cleaner of claim 1, wherein the handle is inclined with respect to the cyclonic separating unit to form an angle of not less than 100 degrees and not greater than 125 degrees between the handle axis and the longitudinal axis of the cyclonic separating unit.

3. (Original) The handheld vacuum cleaner of claim 1, wherein the end portion comprises an end wall of the cyclonic separating unit.

4. (Original) The handheld vacuum cleaner of claim 1, wherein the end portion is arranged to pivot between the closed configuration and the open configuration.

5. (Original) The handheld vacuum cleaner of claim 1, wherein the cyclonic separating unit comprises a dirty air inlet through the end portion.

6. (Original) The handheld vacuum cleaner of claim 1, further comprising a connector and a cleaning tool connectable to the connector, wherein the cleaning tool is configured such that when the end portion is in the closed configuration and the cleaning tool is connected to the connector movement of the end portion from the closed configuration into the open configuration is prevented.

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7. (Original) The handheld vacuum cleaner of claim 6, wherein the cleaning tool comprises a collar which abuts the end portion in order to hold the end portion in the closed configuration.

8. (Original) The handheld vacuum cleaner of claim 1, wherein the dirt collector is disposed forward of the handle.

9. (Original) The handheld vacuum cleaner of claim 1, wherein the longitudinal axis of the cyclonic separating unit extends in a plane which is located above the handle.

10. (Currently Amended) The handheld vacuum cleaner of claim 1, wherein the cyclonic separating unit comprises a cyclonic ~~separation~~ separator having an axis that defines the longitudinal axis of the cyclonic separating unit.

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Docket No. 42466-21059.00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Stephen Robert DIMBYLOW

Application No.: 15/269,430 | Confirmation No.: 6526

Filed: September 19, 2016 | Art Unit: 3723

For: VACUUM CLEANER | Examiner: M. Carlson

AMENDMENT UNDER 37 C.F.R. 1.111

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

Dear Commissioner:

In response to the non-final Office Action dated August 27, 2018, please amend this application as follows.

Amendments to the Claims begin on page 2.

Remarks begin on page 4.

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	1	"15269420"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 06:52
L3	521	(A47L9/00 OR A47L9/1616).CPC. and (cyclon$4 or vort$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 06:55
L5	42	"8156609"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 07:50
L6	62	"2508035"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 08:01
L7	51	"2484146"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 08:03
L8	1	"15269430"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/06 11:54
S2	4	"20120079671"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:17
S3	14	"203724037"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:18
S5	6	"2009144931"	US-PGPUB; USPAT;	ADJ	ON	2018/05/29 13:29

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			USOCR; FPRS; EPO; JPO; DERWENT			
S6	3	"20090144931"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:30
S7	14	"203724037"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:31
S8	18	"2004089241"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:32
S9	6	"101449948"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:35
S10	10	"2007104238"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:37
S11	3	"20120266576"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:46
S12	0	"201400137363"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:50
S13	5	"20140137363"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:50
S14	3	"20170071426"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 13:53
S15	4	"20160128527"	US-PGPUB; USPAT;	ADJ	ON	2018/05/29 13:55

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			USOCR; FPRS; EPO; JPO; DERWENT			
S16	8	"20160113455"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 14:01
S18	5	"15269426"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 14:05
S19	51	"2484146"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/05/29 17:04
S20	0	"15283021"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 11:25
S21	5	"15269426"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 12:18
S22	21273	(A47L5/24 OR A47L5/28 OR A47L9/1616 OR A47L9/1625 OR A47L9/1641 OR A47L9/165 OR A47L9/1666 OR A47L9/1683 OR A47L9/24 OR A47L9/242).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 12:20
S23	7475	(A47L5/24 OR A47L5/28 OR A47L9/1616 OR A47L9/1625 OR A47L9/1641 OR A47L9/165 OR A47L9/1666 OR A47L9/1683 OR A47L9/24 OR A47L9/242).CPC. and (cyclon$4 or vort$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 12:20
S24	27	("20090144931" | "20120079671" | "20120266576" | "20140137363" | "20160113455" | "20170071426" | "20170079489" | "20170079491" | "9826868").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	ADJ	ON	2018/06/05 12:55

EAST Search History (Interference)

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6/6/2018 12:51:51 PM
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15269430	DIMBYLOW, STEPHEN ROBERT
	Examiner	Art Unit
	MARC CARLSON	3723

CPC- SEARCHED		
Symbol	Date	Examiner
A47L5/24; A47L5/28; A47L9/1616; A47L9/1625; A47L9/1641; A47L9/165; A47L9/1666; A47L9/1683	6/6/2018	M.C.
A47L9/00, A47L9/1616, A47L/24, A47L9/242	6/6/2018	M.C.

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
See East search history	6/6/2018	M.C.

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/MARC CARLSON/ Primary Examiner.Art Unit 3723

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(12) 按照专利合作条约所公布的国际申请

(19) 世界知识产权组织
国 际 局

(43) 国际公布日
2007 年9 月20 日 (20.09.2007)

PCT

(10) 国际公布号
WO 2007/104238 A1

(51) 国际专利分类号:
A47L 5/24 (2006.01) A47L 9/16 (2006.01)
A47L 5/28 (2006.01)

(21) 国际申请号: PCT/CN2007/000733

(22) 国际申请日: 2007 年3 月7 日 (07.03.2007)

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(81) 指定国 (除另有指明, 要求每一种可提供的国家保护): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW。

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根据细则4.17的声明:
— 关于申请人有权申请并被授予专利(细则4.17(ii))

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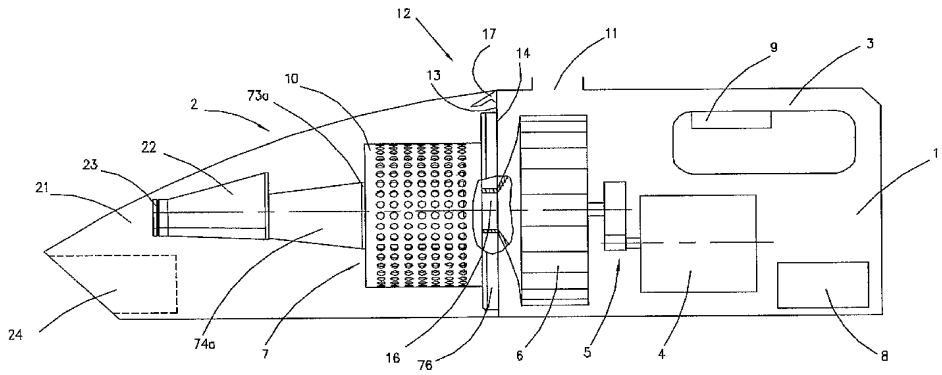
(54) **Title:** PORTABLE CLEANER

(54) **发明名称:** 便携式吸尘器



(57) **Abstract:** A portable cleaner includes a case (1), a dust collecting box (2) which can detachably connected to the said case, a handle which is fixed on the said case, a motor which is contained in the said case, a fan which is driven by the said motor and a power supply device which is electrically connected to the said motor by a switch. A cyclone device is fixed in the said dust collecting box. The said cyclone device includes at least two coniform separating parts set abreast. With the separating parts set abreast, for the same amount of dust, further smaller dust can be absorbed effectively, so that it can prevent the dust from leaking and improve the dust catching efficiency of the cleaner.

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— 关于申请人有权要求在先申请的优先权(细则4.17(iii))
— 发明人资格(细则4.17(iv))

本国际公布:
— 包括国际检索报告。

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(57) 摘要:

一种便携式吸尘器，包括壳体(1)、可拆装地连接到所述壳体的集尘盒(2)、设于所述壳体上的手柄、容纳于所述壳体中的电机、由所述电机驱动的风扇，以及通过开关与所述电机电连接的供电装置，所述集尘盒内设有旋风分离装置。所述旋风分离装置包括至少两个并列设置的圆锥形分离部。由于采用了并列设置的灰尘分离部，在同样的灰尘收集量的情况下，更细微的灰尘能够被有效地吸收，从而不会产生灰尘外泄的情况，提高了吸尘器的除尘效率。

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便携式吸尘器

技术领域

本发明涉及一种便携式吸尘器，特别是一种具有旋风式灰尘分离装置的便携式吸尘器。

背景技术

目前，市场上有各种各样的便携式吸尘器。便携式吸尘器以其方便轻巧而广为家庭除尘所应用，但现有的吸尘及滤尘装置使用不便，成本高，不能满足消费者的需求。比如，中国发明专利公开第 CN1626025A 号揭示了一种灰尘分离装置，通过设置包括褶状物形成的过滤器和杯形滤网的高效微粒空气过滤器实现灰尘的高效分离，集尘箱内壁形成旋风分离结构，将吸尘器吸入的脏空气初步分离，但这种分离装置包括了多个构件，结构复杂，而且需要经常清洗，使用时间长的话，褶状物容易失效。再比如，中国实用新型专利公告第 CN2631412Y 号揭示了一种二次旋风吸尘器，包括尘杯、旋风杯，旋风杯设于尘杯中，在旋风杯与尘杯之间设有旋风杯罩，从而尘杯与尘杯架之间形成螺旋风道，旋风杯与旋风杯罩之间也形成螺旋风道，这种分离装置的集尘杯中，灰尘混杂在一起，容易造成旋风分离装置除尘效力的降低。

发明内容

为了克服上述不足和缺点，本发明提供一种结构简单，灰尘分离效率更高的便携式吸尘器。

本发明的技术方案是：一种便携式吸尘器，包括壳体，可拆装的连接到所述壳体的集尘盒，设于所述壳体及集尘盒二者之一上的手柄，容纳于所述壳体中的电机，由所述电机驱动的风扇，以及通过开关与所述电机电连接的供电装置，所述集尘盒内设有旋风分离装置，其特征在于，所述旋风分离装置包括灰尘空气混合物入口、灰尘和碎屑的出口、至少两个并列设置的圆锥形分离部、以及与所述风扇连通的空气出口。

特别的，所述旋风分离装置包括与所述锥形分离部相连的圆柱形分离部，所述灰尘空气混合物入口沿所述圆柱形分离部切向设置；所述入口外设有滤网；所述集尘盒包括第一灰尘容室和第二灰尘容室，所述灰尘和碎屑的出口设于所述第二灰尘容室内；所述第二灰尘容室包括可拆装的密封盖；所述第

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二灰尘容室设于所述第一灰尘容室内；所述圆锥形分离部基本上相互平行设置；所述旋风分离装置的入口位于所述圆柱形分离部的相同的一侧；所述旋风分离装置的入口也可以位于所述圆柱形分离部的相对的两侧；所述旋风分离装置由塑料材料构成；所述供电装置可以是电池组或者交流电。

由于采用了并列设置的灰尘分离部，在同样的灰尘收集量的情况下，更细微的灰尘能够被有效的吸收，从而不会产生灰尘外泄的情况，提高了吸尘器的滤尘效率。同时，灰尘分离部的入口外围设有滤网，初步分离吸尘器吸入的大的灰尘颗粒，使旋风分离装置仅担负小的灰尘颗粒的过滤工作，实现了不同尺寸的灰尘颗粒都能够被有效分离。特别的，小的灰尘颗粒和大的灰尘颗粒分在不同的灰尘容室内容纳，容易清理，操作方便。

附图说明

图 1 是本发明便携式吸尘器的侧剖示意图；

图 2 是本发明中旋风分离装置的一种实施例的侧面示意图；

图 3 是图 2 中所示旋风分离装置的俯视示意图；

图 4 是图 2 中所示旋风分离装置的右视示意图；

图 5 是本发明中旋风分离装置的另一种实施例的侧面示意图；

图 6 是图 5 中所示旋风分离装置的俯视示意图；

图 7 是图 5 中所示旋风分离装置的右视示意图；

图 8 是本发明中旋风分离装置的另一种实施例的侧剖示意图。

其中，

1 壳体	2 集尘盒	3 手柄
4 电机	5 传动机构	6 风扇
7 旋风分离装置	8 供电装置	9 开关
10 滤网	11 排气口	12 连接装置
13 第一连接壁	14 第二连接壁	15 开口
16 接收口	17 卡扣装置	21 灰尘容室
22 灰尘容室	23 密封盖	24 灰尘入口
71a 出口	71b 出口	72a 入口
72b 入口	73a 圆柱形分离部	73b 圆柱形分离部
74a 圆锥形分离部	74b 圆锥形分离部	75a 空气出口

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75b 空气出口 76 连接部

具体实施方式

下面结合附图和具体的实施例对本发明进行进一步详细说明。

参见附图 1，本发明揭示了一种便携式吸尘器。本发明的优选实施例中，便携式吸尘器包括壳体 1，可拆装的附着到壳体 1 上的集尘盒 2，设于壳体 1 上的手柄 3，容纳于壳体 1 中的电机 4，由电机 4 驱动的风扇 6，以及通过开关 9 与电机 4 电连接的供电装置 8。集尘盒 2 内设有旋风分离装置 7 用于收集和分离微小的灰尘颗粒。

通常，便携式吸尘器的风扇 6 通过传动机构 5 由电机 4 驱动，为电机 4 提供电能的供电装置 8 可以是电池组或者交流电。电池组是可充电的，能够反复利用。优选的，本发明采用电池组作为供电装置 8，该供电装置 8 设于吸尘器的壳体 1 中。

吸尘器的手柄 3 可以设于壳体 1 上，也可以设于集尘盒 2 上。

壳体 1 上设有排气口 11，用于排出由风扇 6 产生的气流。壳体 1 与集尘盒 2 通过连接装置 12 相连。通常，连接装置 12 包括设于集尘盒 2 的第一连接壁 13、设于壳体 1 的第二连接壁 14、以及卡扣装置 17。通过卡扣装置 17，第一连接壁 13 与第二连接壁 14 相接，从而将集尘盒 2 连接到壳体 1 上。壳体 1 面向集尘盒 2 的一侧设有接收口 16，旋风分离装置 7 通过该接收口 16 与风扇 6 连通。

参见附图 2~7，旋风分离装置 7 包括灰尘空气混合物入口 72a，72b，灰尘和碎屑的出口 71a，71b，至少两个并列设置的圆锥形分离部 74a，74b，以及与所述风扇 6 连通的空气出口 75a，75b。通过连接部 76，旋风分离装置 7 的空气出口 75a，75b 与壳体 1 上设置的接收口 16 相连通。根据集尘盒 2 的尺寸的不同，也可以设置多个并列的圆锥形分离部以提高吸尘器的除尘效率。由于采用了并列设置的灰尘分离部，在同样的灰尘收集量的情况下，更细微的灰尘能够被有效的吸收，从而不会产生灰尘外泄的情况，提高了吸尘器的除尘效率。

旋风分离装置 7 还包括与圆锥形分离部 74a，74b 相连的圆柱形分离部 73a,73b，灰尘空气混合物入口 72a，72b 沿圆柱形分离部 73a，73b 切向设置。灰尘空气混合物被吸入圆柱形分离部 73a，73b 后，形成螺旋气流，在离心

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力的作用下，灰尘微粒被从气流中分离出来并且从灰尘和碎屑的出口 71a，71b 跑出来，落入集尘盒 2 中。干净的空气沿着箭头 A 所指的方向从空气出口 75a，75b 中流出流向电机 4 驱动的风扇 6。

参见附图 2~4，本发明的旋风分离装置 7 的一个优选实施例中，旋风分离装置 7 的入口 72a，72b 位于圆柱形分离部 73a，73b 的相同的一侧。灰尘空气穿过滤网 10 后沿切向由入口 72a，72b 进入圆柱形分离部 73a，73b 中。

参见附图 5~7，本发明的旋风分离装置 7 的另一个实施例中，旋风分离装置 7 的入口 72a，72b 分别位于圆柱形分离部 73a，73b 的相对的两侧。

吸尘器的集尘盒 2 包括第一灰尘容室 21 和第二灰尘容室 22，其前部设有灰尘入口 24，用于收集和引导灰尘和空气的混合物。合适的附件可以连接到灰尘入口 24，以便在不同的场合下进行清理工作。当吸尘器工作时，风扇 6 从排气口 11 排出空气，在容纳风扇 6 的壳体 1 内产生相对于大气压为负压的气压，使灰尘空气的混合物通过灰尘入口 24 进入集尘盒 2。集尘盒 2 的剖面形状基本上呈“D”形，灰尘和空气的混合物被吸入后形成螺旋气流，流向设于集尘盒 2 内的旋风分离装置 7，大的碎屑在第一灰尘容室 21 内落下堆积。同时，旋风分离装置 7 的入口 72a，72b 外围设有滤网 10，初步分离吸尘器吸入的大的灰尘颗粒，旋风分离装置 7 仅担负小的灰尘颗粒的过滤工作，从而，不同尺寸的灰尘颗粒都能够被有效分离。滤网 10 上设有多个通孔，细小的灰尘颗粒会从通孔中穿过进入旋风分离装置 7 的入口 72a，72b。

本发明的优选实施例中，灰尘和碎屑的出口 71a，71b 设于第二灰尘容室 22 内。参见图 1，第二灰尘容室 22 可单独拆卸，包括可拆装的密封盖 23，用于将收集起来的细小的灰尘微粒密封于第二灰尘容室 22 内，从而灰尘微粒不会混入第一灰尘容室 21 中，避免了旋风分离装置 7 再次分离的情况的发生。本领域技术人员容易想到的是，第二灰尘容室 22 不仅可以设于第一灰尘容室 21 内，也可以设于第一灰尘容室 21 之外。参见图 7，第二灰尘容室 22 设于第一灰尘容室 21 之外。第一灰尘容室 21 上设有开口 15，旋风分离装置 7 的圆锥形分离部 74a，74b 的端部设有连接部，灰尘和碎屑的出口 71a，71b 自开口 15 延伸至第二灰尘容室 22 中，连接部可将第二灰尘容室 22 相对密封。当需要清理集尘盒 2 时，将集尘盒 2 整个的从壳体 1 上拆下来，就可以同时清理第一灰尘容室 21 和第二灰尘容室 22。同时，小的灰尘颗粒

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和大的灰尘颗粒分在不同的灰尘容室内容纳，可以分别清理，操作方便。

本发明的优选实施例中，圆锥形分离部 74a，74b 基本上相互平行设置，空间尺寸允许的情况下，也可以相互成一定的角度设置。

为了方便操作者观察集尘盒 2 内的灰尘收集状况，优选的，集尘盒 2 以及旋风分离装置 7 可以由透明的材料构成，最好是轻的塑料材料构成。这样，整个吸尘器的重量不会因为旋风分离装置 7 的设置而增加，操作者操作方便舒适。

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权 利 要 求

1. 一种便携式吸尘器，包括壳体（1），可拆装的连接到所述壳体（1）的集尘盒（2），设于所述壳体（1）及集尘盒（2）二者之一上的手柄（3），容纳于所述壳体（1）中的电机（4），由所述电机（4）驱动的风扇（6），以及通过开关（9）与所述电机（4）电连接的供电装置（8），所述集尘盒（2）内设有旋风分离装置（7），其特征在于，所述旋风分离装置（7）包括灰尘空气混合物入口（72a,72b），灰尘和碎屑的出口（71a,71b），至少两个并列设置的圆锥形分离部（74a,74b），以及与所述风扇（6）连通的空气出口（75a,75b）。
2. 根据权利要求 1 所述的便携式吸尘器，其特征在于，所述旋风分离装置（7）包括与所述圆锥形分离部（74a,74b）相连的圆柱形分离部（73a,73b），所述灰尘空气混合物入口（72a,72b）沿所述圆柱形分离部（73a,73b）切向设置。
3. 根据权利要求 2 所述的便携式吸尘器，其特征在于，所述入口（72a,72b）外设有滤网（10）。
4. 根据权利要求 3 所述的便携式吸尘器，其特征在于，所述集尘盒（2）包括第一灰尘容室（21）和第二灰尘容室（22），所述灰尘和碎屑的出口（71a,71b）设于所述第二灰尘容室（22）内。
5. 根据权利要求 4 所述的便携式吸尘器，其特征在于，所述第二灰尘容室（22）包括可拆装的密封盖（23）。
6. 根据权利要求 5 所述的便携式吸尘器，其特征在于，所述第二灰尘容室（22）设于所述第一灰尘容室（21）内。
7. 根据权利要求 1 所述的便携式吸尘器，其特征在于，所述圆锥形分离部（74a,74b）基本上相互平行设置。
8. 根据权利要求 2 至 7 任意一项所述的便携式吸尘器，其特征在于，所述旋风分离装置（7）的入口（72a,72b）位于所述圆柱形分离部（73a,73b）的相同的一侧。
9. 根据权利要求 2 至 7 任意一项所述的便携式吸尘器，其特征在于，所述旋风分离装置（7）的入口（72）位于所述圆柱形分离部（73a,73b）的相对的两侧。
10. 根据权利要求 2 至 7 任意一项所述的便携式吸尘器，其特征在于，所述旋风分离装置（7）由塑料材料构成。

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图1

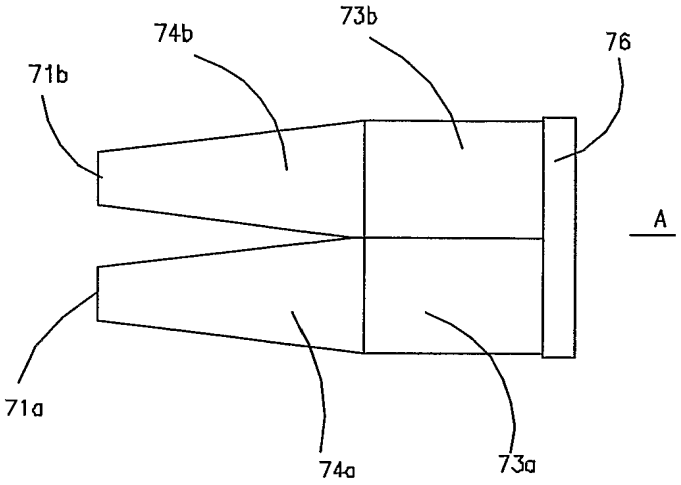

图2

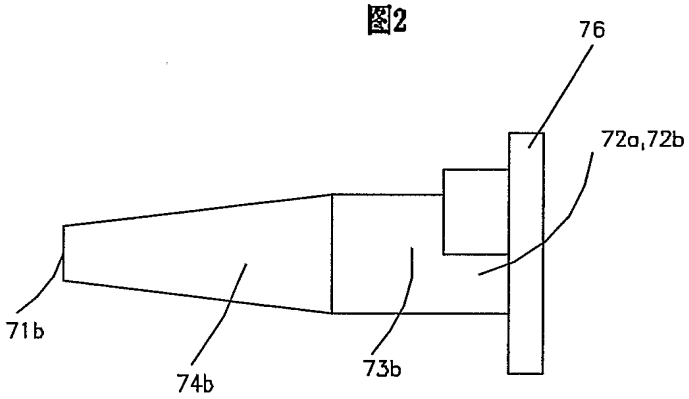

图3

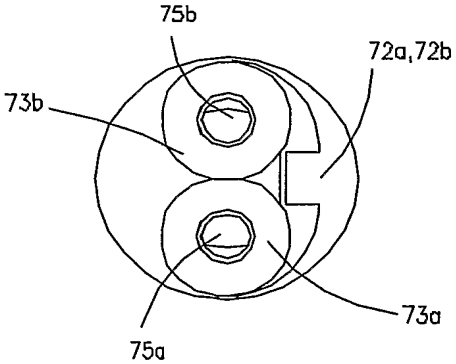

图4

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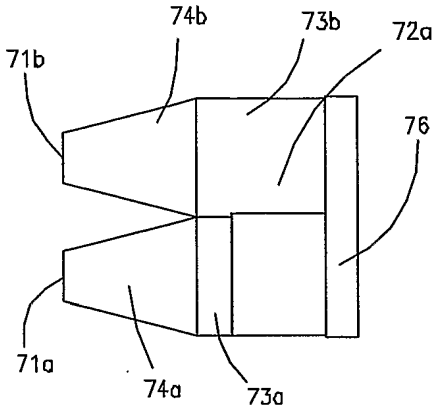

图5

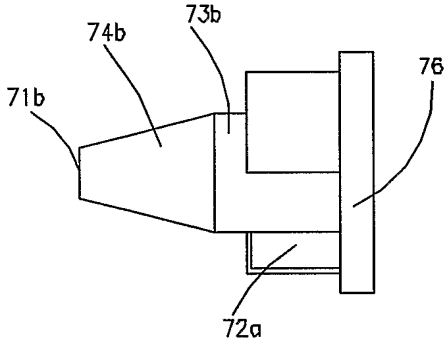

图6

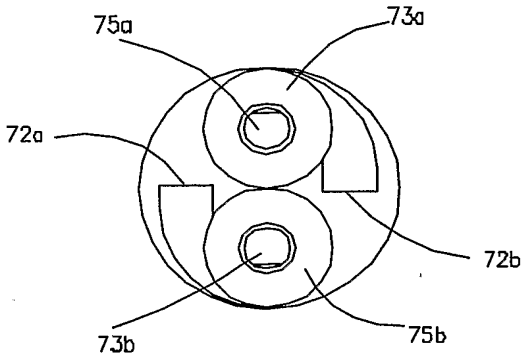

图7

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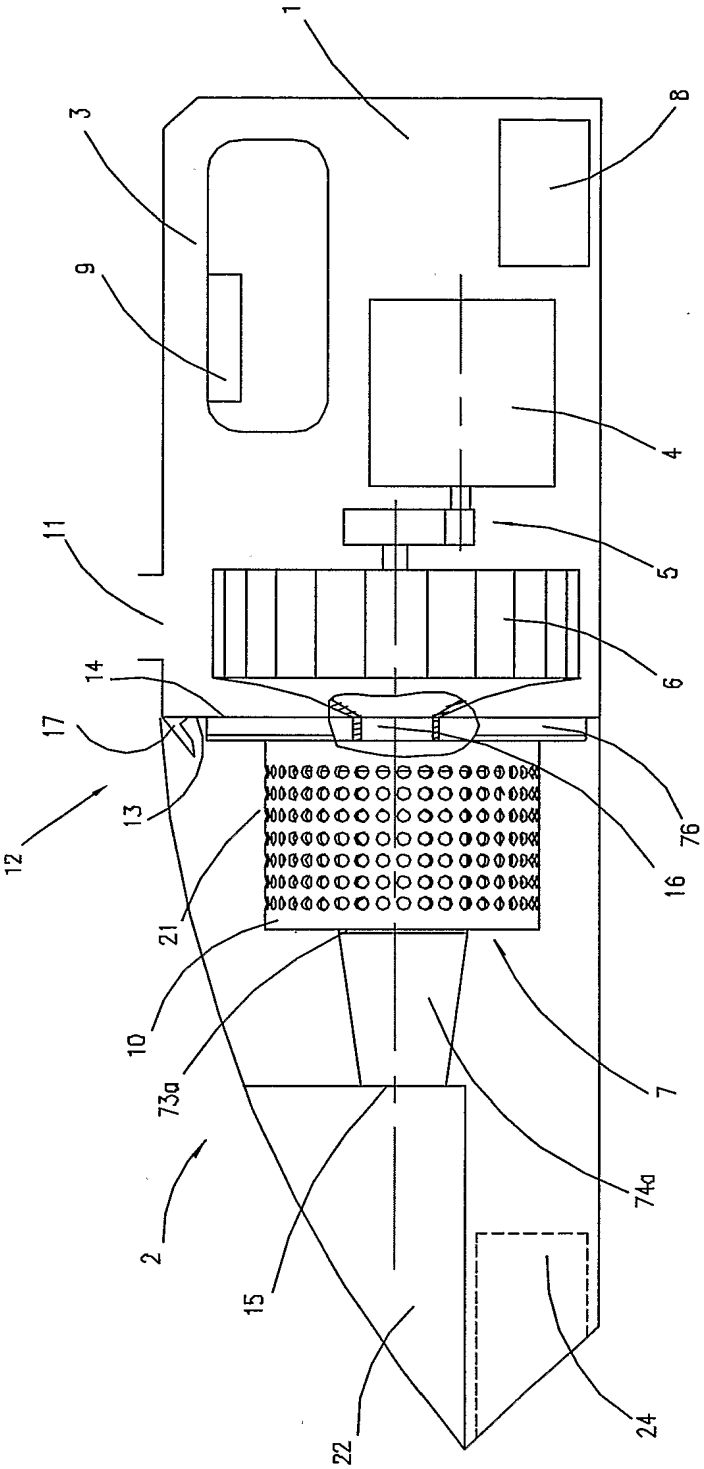

图8

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2007/000733

A. CLASSIFICATION OF SUBJECT MATTER

SEE EXTRA SHEET

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)

IPC: A47L5, A47L9, B01D45, B01D46, B04B3, B04B5, B04B7, B04C3, B04C5, B04C7

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 practicable, search terms used)

CNPAT, WPI, EPODOC, PAJ

IW: Cleaner(collector),syclon+,separat+,parallel,taper+(coniform,conoid)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN2762738Y (TAIYIKAI ELECTRICAL APPLIANCE) 08 Mar.2006 (08.03.2006) page 1 the last line-page 2 the last line, figures 1-3	1-10
Y	CN1600222A(GLDS)30 Mar. 2005(30.03.2005)page 1 line 7-page 3 line 15,figures 1,2	1-10
Y	US2005028675A1 (FANT-N) 10 Feb.2005 (10.02.2005) par. 72-par. 104,figures1-11	1-10
Y	US2004088956A1 (DYSON LTD et al.) 13 May 2004 (13.05.2004) par.17-par.42,figures1-5b	1-10
A	GB2399780A (DESON LTD) 29 Sep. 2004 (29.09.2004) the whole document	1-10
A	CN1729924A (SUZHOU KINGCLEAN FLOORCARE CO.) 08 Feb. 2006 (08.02.2006) the whole document	1-10

☐ 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 application or patent 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	Date of mailing of the international search report
01 Jun. 2007(01.06.2007)	**14 Jun. 2007 (14.06.2007)**
Name and mailing address of the ISA/CN The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451	Authorized officer LI, Meng Telephone No. (86-10)62085831

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2007/000733

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN2762738Y	08.03.2006	none	
CN1600222A	30.03.2005	none	
US2005028675A1	10.02.2005	CA2293984A	08.07.2000
		WO0040135A	13.07.2000
		US6238451B	29.05.2001
		US6383266B	07.05.2002
		US2002066366A	06.06.2002
		US6740144B	25.05.2004
		US6482252B	19.11.2002
US2004088956A1	13.05.2004	GB2360719A	03.10.2001
		WO0174493A	11.10.2001
		AU4089401A	15.10.2001
		EP1268076A	02.01.2003
		EP20010911975A	19.03.2001
		CN1422187A	04.06.2003
		CN1257016C	24.05.2006
		JP2003528704T	30.09.2003
		US6835222B	28.12.2004
		AT279263T	15.10.2004
		DE60106407D	18.11.2004
		DK1268076T	28.02.2005
		ES2228819T	16.04.2005
		DE60106407T	13.10.2005
GB2399780A	29.09.2004	none	
CN1729924A	08.02.2006	WO2007022664A	01.03.2007

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2007/000733

CLASSIFICATION OF SUBJECT MATTER

A47L5/24（2006.01）i

A47L5/28（2006.01）i

A47L9/16（2006.01）i

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国际检索报告

国际申请号
PCT/CN2007/000733

A. 主题的分类

参见附加页

按照国际专利分类表(IPC)或者同时按照国家分类和 IPC 两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

IPC：A47L5，A47L9，B01D45，B01D46，B04B3，B04B5，B04B7，B04C3，B04C5，B04C7

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用）)

CNPAT，WPI，EPODOC，PAJ

IW：吸尘器（集尘器），分离装置，旋风，并列（并排，平行），过滤（滤网），风筒，圆锥（锥形）

Cleaner(collector),syclon+,separat+,parallel,taper+(coniform,conoid)

C. 相关文件

类　型*	引用文件，必要时，指明相关段落	相关的权利要求
Y	CN2762738Y（泰怡凯电器（苏州）有限公司）08.3 月 2006（08.03.2006）说明书第 1 页最后一行至第 2 页最后一行，附图 1-3	1-10
Y	CN1600222A（乐金电子（天津）电器有限公司）30.3 月 2005（30.03.2005）说明书第 1 页第 7 行至第 3 页第 15 行，附图 1，2	1-10
Y	US2005028675A1（FANT-N）10.2 月 2005（10.02.2005）说明书第 72 段至第 104 段，附图 1-11	1-10
Y	US2004088956A1（DYSON LTD et al.）13.5 月 2004（13.05.2004）说明书第 17 段至第 42 段，附图 1-5b	1-10
A	GB2399780A（DESON LTD）29.9 月 2004（29.09.2004）全文	1-10
A	CN1729924A（苏州金莱克清洁器具有限公司）08.2 月 2006（08.02.2006）全文	1-10

☐ 其余文件在 C 栏的续页中列出。　　☒ 见同族专利附件。

* 引用文件的具体类型：

"A" 认为不特别相关的表示了现有技术一般状态的文件

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"L" 可能对优先权要求构成怀疑的文件，或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件

"O" 涉及口头公开、使用、展览或其他方式公开的文件

"P" 公布日先于国际申请日但迟于所要求的优先权日的文件

"T" 在申请日或优先权日之后公布，与申请不相抵触，但为了理解发明之理论或原理的在后文件

"X" 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

"Y" 特别相关的文件，当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时，要求保护的发明不具有创造性

"&" 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
01.6 月 2007（01.06.2007）	**14.6 月 2007 (14.06.2007)**
中华人民共和国国家知识产权局(ISA/CN) 中国北京市海淀区蓟门桥西土城路 6 号 100088 传真号：　(86-10)62019451	受权官员 李萌 电话号码：(86-10) **62085831**

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国际检索报告
关于同族专利的信息

国际申请号
PCT/CN2007/000733

检索报告中引用的专利文件	公布日期	同族专利	公布日期
CN2762738Y	08.03.2006	无	
CN1600222A	30.03.2005	无	
US2005028675A1	10.02.2005	CA2293984A	08.07.2000
		WO0040135A	13.07.2000
		US6238451B	29.05.2001
		US6383266B	07.05.2002
		US2002066366A	06.06.2002
		US6740144B	25.05.2004
		US6482252B	19.11.2002
US2004088956A1	13.05.2004	GB2360719A	03.10.2001
		WO0174493A	11.10.2001
		AU4089401A	15.10.2001
		EP1268076A	02.01.2003
		EP20010911975A	19.03.2001
		CN1422187A	04.06.2003
		CN1257016C	24.05.2006
		JP2003528704T	30.09.2003
		US6835222B	28.12.2004
		AT279263T	15.10.2004
		DE60106407D	18.11.2004
		DK1268076T	28.02.2005
		ES2228819T	16.04.2005
		DE60106407T	13.10.2005
GB2399780A	29.09.2004	无	
CN1729924A	08.02.2006	WO2007022664A	01.03.2007

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A47L5/24（2006.01）i

A47L5/28（2006.01）i

A47L9/16（2006.01）i

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Notice

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DESCRIPTION DE102008044184

[Technological area]

[Technologisches Gebiet]

[0001]

This invention extends to a vortex separating apparatus for use in a vacuum cleaner, including a swirling cavity having an airflow inlet, a side wall and an end wall, wherein in use of the described vacuum cleaner sucked airflow containing dirt through the described air flow inlet into the described vortex cavity passes and rotates along the described side wall; a dip tube, which dips into the vortex cavity described and has a muzzle, wherein the air flow can enter the described immersion tube after vortex separation through this muzzle and leaves the vortex cavity described; and a locking element which is arranged between the described pipe mouth and the end wall described, wherein between the described pipe mouth and the described blocking element, an air inlet is formed. This invention also extends to vacuum cleaners having this vortex separating device.

Diese Erfindung erstreckt sich auf eine Wirbeltrennvorrichtung zur Verwendung in einem Staubsauger, einschließlich eines Wirbelhohlraums, der über einen Luftstromeingang, eine Seitenwand sowie eine Stirnwand verfügt, wobei bei der Benutzung der vom beschriebenen Staubsauger eingesaugte Luftstrom, der Schmutz enthält, durch den beschriebenen Luftstromeingang in den beschriebenen Wirbelhohlraum gelangt und sich entlang der beschriebenen Seitenwand rotierend bewegt; eines Eintauchrohrs, das in den beschriebenen Wirbelhohlraum eintaucht und über eine Rohrmündung verfügt, wobei der Luftstrom nach dem Wirbeltrennen durch diese Rohrmündung in das beschriebene Eintauchrohr gelangen kann und den beschriebenen Wirbelhohlraum verlässt; sowie eines Sperrelements, das zwischen der beschriebenen Rohrmündung und der beschriebenen Stirnwand angeordnet ist, wobei zwischen

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der beschriebenen Rohrmündung und dem beschriebenen Sperrelement ein Lufteinlass gebildet wird. Diese Erfindung erstreckt sich außerdem auf Staubsauger mit dieser Wirbeltrennvorrichtung.

[Technological background]

[Technologischer Hintergrund]

[0002]

From this vortex separation device can be obtained from the US Patent US 6,896,711 62 note. According to the disclosure of its description, this conventional vortex separating device comprises a dirt barrier element, this barrier element having a spherical surface and being constructed like a picture panel. The inner surface of this barrier element is directed to the end wall of the whirling cavity. The leaving air flow can collide with the inner surface of the barrier element, whereby dirt contained in the air flow is blocked by this blocking element and falls into the dirt container. The disadvantage of this vortex separation device is that the dirt blocked by the blocking element is possibly caught again by the air flow leaving the vortex cavity. Therefore, there are good opportunities for the dirt leaving the vertebral cavity.

Von dieser Wirbeltrennvorrichtung kann aus dem US-Patent US 6.896.711 62 Kenntnis erlangt werden. Gemäß der Offenbarung seiner Beschreibung umfasst diese herkömmliche Wirbeltrennvorrichtung ein Schmutzsperrelement, wobei dieses Sperrelement über eine Kugeloberfläche verfügt und wie eine Bildtafel aufgebaut ist. Die innere Oberfläche dieses Sperrelements ist zur Stirnwand des Wirbelhohlraums gerichtet. Der verlassende Luftstrom kann mit der inneren Oberfläche des Sperrelements kollidieren, wodurch im Luftstrom enthaltener Schmutz durch dieses Sperrelement blockiert wird und in den Schmutzbehälter fällt. Der Nachteil dieser Wirbeltrennvorrichtung besteht darin, dass der vom Sperrelement blockierte Schmutz möglicherweise vom nachfolgend den Wirbelhohlraum verlassenden Luftstrom wieder eingefangen wird. Deshalb bestehen für den Schmutz gute Möglichkeiten zum Verlassen des Wirbelhohlraums.

[Content of the invention]

[Inhalt der Erfindung]

[0003]

The aim of this invention, therefore, is to overcome the said problems of the conventional

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technology and to separate the absolutely largest part of the dirt from the air stream, in particular it must be possible to minimize the risk that ultrafine particles can leave the vortex cavity.

Das Ziel dieser Erfindung besteht deshalb darin, die genannten Probleme der herkömmlichen Technologie zu überwinden und den absolut größten Teil des Schmutzes aus dem Luftstrom zu separieren, wobei es insbesondere möglich sein muss, das Risiko zu minimieren, dass feinste Teilchen den Wirbelhohlraum verlassen können.

[0004]

This invention relates to a vortex separating apparatus for use in a vacuum cleaner, including: a vortex cavity having an air flow inlet, a side wall and an end wall, wherein in use of the vacuum cleaner sucked by the described air flow containing dirt through the described air flow inlet in the described vortex cavity passes and rotates along the side wall; Immersion tube, which dips into the vortex cavity described and has a muzzle, the air flow can pass through the vortex separation through this muzzle into the immersion tube described and leaves the vortex cavity described; and a blocking element, which is arranged between the described pipe mouth and the described end wall, wherein between the described pipe mouth and the described blocking element, an air inlet is formed, characterized in that the locking element described has an outer surface, said outer surface continuously and in Direction to the end wall of the vortex cavity described gradually shrinks to the top.

Diese Erfindung bezieht sich auf eine Wirbeltrennvorrichtung zur Verwendung in einem Staubsauger, einschließlich: Wirbelhohlraum, der über einen Luftstromeingang, eine Seitenwand sowie eine Stirnwand verfügt, wobei bei der Benutzung der vom beschriebenen Staubsauger eingesaugte Luftstrom, der Schmutz enthält, durch den beschriebenen Luftstromeingang in den beschriebenen Wirbelhohlraum gelangt und sich entlang der Seitenwand rotierend bewegt; Eintauchrohr, das in den beschriebenen Wirbelhohlraum eintaucht und über eine Rohrmündung verfügt, wobei der Luftstrom nach dem Wirbeltrennen durch diese Rohrmündung in das beschriebene Eintauchrohr gelangen kann und den beschriebenen Wirbelhohlraum verlässt; sowie ein Sperrelement, das zwischen der beschriebenen Rohrmündung und der beschriebenen Stirnwand angeordnet ist, wobei zwischen der beschriebenen Rohrmündung und dem beschriebenen Sperrelement ein Lufteinlass gebildet wird, dadurch gekennzeichnet, dass das beschriebene Sperrelement über eine äußere Oberfläche verfügt, wobei diese äußere Oberfläche stufenlos und in Richtung zur Stirnwand des beschriebenen Wirbelhohlraums allmählich bis zum Oberteil schrumpft.

[0005]

Before entering the immersion tube and leaving the vortex cavity, the air flow first collides with the outer surface of the barrier element, whereby at least part of the particles contained in the air flow

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can be separated from the air flow by the impact.

Vor dem Eintritt in das Eintauchrohr und Verlassen des Wirbelhohlraums kollidiert der Luftstrom zuerst mit der äußeren Oberfläche des Sperrelements, wodurch zumindest ein Teil der im Luftstrom enthaltenen Teilchen durch den Aufprall aus dem Luftstrom separiert werden kann.

In addition, due to the shape of the described outer surface, this debris may move toward the sidewall of the vertebral cavity.

Außerdem kann dieser Schmutz aufgrund der Gestalt der beschriebenen äußeren Oberfläche sich zur Seitenwand des Wirbelhohlraums hin bewegen.

This moving towards the described side wall dirt can be taken by the newly entering and dirt-containing air flow and again subjected to a vortex separation. As a result, the separating effect of the vertebral separating device can be significantly increased.

Dieser sich zur beschriebenen Seitenwand hin bewegende Schmutz kann durch den neu eintretenden und Schmutz enthaltenden Luftstrom mitgenommen werden und noch einmal einer Wirbeltrennung unterzogen werden. Dadurch kann die Trennwirkung der Wirbeltrennvorrichtung signifikant erhöht werden.

[0006]
Other features, which are considered alone or in conjunction with other features to be features of this invention, are set forth in the following additional claims.

Andere Merkmale, die allein oder in Verbindung mit anderen Merkmalen als Eigenschaften dieser Erfindung angesehen werden, werden in den folgenden zusätzlichen Ansprüchen erläutert.

[0007]
An additional feature according to this invention is that the described locking element and the immersion tube described are arranged interconnected.

Ein zusätzliches Merkmal gemäß dieser Erfindung besteht darin, dass das beschriebene Sperrelement und das beschriebene Eintauchrohr miteinander verbunden angeordnet sind.

[0008]

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Preferably, the described blocking element is connected by a connecting element with the immersion tube described, wherein the described connecting element and the locking element described are integrally mounted, whereby the assembly of the described separating device is simplified.

Vorzugsweise ist das beschriebene Sperrelement durch ein Verbindungselement mit dem beschriebenen Eintauchrohr verbunden, wobei das beschriebene Verbindungselement und das beschriebene Sperrelement integriert angebracht sind, wodurch die Montage der beschriebenen Trennvorrichtung vereinfacht wird.

[0009]

A preferred embodiment according to this invention is that the described locking element and a circular cone are arranged connected to each other, wherein the described circular cone is mounted adjacent to the described end wall.

Eine bevorzugte Ausführungsweise gemäß dieser Erfindung besteht darin, dass das beschriebene Sperrelement und ein Kreiskegel miteinander verbunden angeordnet sind, wobei der beschriebene Kreiskegel neben der beschriebenen Stirnwand angebracht ist.

[0010]

Preferably, the described outer surface has a positive or negative curvature part, whereby the air flow along the described curvature part can be freely guided to described side wall.

Vorzugsweise verfügt die beschriebene äußere Oberfläche über einen positiven oder negativen Krümmungsteil, wodurch der Luftstrom entlang des beschriebenen Krümmungsteils ungehindert zu beschriebenen Seitenwand geführt werden kann.

[0011]

Preferably, the locking element described is conical, since this shape is particularly advantageous for the movement of the described air flow.

Vorzugsweise ist das beschriebene Sperrelement kegelförmig, da diese Gestalt für die Bewegung des beschriebenen Luftstroms besonders vorteilhaft ist.

[0012]

An advantageous embodiment according to this invention is that the total area of the air inlet described is greater than or generally equal to the cross-sectional area of the immersion tube

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described, whereby the air pressure can not have any losses due to the attachment of the described locking element.

Eine vorteilhafte Ausführungsweise gemäß dieser Erfindung besteht darin, dass die Gesamtfläche des beschriebenen Lufteinlasses größer als die oder generell gleich der Querschnittsfläche des beschriebenen Eintauchrohres ist, wodurch der Luftdruck keine Verluste aufgrund der Anbringung des beschriebenen Sperrelements aufweisen kann.

A particularly preferred manner is that the total area of the air inlet described is generally equal to the cross-sectional area of the immersion tube described, whereby the air pressure is generally identical at the described air inlet and at the described inlet opening.

Eine besonders bevorzugte Weise besteht darin, dass die Gesamtfläche des beschriebenen Lufteinlasses generell gleich der Querschnittsfläche des beschriebenen Eintauchrohres ist, wodurch am beschriebenen Lufteinlass und an der beschriebenen Eintrittsöffnung der Luftdruck generell identisch ist.

[0013]

Another feature of this invention is that a dirt outlet is mounted on the described side wall, wherein the vortex cavity described is fluidly connected via this dirt outlet with a dirt container.

Ein weiteres Merkmal dieser Erfindung besteht darin, dass auf der beschriebenen Seitenwand ein Schmutzausgang angebracht ist, wobei der beschriebene Wirbelhohlraum über diesen Schmutzausgang mit einem Schmutzbehälter fluidleitend verbunden ist.

Preferably, the side wall described forms part of the described dirt container.

Vorzugsweise bildet die beschriebene Seitenwand einen Teil des beschriebenen Schmutzbehälters.

[0014]

A particularly preferred embodiment according to this invention is that the dirt outlet described in the axial direction of the vortex cavity described in maximum proximity to the described muzzle has a limit, wherein at least a portion of the described barrier element is located between the described muzzle and the described boundary.

Eine besonders bevorzugte Ausführungsweise gemäß dieser Erfindung besteht darin, dass der

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beschriebene Schmutzausgang in axialer Richtung des beschriebenen Wirbelhohlraums in maximaler Nähe zur beschriebenen Rohrmündung über eine Grenze verfügt, wobei mindestens ein Teil des beschriebenen Sperrelements sich zwischen der beschriebenen Rohrmündung und der beschriebenen Grenze befindet.

[0015]
This invention applies to vacuum cleaners.

Diese Erfindung findet auf Staubsauger Anwendung.

[0016]
The structure of this invention, as well as its other objectives and advantages, will become more apparent and easier to understand from the following preferred embodiments described in conjunction with the drawings.

Der Aufbau dieser Erfindung sowie ihre sonstigen Erfindungsziele und Nutzeffekte werden durch die nachfolgenden, in Verbindung mit den Abbildungen beschriebenen bevorzugten Ausführungsweisen noch deutlicher und einfacher verständlich.

[Description of the pictures]

[Beschreibung der Abbildungen]

[0017]
As a part of the description and for enabling a further understanding of this invention, the figures below illustrate the specific embodiments of this invention and, together with the description, serve to illustrate the principle of this invention.

Als ein Teil der Beschreibung und zur Ermöglichung eines weitergehenden Verständnisses dieser Erfindung erläutern die unten stehenden Abbildungen die konkreten Ausführungsweisen dieser Erfindung und dienen gemeinsam mit der Beschreibung der Darstellung des Prinzips dieser Erfindung.

[0018]
fig. shows a sectional view of the vortex separation device of a preferred embodiment according to this invention.

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fig. zeigt ein Schnittbild der Wirbeltrennvorrichtung einer bevorzugten Ausführungsweise gemäß dieser Erfindung.

[0019]
shows a three-dimensional image of a vacuum cleaner with the vortex separator of a preferred embodiment of this invention.

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zeigt eine dreidimensionale Abbildung eines Staubsaugers mit der Wirbeltrennvorrichtung einer bevorzugten Ausführungsweise dieser Erfindung.

[Description of the specific embodiments]

[Beschreibung der konkreten Ausführungsweisen]

[0020]
In the following specific description of the preferred embodiments, identical or similar features are provided with identical markings in the figures.

In der folgenden konkreten Beschreibung der bevorzugten Ausführungsweisen sind identische oder ähnliche Merkmale mit identischen Markierungen in den Abbildungen versehen.

[0021]
It is referred to the pictures, first of all in particular. shows the vortex separation device 1 of a preferred procedure according to this invention.

Es wird auf die Abbildungen verwiesen, zuerst insbesondere auf . zeigt die Wirbeltrennvorrichtung 1 einer bevorzugten Verfahrensweise gemäß dieser Erfindung.

This vortex separation device 1 comprises a tubular vortex cavity 10 and a dip tube 20.

Diese Wirbeltrennvorrichtung 1 umfasst einen röhrenartigen Wirbelhohlraum 10 und ein Eintauchrohr 20 .

The whirling cavity 10 has an airflow inlet 11, a side wall 12 and an end wall 13.

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Der Wirbelhohlraum 10 verfügt über einen Luftstromeingang 11 , eine Seitenwand 12 sowie eine Stirnwand 13 .

In use, the air flow containing dirt passes through the described air flow inlet 11 into the vortex cavity 10 described and moves in a rotating manner along the described side wall 12.

Bei der Benutzung gelangt der Luftstrom, der Schmutz enthält, durch den beschriebenen Luftstromeingang 11 in den beschriebenen Wirbelhohlraum 10 und bewegt sich rotierend entlang der beschriebenen Seitenwand 12 .

On the side wall 12, a dirt outlet 15 is formed.

Auf der Seitenwand 12 wird ein Schmutzausgang 15 gebildet.

The vortex cavity 10 is fluidly connected via this dirt outlet 15 with a dirt container 50, whereby the dirt due to the effect of centrifugal force can be separated from the air flow and collected in this dirt container 50.

Der Wirbelhohlraum 10 ist über diesen Schmutzausgang 15 mit einem Schmutzbehälter 50 fluidleitend verbunden, wodurch der Schmutz aufgrund der Wirkung der Fliehkraft aus dem Luftstrom separiert werden kann und in diesem Schmutzbehälter 50 gesammelt wird.

Preferably, the described side wall 12 forms part of the described dirt container 50.

Vorzugsweise bildet die beschriebene Seitenwand 12 einen Teil des beschriebenen Schmutzbehälters 50 .

In addition to the described end wall 13, a circular cone 14 is arranged, which is located in the vortex cavity 10.

Neben der beschriebenen Stirnwand 13 ist ein Kreiskegel 14 angeordnet, der sich im Wirbelhohlraum 10 befindet.

Preferably, this circular cone 14 forms part of the end wall 13 described.

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Vorzugsweise bildet dieser Kreiskegel 14 einen Teil der beschriebenen Stirnwand 13 .

In this embodiment, the end wall 13 is provided as an independent part of the vortex cavity 10.

In diesem Ausführungsbeispiel wird die Stirnwand 13 als selbständiges Teil des Wirbelhohlraums 10 bereitgestellt.

Preferably, the end wall 13 is mounted removable on the vortex separation device 1.

Vorzugsweise wird die Stirnwand 13 demontierbar auf die Wirbeltrennvorrichtung 1 montiert.

The dip tube 20 is immersed in this whirl cavity 10 and has a muzzle 21st Through this pipe mouth 21, the air flow that has passed through the vortex separation and has been reflected by the end wall 13, get into the dip tube 20 and thereby leave the vortex cavity 10.

Das Eintauchrohr 20 taucht in diesen Wirbelhohlraum 10 ein und verfügt über ein Rohrmündung 21 . Durch diese Rohrmündung 21 kann der Luftstrom, der das Wirbeltrennen durchlaufen hat und von der Stirnwand 13 reflektiert wurde, in das Eintauchrohr 20 gelangen und dadurch den Wirbelhohlraum 10 verlassen.

[0022]

Between the muzzle 21 of the dip tube 20 and the end wall 13 of the whirling cavity 10, a blocking element 30 is mounted. There is a spacing between the blocking element 30 and the muzzle 21 of the immersion tube 20, so that the air inlet 41 can be formed between the described muzzle 21 and the blocking element 30, whereby the whirling cavity 10 is fluid-conductively connected to the immersion tube 20 via this air inlet 41. After passing through the vortex separation, the air flow passes through the air inlet 41 via the pipe mouth 21 into the immersion tube 20 and then leaves the vortex cavity 10.

Zwischen der Rohrmündung 21 des Eintauchrohrs 20 und der Stirnwand 13 des Wirbelhohlraums 10 ist ein Sperrelement 30 angebracht. Zwischen dem Sperrelement 30 und der Rohrmündung 21 des Eintauchrohrs 20 besteht ein Abstand, so dass zwischen der beschriebenen Rohrmündung 21 und dem Sperrelement 30 der Lufteinlass 41 gebildet werden kann, wodurch der Wirbelhohlraum 10 über diesen Lufteinlass 41 mit dem Eintauchrohr 20 fluidleitend verbunden ist. Durch diesen Lufteinlass 41 gelangt der Luftstrom nach Durchlaufen der Wirbeltrennung über die Rohrmündung 21 in das Eintauchrohr 20 und verlässt anschließend den Wirbelhohlraum 10.

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[0023]
The blocking element 30 has an outer surface 31, this outer surface 31 shrinks continuously and gradually towards the end wall 13 of the vortex cavity 10 described up to the upper part 32nd Preferably, this blocking element 30 is hollow and conical.

Das Sperrelement 30 verfügt über eine äußere Oberfläche 31 , diese äußere Oberfläche 31 schrumpft stufenlos und in Richtung zur Stirnwand 13 des beschriebenen Wirbelhohlraums 10 allmählich bis zum Oberteil 32 . Vorzugsweise ist dieses Sperrelement 30 hohl und kegelförmig.

[0024]
The blocking element 30 and the immersion tube 20 are connected to each other. Specifically, the locking member 30 is connected by the connecting member 40 with the dip tube 20. One end of the described connector 40 is connected to the wall of the dip tube 20. The other end is connected to the lower edge of the locking element 30. Preferably, the connecting element 40 forms an integrated structure with the blocking element 30, whereby the blocking element 30 can be mounted in the vortex cavity 10 in a very simple manner by connecting the connecting element 40 to the immersion tube 20. In the exemplary embodiment in, for example, the blocking element 30, the connecting element 40 and the immersion tube 20 are designed to be integrated. However, in a substituting embodiment, the locking member 30 and the dip tube 20 may be provided individually and then assembled together.

Das Sperrelement 30 und das Eintauchrohr 20 sind miteinander verbunden. Konkret ist das Sperrelement 30 durch das Verbindungselement 40 mit dem Eintauchrohr 20 verbunden. Ein Ende des beschriebenen Verbindungselements 40 ist mit der Wandung des Eintauchrohrs 20 verbunden. Das andere Ende ist mit dem unteren Rand des Sperrelements 30 verbunden. Vorzugsweise bildet das Verbindungselement 40 mit dem Sperrelement 30 eine integrierte Struktur, wodurch das Sperrelement 30 in sehr einfacher Weise im Wirbelhohlraum 10 montiert werden kann, indem das Verbindungselement 40 mit dem Eintauchrohr 20 verbunden wird. Im Ausführungsbeispiel in werden zum Beispiel das Sperrelement 30 , das Verbindungselement 40 sowie das Eintauchrohr 20 integriert gestaltet. In einer substituierenden Ausführungsweise können jedoch auch das Sperrelement 30 und das Eintauchrohr 20 einzeln bereitgestellt und anschließend zusammenmontiert werden.

[0025]
Although there is no representation, however, in a further embodiment, the described blocking element 30 can also be connected to the circular cone 14 described.

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Obwohl es keine Darstellung gibt, kann jedoch in einer weiteren Ausführungsweise das beschriebene Sperrelement 30 auch mit dem beschriebenen Kreiskegel 14 verbunden werden.

[0026]
The described connector 40 is mounted in this manner: it leaves the total area of the air inlet 41 located between the barrier member 30 and the muzzle 21 of the dip tube 20 greater than, or generally equal to, the cross-sectional area of the dip tube 20, thereby facilitating attachment the blocking element 30 caused loss of air pressure is prevented.

Das beschriebene Verbindungselement 40 wird in dieser Weise angebracht: Es lässt die Gesamtfläche des Lufteinlasses 41 , der sich zwischen dem Sperrelement 30 und der Rohrmündung 21 des Eintauchrohrs 20 befindet, größer als oder generell gleich der Querschnittsfläche des Eintauchrohrs 20 sein, wodurch ein durch die Anbringung des Sperrelements 30 hervorgerufener Verlust des Luftdrucks verhindert wird.

[0027]
The outer surface 31 of the blocking element 30 has a curvature part 33, whereby the air flow through the guide of this curvature part 33 can move even better in the direction of the side wall 12.

Die äußere Oberfläche 31 des Sperrelements 30 verfügt über einen Krümmungsteil 33 , wodurch sich der Luftstrom durch die Führung dieses Krümmungsteils 33 noch besser in Richtung Seitenwand 12 bewegen kann.

In this embodiment, the curvature part 33 is negative.

In diesem Ausführungsbeispiel ist der Krümmungsteil 33 negativ.

However, this curvature part 33 can also be positive.

Dieser Krümmungsteil 33 kann jedoch auch positiv sein.

[0028]
In this embodiment, the upper part 32 of the locking element 30 extends to this degree: in the direction perpendicular to the axis A of the swirling cavity 10, it interpolates with the dirt outlet 15. However, the blocking element 30 is at least partially not exposed to this dirt outlet 15. That is, the

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blocking element 30 is located at least partially between the pipe mouth 21 and a boundary 16 of the dirt outlet 15, said boundary 16 in the direction of the axis A of the vortex cavity 10 in maximum proximity to the pipe mouth 21. In a substituting embodiment, the blocking element 30 is not exposed altogether with respect to this dirt outlet 15.

In diesem Ausführungsbeispiel streckt sich der Oberteil 32 des Sperrelements 30 bis zu diesem Grad: In Richtung senkrecht zur Achse A des Wirbelhohlraums 10 interpoliert er mit dem Schmutzausgang 15 . Allerdings wird das Sperrelement 30 zumindest teilweise nicht gegenüber diesem Schmutzausgang 15 bloßgelegt. Das heißt, das Sperrelement 30 befindet sich zumindest teilweise zwischen der Rohrmündung 21 und einer Grenze 16 des Schmutzausgangs 15 , wobei diese Grenze 16 in Richtung der Achse A des Wirbelhohlraums 10 in maximaler Nähe zur Rohrmündung 21 liegt. In einer substituierenden Ausführungsweise wird das Sperrelement 30 insgesamt nicht gegenüber diesem Schmutzausgang 15 bloßgelegt.

[0029]

This invention applies to vacuum cleaners. shows a vacuum cleaner 2. The vacuum cleaner 2 comprises a main body 5, a suction nozzle for sucking in the dirt-containing air (not shown), a ventilator with electric motor drive (not shown), and a vertebral separating device 1. In this case, the fan driven by an electric motor is used to generate the suction force and is accommodated in a separate chamber of the main body. Between the suction head and this fan with electric motor drive creates a way for the air flow. Said vortex separation device 1 is mounted in this air flow path and serves to separate the dirt from the air stream before the air flow enters the separate chamber. The suction nozzle may be connected to the main body 5 via a hose, but may also be connected directly to the main body 5.

Diese Erfindung findet Anwendung auf Staubsauger. zeigt einen Vakuumstaubsauger 2 . Der Staubsauger 2 umfasst einen Hauptkörper 5 , eine Saugdüse zum Einsaugen der Schmutz enthaltenden Luft (nicht abgebildet), einen Ventilator mit Elektromotorantrieb (nicht abgebildet) sowie eine Wirbeltrennvorrichtung 1 . Dabei wird der von einem Elektromotor angetriebene Ventilator zur Erzeugung der Saugkraft verwendet und ist in einer separaten Kammer des Hauptkörpers untergebracht. Zwischen dem Saugkopf und diesem Ventilator mit Elektromotorantrieb entsteht ein Weg für den Luftstrom. Die genannte Wirbeltrennvorrichtung 1 wird in diesen Luftstromweg montiert und dient dazu, vor dem Eintritt des Luftstroms in die separate Kammer aus dem Luftstrom den Schmutz zu separieren. Die Saugdüse kann über einen Schlauch mit dem Hauptkörper 5 verbunden werden, kann aber auch direkt mit dem Hauptkörper 5 verbunden werden.

[0030]

During use, the air stream drawn in by the vacuum cleaner 2 and contaminated with dirt passes

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via the air flow inlet 11 into the swirl cavity 10 and then begins the process of vortex separation. Specifically, the air flow loaded with dirt moves spirally along the side wall 12 in the direction of the end wall 13. Thereby, the majority of the dirt, in particular the dirt with high weight, due to the effect of centrifugal force through the dirt outlet 15 on the side wall 12 is separated from the air flow and collected in the dirt container 50. The air flow with the remaining dirt (z. B. dust particles) is reflected by the end wall 13 and rotates with a small rotation diameter spirally in the direction of the muzzle 21 of the dip tube 20th Before entering the air flow into the dip tube 20 to leave the vortex hollow space 10, the air flow collides with the outer surface 31 of the locking element 30th As a result, at least part of the dirt contained in the air stream is separated from the air stream by the collision and, due to the shape of the blocking element 30, moves in the direction of the side wall 12 of the swirling cavity 10.

Während der Verwendung gelangt der vom Staubsauger 2 eingesaugte und mit Schmutz belastete Luftstrom über den Luftstromeingang 11 in den Wirbelhohlraum 10 und beginnt anschließend den Prozess der Wirbeltrennung. Konkret bewegt sich der mit Schmutz belastete Luftstrom spiralförmig entlang der Seitenwand 12 in Richtung Stirnwand 13 . Dadurch wird der Großteil des Schmutzes, insbesondere der Schmutz mit hohem Gewicht, aufgrund der Wirkung der Fliehkraft durch den Schmutzausgang 15 auf der Seitenwand 12 aus dem Luftstrom separiert und im Schmutzbehälter 50 gesammelt. Der Luftstrom mit dem restlichen Schmutz (z. B. Staubteilchen) wird von der Stirnwand 13 reflektiert und rotiert mit einem kleinen Rotationsdurchmesser spiralförmig in Richtung der Rohrmündung 21 des Eintauchrohres 20 . Vor dem Eintritt des Luftstroms in das Eintauchrohr 20 zum Verlassen des Wirbelhohl raums 10 kollidiert der Luftstrom mit der äußeren Oberfläche 31 des Sperrelements 30 . Dadurch wird mindestens ein Teil des im Luftstrom enthaltenen Schmutzes durch die Kollision aus dem Luftstrom separiert und bewegt sich aufgrund der Gestalt des Sperrelements 30 in Richtung Seitenwand 12 des Wirbelhohlraums 10 .

The air flow after the separation of the dirt passes through the air inlet 41 into the immersion tube 20 and leaves the vortex cavity. This moving towards the side wall 12 dirt is taken from the newly incoming, along the side wall 12 spirally rotating and contaminated with dirt airflow. As a result, the dirt separated from the blocking element 30 again passes through the process of vortex separation, as a result of which the performance of the vortex separation device 1 for separating the dirt is significantly increased.

Der Luftstrom nach der Separation des Schmutzes gelangt über den Lufteinlass 41 in das Eintauchrohr 20 und verlässt den Wirbelhohlraum. Dieser sich in Richtung Seitenwand 12 bewegende Schmutz wird von dem neu hereinkommenden, entlang der Seitenwand 12 spiralförmig rotierenden und mit Schmutz belasteten Luftstrom mitgenommen. Dadurch durchläuft der vom Sperrelement 30 separierte Schmutz nochmals den Prozess der Wirbeltrennung, wodurch im weiteren die Leistung der Wirbeltrennvorrichtung 1 zur Trennung des Schmutzes

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signifikant erhöht wird.

[0031]
After leaving the vortex cavity 10 through the dip tube 20, a separate chamber with a fan with electric motor drive (not shown) is mounted in the flow direction of the air flow. Preferably, in the air path between the vortex separation device 1 and the electric motor driven fan, a filter 60 is mounted to filter the remaining finest particles contained in the air flow. It should be noted that it is possible to arrange another vortex separation stage in front of the filter 60, or it is also possible to replace the filter 60 by means of this further vortex separation stage.

Nach dem Verlassen des Wirbelhohlraums 10 durch das Eintauchrohr 20 ist in der Fließrichtung des Luftstroms eine separate Kammer mit einem Ventilator mit Elektromotorantrieb (nicht abgebildet) angebracht. Vorzugsweise ist in dem Luftweg zwischen der Wirbeltrennvorrichtung 1 und dem Ventilator mit Elektromotorantrieb ein Filter 60 angebracht, um die restlichen feinsten Teilchen, die im Luftstrom enthalten sind, zu filtern. Es ist zu beachten, dass es möglich ist, vor dem Filter 60 eine weitere Wirbeltrennstufe anzuordnen, oder es ebenso möglich ist, mittels dieser weiteren Wirbeltrennstufe den Filter 60 zu ersetzen.

1 : Whirl separation device 2: Vacuum cleaner 5: Main body 10: Whirling cavity 11: Airflow inlet 12: Sidewall 13: End wall 14: Cone body 15: Dirt outlet 20: Immersion pipe 21: Pipe mouth of immersion pipe 20 30: Restraint member 31: Outer surface of blocking member 30 32: Upper part of blocking element 30 40: connecting element 41: air inlet 50: dirt container 60: filter

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1 : Wirbeltrennvorrichtung 2 : Staubsauger 5 : Hauptkörper 10 : Wirbelhohlraum 11 : Luftstromeingang 12 : Seitenwand 13 : Stirnwand 14 : Kegelkörper 15 : Schmutzausgang 20 : Eintauchrohr 21 : Rohrmündung des Eintauchrohrs 20 30 : Sperrelement 31 : äußere Oberfläche des Sperrelements 30 32 : Oberteil des Sperrelements 30 40 : Verbindungselement 41 : Lufteinlass 50 : Schmutzbehälter 60 : Filter

QUOTES INCLUED IN THE DESCRIPTION

ZITATE ENTHALTEN IN DER BESCHREIBUNG

[0032]
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Cited patent literature

Zitierte Patentliteratur

[0033]
US 689671162 [0002]

- US 689671162 [0002]

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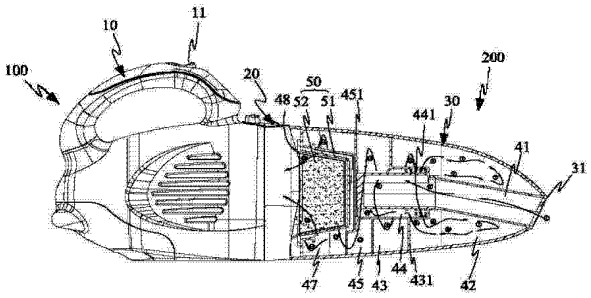
权利要求书1页 说明书4页 附图2页

(54)实用新型名称

一种吸尘装置

(57)摘要

本实用新型公开一种吸尘装置，包括手持式的吸尘器主体和可拆式安装于吸尘器主体头端的吸尘仓，该吸尘仓包括外壳、灰尘分离器和过滤器；所述灰尘分离器中有第一进风管、第一集尘腔、第一螺旋风道，所述第一进风管内部隔离形成第二进风管，该第二进风管通过多个小孔与第一集尘腔相通；由第一螺旋风道后端与外壳之间围合形成第二螺旋风道；该第二螺旋风道的后端界定出过滤器安装腔，所述过滤器安装于该过滤器安装腔内，该过滤器安装腔与外壳之间围合形成第二集尘腔。由于将第二次过滤时的风道也设计为螺旋风道，使得空气和灰尘颗粒在第二集尘腔内做圆周离心运动，使灰尘吸附于过滤器的吸附力也较传统吸尘器小，以便于抖落和清洗。



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1. 一种吸尘装置，包括手持式的吸尘器主体和可拆式安装于吸尘器主体头端的吸尘仓，该吸尘仓包括外壳、灰尘分离器和过滤器；所述灰尘分离器的头端设有一与外界相通的第一进风管，该第一进风管与外壳之间围合形成第一集尘腔；由第一进风管末端的外周向前延伸形成第一螺旋式导风板，该第一螺旋式导风板与外壳之间围合形成第一螺旋风道，该第一螺旋风道与第一进风管相通和第一集尘腔相通，其特征在于：

所述第一进风管内部隔离形成第二进风管，该第二进风管通过多个小孔与第一集尘腔相通；由第一进风管末端的外周向后延伸形成第二螺旋式导风板，该第二螺旋式导风板与外壳之间围合形成第二螺旋风道；该第二螺旋风道的后端界定出过滤器安装腔，所述过滤器安装于该过滤器安装腔内，该过滤器安装腔与外壳之间围合形成第二集尘腔。

2. 根据权利要求 1 所述的一种吸尘装置，其特征在于：所述第一螺旋式导风板及第二螺旋式导风板一体连接，于第一螺旋风道与第二螺旋风道之间设有一隔板。

3. 根据权利要求 2 所述的一种吸尘装置，其特征在于：所述第一进风管与第一螺旋风道之间的第一出风口倾斜设置，由第一进风管斜向第一螺旋风道。

4. 根据权利要求 3 所述的一种吸尘装置，其特征在于：所述第二进风管与第二螺旋风道之间的第二出风口倾斜设置，由第二进风管斜向第二螺旋风道。

5. 根据权利要求 4 所述的一种吸尘装置，其特征在于：所述第一出风口和第二出风口分布于隔板两侧，且第一、第二出风口的倾斜方向相反。

6. 根据权利要求 1 所述的一种吸尘装置，其特征在于：所述灰尘分离器的后端有一圆形拦圈和多条连接于拦圈与第二螺旋式导风板之间的支承条，由该拦圈、支承条和第二螺旋式导风板内侧围合形成过滤器安装腔，由该拦圈、支承条外侧与外壳之间围合形成所述第二集尘腔。

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一种吸尘装置

技术领域

[0001] 本实用新型涉及吸尘装置领域技术。

背景技术

[0002] 随着社会的发展，吸尘器已经进入寻常百姓家。目前的吸尘器主要包括壳体、设于该壳体前端的吸尘仓、以及设于该壳体内的吸尘风机，该吸尘风机正对所述吸尘仓，所述吸尘仓包括吸尘仓壳体、设于该吸尘仓壳体上的进风口和出风口、以及设于该吸尘仓壳体内并连通在进风口和出风口之间的风道。在使用时，吸尘风机工作，风从进风口进入吸尘仓的风道内，然后通过壳体进入口进入壳体内，最后通过壳体上的出口排出吸尘器外，尘埃留在尘仓内。然而，由于出风口和进风口位于风道的两侧，使得尘埃颗粒在风道内停留时间比较短，即使有过滤装置进行过滤，也只能使大部分尘埃颗粒在风道内进行沉淀，部分尘埃颗粒仍能排出吸尘器外，仍污染环境，使清洁工作不到位。

[0003] 有鉴于此，已有的中国实用新型专利（专利号 201220423772.2）公开一种旋风吸尘仓及其具有该旋风吸尘仓的吸尘器，其风道由进风通道和螺旋风道组成，且螺旋风道的出口设有集尘室，使得空气和灰尘颗粒经过螺旋风道后在集尘室内做圆周离心运动，将空气和灰尘颗粒分离开，灰尘颗粒沉淀在集尘室内，空气从出风口流出，这样使得尘埃颗粒得到有效的过滤，保证排除空气的质量，不会污染环境。

[0004] 上述专利虽然在一定程度上实现了灰尘的两次分离，由集尘室将大颗粒的灰尘进行第一次收集，由出风口位置的过滤器对小颗粒灰尘进行第二次收集，大小尘分离，易于清洗；小尘埃在第二次收集仓作圆周离心运动，不会很快吸附到过滤器上，从而不易堵塞过滤器，有利于保持机器的吸更长的时间。然而，现通用的设计由于进风口是正对过滤器，大风力吸尘时，小颗粒灰尘猛烈地直线撞入到过滤器内部，小颗粒灰尘冲击力非常大，容易堵塞过滤器的滤孔，并且这种直接冲击于过滤器的灰尘附着力很强，导致过滤器难以清洗干净，从而更换频繁，增加使用成本。

实用新型内容

[0005] 有鉴于此，本实用新型针对现有技术存在之缺失，其主要目的是提供一种吸尘装置，其不但能进行二次过滤，并且进行第二次过滤时，灰尘能够柔和地吹向过滤器，使过滤器长期使用不易堵塞，清洗容易，大大降低更换频率。

[0006] 为实现上述目的，本实用新型采用如下之技术方案：

[0007] 一种吸尘装置，包括手持式的吸尘器主体和可拆式安装于吸尘器主体头端的吸尘仓，该吸尘仓包括外壳、灰尘分离器和过滤器；所述灰尘分离器的头端设有一与外界相通的第一进风管，该第一进风管与外壳之间围合形成第一集尘腔；由第一进风管末端的外周向前延伸形成第一螺旋式导风板，该第一螺旋式导风板与外壳之间围合形成第一螺旋风道，该第一螺旋风道与第一进风管相通和第一集尘腔相通；所述第一进风管内部隔离形成第二进风管，该第二进风管通过多个小孔与第一集尘腔相通；由第一进风管末端的外周向后延

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伸形成第二螺旋式导风板，该第二螺旋式导风板与外壳之间围合形成第二螺旋风道；该第二螺旋风道的后端界定出过滤器安装腔，所述过滤器安装于该过滤器安装腔内，该过滤器安装腔与外壳之间围合形成第二集尘腔。

[0008] 优选的，所述第一螺旋式导风板及第二螺旋式导风板一体连接，于第一螺旋风道与第二螺旋风道之间设有一隔板。

[0009] 优选的，所述第一进风管与第一螺旋风道之间的第一出风口倾斜设置，由第一进风管斜向第一螺旋风道。

[0010] 优选的，所述第二进风管与第二螺旋风道之间的第二出风口倾斜设置，由第二进风管斜向第二螺旋风道。

[0011] 优选的，所述第一出风口和第二出风口分布于隔板两侧，且第一、第二出风口的倾斜方向相反。

[0012] 优选的，所述灰尘分离器的后端有一圆形拦圈和多条连接于拦圈与第二螺旋式导风板之间的支承条，由该拦圈、支承条和第二螺旋式导风板内侧围合形成过滤器安装腔，由该拦圈、支承条外侧与外壳之间围合形成所述第二集尘腔。

[0013] 本实用新型与现有技术相比具有明显的优点和有益效果，具体而言，由上述技术方案可知，由于将第二次过滤时的风道也设计为螺旋风道，使得空气和灰尘颗粒在第二集尘腔内做圆周离心运动，空气围绕在过滤器的外表面转圈，小灰尘颗粒与过滤器侧向摩擦，风速相对于传统直冲式的设计结构而言，风力、冲击力有效降低，使空气与过滤器接触更为柔和，即使灰尘吸附于过滤器上，其吸附力也较传统吸尘器小，以便于抖落和清洗。

[0014] 为更清楚地阐述本实用新型的结构特征和功效，下面结合附图与具体实施例来对本实用新型进行详细说明。

附图说明

[0015] 图 1 是本实用新型之实施例的组装状态截面图；

[0016] 图 2 是本实用新型之实施例的分解装态示意图；

[0017] 图 3 是本实用新型之实施例的灰尘分离器的放大示意图。

[0018] 附图标识说明：

[0019] 100、吸尘器主体　　10、卧把

[0020] 11、开关　　20、弹性卡合件

[0021] 200、吸尘仓　　30、外壳

[0022] 31、进风口　　32、卡合孔

[0023] 40、灰尘分离器　　41、第一进风管

[0024] 42、第一集尘腔　　43、第一螺旋风道

[0025] 431、第一螺旋式导风板　　432、第一出风口

[0026] 44、第二进风管　　441、小孔

[0027] 45、第二螺旋风道　　451、第二螺旋式导风板

[0028] 452、第二出风口　　46、隔板

[0029] 47、第二集尘腔　　471、拦圈

[0030] 472、支承条　　48、过滤器安装腔

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[0031] 50、过滤器 51、滤网

[0032] 52、海绵。

具体实施方式

[0033] 请参照图 1 和图 2 所示，其显示出了本实用新型之较佳实施例的具体结构。一种吸尘装置包括有手持式的吸尘器主体 100 和可拆式安装于吸尘器主体 100 头端的吸尘仓 200。其中：

[0034] 该吸尘器主体 100 内设有吸尘电机和设于该吸尘电机前端的吸尘风叶，该吸尘风叶正对吸尘仓 200。于吸尘器主体 100 上设有一卧把 10，该卧把 10 上设有一控制吸尘器工作的开关 11。这种手持式的吸尘器具有体积小、操作方便的特点，人们可以用这种吸尘器灵活地清洁墙壁、沙发、橱柜等家具上的灰尘，弥补传统自动吸尘器只能清洁地面的不足。

[0035] 结合图 1-3 所示，所述吸尘仓 200 包括外壳 30、安装于外壳 30 内的灰尘分离器 40 和过滤器 50。其中：

[0036] 所述吸尘仓 200 的外壳 30 为呈中空的子弹头形状，是由透明的塑胶材料制作而成，以便于人们观察集尘腔内的灰尘量。该外壳 30 的头端开设有一进风口 31。此外，所述吸尘器主体 100 上设有一弹性卡合件 20，对应之吸尘仓 200 的外壳 30 上设有卡合孔 32，该弹性卡合件 20 与卡合孔 32 配合可拆卸式安装，当集尘腔内的灰尘量达到一定量时，轻易地拆卸清除。

[0037] 所述灰尘分离器 40 的头端设有一与外界相通的第一进风管 41，该第一进风管 41 的头端接于进风口 31。第一进风管 41 的外壁与外壳 30 之间围合形成第一集尘腔 42，用于收集体积较大的灰尘颗粒，进行第一次集尘。所述第一进风管 41 末端的外周向前延伸形成第一螺旋式导风板 431，该第一螺旋式导风板 431 与外壳 30 之间围合形成第一螺旋风道 43。该第一螺旋风道 43 的后端与第一进风管 41 相通，前端与第一集尘腔 42 相通。本实施例中，所述第一进风管 41 与第一螺旋风道 43 之间的第一出风口 432 倾斜设置，由第一进风管 41 斜向第一螺旋风道 43，斜向的第一出风口 432 能够更好地导引风向。

[0038] 所述第一进风管 41 内部隔离形成第二进风管 44，该第二进风管 44 的前端通过多个小孔 411 与第一集尘腔 42 相通。由第一进风管 41 末端的外周向后延伸形成第二螺旋式导风板 451，该第二螺旋式导风板 451 与外壳 30 之间围合形成第二螺旋风道 45。所述第二进风管 44 与第二螺旋风道 45 之间的第二出风口 452 倾斜设置，由第二进风管 44 斜向第二螺旋风道 45，斜向的第二出风口 452 能够更好地导引风向。本实施例中，该第一螺旋式导风板 431 及第二螺旋式导风板 451 一体连接，于第一螺旋风道 43 与第二螺旋风道 45 之间设有一隔板 46，使两风道彼此隔离。第一出风口 432 和第二出风口 452 分布于隔板 46 两侧，且第一、第二出风口 432、452 的倾斜方向相反，这样，两风道内的风向相反，即第一螺旋风道 43 的风向由后向前流动，而第二螺旋风道 45 的风向由前向后流动。

[0039] 该第二螺旋风道 45 的后端界定出一过滤器安装腔 48，用于安装过滤器 50。该过滤器安装腔 48 与外壳 30 之间围合形成第二集尘腔 47，用于收集剩下的小颗粒灰尘。本实施例中，所述灰尘分离器 40 的后端有一圆形拦圈 471 和多条连接于拦圈 471 与第二螺旋式导风板 451 之间的支承条 472，由该拦圈 471、支承条 472 和第二螺旋式导风板 451 内侧围合形成过滤器安装腔 48，由该拦圈 471、支承条 472 外侧与外壳 30 之间围合形成第二集尘

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腔 47。

[0040] 所述过滤器 50 包括滤网 51 和 / 或内置于滤网 51 的可拆洗的海绵（或滤布）52 。该过滤器 50 为前窄后宽结构，对应之过滤器安装腔 48 也为前窄后宽结构，二者匹配安装，通过过滤器 50 将吸尘器主体 100 与吸尘仓 200 的风道隔开，隔离体积较小的灰尘颗粒，起到第二次隔尘效果。

[0041] 本吸尘装置的工作原理如下 ：

[0042] 启动开关 11 后，吸尘电机带动吸尘叶轮快速旋转，将外界携带灰尘的空气由第一进风管 41 吸入。倾斜设置的第一出风口 432 使得由第一进风管 41 吸入的空气，可以顺着第一螺旋风道 43 由后向前螺旋式吹向第一集尘腔 42，并且藉由其螺旋式的第一螺旋风道 43 设计结构，空气能够在第一螺旋风道 43 内形成旋风，使得空气和灰尘颗粒在第一集尘腔 42 内做圆周离心运动，将空气和体积较大的灰尘颗粒分离开，大颗粒灰尘颗粒沉淀在第一集尘室内，其它携带微小灰尘颗粒的空气从小孔 411 进入到第二进风管 44 内，藉此完成第一次过滤。

[0043] 同理，倾斜设置的第二出风口 452 使得由第二进风管 44 吸入的空气，可以顺着第二螺旋风道 45 由前向后螺旋式吹向第二集尘腔 47，并且藉由其螺旋式的第二螺旋风道 45 设计结构，能够在第二螺旋风道 45 内形成旋风，使得空气和灰尘颗粒在第二集尘腔 47 内做圆周离心运动，空气围绕在过滤器 50 的外表面转圈，大部分灰尘掉落在第二集尘腔内，其余的小部分灰尘颗粒与过滤器 50 侧向摩擦，会渗入到海绵 52 或滤网 51 中，由于其圆周离心运动，风速相对于传统直冲式进入海绵 52 或滤网 51 的设计结构而言，风力、冲击力有效降低，使空气与过滤器 50 接触更为柔和，即使灰尘吸附于过滤器 50 上，其吸附力也较传统吸尘器小，以便于抖落和清洗。

[0044] 最后，经过滤器 50 过滤后从吸尘器主体 100 的出风口吹出洁净的空气，完成第二次过滤。这样，设计两次螺旋风道的过滤结构，使得尘埃颗粒得到有效的过滤，保证排除空气的质量，不会污染环境。

[0045] 综上所述，本实用新型的设计重点在于将第二次过滤时的风道也设计为螺旋风道，使得空气和灰尘颗粒在第二集尘腔 47 内做圆周离心运动，空气围绕在过滤器 50 的外表面转圈，小灰尘颗粒与过滤器 50 侧向摩擦，风速相对于传统直冲式的设计结构而言，风力、冲击力有效降低，使空气与过滤器 50 接触更为柔和，即使灰尘吸附于过滤器 50 上，其吸附力也较传统吸尘器小，以便于抖落和清洗。

[0046] 以上所述，仅是本实用新型的较佳实施例而已，并非对本实用新型的技术范围作任何限制，故凡是依据本实用新型的技术实质对以上实施例所作的任何细微修改、等同变化与修饰，均仍属于本实用新型技术方案的范围内。

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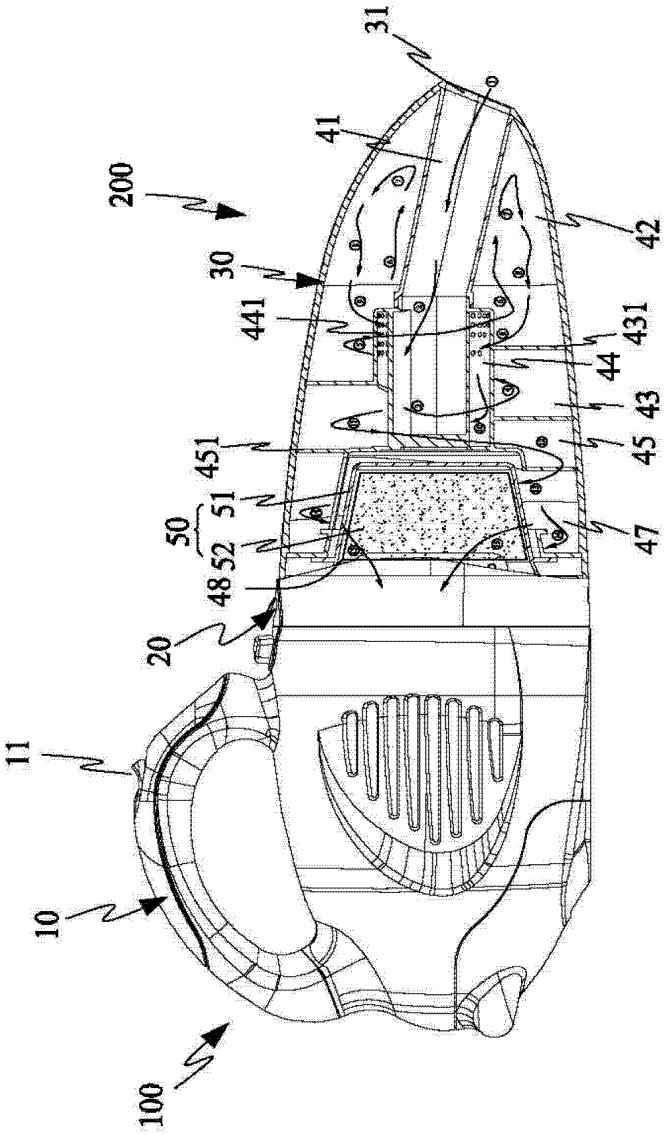

图 1

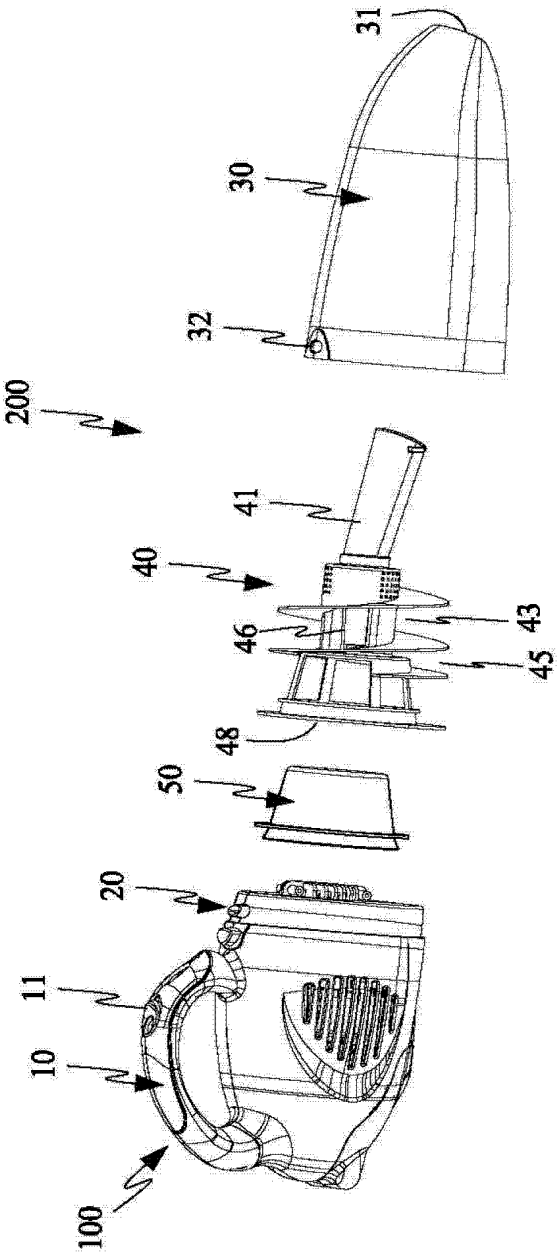

图 2

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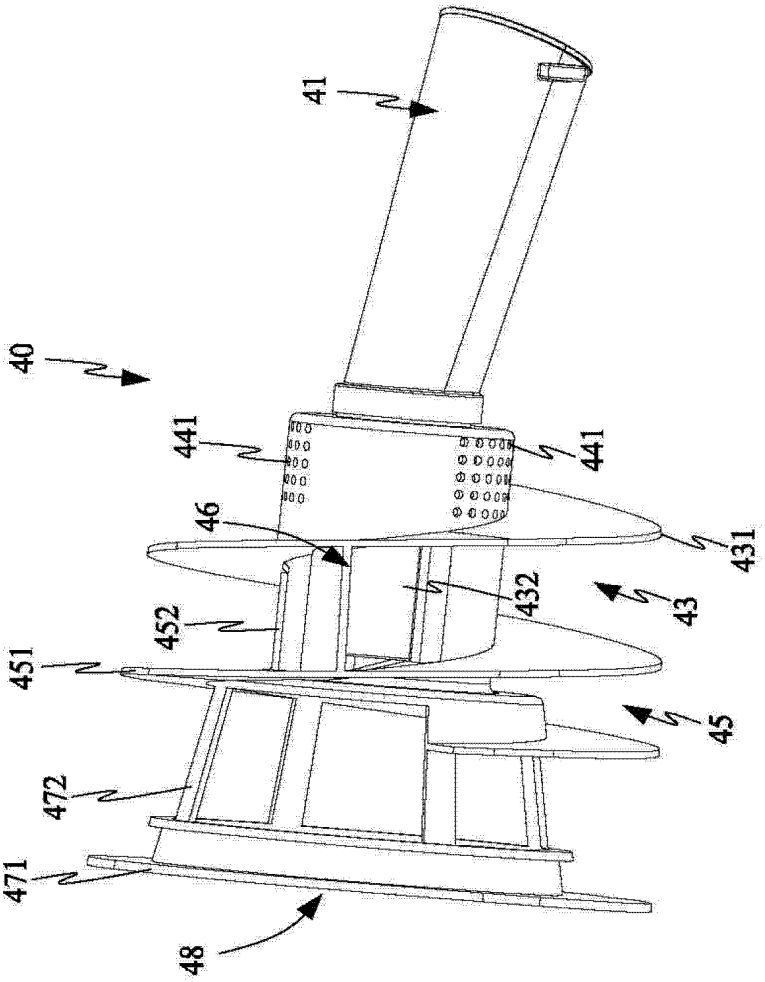

图 3

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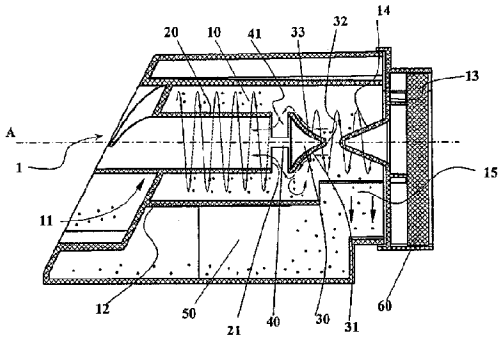
Prüfungsantrag gemäß § 44 PatG ist gestellt.

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

(54) Bezeichnung: **Wirbeltrennvorrichtung zur Verwendung in einem Staubsauger sowie Staubsauger mit dieser Vorrichtung**

(57) Zusammenfassung: Diese Erfindung bezieht sich auf eine Wirbeltrennvorrichtung (1) zur Verwendung in eiem Staubsauger (2), einschließlich: Wirbelhohlraum (10), wobei dieser Wirbelhohlraum (10) über einen Luftstromeingang (11), eine Seitenwand (12) sowie eine Stirnwand (13) verfügt, wobei bei der Benutzung der vom beschriebenen Staubsauger eingesaugte Luftstrom, der Schmutz enthält, durch den beschriebenen Luftstromeingang (11) in den beschriebenen Wirbelhohlraum (10) gelangt und sich entlang der beschriebenen Seitenwand (12) rotierend bewegt; Eintauchrohr (20), das in den beschriebenen Wirbelhohlraum (10) eintaucht und über eine Rohrmündung (21) verfügt, wobei der Luftstrom nach dem Wirbeltrennen durch diese Rohrmündung (21) in das beschriebenen Eintauchrohr (20) gelangen kann und den beschriebenen Wirbelhohlraum (10) verlässt; sowie Sperrelement (30), das zwischen der beschriebenen Rohrmündung (21) und der beschriebenen Stirnwand (13) angeordnet ist, wobei zwischen der beschriebenen Rohrmündung (21) und dem beschriebenen Sperrelement (30) ein Lufteinlass (41) gebildet wird. Diese Erfindung wird auf dieser vorhandenen Wirbeltrennvorrichtung (1) basieren, dadurch gekennzeichnet, dass das beschriebene Sperrelement (30) über eine äußere Oberfläche (31) verfügt, wobei diese äußere Oberfläche (31) stufenlos und in Richtung zur Stirnwand (13) des beschriebenen Wirbelhohlraums (10) allmählich bis zum Oberteil (32) des Sperrelements (30) schrumpft. Diese Erfindung findet in Staubsaugern Anwendung.



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Beschreibung

[Technologisches Gebiet]

[0001] Diese Erfindung erstreckt sich auf eine Wirbeltrennvorrichtung zur Verwendung in einem Staubsauger, einschließlich eines Wirbelhohlraums, der über einen Luftstromeingang, eine Seitenwand sowie eine Stirnwand verfügt, wobei bei der Benutzung der vom beschriebenen Staubsauger eingesaugte Luftstrom, der Schmutz enthält, durch den beschriebenen Luftstromeingang in den beschriebenen Wirbelhohlraum gelangt und sich entlang der beschriebenen Seitenwand rotierend bewegt; eines Eintauchrohrs, das in den beschriebenen Wirbelhohlraum eintaucht und über eine Rohrmündung verfügt, wobei der Luftstrom nach dem Wirbeltrennen durch diese Rohrmündung in das beschriebene Eintauchrohr gelangen kann und den beschriebenen Wirbelhohlraum verlässt; sowie eines Sperrelements, das zwischen der beschriebenen Rohrmündung und der beschriebenen Stirnwand angeordnet ist, wobei zwischen der beschriebenen Rohrmündung und dem beschriebenen Sperrelement ein Lufteinlass gebildet wird. Diese Erfindung erstreckt sich außerdem auf Staubsauger mit dieser Wirbeltrennvorrichtung.

[Technologischer Hintergrund]

[0002] Von dieser Wirbeltrennvorrichtung kann aus dem US-Patent US 6.896.711 62 Kenntnis erlangt werden. Gemäß der Offenbarung seiner Beschreibung umfasst diese herkömmliche Wirbeltrennvorrichtung ein Schmutzsperrelement, wobei dieses Sperrelement über eine Kugeloberfläche verfügt und wie eine Bildtafel aufgebaut ist. Die innere Oberfläche dieses Sperrelements ist zur Stirnwand des Wirbelhohlraums gerichtet. Der verlassende Luftstrom kann mit der inneren Oberfläche des Sperrelements kollidieren, wodurch im Luftstrom enthaltener Schmutz durch dieses Sperrelement blockiert wird und in den Schmutzbehälter fällt. Der Nachteil dieser Wirbeltrennvorrichtung besteht darin, dass der vom Sperrelement blockierte Schmutz möglicherweise vom nachfolgend den Wirbelhohlraum verlassenden Luftstrom wieder eingefangen wird. Deshalb bestehen für den Schmutz gute Möglichkeiten zum Verlassen des Wirbelhohlraums.

[Inhalt der Erfindung]

[0003] Das Ziel dieser Erfindung besteht deshalb darin, die genannten Probleme der herkömmlichen Technologie zu überwinden und den absolut größten Teil des Schmutzes aus dem Luftstrom zu separieren, wobei es insbesondere möglich sein muss, das Risiko zu minimieren, dass feinste Teilchen den Wirbelhohlraum verlassen können.

[0004] Diese Erfindung bezieht sich auf eine Wirbeltrennvorrichtung zur Verwendung in einem Staubsauger, einschließlich: Wirbelhohlraum, der über einen Luftstromeingang, eine Seitenwand sowie eine Stirnwand verfügt, wobei bei der Benutzung der vom beschriebenen Staubsauger eingesaugte Luftstrom, der Schmutz enthält, durch den beschriebenen Luftstromeingang in den beschriebenen Wirbelhohlraum gelangt und sich entlang der Seitenwand rotierend bewegt; Eintauchrohr, das in den beschriebenen Wirbelhohlraum eintaucht und über eine Rohrmündung verfügt, wobei der Luftstrom nach dem Wirbeltrennen durch diese Rohrmündung in das beschriebene Eintauchrohr gelangen kann und den beschriebenen Wirbelhohlraum verlässt; sowie ein Sperrelement, das zwischen der beschriebenen Rohrmündung und der beschriebenen Stirnwand angeordnet ist, wobei zwischen der beschriebenen Rohrmündung und dem beschriebenen Sperrelement ein Lufteinlass gebildet wird, dadurch gekennzeichnet, dass das beschriebene Sperrelement über eine äußere Oberfläche verfügt, wobei diese äußere Oberfläche stufenlos und in Richtung zur Stirnwand des beschriebenen Wirbelhohlraums allmählich bis zum Oberteil schrumpft.

[0005] Vor dem Eintritt in das Eintauchrohr und Verlassen des Wirbelhohlraums kollidiert der Luftstrom zuerst mit der äußeren Oberfläche des Sperrelements, wodurch zumindest ein Teil der im Luftstrom enthaltenen Teilchen durch den Aufprall aus dem Luftstrom separiert werden kann. Außerdem kann dieser Schmutz aufgrund der Gestalt der beschriebenen äußeren Oberfläche sich zur Seitenwand des Wirbelhohlraums hin bewegen. Dieser sich zur beschriebenen Seitenwand hin bewegende Schmutz kann durch den neu eintretenden und Schmutz enthaltenden Luftstrom mitgenommen werden und noch einmal einer Wirbeltrennung unterzogen werden. Dadurch kann die Trennwirkung der Wirbeltrennvorrichtung signifikant erhöht werden.

[0006] Andere Merkmale, die allein oder in Verbindung mit anderen Merkmalen als Eigenschaften dieser Erfindung angesehen werden, werden in den folgenden zusätzlichen Ansprüchen erläutert.

[0007] Ein zusätzliches Merkmal gemäß dieser Erfindung besteht darin, dass das beschriebene Sperrelement und das beschriebene Eintauchrohr miteinander verbunden angeordnet sind.

[0008] Vorzugsweise ist das beschriebene Sperrelement durch ein Verbindungselement mit dem beschriebenen Eintauchrohr verbunden, wobei das beschriebene Verbindungselement und das beschriebene Sperrelement integriert angebracht sind, wodurch die Montage der beschriebenen Trennvorrichtung vereinfacht wird.

[0009] Eine bevorzugte Ausführungsweise gemäß dieser Erfindung besteht darin, dass das beschriebe-

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ne Sperrelement und ein Kreiskegel miteinander verbunden angeordnet sind, wobei der beschriebene Kreiskegel neben der beschriebenen Stirnwand angebracht ist.

[0010] Vorzugsweise verfügt die beschriebene äußere Oberfläche über einen positiven oder negativen Krümmungsteil, wodurch der Luftstrom entlang des beschriebenen Krümmungsteils ungehindert zu beschriebenen Seitenwand geführt werden kann.

[0011] Vorzugsweise ist das beschriebene Sperrelement kegelförmig, da diese Gestalt für die Bewegung des beschriebenen Luftstroms besonders vorteilhaft ist.

[0012] Eine vorteilhafte Ausführungsweise gemäß dieser Erfindung besteht darin, dass die Gesamtfläche des beschriebenen Lufteinlasses größer als die oder generell gleich der Querschnittsfläche des beschriebenen Eintauchrohres ist, wodurch der Luftdruck keine Verluste aufgrund der Anbringung des beschriebenen Sperrelements aufweisen kann. Eine besonders bevorzugte Weise besteht darin, dass die Gesamtfläche des beschriebenen Lufteinlasses generell gleich der Querschnittsfläche des beschriebenen Eintauchrohres ist, wodurch am beschriebenen Lufteinlass und an der beschriebenen Eintrittsöffnung der Luftdruck generell identisch ist.

[0013] Ein weiteres Merkmal dieser Erfindung besteht darin, dass auf der beschriebenen Seitenwand ein Schmutzausgang angebracht ist, wobei der beschriebene Wirbelhohlraum über diesen Schmutzausgang mit einem Schmutzbehälter fluidleitend verbunden ist. Vorzugsweise bildet die beschriebene Seitenwand einen Teil des beschriebenen Schmutzbehälters.

[0014] Eine besonders bevorzugte Ausführungsweise gemäß dieser Erfindung besteht darin, dass der beschriebene Schmutzausgang in axialer Richtung des beschriebenen Wirbelhohlraums in maximaler Nähe zur beschriebenen Rohrmündung über eine Grenze verfügt, wobei mindestens ein Teil des beschriebenen Sperrelements sich zwischen der beschriebenen Rohrmündung und der beschriebenen Grenze befindet.

[0015] Diese Erfindung findet auf Staubsauger Anwendung.

[0016] Der Aufbau dieser Erfindung sowie ihre sonstigen Erfindungsziele und Nutzeffekte werden durch die nachfolgenden, in Verbindung mit den Abbildungen beschriebenen bevorzugten Ausführungsweisen noch deutlicher und einfacher verständlich.

[Beschreibung der Abbildungen]

[0017] Als ein Teil der Beschreibung und zur Ermöglichung eines weitergehenden Verständnisses dieser Erfindung erläutern die unten stehenden Abbildungen die konkreten Ausführungsweisen dieser Erfindung und dienen gemeinsam mit der Beschreibung der Darstellung des Prinzips dieser Erfindung.

[0018] Abb. 1 zeigt ein Schnittbild der Wirbeltrennvorrichtung einer bevorzugten Ausführungsweise gemäß dieser Erfindung.

[0019] Abb. 2 zeigt eine dreidimensionale Abbildung eines Staubsaugers mit der Wirbeltrennvorrichtung einer bevorzugten Ausführungsweise dieser Erfindung.

[Beschreibung der konkreten Ausführungsweisen]

[0020] In der folgenden konkreten Beschreibung der bevorzugten Ausführungsweisen sind identische oder ähnliche Merkmale mit identischen Markierungen in den Abbildungen versehen.

[0021] Es wird auf die Abbildungen verwiesen, zuerst insbesondere auf Abb. 1. Abb. 1 zeigt die Wirbeltrennvorrichtung **1** einer bevorzugten Verfahrensweise gemäß dieser Erfindung. Diese Wirbeltrennvorrichtung **1** umfasst einen röhrenartigen Wirbelhohlraum **10** und ein Eintauchrohr **20**. Der Wirbelhohlraum **10** verfügt über einen Luftstromeingang **11**, eine Seitenwand **12** sowie eine Stirnwand **13**. Bei der Benutzung gelangt der Luftstrom, der Schmutz enthält, durch den beschriebenen Luftstromeingang **11** in den beschriebenen Wirbelhohlraum **10** und bewegt sich rotierend entlang der beschriebenen Seitenwand **12**. Auf der Seitenwand **12** wird ein Schmutzausgang **15** gebildet. Der Wirbelhohlraum **10** ist über diesen Schmutzausgang **15** mit einem Schmutzbehälter **50** fluidleitend verbunden, wodurch der Schmutz aufgrund der Wirkung der Fliehkraft aus dem Luftstrom separiert werden kann und in diesem Schmutzbehälter **50** gesammelt wird. Vorzugsweise bildet die beschriebene Seitenwand **12** einen Teil des beschriebenen Schmutzbehälters **50**. Neben der beschriebenen Stirnwand **13** ist ein Kreiskegel **14** angeordnet, der sich im Wirbelhohlraum **10** befindet. Vorzugsweise bildet dieser Kreiskegel **14** einen Teil der beschriebenen Stirnwand **13**. In diesem Ausführungsbeispiel wird die Stirnwand **13** als selbständiges Teil des Wirbelhohlraums **10** bereitgestellt. Vorzugsweise wird die Stirnwand **13** demontierbar auf die Wirbeltrennvorrichtung **1** montiert. Das Eintauchrohr **20** taucht in diesen Wirbelhohlraum **10** ein und verfügt über ein Rohrmündung **21**. Durch diese Rohrmündung **21** kann der Luftstrom, der das Wirbeltrennen durchlaufen hat und von der Stirnwand **13** reflektiert wurde, in das Eintauchrohr **20** gelangen und dadurch den Wirbelhohlraum **10** verlassen.

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[0022] Zwischen der Rohrmündung **21** des Eintauchrohrs **20** und der Stirnwand **13** des Wirbelhohlraums **10** ist ein Sperrelement **30** angebracht. Zwischen dem Sperrelement **30** und der Rohrmündung **21** des Eintauchrohrs **20** besteht ein Abstand, so dass zwischen der beschriebenen Rohrmündung **21** und dem Sperrelement **30** der Lufteinlass **41** gebildet werden kann, wodurch der Wirbelhohlraum **10** über diesen Lufteinlass **41** mit dem Eintauchrohr **20** fluidleitend verbunden ist. Durch diesen Lufteinlass **41** gelangt der Luftstrom nach Durchlaufen der Wirbeltrennung über die Rohrmündung **21** in das Eintauchrohr **20** und verlässt anschließend den Wirbelhohlraum **10**.

[0023] Das Sperrelement **30** verfügt über eine äußere Oberfläche **31**, diese äußere Oberfläche **31** schrumpft stufenlos und in Richtung zur Stirnwand **13** des beschriebenen Wirbelhohlraums **10** allmählich bis zum Oberteil **32**. Vorzugsweise ist dieses Sperrelement **30** hohl und kegelförmig.

[0024] Das Sperrelement **30** und das Eintauchrohr **20** sind miteinander verbunden. Konkret ist das Sperrelement **30** durch das Verbindungselement **40** mit dem Eintauchrohr **20** verbunden. Ein Ende des beschriebenen Verbindungselements **40** ist mit der Wandung des Eintauchrohrs **20** verbunden. Das andere Ende ist mit dem unteren Rand des Sperrelements **30** verbunden. Vorzugsweise bildet das Verbindungselement **40** mit dem Sperrelement **30** eine integrierte Struktur, wodurch das Sperrelement **30** in sehr einfacher Weise im Wirbelhohlraum **10** montiert werden kann, indem das Verbindungselement **40** mit dem Eintauchrohr **20** verbunden wird. Im Ausführungsbeispiel in Abb. 1 werden zum Beispiel das Sperrelement **30**, das Verbindungselement **40** sowie das Eintauchrohr **20** integriert gestaltet. In einer substituierenden Ausführungsweise können jedoch auch das Sperrelement **30** und das Eintauchrohr **20** einzeln bereitgestellt und anschließend zusammenmontiert werden.

[0025] Obwohl es keine Darstellung gibt, kann jedoch in einer weiteren Ausführungsweise das beschriebene Sperrelement **30** auch mit dem beschriebenen Kreiskegel **14** verbunden werden.

[0026] Das beschriebene Verbindungselement **40** wird in dieser Weise angebracht: Es lässt die Gesamtfläche des Lufteinlasses **41**, der sich zwischen dem Sperrelement **30** und der Rohrmündung **21** des Eintauchrohrs **20** befindet, größer als oder generell gleich der Querschnittsfläche des Eintauchrohrs **20** sein, wodurch ein durch die Anbringung des Sperrelements **30** hervorgerufener Verlust des Luftdrucks verhindert wird.

[0027] Die äußere Oberfläche **31** des Sperrelements **30** verfügt über einen Krümmungsteil **33**, wodurch sich der Luftstrom durch die Führung dieses Krümmungsteils **33** noch besser in Richtung Seitenwand **12** bewegen kann. In diesem Ausführungsbeispiel ist der Krümmungsteil **33** negativ. Dieser Krümmungsteil **33** kann jedoch auch positiv sein.

[0028] In diesem Ausführungsbeispiel streckt sich der Oberteil **32** des Sperrelements **30** bis zu diesem Grad: In Richtung senkrecht zur Achse A des Wirbelhohlraums **10** interpoliert er mit dem Schmutzausgang **15**. Allerdings wird das Sperrelement **30** zumindest teilweise nicht gegenüber diesem Schmutzausgang **15** bloßgelegt. Das heißt, das Sperrelement **30** befindet sich zumindest teilweise zwischen der Rohrmündung **21** und einer Grenze **16** des Schmutzausgangs **15**, wobei diese Grenze **16** in Richtung der Achse A des Wirbelhohlraums **10** in maximaler Nähe zur Rohrmündung **21** liegt. In einer substituierenden Ausführungsweise wird das Sperrelement **30** insgesamt nicht gegenüber diesem Schmutzausgang **15** bloßgelegt.

[0029] Diese Erfindung findet Anwendung auf Staubsauger. Abb. 2 zeigt einen Vakuumstaubsauger **2**. Der Staubsauger **2** umfasst einen Hauptkörper **5**, eine Saugdüse zum Einsaugen der Schmutz enthaltenden Luft (nicht abgebildet), einen Ventilator mit Elektromotorantrieb (nicht abgebildet) sowie eine Wirbeltrennvorrichtung **1**. Dabei wird der von einem Elektromotor angetriebene Ventilator zur Erzeugung der Saugkraft verwendet und ist in einer separaten Kammer des Hauptkörpers untergebracht. Zwischen dem Saugkopf und diesem Ventilator mit Elektromotorantrieb entsteht ein Weg für den Luftstrom. Die genannte Wirbeltrennvorrichtung **1** wird in diesen Luftstromweg montiert und dient dazu, vor dem Eintritt des Luftstroms in die separate Kammer aus dem Luftstrom den Schmutz zu separieren. Die Saugdüse kann über einen Schlauch mit dem Hauptkörper **5** verbunden werden, kann aber auch direkt mit dem Hauptkörper **5** verbunden werden.

[0030] Während der Verwendung gelangt der vom Staubsauger **2** eingesaugte und mit Schmutz belastete Luftstrom über den Luftstromeingang **11** in den Wirbelhohlraum **10** und beginnt anschließend den Prozess der Wirbeltrennung. Konkret bewegt sich der mit Schmutz belastete Luftstrom spiralförmig entlang der Seitenwand **12** in Richtung Stirnwand **13**. Dadurch wird der Großteil des Schmutzes, insbesondere der Schmutz mit hohem Gewicht, aufgrund der Wirkung der Fliehkraft durch den Schmutzausgang **15** auf der Seitenwand **12** aus dem Luftstrom separiert und im Schmutzbehälter **50** gesammelt. Der Luftstrom mit dem restlichen Schmutz (z. B. Staubteilchen) wird von der Stirnwand **13** reflektiert und rotiert mit einem kleinen Rotationsdurchmesser spiralförmig in Richtung der Rohrmündung **21** des Eintauchrohres **20**. Vor dem Eintritt des Luftstroms in das Eintauchrohr **20** zum Verlassen des Wirbelhohl-

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raums **10** kollidiert der Luftstrom mit der äußeren Oberfläche **31** des Sperrelements **30**. Dadurch wird mindestens ein Teil des im Luftstrom enthaltenen Schmutzes durch die Kollision aus dem Luftstrom separiert und bewegt sich aufgrund der Gestalt des Sperrelements **30** in Richtung Seitenwand **12** des Wirbelhohlraums **10**. Der Luftstrom nach der Separation des Schmutzes gelangt über den Lufteinlass **41** in das Eintauchrohr **20** und verlässt den Wirbelhohlraum. Dieser sich in Richtung Seitenwand **12** bewegende Schmutz wird von dem neu hereinkommenden, entlang der Seitenwand **12** spiralförmig rotierenden und mit Schmutz belasteten Luftstrom mitgenommen. Dadurch durchläuft der vom Sperrelement **30** separierte Schmutz nochmals den Prozess der Wirbeltrennung, wodurch im weiteren die Leistung der Wirbeltrennvorrichtung **1** zur Trennung des Schmutzes signifikant erhöht wird.

[0031] Nach dem Verlassen des Wirbelhohlraums **10** durch das Eintauchrohr **20** ist in der Fließrichtung des Luftstroms eine separate Kammer mit einem Ventilator mit Elektromotorantrieb (nicht abgebildet) angebracht. Vorzugsweise ist in dem Luftweg zwischen der Wirbeltrennvorrichtung **1** und dem Ventilator mit Elektromotorantrieb ein Filter **60** angebracht, um die restlichen feinsten Teilchen, die im Luftstrom enthalten sind, zu filtern. Es ist zu beachten, dass es möglich ist, vor dem Filter **60** eine weitere Wirbeltrennstufe anzuordnen, oder es ebenso möglich ist, mittels dieser weiteren Wirbeltrennstufe den Filter **60** zu ersetzen.

Bezugszeichenliste

1	Wirbeltrennvorrichtung
2	Staubsauger
5	Hauptkörper
10	Wirbelhohlraum
11	Luftstromeingang
12	Seitenwand
13	Stirnwand
14	Kegelkörper
15	Schmutzausgang
20	Eintauchrohr
21	Rohrmündung des Eintauchrohrs **20**
30	Sperrelement
31	äußere Oberfläche des Sperrelements **30**
32	Oberteil des Sperrelements **30**
40	Verbindungselement
41	Lufteinlass
50	Schmutzbehälter
60	Filter

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ZITATE ENTHALTEN IN DER BESCHREIBUNG

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Zitierte Patentliteratur

- US 689671162 **[0002]**

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Patentansprüche

1. Wirbeltrennvorrichtung (**1**) zur Verwendung in einem Staubsauger (**2**), einschließlich:
Wirbelhohlraum (**10**), wobei dieser Wirbelhohlraum (**10**) über einen Luftstromeingang (**11**), eine Seitenwand (**12**) sowie eine Stirnwand (**13**) verfügt, wobei bei der Benutzung der vom beschriebenen Staubsauger eingesaugte Luftstrom, der Schmutz enthält, durch den beschriebenen Luftstromeingang (**11**) in den beschriebenen Wirbelhohlraum (**10**) gelangt und sich entlang der Seitenwand (**12**) rotierend bewegt;
Eintauchrohr (**20**), das in den beschriebenen Wirbelhohlraum (**10**) eintaucht und über eine Rohrmündung (**21**) verfügt, wobei der Luftstrom nach dem Wirbeltrennen durch diese Rohrmündung (**21**) in das beschriebene Eintauchrohr (**20**) gelangen kann und den beschriebenen Wirbelhohlraum (**10**) verlässt; sowie
Sperrelement (**30**), das zwischen der beschriebenen Rohrmündung (**21**) und der beschriebenen Stirnwand (**13**) angeordnet ist, wobei zwischen der beschriebenen Rohrmündung (**21**) und dem beschriebenen Sperrelement (**30**) ein Lufteinlass (**41**) gebildet wird, **dadurch gekennzeichnet**, dass das beschriebene Sperrelement (**30**) über eine äußere Oberfläche (**31**) verfügt, wobei diese äußere Oberfläche (**31**) stufenlos und in Richtung zur Stirnwand (**13**) des beschriebenen Wirbelhohlraums (**10**) allmählich bis zum Oberteil (**32**) schrumpft.

2. Wirbeltrennvorrichtung (**1**) gemäß Anspruch 1, dadurch gekennzeichnet, dass das beschriebene Sperrelement (**30**) und das beschriebene Eintauchrohr (**20**) miteinander verbunden angeordnet sind.

3. Wirbeltrennvorrichtung (**1**) gemäß Anspruch 1 oder 2, dadurch gekennzeichnet, dass das beschriebene Sperrelement (**30**) durch ein Verbindungselement (**40**) mit dem beschriebenen Eintauchrohr (**20**) verbunden ist, wobei das beschriebene Verbindungselement (**40**) und das beschriebene Sperrelement (**30**) integriert angeordnet sind.

4. Wirbeltrennvorrichtung (**1**) gemäß einem beliebigen der Ansprüche 1 bis 3, dadurch gekennzeichnet, dass das beschriebene Sperrelement (**30**) und ein Kreiskegel (**14**) miteinander verbunden angeordnet sind, wobei der beschriebene Kreiskegel (**14**) neben der beschriebenen Stirnwand (**13**) angebracht ist.

5. Wirbeltrennvorrichtung (**1**) gemäß einem beliebigen der vorstehenden Ansprüche, dadurch gekennzeichnet, dass die beschriebene äußere Oberfläche über einen positiven oder negativen Krümmungsteil (**33**) verfügt.

6. Wirbeltrennvorrichtung (**1**) gemäß einem beliebigen der vorstehenden Ansprüche, dadurch gekennzeichnet, dass das beschriebene Sperrelement (**30**) kegelförmig ist.

7. Wirbeltrennvorrichtung (**1**) gemäß einem beliebigen der vorstehenden Ansprüche, dadurch gekennzeichnet, dass die Gesamtfläche des beschriebenen Lufteinlasses (**41**) größer als die oder generell gleich der Querschnittsfläche des beschriebenen Eintauchrohres (**21**) ist.

8. Wirbeltrennvorrichtung (**1**) gemäß einem beliebigen der vorstehenden Ansprüche, dadurch gekennzeichnet, dass die beschriebene Seitenwand (**12**) mit einem Schmutzausgang (**15**) versehen ist, wobei der beschriebene Wirbelhohlraum (**10**) über diesen Schmutzausgang (**15**) mit einem Schmutzbehälter (**50**) fluidleitend verbunden ist.

9. Wirbeltrennvorrichtung (**1**) gemäß Anspruch 8, dadurch gekennzeichnet, dass der beschriebene Schmutzausgang (**15**) in axialer Richtung des beschriebenen Wirbelhohlraums (**10**) in maximaler Nähe zur beschriebenen Rohrmündung (**21**) über eine Grenze (**16**) verfügt, wobei mindestens ein Teil des beschriebenen Sperrelements (**30**) sich zwischen der beschriebenen Rohrmündung (**21**) und der beschriebenen Grenze (**16**) befindet.

10. Wirbeltrennvorrichtung (**1**) gemäß Anspruch 8, dadurch gekennzeichnet, dass die beschriebene Seitenwand (**12**) einen Teil des beschriebenen Schmutzbehälters (**50**) bildet.

11. Staubsauger, einschließlich einer Wirbeltrennvorrichtung (**1**) gemäß einem beliebigen der vorstehenden Ansprüche.

Es folgt ein Blatt Zeichnungen

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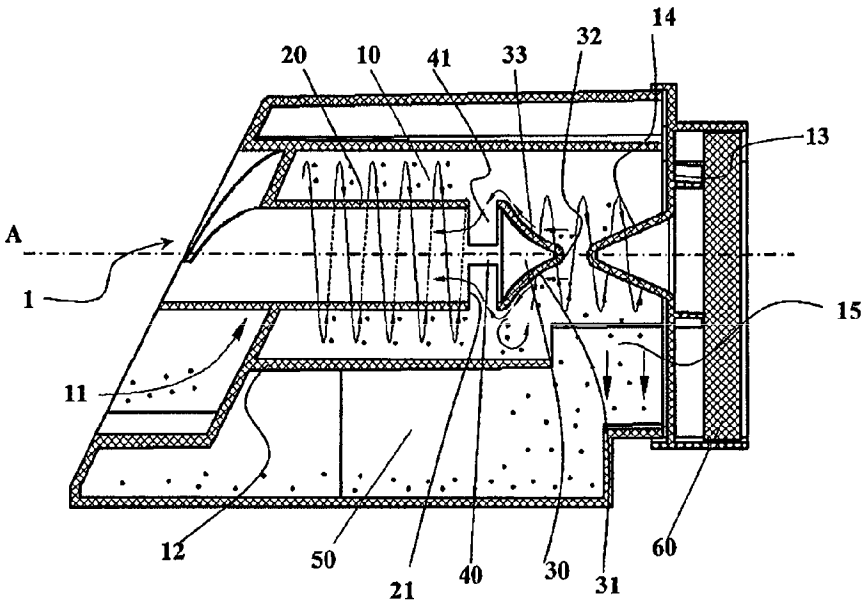
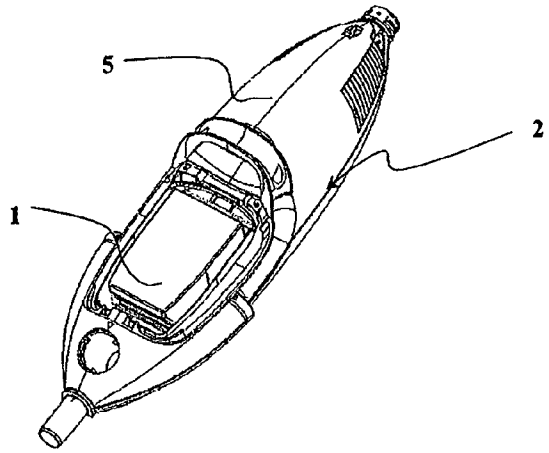
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322
Page 255 of 1677

6/5/2018, EAST Version: 3.4.1

Anhängende Zeichnungen



Figur 1



Figur 2

SharkNinja Ex. 1002
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6/5/2018, EAST Version: 3.4.1

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/269,430	09/19/2016	Stephen Robert DIMBYLOW	424662105900	6526

25227 7590 08/27/2018

MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

EXAMINER
CARLSON, MARC

ART UNIT	PAPER NUMBER
3723	

NOTIFICATION DATE	DELIVERY MODE
08/27/2018	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

EOfficeVA@mofo.com
PatentDocket@mofo.com
pair_mofo@firsttofile.com

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SharkNinja et al. v. Dyson Technology Limited,
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Office Action Summary	Application No. 15/269,430	Applicant(s) DIMBYLOW, STEPHEN ROBERT	
	Examiner Marc Carlson	Art Unit 3723	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *9/19/2016*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-10* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-6 and 8-10* is/are rejected.

8)☒ Claim(s) *7* is/are objected to.

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *11/29/2016* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☒ All b)☐ Some** c)☐ None of the:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *3/3/2017 and 4/20/2018*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

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The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

Claim Rejections - 35 USC § 102

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 –

(a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

1. Claims 1, 3-6, 8, and 10 are rejected under 35 U.S.C. 102(a)(2) as being anticipated by Krebs et al. US 2017/0071426 (hereafter Krebs et al.).

a. Regarding Claim 1, Krebs et al. anticipates:

A handheld vacuum cleaner (vacuum cleaner 10) comprising:

a handle (handle 30) by which the vacuum cleaner is supported during normal use (Figure 1B);

a cyclonic separating unit (cyclonic or centrifugal separator positioned within chamber 46, Paragraph [0028]) having a longitudinal axis (central longitudinal axis X) and a dirt collector (cylindrical collection chamber 76) at one end of the cyclonic separating unit (Figure 4), the cyclonic separating unit comprising an end portion (labeled in attached Figure 4 below) having a closed configuration (openable door 82 closed, Figure 4) in which dirt is retained within the dirt collector by the end portion and an open configuration (openable door 82 open Figure 3) for the removal of dirt from the dirt collector (Paragraphs [0039]-[0040]), wherein the handle has a pistol grip configuration (pistol-style grip, Paragraphs [0023] and [0064]) in which the handle is inclined (oriented along handle axis W, Figure 4) with respect to the cyclonic separating unit (oriented along central longitudinal axis X) to form an angle of not less than 85 degrees and not greater than 140 degrees (135 degrees as shown in attached Figure 4 below and Paragraph [0064]) between the handle and the longitudinal axis of the cyclonic separating unit.

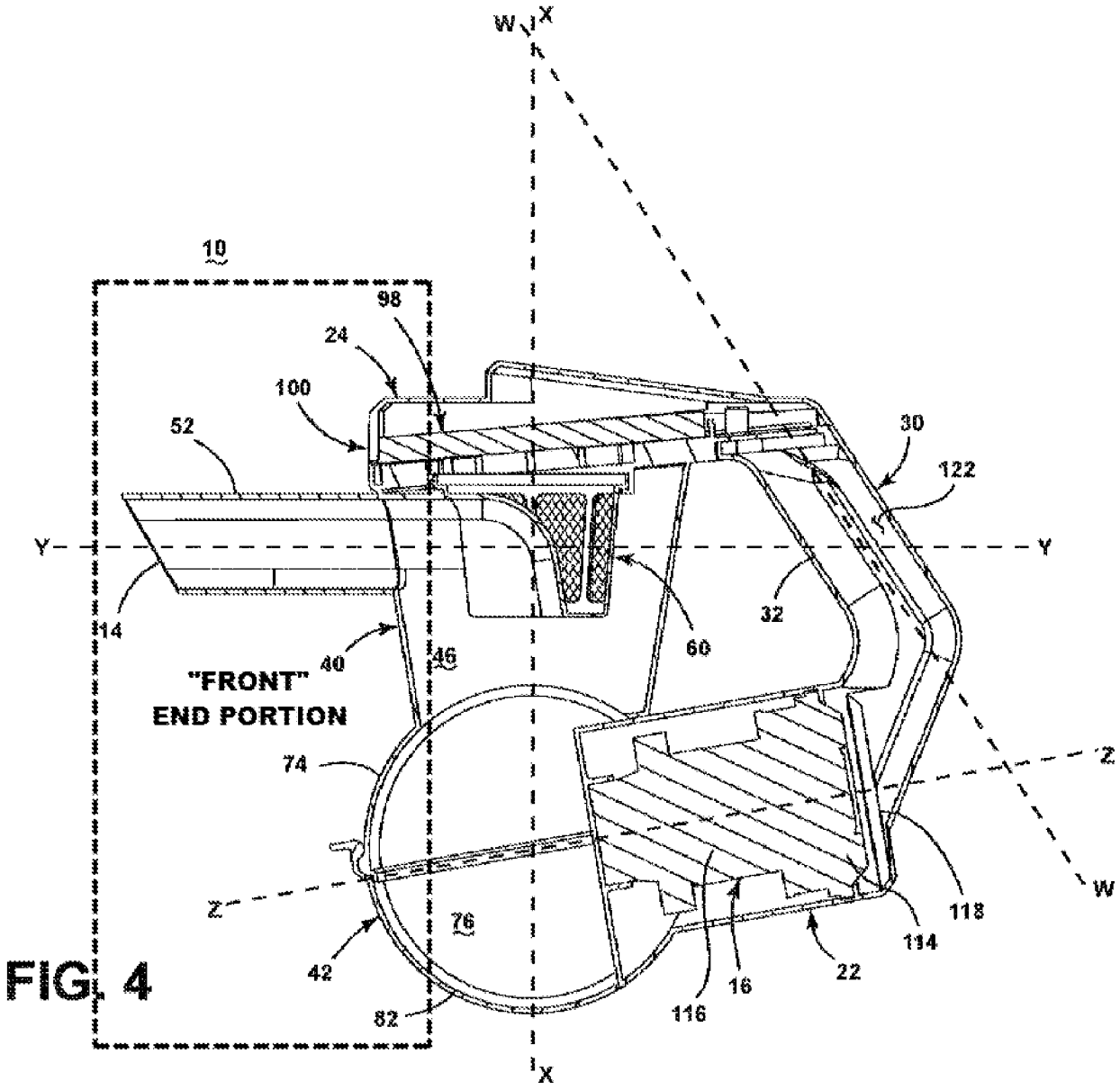

W
X
10
98
24
100
52
30
122
Y
Y
14
40
46
60
32
"FRONT"
END PORTION
74
Z
Z
W
76
118
114
42
22
16
116
82
X

FIG. 4

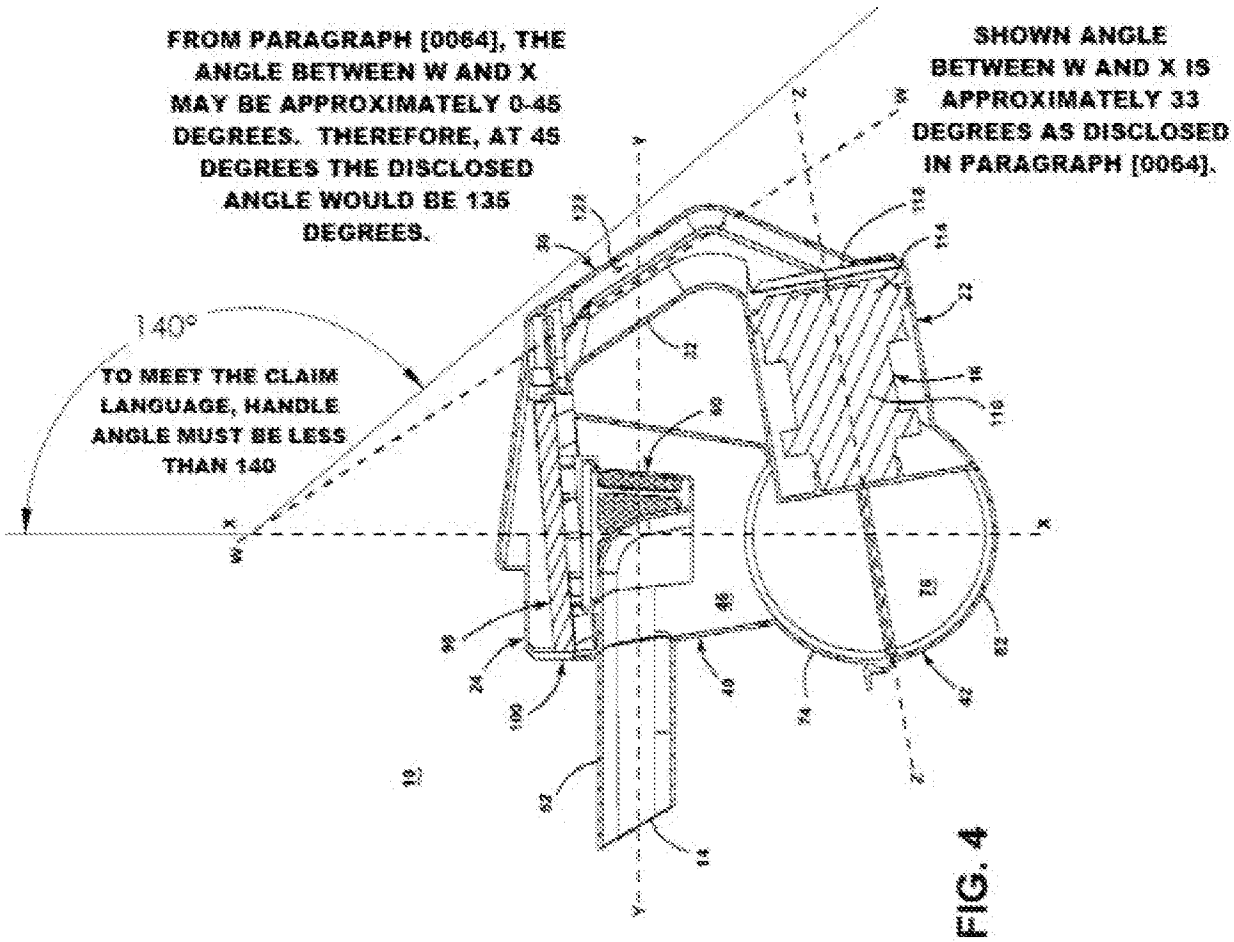


FIG. 4

b. Regarding Claim 3, Krebs et al. anticipates:

The handheld vacuum cleaner of claim 1, wherein the end portion (labeled in attached Figure 4 above) comprises an end wall (openable door 82, Figure 2) of the cyclonic separating unit (cyclonic or centrifugal separator positioned within chamber 46, Paragraph [0028])(Figure 2).

c. Regarding Claim 4, Krebs et al. anticipates:

The handheld vacuum cleaner of claim 1, wherein the end portion (labeled in attached Figure 4 above) is arranged to pivot (openable door 82 pivot with hinge 84) between the closed configuration (openable door 82 closed, Figure 4) and the open configuration (openable door 82 open, Figure 3).

d. Regarding Claim 5, Krebs et al. anticipates:

The handheld vacuum cleaner of claim 1, wherein the cyclonic separating unit (cyclonic or centrifugal separator positioned within chamber 46, Paragraph [0028]) comprises a dirty air inlet (air inlet 14) through the end portion (see attached Figure 4 above).

e. Regarding Claim 6, Krebs et al. anticipates:

The handheld vacuum cleaner of claim 1, further comprising a connector (conduit 52, Paragraph [0029]) and a cleaning tool (cleaning head 15) connectable to the connector (Figure 1B), wherein the cleaning tool is configured such that when the end portion is in the closed configuration and the cleaning tool is connected to the connector (arrangement shown in Figure 1B) movement of the end portion (see attached Figure 4 above) from the closed configuration (openable door 82 closed, Figure 4) into the open configuration (openable door 82 open, Figure 4) is prevented (movement of the openable door 82 is prevented in this scenario by latch 86).

f. Regarding Claim 8, Krebs et al. anticipates:

The handheld vacuum cleaner of claim 1, wherein the dirt collector (cylindrical collection chamber 76) is disposed forward of the handle (handle 30)(Figure 2).

g. Regarding Claim 10, Krebs et al. anticipates:

The handheld vacuum cleaner of claim 1, wherein the cyclonic separating unit (cyclonic or centrifugal separator positioned within chamber 46, Paragraph [0028]) comprises a cyclonic separation (cyclonic airflow would be shaped by chamber 46) having an axis (axis of chamber 46, Figure 4) that defines the longitudinal axis (central longitudinal axis X) of the cyclonic separating unit (Figure 4).

Claim Rejections - 35 USC § 103

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

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

> Determining the scope and contents of the prior art.
> Ascertaining the differences between the prior art and the claims at issue.
> Resolving the level of ordinary skill in the pertinent art.
> Considering objective evidence present in the application indicating obviousness or nonobviousness.

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of

rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

2. Claims 2 and 9 are rejected under 35 U.S.C. 103 as being unpatentable over Krebs et al. US 2017/0071426 (hereafter Krebs et al.).

a. Regarding Claim 2, Krebs et al. teaches:

The handheld vacuum cleaner of claim 1, wherein the handle (handle 30) is inclined with respect to the cyclonic separating unit (cyclonic or centrifugal separator positioned within chamber 46, Paragraph [0028]) to form an angle of not less than 100 degrees and not greater than 125 degrees (135 degrees as shown in attached Figure 4 below and Paragraph [0064]) between the handle and the longitudinal axis (central longitudinal axis X) of the cyclonic separating unit (see discussion below).

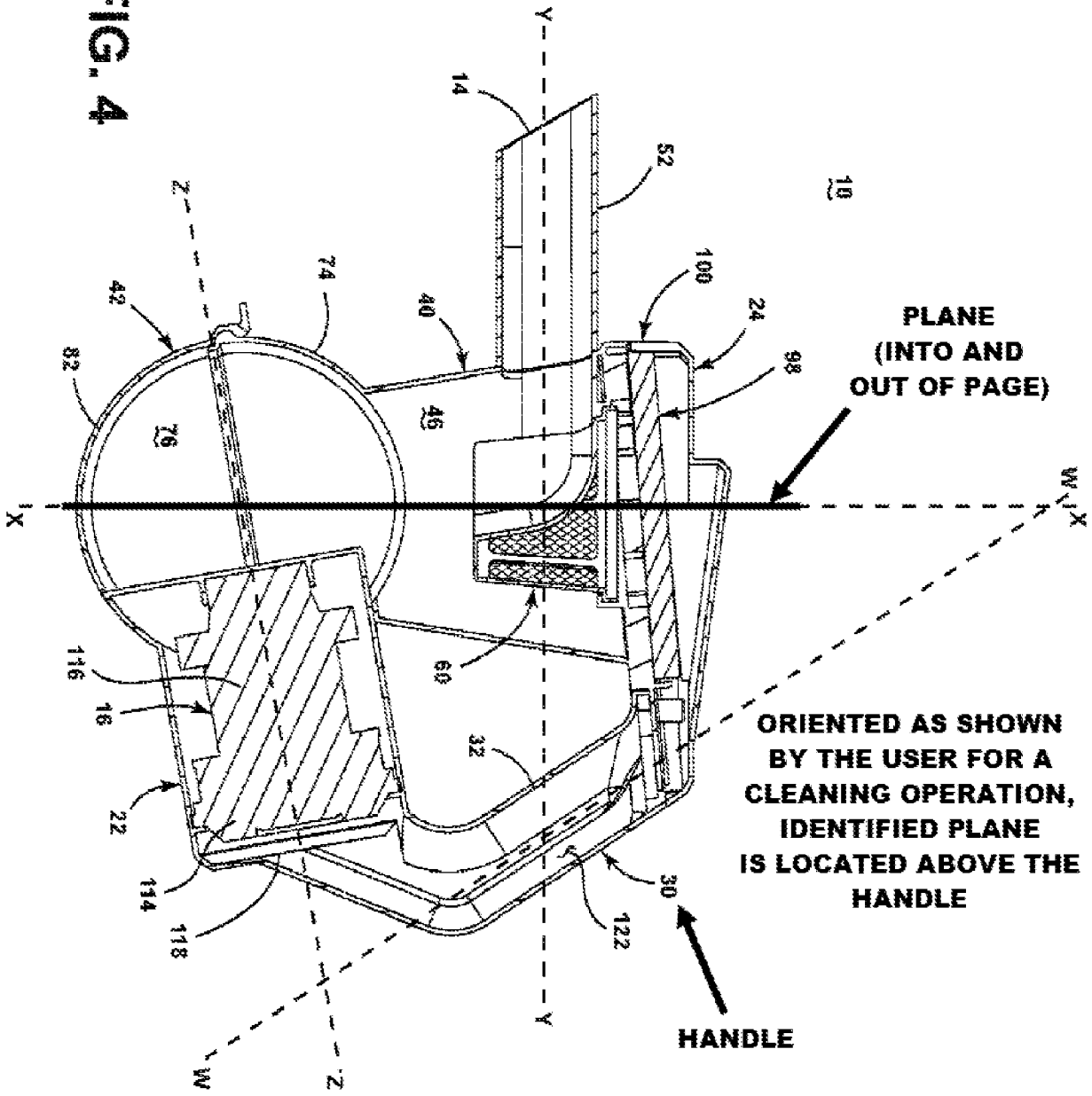
Krebs et al. teaches in Paragraph [0064] a handle 30 with a pistol-style grip that is angled relative to the central longitudinal axis X to position the user's hand and wrist in an ergonomic position with more grip strength for holding the vacuum cleaner. As currently disclosed, Krebs et al. teaches a claimed angle of approximately 135 degrees which is merely at most 10 degrees outside the claimed range for his arrangement. It is important to point out the Krebs et al. does not disclose the angular range that is included in his use of "approximately". Additionally, Krebs et al. does not disclose that angles outside that range will not work or have adverse effects. It is common knowledge to a designer that the

ergonomic angle would be related to the center of gravity of the device and the angle of intended use. Therefore, any obvious change in the device arrangement may result in a different center of gravity or angle of intended use which would affect the result of the optimal handle angle. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the angle based on the center of gravity and the angle of intended use with the motivation to optimize the ergonomic comfort during operation, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

b. Regarding Claim 9, Krebs et al. teaches:

The handheld vacuum cleaner of claim 1, wherein the longitudinal axis (central longitudinal axis X) of the cyclonic separating unit (cyclonic or centrifugal separator positioned within chamber 46, Paragraph [0028]) extends in a plane (labeled in attached Figure 4 below) which is located above the handle (see discussion and attached Figure 4 below).

FIG. 4



Krebs et al. discloses a handheld vacuum cleaner that is designed to permit orientation by the user to accomplish their desired cleaning needs. It would have been obvious to one with ordinary skill in the art at the time of the

invention to orient the device to clean an overhead surface such as a light fixture or ceiling fan. That being said, the orientation is roughly as depicted by the attached Figure 4 above where the longitudinal axis extends in a plane which is located above the handle as claimed.

Allowable Subject Matter

3. Claim 7 is objected to as being dependent upon a rejected base claim but it would be allowable if rewritten to overcome the rejection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure can be found in form PTO-892 Notice of References Cited.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc Carlson whose telephone number is (571) 272-9963. The examiner can normally be reached on Monday - Friday 7:30a-5:00p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph 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.

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.

/Marc Carlson/

Primary Examiner, Art Unit 3723

Bibliographic Data

Application No: 15/269,430

Foreign Priority claimed: (•) Yes ( ) No

35 USC 119 (a-d) conditions met: [✓] Yes [ ] No [ ] Met After Allowance

Verified and Acknowledged: /MARC CARLSON/ Examiner's Signature [ ] Initials

Title: VACUUM CLEANER

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
09/19/2016	015	3723	424662105900
RULE			

APPLICANTS

Dyson Technology Limited, Wiltshire, UNITED KINGDOM

INVENTORS

Stephen Robert DIMBYLOW Swindon, UNITED KINGDOM

CONTINUING DATA

FOREIGN APPLICATIONS

UNITED KINGDOM 1516499.9 09/17/2015

IF REQUIRED, FOREIGN LICENSE GRANTED**

09/28/2016

STATE OR COUNTRY

UNITED KINGDOM

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MCLEAN, VA 22102
UNITED STATES

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ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 4

Complete if Known	
Application Number	15/269,430
Filing Date	September 19, 2016
First Named Inventor	Stephen Robert DIMBYLOW
Art Unit	3727
Examiner Name	B. R. Muller
Attorney Docket Number	424662105900

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/M.C/	1.	US-1,420,665	06-27-1922	Newcombe	
	2.	US-6,131,239	10-17-2000	White	
	3.	US-2001/0023517	09-27-2001	Onishi et al.	
	4.	US-2003/0131441	07-17-2003	Murphy et al.	
	5.	US-2003/0200621	10-30-2003	Inoue et al.	
	6.	US-2004/0040270	03-04-2004	Inoue et al.	
	7.	US-2004/0134022	07-15-2004	Murphy et al.	
	8.	US-2006/0090290	05-04-2006	Lau	
	9.	US-2006/0156508	07-20-2006	Khalil	
	10.	US-2007/0163075	07-19-2007	Butler et al.	
	11.	US-2008/0040883	02-21-2008	Beskow et al.	
	12.	US-2010/0132151	06-03-2010	Khalil et al.	
	13.	US-2010/0175219	07-15-2010	Soen et al.	
	14.	US-2010/0180398	07-22-2010	Casper	
	15.	US-2010/0229322	09-16-2010	Conrad	
	16.	US-2010/0229327	09-16-2010	Conrad	
	17.	US-2010/0242421	09-30-2010	Conrad et al.	
	18.	US-2010/0293745	11-25-2010	Coburn	
	19.	US-2011/0289719	12-01-2011	Han et al.	
	20.	US-2011/0308036	12-22-2011	Engström et al.	
	21.	US-2012/0030896	02-09-2012	Crouch et al.	
	22.	US-8,167,964	05-01-2012	Wai	
	23.	US-2013/0031742	02-07-2013	Miefalk et al.	
	24.	US-8,510,907	08-20-2013	Conrad	
	25.	US-8,607,407	12-17-2013	Conrad	
	26.	US-2014/0041150	02-13-2014	Sjöberg et al.	
	27.	US-2014/0366314	12-18-2014	Conrad	
	28.	US-9,027,201	05-12-2015	Conrad	
	29.	US-2015/0208885	07-30-2015	Conrad	
	30.	US-2016/0037984	02-11-2016	Park et al.	
	31.	US-2016/0143495	05-26-2016	Conrad	
	32.	US-2016/0150923	06-02-2016	Conrad	
	33.	US-2016/0174785	06-23-2016	Conrad	
/M.C/	34.	US-2016/0174789	06-23-2016	Han et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
/M.C/	35.	FR-553202	05-15-1923	John Wesley NEWCOMBE	Machine Translation	X
/M.C/	36.	DE-661573	06-22-1938	Friedrich BÜTTNER	Machine Translation	X
/M.C/	37.	CH-203675	03-31-1939	Peter JÖRG	Partial Translation	X
/M.C/	38.	FR-1.094.603	05-23-1955	François MARTELLIERE	Machine Translation	X

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.C/

SharkNinja Ex. 1002
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ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

Substitute for form 1449/PTO **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** *(Use as many sheets as necessary)* Sheet 2 of 4	*Complete if Known*	
	Application Number	15/269,430
	Filing Date	September 19, 2016
	First Named Inventor	Stephen Robert DIMBYLOW
	Art Unit	3727
	Examiner Name	B. R. Muller
	Attorney Docket Number	424662105900

/M.C/	39.	DE-1 407 995	02-20-1969	Siemens-Electrogerate GmbH (Fritz KAISER)	Machine Translation	X
	40.	DE-2 153 664	07-13-1972	Aktiebolaget Electrolux (Osten SCHWARTZ et al.)	Machine Translation	X
	41.	JP-48-54259	07-12-1973		Figures	
	42.	JP-48-54260	07-12-1973		Figures	
	43.	JP-3-65545	06-26-1991		Figures	
	44.	WO-00/19881	04-13-2000	Jetfan Australia Pty. Ltd.; (Terence Robert DAY)		
	45.	JP-2001-353110	12-25-2001	Matsushita Electric Ind. Co. Ltd. (Toru KODACHI et al.)	Machine Translation	X
	46.	JP-2002-85297	03-26-2002	Matsushita Electric Ind. Co. Ltd. (Naoyuki OHARA)	Machine Translation	X
	47.	CN-2529599	01-08-2003	Jingliang PAN	Machine Translation	X
	48.	JP-2003-70706	03-11-2003	Sharp Corp. (Yuji ONISHI et al.)	Machine Translation	X
	49.	JP-2003-204903	07-22-2003	Matsushita Electric Ind. Co., Ltd. (Toru HIROSE et al.)	Machine Translation	X
	50.	JP-2003-250729	09-09-2003	Toshiba Tec KK (Ritsuo TAKEMOTO)	Machine Translation	X
	51.	JP-2004-201875	07-22-2004	Tsuin Bado Kogyo KK (Takeshi YAMADA)	Machine Translation	X
	52.	JP-2005-270312	10-06-2005	Sharp KK (Hiroshi TOMOOKA)	Machine Translation	X
	53.	CN-1726857	02-01-2006	Baoshide Electric Tools Co., Ltd. (Baoruinato JOHNY)	Machine Translation	X
	54.	JP-2006-87961	04-06-2006	Sharp KK (Yuji ONISHI)	Machine Translation	X
	55.	CN-2812826	09-06-2006	Jinlaike Cleaning Implements C (Zugen NI)	Machine Translation	X
	56.	JP-2006-230815	09-07-2006	Tsuin Bado Kogyo KK (Kazunori MATSUO et al.)	Figures	
	57.	EP-1 752 076	02-14-2007	Black & Decker Inc. (Andrew WALKER)		
	58.	DE-10 2005 056 922	05-31-2007	BSH Bosch Siemens Hausgeraete (Armin BOECK et al.)	Machine Translation	X
	59.	CN-2927961	08-01-2007	Baoshide Electric Tool Co., Ltd. (Chengzhong Qanny CHEN)	Machine Translation	X
	60.	WO-2007/104238	09-20-2007	Positec Power Tools Suzhou Co.; Gianni Borinato; Chengzhong Chen (Gianni BORINATO et al.)	Machine Translation	X
	61.	CN-101061932	10-31-2007	Kwonnie Electrical Products Lt. (He JIANAN)	Machine Translation	X
/M.C/	62.	GB-2440111	01-23-2008	Dyson Technology Limited (William Frame MILNE et al.)		

va-489491

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.C/

ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

Substitute for form 1449/PTO **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** *(Use as many sheets as necessary)*				*Complete if Known*	
				Application Number	15/269,430
				Filing Date	September 19, 2016
				First Named Inventor	Stephen Robert DIMBYLOW
				Art Unit	3727
				Examiner Name	B. R. Muller
Sheet	3	of	4	Attorney Docket Number	424662105900

/M.C/	63.	JP-2008-73221	04-03-2008	Toshiba Corp.; Toshiba Consumer Marketing; Toshiba Kaden Seizo KK (Takeshi SATO et al.)	Machine Translation	X
	64.	JP-2008-79920	04-10-2008	Toshiba Corp.; Toshiba Consumer Marketing; Toshiba Kaden Seizo KK (Shuhei OMOTO et al.)	Machine Translation	X
	65.	SE-0702236	08-19-2008	AB Electrolux (Jonas BESKOW et al.)	Figures	
	66.	EP-1958560	08-20-2008	Black & Decker, Inc. (Michael A. MILLIGAN et al.)		
	67.	JP-2008-206613	09-11-2008	Tsuin Bado Kogyo KK (Tetsuya KAMIMURA)	Machine Translation	X
	68.	KR-2008-0110720	12-19-2008	Jong Dae CHOI	Machine Translation	X
	69.	CA-2 894 369	03-05-2009	G.B.D. Corp. (Wayne Ernest CONRAD)		
	70.	DE-10 2008 044 184	06-04-2009	BSH Bosch Siemens Hausgeraete (Stefan BOCKELT et al.)	Machine Translation	X
	71.	JP-2009-261501	11-12-2009	Yamada Electric Ind. (Junichi YOSHITOMI)	Machine Translation	X
	72.	CN-201346180	11-18-2009	Dongguan Kwonnie Electrical PR (Chen YUMING et al.)	Machine Translation	X
	73.	JP-2009-279284	12-03-2009	Tsuin Bado Kogyo KK (Kazunori MATSUO et al.)	Machine Translation	X
	74.	DE-10 2009 041 728	06-24-2010	Vorwerk Co. Interholding (Martin MEGGLE et al.)	Machine Translation	X
	75.	CA-2 917 900	09-13-2010	Omachron Intellectual Property Inc. (Wayne Ernest CONRAD)		
	76.	CA-2 907 308	09-20-2010	Omachron Intellectual Property Inc. (Wayne Ernest CONRAD)		
	77.	WO-2010/147247	12-23-2010	Joo-Hyeok KIM	Machine Translation	X
	78.	CN-201755193	03-09-2011	Tek Electrical Suzhou Co. Ltd. (Lv Xiaoming)	Machine Translation	X
	79.	CN-102217912	10-19-2011	Tekfirst Electrical Equipment Suzhou Co. Ltd. (Lv XIAOMING)	Machine Translation	X
	80.	KR-2011-0119176	11-02-2011	Se Kwang Precision Co., Ltd. (Do Suk JUNG et al.)	Machine Translation	X
	81.	GB-2484146	04-04-2012	Dyson Technology Limited (James DYSON et al.)		
/M.C/	82.	DE-10 2011 007 373	10-18-2012	Gerhard THIEN	Machine Translation	X

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Sheet 4 of 4

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Filing Date	September 19, 2016
First Named Inventor	Stephen Robert DIMBYLOW
Art Unit	3727
Examiner Name	B. R. Muller
Attorney Docket Number	424662105900

/M.C/	83.	TR-2012-10114	12-21-2012	Adnan TANGÜLER	English Translation of Abstract	
	84.	CN-202776167	03-13-2013	Kingclean Electric Co. Ltd. (Zugen NI)	Machine Translation	X
	85.	CN-202776168	03-13-2013		Figures	
	86.	CN-202932850	05-15-2013	Suzhou Provac Electrical Co. Ltd. (Wei WANG)	English Translation of Abstract	
	87.	GB-2508035	05-21-2014	Dyson Technology Limited (Hugo George WILSON)		
	88.	JP-2014-124443	07-07-2014	Iris Ohyama Inc. (Masayuki KOSAKA)	Machine Translation	X
	89.	CN-203724037	07-23-2014	Kwonnie Electrical Products Ltd. (Guoyong YAN)	Machine Translation	X
	90.	KR-10-1507922	04-07-2015	Tobiz Co., Ltd. (Jou Hyuk KIM et al.)	Machine Translation	X
	91.	CN-104840152	08-19-2015	Kingclean Electric Co. Ltd. (Zugen NI)	Machine Translation	X
	92.	CN-204698456	10-14-2015	Kingclean Electric Co. Ltd. (Zugen NI)	Machine Translation	X
	93.	KR-10-2015-0125223	11-09-2015	Samsung Electronics Co., Ltd. (Dong Hyuk UIM et al.)	Machine Translation	X
	94.	CN-105662271	06-15-2016	Ningbo Haiji Electric Appliance Co. Ltd. (Rong ZHOU et al.)	Figures	
/M.C/	95.	CN-205322247	06-22-2016	Hitachi Appliances Inc. (Takuya TACHIBANAGAWA et al.)	Figures	

Examiner Signature	/MARC CARLSON/	Date Considered	06/06/2018

*EXAMINER: Initial if information considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	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, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
/M.C/	96.	Search Report dated February 29, 2016, directed to GB Application No. 1516499.9; 1 page	
/M.C/	97.	International Search Report and Written Opinion mailed October 28, 2016, directed to International Application No. PCT/GB2016/052611; 10 pages	

Examiner Signature	/MARC CARLSON/	Date Considered	06/06/2018

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SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322
Page 274 of 1677

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Field

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	15/269,430
Filing Date	September 19, 2016
First Named Inventor	Stephen Robert DIMBYLOW
Art Unit	3727
Examiner Name	B. R. Muller
Attorney Docket Number	42466-21059.00

U.S. PATENTS

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
/M.C/	1.	US-8,156,609		04-17-2012	Milne et al.	

U.S. PATENT APPLICATION PUBLICATIONS

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

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Country Code[2]	Foreign Document Number[3]	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]
/M.C/	2.	JP	2002-85297		03-26-2002	Matsushita Electric Ind. Co., Ltd.	Machine Translation	X
/M.C/	3.	JP	2008-206613		09-11-2008	Tsuin Bado Kogyo KK	Machine Translation	X
/M.C/	4.	JP	2009-543642		12-10-2009	Milne et al.	Corresponds to US-8,156,609 listed above	

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SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322
Page 275 of 1677

Doc code: IDS
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	Filing Date	September 19, 2016
	First Named Inventor	Stephen Robert DIMBYLOW
	Art Unit	3727
	Examiner Name	B. R. Muller
	Attorney Docket Number	42466-21059.00

NON-PATENT LITERATURE DOCUMENTS			
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, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

EXAMINER SIGNATURE			
Examiner Signature	/MARC CARLSON/	Date Considered	06/06/2018

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Doc description: Information Disclosure Statement (IDS) Field

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	First Named Inventor	Stephen Robert DIMBYLOW
	Art Unit	3727
	Examiner Name	B. R. Muller
	Attorney Docket Number	42466-21059.00

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	/christopher gloria/	Date (YYYY-MM-DD)	2018-04-20
Name/Print	Christopher Gloria	Registration Number	71,907

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.**

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SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322

Notice of References Cited	Application/Control No. 15/269,430	Applicant(s)/Patent Under Reexamination DIMBYLOW, STEPHEN ROBERT	
	Examiner Marc Carlson	Art Unit 3723	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2009/0144931 A1	06-2009	Milligan; Michael A.	A47L5/24	15/344
*	B	US-8,156,609 B2	04-2012	Milne; William Frame	A47L5/24	15/344
*	C	US-2012/0079671 A1	04-2012	STICKNEY; Timothy Nicholas	A47L5/225	15/344
*	D	US-2012/0266576 A1	10-2012	Gomiciaga-Pereda; Ricardo	A47L5/24	55/343
*	E	US-2014/0137363 A1	05-2014	WILSON; Hugo George	A47L5/24	15/347
*	F	US-2016/0113455 A1	04-2016	Horvath; Jamie	A47L9/12	15/344
*	G	US-2017/0071426 A1	03-2017	Krebs; Alan J.	A47L9/322	1/1
*	H	US-2017/0079490 A1	03-2017	Dimbylow; Stephen Robert	A47L5/24	1/1
*	I	US-2017/0079489 A1	03-2017	DIMBYLOW; Stephen Robert	A47L5/24	1/1
*	J	US-9,826,868 B2	11-2017	Conrad; Wayne Ernest	A47L5/225	1/1
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N	WO 2007104238 A1	09-2007	CHINA	CHEN CHENGZHONG	A47L5/24
	O	CN 203724037 U	07-2014		YAN GUOYONG	
	P	DE 102008044184 A1	06-2009	GERMANY	CHEN LEITAO	A47L5/24
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	DE 10 2008 044 184 A1 - 06-2009 - English Machine Translation
	V	
	W	
	X	

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SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322
Page 278 of 1677

Electronic Acknowledgement Receipt

EFS ID:	32393966
Application Number:	15269430
International Application Number:	
Confirmation Number:	6526
Title of Invention:	VACUUM CLEANER
First Named Inventor/Applicant Name:	Stephen Robert DIMBYLOW
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Laura Razzuri
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662105900
Receipt Date:	20-APR-2018
Filing Date:	19-SEP-2016
Time Stamp:	13:00:42
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	Information Disclosure Statement (IDS) Form (SB08)	424662105900_SB08.pdf	112356 6ea25d126612b86b7ce2bcc7ff50705a86cf0fb6	no	3

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Information:					
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2	Foreign Reference	JP_2002_85297.pdf	5812680 fc62749b58365bdc6b67d20002660d9a3d4065ec	no	11
Warnings:					
Information:					
3	Foreign Reference	JP_2008_206613.pdf	9750049 45901a3dd6a11cbe01867fcce5c9dfe4d46aa8c1	no	22
Warnings:					
Information:					
4	Foreign Reference	JP_2009_543642.pdf	4839045 ddc58f6fcbdfaf66716f85200ddd58f9495318e3	no	11
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		Total Files Size (in bytes):	20514130		

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U.S. PATENTS

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.	US-8,156,609		04-17-2012	Milne et al.	

U.S. PATENT APPLICATION PUBLICATIONS

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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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, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

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☐ 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

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Signature	/christopher gloria/	Date (YYYY-MM-DD)	2018-04-20
Name/Print	Christopher Gloria	Registration Number	71,907

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(19)日本国特許庁(JP)　(12)公表特許公報(A)　(11)特許出願公表番号
特表2009-543642
(P2009-543642A)
(43)公表日　平成21年12月10日(2009.12.10)

(51)Int.Cl.			F I			テーマコード（参考）
A47L	*9/10*	*(2006.01)*	A47L	9/10	D	3B006
A47L	*9/00*	*(2006.01)*	A47L	9/00	D	3B062
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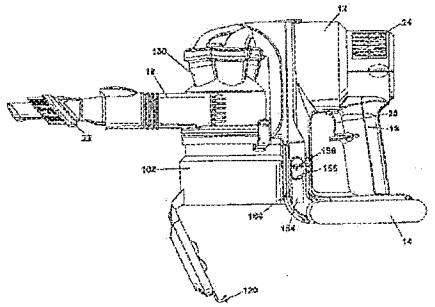
(54)【発明の名称】手持ち型掃除用器具

(57)【要約】
本発明は、汚れ空気入口（１８）と、清浄空気出口（２４）と、空気入口（１８）から空気出口（２４）まで延びる空気流経路中の空気流からごみやほこりを分離する分離装置（１００）と、を有する手持ち型掃除用器具を提供する。分離装置（１００）は、少なくとも１つのサイクロン（１０２）を備えたサイクロン分離器及び収集器（１０５）を有する。収集器（１０５）は、壁（１０４）及びベース部材（１１６）を有し、ベース部材（１１６）は、キャッチ（１２０）によって閉位置に保持されるとともに、壁（１０４）に枢動可能に連結されている。掃除用器具は、キャッチ（１２０）を作動させるためのアクチュエータ（１５２）を備えた本体（１２）を更に有している。アクチュエータ（１５２）は、摺動可能に設けられたロッド（１５４）を有し、このロッド（１５４）は、不作動位置と、収集器（１０５）を空にする目的で開くことができるようにロッド（１５４）がキャッチ（１２０）の一部に接触する作動位置との間で動くことができる。この構成により、ユーザが収集器（１０５）に実際に触らないでキャッチ（１２０）を解除



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【特許請求の範囲】
【請求項１】
手持ち型掃除用器具であって、汚れ空気入口と、清浄空気出口と、前記空気入口から前記空気出口に至る空気流経路中の空気流からごみやほこりを分離する分離装置とを有し、前記分離装置は、少なくとも１つのサイクロンを備えたサイクロン分離器と、壁及びベース部材を備えた収集器とを有し、前記ベース部材は、キャッチによって閉位置に保持されると共に前記壁に枢動可能に連結され、前記手持ち型掃除用器具は、前記キャッチを作動させるためのアクチュエータを備えた本体を更に有し、前記アクチュエータは、摺動可能に設けられたロッドを有し、前記ロッドは、不作動位置と、前記収集器を空にする目的で開くことができるように、前記ロッドが前記キャッチの一部に接触する作動位置との間で動くことができる、手持ち型掃除用器具。
【請求項２】
前記ベースは、前記壁の第１の側部にヒンジ止めされている、請求項１記載の手持ち型掃除用器具。
【請求項３】
前記キャッチは、前記ヒンジと直径方向反対側の位置に設けられている、請求項２記載の手持ち型掃除用器具。
【請求項４】
前記ロッドは、前記不作動位置に付勢されている、請求項１～３のうちいずれか一に記載の手持ち型掃除用器具。
【請求項５】
前記ロッドは、手動で前記本体に対して動くことができる突出部を有する、請求項１～４のうちいずれか一に記載の手持ち型掃除用器具。
【請求項６】
前記ロッドは、前記本体の一部分内に配置されている、請求項１～５のうちいずれか一に記載の手持ち型掃除用器具。
【請求項７】
前記収集器の一部分は、前記本体の一部分に隣接して位置している、請求項１～６のうちいずれか一に記載の手持ち型掃除用器具。
【発明の詳細な説明】
【技術分野】
【０００１】
本発明は、手持ち型掃除用器具に関し、特に、手持ち型掃除機（これには限られない）に関する。特に、本発明は、サイクロン分離器を備えた手持ち型掃除用器具に関する。
【背景技術】
【０００２】
手持ち型掃除機は、周知であり、数年間にわたり種々の製造業者によって製造されて販売されている。典型的に、手持ち型掃除機は、空気を入口経由で掃除機内に引き込むためのモータ・ファンユニット及びごみやほこりを流入空気流から分離するための分離装置、例えばフィルタ又は袋を収容したケーシングを有している。かかる掃除機の一例が、英国特許第１２０７２７８号明細書に記載されている。
【０００３】
手持ち型掃除機は、近年、フィルタ又は他のバリヤ手段を用いてより細かい粒子を除去する前に、大きな屑片を空気流から取り除くことができるサイクロン型分離システムを有するよう開発が行われた。かかる装置の一例は、ブラック・アンド・デッカー（Black & Decker）社によってDUSTBUSTER（登録商標）という商品名で販売されている。サイクロン分離器を有する手持ち型掃除機のもう１つの例が、英国特許出願公開第２０３５７８７号明細書及び国際公開第２００６／０７６３６３号パンフレットに記載されている。
【先行技術文献】
【特許文献】

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【０００４】
【特許文献１】英国特許第１２０７２７８号明細書
【特許文献２】英国特許出願公開第２０３５７８７（Ａ）号明細書
【特許文献３】国際公開第２００６／０７６３６３号パンフレット
【発明の概要】
【発明が解決しようとする課題】
【０００５】
サイクロン分離器を利用している公知の手持ち型掃除機の欠点は、かかる掃除用器具からこの中に集められたごみやほこりを排出することが厄介であり、不便であり、しかも汚れるということにある。或る場合には、掃除用器具のコンパートメントは、掃除用器具の残部から物理的に取り外され、適当な入れ物まで運ばれて空にされ、次に掃除用器具に取り付けて戻されなければならない。掃除用器具の一部分の取り外しに伴って、この一部分が正しく元に戻されないというリスクを伴うことが避けられず、これは、掃除用器具の性能に悪影響を及ぼす場合がある。他の構成では、ごみやほこりが集められたコンパートメントの開放は、全体として掃除用器具の厄介な操作が必要になる。掃除用器具は、掃除中、取り扱いを容易にするよう設計されている場合、空にする作業は、掃除用器具を空にしている際に不注意により落として壊すという恐れを増大させる場合がある。したがって、本発明の目的は、公知の手持ち型掃除機よりも空にするのが容易であり且つ便利である手持ち型掃除用器具を提供することにある。
【課題を解決するための手段】
【０００６】
本発明は、手持ち型掃除用器具であって、汚れ空気入口と、清浄空気出口と、空気入口から空気出口に至る空気流経路中の空気流からごみやほこりを分離する分離装置とを有し、分離装置は、少なくとも１つのサイクロンを備えたサイクロン分離器と、壁及びベース部材を備えた収集器とを有し、ベース部材は、キャッチによって閉位置に保持されると共に壁に枢動可能に連結され、手持ち型掃除用器具は、キャッチを作動させるためのアクチュエータを備えた本体を更に有し、アクチュエータは、摺動可能に設けられたロッドを有し、ロッドは、不作動位置と、収集器を空にする目的で開くことができるようロッドがキャッチの一部に接触する作動位置との間で動くことができることを特徴とする手持ち型掃除用器具を提供する。
【０００７】
この構成により、ユーザが収集器に実際に触らないでキャッチを解除することができる。本発明は又、費用効果の良い仕方で収集器を遠隔操作で空にするコンパクトで且つ確実な機構を提供する。
【０００８】
次に、添付の図面を参照して本発明の実施形態について説明する。
【図面の簡単な説明】
【０００９】
【図１】本発明の手持ち型掃除用器具を示す図である。
【図２】図１の掃除用器具の側面図である。
【図３】図１の掃除用器具の側面図であり、収集器ベースを開放位置で示す図である。
【図４】図１の掃除用器具の一部をなすサイクロン型分離装置の縦断面図である。
【発明を実施するための形態】
【００１０】
図１乃至図３は、手持ち型掃除機１０を示している。手持ち型掃除機１０は、モータ・ファンユニット（図示せず）を収容した本体１２を有している。本体１２は、電源１４、例えば電池を更に収納している。手持ち型掃除機１０を使用中操作するための取っ手１６が、本体１２に設けられている。サイクロン分離器１００が、本体１２に取り付けられている。汚れ空気入口１８が、本体１２から見て遠くに位置するサイクロン分離器１００の一部分から延びている。ブラシツール２２が、汚れ空気入口１８の遠位端部に摺動可能に

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取り付けられている。空気を手持ち型掃除機１０から排出するための１組の排出ベント２４が、本体１２に設けられている。

【００１１】

サイクロン分離器１００は、本体１２と汚れ空気入口１８との間に配置されている。その結果、サイクロン分離器１００は、取っ手１６と汚れ空気入口１８との間に位置している。サイクロン分離器１００は、ほぼ直立した方向に延びる長手方向軸線２６を有し、この軸線２６及びしたがってサイクロン分離器１００は、取っ手１６が延びる方向に実質的に平行に位置する。

【００１２】

取っ手１６の向きは、ユーザが取っ手１６を掴むと、のこぎりを握ったときのような仕方で拳を形成するような向きである。これにより、手持ち型掃除機１０を掃除目的で操作する際に、ユーザの手首には必要な程度以上は無理な力が加わらないようになる。サイクロン分離器１００は、取っ手１６の近くに位置決めされ、これによっても、手持ち型掃除機１０の使用中、ユーザの手首に加わるモーメントが減少する。取っ手１６は、掃除機用モータを作動させたり停止させたりするためのトリガの形態をしたオン／オフスイッチ２０を備えている。

【００１３】

手持ち型掃除機１０の一部をなすサイクロン型分離装置１００が、図４に詳細に示されている。サイクロン型分離装置１００は、長手方向軸線Ｘ－Ｘ及び壁１０４を有する収集器１０５を備えた第１のサイクロン１０２を有している。入口１１０が、壁１０４の上方部分に形成されている。入口１１０は、汚れ空気入口１８と連通状態にあり、この入口は、汚れ空気入口１８と第１のサイクロン１０２の内部との間の連通経路を形成している。空気入口１１０は、第１のサイクロン１０２に対して接線方向に配置されており、それにより、流入空気は、第１のサイクロン１０２の内部に沿って螺旋経路を辿らされる。

【００１４】

ベース１１６が、第１のサイクロン１０２の一端で収集器１０５を閉鎖している。ベース１１６は、ヒンジ１１８によって壁１０４の下端部に枢動可能に取り付けられている。ベース１１６は、キャッチ（留め具）１２０により閉位置に（図１、図２及び図４に示すように）保持され、このキャッチ１２０は、壁１０４に設けられているリップ（舌片）１５０と相互係止する。キャッチ１２０は、下向きの圧力がキャッチ１２０の最も上に位置する部分に加えられた場合、キャッチがリップ１５０から遠ざかってこれから外れた状態になるように、弾性的に変形可能である。この場合、ベース１１６は、壁１０４から落下して離れることになる。

【００１５】

アクチュエータ１５２が、本体１２に設けられている。このアクチュエータは、図３及び図４に概略的に示されている。本質的に、アクチュエータ１５２は、第１の不作動位置と第２の操作又は作動位置との間で動くことができるように、本体１２の一部分内に摺動可能に設けられているロッド１５４を有する。第１の位置は、図４に示されている。ロッド１５４は、図面には示されていないばね又は他の弾性手段によって第１の位置に付勢されている。ロッド１５４は、その上端部に又はその近くに、突出部１５６を備え、この突出部は、ロッド１５４から側方に遠ざかって延び、本体１２に設けられている孔１５８を貫通して突き出ている（図２及び図３参照）。ロッド１５４は、その下端部に、別の突出部１６０を更に備え、この突出部１６０は、収集器１０５及びキャッチ１２０に向かって延びている。この突出部も又、本体１２に設けられた別の孔を貫通して突き出て、ロッド１５４を第２の位置に動かすと、突出部１６０がキャッチ１２０に接触してこれを下方に押して、キャッチ１２０がリップ１５０から解除される。

【００１６】

ロッド１５４は、ユーザが突出部１５６をばねの作用に抗して下向きに押すことによって手動で第１の位置から第２に動かされる。これにより、キャッチ１２０がリップ１５０から解除され、すると、ベース１１６は揺動して壁１０４から遠ざかる。キャッチ１２０

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は又、ロッド１５４を更に下方に動かすと、開放力がキャッチ１２０に加わるよう構成されているのが良い。これは、この場合、ベース１１６と壁１０４との間のシールが壊されてベースがより自由に揺動して開くことができるという点で有利である。

【００１７】

ユーザにより突出部１５６に加えられている圧力が除かれると、ロッド１５４は、ばねの作用を受けて第１の位置に戻る。ベース１１６をユーザにより手動で閉位置に戻すことができ、すると、キャッチは、リップ１５０に再び係合することになる。ヒンジ１１８が設けられていることは、ベース１１６が壁１０４と自動的に整列したままであり、その結果、ベース１１６を閉位置に戻したときにベース１１６が不正確に位置決めされる恐れが殆どなく又は全くないことを意味している。

【００１８】

シュラウド１２１が、第１のサイクロン１０２の壁１０４の内方に配置されている。シュラウド１２１は、複数の貫通孔１２３が設けられた部分円筒形、そして部分的切頭円錐形の壁１２２を有している。シュラウド１２１は、第１のサイクロン１０２の出口１２４を包囲している。出口１２４は、第１のサイクロン１０２と第２のサイクロン組立体１２６との間の連通経路となっている。リップ（舌片）１２８が、シュラウド１２１のベースに設けられている。リップ１２８は、複数の貫通孔１２９を有し、これら貫通孔は、空気を流通させることができるがごみやほこりを捕捉するように設計されている。

【００１９】

第２のサイクロン組立体１２６は、互いに平行に配置された複数の第２のサイクロン１３０を有している。この実施形態では、６つの第２のサイクロン１３０が設けられている。第２のサイクロン１３０は、第１のサイクロン１０２の軸線Ｘ－Ｘ回りに配置されている。第２のサイクロンの配置状態は、第２のサイクロン１３０が軸線Ｘ－Ｘ回りに等角度に間隔を置いて配置されるようになっている。第２のサイクロン１３０は各々、接線方向に配置された空気入口と空気出口（図示せず）とを有し、空気入口及び空気出口は各々、それぞれの第２のサイクロン１３０の第１の端部に設けられている。空気入口１３２及び空気出口１３４は各々、それぞれの第２のサイクロン１３０の第１の端部に設けられている。円錐形開口部１３６が、各第２のサイクロン１３０の第２の端部に設けられている。各第２のサイクロン１３０の円錐形開口部１３６の平面は、それぞれの別のサイクロン１３０の長手方向軸線（図示せず）に対して傾けられている。第２のサイクロン１３０の各々の円錐形開口部１３６は、シュラウド１２１の内方に設けられた壁１４０によって画定された通路１３８と連通状態にある。

【００２０】

各第２のサイクロン１３０の第２の端部は、第１のサイクロン１０２の内部に突き出ている。しかしながら、各第２のサイクロン１３０の第１の端部は、第１のサイクロン１０２の包囲体の外部に位置している。図示の向きでは、第１のサイクロン１０２の上端部内に突き出るのは、各第２のサイクロン１３０の下端部である。また、入口１１０は、第１のサイクロン１０２の上端部に配置されており、入口１１０は、第１のサイクロン１０２と第２のサイクロン１３０が重なったサイクロン分離器１００の領域内に位置するようになっている。第２のサイクロン１３０の第１の端部が第１のサイクロン１０２の包囲体の外部に位置しているので、サイクロン分離器１００のこの領域は、サイクロン分離器１００の上端部とサイクロン分離器１００の下端部との中間に位置している。汚れ空気入口１８をサイクロン分離器１００にその中間部分のところで連結することは、手持ち型掃除機１０の操作にとって有益であり、それにより掃除用器具の下方端が偶発的に面にぶつかって掃除される領域から遠ざかるのが回避される。

【００２１】

収集器１４２が、通路１３８の下端部に設けられている。収集器１４２は、切頭円錐形の第１の部分１４４及び円筒形の第２の部分１４６を有している。収集器１４２の内部は、ベース１１６並びに収集器１４２の第１及び第２の部分１４４，１４６の側部によって包囲されている。

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【００２２】
第２のサイクロン１３０の空気出口の各々は、ダクト１５０と連通状態にある。ダクト１５０は、サイクロン型分離装置１００から手持ち型掃除機１０の他の部分内への空気流経路を提供している。ダクト１５０の下流側端部には、モータ前置フィルタ１５２が設けられている。モータ前置フィルタ１５２は、多孔質材料、例えば発泡体から成っており、微粒子用フィルタ材料を更に有するのが良い。モータ前置フィルタ１５２は、細かいほこり粒子がモータに入ってモータの損傷を引き起こすのを阻止するよう設計されている。
【００２３】
使用にあたり、オン／オフスイッチ２０を押すと、モータ・ファンユニットは、汚れ含有空気の流れを汚れ空気入口１８内に引き込み、次にサイクロン分離器１００内に引き込む。汚れ含有空気は、入口１１０を通ってサイクロン分離器１００に入る。入口１１０が接線方向に配置されているので、空気流は、壁１０４の内部に沿って螺旋経路を辿らされる。大きなごみ及びほこり粒子は、壁１０４周りのサイクロン運動によって分離される。これら粒子は、次に、第１のサイクロン１０２のベース１１６に集められる。
【００２４】
部分的に清浄になった空気流は、次に、第１のサイクロン１０２の内部を上方に逆流し、そしてシュラウド１２１の貫通孔１２３を経て第１のサイクロン１０２から出る。空気流がシュラウド１２１をいったん通過すると、空気流は、出口１２４に入り、ここから第２のサイクロン１３０の各々の接線方向入口に分割される。第２のサイクロン１３０の各々は、第１のサイクロン１０２の直径よりも小さい直径を有している。したがって、第２のサイクロン１３０は、第１のサイクロン１０２の場合よりも小さいごみ及びほこり粒子を、部分的に清浄になった空気流から分離することができる。分離されたごみやほこりは、円錐形開口部１３６を通って第２のサイクロン１３０から出る。しかる後、分離されたごみやほこりは、通路１３８を下って収集器１４２内に入る。分離されたごみやほこりは、最終的には、ベース１１６上の収集器１４２の底部に落ち着く。
【００２５】
次に、清浄になった空気は、第２のサイクロン１３０を上方に逆流し、空気出口を通って第２のサイクロン１３０から出てダクト１５０に流入する。清浄になった空気は、次に、ダクト１５０からモータ前置フィルタ１５２、モータ・ファンユニット及びモータ後置フィルタを順次通過し、その後空気ベント２４を通って掃除機１０から排出される。
【００２６】
第１のサイクロン１０２及び収集器１４２を同時に空にするには、キャッチ１２０を解除してベース１１６がヒンジ１１８回りに枢動させると、分離されたごみやほこりをサイクロン型分離装置１００から落下させることができる。これは、ユーザが突出部１５６をばねの付勢作用に抗して下向きに押して、他方の突出部１６０をキャッチ１２０に接触させることによって行われる。キャッチ１２０は、弾性的に変形してリップ１５０から離れ、かくしてこれから解除される。突出部１５６を更に下方に動かすと、ベース１１６と壁１０４との間のシールが壊され、次にベース１１６は下方に揺動して壁１０４から離れる。すると、サイクロン分離器１００内に集められたごみやほこりは、第１のサイクロン１０２及び収集器１４２から落下する。掃除用器具１０を適当なごみの入れ物、例えばゴミ箱の上に位置決めすることにより、サイクロン分離器内に集められたごみやほこりを効果的且つ確実に空にすることができる。
【００２７】
サイクロン分離器１００を上述したように空にすると、ユーザは、ベース１１６を手で動かして図１及び図２に示す閉位置に戻すことにより、サイクロン分離器１００を閉じるのが良い。変形例として、掃除用器具を操作してベース１１６を閉位置に揺動させても良い。別の代替手段は、掃除用器具を表面上に配置して、閉鎖力をベース１１６に加え、それによりベース１１６をリップ１５０とのラッチ止め接触状態にすることである。ヒンジ１１８が設けられているので、サイクロン分離器１００を空にし、その後ベース１１６の深刻な位置合わせ不良のリスクを生じることなく閉じることができる。ベース１１６の位

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置合わせ不良は、掃除用器具の性能を損なうことになる。

【００２８】

本発明は、上述の実施形態の細部そのものには限定されない。例えば、第１及び第２のサイクロンの数は、これらの設計の細部、例えばこれらの円錐角、軸の傾き及び円錐形開口部の傾きと同様に、変更しても良い。収集器及びベースの形状は、改変可能であり、ヒンジ及びキャッチの正確な配設場所並びにアクチュエータの配設場所も同様に変えることができる。オン／オフスイッチの配設場所も又、様々であって良い。

【図１】

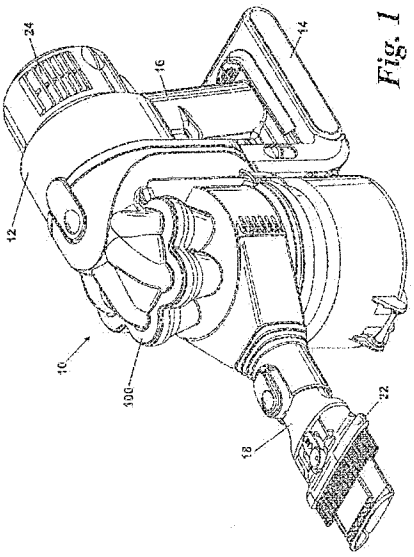

Fig. 1

【図２】

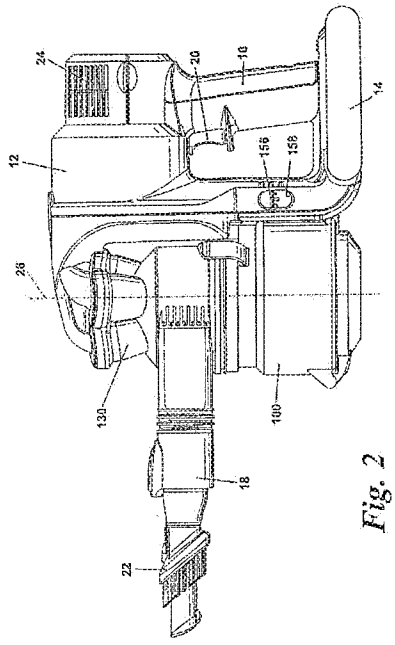

Fig. 2

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【図３】

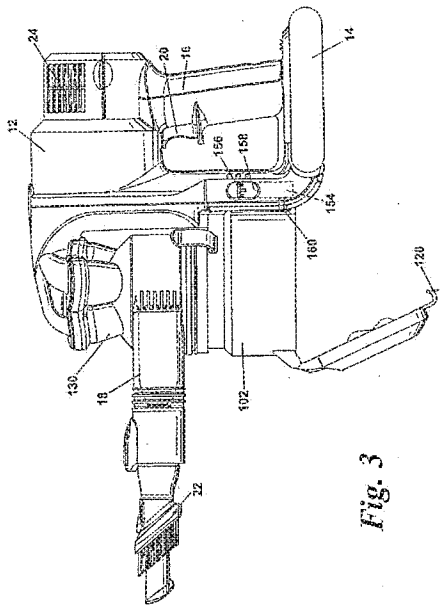

Fig. 3

【図４】

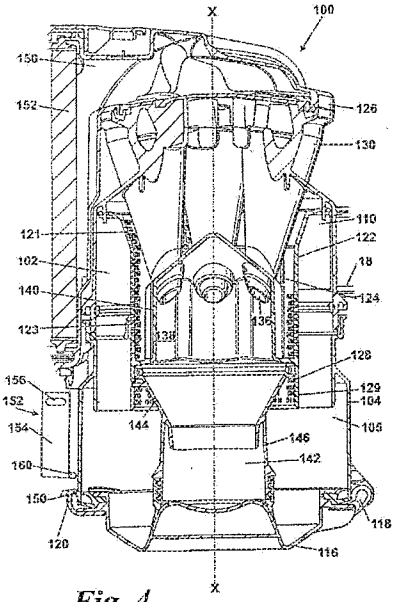

Fig. 4

【国際調査報告】

INTERNATIONAL SEARCH REPORT

International application No
FCT/GB2007/002543

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 2 035 787 A (L & H DESIGNS LTD & MERRITT H) 25 June 1980 (1980-06-25) cited in the application page 1, line 24 - line 57; figure 3 page 2, line 61 - line 66	1-8
Y	US 2005/229355 A1 (CROUCH JAMES T [US] ET AL) 20 October 2005 (2005-10-20) paragraph [0033] paragraph [0035]; figures 2b,3,4b	1-8
A	GB 1 207 278 A (NEMEJANSKI ARIANE SABINE [FR]) 30 September 1970 (1970-09-30) cited in the application the whole document	1-8

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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24 September 2007	08/10/2007

Name and mailing address of the ISA/	Authorized officer
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	Clarke, Alister

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2007/002543

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2035787 A	25-06-1980	NONE	
US 2005229355 A1	20-10-2005	NONE	
GB 1207278 A	30-09-1970	BE 724560 A	02-05-1969
		CH 479231 A	30-09-1969
		DE 1812748 A1	21-08-1969
		ES 160126 Y	16-05-1971
		FR 1554851 A	24-01-1969
		LU 57453 A1	21-04-1969
		NL 6817505 A	10-06-1969

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

フロントページの続き

(81)指定国 AP(BW,GH,GM,KE,LS,MW,MZ,NA,SD,SL,SZ,TZ,UG,ZM,ZW),EA(AM,AZ,BY,KG,KZ,MD,RU,TJ,TM),EP(AT,BE,BG,CH,CY,CZ,DE,DK,EE,ES,FI,FR,GB,GR,HU,IE,IS,IT,LT,LU,LV,MC,MT,NL,PL,PT,RO,SE,SI,SK,TR),OA(BF,BJ,CF,CG,CI,CM,GA,GN,GQ,GW,ML,MR,NE,SN,TD,TG),AE,AG,AL,AM,AT,AU,AZ,BA,BB,BG,BH,BR,BW,BY,BZ,CA,CH,CN,CO,CR,CU,CZ,DE,DK,DM,DO,DZ,EC,EE,EG,ES,FI,GB,GD,GE,GH,GM,GT,HN,HR,HU,ID,IL,IN,IS,JP,KE,KG,KM,KN,KP,KR,KZ,LA,LC,LK,LR,LS,LT,LU,LY,MA,MD,MG,MK,MN,MW,MX,MY,MZ,NA,NG,NI,NO,NZ,OM,PG,PH,PL,PT,RO,RS,RU,SC,SD,SE,SG,SK,SL,SM,SV,SY,TJ,TM,TN,TR,TT,TZ,UA,UG,US,UZ,VC,VN,ZA,ZM,ZW

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Fターム(参考) 3B006 DA01 DA03
3B062 AG02 AH00

【要約の続き】
することができる。本発明は又、費用効果の良い仕方で収集器（１０５）を遠隔操作で空にするコンパクトで且つ確実な機構を提供する。

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VACUUM CLEANER

Page bookmark JP2008206613 (A) - VACUUM CLEANER

Inventor(s): KAMIMURA TETSUYA ±

Applicant(s): TSUIN BADO KOGYO KK ±

Classification: - international: *A47L5/24; A47L5/28*

- cooperative:

Application number: JP20070044726 20070223 Global Dossier

Priority number(s): JP20070044726 20070223

Also published as: CN101248972 (A) JP4895326 (B2)

Abstract of JP2008206613 (A)

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PROBLEM TO BE SOLVED: To provide a separated type vacuum cleaner capable of preventing the vacuum cleaner from being enlarged in size due to protection means for protecting the vacuum cleaner from impact when colliding with an obstacle. ;SOLUTION: The protection means 15A is provided at a front part of a vacuum cleaner body 1, and a housing part 2 is provided to appear on the back side of a support 3. The housing part 2 is composed in such a way that the vacuum cleaner body 1 can be housed with the protection means 15A directed backward. In using the vacuum cleaner body 1 solely, the vacuum cleaner body 1 can be protected from an impact by the protection means 15A even if the vacuum cleaner body 1 is collided with an obstacle ahead of it. In using the vacuum cleaner body 1 as installed on the support 3, the vacuum cleaner body 1 can be protected from an impact by means of the support 3 even if the vacuum cleaner is collided with an obstacle. ;COPYRIGHT: (C)2008,JPO&INPIT

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DESCRIPTION JP2008206613

PROBLEM TO BE SOLVED to prevent the enlargement of an electric vacuum cleaner by protection means for protecting an electric vacuum cleaner from an impact when colliding with an obstacle in a separate electric vacuum cleaner as much as possible. SOLUTION: The protection means 15A is provided at the front portion of the electric vacuum cleaner main body 1, the storage portion 2 is provided so as to appear on the rear side of the support 3, and in a state where the protection means 15A faces backwards, the electric vacuum cleaner The storage unit 2 is configured so that the main unit 1 can be stored. When the electric vacuum cleaner main body 1 is used alone, even if the electric vacuum cleaner main body 1 collides with an obstacle in front, the protection unit 15 A protects the cleaner main body 1 from the impact You can do. In addition, when the electric vacuum cleaner main body 1 is attached to the support 3 and used, the support 3 protects the cleaner main body 1 from the impact even if the electric vacuum cleaner collides with an obstacle be able to. (FIG.

Vacuum cleaner

[0001]

The present invention relates to an electric vacuum cleaner, and more particularly to a separate type electric vacuum cleaner.

[0002]

Conventionally, as an electric vacuum cleaner of this type, there has been known an electric vacuum cleaner having an electric vacuum cleaner main body having a suction port and a dust collector and incorporating an electric blower, and a support in which the electric vacuum cleaner main body is housed, , A nozzle head is provided on one end side and a grip portion is provided on the other end side and a storage portion for housing the electric vacuum cleaner main body is provided in the front portion, and when the electric vacuum cleaner main body is stored, Wherein the dust collector is configured to be communicated with the dust collecting part through an intake port, wherein the electric vacuum cleaner body is housed in the support body alone or used, and the dust sucked from the suction port or the nozzle head is drawn into the dust collecting part (For example, Patent Documents 1 and 2). Such a separate type electric vacuum cleaner grips the grip portion in a state where the electric vacuum cleaner main body is accommodated in the storage portion provided in the front portion of the support body, and as a stick-type vacuum cleaner The vacuum cleaner can be used by sucking dust from the nozzle head or can be used alone as a hand-held vacuum cleaner. Patent Document 1: Japanese Patent No. 2627275 Patent Document 2: Japanese Patent Application Laid-Open No. Hei 4-364622

[0003]

In the prior art, when the electric vacuum cleaner main body is used as a stick-type vacuum cleaner in a state of being housed in the support, when cleaning a floor on which a desk, a table or the like is placed, it is placed under a desk or a table When the nozzle head is inserted into the nozzle head and the nozzle head is moved along the floor to clean it, the front portion of the cleaner collides with a desk, a table, or the like, and the electric vacuum cleaner body and the vacuum cleaner body There is a possibility that air flow leakage occurs due to deviation of the positional relationship of the supports and in some cases the electric vacuum cleaner main body falls off from the support. In addition, if a crack occurs in the dust collecting part or the like due to an impact at the time of collision, there is a possibility that air leakage may occur due to this crack. In addition, there is a possibility that the electric blower in the main body of the electric vacuum cleaner may be damaged by impact at the time of a collision. Furthermore, such an electric vacuum cleaner is not only pushed forward along the floor surface but also drawn backward along the floor surface when tilted rearward, so that the rear of the electric vacuum cleaner There is a possibility of collision with an obstacle and there is a possibility that the hand is separated from the grip portion due to an impact or the like at the time of a collision and the electric vacuum cleaner is dropped on the floor surface. Due to such a collision or impact caused by the

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fall , The positional relationship between the electric vacuum cleaner main body and the support shifts to cause poor sealing, the electric vacuum cleaner main body may drop off from the support, and the dust collector and the electric blower may be damaged there were.

[0004]

On the other hand, if the electric vacuum cleaner body is to be used alone to move the electric vacuum cleaner body along a top plate such as a desk or a table to clean it, the electric stand or the like on the top plate The main body of the electric vacuum cleaner may collide, and there is a possibility that the dust collecting part and the electric blower may be damaged by this impact.

[0005]

In order to solve the problem associated with such impact, it is preferable that the protection means is provided first in the front portion of the electric vacuum cleaner body in the use state, and secondly, the protection means is provided in the rear portion of the support Conceivable.

[0006]

Meanwhile, the impact when the electric vacuum cleaner collides with the obstacle during cleaning is higher in the case of using the electric vacuum cleaner body attached to the support than in the case of using the electric vacuum cleaner main body alone large. This is because the difference between the total weight of the support and the vacuum cleaner main body and the weight of the electric vacuum cleaner main body alone and the difference between the weight of the main body of the electric vacuum cleaner main body and the weight of the electric vacuum cleaner main body and the obstacle placed on the floor are placed on the table top such as a desk or a table It is due to the fact that the weight tends to be larger than the obstacle. Therefore, a protective means is provided on the front portion of the electric vacuum cleaner main body attached to the front portion of the support body in anticipation of a collision impact in a state of being attached to the support body, not a collision impact at the time of single use As a result, the size of the electric vacuum cleaner main body, which should be small, is increased, and there is a possibility that usability in using the electric vacuum cleaner body by itself may be deteriorated.

[0007]

SUMMARY OF THE INVENTION The present invention has been made to solve the above problems, and an object of the present invention is to provide an electric vacuum cleaner in which a main body of an electric vacuum cleaner and a support can be separated, a vacuum cleaner using a protection means for protecting the electric vacuum cleaner from an impact when colliding with an obstacle In order to prevent the increase in size as much as possible.

[0008]

A first aspect of the present invention provides a dust collecting apparatus comprising a dust collecting part having a first suction port formed at one end thereof and connected to the first suction port through a first air intake path and an electric blower, An electric vacuum cleaner comprising a vacuum cleaner main body provided with a grip portion and a support having a storage portion for detachably accommodating the electric vacuum cleaner main body, wherein the support has a nozzle head on one end side thereof and on the other end side thereof A second suction port is provided in the nozzle head and a second intake path connectable with the second suction port is communicated with the dust collecting section and the electric blower when storing the cleaner body A protecting means is provided at a front portion of the electric vacuum cleaner body so that the storage portion is provided so as to appear on the rear side of the support body and the storage portion is provided such that the protection means Store the electric vacuum cleaner body so that it faces backward A vacuum cleaner, characterized by being configured to capacity.

[0009]

According to a second aspect of the present invention, the protection means is provided in a longitudinal direction of a front portion of the electric vacuum cleaner body, and when the housing portion accommodates the electric vacuum cleaner body, the protection means Wherein the length direction of the support member is configured to be along the longitudinal direction of the support body.

[0010]

According to a third aspect of the present invention, the first air intake passage is formed by a substantially linear pipe-like portion, the pipe-shaped portion is provided at the front portion of the electric vacuum cleaner body, and around the pipe-like portion The electric vacuum cleaner according to claim 1 or 2, wherein the protection means is provided,

[0011]

Further, according to a fourth aspect of the present invention, the second intake passage communicates with the dust collecting portion and the electric blower through the first intake port when storing the electric vacuum cleaner main body. Wherein the electric vacuum cleaner is the electric vacuum cleaner according to any one of the first to third aspects.

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[0012]

According to the first aspect of the invention, when the electric vacuum cleaner body is used alone, even if the main body of the electric vacuum cleaner collides against an obstacle in front of the electric vacuum cleaner main body, Even if the main body of the electric vacuum cleaner can be protected by the protection means and the electric vacuum cleaner is used in a state in which the main body of the electric vacuum cleaner is attached to the support, even if the electric vacuum cleaner collides with an obstacle in front of the support , The electric vacuum cleaner main body can be protected from the shock at this time by the support and the electric vacuum cleaner is caused to collide with an obstacle behind the electric vacuum cleaner or the electric vacuum cleaner is dropped during use , The main body of the electric vacuum cleaner can be protected by the backward facing protective means. Moreover, such a protection means is smaller in shock than the case where the main body of the cleaner is brought into collision with the obstacle in a state where the main body of the cleaner is attached to the support, and when the main body of the vacuum cleaner is used alone, An impact sufficient to withstand an impact in the event of collision with an obstacle or an impact sufficient to withstand an impact in a case where the main body of the cleaner is attached to the support is made to collide with an obstacle behind the cleaner main body, , And it is possible to minimize the arrangement of the protection member.

[0013]

According to the second aspect of the present invention, even when the electric vacuum cleaner main body is used singly or attached to the support, the impact absorbing means can be attached to the main body of the vacuum cleaner or the electric cleaning As a result, the region protected by the protection means can be made as large as possible.

[0014]

According to the third aspect of the present invention, since the protection means is provided around the substantially linear pipe-like portion forming the first air intake passage, it is possible to reduce the size of the electric vacuum cleaner body it can.

[0015]

Further, according to the fourth aspect of the invention, the second intake passage can be easily connected to the dust collecting portion and the electric blower via the first intake port when the electric vacuum cleaner main body is stored.

[0016]

Preferred embodiments of the present invention will be described with reference to the accompanying drawings. It is to be noted that the embodiments described below do not limit the content of the present invention described in the claims. In addition, all of the configurations described below are not necessarily indispensable requirements of the present invention.

[0017]

Each drawing shows Example 1. In FIG. 1, FIG. 2, and FIG. 7, the left side is the front. As shown in FIG. 1, the electric vacuum cleaner of the present invention constructed as a separate type comprises an electric vacuum cleaner main body 1, a storage for removably storing the electric vacuum cleaner main body 1 as shown in FIG. 2 And a support 3 having a part 2. As shown in FIG. 1, the electric vacuum cleaner main body 1 has a machine frame case 4 and a dust collecting portion 5 detachably attached to one end portion of the machine frame case 4. Inside the machine case case 4, an electric blower 8 and a rechargeable battery 9, each of which has a motor 6 and a fan 7, are incorporated, and at the other end (upper part in FIG. 1) , A first grip portion 10 is formed. A first suction port 11 is formed in a front portion of one end portion (the lower portion in FIG. 1) of the dust collecting portion 5, and a first suction port 11 and a first dust collecting portion 5 connecting the dust collecting portion 5 An intake path 12 is formed integrally with the dust collecting section 5. In addition, a vortex flow generating means 13 is detachably attached in the container 5 A of the dust collecting part 5, and by the vortex flow generating means 13, the dust collecting part 5 is a cyclone separating apparatus. Further, the dust collecting part 5 is connected to an exhaust path (not shown) formed in the machine case case 4 via the electric blower 9. As shown in FIG. 1, the first intake passage 12 extends from the first intake port 11 to the introduction port 14 at a front portion of the dust collection portion 5 in a hollow formed integrally with the dust collection portion 5 Like first portion 15. The first pipe- The first pipe-like portion 15 has a semicircular shape in which the plane cross section thereof projects forward, and the center axis A thereof is in the state where the dust collecting portion 5 is attached to the machine case case 4 And is formed integrally with the dust collecting part 5 so as to extend along the longitudinal direction of the vacuum cleaner main body 1. Further, the outer periphery of the first pipe-like portion 15 is covered with protective means 15A made of synthetic resin. It should be noted that a slight gap is formed between the protection means 15 A and the first pipe-like portion 15. Further, the lateral width W 1 of the protection means 15 A is formed to be smaller than the lateral width W 2 of the dust collection part 5 (W 1 <W 2). Further, the first gripping portion 10 includes a front connecting portion 16 and a rear connecting portion 17, which project diagonally upward and rearward respectively in the posture of FIG. 1, at the front portion and the rear portion of the machine frame case 4, And a grip portion 18 connecting between the end portions of the upper and lower end portions 16 and 17. The coupling portions 16 and 17 and the grip portion 18 are formed in a substantially U shape as viewed

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from the side.

The front connecting portion 16 is provided so as to be flush with the protecting portion 15 </ b> A. That is, the second pipe-like portion 19 provided at the front portion of the machine frame case 4 and constituting the front connecting portion 16 is coaxial with the protecting means 15 </ b> A covering the first pipe-like portion 15 and has an outer peripheral shape of It is almost the same. Although the second pipe-like portion 19 is formed in a pipe shape, it does not constitute the first intake passage 12. A switch 20 for operating the electric blower 8 is provided at the upper end of the front connecting portion 16 and at the front end of the grip portion 18.

[0018]

The dust collecting part 5 serving as a cyclone separating apparatus is provided with the inlet 14 which constitutes the first air intake passage 12 and communicates the first pipe shaped part 15 and the container 5 A at the front upper part thereof ing. The center axis X of the introduction port 14 is arranged to be orthogonal to the axis Y of the dust collection part 5. The vortex flow generating means 13 is attached to the upper opening portion of the container 5 A of the dust collecting portion 5 and the air flow guiding portion 13 A of the vortex flow generating means 13 is formed to face the introduction port 14 , The primary side of the airflow guiding portion 13 A is connected to the introducing port 14 and the secondary side is in communication with the inside of the container 5 A of the dust collecting portion 5 in a tangential direction of a circle centered on the axis line Y. A frame body 21 formed in a substantially columnar shape as a whole is provided coaxially with the axis line Y at substantially the center of the vortex flow generating means 13, and a filter 22 is provided on the frame body 21 ing. Further, an exhaust path 23 is formed above the container body 5 in the direction of the axis Y direction of the container 5 A, and the exhaust path 23 communicates with the electric blower 8.

[0019]

The support body 3 serves as a base when the electric vacuum cleaner body 1 is used as a stick-type vacuum cleaner. The support body 24 of the support body 3 has a front face portion 24 A and a rear face portion 24 B, is vertically elongated and has an interior hollow, and the flat cross-sectional shape is a substantially crescent shape protruding forward . It should be noted that the support body 24 can be folded by a shaft 24C and its lateral width W3 is smaller than the lateral width W2 of the dust collector 5 and larger than the lateral width W1 of the protection means 15A (W1 <W3 < W2). Further, a nozzle head 26 provided with a horizontally elongated suction port 25 is rotatably connected to the one end side (lower end side in FIG. 2) of the support main body 24 via a universal joint 27. Further, a second gripping portion 28 is integrally provided on the other end side (the upper end side in FIG. 2) of the supporting body 24 of the support 3. Further, on the support 3, the storage portion 2 is formed in a concave shape on the rear side close to one end of the support main body 24. The support main body 24 is formed in a bow shape in which the front surface protrudes slightly forward as a whole. Further, the storage part 2 is formed so as to appear on the rear side of the support 3, and the storage part 2 includes the first pipe-like part 15 and the second pipe-like part 19 The rear side, the upper side, and the left and right sides except the front and the lower of the storage part 2 are opened so that the electric vacuum cleaner main body 1 can be stored in a state where the electric vacuum cleaner main body 1 is facing rearward. A placing and receiving portion 29 on which one end portion of the vacuum cleaner body 1 can be placed is provided below the accommodating portion 2, and the placing receiving portion 29 is provided with a plurality of And a connection port 30 serving as a secondary side is provided upward. The first suction port 11 is airtightly connected to the connection port 30 so as to communicate therewith, and further around the rear side of the connection port 30, the first pipe-like portion 15 A first fitting receiving portion 31 capable of fitting to the right and left sides and the rear portion around one suction port 11 projects upward in a U shape in a plan view. On the other hand, in the upper portion of the storage portion 2, in a portion corresponding to the rear connection portion 17 when storing the electric vacuum cleaner main body 1, in the vicinity of a connection portion between the rear connection portion 17 and the grip portion 18 in the embodiment A pair of right and left second fitting receiving portions 32 that can be fixed by sandwiching the portion from the left and right are provided at corresponding positions.

[0020]

The nozzle head 26 has a substantially T-shaped plan view and a horizontally elongated suction port 25 opened long in the left-right direction at the front of the lower surface of a flat box-shaped head case 33, And communicates with the universal joint 27. A second air intake path 34 is formed between the horizontally long suction port 25 and the connection port 30.

[0021]

In the electric vacuum cleaner having the above configuration, in order to clean a surface G to be cleaned such as a desk or a top plate of a table, the electric vacuum cleaner main body 1 is separated from the support 3 and the electric vacuum cleaner main body 1, the user grips the grip portion 18 of the first grip portion 11 provided at the other end portion of the machine frame case 4 to hold the electric vacuum cleaner main body 1. When the user operates the switch 20, the electric blower 8 is operated by electric power from the rechargeable battery 9, and the fan 7 is rotated, whereby power is supplied from the first suction port 11 to the first Sucked through the pipe member 15, passed through the dust collecting portion 5 and the electric blower 8, and an intake air flow discharged to the outside of the machine frame case 4 through the exhaust passage (not shown) is generated. As described above, in a state where the electric blower 8 is operated, the first suction port 11 is brought close to the cleaning target surface G, and the first suction port 11 is moved along the surface G to be cleaned, the

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electric vacuum cleaner By moving the main body 1, an intake air flow containing dust is sucked from the first suction port 11, and the suction air flow containing this dust is sucked into the first pipe shaped portion 15 into the container 5 A of the dust collecting part 5 via the introduction port 14.

[0022]

The airflow including the dust which has entered the container 5 A of the dust collecting part 5 from the introduction port 14 is directed by the airflow guiding part 13 A of the vortex flow generating means 13 in the tangential direction of the inner surface of the container 5 A , Becomes a swirling flow which swirls along the inner peripheral surface of the container 5A and descends spirally in the container 5A. At this time, among the dusts contained in the vortex flow, at least coarse dust is separated from the vortex flow by being pressed against the inner peripheral surface of the container 5 A of the dust collection unit 5 by centrifugal force. Then, the air flow from which coarse dust is separated by the centrifugal force passes through the filter 22 provided at the center of the vortex flow generating means 13. When the airflow passes through the filter 22, fine dust that has not been separated by the centrifugal force contained in the airflow is filtered. Further, the airflow from which the dust has been removed by the filter 22 is discharged from the dust collecting section 5 via the exhaust path 23, and is sucked into the electric blower 8. Then, the dust separated from the airflow in this way is stored in the container 5 A of the dust collecting section 5. At this time, at the time of use of FIG. 1, the introduction port 14 is disposed above the container 5 A of the dust collection unit 5, so that the dust accumulated in the container 5 A can be drawn out from the introduction port 14 And does not return to the first suction port 11. Further, the dust collected in the container 5A is removed from the machine frame case 4, the vortex flow generating means 13 is removed from the container 5A, and the upper opening of the container 5A is opened It can be discarded by opening it.

[0023]

As described above, when cleaning the surface G to be cleaned such as a desk or a top plate of a table by using the vacuum cleaner body 1 alone, an obstacle (for example, display D Etc.), the electric vacuum cleaner main body 1 may collide. However, even if the electric vacuum cleaner main body 1 collides with an obstacle such as the display D, the colliding position is the protection means 15 A covering the first pipe-like portion 15. As described above, a slight gap is formed between the protection means 15A and the first pipe-shaped portion 15, so that the protection means 15A can be deformed by an impact at the time of a collision , The impact is absorbed by the deformation cf the protection means 15A, and the impact received by the first pipe-like portion 15 is alleviated. As a result, it is possible not only to reduce the possibility that the first pipe-like portion 15 and the container 5 </ b> A, that is, the dust collecting portion 5 are broken and the occurrence of airflow leakage, but also to reduce the risk of airflow leakage, It is possible to reduce troubles and the like caused by the impact of the electric blower 8 provided in the case 4 to the motor 6 and the fan 7.

[0024]

On the other hand, in the case of using the vacuum cleaner body 1 as the stick-type vacuum cleaner with the vacuum cleaner main body 1 attached to the support 3 in order to clean a surface to be cleaned F such as a floor or the like under a desk or a table, , The electric vacuum cleaner body 1 is housed in the housing portion 2 of the support 3 so that the first inlet 11 of the vacuum cleaner body 1 is connected to the connection port 30 of the support 3, Holding the second grip portion 28 provided on the other end side of the support body 24 of the support 3 and placing the nozzle head 26 provided on one end side of the support main body 24 on the surface to be cleaned F. When the user operates the switch 20, the electric blower 8 is operated by electric power from the rechargeable battery 9 and the fan 7 is rotated, whereby the suctioned airflow containing dust flows through the second Is drawn through the horizontally elongated suction port 25 serving as a suction port and is sucked from the first suction port 11 through the nozzle head 26, the universal joint 27, and the connection port 30 (that is, the second intake path 34) 15 (that is, the first air intake path 12) and flows into the container 5 A of the dust collecting section 5. Then, as shown in FIG. 2, the rear half of the second intake passage 34 (from the universal joint 27 to the connection port 30) and the first intake passage 12 are linearly connected. Therefore, as compared with the case where the intake path is bent, the pressure loss is small, the suction airflow smoothly flows to the container 5 A, but also dust collides with the wall of the bent portion of the intake path and adheres Problems hard to occur. Since the separation of the dust and the discharge of the air flow are as described above, the explanation is omitted.

[0025]

In this manner, when cleaning the surface to be cleaned F such as a floor using the electric vacuum cleaner as a stick type, an obstacle (for example, a tabletop T of a desk or a table) placed on the surface to be cleaned F, There is a possibility that the electric vacuum cleaner will collide. However, even if the electric vacuum cleaner collides with an obstacle such as a tabletop T of a desk or a table, the colliding position is the hollow support main body 24. Since the support body 24 is hollow as described above, the support body 24 is configured to be deformable by the impact at the time of a collision, so that the impact is absorbed by the deformation of the support body 24 And the impact received by the electric vacuum cleaner main body 1 attached to the support 3 is alleviated. This makes it possible to reduce troubles and the like caused by the impact on the motor 6 and the fan 7 of the electric blower 8 provided in the machine case case 4 of the electric vacuum cleaner main body 1 attached to the support 3 .

[0026]

Further, in the case of cleaning in a state in which the electric vacuum cleaner main body 1 is attached to the support 3, when the electric vacuum cleaner is drawn backward along the surface to be cleaned F, the rear side of the electric vacuum cleaner collides with an obstacle There is a possibility that the electric vacuum cleaner will fall and the rear side of the electric vacuum cleaner will collide with the floor F because there is a possibility that the electric cleaner will fall away from the second holding portion 28. However, in such a case, the protective means 15A covering the first pipe-shaped portion 15 attached rearward collides with the floor F and, as described above, the protection means 15A and the first pipe-like portion 15, the protection means 15A is deformable by the impact at the time of a collision, so that the impact is absorbed by the deformation of the protection means 15A, so that the first The impact applied to the pipe-like portion 15 is alleviated. As a result, it is possible not only to reduce the possibility that the first pipe-like portion 15 and the container 5 </ b> A, that is, the dust collecting portion 5 are broken and the occurrence of airflow leakage, but also to reduce the risk of airflow leakage. It is possible to reduce troubles and the like caused by the impact of the electric blower 8 provided in the case 4 to the motor 6 and the fan 7.

[0027]

In the case where the main body 1 is attached to the support 3 and is used as a stick-type vacuum cleaner, the impact main body 24 collides with an obstacle such as a tabletop T or a table top of a table Is larger than the impact when the protective means 15A collides with an obstacle such as the display D when the electric vacuum cleaner main body 1 is used alone as a hand-held type vacuum cleaner. This is because the difference between the total weight of the support 3 and the vacuum cleaner main body 1 and the weight of the electric vacuum cleaner main body 1 itself, and the obstacle placed on the surface to be cleaned F such as a floor, The weight of the obstacle placed on the surface G to be cleaned such as the top plate of the floor or the like and the speed of moving the stick type electric vacuum cleaner on the surface to be cleaned F such as a floor is higher than the desk And the speed at which the hand-held electric vacuum cleaner is moved on the cleaned surface G such as the top plate of the table or the like, and the like. Therefore, although the support main body 24 of the support 3 needs to be formed in a shape and size in anticipation of a large impact impact when used as a stick-type electric vacuum cleaner, it is necessary to form the support main body 24 at the front part of the electric vacuum cleaner main body 1 The protection means 15A provided in the electric vacuum cleaner main body 1 may be formed in a shape and size in which a relatively small collision impact is expected when the electric vacuum cleaner main body 1 is used singly, It is possible to suppress the increase in size and to prevent the usability of the electric vacuum cleaner body 1 when used alone.

[0028]

When the vacuum cleaner body 1 is attached to the support 3 and is used as a stick-type vacuum cleaner, the support main body 24, which is the front side of the electric vacuum cleaner, The impact when colliding with the obstacle tends to be larger than the impact when the protection means 15A on the rear side of the electric vacuum cleaner collides with the obstacle. This is because, as shown in FIG. 2, when the electric vacuum cleaner falls to the rear, when the electric vacuum cleaner is pushed forward along the surface to be cleaned F, the support main body 24 of the electric vacuum cleaner A force for pressing the electric vacuum cleaner against the surface to be cleaned F acts due to an impact when colliding with an obstacle such as a tabletop T of a desk or a table and a force at the time of collision , When the electric vacuum cleaner is drawn backward along the surface to be cleaned F, an obstacle which may collide with the protection means 15A is drawn between the user and the vacuum cleaner It is relatively low, so that a force to float the electric vacuum cleaner from the surface to be cleaned F acts due to the impact when the protective means 15A of the electric vacuum cleaner collides with a low obstacle , Thereby moderately missing the force at the time of a collision Succoth is because it is. The frequency of collision of the support main body 24 as the front side of the electric vacuum cleaner is also higher than the collision frequency of the protection means 15A on the rear side of the electric vacuum cleaner. This is because, as described above, when an obstacle collides with the protection means 15A, this obstacle must exist between the user and the vacuum cleaner. For this reason, in an electric vacuum cleaner in a state of being used as a stick type, the protection means 15A located on the rear side of the electric vacuum cleaner applies a relatively small impact shock when the electric vacuum cleaner main body 1 is used alone It is possible to protect the electric vacuum cleaner main body 1 sufficiently from the impact caused by the collision with the obstacle even if it is formed in the expected shape and size.

[0029]

As described above, in the above-described embodiment, the dust collecting portion 5 formed with the first suction port 11 at one end portion and connected to the first suction opening 11 via the first intake passage 12 and the electric blower 8 provided with a first gripping portion 10 at the other end portion thereof and a support member 3 having a storage portion 2 for detachably accommodating the electric vacuum cleaner main body 1, 3 has a nozzle head 26 on one end side thereof and a second gripping portion 28 on the other end side thereof, a horizontally elongated suction port 25 as a second suction port is provided in the nozzle head 26. To communicate with the dust collecting portion 5 and the electric blower 8 when storing the cleaner body 1, and a protective means 15A is provided at the front portion of the vacuum cleaner body 1 So that the storage part 2 appears on the back side of the support 3 And the electric vacuum cleaner main body 1 can be housed so that the protection means 15A faces backward in the storage portion 2, so that the electric vacuum cleaner main body 1 can be used alone and the desk or table top When cleaning the surface G to be cleaned such as a plate or the like, even if it hits an obstacle such as the display D on the front side of the surface G to be cleaned, the dust collecting part 5 is protected by the protection means 15A from the impact , It is possible to

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prevent damage to the dust collecting part 5 and thus the electric blower 8 in the machine frame case 4 to which the dust collecting part 5 is attached. In addition, when cleaning the surface to be cleaned F such as a floor by using the vacuum cleaner main body 1 attached to the support 3, it is possible to clean an obstacle such as the front top T by the electric cleaning It is possible to protect the cleaner body 1 with the support 3 even if the machine collides and to collide the rear portion of the vacuum cleaner against an obstacle when drawing the electric vacuum cleaner along the surface to be cleaned F , Even if the hand gets away from the second gripping portion 28 during cleaning to cause the rear portion of the electric vacuum cleaner to collide with the surface to be cleaned F, the protection means 15 A located at the rear portion of the electric vacuum cleaner , It is possible to protect the dust collecting portion 5 and thus the electric blower 8 in the machine frame case 4 to which the dust collecting portion 5 is attached. Furthermore, since it is only necessary to form the protection means 15A in a shape or size in which a relatively small impact impact is expected when the electric vacuum cleaner main body 1 is used singly, minimizing the protection means 15A As a result, it is possible to keep the electric vacuum cleaner main body 1, and consequently the entire vacuum cleaner compact without enlarging it, thereby maintaining the operability of the electric vacuum cleaner .

[0030]

Further, the protection means 15A is provided in the longitudinal direction at a portion corresponding to the front portion when the electric vacuum cleaner main body 1 is used singly, and the protection means 15A is provided in the longitudinal direction of the protection means 15A, The housing 2 is provided so that the center axis A substantially follows the longitudinal direction of the support 3, so that when the electric vacuum cleaner main body 1 is used alone, or when it is used together with the support 3 , The protection means 15A is oriented vertically, and as a result, the effective length of the impact absorption by the protection means 15A can be made as large as possible.

[0031]

Further, since the protection means 15A is provided around the substantially linear first pipe-like portion 15 forming the first air intake path 12, it is possible to avoid the increase in size of the electric vacuum cleaner main body 1 and make it compact be able to.

[0032]

Furthermore, when the electric vacuum cleaner body 1 is stored, the second intake path 34 communicates with the dust collection section 5 and the electric blower 8 via the first intake port 11, whereby the first suction port 11 By accommodating the electric vacuum cleaner body 1 in the storage part 2 so as to be connected to the connection port 30, the second intake passage 34 is connected to the dust collecting part 5 and the electric blower It is possible to easily connect to the container 8.

[0033]

It should be noted that the present invention is not limited to the above-described embodiments, and various modifications can be made within the scope of the gist of the invention. For example, in the above embodiment, the protection means made of a synthetic resin can be deformed by interposing a small gap around the pipe-like portion, but without providing such a gap, the protection means made of synthetic resin The protective means may be formed by covering the periphery with a soft synthetic resin called an elastomer or the like.

[0034]

As described above, the electric vacuum cleaner according to the present invention can be applied to various uses. Further, the dust collecting part may be a filter type rather than a cyclone separating apparatus.

[0035]

1 is a side view of an electric vacuum cleaner main body showing a first embodiment of the present invention in use. FIG. 5 is a side view of the electric vacuum cleaner main body when it is used in a state of being attached to a support. FIG. 2 is a cross-sectional view taken along line II of FIG. 2. FIG. 2 is a front view of the electric vacuum cleaner main body in an upright state in a state where it is attached to a support. FIG. 4 is a plan view of the electric vacuum cleaner main body when it is mounted on a support in an upright state. FIG. 5 is a bottom view of the electric vacuum cleaner body in an upright state in a state where the main body is attached to the support body. FIG. 2 is a side view of the electric vacuum cleaner main body removed from the support. FIG. 2 is a rear view in which the main body of the vacuum cleaner and the support are arranged side by side, with the main body of the electric vacuum cleaner removed from the support. FIG. 2 is a plan view of the support.

Explanation of sign

[0036]

DESCRIPTION OF THE REFERENCE NUMERALS 1 electric vacuum cleaner body 2 housing part 3 support body 5 dust collecting part 8 electric blower 10 first gripping part 11 first suction port 12 first intake passage 15 first pipe shaped part 15 A protection means 25 horizontally elongated suction port Suction port) 26 Nozzle head 28 Second grip portion 30 Connection port 34 Second intake passage

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CLAIMS JP2008206613

1.

An electric cleaner having a dust collecting part formed with a first suction port at one end portion thereof and connected to the first suction port via a first intake passageway and an electric blower and having a first gripping portion at the other end portion A main body and a support having a storage portion for detachably housing the electric vacuum cleaner main body, wherein the support has a nozzle head on one end side thereof and a second grip portion on the other end side thereof , A second suction port is provided in the nozzle head and a second intake path connectable with the second suction port is configured to communicate with the dust collecting section and the electric blower when storing the cleaner body, A protecting means is provided at a front portion of the main body of the electric vacuum cleaner so that the storing portion is provided so as to appear on the rear side of the supporting body and the storing portion is provided with the electricity it is constructed so that the main body of the vacuum cleaner can be stored Vacuum cleaner according to claim.

2.

Wherein the protection means is provided in a longitudinal direction of a front portion of the electric vacuum cleaner body and the storage portion is configured such that when the electric vacuum cleaner body is accommodated, a longitudinal direction of the protection means is And wherein the electric vacuum cleaner is configured so as to extend along a longitudinal direction of the electric vacuum cleaner.

3.

Characterized in that the first air intake passage is formed by a substantially straight pipe-like portion, the pipe-like portion is provided at the front portion of the electric vacuum cleaner body, and the protection means is provided around the pipe-like portion 3. The electric vacuum cleaner according to claim 1 or 2.

4.

4. The electric vacuum cleaner according to claim 1, wherein when the electric vacuum cleaner body is stored, the second intake passage communicates with the dust collector and the electric blower through the first intake port. Electric vacuum cleaner.

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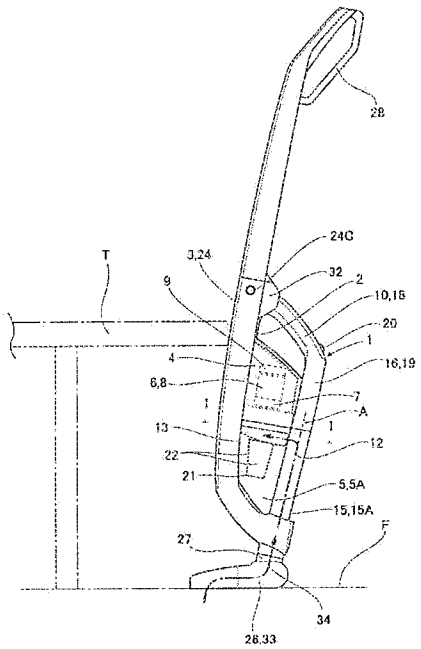
(54)【発明の名称】電気掃除機

(57)【要約】
【課題】分離型電気掃除機において、障害物に衝突した際の衝撃から電気掃除機を保護するための保護手段による電気掃除機の大型化を可及的に阻止すること。
【解決手段】電気掃除機本体１の前部に保護手段１５Ａを設け、収納部２を支持体３の後側に現れるように設けると共に、前記保護手段１５Ａが後ろを向いた状態で電気掃除機本体１を収納可能に、前記収納部２を構成する。そして、前記電気掃除機本体１を単独で使用する場合、この電気掃除機本体１を前方の障害物に衝突させても、前記保護手段１５Ａにより、その衝撃から前記掃除機本体１を保護することができる。また、前記支持体３に前記電気掃除機本体１を取り付けて使用する場合、障害物に前記電気掃除機を衝突させても、前記支持体３により、その衝撃から前記掃除機本体１を保護することができる。
【選択図】図２



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【特許請求の範囲】
【請求項１】
一端部に第一吸込口が形成されると共にこの第一吸込口に第一吸気路を介して接続される集塵部及び電動送風機を備えかつ他端部に第一把持部を設けた電気掃除機本体と、
この電気掃除機本体を着脱可能に収納する収納部を有する支持体とを備え、
この支持体が、その一端側にノズルヘッドを有すると共にその他端側に第二把持部を有し、前記ノズルヘッドに第二吸込口を設けると共に、この第二吸込口と接続可能な第二吸気路を前記掃除機本体の収納時に前記集塵部及び電動送風機に連通するように構成した電気掃除機において、
前記電気掃除機本体の前部に保護手段を設け、前記収納部を前記支持体の後側に現れるように設けると共に、前記収納部を、前記保護手段が後ろ向きとなるように前記電気掃除機本体を収納可能に構成したことを特徴とする電気掃除機。
【請求項２】
前記保護手段が、前記電気掃除機本体の前部の長さ方向に設けられると共に、前記収納部が、前記電気掃除機本体を収納した際に、前記保護手段の長さ方向が前記支持体の長さ方向に沿うように構成されていることを特徴とする請求項１記載の電気掃除機。
【請求項３】
前記第一吸気路をほぼ直線状のパイプ状部により形成し、このパイプ状部を前記電気掃除機本体の前部に設けると共に、前記パイプ状部の周囲に前記保護手段を設けたことを特徴とする請求項１又は２記載の電気掃除機。
【請求項４】
前記電気掃除機本体の収納時に、前記第一吸込口を介して前記第二吸気路が前記集塵部及び電動送風機に連通することを特徴とする請求項１～３のいずれか１項に記載の電気掃除機。
【発明の詳細な説明】
【技術分野】
【０００１】
本発明は電気掃除機に関するものであり、特に、分離型の電気掃除機に関するものである。
【背景技術】
【０００２】
従来、この種の電気掃除機として、吸込口及び集塵部を有し電動送風機を内蔵する電気掃除機本体と、この電気掃除機本体が収納される支持体とを有し、この支持体が、一端側にノズルヘッドを有し、他端側に把持部を有すると共に、前記電気掃除機本体を収納する収納部を前部に有し、前記電気掃除機本体の収納時に前記ノズルヘッドが前記吸込口を介して前記集塵部に連通されるように構成され、前記電気掃除機本体を単独或いは前記支持体に収容して使い、前記吸込口或いはノズルヘッドから吸い込んだ塵埃を前記集塵部内に溜めるものが知られている（例えば特許文献１、２）。そして、このような分離型の電気掃除機は、前記電気掃除機本体を前記支持体の前部に設けられた前記収納部に収納した状態で前記把持部を把持し、スティック型の掃除機として前記ノズルヘッドから塵埃を吸引するようにして使用したり、或いは前記電気掃除機本体を手持ち型の掃除機として単独で使用したりすることができるように構成されている。
【特許文献１】特許第２６２７２７５号公報
【特許文献２】特開平４－３６４８２２号公報
【発明の開示】
【発明が解決しようとする課題】
【０００３】
従来技術において、前記電気掃除機本体を前記支持体に収納した状態でスティック型の掃除機として使用する場合、例えば机やテーブル等が置いてある床を掃除する際に、机やテーブル等の下に前記ノズルヘッドを差し込み、このノズルヘッドを床に沿って移動させ

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て掃除をしようとすると、机やテーブル等に前記掃除機の前部が衝突してしまい、この衝撃によって前記電気掃除機本体と支持体の位置関係がずれて気流漏れが発生したり、場合によっては前記電気掃除機本体が前記支持体から脱落してしまったりする虞があった。また、衝突時の衝撃によって前記集塵部等に亀裂が生じると、この亀裂によって気流漏れが発生する虞もあった。また、衝突時の衝撃によって、前記電気掃除機本体内の電動送風機が損傷してしまう虞もあった。更に、このような電気掃除機は、後方に傾けて使用する際に、床面に沿って前方に押し出すばかりでなく、床面に沿って後方に引き寄せる場合もあるので、電気掃除機の後方を障害物に衝突させてしまう虞があり、また、衝突時の衝撃等によって前記把持部から手が離れ、電気掃除機を床面に落としてしまう虞があり、このような衝突や落下による衝撃によって、前記電気掃除機本体と支持体の位置関係がずれてシール不良が発生したり、前記電気掃除機本体が前記支持体から脱落したり、前記集塵部や電動送風機が損傷したりする虞もあった。

【０００４】

一方、前記電気掃除機本体を単独で使用して、例えば机やテーブル等の天板上に沿って前記電気掃除機本体を移動させて掃除をしようとすると、天板上の電気スタンド等に前記電気掃除機本体が衝突してしまい、この衝撃によって、前記集塵部や電動送風機が損傷する虞もあった。

【０００５】

このような衝撃に伴う問題点を解決するには、保護手段を、第一に、使用状態における前記電気掃除機本体の前部に設けること、第二に、前記支持体の後部に設けることが考えられる。

【０００６】

ところで、清掃時に前記電気掃除機が障害物に衝突した際の衝撃は、前記支持体に前記電気掃除機本体を取り付けて使用する場合のほうが、前記電気掃除機本体を単独で使用する場合よりも大きい。これは、前記支持体と電気掃除機本体の合計重量と、前記電気掃除機本体単体の重量との相違、並びに、床上に置かれた障害物が机やテーブル等の天板上に置かれた障害物よりも重量が大きい傾向にあることに起因する。従って、前記支持体の前部に取り付けられる前記電気掃除機本体の前部には、単独使用時の衝突衝撃ではなく、前記支持体に取り付けられた状態での衝突衝撃を見込んだ保護手段を設けなければならず、この結果、小型であるべき前記電気掃除機本体が大型化してしまい、この電気掃除機本体を単独で使用する際の使い勝手を低下させてしまう虞があった。

【０００７】

本発明は以上の問題点を解決し、電気掃除機本体と支持体が分離可能な電気掃除機において、障害物に衝突した際の衝撃から電気掃除機を保護するための保護手段による電気掃除機の大型化を可及的に阻止することを目的とする。

【課題を解決するための手段】

【０００８】

請求項１の発明は、一端部に第一吸込口が形成されると共にこの第一吸込口に第一吸気路を介して接続される集塵部及び電動送風機を備えかつ他端部に第一把持部を設けた電気掃除機本体と、この電気掃除機本体を着脱可能に収納する収納部を有する支持体とを備え、この支持体が、その一端側にノズルヘッドを有すると共にその他端側に第二把持部を有し、前記ノズルヘッドに第二吸込口を設けると共に、この第二吸込口と接続可能な第二吸気路を前記掃除機本体の収納時に前記集塵部及び電動送風機に連通するように構成した電気掃除機において、前記電気掃除機本体の前部に保護手段を設け、前記収納部を前記支持体の後側に現れるように設けると共に、前記収納部を、前記保護手段が後ろ向きとなるように前記電気掃除機本体を収納可能に構成したことを特徴とする電気掃除機である。

【０００９】

また、請求項２の発明は、前記保護手段が、前記電気掃除機本体の前部の長さ方向に設けられると共に、前記収納部が、前記電気掃除機本体を収納した際に、前記保護手段の長さ方向が前記支持体の長さ方向に沿うように構成されていることを特徴とする請求項１記

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載の電気掃除機である。

【００１０】

また、請求項３の発明は、前記第一吸気路をほぼ直線状のパイプ状部により形成し、このパイプ状部を前記電気掃除機本体の前部に設けると共に、前記パイプ状部の周囲に前記保護手段を設けたことを特徴とする請求項１又は２記載の電気掃除機である。

【００１１】

更に、請求項４の発明は、前記電気掃除機本体の収納時に、前記第一吸込口を介して前記第二吸気路が前記集塵部及び電動送風機に連通することを特徴とする請求項１～３のいずれか１項に記載の電気掃除機である。

【発明の効果】

【００１２】

請求項１の発明によれば、前記電気掃除機本体を単独で使用する場合、この電気掃除機本体の前方にある障害物に前記電気掃除機本体を衝突させても、この際の衝撃から前記電気掃除機本体を前記保護手段により保護でき、また、前記支持体に前記電気掃除機本体を取り付けた状態で使用する場合、前記支持体の前方にある障害物に電気掃除機を衝突させても、この際の衝撃から前記電気掃除機本体を前記支持体により保護できると共に、前記電気掃除機の後方にある障害物に前記電気掃除機を衝突させたり、使用中に前記電気掃除機を落下させたりしても、後ろ向きの前記保護手段により前記電気掃除機本体を保護することができる。しかも、このような保護手段は、前記掃除機本体を前記支持体に取り付けた状態で障害物に衝突させる場合に比較して衝撃の小さな、前記電気掃除機本体を単独で使用する際に前方の障害物に衝突させる場合の衝撃、或いは前記掃除機本体を前記支持体に取り付けた状態で後方の障害物に衝突させる場合の衝撃に耐えるのに必要充分な規模のものを前記掃除機本体の前側のみに設ければよく、保護部材を最小限の配置で済ますことができる。

【００１３】

また、請求項２の発明によれば、前記電気掃除機本体を単独で使用する場合でも、前記支持体に取り付けて使用する場合でも、前記衝撃吸収手段が、前記電気掃除機本体或いは前記電気掃除機の長さ方向に沿って設けられることで、この結果、前記保護手段によって保護される領域を可及的に大きくすることができる。

【００１４】

また、請求項３の発明によれば、前記第一吸気路を形成するほぼ直線状のパイプ状部の周囲に前記保護手段を設けたことで、前記電気掃除機本体のコンパクト化を図ることができる。

【００１５】

更に、請求項４の発明によれば、前記電気掃除機本体の収納時に、前記第一吸込口を介して前記第二吸気路を前記集塵部及び電動送風機に簡単に接続することができる。

【発明を実施するための最良の形態】

【００１６】

本発明における好適な実施の形態について、添付図面を参照して説明する。尚、以下に説明する実施の形態は、特許請求の範囲に記載された本発明の内容を限定するものではない。また、以下に説明される構成の全てが、本発明の必須要件であるとは限らない。

【実施例１】

【００１７】

各図は実施例１を示している。なお、図１、図２、及び図７では、左側が前である。分離型に構成された本発明の電気掃除機は、図１に示すように、電気掃除機本体１と、図２に示すように、この電気掃除機本体１を着脱可能に収納するための収納部２を有する支持体３とを備える。前記電気掃除機本体１は、図１に示すように、機枠ケース４と、この機枠ケース４の一端部に着脱自在に取り付けられる集塵部５とを有して構成されている。そして、前記機枠ケース４の内部には、モータ６とファン７とを有して構成される電動送風器８及び充電池９が内蔵されていると共に、他端部（図１における上部）には、第一把持

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部１０が形成されている。また、前記集塵部５の一端部（図１における下部）の前部には、第一吸込口１１が形成されると共に、この第一吸込口１１と前記集塵部５を接続する第一吸気路１２が、前記集塵部５と一体に形成されている。また、前記集塵部５の容器５Ａ内には渦流発生手段１３が着脱自在に取り付けられており、この渦流発生手段１３によって、前記集塵部５はサイクロン分離装置となっている。更に、前記集塵部５は、前記電動送風器９を介して、前記機枠ケース４に形成された図示しない排気路に接続されている。そして、図１に示すように、前記第一吸気路１２は、前記第一吸込口１１から導入口１４まで、前記集塵部５の前部にこの集塵部５と一体に形成された中空な第一パイプ状部１５によって構成されている。なお、この第一パイプ状部１５は、平断面が前方へ突出する半円状となっており、その中心軸線Ａは、前記集塵部５を前記機枠ケース４に取り付けた状態において、前記電気掃除機本体１の長手方向に沿うように、前記集塵部５に一体に形成されている。また、前記第一パイプ状部１５の外周は、合成樹脂製の保護手段１５Ａによって覆われている。なお、この保護手段１５Ａと第一パイプ状部１５との間には、僅かな空隙が形成されている。更に、この保護手段１５Ａの横幅Ｗ１は、前記集塵部５の横幅Ｗ２より小さく形成されている（Ｗ１＜Ｗ２）。更に、前記第一把持部１０は、前記機枠ケース４の前部と後部に、図１の姿勢においてそれぞれ斜め上後方に突設する前連結部１６及び後連結部１７と、これらの連結部１６，１７の端部間を接続する握り部１８とを備えたもので、これらの連結部１６，１７及び握り部１８とが、側面視で略コ字形状に形成されている。そして、前記前連結部１６は前記保護手段１５Ａと面一状態となるように設けられている。すなわち、前記機枠ケース４の前部に設けられて前記前連結部１６を構成する第二パイプ状部１９は、前記第一パイプ状部１５を覆う保護手段１５Ａと同軸状で且つ外周形状がほぼ同一である。なお、前記第二パイプ状部１９は、パイプ状に形成されているものの、前記第一吸気路１２を構成するものではない。そして、前記前連結部１６の上端で且つ前記握り部１８の前端には、前記電動送風器８を操作するためのスイッチ２０が設けられている。

【００１８】

なお、サイクロン分離装置である前記集塵部５は、その前上部に、前記第一吸気路１２を構成すると共に前記第一パイプ状部１５と容器５Ａとを連通させる前記導入口１４が形成されている。そして、この導入口１４の中心軸線Ｘは、前記集塵部５の軸線Ｙに対して直交するように配置されている。また、前記集塵部５の容器５Ａの上部開口部には前記渦流発生手段１３が取り付けられており、この渦流発生手段１３の気流案内部１３Ａが前記導入口１４と対向して形成されており、前記気流案内部１３Ａの一次側が前記導入口１４に接続されると共に、二次側が軸線Ｙを中心とした円の接線方向に向いて前記集塵部５の容器５Ａ内に連通している。また、前記渦流発生手段１３の略中央には、全体として略円柱状に形成された枠体２１が前記軸線Ｙと同軸状に設けられていると共に、前記枠体２１にはフィルタ２２が設けられている。更に、前記枠体２１における前記容器５Ａの軸線Ｙ方向の上方には、排気路２３が形成されており、この排気路２３が前記電動送風機８と連通している。

【００１９】

前記支持体３は、前記電気掃除機本体１をスティック型掃除機として使用する際のベースとなる。そして、前記支持体３の支持本体２４は、前面部２４Ａと後面部２４Ｂとを有し、縦長形状で且つ内部が中空であり、平断面形状が、前方へ突出する略三日月状となっている。なお、前記支持本体２４は軸２４Ｃにより折り畳み可能であり、またその横幅Ｗ３は前記集塵部５の横幅Ｗ２より小さく且つ前記保護手段１５Ａの横幅Ｗ１よりも大きく形成されている（Ｗ１＜Ｗ３＜Ｗ２）。また、前記支持本体２４の一端側（図２における下端側）には、横長吸込口２５が設けられたノズルヘッド２６が自在継手２７を介して回動自在に接続されている。また、前記支持体３の支持本体２４の他端側（図２における上端側）には、第二把持部２８が一体的に設けられる。更に、前記支持体３には、その支持本体２４の一端寄りの後側に前記収納部２が凹状に形成されている。そして、前記支持本体２４は全体として正面がやや前方に突出する弓なり形状に形成されている。また、前記

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収納部２は、前記支持体３の後側に現れるように形成されると共に、前記収納部２は前記第一パイプ状部１５及びこれに一直線状に連なる前記第二パイプ状部１９が後ろ向きとなった状態で前記電気掃除機本体１が収納可能となるように、前記収納部２の前方と下方を除いた後方、上方、及び左右両方が開放された状態に形成されている。また、前記収納部２の下方には、前記電気掃除機本体１の一端部が載置可能な載置受け部２９が設けられており、この載置受け部２９には、前記自在継ぎ手２７の二次側となる接続口３０が上向きに設けられている。なお、この接続口３０には、前記第一吸込口１１が気密に接続して連通可能に構成されており、さらに前記接続口３０の後側周囲には、前記第一パイプ状部１５の第一吸込口１１の周囲における左右両側及び後部が嵌合可能な第一嵌合受け部３１が平面視でＵ字状となって上方へ突設している。一方、前記収納部２の上部においては、前記電気掃除機本体１を収納した際の前記後連結部１７に対応する部位、実施例では前記後連結部１７と握り部１８との接続箇所近傍に対応する箇所に、該箇所を左右から挟みこんで固定可能な左右一対の第二嵌合受け部３２が設けられている。

【００２０】

なお、前記ノズルヘッド２６は、平面視が略Ｔ字状であると共に偏平な箱型のヘッドケース３３の下面前部に、前記横長吸込口２５が左右方向に長く開口して設けられており、前記自在継ぎ手２７に連通している。そして、前記横長吸込口２５から接続口３０までの間に第二吸気路３４が形成される。

【００２１】

以上の構成を有する電気掃除機において、机やテーブルの天板上等の被清掃面Ｇを掃除するために、前記支持体３から前記電気掃除機本体１を分離して、この電気掃除機本体１を使用する場合、使用者は、前記機枠ケース４の他端部に設けられた前記第一把持部１１の握り部１８を握って前記電気掃除機本体１を持つ。そして、使用者が前記スイッチ２０を操作することで、前記充電池９からの電力によって前記電動送風器８が作動してそのファン７が回転し、これによって、前記第一吸込口１１から第一パイプ状部材１５を通って吸入されて、前記集塵部５及び前記電動送風器８を通過し、図示しない前記排気路を経て前記機枠ケース４外に排出される吸込気流が発生する。このように、前記電動送風器８が作動した状態で前記第一吸込口１１を被清掃面Ｇに近付け、この被清掃面Ｇに沿って前記第一吸込口１１が動くように前記電気掃除機本体１を移動させることで、塵埃を含んだ吸込気流が前記第一吸込口１１から吸い込まれ、そして、この塵埃を含んだ吸込気流が前記第一吸気路１２を構成する前記第一パイプ状部１５から前記導入口１４を経て前記集塵部５の容器５Ａ内に流入する。

【００２２】

そして、前記導入口１４から前記集塵部５の容器５Ａ内に入り込んだ塵埃を含む気流は、前記渦流発生手段１３の気流案内部１３Ａによって、前記容器５Ａの内面の接線方向に方向付けられることで、この容器５Ａの内周面に沿って旋回する渦流となると共に、前記容器５Ａ内を螺旋状に下降する。この際、この渦流に含まれる前記塵埃のうち、少なくとも粗い塵埃は、遠心力によって前記集塵部５の容器５Ａの内周面に押し付けられることで、前記渦流から分離されることになる。そして、遠心力によって粗い塵埃が分離された気流は、前記渦流発生手段１３の中央に設けられた前記フィルタ２２を通過する。そして、前記気流が前記フィルタ２２を通過する際、前記気流に含まれている遠心力では分離されなかった細かい塵埃が濾過される。更に、前記フィルタ２２によって塵埃が取り除かれた気流は、前記排気路２３を経て前記集塵部５から排出され、前記電動送風機８に吸い込まれる。そして、このようにして気流から分離された塵埃は、前記集塵部５の容器５Ａ内に溜められる。この際、図１の使用時において、前記導入口１４が前記集塵部５の容器５Ａに対して上方に配置されることで、この容器５Ａに溜まった塵埃が自重で前記導入口１４から前記第一吸込口１１に逆戻りすることはない。また、前記容器５Ａ内に溜められた塵埃は、前記集塵部５を前記機枠ケース４より取り外すと共に、前記渦流発生手段１３を前記容器５Ａ内から取り外して、前記容器５Ａの上部開口部を開放させることで、廃棄することができる。

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【００２３】

このように、前記電気掃除機本体１を単独で使用して机やテーブルの天板上等の被清掃面Ｇを掃除する際、この被清掃面Ｇ上に置いてある障害物（例えばディスプレイＤ等）に前記電気掃除機本体１が衝突する虞がある。しかしながら、前記電気掃除機本体１がディスプレイＤ等の障害物に衝突したとしても、その衝突する位置は、前記第一パイプ状部１５を覆う保護手段１５Ａである。そして、前述したように、前記保護手段１５Ａと前記第一パイプ状部１５との間に僅かな空隙が形成されていることによって、衝突時の衝撃によって前記保護手段１５Ａが変形可能に構成されているので、この保護手段１５Ａの変形によって衝撃が吸収され、前記第一パイプ状部１５が受ける衝撃が緩和される。これによって、前記第一パイプ状部１５や容器５Ａ、即ち前記集塵部５が破損して気流漏れが発生する虞を減ずることができるばかりでなく、前記集塵部５が取り付けられる前記機枠ケース４内に設けられた前記電動送風器８のモータ６やファン７への衝撃に伴う故障等を減ずることができる。

【００２４】

一方、机やテーブルの下の床面等の被清掃面Ｆを掃除するために、前記支持体３に前記電気掃除機本体１を取り付けた状態でスティック型の掃除機として使用する場合、使用者は、前記支持体３の接続口３０に前記電気掃除機本体１の第一吸込口１１が接続されるよう、前記支持体３の収納部２に前記電気掃除機本体１を収納すると共に、前記支持体３の支持本体２４の他端側に設けられた前記第二把持部２８を持ち、前記支持本体２４の一端側に設けられた前記ノズルヘッド２６を被清掃面Ｆ上に置く。そして、使用者が前記スイッチ２０を操作することで、前記充電池９からの電力によって前記電動送風器８が作動してそのファン７が回転し、これによって、塵埃を含んだ吸込気流が第二吸込口である前記横長吸込口２５から吸い込まれ、前記ノズルヘッド２６、自在継手２７、接続口３０（即ち前記第二吸気路３４）を介して、前記第一吸込口１１から第一パイプ状部材１５（即ち前記第一吸気路１２）を通り、前記集塵部５の容器５Ａ内に流入する。そして、前記第二吸気路３４の後半（前記自在継手２７から前記接続口３０にかけて）と前記第一吸気路１２は、図２に示すように、直線的に接続されることになる。このため、吸気路が曲がっている場合に比べて圧力損失が少なく、吸込気流がスムーズに前記容器５Ａまで流れるばかりでなく、塵埃が吸気路の曲がった部分の壁に衝突して付着してしまうといった問題も起きにくい。なお、塵埃の分離及び気流の排出については前述した通りなので、説明を省略する。

【００２５】

このように、前記電気掃除機をスティック型として使用して床等の被清掃面Ｆを掃除する際、この被清掃面Ｆ上に置いてある障害物（例えば机やテーブルの天板Ｔ等）に前記電気掃除機が衝突する虞がある。しかしながら、前記電気掃除機が机やテーブルの天板Ｔ等の障害物に衝突したとしても、その衝突する位置は、中空の前記支持本体２４である。そして、前述したように、前記支持本体２４が中空に構成されていることによって、衝突時の衝撃によって前記支持本体２４が変形可能に構成されているので、この支持本体２４の変形によって衝撃が吸収され、前記支持体３に取り付けられた前記電気掃除機本体１が受ける衝撃が緩和される。これによって、前記支持体３に取り付けられた前記電気掃除機本体１の機枠ケース４内に設けられた前記電動送風器８のモータ６やファン７への衝撃に伴う故障等を減ずることができる。

【００２６】

また、前記支持体３に前記電気掃除機本体１を取り付けた状態で掃除する場合、前記電気掃除機を被清掃面Ｆに沿って後方に引き寄せる際に、電気掃除機の後方を障害物に衝突させてしまう虞があるばかりでなく、前記第二把持部２８から手が離れてしまうことで前記電気掃除機が倒れ、この電気掃除機の後方が床Ｆに衝突してしまう虞もある。しかしながら、このような場合、後ろ向きに取り付けられている前記第一パイプ状部１５を覆う前記保護手段１５Ａが床Ｆに衝突すると共に、前述したように、前記保護手段１５Ａと前記第一パイプ状部１５との間に僅かな空隙が形成されていることによって、衝突時の衝撃に

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よって前記保護手段１５Ａが変形可能に構成されているので、この保護手段１５Ａの変形によって衝撃が吸収され、前記第一パイプ状部１５が受ける衝撃が緩和される。これによって、前記第一パイプ状部１５や容器５Ａ、即ち前記集塵部５が破損して気流漏れが発生する虞を減ずることができるばかりでなく、前記集塵部５が取り付けられる前記機枠ケース４内に設けられた前記電動送風器８のモータ６やファン７への衝撃に伴う故障等を減ずることができる。

【００２７】

なお、前記支持体３に前記電気掃除機本体１を取り付けた状態でスティック型掃除機として使用する場合に、前記支持本体２４が机やテーブルの天板Ｔ等の障害物に衝突した際の衝撃は、前記電気掃除機本体１を単独で手持ち型掃除機として使用する場合に、前記保護手段１５Ａがディスプレイ Ｄ等の障害物に衝突した際の衝撃よりも大きい。これは、前記支持体３と電気掃除機本体１の合計重量と、前記電気掃除機本体１単体の重量との相違、床等の被清掃面Ｆ上に置かれた障害物が、机やテーブルの天板等の被清掃面Ｇ上に置かれた障害物よりも重量が大きい傾向にあること、並びに、床等の被清掃面Ｆ上でスティック型の電気掃除機を動かす速さが、机やテーブルの天板等の被清掃面Ｇ上で手持ち型の電気掃除機を動かす速さよりも速い傾向にあること等にに起因する。従って、前記支持体３の支持本体２４は、スティック型の電気掃除機として使用する場合の大きな衝突衝撃を見込んだ形状や大きさに形成する必要があるものの、前記電気掃除機本体１の前部に設けられる前記保護手段１５Ａは、前記電気掃除機本体１を単独で使用する場合の比較的小さな衝突衝撃を見込んだ形状や大きさに形成すればよく、この結果、前記電気掃除機本体１の大型化を抑えることができ、この電気掃除機本体１を単独で使用する際の使い勝手を低下させないようにすることができる。

【００２８】

また、前記支持体３に前記電気掃除機本体１を取り付けた状態でスティック型掃除機として使用する場合に、前記電気掃除機の前側となる前記支持本体２４が机やテーブルの天板Ｔ等の障害物に衝突した際の衝撃は、前記電気掃除機の後側となる前記保護手段１５Ａが障害物に衝突した際の衝撃よりも大きい傾向にある。これは、図２に示すように、前記電気掃除機が後方に倒れていることで、前記被清掃面Ｆに沿って前記電気掃除機を前方に押し出す場合、前記電気掃除機の支持本体２４が机やテーブルの天板Ｔ等の障害物に衝突した際の衝撃によって前記電気掃除機を被清掃面Ｆに押し付ける力が働き、前記天板Ｔ等と被清掃面Ｆの間で衝突時の力の逃げ場がないのに対し、前記被清掃面Ｆに沿って前記電気掃除機を後方に引き寄せる場合、前記保護手段１５Ａに衝突する虞のある障害物が、使用者と前記電気掃除機の間に存在しなければならないため、比較的低いものであることから、前記電気掃除機の保護手段１５Ａが低い障害物に衝突した際の衝撃によって前記電気掃除機を前記被清掃面Ｆから浮かす力が働き、これによって、衝突時の力を適度に逃がすことができるからである。また、前記電気掃除機の前側となる前記支持本体２４の衝突の頻度も、前記電気掃除機の後側となる前記保護手段１５Ａの衝突頻度よりも高い。これは、前述したように、前記保護手段１５Ａに障害物が衝突する場合、この障害物は、使用者と前記電気掃除機の間に存在しなければならないためである。このため、スティック型として使用される状態の電気掃除機において、この電気掃除機の後側に位置する保護手段１５Ａが、前記電気掃除機本体１を単独で使用する場合の比較的小さな衝突衝撃を見込んだ形状や大きさに形成されていたとしても、障害物との衝突による衝撃から充分に前記電気掃除機本体１を保護することができる。

【００２９】

以上のように、前記実施例においては、一端部に第一吸込口１１が形成されると共にこの第一吸込口１１に第一吸気路１２を介して接続される集塵部５及び電動送風器８を備え且つ他端部に第一把持部１０を設けた電気掃除機本体１と、この電気掃除機本体１を着脱可能に収納する収納部２を有する支持体３とを備え、この支持体３が、その一端側にノズルヘッド２６を有すると共にその他端側に第二把持部２８を有し、前記ノズルヘッド２６に第二吸込口としての横長吸込口２５を設けると共に、この横長吸込口２５と接続可能な

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第二吸気路３４を前記掃除機本体１の収納時に前記集塵部５及び電動送風器８に連通するように構成し、前記電気掃除機本体１の前部に保護手段１５Ａを設け、前記収納部２を前記支持体３の後側に現れるように設けると共に、この収納部２に前記保護手段１５Ａが後ろ向きとなるように前記電気掃除機本体１を収納可能に構成したことにより、前記電気掃除機本体１を単独で使用して机やテーブルの天板等の被清掃面Ｇ上を掃除する場合、被清掃面Ｇ上で前方にあるディスプレイＤ等の障害物に衝突しても、その衝撃から前記保護手段１５Ａにより前記集塵部５を保護することで、この集塵部５、ひいてはこの集塵部５が取り付けられた前記機枠ケース４内の前記電動送風器８の損傷を阻止できる。また、前記支持体３に前記電気掃除機本体１を取り付けた状態で使用して床等の被清掃面Ｆを掃除する場合、前記支持体３により前方の天板Ｔ等の障害物に電気掃除機が衝突しても前記支持体３により前記掃除機本体１を保護できると共に、前記電気掃除機を被清掃面Ｆに沿って引き寄せた際に前記電気掃除機の後部を障害物に衝突させたり、清掃中に前記第二把持部２８から手が離れて前記電気掃除機の後部を被清掃面Ｆに衝突させたりしても、前記電気掃除機の後部に位置する前記保護手段１５Ａによって、これらの衝突の衝撃から前記集塵部５、ひいてはこの集塵部５が取り付けられた前記機枠ケース４内の前記電動送風器８を保護できる。更に、前記電気掃除機本体１を単独で使用する場合の比較的小さな衝突衝撃を見込んだ形状や大きさに前記保護手段１５Ａを形成すればよいので、保護手段１５Ａを最小限のもので済ますことができ、この結果、前記電気掃除機本体１，ひいては前記電気掃除機全体を大型化させることなくコンパクトのままで済ますことができ、これによって、前記電気掃除機の操作性を維持することができる。

【００３０】

また、前記保護手段１５Ａが、電気掃除機本体１を単独で使用する際の前部に対応する部位における長さ方向に設けられると共に、前記保護手段１５Ａの長さ方向、即ち前記保護手段１５Ａの中心軸線Ａが、前記支持体３の長さ方向にほぼ沿うように前記収納部２が設けられることで、前記電気掃除機本体１を単独で使用する場合、或いは前記支持体３と一緒に使用する場合に、前記保護手段１５Ａが縦向きとなり、この結果、前記保護手段１５Ａによる衝撃吸収の有効長さを可及的に大きくすることができる。

【００３１】

また、前記第一吸気路１２を形成するほぼ直線状の第一パイプ状部１５の周囲に前記保護手段１５Ａを設けたことにより、前記電気掃除機本体１の大型化を避けてコンパクト化を図ることができる。

【００３２】

更に、前記電気掃除機本体１の収納時に前記第一吸込口１１を介して前記第二吸気路３４が前記集塵部５及び電動送風器８に連通することにより、前記第一吸込口１１を前記接続口３０に接続するように前記電気掃除機本体１を前記収納部２に収納することで、前記第二吸気路３４を前記第一吸気路１２を介して前記集塵部５及び電動送風器８に簡単に接続することができる。

【００３３】

なお、本発明は以上の実施例に限定されるものではなく、発明の要旨の範囲内で種々の変形実施が可能である。例えば、上記実施例では、合成樹脂製の保護手段はパイプ状部の周囲に僅かな空隙を介在させることで変形可能とされているが、このような空隙を設けずに、前記パイプ状部の周囲をエラストマー等と呼ばれる軟質合成樹脂で被覆することで、前記保護手段を形成してもよい。

【産業上の利用可能性】

【００３４】

以上のように、本発明に係る電気掃除機は、各種の用途に適用できる。また集塵部はサイクロン分離装置ではなくフィルター方式でもよい。

【図面の簡単な説明】

【００３５】

【図１】本発明の実施例１を示す電気掃除機本体の使用時における側面図である。

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【図２】同、電気掃除機本体を支持体に取り付けた状態の使用時における側面図である。
【図３】同、図２のＩ―Ｉ線断面図である。
【図４】同、電気掃除機本体を支持体に取り付けた状態の直立時における正面図である。
【図５】同、電気掃除機本体を支持体に取り付けた状態の直立時における平面図である。
【図６】同、電気掃除機本体を支持体に取り付けた状態の直立時における底面図である。
【図７】同、電気掃除機本体を支持体より外した状態の側面図である。
【図８】同、電気掃除機本体を支持体より外した状態の掃除機本体と支持体を横並びさせた背面図である。
【図９】同、支持体の平面図である。
【符号の説明】
【００３６】
１　電気掃除機本体
２　収納部
３　支持体
５　集塵部
８　電動送風器
１０　第一把持部
１１　第一吸込口
１２　第一吸気路
１５　第一パイプ状部
１５Ａ　保護手段
２５　横長吸込口（第二吸込口）
２６　ノズルヘッド
２８　第二把持部
３０　接続口
３４　第二吸気路

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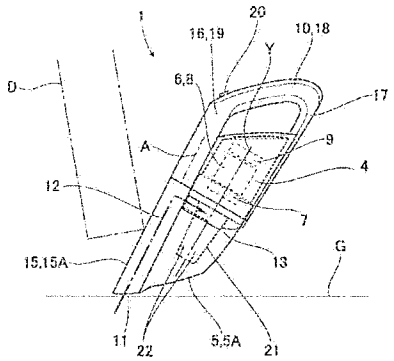
【図１】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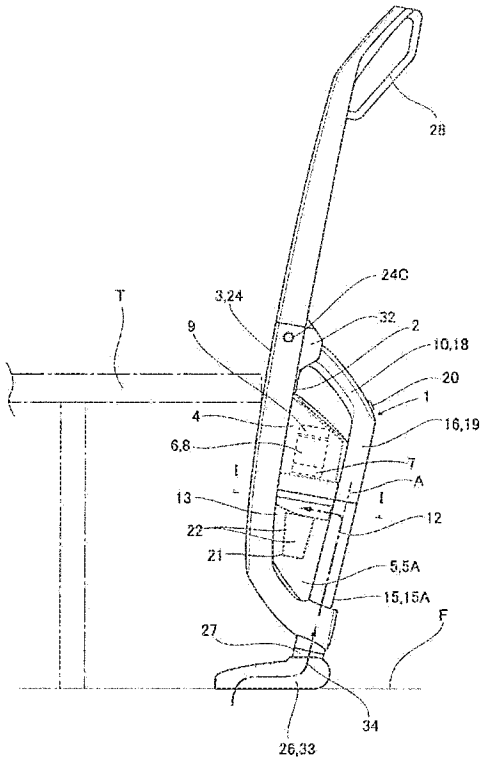
【図２】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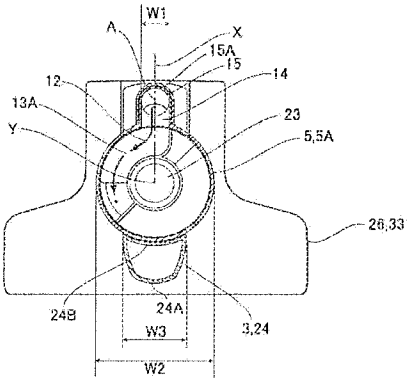
【図３】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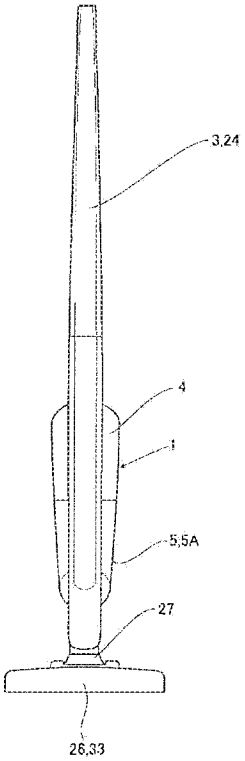
W2

【図４】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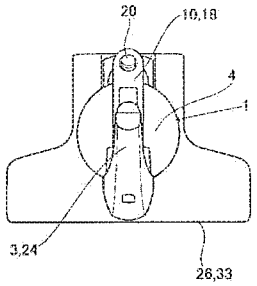
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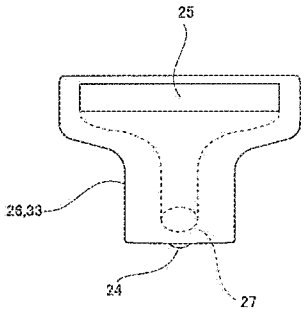
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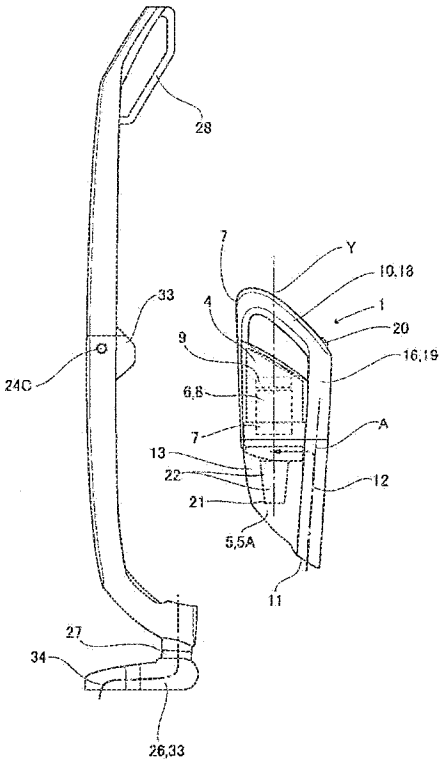
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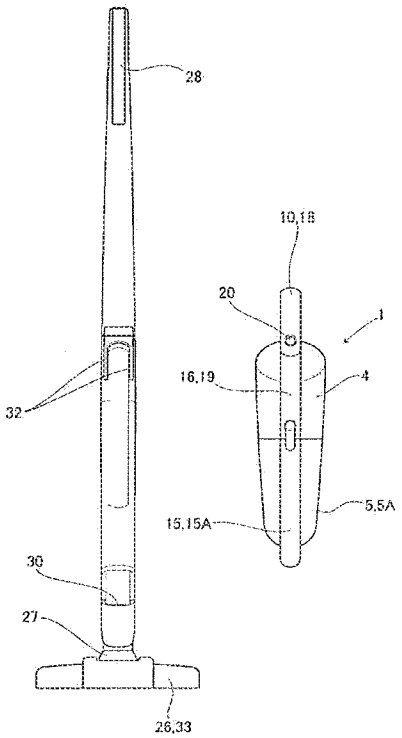
【図８】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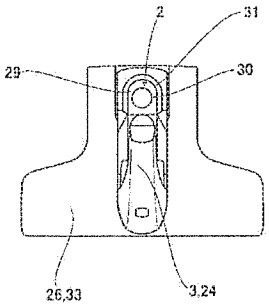
【図９】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(72) Inventor: OHARA NAOYUKI

(54) VACUUM CLEANER

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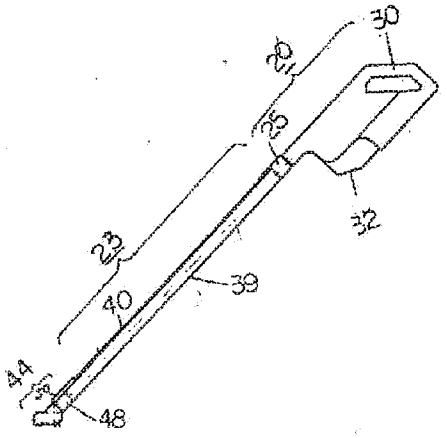
(57) Abstract:

PROBLEM TO BE SOLVED: To provide a vacuum cleaner which is high in dust collecting performance, lightweight and excellent in usability for three-dimensional cleaning of a ceiling, a wall surface, a floor, etc., in particular.

SOLUTION: The cleaner consists of a suction port body 44 incorporating an electric brush, a main body 20 incorporating an electric blower, a dust collecting case 32 fitted to the main body 20 and a conductive extension pipe 23 for connecting the body 44 and the main body 20. The total mass of the main body 20 and the case 32 is ≤1 kg and the mass of the body 44 is ≤1/5 of the total mass of the main body 20 and the case 32. Thus, it is possible to clean even the ceiling, the wall surface, etc., by the electric blower 21 of a comparatively small power without deteriorating the dust collecting performance by utilizing the raking-up force of an electric brush 47 without being bothered by the weight of the cleaner.



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DESCRIPTION JP2002085297

[0001]

BACKGROUND OF THE INVENTION 1. Field of the Invention The present invention relates to an electric vacuum cleaner having an electric brush on a suction port body.

[0002]

2. Description of the Prior Art Conventionally, a hand-held stick-type electric vacuum cleaner in which a floor nozzle is connected with an extension pipe to a main body portion provided with an electric blower and a dust collector is disclosed in Japanese Patent Publication No. 64-9006 It was configured to be. Hereinafter, the configuration will be described with reference to FIG. 6.

[0003]

1 has an electric blower (not shown) for generating suction force, the insertion portion 3 of the extension pipe 2 is provided at the tip, the handle portion 4 is formed at the rear end, and the switch portion 5 is provided 6 is a dust collecting part having a built-in filter body (not shown), and 7 is a floor nozzle coupled with the main body part 1 via the extension pipe 2.

[0004]

Dust on the floor surface is drawn into the dust collecting portion 6 from the suction opening of the floor nozzle 7 via the extension pipe 2 by the suction force generated by the electric blower.

[0005]

In such a conventional configuration, if it is attempted to increase the dust collection performance of the floor nozzle 7, it is possible to compensate for the pressure loss of the extension pipe 2 and sufficiently suck it from the suction port of the floor nozzle 7 In order to draw in the air volume, it was necessary to increase the input of the electric blower and increase the air volume and the degree of vacuum. As a result, the weight of the body part 1 inevitably increased and the usability was bad. In addition, the floor nozzle 7 also becomes large, and it is necessary to lift it when stereoscopically cleaning the wall surface or the ceiling and it is too heavy, so it was necessary to replace it with a compact light weight shelf nozzle attached separately.

[0006]

SUMMARY OF THE INVENTION It is an object of the present invention to provide an electric vacuum cleaner with reduced weight suitable for three-dimensional cleaning.

[0007]

In order to solve the above problems, the electric vacuum cleaner of the present invention comprises a suction mouth body having an electric brush built therein, a main body part incorporating an electric blower, a suction port And an extension pipe connecting and connecting the body and the main body portion, wherein the total mass of the main body portion is 1 kg or less and the mass ratio of the suction port body and the main body portion is 1/5 or less .

[0008]

Accordingly, if the dust collection performance is improved and secured by the scraping up force of the electric brush of the suction port body, if the electric blower supplies a suction air amount enough to convey the scraped up dust to the dust collection case Since it is good, it is possible to realize

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compactness and weight reduction of the body part, it can reduce the weight of the hand at the time of use as less than 1 kg, and usability can be improved.

[0009]

Further, in the electric vacuum cleaner of the present invention, since the mass of the suction port body is set to 1/5 or less of the main body portion, that is, 200 g or less, even if the wall surface or the ceiling is cleaned as it is, it will not get tired So that it is suitable especially for three-dimensional cleaning other than the floor surface.

[0010]

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS The invention according to claim 1 of the present invention is characterized in that it comprises a suction port body incorporating an electric brush, a main body portion having an electric blower and a dust collecting portion, a dust collecting case. And an extension pipe connecting and connecting the suction port body and the main body portion, wherein the total mass of the main body portion is set to 1 kg or less, and the suction port body is set to 1/5 or less of the total mass with the main body portion By doing so, you can avoid exhausting cleaning of walls and ceilings.

[0011]

According to the second aspect of the present invention, since the handle portion is formed on the main body portion, the main body can be moved by gripping the grip portion and holding the grip portion for wall surface or ceiling cleaning The suction port body can be moved.

[0012]

According to a third aspect of the present invention, the grip portion is provided rearward of the electric blower, and the dust collecting portion is provided in front of the electric blower so that the electric blower, which is a heavy item, The center of gravity of the part is located at the rear and the center of gravity of the body part can be brought closer to the grip part. Therefore, in the case of cleaning the ceiling with the grip portion lifted while lifting the main body portion, it is possible to relieve the weight from the main body portion hanging on the handgrip as much as the center of gravity of the main body portion is close to the grip portion, and usability is improves.

[0013]

According to the fourth aspect of the present invention, since the extension pipe is constituted by the intake passage and the conductor storing portion partitioned from the intake passage, the electric power to the electric brush provided in the suction port body Since the electric conductor is partitioned from the intake passageway, the electric conductor is not adversely affected by the influence of dust or the like, and the ventilation resistance of the intake air passage can also be controlled by the electric conductor , It is possible to adopt a lightweight and compact electric blower with low suction power.

[0014]

According to a fifth aspect of the present invention, the dust collecting portion is constituted by a dust collecting case having a substantially mortar shape or a substantially bottomed cylindrical shape, and a filter body covering the opening portion of the dust collecting case, Since the suction port is provided on the circumferential surface of the dust collection case, the dust sucked from the suction port on the circumferential surface turns spirally along the circumferential surface of the dust collection case and descends to the bottom side of the dust collection case. Since it is a so-called cyclone system, clogging due to adhesion of dust to the filter body is reduced. Therefore, even if a lightweight and compact electric blower with low suction power is adopted, it is possible to suck dust sufficiently.

[0015]

According to a sixth aspect of the present invention, since the dust collection case is attached to the front of the electric blower through the filter body, when the floor cleaning is performed, the filter body of the dust collection case is located above , The filter body is less likely to be clogged by dust and the filter body of the dust collecting case is placed on the lower side when cleaning the ceiling. However, since the cyclone system as described above is used, the dust moving toward the filter body swirls So that clogging of the filter is less likely to occur.

[0016]

DESCRIPTION OF THE PREFERRED EMBODIMENTS Embodiment 1 Hereinafter, an embodiment of the present invention will be described with reference to the drawings.

[0017]

FIG. 1 is a longitudinal sectional view of a main body portion and a main portion of a conductive extension pipe, FIG. 2 is a longitudinal sectional view of a main portion of a conductive extension pipe and an intake port body, and FIG. 3 is an external side view thereof.

[0018]

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As shown in FIGS. 1 to 3, in the main body 20 of the cleaner, an electric blower 21 for generating a suction force is supported while being supported by a support rubber 22, and a conductive extension pipe 23 A suction portion 26 provided with a receiving portion 25 to be engaged with the insertion portion 24 of the main body 1. A contact plate 29 is provided on the receiving portion 25, and the contact plate 29 is connected to a power supply through the switch portion 27 and the electric wire 28. A handle portion 30 is formed integrally with the rear end of the main body 20.

[0019]

A dust collecting case 32 having a filter body 31 mounted thereon is engaged with a locking portion 34 of the main body 20 by an engaging portion 33 at one end and provided at the other end of the electric blower 21 built in the main body 20 The key lock 35 engages with the recess 36 of the main body 20 and is detachably locked. An intake port 37 is provided on the circumferential surface of the substantially mortar-shaped dust collection case 32, and the intake port 37 is formed at a position communicating with the suction portion 26 integrally formed with the main body 20. By configuring the dust collection case 32 in this manner, the dust sucked from the suction port 37 on the peripheral surface spirally turns along the circumferential surface of the dust collection case 32, and is drawn toward the bottom side of the dust collection case 32 Called descending cyclone system, so that it is possible to reduce adhesion of dust to the filter body 31.

[0020]

The conductive extension pipe 23 is composed of a pipe body 39 having an insertion portion 24 at the end on the side of the main body 20 and a receiving portion 38 having the same shape as the receiving portion 25 of the main body 20 at the other end and a cover body 40 There. Then, in the space between the pipe body 39 and the cover body 40, the connection terminal 41 pressed against the contact plate 29 fixed to the receiving portion 25 is arranged at the end on the main body 20 side, the same contact plate 42 is arranged at the other end as the contact plate 29 And is held and fixed together with the electric wire 43 connecting the connection terminal 41 and the contact plate 42.

[0021]

Reference numeral 44 denotes a suction port body having a built-in electric brush 47 rotatably driven by a drive motor 46 via a belt body 45 and pivotally journaled with the connection pipe 48. The connecting pipe 48 has an insertion portion 49 having the same shape as the main body side end of the conductive extension pipe 23 and the connection terminal 49 is held and fixed by the cover body 50, and the electric wire 51 is connected to the drive motor 46. In addition, the electric brush 47 is obtained by implanting synthetic fibers 53 on the shaft body 52, and the outermost peripheral end 54 is disposed so as to be in contact with the floor surface. 55 is a sliding body made of a raised fabric material acting as a cushioning material with the floor surface.

[0022]

The electric blower 21 comprises a fan unit 56 and a motor 57 for driving the fan unit 56. Since a low input type motor having a motor input of 40 W and a fan output of 20 W is used, the weight is about 250 g It is lightweight. In addition, the capacity of the dust collection case 32 is about 0.6 L, which is about one-third smaller than that of ordinary household vacuum cleaners, and the thickness of the outer shell of the main body 20 is thinned to an average of 1.6 mm , The total weight of the main body 20 and the dust collection case 32 is 1 kg or less.

[0023]

Further, the width of the suction port body 44 is set to 120 mm, which is about half that of the household vacuum cleaner which is prevailing in Japan, the depth L is also minimized, and the width of the pipe body 39 of the conductive extension pipe 23 Since the inner diameter is also made small, the insertion portion 49 of the connection pipe 48 can also be downsized and its weight is 200 g or less.

[0024]

The operation in the above configuration will be described. Since the outer peripheral portion of the electric brush 47 is implanted with synthetic synthetic fibers having elasticity, even if the outer peripheral end 54 of the electric brush 47 is in contact with the floor surface of the surface to be cleaned and is rotated at all times, the floor surface is not damaged It also makes it possible to dust dust by scraping force even on a floor surface. Therefore, the electric blower 21 suffices as long as it has a suction force enough to convey the scraped up dust to the dust collection case 32 through the conductive extension pipe 23. According to experiments, the electric blower 21 has practicality equivalent to 10 W by air power. Therefore, it is possible to make the electric blower 21 low input, and it is possible to reduce the size and weight. Also, if the width of the suction port body 44 is large, although the range that can be cleaned by one operation is expanded, there are inconvenient aspects to clean a narrow place such as a corner. In other words, it is rather difficult to clean narrow places in general like Japanese houses, and the effect of weight saving is greater. Also, by reducing the width, the suction air volume per unit width increases, so improvement of dust collection performance with lower input is expected.

[0025]

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If the weight of the suction port body 44 is 200 g or less and the total mass of the main body 20 and the dust collection case 32 is 1 kg or less, even if the ceiling and the wall surface are cleaned as shown in FIG. 4, it is heavy in the practical test With no difficulty, you can easily clean three-dimensional. In addition, since the scooping force of the electric brush 47 can be applied not only to the floor surface but also to the ceiling and the wall surface, usability can be improved without deteriorating the dust collection performance. Of course, it is also possible to remove the suction port body 44 from the conducting extension pipe 23 and clean it as in the conventional case, and furthermore, as shown in FIG. 5, by removing the conducting extension pipe 23, the suction port body 44 is directly attached to the main body 20 and so- It can also be used as a hand type.

[0026]

In the present embodiment, the width of the suction port body 44 is reduced to reduce the weight, but it is also possible to reduce the weight of the drive motor 46 or reduce the weight of the external material without reducing the width, and in essence, the electric brush 44 As shown in FIG.

[0027]

Although this embodiment is constituted by the AC type electric blower 21, it may be a DC type electric blower, a cordless type using a secondary battery as a power source, an NI-H (nickel-hydrogen) battery or the like may be used It may be lightweight using it.

[0028]

Further, although the conductive extension pipe 23 is integrally formed in this embodiment, it may be a two-piece joint or a structure which can be expanded and contracted. The electric wire 28 may not be built in, but may be externally attached.

[0029]

As described above, according to the present invention, it is possible to obtain a lightweight suction port body and a main body portion by utilizing the scraping up force of the electric brush without lowering the dust collection performance Thus, it is possible to obtain a vacuum cleaner excellent in usability for three-dimensional cleaning.

[0030]

Brief Description of the Drawings

[0031]

BRIEF DESCRIPTION OF THE DRAWINGS FIG. 1 is a longitudinal sectional view of the periphery of a main body part of an electric vacuum cleaner showing a first embodiment of the present invention

[0032]

Fig. 2 Vertical cross-sectional view of main part of conductive extension pipe and suction port body of the electric vacuum cleaner

[0033]

Fig. 3 Outside view of the same electric vacuum cleaner Side view

[0034]

FIG. 4 Side view showing the use state of the electric vacuum cleaner

[0035]

FIG. 5 Exterior side view showing another use state of the electric vacuum cleaner

[0036]

FIG. 6 A perspective view of the external appearance of a conventional electric vacuum cleaner

[0037]

Explanation of sign

[0038]

20 body 21 electric blower 23 conductive extension pipe 32 dust collection case 44 suction port body 47 electric brush

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CLAIMS JP2002085297

1.

A main body part having an electric blower and a dust collecting part, and an extension pipe connecting and connecting the suction port body and the main body part, wherein the total mass of the main body part is set to 1 kg or less And the suction port body is set to be substantially equal to or less than approximately one-fifth of the total mass of the main body portion.

2.

The electric vacuum cleaner according to claim 1, wherein a grip portion is formed on the main body portion.

3.

3. The electric vacuum cleaner according to claim 2, wherein the grip portion is provided behind the electric blower, and the dust collection portion is provided in front of the electric blower.

4.

The electric vacuum cleaner according to any one of claims 1 to 3, wherein the extension pipe is constituted by an intake passage and a conductor storing portion partitioned from the intake passage.

5.

The dust collecting portion is constituted by a dust collecting case having a substantially mortar shape or a substantially bottomed cylindrical shape and a filter body covering the opening portion of the dust collecting case, and an intake port is provided on the peripheral surface of the dust collecting case The electric vacuum cleaner according to any one of 1 to 4.

6.

The electric vacuum cleaner according to claim 5, wherein a dust collection case is attached to the front of the electric blower via a filter body.

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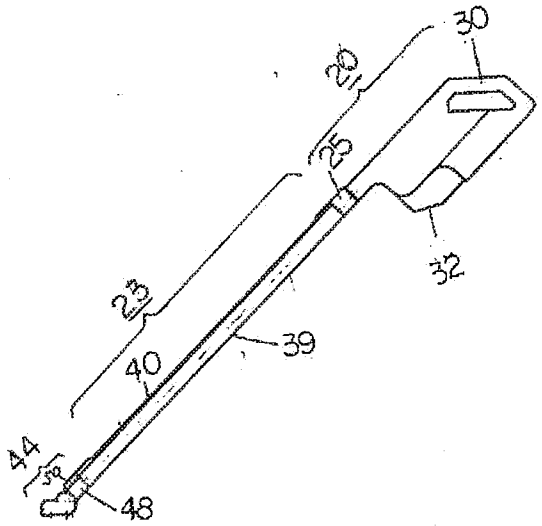
(54)【発明の名称】　電気掃除機

(57)【要約】
【課題】　集塵性能が高く、軽量で特に天井や壁面、床等の立体掃除の使用性に優れた電気掃除機を提供する。
【解決手段】　電動ブラシを内蔵した吸込口体４４と、電動送風機を内蔵する本体２０と、本体２０に取り付けた集塵ケース３２と、吸込口体４４と本体２０とを連結結合する導電延長管２３とからなり、本体２０と集塵ケース３２の合計質量を１Ｋｇ以下にすると共に、吸込口体４４は本体２０と集塵ケース３２の合計質量の５分の１以下としてある。これにより、重さを苦にすることなく、天井や壁面等も電動ブラシ４７の掻き上げ力を活用して集塵性能を低下させずに比較的小さい出力の電動送風機２１により掃除する事ができる。



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【特許請求の範囲】

【請求項１】　電動ブラシを内蔵した吸込口体と、電動送風機及び集塵部を有する本体部分と、前記吸込口体と前記本体部分とを連結結合する延長管を備え、前記本体部分の合計質量を１Ｋｇ以下にすると共に、前記吸込口体は、前記本体部分の合計質量の略５分の１以下とした電気掃除機。

【請求項２】　本体部分には把手部を形成した請求項１記載の電気掃除機。

【請求項３】　把手部は電動送風機より後方に設け、集塵部は電動送風機より前方に設けた請求項２記載の電気掃除機。

【請求項４】　延長管は、吸気通路と、この吸気通路とは仕切られた導電体収納部から構成した請求項１乃至３のいずれか１項に記載の電気掃除機。

【請求項５】　集塵部を、略すり鉢形状もしくは略有底円筒形状の集塵ケースと、その集塵ケースの開口部を覆うフィルター体から構成し、前記集塵ケースの周面に吸気口を設けた請求項１乃至４のいずれか１項に記載の電気掃除機。

【請求項６】　電動送風機の前方にフィルター体を介して集塵ケースを取り付けた請求項５記載の電気掃除機。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、吸込口体に電動ブラシを備えた電気掃除機に関するものである。

【０００２】

【従来の技術】従来、電動送風機及び集塵部を備えた本体部分に、延長管で床ノズルを結合した手持ち式のスティック型電気掃除機は特公昭６４－９００６号公報に示されているように構成されていた。以下、その構成について図６に基づいて説明する。

【０００３】１は吸引力を発生する電動送風機（図示せず）を内蔵し、先端に延長管２の挿入部３を設け、後端に持ち手部４を形成し、スイッチ部５を設けた本体部分であり、６はフィルター体（図示せず）を内蔵した集塵部、７は延長管２を介して本体部分１と結合される床ノズルである。

【０００４】電動送風機によって発生される吸引力によって床ノズル７の吸込口から延長管２を介して床面の塵埃を集塵部６内に集塵するものである。

【０００５】

【発明が解決しようとする課題】このような従来の構成では、床ノズル７の集塵性能を高めようとすれば、延長管２の圧損を補い、床ノズル７の吸い込み口から十分な風量を引込みするため、電動送風機の入力を大きくし風量と真空度を高くする必要があった。そのため必然的に本体部分１の重さが大きくなり使い勝手を悪くしていた。又、床ノズル７も大きくなり壁面や天井を立体的に掃除をする場合には持上げる必要があり重すぎるので、

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別に添付の小型軽量の棚ノズルに付け替えて使用する必要があった。

【０００６】本発明は上記従来の課題を解決するもので、立体掃除に適した重さを軽減した電気掃除機を提供することを目的とするものである。

【０００７】

【課題を解決するための手段】本発明の電気掃除機は、上記課題を解決するために、電動ブラシを内蔵した吸込口体と、電動送風機を内蔵する本体部分と、前記吸込口体と本体部分とを連結結合する延長管とからなり、前記本体部分の合計質量を１Ｋｇ以下にすると共に、前記吸込口体と、本体部分の質量比を５分の１以下としたものである。

【０００８】これにより、吸込口体の電動ブラシの掻き上げ力で集塵性能が向上し確保すれば、電動送風機は掻き上げられた塵埃を集塵ケースに搬送するだけの吸込み風量を供給すれば良いので、本体部分の小型、軽量化を実現でき１Ｋｇ以下として使用時の手元の重さを軽減でき、使い勝手を向上することができる。

【０００９】また、本発明の電気掃除機は、吸込口体の質量を本体部分の５分の１以下、すなわち２００ｇ以下にしているので、そのまま壁面や天井を掃除をしても疲れることがないので特に床面以外の立体的な掃除をする場合に適したものとなる。

【００１０】

【発明の実施の形態】本発明の請求項１に記載の発明は、電動ブラシを内蔵した吸込口体と、電動送風機及び集塵部を有する本体部分と、集塵ケースと、前記吸込口体と本体部分とを連結結合する延長管とを備え、前記本体部分の合計質量を１Ｋｇ以下にすると共に、前記吸込口体は、本体部分との合計質量の５分の１以下としたことにより、壁面や天井の掃除が疲れることが無くできる。

【００１１】本発明の請求項２記載の発明は、本体部分には把手部を形成したので、把手部を握り本体を移動させることができ、また、壁面や天井掃除のために把手部を持って吸込口体を移動させることができる。

【００１２】本発明の請求項３記載の発明は、把手部は電動送風機より後方に設け、集塵部は電動送風機より前方に設けたので、重量物である電動送風機が後方にある分、本体部分の重心が後方に位置することとなり、本体部分の重心を把手部に近づけることができる。よって、把手部を握って本体部分を持ち上げた状態で天井掃除する場合には、本体部分の重心が把手部に近い分、握り手に掛かる本体部分からの重量を緩和することができ、使い勝手が向上する。

【００１３】本発明の請求項４記載の発明は、延長管を、吸気通路と、この吸気通路とは仕切られた導電体収納部から構成したので、吸込口体に設けた電動ブラシへの電力供給を導電体を介して行うことができると共に、

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導電体が吸気通路と仕切られているので、塵埃などの影響により導電体が悪影響を受けることがなく、また、吸気通路の通風抵抗も導電体により大きくなることもないので、吸い込み力が低い軽量かつ小型の電動送風機を採用できる。

【００１４】本発明の請求項５記載の発明は、集塵部を、略すり鉢形状もしくは略有底円筒形状の集塵ケースと、その集塵ケースの開口部を覆うフィルター体から構成し、前記集塵ケースの周面に吸気口を設けたので、周面の吸気口から吸引された塵埃は集塵ケースの周面に沿って螺旋状に旋回して集塵ケースの底部側に下降する、いわゆるサイクロン方式であるので、フィルター体へ塵埃の付着による目詰まりが少なくる。したがって、吸い込み力が低い軽量かつ小型の電動送風機を採用しても充分に塵埃を吸い込むことができる。

【００１５】本発明の請求項６記載の発明は、電動送風機の前方にフィルター体を介して集塵ケースを取り付けたので、床掃除する場合には集塵ケースのフィルター体が上方に位置することとなり、フィルター体が塵埃により目詰まりを起こすことが少なく、また、天井掃除する場合に集塵ケースのフィルター体が下側になるが、上述したサイクロン方式なので、フィルター体側に移動する塵埃が旋回流により巻き上げられ、フィルターの目詰まりをしにくくする。

【００１６】

【実施例】（実施例１）以下、本発明の実施例について、図面を参照しながら説明する。

【００１７】図１は、本体部分及び導電延長管要部の縦断面図、図２は、導電延長管要部及び吸込口体の縦断面図、図３は、外観側面図である。

【００１８】図１～図３に示すように、掃除機本体２０内には、吸引力を発生する電動送風機２１をサポートゴム２２で支持して内蔵し、上部一端に、前方に導電延長管２３の挿入部２４と嵌合する受け部２５を設けた吸い込み部２６を形成している。受け部２５には接点板２９を設け、この接点板２９をスイッチ部２７及び電線２８を介して電源に接続している。また、本体２０の後端には把手部３０を一体に形成している。

【００１９】本体２０に内蔵した電動送風機２１の前方にはフィルター体３１を取付けた集塵ケース３２が、一端の係合部３３で本体２０の係止部３４に係合し、他端に設けた尾錠３５が本体２０の凹部３６に係合し、着脱自在に係止してある。略すり鉢状の集塵ケース３２の周面には吸気口３７を設け、この吸気口３７は本体２０と一体形成の吸い込み部２６と連通する位置に形成している。このように、集塵ケース３２を構成することにより、周面の吸気口３７から吸引された塵埃は集塵ケース３２の周面に沿って螺旋状に旋回して集塵ケース３２の底部側に下降する、いわゆるサイクロン方式となり、フィルター体３１へ塵埃が付着するのを少なくできる。

【００２０】導電延長管２３は、本体２０側端に挿入部２４を、他端に本体２０の受け部２５と同形状の受け部３８を設けたパイプ体３９と、カバー体４０で構成している。そしてパイプ体３９とカバー体４０の空間で、本体２０側端には受け部２５に固定した接点板２９に圧接する接続端子４１を、他端には接点板２９と同一の接点板４２を配設し、接続端子４１と接点板４２をつなぐ電線４３と共に保持、固定している。

【００２１】４４はベルト体４５を介して駆動モータ４６により回転駆動される電動ブラシ４７を内蔵し、接続パイプ４８と揺動自在に軸支した吸込口体である。接続パイプ４８は導電延長管２３の本体側端と同形状の挿入部４９を設けると共に接続端子４９をカバー体５０で保持固定してあり、電線５１は駆動モータ４６に接続してある。また、電動ブラシ４７は軸体５２に合成繊維５３を植毛したものであり、最外周端５４は床面に接するように配設してある。５５は床面との間の緩衝材として作用する起毛布材からなる摺動体である。

【００２２】電動送風機２１は、ファン部５６と、このファン部５６を駆動するモータ５７とで構成し、モータ入力４０W、ファン出力２０Wの低入力型モータを使用しているので重量は約２５０ｇと軽量になっている。また、集塵ケース３２の容量は約０．６Ｌで一般の家庭用掃除機に比べると約１／３と小型にしてあり、さらに本体２０の外郭肉厚は平均１．６mmと薄肉にしているので、本体２０及び集塵ケース３２の合計重量は１ｋｇ以下になっている。

【００２３】また、吸込口体４４の幅を１２０mmと我が国で普及している一般家庭用掃除機の約半分にし、奥行きＬも最小限に小型化すると共に、導電延長管２３のパイプ体３９の内径も小さくしているので接続パイプ４８の挿入部４９も小型化でき重量は２００ｇ以下となっている。

【００２４】上記構成において動作を説明する。電動ブラシ４７は外周部は弾性を有する合成繊維を植毛した構成にしているので、その外周端５４を常時被掃除面の床面に当接して回転させても床面を傷つけることがなく、どのような床面でも掻き揚げ力による塵埃の吸塵を可能にする。このため電動送風機２１は掻き上げられた塵埃を導電延長管２３を通じて集塵ケース３２に運ぶだけの吸引力があれば良く、実験によれば空気動力で１０W相当で実用性があるものである。このため電動送風機２１を低入力にする事ができ、小型化、軽量化ができる。又吸込口体４４の幅は大きければ1回の操作で掃除できる範囲は広がるものの、隅などの狭い場所を掃除するには都合が悪い面がある。すなわち日本の家屋のように一般的に狭い場所を掃除するにはかえって扱いにくい場面が多く、軽量化を優先させることによる効果がより大きい。また、幅を小さくすることによって単位幅当たりの吸い込み風量は増加するので、より低入力での集塵性能

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の向上が見込まれる。

【００２５】そして、吸込口体４４の重量２００ｇ以下、本体２０と集塵ケース３２の合計質量１ｋｇ以下であれば、図４に示すように天井及び壁面をそのまま掃除をしても実用試験では重くて苦になることがなく、簡単に立体的に掃除をすることができる。また、床面だけでなく天井や壁面でも電動ブラシ４７の掻き上げ力を作用させることができるので、集塵性能を低下させずに使い勝手の向上が図れる。もちろん従来と同じく導電延長管２３から吸込口体４４をはずして掃除することも可能であり、さらに図５に示すように導電延長管２３をはずして本体２０に直接吸込口体４４を取り付けていわゆるハンド型として使用することもできる。

【００２６】本実施例では吸込口体４４の幅を小さくして軽量化したが、幅を小さくすることなく、駆動モータ４６の軽量化もしくは外郭材料の軽量化によってもよく、要は電動ブラシ４４を有する構成であればよい。

【００２７】また、本実施例は交流式の電動送風機２１で構成しているが、直流式の電動送風機で2次電池を電源とするコードレス型にし、ＮＩ－Ｈ（ニッケル－水素）電池などを使用して軽量化したものでもよい。

【００２８】さらに本実施例では導電延長管２３は一体で構成しているが、２本継ぎでもよく又伸縮自在な構成のものでもよい。そして電線２８は内蔵せず外付けで構＊成してもよい。

【００２９】

【発明の効果】以上のように本発明のによれば、電動ブラシの掻き上げ力を活用し、集塵性能を低下させることなく軽量な吸込口体及び本体部分を得ることができるので、立体的な掃除をするのに使用性に優れた電気掃除機を得る事ができる。

【図面の簡単な説明】

【図１】本発明の第１の実施例を示す電気掃除機の本体部分周辺の縦断面図

【図２】同電気掃除機の導電延長管要部及び吸込口体の縦断面図

【図３】同電気掃除機の外観側面図

【図４】同電気掃除機の使用状態を示す側面図

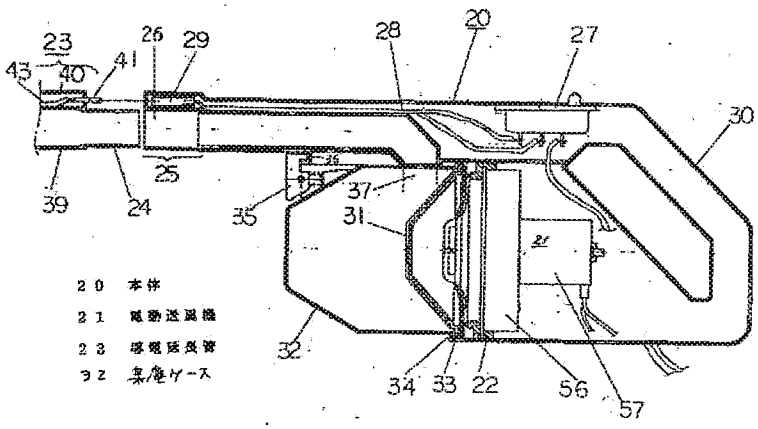
【図５】同電気掃除機の他の使用状態を示す外観側面図

【図６】従来の電気掃除機の外観斜視図

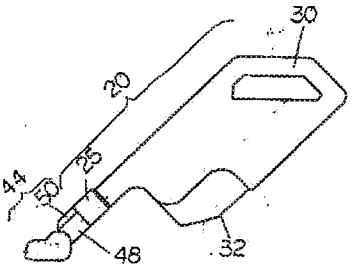
【符号の説明】

２０　本体
２１　電動送風機
２３　導電延長管
３２　集塵ケース
４４　吸込口体
４７　電動ブラシ

【図１】



【図５】



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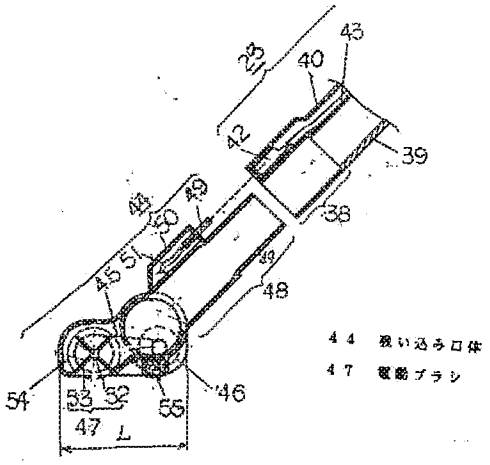
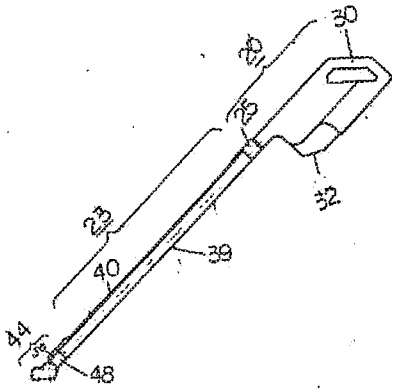
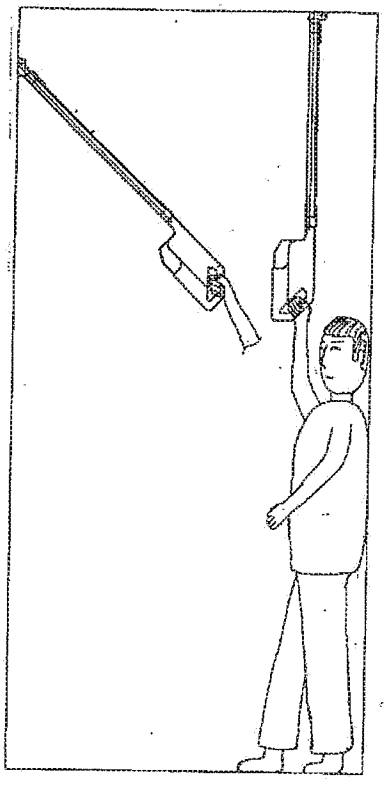
【図２】



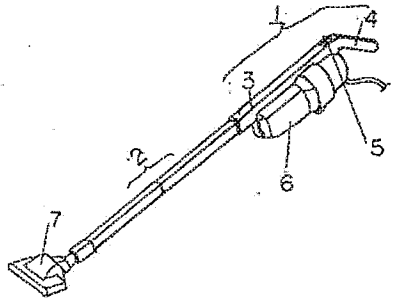
【図３】



【図４】



【図６】



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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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/269,430	09/19/2016	Stephen Robert DIMBYLOW	424662105900

CONFIRMATION NO. 6526

25227
MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

PUBLICATION NOTICE

OC000000090103316

Title:VACUUM CLEANER

Publication No.US-2017-0079491-A1
Publication Date:03/23/2017

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 (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, 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 Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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I hereby certify that this paper is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: March 3, 2017
Electronic Signature for Laura Razzuri: /Laura Razzuri/

Patent
Docket No. 424662105900

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Stephen Robert DIMBYLOW

Application No.: 15/269,430 Confirmation No.: 6526

Filed: September 19, 2016 Art Unit: 3727

For: VACUUM CLEANER Examiner: B. R. Muller

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97 & § 1.98

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

Dear Sir:

Pursuant to 37 C.F.R. § 1.97 and § 1.98, Applicants submit for consideration in the above-identified application the documents listed on the attached Form PTO/SB/08a/b. Copies of the foreign documents and non-patent literature are submitted herewith. The Examiner is requested to make these documents of record.

This Information Disclosure Statement is submitted within three months of the application filing date or before mailing of a first Office Action on the merits; accordingly, no fee or separate requirements are required.

Applicants would appreciate the Examiner initialing and returning the Form PTO/SB/08a/b, indicating that the information has been considered and made of record herein.

va-490052

The information contained in this Information Disclosure Statement under 37 C.F.R. § 1.97 and § 1.98 is not to be construed as a representation that: (i) a complete search has been made; (ii) additional information material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the above information constitutes prior art to the subject invention.

In the unlikely event that the transmittal form is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief (such as payment of a fee under 37 C.F.R. § 1.17 (p)) is required, Applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petition and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing (424662105900). However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: March 3, 2017

Respectfully submitted,

Electronic signature: /christopher gloria/
Christopher Gloria
Registration No.: 71,907
MORRISON & FOERSTER LLP
1650 Tysons Blvd, Suite 400
McLean, Virginia 22102
(703) 760-7389

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
SXB_WOP1549A		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/GB2016/052611	23 August 2016 (23-08-2016)	17 September 2015 (17-09-2015)

Applicant

DYSON TECHNOLOGY LIMITED

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language,** the international search was carried out on the basis of:

[X] the international application in the language in which it was filed

[ ] a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title,**

[X] the text is approved as submitted by the applicant

[ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

[X] the text is approved as submitted by the applicant

[ ] the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings,**

a. the figure of the **drawings** to be published with the abstract is Figure No. 8

[X] as suggested by the applicant

[ ] as selected by this Authority, because the applicant failed to suggest a figure

[ ] as selected by this Authority, because this figure better characterizes the invention

b. [ ] none of the figures is to be published with the abstract

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INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2016/052611

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47L5/24 A47L5/28 A47L9/00
ADD.

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 practicable, 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.
Y A	CN 203 724 037 U (KWONNIE ELECTRICAL PRODUCTS LTD) 23 July 2014 (2014-07-23) abstract; figure 1	1-4,6-8,10 5,9,11
Y A	GB 2 484 146 A (DYSON TECHNOLOGY LTD [GB]) 4 April 2012 (2012-04-04) page 5, line 16 - page 7, line 12; figures 1-3	1-4,6-8,10 5,9,11
A	EP 1 752 076 A1 (BLACK & DECKER INC [US]) 14 February 2007 (2007-02-14) abstract; figures 1a,1b,1c,1d	1-11

☐ 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 application or patent 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	Date of mailing of the international search report
20 October 2016	28/10/2016

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Blumenberg, Claus

3

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

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INTERNATIONAL SEARCH REPORT

information on patent family members

International application No
PCT/GB2016/052611

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 203724037 U	23-07-2014	NONE	
GB 2484146 A	04-04-2012	AU 2011309890 A1	04-04-2013
		CN 102440717 A	09-05-2012
		EP 2621323 A1	07-08-2013
		GB 2484146 A	04-04-2012
		JP 2012075904 A	19-04-2012
		JP 2014061451 A	10-04-2014
		KR 20130066681 A	20-06-2013
		US 2012079671 A1	05-04-2012
		WO 2012042240 A1	05-04-2012
EP 1752076 A1	14-02-2007	AT 446040 T	15-11-2009
		AU 2006203113 A1	01-03-2007
		CA 2553412 A1	11-02-2007
		CN 1911151 A	14-02-2007
		EP 1752076 A1	14-02-2007
		NZ 549034 A	30-03-2007
		US RE42873 E	01-11-2011
		US RE43804 E	20-11-2012
		US 2007033765 A1	15-02-2007

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Information on Search Strategy - Pilot phase (see OJ 2015, A86)
The type of information contained in this sheet may change during the pilot for improving the usefulness of this new service.

Application Number
PCT/GB2016/052611

TITLE: VACUUM CLEANER

APPLICANT: DYSON TECHNOLOGY LIMITED

IPC CLASSIFICATION: A47L5/24, A47L5/28, A47L9/00

EXAMINER: Blumenberg, Claus

CONSULTED DATABASES: EPODOC

CLASSIFICATION SYMBOLS DEFINING EXTENT OF THE SEARCH:

IPC:

CPC: A47L5/24, A47L5/28, A47L9/00

FI/F-TERMS:

KEYWORDS OR OTHER ELEMENTS FEATURING THE INVENTION:

EPO FORM P0A142

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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB2016/052611	23.08.2016	17.09.2015

International Patent Classification (IPC) or both national classification and IPC
INV. A47L5/24 A47L5/28 A47L9/00

Applicant
DYSON TECHNOLOGY LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Blumenberg, Claus Telephone No. +49 89 2399-0

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IPR2023-01322
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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☑ the international application in the language in which it was filed.

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

   a. ☐ forming part of the international application as filed:

      ☐ in the form of an Annex C/ST.25 text file.

      ☐ on paper or in the form of an image file.

   b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

   c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

      ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

      ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

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Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-11
	No:	Claims	
Inventive step (IS)	Yes:	Claims	5, 9, 11
	No:	Claims	1-4, 6-8, 10
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

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SharkNinja et al. v. Dyson Technology Limited,
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D1 CN 203 724 037 U (KWONNIE ELECTRICAL PRODUCTS LTD) 23 July 2014 (2014-07-23)

D2 GB 2 484 146 A (DYSON TECHNOLOGY LTD [GB]) 4 April 2012 (2012-04-04)

D3 EP 1 752 076 A1 (BLACK & DECKER INC [US]) 14 February 2007 (2007-02-14)

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Lack of inventive step with respect to claims 1,2,3,4,6,7,8 and 10:

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1,2,3,4,6,7,8 and 10 is not inventive in the sense of Article 33(2) PCT.

1.1. Lack of inventive step with respect to independent claim 1:

The closest prior art is seen in D1. This document discloses particularly in figure 1 and in the abstract:

a) a handheld vacuum cleaner comprising:
b) a handle by which the vacuum cleaner is supported during normal use;
c) a cyclonic separating unit having a longitudinal axis and a dirt collector at one end of the cyclonic separating unit,

d) the cyclonic separating unit comprising an end portion having a closed configuration in which dirt is retained within the dirt collector by the end portion and

e) an open configuration for the removal of dirt from the dirt collector.

Claim 1 differs from this prior art in that:

f) the handle has a pistol grip configuration in which the handle is inclined with respect to the cyclonic separating unit to form an angle of not less than 85 degrees and not greater than 140 degrees between the handle and the longitudinal axis of the cyclonic separating unit.

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Consequently the subject-matter of claim 1 fulfills the requirements of novelty.

This difference results in the capability of the handheld vacuum cleaner that an operator always holds the cleaner in an optimal ergonomic position with respect to the ground.

The object is therefore to provide an optimal ergonomic position of a handle for that kind of vacuum cleaner.

If the skilled man turns to D2 a handle is disclosed comprising the feature f. Consequently the subject-matter of claim 1 lacks an inventive step.

1.2. Lack of inventive step with respect to dependent claims 2,3,4,6,7,8 and 10 :

Dependent claims 2,3,4,6,7,8 and 10 do not appear to contain any additional features which, in combination with the features of any claim to which it refers, meet the requirements of the PCT in respect of inventive step, the reasons being as follows:

With respect to claims 2, 3, 4, 7, 8 and 10:

The subject-matter of these claims is already disclosed in D1.

With respect to claim 6:

The subject-matter of claim 6 is already disclosed in D2.

Re Item VII

Certain defects in the international application

1. Lack of reference signs:

The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

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SharkNinja et al. v. Dyson Technology Limited,
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2. Lack of two-part form:

Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art D1 being placed in the preamble (Rule 6.3(b)(i) PCT) and the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

3. Closest prior art not mentioned:

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1, D2 and D3 is not mentioned in the description, nor are these documents identified therein.

Re Item VIII

Certain observations on the international application

Lack of clarity with respect to claim 11:

The application does not meet the requirements of Article 6 PCT, because claim 11 is not clear.

The reference to the drawings used in claim 11 is vague and unclear and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claim unclear, Article 6 PCT.

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
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Page 340 of 1677

Electronic Acknowledgement Receipt

EFS ID:	28526441
Application Number:	15269430
International Application Number:	
Confirmation Number:	6526
Title of Invention:	VACUUM CLEANER
First Named Inventor/Applicant Name:	Stephen Robert DIMBYLOW
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Laura Razzuri
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662105900
Receipt Date:	03-MAR-2017
Filing Date:	19-SEP-2016
Time Stamp:	16:11:39
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	Transmittal Letter	424662105900_IDS_Transmittal.pdf	24993 8123f1c041ab5649f74c536180d42eeba9fc4a17	no	2

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SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322

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2	Foreign Reference	35_FR_553202.pdf	1124184 5da952f32c029db17de935b6a7520430452a07d7	no	9
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4	Foreign Reference	37_CH_203675.pdf	820661 cf10b116d0fb5f49ac553b253a3566a9705dd813	no	8
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7	Foreign Reference	40_DE_2153664.pdf	1580180 d51e0ca19b5156fa1db02a95148bb8793d196666	no	13
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9	Foreign Reference	42_JP_48_54260.pdf	633372 71d664b4a31993d12168fe08130207b954588739	no	7
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15	Foreign Reference	48_JP_2003_70706.pdf	1329681 454cd30273efd5176132482cb271ca50b932c104	no	16
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18	Foreign Reference	51_JP_2004_201875.pdf	3771576 bca20572259af9deef79f5aae5d4f714c80899c7	no	28
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19	Foreign Reference	52_JP_2005_270312.pdf	920625 74cce8f95e61e6510b3a329c60090db61edd4ce6	no	17
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27	Foreign Reference	60_CN_2927961.pdf	1508691 d7cb07cfbee2837cbd2646d9f1f2611614437a54	no	18
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44	Foreign Reference	77_WO_2010_147247.pdf	2303663 36b03cd486480139afaf29bf1c00318c18761930	no	24
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46	Foreign Reference	79_CN_102217912.pdf	1601938 f3dcf9d79d01dd34409d312a004cdf20ca69c1b9	no	19
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47	Foreign Reference	80_KR_2011_0119176.pdf	1462861 89b5013e96cae4fcf78c005d0c14900f3a1d00ee	no	13
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48	Foreign Reference	81_GB_2484146.pdf	1481708 43129f6cdcafabf7fae454242a1586ffc82828c0	no	20
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49	Foreign Reference	82_DE_102011007373.pdf	2687761 8349927faad4cb3cbc69adfe7fa7f428ccced bad	no	28
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50	Foreign Reference	83_TR_2012_10114.pdf	842317 985ca8c57c8d2f9ebcc9246b72f068b79c8488f1	no	10
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51	Foreign Reference	84_CN_202776167.pdf	175297 8794e9f561d2372acbf59201c20e83ba735fb0ce	no	5
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53	Foreign Reference	86_CN_202932850.pdf	722393 49852facf0a56ad017bd6ff51af06f6981f40800	no	7
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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.

Electronic Acknowledgement Receipt

EFS ID:	28526468
Application Number:	15269430
International Application Number:	
Confirmation Number:	6526
Title of Invention:	VACUUM CLEANER
First Named Inventor/Applicant Name:	Stephen Robert DIMBYLOW
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Laura Razzuri
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662105900
Receipt Date:	03-MAR-2017
Filing Date:	19-SEP-2016
Time Stamp:	16:12:34
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	Foreign Reference	93_KR_2015_0125223.pdf	1168523 b57671e7d4f4554c84833824b7a23355ebfad33b	no	19

Warnings:

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322

Information:					
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4	Non Patent Literature	96_GBSR_2105900_Feb292016.pdf	43685 8cf813a85d727341fb8b25c1856db721561c4730	no	1
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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.

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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.

ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 4

Complete if Known	
Application Number	15/269,430
Filing Date	September 19, 2016
First Named Inventor	Stephen Robert DIMBYLOW
Art Unit	3727
Examiner Name	B. R. Muller
Attorney Docket Number	424662105900

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	US-1,420,665	06-27-1922	Newcombe	
	2.	US-6,131,239	10-17-2000	White	
	3.	US-2001/0023517	09-27-2001	Onishi et al.	
	4.	US-2003/0131441	07-17-2003	Murphy et al.	
	5.	US-2003/0200621	10-30-2003	Inoue et al.	
	6.	US-2004/0040270	03-04-2004	Inoue et al.	
	7.	US-2004/0134022	07-15-2004	Murphy et al.	
	8.	US-2006/0090290	05-04-2006	Lau	
	9.	US-2006/0156508	07-20-2006	Khalil	
	10.	US-2007/0163075	07-19-2007	Butler et al.	
	11.	US-2008/0040883	02-21-2008	Beskow et al.	
	12.	US-2010/0132151	06-03-2010	Khalil et al.	
	13.	US-2010/0175219	07-15-2010	Soen et al.	
	14.	US-2010/0180398	07-22-2010	Casper	
	15.	US-2010/0229322	09-16-2010	Conrad	
	16.	US-2010/0229327	09-16-2010	Conrad	
	17.	US-2010/0242421	09-30-2010	Conrad et al.	
	18.	US-2010/0293745	11-25-2010	Coburn	
	19.	US-2011/0289719	12-01-2011	Han et al.	
	20.	US-2011/0308036	12-22-2011	Engström et al.	
	21.	US-2012/0030896	02-09-2012	Crouch et al.	
	22.	US-8,167,964	05-01-2012	Wai	
	23.	US-2013/0031742	02-07-2013	Miefalk et al.	
	24.	US-8,510,907	08-20-2013	Conrad	
	25.	US-8,607,407	12-17-2013	Conrad	
	26.	US-2014/0041150	02-13-2014	Sjöberg et al.	
	27.	US-2014/0366314	12-18-2014	Conrad	
	28.	US-9,027,201	05-12-2015	Conrad	
	29.	US-2015/0208885	07-30-2015	Conrad	
	30.	US-2016/0037984	02-11-2016	Park et al.	
	31.	US-2016/0143495	05-26-2016	Conrad	
	32.	US-2016/0150923	06-02-2016	Conrad	
	33.	US-2016/0174785	06-23-2016	Conrad	
	34.	US-2016/0174789	06-23-2016	Han et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
	35.	FR-553202	05-15-1923	John Wesley NEWCOMBE	Machine Translation	X
	36.	DE-661573	06-22-1938	Friedrich BÜTTNER	Machine Translation	X
	37.	CH-203675	03-31-1939	Peter JÖRG	Partial Translation	X
	38.	FR-1.094.603	05-23-1955	François MARTELLIERE	Machine Translation	X

ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 4

Complete if Known	
Application Number	15/269,430
Filing Date	September 19, 2016
First Named Inventor	Stephen Robert DIMBYLOW
Art Unit	3727
Examiner Name	B. R. Muller
Attorney Docket Number	424662105900

	39.	DE-1 407 995	02-20-1969	Siemens-Electrogerate GmbH (Fritz KAISER)	Machine Translation	X
	40.	DE-2 153 664	07-13-1972	Aktiebolaget Electrolux (Osten SCHWARTZ et al.)	Machine Translation	X
	41.	JP-48-54259	07-12-1973		Figures	
	42.	JP-48-54260	07-12-1973		Figures	
	43.	JP-3-65545	06-26-1991		Figures	
	44.	WO-00/19881	04-13-2000	Jetfan Australia Pty. Ltd.; (Terence Robert DAY)		
	45.	JP-2001-353110	12-25-2001	Matsushita Electric Ind. Co. Ltd. (Toru KODACHI et al.)	Machine Translation	X
	46.	JP-2002-85297	03-26-2002	Matsushita Electric Ind. Co. Ltd. (Naoyuki OHARA)	Machine Translation	X
	47.	CN-2529599	01-08-2003	Jingliang PAN	Machine Translation	X
	48.	JP-2003-70706	03-11-2003	Sharp Corp. (Yuji ONISHI et al.)	Machine Translation	X
	49.	JP-2003-204903	07-22-2003	Matsushita Electric Ind. Co., Ltd. (Toru HIROSE et al.)	Machine Translation	X
	50.	JP-2003-250729	09-09-2003	Toshiba Tec KK (Ritsuo TAKEMOTO)	Machine Translation	X
	51.	JP-2004-201875	07-22-2004	Tsuin Bado Kogyo KK (Takeshi YAMADA)	Machine Translation	X
	52.	JP-2005-270312	10-06-2005	Sharp KK (Hiroshi TOMOOKA)	Machine Translation	X
	53.	CN-1726857	02-01-2006	Baoshide Electric Tools Co., Ltd. (Baoruinato JOHNY)	Machine Translation	X
	54.	JP-2006-87961	04-06-2006	Sharp KK (Yuji ONISHI)	Machine Translation	X
	55.	CN-2812826	09-06-2006	Jinlaike Cleaning Implements C (Zugen NI)	Machine Translation	X
	56.	JP-2006-230815	09-07-2006	Tsuin Bado Kogyo KK (Kazunori MATSUO et al.)	Figures	
	57.	EP-1 752 076	02-14-2007	Black & Decker Inc. (Andrew WALKER)		
	58.	DE-10 2005 056 922	05-31-2007	BSH Bosch Siemens Hausgeraete (Armin BOECK et al.)	Machine Translation	X
	59.	CN-2927961	08-01-2007	Baoshide Electric Tool Co., Ltd. (Chengzhong Qanny CHEN)	Machine Translation	X
	60.	WO-2007/104238	09-20-2007	Positec Power Tools Suzhou Co.; Gianni Borinato; Chengzhong Chen (Gianni BORINATO et al.)	Machine Translation	X
	61.	CN-101061932	10-31-2007	Kwonnie Electrical Products Lt. (He JIANAN)	Machine Translation	X
	62.	GB-2440111	01-23-2008	Dyson Technology Limited (William Frame MILNE et al.)		

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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01322
Page 354 of 1677

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 3 of 4

Complete if Known	
Application Number	15/269,430
Filing Date	September 19, 2016
First Named Inventor	Stephen Robert DIMBYLOW
Art Unit	3727
Examiner Name	B. R. Muller
Attorney Docket Number	424662105900

	63.	JP-2008-73221	04-03-2008	Toshiba Corp.; Toshiba Consumer Marketing; Toshiba Kaden Seizo KK (Takeshi SATO et al.)	Machine Translation	X
	64.	JP-2008-79920	04-10-2008	Toshiba Corp.; Toshiba Consumer Marketing; Toshiba Kaden Seizo KK (Shuhei OMOTO et al.)	Machine Translation	X
	65.	SE-0702236	08-19-2008	AB Electrolux (Jonas BESKOW et al.)	Figures	
	66.	EP-1958560	08-20-2008	Black & Decker, Inc. (Michael A. MILLIGAN et al.)		
	67.	JP-2008-206613	09-11-2008	Tsuin Bado Kogyo KK (Tetsuya KAMIMURA)	Machine Translation	X
	68.	KR-2008-0110720	12-19-2008	Jong Dae CHOI	Machine Translation	X
	69.	CA-2 894 369	03-05-2009	G.B.D. Corp. (Wayne Ernest CONRAD)		
	70.	DE-10 2008 044 184	06-04-2009	BSH Bosch Siemens Hausgeraete (Stefan BOCKELT et al.)	Machine Translation	X
	71.	JP-2009-261501	11-12-2009	Yamada Electric Ind. (Junichi YOSHITOMI)	Machine Translation	X
	72.	CN-201346180	11-18-2009	Dongguan Kwonnie Electrical PR (Chen YUMING et al.)	Machine Translation	X
	73.	JP-2009-279284	12-03-2009	Tsuin Bado Kogyo KK (Kazunori MATSUO et al.)	Machine Translation	X
	74.	DE-10 2009 041 728	06-24-2010	Vorwerk Co. Interholding (Martin MEGGLE et al.)	Machine Translation	X
	75.	CA-2 917 900	09-13-2010	Omachron Intellectual Property Inc. (Wayne Ernest CONRAD)		
	76.	CA-2 907 308	09-20-2010	Omachron Intellectual Property Inc. (Wayne Ernest CONRAD)		
	77.	WO-2010/147247	12-23-2010	Joo-Hyeok KIM	Machine Translation	X
	78.	CN-201755193	03-09-2011	Tek Electrical Suzhou Co. Ltd. (Lv Xiaoming)	Machine Translation	X
	79.	CN-102217912	10-19-2011	Tekfirst Electrical Equipment Suzhou Co. Ltd. (Lv XIAOMING)	Machine Translation	X
	80.	KR-2011-0119176	11-02-2011	Se Kwang Precision Co., Ltd. (Do Suk JUNG et al.)	Machine Translation	X
	81.	GB-2484146	04-04-2012	Dyson Technology Limited (James DYSON et al.)		
	82.	DE-10 2011 007 373	10-18-2012	Gerhard THIEN	Machine Translation	X

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	83.	TR-2012-10114	12-21-2012	Adnan TANGÜLER	English Translation of Abstract	
	84.	CN-202776167	03-13-2013	Kingclean Electric Co. Ltd. (Zugen NI)	Machine Translation	X
	85.	CN-202776168	03-13-2013		Figures	
	86.	CN-202932850	05-15-2013	Suzhou Provac Electrical Co. Ltd. (Wei WANG)	English Translation of Abstract	
	87.	GB-2508035	05-21-2014	Dyson Technology Limited (Hugo George WILSON)		
	88.	JP-2014-124443	07-07-2014	Iris Ohyama Inc. (Masayuki KOSAKA)	Machine Translation	X
	89.	CN-203724037	07-23-2014	Kwonnie Electrical Products Ltd. (Guoyong YAN)	Machine Translation	X
	90.	KR-10-1507922	04-07-2015	Tobiz Co., Ltd. (Jou Hyuk KIM et al.)	Machine Translation	X
	91.	CN-104840152	08-19-2015	Kingclean Electric Co. Ltd. (Zugen NI)	Machine Translation	X
	92.	CN-204698456	10-14-2015	Kingclean Electric Co. Ltd. (Zugen NI)	Machine Translation	X
	93.	KR-10-2015-0125223	11-09-2015	Samsung Electronics Co., Ltd. (Dong Hyuk UIM et al.)	Machine Translation	X
	94.	CN-105662271	06-15-2016	Ningbo Haiji Electric Appliance Co. Ltd. (Rong ZHOU et al.)	Figures	
	95.	CN-205322247	06-22-2016	Hitachi Appliances Inc. (Takuya TACHIBANAGAWA et al.)	Figures	

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	96.	Search Report dated February 29, 2016, directed to GB Application No. 1516499.9; 1 page	
	97.	International Search Report and Written Opinion mailed October 28, 2016, directed to International Application No. PCT/GB2016/052611; 10 pages	

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Hand vacuum cleaner with spiral second grade spout travel fatigue gas isolating construction

Page bookmark CN204698456 (U) - Hand vacuum cleaner with spiral second grade spout travel fatigue gas isolating construction

Inventor(s): NI ZUGEN ±

Applicant(s): KINGCLEAN ELECTRIC CO LTD ±

Classification: - international: ***A47L9/10; A47L9/16***

- cooperative:

Application number: CN20152394596U 20150609

Priority number(s): CN20152394596U 20150609

Abstract of CN204698456 (U)

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The utility model discloses a hand vacuum cleaner, an inside spiral second grade spout travel fatigue gas isolating construction and the one -level dirt section of thick bamboo that be equipped with of dust catcher fuselage, spiral second grade spout travel fatigue gas isolating construction includes an one -level whirlwind section of thick bamboo, a second grade whirlwind section of thick bamboo, sets up in the spiral dirt gas separator of second grade whirlwind section of thick bamboo upper end, and the whirlwind cover. The separation of one -level dirt gas is implemented with the whirlwind cover to the elementary dirt gas that gets into spiral second grade spout travel fatigue gas isolating construction to an one -level whirlwind section of thick bamboo, and the second grade dirt gas of after separating gets into a second grade whirlwind section of thick bamboo and carries out the separation of second grade dirt gas. This dust catcher spare part is small in quantity, and the equipment process is simple, and the comprehensive properties of complete machine is high. Volume is less in spiral second grade spout travel fatigue gas separation simultaneously, can effectively reduce the fuselage space, realizes the biggest storage ash volume.

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DESCRIPTION CN204698456

The utility model discloses a hand-held vacuum cleaner, vacuum cleaner inside the fuselage has a spiral two tornadoes dust and gas separation structure and a dust tube, screw two tornadoes dust and gas separation structure comprising a cyclone and secondary cyclone tube provided in the upper end of two spiral cyclone dust and gas separation plant, as well as cyclone cover. A cyclone and the cyclone cover enter the spiral of dust and gas separation structure tornado two primary embodiment of a dust gas dust and gas separation, gas separation after two dust into the secondary cyclone for secondary dust and gas separation. The vacuum cleaner small number of components, the assembly process is simple, high machine's overall performance. Meanwhile two spiral tornado dust and gas separation structure smaller, the body can effectively reduce the space for maximum storage volume of ash.

Having two spiral tornado dust and gas separation structure handheld vacuum cleaner

TECHNICAL FIELD

The utility model belongs to the field of vacuum cleaner manufacturing technology, specifically it relates to a spiral Two tornadoes dust and gas separation structure handheld vacuum cleaner.

Background technique

Vacuum cleaner as a daily necessities, widely used in indoor and outdoor cleaning. Lee is a vacuum cleaner High-speed rotary motor driven blade, resulting in negative air pressure within the sealed housing, so that the dust inhalation Dust collector, and the filtered air at high velocity exhaust fan cleaning appliances, vacuum cleaners According to their functional classification including dry cleaners and wet and dry vacuum cleaners, dry cleaners generally include dust bag Style and body type, vacuum cleaner according to the shape classification, can be divided into horizontal, vertical, hand-held vacuum cleaners, hand Held vacuum cleaner easy to clean walls, sofa, window sills, table tops, appliances and other items.

Handheld existing dust and gas separation mode cleaner parts mostly by a centrifugal separator module Type or dust bag filter mode, a low filtration efficiency of the two separate modes and prone to clogging.

Existing two separate body, generally it includes two dust and gas separation structure, the structure for the first stage Large air filter dirt, the second-stage structure for the separation of small dust particles collected and other debris, Traditional secondary dust and gas separation structure generally through the filter cover and the body is provided with a plurality of rotary cyclone port Wind form secondary cyclone body fit, so the structure of the components needed are more involved and mold Assembly process is relatively large and complex, difficult to control all aspects of the seal, prone to leak ash leakage And affect the machine's overall performance.

China Patent Document CN200520102558.7, discloses an integrated two separate vacuum cleaner Fuselage, the fuselage structure axial layout, the dust removal device inside and outside the tube axially arranged, and up To dust and gas separation purposes, however, such a design, part number, two dust cartridge in a dust Barrel, the space occupied by a dust tube, excessive volume occupied by the body of dust, ash storage space is To limit the gray smoke effect is greatly affected, and smaller two return air area, resulting in a low overall amount of wind. Simultaneously Such two separate dust and gas fuselage structure requires a relatively high larger body size, and the shape does not apply For portable hand-held vacuum cleaner, use is limited in scope. Further, since the flexible hand-held

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vacuum cleaner Strong orientation change at any time at work, the existing structure of the fuselage dust easily back.

In view of the above problems, it is necessary to propose a novel with two spiral tornado dust and gas separation Handheld vacuum cleaner structure, reducing the number of parts of the structure, simplify the assembly process, improve machine Fully Sealing properties, while effectively reducing the two-separated structure space occupied by the body to achieve maximum storage capacity of ash Product, improve dust collection efficiency, and effectively prevent the backflow of dust.

Utility Model Content

In view of this, the utility model provides a spiral having two tornadoes dust and gas separation structure Hand-held vacuum cleaner, a handheld vacuum cleaner inside the fuselage has a spiral two tornadoes dust and gas separation Structure, shape fit hand-held vacuum cleaner, small number of parts, the assembly process is simple, comprehensive machine Can improve, while effectively reducing the two-separated structure of space occupied by the body to achieve maximum storage capacity of ash Product, improve dust collection efficiency, and effectively prevent the backflow of dust.

A hand-held vacuum cleaner according to the present utility model aims proposed, the internal body has an accommodating Space, the receiving space features a spiral two tornadoes dust and gas separation structure, accommodating space Located in the two spiral tornado dust and gas separation structure opposite side of the space constitute a dust tube, located in the Said two spiral tornado dust and gas separation structure on the same side of the space constituting the two spiral tornado dust and gas A cyclone separator structure.

Preferably, the two spiral tornado dust and gas separation structure, including a cyclone provided A cyclone in the internal secondary cyclone, spiral set in two cyclone dust and gas of the upper end Separation device, and set a cyclone in the cyclone and secondary cyclone cover between the two With a gap between the inner wall of the cyclone and the cyclone stage cover, the space for forming a dust and gas separation After the separation of dust and gas secondary air duct, a cyclone and the cyclone dust cover to enter the two-gas separator Primary dust and gas apparatus embodiment of a dust and gas separation, gas separation after two dust into the secondary cyclone feed Line two dust and gas separation.

Preferably, the hand-held vacuum cleaner includes a main body inlet, including one said a cyclone Rejection of gray dust from the cyclone body inlet into a cylinder, to achieve a separation of dust and gas, dust Under the effect of centrifugal force thrown a gray dust enters a cylinder.

Below said secondary cyclone dust collecting device is preferably provided with two, at the end of the two cyclones The top of the two portions constituting the dust collecting means, said secondary side wall near the bottom of the cyclone position with A rejection of two gray.

Preferably, the two body into the ash collector, including a passage portion and the dust, the dust passageway extends To the bottom of the main cylinder and a dust abut main body portion and into the gray dust seal channel connection or integrally formed.

Preferably, the body portion into the ash or dust or both channels, at least in part to the inside of the fuselage Side, or the formation of an independent secondary dust collection space.

Preferably, the two cyclone bottom center downwardly convex design to prevent dust back.

Preferably, the set is provided between the internal cylinder block dust, dust-cylinder with the secondary cyclone said secondary cyclone There is a gap, the gap for the formation of secondary dust and gas separation duct, blocking the dust barrel inner wall for confinement Dust and gas in the cylinder block dust rotating centrifugal force to resist negative pressure suction.

After Preferably, the air with dust cover is a first-stage cyclone dust and gas separation, at least one Points to guide the spiral dust and gas separation apparatus through the secondary separation of dust and gas duct and the spiral dust gas separation From the lower guide means in the secondary cyclone is formed to the inner wall of the cylinder bottom rotating gas stream of ash Dust spin to the bottom of the barrel, driven by centrifugal force and collected in the secondary dust collection space, whirling airflow in the air Negative pressure gas is withdrawn at the outlet of two spiral tornado dust and gas separation structure, realize the second stage dust and gas Separation.

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Preferably, the upper end of the body of the outlet means 230 also includes a filter, the filter device may Of cotton filters, micro dust and gas concentration by the body after the outlet for final filtered through a cotton filter.

Preferably, the spiral means comprises a dust separator gas for generating the secondary cyclone spiral wind impeller, The spiral downward wind impeller provided with a plurality of blades, the blade to bind dust and gas flow direction Swoop down to tilt.

Preferably, the spiral dust separating apparatus further comprises a gas disposed in the inner ring of the spiral wind impeller inner circle, is provided on the outlet side wall corresponding to the inner ring and a pluraity of the spiral wind impeller guide Section to the guide section constraint dust stream to spiral wind impeller rotating outer ring and begins to form a state.

Preferably, the overall spiral wind impeller inlet area of less than two spiral tornado dust gas separation From the structure of the area out of the wind, so that the centrifugal force generated by the rotation enough to resist negative pressure suction.

Compared with the prior art, the advantages of the present utility model discloses a hand-held vacuum cleaner is:

Using two spiral tornado dust and gas separation structure, relative to the previous model can improve the filtration of dust Efficiency and reduce structural components, simplifying the assembly process and improve the overall performance of the machine.

The dust and gas separation structure is smaller, can effectively reduce the structural separation of space occupied by the body, in fact, Now the largest ash storage volume, improve dust collection efficiency

The two spiral tornado dust and gas separation structure and dust cylinder shape is designed to fit the hand-held vacuum cleaner Shape, suitable for hand-held vacuum cleaner.

The two bottom center of the cyclone is designed to protrude downward so that dust is not easy to turn the clock back.

Two dust collector extends directly to the bottom of the fuselage, while a portion of the medial side of the fuselage, festival Saving materials, easy to ashes.

The upper end of the outlet in the body further comprises filter means, serve to prevent the dust from the outlet for pouring Used to achieve the final filter.

BRIEF DESCRIPTION

In order to more clearly illustrate the embodiments of the present utility model or the art technical solutions, will be Embodiments or the prior art described in the accompanying drawings required to make a brief introduction. Apparently, The following description of the drawings are merely the utility model to some embodiments, those of ordinary skill in Members concerned, without creative efforts of the premise, you can also obtain other drawings based on these attachment FIG.

Figure 1 is a cross-sectional view of the internal structure of the fuselage.

Figure 2 is an external view of the whole body

Figure 3 shows the internal structure of the fuselage.

Figure 4 is a two cyclone dust collector with two schematic.

Figure 5 is a body airflow to FIG.

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Figure 6 is a cyclone cover exterior and interior perspective

7 is a schematic view of the structure of spiral dust and gas separation apparatus.

Figure 8 is a spiral dust and gas separation means the airflow in the schematic.

Figure 9 is an exploded diagram of the fuselage.

Reference numerals and components involved in the description:

[100]

100、Body; 110, a dust tube; 111, a rejection of gray; 120, fuselage air inlet; 130, Body outlet; 140, a separator; 150, opening;

[233]

210、A cyclone; 211 cyclone cover; 212, second cyclone; 213, an intake air damper Road; 214 secondary dust collector; 215, block dust drum; 216, two separate dust and gas duct; 217, di Rejection level gray; 220, spiral dust and gas separation apparatus; 221, spiral wind impeller; 222, inner ring; 223, The guide section; 224, the windshield; 230, a filter device; 231, spiral grooves; 232, into the gray body portion; 233、Dust channel.

detailed description

Traditional secondary dust and gas separation structure required parts are more involved and mold assembly station Sequence is also relatively high and compiex, difficult to control all aspects of the seal, ash leakage phenomenon prone to leakage and Affect the overall performance of the machine. And the previous secondary dust and gas separation fuselage structure for the axial layout making its filter structure accounted for a larger proportion of body space, and excessive volume occupied by the body of dust, Ash storage space is limited, and such two separate dust and gas fuselage structure requires a relatively high larger machine Physical product, and its shape is not available for portable hand-held vacuum cleaner, use is limited in scope.

The utility model for deficiencies in the prior art, there is provided a spiral having two tornadoes Dust and gas separation structure handheld vacuum cleaner in order to reduce the number of parts of the structure, simplify the assembly process, mention Integrated high-performance machine, while effectively reducing second separated the space occupied by the structure, to achieve the greatest Ash storage volume, improve dust collection efficiency, especially spiral two tornadoes dust and gas separation structure and the outer tube dust Shape designed to fit the shape of a hand-held vacuum cleaner is suitable for hand-held vacuum cleaner.

Below through specific embodiments of the present utility model technical solutions were clear and complete description Said. Obviously, the described embodiments are merely part of embodiments of the present utility model, rather than all Example. Based on the utility model of embodiment, those of ordinary skill in creating not made All other embodiments obtained under the premise of labor, all belong to the scope of protection of the utility model.

Please also refer to Figures 1 to 9, a hand-held vacuum cleaner, inside the fuselage has a receiving space The accommodating space features a spiral two tornadoes dust and gas separation structure, located within the receiving space Said two spiral tornado dust and gas separation structure opposite side of the space constitute a dust tube 110, located in the spiro Tornado dust and gas rotating two separate structures on the same side of the space constituting the two spiral tornado dust and gas separation A cyclone 210 structures.

The two spiral tornado dust and gas separation structure comprises a cyclone 210 provided in the pair Stage cyclone 210 internal secondary cyclone 212, and set a cyclone in the cyclone and secondary Tube between the cyclone cover 211, a gap is provided between the inner wall of the two cyclones and cyclone cover the gap for Formation of secondary dust and gas a dust and gas separation after separation duct 216, which includes a rejection of a cyclone ash Port 111. Dust and air through the inlet into a cyclone barrel, a cyclone and the cyclone cover 210 211 Enter a whirlwind of dust and gas cylinder primary embodiment of the centrifugal force of a dust and gas separation dust A rejection by the gray dust 111 into a cylinder 110, a low concentration of dust and gas are separated cyclone cover Mesh inhaled dust and gas into the secondary separation duct 216, after a spiral dust spin-gas separator in the secondary By generating the secondary cyclone duct constraints.

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Wherein the upper end of the cyclone cover provided inside the helical groove 231, such that the airflow generated from rotation where Effort, airflow conveniently screwed into the spiral gas dust separation apparatus.

Spiral dust and gas separation apparatus 220 is provided on the upper end of the tube mouth two cyclones 212 with dust After the air is a first-stage cyclone dust cover 211 gas separation, at least a portion of the gas separation through the secondary dust Boot from the duct 216 to the spiral dust and gas separation apparatus 220, and lead dust and gas in the spiral separation unit Under the guidance of, the inner wall 212 is formed to two cyclone rotating cylinder bottom stream, said secondary cyclone 212 The bottom has two dust-collecting device 214, the bottom of the two cyclone dust collector constitute two of the top Section, two cyclone dust collector with two tight connection, or integrally formed.

In the side walls of the two cyclones 212 near the bottom position with a two thrown 217 gray, with When dumped near two gray parts 217, two at the bottom center of the cyclone 212 provided projecting downward Meter, whereby the air flow, the upper two cyclone pressure is greater than the lower part of the pressure, but also by the dust The flow down to prevent the hand-held vacuum cleaner when changing posture using dust back. Two dust and gas Dust backspin to the bottom of the cylinder driven by centrifugal force, the rejection of the two gray 217 into the two sets Space dust means 214, whirling airflow in the suction air is drawn out of the second stage to achieve separation of dust and gas.

Spiral dust and gas separation apparatus 220 includes means for generating the secondary cyclone wind spiral impeller 221, spiral Wind impeller 221 is provided with a plurality of downwardly inclined blades which can constrain the flow direction of the dust and gas inclined to Dive under to form a swirl flow.

[222]

Spiral dust and gas separation apparatus 220 further includes a spiral wind impeller 221 within the inner ring 222. The inner ring 222 and disposed on the wind impeller outlet corresponding side wall 221 has several spiral-cut guide Surface 223, the guide section constraint dust stream to spiral wind impeller rotating outer ring and begins to form a state. among them Provided on the outer circumference of the spiral wind impeller outer ring by the action of the inner and outer ring to achieve the airflow Guide and improve the structural strength and stability of the wind spiral impeller. Inner annular wall extended downward spiral wind impeller There are 224 extending wind deflector.

212 set inside two cyclone dust-cylinder 215 with a gap between the cylinder block with the secondary cyclone dust, The gap for the formation of secondary dust and gas separation duct 216, with dust in the air inside the two solid-gas separation dust duct Now screw is rotated to generate a centrifugal force so that dust along the inner wall of the whereabouts of two cyclones. Dust the inside of the barrel Wall for restricting dust and gas in the cylinder block dust rotating centrifugal force to resist negative pressure suction, dust and gas realization Effective separation.

[232]

Said secondary dust collector includes a main body portion 232 and into the gray dust channel 233, the main body portion into the gray 232Tight connection between the dust channel 233 and through the ring, the dust channel 233 can body The inside of the side, and extends to the lower body and a dust tube abut, clean up the dust in the vacuum cleaner When, at this time all the dust fall within one of dust and dirt tube channel, two tornado spiral out of dust and gas Separating structure and into the gray body portion, the body portion 232 and into the gray dust separation channel 233, then poured ash Dust can be.

The body further comprises an upper outlet filter means 230, the filter device may be a filter cotton, Micro dust and gas concentration by the body after the outlet for final again filtered through a cotton filter.

Wherein two cyclones and spiral dust and gas separation device can be integrally molding structure, forming Center position after spiraling dust-gas separation device is directly attached to the two cyclones to complete the installation Hotels. Specific molding methods not limited.

In addition, two spiral tornado dust and gas separation structure can also be directly integrated molding process, in particular to Type assembly methods not limited.

The utility model, a hand-held vacuum cleaner, the internal body 100 has an accommodating space accommodating Space equipped with a screw-type two tornadoes dust and gas separation structure, located in the receiving space of the spiral Two tornadoes space dust and gas separation structure opposite side constitute a dust tube 110, located in the two spiral Tornado dust and gas separation

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structure on the same side of the space constituting the two spiral tornado dust and gas separation structure of a 210, the two spiral tornado dust and gas separation cyclone stage structure includes a cyclone 210, set The cyclone 210 is placed inside a cylindrical secondary cyclone 212, and set a cyclone in the And cyclones between two cyclone cover 211. Lower body is provided with air inlet 120, body side is provided Outlet 130 with the inlet air through the dust boot to cover the cyclone dust and gas at two separate structures, the After the dust laden air is a first-stage cyclone dust cover 211 gas separation, at least a part of the cover after cyclone Enter the secondary cyclone 212. The second stage dust and gas separation.

Among them, the overall spiral wind impeller inlet area 221 is smaller than the area of the body out of the wind, so that with the wind Under the circumstances the amount of energy has a higher rotational speed to resist negative pressure suction.

The inside of the body is provided with a partition plate 140 extends downwardly at the center of the partition with an opening 150, the two dust and gas Air separated by vacuum extraction. By setting the upper end of the cyclone separator cover obscured, so after a spin Dust and gas hood filtered dust and gas will be separated by the two upper guide duct into the spiral gas dust separation apparatus Inside, the air intake guide realization. Wherein the central separator was downwardly curved structure, easy to dust and gas shift Movable guide

The utility model discloses a hand-held vacuum cleaner, the cleaner comprises two spiral tornado Dust and gas separation structure, a dust canister, the two spiral tornado dust and gas separation structure includes only a spin Hairdryer, two cyclone, cyclone dust cover and spiral air separation plant can be achieved for dust and gas filter isolated, effectively reducing the number of parts of the structure, simplifies the assembly process, easy to improve the machine's mechanized Sealing properties. Meanwhile, the two spiral tornado dust and gas separation structure smaller, can effectively reduce the two Separating the space occupied by the structure to achieve maximum ash storage volume, improve dust collection efficiency, especially for Hand-held vacuum cleaner. In addition, two dust collector extends directly to the bottom of the fuselage, while the inside of the body To the side, material savings, convenience ashes.

The above description of the disclosed embodiments, so that the skilled in the art to make or use The utility model. These various modifications to the field of professional and technical personnel who embodiments will be apparent Readily apparent, the general principles defined herein may be without departing from the spirit or scope of the utility model Under the circumstances, it is implemented in other embodiments. Thus, the utility model will not be limited to herein These shows are consistent with the principles disclosed herein and novel features of the broadest embodiment, but to comply with Range.

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CLAIMS CN204698456

[1]

1. A hand-held vacuum cleaner, characterized in that: the hand-held vacuum cleaner with a body inside A receiving space of the receiving space features a spiral two tornadoes dust and gas separation structure, accommodating Located in the two spiral tornado dust and gas separation structure opposite side of the space dust constitutes a cylinder space, Located in the two spiral tornado dust and gas separation structure on the same side of the space constituting the spiral two tornadoes A cyclone dust gas separation structure.

[2]

2. 1 of the hand-held vacuum cleaner as claimed in claim wherein: the spiral two tornadoes Dust gas separation structure, including a cyclone, a cyclone disposed in the interior secondary cyclone Tube provided in the upper end of two spiral cyclone dust and gas separation plant, and set to the first hydrocyclone Duct between cyclone and secondary cyclone cover between the inner wall of said secondary cyclone and the cyclone cover With a gap, the gap for the formation of a dust and gas separation dust after two separate air duct, said a Cyclone with cyclone cover enter the spiral of dust and gas separation structure tornado two primary embodiment of dust and gas A dust and gas separation, gas separation after two dust into the secondary cyclone for secondary dust and gas separation.

[3]

3. Hand-held vacuum cleaner according to claim 2, wherein: the hand-held vacuum cleaner includes a main body inlet, the cyclone include a rejection of a gray dust from the air inlet into the body A cyclone barrel to achieve a separation of dust and gas, dust under the effect of centrifugal force into a rejection by the gray Dust into a cylinder.

[4]

4. Hand-held vacuum cleaner according to claim 2, wherein: said secondary cyclone Two dust collector is provided below the bottom of the two cyclones constituting the top of the two dust collector, In the side walls of the two cyclones near the bottom position with a two thrown gray.

[5]

5. Handheld vacuum cleaner according to claim 4, characterized in that: said two dust collecting means includes a body portion and into the gray dust passage, dust passage extends to the bottom of the host and a dust tube abut, Ash and dust into the main body portion of the seal channel is connected to the inside of the dust passage fuselage side, or leaning On the inside of the fuselage and dust to form an independent channel.

[6]

6. Hand-held vacuum cleaner according to claim 4, wherein: said secondary cyclone Bottom center of the downwardly convex design.

[7]

7. Handheld vacuum cleaner according to claim 4, characterized in that: the dust laden air is A first stage cyclone dust cover gas separation after at least a portion of the gas through the secondary dust separation duct directed to Spiral dust and gas separation plant, and under the guidance of the spiral dust and gas separation plant in the secondary cyclone The bottom wall to form a cylinder rotating gas

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stream in the dust in the centrifugal force driven to spin the cylinder and the bottom Dust is collected in the secondary space, the rotation of the gas stream of air is drawn negative spiral two tornadoes The outlet dust and gas separation structure, realize the second stage separation of dust and gas.

[8]

8. Handheld vacuum cleaner as claimed in claim 7, wherein: the body of the outlet After filtration device further comprises an upper end, said filter means is a filter cotton, micro dust and gas concentration by outlet through Cotton filters for final filtration.

[9]

9. Hand-held vacuum cleaner according to claim 2, wherein: the spiral dust gas separation Off means comprises means for generating the secondary cyclone wind spiral impeller, the impeller is provided with a plurality of helical wind to Flow direction to bind dust and gas under an inclined dive blades.

[10]

10. Handheld vacuum cleaner as claimed in claim 9, wherein. the spiral dust and gas Separation means further comprises a ring disposed within the inner ring of the spiral wind impeller, the inner ring and the screw It is provided with a corresponding outlet on the side wall of the cyclone dust airflow impeller number of constraints to the wind spiral impeller outer ring The guide began to form rotation state section.

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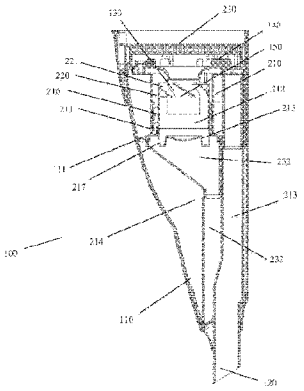
(54)实用新型名称

一种具有螺旋式二级龙卷风尘气分离结构的手持式吸尘器

(57)摘要

本实用新型公开了一种手持式吸尘器，吸尘器机身内部设有一螺旋式二级龙卷风尘气分离结构及一级尘筒，螺旋式二级龙卷风尘气分离结构包括一级旋风筒、二级旋风筒、设置于二级旋风筒上端的螺旋式尘气分离装置，以及旋风罩。一级旋风筒与旋风罩对进入螺旋式二级龙卷风尘气分离结构的初级尘气实施一级尘气分离，分离之后的二级尘气进入二级旋风筒进行二级尘气分离。该吸尘器零部件数量少，组装工序简单，整机的综合性能高。同时螺旋式二级龙卷风尘气分离结构体积较小，可有效降低机身空间，实现最大的储灰容积。



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1. 一种手持式吸尘器，其特征在于：所述手持式吸尘器的机身内部设有一容置空间，所述容置空间内设有一螺旋式二级龙卷风尘气分离结构，容置空间内位于所述螺旋式二级龙卷风尘气分离结构异侧的空间构成一级尘筒，位于所述螺旋式二级龙卷风尘气分离结构同侧的空间构成该螺旋式二级龙卷风尘气分离结构的一级旋风筒。

2. 如权利要求 1 所述手持式吸尘器，其特征在于：所述螺旋式二级龙卷风尘气分离结构，包括一级旋风筒、设置于所述一级旋风筒内部的二级旋风筒，设置于二级旋风筒上端的螺旋式尘气分离装置，以及设置于所述一级旋风筒和二级旋风筒之间的旋风罩，所述二级旋风筒与所述旋风罩的内壁之间设有空隙，该空隙用于形成一级尘气分离后的二级尘气分离风道，所述一级旋风筒与旋风罩对进入所述螺旋式二级龙卷风尘气分离结构的初级尘气实施一级尘气分离，分离之后的二级尘气进入二级旋风筒进行二级尘气分离。

3. 如权利要求 2 所述的手持式吸尘器，其特征在于：所述手持式吸尘器包括机身进风口，所述一级旋风筒包括一级甩灰口，灰尘由机身进风口进入一级旋风筒内，实现一级尘气分离，灰尘在离心力的作用下由一级甩灰口进入一级尘筒。

4. 如权利要求 2 所述的手持式吸尘器，其特征在于：所述二级旋风筒的下方设有二级集尘装置，该二级旋风筒的底部构成该二级集尘装置的顶部，在所述二级旋风筒的侧壁靠近底部位置设有一个二级甩灰口。

5. 如权利要求 4 所述的手持式吸尘器，其特征在于：所述二级集尘装置包括进灰主体部与灰尘通道，灰尘通道延伸至主机底部与一级尘筒相抵接，进灰主体部与灰尘通道密封连接，所述灰尘通道以机身内侧为侧边，或不倚靠机身内侧而形成独立的灰尘通道。

6. 如权利要求 4 所述的手持式吸尘器，其特征在于：所述二级旋风筒的底部中心处向下凸出设计。

7. 如权利要求 4 所述的手持式吸尘器，其特征在于：带有灰尘的空气被旋风罩进行第一级尘气分离之后，至少一部分通过二级尘气分离风道引导至螺旋式尘气分离装置，并在该螺旋式尘气分离装置的引导下，在二级旋风筒内壁形成向筒底旋转的气流，该气流中的灰尘在离心力带动下下旋至筒底并被收集在二级集尘空间中，旋转气流中的空气被负压抽出螺旋式二级龙卷风尘气分离结构的出风口处，实现第二级尘气分离。

8. 如权利要求 7 所述的手持式吸尘器，其特征在于：所述机身出风口的上端还包括过滤装置，所述过滤装置为过滤棉，微浓度尘气经出风口后通过过滤棉进行最终的过滤。

9. 如权利要求 2 所述的手持式吸尘器，其特征在于：所述螺旋式尘气分离装置包括用于产生二级旋风的螺旋风叶轮，所述螺旋风叶轮设置有若干向下倾斜的可约束尘气的流动方向倾斜向下俯冲的叶片。

10. 如权利要求 9 所述的手持式吸尘器，其特征在于：所述螺旋式尘气分离装置还包括设置于所述螺旋风叶轮内圈的内圆环，所述内圆环与所述螺旋风叶轮的出风口对应的侧壁上设置有若干约束尘气流向螺旋风叶轮的外环面开始形成旋转状态的导向切面。

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技术领域

[0001] 本实用新型属于吸尘器的生产制造技术领域，具体涉及一种具有螺旋式二级龙卷风尘气分离结构的手持式吸尘器。

背景技术

[0002] 吸尘器作为一种生活用品，广泛应用于室内、室外的清洁。吸尘器是利用电机带动叶片高速旋转，在密封的壳体内产生空气负压，从而将尘屑吸入集尘装置中，并将过滤后的空气以极高的速度排出风机的清洁电器，吸尘器按其功能分类包括干式吸尘器与干湿两用吸尘器，干式吸尘器一般包括尘袋式与机身式，吸尘器按形状分类，可分为卧式、立式、手持式吸尘器等，手持式吸尘器方便清洁墙面、沙发、窗台、桌面、电器等物品。

[0003] 现有手持式吸尘器集尘部分的尘气分离模式大都采用一级离心式分离模式或尘袋过滤模式，该两种分离模式的过滤效率低并且容易堵塞。

[0004] 现有的二级分离式机身，一般包括两级尘气分离结构，第一级结构用以过滤空气中的大型污物，第二级结构用于分离收集小型的灰尘颗粒等杂物，传统的二级尘气分离结构一般通过机身过滤器盖板与设置有若干旋风口的旋风体相配合形成二级旋风，这样结构所需的零部件较多，所牵涉的模具以及组装工序也相对较多且复杂，各个环节的密封难以控制，容易出现漏气漏灰现象而影响整机的综合性能。

[0005] 中国专利文献 CN200520102558.7，公开了一种一体式两次分离的吸尘器机身，该机身结构为轴向布局，将除尘装置采用内外管轴向方式布置，而达到尘气分离的目的，然而，这样的设计，零件数量多，二级尘筒置于一级尘筒内，占用了一级尘筒的空间，过多的占用了机身集尘的容积，储灰空间受到限制，吸灰效果大受影响，且二级的回风面积小，导致整机风量低。同时此类二级尘气分离式机身结构需要相对较高较大的机身体积，且其形状不适用于便携式手持吸尘器，使用范围受到限制。另外，由于手持吸尘器的灵活性强，在工作时随时变换方位，现有的机身结构中灰尘容易倒流。

[0006] 鉴于以上问题，有必要提出一种新型的具备螺旋式二级龙卷风尘气分离结构的手持式吸尘器，减少结构的零件数量，简化组装工序，提高整机的综合性能，同时有效降低二级分离结构所占用的机身空间，实现最大的储灰容积，提高集尘效率，且有效防止灰尘倒流。

实用新型内容

[0007] 有鉴于此，本实用新型提供了一种具有螺旋式二级龙卷风尘气分离结构的手持式吸尘器，手持式吸尘器机身内部设有一螺旋式二级龙卷风尘气分离结构，外形贴合手持式吸尘器，零件数量少，组装工序简单，整机的综合性能提高，同时有效降低二级分离结构所占用的机身空间，实现最大的储灰容积，提高集尘效率，且有效防止灰尘倒流。

[0008] 根据本实用新型的目的提出的一种手持式吸尘器，机身内部设有一容置空间，所述容置空间内设有一螺旋式二级龙卷风尘气分离结构，容置空间内位于所述螺旋式二级龙

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卷风尘气分离结构异侧的空间构成一级尘筒，位于所述螺旋式二级龙卷风尘气分离结构同侧的空间构成该螺旋式二级龙卷风尘气分离结构的一级旋风筒。

[0009] 优选的，所述螺旋式二级龙卷风尘气分离结构，包括一级旋风筒、设置于所述一级旋风筒内部的二级旋风筒，设置于二级旋风筒上端的螺旋式尘气分离装置，以及设置于所述一级旋风筒和二级旋风筒之间的旋风罩，所述二级旋风筒与所述旋风罩的内壁之间设有空隙，该空隙用于形成一级尘气分离后的二级尘气分离风道，所述一级旋风筒与旋风罩对进入所述二级尘气分离装置的初级尘气实施一级尘气分离，分离之后的二级尘气进入二级旋风筒进行二级尘气分离。

[0010] 优选的，所述手持式吸尘器包括机身进风口，所述一级旋风筒包括一级甩灰口，灰尘由机身进风口进入一级旋风筒内，实现一级尘气分离，灰尘在离心力的作用下由一级甩灰口进入一级尘筒。

[0011] 优选的，所述二级旋风筒的下方设有二级集尘装置，该二级旋风筒的底部构成该二级集尘装置的顶部，在所述二级旋风筒的侧壁靠近底部位置设有一个二级甩灰口。

[0012] 优选的，所述二级集尘装置包括进灰主体部与灰尘通道，灰尘通道延伸至主机底部与一级尘筒相抵接，进灰主体部与灰尘通道密封连接或一体成型。

[0013] 优选的，所述进灰主体部或灰尘通道或其二者，至少部分以机身内侧为侧边，或形成独立的二级集尘空间。

[0014] 优选的，所述二级旋风筒的底部中心处向下凸出设计，防止灰尘倒流。

[0015] 优选的，所述二级旋风筒内部设置挡尘筒，挡尘筒与二级旋风筒之间设有空隙，该空隙用于形成二级尘气分离风道，所述挡尘筒的内侧壁用以约束尘气在该挡尘筒内旋转产生离心力以抵抗负压的吸力。

[0016] 优选的，带有灰尘的空气被旋风罩进行第一级尘气分离之后，至少一部分通过二级尘气分离风道引导至螺旋式尘气分离装置，并在该螺旋式尘气分离装置的引导下，在二级旋风筒内壁形成向筒底旋转的气流，该气流中的灰尘在离心力带动下下旋至筒底并被收集在二级集尘空间中，旋转气流中的空气被负压抽出螺旋式二级龙卷风尘气分离结构的出风口处，实现第二级尘气分离。

[0017] 优选的，所述机身的出风口的上端还包括过滤装置 230，所述过滤装置可为过滤棉，微浓度尘气经机身出风口后通过过滤棉进行最终的过滤。

[0018] 优选的，所述螺旋式尘气分离装置包括用于产生二级旋风的螺旋风叶轮，所述螺旋风叶轮设置有若干向下倾斜的叶片，所述叶片可约束尘气的流动方向倾斜向下俯冲。

[0019] 优选的，所述螺旋式尘气分离装置还包括设置于所述螺旋风叶轮内圈的内圆环，所述内圆环与所述螺旋风叶轮的出风口对应的侧壁上设置有若干导向切面，所述导向切面约束尘气流向螺旋风叶轮的外环面开始形成旋转状态。

[0020] 优选的，所述螺旋风叶轮的总体进风面积小于螺旋式二级龙卷风尘气分离结构的出风面积，使得旋转产生的离心力足以抵抗负压的吸力。

[0021] 与现有技术相比，本实用新型公开的手持式吸尘器的优点是：

[0022] 采用螺旋式二级龙卷风尘气分离结构，相对以往的集尘模式能提高过滤效率，减少结构的零部件，简化组装工序，提高整机的综合性能。

[0023] 该尘气分离结构体积较小，可有效降低分离结构所占用的机身空间，实现最大的

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储灰容积，提高集尘效率。

[0024] 该螺旋式二级龙卷风尘气分离结构及尘筒外形设计成贴合手持式吸尘器的外形，适用于手持式吸尘器。

[0025] 将二级旋风筒底部中心设计为向下凸出，使得灰尘不易倒流。

[0026] 二级集尘装置直接延伸至机身底部，同时有部分以机身内侧为侧边，节省材料，方便倒灰。

[0027] 在机身出风口的上端还包括过滤装置，起到防止灰尘从出风口倒出的作用，实现最终的过滤。

附图说明

[0028] 为了更清楚地说明本实用新型实施例或现有技术中的技术方案，下面将对实施例或现有技术描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本实用新型的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。

[0029] 图 1 为机身内部结构剖视图。

[0030] 图 2 为机身整体外观图

[0031] 图 3 为机身内部结构图。

[0032] 图 4 为二级旋风筒与二级集尘装置示意图。

[0033] 图 5 为机身气流走向图。

[0034] 图 6 为旋风罩外观及内部透视图

[0035] 图 7 为螺旋式尘气分离装置的结构示意图。

[0036] 图 8 为螺旋式尘气分离装置的气流走向示意图。

[0037] 图 9 为机身的分解图。

[0038] 附图中涉及的附图标记和组成部分说明：

[0039] 100、机身；110、一级尘筒；111、一级甩灰口；120、机身进风口；130、机身出风口；140、隔板；150、开孔；

[0040] 210、一级旋风筒；211、旋风罩；212、二级旋风筒；213、一级进风风道；214、二级集尘装置；215、挡尘筒；216、二级尘气分离风道；217、二级甩灰口；220、螺旋式尘气分离装置；221、螺旋风叶轮；222、内圆环；223、导向切面；224、挡风板；230、过滤装置；231、螺旋槽；232、进灰主体部；233、灰尘通道。

具体实施方式

[0041] 传统的二级尘气分离结构所需的零部件较多，所牵涉的模具以及组装工序也相对较多且复杂，各个环节的密封难以控制，容易出现漏气漏灰现象而影响整机的综合性能。且以往的二级尘气分离式机身结构为轴向布局，使得其过滤器结构占机身的空间的比率较大，而过多的占用了机身集尘的容积，储灰空间受到限制，且此类二级尘气分离式机身结构需要相对较高较大的机身体积，且其形状不适用于便携式手持吸尘器，使用范围受到限制。

[0042] 本实用新型针对现有技术中的不足，提供了一种具有螺旋式二级龙卷风尘气分离结构的手持式吸尘器，以减少结构的零件数量，简化组装工序，提高整机的综合性能，同时

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有效降低二级分离结构所占用的空间，实现最大的储灰容积，提高集尘效率，尤其是螺旋式二级龙卷风尘气分离结构及尘筒外形设计成贴合手持式吸尘器的外形，适用于手持式吸尘器。

[0043] 下面将通过具体实施方式对本实用新型的技术方案进行清楚、完整地描述。显然，所描述的实施例仅仅是本实用新型一部分实施例，而不是全部的实施例。基于本实用新型中的实施例，本领域普通技术人员在没有作出创造性劳动前提下所获得的所有其他实施例，都属于本实用新型保护的范围。

[0044] 请一并参见图 1 至图 9，一种手持式吸尘器，机身内部设有一容置空间，所述容置空间内设有一螺旋式二级龙卷风尘气分离结构，容置空间内位于所述螺旋式二级龙卷风尘气分离结构异侧的空间构成一级尘筒 110，位于所述螺旋式二级龙卷风尘气分离结构同侧的空间构成该螺旋式二级龙卷风尘气分离结构的一级旋风筒 210。

[0045] 所述螺旋式二级龙卷风尘气分离结构包括一级旋风筒 210、设置于所述一级旋风筒 210 内部的二级旋风筒 212，以及设置于所述一级旋风筒和二级旋风筒之间的旋风罩 211，二级旋风筒与旋风罩的内壁之间设有空隙，该空隙用于形成一级尘气分离后的二级尘气分离风道 216，所述一级旋风筒包括一级甩灰口 111。灰尘空气经进风口进入一级旋风筒内，一级旋风筒 210 与旋风罩 211 对进入一级旋风筒内的初级尘气实施一级尘气分离，灰尘在离心力的作用下由一级甩灰口 111 进入一级尘筒 110 内，一级分离后的低浓度尘气被旋风罩网筛吸入进入二级尘气分离风道 216，在经过螺旋式尘气分离装置后在二级旋风筒的约束下产生二级旋风。

[0046] 其中，旋风罩的上端内侧设置有螺旋槽 231，使得气流在该处旋转产生离心力，方便气流下旋进入螺旋式尘气分离装置内。

[0047] 螺旋式尘气分离装置 220 设置于二级旋风筒 212 的上端筒口，带有灰尘的空气被旋风罩 211 进行第一级尘气分离之后，至少一部分通过二级尘气分离风道 216 引导至螺旋式尘气分离装置 220，并在该螺旋式尘气分离装置的引导下，在二级旋风筒 212 内壁形成向筒底旋转的气流，所述二级旋风筒 212 的下方设有二级集尘装置 214，该二级旋风筒的底部构成该二级集尘装置的顶部，二级旋风筒与二级集尘装置密封连接，或一体成型。

[0048] 在所述二级旋风筒 212 的侧壁靠近底部位置设有一个二级甩灰口 217，同时在靠近二级甩灰口 217 的部位，二级旋风筒 212 的底部中心处向下凸出设计，由此，在空气流动时，二级旋风筒的上部气压大于下部气压，灰尘也由上往下流动，防止了手持式吸尘器在变换姿态使用时的灰尘倒流。二级尘气中的灰尘在离心力带动下下旋至筒底，经该二级甩灰口 217 进入所述二级集尘装置 214 的空间内，旋转气流中的空气被负压抽出，实现第二级尘气分离。

[0049] 螺旋式尘气分离装置 220 包括用于产生二级旋风的螺旋风叶轮 221，螺旋风叶轮 221 设置有若干向下倾斜的叶片，叶片可约束尘气的流动方向倾斜向下俯冲以形成螺旋气流。

[0050] 螺旋式尘气分离装置 220 还包括设置于螺旋风叶轮 221 内圈的内圆环 222，内圆环 222 与螺旋风叶轮 221 的出风口对应的侧壁上设置有若干导向切面 223，导向切面约束尘气流向螺旋风叶轮的外环而开始形成旋转状态。其中螺旋风叶轮的外环圆周上设置有外圆环，通过内、外圆环的作用以实现气流导向、提高螺旋风叶轮的结构强度及稳定性。螺旋风

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叶轮的内圆环壁向下延伸有挡风板 224。

[0051] 二级旋风筒 212 内部设置挡尘筒 215，挡尘筒与二级旋风筒之间设有空隙，该空隙用于形成二级尘气分离风道 216，带尘空气在该二级尘气分离风道内实现螺旋转动以产生离心力使得灰尘沿二级旋风筒的内壁下落。挡尘筒的内侧壁用以约束尘气在该挡尘筒内旋转产生离心力以抵抗负压的吸力，实现尘气的有效分离。

[0052] 所述二级集尘装置包括进灰主体部 232 与灰尘通道 233，所述进灰主体部 232 与灰尘通道 233 之间通过密封圈密封连接，所述灰尘通道 233 可以以机身内侧为侧边，并延伸到机身下部与一级尘筒相抵接，在清理吸尘器内的灰尘时，此时灰尘全部落于一级尘筒与灰尘通道内，抽出螺旋式二级龙卷风尘气分离结构与进灰主体部，进灰主体部 232 与灰尘通道 233 分离，然后倒出灰尘即可。

[0053] 所述机身出风口的上端还包括过滤装置 230，所述过滤装置可为过滤棉，微浓度尘气经机身出风口后通过过滤棉再次进行最终的过滤。

[0054] 其中二级旋风筒与螺旋式尘气分离装置均可为一体加工成型结构，成型后将螺旋式尘气分离装置直接安装于二级旋风筒的中心位置处即可完成装配。具体成型方式不做限制。

[0055] 此外，螺旋式二级龙卷风尘气分离结构也可直接一体加工成型，具体成型装配方式不做限制。

[0056] 本实用新型，一种手持式吸尘器，机身 100 内部设有一容置空间，容置空间内设有一螺旋式二级龙卷风尘气分离结构，容置空间内位于所述螺旋式二级龙卷风尘气分离结构异侧的空间构成一级尘筒 110，位于所述螺旋式二级龙卷风尘气分离结构同侧的空间构成该螺旋式二级龙卷风尘气分离结构的一级旋风筒 210，所述螺旋式二级龙卷风尘气分离结构包括一级旋风筒 210、设置于所述一级旋风筒 210 内部的二级旋风筒 212，以及设置于所述一级旋风筒和二级旋风筒之间的旋风罩 211。机身的下部设有进风口 120，机身上侧设有出风口 130，带尘空气通过该进风口引导至二级尘气分离结构的旋风罩处，该带尘空气被旋风罩 211 进行第一级尘气分离后，至少一部分通过该旋风罩后进入二级旋风筒 212 进行第二级尘气分离。

[0057] 其中，螺旋风叶轮 221 的总体进风面积小于机身出风面积，使得在同风量的情况下能拥有更高的旋转速度来抵抗负压的吸力。

[0058] 机身内侧设置有隔板 140，隔板中心处向下延伸有开孔 150，经二级尘气分离后的空气被负压抽出。通过设置隔板将旋风罩的上端遮挡住，这样经旋风罩过滤后的尘气会由二级尘气分离风道上端导向进入螺旋式尘气分离装置内，实现进风导向。其中隔板的中部呈向下倾斜的弧形结构，便于尘气的移动导向。

[0059] 本实用新型公开了一种手持式吸尘器，该吸尘器包括螺旋式二级龙卷风尘气分离结构、一级尘筒，该螺旋式二级龙卷风尘气分离结构仅包括一级旋风筒、二级旋风筒、旋风罩与螺旋式尘气分离装置，就可实现对尘气的过滤分离，有效减少了结构的零部件数量，简化了组装工序，便于提高整机的综合性能。同时该螺旋式二级龙卷风尘气分离结构体积较小，可有效降低二级分离结构所占用的空间，实现最大的储灰容积，提高集尘效率，尤其适用于手持式吸尘器。另外，二级集尘装置直接延伸至机身底部，同时以机身内侧为侧边，节省材料，方便倒灰。

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[0060] 对所公开的实施例的上述说明，使本领域专业技术人员能够实现或使用本实用新型。对这些实施例的多种修改对本领域的专业技术人员来说将是显而易见的，本文中所定义的一般原理可以在不脱离本实用新型的精神或范围的情况下，在其它实施例中实现。因此，本实用新型将不会被限制于本文所示的这些实施例，而是要符合与本文所公开的原理和新颖特点相一致的最宽的范围。

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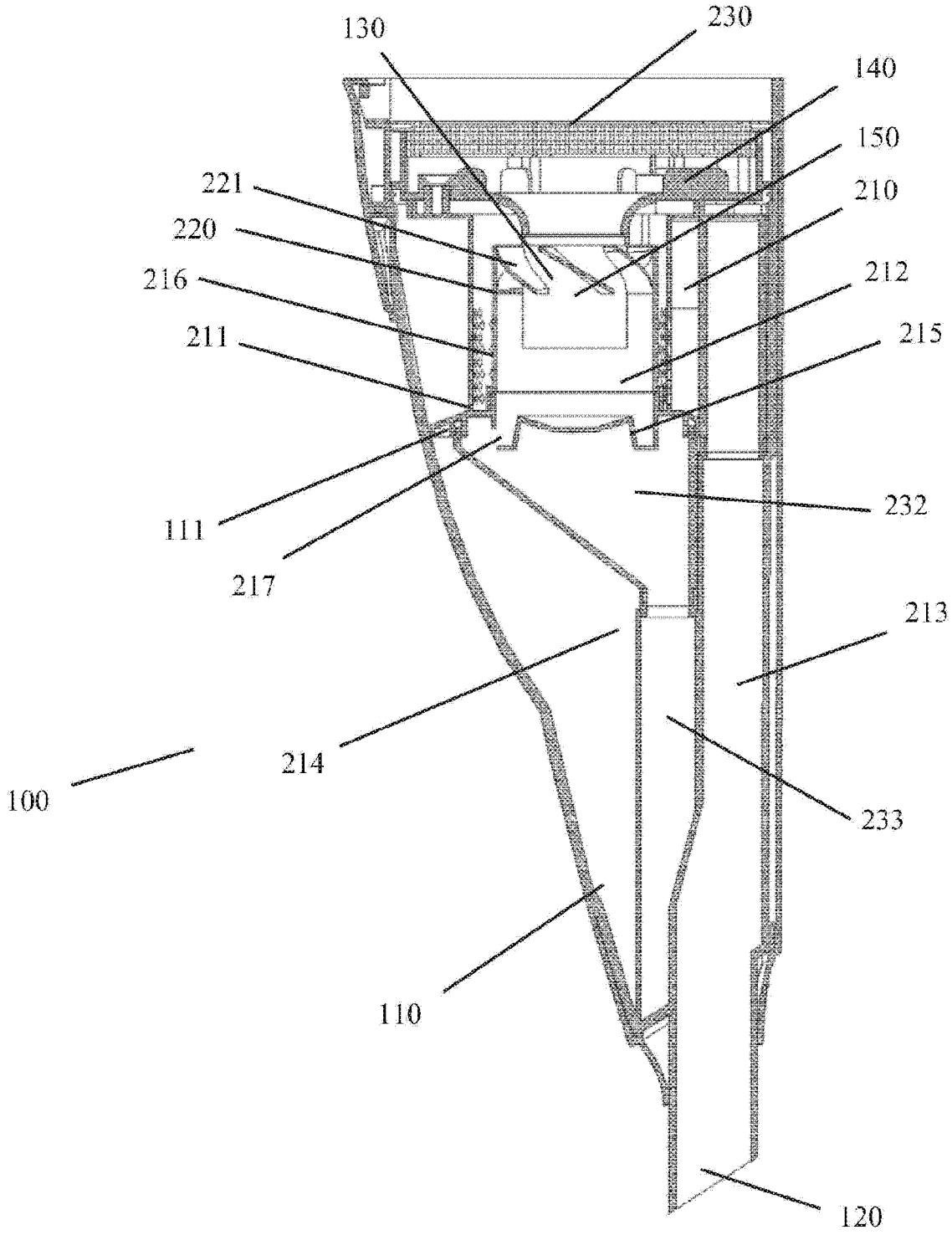

图 1

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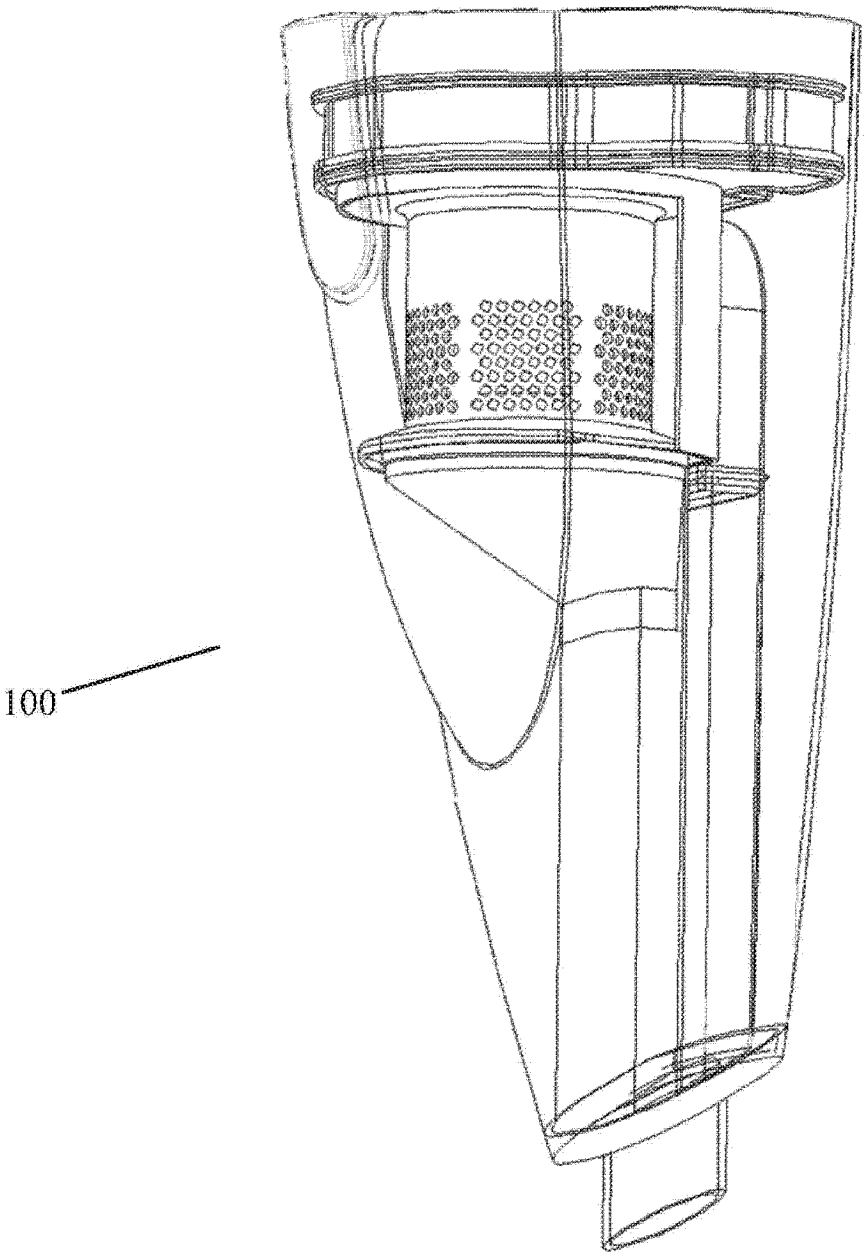

图 2

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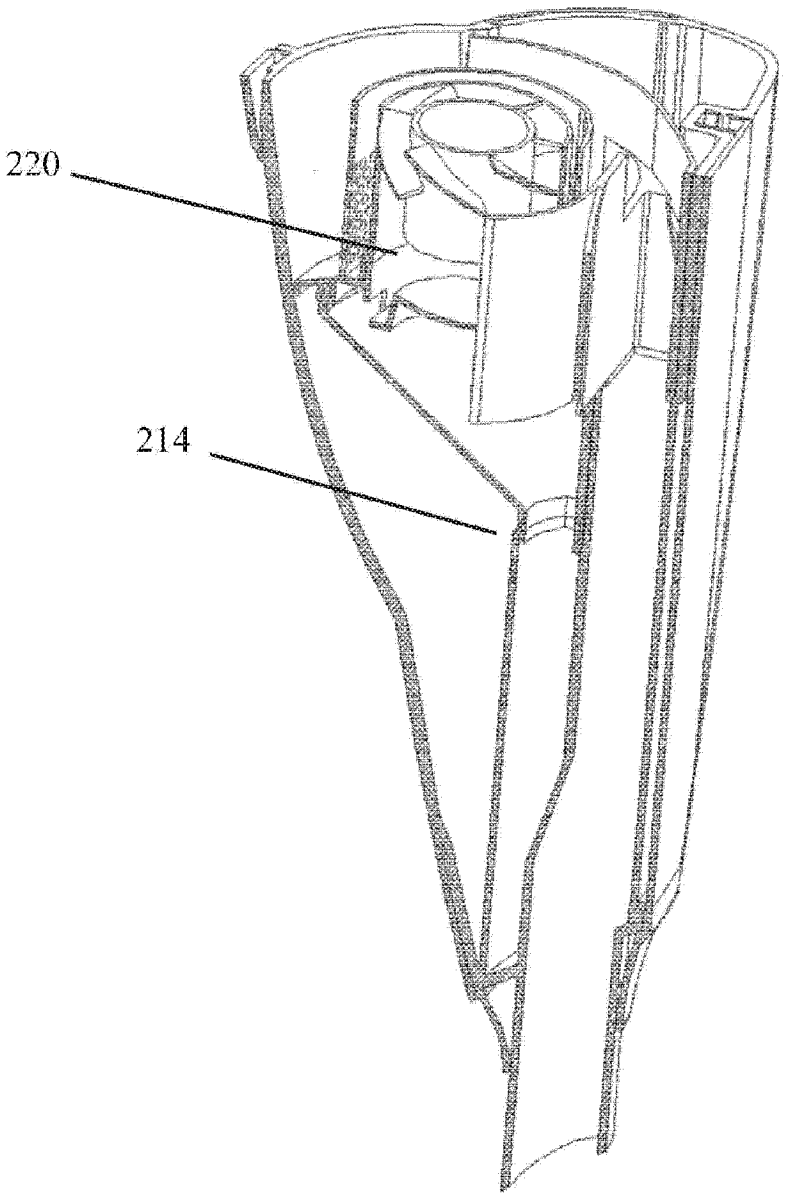

图 3

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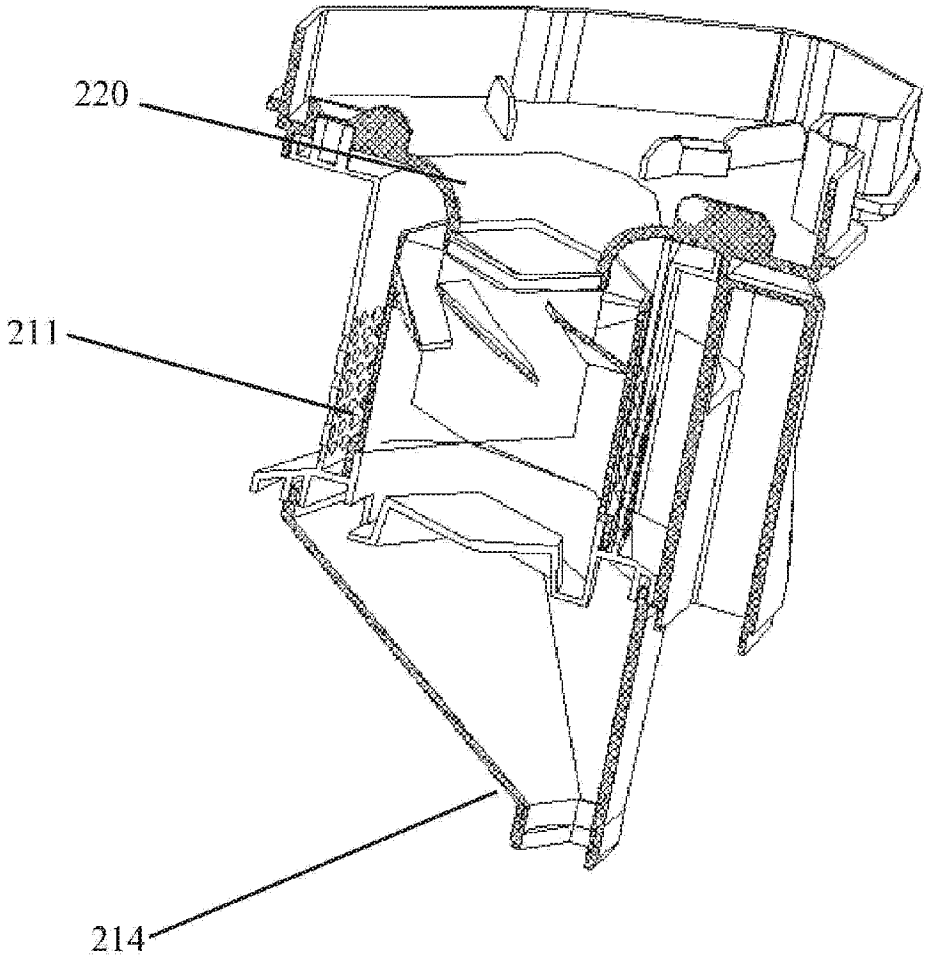

图 4

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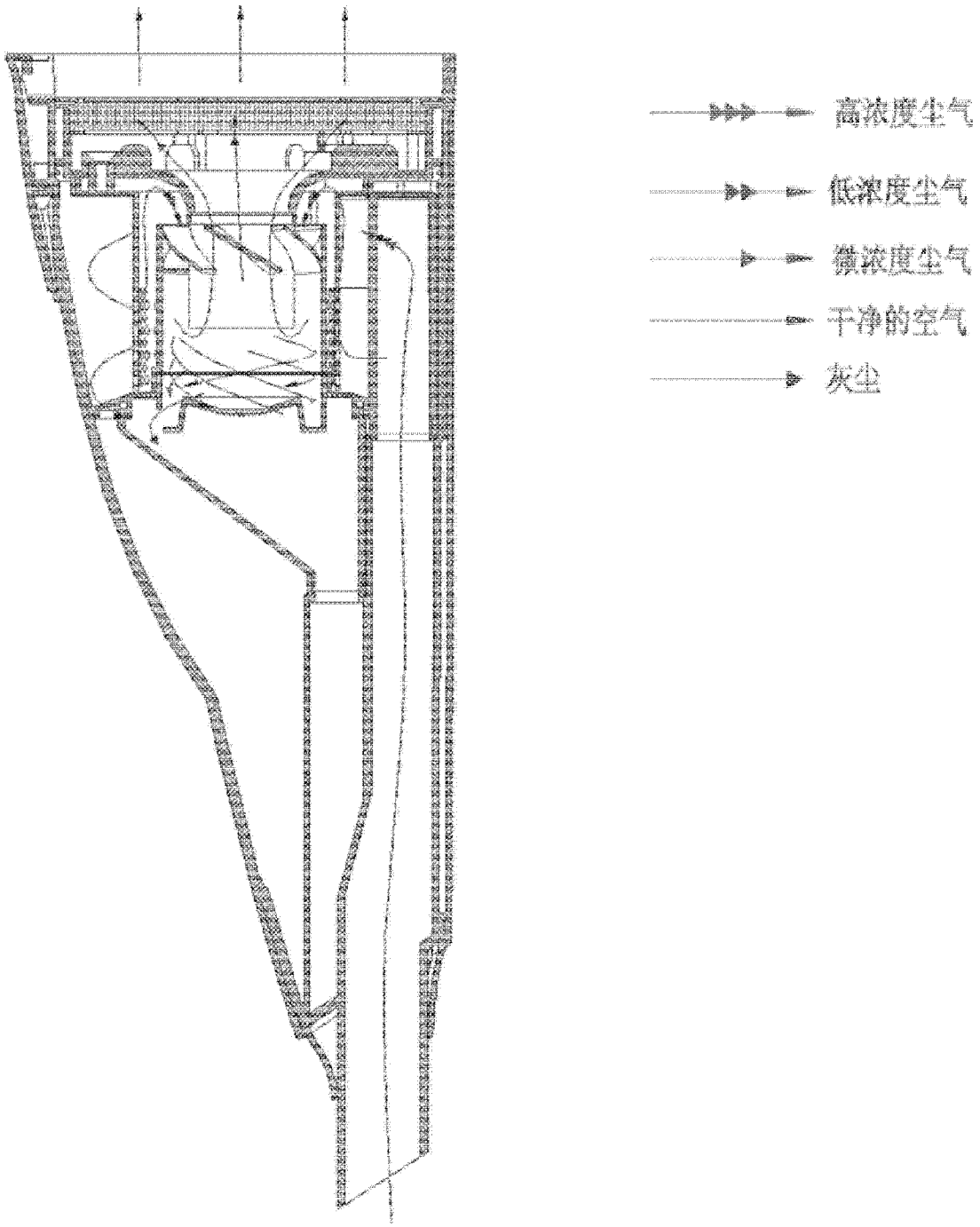

图 5

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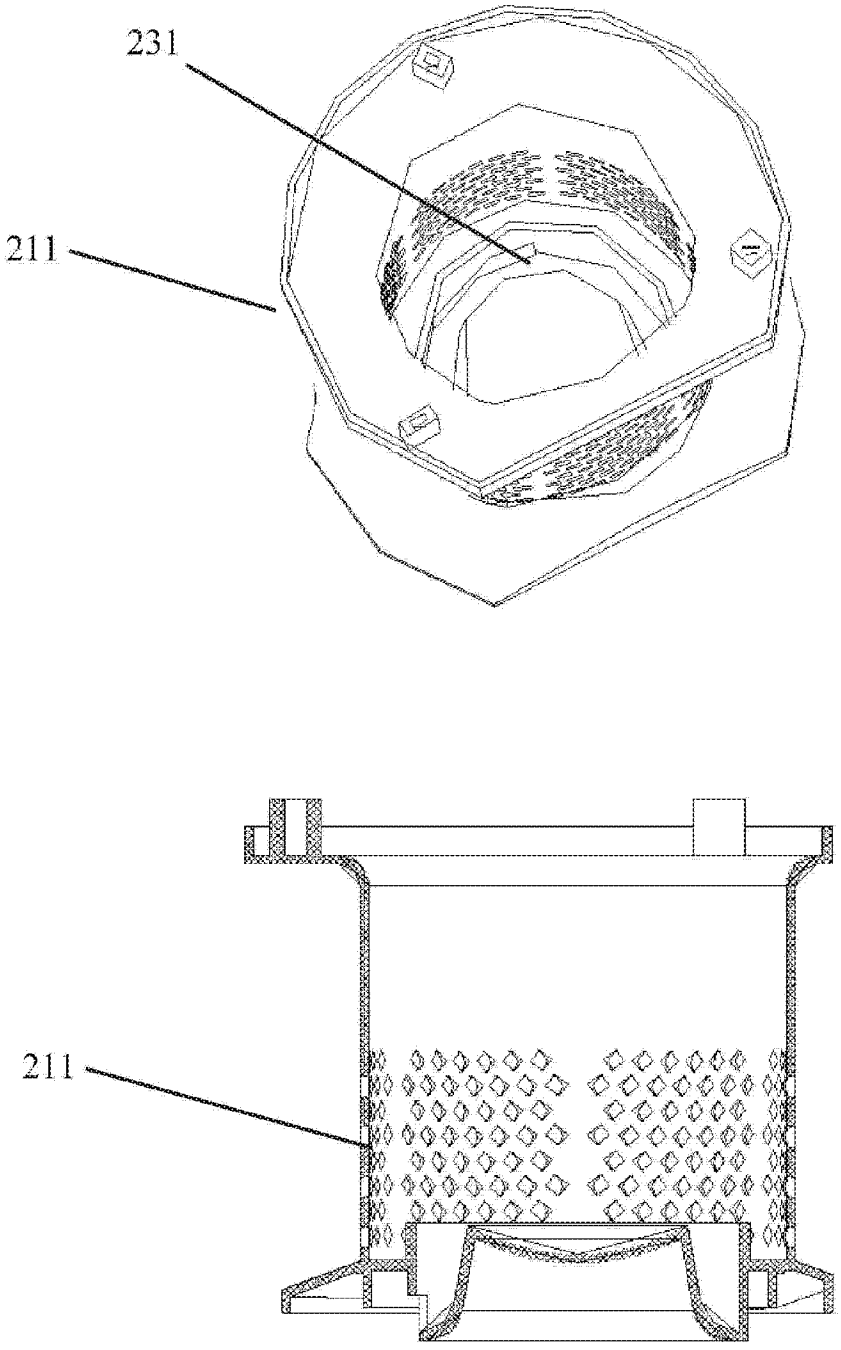

图 6

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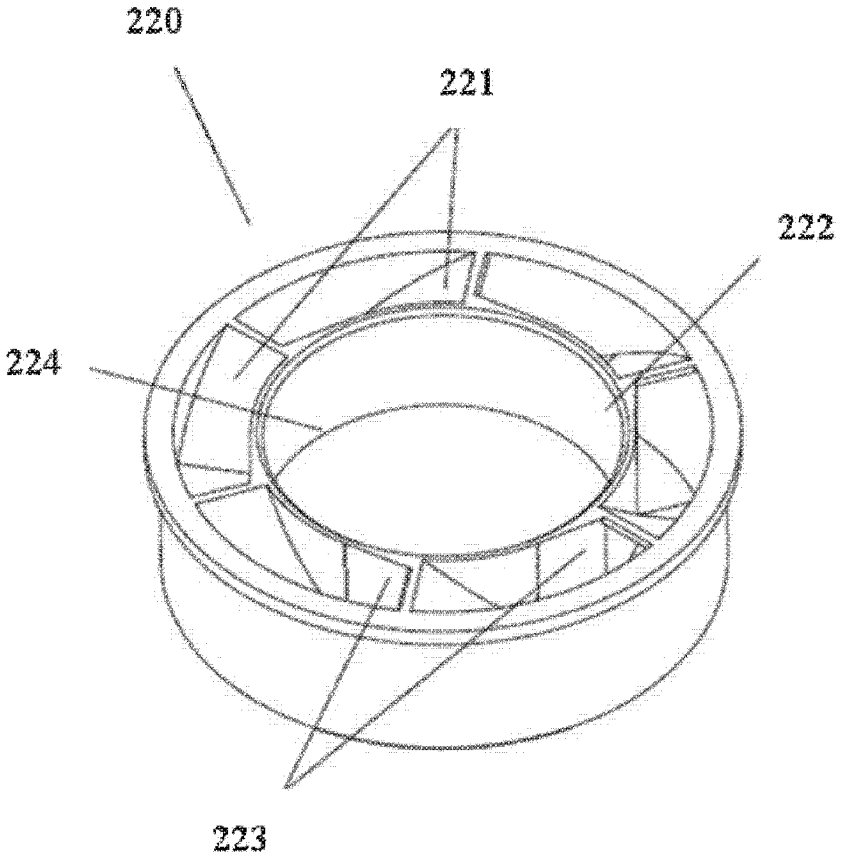

图 7

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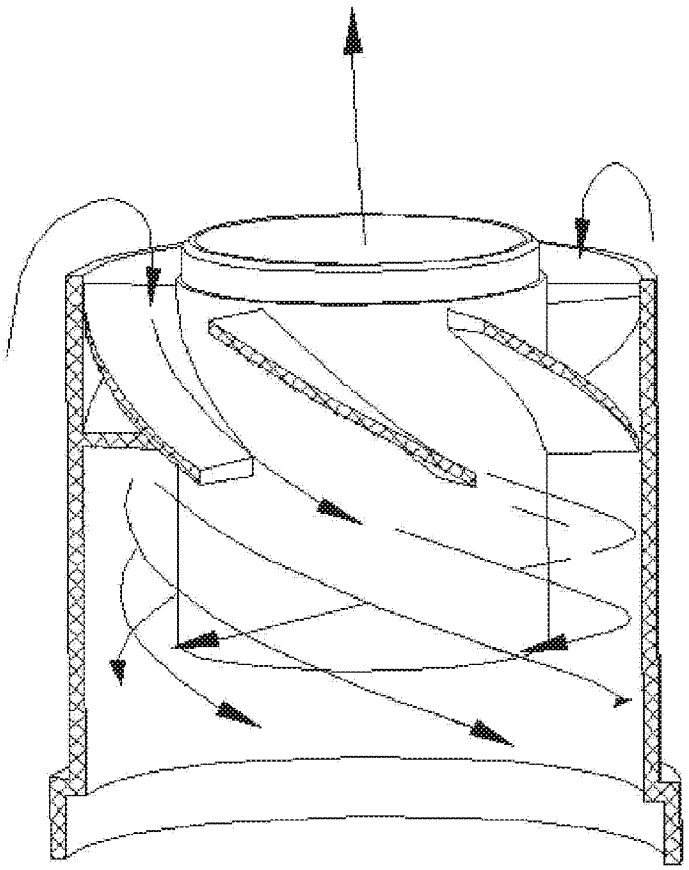

图 8

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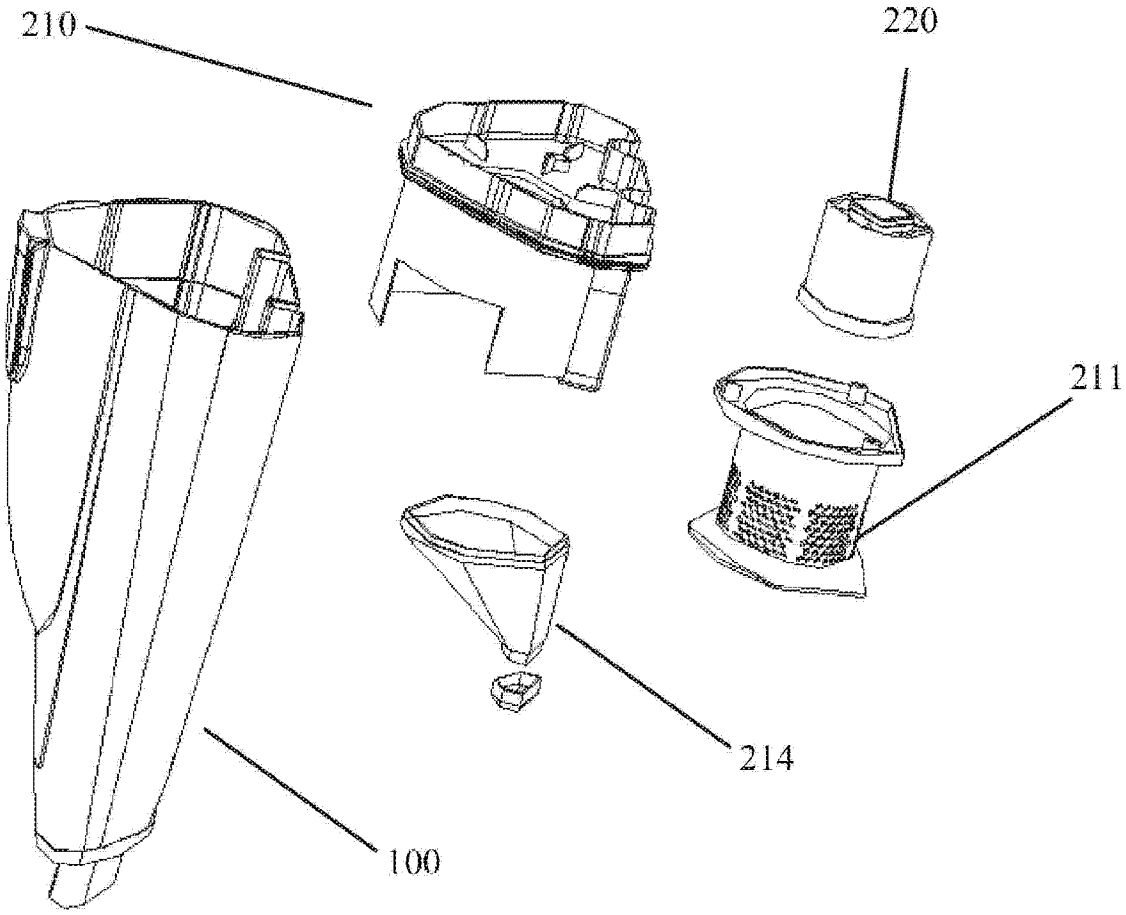

图 9

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Handheld dust collector with spiral two-level tornado dust-air separation structure

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Inventor(s):	NI ZUGEN ±
Applicant(s):	KINGCLEAN ELECTRIC CO LTD ±
Classification:	- international: ***A47L9/10; A47L9/16***
	- cooperative:
Application number:	CN20151313317 20150609
Priority number(s):	CN20151313317 20150609

Abstract of CN104840152 (A)

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The invention discloses a handheld dust collector, which is characterized in that a body of the dust collector is internally provided with the spiral two-level tornado dust-air separation structure and a one-level dust cylinder, wherein the spiral two-level tornado dust-air separation structure comprises a first-level cyclone cylinder, a second-level cyclone cylinder, a spiral gas-air separation device arranged at the upper end of the second-level cyclone cylinder and a cyclone cover. The first-level cyclone cylinder and the cyclone cover carry out first-level gas-air separation on primary dust-air getting into the spiral two-level tornado dust-air separation structure, and separated two-level dust-air gets into the second-level cyclone cylinder to receive second-level dust-air separation. The dust collector disclosed by the invention is small in number of components, simple in assembling procedure and high in comprehensive performance of the complete machine. Meanwhile, the spiral two-level tornado dust-air separation structure is small in size, can effectively reduce the space of the machine body, and realizes the maximum dust storage volume.

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DESCRIPTION CN104840152

The present invention discloses a hand-held vacuum cleaner, vacuum cleaner inside the fuselage has a spiral two tornadoes dust and gas separation structure and a dust tube, screw two tornadoes dust and gas separation structure comprising a cyclone and secondary cyclone provided at the upper end of two spiral cyclone dust and gas separation plant, as well as cyclone cover. A cyclone and the cyclone cover enter the spiral of dust and gas separation structure tornado two primary embodiment of a dust gas dust and gas separation, gas separation after two dust into the secondary cyclone for secondary dust and gas separation. The vacuum cleaner small number of components, the assembly process is simple, high machine's overall performance. Meanwhile two spiral tornado dust and gas separation structure smaller, the body can effectively reduce the space for maximum storage volume of ash.

Having two spiral tornado dust and gas separation structure handheld vacuum cleaner

TECHNICAL FIELD

The present invention belongs to the field of manufacturing technology of the vacuum cleaner, in particular to a spiral having two Tornado dust and gas separation structure handheld vacuum cleaner.

Background technique

Vacuum cleaner as a daily necessities, widely used in indoor and outdoor cleaning. Lee is a vacuum cleaner High-speed rotary motor driven blade, resulting in negative air pressure within the sealed housing, so that the dust inhalation Dust collector, and the filtered air at high velocity exhaust fan cleaning appliances, vacuum cleaners According to their functional classification including dry cleaners and wet and dry vacuum cleaners, dry cleaners generally include dust bag Style and body type, vacuum cleaner according to the shape classification, can be divided into horizontal, vertical, hand-held vacuum cleaners, hand Held vacuum cleaner easy to clean walls, sofa, window sills, table tops, appliances and other items.

Handheld existing dust and gas separation mode cleaner parts mostly by a centrifugal separator module Type or dust bag filter mode, a low filtration efficiency of the two separate modes and prone to clogging.

Existing two separate body, generally it includes two dust and gas separation structure, the structure for the first stage Large air filter dirt, the second-stage structure for the separation of small dust particles collected and other debris, Traditional secondary dust and gas separation structure generally through the filter cover and the body is provided with a plurality of rotary cyclone port Wind form secondary cyclone body fit, so the structure of the components needed are more involved and mold Assembly process is relatively large and complex, difficult to control all aspects of the seal, prone to leak ash leakage And affect the machine's overall performance.

China Patent Document CN200520102558.7, discloses an integrated two separate vacuum cleaner Fuselage, the fuselage structure axial layout, the dust removal device inside and outside the tube axially arranged, and up To dust and gas separation purposes, however, such a design, part number, two dust cartridge in a dust Barrel, the space occupied by a dust tube, excessive volume occupied by the body of dust, ash storage space is To limit the gray smoke effect is greatly affected, and smaller two return air area, resulting in a low overall amount of wind. Simultaneously Such two separate dust and gas fuselage structure requires a relatively high larger body size, and the shape does not apply For portable hand-held vacuum cleaner, use is limited in scope. Further, since the flexible hand-held vacuum cleaner Strong orientation change at any time at work, the existing structure of the fuselage

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dust easily back.

In view of the above problems, it is necessary to propose a novel with two spiral tornado dust and gas separation Handheld vacuum cleaner structure, reducing the number of parts of the structure, simplify the assembly process, improve machine Fully Sealing properties, while effectively reducing the two-separated structure space occupied by the body to achieve maximum storage capacity of ash Product, improve dust collection efficiency, and effectively prevent the backflow of dust.

SUMMARY

In view of this, the present invention provides a spiral having two cyclone dust and gas separation structure hand Held vacuum cleaners, hand-held vacuum cleaner inside the fuselage has a spiral two tornadoes dust and gas separation structure, Shape fit hand-held vacuum cleaner, small number of parts, the assembly process is simple, to improve the overall performance of the machine, While effectively reducing the two-separated structure of space occupied by the body to achieve maximum ash storage volume increase Dust collection efficiency, and effectively prevent the backflow of dust.

A hand-held vacuum cleaner according to the object of the present invention proposes, the internal body is provided with a receiving space The accommodating space features a spiral two tornadoes dust and gas separation structure, located within the receiving space Said two spiral tornado dust and gas separation structure constituted an opposite side of the space dust barrel, the spiral is located Grade II Tornado dust and gas separation structure on the same side of the space constituting the two spiral tornado dust and gas separation knot Structure of a cyclone.

Preferably, the two spiral tornado dust and gas separation structure, including a cyclone provided A cyclone in the internal secondary cyclone, spiral set in two cyclone dust and gas of the upper end Separation device, and set a cyclone in the cyclone and secondary cyclone cover between the two With a gap between the inner wall of the cyclone and the cyclone stage cover, the space for forming a dust and gas separation After the separation of dust and gas secondary air duct, a cyclone and the cyclone dust cover tc enter the two-gas separator Primary dust and gas apparatus embodiment of a dust and gas separation, gas separation after two dust into the secondary cyclone feed Line two dust and gas separation.

Preferably, the hand-held vacuum cleaner includes a main body inlet, including one said a cyclone Rejection of gray dust from the cyclone body inlet into a cylinder, to achieve a separation of dust and gas, dust Under the effect of centrifugal force thrown a gray dust enters a cylinder.

Below said secondary cyclone dust collecting device is preferably provided with two, at the end of the two cyclones The top of the two portions constituting the dust collecting means, said secondary side wall near the bottom of the cyclone position with A rejection of twc gray.

Preferably, the two body into the ash collector, including a passage portion and the dust, the dust passageway extends To the bottom of the main cylinder and a dust abut main body portion and into the gray dust seal channel connection or integrally formed.

Preferably, the body portion into the ash or dust or both channels, at least in part to the inside of the fuselage Side, or the formation of an independent secondary dust collection space.

Preferably, the two cyclone bottcm center downwardly convex design tc prevent dust back.

Preferably, the set is provided between the internal cylinder block dust, dust-cylinder with the secondary cyclone said secondary cyclone There is a gap, the gap for the formation of secondary dust and gas separation duct, blocking the dust barrel inner wall for confinement Dust and gas in the cylinder block dust rotating centrifugal force to resist negative pressure suction.

After Preferably, the air with dust cover is a first-stage cyclone dust and gas separation, at least one Points tc guide the spiral dust and gas separation apparatus thrcugh the secondary separation cf dust and gas duct and the spiral dust gas separation From the lower guide means in the secondary cyclone is formed tc the inner wall of the cylinder bottom rotating gas stream of ash Dust spin to the bottom of the barrel, driven by centrifugal force and collected in the secondary dust collection space, whirling airflow in the air Negative pressure gas is withdrawn at the outlet of two spiral tornado dust and gas separation structure, realize the second stage dust and gas Separation.

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Preferably, the upper end of the body of the outlet means 230 also includes a filter, the filter device may Of cotton filters, micro dust and gas concentration by the body after the outlet for final filtered through a cotton filter.

Preferably, the spiral means comprises a dust separator gas for generating the secondary cyclone spiral wind impeller, The spiral downward wind impeller provided with a plurality of blades, the blade to bind dust and gas flow direction Swoop down to tilt.

Preferably, the spiral dust separating apparatus further comprises a gas disposed in the inner ring of the spiral wind impeller inner circle, is provided on the outlet side wall corresponding to the inner ring and a plurality of the spiral wind impeller guide Section to the guide section constraint dust stream to spiral wind impeller rotating outer ring and begins to form a state.

Preferably, the overall spiral wind impeller inlet area of less than two spiral tornado dust gas separation From the structure of the area out of the wind, so that the centrifugal force generated by the rotation enough to resist negative pressure suction.

Compared with the prior art, the advantages of a hand-held vacuum cleaner of the present invention is disclosed:

Using two spiral tornado dust and gas separation structure, relative to the previous model can improve the filtration of dust Efficiency and reduce structural components, simplifying the assembly process and improve the overall performance of the machine.

The dust and gas separation structure is smaller, can effectively reduce the structural separation of space occupied by the body, in fact, Now the largest ash storage volume, improve dust collection efficiency.

The two spiral tornado dust and gas separation structure and dust cylinder shape is designed to fit the hand-held vacuum cleaner Shape, suitable for hand-held vacuum cleaner.

The two bottom center of the cyclone is designed to protrude downward so that dust is not easy to turn the clock back.

Two dust collector extends directly to the bottom of the fuselage, while a portion of the medial side of the fuselage, festival Saving materials, easy to ashes.

The upper end of the outlet in the body further comprises filter means, serve to prevent the dust from the outlet for pouring Used to achieve the final filter.

BRIEF DESCRIPTION

In order to more clearly illustrate the embodiments or the prior art technical solutions embodiment of the present invention, the following will be real Embodiments or drawings as described in the prior art requires the use of a brief introduction, below. Apparently, The drawings described are only some embodiments of the present invention, the person of ordinary skill in this art, Without creative efforts premise, you can also obtain other drawings based on these drawings.

Figure 1 is a cross-sectional view of the internal structure of the fuselage.

Figure 2 is an external view of the whole body

Figure 3 shows the internal structure of the fuselage.

Figure 4 is a two cyclone dust collector with two schematic.

Figure 5 is a body airflow to FIG.

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Figure 6 is a cyclone cover exterior and interior perspective

7 is a schematic view of the structure of spiral dust and gas separation apparatus.

Figure 8 is a spiral dust and gas separation means the airflow in the schematic.

Figure 9 is an exploded diagram of the fuselage.

Reference numerals and components involved in the description:

[100]

100、Body; 110, a dust tube; 111, a rejection of gray; 120, fuselage air inlet; 130, Body outlet; 140, a separator; 150, opening;

[233]

210、A cyclone; 211 cyclone cover; 212, second cyclone; 213, an intake air damper Road; 214 secondary dust collector; 215, block dust drum; 216, two separate dust and gas duct; 217, di Rejection level gray; 220, spiral dust and gas separation apparatus; 221, spiral wind impeller; 222, inner ring; 223, The guide section; 224, the windshield; 230, a filter device; 231, spiral grooves; 232, into the gray body portion; 233、Dust channel.

detailed description

Traditional secondary dust and gas separation structure required parts are more involved and mold assembly station Sequence is also relatively high and compiex, difficult to control all aspects of the seal, ash leakage phenomenon prone to leakage and Affect the overall performance of the machine. And the previous secondary dust and gas separation fuselage structure for the axial layout making its filter structure accounted for a larger proportion of body space, and exoessive volume occupied by the body of dust, Ash storage space is limited, and such two separate dust and gas fuselage structure requires a relatively high larger machine Physical product, and its shape is not available for portable hand-held vacuum cleaner, use is limited in scope.

The present invention addresses deficiencies in the prior art, provides a spiral having two cyclone dust and gas Handheld vacuum cleaner separation structure in order to reduce the number of parts of the structure, simplify the assembly process, improve the whole Comprehensive performance machine, while effectively reducing second separated the space occupied by the structure, to achieve maximum ash storage Volume, improve dust collection efficiency, especially spiral two tornadoes dust and gas separation structure and dust cylinder shape provided Count to fit the shape of a hand-held vacuum cleaner is suitable for hand-held vacuum cleaner.

Will adopt specific embodiments of the aspect of the present invention will be clear and complete description. Obviously, the described embodiments are merely part of embodiments of the present invention, but not all embodiments. Based on the next embodiment of the present invention, those of ordinary skill without making creative efforts All other embodiments obtained, are within the scope of the present invention is protected.

Please also refer to Figures 1 to 9, a hand-held vacuum cleaner, inside the fuselage has a receiving space The accommodating space features a spiral two tornadoes dust and gas separation structure, located within the receiving space Said two spiral tornado dust and gas separation structure opposite side of the space constitute a dust tube 110, located in the spiro Tornado dust and gas rotating two separate structures on the same side of the space constituting the two spiral tornado dust and gas separation A cyclone 210 structures.

The two spiral tornado dust and gas separation structure comprises a cyclone 210 provided in the pair Stage cyclone 210 internal secondary cyclone 212, and set a cyclone in the cyclone and secondary Tube between the cyclone cover 211, a gap is provided between the inner wall of the two cyclones and cyclone cover the gap for Formation of secondary dust and gas a dust and gas separation after separation duct 216, which includes a rejection of a cyclone ash Port 111. Dust and air through the inlet into a cyclone barrel, a cyclone and the cyclone cover 210 211 Enter a whirlwind of dust and gas cylinder primary embodiment of the centrifugal force of a dust and gas separation dust A rejection by the gray dust 111 into a cylinder 110, a low concentration of dust and gas are separated cyclone cover Mesh inhaled dust and gas into the secondary separation duct 216, after a spiral dust spin-gas separator in the secondary By generating the secondary cyclone duct constraints.

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Wherein the upper end of the cyclone cover provided inside the helical groove 231, such that the airflow generated from rotation where Effort, airflow conveniently screwed into the spiral gas dust separation apparatus.

Spiral dust and gas separation apparatus 220 is provided on the upper end of the tube mouth two cyclones 212 with dust After the air is a first-stage cyclone dust cover 211 gas separation, at least a portion of the gas separation through the secondary dust Boot from the duct 216 to the spiral dust and gas separation apparatus 220, and lead dust and gas in the spiral separation unit Under the guidance of, the inner wall 212 is formed to two cyclone rotating cylinder bottom stream, said secondary cyclone 212 The bottom has two dust-collecting device 214, the bottom of the two cyclone dust collector constitute two of the top Section, two cyclone dust collector with two tight connection, or integrally formed.

In the side walls of the two cyclones 212 near the bottom position with a two thrown 217 gray, with When dumped near two gray parts 217, two at the bottom center of the cyclone 212 provided projecting downward Meter, whereby the air flow, the upper two cyclone pressure is greater than the lower part of the pressure, but also by the dust The flow down to prevent the hand-held vacuum cleaner when changing posture using dust back. Two dust and gas Dust backspin to the bottom of the cylinder driven by centrifugal force, the rejection of the two gray 217 into the two sets Space dust means 214, whirling airflow in the suction air is drawn out of the second stage to achieve separation of dust and gas.

Spiral dust and gas separation apparatus 220 includes means for generating the secondary cyclone wind spiral impeller 221, spiral Wind impeller 221 is provided with a plurality of downwardly inclined blades which can constrain the flow direction of the dust and gas inclined to Dive under to form a swirl flow.

[222]

Spiral dust and gas separation apparatus 220 further includes a spiral wind impeller 221 within the inner ring 222. The inner ring 222 and disposed on the wind impeller outlet corresponding side wall 221 has several spiral-cut guide Surface 223, the guide section constraint dust stream to spiral wind impeller rotating outer ring and begins to form a state. among them Provided on the outer circumference of the spiral wind impeller outer ring by the action of the inner and outer ring to achieve the airflow Guide and improve the structural strength and stability of the wind spiral impeller. Inner annular wall extended downward spiral wind impeller There are 224 extending wind deflector.

212 set inside two cyclone dust-cylinder 215 with a gap between the cylinder block with the secondary cyclone dust, The gap for the formation of secondary dust and gas separation duct 216, with dust in the air inside the two solid-gas separation dust duct Now screw is rotated to generate a centrifugal force so that dust along the inner wall of the whereabouts of two cyclones. Dust the inside of the barrel Wall for restricting dust and gas in the cylinder block dust rotating centrifugal force to resist negative pressure suction, dust and gas realization Effective separation.

[232]

Said secondary dust collector includes a main body portion 232 and into the gray dust channel 233, the main body portion into the gray 232Tight connection between the dust channel 233 and through the ring, the dust channel 233 can body The inside of the side, and extends to the lower body and a dust tube abut, clean up the dust in the vacuum cleaner When, at this time all the dust fall within one of dust and dirt tube channel, two tornado spiral out of dust and gas Separating structure and into the gray body portion, the body portion 232 and into the gray dust separation channel 233, then poured ash Dust can be.

The body further comprises an upper outlet filter means 230, the filter device may be a filter cotton, Micro dust and gas concentration by the body after the outlet for final again filtered through a cotton filter.

Wherein two cyclones and spiral dust and gas separation device can be integrally molding structure, forming Center position after spiraling dust-gas separation device is directly attached to the two cyclones to complete the installation Hotels. Specific molding methods not limited.

In addition, two spiral tornado dust and gas separation structure can also be directly integrated molding process, in particular to Type assembly methods not limited.

The present invention, a hand-held vacuum cleaner, inside the body 100 is provided with a receiving space, housing space Equipped with a helical two tornadoes dust and gas separation structure, located in the receiving space of the spiral two Tornado space dust and gas separation structure opposite side constitute a dust tube 110, located in the spiral two tornadoes A spin-gas dust separation structure on

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the same side of the space constituting the two spiral tornado dust and gas separation structure Duct 210, the two spiral tornado dust and gas separation structure comprises a cyclone 210 provided in The one cyclone 210 internal secondary cyclone 212, and set in a cyclone and the two Cyclones between stage cyclone cover 211. Lower body is provided with air inlet 120, body side is provided with the wind Port 130, through which dust laden air is guided to the inlet cyclone dust cover at two gas separation structure, the tape dust Air is the first stage cyclone dust cover 211 separated gas, through at least a portion of the rear cover into the cyclone Two cyclone 212 second level dust and gas separation.

Among them, the overall spiral wind impeller inlet area 221 is smaller than the area of the body out of the wind, so that with the wind Under the circumstances the amount of energy has a higher rotational speed to resist negative pressure suction.

The inside of the body is provided with a partition plate 140 extends downwardly at the center of the partition with an opening 150, the two dust and gas Air separated by vacuum extraction. By setting the upper end of the cyclone separator cover obscured, so after a spin Dust and gas hood filtered dust and gas will be separated by the two upper guide duct into the spiral gas dust separation apparatus inside, the air intake guide realization. Wherein the central separator was downwardly curved structure, easy to dust and gas shift Movable guide

The present invention discloses a hand-held vacuum cleaner, the cleaner comprises two spiral tornado dust and gas Separated structure, a dust canister, the two spiral tornado dust and gas separation structure comprises only one cyclone, Two cyclone, cyclone dust cover and spiral air separation unit, the separation can be achieved by filtration of dust and gas, Effectively reducing the number of parts of the structure, it simplifies the assembly process, easy to improve the overall performance of the machine. Meanwhile, the two spiral tornado dust and gas separation structure smaller, can effectively reduce the two-separated structure Occupied space and the largest ash storage volume, improve dust collection efficiency, especially for handheld suction Dust. In addition, two dust collector extends directly to the bottom of the fuselage, while the inside of the fuselage side, Material savings, convenience ashes.

The above description of the disclosed embodiments, so that the skilled in the art to make or use this invention. These various modifications to the field of professional and technical personnel who embodiments will be apparent See, the general principles defined herein may be made without departing from the spirit or scope of the present invention, Implemented in other embodiments. Accordingly, the present invention will not be limited to these embodiments shown herein, But to comply consistent with the principles disclosed herein, and novel features of the widest range.

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CLAIMS CN104840152

[1]

1. A hand-held vacuum cleaner, characterized in that: the hand-held vacuum cleaner with a body inside A receiving space of the receiving space features a spiral two tornadoes dust and gas separation structure, accommodating Located in the two spiral tornado dust and gas separation structure opposite side of the space dust constitutes a cylinder space, Located in the two spiral tornado dust and gas separation structure on the same side of the space constituting the spiral two tornadoes A cyclone dust gas separation structure.

[2]

2. 1 of the hand-held vacuum cleaner as claimed in claim wherein: the spiral two tornadoes Dust gas separation structure, including a cyclone, a cyclone disposed in the interior secondary cyclone Tube provided in the upper end of two spiral cyclone dust and gas separation plant, and set to the first hydrocyclone Duct between cyclone and secondary cyclone cover between the inner wall of said secondary cyclone and the cyclone cover With a gap, the gap for the formation of a dust and gas separation dust after two separate air duct, said a Cyclone with cyclone cover enter the spiral of dust and gas separation structure tornado two primary embodiment of dust and gas A dust and gas separation, gas separation after two dust into the secondary cyclone for secondary dust and gas separation.

[3]

3. Hand-held vacuum cleaner according to claim 2, wherein: the hand-held vacuum cleaner Includes a main body inlet, the cyclone include a rejection of a gray dust from the air inlet into the body A cyclone barrel to achieve a separation of dust and gas, dust under the effect of centrifugal force into a rejection by the gray Dust into a cylinder.

[4]

4. Hand-held vacuum cleaner according to claim 2, wherein: said secondary cyclone Two dust collector is provided below the bottom of the two cyclones constituting the top of the two dust collector, In the side walls of the two cyclones near the bottom position with a two thrown gray.

[5]

5. Handheld vacuum cleaner according to claim 4, characterized in that: said two dust collecting means Includes a body portion and into the gray dust passage, dust passage extends to the bottom of the host and a dust tube abut, Ash and dust into the main body portion of the seal channel is connected to the inside of the dust passage fuselage side, or leaning On the inside of the fuselage and dust to form an independent channel.

[6]

6. Hand-held vacuum cleaner according to claim 4, wherein: said secondary cyclone Bottom center of the downwardly convex design.

[7]

7. Handheld vacuum cleaner according to claim 4, characterized in that: the dust laden air is A first stage cyclone dust cover gas separation after at least a portion of the gas through the secondary dust separation duct directed to Spiral dust and gas separation plant, and under the guidance of the spiral dust and gas separation plant in the secondary cyclone The bottom wall to form a cylinder rotating gas

stream in the dust in the centrifugal force driven to spin the cylinder and the bottom Dust is collected in the secondary space, the rotation of the gas stream of air is drawn negative spiral two tornadoes The outlet dust and gas separation structure, realize the second stage separation of dust and gas.

[8]

8. Handheld vacuum cleaner as claimed in claim 7, wherein: the body of the outlet After filtration device further comprises an upper end, said filter means is a filter cotton, micro dust and gas concentration by outlet through Cotton filters for final filtration.

[9]

9. Hand-held vacuum cleaner according to claim 2, wherein: the spiral dust gas separation Off means comprises means for generating the secondary cyclone wind spiral impeller, the impeller is provided with a plurality of helical wind to inclined blade, the blade to bind dust and gas flow direction obliquely downward dive.

[10]

10. Handheld vacuum cleaner as claimed in claim 9, wherein. the spiral dust and gas Separation means further comprises a ring disposed within the inner ring of the spiral wind impeller, the inner ring and the screw Provided on the corresponding side walls of the cyclone outlet impeller has several guide section, the guide section constraint dust Airflow to the wind spiral impeller rotating outer ring and begins to form a state.

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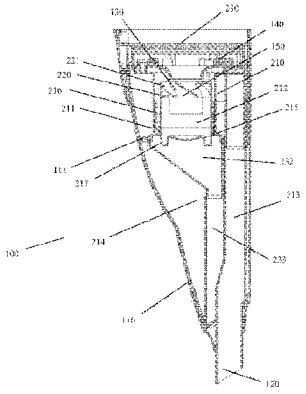
(54)发明名称

一种具有螺旋式二级龙卷风尘气分离结构的手持式吸尘器

(57)摘要

本发明公开了一种手持式吸尘器，吸尘器机身内部设有一螺旋式二级龙卷风尘气分离结构及一级尘筒，螺旋式二级龙卷风尘气分离结构包括一级旋风筒、二级旋风筒、设置于二级旋风筒上端的螺旋式尘气分离装置，以及旋风罩。一级旋风筒与旋风罩对进入螺旋式二级龙卷风尘气分离结构的初级尘气实施一级尘气分离，分离之后的二级尘气进入二级旋风筒进行二级尘气分离。该吸尘器零部件数量少，组装工序简单，整机的综合性能高。同时螺旋式二级龙卷风尘气分离结构体积较小，可有效降低机身空间，实现最大的储灰容积。



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1. 一种手持式吸尘器，其特征在于：所述手持式吸尘器的机身内部设有一容置空间，所述容置空间内设有一螺旋式二级龙卷风尘气分离结构，容置空间内位于所述螺旋式二级龙卷风尘气分离结构异侧的空间构成一级尘筒，位于所述螺旋式二级龙卷风尘气分离结构同侧的空间构成该螺旋式二级龙卷风尘气分离结构的一级旋风筒。

2. 如权利要求 1 所述手持式吸尘器，其特征在于：所述螺旋式二级龙卷风尘气分离结构，包括一级旋风筒、设置于所述一级旋风筒内部的二级旋风筒，设置于二级旋风筒上端的螺旋式尘气分离装置，以及设置于所述一级旋风筒和二级旋风筒之间的旋风罩，所述二级旋风筒与所述旋风罩的内壁之间设有空隙，该空隙用于形成一级尘气分离后的二级尘气分离风道，所述一级旋风筒与旋风罩对进入所述螺旋式二级龙卷风尘气分离结构的初级尘气实施一级尘气分离，分离之后的二级尘气进入二级旋风筒进行二级尘气分离。

3. 如权利要求 2 所述的手持式吸尘器，其特征在于：所述手持式吸尘器包括机身进风口，所述一级旋风筒包括一级甩灰口，灰尘由机身进风口进入一级旋风筒内，实现一级尘气分离，灰尘在离心力的作用下由一级甩灰口进入一级尘筒。

4. 如权利要求 2 所述的手持式吸尘器，其特征在于：所述二级旋风筒的下方设有二级集尘装置，该二级旋风筒的底部构成该二级集尘装置的顶部，在所述二级旋风筒的侧壁靠近底部位置设有一个二级甩灰口。

5. 如权利要求 4 所述的手持式吸尘器，其特征在于：所述二级集尘装置包括进灰主体部与灰尘通道，灰尘通道延伸至主机底部与一级尘筒相抵接，进灰主体部与灰尘通道密封连接，所述灰尘通道以机身内侧为侧边，或不倚靠机身内侧而形成独立的灰尘通道。

6. 如权利要求 4 所述的手持式吸尘器，其特征在于：所述二级旋风筒的底部中心处向下凸出设计。

7. 如权利要求 4 所述的手持式吸尘器，其特征在于：带有灰尘的空气被旋风罩进行第一级尘气分离之后，至少一部分通过二级尘气分离风道引导至螺旋式尘气分离装置，并在该螺旋式尘气分离装置的引导下，在二级旋风筒内壁形成向筒底旋转的气流，该气流中的灰尘在离心力带动下下旋至筒底并被收集在二级集尘空间中，旋转气流中的空气被负压抽出螺旋式二级龙卷风尘气分离结构的出风口处，实现第二级尘气分离。

8. 如权利要求 7 所述的手持式吸尘器，其特征在于：所述机身出风口的上端还包括过滤装置，所述过滤装置为过滤棉，微浓度尘气经出风口后通过过滤棉进行最终的过滤。

9. 如权利要求 2 所述的手持式吸尘器，其特征在于：所述螺旋式尘气分离装置包括用于产生二级旋风的螺旋风叶轮，所述螺旋风叶轮设置有若干向下倾斜的叶片，所述叶片可约束尘气的流动方向倾斜向下俯冲。

10. 如权利要求 9 所述的手持式吸尘器，其特征在于：所述螺旋式尘气分离装置还包括设置于所述螺旋风叶轮内圈的内圆环，所述内圆环与所述螺旋风叶轮的出风口对应的侧壁上设置有若干导向切面，所述导向切面约束尘气流向螺旋风叶轮的外环面开始形成旋转状态。

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一种具有螺旋式二级龙卷风尘气分离结构的手持式吸尘器

技术领域

[0001] 本发明属于吸尘器的生产制造技术领域，具体涉及一种具有螺旋式二级龙卷风尘气分离结构的手持式吸尘器。

背景技术

[0002] 吸尘器作为一种生活用品，广泛应用于室内、室外的清洁。吸尘器是利用电机带动叶片高速旋转，在密封的壳体内产生空气负压，从而将尘屑吸入集尘装置中，并将过滤后的空气以极高的速度排出风机的清洁电器，吸尘器按其功能分类包括干式吸尘器与干湿两用吸尘器，干式吸尘器一般包括尘袋式与机身式，吸尘器按形状分类，可分为卧式、立式、手持式吸尘器等，手持式吸尘器方便清洁墙面、沙发、窗台、桌面、电器等物品。

[0003] 现有手持式吸尘器集尘部分的尘气分离模式大都采用一级离心式分离模式或尘袋过滤模式，该两种分离模式的过滤效率低并且容易堵塞。

[0004] 现有的二级分离式机身，一般包括两级尘气分离结构，第一级结构用以过滤空气中的大型污物，第二级结构用于分离收集小型的灰尘颗粒等杂物，传统的二级尘气分离结构一般通过机身过滤器盖板与设置有若干旋风口的旋风体相配合形成二级旋风，这样结构所需的零部件较多，所牵涉的模具以及组装工序也相对较多且复杂，各个环节的密封难以控制，容易出现漏气漏灰现象而影响整机的综合性能。

[0005] 中国专利文献 CN200520102558.7，公开了一种一体式两次分离的吸尘器机身，该机身结构为轴向布局，将除尘装置采用内外管轴向方式布置，而达到尘气分离的目的，然而，这样的设计，零件数量多，二级尘筒置于一级尘筒内，占用了一级尘筒的空间，过多的占用了机身集尘的容积，储灰空间受到限制，吸灰效果大受影响，且二级的回风面积小，导致整机风量低。同时此类二级尘气分离式机身结构需要相对较高较大的机身体积，且其形状不适用于便携式手持吸尘器，使用范围受到限制。另外，由于手持吸尘器的灵活性强，在工作时随时变换方位，现有的机身结构中灰尘容易倒流。

[0006] 鉴于以上问题，有必要提出一种新型的具备螺旋式二级龙卷风尘气分离结构的手持式吸尘器，减少结构的零件数量，简化组装工序，提高整机的综合性能，同时有效降低二级分离结构所占用的机身空间，实现最大的储灰容积，提高集尘效率，且有效防止灰尘倒流。

发明内容

[0007] 有鉴于此，本发明提供了一种具有螺旋式二级龙卷风尘气分离结构的手持式吸尘器，手持式吸尘器机身内部设有一螺旋式二级龙卷风尘气分离结构，外形贴合手持式吸尘器，零件数量少，组装工序简单，整机的综合性能提高，同时有效降低二级分离结构所占用的机身空间，实现最大的储灰容积，提高集尘效率，且有效防止灰尘倒流。

[0008] 根据本发明的目的提出的一种手持式吸尘器，机身内部设有一容置空间，所述容置空间内设有一螺旋式二级龙卷风尘气分离结构，容置空间内位于所述螺旋式二级龙卷风

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尘气分离结构异侧的空间构成一级尘筒，位于所述螺旋式二级龙卷风尘气分离结构同侧的空间构成该螺旋式二级龙卷风尘气分离结构的一级旋风筒。

[0009] 优选的，所述螺旋式二级龙卷风尘气分离结构，包括一级旋风筒、设置于所述一级旋风筒内部的二级旋风筒，设置于二级旋风筒上端的螺旋式尘气分离装置，以及设置于所述一级旋风筒和二级旋风筒之间的旋风罩，所述二级旋风筒与所述旋风罩的内壁之间设有空隙，该空隙用于形成一级尘气分离后的二级尘气分离风道，所述一级旋风筒与旋风罩对进入所述二级尘气分离装置的初级尘气实施一级尘气分离，分离之后的二级尘气进入二级旋风筒进行二级尘气分离。

[0010] 优选的，所述手持式吸尘器包括机身进风口，所述一级旋风筒包括一级甩灰口，灰尘由机身进风口进入一级旋风筒内，实现一级尘气分离，灰尘在离心力的作用下由一级甩灰口进入一级尘筒。

[0011] 优选的，所述二级旋风筒的下方设有二级集尘装置，该二级旋风筒的底部构成该二级集尘装置的顶部，在所述二级旋风筒的侧壁靠近底部位置设有一个二级甩灰口。

[0012] 优选的，所述二级集尘装置包括进灰主体部与灰尘通道，灰尘通道延伸至主机底部与一级尘筒相抵接，进灰主体部与灰尘通道密封连接或一体成型。

[0013] 优选的，所述进灰主体部或灰尘通道或其二者，至少部分以机身内侧为侧边，或形成独立的二级集尘空间。

[0014] 优选的，所述二级旋风筒的底部中心处向下凸出设计，防止灰尘倒流。

[0015] 优选的，所述二级旋风筒内部设置挡尘筒，挡尘筒与二级旋风筒之间设有空隙，该空隙用于形成二级尘气分离风道，所述挡尘筒的内侧壁用以约束尘气在该挡尘筒内旋转产生离心力以抵抗负压的吸力。

[0016] 优选的，带有灰尘的空气被旋风罩进行第一级尘气分离之后，至少一部分通过二级尘气分离风道引导至螺旋式尘气分离装置，并在该螺旋式尘气分离装置的引导下，在二级旋风筒内壁形成向筒底旋转的气流，该气流中的灰尘在离心力带动下下旋至筒底并被收集在二级集尘空间中，旋转气流中的空气被负压抽出螺旋式二级龙卷风尘气分离结构的出风口处，实现第二级尘气分离。

[0017] 优选的，所述机身的出风口的上端还包括过滤装置 230，所述过滤装置可为过滤棉，微浓度尘气经机身出风口后通过过滤棉进行最终的过滤。

[0018] 优选的，所述螺旋式尘气分离装置包括用于产生二级旋风的螺旋风叶轮，所述螺旋风叶轮设置有若干向下倾斜的叶片，所述叶片可约束尘气的流动方向倾斜向下俯冲。

[0019] 优选的，所述螺旋式尘气分离装置还包括设置于所述螺旋风叶轮内圈的内圆环，所述内圆环与所述螺旋风叶轮的出风口对应的侧壁上设置有若干导向切面，所述导向切面约束尘气流向螺旋风叶轮的外环面开始形成旋转状态。

[0020] 优选的，所述螺旋风叶轮的总体进风面积小于螺旋式二级龙卷风尘气分离结构的出风面积，使得旋转产生的离心力足以抵抗负压的吸力。

[0021] 与现有技术相比，本发明公开的手持式吸尘器的优点是：

[0022] 采用螺旋式二级龙卷风尘气分离结构，相对以往的集尘模式能提高过滤效率，减少结构的零部件，简化组装工序，提高整机的综合性能。

[0023] 该尘气分离结构体积较小，可有效降低分离结构所占用的机身空间，实现最大的

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储灰容积，提高集尘效率。

[0024] 该螺旋式二级龙卷风尘气分离结构及尘筒外形设计成贴合手持式吸尘器的外形，适用于手持式吸尘器。

[0025] 将二级旋风筒底部中心设计为向下凸出，使得灰尘不易倒流。

[0026] 二级集尘装置直接延伸至机身底部，同时有部分以机身内侧为侧边，节省材料，方便倒灰。

[0027] 在机身出风口的上端还包括过滤装置，起到防止灰尘从出风口倒出的作用，实现最终的过滤。

附图说明

[0028] 为了更清楚地说明本发明实施例或现有技术中的技术方案，下面将对实施例或现有技术描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本发明的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。

[0029] 图 1 为机身内部结构剖视图。

[0030] 图 2 为机身整体外观图

[0031] 图 3 为机身内部结构图。

[0032] 图 4 为二级旋风筒与二级集尘装置示意图。

[0033] 图 5 为机身气流走向图。

[0034] 图 6 为旋风罩外观及内部透视图

[0035] 图 7 为螺旋式尘气分离装置的结构示意图。

[0036] 图 8 为螺旋式尘气分离装置的气流走向示意图。

[0037] 图 9 为机身的分解图。

[0038] 附图中涉及的附图标记和组成部分说明：

[0039] 100、机身；110、一级尘筒；111、一级甩灰口；120、机身进风口；130、机身出风口；140、隔板；150、开孔；

[0040] 210、一级旋风筒；211、旋风罩；212、二级旋风筒；213、一级进风风道；214、二级集尘装置；215、挡尘筒；216、二级尘气分离风道；217、二级甩灰口；220、螺旋式尘气分离装置；221、螺旋风叶轮；222、内圆环；223、导向切面；224、挡风板；230、过滤装置；231、螺旋槽；232、进灰主体部；233、灰尘通道。

具体实施方式

[0041] 传统的二级尘气分离结构所需的零部件较多，所牵涉的模具以及组装工序也相对较多且复杂，各个环节的密封难以控制，容易出现漏气漏灰现象而影响整机的综合性能。且以往的二级尘气分离式机身结构为轴向布局，使得其过滤器结构占机身的空间的比率较大，而过多的占用了机身集尘的容积，储灰空间受到限制，且此类二级尘气分离式机身结构需要相对较高较大的机身体积，且其形状不适用于便携式手持吸尘器，使用范围受到限制。

[0042] 本发明针对现有技术中的不足，提供了一种具有螺旋式二级龙卷风尘气分离结构的手持式吸尘器，以减少结构的零件数量，简化组装工序，提高整机的综合性能，同时有效

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降低二级分离结构所占用的空间，实现最大的储灰容积，提高集尘效率，尤其是螺旋式二级龙卷风尘气分离结构及尘筒外形设计成贴合手持式吸尘器的外形，适用于手持式吸尘器。

[0043] 下面将通过具体实施方式对本发明的技术方案进行清楚、完整地描述。显然，所描述的实施例仅仅是本发明一部分实施例，而不是全部的实施例。基于本发明中的实施例，本领域普通技术人员在没有作出创造性劳动前提下所获得的所有其他实施例，都属于本发明保护的范围。

[0044] 请一并参见图 1 至图 9，一种手持式吸尘器，机身内部设有一容置空间，所述容置空间内设有一螺旋式二级龙卷风尘气分离结构，容置空间内位于所述螺旋式二级龙卷风尘气分离结构异侧的空间构成一级尘筒 110，位于所述螺旋式二级龙卷风尘气分离结构同侧的空间构成该螺旋式二级龙卷风尘气分离结构的一级旋风筒 210。

[0045] 所述螺旋式二级龙卷风尘气分离结构包括一级旋风筒 210、设置于所述一级旋风筒 210 内部的二级旋风筒 212，以及设置于所述一级旋风筒和二级旋风筒之间的旋风罩 211，二级旋风筒与旋风罩的内壁之间设有空隙，该空隙用于形成一级尘气分离后的二级尘气分离风道 216，所述一级旋风筒包括一级甩灰口 111。灰尘空气经进风口进入一级旋风筒内，一级旋风筒 210 与旋风罩 211 对进入一级旋风筒内的初级尘气实施一级尘气分离，灰尘在离心力的作用下由一级甩灰口 111 进入一级尘筒 110 内，一级分离后的低浓度尘气被旋风罩网筛吸入进入二级尘气分离风道 216，在经过螺旋式尘气分离装置后在二级旋风筒的约束下产生二级旋风。

[0046] 其中，旋风罩的上端内侧设置有螺旋槽 231，使得气流在该处旋转产生离心力，方便气流下旋进入螺旋式尘气分离装置内。

[0047] 螺旋式尘气分离装置 220 设置于二级旋风筒 212 的上端筒口，带有灰尘的空气被旋风罩 211 进行第一级尘气分离之后，至少一部分通过二级尘气分离风道 216 引导至螺旋式尘气分离装置 220，并在该螺旋式尘气分离装置的引导下，在二级旋风筒 212 内壁形成向筒底旋转的气流，所述二级旋风筒 212 的下方设有二级集尘装置 214，该二级旋风筒的底部构成该二级集尘装置的顶部，二级旋风筒与二级集尘装置密封连接，或一体成型。

[0048] 在所述二级旋风筒 212 的侧壁靠近底部位置设有一个二级甩灰口 217，同时在靠近二级甩灰口 217 的部位，二级旋风筒 212 的底部中心处向下凸出设计，由此，在空气流动时，二级旋风筒的上部气压大于下部气压，灰尘也由上往下流动，防止了手持式吸尘器在变换姿态使用时的灰尘倒流。二级尘气中的灰尘在离心力带动下下旋至筒底，经该二级甩灰口 217 进入所述二级集尘装置 214 的空间内，旋转气流中的空气被负压抽出，实现第二级尘气分离。

[0049] 螺旋式尘气分离装置 220 包括用于产生二级旋风的螺旋风叶轮 221，螺旋风叶轮 221 设置有若干向下倾斜的叶片，叶片可约束尘气的流动方向倾斜向下俯冲以形成螺旋气流。

[0050] 螺旋式尘气分离装置 220 还包括设置于螺旋风叶轮 221 内圈的内圆环 222，内圆环 222 与螺旋风叶轮 221 的出风口对应的侧壁上设置有若干导向切面 223，导向切面约束尘气流向螺旋风叶轮的外环而开始形成旋转状态。其中螺旋风叶轮的外环圆周上设置有外圆环，通过内、外圆环的作用以实现气流导向、提高螺旋风叶轮的结构强度及稳定性。螺旋风叶轮的内圆环壁向下延伸有挡风板 224。

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[0051] 二级旋风筒 212 内部设置挡尘筒 215，挡尘筒与二级旋风筒之间设有空隙，该空隙用于形成二级尘气分离风道 216，带尘空气在该二级尘气分离风道内实现螺旋转动以产生离心力使得灰尘沿二级旋风筒的内壁下落。挡尘筒的内侧壁用以约束尘气在该挡尘筒内旋转产生离心力以抵抗负压的吸力，实现尘气的有效分离。

[0052] 所述二级集尘装置包括进灰主体部 232 与灰尘通道 233，所述进灰主体部 232 与灰尘通道 233 之间通过密封圈密封连接，所述灰尘通道 233 可以以机身内侧为侧边，并延伸到机身下部与一级尘筒相抵接，在清理吸尘器内的灰尘时，此时灰尘全部落于一级尘筒与灰尘通道内，抽出螺旋式二级龙卷风尘气分离结构与进灰主体部，进灰主体部 232 与灰尘通道 233 分离，然后倒出灰尘即可。

[0053] 所述机身出风口的上端还包括过滤装置 230，所述过滤装置可为过滤棉，微浓度尘气经机身出风口后通过过滤棉再次进行最终的过滤。

[0054] 其中二级旋风筒与螺旋式尘气分离装置均可为一体加工成型结构，成型后将螺旋式尘气分离装置直接安装于二级旋风筒的中心位置处即可完成装配。具体成型方式不做限制。

[0055] 此外，螺旋式二级龙卷风尘气分离结构也可直接一体加工成型，具体成型装配方式不做限制。

[0056] 本发明，一种手持式吸尘器，机身 100 内部设有一容置空间，容置空间内设有一螺旋式二级龙卷风尘气分离结构，容置空间内位于所述螺旋式二级龙卷风尘气分离结构异侧的空间构成一级尘筒 110，位于所述螺旋式二级龙卷风尘气分离结构同侧的空间构成该螺旋式二级龙卷风尘气分离结构的一级旋风筒 210，所述螺旋式二级龙卷风尘气分离结构包括一级旋风筒 210、设置于所述一级旋风筒 210 内部的二级旋风筒 212，以及设置于所述一级旋风筒和二级旋风筒之间的旋风罩 211。机身的下部设有进风口 120，机身上侧设有出风口 130，带尘空气通过该进风口引导至二级尘气分离结构的旋风罩处，该带尘空气被旋风罩 211 进行第一级尘气分离后，至少一部分通过该旋风罩后进入二级旋风筒 212 进行第二级尘气分离。

[0057] 其中，螺旋风叶轮 221 的总体进风面积小于机身出风面积，使得在同风量的情况下能拥有更高的旋转速度来抵抗负压的吸力。

[0058] 机身内侧设置有隔板 140，隔板中心处向下延伸有开孔 150，经二级尘气分离后的空气被负压抽出。通过设置隔板将旋风罩的上端遮挡住，这样经旋风罩过滤后的尘气会由二级尘气分离风道上端导向进入螺旋式尘气分离装置内，实现进风导向。其中隔板的中部呈向下倾斜的弧形结构，便于尘气的移动导向。

[0059] 本发明公开了一种手持式吸尘器，该吸尘器包括螺旋式二级龙卷风尘气分离结构、一级尘筒，该螺旋式二级龙卷风尘气分离结构仅包括一级旋风筒、二级旋风筒、旋风罩与螺旋式尘气分离装置，就可实现对尘气的过滤分离，有效减少了结构的零部件数量，简化了组装工序，便于提高整机的综合性能。同时该螺旋式二级龙卷风尘气分离结构体积较小，可有效降低二级分离结构所占用的空间，实现最大的储灰容积，提高集尘效率，尤其适用于手持式吸尘器。另外，二级集尘装置直接延伸至机身底部，同时以机身内侧为侧边，节省材料，方便倒灰。

[0060] 对所公开的实施例的上述说明，使本领域专业技术人员能够实现或使用本发明。

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对这些实施例的多种修改对本领域的专业技术人员来说将是显而易见的，本文中所定义的一般原理可以在不脱离本发明的精神或范围的情况下，在其它实施例中实现。因此，本发明将不会被限制于本文所示的这些实施例，而是要符合与本文所公开的原理和新颖特点相一致的最宽的范围。

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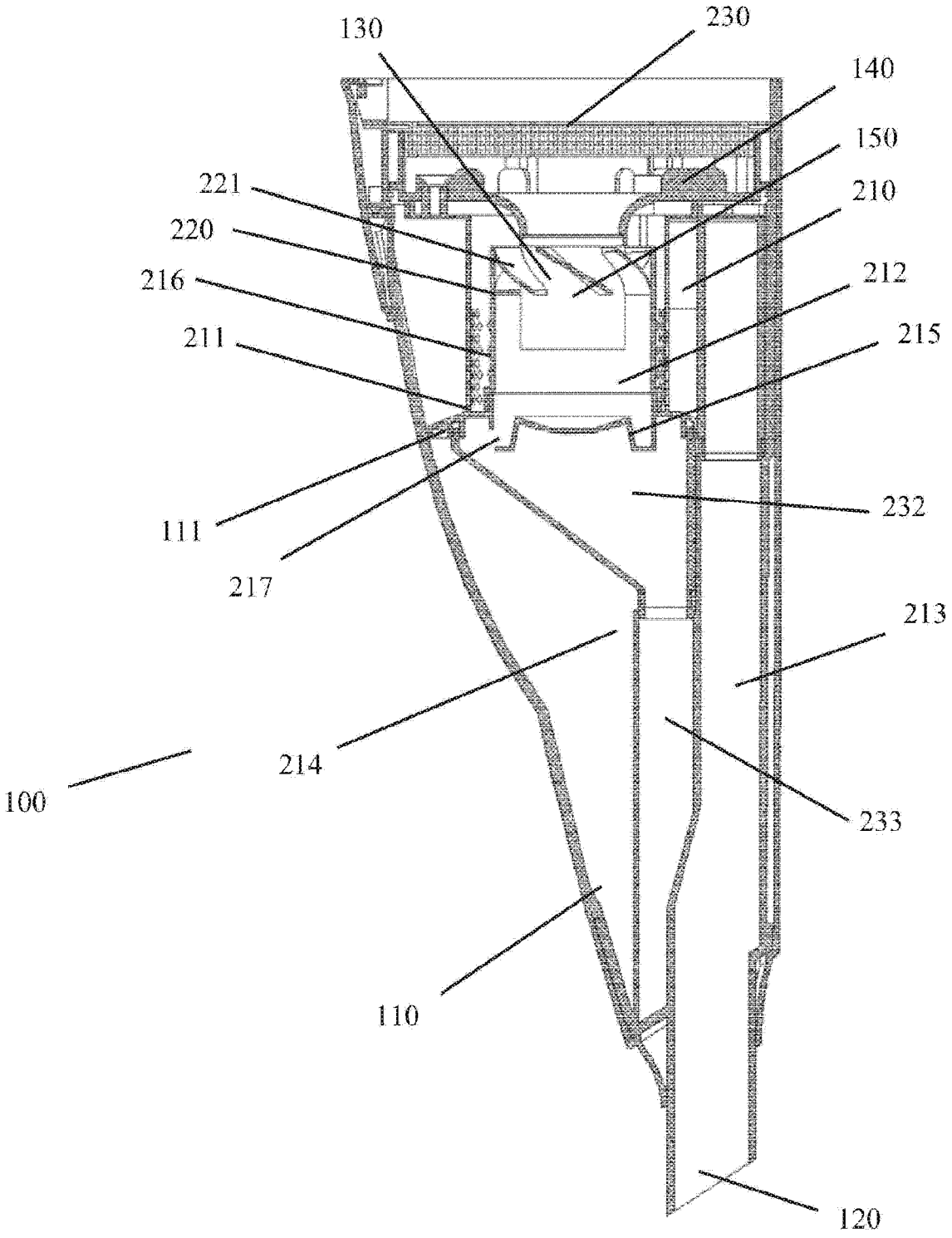

图 1

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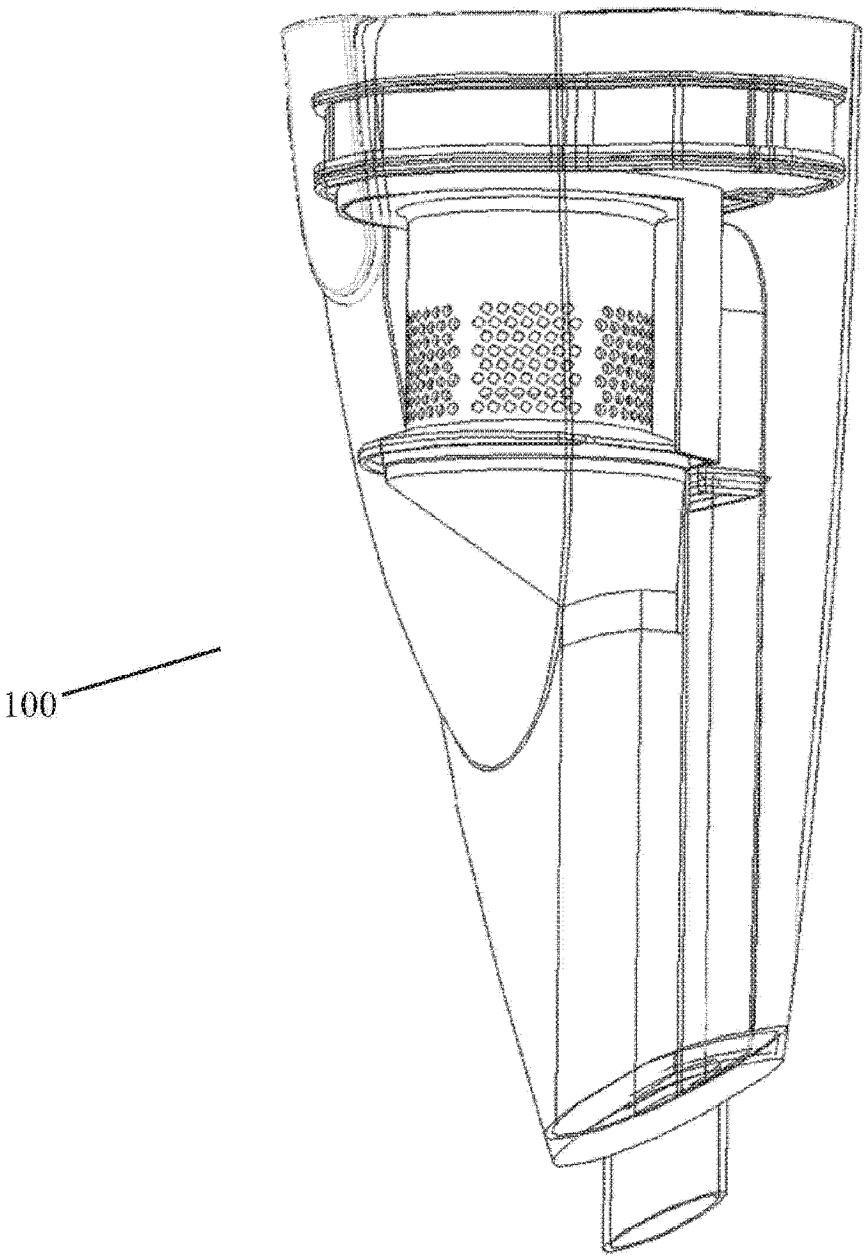

图 2

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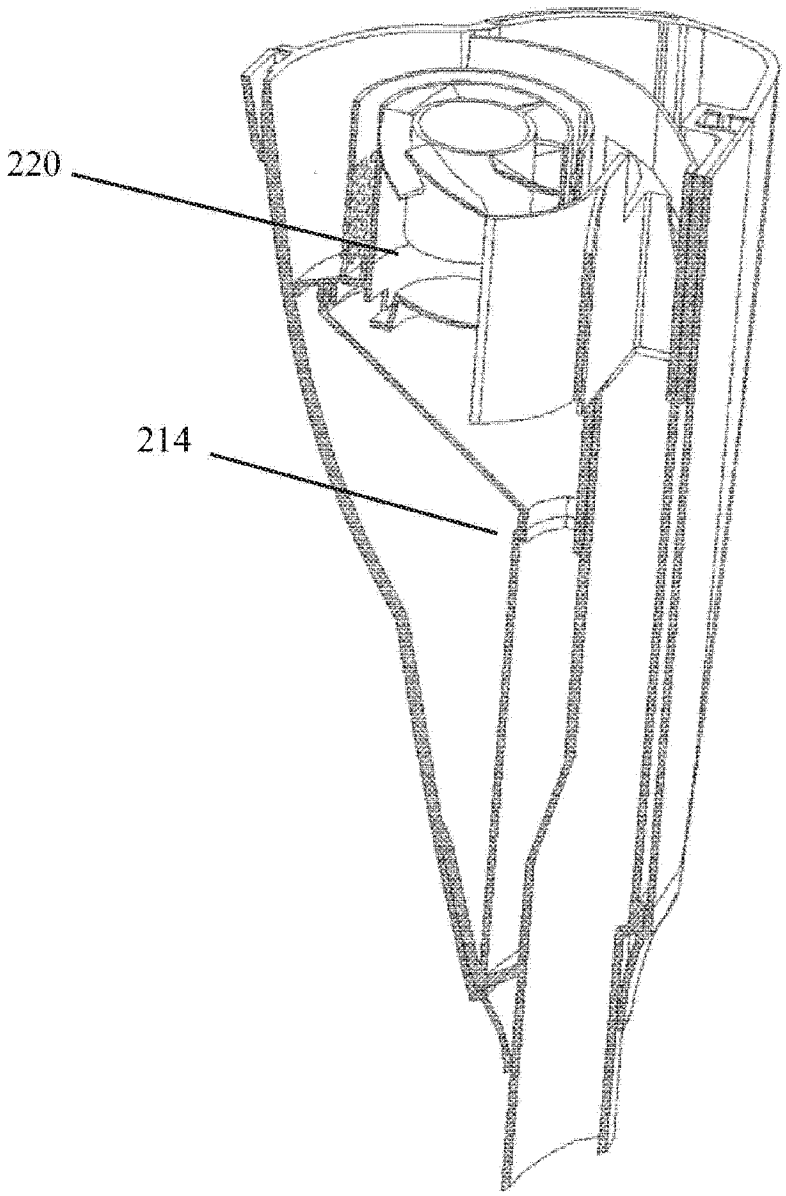

图 3

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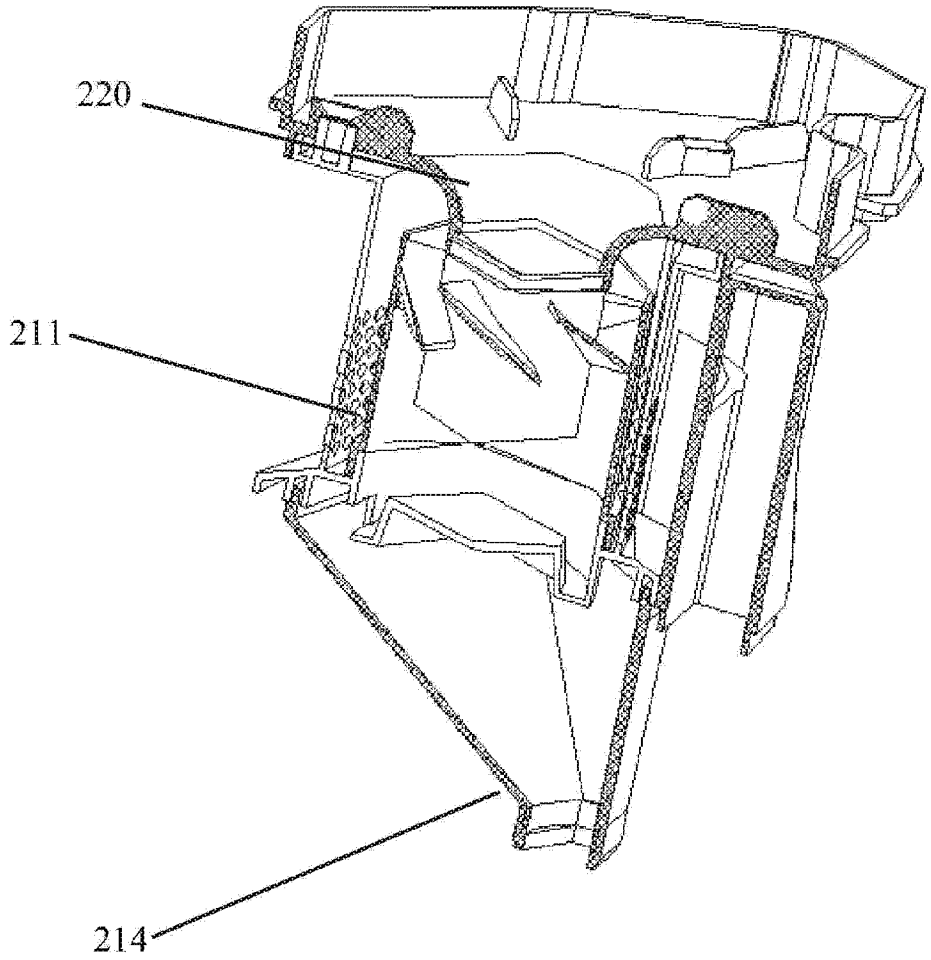

图 4

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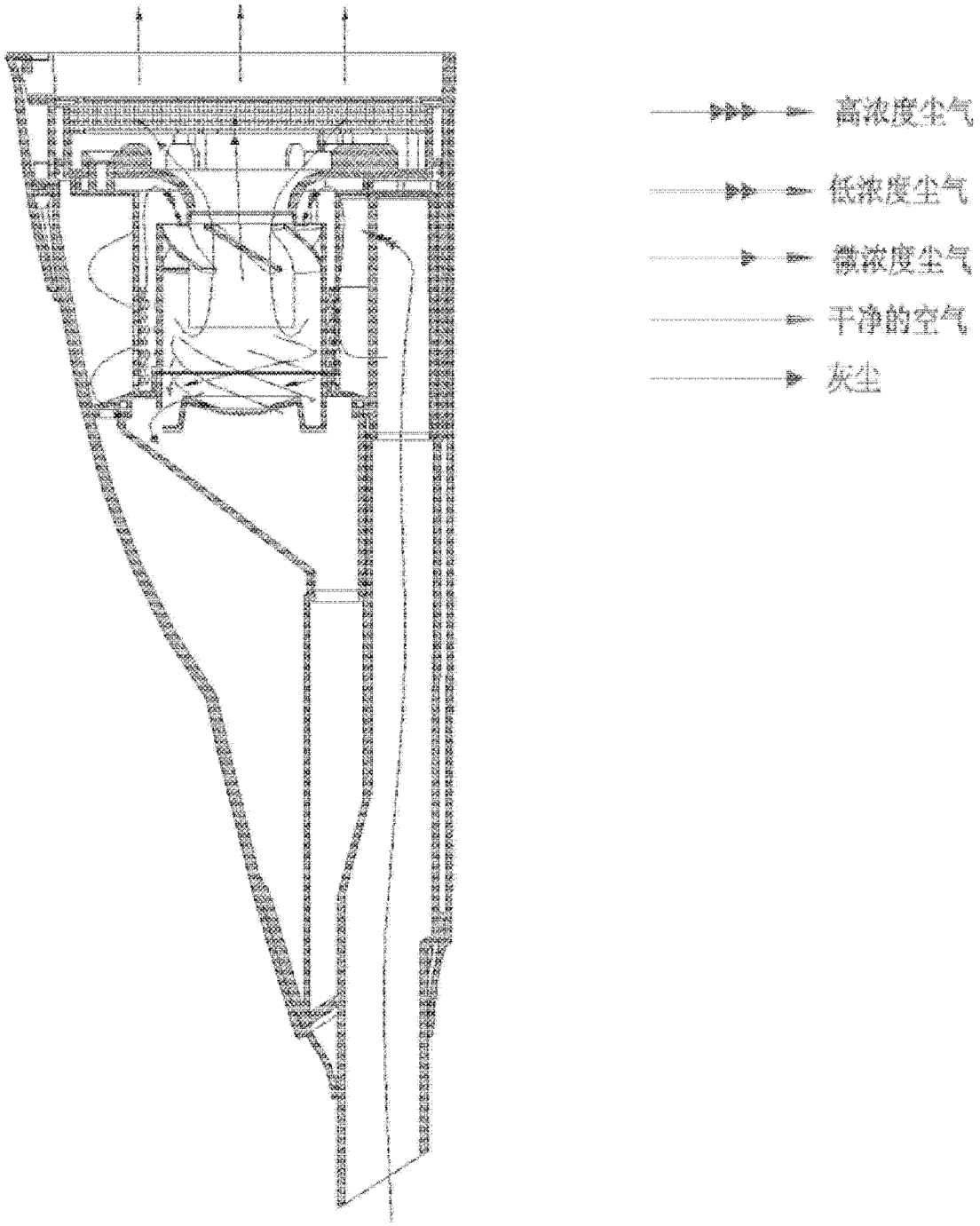

图 5

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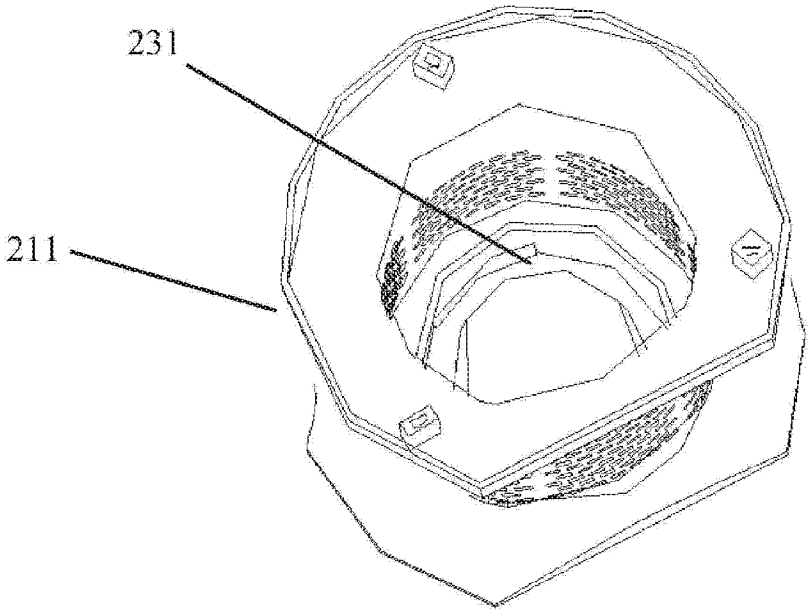

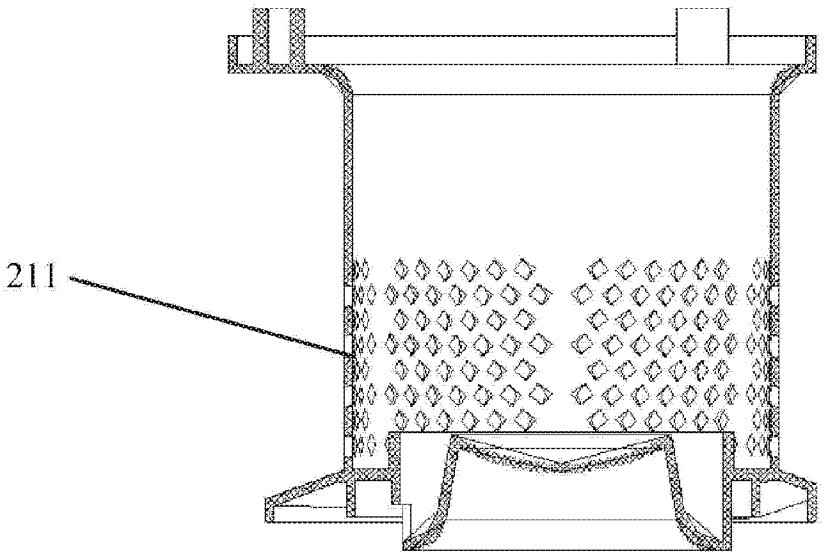

图 6

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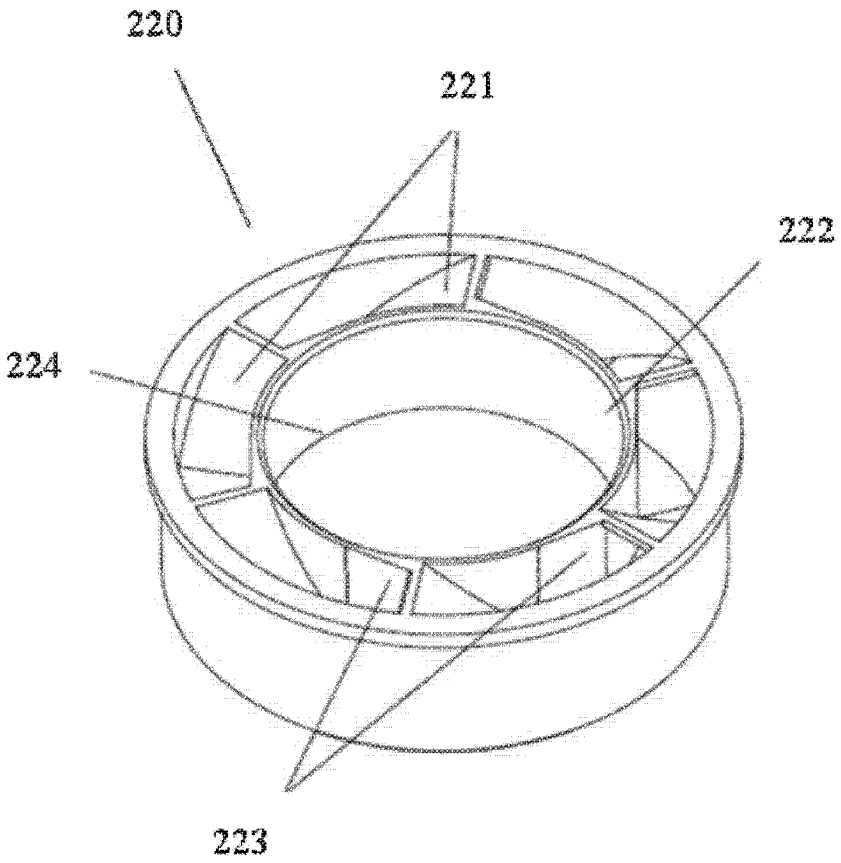

图 7

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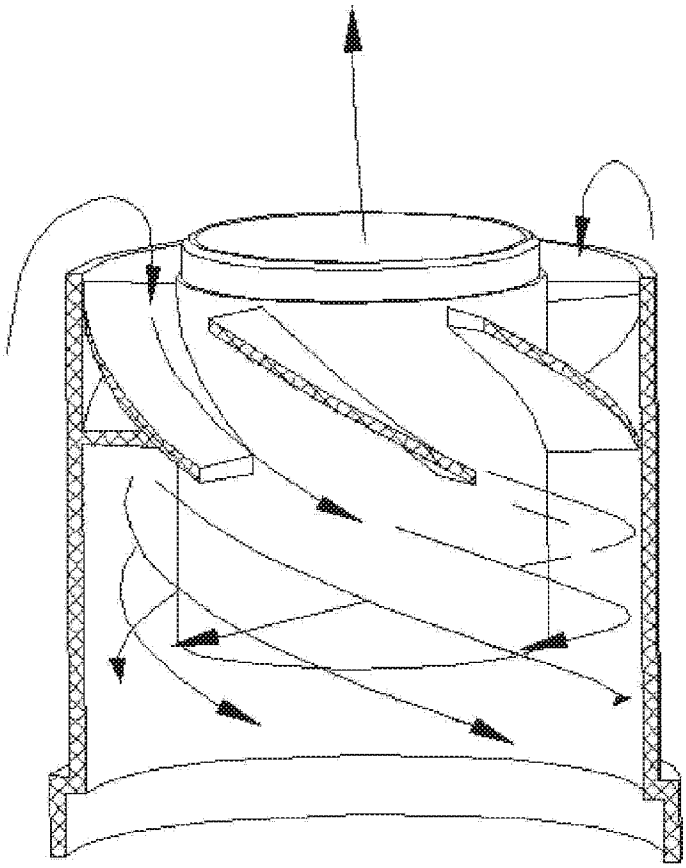

图 8

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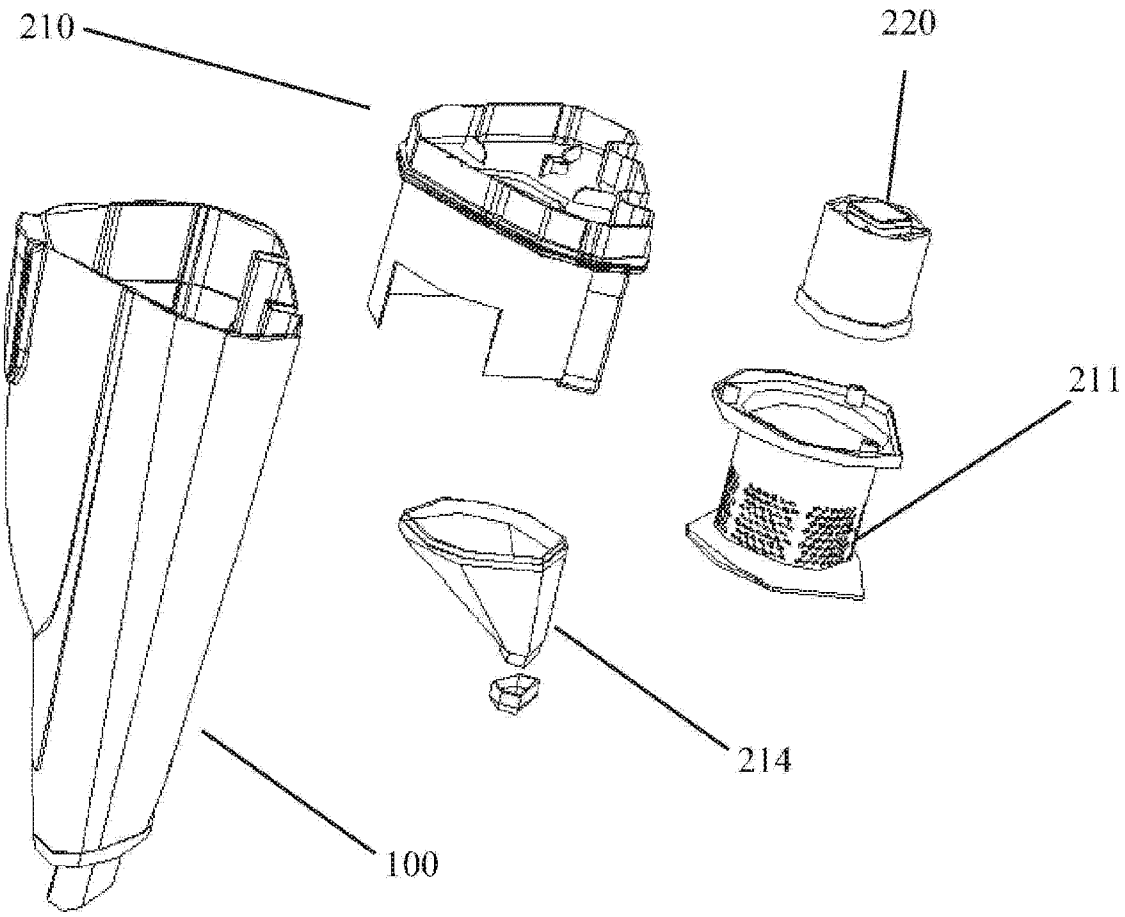

图 9

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Examined Patent Publication(B1)

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Requested Date of Examination	20131023
Agent.	Ryu ChangYeol
Inventor	KIM JOU HYUK	Choi Jinho
Applicant	TOBIZ CO.,LTD.
Rightholder	TOBIZ CO.,LTD.

Title of Invention

The handy type vacuum cleaner having the disinfection function among this.

Abstract

The handy type vacuum cleaner having the disinfection function is disclosed among this. T his handy type vacuum cleaner comprises the suction force which is combined in the main body including the vacuum motor assembly, and the front of the main body in order to be attachable to and detachable and is generated with the operation of the vacuum motor ass embly, the dust collection part racing the foreign substance flowed in with the interaction with the cyclone wing formed in the inside, and the main body, and the filter section, whic h is combined in the inside dust collection it is located on surface the air channel between t he dust collection part the sub-body which it inflows to the inside dust collection it inhales the foreign substance on the cleaning object through the inlet, and the extrusion housing, which is protruded to the front of the main body in the front of the main body it is the dust collection part positioned in the upper portion of the dust collection part outside in case th e attaching and the inside sterilization unit it is received within the extrusion housing and f or irradiating the ultraviolet ray in the inside dust collection.

대표도면(Representative drawing)

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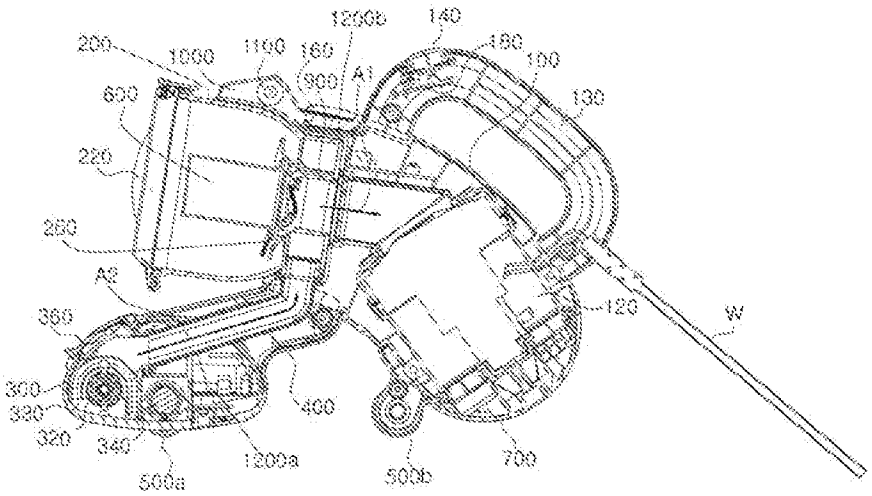

Scope of Claims

Claim 1:

It is combined in the front of the main body :

main body including the vacuum motor assembly in order to be attachable to and detacha ble. The handy type vacuum cleaner which inhales the foreign substance on the cleaning o bject with the action of the cyclone wing formed in the inside and the suction force generat ed with the operation of the vacuum motor assembly through the filter section :

inlet combined in the inside dust collection in order to be located on surface the air channe l between the dust collection part and the dust collection part :

main body racing the foreign substance flowed in and , the upper portion is the dust collec tion part received to the front of the sub-body :

main body for inflowing to the inside dust collection in case the attaching within the extrusi on housing :

extrusion housing protruded to the front of the main body in order to be positioned in the upper portion of the dust collection part outside : it is located on surface the air channel b etween the main body for irradiating the ultraviolet ray in the inside dust collection and th e inside sterilization unit :

dust collection part ; and comprises the NFC chip for providing the information stored in th e data storage module :

of storing the information associated with the sensed air flow rate in the airflow sensing pa rt :

airflow sensing part sensing the air flow rate within the air channel between the dust collec tion part and the main body in the suction force generation by the operation of the vacuu m motor assembly and data storage module to the external mobile apparatus.

Claim 1:

It is combined in the front of the main body :

main body including the vacuum motor assembly in order to be attachable to and detacha ble. The handy type vacuum cleaner which inhales the foreign substance on the cleaning o bject with the action of the cyclone wing formed in the inside and the suction force generat ed with the operation of the vacuum motor assembly through the filter section :

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inlet combined in the inside dust collection in order to be located on surface the air channe l between the dust collection part and the dust collection part :

main body racing the foreign substance flowed in and the upper portion is the dust collecti on part received to the front of the sub-body :

main body for inflowing to the inside dust collection in case the attaching within the extrusi on housing :

extrusion housing protruded to the front of the main body in order to be positioned in the upper portion of the dust collection part outside ; it is located on surface the air channel b etween the main body for irradiating the ultraviolet ray in the inside dust collection and th e inside sterilization unit :

dust collection part ; and comprises the NFC chip for providing the information stored in da ta storage module :

of storing the information associated with the sensed air flow rate in the airflow sensing pa rt :

airflow sensing part sensing the air flow rate within the air channel between the dust collec tion part and the main body in the suction force generation by the operation of the vacuu m motor assembly and data storage module to the external mobile apparatus.

Claim 2:

As for claim 1, the handy type vacuum cleaner which more comprises the outside sterilizat ion unit for being positioned within

sub-body and irradiating the ultraviolet ray in the cleaning object.

Claim 2:

As for claim 1, the handy type vacuum cleaner which more comprises the outside sterilizat ion unit for being positioned within

sub-body and irradiating the ultraviolet ray in the cleaning object.

Claim 3:

Deletion.

Claim 3:

Deletion.

Claim 4:

Deletion.

Claim 4:

Deletion.

Claim 5:

Deletion.

Claim 5:

Deletion.

Claim 6:

As for claim 2, the handy type vacuum cleaner which further includes the radioactivity det ection sensor for sensing the radioactive substance flowed in through the inlet of

sub-body.

Claim 6:

As for claim 2, the handy type vacuum cleaner which further includes the radioactivity det ection sensor for sensing the radioactive substance flowed in through the inlet of

sub-body.

Claim 7:

Deletion.

Claim 7:

Deletion.

Claim 8:

As for claim 1, the handy type vacuum cleaner which is motion to the direction wherein th e handy type vacuum cleaner the pivot supporter which it includes and which in which mul tiple batting rod :

batting rod each pivots are inserted and which is positioned within the case :

and the case in which the slot in which the batting rod exercises circular arc is formed and supports the batting rod each pivot is included ; and

batting rod each circular arc movement is identical in the range limited with the length of s lot in the rotary motion of the batting rod assembly of the rotary motion in the batting rod assembly,

the pivot and the head which is connected to the pivot and strikes the cleaning object the batting rod assembly further is included for sweeping off the foreign substance on the clea ning object by the rotary motion it is attachably and detachably combined within the sub-b ody.

Claim 8:

As for claim 1, the handy type vacuum cleaner which is motion to the direction wherein th e handy type vacuum cleaner the pivot supporter which it includes and which in which mul tiple batting rod :

batting rod each pivots are inserted and which is positioned within the case :

and the case in which the slot in which the batting rod exercises circular arc is formed and supports the batting rod each pivot is included ; and

batting rod each circular arc movement is identical in the range limited with the length of s lot in the rotary motion of the batting rod assembly of the rotary motion in the batting rod assembly,

the pivot and the head which is connected to the pivot and strikes the cleaning object the batting rod assembly further is included for sweeping off the foreign substance on the clea ning object by the rotary motion it is attachably and detachably combined within the sub-b ody.

Technical Field

The present invention relates to the handy type vacuum cleaner having the disinfection fu nction among this, and more particularly to the handy type vacuum cleaner can sterilize a

bout the foreign substance which is simultaneously inhaled from the cleaning object while i t sterilizes the cleaning object with the first with the second.

Background Art

In home or the office etc, the vacuum cleaner of the various kind is used for the dusting. E specially, the bedclothes, the handy type vacuum cleaner for clothing or the vehicle interio r cleaning including the down comforter or pillow etc. comes out among the vacuum clean er of the various kind. The used kind of the handy type vacuum cleaner is till now very mo reover various. The handy type vacuum cleaner included to the function of the furthermor e striking the function of ultraviolet sterilization, and the cleaning object in the function of i nhaling the foreign substance including dust or the hair etc. or brushing exists. It has 10-1 110302 B (: 2012.01.19 B.) which is invented by the inventor of the application which as a n example, looks of such handy type vacuum cleaner and is registered.

Since the dust collector container and the filter in which on the whole, 10-1110302 B the f oreign substance is flowed in as to the existing handy type vacuum cleaner on the air chan nel of the linear type are together arranged it is caused by and the debris removal work w hich the filtering through the cleaner on operation filter is not smooth is collected is to imp rove the problem of the moreover inconvenient existing handy type vacuum cleaner. Furth ermore, 10-1110302 B includes the ultraviolet sterilization unit and the function of sterilizi ng provides concerning the cleaning object or the foreign substance.

However, the function of sterilizing through the foreign substance in which the handy type vacuum cleaner of 10-1110302 B is inhaled through the opening or the ultraviolet sterilizat ion unit for sterilizing about the cleaning object is equipped. But the time when the foreign substance inhaled through the suction opening is flowed in into the dust collection part is v ery short and the function is made. Therefore the disadvantage which is not high has the b acteriocidal effect about the foreign substance. Besides, in the filter replacement cycle, aft er the dust collector container is separated the filter of the inside is by the naked eye disti nguished and the replacement whether or not has to be determined. Therefore the operati on is troublesome. In addition filter can be longer used in fact it replaces or it has the disa dvantage of generating another problem that the filtration work is not smooth as it overly l ong uses.

Furthermore, it had the necessity to more effectively manage the overall administration of the handy type vacuum cleaner not only the replace period of filter and the sensing about the radioactive substance among the cleaning object or the foreign substance was necessa ry as the usage flexibility of the handy type vacuum cleaner was expanded.

Summary of Invention

Problem to be solved

The handy type vacuum cleaner which has the bacteriocidal effect among 2 so that the technical problem intensify the bacteriocidal effect of the conventional hand-held cleaner is provided.

Although the filter replacement cycle is by the naked eye observed and the dissimilar subject which the invention solves does not determine the changing time when being exact is known and the handy type vacuum cleaner which efficiently manages the overall administration of the vacuum cleaner is provided.

The handy type vacuum cleaner equipped with the function in which another subject which the invention solves can sense the radioactive substance among the foreign substance of the cleaning object or the cleaning object is provided.

Means to solve the problem

The subject is solved. And the handy type vacuum cleaner according to one aspect of the present invention comprises the main body including the vacuum motor assembly, the suction force which is combined in the front of the main body in order to be attachable to and detachable and is generated with the operation of the vacuum motor assembly and

the dust collection part, racing the foreign substance flowed in with the action of the cyclone wing formed in the inside and the filter section, which is combined in the inside dust collection is located on surface the air channel between the dust collection part and the main body and the sub-body, which it inflows to the inside dust collection it inhales the foreign substance on the cleaning object through the inlet and the extrusion housing, which is protruded to the front of the main body in the front of the main body it is the dust collection part positioned in the upper portion of the dust collection part outside in case the attaching and the inside sterilization unit it is received within the extrusion housing and for irradiating the ultraviolet ray in the inside dust collection.

According to the embodiment, the outside sterilization unit for the handy type vacuum cleaner being positioned within the sub-body and irradiating the ultraviolet ray in the cleaning object further is included.

According to the embodiment, the sub-body includes the main print circuit board in which the inside sterilization unit and the circuit for operating the outside sterilization unit are integrated in the inside and it is electrically connected for the main print circuit board and inside sterilization unit with the electric trace arranged according to the outside of the air channel between the sub-body and the dust collection part.

According to the embodiment, the main body includes the sub-print circuit board in the position adjacent to the extrusion housing, and the active status display for being electrically connected with the sub-print circuit board and indicating the operating state of the cleaner and the inside sterilization unit is electrically connected with the sub-print circuit board.

According to the embodiment, the extrusion housing is made up of the uncertain material and the side which is in opposite directions in the extrusion housing to the dust collection part is formed.

According to the embodiment, the radioactivity detection sensor for sensing the radioactive substance in which the handy type vacuum cleaner is flowed in through the inlet of the sub-body further is included.

According to the embodiment, the handy type vacuum cleaner further includes the airflow sensing part, the data storage module storing the information associated with the sensed air flow rate in the airflow sensing part, and the NFC chip for providing the information stored in the data storage module to the external mobile apparatus. The airflow sensing part is located on surface the air channel between the main body and the dust collection part and senses the air flow rate within the air channel between the dust collection part and the main body in the suction force generation by the operation of the vacuum motor assembly.

According to the embodiment, the handy type vacuum cleaner is attachably and detachably combined within the sub-body and the batting rod assembly for sweeping off the foreign substance on the cleaning object with the rotary motion further is included and the multiple batting rods: batting rod each pivot in which each includes the pivot and the head which is connected to the pivot and strikes the cleaning object is inserted and the batting rod assembly includes the case in which the slot in which the batting rod exercises circular arc is formed and the pivot supporter which is positioned within the case and supports the batting rod each pivot and the batting rod each circular arc movement is the motion to the same direction as the rotary motion in the range limited with the length of slot in the rotary motion of the batting rod assembly.

Effects of the Invention

It is more the disinfection function improved by providing the handy type vacuum cleaner in which the invention is improved in comparison with the conventional handy type vacuum cleaner and the replace period of filter is easily known and the overall administration of the vacuum cleaner is more effectively managed. In addition it has the effect sensing the radioactive substance among the foreign substance of the cleaning object and beforehand can prevent the exposure about the radioactive substance.

Description of Embodiments

Hereinafter, the preferred embodiments of the invention is illustrated with reference to att ached drawings. The attached description about the drawing and thises experiences and it is exemplified in terms of the intention of helping the understanding about the invention to a person skilled in the art in the technical field. In order to limit the scope of the present in vention it is not intended it has to note.

Figure 1 is a cross-sectional view of the handy type vacuum cleaner according to a preferr ed embodiment of the present invention. Referring to Figure 1, the handy type vacuum cle aner includes largely, the main body (100), the dust collection part (200), and sub-bodies (300, 400). Sub-bodies (300, 400) are classified into the sub-body main body (300) and b ridge (400). Moreover, in the inside of the dust collection part (200), the filter section (60 0) is connected and the extrusion housing (1000) which is protruded to the front of the ma in body (100) and includes the inside sterilization unit (1100) in the inside is included.

The air channel (A1, A2) is formed for the main body (100) and dust collection part (200) between and, sub-bodies (300, 400) and dust collection part (200). It says to be the air ch annel between for convenience main body (100) of the description and the dust collection part (200) the first air fluid path (A1) and it says to be the air channel between the dust c ollection part (200) and sub-bodies (300, 400) the second air fluid path (A2). As to the wh ole air flow path including these air channel (A1, A2) the air flow path including the first air fluid path (A1) in advance is in order, dust collection part (200), filter section (600), first a ir fluid path (A1) order. In the meantime, the air flow path including the second air fluid pa th (A2) is in order, the inlet (330), second air fluid path (A2), dust collection part (200) or der. Hereinafter these air flow paths are conveniently shown in terms of the first air fluid p ath (A1), and the second air fluid path (A2).

The vacuum motor assembly (120) in which the main body (100) generates the suction for ce by the vacuum is included. The vacuum motor assembly used for the vacuum motor ass embly (120), generally, the vacuum cleaner can be used. It further includes the printed cir cuit board (18) which the handle (130) is combined in the main body (100) and includes t he circuit for the control switch (14) for the on/off control of the vacuum cleaner and proce ssor in the handle (13). Moreover, it further includes the display unit (160) for indicating t he operation situation of the vacuum cleaner in the main body (100). After the handle (13 0) is integrally formed with the main body (100) or it is separately shaped it can be combi ned in the main body (100) with the predetermined fastening means. Moreover, the electri cal code (W) is connected to the main body (100) and the necessary power source can be supplied to the operation of the vacuum cleaner. Furthermore, the battery charger (the no t illustrated) is built in the main body (100) and the vacuum cleaner can be operated with the electric charging method.

Sub-bodies (300, 400) comprises largely, the sub-body main body (300), the sub-body m ain body (300), and the function it is composed of the bridge (400) connecting the main b ody (100) liver sub-bodies (300, 400) sterilizing the foreign substance on the cleaning obj ect (not illustrated) or sweeping off the foreign substance from the cleaning object or of in haling the foreign substance. And here it defines that not only the bedclothes but also the vehicle interior including the down comforter or pillow etc. it does, and the concept killing t he pest like not only the meaning that the term kills the bacteria is the sterilization are incl uded because of being the cleaning object. The concept killing the pest like not only the m eaning that the term kills the bacteria is the sterilization can be various is used in moreove r, this specification but also tick. Moreover, it defines that the foreign substance includes t he hair, dust, and all materials generally to remove from the cleaning object with the pape r strips etc.

The sub-body main body (300) includes the batting rod assembly (320) for separating the foreign substance from the cleaning object and the outside sterilization unit (340) for steril izing the foreign substance on the cleaning object. Hereinafter the example about the deta il structure of the batting rod assembly (320) particularly illustrates with reference to figur es 5a and 5b. It is the be desirable that the inlet (330) the batting rod assembly (320) is n ear arranged. The inlet (330) is directly connected to the second air fluid path (A2) betwee n the dust collection part (200) and sub-bodies (300, 400). And the sub-body main body (300) inflows the foreign substance to the dust collection part (200) inside through the inle t (330). On the whole, if it looks at , the air flow path can look as the flow of the first air fl uid path (A1) and inlet (330), the second air fluid path (A2), the dust collection part (200),

the filter section (600). Sub-bodies (300, 400) interpose the dust collection part (200) in t he center and the air channel of the main body (100) lateral fruit is formed.

The outside sterilization unit (340) includes the sterilization lamp of ultra-violet rays and it is positioned within the sub-body main body (300) and the ultraviolet ray is irradiated in th e cleaning object and the cleaning object serves to be sterilized.

The bridge (400) comprising sub-bodies (300, 400) connects the main body (100) and sub -body main body (300) liver and the second air fluid path (A2) is formed in the inside.

The attachably/detachably the dust collection part (200) is combined in the front of the ma in body (100) and the foreign substance flowed in within the dust collection part (200) thr ough the inlet (330) is raced. Here, the user grasps the handle (130) and the front of the main body (100) operates cleaning using the vacuum cleaner the forward direction is mea nt. It comprises the material transparent so that the dust collection part (200) observe the foreign substance dust collection state of the inside.

In the dust collection part (200), the cyclone wing (260) the vortex for racing the foreign s ubstance flowed in into the inside is formed is provided. Furthermore, in order to intensify the eddy formation in the inside of the engaging portion of the dust collection part (200) a nd main body (100), in other words, the starting part of the first air fluid path (A1), and th e part of after escaping from the inside of the dust collection part (300) in other words and passes the filter section (600) the sub cyclone wing (the not illustrated) can be more form ed.

Attachably and detachably the dust collection part (200) can be combined in the front of th e main body (100) and the cyclone wing (260) formed in the inside races the foreign subst ance with the case where the imbibition of being generated with the operation of the vacu um motor assembly (120) is initiated, and the coordinated operation within the dust collec tion part (200).

The filter section (600) can be attachably/detachably combined within the dust collection p art (200). The filter section (600) is located on surface the air flow path between the dust collection part (200) and the main body (100), in other words, the first air fluid path (A1). It comprises the filter box in which the filter section (600) multiple exhaust holes are form ed and the filter inserted into the inside. Filter can be replaced by the user by the proper c ycle. In order that the filter section (600) is attachably/detachably combined within the du st collection part (200) the groove can be formed so that the groove or the screw construc tion of rotating in the inside of the dust collection part (200) and outside of the filter sectio n (600) and attaching and detaching is corresponded.

It further includes the subfilter (900) in the main body (100). In case the combination with the case where this subfilter (900) combines the main body (100) and dust collection part (200) with the state that does not combine the filter section (600) of the user or the main body (100) and filter section (600) is the fault the foreign substance of the dust collection part (200) inside is not flowed in the directly within the first air fluid path (A1). And malfun ction or the lifetime reduction of the cleaner is beforehand prevented.

It further includes wheels (500a, 500b) the movement is facilitated in the lower part of the main body (100) to the state contacting on on operation cleaning object of the handy type vacuum cleaner.

The extrusion housing (1000) is formed in the front of the main body (100) and dust collec tion part (200) in the attaching to be protruded to the front of the main body (100) in orde r to be positioned in the upper portion of the dust collection part (200) outside. Here, the f ront of the main body (100) catches the handle of the handy type vacuum cleaner and it d efines as the front direction, in other words, the direction (the left side in the drawing 1) g oing ahead in case cleaning.

Figures 2 and 3 are referred to for the description about the extrusion housing (1000) and inside sterilization unit. Figure 2 is a cross-sectional view for illustrating the extrusion hous ing (1000) of fig. 1. It is drawing in which fig. 3 exemplifies many shape of the extrusion h ousing (1000) of 1 and the inside sterilization unit (1100) received inside the extrusion ho using (1000). But the inside sterilization unit (1100) in fig. 1 is received like (b) of fig. 3 to lateral and the inside sterilization unit (1100) in fig. 2 is received like (a) of fig. 3 to the ki nd.

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As to the extrusion housing (1000), the side (1000a) which is in opposite directions to the dust collection part (200) is concavely formed. For example, as shown in FIG. 2, it can be f ormed so that the side (1000a) of the extrusion housing (1000) has the corresponding cur ved surface on the denotation (200a) of the dust collection part (200). That is, in order tha t the lower surface (1000a) of the extrusion housing (1000) which is in opposite directions to the dust collection part (200) the ultraviolet ray is well irradiated as the dust collection part (200) inside in order to be not flat type but it has the corresponding structure on the denotation (200a) of the dust collection part (200) it can be formed with the roast curved surface. Or the inside of the side (1000a) which is in opposite directions of the extrusion h ousing (1000) can be differently formed with the form which more enters with this. It is m ade up of the material in which the extrusion housing (1000) is uncertain. Therefore the ul traviolet light of the inside sterilization unit (1100) is not irradiated as the outside of the e xtrusion housing (1000) as the outside except the dust collection part (200).

In the inside of the extrusion housing (1000), the sterilization unit accommodating groove (1110) having the opening is formed into the side which faces the dust collection part (20 0) in order to accommodate the inside sterilization unit (1100), and the quartz plate (112 0) is combined in the aperture side of this sterilization unit accommodating groove (1110) and the inside sterilization unit (1100) is protected.

The inside sterilization unit (1100) is received inside the extrusion housing (1000) and the ultraviolet ray is irradiated in the dust collection part (200) inside and sterilization serves t o be added toward the foreign substance collected inside the dust collection part (200). It can be for example, the cold cathode fluorescent lamp (CCFL) or the light emitting diode la mp to the inside sterilization unit (1100). The shape of the inside sterilization unit (1100) c an be various to the linear type (A of the drawing 3 or the b), the u-shaped (the c of the d rawing 3) etc. In fig. 3, the left side is front and the right side is the rearward, in other wo rds, the main body (100).

In sub-bodies (300, 400), the sub-body main body (300) includes the inside sterilization u nit (1100) in the inside and the main print circuit board (1200a) in which the circuit for op erating the outside sterilization unit (340) is integrated. Moreover, it is electrically connect ed for the main print circuit board (1200a) and inside sterilization unit (1100) with the elec tric trace arranged according to the outside of the air channel (A2) between sub-bodies (3 00, 400) and the dust collection part (200).

The sub-print circuit board (1200b), the sub-print circuit board (1200b) and the active stat us display (160) for being electrically connected and indicating the operating state of the h andy type vacuum cleaner are included in the position in which the main body (100) is diff erently adjacent to this to the extrusion housing (1000) and the extrusion housing (1000) can be electrically connected with the sub-print circuit board (1200b).

Furthermore, it is turned off to the automatically and the handy type vacuum cleaner may further include the sensor (not illustrated) in which the ultraviolet ray is not irradiated in e ye the inside sterilization unit (1100) and the case where the outside sterilization unit (34 0) is separated from the cleaning object over the constant distance. In this case, the outsi de sterilization unit (340) and inside sterilization unit (1100) are controlled to be turned of f to the respectively and it is controlled to be turned off to the simultaneously.

Furthermore, the radioactivity detection sensor for sensing the radioactive substance in wh ich the handy type vacuum cleaner is flowed in through the inlet (330) of the sub-body ma in body (300) is include might. The necessity of the administration about this can be the h andy type vacuum cleaner generated in the environment in which the possibility that radio active substances exist not only the bedclothes, is high in case the use. Therefore the radi oactive substance flowed in into the cleaner is sensed and it corresponds to the appropriat ely. The radioactivity detection sensor is installed at the outside of the inlet (330) opened t o the downward in the sub-body main body (300) and it can detect the radioactive substa nce from the foreign substance or the cleaning object flowed in through the inlet (330).

The reference numeral , and 130 which is not explained in fig. 1 are the handle and 140 is the on/off control switch and 180 is the printed circuit board in which the circuit for the o n/off control is integrated and 700 is the air diffuser. The air diffuser (700) is the part ejec ting air to the outside after the suction through in order inlet (330), and the filtering throu

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gh the filter section (600). Therefore, it further includes the aromatic agent in the air diffu ser (700) the indoor air is purified.

In an embodiment of the upper part, furthermore, fig. 1 the , referring to Figure 4, the ha ndy type vacuum cleaner comprises the dust collection part (200) and the NFC chip (2000) is located on surface the air channel (A1) between the main body (100) and for providing t he airflow sensing part (2030) sensing the air flow rate within the air channel between the dust collection part (200) and the main body (100), and data storage module (2040) stori ng the information associated with the sensed air flow rate in the airflow sensing part (203 0) and the information stored in data storage module (2040) in the suction force generatio n by the operation of the vacuum motor assembly (120) to the external mobile apparatus (2010).

The airflow sensing part (2030) provides the user the flux related information is stored in t he data storage module (2040) the air flow rate within the air channel (A1) is sensed with the information about the replace period of filter. And the inconvenience the user by the n aked eye distinguishes the filter of the inside after the user separates the conventional dus t collector container and of determining the replacement whether or not can be removed. I n addition filter can be longer used in fact it replaces or the filtration work is not smooth b y overly long using and the problem of causing the malfunction of the cleaner due to that or doing is prevented.

Any one of ISO 14444A as the interface, the ISO 14443A, and the ISO 18092 and ISO 144 43 type for example, the P2P mode the communication between the mobile apparatus (20 10) and the NFC chip (2000) can be applied can be used. But it is not restricted to such ex amples. As to the communication using the NFC chip (2000), for example, the information (in other words, the information about the filter replacement cycle) about the air flow rate within the air channel, the information about the radioactivity, sensed from the foreign sub stance flowed in the operation time of the vacuum motor assembly, the cleaner use histor y, the product information or the product A / S information etc. can have as to the informa tion, provided to the mobile apparatus (2010). But the information, is not restricted. Infor mations are received using the app (APP) (2020) in which the mobile apparatus (2010) is i nstalled within the mobile apparatus (2010) and it stores or it can process.

Besides, the handy type vacuum cleaner further includes the real time clock (RTC) (2050) and the time information can be stored to data storage module (2040). Such time informa tion is connected to the operation time or the cleaner use history of the vacuum motor ass embly etc. and such time information can be stored in data storage module (2040).

Finally, the batting rod assembly (320) for sweeping off the foreign substance on the clean ing object is illustrated with reference to figures 5a and 5b. The batting rod assembly (32 0) is combined within the sub-body (300) in order to be attachable to and detachable. The refore, it is the element which the batting rod assembly (320) any time can replace as nec essary. By the batting rod assembly (320) rotating to the together in the foreign substanc e suction action by the operation of the vacuum motor assembly (120) and striking the cle aning object the foreign substance can be swept off. It the independently rotates to the ba tting rod assembly (320) and the cleaning object can be struck with the differently with thi s of the foreign substance suction action. Of course, the motor (not illustrated) for rotating the batting rod assembly (320) is separately prepared within the sub-body (300)

The batting rod assembly (320) comprises the multiple batting rods (322), cases (321a, 3 21b : 321), and the pivot supporter. Multiple batting rods (322) include the pivot (pivot) (322a) and head (322b) and it is connected by the connection part (322c) for the pivot (3 22a) and head (322b).

The case (321) may be provided with the batting rod (322), respectively, the correspondin g slot (323) the batting rod (322) exercises circular arc. That is, the batting rod (322) eac h pivot (322a) is respectively inserted with the slot (323) and the batting rod (322) does a round this with the circular arc movement (324). Here, the motion of the batting rod (322) at the range that the range is restricted with the length of the slot (323) to do because of being the circular arc movement is meant.

Therefore, when the batting rod assembly (322) does the rotary motion (arrow 324) the b atting rod (322) (especially, the head (322b)) strikes cleaning objects. In this case, at the same time, the circular arc movement is together made with the rotary motion of the batti

ng rod (322) according to the rotation of the batting rod assembly (320). Therefore more efficiently, the foreign substance can be swept off from the cleaning object. In other word s, in case the batting rod did not exercise circular arc like the existing and it was fixed sinc e the cleaning object acted on the resistive element in the blow it was caused by and the r otary motion of the batting rod assembly (320) received the disturbance. In addition the o peration was difficult to be nothing but the operation of the extent of scratching rather tha n the batting rod knocked at the cleaning object and efficiently sweep off the foreign subst ance to the structure of being like that. In the present invention, at the same time, the bat ting rod (322) itself of the batting rod (322) the circular arc movement shares in comparis on with this according to the rotation of the batting rod assembly (320) with the rotation (arrow 324) box. Therefore it exercises circular arc according to the slot (323) although th e batting rod (322) contacts the cleaning object and the resistance of the cleaning object c an be reduced and the foreign substance is more effectively swept off.

It is prepared to be respectively corresponded within the case (321) with the batting rod (322) in order to support each pivot supporter (324) is the batting rod (322), especially, t he batting rod (322) each pivot (322a) part. In the pivot supporter (324), so that the batti ng rod (322) smoothly do the circular arc movement the part contacting with the pivot (32 2a) is concavely formed.

As described above, the handy type vacuum cleaner according to the present invention ha s the advantage that the inside sterilization unit adopted to the extrusion housing and insi de is included. In that way the ultraviolet ray is directly irradiated within the dust collectio n part on the collected foreign substance and it can sterilize. Besides, the outside sterilizati on unit includes to the primary in the sub-body body side. In that way it has the advantag e having the function of dually sterilizing. Furthermore, the information about the filter rep lacement cycle can be easily known through the NFC communication and the information h as the advantage which more efficiently, can manage the cleaner administration.

Brief explanation of the drawing

Figure 1 is a cross-sectional view of the handy type vacuum cleaner according to a preferr ed embodiment of the present invention.

Figure 2 is a cross-sectional view for illustrating the extrusion housing (1000) of fig. 1.

It is drawing in which fig. 3 exemplifies many shape of the extrusion housing (1000) of 1 a nd the inside sterilization unit (1100) received inside the extrusion housing (1000).

Figure 4 is a block diagram for illustrating the administrative process of the handy type va cuum cleaner according to a preferred embodiment of the present invention.

Figures 5a and 5b are drawings showing the embodiment of the batting rod assembly (32 0) of fig. 1.

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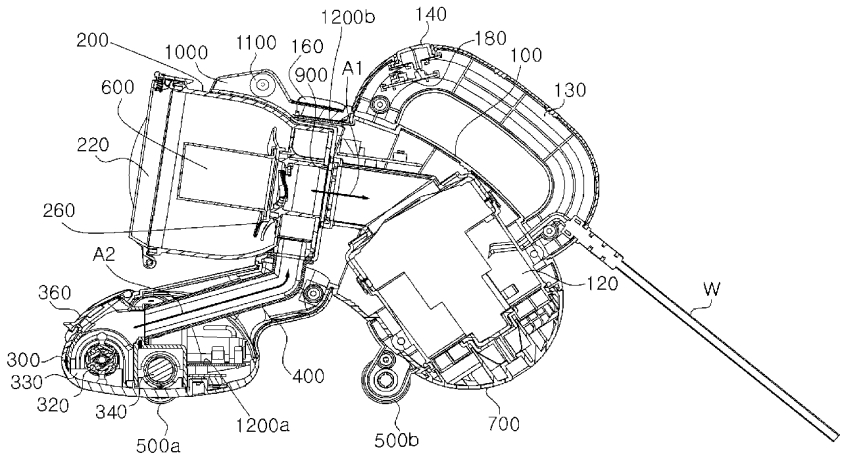
(54) 발명의 명칭 **이중 살균기능을 갖는 핸디형 진공 청소기**

(57) 요 약

이중 살균 기능을 갖는 핸디형 진공 청소기가 개시된다. 이 핸디형 진공 청소기는, 진공모터 어셈블리를 포함하는 메인 바디, 메인 바디의 전방에 착탈가능하도록 결합되고, 진공모터 어셈블리의 작동에 의해 발생되는 흡입력과 내부에 형성된 싸이클론 날개와의 상호 작용에 의해, 유입되는 이물질을 공전시키는 집진부, 메인 바디와 집진부 사이의 공기 유로 상에 위치하도록 집진부 내부에 결합되는 필터부, 흡입구를 통해 청소 대상물 상의 이물질을 흡입하여 집진부 내부로 유입시키는 서브 바디, 메인 바디의 전방에 집진부를 부착하는 경우, 집진부 외곽의 상부에 위치하도록 메인 바디의 전방으로 돌출된 돌출 하우징, 그리고, 돌출 하우징 내에 수용되어, 집진부 내부로 자외선을 조사하기 위한 내부 살균부를 포함한다.

대 표 도 - 도1



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명 세 서

청구범위

청구항 1

진공모터 어셈블리를 포함하는 메인 바디;

상기 메인 바디의 전방에 착탈가능하도록 결합되고, 상기 진공모터 어셈블리의 작동에 의해 발생되는 흡입력과 내부에 형성된 싸이클론 날개의 작용에 의해, 유입되는 이물질을 공전시키는 집진부;

상기 메인 바디와 상기 집진부 사이의 공기 유로 상에 위치하도록 상기 집진부 내부에 결합되는 필터부;

흡입구를 통해 청소 대상물 상의 이물질을 흡입하여 상기 집진부 내부로 유입시키기 위한 서브 바디;

상기 메인 바디의 전방에 상기 집진부를 부착하는 경우, 상기 집진부 외곽의 상부에 위치하도록 상기 메인 바디의 전방으로 돌출된 돌출 하우징;

상기 돌출 하우징 내에 수용되어, 상기 집진부 내부로 자외선을 조사하기 위한 내부 살균부;

상기 집진부와 상기 메인 바디 사이의 공기 유로 상에 위치하여, 상기 진공모터 어셈블리의 작동에 의한 흡입력 발생시, 상기 집진부와 상기 메인 바디 사이의 공기 유로 내의 공기 유속을 센싱하는 공기 흐름 센싱부;

상기 공기 흐름 센싱부에서 센싱된 공기 유속과 관련된 정보를 저장하는 데이터 저장부; 및

상기 데이터 저장부에 저장된 정보를 외부의 모바일 기기로 제공하기 위한 NFC 칩을 포함하는 것을 특징으로 하는 핸디형 진공 청소기.

청구항 2

청구항 1에 있어서,

상기 서브 바디 내에 위치하여 청소 대상물 측으로 자외선을 조사하기 위한 외부 살균부를 더 포함하는 것을 특징으로 하는 핸디형 진공 청소기.

청구항 3

삭제

청구항 4

삭제

청구항 5

삭제

청구항 6

청구항 2에 있어서,

상기 서브 바디의 흡입구를 통해 유입되는 방사능 물질을 감지하기 위한 방사능 감지센서를 더 포함하는 것을 특징으로 하는 핸디형 진공 청소기.

청구항 7

삭제

청구항 8

청구항 1에 있어서, 상기 핸디형 진공 청소기는, 상기 서브 바디 내에 착탈가능하게 결합되어, 회전운동에 의해 상기 청소 대상물 상의 이물질을 털어내기 위한 타격봉 어셈블리를 더 포함하며, 상기 타격봉 어셈블리는,

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각각이, 피봇(pivot)과 상기 피봇에 연결되어 상기 청소 대상물을 타격하는 헤드(head)를 포함하는, 복수 개의 타격봉들;

상기 타격봉들 각각의 피봇이 삽입되어 상기 타격봉들 각각이 원호운동 가능하도록 하는 슬롯이 형성된, 케이스; 및

상기 케이스 내에 위치하여 상기 타격봉들 각각의 피봇을 지지하는 피봇 서포터를 포함하며,

상기 타격봉들 각각의 원호운동은, 상기 슬롯의 길이에 의해 제한되는 범위 내에서, 상기 타격봉 어셈블리의 회전운동시 회전운동과 동일한 방향으로의 운동인 것을 특징으로 하는 핸디형 진공 청소기.

발명의 설명

기 술 분 야

[0001] 본 발명은 이중 살균기능을 갖는 핸디형 진공 청소기에 관한 것이고, 더 구체적으로는 청소 대상물을 1차 살균하면서 이와 동시에 청소 대상물로부터 흡입된 이물질에 대해서도 2차 살균할 수 있는 핸디형 진공 청소기에 관한 것이다.

배 경 기 술

[0002] 가정이나 사무실 등에서 먼지 제거를 위해 여러 종류의 진공 청소기가 사용되고 있다. 여러 종류의 진공 청소기 중 특히, 이불이나 베개 등의 침구류, 의류 또는 차량 내부 청소를 위한 핸디형 진공청소기가 출시되어 있다. 현재까지 사용되고 있는 핸디형 진공청소기의 종류도 또한 매우 다양한데, 먼지나 머리카락 등의 이물질을 흡입하는 기능에서 더 나아가, 자외선 살균 기능, 청소대상물을 타격하거나 브러싱하는 기능까지 구비한 핸디형 진공청소기가 존재한다. 이러한 핸디형 진공청소기의 일 예로서 본 출원의 발명자에 의해 발명되어 등록된 등록특허 10-1110302(등록일자 : 2012.01.19.)가 있다.

[0003] 위 등록특허 10-1110302는 기존의 핸디형 진공청소기에 있어서 전체적으로 직선 형태의 공기 유로 상에 이물질이 유입되는 집진통과 필터가 함께 배치됨으로 인해, 청소기 작동시 필터를 통한 여과가 원활하지 않을 뿐만 아니라 수집된 이물질 제거 작업도 또한 불편했던 기존의 핸디형 진공청소기의 문제점을 개선하기 위한 것이다. 나아가, 위 등록특허 10-1110302는 자외선 살균부를 구비하여, 청소 대상물이나 이물질에 대해 살균을 할 수 있는 기능도 제공하고 있다.

[0004] 하지만, 위 등록특허 10-1110302의 핸디형 진공청소기는 개구를 통해 흡입되는 이물질 또는 청소 대상물에 대해 살균하기 위한 자외선 살균부를 통해 살균하는 기능이 구비되어 있기는 하나, 흡입 개구를 통해 흡입되는 이물질이 집진부로 유입되는 시간은 매우 짧고 순식간에 이루어지므로, 이물질에 대한 살균 효과는 높지 않은 단점이 있다. 그뿐만 아니라, 필터 교체 주기와 관련하여서도, 집진통을 분리한 후 그 내부의 필터를 육안으로 식별하여 교체 여부를 판단하여야 하므로, 그 작업이 번거로울 뿐 아니라, 실제로 필터를 더 오래 사용할 수 있음에도 교체한다거나, 지나치게 오래 사용하여 여과 작업이 원활하지 않게 되는 또 다른 문제를 발생시키는 단점이 있다.

[0005] 더 나아가, 필터의 교체 주기뿐만 아니라, 핸디형 진공청소기의 전반적인 관리를 더욱 효과적으로 할 필요성이 있고, 핸디형 진공청소기의 사용 범위도 확대되어감에 따라 청소 대상물 또는 이물질 중의 방사능 물질에 대한 센싱도 필요하게 되었다.

선행기술문헌

특허문헌

[0006] (특허문헌 0001) 등록특허 10-1110302(등록일자 : 2012.01.19.)

발명의 내용

해결하려는 과제

[0007] 본 발명이 해결하고자 하는 과제는 종래 핸디형 청소기의 살균 효과를 강화하기 위해 2중 살균 효과를 갖는 핸

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디형 진공청소기를 제공하는 것이다.

[0008] 본 발명이 해결하는 다른 과제는 필터 교체 주기를 육안으로 관찰하여 판단하지 않고서도 정확한 교체 시점을 알 수 있도록 하며, 진공청소기의 전반적인 관리를 효율적으로 할 수 있도록 하는 핸디형 진공청소기를 제공하는 것이다.

[0009] 본 발명이 해결하고자 하는 또 다른 과제는 청소 대상물 또는 청소 대상물의 이물질 중의 방사능 물질을 센싱할 수 있는 기능을 구비한 핸디형 진공청소기를 제공하는 것이다.

과제의 해결 수단

[0010] 상기 과제를 해결하기 위한 본 발명의 일 양상에 따른 핸디형 진공청소기는, 진공모터 어셈블리를 포함하는 메인 바디와, 상기 메인 바디의 전방에 착탈가능하도록 결합되고, 상기 진공모터 어셈블리의 작동에 의해 발생되는 흡입력과 내부에 형성된 싸이클론 날개의 작용에 의해, 유입되는 이물질을 공전시키는 집진부와, 상기 메인 바디와 상기 집진부 사이의 공기 유로 상에 위치하도록 상기 집진부 내부에 결합되는 필터부와, 흡입구를 통해 청소 대상물 상의 이물질을 흡입하여 상기 집진부 내부로 유입시키는 서브 바디와, 상기 메인 바디의 전방에 상기 집진부를 부착하는 경우, 상기 집진부 외곽의 상부에 위치하도록 상기 메인 바디의 전방으로 돌출된 돌출 하우징과, 상기 돌출 하우징 내에 수용되어, 상기 집진부 내부로 자외선을 조사하기 위한 내부 살균부를 포함한다.

[0011] 일 실시예에 따라, 상기 핸디형 진공 청소기는, 상기 서브 바디 내에 위치하여 청소 대상물 측으로 자외선을 조사하기 위한 외부 살균부를 더 포함한다.

[0012] 일 실시예에 따라, 상기 서브 바디는 내부에 상기 내부 살균부 및 상기 외부 살균부를 구동하기 위한 회로가 집적된 메인 인쇄회로기판을 포함하며, 상기 메인 인쇄회로기판과 상기 내부 살균부 간은 상기 서브 바디와 상기 집진부 간의 공기 유로의 외측을 따라 배치된 전기 배선에 의해 전기적으로 연결된다.

[0013] 일 실시예에 따라, 상기 메인 바디는 상기 돌출 하우징과 인접한 위치에 서브 인쇄회로기판과, 상기 서브 인쇄회로기판과 전기적으로 연결되어 상기 청소기의 작동 상태를 표시하기 위한 작동 상태 표시부를 포함하며, 상기 내부 살균부는 상기 서브 인쇄회로기판과 전기적으로 연결된다.

[0014] 일 실시예에 따라, 상기 돌출 하우징은 불투명한 재료로 구성되며, 상기 돌출 하우징에서, 상기 집진부와 마주하는 면은 오목하게 형성된다.

[0015] 일 실시예에 따라, 상기 핸디형 진공 청소기는 상기 서브 바디의 흡입구를 통해 유입되는 방사능 물질을 감지하기 위한 방사능 감지센서를 더 포함한다.

[0016] 일 실시예에 따라, 상기 핸디형 진공 청소기는 상기 집진부와 상기 메인 바디 사이의 공기 유로 상에 위치하여, 상기 진공모터 어셈블리의 작동에 의한 흡입력 발생시, 상기 집진부와 상기 메인 바디 사이의 공기 유로 내의 공기 유속을 센싱하는 공기 흐름 센싱부와, 상기 공기 흐름 센싱부에서 센싱된 공기 유속과 관련된 정보를 저장하는 데이터 저장부와, 상기 데이터 저장부에 저장된 정보를 외부의 모바일 기기로 제공하기 위한 NFC 칩을 더 포함한다.

[0017] 일 실시예에 따라, 상기 핸디형 진공 청소기는, 상기 서브 바디 내에 착탈가능하게 결합되어, 회전운동에 의해 상기 청소 대상물 상의 이물질을 털어내기 위한 타격봉 어셈블리를 더 포함하며, 상기 타격봉 어셈블리는, 각각이, 피봇(pivot)과 상기 피봇에 연결되어 상기 청소 대상물을 타격하는 헤드(head)를 포함하는, 복수 개의 타격봉들;상기 타격봉들 각각의 피봇이 삽입되어 상기 타격봉들 각각이 원호운동 가능하도록 하는 슬롯이 형성된, 케이스; 및 상기 케이스 내에 위치하여 상기 타격봉들 각각의 피봇을 지지하는 피봇 서포터를 포함하며, 상기 타격봉들 각각의 원호운동은, 상기 슬롯의 길이에 의해 제한되는 범위 내에서, 상기 타격봉 어셈블리의 회전운동시 회전운동과 동일한 방향으로의 운동이다.

발명의 효과

[0018] 본 발명은 개선된 핸디형 진공청소기를 제공함으로써, 종래 핸디형 진공청소기에 비해 살균 기능을 더욱 향상되며, 필터의 교체 주기를 쉽게 알 수 있도록 하며, 진공청소기의 전반적인 관리를 더욱 효과적으로 할 수 있도록 할 뿐만 아니라, 청소 대상물의 이물질 중 방사능 물질을 센싱할 수 있도록 하여 방사능 물질에 대한 노출을 미연에 방지할 수 있는 효과를 갖는다.

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도면의 간단한 설명

[0019] 도 1은 본 발명의 일 실시예에 따른 핸디형 진공청소기의 단면도이다.

도 2는 도 1의 돌출 하우징(1000)을 설명하기 위한 단면도이다.

도 3은 도 1의 돌출 하우징(1000)과 돌출 하우징(1000)의 내부에 수용된 내부 살균부(1100)의 여러 가지 형태를 예시한 도면이다.

도 4는 본 발명의 일 실시예에 따른 핸디형 진공청소기의 관리 프로세스를 설명하기 위한 블록도이다.

도 5a 및 도 5b는 도 1의 타격봉 어셈블리(320)의 일 실시예를 나타낸 도면들이다.

발명을 실시하기 위한 구체적인 내용

[0020] 이하에서는 본 발명의 바람직한 실시예들을 첨부된 도면들을 참조하여 설명하도록 한다. 첨부된 도면들 및 이에 관한 설명은 당해 기술 분야에서 통상의 지식을 가진 자로 하여금 본 발명에 관한 이해를 돕기 위한 의도로 예시된 것이지, 본 발명의 범위를 한정하려고 의도된 것이 아님에 유의하여야 할 것이다.

[0021] 도 1은 본 발명의 일 실시예에 따른 핸디형 진공청소기의 단면도이다. 도 1을 참조하면, 상기 핸디형 진공청소기는 크게는 메인 바디(100), 집진부(200), 서브 바디(300, 400)를 포함한다. 서브 바디(300, 400)는 서브 바디 본체(300)와 브릿지(400)로 구분된다. 또한, 집진부(200)의 내부에는 필터부(600)가 체결되고, 메인 바디(100)의 전방으로 돌출되고 내부에 내부 살균부(1100)를 포함하고 있는 돌출 하우징(1000)을 포함한다.

[0022] 메인 바디(100)와 집진부(200) 사이, 그리고 서브 바디(300, 400)와 집진부(200) 사이에 공기 유로(A1, A2)가 형성되어 있다. 설명의 편의상 메인 바디(100)와 집진부(200) 사이의 공기 유로를 제1 공기 유로(A1)라 하고, 서브 바디(300, 400)와 집진부(200) 사이의 공기 유로를 제2 공기 유로(A2)라 한다. 이들 공기 유로들(A1, A2)을 포함하는 전체 공기 흐름 경로를 살펴보면, 먼저, 제1 공기 유로(A1)를 포함하는 공기 흐름 경로는, 차례대로, 집진부(200), 필터부(600), 제1 공기 유로(A1) 순서이다. 한편, 제2 공기 유로(A2)를 포함하는 공기 흐름 경로는, 차례대로, 흡입구(330), 제2 공기 유로(A2), 집진부(200) 순서이다. 편의상, 이하에서는 이들 공기 흐름 경로를 각각, 제1 공기 유로(A1), 제2 공기 유로(A2)로 나타내기도 한다.

[0023] 메인 바디(100)는 진공에 의한 흡입력을 발생시키기 위한 진공모터 어셈블리(120)를 포함한다. 진공 모터 어셈블리(120)는 통상적으로 진공 청소기에 사용되는 진공모터 어셈블리가 사용될 수 있다. 메인 바디(100)에는 손잡이(130)가 결합되고, 손잡이(13)에는 진공청소기의 온/오프 제어를 위한 제어 스위치(14) 및 제어 처리를 위한 회로를 포함하는 인쇄회로기판(18)이 더 구비될 수 있다. 또한, 메인 바디(100)에는 진공청소기의 동작 상황을 표시하기 위한 표시부(160)가 더 구비될 수 있다. 상기 손잡이(130)는 메인 바디(100)와 일체로 형성되거나 별도로 성형된 후 소정의 체결수단에 의해 메인 바디(100)에 결합될 수도 있다. 또한, 메인 바디(100)에 전기 코드(W)가 연결되어, 진공청소기의 동작에 필요한 전원이 공급될 수 있다. 더 나아가, 메인 바디(100)에 충전기(미도시)가 내장되어 충전 방식에 의해 진공청소기가 동작될 수도 있다.

[0024] 서브 바디(300, 400)는 크게는 서브 바디 본체(300)와, 서브 바디 본체(300)와 메인 바디(100) 간을 연결하는 브릿지(400)로 구성된다. 서브 바디(300, 400)는 청소 대상물(미도시) 상의 이물질을 살균하거나, 청소 대상물로부터 이물질을 털어내거나, 이물질을 흡입하는 기능을 구비한다. 여기서, 청소 대상물이라 함은 이불이나 베개 등의 침구류뿐만 아니라 차량 내부, 소파, 또는 섬유 재질의 깔판 등 다양할 수 있다. 또한, 본 명세서에서 사용되는 살균이라는 용어는 세균을 죽인다는 의미뿐만 아니라 진드기와 같은 해충을 살충하는 개념을 포함하는 것으로 정의한다. 또한, 이물질은 머리카락, 먼지, 종이 조각 등 일반적으로 청소 대상물로부터 제거하고자 하는 모든 물질을 포함하는 것으로 정의한다.

[0025] 서브 바디 본체(300)는 청소 대상물로부터 이물질을 분리해 내기 위한 타격봉 어셈블리(320)와 청소 대상물 상의 이물질을 살균하기 위한 외부 살균부(340)를 포함한다. 타격봉 어셈블리(320)의 상세 구조에 관한 예는 이하에서 도 5a 및 도 5b를 참조하여 상세히 설명하도록 한다. 타격봉 어셈블리(320)는 흡입구(330) 가까이에 배치되는 것이 바람직하다. 흡입구(330)는 서브 바디(300, 400)와 집진부(200) 사이의 제2 공기 유로(A2)와 직접적으로 연결된다. 그리하여, 서브 바디 본체(300)는 흡입구(330)를 통해 이물질을 집진부(200) 내부로 유입시킨다. 전체적으로 보면, 공기 흐름 경로는, 흡입구(330), 제2 공기 유로(A2), 집진부(200), 필터부(600) 및 제1 공기 유로(A1)의 흐름으로 볼 수 있는데, 서브 바디(300, 400)는 집진부(200)를 중간에 개재시켜 메인 바디(100) 측과의 공기 유로를 형성한다.

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[0026] 외부 살균부(340)는 자외선 살균 램프를 포함하여, 서브 바디 본체(300) 내에 위치하여 청소 대상물 측으로 자외선을 조사하여, 청소 대상물을 살균하는 역할을 한다.

[0027] 서브 바디(300, 400)를 구성하는 브릿지(400)는 메인 바디(100)와 서브 바디 본체(300) 간을 연결하며, 내부에 제2 공기 유로(A2)가 형성되어 있다.

[0028] 집진부(200)는 메인 바디(100)의 전방에 착탈식으로 결합되어, 흡입구(330)를 통해 집진부(200) 내로 유입되는 이물질을 공전시킨다. 여기서, 메인 바디(100)의 전방은 사용자가 손잡이(130)를 잡고 진공청소기를 이용하여 청소 작업을 하는 경우 전진 방향을 의미한다. 집진부(200)는 내부의 이물질 집진 상태를 관찰할 수 있도록 하기 위해 투명한 재료로 구성된다.

[0029] 집진부(200)의 내부에는 내부로 유입되는 이물질을 공전시키기 위한 와류를 형성하기 위해 싸이클론 날개(260)가 마련된다. 더 나아가, 집진부(200)와 메인 바디(100)의 체결 부분의 내부, 즉, 제1 공기 유로(A1)의 시작 부분, 다시 말해, 집진부(300)의 내부를 빠져나와 필터부(600)를 통과한 이후의 부분에는 와류 형성을 강화하기 위해 필요에 따라 서브 싸이클론 날개(미도시)가 더 형성될 수 있다.

[0030] 집진부(200)는 메인 바디(100)의 전방에 착탈가능하게 결합될 수 있으며, 그 내부에 형성된 싸이클론 날개(260)는 진공모터 어셈블리(120)의 작동에 의해 발생되는 흡입 작용이 시작되는 경우, 공동 작용에 의해, 집진부(200) 내부에서 이물질을 공전시킨다.

[0031] 집진부(200) 내에는 필터부(600)가 착탈식으로 결합될 수 있다. 필터부(600)는 메인 바디(100)와 집진부(200) 간의 공기 흐름 경로, 즉 제1 공기 유로(A1) 상에 위치한다. 필터부(600)는 복수 개의 배기공이 형성된 필터통과 그 내부에 삽입되는 필터로 구성될 수 있다. 필터는 사용자에 의해 적절한 주기로 교체될 수 있다. 집진부(200) 내에 필터부(600)가 착탈식으로 결합될 수 있도록 하기 위해, 집진부(200)의 내부와 필터부(600)의 외부에는 회전시켜 탈부착할 수 있는 홈 또는 스크류 구조가 서로 대응되도록 형성될 수 있다.

[0032] 메인 바디(100)에는 서브 필터(900)가 더 구비될 수 있다. 이 서브 필터(900)는 사용자의 실수로 필터부(600)를 결합하지 않은 상태로 메인 바디(100)와 집진부(200)를 결합하는 경우, 또는 메인 바디(100)와 필터부(600)와의 결합이 불량인 경우, 제1 공기 유로(A1) 내로 집진부(200) 내부의 이물질이 직접 유입되지 않도록 한다. 그리하여, 청소기의 고장 또는 수명 단축을 미연에 방지하도록 한다.

[0033] 메인 바디(100)의 하부에는 핸디형 진공 청소기의 작동시 청소 대상물 상에 접촉한 상태로 이동이 용이하도록 휠(500a, 500b)이 더 구비될 수 있다.

[0034] 돌출 하우징(1000)은 집진부(200)와 메인 바디(100)의 전방에 부착시, 집진부(200) 외곽의 상부에 위치하도록 메인 바디(100)의 전방으로 돌출되게 형성된다. 여기서, 메인 바디(100)의 전방은 핸디형 진공 청소기의 손잡이를 잡고 청소하는 경우, 정면 방향, 즉 전진하는 방향(도 1에서 좌측)으로 정의한다.

[0035] 돌출 하우징(1000)과 내부 살균부에 관한 설명을 위해 도 2 및 도 3을 참조하도록 한다. 도 2는 도 1의 돌출 하우징(1000)을 설명하기 위한 단면도이고, 도 3은 도 1의 돌출 하우징(1000)과 돌출 하우징(1000)의 내부에 수용된 내부 살균부(1100)의 여러 가지 형태를 예시한 도면이다. 다만, 도 1에서의 내부 살균부(1100)는 도 3의 (b)와 같이 횡으로 수용된 경우이고, 도 2에서의 내부 살균부(1100)는 도 3의 (a)와 같이 종으로 수용된 경우이다.

[0036] 돌출 하우징(1000)에 있어서, 집진부(200)와 마주하는 면(1000a)은 오목하게 형성된다. 예를 들어, 도 2에 도시된 바와 같이, 돌출 하우징(1000)의 면(1000a)는 집진부(200)의 외연(200a)에 대응하는 곡면을 갖도록 형성될 수 있다. 즉, 집진부(200)와 마주하는 돌출 하우징(1000)의 아랫쪽 면(1000a)은 집진부(200) 내부로 자외선이 잘 조사될 수 있도록, 평면 형태가 아니라 집진부(200)의 외연(200a)에 대응하는 구조를 갖도록 굽은 곡면으로 형성될 수 있다. 또는, 이와는 다르게, 돌출 하우징(1000)의 마주하는 면(1000a)의 안쪽이 더 오목하게 들어간 형태로 형성될 수도 있다. 돌출 하우징(1000)은 불투명한 재료로 구성되므로, 돌출 하우징(1000)의 바깥쪽으로 내부 살균부(1100)의 자외선 광이 집진부(200) 이외의 외부로 조사되지 않도록 한다.

[0037] 돌출 하우징(1000)의 내부에는 내부 살균부(1100)를 수용할 수 있도록 집진부(200)를 향하는 쪽으로 개구(opening)를 갖는 살균부 수용홈(1110)이 형성되어 있고, 이 살균부 수용홈(1110)의 개구 측에 석영판(1120)이 결합되어 내부 살균부(1100)를 보호한다.

[0038] 내부 살균부(1100)는 돌출 하우징(1000)의 내부에 수용되어, 집진부(200) 내부로 자외선을 조사하여 집진부(200) 내부에 수집된 이물질에 대해 살균을 가하는 역할을 한다. 내부 살균부(1100)로는, 예를 들어, 냉음극 형

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광램프(CCFL) 또는 엘이디 램프일 수 있다. 내부 살균부(1100)의 형상은 일자형(도 3의 a 또는 b), U자형(도 3의 c) 등으로 다양할 수 있다. 도 3에서 좌측이 전방이고, 우측이 후방, 즉 메인 바디(100) 측이다.

[0039] 서브 바디(300, 400)에서, 서브 바디 본체(300)는 그 내부에 내부 살균부(1100) 및 외부 살균부(340)를 구동하기 위한 회로가 집적된 메인 인쇄회로기판(1200a)을 포함한다. 또한, 메인 인쇄회로기판(1200a)와 내부 살균부(1100) 간은 서브 바디(300, 400)와 집진부(200) 간의 공기 유로(A2)의 외측을 따라 배치된 전기 배선에 의해 전기적으로 연결된다.

[0040] 이와는 다르게, 메인 바디(100)는 돌출 하우징(1000)과 인접한 위치에 서브 인쇄회로기판(1200b) 및 상기 서브 인쇄회로기판(1200b)과 전기적으로 연결되어 상기 핸디형 진공 청소기의 작동 상태를 표시하기 위한 작동 상태 표시부(160)를 포함하며, 돌출 하우징(1000)은 서브 인쇄회로기판(1200b)과 전기적으로 연결될 수 있다.

[0041] 나아가, 상기 핸디형 진공 청소기는 내부 살균부(1100)과 외부 살균부(340)는 청소 대상물로부터 일정거리 이상으로 이격되는 경우, 자동으로 오프되도록 하여 자외선이 눈에 직접적으로 조사되지 않도록 하기 위한 센서(미도시)를 더 포함할 수 있다. 이 경우, 외부 살균부(340)과 내부 살균부(1100)는 각각 독립적으로 오프되도록 제어될 수도 있고, 동시에 오프되도록 제어될 수도 있다.

[0042] 더 나아가, 상기 핸디형 진공 청소기는 서브 바디 본체(300)의 흡입구(330)를 통해 유입되는 방사능 물질을 감지하기 위한 방사능 감지센서를 포함할 수 있다. 침구류 뿐만 아니라, 방사능 물질들이 존재할 가능성이 높은 환경에서 핸디형 진공청소기를 사용하는 경우, 이에 대한 관리의 필요성도 생길 수 있으므로, 청소기로 유입되는 방사능 물질을 감지하여, 적절하게 대응할 수 있도록 한다. 방사능 감지센서는, 예를 들어, 서브 바디 본체(300)에서 하방으로 개방된 흡입구(330)의 외곽에 설치되어, 흡입구(330)를 통해 유입되는 이물질 또는 청소 대상물로부터 방사능 물질을 검출할 수 있다.

[0043] 도 1에서 미설명된 참조부호, 130은 손잡이이고, 140은 온/오프 제어 스위치이며, 180은 온/오프 제어를 위한 회로가 집적된 인쇄회로기판이며, 700은 공기 배출부이다. 공기 배출부(700)는, 차례대로 흡입구(330)를 통한 흡입, 필터부(600)를 통한 필터링 후, 공기를 외부로 배출하는 부분이다. 따라서, 공기 배출부(700)에 의한 공기 배출시, 실내 공기를 정화하고 불쾌한 냄새를 없애며 좋은 향기를 제공할 수 있도록, 공기 배출부(700) 측에 방향제가 더 구비될 수 있다.

[0044] 위의 실시예에서 더 나아가, 도 1과 함께 도 4를 참조하면, 상기 핸디형 진공 청소기는 집진부(200)와 메인 바디(100) 사이의 공기 유로(A1) 상에 위치하여, 진공모터 어셈블리(120)의 작동에 의한 흡입력 발생시, 집진부(200)와 메인 바디(100) 사이의 공기 유로 내의 공기 유속을 센싱하는 공기 흐름 센싱부(2030), 공기 흐름 센싱부(2030)에서 센싱된 공기 유속과 관련된 정보를 저장하는 데이터 저장부(2040), 그리고 데이터 저장부(2040)에 저장된 정보를 외부의 모바일 기기(2010)로 제공하기 위한 NFC 칩(2000)을 포함할 수 있다.

[0045] 공기 흐름 센싱부(2030)는 공기 유로(A1) 내의 공기 유속을 센싱하여, 그 유속 관련 정보를 데이터 저장부(2040)에 저장함으로써, 사용자에게 필터의 교체 주기에 관한 정보를 제공할 수 있다. 그리하여, 사용자는 종래 집진통을 분리한 후 그 내부의 필터를 육안으로 식별하여 교체 여부를 판단하는 불편함을 덜 수 있을 뿐만 아니라, 실제로 필터를 더 오래 사용할 수 있음에도 교체한다거나, 지나치게 오래 사용하여 여과 작업이 원활하지 않게 되어, 그로 인한 청소기의 고장을 초래한다거나 하는 문제를 방지할 수 있도록 한다.

[0046] NFC 칩(2000)과 모바일 기기(2010) 간의 통신은, 예를 들어, P2P 방식이 사용될 수 있으며, 인터페이스로서는 ISO 14444A, ISO 14443A, ISO 18092 및 ISO 14443 타입 중 어느 하나가 사용될 수 있으나, 이러한 예들로 한정되는 것은 아니다. NFC 칩(2000)을 이용한 통신에 있어서, 모바일 기기(2010)로 제공되는 정보는, 예를 들어, 공기 유로 내의 공기 유속에 관한 정보(즉, 필터 교체 주기에 관한 정보), 유입되는 이물질로부터 센싱되는 방사능에 관한 정보, 진공모터 어셈블리의 작동시간, 청소기 사용 이력, 제품 정보 또는 제품 A/S 정보 등이 있을 수 있으나, 이러한 것들로 한정되는 것은 아니다. 모바일 기기(2010)는 모바일 기기(2010) 내에 설치된 앱(APP)(2020)을 이용하여, 상기 정보들을 수신하여 저장하거나, 가공할 수 있다.

[0047] 뿐만 아니라, 상기 핸디형 진공 청소기는 리얼 타임 클럭(RTC)(2050)을 더 구비하여, 데이터 저장부(2040)로 시간 정보를 저장할 수 있다. 이러한 시간 정보는, 진공모터 어셈블리의 작동시간 또는 청소기 사용 이력 등과 연계되어 데이터 저장부(2040)에 저장될 수 있다.

[0048] 마지막으로, 도 5a 및 도 5b를 참조하여, 청소 대상물 상의 이물질을 털어내기 위한 타격봉 어셈블리(320)를 설명하도록 한다. 타격봉 어셈블리(320)는 서브 바디(300) 내에 착탈가능하도록 결합된다. 따라서, 타격봉 어셈블리(320)는 필요에 따라 언제든지 교체할 수 있는 구성요소이다. 타격봉 어셈블리(320)는 진공모터 어셈블리

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(120)의 작동에 의한 이물질 흡입 동작시 함께 회전운동하여 청소 대상물을 타격함으로써 이물질을 털어낼 수 있다. 이와는 다르게, 이물질 흡입 동작과 관계없이, 타격봉 어셈블리(320)만 단독으로 회전운동하여 청소 대상물을 타격할 수도 있다. 물론, 서브 바디(300) 내에는 타격봉 어셈블리(320)를 회전운동시키기 위한 모터(미도시)가 별도로 마련된다

[0049] 타격봉 어셈블리(320)는, 복수 개의 타격봉들(322), 케이스(321a, 321b : 321) 및 피봇 서포터(pivot supporter)를 포함한다. 복수 개의 타격봉들(322) 각각은 피봇(pivot)(322a) 및 헤드(322b)를 포함하며, 피봇(322a)과 헤드(322b) 간은 연결부(322c)에 의해 연결되어 있다.

[0050] 케이스(321)에는 타격봉들(322) 각각이 원호운동할 수 있도록 타격봉들(322) 각각에 대응하는 슬롯들(323)이 형성된다. 즉, 타격봉들(322) 각각의 피봇(322a)이 슬롯들(323) 각각에 삽입되어, 이를 중심으로 타격봉들(322) 각각이 원호운동(324)할 수 있게 된다. 여기서 원호운동이라 함은 슬롯(323)의 길이에 의해 한정되는 범위에서의 타격봉들(322)의 운동을 의미한다.

[0051] 따라서, 타격봉 어셈블리(322)가 회전운동(화살표 324)할 경우, 타격봉들(322)(특히, 헤드(322b))이 청소 대상물들을 타격하게 되는데, 이 경우, 타격봉 어셈블리(320)의 회전에 따른 타격봉들(322)의 회전운동과 동시에 원호운동도 함께 이루어지므로, 청소 대상물로부터 이물질을 더욱 효율적으로 털어낼 수 있다. 다시 말해, 기존과 같이 타격봉이 원호운동하지 않고 고정되어 있는 경우에는, 타격시 청소 대상물이 저항 요소로 작용함으로 인해 타격봉 어셈블리(320)의 회전운동이 방해를 받을 뿐만 아니라, 타격봉이 청소 대상물을 두드린다기보다는 긁어내는 정도의 동작에 불과하여 이러한 구조만으로는 이물질을 효율적으로 털어내기는 어려웠다. 이에 비해, 본 발명에서는 타격봉 어셈블리(320)의 회전에 따라 타격봉(322)이 회전(회살표 324)함과 동시에, 타격봉(322) 자체가 원호운동도 함께 하므로, 타격봉(322)이 청소 대상물과 접촉하더라도 슬롯(323)을 따라 원호운동하여, 청소 대상물과의 저항을 줄일 수 있어, 이물질을 더욱 효과적으로 털어낼 수 있게 된다.

[0052] 피봇 서포터(324)는 타격봉들(322) 각각, 특히 타격봉들(322) 각각의 피봇(322a) 부분을 지지하도록 케이스(321) 내에 타격봉들(322) 각각에 대응되게 마련된다. 피봇 서포터(324)에서 피봇(322a)과 접촉하는 부분은 타격봉들(322)이 원호운동을 원활하게 할 수 있도록 하기 위해 오목하게 형성된다.

[0053] 이상 설명한 바와 같이, 본 발명에 따른 핸디형 진공 청소기는 돌출 하우징과 그 내부에 수용되는 내부 살균부를 구비함으로써, 집진부 내에 수집되는 이물질에 대해 직접적으로 자외선을 조사하여 살균할 수 있는 이점이 있다. 그뿐만 아니라, 1차적으로 서브 바디 본체 측에 외부 살균부도 구비함으로써, 이중으로 살균하는 기능을 갖는 이점이 있다. 더 나아가, NFC 통신을 통해 필터 교체 주기에 관한 정보를 용이하게 알 수 있어, 청소기 관리를 보다 효율적으로 할 수 있는 이점이 있다.

부호의 설명

[0054]

100 : 메인 바디	200 : 집진부
300 : 서브 바디 본체	400 : 브릿지
600 : 필터	1000 : 돌출 하우징
1100 : 내부 살균부	340 : 외부 살균부
2000 : NFC 칩	2010 : 모바일 기기
2030 : 공기 흐름 센싱부	2040 : 데이터 저장부
2050 : RTC	

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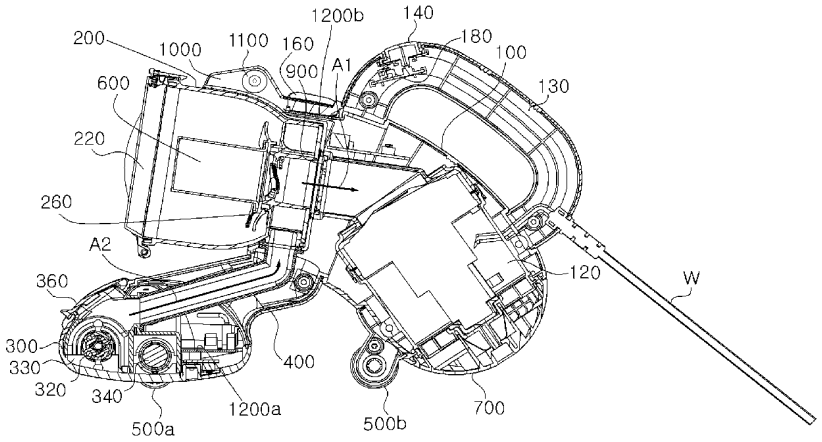
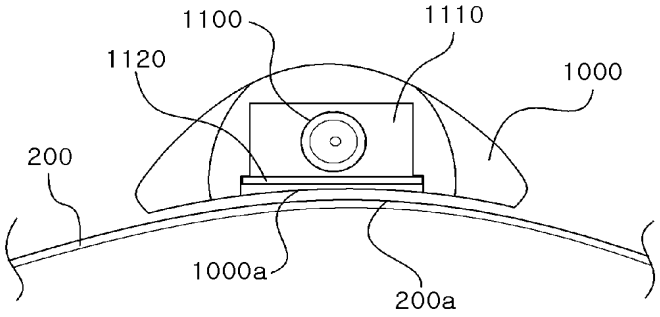
도면

도면1



도면2



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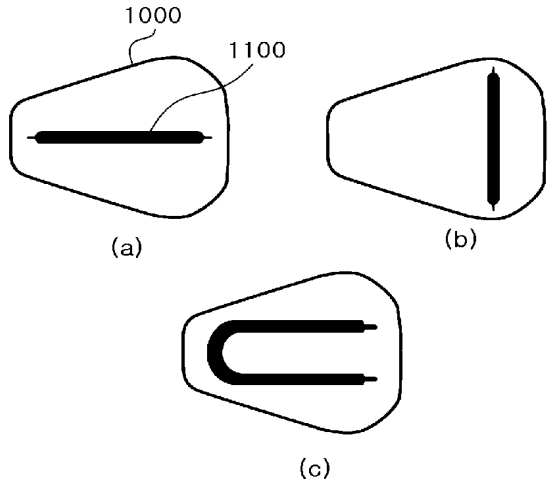

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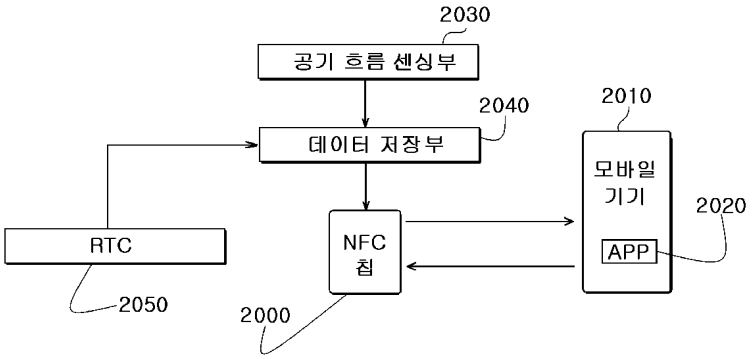
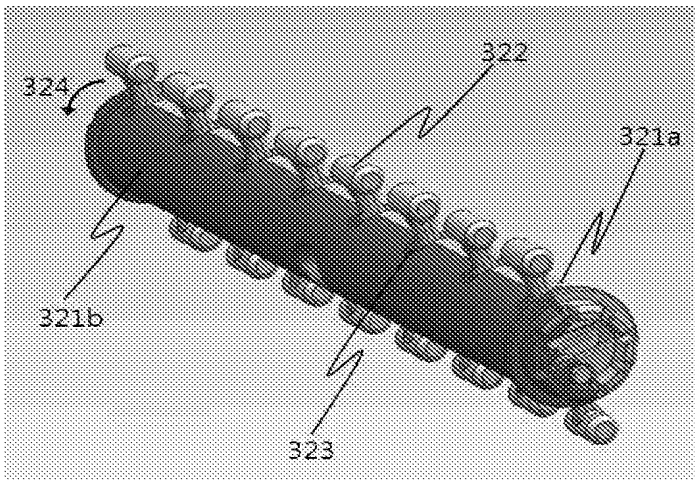
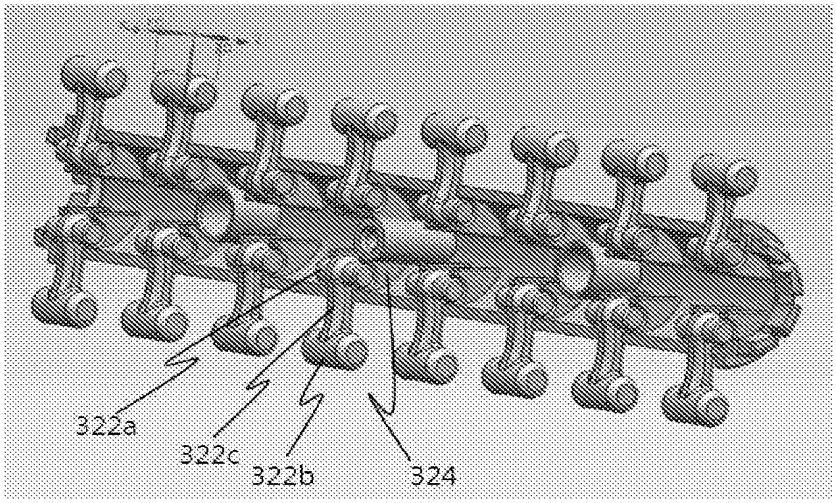
도면4



도면5a



도면5b



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Dust collection device

Page bookmark	CN203724037 (U) - Dust collection device
Inventor(s):	YAN GUOYONG ±
Applicant(s):	KWONNIE ELECTRICAL PRODUCTS LTD ±
Classification:	- international: ***A47L5/24; A47L9/10***
	- cooperative:
Application number:	CN20142112321U 20140313
Priority number(s):	CN20142112321U 20140313

Abstract of CN203724037 (U)

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The utility model discloses a dust collection device which comprises a handheld dust collector body and a dust collection bin. The dust collection bin is detachably mounted at the head end of the dust collector body and comprises a shell, a dust separator and a filter; a first air inlet pipe, a first dust collecting cavity and a first spiral air channel are arranged in the dust separator, a second air inlet pipe is formed inside the first air inlet pipe in an isolation manner and is communicated with the first dust collecting cavity via a plurality of small holes; a second spiral air channel is formed between the rear end of the first spiral air channel and the shell in an enclosed manner; a filter mounting cavity is defined at the rear end of the second spiral air channel, the filter is mounted in the filter mounting cavity, and a second dust collecting cavity is formed between the filter mounting cavity and the shell in an enclosed manner. The dust collection device has the advantages that an air channel used during secondary filtering is the corresponding spiral air channel, so that air and dust particles can circumferentially and centrifugally move in the second dust collecting cavity, suction force required for sucking dust on the filter is low as compared with the traditional dust collector, and the dust can be shaken off and cleaned conveniently.

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DESCRIPTION CN203724037

The utility model discloses a cleaning device comprising a hand-held vacuum cleaner body and removably mounted to the head end of the main body of the cleaner dust bin, dust bin which includes a housing, dust separators and filters; the dust separator a first inlet pipe, a first dust collection chamber, a first spiral duct, the first inlet pipe internal isolation to form a second inlet pipe, the second inlet pipe through a plurality of apertures and the first episode dust chamber in communication; the second spiral duct enclosed by the spiral duct between the first rear end with the housing; rear end of the second spiral duct defining a filter mounting chamber, the filter installed in the filter install cavity, the filter is installed between the enclosure and the shell forming the second dust collection chamber cavity. Since the second air duct when the filter is also designed to spiral duct so that the air and dust particles in the second dust collection chamber circular centrifugal movement, so that dust adsorption filter adsorption force is smaller than the traditional vacuum cleaner in order to shake off and cleaning.

One kind of suction device

TECHNICAL FIELD

The utility model relates to the field of vacuum technology equipment.

Background technique

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With the development of society, the vacuum cleaner has entered the homes of ordinary people. The current vacuum cleaner includes a housing provided at the front end of the housing dust bin, and disposed in the housing suction fan, the suction fan is on the dust bin, including vacuuming the dust bin warehouse housing provided in the inlet and outlet of the dust bin on the housing and disposed within the housing and the dust bin communication between the inlet and the outlet duct. In use, the vacuum fan operation, air from the air inlet into the dust bin of the duct and then into the housing through the housing inlet port, and finally discharged through the outlet on the vacuum cleaner housing, the dust left in the dust bin. However, since both sides of the inlet and outlet duct is located, so that the dust particles in the air duct relatively short residence time, even if there are filter means to filter, and can only make the most of the dust particles settle in the duct, part of the dust particles still discharged outside the vacuum cleaner, still pollute the environment, so that the cleaning work is not in place.

In view of this, the existing Chinese utility model patents (Patent No. 201220423772.2) discloses a cyclonic vacuum cleaner having the cyclone and bin dust bin, the air duct from the inlet channel and the spiral air duct and spiral duct Road dust chamber outlet is provided so that the air and dust particles after a spiral duct in indoor dust circular centrifugal movement, will be separated from the air and dust particles, dust particles settle in indoor dust and air flow from the outlet, such that the dust particles are effectively filtered to ensure exclusion of air quality, will not pollute the environment.

While the above patents to some extent to achieve two separate dust from the baghouse dust large particles for the first time collected by the filter outlet position of small dust particles collected by a second, the size of dust separation , easy to clean; small dust collecting bin in the second circular centrifugal movement, will not soon adsorbed onto the filter, thereby clogging the filter, suction machine helps maintain a longer period of time. However, due to the current general design of the air inlet filter is positive, large wind suction, small dust particles violently crashed straight into the interior of the filter, the small particles of dust impact is very large, easily clog the filter holes of the filter, and this direct impact on the filter dust strong adhesion, resulting in difficult to clean the filter, which change frequently, increasing the cost.

Utility Model Content

In view of this, the utility model for the absence of the prior art, its main purpose is to provide a cleaning device which can not only be a secondary filter, and performs the second time filter, dust filter can be gently blown , the filter clogging long-term use, easy to clean, greatly reducing replacement frequency.

To achieve the above object, the present utility model adopts the technical scheme as follows:

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A suction device, including handheld vacuum cleaner body and detachable mounted on the head end of the cleaner main body dust bin, dust bin which includes a housing, dust separator and a filter; the head end is provided with a dust separator communicated with the outside of the first intake duct, the inlet pipe and the first enclosed cavity is formed between the first dust collector housing; an outer periphery of a first end of the inlet pipe extending forward to form a first helical wind deflector the first helical air guide plate between the housing and the enclosed form a first spiral duct, the first spiral duct in communication with the first inlet duct and the first dust collection chamber in communication; the first intake duct inside forming a second isolation inlet pipe, the second inlet pipe through a plurality of apertures in communication with the first dust collection chamber; a first inlet tube end of the outer periphery extend rearward to form a second helical wind deflector, the first Enclosing formed between two helical air guide plate and the housing second spiral duct; rear end of the second spiral duct defining a filter mounting chamber, the filter attached to the filter mounting chamber, the filter mounted enclosure is formed between the second chamber and the collecting chamber housing.

Preferably, the first spiral air guide plate and the second helical wind deflector integrally connected between the first and second spiral duct duct has a spiral separator.

Preferably, the first outlet into the first tube and the first inclined spiral duct between the air from the first inlet pipe obliquely first spiral duct.

Preferably, the second outlet of the second inclined inlet pipe and a second spiral duct between the second inlet pipe obliquely second spiral duct.

Preferably, the first outlet and a second outlet distributed on both sides of the separator, and the first, second direction opposite to the inclination of the outlet.

Preferably, the rear end of the dust separator bar has a circular ring and a plurality of second bearing ring and bar strip helical connection between the air guide plate in by the bar ring, the support bar and a second spiral guide wind around the inside of the plate to form a filter mounting chamber, stopped by this ring, forming the second dust enclosed cavity between the support bar and the outside shell.

The utility model as compared with the prior art has obvious advantages and benefits, in particular, seen from the above technical solution, since the second duct when the filter is also designed to spiral duct so that the air and dust particles the second collecting chamber circular centrifugal movement of air around the outer surface of the

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filter circling, small dust particles and filter lateral friction, wind speed compared to conventional straight-type design of the structure, the wind, effectively reduce the impact force the air in contact with the filter softer, even the dust adsorbed on the filter, the adsorption force is smaller than the traditional vacuum cleaner in order to shake off and cleaning.

To more clearly illustrate the utility model structural features and effects, with reference to the following detailed description of the utility model performs specific embodiments.

BRIEF DESCRIPTION

FIG. 1 is a sectional view of an assembled state of the utility model of embodiment;

Figure 2 is an exploded installed the utility model schematic diagram of an embodiment of the state;

Figure 3 is an enlarged schematic view of the dust separator of the present utility model of embodiment.

BRIEF identifier Definitions:

100, the cleaner main body 10, lying to

11, switch 20, the elastic engaging piece

200, vacuum bin 30, the housing

31, air inlet 32, an engagement hole

40, the dust separator 41, the first intake air duct

42, the first dust collection chamber 43, a first spiral duct

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431, the first spiral wind deflector 432, a first outlet

44, a second inlet pipe 441, the hole

45, the second spiral duct 451, a second spiral wind deflector

452, a second outlet 46, a separator

47, the second dust collection chamber 471, blocking ring

472, the support bar 48, the filter mounting cavity

50, filter 51, filter

52 sponge.

detailed description

Refer to Figure 1 and Figure 2, which shows a specific structure of the utility model of the preferred embodiment. One kind of suction device comprises a hand-held vacuum cleaner main body 100 and removably attached to the end of the cleaner body 100 dust bin 200. among them:

The body 100 is equipped with vacuum cleaner motors and motor located in the front of the vacuum suction fan, the suction fan 200 is on the dust bin. On the cleaner main body 100 is provided with a 10 to lie, the lie of the work on the vacuum cleaner has a control switch 10 11. This hand-held vacuum cleaner with a small, easy to operate features, people can use this vacuum cleaner to clean the dust on the furniture flexible walls, sofas, cabinets, etc., make up less than conventional automatic vacuum cleaner can clean the floor.

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In conjunction with Figure 1-3, the cleaning cartridge 200 includes a housing 30, attached to the dust separator 40 within the housing 30 and the filter 50. among them:

The vacuum cartridge housing 200 is a hollow 30 bullet shape, is made of a transparent plastic material is made, so that people can observe the amount of dust in the dust collection chamber. The head end of the housing 30 has a inlet opening 31. Also, the cleaner main body 100 provided with an elastic member 20 engaging with the corresponding engaging hole 32 of the dust bin 200 of the housing 30, the resilient engaging member 20 with the engaging hole 32 is detachably mounted, when the amount of dust collecting chamber reaches a certain amount, easily disassembled cleared.

The head end dust separator 40 is provided with a first communication with the outside air intake duct 41, the first air inlet tube 41 terminates in the inlet header 31. The first air inlet tube 41 and the outer wall of the housing enclosure 30 is formed between the first dust collection chamber 42 for collecting large volumes of dust particles, dust for the first time. The outer periphery of the first end of the inlet pipe 41 extends forward to form a first helical air guide plate 431, the first helical air guide plate 431 between the housing 30 and the enclosed form a first spiral duct 43. The rear end of the first spiral duct 43 and the first intake duct 41 communicates with the front end of the first dust collection chamber 42 communicates. In this embodiment, the first inlet pipe 41 and the first helical duct 43 between the first outlet 432 is inclined by a first inlet pipe 41 obliquely first spiral duct 43, oblique the first outlet 432 are better able to guide the wind.

The first intake duct 41 is formed inside the second intake duct isolation 44, the front end of the second intake duct 44 through a plurality of apertures 411 in communication with the first dust collection chamber 42. The outer periphery of the first inlet pipe 41 extends rearward end forming a second spiral wind deflector 451, the second spiral air guide plate 451 between the housing 30 and the enclosure 45 form a second spiral duct. The second inlet pipe 44 and the second spiral 45 between the second outlet duct 452 is inclined by a second inlet pipe 44 obliquely second spiral duct 45, a second oblique outlet 452 better guiding direction. In this embodiment, the first helical air guide plate 431 and the second helical wind deflector 451 integrally connected to the first spiral duct is provided with a plate (46) between 45 and 43 second spiral duct, so that the two duct isolated from each other. The first outlet 432 and a second outlet 452 located in both sides of the plate (46), and first and second outlet opposite inclination direction 432,452, so that the wind direction both within the duct opposite, namely a first spiral duct 43 wind flow from back to front, and a second helical direction duct 45 from front to back flow.

The rear end of the second spiral duct 45 defining a filter mounting cavity 48 for mounting the filter 50. The filter is installed between the housing 30 and the chamber 48 enclosed form a second dust chamber 47 for collecting the remaining small particles of dust. In this embodiment, the rear end of the dust separator 40, a support strip ring 471 and a circular bar is connected to a plurality of block 471 and the second ring spiral wind deflector

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between 451 472 by the blocking ring 471, supporting bars 472 and 451 inside the second helical wind deflector enclosed filter mounting chamber 48 is formed by the blocking ring 471, the support bar 472 and the outer housing 30 enclosed between the second dust-collecting chamber 47 is formed.

The filter 50 includes a filter 51 and / or 51 may be built in strainer washable sponge (or cloth) 52. The filter 50 is a front narrow width structure, corresponding to the filter mounting chamber 48 for the former narrow width structure, both matching the installation, separating the cleaner main body 100 and the dust bin duct 200 through the filter 50, isolation smaller dust particles, dust filters play a second effect.

The dust collection system works as follows:

After the start switch 11, vacuum suction motor driven impeller rotating quickly, will carry dust outside air intake duct 41 by the first inhalation. Inclined first outlet 432 such that the first intake air duct 41 air inhaled, can follow after the first helical duct 43 by the forward helical first dust collection chamber 42 is blown, and by its spiral 43 design structure of the first spiral duct, air can be formed in the first cyclone spiral duct 43 so that air and dust particles in the dust collection chamber 42 within the first circular centrifugal movement, air and larger dust particles separated from the coarse dust particles settle in the first dust collection chamber, the other carrying the tiny dust particles into the air from the hole 411 to the second inlet pipe 44, thereby completing the first filter.

Similarly, a second inclined outlet 452 such that the second inlet pipe 44 air inhaled, can follow a second spiral duct 45 blows from front to back spiral second dust collection chamber 47, and by its spiral second spiral duct design structure 45 can be formed in the second cyclone spiral inside the duct 45, so that air and dust particles in a circular centrifugal movement in the second dust collection chamber 47, the air around the filter 50 the outer surface of a circular motion, most of the dust in the second dust collection chamber, the remaining fraction of the dust particles and the filter 50 lateral friction, will penetrate into the sponge filter 52 or 51, because of its circumference centrifugal motion, relative wind speed traditional washdown design into the sponge structure 52 or 51 of the filter, the wind, to reduce the impact force, 50 make contact with the air filter with a softer, even the dust adsorbed on the filter 50, the adsorption force than traditional small vacuum cleaner in order to shake off and cleaning.

Finally, after filtration through the filter 50 clean air blown from the outlet 100 of the cleaner body, completion of the second filter. Thus, the structural design of the filter twice a spiral duct, so that the dust particles are effectively filtered to ensure the exclusion of air quality, will not pollute the environment.

In summary, the utility model is designed to focus the second duct when the filter is also designed to spiral duct

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so that the air and dust particles in a circular centrifugal movement in the second dust collection chamber 47, the air around the filter the outer surface 50 of the circular motion, small particles and dust filter 50 lateral friction, wind speed compared to conventional straight-type design of the structure, the wind, effectively reduce the impact force, so that the air in contact with the filter 50 a softer, even dust adsorbed on the filter 50, the adsorption force is smaller than the conventional vacuum cleaner, in order to shake off and cleaning.

Above, it is only the utility model preferred embodiments only, not the present utility model technical scope any restrictions, so any slight modifications based on all of the utility model made technology substance of the above example embodiments, equivalent variation and modification range, are still part of this utility model programs within.

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CLAIMS CN203724037

1.

1. A suction device, including handheld vacuum cleaner body and detachable mounted on the head end of the cleaner main body dust bin, dust bin which includes a housing, dust separator and a filter; the head end is provided with a dust separator communicated with the outside of the first intake duct, the inlet pipe and the first enclosed cavity is formed between the first dust collector housing; an outer periphery of a first end of the inlet pipe extending forward to form a first helical wind deflector the first helical air guide plate between the housing and the enclosed form a first spiral duct, the first spiral duct in communication with the first inlet duct and the first dust collection chamber in communication, characterized in that: The first intake duct is formed inside the second intake duct isolation, the second inlet pipe through a plurality of apertures in communication with the first dust collection chamber; inlet pipe extending from a first end of the outer periphery to form a second back spiral wind deflector between the second around the spiral wind deflector with the housing to form a second spiral duct; rear end of the second spiral duct defining a filter mounting chamber, the filter is attached to the install cavity filter, the filter is installed between the enclosure and the shell forming the second dust collection chamber cavity.

2.

2. A cleaning apparatus according to claim 1, wherein, wherein: said first spiral air guide plate and the second helical wind deflector integrally connected to the first and second helical spiral duct of the air duct room with a

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partition.

3.

3. A cleaning apparatus according to claim 2, wherein, wherein: the first outlet of the first inclined inlet pipe and the first spiral duct between the first intake duct obliquely first spiral duct.

4.

4. A cleaning apparatus according to claim 3, wherein, wherein: a second outlet of the second inclined inlet pipe and a second spiral duct between the second inlet pipe obliquely second spiral duct.

5.

5. A cleaning apparatus according to claim 4, wherein, wherein: said first outlet and a second outlet distributed on both sides of the separator, and the first, second direction opposite to the inclination of the outlet.

6. A cleaning apparatus according to claim 1, wherein, wherein: the rear end of the dust separator bar has a circular ring and a plurality of connection between the bar and the second ring spiral wind deflector support bar , enclosed filter mounting chamber formed by the inner side of the ring stopped the support bar and a second spiral wind deflector, stopped by this ring, forming the second dust enclosed cavity between the support bar and the outside shell.

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(12)实用新型专利

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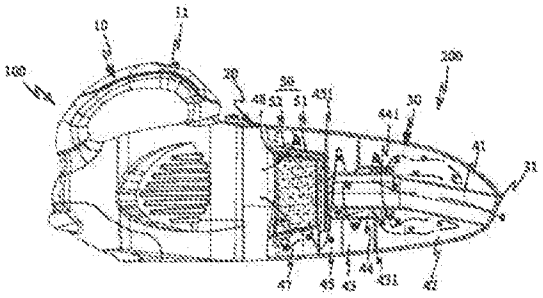
权利要求书1页 说明书4页 附图2页

(54)实用新型名称

一种吸尘装置

(57)摘要

本实用新型公开一种吸尘装置，包括手持式的吸尘器主体和可拆式安装于吸尘器主体头端的吸尘仓，该吸尘仓包括外壳、灰尘分离器和过滤器；所述灰尘分离器中有第一进风管、第一集尘腔、第一螺旋风道，所述第一进风管内部隔离形成第二进风管，该第二进风管通过多个小孔与第一集尘腔相通；由第一螺旋风道后端与外壳之间围合形成第二螺旋风道；该第二螺旋风道的后端界定出过滤器安装腔，所述过滤器安装于该过滤器安装腔内，该过滤器安装腔与外壳之间围合形成第二集尘腔。由于将第二次过滤时的风道也设计为螺旋风道，使得空气和灰尘颗粒在第二集尘腔内做圆周离心运动，使灰尘吸附于过滤器的吸附力也较传统吸尘器小，以便于抖落和清洗。



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1. 一种吸尘装置，包括手持式的吸尘器主体和可拆式安装于吸尘器主体头端的吸尘仓，该吸尘仓包括外壳、灰尘分离器和过滤器；所述灰尘分离器的头端设有一与外界相通的第一进风管，该第一进风管与外壳之间围合形成第一集尘腔；由第一进风管末端的外周向前延伸形成第一螺旋式导风板，该第一螺旋式导风板与外壳之间围合形成第一螺旋风道，该第一螺旋风道与第一进风管相通和第一集尘腔相通，其特征在于：

所述第一进风管内部隔离形成第二进风管，该第二进风管通过多个小孔与第一集尘腔相通；由第一进风管末端的外周向后延伸形成第二螺旋式导风板，该第二螺旋式导风板与外壳之间围合形成第二螺旋风道；该第二螺旋风道的后端界定出过滤器安装腔，所述过滤器安装于该过滤器安装腔内，该过滤器安装腔与外壳之间围合形成第二集尘腔。

2. 根据权利要求 1 所述的一种吸尘装置，其特征在于：所述第一螺旋式导风板及第二螺旋式导风板一体连接，于第一螺旋风道与第二螺旋风道之间设有一隔板。

3. 根据权利要求 2 所述的一种吸尘装置，其特征在于：所述第一进风管与第一螺旋风道之间的第一出风口倾斜设置，由第一进风管斜向第一螺旋风道。

4. 根据权利要求 3 所述的一种吸尘装置，其特征在于：所述第二进风管与第二螺旋风道之间的第二出风口倾斜设置，由第二进风管斜向第二螺旋风道。

5. 根据权利要求 4 所述的一种吸尘装置，其特征在于：所述第一出风口和第二出风口分布于隔板两侧，且第一、第二出风口的倾斜方向相反。

6. 根据权利要求 1 所述的一种吸尘装置，其特征在于：所述灰尘分离器的后端有一圆形拦圈和多条连接于拦圈与第二螺旋式导风板之间的支承条，由该拦圈、支承条和第二螺旋式导风板内侧围合形成过滤器安装腔，由该拦圈、支承条外侧与外壳之间围合形成所述第二集尘腔。

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一种吸尘装置

技术领域

[0001] 本实用新型涉及吸尘装置领域技术。

背景技术

[0002] 随着社会的发展，吸尘器已经进入寻常百姓家。目前的吸尘器主要包括壳体、设于该壳体前端的吸尘仓、以及设于该壳体内的吸尘风机，该吸尘风机正对所述吸尘仓，所述吸尘仓包括吸尘仓壳体、设于该吸尘仓壳体上的进风口和出风口、以及设于该吸尘仓壳体内并连通在进风口和出风口之间的风道。在使用时，吸尘风机工作，风从进风口进入吸尘仓的风道内，然后通过壳体进入口进入壳体内，最后通过壳体上的出口排出吸尘器外，尘埃留在尘仓内。然而，由于出风口和进风口位于风道的两侧，使得尘埃颗粒在风道内停留时间比较短，即使有过滤装置进行过滤，也只能使大部分尘埃颗粒在风道内进行沉淀，部分尘埃颗粒仍能排出吸尘器外，仍污染环境，使清洁工作不到位。

[0003] 有鉴于此，已有的中国实用新型专利(专利号 201220423772.2)公开一种旋风吸尘仓及其具有该旋风吸尘仓的吸尘器，其风道由进风通道和螺旋风道组成，且螺旋风道的出口设有集尘室，使得空气和灰尘颗粒经过螺旋风道后在集尘室内做圆周离心运动，将空气和灰尘颗粒分离开，灰尘颗粒沉淀在集尘室内，空气从出风口流出，这样使得尘埃颗粒得到有效的过滤，保证排除空气的质量，不会污染环境。

[0004] 上述专利虽然在一定程度上实现了灰尘的两次分离，由集尘室将大颗粒的灰尘进行第一次收集，由出风口位置的过滤器对小颗粒灰尘进行第二次收集，大小尘分离，易于清洗；小尘埃在第二次收集仓作圆周离心运动，不会很快吸附到过滤器上，从而不易堵塞过滤器，有利于保持机器的吸更长的时间。然而，现通用的设计由于进风口是正对过滤器，大风力吸尘时，小颗粒灰尘猛烈地直线撞入到过滤器内部，小颗粒灰尘冲击力非常大，容易堵塞过滤器的滤孔，并且这种直接冲击于过滤器的灰尘附着力很强，导致过滤器难以清洗干净，从而更换频繁，增加使用成本。

实用新型内容

[0005] 有鉴于此，本实用新型针对现有技术存在之缺失，其主要目的是提供一种吸尘装置，其不但能进行二次过滤，并且进行第二次过滤时，灰尘能够柔和地吹向过滤器，使过滤器长期使用不易堵塞，清洗容易，大大降低更换频率。

[0006] 为实现上述目的，本实用新型采用如下之技术方案：

[0007] 一种吸尘装置，包括手持式的吸尘器主体和可拆式安装于吸尘器主体头端的吸尘仓，该吸尘仓包括外壳、灰尘分离器和过滤器；所述灰尘分离器的头端设有一与外界相通的第一进风管，该第一进风管与外壳之间围合形成第一集尘腔；由第一进风管末端的外周向前延伸形成第一螺旋式导风板，该第一螺旋式导风板与外壳之间围合形成第一螺旋风道，该第一螺旋风道与第一进风管相通和第一集尘腔相通；所述第一进风管内部隔离形成第二进风管，该第二进风管通过多个小孔与第一集尘腔相通；由第一进风管末端的外周向后延

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伸形成第二螺旋式导风板，该第二螺旋式导风板与外壳之间围合形成第二螺旋风道，该第二螺旋风道的后端界定出过滤器安装腔，所述过滤器安装于该过滤器安装腔内，该过滤器安装腔与外壳之间围合形成第二集尘腔。

[0008] 优选的，所述第一螺旋式导风板及第二螺旋式导风板一体连接，于第一螺旋风道与第二螺旋风道之间设有一隔板。

[0009] 优选的，所述第一进风管与第一螺旋风道之间的第一出风口倾斜设置，由第一进风管斜向第一螺旋风道。

[0010] 优选的，所述第二进风管与第二螺旋风道之间的第二出风口倾斜设置，由第二进风管斜向第二螺旋风道。

[0011] 优选的，所述第一出风口和第二出风口分布于隔板两侧，且第一、第二出风口的倾斜方向相反。

[0012] 优选的，所述灰尘分离器的后端有一圆形拦圈和多条连接于拦圈与第二螺旋式导风板之间的支承条，由该拦圈、支承条和第二螺旋式导风板内侧围合形成过滤器安装腔，由该拦圈、支承条外侧与外壳之间围合形成所述第二集尘腔。

[0013] 本实用新型与现有技术相比具有明显的优点和有益效果，具体而言，由上述技术方案可知，由于将第二次过滤时的风道也设计为螺旋风道，使得空气和灰尘颗粒在第二集尘腔内做圆周离心运动，空气围绕在过滤器的外表面转圈，小灰尘颗粒与过滤器侧向摩擦，风速相对于传统直冲式的设计结构而言，风力、冲击力有效降低，使空气与过滤器接触更为柔和，即使灰尘吸附于过滤器上，其吸附力也较传统吸尘器小，以便于抖落和清洗。

[0014] 为更清楚地阐述本实用新型的结构特征和功效，下面结合附图与具体实施例来对本实用新型进行详细说明。

附图说明

[0015] 图 1 是本实用新型之实施例的组装状态截面图；

[0016] 图 2 是本实用新型之实施例的分解装态示意图；

[0017] 图 3 是本实用新型之实施例的灰尘分离器的放大示意图。

[0018] 附图标识说明：

[0019]	100、吸尘器主体	10、卧把
[0020]	11、开关	20、弹性卡合件
[0021]	200、吸尘仓	30、外壳
[0022]	31、进风口	32、卡合孔
[0023]	40、灰尘分离器	41、第一进风管
[0024]	42、第一集尘腔	43、第一螺旋风道
[0025]	431、第一螺旋式导风板	432、第一出风口
[0026]	44、第二进风管	441、小孔
[0027]	45、第二螺旋风道	451、第二螺旋式导风板
[0028]	452、第二出风口	46、隔板
[0029]	47、第二集尘腔	471、拦圈
[0030]	472、支承条	48、过滤器安装腔

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[0031] 50、过滤器 51、滤网

[0032] 52、海绵。

具体实施方式

[0033] 请参照图 1 和图 2 所示，其显示出了本实用新型之较佳实施例的具体结构。一种吸尘装置包括有手持式的吸尘器主体 100 和可拆式安装于吸尘器主体 100 头端的吸尘仓 200。其中：

[0034] 该吸尘器主体 100 内设有吸尘电机和设于该吸尘电机前端的吸尘风叶，该吸尘风叶正对吸尘仓 200。于吸尘器主体 100 上设有一卧把 10，该卧把 10 上设有一控制吸尘器工作的开关 11。这种手持式的吸尘器具有体积小、操作方便的特点，人们可以用这种吸尘器灵活地清洁墙壁、沙发、橱柜等家具上的灰尘，弥补传统自动吸尘器只能清洁地面的不足。

[0035] 结合图 1-3 所示，所述吸尘仓 200 包括外壳 30、安装于外壳 30 内的灰尘分离器 40 和过滤器 50。其中：

[0036] 所述吸尘仓 200 的外壳 30 为显中空的子弹头形状，是由透明的塑胶材料制作而成，以便于人们观察集尘腔内的灰尘量。该外壳 30 的头端开设有一进风口 31。此外，所述吸尘器主体 100 上设有一弹性卡合件 20，对应之吸尘仓 200 的外壳 30 上设有卡合孔 32，该弹性卡合件 20 与卡合孔 32 配合可拆卸式安装，当集尘腔内的灰尘量达到一定量时，轻易地拆卸清除。

[0037] 所述灰尘分离器 40 的头端设有一与外界相通的第一进风管 41，该第一进风管 41 的头端接于进风口 31。第一进风管 41 的外壁与外壳 30 之间围合形成第一集尘腔 42，用于收集体积较大的灰尘颗粒，进行第一次集尘。所述第一进风管 41 末端的外周向前延伸形成第一螺旋式导风板 431，该第一螺旋式导风板 431 与外壳 30 之间围合形成第一螺旋风道 43。该第一螺旋风道 43 的后端与第一进风管 41 相通，前端与第一集尘腔 42 相通。本实施例中，所述第一进风管 41 与第一螺旋风道 43 之间的第一出风口 432 倾斜设置，由第一进风管 41 斜向第一螺旋风道 43，斜向的第一出风口 432 能够更好地导引风向。

[0038] 所述第一进风管 41 内部隔离形成第二进风管 44，该第二进风管 44 的前端通过多个小孔 411 与第一集尘腔 42 相通。由第一进风管 41 末端的外周向后延伸形成第二螺旋式导风板 451，该第二螺旋式导风板 451 与外壳 30 之间围合形成第二螺旋风道 45。所述第二进风管 44 与第二螺旋风道 45 之间的第二出风口 452 倾斜设置，由第二进风管 44 斜向第二螺旋风道 45，斜向的第二出风口 452 能够更好地导引风向。本实施例中，该第一螺旋式导风板 431 及第二螺旋式导风板 451 一体连接，于第一螺旋风道 43 与第二螺旋风道 45 之间设有一隔板 46，使两风道彼此隔离。第一出风口 432 和第二出风口 452 分布于隔板 46 两侧，且第一、第二出风口 432、452 的倾斜方向相反，这样，两风道内的风向相反，即第一螺旋风道 43 的风向由后向前流动，而第二螺旋风道 45 的风向由前向后流动。

[0039] 该第二螺旋风道 45 的后端界定出一过滤器安装腔 48，用于安装过滤器 50。该过滤器安装腔 48 与外壳 30 之间围合形成第二集尘腔 47，用于收集剩下的小颗粒灰尘。本实施例中，所述灰尘分离器 40 的后端有一圆形拦圈 471 和多条连接于拦圈 471 与第二螺旋式导风板 451 之间的支承条 472，由该拦圈 471、支承条 472 和第二螺旋式导风板 451 内侧围合形成过滤器安装腔 48，由该拦圈 471、支承条 472 外侧与外壳 30 之间围合形成第二集尘

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腔 47。

[0040] 所述过滤器 50 包括滤网 51 和 / 或内置于滤网 51 的可拆洗的海绵(或滤布)52 。该过滤器 50 为前窄后宽结构,对应之过滤器安装腔 48 也为前窄后宽结构,二者匹配安装,通过过滤器 50 将吸尘器主体 100 与吸尘仓 200 的风道隔开,隔离体积较小的灰尘颗粒,起到第二次隔尘效果。

[0041] 本吸尘装置的工作原理如下 :

[0042] 启动开关 11 后,吸尘电机带动吸尘叶轮快速旋转,将外界携带灰尘的空气由第一进风管 41 吸入。倾斜设置的第一出风口 432 使得由第一进风管 41 吸入的空气,可以顺着第一螺旋风道 43 由后向前螺旋式吹向第一集尘腔 42,并且藉由其螺旋式的第一螺旋风道 43 设计结构,空气能够在第一螺旋风道 43 内形成旋风,使得空气和灰尘颗粒在第一集尘腔 42 内做圆周离心运动,将空气和体积较大的灰尘颗粒分离开,大颗粒灰尘颗粒沉淀在第一集尘室内,其它携带微小灰尘颗粒的空气从小孔 411 进入到第二进风管 44 内,藉此完成第一次过滤。

[0043] 同理,倾斜设置的第二出风口 452 使得由第二进风管 44 吸入的空气,可以顺着第二螺旋风道 45 由前向后螺旋式吹向第二集尘腔 47,并且藉由其螺旋式的第二螺旋风道 45 设计结构,能够在第二螺旋风道 45 内形成旋风,使得空气和灰尘颗粒在第二集尘腔 47 内做圆周离心运动,空气围绕在过滤器 50 的外表面转圈,大部分灰尘掉落在第二集尘腔内,其余的小部分灰尘颗粒与过滤器 50 侧向摩擦,会渗入到海绵 52 或滤网 51 中,由于其圆周离心运动,风速相对于传统直冲式进入海绵 52 或滤网 51 的设计结构而言,风力、冲击力有效降低,使空气与过滤器 50 接触更为柔和,即使灰尘吸附于过滤器 50 上,其吸附力也较传统吸尘器小,以便于抖落和清洗。

[0044] 最后,经过滤器 50 过滤后从吸尘器主体 100 的出风口吹出洁净的空气,完成第二次过滤。这样,设计两次螺旋风道的过滤结构,使得尘埃颗粒得到有效的过滤,保证排除空气的质量,不会污染环境。

[0045] 综上所述,本实用新型的设计重点在于将第二次过滤时的风道也设计为螺旋风道,使得空气和灰尘颗粒在第二集尘腔 47 内做圆周离心运动,空气围绕在过滤器 50 的外表面转圈,小灰尘颗粒与过滤器 50 侧向摩擦,风速相对于传统直冲式的设计结构而言,风力、冲击力有效降低,使空气与过滤器 50 接触更为柔和,即使灰尘吸附于过滤器 50 上,其吸附力也较传统吸尘器小,以便于抖落和清洗。

[0046] 以上所述,仅是本实用新型的较佳实施例而已,并非对本实用新型的技术范围作任何限制,故凡是依据本实用新型的技术实质对以上实施例所作的任何细微修改、等同变化与修饰,均仍属于本实用新型技术方案的范围内。

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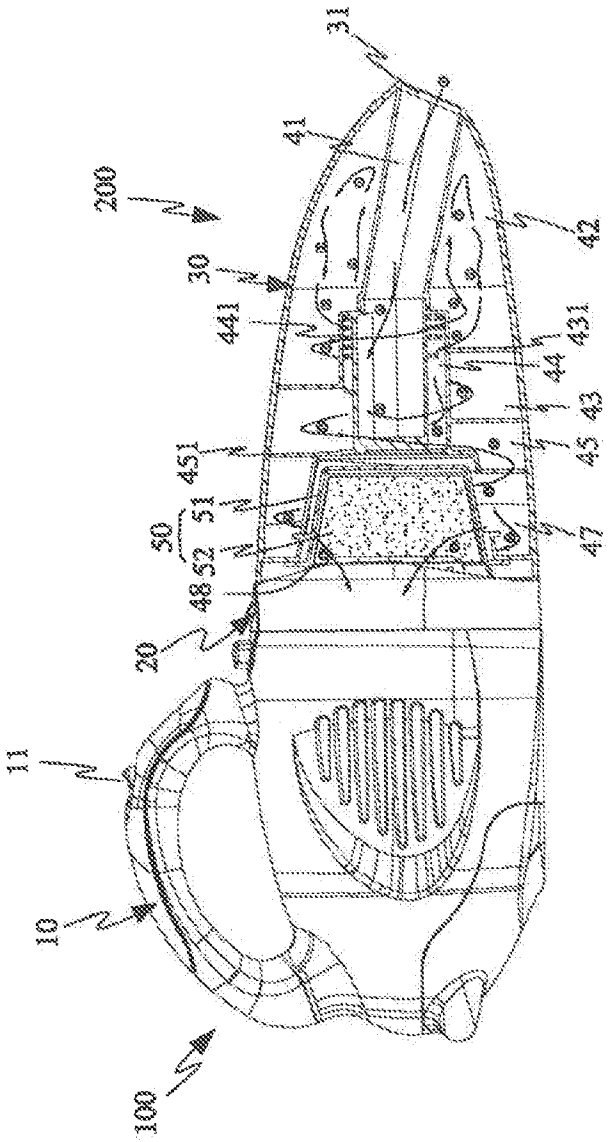

图 1

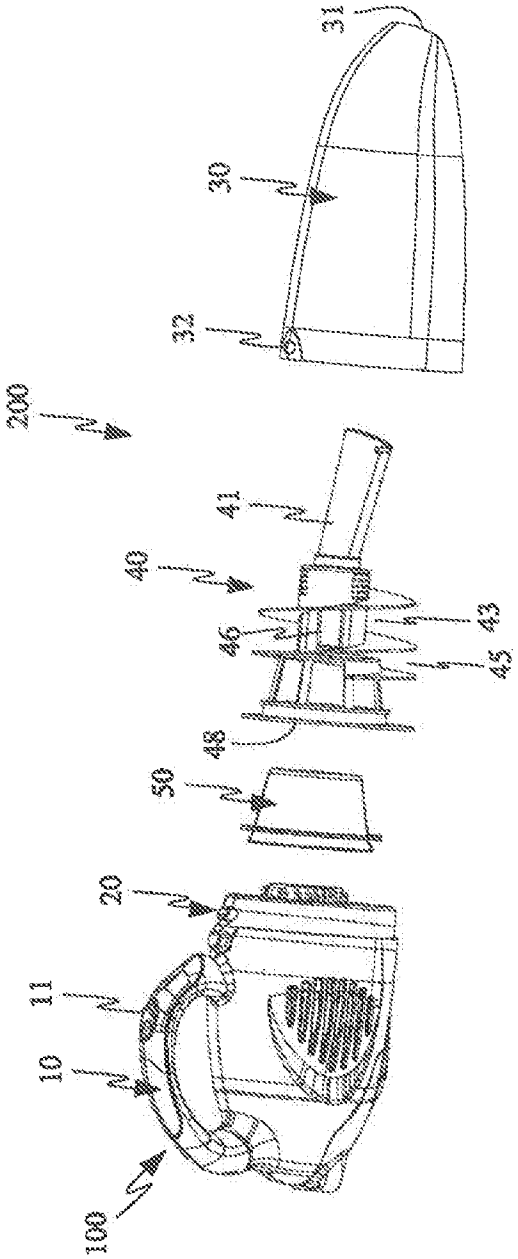

图 2

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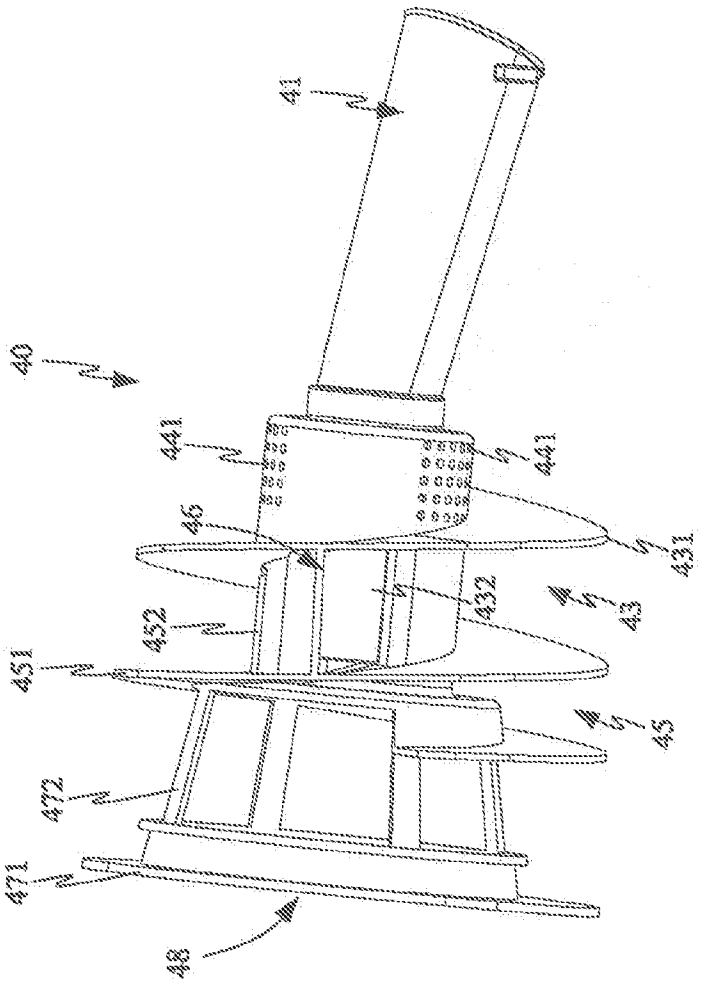

图 3

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VACUUM CLEANER

Page bookmark	JP2014124443 (A) - VACUUM CLEANER
Inventor(s):	KOSAKA MASAYUKI ±
Applicant(s):	IRIS OHYAMA INC ±
Classification:	- international: ***A47L5/24; A47L9/00; A47L9/28***
	- cooperative:
Application number:	JP20120284713 20121227
Priority number(s):	JP20120284713 20121227

Abstract of JP2014124443 (A)

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PROBLEM TO BE SOLVED: To provide a vacuum cleaner capable of facilitating the cleaning of a narrow part and keeping the vacuum cleaner in a stable state.SOLUTION: A vacuum cleaner includes: a cleaner body 100 where an electric suction part 110 having a handle 102 is arranged on the upper side of an extension pipe 120 and a nozzle part 130 is arranged on the lower side of the extension pipe 120; and a stand part 200 where a stand arm part 206 has a barrier 208 by which the cleaner body 100 is prevented from moving in a horizontal direction and the centroid of the cleaner body 100 is set to be nearly at the center of a bottom surface of a stand base part 202.

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DESCRIPTION JP2014124443

[0001]

The present invention relates to a stick-type vacuum cleaner.

[0002]

Conventional stick type vacuum cleaner, for example, there are many configurations in which a vacuum cleaner main body at the bottom of the stick, as shown in Patent Document 1. Such a configuration of the stick-type vacuum cleaner, better balanced be leaning against a wall or the like the electric vacuum cleaner body is closer to the bed containing a motor portion having a weight. However, in the conventional stick-type vacuum cleaner, because the vacuum cleaner body is in the floor side, because that would hit the vacuum cleaner body when cleaning the space, such as under the gap or bed of furniture, narrow part of cleaning it is difficult.

[0003]

To solve this problem, for example, as shown in Patent Document 2, the vacuum cleaner main body is provided in the upper portion of the stick vacuum cleaner is that in the downward direction of the vacuum cleaner main body provided with the extension pipe and the nozzle portion It has been disclosed.

[0004]

Patent Publication No. 2007-89895 (FIG. 1, etc.) Patent Publication No. 2012-50565 (FIG. 1, etc.)

[0005]

However, in the conventional patent document 2 shows such a stick-type vacuum cleaner, take up space when placed directly on its side, when placed leaning against a wall or the like, vacuum cleaner main body is poor balanced because the top, fall there is a problem that cheap.

[0006]

The present invention has been made to solve the problems of the prior art described above, and an object, by the top of the stick providing a vacuum cleaner main body, thereby facilitating the cleaning of the narrow portion, it is to provide an electric vacuum cleaner capable of holding the electric vacuum cleaner in a stable state.

[0007]

Vacuum cleaner according to an aspect of the present invention, an electric suction unit with a handle and the suction port, and an engaged portion disposed on the rear surface of the electric suction unit, the extension pipe having one end in said suction port is connected a When the cleaner main body having a nozzle portion connected to the other end of the extension pipe, the bottom surface of the nozzle portion is mounted, the front edge protruding portions for holding the leading edge of the nozzle portion stand having a stand base portion, and the stand arm portion which is disposed in the upward direction of the stand base portion, provided in an upper portion of the stand arm portion, and a locking portion for locking the engaged portion and parts, consists of, the stand arm portion in a state where the engaging portion engages the engaged portion, holding the leading edge of the nozzle portion to the front edge protrusions of the stand base portion , wherein said cleaner main body when leaning the back side of the cleaner body has a barrier for preventing be moved laterally, the object engaging unit is engaged with the engaging portion wherein the center of gravity of the cleaner main body is configured to come to substantially the center of the bottom surface of the stand base portion.

[0008]

According to this structure, an electric suction unit with a handle on top of the extension pipe is provided, the vacuum cleaner main body having a nozzle portion at the bottom of the extension pipe and the vacuum cleaner main body laterally the stand arm portion so as not to be moved to the barrier is provided, and a stand portion which is configured so that the center of gravity of the vacuum cleaner main body comes to almost the center of the bottom surface of the stand base portion, by forming from, as well as facilitating the cleaning of the narrow portion, the vacuum cleaner It may be held in a stable state.

[0009]

In the above electric vacuum cleaner, the electric suction unit includes a rechargeable battery for operating the electric suction unit, the stand unit, have a charging contacts for charging the rechargeable battery in the vicinity of the locking portion and, the electric suction unit may have a target charging contacts on the charging contacts facing the position of the vicinity of the engaged portion.

[0010]

With this arrangement, since the cleaner body and the stand is locked by the locking portion and the engaged portion, it is possible to reliably contact the charging contacts and the charging contacts, cleaning the stand unit the rechargeable battery of the machine body can be reliably charge.

[0011]

According to the present invention, an electric suction unit with a handle on top of the extension pipe is provided, the vacuum cleaner main body having a nozzle portion at the bottom of the extension pipe and the vacuum cleaner main body laterally the stand arm portion so as not to be moved to the barrier is provided, and a stand portion which is configured so that the center of gravity of the vacuum cleaner main body comes to almost the center of the bottom surface of the stand base portion, by forming from, as well as facilitating the cleaning of the narrow portion, the vacuum cleaner It may be held in a stable state. Further, since the cleaner body and the stand is locked by the locking portion and the engaged portion, it is possible to reliably contact the charging contacts and the charging contacts, the cleaner body from the stand unit it is possible to charge the rechargeable battery securely.

[0012]

It is a side sectional view showing a vacuum cleaner arrangement according to a first embodiment of the present invention. It is a diagram illustrating a locking and an electric contact arrangement of the electric vacuum cleaner according to a first embodiment of the present invention. The first embodiment vacuum cleaner body of the electric vacuum cleaner according to the embodiment of the present invention is a perspective view showing a state away from the stand. The center of gravity of the electric vacuum cleaner according to a first embodiment of the present invention is a side view illustrating.

[0013]

It will be described below with reference to the drawings An embodiment of the vacuum cleaner. In the drawings to be referred to below, other figures and like parts are described with the same reference numerals.

[0014]

(First Embodiment) First, the configuration of the electric vacuum cleaner according to the first embodiment will be described with reference to FIG. Figure 1 is a side sectional view showing the configuration of an electric vacuum cleaner according to the first embodiment. As shown in FIG. 1 (A), the vacuum cleaner, and a cleaner body 100 and the stand 200..

[0015]

Cleaner body 100 is composed of an electric suction unit 110 extension pipe 120 and the nozzle portion 130.. Electric suction unit 110 has a handle 102 at the top, the switch 104 is disposed in a position that can be operated while gripping the handle 102. Electric suction unit 110, and a rechargeable battery 140 and the motor 112 and the fan 114 and the dust chamber 116, the motor 112 operates in a rechargeable battery 140. The shaft of the motor 112 is a fan 114 is mounted, the dust collecting chamber 116 is provided opposite the fan 114 Electric suction unit 110 has a suction port 118 to connect with the dust collection chamber 116. Extension pipe 120 has one end connected to the suction port 118 and the other end connected to the nozzle portion 130.

[0016]

Stand portion 200 is configured from the stand base part 202 and the stand arm portion 206.. Stand base part 202, the front half as a nozzle unit 130 is placed on the diagonal has a slope, and has a front edge protruding portion 204 as the leading edge 132 of the nozzle portion 130 is held . Stand arm portion 206 is disposed in the upward direction of the stand base portion 202.

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[0017]

Figure 1 (B) is an enlarged view of a portion where the boxed A one-dot chain line in FIG. 1 (A). As shown in FIG. 1 (B), the upper part of the stand arm portion 206, the engaging portion 210 and the charging contacts 212 are installed. Further, on the rear surface of the electric suction unit 110, and the charging contacts 152 are installed with the locked portion 150. When the locked part 150 of the rear surface of the electric suction unit 110 is locked to the upper portion of the engaging portion 210 of the stand arm portion 206 is configured such that the target charging contacts 152 and charging contact 212 are in contact.

[0018]

Next, the configuration of the locking and the electrical contacts of the electric vacuum cleaner according to the first embodiment will be described with reference to FIG. Figure 2 is a diagram showing the configuration of the locking and the electrical contacts of the electric vacuum cleaner according to the first embodiment. 2 (A) is a rear view of the electric suction unit 110. As shown in FIG. 2 (A), on the back of the electric suction unit 110, and the charging contacts 152 are installed with the locked portion 150. Figure 2 (B) is a front view of the upper portion of the stand arm portion 206. As shown in FIG. 2 (B), the upper part of the stand arm portion 206, the engaging portion 210 and the charging contacts 212 are installed. In FIG. 2 (B), the stand arm portion 206 has a barrier 208 to the cleaner main body 100 from being able to move laterally when leaning the back side of the cleaner main body 100

[0019]

Then, the electric vacuum cleaner body of the electric vacuum cleaner according to the first embodiment the state away from the stand unit, will be described with reference to FIG. 3, the vacuum cleaner body of the electric vacuum cleaner according to the first embodiment is a perspective view showing a state away from the stand. As shown in FIG 3, the stand unit 200, a barrier 206 is provided on both sides of the stand arm portion 206. Therefore, the vacuum cleaner main body 100 is engaged with the engaging portion 210 of the stand section 200, the leading edge 132 of the nozzle portion 130 is held in the front edge protrusion 204 of the stand base portion 202, electricity through barrier 208 in a state where the cleaner body 100 can not be moved in the transverse direction.

[0020]

Next, the center of gravity of the electric vacuum cleaner according to the first embodiment will be described with reference to FIG. Figure 4 is a side view showing the center of gravity of the electric vacuum cleaner according to the first embodiment. One-dot chain line E in FIG. 4 shows a line extending in the vertical direction from the center of the bottom surface of the stand base portion 202. As shown in FIG. 4, when the vacuum cleaner main body 100 is engaged with the engaging portion 210 of the stand section 200, the leading edge 132 of the nozzle portion 130 is held in the front edge protrusion 204 of the stand base portion 202, stand arm portion 206 so that the center of gravity of the vacuum cleaner main body 100 comes to substantially the center of the bottom surface of the stand base portion 202 is formed. In other words, section C of the stand arm unit 206, so as to absorb the ledge on the back of the electric suction unit 110 than the dot-dash line B has retreated, section D of the stand arm unit 206, the back of the extension pipe 206 is leaning against is as close to the dashed line B, section E of the stand arm section 206 is curved toward the rear edge of the stand base unit 202 from the section D of the stand arm portion 206 such that the nozzle section 130 does not hit .

[0021]

According to the first embodiment described above, the following effects can be obtained.

[0022]

In the first embodiment, the electric suction unit 110 having a handle 102 at the top of the extension pipe 120 is provided, a cleaner body 100 having a nozzle 130 at the bottom of the extension pipe 120, the cleaner main body 100 is laterally has a barrier 208 can not move the stand arm portion 206, a stand 200 that is configured so that the center of gravity of the cleaner main body 100 comes to substantially the center of the bottom surface of the stand base portion 202, by forming from the narrow portion together with ease of cleaning, the vacuum cleaner can be held in a stable state. In addition, since the cleaner body 100 and the stand portion 200 is and locked out with a locked portion 150 and the locking portion 210, since it is possible to reliably contact with the charging contacts 152 and the charging contacts 212, the rechargeable battery 140 of the cleaner main body 100 can be reliably charged from the stand 200.

[0023]

(Modification 1) in the first embodiment, although the electric suction unit 110 has been described to operate in the rechargeable battery 140, an electric suction unit 110 may be configured to operate with an external power source.

[0024]

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Incidentally, the scope of the present invention also includes all embodiments is not limited to the illustrative embodiments have been illustrated and described, the present invention results in a uniform effect as of interest. Moreover, the scope of the present invention may be bounded by any desired combination of specific features of the respective feature is not limited to the combination of features, which are all of the inventive disclosures bounded by the claims.

[0025]

The present invention is an electric suction unit with a handle on top of the extension pipe is provided, and the vacuum cleaner main body having a nozzle portion at the bottom of the extension pipe, substantially at the center of the bottom surface of the center of gravity of the vacuum cleaner main body stand base portion a stand unit configured to come, can be utilized in vacuum cleaner constructed from.

100 vacuum cleaner body 102 handle 104 switch 110 electric suction unit 112 motor 114 fan 116 dust collection chamber 118 suction port 120 extension pipe 130 nozzle portion 140 rechargeable battery 150 locked portion 152 to be charged contact 200 stand 202 stand base part 204 leading edge protrusion 206 stand arms 208 barrier 210 locking part 212 charging contacts

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CLAIMS JP2014124443

An electric suction unit with a handle and the suction port, and an engaged portion disposed on the rear surface of the electric suction unit, and the extension pipe having one end connected to the suction port is connected to the other end of the extension pipe a nozzle portion with a cleaner body having a bottom surface of the nozzle portion is placed, a stand base portion having a leading edge protruding portions for holding the leading edge of the nozzle portion, above the stand base portion a stand arm portion disposed in the direction, provided in an upper portion of the stand arm portion is constituted by a stand portion having a locking portion for locking the engaged portion, the stand arm portion , the locks the be-locked portion to the locking portion, while holding the leading edge of the nozzle unit to the front edge protrusion of the stand base part, was leaning against the back side of the cleaner body the cleaner body has a barrier for preventing possible lateral movement, the center of gravity of the said locking unit and the locking part is locked the cleaner main body of the stand base portion when vacuum cleaner, characterized in that it is configured to come to substantially the center of the bottom surface. The electric suction unit includes a rechargeable battery for operating the electric suction unit, the stand unit has a charging contacts for charging the rechargeable battery in the vicinity of the engaging portion, the electric suction unit the vacuum cleaner according to claim 1 characterized by having a target charging contacts said at a position opposed to the charging contacts in the vicinity of the engaged portion.

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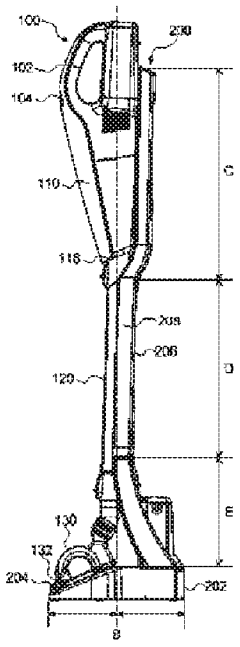
3B057 DC01　DE06

(54)【発明の名称】電気掃除機

(57)【要約】
【課題】狭い部分の掃除を容易にするとともに、電気掃除機を安定した状態で保持することができる電気掃除機を提供する。
【解決手段】延長パイプ２０６の上部に取っ手１０２を有する電動吸引部１１０を設け、延長パイプ２０６の下部にノズル部１３０を設けた掃除機本体１００と、掃除機本体１００が横方向に移動できない障壁２０８をスタンド腕部２０６が有し、掃除機本体１００の重心がスタンド台部２０２の底面の略中心に来るように構成されたスタンド部２００と、から構成する。
【選択図】図４



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【特許請求の範囲】
【請求項１】
取っ手と吸引口とを有する電動吸引部と、
前記電動吸引部の背面に設置された被係止部と、
前記吸引口に一端が接続された延長パイプと、
前記延長パイプの他端に接続されたノズル部と、
を有する掃除機本体と、
前記ノズル部の底面が載置され、前記ノズル部の前縁を保持するための前縁突起部を有するスタンド台部と、
前記スタンド台部の上方向に配置されたスタンド腕部と、
前記スタンド腕部の上部に設けられ、前記被係止部を係止するための係止部と、
を有するスタンド部と、
から構成され、
前記スタンド腕部は、前記係止部に前記被係止部を係止し、前記スタンド台部の前記前縁突起部に前記ノズル部の前縁を保持した状態で、前記掃除機本体の背面側を立て掛けたときに前記掃除機本体が横方向に移動できないようにするための障壁を有し、前記係止部に前記被係止部が係止されると前記掃除機本体の重心が前記スタンド台部の底面の略中心に来るように構成されていることを特徴とする電気掃除機。
【請求項２】
前記電動吸引部は、前記電動吸引部を動作させるための充電池を備え、
前記スタンド部は、前記充電池を充電するための充電接点を前記係止部の近辺に有し、前記電動吸引部は、前記被係止部の近辺の前記充電接点と対向する位置に被充電接点を有することを特徴とする請求項１に記載の電気掃除機。
【発明の詳細な説明】
【技術分野】
【０００１】
本発明は、スティック型の電気掃除機に関する。
【背景技術】
【０００２】
従来のスティック型の電気掃除機は、例えば特許文献１に示すようにスティックの下部に電気掃除機本体を設けた構成が多い。このような構成のスティック型電気掃除機は、重量があるモーター部分を含む電気掃除機本体が床に近い側にあるので壁などに立て掛けてもバランスがよい。しかしながら、従来のスティック型の電気掃除機では、電気掃除機本体が床側にあるため、家具の隙間やベッドの下などの空間を掃除する際に電気掃除機本体がぶつかってしまうため、狭い部分の掃除が困難である。
【０００３】
この問題を解決するために、例えば特許文献２に示すように、電気掃除機本体がスティックの上部に設けられ、電気掃除機本体の下方向に延長パイプとノズル部とを設けた電気掃除機が開示されている。
【先行技術文献】
【特許文献】
【０００４】
【特許文献１】特開２００７－８９８９５号公報（図１など）
【特許文献２】特開２０１２－５０５６５号公報（図１など）
【発明の概要】
【発明が解決しようとする課題】
【０００５】
しかしながら、従来の特許文献２に示すようなスティック型の電気掃除機では、そのまま横向きに置くと場所を取り、壁などに立て掛けて置くと、電気掃除機本体が上部にあるためバランスが悪く、倒れやすいという課題がある。

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【０００６】
本発明は、上述した従来技術の問題点を解決するためになされたものであり、その目的は、スティック型の上部に電気掃除機本体を設けることにより、狭い部分の掃除を容易にするとともに、電気掃除機を安定した状態で保持することができる電気掃除機を提供することである。
【課題を解決するための手段】
【０００７】
本発明のある態様による電気掃除機は、取っ手と吸引口とを有する電動吸引部と、前記電動吸引部の背面に設置された被係止部と、前記吸引口に一端が接続された延長パイプと、前記延長パイプの他端に接続されたノズル部と、を有する掃除機本体と、前記ノズル部の底面が載置され、前記ノズル部の前縁を保持するための前縁突起部を有するスタンド台部と、前記スタンド台部の上方向に配置されたスタンド腕部と、前記スタンド腕部の上部に設けられ、前記被係止部を係止するための係止部と、を有するスタンド部と、から構成され、前記スタンド腕部は、前記係止部に前記被係止部を係止し、前記スタンド台部の前記前縁突起部に前記ノズル部の前縁を保持した状態で、前記掃除機本体の背面側を立て掛けたときに前記掃除機本体が横方向に移動できないようにするための障壁を有し、前記係止部に前記被係止部が係止されると前記掃除機本体の重心が前記スタンド台部の底面の略中心に来るように構成されていることを特徴とする。
【０００８】
この構成によれば、延長パイプの上部に取っ手を有する電動吸引部を設け、延長パイプの下部にノズル部を設けた電気掃除機本体と、掃除機本体が横方向に移動できないようにスタンド腕部に障壁を設け、電気掃除機本体の重心がスタンド台部の底面の略中心に来るように構成されたスタンド部と、から構成することにより、狭い部分の掃除を容易にするとともに、電気掃除機を安定した状態で保持することができる。
【０００９】
上記電気掃除機において、前記電動吸引部は、前記電動吸引部を動作させるための充電池を備え、前記スタンド部は、前記充電池を充電するための充電接点を前記係止部の近辺に有し、前記電動吸引部は、前記被係止部の近辺の前記充電接点と対向する位置に被充電接点を有するようにしてもよい。
【００１０】
こうすれば、掃除機本体とスタンド部とが係止部と被係止部とで係止されることにより、充電接点と被充電接点とを確実に接触させることができるので、スタンド部から掃除機本体の充電池を確実に充電することができる。
【発明の効果】
【００１１】
本発明によれば、延長パイプの上部に取っ手を有する電動吸引部を設け、延長パイプの下部にノズル部を設けた電気掃除機本体と、掃除機本体が横方向に移動できないようにスタンド腕部に障壁を設け、電気掃除機本体の重心がスタンド台部の底面の略中心に来るように構成されたスタンド部と、から構成することにより、狭い部分の掃除を容易にするとともに、電気掃除機を安定した状態で保持することができる。また、掃除機本体とスタンド部とが係止部と被係止部とで係止されることにより、充電接点と被充電接点とを確実に接触させることができるので、スタンド部から掃除機本体の充電池を確実に充電することができる。
【図面の簡単な説明】
【００１２】
【図１】本発明の第１の実施形態に係る電気掃除機の構成を示す側面断面図である。
【図２】本発明の第１の実施形態に係る電気掃除機の係止及び電気接点の構成を示す図である。
【図３】本発明の第１の実施形態に係る電気掃除機の電気掃除機本体がスタンド部から離れた状態を示す斜視図である。

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【図４】本発明の第１の実施形態に係る電気掃除機の重心位置を示す側面図である。
【発明を実施するための形態】
【００１３】
以下、電気掃除機の実施形態について図面に従って説明する。以下に参照する各図において、他の図と同等部分は同一符号を付して説明する。
【００１４】
（第１の実施形態）
先ず、第１の実施形態に係る電気掃除機の構成について、図１を参照して説明する。図１は、第１の実施形態に係る電気掃除機の構成を示す側面断面図である。図１（Ａ）に示すように、電気掃除機は、掃除機本体１００とスタンド部２００とから構成されている。
【００１５】
掃除機本体１００は、電動吸引部１１０と延長パイプ１２０とノズル部１３０とから構成されている。電動吸引部１１０は、上部に取っ手１０２を有し、取っ手１０２を握った状態で操作できる位置にスイッチ１０４が配置されている。電動吸引部１１０は、充電池１４０とモーター１１２とファン１１４と集塵室１１６とを有し、モーター１１２は充電池１４０で動作する。モーター１１２の軸にはファン１１４が取り付けられ、ファン１１４の向かいに集塵室１１６が設けられている。電動吸引部１１０は、集塵室１１６と繋がる吸引口１１８を有する。延長パイプ１２０は、一端が吸引口１１８に接続され、他端がノズル部１３０に接続されている。
【００１６】
スタンド部２００は、スタンド台部２０２とスタンド腕部２０６とから構成されている。スタンド台部２０２は、ノズル部１３０が斜めに載置されるように前半分が傾斜を持っており、ノズル部１３０の前縁１３２が保持されるように前縁突起部２０４を有している。スタンド腕部２０６は、スタンド台部２０２の上方向に配置されている。
【００１７】
図１（Ｂ）は、図１（Ａ）の一点鎖線の四角Ａで囲まれた部分を拡大した図である。図１（Ｂ）に示すように、スタンド腕部２０６の上部には、係止部２１０と充電接点２１２とが設置されている。また、電動吸引部１１０の背面には、被係止部１５０と被充電接点１５２とが設置されている。電動吸引部１１０の背面の被係止部１５０がスタンド腕部２０６の上部の係止部２１０に係止されると、被充電接点１５２と充電接点２１２とが接するように構成されている。
【００１８】
次に、第１の実施形態に係る電気掃除機の係止及び電気接点の構成について、図２を参照して説明する。図２は、第１の実施形態に係る電気掃除機の係止及び電気接点の構成を示す図である。図２（Ａ）は、電動吸引部１１０の背面図である。図２（Ａ）に示すように、電動吸引部１１０の背面には、被係止部１５０と被充電接点１５２とが設置されている。図２（Ｂ）は、スタンド腕部２０６の上部の正面図である。図２（Ｂ）に示すように、スタンド腕部２０６の上部には、係止部２１０と充電接点２１２とが設置されている。図２（Ｂ）において、スタンド腕部２０６は、掃除機本体１００の背面側を立て掛けたときに掃除機本体１００が横方向に移動できないようにするための障壁２０８を有する。
【００１９】
次に、第１の実施形態に係る電気掃除機の電気掃除機本体がスタンド部から離れた状態について、図３を参照して説明する。図３は、第１の実施形態に係る電気掃除機の電気掃除機本体がスタンド部から離れた状態を示す斜視図である。図３に示すように、スタンド部２００は、スタンド腕部２０６の両側に障壁２０８が設けられている。このため、電気掃除機本体１００がスタンド部２００の係止部２１０に係止され、ノズル部１３０の前縁１３２がスタンド台部２０２の前縁突起部２０４に保持されると、障壁２０８により電気掃除機本体１００が横方向に移動できない状態になる。
【００２０】
次に、第１の実施形態に係る電気掃除機の重心位置について、図４を参照して説明する

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。図４は、第１の実施形態に係る電気掃除機の重心位置を示す側面図である。図４の一点鎖線Ｂは、スタンド台部２０２の底面の中心から鉛直方向に延びる線を示している。図４に示すように、電気掃除機本体１００がスタンド部２００の係止部２１０に係止され、ノズル部１３０の前縁１３２がスタンド台部２０２の前縁突起部２０４に保持されると、電気掃除機本体１００の重心がスタンド台部２０２の底面の略中心に来るようにスタンド腕部２０６が構成されている。つまり、スタンド腕部２０６の区間Ｃは、電動吸引部１１０の背面の出っ張りを吸収するように一点鎖線Ｂよりも後退しており、スタンド腕部２０６の区間Ｄは、延長パイプ２０６の背面が立て掛けられるように一点鎖線Ｂの近くにあり、スタンド腕部２０６の区間Ｅは、ノズル部１３０が当らないようにスタンド腕部２０６の区間Ｄからスタンド台部２０２の後縁側に向かって湾曲している。

【００２１】

以上に述べた第１の実施形態によれば、以下の効果が得られる。

【００２２】

第１の実施形態では、延長パイプ１２０の上部に取っ手１０２を有する電動吸引部１１０を設け、延長パイプ１２０の下部にノズル部１３０を設けた掃除機本体１００と、掃除機本体１００が横方向に移動できない障壁２０８をスタンド腕部２０６が有し、掃除機本体１００の重心がスタンド台部２０２の底面の略中心に来るように構成されたスタンド部２００と、から構成することにより、狭い部分の掃除を容易にするとともに、電気掃除機を安定した状態で保持することができる。また、掃除機本体１００とスタンド部２００とが被係止部１５０と係止部２１０とで係止されることにより、被充電接点１５２と充電接点２１２とを確実に接触させることができるので、スタンド部２００から掃除機本体１００の充電池１４０を確実に充電することができる。

【００２３】

（変形例１）

第１の実施形態では、電動吸引部１１０が充電池１４０で動作する場合について説明したが、電動吸引部１１０が外部電源で動作するようにしてもよい。

【００２４】

なお、本発明の範囲は、図示され記載された例示的な実施形態に限定されるものではなく、本発明が目的とするものと均等な効果をもたらすすべての実施形態をも含む。さらに、本発明の範囲は、請求項により画される発明の特徴の組み合わせに限定されるものではなく、すべての開示されたそれぞれの特徴のうち特定の特徴のあらゆる所望する組み合わせによって画されうる。

【産業上の利用可能性】

【００２５】

本発明は、延長パイプの上部に取っ手を有する電動吸引部を設け、延長パイプの下部にノズル部を設けた電気掃除機本体と、電気掃除機本体の重心がスタンド台部の底面の略中心に来るように構成されたスタンド部と、から構成された電気掃除機に利用することができる。

【符号の説明】

【００２６】

１００　掃除機本体
１０２　取っ手
１０４　スイッチ
１１０　電動吸引部
１１２　モーター
１１４　ファン
１１６　集塵室
１１８　吸引口
１２０　延長パイプ
１３０　ノズル部

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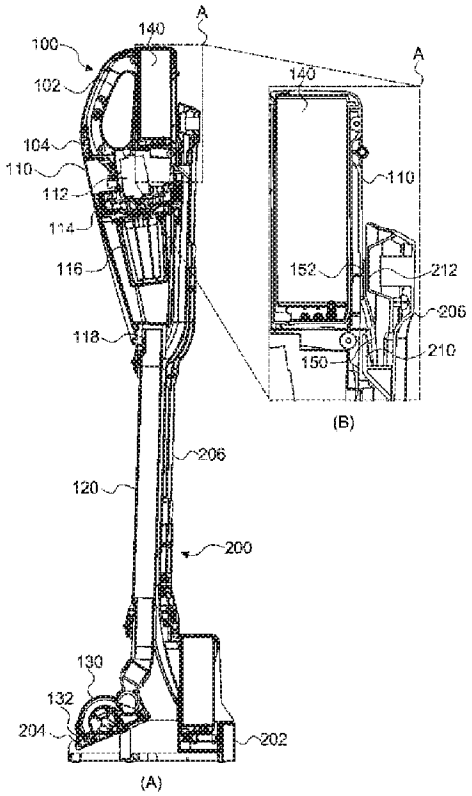
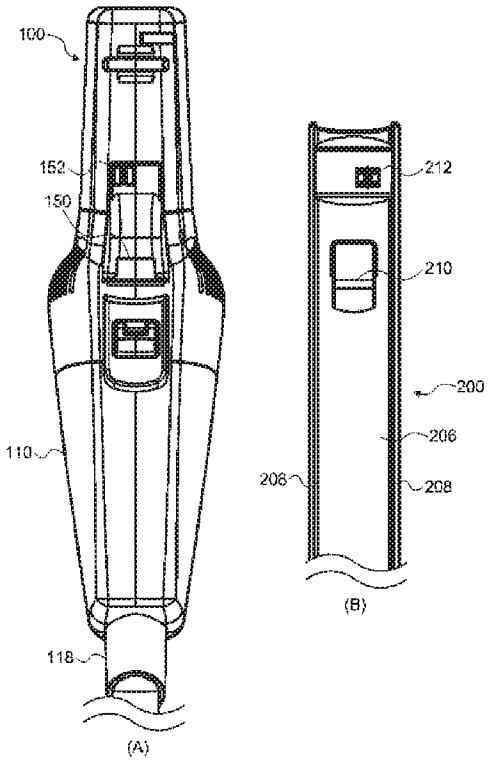
１４０　充電池
１５０　被係止部
１５２　被充電接点
２００　スタンド部
２０２　スタンド台部
２０４　前縁突起部
２０６　スタンド腕部
２０８　障壁
２１０　係止部
２１２　充電接点

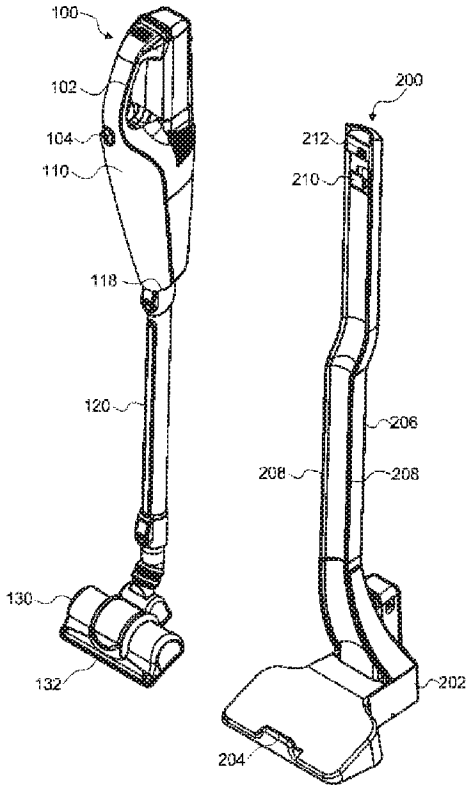
【図１】



【図２】


100
152
150
110
118
(A)
212
210
200
206
208
208
(B)

【図３】


100
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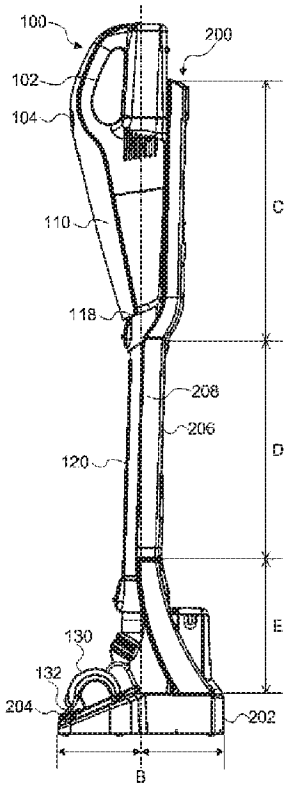
204

【図４】



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(22) Date of Filing: 20.11.2012

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(51) INT CL:
A47L 9/16 (2006.01) ***A47L 5/24*** (2006.01)

(56) Documents Cited:
WO 2010/061211 A2 **WO 2008/009891 A1**

(58) Field of Search:
INT CL **A47L, B04C**
Other: **WPI, EPODOC, TXTE**

(54) Title of the Invention: **Cleaning appliance**
Abstract Title: **Cleaning appliance**

(57) A cleaning appliance comprises a main body (4, fig 1) and a separating apparatus (12, fig 1) including a dirt collector 24 having a base 26 that is openable to allow the dirt collector 24 to be emptied. The cleaning appliance includes an actuator 98 that is operable sequentially such that, during a first operation, the actuator 98 causes the base 26 to be opened and, during a second operation, the actuator 98 causes the dirt collector 24 to disengage from the separating apparatus (12, fig 1). A single actuator 98 is therefore used for two functions: firstly to open the dirt collector 24 for emptying purposes and, secondly, to disengage the dirt collector 24 from the separating apparatus (12, fig 1) for cleaning purposes. Such an arrangement is space efficient and intuitive for the user. The base 26 of the dirt collector 24 may be openable when the separating apparatus (12, fig 1) is coupled to the main body (4, fig 1) or alternatively the base 26 is only openable when the separating apparatus(12, fig 1) is decoupled from the main body (4, fig 1).

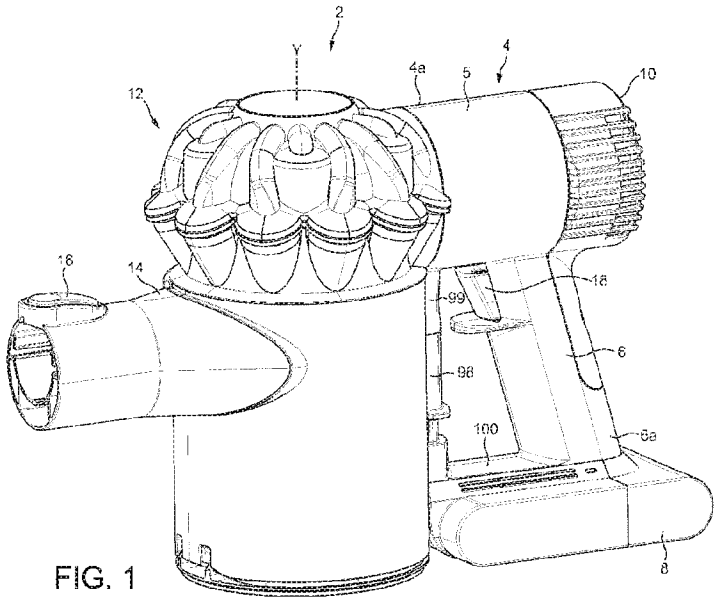

FIG. 1

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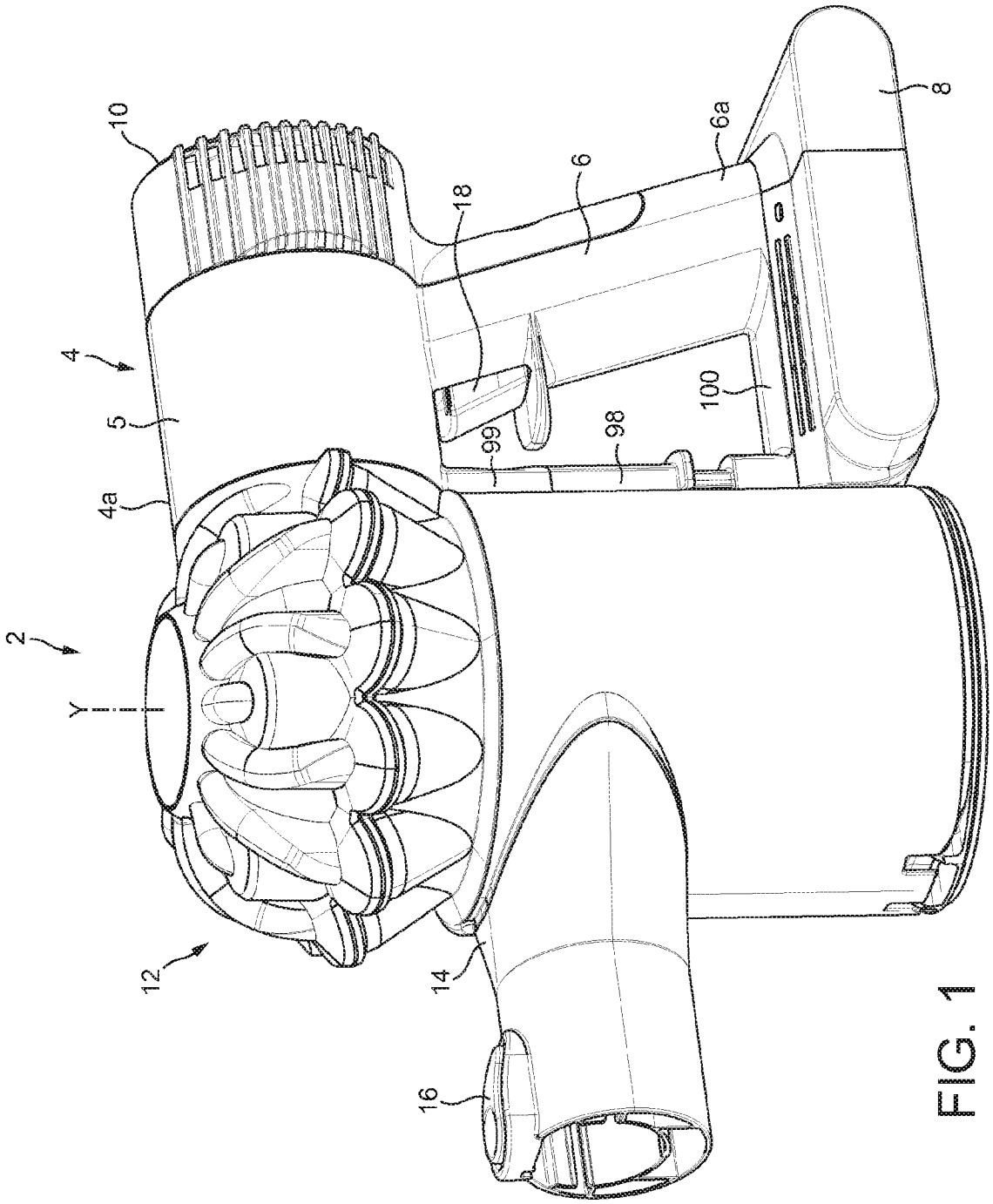

FIG. 1

14 11 13

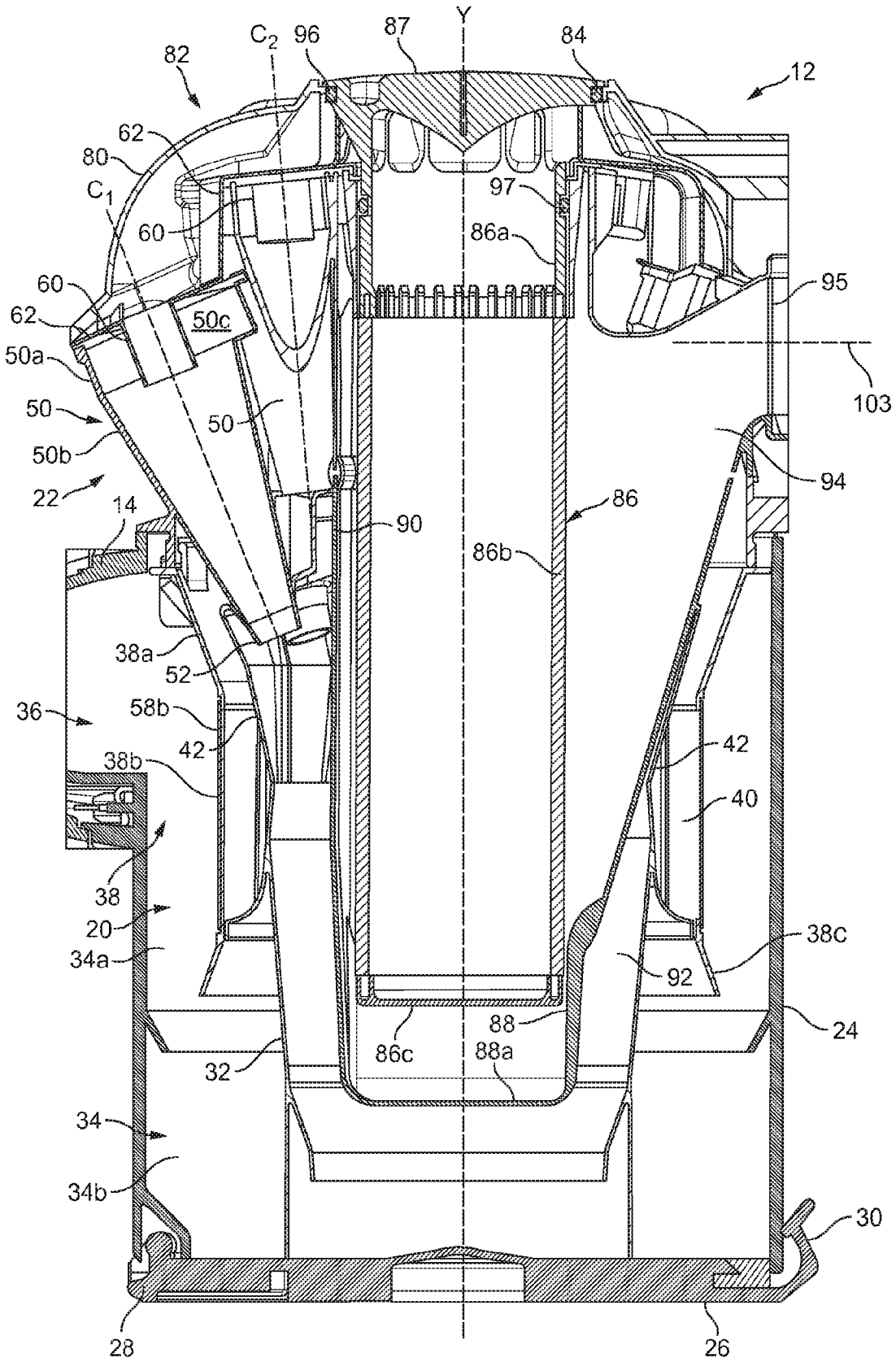

FIG. 2a

14 11 13

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14 11 13

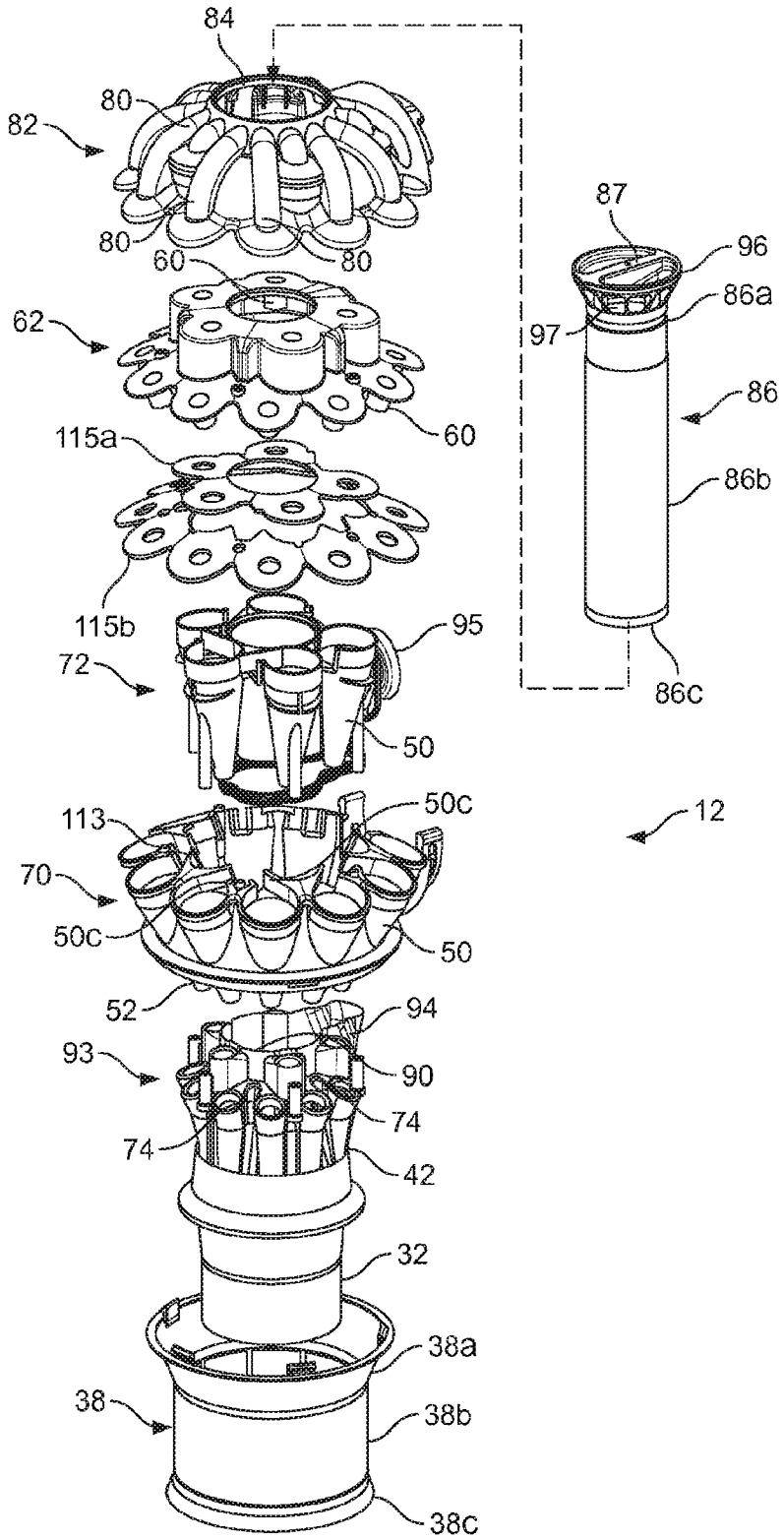

FIG. 2b

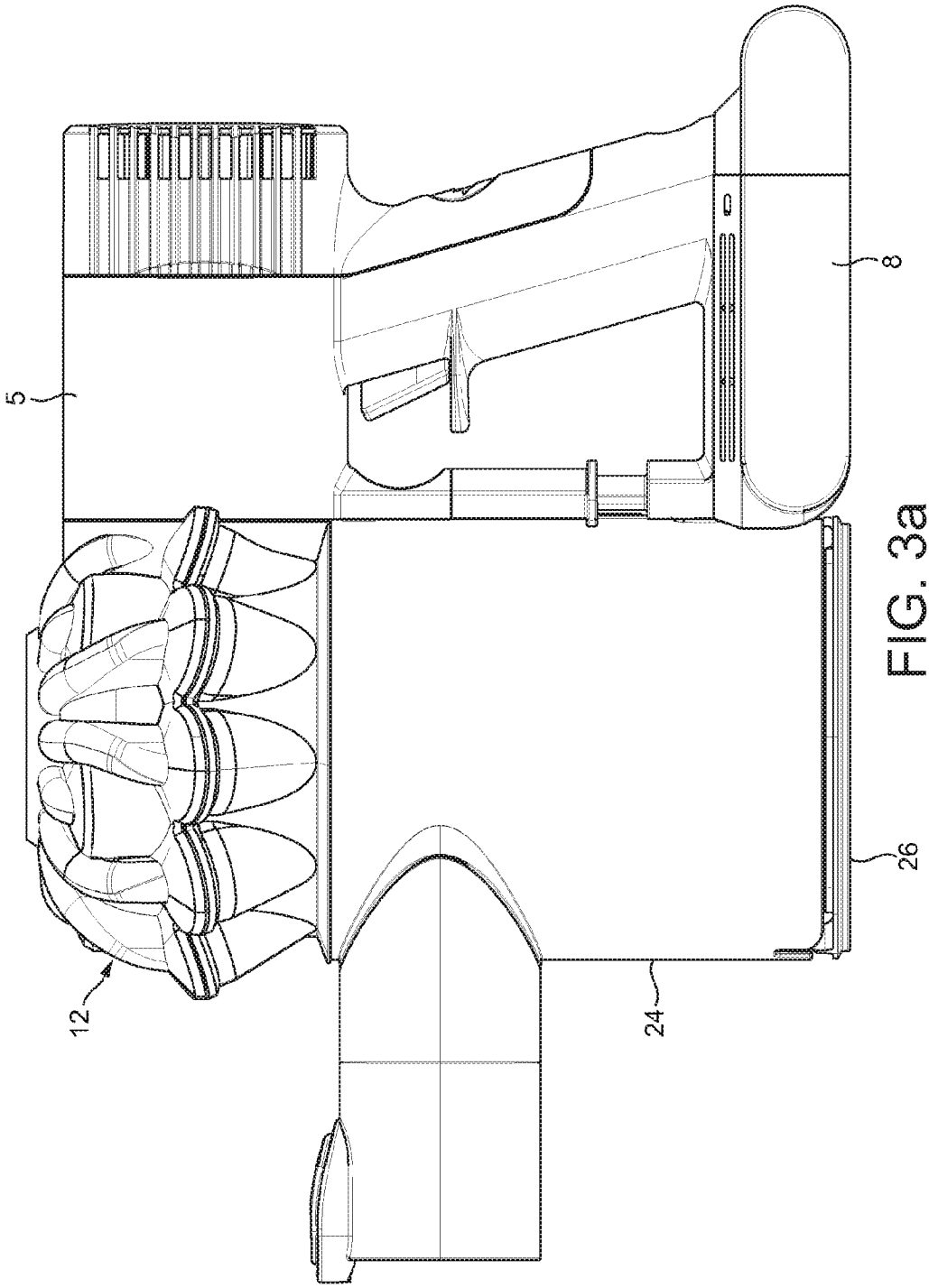

FIG. 3a

14 11 13

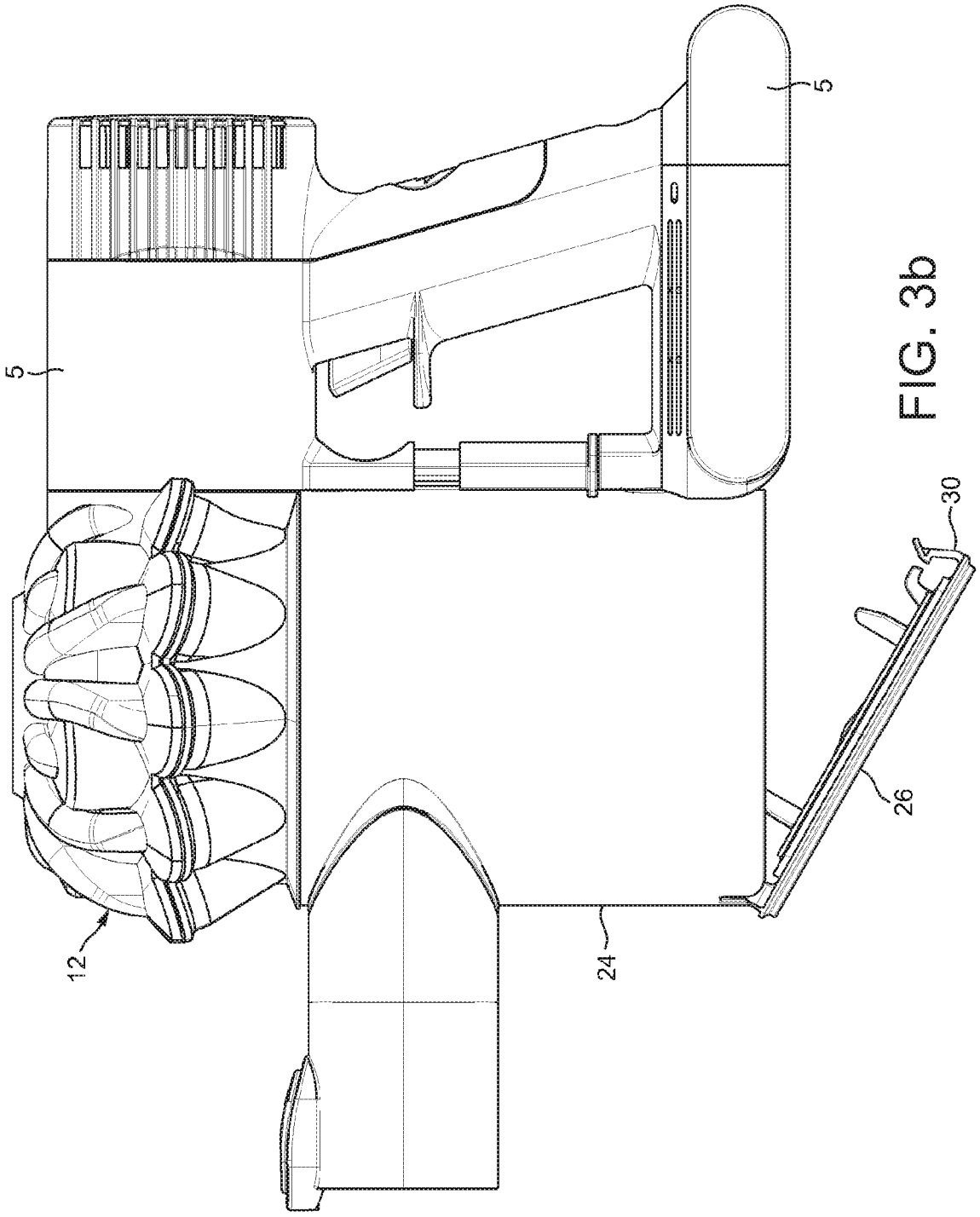

FIG. 3b

14 11 13

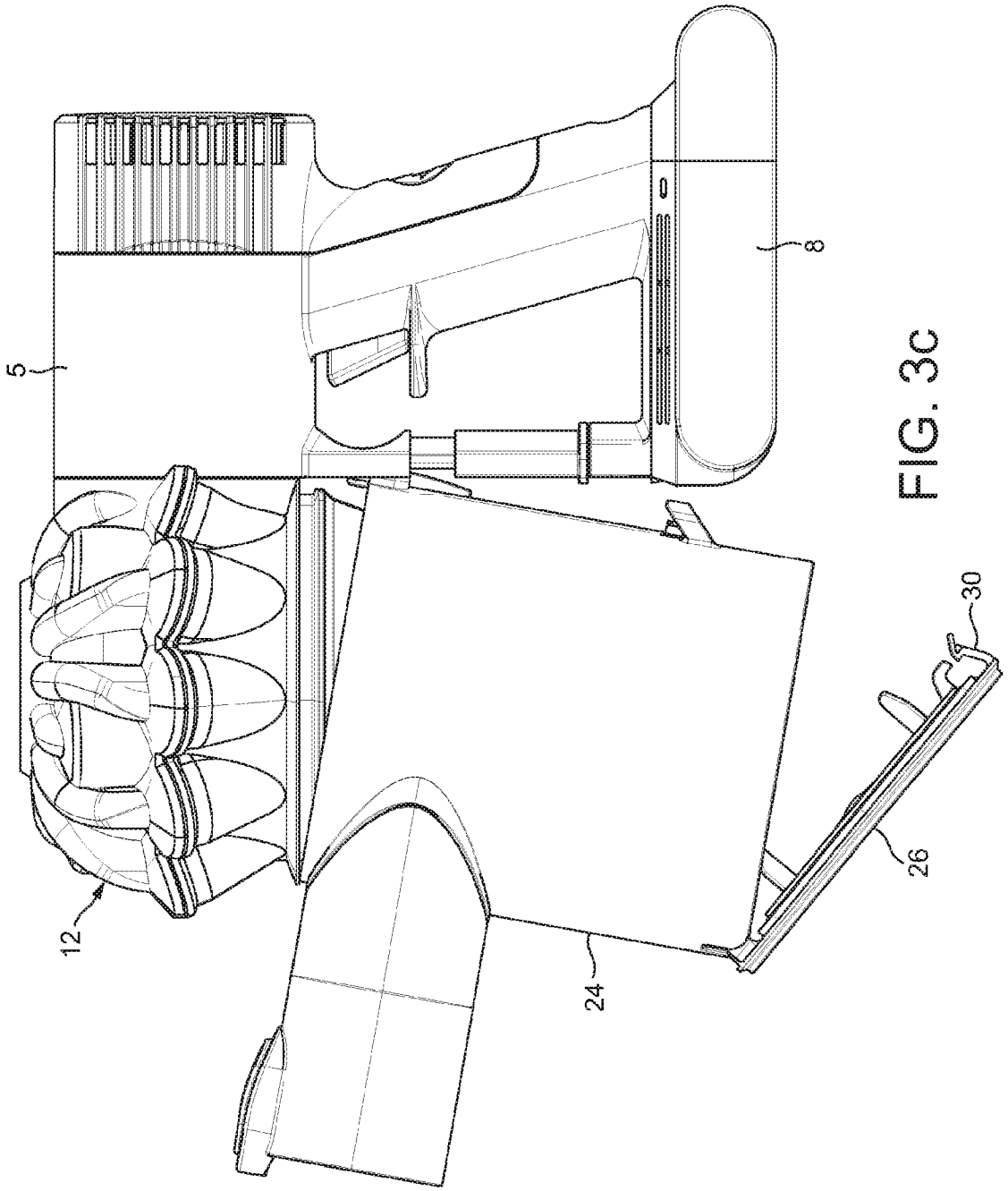

FIG. 3c

14 11 13

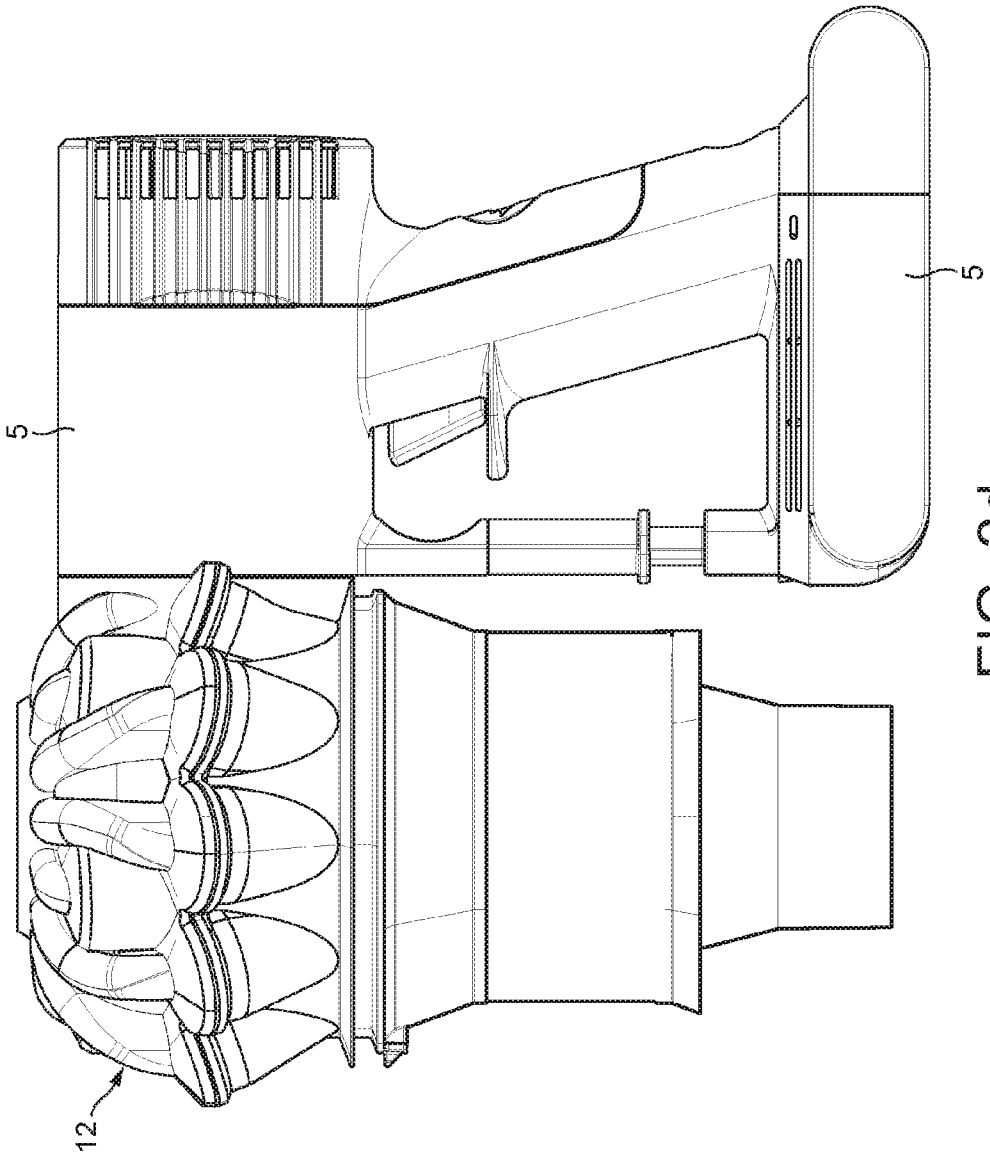

FIG. 3d

14 11 13

14 11 13

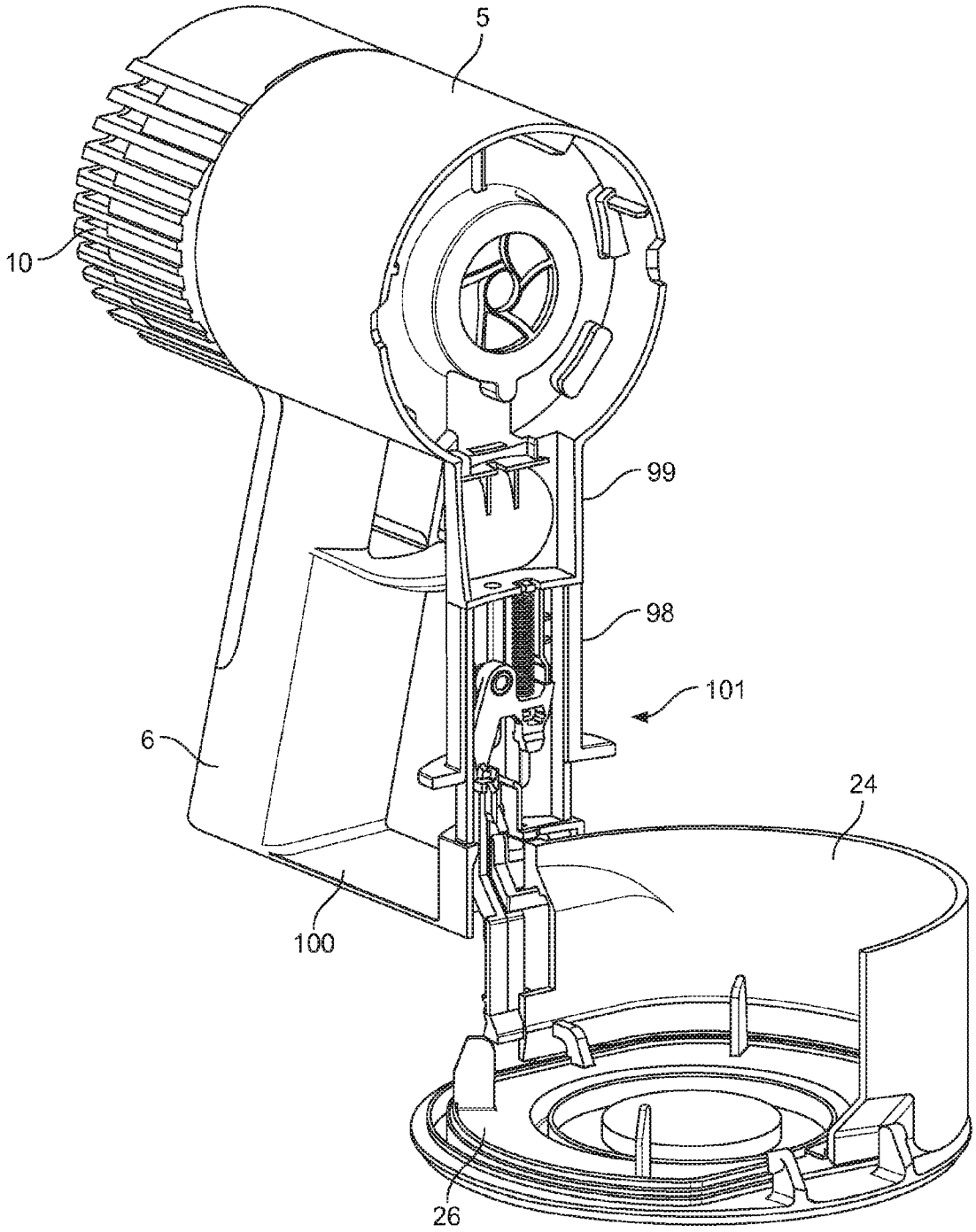

FIG. 4

14 11 13

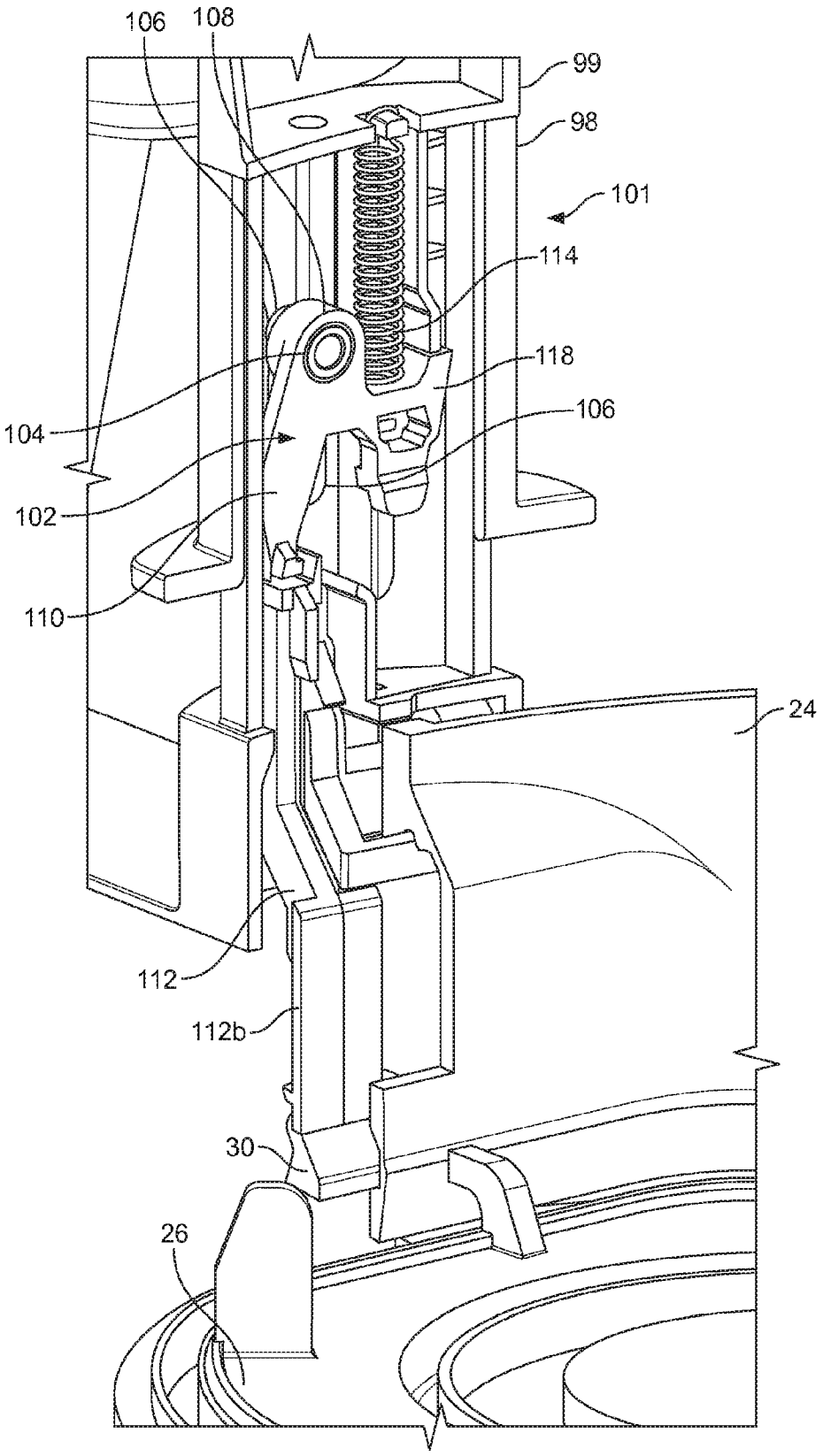

FIG. 5

14 11 13

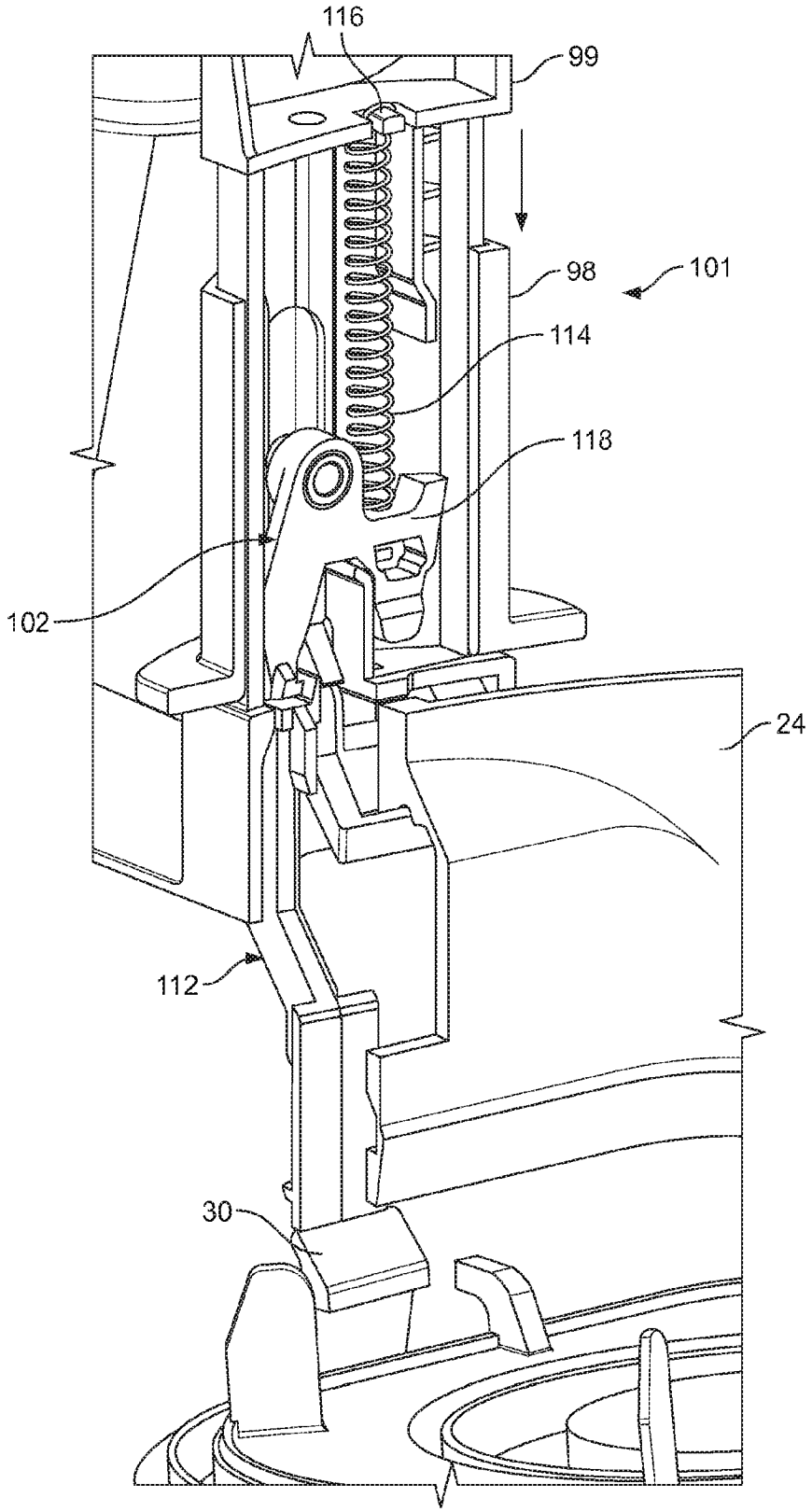

FIG. 6

14 11 13

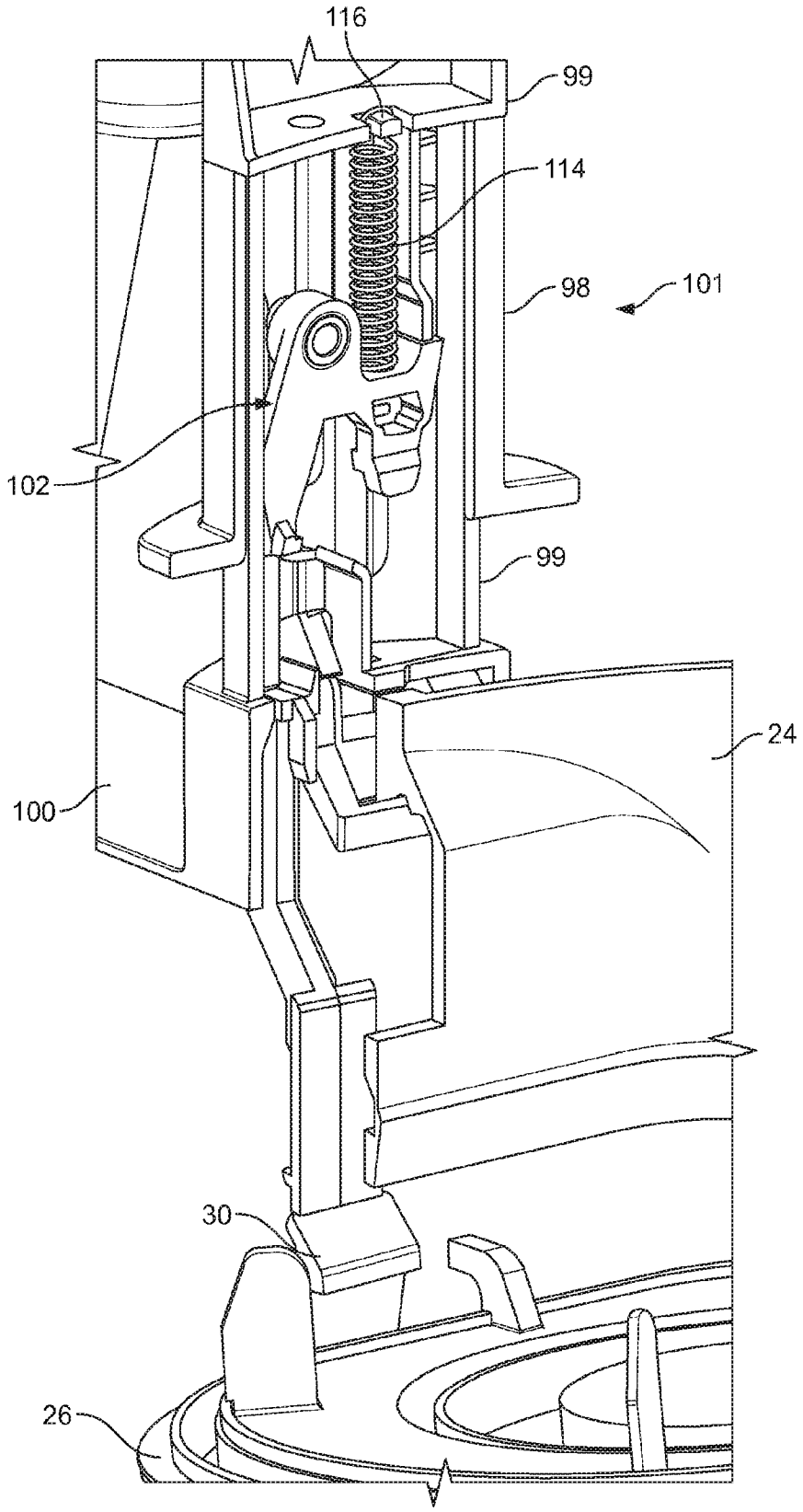

FIG. 7

14 11 13

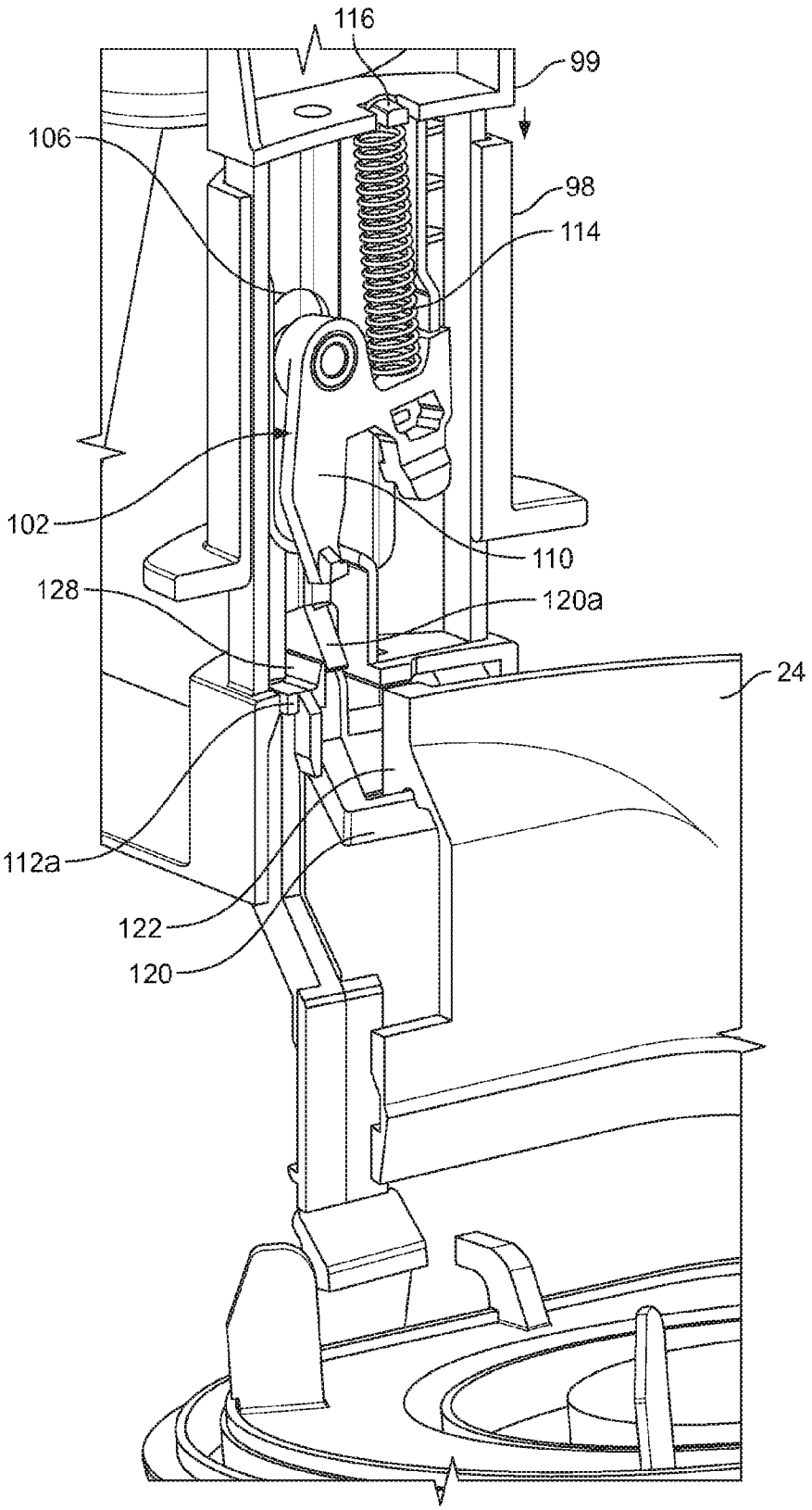

FIG. 8

14 11 13

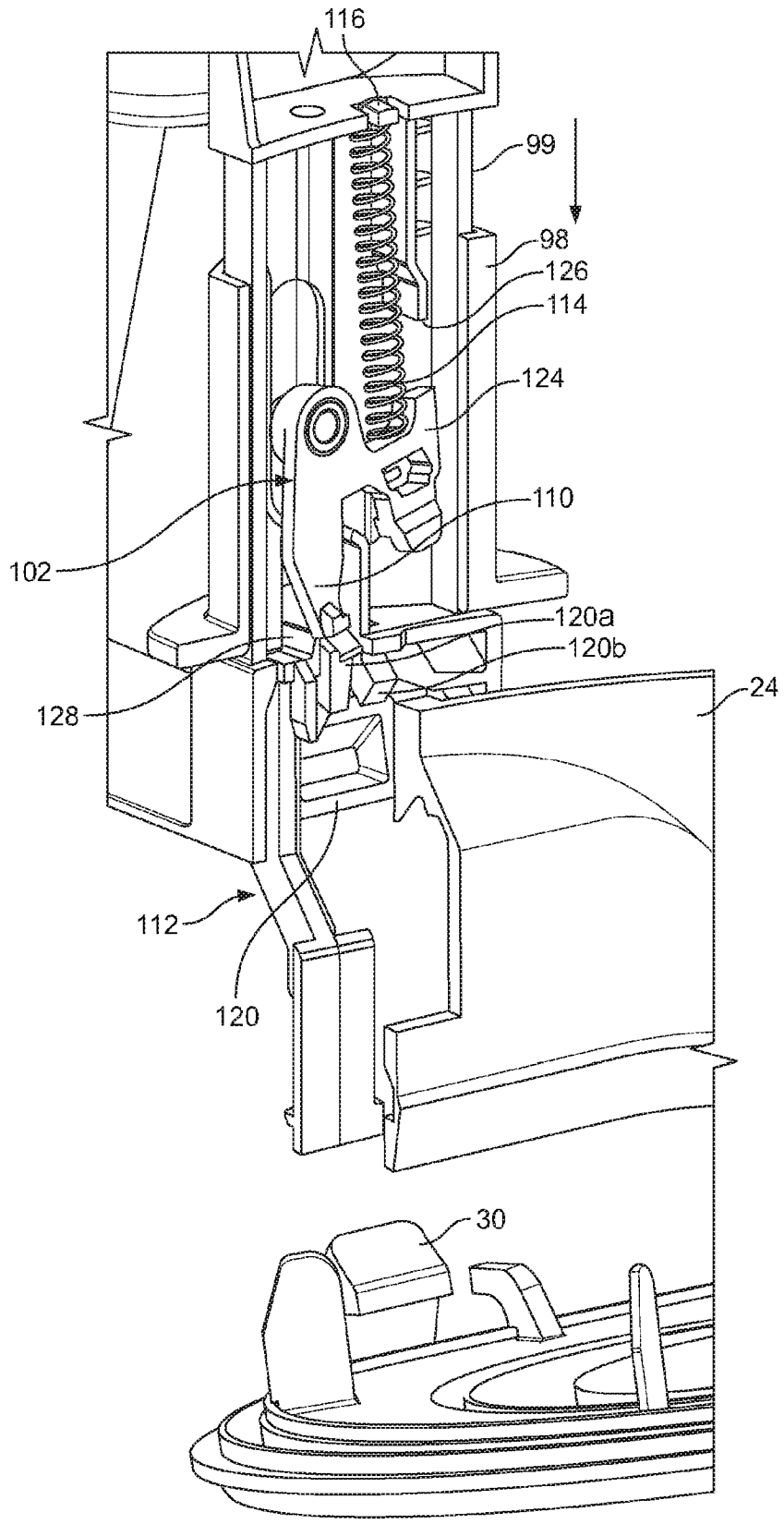

FIG. 9

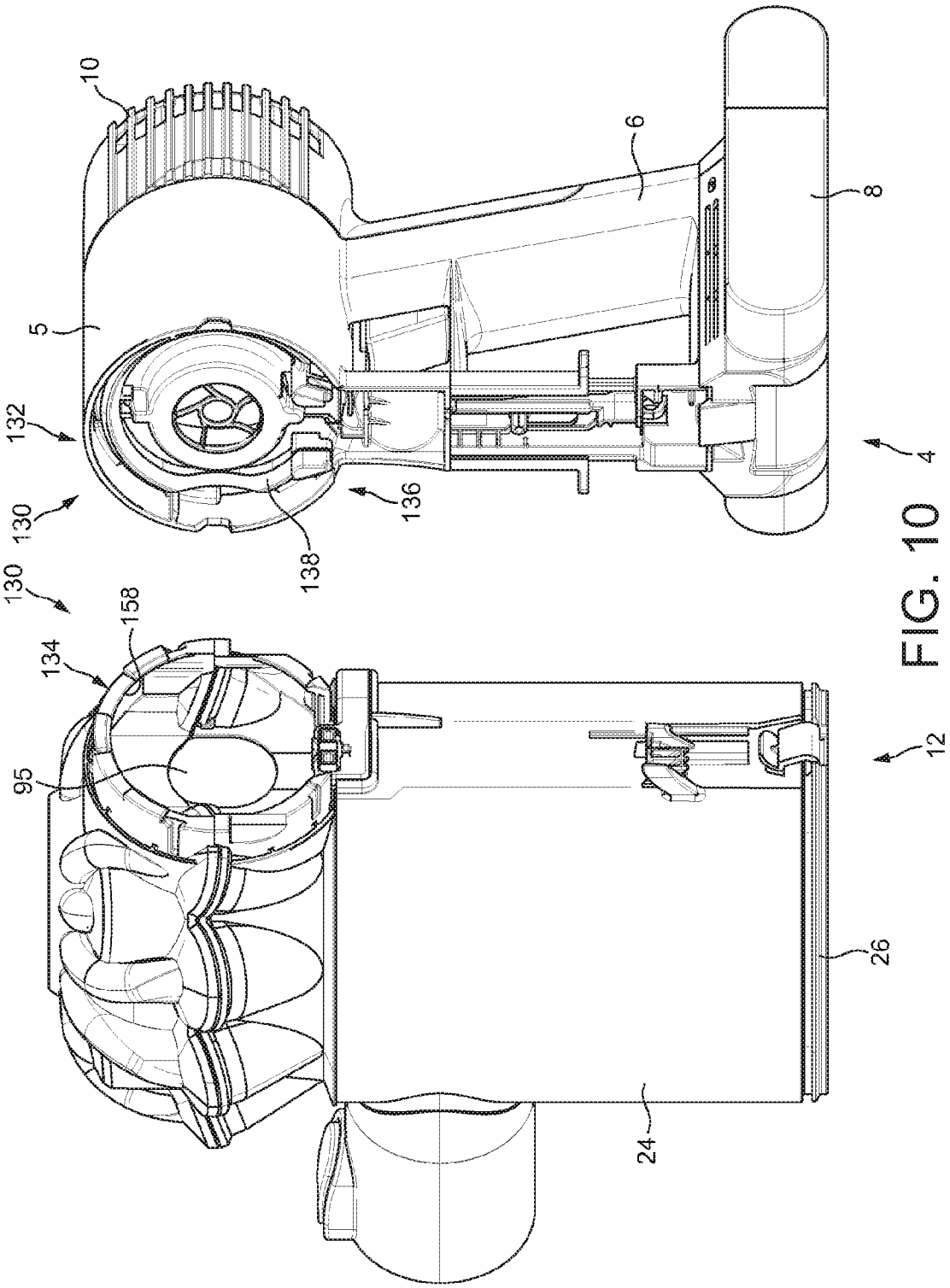

FIG. 10

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14 11 13

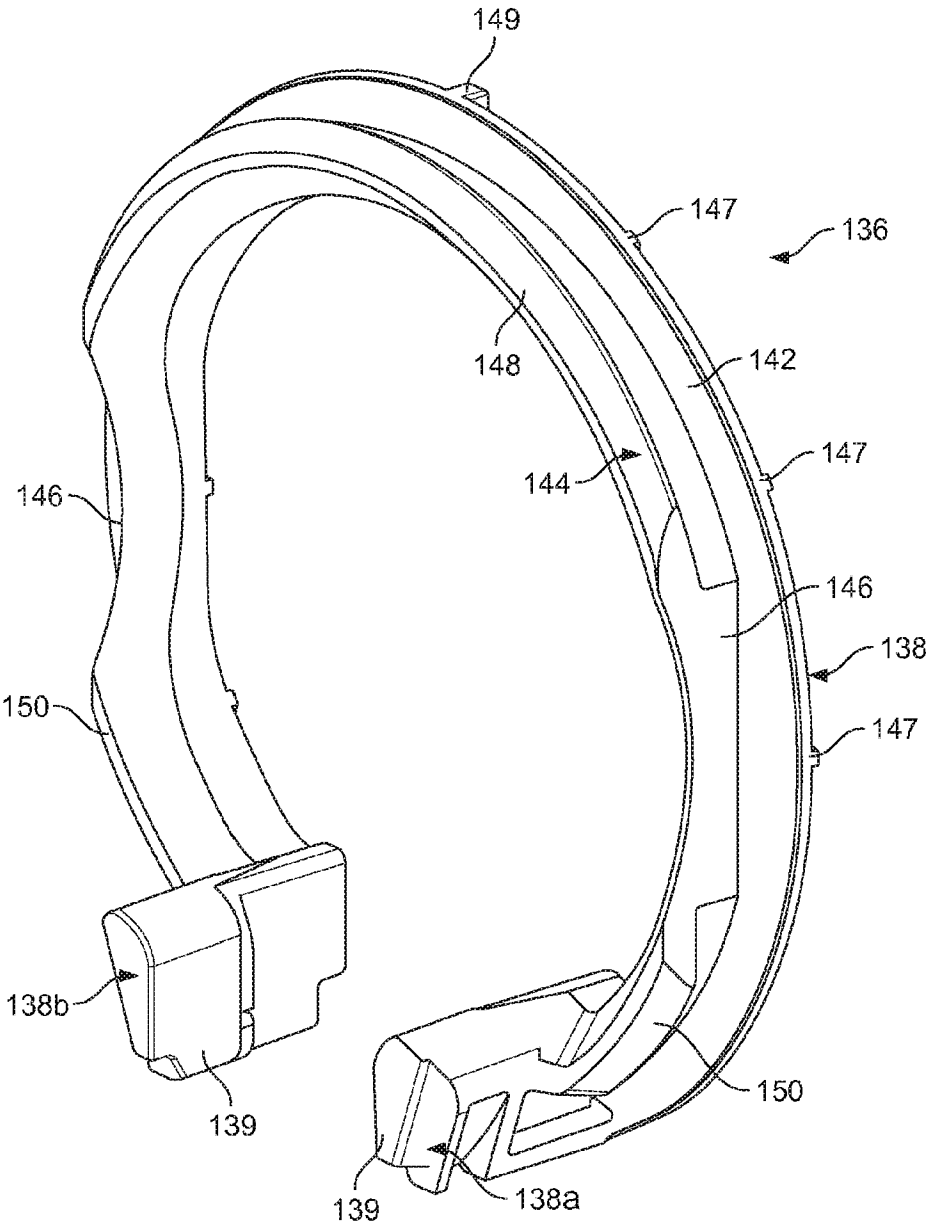

FIG. 11

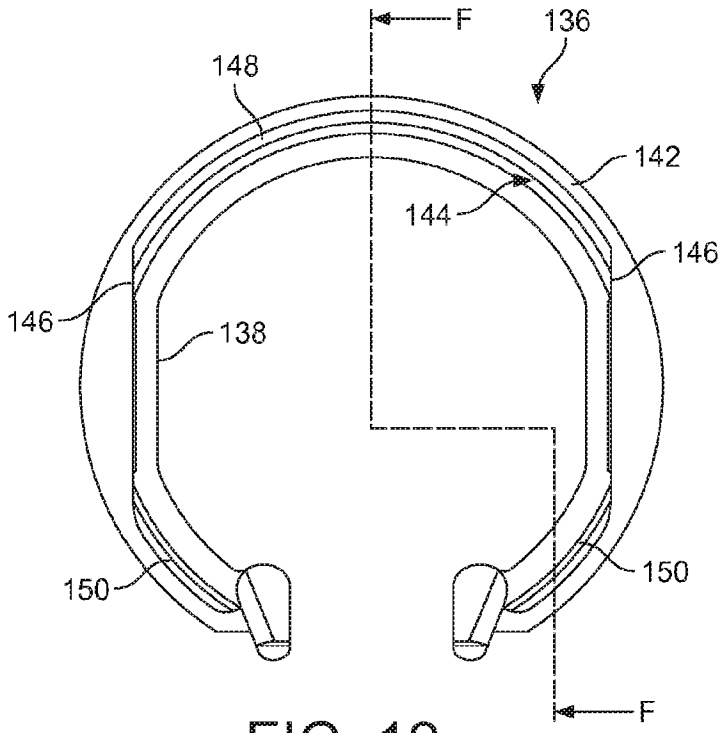

FIG. 12a

14 11 13

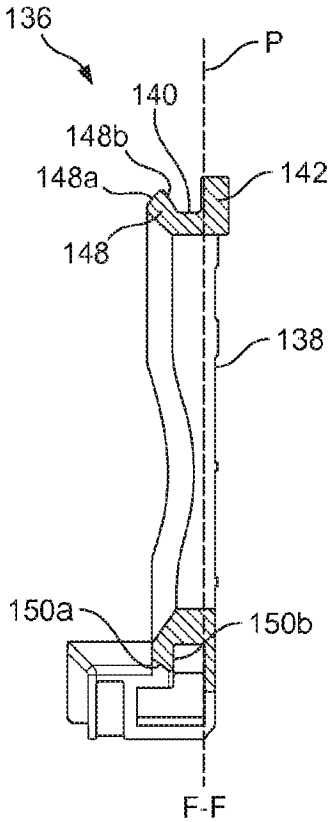

FIG. 12b

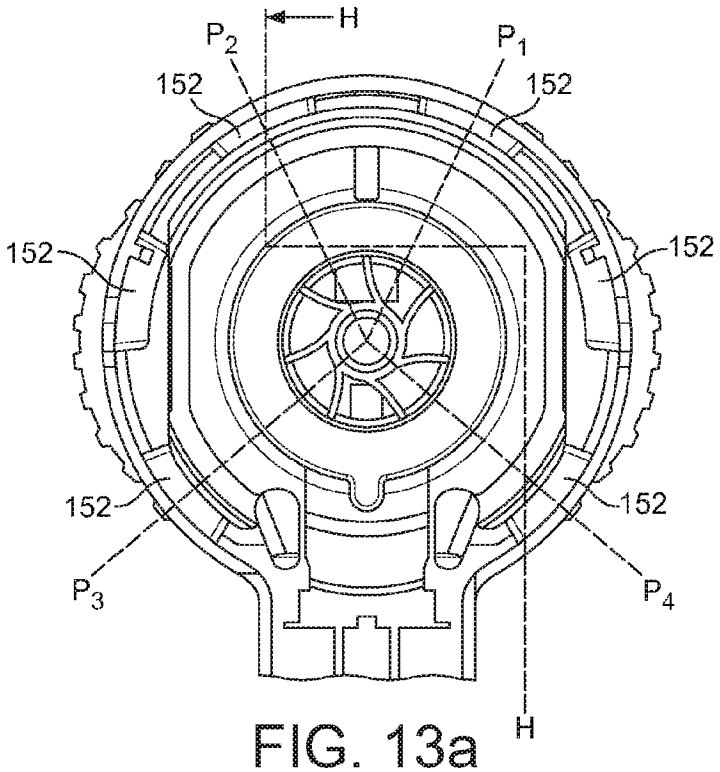

FIG. 13a

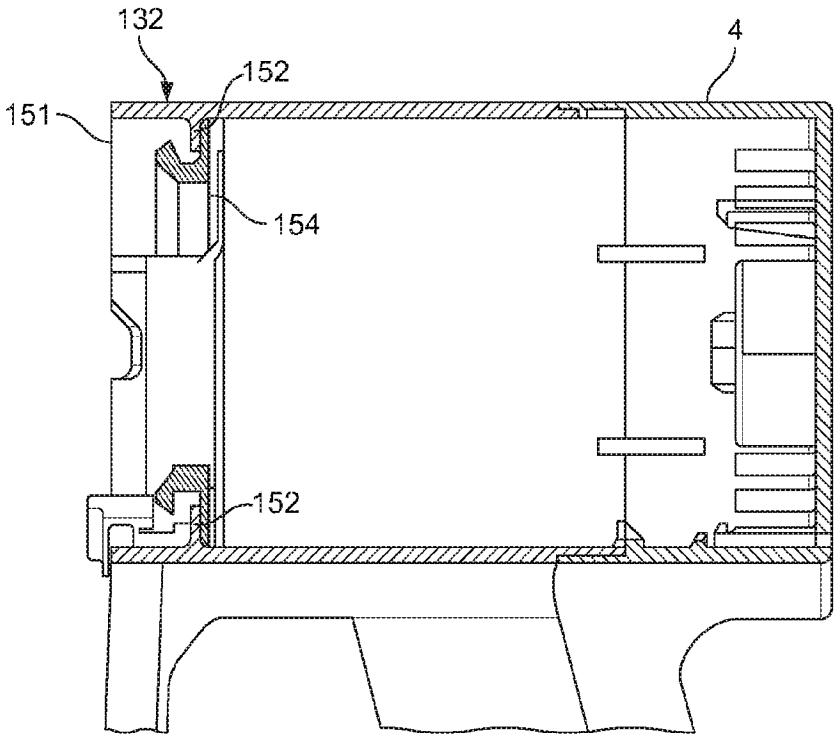

FIG. 13b

14 11 13

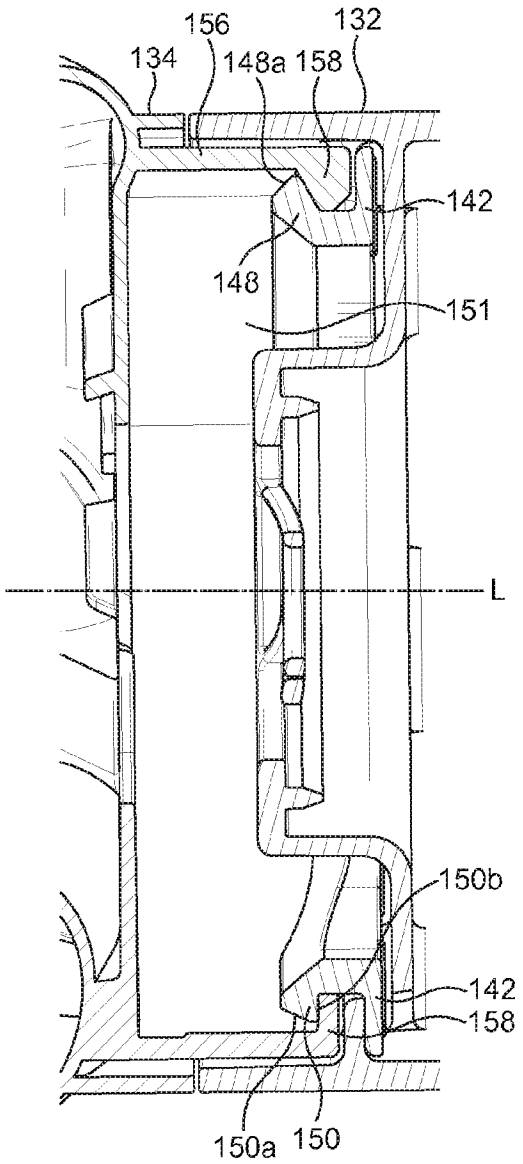

FIG. 14

14 11 13

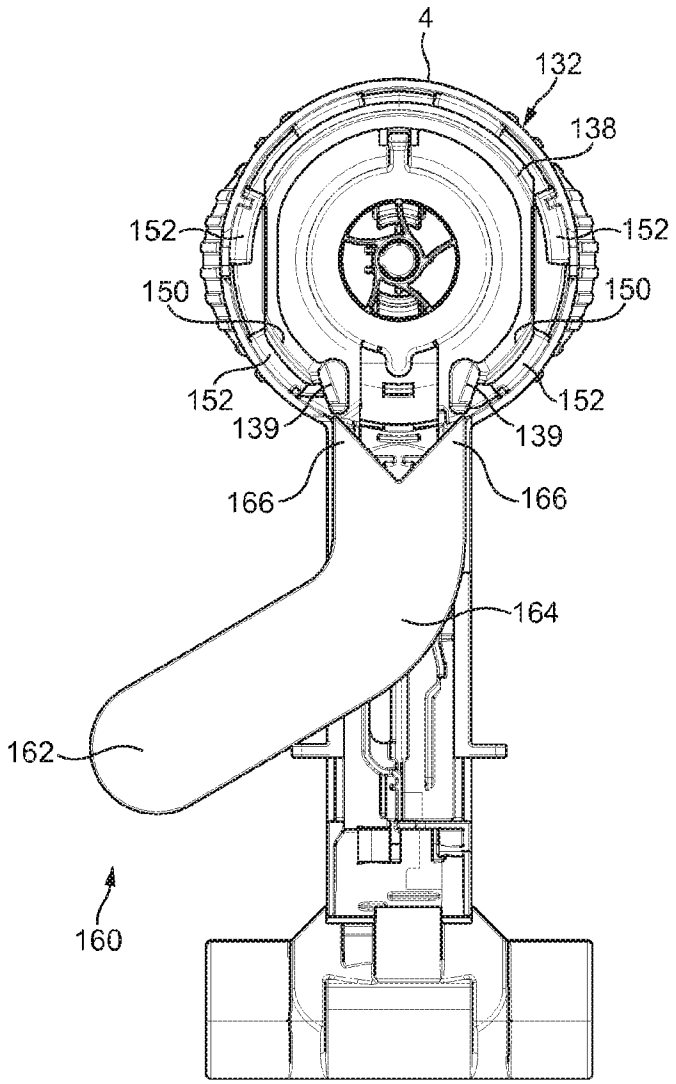

FIG. 15

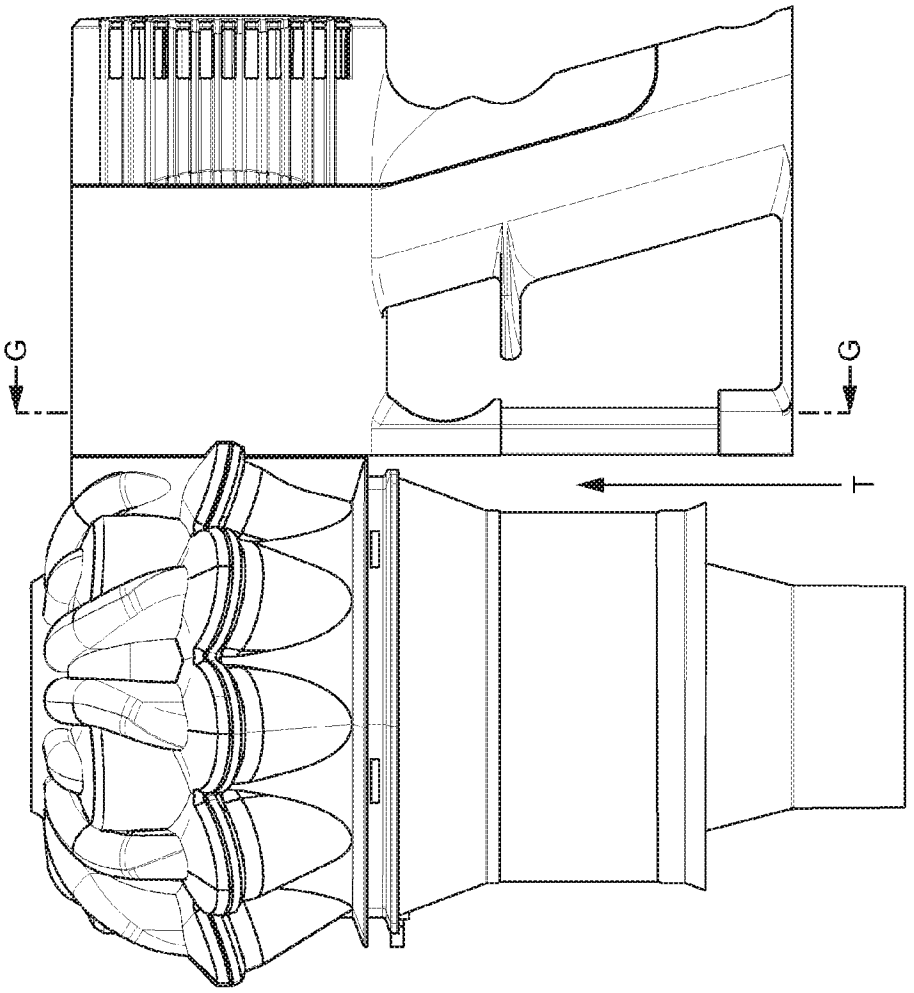

FIG. 16

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14 11 13

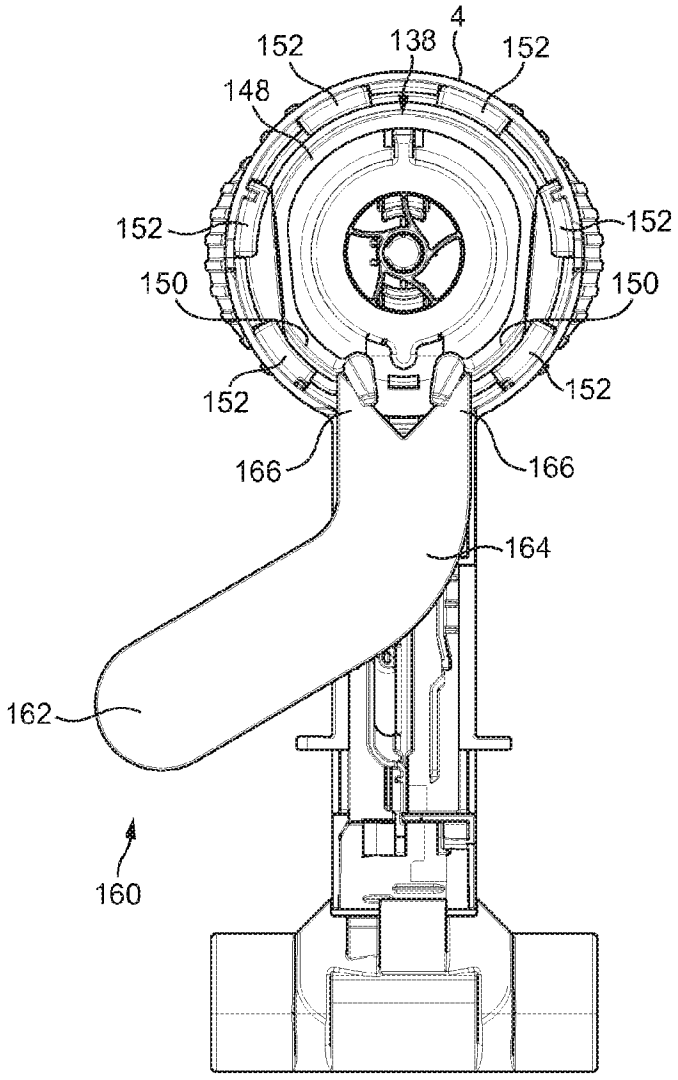

FIG. 17

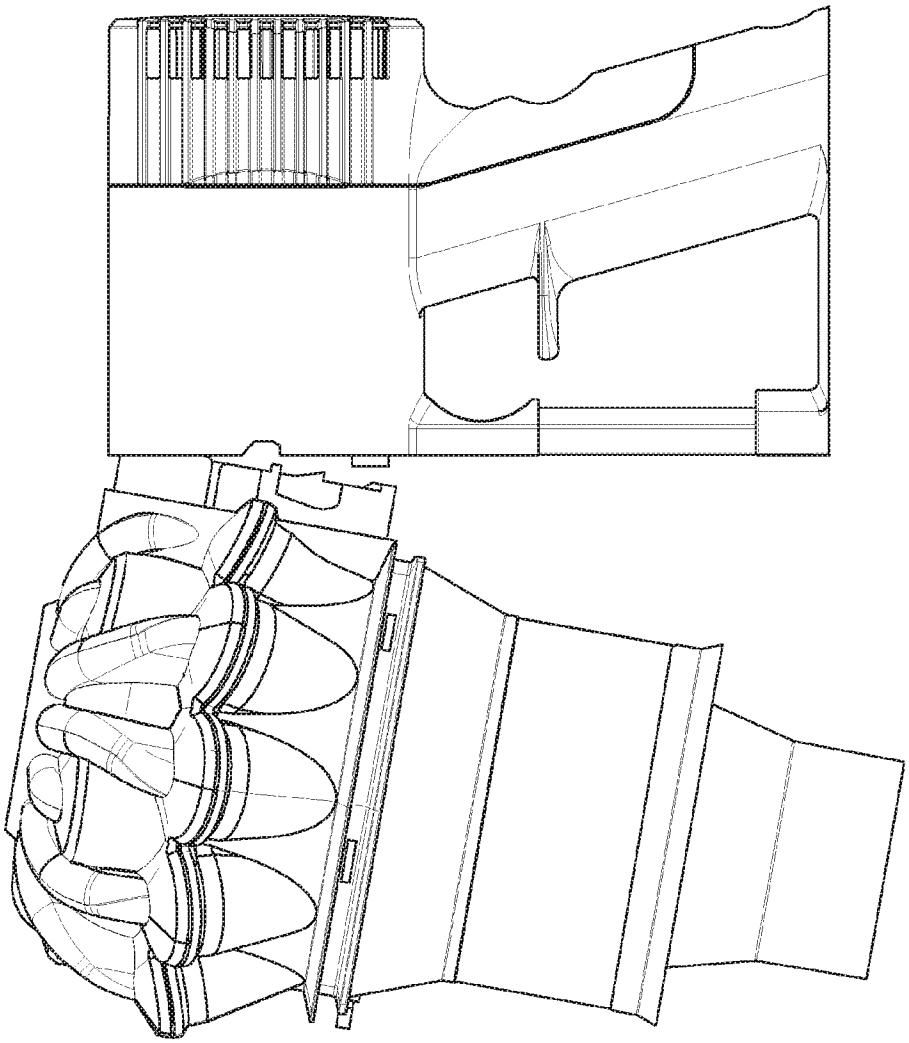

FIG. 18

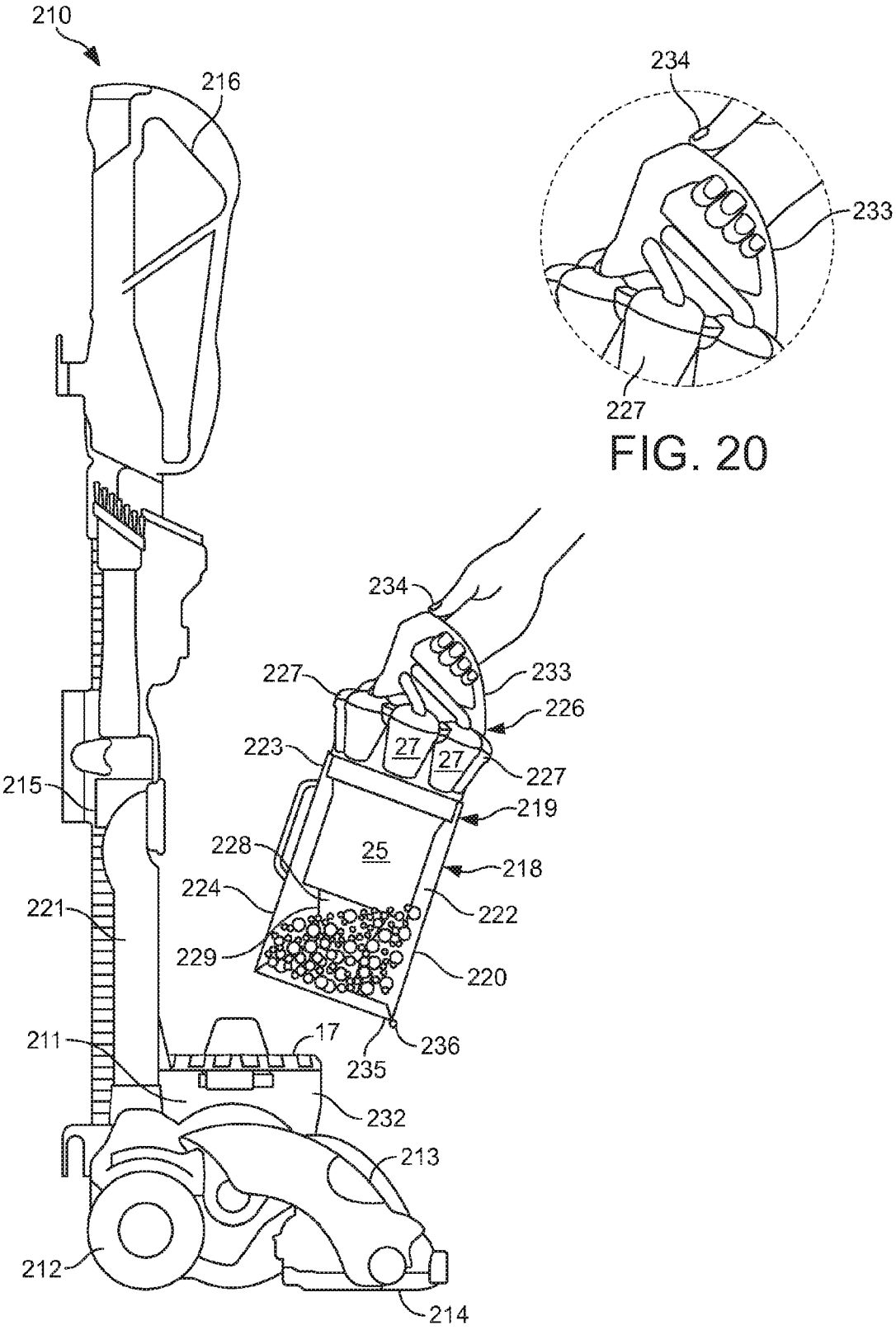

FIG. 19

FIG. 20

14 11 13

14 11 13

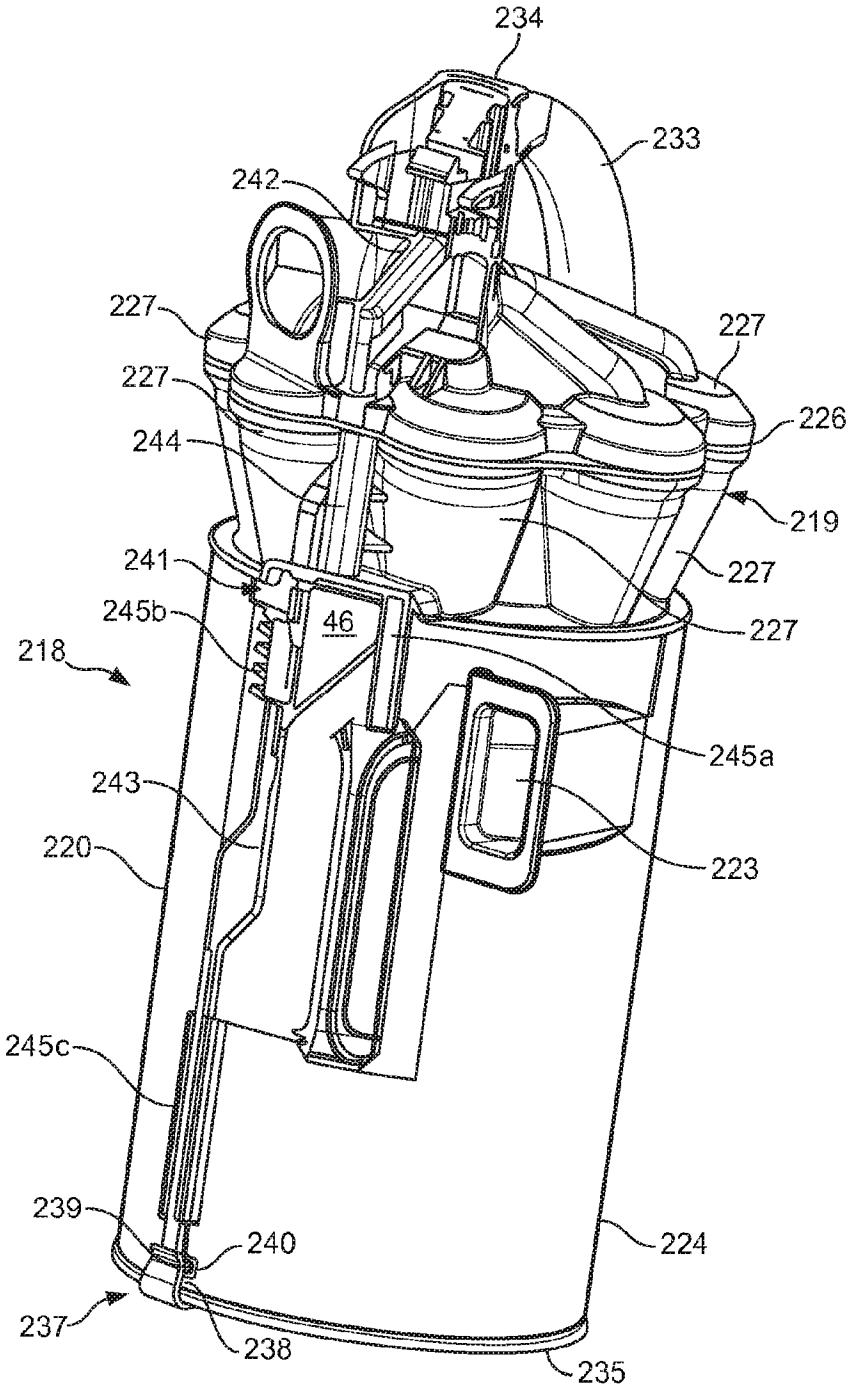

FIG. 21

14 11 13

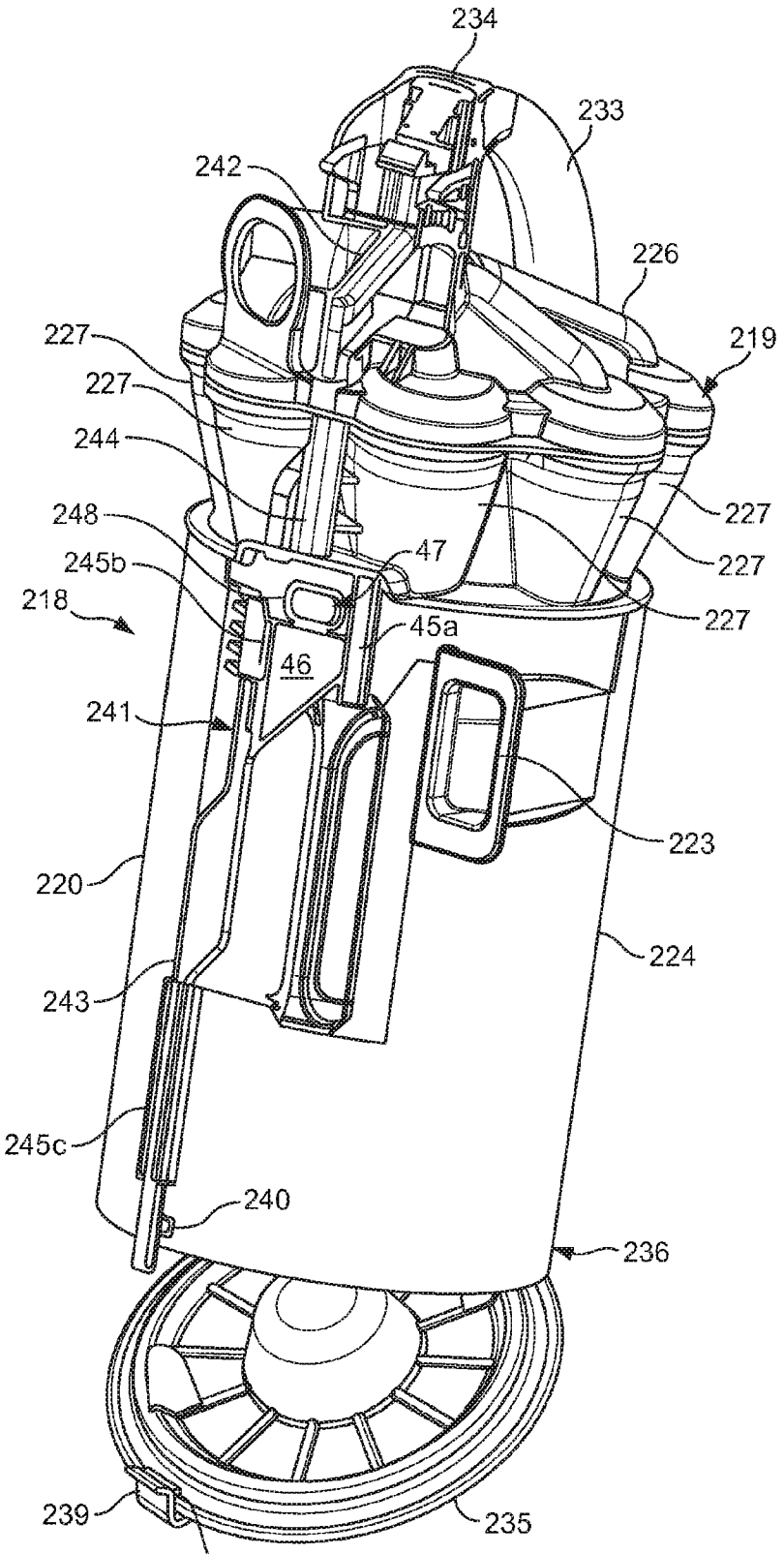

FIG. 22

14 11 13

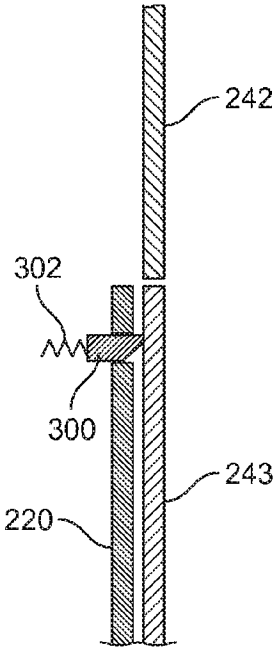

FIG. 23a

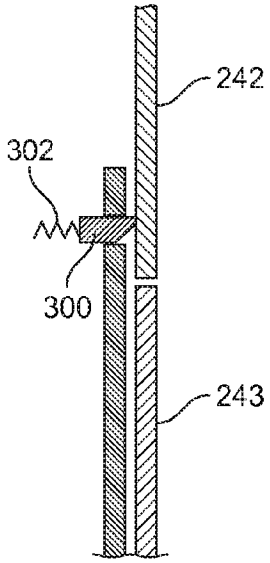

FIG. 23b

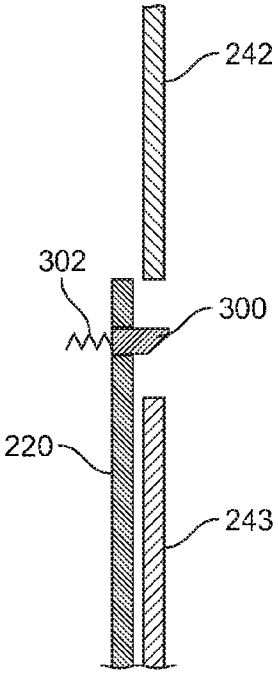

FIG. 23c

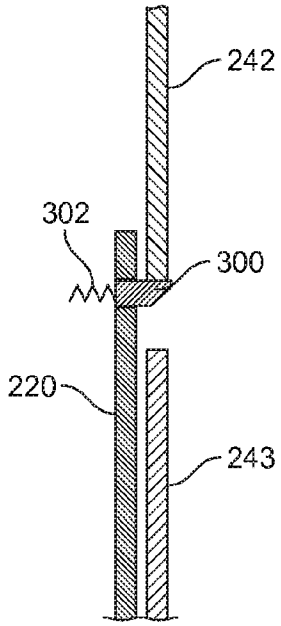

FIG. 23d

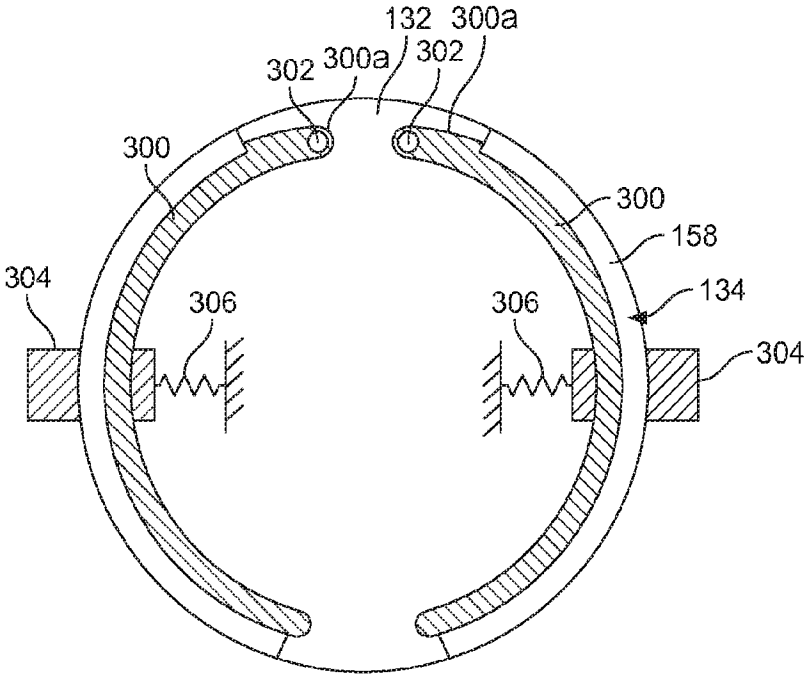

FIG. 24a

14 11 13

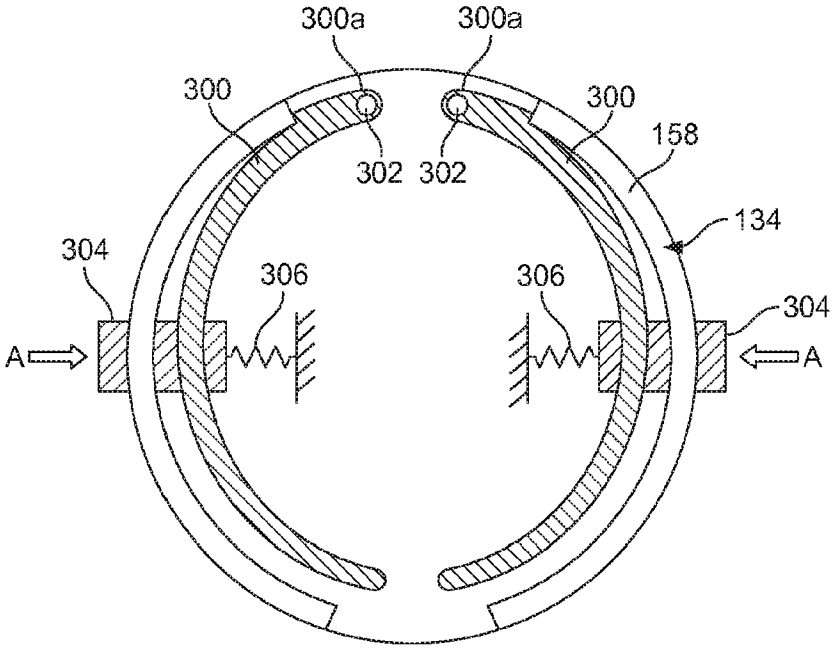

FIG. 24b

Cleaning Appliance

Technical field

The invention relates to a cleaning appliance including a separating apparatus having a dirt collector which can be emptied and also which is removable from the separating apparatus. The invention has particular utility in handheld and stick-type cleaning appliances, but also is applicable to other types of appliances such as upright and cylinder variants.

Background of the invention

Handheld vacuum cleaners are well known and have been manufactured and sold by various manufacturers for several years. One such handheld vacuum cleaner is described in EP2040599B, and as marketed by Dyson Limited as model number DC16. A similar vacuum cleaner of the so-called 'stick-vac' type is also marketed by Dyson Limited as model number DC35.

The vacuum cleaner of EP2040599B comprises a main body including a motor and fan unit located on the upper side of a handle and a power source in the form of a battery located on a lower side of the handle. The main body is connected to a cyclonic separator which includes a dirty air inlet through which dirt is drawn into the cyclonic separator when the motor and fan unit in the main body is operated. The cyclonic separator unit functions in the usual way to separate dirt from the air flow following which clean air is discharged from the cyclonic separator, through the motor and fan unit and exhaust from the air vents defined in the main body.

Two significant user-related features of the vacuum cleaner of EP2040599B are the mechanism by which the cyclonic separator is emptied and the way in which the main body and the cyclonic separator are joined.

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Referring firstly to the joint between the main body and the cyclonic separator, the main body and the cyclonic separator are releasably connectable to each other at a generally rectangular interface. Part of this interface is defined by the cyclonic separator and the other part of the interface is defined by the main body. The two interface parts are engageable with one another in a type of 'clam shell' arrangement the interface defining an internal chamber within which an air filter is housed.

The main body interface part includes a tab on a lower portion thereof that is receivable in a receptacle on the interface part of the cyclonic separator. The two interface parts are therefore hinged about the tab and receptacle. The upper part of the cyclonic separator includes a user operated latch which engages with a catch defined on the upper part of the main body. In this way, the interface parts of the main body and the cyclonic separator can be brought together, hinged about the lower tab and cooperating receptacle, and secured to one another with the latch. It is a simple operation for a user to release the part by actuating the latch thereby disengaging the upper portion of the interface parts. However, a disadvantage with this arrangement is that there is a degree of 'lateral flex' between the main body and the cyclonic separator which may be noticeable particularly when a significant sideways load is exerted on the dirty air inlet of the cyclonic separator. Flex in a vacuum cleaning device is generally undesirable since it may be perceived by a user as an area of mechanical weakness, or simply an indicator of low quality. Therefore, it is desirable to develop a mechanism which provides a stronger interface between the dust separator and the main body of a handheld vacuum cleaner in particular.

Turning to the mechanism by which the cyclonic separator is emptied, the cyclonic separator has an openable base which is pivoted against the cylindrical wall of the cyclonic separator so that it can swing open. The side of the base opposite the pivot is lockable into a catch. The catch is operated by a user-operated actuator in the form of a slider-button mounted on the main body. The actuator includes a rod which pushes against the base when the actuator is pushed and releases the base so that it is free to

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swing away from the door. Further, removal of the outer bin of the cyclonic separator is possible, but this requires a user to undo a dedicated catch proximate the lower rim of the bin and physically pull the bin away from the remainder of the cyclonic separator. A more user-friendly mechanism is desired.

Summary of the invention

It is against this background that the invention provides, in a first aspect, an apparatus, for example a cleaning apparatus and, more particularly a cleaning appliance such as a vacuum cleaner, comprising a first component that is releasably connected to a second component at an interface, the interface including a first interface portion and a second interface portion, and connecting means including at least one radially interlocking region extending about at least a portion of the interface.

When embodied in a cleaning appliance such a vacuum cleaner, the interface may be between a separating apparatus and a main body of the appliance. In this context the invention provides a improved connection between the two components since they are interlocked radially about the interface.

In one embodiment the connecting means includes a connecting member captive on the first interface portion and operable to lock onto one or more radial catch regions provided on the second interface portion. The connecting member may be a part-circular clip, such as a circlip that is compressible in a radial direction to reduce its outer diameter.

In a particularly advantageous arrangement, the apparatus includes an airflow generator for drawing air into the appliance and through the separating apparatus, wherein an airflow path from the separating apparatus to the main body is defined internally through the interface. Preferably, the first interface portion is associated with the body and the second interface portion is associated with the separating apparatus.

Although the resilient member may be configured so that the two components may be pulled apart under a application of a predetermined force, in one embodiment a tool is required to enable the resilient member to disengage the interface.

Further preferred and/or optional features are provided in the dependent claims.

In a second aspect, the invention provides, a cleaning appliance comprising a main body and a separating apparatus including a dirt collector having a base that is openable to allow the dirt collector to be emptied, wherein the cleaning appliance includes an actuator that is operable sequentially such that, during a first operation, the actuator causes the base to be opened and, during a second operation, the actuator causes the dirt collector to disengage from the separating apparatus.

The invention enables a single user-operable interface to perform two functions: firstly to open the bin door and secondly, when the bin door has been opened, to remove the bin from the separating apparatus. This is particularly useful in the case of a handheld cleaning apparatus when it is generally required to empty the bin when the separating apparatus is attached to the main body. However, in the context of an upright or cyclone type vacuum cleaner, the same actuator could also be used to decouple the separating apparatus from the main body. This sequence of operation therefore provides a simplified user interface because only a single actuator is required to perform two, or even three functions, but it is also a solution which is space efficient and lighter in weight.

Preferred and/or optional features of this aspect of the invention are provided in the dependent claims.

Brief description of the drawings

In order that it may be more readily understood, embodiments of the invention will now be described with reference to the accompanying drawings, in which:

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

Figure 2a is a section view of the cyclonic separating apparatus of the appliance in Figure 1, and Figure 2b is an exploded view of the internal components of the separating apparatus;

Figures 3a to 3d are a sequence of side views of the cleaning appliance which show the sequential operations to, firstly, open a door of the bin and, secondly, to remove the bin from the separating apparatus;

Figure 4 is a perspective view in which the main body of the appliance is split from the separating apparatus and which shows internal components of the actuating mechanism by which the separating apparatus may be opened for emptying purposes;

Figures 5 to 9 are a sequence of perspective views, based on Figure 4, which show the internal components of the actuating mechanism in a series of operations to open the bin door and to release the bin from the separating apparatus;

Figure 10 is a perspective view of the main body of the cleaning appliance separated from the separating apparatus showing a further aspect of the invention;

Figure 11 is a perspective view of the resilient member in Figure 10;

Figure 12a is a view of the resilient member from the front and Figure 12b is a section view along the line F-F in Figure 12a;

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Figure 13a is view of the resilient member in-situ in the mechanical interface of the main body, and Figure 13b is a cross section along the line H-H;

Figure 14 is an interior view of the mechanical interface between the main body and the separating apparatus in an assembled condition thereby showing the engagement between the first interface portion, the resilient member and the second interface portion;

Figure 15 is a view of the main body and a tool for interacting with the resilient member;

Figure 16 is a side view of the main body attached to the separating apparatus and illustrates the insertion point of the tool shown in Figure 15;

Figure 17 is a view of the main body like that shown in Figure 15 but shows the tool compressing the resilient member in a radial direction;

Figure 18 is a side view that shows the main body and the separating apparatus being separated from one another;

Figure 19 is a side view of an alternative vacuum cleaner arrangement;

Figure 20 is an enlarged view of part of Figure 19,

Figures 21 and 22 are perspective views of a cyclonic separating apparatus from the upright vacuum cleaner in Figure 19;

Figure 23a to Figure 23d are schematic views of a mechanism associated with the cyclonic separating apparatus of Figures 21 and 22; and

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Figures 24a and 24b show schematically an alternative arrangement to the embodiment of Figures 10 to 17.

Detailed description of the embodiments

With reference to Figures 1 and 2, a handheld vacuum cleaner 2 has a main body 4 which houses an airflow generator 5 in the form of a motor and fan unit above a generally upright handle or grip portion 6. The handle 6 has a lower end 6a that supports a generally slab-like battery pack 8. A set of exhaust vents 10 are provided on the main body 4 for exhausting air from the handheld vacuum cleaner 2.

The main body 4 supports a cyclonic separating apparatus 12 that is operable to remove dirt, dust and other debris from a dirt-bearing airflow drawn into the vacuum cleaner by the airflow generator. The cyclonic separator 12 is attached to a forward part 4a of the main body 4 and an air inlet nozzle 14 extends from a forward portion of the cyclonic separator that is remote from the main body 4. The air inlet nozzle 14 is configured so that a suitable brush tool can be removably mounted to it and includes a catch 16 for securely holding such a brush tool when the tool is engaged with the inlet. The brush tool is not material to the present invention and so is not shown here. It should also be appreciated that the air inlet nozzle could also be connected to a suitable wand having a cleaning head and, in such a configuration, would take the form of a stick-vac type cleaner. Such a configuration is known in the market, for example the Dyson DC35.

The cyclonic separating apparatus 12 is located between the main body 4 and the air inlet nozzle 14 and so also between the handle 6 and the air inlet nozzle 14. The separating apparatus 12 has a longitudinal axis Y which extends in a generally upright direction so that the handle 6 lies at a shallow angle to the axis Y.

The handle 6 is oriented in a pistol-grip formation which is a comfortable configuration for a user since it reduces stress on a user's wrist during cleaning. The separating apparatus 12 is positioned close to the handle 6 which also reduces the moment applied

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to the user's wrist when the handheld vacuum cleaner 2 is in use. The handle 6 carries an on/off switch in the form of a trigger 18 for turning the vacuum cleaner motor on and off. In use, the motor and fan unit 5 draws dust laden air into the vacuum cleaner 12 via the air inlet nozzle 14. Dirt and dust particles entrained within the air flow are separated from the air and retained in the separating apparatus 12. The cleaned air is ejected from the rear of the separating apparatus 12 and conveyed by a short duct to the motor and fan unit 5 located within the main body 4, and is subsequently expelled through the air outlets 10.

The separating apparatus 12 forming part of the handheld vacuum cleaner 2 is shown in more detail in Figure 2 which is a cross section through the separating apparatus 12 along the centreline of the vacuum cleaner. In overview, the separating apparatus 12 comprises a first cyclonic separating unit 20 and a second cyclonic separating unit 22 located downstream from the first cyclonic separating unit 20. A collecting bin 24 of the separating apparatus 12 is defined by an outer wall being substantially cylindrical in shape and which extends about a longitudinal axis Y of the separating apparatus 12 .

The lower end of the outer bin 24 is closed by a bin base 26 or 'door' that is pivotably attached to the outer wall 24 on the side opposite from the main body by means of a pivot 28 and held in a closed position by a catch 30, as will described in further detail later. Radially inward of and coaxial with the outer wall 24 is a second cylindrical wall 32 so that a chamber 34 is defined between the two walls. The second cylindrical wall 32 engages and is sealed against the base 26 when it is closed. The upper portion of the annular chamber 34 forms a cylinder-shaped cyclone chamber or, more simply 'cyclone' 34a, of the first cyclonic separating unit 20 and the lower portion of the annular chamber 34 forms a dust collecting zone 34b of the first cyclonic separating unit 20. Although there is no definite physical demarcation between the cyclone and the dust collecting zone, in general the dust collecting zone is beneath a downwardly angled lip 35 that protrudes radially inwards from the outer wall 24. The lip 35 helps to prevent dirt in the dirt collecting zone being entrained back into the airflow in the cyclone chamber.

A bin inlet 36 is provided at the upper end of the chamber 34 for receiving an air flow from the air inlet nozzle 14. Although not shown in the Figures, the bin inlet 36 is arranged tangentially to the chamber 34 so as to ensure that incoming dirty air is encouraged to follow a helical path around the chamber 34.

A fluid outlet from the chamber 34 is provided in the outer bin in the form of a generally cylindrical shroud 38. More specifically, the shroud 38 has an upper frustoconical wall 38a that tapers towards a lower cylindrical wall 38b that depends downwardly into the chamber 34. A skirt 38c depends from the lower part of the cylindrical wall and tapers outwardly in a direction towards the outer wall 24. The lower wall 38b of the shroud is perforated therefore providing the only fluid outlet from the chamber 34. By 'perforations', it is meant that the shroud is formed to be air-permeable for example in the form of a plastic or metal mesh, or a solid wall having a plurality of holes through which air may pass. Currently a plastics mesh is preferred.

Referring also to Figure 3, a second annular chamber 40 is located behind the shroud 38 and provides a manifold from which airflow passing through the shroud 38 from the first separating unit 20 is fed to the second cyclonic separating unit 22 through channels defined by a centrally positioned cyclone support structure 42. The second cyclonic separating unit 22 comprises a plurality of cyclones 50 arranged fluidically in parallel to receive air from the first cyclonic separating unit 20. In this example, the cyclones 50 are substantially identical in size and shape, and each one comprises a cylindrical portion 50a and a tapering portion 50b depending downwardly from it (only one cyclone is labelled in Figure 2 for clarity). The cylindrical portion 50a comprises an air inlet 50c for receiving fluid from the second annular chamber 40. The tapering portion 50b of each cyclone is frusto-conical in shape and terminates in a cone opening 52 at its bottom end through which dust is ejected, in use, into the interior of the cyclone support structure 42. An air outlet in the form of a vortex finder 60 is provided at the upper end of each cyclone 50 to allow air to exit the cyclone. Each vortex finder 60 extends downwardly from a vortex finder member 62.

The cyclones of the second cyclonic separating unit 22 are grouped into a first set of cyclones 70 and a second set of cyclones 72 and, as can be seen in Figures 2 and 3, the second, upper, set of cyclones is positioned axially above the first, lower, set of cyclones 70. Although not essential to the invention, in this embodiment the first set of cyclones 70 contains more cyclones (ten in total) than the second set of cyclones 72 (five in total). Each cyclone 50 of both sets has a longitudinal axis C which is inclined downwardly and towards the longitudinal axis Y of the outer wall 52. However, to enable a greater degree of nesting of the second set of cyclones into the first set of cyclones, the longitudinal axes C_2 of the second set of cyclones 72 are all inclined at to the longitudinal axis Y of the outer wall at a shallower angle than the longitudinal axes C_1 of the first set of cyclones 70.

Circulating air is discharged from the secondary cyclones 50 via the vortex finders 60, and these are defined by a short cylindrical tube that extends downwardly into an upper region of a respective cyclone 50. Each vortex finder 60 leads into a respective vortex finger 80 defined by an exhaust plenum or manifold 82 located at the top of the separating apparatus 12 that serves to direct air from the outlets of the cyclones to a central aperture 84 of the manifold 82. The aperture 84 constitutes the upper opening of a central duct 88 of the separating apparatus into which a filter member 86 is received. In this embodiment, the filter member 86 is an elongate sock filter that extends down into the central duct 88 along the axis Y, the duct 88 being delimited by a third cylindrical wall 90 defined by the cyclone supporting structure 42.

The third cylindrical wall 90 is located radially inwardly of the second cylindrical wall 32 and is spaced from it so as to define a further annular chamber 92 which extends down to the bin base 26. An upper region of the cyclone support structure 42 provides a cyclone mounting arrangement 93 to which the cone openings 52 of the cyclones of the second cyclonic separating 22 are mounted so that they communicate with the interior of the support structure 42. In this way, in use, dust separated by the cyclones 50 of the second cyclonic separating unit 22 is ejected through the cone openings 52 into the

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chamber 92 where it can collect prior to being emptied. The chamber 92 therefore form a 'fine dust collector' of the second cyclonic separating unit 22 that can be emptied simultaneously with the dust collecting zone of the first cyclonic separating unit 20 when the base 26 is moved to an open position.

During use of the vacuum cleaner, dust laden air enters the separating apparatus 12 via the bin inlet 36. Due to the tangential arrangement of the bin inlet 36, the dust laden air follows a helical path around the outer wall 24. Larger dirt and dust particles are deposited by cyclonic action in the first annular chamber 34 and collect at the bottom of the chamber 34 in the dust collecting bin. The partially-cleaned dust laden air exits the first annular chamber 34 via the air-permeable shroud 38 and enters the second annular chamber 40. The partially-cleaned air then passes into the air channels 74 of the cyclone support structure 42 and is conveyed to the air inlets 50c of the first and second sets of cyclones 70, 72. Cyclonic separation is established inside the two sets of cyclones 70, 72 in order to separate the relatively fine dust particles still entrained within the airflow.

The dust particles separated from the airflow by the first and second set of cyclones 70, 72 are deposited in the third annular chamber 92. The further cleaned air then exits the cyclones via the vortex finders 60 and passes into the manifold 82, from which the air enters the sock filter 86 in the central duct 88 and from there passes into an outlet passage 94 of the cyclone separator. As can be seen, the filter 86 comprises an upper mounting portion 86a and lower filter portion 86b that carries out the filtering function and so is formed from a suitable mesh, foam or fibrous element. The upper mounting portion 86a supports the filter portion 86b and also serves to mount the filter 86 within the duct 88 by engaging with the aperture 84 of the exhaust manifold 82. The mounting portion 86a defines a circular outer rim that carries a sealing member 96, for example in the form of an o-ring, by which means the mounting portion 86a is received removably, but securely, within the aperture 84 of the manifold. Although not shown here, it should be appreciated that the filter 86 could also be provided with a locking mechanism if it is desired to more securely hold the filter in position. For example, the filter mounting

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portion 86a could carry a twist-lock fitting formation so that the filter could be twisted in a first direction to lock it into position within the aperture 84, and twisted in the opposite direction to unlock the filter.

The mounting portion 86a also includes an annular upper section provided with apertures or windows 97 distributed around its circumference, the windows 97 providing an airflow path for air to enter the interior of the filter 86. Air therefore flows into the filter 86 in a radial direction through the windows 97, following which the air flows down the interior of the filter 86 and then exits through the cylindrical filter media in a radial direction. After flowing out of the filter 86, the cleaned air then travels up the outlet passage 94 and exhausts the separating apparatus 12 via an exit port 95 located at the rear of the separating unit 12.

Having described the general function of the separating apparatus 12, the skilled reader will appreciate it includes two distinct stages of cyclonic separation. First, the first cyclonic separating unit 12 comprises a single cylindrical cyclone 20 having a relatively large diameter to cause comparatively large particles of dirt and debris to be separated from the air by virtue of the relatively small centrifugal forces. A large proportion of the larger debris will reliably be deposited in the dust collecting zone 34.

Second, the second cyclonic separating unit 22 comprises fifteen cyclones 50, each of which has a significantly smaller diameter than the cylindrical first cyclone unit 20 and so is capable of separating finer dirt and dust particles due to the increased speed of the airflow therein. The separation efficiency of the cyclones is therefore considerably higher than that of the cylindrical first cyclone unit 20.

It will be appreciated that the first and second cyclonic separating units function to remove dirt particles from the air flow and deposit them in the dust collecting zone 34 from which they may be removed by the openable door 26. Having described the operation of the cyclonic separator in detail, the description will now focus on the mechanism by which the cyclone separating apparatus can be emptied and, moreover,

how the outer bin may be removed from the separating apparatus by a user to allow access to other components of the cyclonic separator such as the shroud for cleaning.

Figure 3a, 3b, 3c and 3d illustrate, in overview, the procedure by which the door 26 of the separating apparatus 12 is opened in order for dirt to be emptied, and the way in which the bin 24 of the separating apparatus 12 may be removed so that a user is able to clean the bin 24, and also the shroud 38, as part of periodic maintenance.

The bin door 26 may be opened by means of an actuator 98 that is provided on the main body. In this embodiment, the actuator 98 is slidably mounted to a spine component 99 of the main body which lies adjacent to the bin 24 and extends in an upright direction between the motor housing 5 and a horizontal battery mount member 100.

In Figure 3a, the actuator 98 is in a first position, in which state the bin door 26 is locked closed against the lower end of the bin 24. The actuator 98 is movable downwards from this position into a second position, as shown in Figure 3b, which causes the bin door 26 to swing away from the bin 24, thereby allowing the bin 24 to be emptied. The actuator 98, once released, is biased to return to the first position, as will be described.

During circumstances when the bin door 26 is opened, as in Figure 3b, the actuator 98 is movable a second time from the first position into the second position in which state the actuator 98 causes the bin 24 to be disengaged from the separating apparatus 12. Figure 3c shows the actuator 98 in the second position during a second operation. It will be appreciated that the bin is disengaged slightly from its engaged position so as to be 'presented' to a user so that a user can pull the bin 24 away from the rest of the separating apparatus 12.

Figure 3d shows the bin 24 removed completely from the separating apparatus 12, with the actuator 98 moved back into the first position. In summary, the actuator 98 is operable to carry out a sequence of two operations: a first operation to open the bin door

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26 and a second operation to disengage the bin 24 from the separating apparatus 12. The benefit of this is that the user need only manipulate a single actuator in order to perform two operations. Ordinarily, the user will more often only need to operate the actuator 98 once in order to open the bin door 26 so as to empty the bin 24. However from time to time, the user may also wish to remove the bin 24 from the separating apparatus 12 in order to clean the shroud 38 of blockages and perhaps to clean the walls of the bin 24. With the invention, the user is simply required to operate the actuator 98 a second time whilst the bin door 26 is opened in order to release the bin 24 from the separating apparatus 12. This provides a simple user interface as there is no need for the user to locate a second actuator in order to remove the bin. Furthermore, the sequence of operation ensures that dirt is emptied from the bin 24 before the bin 24 can be removed from the separating apparatus 12 which has an associated hygiene benefit.

By way of example of a mechanism that embodies the invention, reference will be made to Figures 4 to 9 which show the actuator 98 and its associated actuating mechanism 101 together with the position of the bin 24 and bin door 26 in the positions illustrated in Figures 3a to 3d. Note that Figure 5 shows an enlarged portion of Figure 4. At this point, it should be mentioned that the bin 24 is shown in 'cut-away' form and that the separating apparatus 12 is not shown in order that the actuating mechanism 101 can be illustrated more clearly.

As mentioned above, the actuator 98 is slideably mounted to the spine 99 between a first, upper position and a second, lower position. Note that the actuator 98 is shown in the first position in Figures 4 and 5 and in the second position in Figure 6. The actuator 98 is associated with a primary linkage member 102 that is directly coupled to the actuator 98 and is slidable therewith on the opposite side of the spine 99. The primary linkage member 102 is mounted to the actuator 98 on a pivot pin 104 associated with the actuator 98 and which projects through a slot 106 in the spine 99 and is slidable within the slot 106 through a vertical movement. Movement of the actuator 98 up and down along the spine 99 therefore moves the primary linkage member 102.

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The primary linkage member 102 is generally an inverted L-shaped and is mounted to the pivot pin 104 at an elbow portion 108. The primary linkage member 102 further includes a first arm portion 110 that extends from the elbow portion 108 in a downwards direction and bears against an upper end 112a of an intermediate link member 112 in the form of a push rod. The push rod 112 further includes a lower end 112b which bears against the catch 30 of the bin door 26. The actuator 98 therefore is able to act on the catch 30 through the primary linkage member 102 and the push rod 112.

As can be seen by comparing Figures 4 and 5, as the actuator 98 is pushed downwards from the first position to the second position, the primary linkage member 102 also moves in a downward direction thereby acting through the push rod 112 to release the catch 30 on the bin door 30 which enables the bin door 26 to swing away from the bin 24 so that it can be emptied of dirt.

Following the release of the bin door 26, the actuator 98 returns to the first, upper, position assisted by biasing means which, in this embodiment, takes the form of a coil spring 114, although it will be appreciated that other means to return the actuator to the first position are possible such as a resilient rubber member. This position is shown in Figure 7. The spring 114 is connected between a spring mount 116 on an upper part of the spine 99 and a second arm portion 118 of the primary linkage member 102 which extends away from the first arm portion 110 approximately at a right angle.

Figure 8 shows the actuator 98 moved away from the first position towards the second position in order to release the bin 24 from the main body 4, whereas Figure 9 shows the actuator 98 fully depressed into the second position. Referring firstly to Figure 8, when the actuator 98 is moved in a downwards direction for a second operation, the retaining force of the spring member 114 causes the primary linkage member 102 to move angularly in a counter-clockwise direction which moves the first arm portion 110 out of line with the upper end 112a of the push rod 112 and into line with a contact point 120a of a U-shaped bin catch member 120 which is ordinarily engaged with a lug 122 defined

on the lower end of the bin 24. As the primary linkage member 102 is moved further downwards, as shown in Figure 9, the first arm portion 110 of the primary linkage member 102 comes into contact with the contact point 120a of the bin catch member 120 which is then rotated out of engagement with the lug 122 on the bin 24. As the bin catch member 120 rotates, an extension part 120b of the bin catch member 120 contacts the lug 122 which pushes the entire bin 24 in a downwards direction by a small amount so as to break the upper seal of the bin 24. In this manner, the bin 24 is slightly dislodged from its 'home' position following the disengagement of the bin catch member 120 from the lug 122 thereby presenting the bin 24 which acts as a visual cue for the user that the bin 24 may now be removed from the separating apparatus.

Following the release of the bin, the actuator 98 is released so as to return into the first position as shown in Figures 5 and 6. As the primary linkage member 102 is returned to its 'starting' position, an enlarged end 124 of the second arm portion 118 contacts a stop feature 126 of the spine 99 which causes the primary linkage member 102 to move angularly in a clockwise direction thereby moving the end of the first arm portion 110 into alignment with the upper end 112a of the push rod 112 when the bin door 26 is closed. It should be noted at this point that the upper end 112a of the push rod 112 includes an upstanding projection or 'lip' 128 which retains the first arm portion 110 in alignment with the push rod 112 throughout the first push sequence moving from the first position to the second position.

From the above, the skilled person will appreciate that the bin opening mechanism 101 operates to perform two functions sequentially using a single actuating button: a user presses the actuator 98 a first time to open the bin door 26, but the user may also press the actuator 98 a second time when the bin door 26 is in an open position in order to remove the bin 24 from the cyclonic separating apparatus 12. This arrangement provides a simple user interface since a single button does the job of two buttons provided in known handheld vacuum cleaners, such as disclosed in WO2010/061211. It is therefore intuitive to use and, moreover, it is not necessary for the user to remove the separating apparatus from the cleaning appliance before emptying the bin. Furthermore,

such an arrangement is advantageous in terms of packaging because only a single opening mechanism needs to be provided on the vacuum cleaner which therefore allows for a more compact design.

Having described the manner in which the bin door 26 may be opened to release dirt from the separating apparatus 12, and how the bin 24 itself may be removed from the separating apparatus 12, discussion will now focus on the arrangement by which the separating apparatus 12 is connectable with the main body 4 of the vacuum cleaner. In the following description, reference will be made particularly to Figures 10 to 18.

Referring firstly to Figure 10, the main body 4 of the handheld vacuum cleaner is removably connected to the separating apparatus 12 at a mechanical interface 130. The mechanical interface 130 comprises a first interface portion 132 provided on the main body 4 and a second interface portion 134 provided on the separating apparatus 12. In this embodiment, the first interface portion 132 and the second interface portion 134 are substantially circular, although it should be appreciated that this is not essential to the invention as will become apparent in the following description. As can be seen, the air flow from the separating apparatus flows through the interface 130. As will be explained, the first interface portion and the second interface portion are locked together radially about at least a portion of the interface. Since the interlock between the first and second interface portions extends about at least a portion of their circumference, this results in a very strong, but releasable, connection. At the extreme, the two portions can be interlocked continuously about the entirety of the interface. Alternatively, the two portions can be interlocked at multiple discrete points distributed radially about the interface.

In this specific embodiment, the two portions 132, 134 of the mechanical interface 130 are releasably connected by way of an connecting means 136 which includes, at least in part, a ring-shaped resilient member 138 or 'C-clip/circlip'having first and second ends, labelled here as 138a and 138b. The resilient member 138 is shown *in situ* in Figure 10 but is shown in isolation from the main body 4 in Figures 11, 12a and 12b.

Each of the first and second ends 138a, 138b of the resilient member 138 has an enlarged gripping foot 139. In this embodiment the resilient member 138 is polymeric, preferably polycarbonate, although it may also be a different material such as a suitable metal. Plastics are currently preferred due to cost and strength. By virtue of the shape of the resilient member 138 and the material of which it is made, it is resilient radially, in that it is flexible such that its outer diameter may be reduced. Therefore, a force applied to the gripping feet 139 of the resilient member 138 to close the gap between the ends acts to decrease the outside diameter of the resilient member, and the importance of this feature will be explained later.

The resilient member 138 has a generally U-shaped cross section thereby forming a circumferential channel 140 around its outer periphery. A first radial flange 142 provides a first, rear, wall of the channel 140 and a second radial flange 144 provides the front wall of the channel 140. In this particular embodiment, the rear flange 142 is continuous about substantially the entire circumference of the resilient member 138 although, as can be seen particularly clearly in Figure 12a, the continuity of the second flange 144 is interrupted by two cut-outs or 'flats' 146, one on each side of the resilient member 138. It should be appreciated that the flats 146 are not essential to the invention and are provided here in order to provide space within the internal volume of the interface for additional structural features, for example screw bosses. If the flat 146 were omitted, the second flange 144 may be continuous and therefore provide an even stronger connection.

The flats divide the front flange 144 into a first, upper wall portion 148 and first and second lower wall portions 150. The lower wall portions 150 have a different cross sectional profile to the upper wall portion 148, as is shown most clearly in Figure 12b, and as will now be explained.

The upper wall portion 148 comprises inner and outer faces 148a, 148b, both of which are inclined with respect to the rear flange 142, which extends along a vertical plane P

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as shown in Figure 12b. In contrast, the lower wall portions 150 also comprise inner and outer faces 150a, 150b, but only the inner face 150a is inclined to the rear flange 142 whereas the outer face 150b is parallel to the rear flange 142 and, thus, the plane P. The cross sectional profile of the front flange 144 enables the mechanical interface to be connected and disconnected, as will now be explained.

Although it is a separate part, the resilient member 138 is captive on the first interface portion 132 of the main body 4 and so is held within an internal chamber 151 defined by the first interface portion. As shown in Figure 13a and 13b, the first interface portion 132 includes a plurality of tabs 152. In this embodiment there are five tabs 152 in total, although the skilled person will appreciate that this is not essential. The tabs 152 are spaced radially around the circumference of the first interface portion 132 and extend inwardly by a short distance. The tabs 132 are spaced from a back plate 154 of the first interface portion 132 which enables the rear flange 142 of the retaining member 138 to be secured behind the tabs 152 such that the tabs 152 sit in the channel 140 of the retaining member 138. This is shown clearly in Figure 13b.

In order to secure the second interface portion 134 to the first interface portion 132, the two interface portions can simply be pressed together. As shown in Figure 14, the second interface 134 portion includes a short tubular section 156 having a smaller diameter than that of the circular profile of the first interface portion 132 so that the second interface portion 134 can be received inside the first interface portion 132. The second interface portion 134 includes an inwardly extending radial lip 158 that connects to the resilient member by engaging over the upper wall portion 148 and the lower wall portions 150. Thickened segments 159 of the lip 158 fit between the tabs 152 and have the effect of reducing the axial length of the interface 130.

As the second interface portion 134 is pushed into enagement with the first interface portion 132, the leading edge of the lip 158 engages the angled outer faces 148a, 150a of the front wall 144 of the resilient member 138. This radially compresses the resilient member 138 and therefore allows the lip 158 of the second interface portion 134 to

engage into the channel 140 of the resilient member 138. It should be noted that Figure 14 shows the first interface portion and the second interface portion in the fully engaged position such that the interface 130 extends about the longitudinal axis L.

When in the fully engaged position, the first and second interface portions 132, 134 are securely locked together and cannot be pulled apart freely. The resilient member interlocks the first and second interface portions at radial regions that extend about the interface. As illustrated by the enlarged view of the interlock between the two interface portions 132, 134 in Figure 14, the lower wall portions 150 of the resilient member 138 and the lip 158 of the second interface portion 134 engage at a plane P which is parallel to the rear wall 142 of the resilient member 138. Therefore, by virtue of the complementary profiles of the resilient member 138 and the second interface portion 134, the lip 158 cannot simply be pulled out of engagement from the channel 140 of the resilient member 138. Furthermore, the first and second interface portions 132, 134 interlock at multiple points or regions that extend radially about the periphery of the portions which results in a very strong connection in multiple 'planes', as is illustrated by the planes P1 to P4 in Figure 13a. The resilient member therefore acts as a mechanical fastener.

It should be appreciated that if the outer face 150b of the resilient member 138 and the lip 158 were angled as opposed to being parallel with the back plane P, then it would be possible for the interface to be split apart relatively easily since the outer face 150b and the lip 158 profiles would cause the resilient member 138 to be 'bumped out' under a predetermined separation force pulling the interface components apart. In such an arrangement, then it would be necessary to include an interference means to the connection arrangement which would selectively prevent the resilient member from compressing in the radial direction.

In the illustrated embodiment, however, a tool is required to enable the first interface portion 132 and the second interface portion 134 to be separated, as will now be explained with reference to Figures 15 to 18. A tool 160 for separating the main body 4

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from the separating apparatus 12 comprises a handle 162 and a working end 164 that extends obliquely to the handle. The working end 164 defines a forked interface for engaging the resilient member 138 and includes two spaced apart wedge shaped forks 166 that may be inserted through an aperture (not shown) in the second interface portion 134 so as to engage the gripping feet 139 of the resilient member 138. The insertion point for the tool is shown by the arrow T in Figure 16.

The gripping feet 39 provide angled faces to complement the forks 166 of the tool 160. The tool 160 therefore acts to squeeze the gripping feet 139 towards one another thereby radially compressing the resilient member 138. As shown in Figure 17, insertion of the tool 160 has compressed the resilient member 138 such that the lower wall portions 150 are pulled clear of the lip 158 of the second interface portion 134. In order to minimise the force required to compress the resilient member, a plurality of running ribs 147 are provided on the rear wall to bear against an adjacent part of the first interface portion 132. The running ribs 147 reduce the surface area of the resilient member 138 that is in contact with the first interface portion and so reduces the friction between these parts. Of particular note is running rib 149 which projects further from the resilient member than the other running ribs 147. Running rib 149 locates with a key way (not shown) on the first interface portion and therefore stops the resilient member from turning angularly in use which may otherwise impair the function of the resilient member 138.

With the resilient member 138 compressed in this way, the second interface portion 134 can be pulled away from the first interface portion 132. The most effective way to achieve this is for the user to 'peel' the lower parts of the two interface portions 132, 134 away from one another thereby levering the upper part of the second interface portion 134 away from the angled catch faces of the first interface portion 132. This separating movement is shown in Figure 18.

The connecting arrangement between the first and second interface portions 132, 134 provides a particularly robust configuration of securing the separating apparatus 12 to the main body 4 since the two interface portions are locked together across a radial

span. In this specific embodiment a plurality of engagement regions or points distributed are radially spaced around the mechanical interface. This provides an interlocking connection between the two interfacing portion in multiple planes which results in there being very little 'play' between the parts. This provides a very secure connection and a high quality feel to the cleaning appliance. As an alternative to discrete points, or regions, of locking between the interface components, there may be provided a continuous locking interface over a significant portion of the circumference of the interface; in this case the separate tabs 152 would in effect be a single arcuate tab.

Although the interface has been described in the context of connecting a main body of a vacuum cleaning appliance to an associated separating apparatus, it should be appreciated that the same connecting scheme could also be used to connect together any two functional components of a vacuum cleaning appliance or, indeed any household appliance. For example, the same connection scheme could be used to connect a cleaner head to a wand or hose assembly, two parts of a wand/hose assembly, or even the base and a removable upper unit of a fan assembly, for example.

The skilled person will appreciated that variants and modifications to the specific embodiment described are feasibly within the scope of the invention as defined by the claims. Some have been mentioned above; others will be explained below. For example, it should be appreciated that the specific overall shape of the separating apparatus can be varied according to the type of vacuum cleaner in which the separating apparatus is to be used. For example, the overall length of the separating apparatus can be increased or decreased with respect to the diameter of the separating apparatus. Also, although the cyclonic separation is currently the preferred method of separating contaminants in the airflow within the context of the invention, a different means of dust separation could be used, for example a bagged separation system which does not involve cyclonic airflows or even a more conventional bagged system.

In the embodiments of Figures 10 to 17, a secure means of connection between the two interface components is achieved by way of a radially compressible resilient member.

The skilled person will, however, appreciate that other components would achieve the same purpose, an example of which is shown in Figures 24a and 24b. Note that parts similar to the previous embodiments are referred with like reference numerals. In this arrangement, instead of a c-shaped resilient member 138 as in previous embodiments, the connection means is in part embodied by first and second opposed resilient members or 'catches' 300. Each catch is generally semi-circular in shape and upper ends 300a of the catches are pivotably mounted at pivot points 302 on the first interface portion 132. Each catch 300 is movable inwardly by way of a respective user-operable button 304 and is biased outwardly, in this embodiment, by means of a spring 306.

In Figure 24a, the catches 300 are in a locked position and are therefore in engagement with the lip 158 of the second interface portion. In this position, therefore, the first and second interface portions 132, 134 are locked together. In Figure 24b, the catches 300 are in a second position. In this position, the buttons 306 are actuated, as indicated by the arrows A, which moves the catches 300 angularly about their respective pivots 302. In effect, therefore, the outer dimension of the catches 300 reduces so that they disengage with the lips 158 provided by the second interface portion 134. The catches 300 function in a comparable manner to the resilient member 138 to compress radially in order to release the interlock between the first and second interface portions 132, 134, so that the interface can be split apart. In the same way as the embodiment of Figures 10 to 17, the first and second interfaces are locked together in a radially distributed manner.

Returning to the arrangement discussed specifically in relation to Figures 3 to 9, it should be appreciated that one specific mechanism has been described by which a vacuum cleaner, and particularly an handheld vacuum cleaner, may be provided with a single actuating mechanism that enables both the bin door to be opened and also enables the bin to be released from the separating apparatus itself. However, within this concept, the skilled person will appreciate that other mechanisms may be devised that perform the same function.

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In the arrangement described specifically in relation to Figures 10 to 17, the resilient member provides a convenient mechanism by which an interlocking interface may be provided between mating portions of the main body and the separating apparatus at radially extending region or regions about the circumference of the mating portions, thereby providing a robust connection between the main body and the separating apparatus that is resistant to torsion and bending forces. However, other mechanisms are feasible within the broad inventive concept defined by the claims.

The invention has been described within the context of a handheld vacuum cleaner which may also form part of a stick-vac cleaner. However, the skilled person will appreciate that the invention may also apply to other types of vacuum cleaners, for example upright vacuum cleaners and cylinder vacuum cleaners (also referred to as canisters or barrels.

By way of example, in Figures 19 to 22 an upright vacuum cleaner 210 comprises a main body 211 which includes a motor and fan unit (not shown) and a pair 212 of wheels. A cleaner head 213 is pivotably mounted on the lower end of the main body 211 and a dirty air inlet 214 is provided in the underside of the cleaner head 213 facing the floor surface. The main body 211 further includes a spine 215 which extends vertically upward and merges into a hand grip 216. The hand grip 216 can be manipulated by a user to manoeuvre the vacuum cleaner 210 across a floor surface. The main body 211 further includes outlet ports 217 for exhausting air from the vacuum cleaner 210.

Separating apparatus 218 is releasably held on the main body 211 of the vacuum cleaner 210. The separating apparatus 218 comprises a separator 219 and a collecting chamber 220. The separating apparatus 218 is supported on the main body 211 above the outlet ports 217 and lies adjacent the spine 215. The interior of the separating apparatus 218 is in communication with the dirty air inlet 214 through ducting 221 adjacent the spine 215. The separating apparatus 218 can be removed from the main body 211 for emptying and for maintenance.

In use, the motor and fan unit draws dirty air into the vacuum cleaner 210 via the dirty air inlet 214. The dirty air is carried to the separating apparatus 218 via the ducting 221 adjacent the spine 215. The separating apparatus 218 includes an upstream cyclone 222 in the collecting chamber 220. An air inlet 223 is formed in the cylindrical side wall 224 of the chamber 220. When the separating apparatus 218 is held on the main body 211 of the vacuum cleaner 210, the air inlet 223 is in communication with the dirty air inlet 214 and forms a communication path between the ducting 221 adjacent the spine 215 and the interior of the upstream cyclone 222. The air inlet 223 is arranged tangentially to the upstream cyclone 222 so that the incoming air is encouraged to follow a helical path around the interior of the upstream cyclone.

A shroud 225 is located inwardly of the cylindrical wall 224 of the upstream cyclone 222. The shroud 225 comprises a cylindrical wall having a plurality of through-holes. The shroud 225 provides a communication path between the upstream cyclone 222 and a downstream cyclone assembly 226.

The downstream cyclone assembly 226 comprises a plurality of downstream cyclones 227 arranged in parallel. In this embodiment, seven downstream cyclones 227 are provided. Each downstream cyclone 227 is in communication with a downstream collector 228 forming part of the collecting chamber 220. The downstream collector 228 has a collector wall 229 located inwardly of the shroud 225. Each of the downstream cyclones 227 has a diameter smaller than that of the upstream cyclone 222 and so are able to separate smaller particles of dirt and dust from the partially-cleaned airflow than the upstream cyclone 222. Separated dirt and dust exits the downstream cyclones 227 and passes into the downstream collector 228.

Cleaned air then flows back up through the downstream cyclones 227 and enters a duct 230. The cleaned air then passes from the duct 230 sequentially through a pre-motor filter 231, the motor and fan unit, and a post-motor filter 232 before being exhausted from the vacuum cleaner 210 through the outlet ports 217.

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A handle 233 is located over the separating apparatus 218 and is arranged to allow a user to carry the vacuum cleaner 210. When the separating apparatus 218 is released from the main body 211, as is shown in Figure 20, the handle 233 may also be used to carry the separating apparatus alone. With reference to Figure 20, a user-operable button 234 is located on the separating apparatus 218 at the upper end portion of the handle 233. By depressing the button 234, the user releases a catch holding the separating apparatus 218 to the main body 211. The user can then place the separating apparatus 218 over a suitable dirt and dust receptacle such as a dustbin for emptying of dirt and dust that has been collected in the collecting chamber 220.

Referring now to Figures 21 and 22, the collecting chamber 220 includes a closure member which, in this embodiment, comprises the base 235 of the collecting chamber. The base 235 is pivotably mounted on the lower end of the cylindrical side wall 224 by means of a hinge 236. The base 235 is retained in a closed position (as shown in Fig 21) by means of a first catch 237. The first catch 237 includes a lug 238 and a flange 239. In this embodiment, the lug 238 and flange 239 are integral with the base 235 and extend from it. The lug 238 is inwardly directed and is received by a cooperating groove 240 formed in the external surface of the cylindrical side wall 224. The lug 238 is formed from a resilient material which biases the lug into the groove 240 when the base 235 is in the closed position. The flange 239 extends outwardly and upwardly from the lug 238.

The separating apparatus 218 further includes first releasing means in the form of an actuator 241. The actuator 241 comprises a first push member 242 and a second push member 243 which are generally in the form of elongated rods. The first push member 242 is arranged at the upper end of the rear of the separating apparatus 218, adjacent some of the downstream cyclones 227. The uppermost end portion of the first push member 242 includes the user-operable button 234 at the upper end of the handle 233. The button 234 is biased upwardly by a spring (not shown). The first push member 242 is arranged to be slideably movable by depression of the button 234 against the bias of

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the spring. The first push member 242 is supported by a guide 244 that constrains the first push member to slide in a generally vertical direction, namely towards the base 235 of the collecting chamber 220.

The second push member 243 is arranged on the lower portion of the rear of the separating apparatus 218, adjacent the collecting chamber 220. The second push member 243 is supported by a plurality of guides 245a, 245b, 245c that constrain the second push member 243 also to slide in a generally vertical direction. An upper portion of the second push member 243 comprises a cover 246 which, in this embodiment, takes the form of a triangular-shaped member which extends to one side of the elongate rod. A lower portion of the second push member has a thick dog-leg shape for increased robustness. The second push member 243 is not biased in any direction. The lower end portion of the second push member 243 is arranged to abut the flange 239 of the first catch 237. In this embodiment, the second push member 243 is interposed between the flange 237 and the wall 224 of the collecting chamber 220.

When a user decides to empty the collecting chamber 220 of the separating apparatus 218, he pushes the button 234 against the force of the spring, as shown in Figure 20. The guide 244 constrains the first push member 242 to slide downwardly towards the collecting chamber 220 into a lower second position. The lower end of the first push member 242 normally abuts the upper end of the second push member 243, and so the action of pushing down the first push member also urges the second push member downwardly into a lower second position. The bottom end of the second push member 243 is forced against the flange 239 of the first catch 237 and applies an outwardly-directed force to it. The lug 238, being integral with the flange 239, also experiences an outwardly-directed force, which force urges the lug 238 away from the groove 240. Thus, the first catch 237 holding the base 235 to the cylindrical side wall 224 of the collecting chamber 220 is released. The action of the second push member 243 against the flange 239 forces the base 235 to swing open on its hinge 236, as is shown in Figure 22. The dirt and dust collected in the collecting chamber 220 can thus be emptied

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conveniently and efficiently. The upstream cyclone 22 and the downstream collector 28 are emptied simultaneously during this process.

When the user releases pressure on the button 234, the spring urges the button and the first push member 242 upwards into their original positions. The second push member 243 is not biased and so remains in its lower second position as shown in Figure 21. In moving the second push member 243 from its original position to its lower position, the cover 246 associated with the second push member slides downwardly to reveal a second catch 247, which was concealed behind the cover. This second catch 247 holds the collecting chamber 220 to the separator 219. Activation of this second catch 247 therefore enables the collecting chamber 220 to be removed from the separator 219.

Instead of the second catch 247, the separating apparatus 218 of Figures 19 to 22 may alternatively be configured so that the user-operable button 234 also acts to release the collecting chamber 220 from the separator 219. A schematic illustration of such an arrangement is shown in Figures 23a-23d in which the same reference numerals are used.

In Figure 23a, the collecting chamber 220 is attached to the separator and the first push member is in a deactivated position. In this position, a slidable lug 300 that forms part of the collecting chamber is retained in a recessed position behind the second push member 243. In this condition the base 35 is in the position as shown in Figure 21.

In Figure 23b, a user has depressed the button 243 which slides the first push member 242 in a downwards direction and also, therefore, the second push member 243 which opens the base 235. This position corresponds to the position of the base 235 shown in Figure 22. In this position, the lug 300 is still retained in a recessed position by the presence of the first push member 242.

In Figure 23c, the first push member has returned to its original position which allows the lug 300 to deploy from the collecting chamber by virtue of the biasing means 302 which, in this arrangement, is in the form of a spring 302.

Figure 23d shows the movement of the first push member 242 during a second actuation. As can be seen, the lower end of the first push member 242 engages the lug 300 after movement of a short distance. Further downwards movement of the first push member 242 bears against the lug 300 and, in turn, against the collecting chamber 220 itself and so urges the collecting chamber 220 to disengage from the separator 219.

It will therefore be appreciated that the bin opening and bin release arrangement of the vacuum cleaner in Figures 19 to 23 functions similarly to the arrangement described in Figure 1 to 9 in that a single user-operable button is operable to perform two functions sequentially: a first press of the button 234 opens the base 235 of the dirt collecting chamber 220 and, once the base 235 is open, a second press of the button 234 releases the collecting chamber 220 from the separator 219.

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CLAIMS

1. A cleaning appliance comprising a main body and a separating apparatus including a dirt collector having a base that is openable to allow the dirt collector to be emptied, wherein the cleaning appliance includes an actuator that is operable sequentially such that, during a first operation, the actuator causes the base to be opened and, during a second operation, the actuator causes the dirt collector to disengage from the separating apparatus.

2. The cleaning appliance of claim 1, wherein the base of the dirt collector is openable when the separating apparatus is coupled to the main body.

3. The cleaning appliance of claim 1 or claim 2, wherein the actuator is a user-operable button.

4. The cleaning appliance of any one of claims 1 to 3, wherein the actuator includes a linkage member which, during the first operation, actuates a push rod that is engagable with the base.

5. The cleaning appliance of claim 4, wherein the linkage member is further operable, during the second operation, to engage a release member on the main body for retaining a lug on the dirt collector.

6. The cleaning appliance of claim 5, wherein the linkage member is rotatable between a first angular position in which the linkage member engages with the push rod and a second position in which the linking member engages with the release member.

7. The cleaning appliance of claim 6, wherein the linkage member rotates from the first to the second position after completion of the first operation of the actuator.

8. The cleaning appliance of claim 7, wherein the linkage member rotates from the first to the second position during the second operation of the actuator.

9. The cleaning appliance of any of claims 6 to 8, wherein the linkage member is biased into the second angular position.

10. The cleaning appliance of claim 9, wherein the pushrod includes a lip to retain the linkage member in the first angular position during the first operation of the actuator.

11. The cleaning appliance of claims 5 to 10, wherein during the second operation the release member is moved out of engagement with the lug on the dirt collector so as to allow the dirt collector to be disengaged from the separating apparatus.

12. The cleaning appliance of claim 11, wherein the release member includes a projection that, during the second operation, moves in synchronisation with the release member to push the lug away from the main body therefore to present the dirt collector for a user to remove from the separating apparatus.

13. The cleaning appliance of any of claims 1 to 12, wherein the main body includes a spine against which the dirt collector abuts when the separating apparatus is coupled to the main body.

14. The cleaning appliance of claim 13, wherein the actuator is slidably mounted to the spine.

15. The cleaning appliance of any of the preceding claims, wherein the actuator is arranged to be accessible from either side of the vacuum cleaner.

16. The cleaning appliance of any of the preceding claims, wherein the separating apparatus includes a cyclonic separator.

17. The cleaning appliance of claim 1, wherein the base of the dirt collector is openable only when the separating apparatus is decoupled from the main body.

18. The cleaning appliance of claim 17, wherein the actuator is also operable to release the separating apparatus from the main body.

19. The cleaning appliance of claims 17 or 18, wherein the actuator for opening the base and releasing the dirt collector from the separating apparatus is located on the separating apparatus.

20. A cleaning appliance as hereinbefore described with reference to or as illustrated in the accompanying drawings.

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INTELLECTUAL PROPERTY OFFICE

Application No:	GB1220884.9	**Examiner:**	Mr Rhodri Evans
Claims searched:	1-20	**Date of search:**	18 March 2013

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A	-	WO 2008/009891 A1 (Dyson)
A	-	WO 2010/061211 A2 (Dyson)

Categories:

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Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

A47L; B04C

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC, TXTE

International Classification:

Subclass	Subgroup	Valid From
A47L	0009/16	01/01/2006
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Cyclone dust collector

Page bookmark	CN202932850 (U) - Cyclone dust collector
Inventor(s):	WANG WEI ±
Applicant(s):	SUZHOU PROVAC ELECTRICAL CO LTD ±
Classification:	- international: ***A47L5/24; A47L9/16***
	- cooperative:
Application number:	CN20122590369U 20121109
Priority number(s):	CN20122590369U 20121109

Abstract of CN202932850 (U)

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The utility model discloses a cyclone dust collector comprising a cyclone cylinder body, wherein the bottom of the cyclone cylinder body is inwards sunken; and a filtering net hole is formed in the inwards-sunken wall. According to the cyclone dust collector, the bottom of the cyclone cylinder body is inwards sunken to form an inwards-sunken structure, so that the normal cyclone separation is achieved; the axial length of the cyclone cylinder body is relatively shortened, thereby relatively increasing the dust collection space of the dust collector and obtaining a good effect which play an active practical significance to the dust collector (for example a handheld dust collector) with a smaller dust holding amount.

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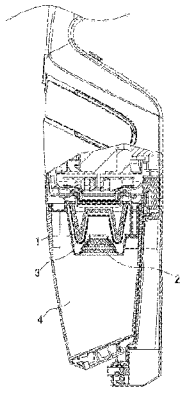
权利要求书1页 说明书2页 附图2页

(54)实用新型名称

一种旋风吸尘器

(57)摘要

本实用新型公开了一种旋风吸尘器，包括旋风筒体，所述旋风筒体的底部向内凹陷，内凹壁上设有过滤网孔。本实用新型将旋风筒体的底部向内凹陷，形成内凹结构，在实现正常旋风分离的同时，相对缩短了旋风筒体的轴向长度，从而相对增大了吸尘器的容尘空间，取得了较好的效果，这对于容尘量相对较小的吸尘器(如手持式吸尘器)具有积极的现实意义。



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1. 一种旋风吸尘器，其特征在于：包括旋风筒体 (1)，所述旋风筒体的底部向内凹陷，内凹壁上设有过滤网孔 (2)。

2. 根据权利要求 1 所述的旋风吸尘器，其特征在于：所述旋风筒体的底部向内凹陷，构成内锥结构。

3. 根据权利要求 1 所述的旋风吸尘器，其特征在于：所述旋风筒体的外部套设有第二过滤网罩 (3)。

4. 根据权利要求 3 所述的旋风吸尘器，其特征在于：所述第二过滤网罩与旋风筒体的结构相同，且两者同轴设置。

5. 根据权利要求 1 所述的旋风吸尘器，其特征在于：所述旋风筒体的侧壁设有复数个通孔，通孔的进气方向与进风方向相反。

6. 根据权利要求 1 所述的旋风吸尘器，其特征在于：所述旋风吸尘器为手持式吸尘器。

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一种旋风吸尘器

技术领域

[0001] 本实用新型涉及一种吸尘器，具体涉及一种旋风吸尘器。

背景技术

[0002] 旋风吸尘器是近几年发展起来的一种吸尘器，其可以没有传统的集尘袋或过滤器系统，而是使气流沿着一条高速螺旋形的路径流经一个或多个圆筒；当气流沿螺旋形路径快速运动时，所有脏物颗粒都会因强大的离心力作用，被甩出气流；实现这种气流旋转的载体通常称作旋风筒体。

[0003] 现有技术中，不论旋风筒体的大小，现有的旋风筒体一般都是呈锥形，其上设有气流入口和气流出口，其底部为排灰口，其内腔即为旋风分离室。为了实现较好的分离效果，现有的旋风筒的轴向尺寸较大，造成了整个吸尘器的结构不紧凑；此外，对于较大尺寸的单个旋风筒而言，旋风筒的轴向尺寸越大，其下方的容尘空间越小，而若增大容尘空间，则又要增加整个吸尘器的体积。另一方面，现有的旋风筒中，外层旋风在向上返转时易将分离下来的灰尘（例如集尘桶中的灰尘）重新卷起，并被上升气流带走，即灰尘夹带，影响分离效果。

发明内容

[0004] 本实用新型的发明目的是提供一种旋风吸尘器。

[0005] 为达到上述发明目的，本实用新型采用的技术方案是：一种旋风吸尘器，包括旋风筒体，所述旋风筒体的底部向内凹陷，内凹壁上设有过滤网孔。

[0006] 上述技术方案中，所述旋风筒体的底部向内凹陷，构成内锥结构。该内锥上设有复数个过滤网孔；使整个旋风筒体构成锥形过滤网罩。

[0007] 进一步的技术方案，所述旋风筒体的外部套设有第二过滤网罩。

[0008] 上述技术方案中，所述第二过滤网罩与旋风筒体的结构相同，且两者同轴设置。

[0009] 上述技术方案中，所述旋风筒体的侧壁设有复数个通孔，通孔的进气方向与进风方向相反。

[0010] 上述技术方案中，所述旋风吸尘器为手持式吸尘器。包括把手、壳体，壳体内设有电机风扇单元、集尘桶、旋风过滤器等。

[0011] 由于上述技术方案运用，本实用新型与现有技术相比具有下列优点：

[0012] 1. 本实用新型将旋风筒体的底部向内凹陷，形成内凹结构，在实现正常旋风分离的同时，相对缩短了旋风筒体的轴向长度，从而相对增大了吸尘器的容尘空间，取得了较好的效果，这对于容尘量相对较小的吸尘器（如手持式吸尘器）具有积极的现实意义。

[0013] 2. 本实用新型在将旋风筒体的底部向内凹陷的同时，在其内凹壁上设置了过滤网孔，构成过滤网罩，从而防止了上升气流的灰尘夹带，提高了分离效果。

[0014] 3. 本实用新型在风筒体的外部套设第二过滤网罩，形成两道过滤结构，进一步提高了过滤效果。

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[0015] 4 本实用新型的结构简单，易于制备，适于推广应用。

附图说明

[0016] 图 1 是本实用新型实施例一的结构示意图；

[0017] 图 2 是本实用新型实施例一的局部分解图；

[0018] 图 3 是本实用新型实施例一的局部剖视图。

[0019] 其中：1、旋风筒体；2、过滤网孔；3、第二过滤网罩；4、容尘空间。

具体实施方式

[0020] 下面结合附图及实施例对本实用新型作进一步描述：

[0021] 实施例一

[0022] 参见图 1~3 所示，一种手持式旋风吸尘器，包括旋风筒体 1，所述旋风筒体的底部向内凹陷，构成内锥结构，内凹壁上设有过滤网孔 2。

[0023] 所述旋风筒体的外部套设有第二过滤网罩 3。所述第二过滤网罩与旋风筒体的结构相同，且两者同轴设置。

[0024] 所述旋风筒体的侧壁设有复数个通孔，通孔的进气方向与进风方向相反。所述手持式旋风吸尘器还包括把手、壳体，壳体内设有电机风扇单元、容尘空间 4 等。

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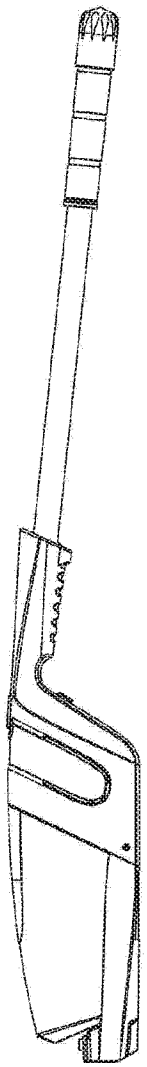

图 1

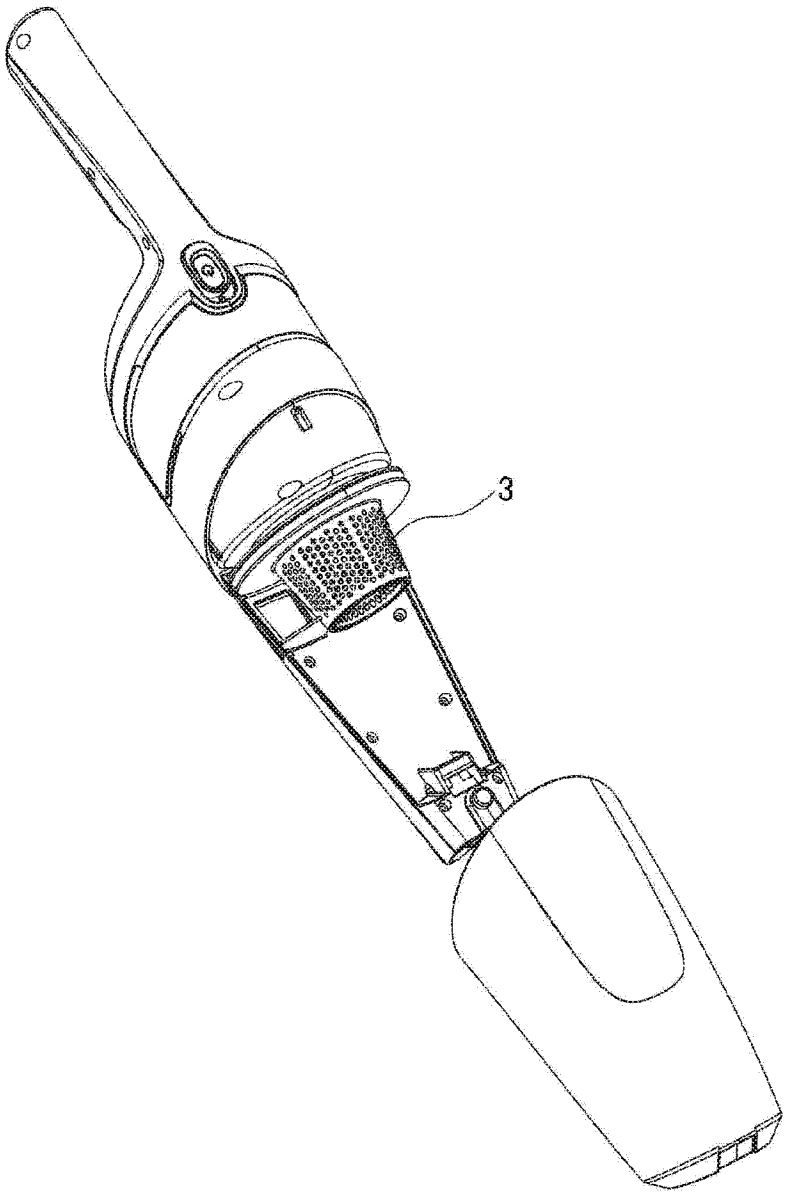

图 2

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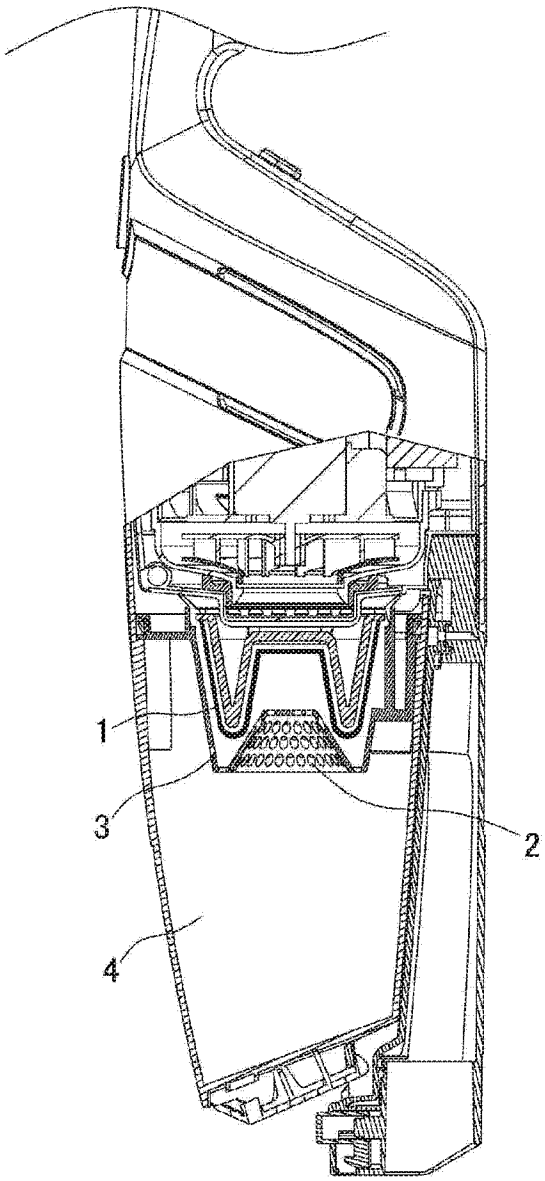

图 3

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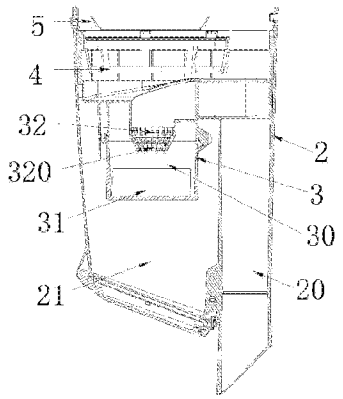
权利要求书 1 页 说明书 3 页 附图 3 页

(54)实用新型名称

具有新型旋风组件的多功能吸尘器

(57)摘要

本实用新型公开了一种具有新型旋风组件的多功能吸尘器，其包括：内部收容一电机并在便携式和立式双模式下运行的机头、与机头相扣合并内部形成一集尘腔的尘杯、以及可拆卸地安装在集尘腔内并通过一出灰口与集尘腔相连通的旋风组件。本实用新型能实现立式和手持式双重功能，便于用户根据场合来使用，且结构简单，也便于清洗。



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1. 一种具有新型旋风组件的多功能吸尘器，其特征在于其包括：内部收容一电机并在便携式和立式双模式下运行的机头(10)、与机头(10)相扣合并内部形成一集尘腔(21)的尘杯(2)、以及可拆卸地安装在集尘腔(21)内并通过一出灰口(31)与集尘腔(21)相连通的旋风组件(3)。

2. 根据权利要求 1 所述的多功能吸尘器，其特征在于：所述旋风组件(3)包括旋风室(30)、以及位于旋风室(30)内的旋风锥(32)，其中旋风室(30)通过出灰口(31)与集尘腔(21)相连通，而旋风锥(32)与旋风组件(3)一体成型并包括有若干个栅格孔(320)，同时旋风锥(32)的中心线与集尘腔(21)的中心线重合。

3. 根据权利要求 2 所述的多功能吸尘器，其特征在于：所述尘杯(2)包括一体成型且伸入到集尘腔(21)内的导气管(20)，其中导气管(20)的顶端支撑旋风组件(3)并与旋风室(30)相连通，而旋风组件(3)的侧部与尘杯(2)内壁抵靠支撑。

4. 根据权利要求 3 所述的多功能吸尘器，其特征在于：所述机头(10)包括一体成型的把手(12)、和可选择性地连接到机头(10)内的手柄(1)，其中尘杯(2)的轴向长度大于把手(12)的长度，而小于手柄(1)的长度。

5. 根据权利要求 2 或 3 或 4 所述的多功能吸尘器，其特征在于：其进一步包括位于旋风锥(32)下游的过滤单元(4)、以及用于机头(10)和尘杯(2)之间进行密封的尘杯密封圈(5)。

6. 根据权利要求 5 所述的多功能吸尘器，其特征在于：所述尘杯(2)的底部为一斜面，所述旋风组件(3)和尘杯密封圈(5)的外轮廓均与尘杯(2)的截面相匹配。

7. 根据权利要求 6 所述的多功能吸尘器，其特征在于：所述过滤单元(4)为布袋架且与尘杯密封圈(5)相互扣合，而导气管(20)至少部分表面裸露在外，且该部分表面为弧形。

8. 一种具有新型旋风组件的多功能吸尘器，其特征在于其包括：内部收容一电机的机头(10)、与机头(10)相扣合并内部形成一集尘腔(21)的尘杯(2)、以及可拆卸地安装在集尘腔(21)内并通过一出灰口(31)与集尘腔(21)相连通的旋风组件(3)，其中所述旋风组件(3)的外轮廓与尘杯(2)的截面相匹配，并与尘杯(2)的内壁配合固定。

9. 根据权利要求 8 所述的多功能吸尘器，其特征在于：所述尘杯(2)包括一体成型且伸入到集尘腔(21)内的导气管(20)，其中导气管(20)的顶端支撑旋风组件(3)并与旋风组件(3)相连通。

10. 根据权利要求 9 所述的多功能吸尘器，其特征在于：所述机头(10)包括一体成型的把手(12)、和可选择性地连接到导气管(20)的底端的手柄(1)。

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具有新型旋风组件的多功能吸尘器

技术领域

[0001] 本实用新型涉及一种具有新型旋风组件的多功能吸尘器。

背景技术

[0002] 目前吸尘器的种类繁多，包括卧式、立式、手持式等吸尘器，但这些不同种类的吸尘器无法集合在单个产品上切换使用，只能分别购买，造成用户的不便以及重复购买。另外，现有的吸尘器的旋风结构除尘效率较低，而且不便于拆卸来进行清洗。

发明内容

[0003] 本实用新型目的是：提供一种具有新型旋风组件的多功能吸尘器。

[0004] 为实现本实用新型目的，本实用新型的一技术方案是：一种具有新型旋风组件的多功能吸尘器，其包括：内部收容一电机并在便携式和立式双模式下运行的机头、与机头相扣合并内部形成一集尘腔的尘杯、以及可拆卸地安装在集尘腔内并通过一出灰口与集尘腔相连通的旋风组件。

[0005] 所述旋风组件包括旋风室、以及位于旋风室内的旋风锥，其中旋风室通过出灰口与集尘腔相连通，而旋风锥与旋风组件一体成型包括有若干个栅格孔，同时旋风锥的中心线与集尘腔的中心线重合。

[0006] 所述尘杯包括一体成型且伸入到集尘腔内的导气管，其中导气管的顶端支撑旋风组件并与旋风室相连通，而旋风组件的侧部与尘杯内壁抵靠支撑。

[0007] 所述机头包括一体成型的把手、和可选择性地连接到机头内的手柄，其中尘杯的轴向长度大于把手的长度，而小于手柄的长度。

[0008] 其进一步包括位于旋风锥下游的过滤单元、以及用于机头和尘杯之间进行密封的尘杯密封圈。

[0009] 所述尘杯的底部为一斜面，所述旋风组件和尘杯密封圈的外轮廓均与尘杯的截面相匹配。

[0010] 所述过滤单元为布袋架，且与尘杯密封圈相互扣合，所述导气管至少部分表面裸露在外，且该部分表面为弧形。

[0011] 为实现本实用新型目的，本实用新型的另一技术方案是：一种具有新型旋风组件的多功能吸尘器，其包括：内部收容一电机的机头、与机头相扣合并内部形成一集尘腔的尘杯、以及可拆卸地安装在集尘腔内并通过一出灰口与集尘腔相连通的旋风组件，其中所述旋风组件的外轮廓与尘杯的截面相匹配，并与尘杯的内壁配合固定。

[0012] 所述尘杯包括一体成型且伸入到集尘腔内的导气管，其中导气管的顶端支撑旋风组件并与旋风组件相连通。

[0013] 所述机头包括一体成型的把手、和可选择性地连接到导气管的底端的手柄。

[0014] 本实用新型优点是：

[0015] 本实用新型能实现立式和手持式双重功能，便于用户根据场合来使用，且结构简

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单，也便于清洗。

附图说明

[0016] 下面结合附图及实施例对本实用新型作进一步描述：

[0017] 图 1 为本实用新型的立体示意图；

[0018] 图 2 为本实用新型中尘杯的分解示意图；

[0019] 图 3 为本实用新型中尘杯的剖视示意图；

[0020] 其中：1、手柄；10、机头；2、尘杯； 20、导气管；21、集尘腔；30、旋风室；31、出灰口；32、旋风锥；320、栅格孔；4、过滤单元；5、尘杯密封圈。

具体实施方式

[0021] 实施例：如图 1-3 所示，本实用新型提供了一种具有新型旋风组件的多功能吸尘器的一实施例，其包括内部收容一电机并在便携式和立式双模式下运行的机头 10、与机头 10 相扣合并内部形成一集尘腔 21 的尘杯 2、以及可拆卸地安装在集尘腔 21 内并通过一出灰口 31 与集尘腔 21 相连通的旋风组件 3。其中机头 10 包括一把手 12，并可与手柄 1 相连接。尘杯 2 包括一体成型且伸入到集尘腔 21 内的导气管 20，导气管 20 的底端与扁吸、或毛刷、或地刷等附件进行连接并连通。

[0022] 旋风组件 3 包括旋风室 30、以及位于旋风室 30 内的旋风锥 32，其中旋风室 30 通过出灰口 31 与集尘腔 21 相连通，而旋风锥 32 与旋风组件 3 一体成型并包括有若干个栅格孔 320。其中导气管 20 的顶端支撑旋风组件 3 并与旋风室 30 相连通，而旋风组件 3 的侧部与尘杯 2 内壁抵靠支撑。导气管 20 至少部分表面裸露在外，且该部分表面为弧形。位于旋风锥 32 下游的过滤单元 4、以及用于机头 10 和尘杯 2 之间进行密封的尘杯密封圈 5。尘杯 2 的底部为一斜面，旋风组件 3 和尘杯密封圈 5 的外轮廓均与尘杯 2 的截面相匹配。过滤单元 4 为布袋架，且与尘杯密封圈 5 相互扣合。

[0023] 便携式模式下，本实用新型的多功能吸尘器包括机头 10、尘杯 2、旋风组件 3、与尘杯 2 的导气管 20 连接的扁吸或毛刷等附件。用户通过握住把手 12，即可通过导气管 20 所连接的附件对地面进行清洁，当然为增加工作半径，可将手柄插入到导气管 20 内，并通过手柄来连接附件。

[0024] 立式模式下，本实用新型的多功能吸尘器包括机头 10、尘杯 2、旋风组件 3、与尘杯 2 的导气管 20 连接的地刷、固定到机头 10 上的手柄。用户通过推动手柄，即可带动地刷对地面进行清洁。

[0025] 同时，本实用新型还提供了一种具有新型旋风组件的多功能吸尘器的另一实施例，其包括内部收容一电机并在便携式或立式模式下运行的机头 10、与机头 10 相扣合并内部形成一集尘腔 21 的尘杯 2、以及可拆卸地安装在集尘腔 21 内并通过一出灰口 31 与集尘腔 21 相连通的旋风组件 3，其中所述旋风组件 3 的外轮廓与尘杯 2 的截面相匹配，并与尘杯 2 的内壁配合固定。尘杯 2 包括一体成型且伸入到集尘腔 21 内的导气管 20，其中导气管 20 的顶端支撑旋风组件 3 并与旋风组件 3 相连通。

[0026] 本实用新型能实现立式和便携式双重功能，便于用户根据场合来使用，且结构简单，也便于清洗。

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[0027] 当然上述实施例只为说明本发明的技术构思及特点，其目的在于让熟悉此项技术的人能够了解本发明的内容并据以实施，并不能以此限制本发明的保护范围。凡根据本发明主要技术方案的精神实质所做的等效变换或修饰，都应涵盖在本发明的保护范围之内。

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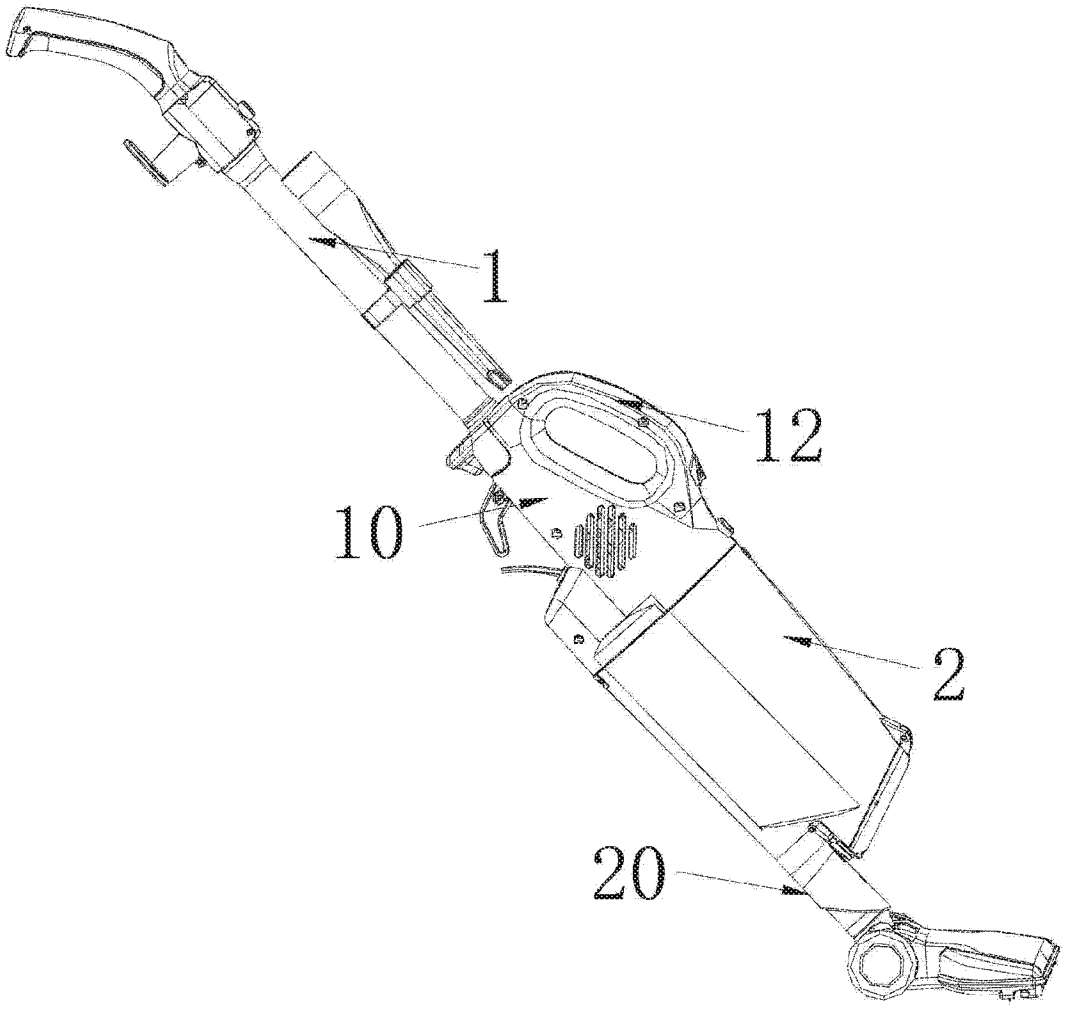

图 1

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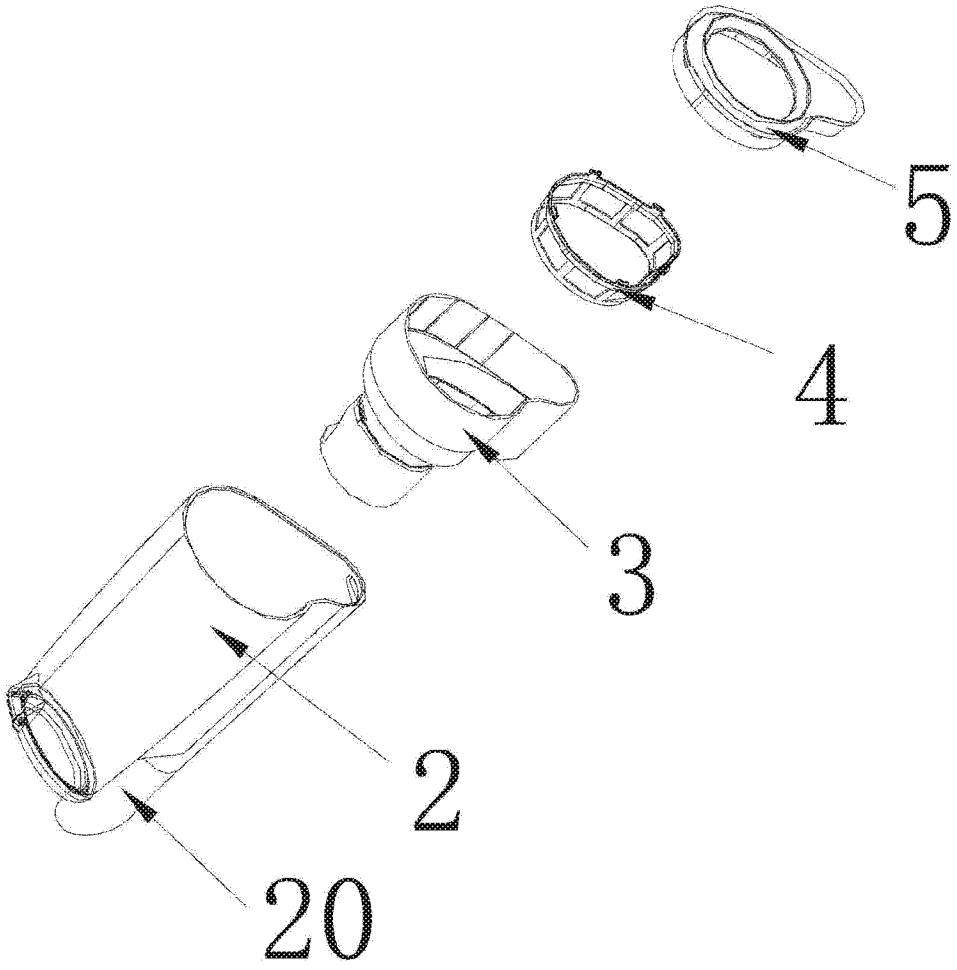

图 2

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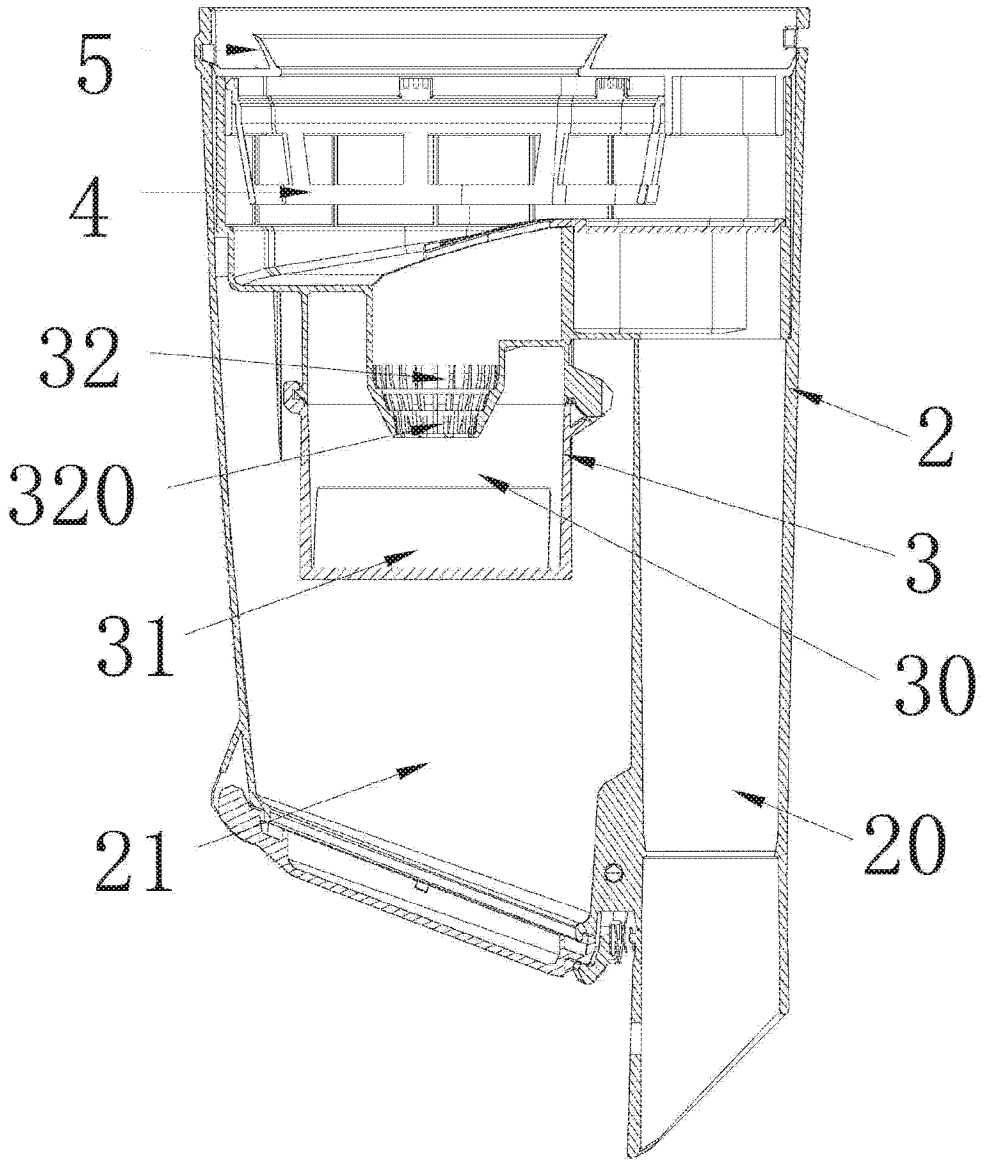

图 3

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Claims
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Bibliographic data: CN202776167 (U) — 2013-03-13

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Multifunctional dust collector with cyclone assembly

Page bookmark CN202776167 (U) - Multifunctional dust collector with cyclone assembly

Inventor(s): NI ZUGEN ±

Applicant(s): KINGCLEAN ELECTRIC CO LTD ±

Classification: - international: ***A47L9/16***

- cooperative:

Application number: CN20122442327U 20120831

Priority number(s): CN20122442327U 20120831

Abstract of CN202776167 (U)

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The utility model discloses a multifunctional dust collector with a cyclone assembly, which comprises a head, a dust cup and the cyclone assembly, wherein a motor is accommodated in the head; the dust cup is buckled with the head; a dust collection cavity is formed in the dust cup; the cyclone assembly is arranged in the dust collection cavity in a detachable manner and comprises a cyclone main body and a cover board; the cover board can rotate to be opened relative to the cyclone main body and is sealed together with the cyclone main body to form a cyclone chamber; and the cyclone main body or the cover board is also provided with an ash outlet communicated with the dust collection cavity. The multifunctional dust collector can realize double vertical and handheld functions and is convenient for a user to use according to places; meanwhile, the cyclone chamber can be opened to be cleaned so as to improve dust collection efficiency; and the multifunctional dust collector has a simple structure and is also convenient to clean.

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CLAIMS CN202776167

[1]

1. Multifunctional cleaner having a cyclone assembly, characterized in that it comprises: a head that houses the motor (10), the head (10) is formed inside a combined interlocking collecting chamber (21) of the dust cup (2), and detachably mounted on the dust collecting chamber (cyclone assembly 21) (3), wherein the cyclone assembly (3) comprises a cyclone body (30), and relative to the cyclone body (30) is rotated to open and cyclone body (30) together form a closed cyclone chamber (300) of the cover plate (31), while the cyclone body (30) or cover plate (31) is provided with a collecting chamber (21) communicating an ash outlet (312).

[2]

2. Multifunctional vacuum cleaner according to claim 1, wherein: said cyclone assembly (3) further comprises a cyclone chamber (300) and the inside (312) above the ash outlet of the cyclone cone (32), wherein the cyclone cone (32) comprises a plurality of grid holes (320)

[3]

3. The multi-purpose cleaner according to claim 2, wherein: said cyclone body (30) is provided with a projection (311), and the cover plate (31) located beneath the cyclone body (30) and is provided with a projection (311) with a fixed latch (310).

[4]

4. Multifunctional vacuum cleaner according to 1 or 2, or claim 3, characterized in that: said dust cup (2) comprises a one-piece and projects into the collecting chamber duct (21) inside (20), wherein the airway the top (20) of the cyclone support assembly (3) and with the cyclone chamber (300) communicating, while the cyclone body (30) of the side portion of the dust cup (2) against the inner wall of the support.

[5]

5. Multifunctional cleaner according to claim 4, characterized in that: said head (10) includes integrally formed handle (12), and selectively connected to the handpiece handle (10) (1).

[6]

6. Multifunctional cleaner according to claim 5, characterized in that: it further comprises cyclonic cone (32) downstream of the filter unit (4), and between the head (10) and the dust cup (2) for sealing dust cup seal (5).

[7]

7. Multifunctional vacuum cleaner according to claim 6, characterized in that: the bottom of the dust cup (2) is an inclined surface, the cyclone assembly (3) and the dust cup seal (5) and the outer contour of the dust cup are (2) matches the cross-section.

[8]

8. Multifunctional cleaner according to claim 7, characterized in that: said filter means (4) for the bag holder, with the dust cup and the sealing ring (5) engaging each other, said air duct (20) at least partially the exposed surface out, and the portion of the surface is curved.

[9]

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9. The multi-purpose cleaner 2 or claim 3, wherein: said cyclone cone (32) and the cyclone body (30) integrally formed, while the cyclone cone (32) with the center line collecting chamber (21) centerline coincide.

[10]

10. Multifunctional vacuum cleaner according to claim 9, characterized in that: as a portable vacuum cleaner or upright cleaner.

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[3]

3. The multi-purpose cleaner according to claim 2, wherein: said cyclone body (30) is provided with a projection (311), and the cover plate (31) located beneath the cyclone body (30) and is provided with a projection (311) with a fixed latch (310).

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[5]

5. Multifunctional cleaner according to claim 4, characterized in that: said head (10) includes integrally formed handle (12), and selectively connected to the handpiece handle (10) (1).

[6]

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[9]

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9. The multi-purpose cleaner 2 or claim 3, wherein: said cyclone cone (32) and the cyclone body (30) integrally formed, while the cyclone cone (32) with the center line collecting chamber (21) centerline coincide.

[10]

10. Multifunctional vacuum cleaner according to claim 9, characterized in that: as a portable vacuum cleaner or upright cleaner.

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ABSTRACT TR201210114

63

dB (A) to 67 dB (A) for working volume, engine vibration gasket (13) engine (5) engine emission seal (12), the motor fiber insulation filter (4), the engine canopy (2), engine top seal (3), cabin fiber insulation filter (1), exhaust hEPA filter (23) has a quiet, consisting of parts and cyclonic cleaning function, scavenging lower body (29), extension tubes (24), air cyclone (19), air turbine filter (17), air directing turbine (16), the air filter (15) motor (5) is composed of parts cyclone cleaner stick.

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(19) TÜRK PATENT ENSTİTÜSÜ

(10) **TR 2012 10114 U**

(12) **Faydalı Model Belgesi Başvurusu**

(21) Başvuru Numarası
2012/10114

(22) Başvuru Tarihi
2012/09/05

(43) Başvuru Yayın Tarihi
2012/12/21

(51) Buluşun tasnif sınıfı
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(30) Rüçhan Bilgileri (32) (33) (31)

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LEVENT ASLAN
ŞEHİT DANİŞ TUNALIGİL SOK. NO:11/15 MALTEPE/ANKARA

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TÜRKİYE

(54) Buluş Başlığı

Sessiz siklon stick süpürge.

(57) Özet

63 db(a) ile 67 db(a) ses seviyesinde çalışmayı sağlayan, motor vibrasyon contası (13) motor (5), motor emisyon contası (12), motor elyaf yalıtım filtresi (4), motor izolasyon kabini (2), motor üst contası (3), kabin elyaf yalıtım filtresi (1), hava çıkış hepa filtresi (23) parçalarından oluşan sessiz ve siklonik temizleme işlevine sahip,süpürücü alt gövde (29) ,uzatma boruları (24), hava siklon gövde (19), hava türbin filtresi (17) ,hava yönlendirme türbini (16), hava filtresi (15) motor (5) parçalarından oluşan siklon stick süpürgedir.

TR 2012 10114 U

ÖZET

SESSİZ SİKLON STICK SÜPÜRGE

63 dB(A) ile 67 dB(A) ses seviyesinde çalışmayı sağlayan, motor vibrasyon contası (13) motor (5) ,motor emisyon contası (12) , motor elyaf yalıtım filtresi (4) ,motor izolasyon kabini (2), motor üst contası (3),kabin elyaf yalıtım filtresi (1) ,hava çıkış hepa filtresi (23) parçalarından oluşan sessiz ve siklonik temizleme işlevine sahip,süpürücü alt gövde (29) ,uzatma boruları (24) ,hava siklon gövde (19) ,hava türbin filtresi (17) ,hava yönlendirme türbini (16) ,hava filtresi (15) motor (5) parçalarından oluşan siklon stick süpürgedir.

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DESCRIPTION

TARİFNAME

SESSİZ SİKLON STICK SÜPÜRGE

Buluşu oluşturan ürün stick süpürgelerde toz torbasız ve ses seviyesinin tasarım ve imalat tekniği ile azaltılarak sessiz siklon stick süpürgesine dairdir.

Bu güne kadar ki bilinen tekniklerde pazarda bulunan mevcut stick tip ürünlerde ses seviyesi 80 dB(A) ve üzeridir. Ev ve iş yerlerinde kullanılan stick tip elektrikli süpürgeler ortamda gürültü kirliliği oluşturarak insanları rahatsız edici bir sesle çalışmaktadır. Aynı zamanda toz torbalı olarak hazne ve filtre temizliğinde zorluklar yaşanmakta olup kullanıcı içinde toz torba belirli kullanım süresi içerisinde yıpranacağından filtre maliyeti oluşturmaktadır.

Buluşun çözümünü amaçladığı problemler ;Buluşa konu olan sessiz siklon stick süpürge geliştirilen sistemi sayesinde 60 dB(A) ile 67 dB(A) ses seviyesi arasında çalışarak gürültü kirliliğine neden olmamaktadır.Siklonik (torbasız) temizleme özelliği ile haznenin daha kolay temizlenmesini sağlamakta ve kullanıcının ekstra olarak toz torba maliyetini önlemektedir.

Buluşun açıklanmasında şekillerden faydalanılmış olup,bunlar aşağıda açıklanmıştır.

Şekil 1 – Sessiz siklon stick süpürge patlamış resim görüntüsü

Şekil 2 – Sessiz siklon stick süpürge kesit görüntüsü

Şekil 3 – Sessiz siklon stick süpürge genel görüntüsü

Buluşun açıklanmasında yararlanılan şekillerdeki parçalar numaralandırılmış olup,bunlar aşağıda açıklanmıştır.

(1) Kabin Elyaf Yakıtım Filtresi
(2) Motor İzolasyon Kabini
(3) Motor Üst Conta
(4) Motor Elyaf Yakıtım Filtre
(5) Motor
(6) Elektronik Devre
(7) Motor Gövde
(8) Ayar Düğmesi
(9)DC Switch

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(10) On Off Düğmesi

(11) Gövde Açma Düğmesi

(12) Motor Emisyon Contası

(13) Motor Vibrasyon Contası

(14) Hava Filtre Kasa Contası

(15) Hava Filtresi

(16) Hava Yönlendirme Türbini

(17) Hava Türbin Filtresi

(18) Hava Siklon Gövde Contası

(19) Hava Siklon Gövde

(20) Ön Gövde

(21) Toz Hane Contası

(22) Şeffaf Toz Haznesi

(23) Hava Çıkış Hepa Filtre

(24) Uzatma Boruları

(25) Kablo Sarma Düğmeleri

(26) Mafsal

(27) Süpürücü Üst Gövde

(28) Süpürücü Tekerlekleri

(29) Süpürücü Alt Gövde

Süpürücü alt gövdeden (29) geçen toz partikülleri uzatma borularından (24) geçerek hava siklon gövdeye (19) gelir ve gövde üzerindeki niş tarafından hava ve toz partikülleri türbülans oluşturarak hazne altına doğru itilir hava siklon gövde (19) etrafında girdap oluşturan hava ve toz partikülleri yüksek debide oluşan girdaptan toz ve partiküller ayrışırlır. Hava türbin filtresine (17) emilen hava, hava yönlendirme türbinine (16) yönlendirilerek, hava tekrar türbülans ve hortuma dönüşür. Merkez kaç kuvveti ile parça, toz partikülleri bu bölümde tekrar birbirinden ayrıştırılır hava filtresinden (15) gelen temiz havayı tekrar filtre ederek motora (5) temiz hava gitmesini sağlar. Böylece siklonik temizleme işlemi gerçekleştirilmiş olur.

Sessiz çalışma prensibinde, motor vibrasyon contası (13) motor (5) üzerindeki titreşim ve balansı minimize eder motor emisyon contası (12) motor (5) sesini azaltarak motorun (5) sessiz çalışmasını sağlar motor elyaf yalıtım filtresi (4) üzerinden geçen hava, debisi kontrol altına alınarak ses seviyesinin azaltılmasını sağlar motor izolasyon kabini (2), içeride oluşan

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ses seviyesini hapsederek sesin dışarı çıkmasını önler ve havanın bir noktadan dışarı çıkmasına izin verir motor üst conta (3) motor (5) ile motor izolasyon kabini (2) arasında oluşacak vibrasyonu önler ve motorun (5) sabit kalmasını sağlar kabin elyaf yalıtım filtresi (1) gelen havanın debisini kontrol altına alarak yüksek debiden oluşan yüzey çarpmalarındaki ses seviyesini minimize eder hava çıkış hepa filtre (23) üzerinden geçen hava, filtre edilerek ve ses seviyesi düşürülmüş şekilde dışarı atılır.

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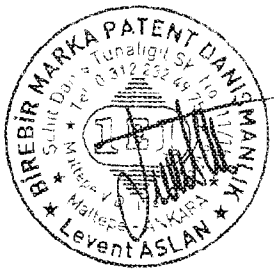
İSTEMLER

1. Buluş sessiz siklon stick süpürge olup,özelliği;Siklonik temizleme işlevine sahip,süpürücü alt gövde (29) ,uzatma boruları (24) ,hava siklon gövde (19) ,hava türbin filtresi (17) ,hava yönlendirme türbini (16) ,hava filtresi (15) motor (5) parçalarından oluşmasıdır.
2. Buluş sessiz siklon stick süpürge olup,özelliği;63 dB(A) ile 67 dB(A) ses seviyesinde çalışmayı sağlayan, motor vibrasyon contası (13), motor (5) ,motor emisyon contası (12) , motor elyaf yalıtım filtresi (4) ,motor izolasyon kabini (2), motor üst contası (3),kabin elyaf yalıtım filtresi (1) ,hava çıkış hepa filtresi (23) parçalarından oluşmasıdır.
3. İstem 1 ve İstem 2'de bahsedilen sessiz siklon stick süpürge olup,özelliği; Motor (5) üzerindeki titreşim ve balansı minimize eden motor vibrasyon contası (13), sesi azaltan motor emisyon contası (12) , motor elyaf yalıtım filtresi (4) , motor izolasyon kabini (2) bulunmasıyla karakterize edilmektedir.



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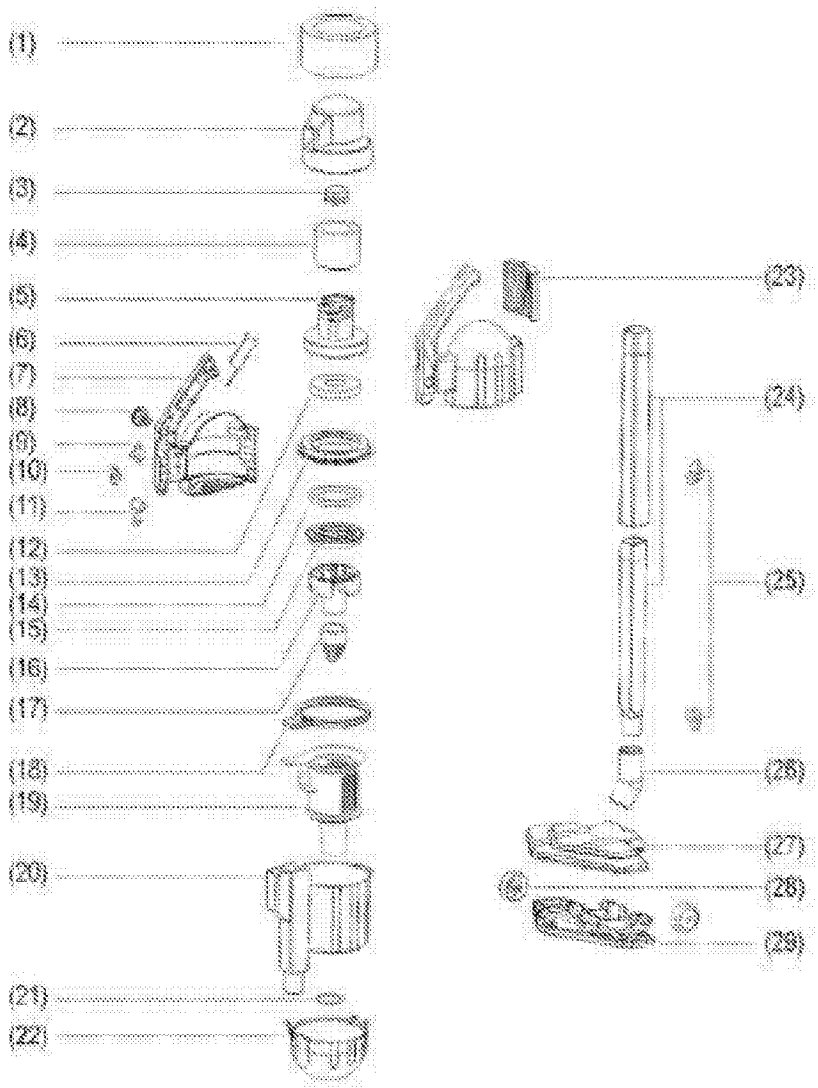

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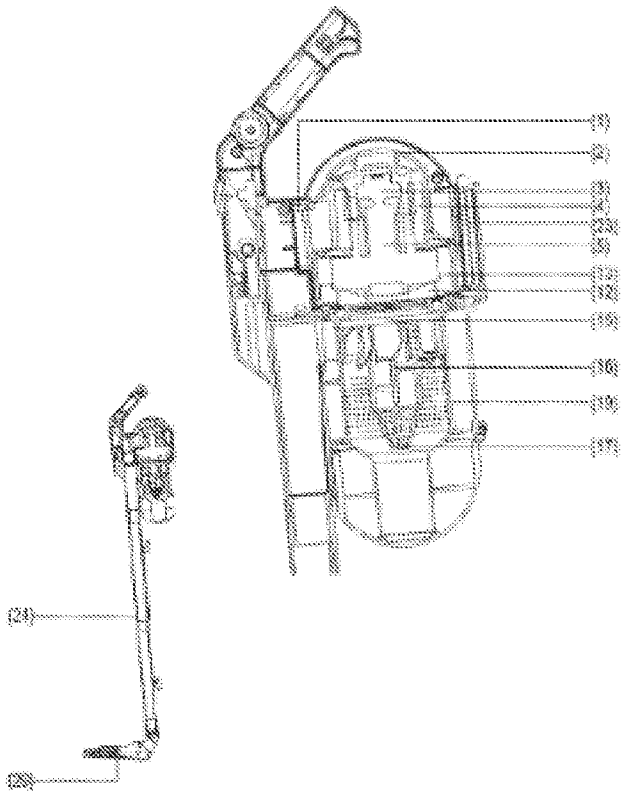

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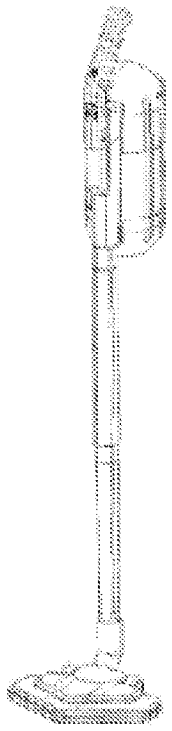

Şekil 3

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Bibliographic data: DE102011007373 (A1) — 2012-10-18

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Vacuum cleaner device, has flow guide passage for reconducting airflow into area of cleaning portion after passing airflow through secretion device and arranged between suction and outer housings at outer side of suction housing

Page bookmark	DE102011007373 (A1) - Vacuum cleaner device, has flow guide passage for reconducting airflow into area of cleaning portion after passing airflow through secretion device and arranged between suction and outer housings at outer side of suction housing
Inventor(s):	THIEN GERHARD [DE] ±
Applicant(s):	THIEN GERHARD [DE] ±
Classification:	- international: *A47L9/00*
	- cooperative: A47L5/24; A47L5/365; A47L9/16
Application number:	DE20111007373 20110414
Priority number(s):	DE20111007373 20110414

Abstract of DE102011007373 (A1)

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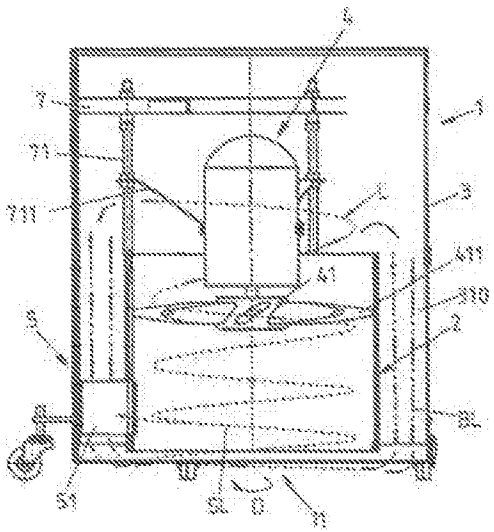
The device (1) has a cleaning portion staying in contact with a surface to be cleaned, and a suction housing arranged within an outer housing (3). A drive unit i.e. electric motor, generates air flow for collecting dirt in an area of the portion. A secretion device separates the dirt from the air flow, and a flow guide passage reconducts the airflow into the area of the portion after passing the airflow through the secretion device. Suctions of the suction housing are enclosed by the outer housing, where the passage is arranged between the housings at an outer side of the suction housing.



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DESCRIPTION DE102011007373

[0001]

The invention relates to a vacuum cleaner apparatus according to the preamble of claim 1.

[0002]

Such a vacuum cleaner apparatus includes a cleaning portion to be engaged with a surface to be cleaned in contact, disposed within an outer housing intake housing, a drive unit for generating a directed from the cleaning section in the intake into the air stream for receiving befindlichem in the area of the cleaning portion dirt, a separation device for separating dirt from the air flow and a flow guide passage for returning the air flow in the region of the underside of the cleaning portion, after the airflow has passed through the separation device, on.

[0003]

In a vacuum cleaner device known from EP 1997412 A2 a drive unit generated in the form of an electric blower motor a vacuum within an enclosure, which is passed through an attached hose and a suction tube to the suction port of a floor nozzle and air through the floor nozzle, the suction tube and the suction hose into sucked into the housing. In the housing a dust separator is in the form of a dust bag with a downstream motor filter, which separates the conveyed with the sucked air into the housing dirt from the air stream and collected. About the drive unit of the air flow by depositing dirt via an exhaust filter is blown out of the housing.

[0004]

Conventional vacuum cleaner devices, such as known from EP 1997412 A2, generate a negative pressure for sucking air. In such devices, the producible pressure difference between the normal pressure in the environment and the vacuum within the vacuum cleaner is necessarily limited, namely by the maximum pressure difference between ambient and produced under pressure of 1 bar.

[0005]

The DE 20 2009 017 053 describes a vacuum cleaner device comprising a suction housing which is to be placed with a bottom surface on a surface to be cleaned, a drive unit for generating an inside directed from the bottom in the intake air flow for taking in the region of the suction befindlichem dirt and a transpiration apparatus for separating dirt from the air stream, said air stream not passed through a housing and is blown off after the deposition of the dirt from the air stream as exhaust air.

[0006]

Here, a flow of air from a surface to be cleaned is directed towards a transpiration apparatus for separating dirt from the air stream and out of the separation device back to the surface to be cleaned. The flow of air is not vented as exhaust air, but turn out in the area of the surface to be cleaned. This results in a closed air circuit. In this case, the vacuum cleaner apparatus in an inner part with a collecting chamber for collecting ingested dirt, wherein the inner part is removable from the suction housing. The vacuum cleaner device in this case has a high material and construction costs.

[0007]

Object of the present invention is to provide a vacuum cleaner device with which the achievable performance and efficiency for capturing dirt and improves the design and cost of materials is reduced.

[0008]

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This object is achieved by an article having the features of claim 1. In this case, the vacuum cleaner apparatus of the type mentioned a cleaning portion to be engaged with a surface to be cleaned in contact, and a suction housing arranged within an outer casing and at least surrounded partially by the outer housing on. Within the suction housing a directed from the cleaning section in the intake air flow into for receiving befindlichem in the area of the cleaning portion dirt is produced by means of a drive device. The vacuum cleaner apparatus further comprises a separation apparatus for separating dirt from the air flow and a flow guide passage for returning the air flow in the area of the cleaning portion, after the airflow has passed through the separation device, on. The duct flow channel for redirecting the air flow from the suction in the cleaning section is disposed outside the suction housing between the outer housing and the suction housing.

[0009]

This is a closed air circuit is provided while reducing the design effort in a simple manner, in which an air stream is passed by a cleaning section towards a separation device for separating dirt from the air stream and out of the separation device back to the cleaning section.

[0010]

Here, a "sucking air flow" by the drive means is generated in the suction, the dust and dirt of the cleaning portion receives and is guided to the separation device for separating the dirt. After passing through the separation device of "sucking air flow" from the suction housing is guided in the spaced between the intake housing and the outer housing duct flow channel. The flow guide channel is formed such that it the "suction air stream" converts to a "bubble-air stream" and directed to the surface to be cleaned. It now emphasizes the "blowing air flow" at the surface to be cleaned along, picks up dirt and dust and unites within the cleaning section again with the "sucking air flow". Thus, the air circuit is closed.

[0011]

This achieves a high performance and cleaning efficiency under a reducing construction expenses, wherein substantially there is no exhaust air.

[0012]

Advantageously, the flow guide channel is designed such that the intake housing formed within the turbulent "sucking air current" is returned as a substantially laminar air flow in the region of the underside of the suction. By return of a turbulent "sucking air flow" as an essentially laminar "blowing airflow" high performance is achieved with a low energy consumption. Through the now substantially laminar air flow has a lower flow resistance, as compared to a turbulent air flow, overcome, so that with the same power, a lower power is required.

[0013]

In this case, the intake housing is preferably completely surrounded by the outer housing and the flow guide channel. Thereby is achieved that the blown air flow to the greatest possible surface of the acting surface to be cleaned and the dust and dirt with high efficiency in sucking airflow of the suction brings.

[0014]

In principle, it is conceivable, as in conventional vacuum cleaners, to take air through the intake housing and to pass into a further housing in which the drive unit is arranged. The introduction of air occurs in the intake housing via a suction pipe or a suction hose, and returning the air flow via a flow channel from the further housing back into the intake housing, wherein the back line may be realized, for example via a further tube or another hose.

[0015]

Advantageously, however, the drive unit is arranged directly on or in the intake housing. This is formed from the suction casing with arranged thereon drive unit a functional unit. Consequently, the functional unit generates the closed airflow circulation, absorbs the dirt and separates the dirt in the likewise arranged on suction device secretion from. Characterized a functional and compact unit is obtained which can be moved over a surface to be cleaned, for example, with a grip or handle.

[0016]

The separation apparatus for separating dirt from the turbulent, sucking airflow is preferably arranged in the flow path of the turbulent air flow between the bottom of the intake housing and the drive unit. The drive unit generates a sucking, turbulent air flow from the underside of the suction towards the drive unit, wherein the air stream passes through the separation apparatus before it reaches the drive unit. Subsequently, the air stream exits the intake housing, and is returned via the flow channel outside of the suction guide as a substantially laminar air flow in the region of the underside of the suction. Here, the substantially laminar flow of air is blown onto the surface to be cleaned, and again picks up dirt and dust. Through an association of the blown air stream with the generated in the suction by the drive unit sucking air flow of the re-recorded dirt in a closed air circuit is conveyed towards the discharge device.

[0017]

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Here, the absorbed dirt is separated advantageously in the separation device utilizing the principle of a centrifuge. In this case, the intake housing is formed such that it enables the produced by the drive unit sucking air flow in such a way into a rotational movement, that the conveyed with the sucking airflow dirt is separated from the air stream in a separation device and collected in a arranged in the separation device of the collecting chamber. The secretion of dirt is due to the forces acting on the particles of dirt centrifugal forces.

[0018]

The absorbent turbulent air flow is so set into a rotational movement similar to the rotation of a tornado that the captured dirt particles are increasingly compressed by the centrifugal forces acting on it within the suction housing to the outside. By these forces acting on them, the particles are passed and collected by means of an attached to the inside of the suction collection opening in the collecting chamber of the separation device. Consequently, the dirt is separated from the air stream before the air stream leaves the suction again. Advantageously, the separation device disposed therein collecting chamber and the collecting opening is provided in the lower region of the intake housing. The inside of the suction housing is configured such that the rotating air stream in the particles are thrown by the centrifugal force acting on them in accordance with the attached collection opening.

[0019]

Thus, the dirt to get at the bottom of the suction in the arranged in the secretion apparatus collecting chamber. The collection chamber may be formed as a collecting pocket, labyrinth system or cyclone filter. Even further embodiments of a collection or a filter device are conceivable.

[0020]

The resulting air circuit permits very high air velocities, which have a correspondingly good cleaning performance, is blown without the polluted air in the room. The generation of these flow rates can thus be produced with a considerably lower electrical power, because there is no positive pressure (blowing air flow) needs to be pumped into the normal system to the ambient air, but this overpressure in the resulting low pressure area (sucking air flow) is pumped immediately. This negative pressure forms on the inside of the suction created in the rotating air flow, similar as in a tornado. The refed laminar, blowing air stream is passed over the surface to be cleaned, thereby picks up dirt and dust on and is passed into the negative pressure of the sucking air flow within the suction housing. Consequently, high flow velocities can be produced at a much lower electric power.

[0021]

Due to the lower electric power and a lower heat generation of the vacuum cleaner device is achieved. The resulting heat by the drive unit is discharged through the air flow within the flow channel to guide the outer housing and can thus be discharged into the ambient air.

[0022]

Furthermore, a very low noise of the vacuum cleaner device is achieved because no sucked air must be delivered into the living room again through the closed air circuit. Thereby the bacterial load in the living room is considerably reduced, since the polluted air by germs no longer discharged into the living room, but is fed into a circuit. Accordingly, the use of expensive filter devices intended to reduce the bacterial load in the living room, can be saved.

[0023]

Advantageously, the separation device or parts thereof is removably connected with the suction housing, so that by removing the separation device, the vacuum cleaner device can be emptied for further use.

[0024]

The intake housing and the outer housing can be formed in a configuration substantially rotationally symmetrically about a central vertical axis of the vacuum cleaner device so that also the air flow generated has an essentially rotationally symmetrical shape. Fundamentally conceivable and possible, however, other shapes of the suction and the outer casing, for example, with a rectangular or oval cross-section.

[0025]

The outer housing is positioned within the intake housing, an air flow is preferably generated which is directed in from the cleaning section in the intake housing in the direction of the drive element. The air flow passes through the separation device and the drive unit and thus passes outside the suction housing and is outwardly directed conclusion on suction along back in the cleaning section. The in-directed from the cleaning section in the intake air stream flows so that the inside of the suction casing along and outside of the suction housing between the intake housing and the outer housing returned. This results in a closed airflow within the vacuum cleaner device, which is not called off as exhaust.

[0026]

The drive unit of the vacuum cleaner device is advantageously designed as an electric motor and has a relative to the intake housing about a rotation axis rotary, rotating rotor and a fixed stator arranged at the suction on. As is known electric motors, the rotor and stator interact in a rotational movement for driving the rotor. In this case, an air stream is generated by, for example, driven by an electric motor air vanes such that the air is accelerated by the surface to be cleaned to the drive unit out. The electric motor can be designed for example in the manner of a permanent-magnet synchronous motor, magnets are arranged on the rotor permanent.

[0027]

A use of electric motors as a drive unit for generating an air stream is merely exemplary. It is explicitly pointed out that in the context of the present invention in principle entirely different nature types of drives can be used to generate an air stream.

[0028]

in one embodiment, the apparatus has a air pipe piece which is arranged on a floor nozzle on. Here, the air line piece to a pneumatic supply line section which is connected to the flow guide channel. Thereby, the introduced into the flow guiding channel laminar, blowing air flow through the air inlet portion of the air line piece are introduced into the floor nozzle. Furthermore, the air line piece on an air discharge portion that is connected to the intake housing. This ensures that in the air outlet piece of a sucking air flow is generated. Consequently, the laminar, blowing air flow can be directed into the floor nozzle to accommodate there dirt and are combined with the sucking air flow within the floor nozzle. Thus it can be passed into the intake air within a closed circulatory system of the captured debris. in this case the dirt is flung by the rotating of the suction generated inside the air flow in the separation device.

[0029]

The idea underlying the invention is below with reference shown in the figures embodiments are explained in detail. Show it:

[1]

Fig. 1 A perspective view of a vacuum cleaner device obliquely from above;

[0031]

Fig. 2 is a cross-sectional view through the vacuum cleaner apparatus;

[0032]

Figure 3 shows a view of the vacuum cleaner apparatus of topless top cover.

[0033]

Fig. 4 is a cross section through a second vacuum cleaner apparatus;

[0034]

. Fig. 5 is a plan view of the vacuum cleaner apparatus of Figure 4 shown without a top cover;

[0035]

Fig. 6 is a perspective view of a third vacuum cleaner apparatus;

[0036]

Fig. 7 is a cross-sectional view of a fourth vacuum cleaner device with an air line section;

[0037]

Fig. 8 is a cross sectional view of a floor nozzle and

[0038]

FIG. 9 is a perspective view of a fourth vacuum cleaner device with air duct fitting and floor nozzle.

[0039]

in Fig. 1 to Fig. 3 is an embodiment of a vacuum cleaner device 1 in perspective view (Fig. 1), in a cross-sectional view (FIG. 2) and in a plan view (Fig. 3). The vacuum cleaner device 1 has an outer casing 3 and one disposed within the outer housing 3 suction casing 2, which in each case essentially rotationally symmetrical about an axis of rotation D (see FIG. 2 and FIG. 3) constructed and arranged

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concentrically to one another. Here, the suction casing 2 is completely surrounded on its outer surface of the outer housing 3rd The intake housing 2 is connected via a connection part 71 with a connecting device 7, which connects the intake housing 2 fixed to the external housing 3 (see Fig. 2).

[0040]

The vacuum cleaner device 1 is used for picking up dust and dirt and can be attached thereto with a cleaning section 11 to a surface to be cleaned. In the area of the cleaning portion 11 or on the circumferential edge of the vacuum cleaner apparatus 1 rolls or other sliders can be provided, with which the vacuum cleaner device 1 or the cleaning section 11 may be moved in a light and low-friction manner on the surface to be cleaned.

[0041]

The vacuum cleaner device 1 comprises an at least partially within the intake housing 2 disposed drive unit 4 (see Fig. 2), which is formed as an electric motor and is arranged offset to securely over attachment pieces 711th

[0042]

In the illustrated embodiment, the electric motor drives a rotor 41, the accelerated air 411 from the cleaning section 11 towards the drive unit 4 with the air vanes arranged on it. The electric motor can in principle any shape of an electric motor such as a permanent-magnet synchronous motor, a bürstenkommutierten Gleitstrommotor, an induction motor or a reluctance motor having.

[0043]

The vacuum cleaner device 1 is used for cleaning a flat substrate from dust and loose dirt and this creates a "suction airflow" SL within the intake housing 2 by means of the drive device. 4 The vacuum cleaner device 1 is constructed such that a self-contained air flow L is generated in the manner of a circuit by moving the air blades 411 of the rotor 41st

[0044]

Here, a sucking air flow SL by means of the drive device 4 inside of the suction 2 generates, receives the dirt and dust from a surface to be cleaned in the area of the cleaning portion 11 and conveyed toward a separation device 5 within the intake housing 2, in which the dust and dirt from the sucking air flow SL is secreted and collected. After passing through the separation device 5 of the sucking air flow SL toward the drive unit 4 is led and guided by the drive unit 4 after passing the driving unit 4, in a flow duct 310th

[0045]

Here, the duct flow channel 310 outside the suction casing 2, between the outer housing 3 and the suction casing 2, arranged and designed such that the incoming turbulent sucking airflow SL directed within the flow guide channel 310 substantially as a laminar, "blowing airflow" BL back to the cleaning section 11 becomes. At the cleaning section 11 of the blowing air stream BL is passed over the surface to be cleaned and swirls this dirt and dust to and taken up with and unites with the scale below the intake housing 2 sucking air flow SL. In addition, the outer housing 3 at the bottom of an additional flow guide be mounted (not shown here), which may be, for example, formed as a nozzle. This flow pattern is used for better guidance of the "blowing airflow" in the cleaning section 11th

[0046]

Thus, a closed cycle results in a stream of air from the cleaning section 11 towards the separation device 5, from there to the drive unit 4 and the flow guide channel 310 back to the cleaning section. By the generation of a closed air flow L produced no exhaust air, as is usual in conventional vacuum cleaners. The resulting conventional vacuum cleaners air absorbs when cleaning germs, which are not normally secreted within the vacuum cleaner, but are distributed through an exhaust vent in the living room. Often expensive filter devices are used to reduce the bacterial load in the living room through the exhaust. The generated in the vacuum cleaner device 1 closed air circuit L a blow of germ-laden air is avoided in the living room and even the use of expensive filter devices is not necessary.

[0047]

Furthermore, the vacuum cleaner device 1 can be operated at a high cleaning efficiency, at the same time the energy expenses are minimized. Within the suction housing 2 large flow rates for the air flow L are adjustable. By increasing the performance and aerodynamically matched forming the intake housing 2 and / or of the flow guiding channel 310, the flow velocities and the flow paths can be optimized for a high cleaning efficiency.

[0048]

Within the suction casing 2, a sucking air flow SL by means of the drive device 4 generated, which is displaced by the drive unit 4 and the rotationally symmetrical configuration of the suction casing 2 in such a way into a rotational movement, that the conveyed with the sucking airflow SL dirt from the

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sucking airflow SL in a transpiration apparatus 5 is secreted. The offset in rotation sucking airflow SL, similar to the rotation of a tornado that recorded in sucking airflow SL dirt particles are increasingly pressed inside the suction housing 2 to the outside. The sucking air flow SL flows in the arrow directions (see FIG. 3) inside of the suction 2nd Due to the forces acting on them, the dirt particles are pressed against the inside of the suction casing 2 and passed through an attached to the inside of the suction casing 2 collection opening 511 in the discharge device 5 and collected in a disposed within the separation device 5 collecting chamber 51st

The sucking air flow SL is drawn after passing the separation device 5 towards the drive unit 4 and sets, now cleaned of dust and dirt, his cycle continues.

[0049]

The separation device 5 or at least part of the separation device 5 are removably connected to the suction casing 2, thus enabling easy removal of the enriched in the separation device 5 dirt. In principle, other separation devices, for example in the form of a dust bag and a dust filter, such as are known from conventional vacuum cleaners, used.

[0050]

The resulting in the vacuum cleaner device 1 air circuit permits very high air velocities, which have a correspondingly good cleaning performance, when compared to the standard vacuum cleaners known much lower necessary electrical power. Due to the substantially laminar flow of air within the flow-guiding body 310 has a lesser, flow resistance to be overcome in comparison to a turbulent air flow, so that with the same power, a lower power is required. Further forms of the suction produced 2 sucking air flow SL, similar to a tornado, a negative pressure area to the cleaning portion 11th Consequently, the laminar essentially blowing air stream BL must not be pumped into the normal system of the ambient air, but the pressure of the blowing air stream BL is pumped directly into the partial vacuum area of the sucking airflow SL, so that to generate high flow velocities only a substantially lower electric power is necessary.

[0051]

Additionally flow guide rails 312 may, to improve the flow guide of the blowing air flow BL can be arranged between the outer housing 3 and the intake housing second The flow guide rails 312 are formed such that they guide the flow channel 310 into individual flow guide channel regions (310, 310 ', 310' ', etc.) is divided. Consequently, better control and flow guide the blowing air stream BL is achieved and the blowing airflow BL can be conducted with a greater effectiveness in the cleaning section 11th

[0052]

FIGS. 4 and Fig. 5 show a second embodiment of the vacuum cleaner apparatus 1, FIG. 4 is a cross-sectional view and FIG. 5 shows a plan view of the vacuum cleaner device 1. The vacuum cleaner device 1 is constructed such that a self-contained air flow L produced by the manner of a circuit by movement of the rotor 41, which flows from the cleaning section 11 within the intake housing 2 along, while on its way, the separation device 5 happens in the the dust and dirt is separated from the sucking airflow SL and collected, being directed after passing through the separation device 5 of the air flow towards the drive unit 4 and past the drive unit 4 is guided into the flow duct 310 back to the cleaning section eleventh In this case is substantially the same principle as described above for the first embodiment is used. With regard to the explanation and description of the construction and operation of individual and comparable items is made to the explanations of the first embodiment.

[0053]

A difference of the second embodiment compared with the first embodiment is the mounting of the drive unit 4 within the vacuum cleaner apparatus first

[0054]

The vacuum cleaner device 1 has a disposed inside the suction housing 2 drive unit 4, which is designed as an electric motor and a rotationally fixed connected to the suction casing 2 stator 42 and having a about the rotation axis D of a connecting pin (not shown here) is rotatably arranged rotor 41, wherein the connecting bolt, the drive unit 4 offset to securely connecting to the outer casing lid 31st

[0055]

The drive unit 4 shown in FIG. 4, configured as a permanent-magnet synchronous motor 41 permanent magnets 410 are arranged at regular intervals on the rotor and the act arranged on the stator 42 magnetic field coils (not shown here) together. According to the operation of a permanent-magnet synchronous motor, the magnetic coils of the stator 42 to form a revolving magnetic rotary field, the generated by the permanent magnets 410, also called the excitation field magnetic field, lags and thus the rotating field of the stator 42 subsequent synchronous rotation of the rotor 41 to the rotational axis D causes.

[0056]

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The direction of rotation of the electric motor depends on the phase position of the currents in the individual magnetic field coils, the direction of rotation in the example according to the drawn in Fig. 4 and Fig. 5 arrow shown is selected to the axis of rotation D.

[0057]

In the second embodiment, the intake housing 2 is connected with a fastening device 7, which is in turn connected via connection part 71 with the outer housing 3rd It may in or on the outer casing 3 capacitors 9 or as an energy storage suitable storage media (high-performance capacitors, batteries) for a wireless operation be arranged (not shown here).

[0058]

In Fig. 5 is again the movement of dirt particles S clarified within the sucking airflow SL. Due to the rotationally symmetrical movement of the sucking air flow within the intake housing SL 2, the dirt particles S are pressed by the centrifugal forces acting on them increasingly outwards. Thus, the dirt particles S are pressed against the inside of the suction. 2 This spiral movement of the dirt particles S ensures that the dirt particles S are separated in a separation device 5 due to them within the rotationally symmetrical, sucking airflow SL forces acting on them. The separation device 5 is advantageously mounted in the lower portion of the suction. 2 By a suitable flow rate of sucking airflow SL the dirt particles are due to the centrifugal forces acting on it, as described above, thrown into a suitable receiving port 511 of the separation device. 5

Thus, the dust and debris from entering an attached device in the secretion collecting chamber 5 51st

[0059]

Advantageously, the discharge apparatus 5 is separable 51 separably connected to the outer side of the outer casing 3, or the capture chamber of the transpiration apparatus 5, so that a simple emptying and cleaning the vacuum cleaner device is made possible.

[0060]

Fig. Figure 6 shows a perspective view of an embodiment of the vacuum cleaner device 1. In this case, the vacuum cleaner device 1 to the cleaning portion preferably rollers or other Gleitwerkzeuge on, so that the vacuum cleaner device 1 can be moved in a simple manner via a grip or handle attached to the outer housing 3rd Here, in the handle or stem capacitors 9 or as an energy storage suitable storage media (high-performance capacitors, batteries) arranged for a cable-free operation. Advantage of the embodiment shown in the figure is its compact construction, wherein by integrating the suction casing 2, the drive unit 4 and of the flow guide channel 310, a self-contained functional unit is provided inside the outer casing 3, which has a simplified wireless handling.

[0061]

Fig. 7 shows a further embodiment of the vacuum cleaner device 1. In this case, the vacuum cleaner apparatus 1, an air pipe piece 6 which is disposed on a floor nozzle 61 on. The cleaning section 11 via the air pipe piece 6 to the floor nozzle 61 (Fig. 8) is connected. With regard to the functioning and the structure of the suction 3, the drive unit 4, the discharge device 5 and the flow guide channel 310, and the elements arranged on it, is made to the explanations of the above figures.

[0062]

Here, the air line 6 one piece air supply portion 611, for supplying the flow coming from the guide channel 310 is substantially laminar, blowing air flow BL of the cleaning portion 11 is disposed on the floor nozzle 61 on. Here, the blowing air flow BL slides over the surface to be cleaned to the cleaning portion 11 of the floor nozzle 61 along and picks up dirt and dust.

[0063]

Further, the air pipe piece 6, an air discharge section 612, which is connected to the suction casing 2, and hence has a generated by the drive unit 4 in the intake housing 2 sucking air current SL. Accordingly, the blown air stream BL is transferred from the flow guide body 310 in the air supply portion 611 and thus passes to the purification section 11 of the floor nozzle 61, where it receives dirt and is combined with the voltage applied to the air discharge section 612 sucking air current SL.

[0064]

Thereby, the dirt by cleaning section 11 of the floor nozzle 61 from entering the intake housing 2 where the sucking air flow SL is placed in a rotationally symmetrical rotational movement due to the formation of the suction 2nd This allows the dirt, as already described above, are secreted in the secretion apparatus 5 and the air stream passes through to the drive unit 5 and the drive unit 5 out again into the flow guide body 310th Thus, the air circuit is closed.

[0065]

In an alternative, the embodiment of FIG. 7 consist of a separable from the outer housing air pipe piece 6, wherein the vacuum cleaner device 1 is configured such that it can be operated both with and

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without the air pipe piece 6. This provides maximum flexibility of application possibilities of the vacuum cleaner device 1 is ensured. Alternatively, the floor nozzle 61 is removably connected to the air line section. 6 This ensures a safe operation in hard to reach places.

[0066]

Preferably, the air line section 6 of a solid material such as a metal or plastic tube formed. Alternatively, the air line section 6 can also be partially or completely of a flexible material, such as a tube made.

[0067]

Fig. 9 shows a perspective view of an embodiment of the vacuum cleaner device 1. In this case, the vacuum cleaner device 1 to the cleaning portion preferably rollers or other Gleitwerkzeuge on, so that the vacuum cleaner device 1 can be moved in a simple manner via a grip or handle attached to the outer housing 3rd it can at the vacuum apparatus 1, for example, a handle or stem capacitors 9 or as an energy storage suitable storage media (high-performance capacitors, batteries) for a wireless operation be arranged (comparable to Fig. 6). This enables simplified wireless handling has.

[0068]

In the vacuum cleaner device 1 shown in the figures, the drive unit 4 is at least partially positioned within the intake housing 2, but entirely within the outer housing 3rd Alternatively, it is also conceivable and possible that the drive unit 4 outside of the outer casing 3, for example, the outside of the outer housing cover to arrange 31 to drive an arranged inside of the suction fan 2.

[0069]

It can be provided in the embodiments that electric current via a power cable is provided, or a large-capacity capacitor, a mobile and wireless use of the device is made possible.

[0070]

The individual components, in particular the intake housing 2 and the outer casing 3 can be made as plastics moldings, thus resulting in a cost-effective production.

[0071]

The idea underlying the invention is not limited to the above described embodiments, but can in principle be realized in quite different embodiments.

[0072]

For example, it is also conceivable to completely arrange the drive unit 4 outside of the outer casing 3 and to conduct a flow of air through a first tube towards a discharge device 5 and drive unit 4 and to lead through a second hose from the power unit 4 back to the suction. 2

LIST OF REFERENCE NUMBERS

1

Vacuum device 11 cleaning section 2 suction 3 outer casing 31 housing cover 310 duct flow channel 311 connecting pins 312 flow guide rails 4 drive unit 41 rotor 410 Magnets 411 airfoils 42 stator 420 coils 5 transpiration apparatus 51 collection chamber 511 collecting opening 6 air line section 61 floor nozzle 611 air supply section 612 Exhauster Section 7 fastener 71 connecting part 711 fixing piece 8 Connector 9 capacitor D rotational axis L airflow BL bubble Santander airflow SL Absorbent airflow S debris

QUOTES INCLUDED IN THE DESCRIPTION

[0073]

This list of references cited by the applicant is generated automatically and is included solely to inform the reader. The list is not part of the German Patent and Utility model application. The DPMA assumes no responsibility for errors or omissions.

Cited patent literature

[0074]

EP 1997412 A2 DE 202009017053

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1.

Vacuum device with - A cleaning portion to be engaged with a surface to be cleaned in contact, - A suction casing disposed within an outer housing, - A drive unit for generating a directed from the cleaning section in the intake into the air stream for receiving befindlichem in the area of the cleaning portion dirt, - A separation device for separating dirt from the air flow and - A flow guide passage for returning the air flow in the area of the cleaning portion, after the airflow has passed through the separation device, characterized, that the suction housing (2) at least in sections of the outer housing (3) is enclosed and the flow guiding channel (310) outside the suction housing (2) between the outer casing (3) and the intake housing (2) is arranged.

2.

Vacuum cleaner apparatus according to claim 1, characterized in that the flow guide channel (310) is formed such that a in the suction housing (2) formed a turbulent air stream (SL) through the flow guide channel (310) as a substantially laminar air flow (LL) back into the region of the cleaning portion (11) is returned.

3.

Vacuum cleaner apparatus according to claim 1 or 2, characterized in that the outer housing (3) and / or of the flow guiding channel (310), the intake housing (2) fully surrounded.

4.

Vacuum cleaner apparatus according to claim 1 to 3, characterized in that the drive unit (4) is arranged in or on the suction housing (2).

5.

Vacuum cleaner apparatus according to any one of the preceding claims, characterized in that the separation device (5) for separating dirt from the turbulent air current (SL) in the flow path of the turbulent air stream (SL) within the suction housing (2) between the cleaning section (11) and the drive unit (4) is arranged.

6.

Vacuum cleaner apparatus according to any one of the preceding claims, characterized in that the suction housing (2) is formed, the turbulent stream of air (SL) in such a way to enable a rotational movement, that the turbulent air current (SL) transported dirt (S) from the turbulent air stream (SL) is separated in the separation device (5).

7.

Vacuum cleaner apparatus according to any one of the preceding claims, characterized in that the separation device (5) has a collecting chamber (51) for collecting ingested dirt (S).

8.

Vacuum cleaner apparatus according to any one of the preceding claims, characterized in that the separation device (5) or parts of the discharge device (5) are removably connected to the intake housing (2).

9.

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Vacuum cleaner apparatus according to any one of the preceding claims, characterized in that the suction housing (2) and the outer housing (3) are essentially rotationally symmetrical.

10.

Vacuum cleaner apparatus according to any one of the preceding claims, characterized in that from the cleaning portion (11) in the intake housing (2) into directed air current (L) after passing through the intake housing (2) outside of the suction housing (2) along back into the region of the cleaning portion (11) is passed.

11.

Vacuum cleaner apparatus according to any one of the preceding claims, characterized in that the drive unit (4) is designed as an electric motor and a relative to the suction housing (2) about an axis of rotation disposed (D) rotating, the rotating rotor (41) and a stationary on the suction housing (2) stator (42) which for driving the rotor (41) cooperating with the rotor (41) blades (411) for generating the air flow (L).

12.

Vacuum cleaner apparatus according to any one of the preceding claims, characterized in that the cleaning section (11) via an air line piece (6) with a floor nozzle (61) is connected.

13.

Vacuum cleaner apparatus according to claim 12, characterized in that the air conduit member (6) has an air inlet portion (611) which is connected to the flow guide channel (310), and an air discharge portion (612) which is connected to the intake housing (2) connected to which.

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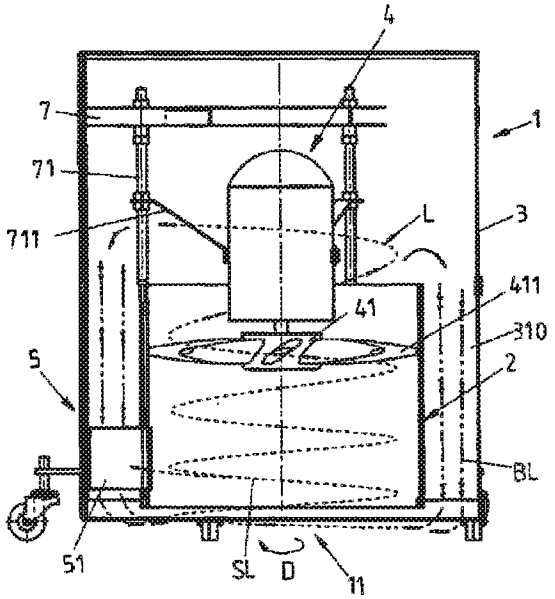
Prüfungsantrag gemäß § 44 PatG ist gestellt.

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

(54) Bezeichnung: **Staubsaugervorrichtung**

(57) Zusammenfassung: Die Erfindung betrifft eine Staubsaugervorrichtung mit einem Reinigungsabschnitt, der mit einer zu reinigenden Fläche in Kontakt zu bringen ist, einem innerhalb eines Außengehäuses angeordnetem Ansauggehäuse, einer Antriebseinheit zum Erzeugen eines von dem Reinigungsabschnitt in das Ansauggehäuse hinein gerichteten Luftstroms zum Aufnehmen von im Bereich des Reinigungsabschnitts befindlichem Schmutz, einer Absonderungsvorrichtung zum Absondern von Schmutz aus dem Luftstrom und einem Strömungsführungskanal zum Zurückleiten des Luftstroms in den Bereich des Reinigungsabschnitts, nachdem der Luftstrom die Absonderungsvorrichtung passiert hat. Dabei ist das Ansauggehäuse (2) zumindest abschnittsweise von dem Außengehäuse (3) eingefasst ist und der Strömungsführungskanal (310) außerhalb des Ansauggehäuses (2) zwischen dem Außengehäuse (3) und dem Ansauggehäuse (2) angeordnet.



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Beschreibung

[0001] Die Erfindung betrifft eine Staubsaugervorrichtung nach dem Oberbegriff des Anspruchs 1.

[0002] Eine derartige Staubsaugervorrichtung weist einen Reinigungsabschnitt, der mit einer zu reinigenden Fläche in Kontakt zu bringen ist, ein innerhalb eines Außengehäuses angeordnetes Ansauggehäuse, eine Antriebseinheit zum Erzeugen eines von dem Reinigungsabschnitt in das Ansauggehäuse hinein gerichteten Luftstroms zum Aufnehmen von im Bereich des Reinigungsabschnitts befindlichem Schmutz, eine Absonderungsvorrichtung zum Absondern von Schmutz aus dem Luftstrom und einem Strömungsführungskanal zum Zurückleiten des Luftstroms in den Bereich der Unterseite des Reinigungsabschnitts, nachdem der Luftstrom die Absonderungsvorrichtung passiert hat, auf.

[0003] Bei einer aus der EP 1 997 412 A2 bekannten Staubsaugervorrichtung erzeugt eine Antriebseinheit in Form eines elektrischen Gebläsemotors einen Unterdruck innerhalb eines Gehäuses, der über einen angeschlossenen Saugschlauch und ein Saugrohr an dem Saugmund einer Bodendüse weitergegeben wird und Luft durch die Bodendüse, das Saugrohr und den Saugschlauch in das Gehäuse hineinsaugt. Im Gehäuse befindet sich ein Staubabscheider in Form eines Staubbeutels mit nachgeschaltetem Motorfilter, der dem mit der angesaugten Luft in das Gehäuse beförderten Schmutz aus dem Luftstrom abscheidet und sammelt. Über die Antriebseinheit wird der Luftstrom nach Abscheiden des Schmutzes über einen Abluftfilter aus dem Gehäuse geblasen.

[0004] Herkömmliche Staubsaugervorrichtungen, wie aus der EP 1 997 412 A2 bekannt, erzeugen einen Unterdruck zum Ansaugen von Luft. Bei derartigen Vorrichtungen ist die erzeugbare Druckdifferenz zwischen dem normalen Druck in der Umgebung und dem Unterdruck innerhalb des Staubsaugers zwangsläufig begrenzt, nämlich durch den maximalen Druckunterschied zwischen Umgebung und erzeugtem Unterdruck von 1 bar.

[0005] Die DE 20 2009 017 053 beschreibt eine Staubsaugervorrichtung die ein Ansauggehäuse, das mit einer Unterseite auf eine zu reinigende Fläche aufzusetzen ist, eine Antriebseinheit zum Erzeugen eines von der Unterseite in das Ansauggehäuse hineingerichteten Luftstroms zum Aufnehmen von im Bereich des Ansauggehäuses befindlichem Schmutz und eine Absonderungsvorrichtung zum Absondern von Schmutz aus dem Luftstrom aufweist, wobei der Luftstrom nicht durch ein Gehäuse hindurchgeleitet und nach Abscheiden des Schmutzes aus dem Luftstrom als Abluft abgeblasen wird.

[0006] Dabei wird ein Luftstrom von einer zu reinigenden Fläche hin zu einer Absonderungsvorrichtung zum Absondern von Schmutz aus dem Luftstrom geleitet und von der Absonderungsvorrichtung zurück zu der zu reinigenden Fläche geführt. Der Luftstrom wird nicht als Abluft abgeblasen, sondern wiederum in den Bereich der zu reinigenden Fläche geführt. Dadurch ergibt sich ein geschlossener Luftkreislauf. Dabei weist die Staubsaugervorrichtung ein Innenteil mit einer Auffangkammer zum Auffangen von aufgenommenem Schmutz auf, wobei das Innenteil von dem Ansauggehäuse entnehmbar ist. Die Staubsaugervorrichtung weist dabei einen hohen Material- und Konstruktionsaufwand auf.

[0007] Aufgabe der vorliegenden Erfindung ist es, eine Staubsaugervorrichtung zu schaffen, mit der die erreichbare Leistung und Effizienz zum Aufnehmen von Schmutz verbessert wird und der Konstruktions- und Materialaufwand reduziert wird.

[0008] Diese Aufgabe wird durch einen Gegenstand mit den Merkmalen des Anspruchs 1 gelöst. Dabei weist die Staubsaugervorrichtung der eingangs genannten Art einen Reinigungsabschnitt, der mit einer zu reinigenden Fläche in Kontakt zu bringen ist, und ein Ansauggehäuse, das innerhalb eines Außengehäuses angeordnet und zumindest abschnittsweise von dem Außengehäuse eingefasst ist, auf. Innerhalb des Ansauggehäuses wird mittels einer Antriebsvorrichtung ein von dem Reinigungsabschnitt in das Ansauggehäuse hinein gerichteter Luftstrom zum Aufnehmen von im Bereich des Reinigungsabschnitts befindlichem Schmutz erzeugt. Die Staubsaugervorrichtung weist weiterhin eine Absonderungsvorrichtung zum Absondern von Schmutz aus dem Luftstrom und einen Strömungsführungskanal zum Zurückleiten des Luftstroms in den Bereich des Reinigungsabschnitts, nachdem der Luftstrom die Absonderungsvorrichtung passiert hat, auf. Der Strömungsführungskanal zum Zurückleiten des Luftstroms aus dem Ansauggehäuse in den Reinigungsabschnitt ist außerhalb des Ansauggehäuses zwischen dem Außengehäuse und dem Ansauggehäuse angeordnet.

[0009] Dadurch wird unter Verringerung des konstruktiven Aufwands auf einfache Art und Weise ein geschlossener Luftkreislauf geschaffen, bei dem ein Luftstrom von einem Reinigungsabschnitt hin zu einer Absonderungsvorrichtung zum Absondern von Schmutz aus dem Luftstrom geleitet und von der Absonderungsvorrichtung zurück zu dem Reinigungsabschnitt geführt wird.

[0010] Dabei wird in dem Ansauggehäuse ein „saugender Luftstrom" durch das Antriebsmittel erzeugt, der Staub und Schmutz von dem Reinigungsabschnitt aufnimmt und zu der Absonderungsvorrichtung zum Absondern des Schmutzes geführt wird. Nach dem Passieren der Absonderungsvorrichtung

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wird der „saugende Luftstrom" aus dem Ansauggehäuse in den zwischen dem Ansauggehäuse und dem Außengehäuse angeordneten Strömungsführungskanal geleitet. Der Strömungsführungskanal ist derart ausgebildet, dass er den „saugenden Luftstrom" in einen „blasenden Luftstrom" umwandelt und auf die zu reinigende Fläche leitet. Dabei streicht der „blasende Luftstrom" nun an der zu reinigenden Fläche entlang, nimmt Schmutz und Staub auf und vereinigt sich innerhalb des Reinigungsabschnitts wieder mit dem „saugenden Luftstrom". Somit wird der Luftkreislauf geschlossen.

[0011] Dadurch wird unter Verringerung eines Konstruktionsaufwands eine hohe Leistung und Reinigungseffizienz erreicht, wobei im Wesentlichen keine Abluft entsteht.

[0012] Vorteilhafterweise ist der Strömungsführungskanal derart ausgebildet, dass der innerhalb des Ansauggehäuses gebildete turbulente „saugende Luftstrom" im Wesentlichen als laminarer Luftstrom in den Bereich der Unterseite des Ansauggehäuses zurückgeleitet wird. Durch die Zurückleitung des turbulenten „saugenden Luftstroms" als im Wesentlichen laminaren „blasenden Luftstroms" wird eine hohe Leistung bei einem geringen Energieeinsatz erzielt. Durch die nun im Wesentlichen laminare Luftströmung muss ein geringerer Strömungswiderstand, im Vergleich zu einer turbulenten Luftströmung, überwunden werden, so dass bei gleicher Leistung eine geringere Energie notwendig ist.

[0013] Dabei ist das Ansauggehäuse bevorzugt vollständig von dem Außengehäuse und dem Strömungsführungskanal umgeben. Dadurch wird erzielt, dass der blasende Luftstrom auf die größtmöglichste Fläche der zu reinigenden Fläche einwirkt und den Staub und Schmutz mit hoher Effizienz in den saugenden Luftstrom des Ansauggehäuses bringt.

[0014] Grundsätzlich ist es denkbar, wie bei herkömmlichen Staubsaugern, Luft über das Ansauggehäuse aufzunehmen und in ein weiteres Gehäuse zu leiten, in dem die Antriebseinheit angeordnet ist. Dabei erfolgt die Einleitung der Luft in das Ansauggehäuse über ein Ansaugrohr oder einen Ansaugschlauch und das Zurückleiten des Luftstroms über einen Strömungskanal aus dem weiteren Gehäuse zurück in das Ansauggehäuse, wobei die Zurückleitung beispielsweise über ein weiteres Rohr oder einen weiteren Schlauch verwirklicht sein kann.

[0015] Vorteilhafterweise jedoch ist die Antriebseinheit unmittelbar an oder in dem Ansauggehäuse angeordnet. Dadurch wird eine funktionale Einheit aus dem Ansauggehäuse mit der daran angeordneten Antriebseinheit gebildet. Folglich erzeugt die funktionale Einheit den geschlossenen Luftstromkreislauf, nimmt den Schmutz auf und sondert den Schmutz in der ebenfalls am Ansauggehäuse angeordneten Absonderungsvorrichtung ab. Dadurch wird eine funktionale und kompakte Einheit erzielt, die beispielsweise mit einem Griff oder Stiel über eine zu reinigende Fläche bewegt werden kann.

[0016] Die Absonderungsvorrichtung zum Absondern von Schmutz aus dem turbulenten, saugenden Luftstrom ist bevorzugt im Strömungsweg des turbulenten Luftstroms zwischen der Unterseite des Ansauggehäuses und der Antriebseinheit angeordnet. Die Antriebseinheit erzeugt einen saugenden, turbulenten Luftstrom von der Unterseite des Ansauggehäuses hin zur Antriebseinheit, wobei der Luftstrom die Absonderungsvorrichtung passiert, bevor er zur Antriebseinheit gelangt. Anschließend verlässt der Luftstrom das Ansauggehäuse und wird über den Strömungsführungskanal außerhalb des Ansauggehäuses als im Wesentlichen laminarer Luftstrom in den Bereich der Unterseite des Ansauggehäuses zurückgeführt. Dabei wird der im Wesentlichen laminare Luftstrom auf die zu reinigende Fläche geblasen und nimmt erneut Schmutz und Staub auf. Durch eine Vereinigung des eingeblasenen Luftstroms mit dem in dem Ansauggehäuse durch die Antriebseinheit erzeugten saugenden Luftstrom wird der erneut aufgenommene Schmutz in einem geschlossenen Luftkreislauf hin zur Absonderungsvorrichtung befördert.

[0017] Dabei wird der aufgenommene Schmutz vorteilhafterweise in der Absonderungsvorrichtung unter Ausnutzung des Prinzips einer Zentrifuge abgesondert. Dabei ist das Ansauggehäuse derart ausgebildet, dass es den durch die Antriebseinheit erzeugten saugenden Luftstrom derart in eine Rotationsbewegung versetzt, dass der mit dem saugenden Luftstrom beförderte Schmutz aus dem Luftstrom in eine Absonderungsvorrichtung abgesondert und in einer in der Absonderungsvorrichtung angeordneten Auffangkammer gesammelt wird. Dabei erfolgt die Absonderung des Schmutzes aufgrund der auf die Schmutzpartikel wirkenden Zentrifugalkräfte.

[0018] Der turbulente saugende Luftstrom wird derart in eine Rotationsbewegung versetzt, vergleichbar der Rotation eines Tornados, dass die aufgenommenen Schmutzpartikel zunehmend durch die auf sie wirkende Zentrifugalkräfte innerhalb des Ansauggehäuses nach außen gedrückt werden. Durch diese auf sie wirkenden Kräfte werden die Partikel mittels einer an der Innenseite des Ansauggehäuses angebrachten Auffangöffnung in die Auffangkammer der Absonderungsvorrichtung geleitet und gesammelt. Folglich wird der Schmutz aus dem Luftstrom abgesondert bevor der Luftstrom das Ansauggehäuse wieder verlässt. Vorteilhafterweise ist die Absonderungsvorrichtung mit der darin angeordneten Auffangkammer und der Auffangöffnung im unteren Bereich des Ansauggehäuses angebracht. Dabei ist die Innenseite des Ansauggehäuses derart ausgestaltet,

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dass die im Luftstrom rotierenden Partikel durch die auf sie wirkende Fliehkraft in die entsprechend angebrachte Auffangöffnung geschleudert werden.

[0019] Somit gelangen die Schmutzpartikel im unteren Bereich des Ansauggehäuses in die in der Absonderungsvorrichtung angeordnete Auffangkammer. Die Auffangkammer kann als Fangtasche, Labyrinthsystem oder Zyklonfilter ausgebildet sein. Auch weitere Ausgestaltungsformen eines Sammelbehälters oder einer Filtereinrichtung sind denkbar.

[0020] Der so entstandene Luftkreislauf erlaubt sehr hohe Luftgeschwindigkeiten, die eine entsprechend gute Reinigungsleistung aufweisen, ohne dass belastete Luft in den Raum geblasen wird. Die Erzeugung dieser Strömungsgeschwindigkeiten kann folglich mit einer wesentlich geringeren elektrischen Leistung erzeugt werden, da kein Überdruck (blasender Luftstrom) in das Normalsystem der Umgebungsluft gepumpt werden muss, sondern dieser Überdruck sofort in das entstandene Unterdruckgebiet (saugender Luftstrom) gepumpt wird. Dieser Unterdruck bildet sich auf der Innenseite der in dem Ansauggehäuse entstandenen rotierenden Luftströmung, vergleichbar wie bei einem Tornado. Der zurückgeleitete laminare, blasende Luftstrom wird über die zu reinigende Fläche geleitet, nimmt dabei Schmutz und Staub auf und wird in den Unterdruck des saugenden Luftstroms innerhalb des Ansauggehäuses geleitet. Folglich können hohe Strömungsgeschwindigkeiten bei einer wesentlich geringeren elektrischen Leistung erzeugt werden.

[0021] Durch die geringere elektrische Leistung wird auch eine geringere Wärmeentwicklung der Staubsaugervorrichtung erzielt. Die durch die Antriebseinheit entstehende Wärme wird durch den Luftstrom innerhalb des Strömungsführungskanals an das Außengehäuse abgegeben und kann somit in die Umgebungsluft abgeführt werden.

[0022] Weiterhin wird durch den geschlossenen Luftkreislauf eine sehr geringe Geräuschentwicklung der Staubsaugervorrichtung erzielt, da keine eingesaugte Abluft wieder in den Wohnraum abgegeben werden muss. Dadurch sinkt auch die Keimbelastung im Wohnraum erheblich, da die durch Keime belastete Abluft nicht mehr in den Wohnraum abgelassen, sondern in einen Kreislauf geführt wird. Demzufolge kann auch der Einsatz von teuren Filtereinrichtungen, die die Keimbelastung im Wohnraum reduzieren sollen, eingespart werden.

[0023] Vorteilhafterweise ist die Absonderungsvorrichtung oder Teile davon entnehmbar mit dem Ansauggehäuse verbunden, so dass durch Entnehmen der Absonderungsvorrichtung die Staubsaugervorrichtung zum erneuten Gebrauch entleert werden kann.

[0024] Das Ansauggehäuse und das Außengehäuse können in einer Ausgestaltung im Wesentlichen rotationssymmetrisch zu einer zentralen senkrechten Achse der Staubsaugervorrichtung ausgebildet sein, so dass auch der erzeugte Luftstrom eine im Wesentlichen rotationssymmetrische Gestalt aufweist. Grundlegend denkbar und möglich sind aber auch andere Formgebungen des Ansauggehäuses und des Außengehäuses, beispielsweise mit einem rechteckigen oder ovalen Querschnitt.

[0025] Ist das Außengehäuse innerhalb des Ansauggehäuses angeordnet, wird bevorzugt ein Luftstrom erzeugt, der von dem Reinigungsabschnitt in das Ansauggehäuse hinein in Richtung des Antriebselements gerichtet ist. Dabei passiert der Luftstrom die Absonderungsvorrichtung und die Antriebseinheit und gelangt somit außerhalb des Ansauggehäuses und wird abschließend außen am Ansauggehäuse entlang zurück in den Reinigungsabschnitt geleitet. Der von dem Reinigungsabschnitt in das Ansauggehäuse hineingerichtete Luftstrom strömt damit innen am Ansauggehäuse entlang und wird außerhalb des Ansauggehäuses, zwischen dem Ansauggehäuse und dem Außengehäuse, zurückgeführt. Es ergibt sich somit ein geschlossener Luftstrom innerhalb der Staubsaugervorrichtung, der nicht als Abluft abgeblasen wird.

[0026] Die Antriebseinheit der Staubsaugervorrichtung ist vorteilhafterweise als Elektromotor ausgebildet und weist einen relativ zum Ansauggehäuse um eine Drehachse drehbaren, umlaufenden Rotor und einen feststehend am Ansauggehäuse angeordneten Stator auf. Wie von Elektromotoren bekannt, wirken der Rotor und der Stator zum Antreiben des Rotors in einer Drehbewegung zusammen. Dabei wird ein Luftstrom durch beispielsweise von einem Elektromotor angetriebene Luftschaufeln derart erzeugt, dass die Luft von der zu reinigenden Fläche zu der Antriebseinheit hin beschleunigt wird. Der Elektromotor kann beispielsweise nach Art eines permanent erregten Synchronmotors ausgebildet sein, wobei am Rotor permanent Magnete angeordnet sind.

[0027] Eine Verwendung von Elektromotoren als Antriebseinheit zur Erzeugung eines Luftstroms ist lediglich beispielhaft. Es wird explizit darauf hingewiesen, dass im Rahmen der vorliegenden Erfindung grundsätzlich auch gänzlich anders geartete Bauformen von Antrieben zur Erzeugung eines Luftstroms einsetzbar sind.

[0028] In einer Ausgestaltungsform weist die Vorrichtung ein Luftleitungsstück, das an einer Bodendüse angeordnet ist, auf. Dabei weist das Luftleitungsstück einen Luftzuleitungsabschnitt auf, der mit dem Strömungsführungskanal verbunden ist. Dadurch kann die in den Strömungsführungskanal eingeleitete laminare, blasende Luftströmung über den

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Luftzuleitungsabschnitt des Luftleitungsstücks in die Bodendüse geleitet werden. Weiterhin weist das Luftleitungsstück einen Luftableitungsabschnitt auf, der mit dem Ansauggehäuse verbunden ist. Dadurch wird gewährleistet, dass in dem Luftableitungsstück ein saugender Luftstrom erzeugt wird. Folglich kann die laminare, blasende Luftströmung in die Bodendüse geleitet werden, um dort Schmutz aufzunehmen und mit dem saugenden Luftstrom innerhalb der Bodendüse vereinigt werden. Somit kann innerhalb eines geschlossenen Luftkreislaufsystems der aufgenommene Schmutz in das Ansauggehäuse geleitet werden. Dabei wird der Schmutz durch den innerhalb des Ansauggehäuses erzeugten rotierenden Luftstrom in die Absonderungsvorrichtung geschleudert.

[0029] Der der Erfindung zugrundeliegende Gedanke soll nachfolgend anhand in den Figuren dargestellter Ausführungsbeispiele näher erläutert werden. Es zeigen:

[0030] Fig. 1 Eine perspektivische Ansicht einer Staubsaugervorrichtung schräg von oben;

[0031] Fig. 2 eine Querschnittsansicht durch die Staubsaugervorrichtung;

[0032] Fig. 3 eine Ansicht der Staubsaugervorrichtung von oben ohne oberen Gehäusedeckel;

[0033] Fig. 4 ein Querschnitt durch eine zweite Staubsaugervorrichtung;

[0034] Fig. 5 eine Draufsicht auf die Staubsaugervorrichtung der Fig. 4, dargestellt ohne oberen Gehäusedeckel;

[0035] Fig. 6 eine perspektivische Ansicht einer dritten Staubsaugervorrichtung;

[0036] Fig. 7 eine Querschnittansicht einer vierten Staubsaugervorrichtung mit Luftleitungsstück;

[0037] Fig. 8 eine Querschnittansicht einer Bodendüse und

[0038] Fig. 9 eine perspektivische Ansicht einer vierten Staubsaugervorrichtung mit Luftleitungsstück und Bodendüse.

[0039] In Fig. 1 bis Fig. 3 ist eine Ausführungsform einer Staubsaugervorrichtung **1** in perspektivischer Ansicht (Fig. 1), in einer Querschnittsansicht (Fig. 2) und in einer Draufsicht (Fig. 3) dargestellt. Die Staubsaugervorrichtung **1** weist ein Außengehäuse **3** und ein innerhalb des Außengehäuses **3** angeordnetes Ansauggehäuse **2** auf, die jeweils im Wesentlichen rotationssymmetrisch zu einer Drehachse D (siehe Fig. 2 und Fig. 3) ausgebildet und konzentrisch zueinander angeordnet sind. Dabei ist das Ansauggehäuse **2** an seiner Außenfläche vollständig von dem Außengehäuse **3** umgeben. Das Ansauggehäuse **2** ist über ein Verbindungsteil **71** mit einer Verbindungsvorrichtung **7** verbunden, die das Ansauggehäuse **2** mit dem Außengehäuse **3** fest verbindet (siehe Fig. 2).

[0040] Die Staubsaugervorrichtung **1** dient zum Aufnehmen von Staub und Schmutz und kann hierzu mit einem Reinigungsabschnitt **11** auf eine zu reinigende Fläche aufgesetzt werden. Im Bereich des Reinigungsabschnitts **11** oder am umfänglichen Rand der Staubsaugervorrichtung **1** können Rollen oder andere Gleitstücke vorgesehen sein, mit denen die Staubsaugervorrichtung **1** oder der Reinigungsabschnitt **11** in leichter und reibungsarmer Weise über die zu reinigende Fläche bewegt werden können.

[0041] Die Staubsaugervorrichtung **1** weist eine zumindest abschnittsweise innerhalb des Ansauggehäuses **2** angeordnete Antriebseinheit **4** auf (siehe Fig. 2), die als Elektromotor ausgebildet ist und über Befestigungsstücke **711** verschiebungssicher angeordnet ist.

[0042] In dem dargestellten Ausführungsbeispiel treibt der Elektromotor einen Rotor **41** an, der mit den an ihm angeordneten Luftschaufeln **411** Luft von dem Reinigungsabschnitt **11** hin zur Antriebseinheit **4** beschleunigt. Der Elektromotor kann grundsätzlich jede Bauform eines Elektromotors wie beispielsweise einen permanent erregten Synchronmotor, einen bürstenkommutierten Gleitstrommotor, einen Asynchronmotor oder einen Reduktanzmotor aufweisen.

[0043] Die Staubsaugervorrichtung **1** dient zum Reinigen eines flächigen Untergrundes von Staub und losem Schmutz und erzeugt hierzu einen „saugenden Luftstrom" SL innerhalb des Ansauggehäuses **2** mittels der Antriebsvorrichtung **4**. Die Staubsaugervorrichtung **1** ist dabei so aufgebaut, dass durch Bewegung der Luftschaufeln **411** des Rotors **41** ein in sich geschlossener Luftstrom L nach Art eines Kreislaufs erzeugt wird.

[0044] Dabei wird mittels der Antriebsvorrichtung **4** innerhalb des Ansauggehäuses **2** ein saugender Luftstrom SL erzeugt, der Schmutz und Staub von einer zu reinigenden Fläche im Bereich des Reinigungsabschnitts **11** aufnimmt und hin zu einer Absonderungsvorrichtung **5** innerhalb des Ansauggehäuses **2** befördert, in der der Staub und Schmutz aus dem saugenden Luftstrom SL abgesondert und gesammelt wird. Nach Passieren der Absonderungsvorrichtung **5** wird der saugende Luftstrom SL hin zur Antriebseinheit **4** geleitet und mittels der Antriebseinheit **4**, nach Passieren der Antriebseinheit **4**, in einen Strömungsführungskanal **310** geleitet.

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[0045] Dabei ist der Strömungsführungskanal **310** außerhalb des Ansauggehäuses **2**, zwischen dem Außengehäuse **3** und dem Ansauggehäuse **2**, angeordnet und derart ausgebildet, dass der ankommende turbulente saugende Luftstrom SL innerhalb des Strömungsführungskanals **310** im Wesentlichen als laminarer, „blasender Luftstrom" BL zurück zum Reinigungsabschnitt **11** geleitet wird. An dem Reinigungsabschnitt **11** wird der blasende Luftstrom BL über die zu reinigende Fläche geleitet und wirbelt dabei Schmutz und Staub auf, nimmt diese mit und vereinigt sich mit dem unterhalb des Ansauggehäuses **2** angelegten saugenden Luftstrom SL. Zusätzlich kann am Außengehäuse **3** im unteren Bereich eine zusätzliche Strömungsführung angebracht sein (hier nicht dargestellt), die beispielsweise, wie eine Düse ausgebildet sein kann. Diese Strömungsführung dient zur besseren Führung des „blasenden Luftstroms" in den Reinigungsabschnitt **11**.

[0046] Somit ergibt sich ein geschlossener Kreislauf mit einem Luftstrom von dem Reinigungsabschnitt **11** hin zur Absonderungsvorrichtung **5**, von dort zur Antriebseinheit **4** und über den Strömungsführungskanal **310** zurück zum Reinigungsabschnitt. Durch die Erzeugung eines geschlossenen Luftstroms L entsteht keine Abluft, wie dies bei herkömmlichen Staubsaugern üblich ist. Die bei herkömmlichen Staubsaugern entstehende Abluft nimmt beim Reinigen Keime auf, die normalerweise nicht innerhalb des Staubsaugers abgesondert werden, sondern durch eine Abluftöffnung im Wohnraum verteilt werden. Häufig werden teure Filtereinrichtungen eingesetzt, um die Keimbelastung im Wohnraum durch die Abluft zu reduzieren. Durch den in der Staubsaugervorrichtung **1** erzeugten geschlossenen Luftkreislauf L wird ein Abblasen von keimbelasteter Luft in den Wohnraum vermieden und auch der Einsatz von teuren Filtereinrichtungen ist nicht notwendig.

[0047] Weiterhin kann die Staubsaugervorrichtung **1** mit einer hohen Reinigungseffizienz betrieben werden, wobei gleichzeitig die Energieaufwendungen minimiert werden. Innerhalb des Ansauggehäuses **2** sind große Strömungsgeschwindigkeiten für den Luftstrom L einstellbar. Durch Erhöhung der Leistung und strömungstechnisch angepassten Ausbildung des Ansauggehäuses **2** und/oder des Strömungsführungskanals **310** können die Strömungsgeschwindigkeiten und die Strömungswege für eine hohe Reinigungseffizienz optimiert werden.

[0048] Innerhalb des Ansauggehäuses **2** wird mittels der Antriebsvorrichtung **4** ein saugender Luftstrom SL erzeugt, der durch die Antriebseinheit **4** und der rotationssymmetrischen Ausgestaltung des Ansauggehäuses **2** derart in eine Rotationsbewegung versetzt wird, dass der mit dem saugenden Luftstrom SL beförderte Schmutz aus dem saugenden Luftstrom SL in eine Absonderungsvorrichtung **5** abgesondert wird. Durch den in Rotationsbewegung versetzten saugenden Luftstrom SL, vergleichbar der Rotation eines Tornados, werden die im saugenden Luftstrom SL aufgenommenen Schmutzpartikel zunehmend innerhalb des Ansauggehäuses **2** nach außen gedrückt. Der saugende Luftstrom SL strömt in Pfeilrichtungen (siehe Fig. 3) innerhalb des Ansauggehäuses **2**. Durch die auf sie wirkenden Kräfte werden die Schmutzpartikel an die Innenseite des Ansauggehäuses **2** gedrückt und durch eine an der Innenseite des Ansauggehäuses **2** angebrachte Auffangöffnung **511** in die Absonderungsvorrichtung **5** geleitet und in einer innerhalb der Absonderungsvorrichtung **5** angeordneten Auffangkammer **51** gesammelt. Der saugende Luftstrom SL wird nach Passieren der Absonderungsvorrichtung **5** hin zur Antriebseinheit **4** gesogen und setzt damit, nunmehr gereinigt von Staub und Schmutz, seinen Kreislauf fort.

[0049] Dabei sind die Absonderungsvorrichtung **5** oder zumindest Teil der Absonderungsvorrichtung **5** entnehmbar mit dem Ansauggehäuse **2** verbunden und ermöglichen somit ein einfaches Entfernen des in der Absonderungsvorrichtung **5** angereicherten Schmutzes. Grundsätzlich können auch andere Absonderungsvorrichtungen, beispielsweise in Form eines Staubbeutels und eines Staubfilters, wie von herkömmlichen Staubsaugern bekannt, verwendet werden.

[0050] Der in der Staubsaugervorrichtung **1** entstandene Luftkreislauf erlaubt sehr hohe Luftgeschwindigkeiten, die eine entsprechend gute Reinigungsleistung aufweisen, bei einer gegenüber den standardmäßig bekannten Staubsaugern wesentlich geringeren notwendigen elektrischen Leistung. Durch die im Wesentlichen laminare Luftströmung innerhalb des Strömungsführungskörpers **310** muss ein geringerer, im Vergleich zu einer turbulenten Luftströmung, Strömungswiderstand überwunden werden, so dass bei gleicher Leistung eine geringere Energie notwendig ist. Weiterhin bildet der im Ansauggehäuse **2** erzeugte saugende Luftstrom SL, vergleichbar mit einem Tornado, ein Unterdruckgebiet an dem Reinigungsabschnitt **11**. Folglich muss der im Wesentlichen laminare, blasende Luftstrom BL nicht mehr in das Normalsystem der Umgebungsluft gepumpt werden, sondern der Überdruck des blasenden Luftstroms BL wird direkt in das entstandene Unterdruckgebiet des saugenden Luftstroms SL gepumpt, so dass zur Erzeugung hoher Stromgeschwindigkeiten nur eine im Wesentlichen geringere elektrische Leistung notwendig ist.

[0051] Zusätzlich können noch, um die Strömungsführung des blasenden Luftstroms BL zu verbessern, Strömungsführungsschienen **312** zwischen dem Außengehäuse **3** und dem Ansauggehäuse **2** angeordnet sein. Dabei sind die Strömungsführungsschienen **312** derart ausgebildet, dass sie den Strömungsfüh-

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rungskanal **310** in einzelne Strömungsführungskanalbereiche (**310**, **310'**, **310"** usw.) unterteilen. Folglich wird eine bessere Steuerung und Strömungsführung des blasenden Luftstroms BL erzielt und der blasende Luftstrom BL kann mit einer größeren Effektivität in den Reinigungsabschnitt **11** geleitet werden.

[0052] Die Fig. 4 und Fig. 5 zeigen eine zweite Ausführungsform der Staubsaugervorrichtung **1**, wobei die Fig. 4 eine Querschnittsansicht und die Fig. 5 eine Draufsicht der Staubsaugervorrichtung **1** zeigt. Die Staubsaugervorrichtung **1** ist dabei so aufgebaut, dass durch Bewegung des Rotors **41** ein in sich geschlossener Luftstrom L nach Art eines Kreislaufes erzeugt wird, der von dem Reinigungsabschnitt **11** innerhalb des Ansauggehäuses **2** entlang strömt und dabei auf seinem Weg die Absonderungsvorrichtung **5** passiert, in der der Staub und Schmutz aus dem saugenden Luftstrom SL abgesondert und gesammelt wird, wobei nach Passieren der Absonderungsvorrichtung **5** der Luftstrom hin zur Antriebseinheit **4** geleitet und an der Antriebseinheit **4** vorbei in den Strömungsführungskanal **310** zurück zum Reinigungsabschnitt **11** geführt wird. Dabei wird im Wesentlichen das gleiche Prinzip, wie oben für das erste Ausführungsbeispiel beschrieben, verwendet. Hinsichtlich der Erläuterung und Beschreibung des Aufbaus und der Wirkungsweise einzelner und vergleichbarer Elemente wird auf die Erläuterungen des ersten Ausführungsbeispiels verwiesen.

[0053] Ein Unterschied des zweiten Ausführungsbeispiels im Vergleich mit dem ersten Ausführungsbeispiel ist die Anbringung der Antriebseinheit **4** innerhalb der Staubsaugervorrichtung **1**.

[0054] Die Staubsaugervorrichtung **1** weist eine innerhalb des Ansauggehäuses **2** angeordnete Antriebseinheit **4** auf, die als Elektromotor ausgebildet ist und einen mit dem Ansauggehäuse **2** drehfest verbundenen Stator **42** und einen um die Drehachse D an einem Verbindungsbolzen (hier nicht dargestellt) drehbar angeordneten Rotor **41** aufweist, wobei der Verbindungsbolzen die Antriebseinheit **4** mit dem Außengehäusedeckel **31** verschiebungssicher verbindet.

[0055] Bei der in Fig. 4 dargestellten, als permanent erregter Synchronmotor ausgebildeten Antriebseinheit **4** sind in regelmäßigen Abständen am Rotor **41** Permanentmagnete **410** angeordnet und wirken den am Stator **42** angeordneten Magnetfeldspulen (hier nicht dargestellt) zusammen. Entsprechend der Wirkungsweise eines permanent erregten Synchronmotors erzeugen die Magnetfeldspulen des Stators **42** ein umlaufendes magnetisches Drehfeld, dem das durch die Permanentmagneten **410** erzeugte, auch als Erregerfeld bezeichnete Magnetfeld, nacheilt und das somit eine dem Drehfeld des Stators **42** nachfolgende synchrone Drehbewegung des Rotors **41** um die Drehachse D bewirkt.

[0056] Die Drehrichtung des Elektromotors hängt ab von der Phasenlage der Ströme in den einzelnen Magnetfeldspulen, wobei die Drehrichtung im dargestellten Beispiel entsprechend den in Fig. 4 und Fig. 5 gezeichneten Pfeil um die Drehachse D gewählt ist.

[0057] In dem zweiten Ausführungsbeispiel ist das Ansauggehäuse **2** mit einer Befestigungsvorrichtung **7** verbunden, die wiederum über Verbindungsteil **71** mit dem Außengehäuse **3** verbunden ist. Dabei können in oder an dem Außengehäuse **3** Kondensatoren **9** oder andere als Energiespeicher geeignete Speichermedien (Hochleistungskondensatoren, Batterien) für einen kabellosen Betrieb angeordnet sein (hier nicht dargestellt).

[0058] In Fig. 5 ist noch einmal die Bewegung der Schmutzpartikel S innerhalb des saugenden Luftstroms SL verdeutlicht. Durch die rotationssymmetrische Bewegung des saugenden Luftstroms SL innerhalb des Ansauggehäuses **2** werden die Schmutzpartikel S durch die auf sie einwirkenden Zentrifugalkräfte zunehmend nach außen gedrückt. Somit werden die Schmutzpartikel S an die Innenseite des Ansauggehäuses **2** gedrückt. Durch diese spiralförmige Bewegung der Schmutzpartikel S wird gewährleistet, dass die Schmutzpartikel S aufgrund der auf sie innerhalb des rotationssymmetrischen, saugenden Luftstroms SL auf sie wirkenden Kräfte in eine Absonderungsvorrichtung **5** abgesondert werden. Dabei ist die Absonderungsvorrichtung **5** vorteilhafterweise in dem unteren Bereich des Ansauggehäuses **2** angebracht. Durch eine geeignete Strömungsgeschwindigkeit des saugenden Luftstroms SL werden die Schmutzpartikel aufgrund der auf sie wirkenden Fliehkräfte, wie oben beschrieben, in eine geeignete Auffangöffnung **511** der Absonderungsvorrichtung **5** geschleudert. Somit gelangen die Schmutz- und Staubpartikel in eine in der Absonderungsvorrichtung **5** angebrachte Auffangkammer **51**.

[0059] Vorteilhafterweise ist die Absonderungsvorrichtung **5** trennbar mit der Außenseite des Außengehäuses **3** oder die Auffangkammer **51** trennbar der Absonderungsvorrichtung **5** verbunden, so dass ein einfaches Entleeren und Reinigen der Staubsaugervorrichtung ermöglicht wird.

[0060] Die Fig. 6 zeigt eine perspektivische Ansicht eines Ausführungsbeispiels der Staubsaugervorrichtung **1**. Dabei weist die Staubsaugervorrichtung **1** an dem Reinigungsabschnitt vorzugsweise Rollen oder andere Gleitwerkzeuge auf, so dass die Staubsaugervorrichtung **1** in einfacher Weise über ein am Außengehäuse **3** befestigten Griff oder Stiel bewegt werden kann. Dabei sind in dem Griff oder Stiel Kondensatoren **9** oder andere als Energiespeicher ge-

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eignete Speichermedien (Hochleistungskondensatoren, Batterien) für einen kabellosen Betrieb angeordnet. Vorteil der in der Figur dargestellten Ausführungsform ist dabei deren kompakte Bauweise, bei der durch Integrieren des Ansauggehäuses **2**, der Antriebseinheit **4** und des Strömungsführungskanals **310** innerhalb des Außengehäuses **3** eine in sich geschlossene Funktionseinheit geschaffen wird, die eine vereinfachte, kabellose Handhabung aufweist.

[0061] Die Fig. 7 zeigt ein weiteres Ausführungsbeispiel der Staubsaugervorrichtung **1**. Dabei weist die Staubsaugervorrichtung **1** ein Luftleitungsstück **6**, das an eine Bodendüse **61** angeordnet ist, auf. Der Reinigungsabschnitt **11** ist dabei über das Luftleitungsstück **6** mit der Bodendüse **61** (Fig. 8) verbunden. Hinsichtlich der Funktionsweise und des Aufbaus des Ansauggehäuses **3**, der Antriebseinheit **4**, der Absonderungsvorrichtung **5** und des Strömungsführungskanals **310**, sowie die daran angeordneten Elemente, wird auf die Erläuterungen der oben genannten Figuren verwiesen.

[0062] Dabei weist das Luftleitungsstück **6** einen Luftzuleitungsabschnitt **611** auf, zur Zuleitung der aus dem Strömungsführungskanal **310** kommenden im Wesentlichen laminaren, blasenden Luftströmung BL an den Reinigungsabschnitt **11**, der an der Bodendüse **61** angeordnet ist, auf. Dabei gleitet der blasende Luftstrom BL über die zu reinigende Fläche an dem Reinigungsabschnitt **11** der Bodendüse **61** entlang und nimmt dabei Schmutz und Staub auf.

[0063] Weiterhin weist das Luftleitungsstück **6** ein Luftableitungsabschnitt **612** auf, der mit dem Ansauggehäuse **2** verbunden ist und folglich einen durch die Antriebseinheit **4** in dem Ansauggehäuse **2** erzeugten saugenden Luftstrom SL aufweist. Demzufolge wird der blasende Luftstrom BL aus dem Strömungsführungskörper **310** in dem Luftzuleitungsabschnitt **611** geleitet und gelangt somit an den Reinigungsabschnitt **11** der Bodendüse **61**, wo er Schmutz aufnimmt und mit dem an dem Luftableitungsabschnitt **612** anliegenden saugenden Luftstrom SL vereinigt wird.

[0064] Dadurch gelangt der Schmutz von Reinigungsabschnitt **11** der Bodendüse **61** in das Ansauggehäuse **2**, wo der saugende Luftstrom SL aufgrund der Ausbildung des Ansauggehäuses **2** in eine rotationssymmetrische Drehbewegung versetzt wird. Dadurch kann der Schmutz, wie oben bereits beschrieben, in der Absonderungsvorrichtung **5** abgesondert werden und der Luftstrom gelangt hin zu der Antriebseinheit **5** und die Antriebseinheit **5** hinaus wieder in den Strömungsführungskörper **310**. Somit wird der Luftkreislauf geschlossen.

[0065] In einer Alternative kann das Ausführungsbeispiel der Fig. 7 aus einem von dem Außengehäuse trennbaren Luftleitungsstück **6** bestehen, wobei die Staubsaugervorrichtung **1** derart ausgebildet ist, dass sie sowohl mit als auch ohne das Luftleitungsstück **6** betrieben werden kann. Dadurch wird eine maximale Flexibilität der Einsatzmöglichkeiten der Staubsaugervorrichtung **1** gewährleistet. Alternativ ist die Bodendüse **61** trennbar mit dem Luftleitungsstück **6** verbunden. Dies gewährleistet einen Einsatz in schwer zugänglichen Stellen.

[0066] Vorzugsweise ist das Luftleitungsstück **6** aus einem stabilen Material, wie beispielsweise einem Metall oder Plastikrohr ausgebildet. Alternativ kann das Luftleitungsstück **6** auch teilweise oder vollständig aus einem flexiblen Material, wie zum Beispiel einem Schlauch bestehen.

[0067] Die Fig. 9 zeigt eine perspektivische Ansicht eines Ausführungsbeispiels der Staubsaugervorrichtung **1**. Dabei weist die Staubsaugervorrichtung **1** an dem Reinigungsabschnitt vorzugsweise Rollen oder andere Gleitwerkzeuge auf, so dass die Staubsaugervorrichtung **1** in einfacher Weise über ein am Außengehäuse **3** befestigten Griff oder Stiel bewegt werden kann. Dabei können an der Staubsaugervorrichtung **1**, beispielsweise in einem Griff oder Stiel Kondensatoren **9** oder andere als Energiespeicher geeignete Speichermedien (Hochleistungskondensatoren, Batterien) für einen kabellosen Betrieb angeordnet sein (vergleichbar der Fig. 6). Dies ermöglicht eine vereinfachte, kabellose Handhabung aufweist.

[0068] Bei der in den Figuren dargestellten Staubsaugervorrichtung **1** ist die Antriebseinheit **4** zumindest teilweise innerhalb des Ansauggehäuses **2**, aber vollständig innerhalb des Außengehäuses **3** angeordnet. Alternativ ist auch denkbar und möglich, dass die Antriebseinheit **4** außerhalb des Außengehäuses **3**, beispielsweise außenseitig des Außengehäusedeckels **31** anzuordnen, um ein innerhalb des Ansauggehäuses **2** angeordnetes Lüfterrad anzutreiben.

[0069] Dabei kann in den Ausführungsbeispielen vorgesehen sein, dass elektrischer Strom über ein Stromkabel zur Verfügung gestellt wird oder über einen Hochleistungskondensator ein mobiler und kabelloser Einsatz des Gerätes ermöglicht wird.

[0070] Die einzelnen Bauteile, insbesondere das Ansauggehäuse **2** und das Außengehäuse **3** können als Kunststoffformteile hergestellt sein, so dass sich eine kostengünstige Fertigung ergibt.

[0071] Der der Erfindung zugrundeliegende Gedanke ist nicht auf die vorangehend geschilderten Ausführungsbeispiele beschränkt, sondern kann grundsätzlich bei gänzlich anders gearteten Ausführungsformen verwirklicht sein.

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[0072] Beispielsweise ist es auch denkbar, die Antriebseinheit **4** vollständig außerhalb des Außengehäuses **3** anzuordnen und einen Luftstrom über einen ersten Schlauch hin zu einer Absonderungsvorrichtung **5** und Antriebseinheit **4** zu leiten und über einen zweiten Schlauch von der Antriebseinheit **4** zurück zum Ansauggehäuse **2** zu führen.

Bezugszeichenliste

1	Staubsaugervorrichtung
11	Reinigungsabschnitt
2	Ansauggehäuse
3	Außengehäuse
31	Gehäusedeckel
310	Strömungsführungskanal
311	Verbindungsbolzen
312	Strömungsführungsschienen
4	Antriebseinheit
41	Rotor
410	Magnete
411	Schaufelblätter
42	Stator
420	Spulen
5	Absonderungsvorrichtung
51	Auffangkammer
511	Auffangöffnung
6	Luftleitungsstück
61	Bodendüse
611	Luftzuleitungsabschnitt
612	Luftableitungsabschnitt
7	Befestigungsvorrichtung
71	Verbindungsteil
711	Befestigungsstück
8	Verbindungsstück
9	Kondensator
D	Drehachse
L	Luftstrom
BL	Blasender Luftstrom
SL	Saugender Luftstrom
S	Schmutzpartikel

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ZITATE ENTHALTEN IN DER BESCHREIBUNG

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Zitierte Patentliteratur

- EP 1997412 A2 [0003, 0004]
- DE 202009017053 [0005]

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Patentansprüche

1. Staubsaugervorrichtung, mit
– einem Reinigungsabschnitt, der mit einer zu reinigenden Fläche in Kontakt zu bringen ist,
– einem innerhalb eines Außengehäuses angeordnetem Ansauggehäuse,
– einer Antriebseinheit zum Erzeugen eines von dem Reinigungsabschnitt in das Ansauggehäuse hinein gerichteten Luftstroms zum Aufnehmen von im Bereich des Reinigungsabschnitts befindlichem Schmutz,
– einer Absonderungsvorrichtung zum Absondern von Schmutz aus dem Luftstrom und
– einem Strömungsführungskanal zum Zurückleiten des Luftstroms in den Bereich des Reinigungsabschnitts, nachdem der Luftstrom die Absonderungsvorrichtung passiert hat,
dadurch gekennzeichnet,
dass das Ansauggehäuse (**2**) zumindest abschnittsweise von dem Außengehäuse (**3**) eingefasst ist und der Strömungsführungskanal (**310**) außerhalb des Ansauggehäuses (**2**) zwischen dem Außengehäuse (**3**) und dem Ansauggehäuse (**2**) angeordnet ist.

2. Staubsaugervorrichtung nach Anspruch 1, dadurch gekennzeichnet, dass der Strömungsführungskanal (**310**) derart ausgebildet ist, dass ein im Ansauggehäuse (**2**) gebildeter turbulenter Luftstrom (SL) über den Strömungsführungskanal (**310**) als im Wesentlichen laminarer Luftstrom (LL) zurück in den Bereich des Reinigungsabschnitts (**11**) zurückgeleitet wird.

3. Staubsaugervorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass das Außengehäuse (**3**) und/oder der Strömungsführungskanal (**310**) das Ansauggehäuse (**2**) vollständig umgeben.

4. Staubsaugervorrichtung nach Anspruch 1 bis 3, dadurch gekennzeichnet, dass die Antriebseinheit (**4**) in oder an dem Ansauggehäuse (**2**) angeordnet ist.

5. Staubsaugervorrichtung nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass die Absonderungsvorrichtung (**5**) zum Absondern von Schmutz aus dem turbulenten Luftstrom (SL) im Strömungsweg des turbulenten Luftstroms (SL) innerhalb des Ansauggehäuses (**2**) zwischen dem Reinigungsabschnitt (**11**) und der Antriebseinheit (**4**) angeordnet ist.

6. Staubsaugervorrichtung nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass das Ansauggehäuse (**2**) ausgebildet ist, den turbulenten Luftstrom (SL) derart in eine Rotationsbewegung zu versetzen, dass mit dem turbulenten Luftstrom (SL) beförderter Schmutz (S) aus dem turbulenten Luftstrom (SL) in die Absonderungsvorrichtung (**5**) abgesondert wird.

7. Staubsaugervorrichtung nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass die Absonderungsvorrichtung (**5**) eine Auffangkammer (**51**) zum Auffangen von aufgenommenem Schmutz (S) aufweist.

8. Staubsaugervorrichtung nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass die Absonderungsvorrichtung (**5**) oder Teile der Absonderungsvorrichtung (**5**) entnehmbar mit dem Ansauggehäuse (**2**) verbunden sind.

9. Staubsaugervorrichtung nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass das Ansauggehäuse (**2**) und das Außengehäuse (**3**) im Wesentlichen rotationssymmetrisch ausgebildet sind.

10. Staubsaugervorrichtung nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass der von dem Reinigungsabschnitt (**11**) in das Ansauggehäuse (**2**) hinein gerichteten Luftstrom (L) nach dem Passieren des Ansauggehäuses (**2**) außen am Ansauggehäuse (**2**) entlang zurück in den Bereich des Reinigungsabschnitts (**11**) geleitet wird.

11. Staubsaugervorrichtung nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass die Antriebseinheit (**4**) als Elektromotor ausgebildet ist und einen relativ zum Ansauggehäuse (**2**) um eine Drehachse (D) drehbaren, umlaufenden Rotor (**41**) und einen feststehend am Ansauggehäuse (**2**) angeordneten Stator (**42**) aufweist, die zum Antreiben des Rotors (**41**) zusammenwirken, wobei der Rotor (**41**) Schaufelblätter (**411**) zum Erzeugen des Luftstroms (L) aufweist.

12. Staubsaugervorrichtung nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass der Reinigungsabschnitt (**11**) über ein Luftleitungsstück (**6**) mit einer Bodendüse (**61**) verbunden ist.

13. Staubsaugervorrichtung nach Anspruch 12, dadurch gekennzeichnet, dass das Luftleitungsstück (**6**) einen Luftzuleitungsabschnitt (**611**), der mit dem Strömungsführungskanal (**310**) verbunden ist, und einen Luftableitungsabschnitt (**612**), der mit dem Ansauggehäuse (**2**) verbunden ist, aufweist.

Es folgen 6 Blatt Zeichnungen

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Anhängende Zeichnungen

FIG 1

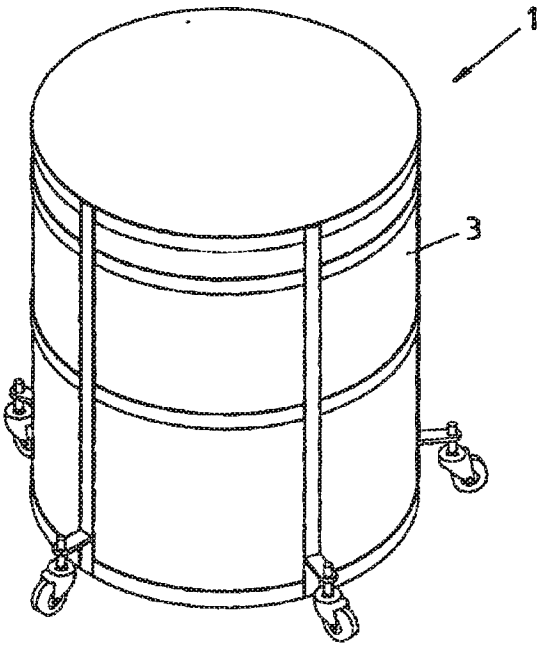

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FIG 2

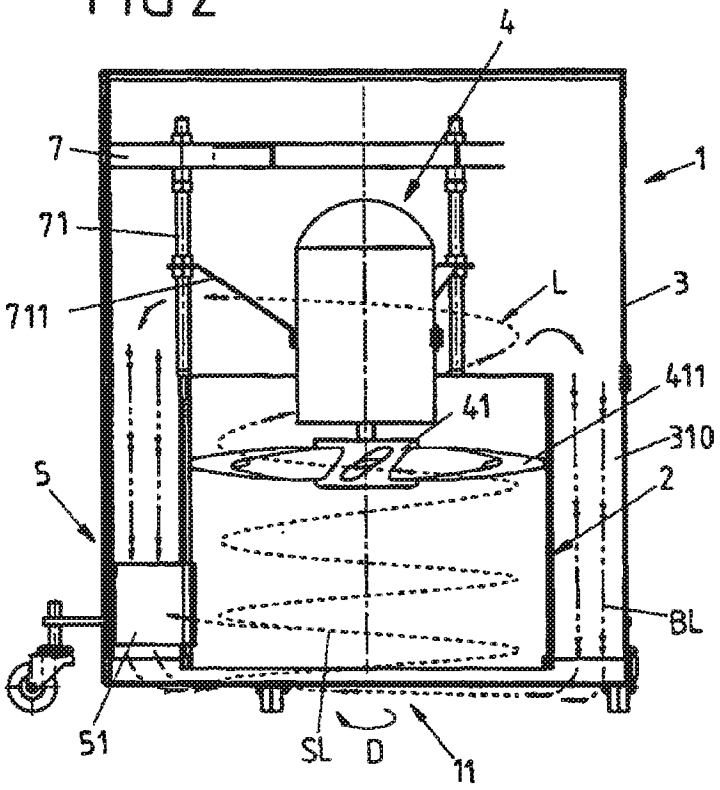

FIG 3

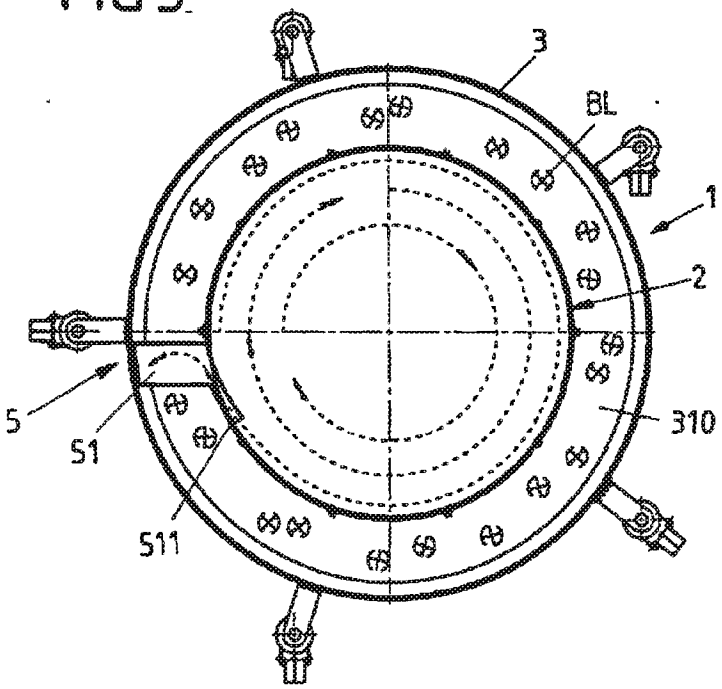

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FIG 4

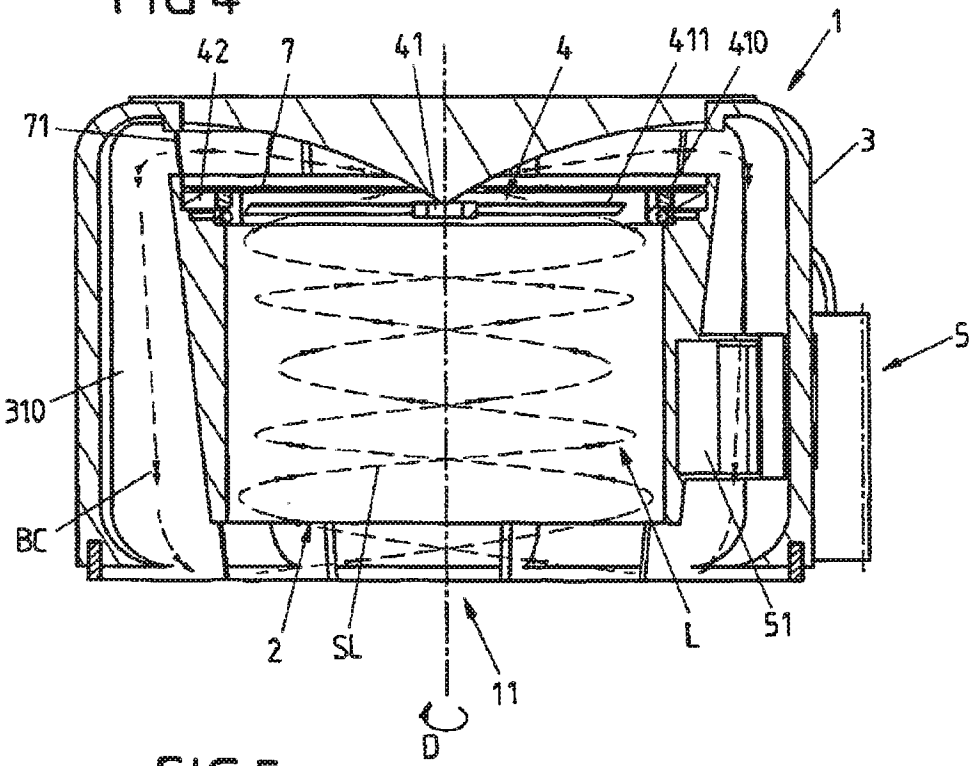

FIG 5

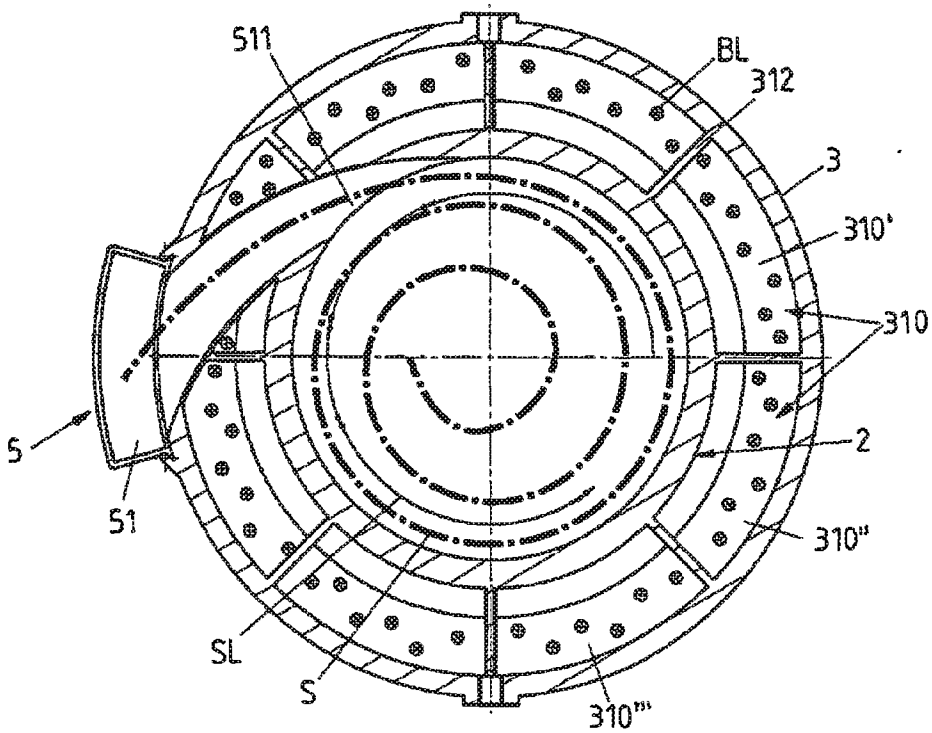

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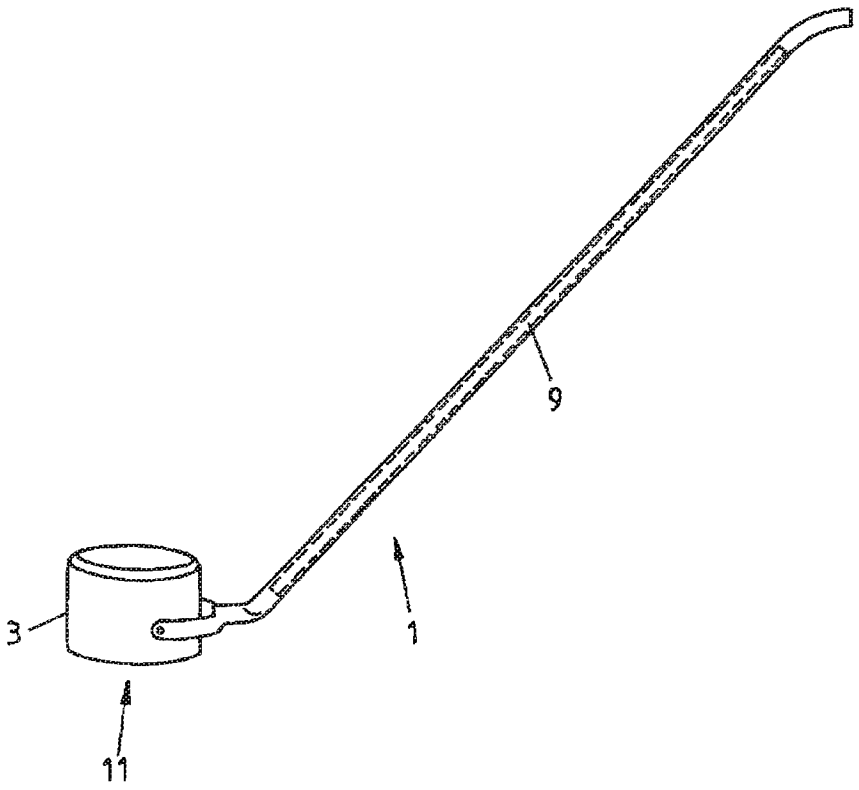
FIG 6



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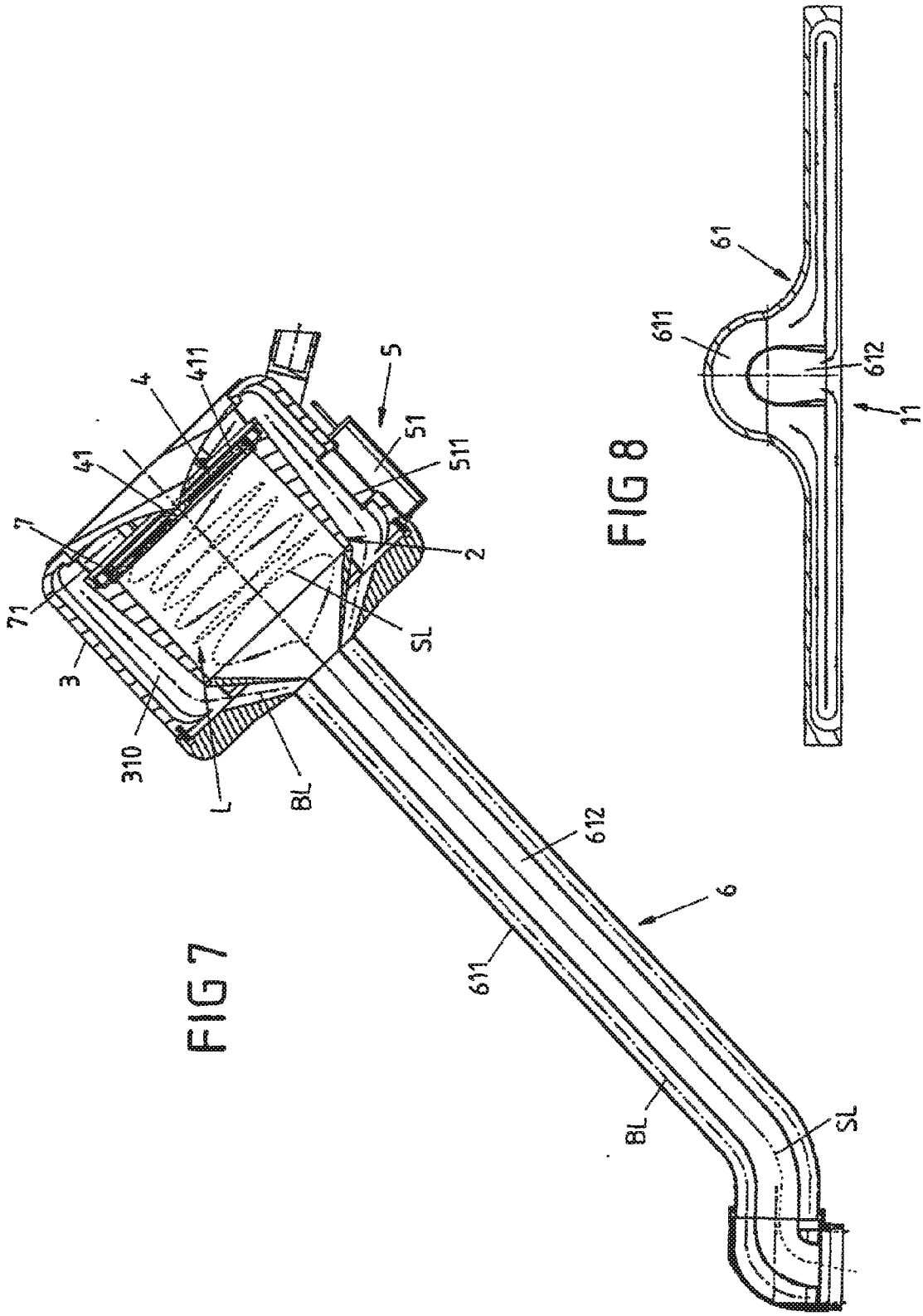

FIG 7

FIG 8

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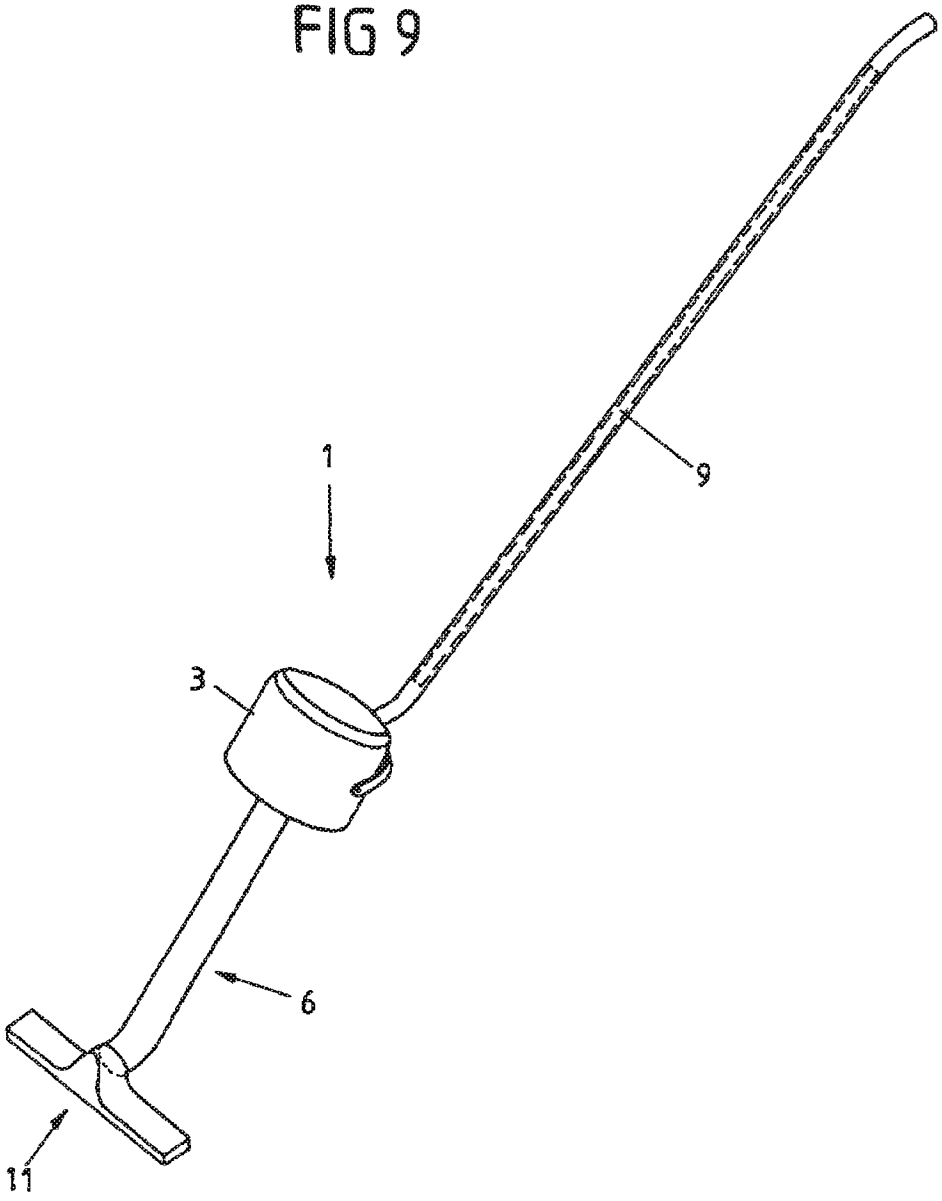
FIG 9



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(51) INT CL:
A47L 5/24 (2006.01)

(56) Documents Cited:
GB 2466290 A
GB 2409404 A
USD298875
GB 2441962 A

(58) Field of Search:
INT CL A47L
Other: WPI, EPODOC

(54) Title of the Invention: **A vacuum cleaner**
Abstract Title: **A stick-type vacuum cleaner**

(57) A vacuum cleaner of the stick-vac type, comprises a handheld vacuum cleaner 3 which is attached to an elongate, rigid wand 5 and which is fluidly connected to a cleaner head 7 provided at the end of the wand. The cleaner head 7 is connected to the wand via a mechanical steering couple for directionally steering the cleaner head in plane parallel contact with the floor as the wand 5 is rotated about its axis (C, fig 4). The head 7 and wand 5 may be coupled for relative rotation along a scarf joint (figure 6) or via an elbow joint (figure 3) which is preferably a hinged elbow joint. The vacuum cleaner may include a pistol grip handle (35, fig 2)

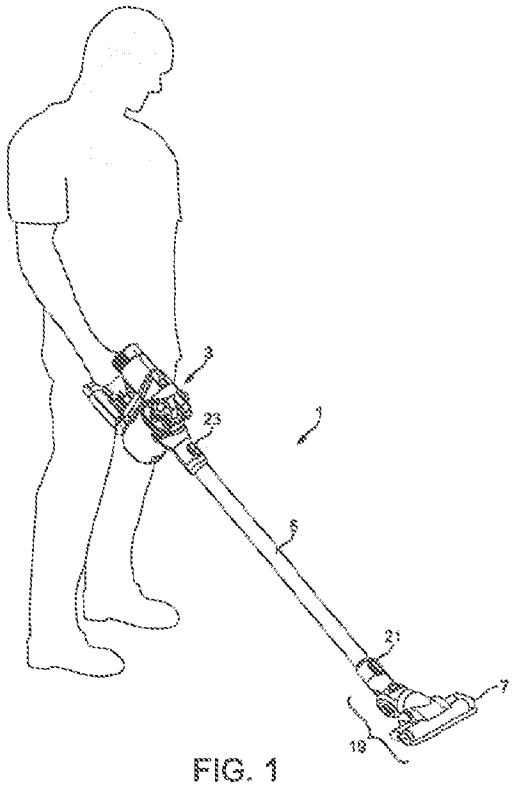

FIG. 1

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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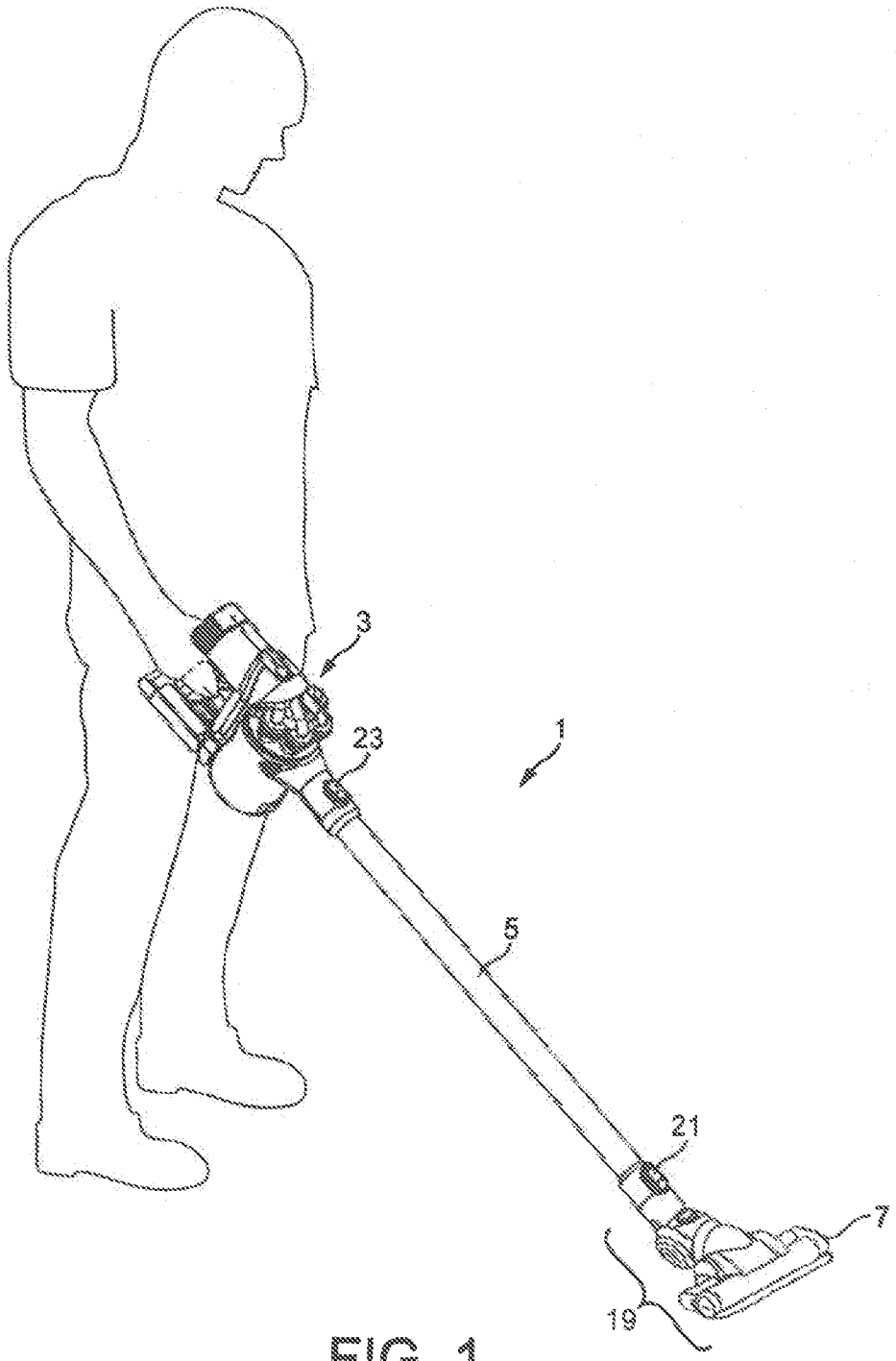

FIG. 1

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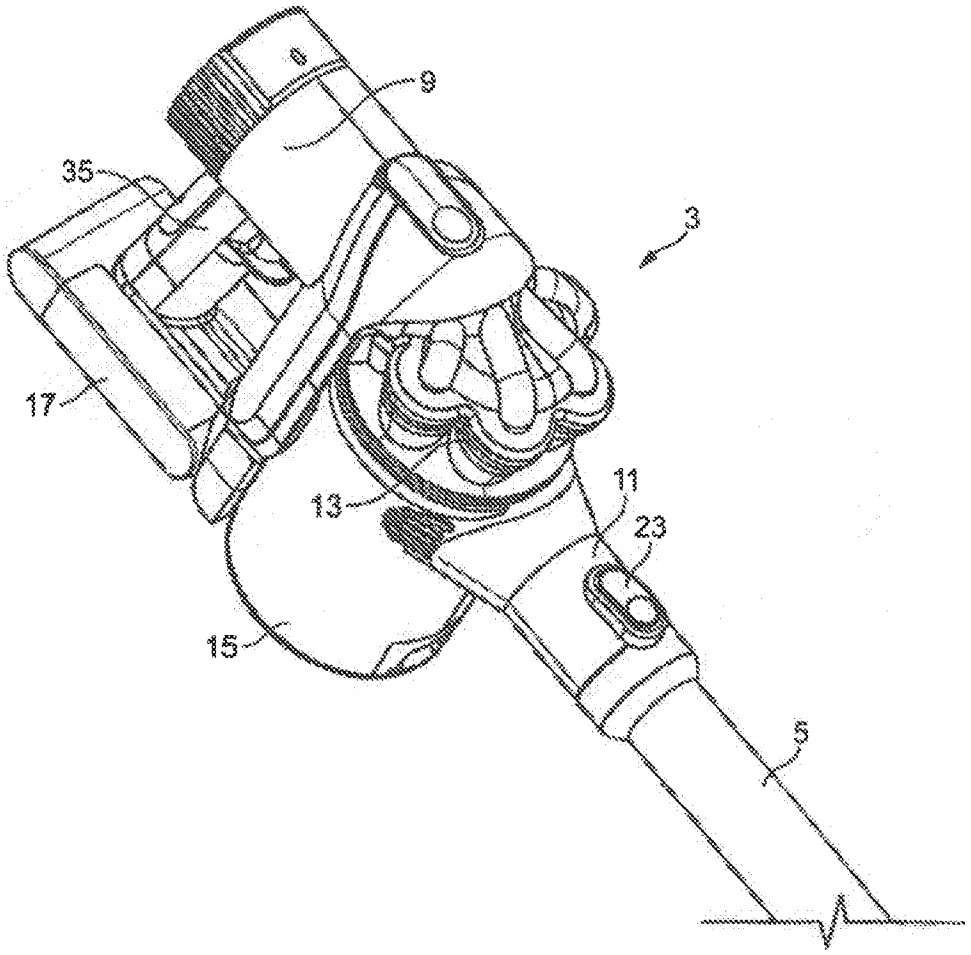

FIG. 2

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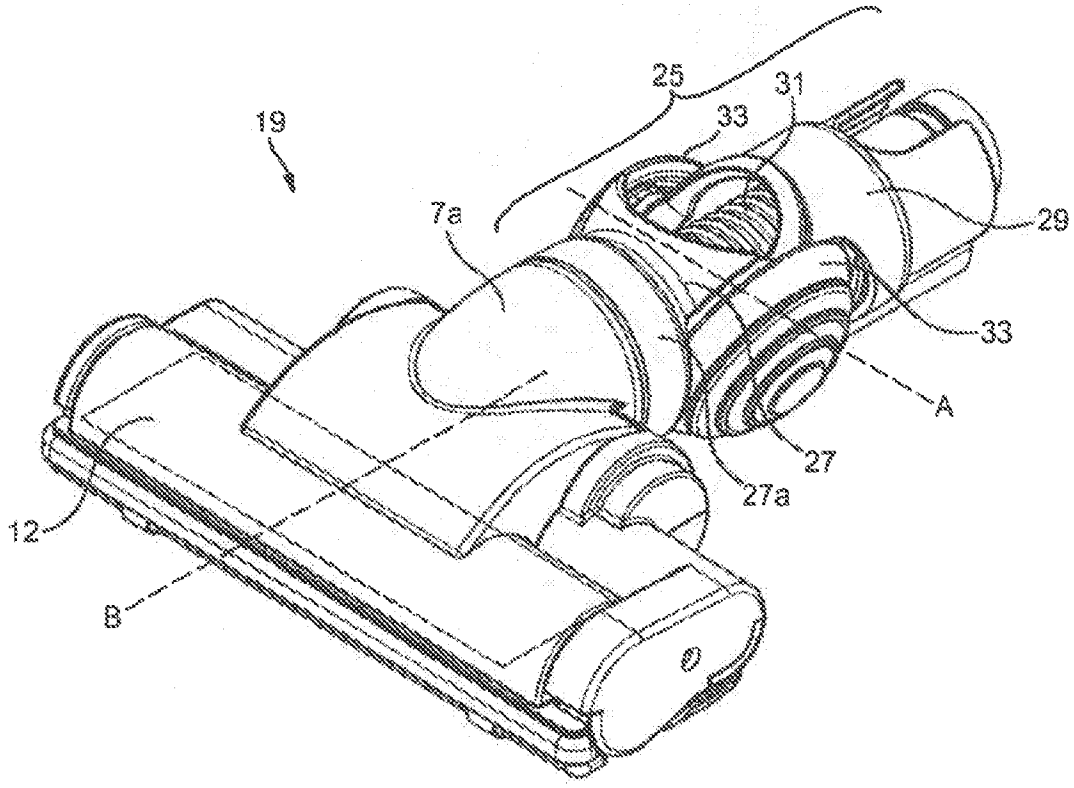

FIG. 3

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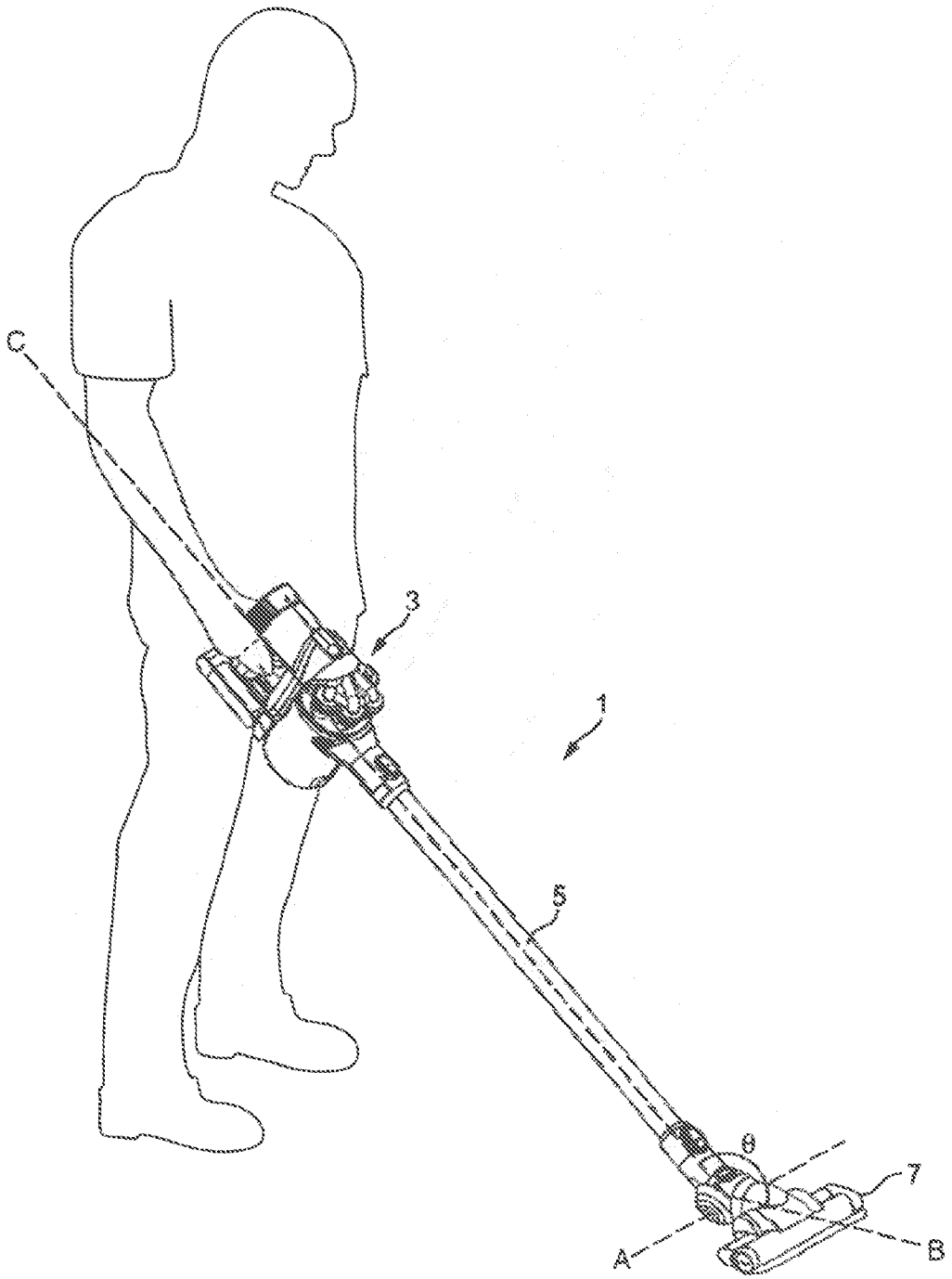

FIG. 4

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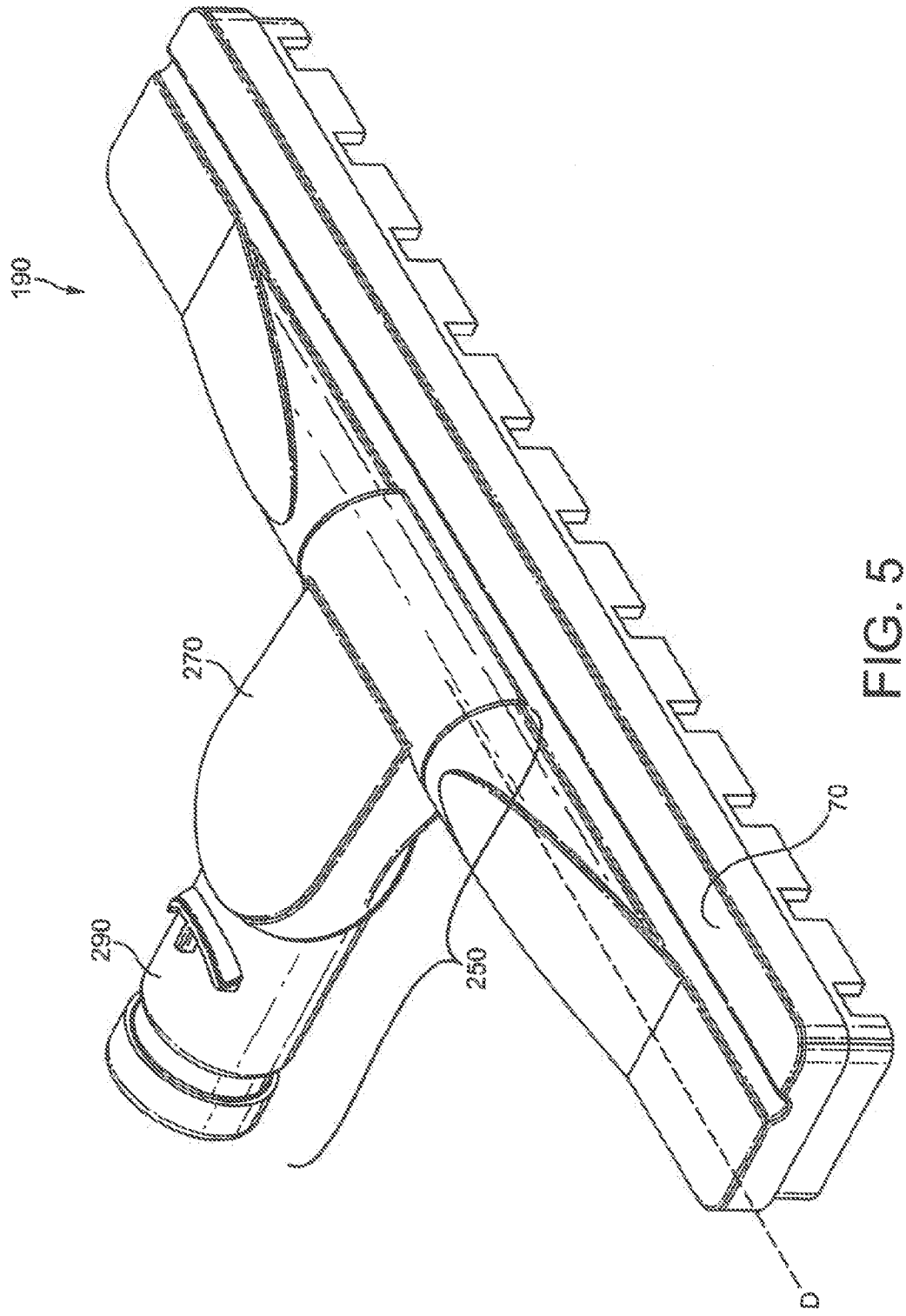

FIG. 5

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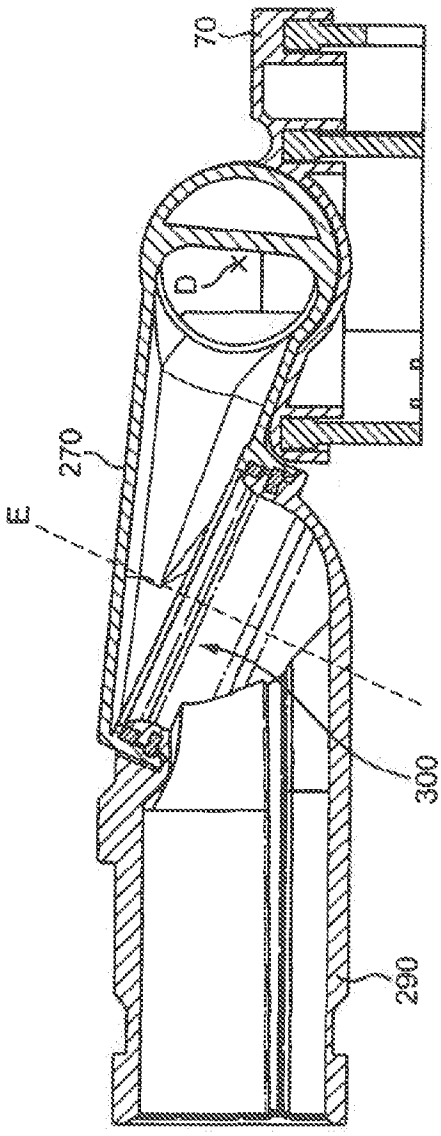

FIG. 6

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A Vacuum Cleaner

The present invention relates to the field of vacuum cleaners, and more specifically to "stick-vac" type vacuum cleaners of the general type comprising a handheld vacuum cleaner which is attached to an elongate, rigid wand and which is fluidly connected to a cleaner head provided at the end of the wand.

Broadly speaking, there are four types of vacuum cleaner: "upright" vacuum cleaners, "cylinder" cleaners (also referred to as "canister" cleaners), "handheld" vacuum cleaners and "stick" vacuum cleaners, the latter being popularly referred to as "stick-vac" cleaners, or simply "stick-vacs".

Upright cleaners and cylinder cleaners are well known. They tend to be mains-operated and are used for relatively heavy-duty cleaning applications.

Handheld vacuum cleaners are relatively small, highly portable vacuum cleaners, best suited to relatively low duty applications such as spot cleaning floors and upholstery in the home, interior cleaning of cars and boats etc. Unlike upright cleaners and cylinder cleaners, they are designed to be carried in the hand during use, and tend to be battery-operated.

Stick-vac cleaners essentially offer a lightweight, functional alternative to upright cleaners for relatively low duty floor-cleaning applications, such as cleaning up floor spills.

Broadly speaking, there are two distinct types of stick-vac. The first type is, in a sense, an ultra slim-line upright cleaner, though usually "cordless" rather than mains-operated. An example of this type of stick-vac cleaner is shown in UK Patent Application No.

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GB2377880A1, in this case additionally incorporating a removable, handheld vacuum-cleaner.

The second type of stick-vac cleaner is a spin-off from the handheld vacuum cleaner, and comprises a handheld vacuum cleaner in combination with a rigid, elongate suction wand which effectively reaches down to the floor so that the user may remain standing while cleaning a floor surface. A floor tool is typically fixedly attached to the end of the rigid, elongate suction wand, or alternatively may be integrated with the bottom end of the wand. Designs of this type of stick-vac cleaner are shown in USD298875, USD303173 and USD280033. In each case, the handheld suction unit incorporates the motor, the fan and some sort of separating apparatus, which may be a bag or a cyclonic separation system.

The present invention relates to stick vac cleaners of the second type. In the case of these stick vac cleaners, the wand and floor tool are typically conceived and marketed as low-cost accessories for a handheld vacuum cleaner, and as such the functionality of the cleaner in stick vac mode tends to be relatively poor compared to dedicated stick vac cleaners of the first type.

It is an object of the present invention to seek to provide an improved stick vac cleaner of the second general type described above.

According to the present invention there is provided a stick-vac cleaner comprising a handheld vacuum cleaner which is attached to an elongate, rigid wand and which is fluidly connected to a cleaner head provided at the end of the wand, wherein the cleaner head is connected to the wand via a mechanical steering couple for directionally steering the cleaner head in plane parallel contact with the floor as the wand is rotated about its axis.

By providing a mechanical steering couple between the wand and cleaner head according to the present invention, the manoeuvrability of the stick-vac cleaner is

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greatly improved compared to conventional stick-vac cleaners of the second general type..

Any suitable mechanical steering couple may be used. In particular, the mechanical steering couple may be configured to constrain the wand and the cleaner head for co-rotation about the wand axis whilst permitting relative rotation of the wand and cleaner head about an axis which is non-parallel to the wand axis. This type of steering couple can be implemented relatively cheaply, whilst still providing a high degree of manoeuvrability for the cleaner.

The wand and the cleaner head may be coupled for relative rotation along a rotatable scarf joint or via an elbow joint. The use of a scarf joint is considered to be particularly advantageous, in that it provides a mechanical turning advantage for the cleaner head during steering.

The wand may be hingedly connected to the cleaner head passively for varying the lie angle between the wand and the cleaner head. A variable lie angle helps maintain the cleaner head in contact with the floor across a relatively wide range of turning angles during steering of the cleaner head. Here, the term "lie angle" is somewhat analogous to the lie angle between the sole of a golf club head and the shaft of the club.

In the case where the wand and cleaner head are coupled by an elbow joint, this elbow joint may be a hinged elbow joint for varying the lie angle between the cleaner head and the wand.

The dust-laden air may be ducted to the handheld vacuum cleaning unit through the wand. The wand thus advantageously serves the dual purpose of fluidly connecting the cleaner head to the hand held vacuum cleaner whilst also transmitting steering torque to the cleaner head.

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The handheld vacuum cleaner may comprise a pistol grip handle. The provision of a pistol grip handle on the handheld vacuum cleaner is considered to be particularly advantageous in a stick-vac cleaner according to the present invention, because it tends to align a user's forearm with the wand (the wand being analogous to the barrel of a pistol). Consequently, steering of the cleaner can be controlled primarily through supination and pronation of the forearm, which is comfortable and natural for the user.

A pistol grip handle also provides good leverage for effective transmission of steering torque between the handle and the cleaner head (via the wand), and in particular reduces the tendency for a user's hand to roll "over the top" of the handle as the handle is rotated to steer the cleaner head. The provision of a straight pistol grip which extends perpendicular to the wand is considered to be particularly beneficial in this regard.

The provision of a pistol grip handle does not make it essential to use a trigger, though use of a trigger may of course be convenient, for example to switch the handheld cleaner on and off.

The handheld vacuum cleaner will comprise some form of motor, which will be a relatively heavy component in the handheld vacuum cleaner. Advantageously, this motor may be positioned at or near the upper end of the pistol grip, so that the weight of the motor may be supported more comfortably on top of the user's hand.

The handheld vacuum cleaner may incorporate a cyclonic separation system, in which case the wand may be axially aligned with a tangential inlet to the cyclonic separation system. The dirty air thus feeds directly into the cyclonic separation system along the preferred inlet axis. This reduces "discontinuity" pressure losses between the wand and the separation system, which is particularly advantageous in the present case because of the relatively high pressure drop across the ends of the (relatively long) wand.

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

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Figure 1 is a perspective view showing a stick vac cleaner in use;

Figure 2 is a close-up perspective view of part of the stick-vac cleaner in Figure 1;

Figure 3 is a perspective view of a floor tool forming part of the stick-vac cleaner shown in Figure 1;

Figure 4 is a view corresponding to Figure 1, but illustrating various operational axes of rotation associated with steering the stick-vac cleaner across the floor;

Figure 5 is a perspective view showing an alternative floor tool which may form part of a stick vac cleaner in accordance with the invention; and

Figure 6 is a cross-sectional side view of the tool shown in Figure 5.

Figure 1 shows a stick-vac cleaner 1 in use, comprising a handheld vacuum cleaner 3 which is carried in the hand, an elongate wand 5 attached to the handheld cleaner 3 and which reaches down to the floor and a cleaner head 7 provided at the end of the wand 5, which makes contact with the floor (the floor itself, though implicit, is not explicitly shown in Figure 1).

Referring to Figure 2, the handheld vacuum cleaner 3 comprises a motor-driven fan which is arranged inside a motor casing 9 for drawing air in through a suction nozzle 11 positioned at the front of the hand held vacuum cleaner 3. The elongate wand 5 is connected to the suction nozzle 11, and the cleaner head 7 is in turn connected to the lower end of the wand 5. In use, dirty air is drawn in through a suction opening 12 (Figure 3) on the underside of the cleaner head 7 and is ducted to the suction nozzle 11 on the handheld vacuum cleaner 3, through the wand 5.

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Dirty air entering the suction nozzle 11 passes through a cyclonic separation system 13, where dirt is separated from the air, before the relatively clean air is then exhausted back to atmosphere via one or more fine-particulate filters (not visible). The dirt which is separated from the airflow inside the cyclonic separating system 13 is collected in a bin 15 for disposal. The hand held vacuum cleaner 3 is powered by a multi-cell rechargeable battery which is housed in a battery pack 17.

The cleaner head 7 forms part of a floor tool 19 which is detachable from the wand 5 by means of a catch 21. The wand 5 is in turn detachable from the handheld cleaner 3 by means of a catch 23. The handheld cleaner 3 can thus be used in isolation as a stand-alone handheld vacuum cleaner by detaching the wand 5 or, alternatively, the handheld vacuum cleaner 3 and wand 5 can be used in combination as a "long reach" handheld vacuum cleaner by detaching the floor tool 19. The use of a detachable floor tool is not essential: for example, the cleaner head 7 may be permanently secured to the wand 5.

The floor tool 19 is shown in more detail in Figure 3, detached from the wand 5.

The floor tool 19 comprises an articulated neck portion 25 which acts as a mechanical steering couple between the wand 5 and the cleaner head 7.

The neck portion 25 comprises a front part 27, the front end of which is connected to the cleaner head 7, and a rear part 29, the rear end of which incorporates the catch 21 for detachable connection to the wand 5. The front part 27 is pivotally connected to the rear part 29, so that the front an rear parts 27, 29 are constrained for relative movement about an axis A. The front and rear parts 27, 29 thus effectively form a hinged elbow joint which allows for variation in the lie angle θ between the cleaner head 7 and wand 5 when the floor tool is connected to the wand 5 (see Figure 4). Thus, the lie angle is adaptable to suit the height of the particular user and, in use, the cleaner can be moved into a lower profile orientation, as desired, for example to clean underneath a bed.

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A flexible duct in the form of a hose 31 extends through the articulated neck portion 25. The hose 31 flexibly connects the cleaner head 7 to the end of the wand 5 in use so as not to hinder articulation of the neck portion 25 about the axis A.

The front end of the front part 27 is shaped as a cylindrical collar 27a. This cylindrical collar 27a is connected to the cylindrical end of a rear outlet duct 7a on the cleaner head 7 by a conventional circlip or snap ring arrangement (not visible in Figure 3) which constrains the cleaner head 7 and front part 27 for relative rotation about the axis B of the cylindrical collar 27a. A conventional gasket arrangement (not shown) can be used to form a compression seal between the cleaner head 7 and the neck portion 25; this seal should preferably be a low-friction seal (for example using a PTFE-coated gasket), so as not to hinder free rotation of the cleaner head 7 relative to the neck portion 25.

The neck portion 25 functions as a steering couple by constraining the cleaner head 7 and wand 5 for co-rotation about the wand axis C, whilst nevertheless permitting relative rotation of the cleaner head 7 and the front part 27 about the axis B, which in use is non-parallel to the axis C (see Figure 4). Accordingly, steering of the cleaner head 7 can be controlled by rotating the wand 5 about the wand axis C to direct the cleaner head 7 in the desired direction. As the wand rotates about the axis C, co-rotation of the cleaner head 7 with the wand 5 and relative rotation of the collar 8 and rear outlet duct 7a combine to turn the cleaner head 7 in plane parallel contact with the floor, so that the cleaner head 7 does not bank about the axis B as it turns. Hinging movement of the wand 5 and cleaner head 7 about axis A may also help to maintain the cleaner head 7 in plane parallel contact with the floor, particularly for large turning angles, though this hinging movement is not considered essential to obtain the benefit of directional steering.

A pair of domed wheels 33 is provided on the front part 27. The domed wheels 33 are mounted on stub axles (not visible) either side of the neck portion 25. These stub axles are each angled downwardly to set the respective wheel at a corresponding fixed, positive camber angle. This camber angle is the same for each of the wheels 33, so that

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the wheels form a "V" when viewed from the front. As the wand 5 is rotated about the wand axis C, the dome-shaped wheels 33 bank accordingly to maintain rolling contact with the floor. The dome-shaped wheels 33 are thus better able to track through the turn than conventional "flat-sided" wheels.

The handheld vacuum cleaner 3 is provided with a pistol grip handle 35 (see Figure 2), which tends to position a user's forearm parallel to the wand 5. Consequently, steering of the cleaner 1 can be controlled primarily through supination and pronation of the forearm, and is therefore natural and comfortable for the user. A pistol grip also provides good leverage for effective transmission of steering torque from the handle 35 to the cleaner head 7 (via the wand 5 and neck portion 25), and in particular reduces the tendency for a user's hand to roll "over the top" of the handle as the handle is rotated to steer the cleaner head 7.

The motor casing 9 is provided at the upper end of the pistol grip handle 35. Consequently, the weight of the motor inside the motor casing 9 is comfortably supported on top of a user's hand during use of the cleaner 1.

Figure 5 shows an alternative floor tool 190 which may be connected to the wand 5 in accordance with the invention to provide a mechanical steering couple between the wand 5 and a cleaner head.

The floor tool comprises an articulated neck portion 250 which incorporates a front duct part 270 and a rear duct part 290. The front duct part 270 is fluidly connected to a cleaner head 70. The rear duct part 290 is configured to push fit onto the wand 5 (the end of the wand may need to be modified accordingly to accommodate the push fit).

The front duct part 270 is pivotally connected to the cleaner head 70 so that the front part 270 and cleaner head 70 are constrained for rotation about an axis D. This allows for variation of the lie angle between the wand 5 and the cleaner head 70 in use.

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The front duct part 270 is connected to the rear duct part 290 by a rotatable scarf joint 300, which constrains the front duct part 270 and rear duct part 290 for rotation about an axis E, non-parallel with the longitudinal axis of the rear duct part 290.

The front duct part 270 and rear duct part 290 together form an air duct for fluidly connecting the cleaner head 70 to the wand 5 in use.

The neck portion 250 acts as a mechanical steering couple between the wand 5 and the cleaner head 70 in similar manner to the neck portion 25. Thus, the neck portion 250 is arranged to constrain the wand 5 and cleaner head 70 for co-rotation about the wand axis C whilst, nevertheless, permitting relative rotation of the wand 5 and cleaner head 70 about the axis E. Accordingly, as the wand 5 is rotated about the wand axis C, co-rotation of the cleaner head 7 with the wand 5 combines with relative rotation of the front part 270 and rear part 290 to turn the cleaner head 7 in plane parallel contact with the floor.

The axis E is non-parallel with the floor, so that relative rotation of the front and rear parts 17, 19 about the axis E involves both a horizontal and vertical component (cf. relative rotation about the axis B in Figure 4, which is solely in a vertical plane). Consequently, relative rotation of the front part 270 and rear part 290 not only counteracts undesirable banking of the cleaner head during steering, but also provides an associated mechanical advantage in turning the cleaner head 70 left or right, further improving manoeuvrability.

Air drawn in through the suction opening on the cleaner head need not be ducted through the wand. For example, the air may be ducted through a flexible hose running alongside the wand; in this arrangement, the wand would nevertheless couple to the cleaner head in similar manner for providing the necessary directional steering capability, so the wand would still physically connect the cleaner head to the handheld vacuum cleaner, but the wand itself need not be hollow.

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A stick-vac cleaner according to the present invention, examples of which have been described, is considered to offer significantly better manoeuvrability than existing "stick- vacs" of the same general type, bringing the functionality of this type of stick-vac more into line with the stick-vac cleaners of the first general type described above.

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CLAIMS

1. A stick-vac cleaner comprising a handheld vacuum cleaner which is attached to an elongate, rigid wand and which is fluidly connected to a cleaner head provided at the end of the wand, wherein the cleaner head is connected to the wand via a mechanical steering couple for directionally steering the cleaner head in plane parallel contact with the floor as the wand is rotated about its axis.

2. A stick-vac cleaner according to claim 1, wherein, in use, the mechanical steering couple constrains the wand and the cleaner head for co-rotation about the wand axis whilst permitting relative rotation of the wand and cleaner head about an axis which is non-parallel to the wand axis.

3. A stick-vac cleaner according to any preceding claim, in which the cleaner head and wand are coupled for relative rotation along a scarf joint or via an elbow joint.

4. A stick-vac cleaner according to any preceding claim, in which the wand is hingedly connected to the cleaner head for varying the lie angle between the wand and the cleaner head.

5. A stick vac cleaner according to claims 3 and 4, wherein the cleaner head and wand are coupled by a hinged elbow joint for varying the lie angle between the cleaner head and the wand.

6. A stick-vac cleaner according to any preceding claim, wherein the handheld vacuum cleaner comprises a pistol grip handle.

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BNSDOCID: <GB 2484146A 1>

7. A stick-vac cleaner according to claim 6, wherein the pistol grip handle is substantially straight.

8. A stick-vac cleaner according to claim 6 or 7, wherein the pistol grip handle extends substantially perpendicular to the wand.

9. A stick-vac cleaner according to any of claims 6 to 8, wherein the handheld vacuum cleaner comprises a motor which is positioned at or near the upper end of the pistol grip handle.

10. A vacuum cleaner according to claim any preceding claim, wherein the handheld vacuum cleaning unit incorporates a cyclonic separation system.

11. A vacuum cleaner according to claim 10, wherein the wand is axially aligned with a tangential inlet to the cyclonic separation system.

12. A stick-vac cleaner according to any preceding claim, wherein the wand fluidly connects the handheld vacuum cleaner to the cleaner head.

SNEDOCID: <GB 2486146A 1 >

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Application No:	GB1016563.7	**Examiner:**	Mr Rhodri Evans
Claims searched:	1-12	**Date of search:**	28 January 2011

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
Y	1-12	USD298875 (Nakamura) all figures.
Y	1-12	GB2466290 A (Dyson) all figures and lines 8-23 of page 6.
Y	1-3, 6-12	GB2409404 A (Samsung) figure 3.
Y	6-9	GB2441962 A (Dyson) figure 1.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC[X] :

Worldwide search of patent documents classified in the following areas of the IPC

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The following online and other databases have been used in the preparation of this search report

WPI, EPODOC

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Applicant	SE KWANG PRECISION CO., LTD.
Rightholder	SE KWANG PRECISION CO., LTD.

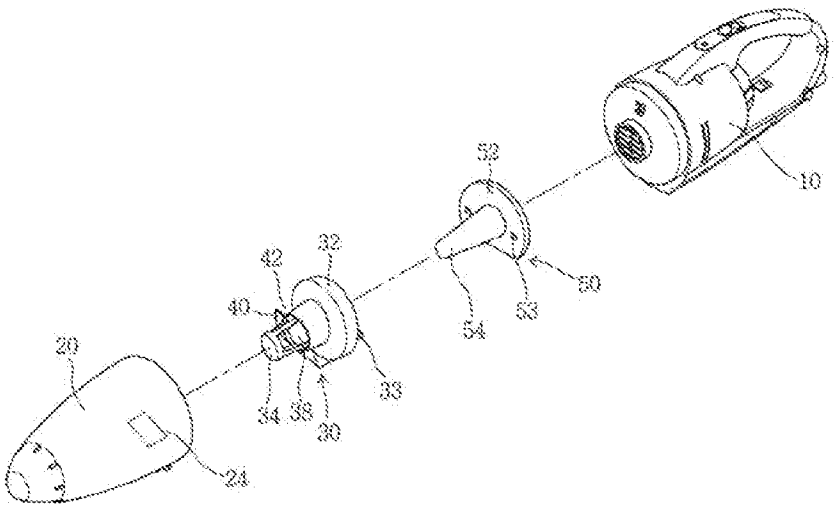
Title of Invention

Handy type vacuum cleaner.

Abstract

The present invention is to provide the handy type vacuum cleaner which the air grafting t he cyclone method on the handy type vacuum cleaner which organizes on the suction forc e of air in order to the foreign substance including garbage etc. be inhaled to the housing i nternal space and is inhaled is inhaled through the guiding channel formed in the filter cov er circumference while causing the spiral flow more efficiently, inhales the foreign substan ce through the centrifugal working.

대표도면(Representative drawing)



Scope of Claims

Claim 1:

The inside it is assembled in the front of the main body (10), and main body (10) may be provided with the insertion hole (36) in the inside it is protruded to the front of the cover fl ange (32), in which

filter cover (30) is closely fixed in the space (22) inner surface of the housing (20) and cov er flange (32) as to the handy type vacuum cleaner including the housing (20), and the du st collecting filter (50) assembled between the housing (20) and main body (10) and the fi lter cover (30) fixing the dust collecting filter (50) inside the housing (20), and as to the, t he space (22) accommodating the foreign substance inhaled to the suction force of air is f ormed. The handy type vacuum cleaner which protrusively forms the partition wall (40) fro m more in the column member (34) boundary surface of :

filter cover (30) while organizing on the filter member (54) which is inserted in the insertio n hole (36) of the column member (34) while being protruded to the front of the filter flan ge (52), which is inserted inside the cover flange (32) while :

dust collecting filter (50) has the joint groove (53) in which the protruded jamming protrus ion (33) is inserted in the cover flange (32) of the filter cover (30) while organizing on the column member (34) in which the air inject aperture (38) is penetratedly formed in the bo undary surface and filter flange (52) ; and is characterized configuring so that the guiding channel (42) which induces so that air is inhaled between the cover flange (32) of the filte r cover (30) and partition wall (40) in the state causing the spiral flow to the air inject ape rture (38) of the column member (34) is more formed.

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Technical Field

The invention relates to the handy type vacuum cleaner, and more particularly to the hand y type vacuum cleaner in which cleaning including washing etc. is facilitated by adopting t he cyclone dust collection method and enhancing the suction force of the cleaner and usin g moreover, the semipermanent dust collecting filter.

Background Art

As is well known, the apparatus which inhales dust or garbage using the attracting force of the suction fan rotated with the electric motor in which the handy type vacuum cleaner is i nstalled at the inside with air and in which dust or garbage filters in the dust cover and whi ch air discharges to the outside.

The mode which inserts the plug into jack and in which the normal time when such handy type vacuum cleaner is installed in the vehicle uses the battery is employed or the mode u sed using the household power after doing the charge is employed or the electron and the above-described later mode are employed.

In the meantime, in fig. 1, specifically the configuration of the conventional handy type va cuum cleaner is shown. It comprises the suction head (8) in which the handy type vacuum cleaner is connected to the dust collection part (6) in which the dust cover which assemble d filters out dust and garbage is accepted in the front end of the electric motor in which th e suction fan is attached to the inside and the main body (4), in which the charger circuit i s built in and which is organized and main body (4) and the above knows with reference to 1 with the dust collection part (6) and the air which is connected to assembly and contains dust and garbage is passed. Here, the outside of the main body (4) may be provided with the grill (4b) in which the handle (4a) is formed or it is adhered and the user easily can arr est and the user use and for the term of works, is gone in both sides.

The suction head (8) connects the extension spray lance and uses between the dust collect ion part (6) and suction head (8) the place which does not arrive tries to be cleaned the re placement is possible through the suction head having the various function and when clea ning the narrow place, the end portion of the pipe is slim and the elongated gap suction he ad is mainly assembled in the dust collection part and it uses and when cleaning the sofa o r the computer keyboard etc., the suction head in which the brush is adhered to the end p ortion of the pipe is assembled in the dust collection part (6) and it uses.

But as described above, because the suction head is set up in the front of the dust collecti on part and the organized conventional handy type vacuum cleaner uses the separate con duit line is not formed and the suction force remarkably falls down and the suction force h as the disadvantage in conclusion, of properly cleaning dust or garbage. Besides, there is a problem that in the dust collection part, the dust collection part whole has to be washed a

nd dust etc. are flowed in moreover, the main body and the motor, including, the electron accessories etc. is damaged in cleaning because there is no separate dust collecting filter.

Summary of Invention

Problem to be solved

An object of the present invention are to provide the handy type vacuum cleaner which it configures so that dust or garbage etc. are flowed in into forms the passing hole on the bottom surface of the housing and is flowed in through the passing hole for solving the conventional problem as in the above while it rotates through the path of the cyclone method.

Moreover, an object of the present invention is to provide the handy type vacuum cleaner adopting the cyclone dust collection method and can enhance the suction force of the vacuum cleaner.

Moreover, an object of the present invention are to provide the handy type vacuum cleaner in which cleaning including washing etc. is facilitated using the semipermanent dust collecting filter.

Means to solve the problem

The inside the invention for achieving above-described purposes is assembled in the front of the main body, and main body may be provided with the insertion hole in the inside it is protruded to the front of the cover flange, in which the filter cover is closely fixed in the space inner surface of the housing and cover flange as to the handy type vacuum cleaner including the housing, and the dust collecting filter assembled between the housing and main body and the filter cover fixing the dust collecting filter to the inner structure of housing. As to the housing, the space accommodating the foreign substance inhaled to the suction force of air is formed. In the boundary surface, it organizes on the column member in which the air inject aperture is penetratedly formed and it organizes on the filter member which is inserted in the insertion hole of the column member while being protruded to the front of the filter flange, which is inserted inside the cover flange while the dust collecting filter has the joint groove in which the protruded jamming protrusion is inserted in the cover flange of the filter cover and filter flange and it is characterized configuring so that the guiding channel which it induces so that it protrusively forms the partition wall from more in the column member boundary surface of the filter cover and air is inhaled between the cover flange of the filter cover and partition wall in the state causing the spiral flow to the air inject aperture of the column member is more formed.

Effects of the Invention

The handy type vacuum cleaner of the invention has the advantage that the suction force can be considerably enhanced in comparison with the conventional handy type vacuum cleaner by adopting the cyclone method and dust or garbage etc. can be completely removed using the same motor accordingly as the convention.

Besides, because washing and cleaning are facilitated and dust or the foreign substance etc. are not flowed in into moreover, the electron part inside including the motor etc. since the handy type vacuum cleaner of the invention uses the separate dust collecting filter dust have the synergistic effect using the handy type vacuum cleaner for the long term.

Description of Embodiments

Hereinafter, the embodiment of the invention is made to be equal to next, referring to the figure it illustrates. In the following detailed description, the typical embodiment will be pr esented as to the above-described invention. And in the other embodiments which can be

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presented in the invention is the configuration of the invention, it replaces with the descrip tion.

In the present invention, while causing the spiral flow through the guiding channel formed in the filter cover circumference the air grafting the cyclone method on the handy type vac uum cleaner which organizes on the suction force of air in order to the foreign substance i ncluding garbage etc. be inhaled to the housing internal space and is inhaled is inhaled the handy type vacuum cleaner which more efficiently, inhales the foreign substance through t he centrifugal working tries to be implemented.

The embodiment doing with the desirable of the invention decides to be hereinafter descri bed.

Figure 2 is drawing showing the configuration of the handy type vacuum cleaner in three d imensions according to the invention. It is drawing which fig. 3 shows in 2 and showing th e bottom surface of the filter cover in three dimensions. Figure 4 is a drawing showing the cross section of fig. 2.

As shown in figures 2 through 4, the dust collecting filter (50) filtering the micro substance in which the internal space (22) which accommodates the inhaled foreign substance accor ding to the operation of the electric motor equipped in the inside in the main body (10) wh ile the handy type vacuum cleaner is assembled in the front of the electric motor in which the suction fan is attached to the inside and the main body (10), in which the charger circ uit (not shown) is built in and which is organized and main body (10) is formed and which is the foreign substance and air included in the bottom surface in the process of garbage b eing inhaled while being assembled between the housing (20), in which the passing hole (24) is penetratedly formed the main body (10) and housing (20) in air in order to be pass ed and the filter cover (30) supporting the dust collecting filter (50) are included. Moreove r, in the bottom surface of the housing (20), the case (80) in which the inlet (82) for the f oreign substance being inhaled to the housing (20) internal space (22) is formed is made up after assembling.

The outer shape is constructed in insertion hole (36) is formed in the inside while being pr otruded to the center of the flange (32), which is closely fixed in the inner surface of the h ousing (20) while the filter cover (30) is shaped to the disc type and flange (32) it has the diameter smaller than the flange (32) the boundary surface with the column member (34) in which the air inject aperture (38) is penetratedly formed.

The dust collecting filter (50) assembled in the filter cover (30) includes the filter flange (5 2) inserted inside the cover flange (32) of the filter cover (30), and the filter member (5 4). The filter member (54) is inserted in the column member (34) internal insertion groove (36) of the filter cover (52) while being protruded to the center of the filter flange (52) an d filters the foreign substance included in the air inhaled to the air inject aperture (38) of t he column member (34). Then, in the cover flange (32) inside circumference of the filter c over (30), the combining projection (33) is protruded and the joint groove (53) in which th e combining projection (33) is inserted is formed in the filter flange (32) boundary surface of the filter member (30) and the filter member (54) is adamantly fixed to the filter cover (30).

In the meantime, in the filter cover (30), the means it induces so that the inhaled air caus es the spiral flow and more efficiently, of inhaling the foreign substance through the centrif ugal working is more included and the means is installed.

Specifically, the partition wall (40) is extended and is formed from the integrally in the bou ndary surface of *** member (34) comprising the attached filter cover (30) and it configur es so that the guiding channel (42) is formed for the partition wall (40) and cover flange (32) according to the circumference. At this time, the furthermore is the be desirable the b e desirable to assemble in order to be positioned on the passing hole (24) of the housing (20) in which the downside of the guiding channel (42) describes in the above to process i n order not to process the downside of the partition wall (40) and the cover flange (32) for ming the guiding channel (42) in assembly in consideration of the cohesive power with the passing hole (24) to the curve shaped and it has the linear type.

That is, if air is inhaled through the above-described configuration to the driving of the mai n body (10) , as the inhaled air raises the spiral flow in the process of getting the guiding c

hannel (42) and moving the centrifugal force is induced and more efficiently, the foreign s ubstance is inhaled.

Hereinafter, referring to figures 2 through 4 the action of the handy type vacuum cleaner a ccording to the present invention decides to be described.

Firstly, the outside air is inhaled through the inlet (82) of the case (80) if the operation of the handy type vacuum cleaner of the invention permits power to the electric motor of the main body (10) and it is removed while the foreign substance is inhaled to the housing (2 0) internal space after the inlet (82) through the passing hole (24) of the housing (20).

In the meantime, after the air inhaling the foreign substance passes through the passing h ole (24) of the housing (20) after the air inject aperture (38) which is formed in the colum n member (34) boundary surface of the filter cover (30) while raising the spiral flow in the process of getting the guiding channel (42) formed in the boundary surface of the filter co ver (30) and moving is passed the air is inhaled after the filter member (54) inserted insid e the column member (34) to the main body.

At this time, in the process where air causes the spiral flow through the guiding channel (4 2), the centrifugal force is induced and more efficiently, the foreign substance inhaled thro ugh the action of such centrifugal force to the housing (20) internal space (22) is inhaled.

Brief explanation of the drawing

Figure 1 is a drawing showing a conventionally general handy type vacuum cleaner.

Figure 2 is drawing showing the configuration of the handy type vacuum cleaner in three d imensions according to the embodiment doing with the desirable of the invention.

Drawing showing the filter cover which fig. 3 shows in 2 in three dimensions.

Figure 4 is a drawing showing the cross section of fig. 2.

Disclaimer

본 문서는 특허 및 과학기술문헌 전용의 첨단 자동번역 시스템을 이용해 생성되었습니다. 따라서 부분적으로 오역의 가능성이 있으며, 본 문서를 자격을 갖춘 전문 번역가에 의한 번역물을 대신하는 것으로 이용되어서는 안 됩니다. 시스템 및 네트워크의 특성때문에 발생한 오역과 부분 누락, 데이터의 불일치등에 대하여 본원은 법적인 책임을 지지 않습니다. 본 문서는 당사의 사전 동의 없이 권한이 없는 일반 대중을 위해 DB 및 시스템에 저장되어 재생, 복사, 배포될 수 없음을 알려드립니다.
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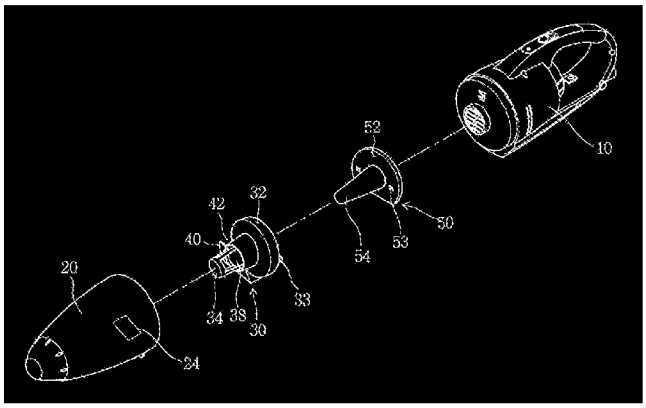
전체 청구항 수 : 총 1 항

(54) 핸디형 진공 청소기

(57) 요 약

본 발명은 공기의 흡입력으로 하우징 내부 공간으로 쓰레기 등의 이물질을 흡입토록 구성한 핸디형 진공청소기에 싸이클론 방식을 접목하여 흡입되는 공기가 필터커버 둘레에 형성된 안내유로를 통해 선회류를 일으켜가며 흡입되도록 함으로서 원심력 작용을 통해 이물질을 보다 효율적으로 흡입할 수 있도록 한 핸디형 진공청소기를 제공하고자 한다.

대 표 도 - 도1



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특허청구의 범위

청구항 1

본체(10)와, 상기 본체(10)의 앞쪽에 조립되며 내부에는 공기의 흡입력으로 흡입된 이물질을 수용하는 공간(22)이 형성된 하우징(20)과, 상기 하우징(20)과 본체(10) 사이에 조립되는 집진필터(50) 및 상기 집진필터(50)를 상기 하우징(20) 내부에 고정시키는 필터커버(30)를 포함하여 구성한 핸디형 진공청소기에 있어서,

상기 필터커버(30)는 상기 하우징(20)의 공간(22) 내면에 밀착 고정되는 커버플랜지(32)와, 상기 커버플랜지(32)의 앞쪽에 돌출 형성되며 내부에는 삽입홈(36)이 형성되고, 그 둘레면에는 공기유입구멍(38)이 관통 형성된 기둥부재(34)로 구성하며;

상기 집진필터(50)는 상기 필터커버(30)의 커버플랜지(32)에 돌출 형성되어 있는 걸림돌기(33)가 끼워지기 위한 체결홈(53)을 가지며 상기 커버플랜지(32) 내부에 끼워지는 필터플랜지(52)와, 상기 필터플랜지(52)의 앞쪽에 돌출 형성되며 상기 기둥부재(34)의 삽입홈(36)에 끼워지는 필터부재(54)로 구성하며;

상기 필터커버(30)의 기둥부재(34) 둘레면에는 격판(40)을 더 돌출 형성하여, 상기 격판(40)과 상기 필터커버(30)의 커버플랜지(32) 사이에 공기가 선회류를 일으킨 상태에서 상기 기둥부재(34)의 공기유입구멍(38)으로 흡입되도록 유도하는 안내유로(42)가 더 형성되도록 구성함을 특징으로 하는 핸디형 진공청소기.

명 세 서

기 술 분 야

[0001] 본 발명은 핸디형 진공 청소기에 관한 것으로서, 더욱 상세하게는 싸이클론 집진 방식을 채택하여 청소기의 흡입력을 높이고 또한 반영구적 집진필터를 사용함으로써 세척 등의 청소가 용이한 핸디형 진공 청소기에 관한 것이다.

배 경 기 술

[0002] 잘 알려진 바와 같이, 핸디형 진공 청소기는 내부에 설치된 전동모터에 의해 회전되는 흡입팬의 흡인력을 이용하여 먼지나 쓰레기를 공기와 함께 빨아들여 먼지나 쓰레기는 더스트 커버에서 걸러내고 공기는 외부로 배출시키는 장치이다.

[0003] 이러한 핸디형 진공 청소기는 차량에 설치된 통상의 시가 잭에 플러그를 삽입하여 밧데리 전원을 이용하는 방식이 채용되거나, 가정용 전원을 이용하여 충전한 후 사용하는 방식이 채용되거나, 아니면 전술한 전자와 후자의 방식이 동시에 채용된다.

[0004] 한편, 도 1에서는 통상적인 핸디형 진공 청소기의 구성을 구체적으로 도시하고 있다. 상기 도 1을 참조하면, 핸디형 진공청소기는 내부에 흡입팬이 달린 전동모터와 충전회로가 내장되어 구성된 본체(4)와, 상기 본체(4)의 전단에 조립되고 먼지와 쓰레기를 걸러내는 더스트 커버가 수납된 집진부(6)와, 상기 집진부(6)에 조립 및 연결되어 먼지와 쓰레기를 함유한 공기가 통과되는 흡입헤드(8)로 구성된다. 여기서, 상기 본체(4)의 외부에는 통상 손잡이(4a)가 형성되거나 부착되어져 사용자가 용이하게 잡고 사용할 수 있고, 양측면에는 공기가 빠져 나가는 그릴(4b)이 형성된다.

[0005] 이때, 상기 흡입헤드(8)는 다양한 기능을 가지는 흡입헤드로 교체가 가능한 바, 폭이 좁은 곳을 청소할 때는 주로 관의 끝부분이 가늘고 길게 연장된 틈새흡입헤드를 집진부에 조립하여 사용하고, 쇼파나 컴퓨터 자판 등을 청소할 때는 관의 끝부분에 브러쉬가 부착된 흡입헤드를 집진부(6)에 조립하여 사용하며, 손이 닿지 않는 곳을 청소하고자 할 경우에는 집진부(6)와 흡입헤드(8) 사이에 연장관을 연결하여 사용한다.

[0006] 그러나, 상기한 바와 같이 구성된 종래의 핸디형 진공 청소기는 집진부의 전방에 흡입헤드를 설치하여 사용하기 때문에 별도의 관로가 형성되지 않아 흡입력이 현저히 떨어지게 되고, 결국 먼지나 쓰레기를 제대로 청소할 수 없는 단점이 있다. 뿐만 아니라 상기 집진부에는 별도의 집진필터가 없기 때문에 청소시에 집진부 전체를 세척

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해야만 하고 또한 본체에 먼지 등이 유입되어 모터 등의 전자 부속품 등이 파손되는 문제점이 있었다.

선행기술문헌

특허문헌

[0007] (특허문헌 0001) 1. 등록실용신안공보 등록번호 제20-0178902호(고안의 명칭: 핸디형 진공청소기, 공고일자: 2000년 04월 15일)

(특허문헌 0002) 2. 공개실용신안공보 공개번호 제20-1999-0022107호(고안의 명칭: 핸디형 진공청소기, 공개일자: 1999년 06월 25일)

(특허문헌 0003) 3. 등록실용신안공보 등록번호 제20-0171783호(고안의 명칭: 핸디형 진공청소기, 공고일자: 2000년 03월 15일)

(특허문헌 0004) 4. 등록실용신안공보 등록번호 제20-0205498호(고안의 명칭: 핸디형 진공청소기, 공고일자: 2000년 12월 01일)

(특허문헌 0005) 5. 공개실용신안공보 공개번호 제20-1998-057741호(고안의 명칭: 조명장치가 부착된 핸디형 청소기, 공개일자: 1998년 10월 15일)

발명의 내용

해결하려는 과제

[0008] 본 발명은 위와 같은 종래의 문제점을 해결하기 위한 것으로, 하우징의 저면에 통과공을 형성하고 상기 통과공을 통해 유입된 먼지나 쓰레기 등이 싸이클론 방식의 통로를 통해 회전하면서 유입될 수 있도록 구성한 핸디형 진공 청소기를 제공하는데 그 목적이 있다.

[0009] 또한, 본 발명은 싸이클론 집진 방식을 채택하여 진공 청소기의 흡입력을 높일 수 있는 핸디형 진공 청소기를 제공하는데 그 목적이 있다.

[0010] 또한, 본 발명은 반영구적 집진필터를 사용하여 세척 등의 청소가 용이한 핸디형 진공 청소기를 제공하는데 그 목적이 있다.

과제의 해결 수단

[0011] 상술한 목적들을 달성하기 위한 본 발명은 본체와, 상기 본체의 앞쪽에 조립되며 내부에는 공기의 흡입력으로 흡입된 이물질을 수용하는 공간이 형성된 하우징과, 상기 하우징과 본체 사이에 조립되는 집진필터 및 상기 집진필터를 상기 하우징 내부에 고정시키는 필터커버를 포함하여 구성한 핸디형 진공청소기에 있어서, 상기 필터커버는 상기 하우징의 공간 내면에 밀착 고정되는 커버플랜지와, 상기 커버플랜지의 앞쪽에 돌출 형성되며 내부에는 삽입홈이 형성되고, 그 둘레면에는 공기유입구멍이 관통 형성된 기둥부재로 구성하며, 상기 집진필터는 상기 필터커버의 커버플랜지에 돌출 형성되어 있는 걸림돌기가 끼워지기 위한 체결홈을 가지며 상기 커버플랜지 내부에 끼워지는 필터플랜지와, 상기 필터플랜지의 앞쪽에 돌출 형성되며 상기 기둥부재의 삽입홈에 끼워지는 필터부재로 구성하며, 상기 필터커버의 기둥부재 둘레면에는 격판을 더 돌출 형성하여 상기 격판과 상기 필터커버의 커버플랜지 사이에 공기가 선회류를 일으킨 상태에서 상기 기둥부재의 공기유입구멍으로 흡입되도록 유도하는 안내유로가 더 형성되도록 구성함을 특징으로 한다.

발명의 효과

[0012] 본 발명의 핸디형 진공 청소기는 싸이클론 방식을 채택함으로써 종래의 핸디형 진공 청소기에 비해 흡입력을 상당히 높일 수 있으며, 이에 따라 종래와 동일한 모터를 사용하여도 먼지나 쓰레기 등을 완벽하게 제거할 수 있

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는 장점이 있다.

[0013] 뿐만 아니라, 본 발명의 핸디형 진공 청소기는 별도의 집진필터를 사용함으로써 세척 및 청소가 용이하고 또한 모터 등의 전자 부품 내부로 먼지나 이물질 등이 유입되지 않기 때문에 장기간 동안 핸디형 진공 청소기를 사용할 수 있는 상승적인 효과가 있다.

도면의 간단한 설명

[0014] 도 1은 종래 일반적인 핸디형 진공 청소기를 도시한 도면.

도 2는 본 발명의 바람직한 실시 예에 따른 핸디형 진공청소기의 구성을 입체적으로 도시한 도면.

도 3은 도 2에서 도시하고 있는 필터커버를 입체적으로 도시한 도면.

도 4는 도 2의 단면을 도시한 도면.

발명을 실시하기 위한 구체적인 내용

[0015] 이하 본 발명의 실시 예를 첨부된 도면을 참조하여 설명하면 다음과 같다. 후술될 상세한 설명에서는 상술한 기술적 과제를 이루기 위해 본 발명에 있어 대표적인 실시 예를 제시할 것이다. 그리고 본 발명으로 제시될 수 있는 다른 실시 예들은 본 발명의 구성에서 설명으로 대체한다.

[0016] 본 발명에서는 공기의 흡입력으로 하우징 내부 공간으로 쓰레기 등의 이물질을 흡입토록 구성한 핸디형 진공청소기에 싸이클론 방식을 접목하여 흡입되는 공기가 필터커버 둘레에 형성된 안내유로를 통해 선회류를 일으켜가며 흡입되도록 함으로서 원심력 작용을 통해 이물질을 보다 효율적으로 흡입할 수 있도록 한 핸디형 진공청소기를 구현하고자 한다.

[0017] 이하 첨부된 도면을 참조하여 본 발명의 바람직한 실시 예를 기술하기로 한다.

[0018] 도 2는 본 발명에 따른 핸디형 진공청소기의 구성을 입체적으로 도시한 도면이고, 도 3은 도 2에서 도시하고 필터커버의 저면을 입체적으로 도시한 도면이며, 도 4는 도 2의 단면을 도시한 도면이다.

[0019] 도 2 내지 도 4에서 도시한 바와 같이, 핸디형 진공청소기는 내부에 흡입팬이 달린 전동모터와 충전회로(미 도시 함)가 내장되어 구성된 본체(10)와, 상기 본체(10)의 앞쪽에 조립되며 내부에는 상기 본체(10)에 구비되어 있는 전동모터의 동작에 따라 흡입된 이물질을 수용하는 내부공간(22)이 형성되고 그 저면에는 이물질과 공기를 통과될 수 있도록 통과공(24)이 관통 형성된 하우징(20), 그리고 상기 본체(10)와 하우징(20) 사이에 조립되며 쓰레기를 흡입하는 과정에서 공기에 포함되어 있는 미세 이물질을 걸러주는 집진필터(50) 그리고 상기 집진필터(50)를 지지하는 필터커버(30)를 포함하여 구성한다. 또한 상기 하우징(20)의 저면에는 이물질을 상기 하우징(20) 내부 공간(22)으로 흡입하기 위한 흡입구(82)가 형성된 케이스(80)가 조립 구성된다.

[0020] 상기 필터커버(30)는 원판 형태로 성형되며 상기 하우징(20)의 내면에 밀착 고정되는 플랜지(32)와, 상기 플랜지(32)의 중앙에 돌출 형성되며 상기 플랜지(32) 보다 작은 직경을 가지며 내부에는 삽입홈(36)이 형성되고 그 둘레면에는 공기유입구멍(38)이 관통 형성된 기둥부재(34)로 외형을 구성한다.

[0021] 상기 필터커버(30)에 조립되는 집진필터(50)는 상기 필터커버(30)의 커버플랜지(32) 내부에 끼워지는 필터플랜지(52)와, 상기 필터플랜지(52)의 중앙에 돌출 형성되며 상기 필터커버(52)의 기둥부재(34) 내부 삽입홈(36)에 끼워져 상기 기둥부재(34)의 공기유입구멍(38)으로 흡입되는 공기에 포함되어 있는 이물질을 걸러내는 필터부재(54)를 포함하여 구성한다. 이때 상기 필터커버(30)의 커버플랜지(32) 내부 둘레면에는 결합돌기(33)가 돌출 형성되고, 상기 필터부재(30)의 필터플랜지 (32) 둘레면에는 상기 결합돌기(33)가 끼워지기 위한 체결홈(53)을 형성하여 필터부재(54)를 필터커버(30)에 견고히 고정시킬 수 있도록 한다.

[0022] 한편, 상기 필터커버(30)에는 흡입되는 공기가 선회류를 일으키도록 유도하여 원심력 작용을 통해 이물질을 보다 효율적으로 흡입할 수 있도록 하는 수단이 더 포함되어 설치된다.

[0023] 구체적으로, 첨부된 도 3에서와 같이 상기 필터커버(30)를 구성하는 기둥부재(34)의 둘레면에는 격판(40)을 일체 연장 형성하여, 상기 격판(40)과 커버플랜지 (32)사이 둘레를 따라 안내유로(42)가 형성되도록 구성한다. 이

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때 상기 안내유로(42)의 아래쪽은 전술한 하우징(20)의 통과공(24) 위에 위치하도록 조립함이 바람직하며, 더욱이 조립시 통과공(24)과의 밀착력을 고려하여 안내유로(42)를 형성하는 커버플랜지(32)와 격판(40)의 아래쪽을 곡선형태로 가공하지 않고 직선형태를 가지도록 가공 처리함이 바람직하다.

[0024] 즉, 상기한 구성을 통해 본체(10)의 구동으로 공기가 흡입되면, 흡입된 공기는 상기 안내유로(42)를 타고 이동하는 과정에서 선회류를 일으킴에 따라 원심력을 유발하여 이물질을 보다 효율적으로 흡입할 수 있게 되는 것이다.

[0025] 이하, 본 발명에 따른 핸디형 진공 청소기의 작용을 첨부된 도 2 내지 도 4을 참조하여 기술하기로 한다.

[0026] 먼저, 본 발명의 핸디형 진공청소기의 동작은 본체(10)의 전동모터로 전원을 인가하게 되면 케이스(80)의 흡입구(82)를 통해 외부 공기를 흡입하게 되며, 이 과정에서 이물질은 흡입구(82)를 거쳐 하우징(20)의 통과공(24)을 통해 하우징(20) 내부 공간으로 흡입되며 제거되어 진다.

[0027] 한편, 이물질을 흡입하는 공기는 상기 하우징(20)의 통과공(24)을 통과한 후, 필터커버(30)의 둘레면에 형성된 안내유로(42)를 타고 이동하는 과정에서 선회류를 일으키며 필터커버(30)의 기둥부재(34) 둘레면에 형성되어 있는 공기유입구멍(38)을 통과한 후, 기둥부재(34) 내부에 삽입되어 있는 필터부재(54)를 거쳐 본체로 흡입되어 진다.

[0028] 이때, 공기는 상기 안내유로(42)를 통해 선회류를 일으키는 과정에서 원심력을 유발하게 되고, 이러한 원심력의 작용을 통해 하우징(20) 내부 공간(22)으로 흡입되는 이물질을 보다 효율적으로 흡입할 수 있게 된다.

부호의 설명

[0029] <도면의 주요부분에 대한 부호의 설명>

10: 본체	20: 하우징
30: 필터커버	32: 커버플랜지
34: 기둥부재	40: 격판
42: 안내유로	50: 집진필터
52: 필터하우징	54: 필터부재

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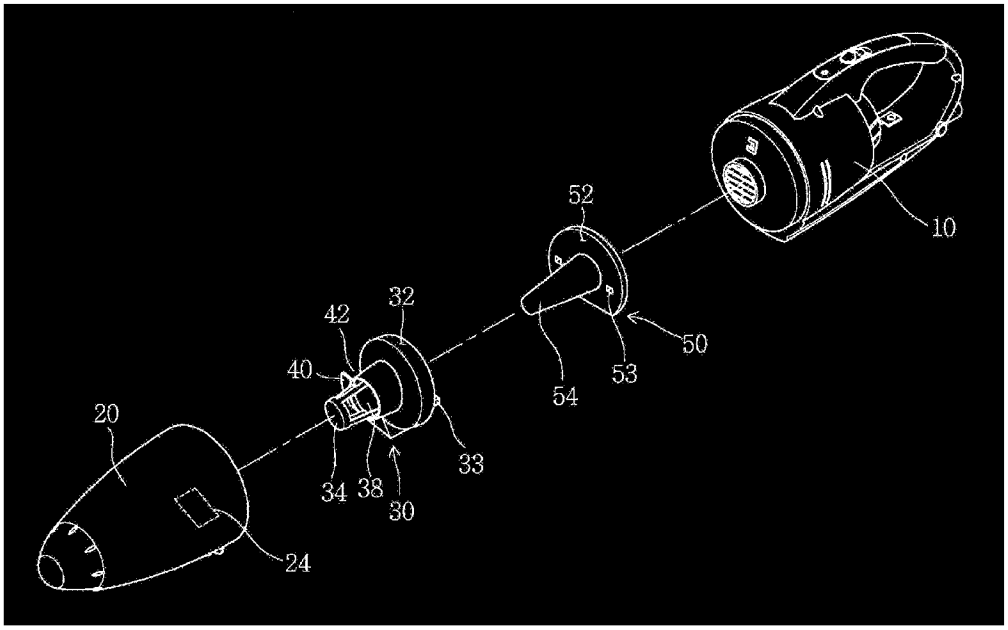
도면

도면1



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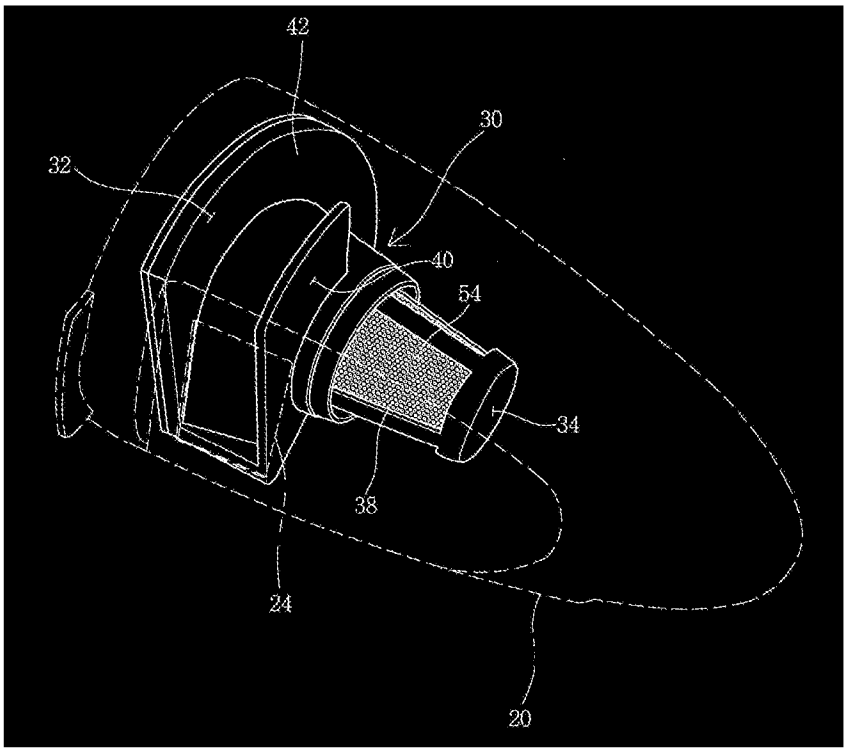

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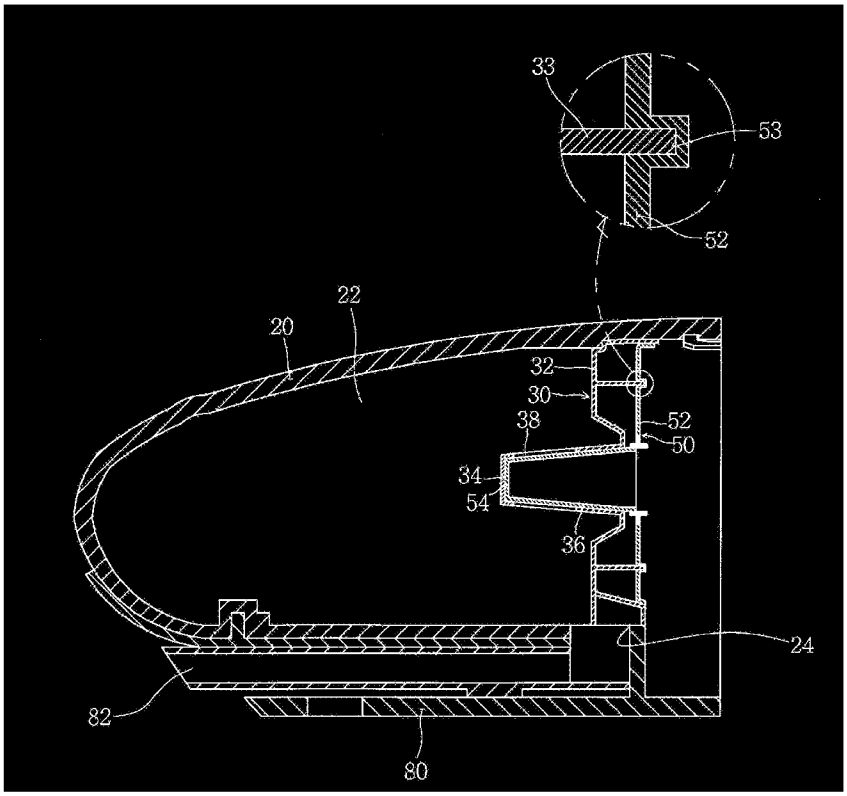
도면3



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Handheld cleaning system

Page bookmark	CN102217912 (A) - Handheld cleaning system
Inventor(s):	XIAOMING LV ±
Applicant(s):	TEKFIRST ELECTRICAL EQUIPMENT SUZHOU CO LTD ±
Classification:	- international: ***A47L5/24; A47L9/00; A47L9/16***
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Application number:	CN20101149966 20100414
Priority number(s):	CN20101149966 20100414
Also published as:	CN102217912 (B)

Abstract of CN102217912 (A)

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The invention provides a handheld cleaning system, comprising a cyclone separation device and a mask, wherein the cyclone separation device comprises a cyclone dust bucket and a suction device arranged in the cyclone dust bucket, the outer wall of the cyclone dust bucket is provided with a handle and a first air inlet, the two ends of the cyclone dust bucket are provided with a base assembly and a top cover assembly, the base assembly is provided with a first air outlet; the mask is provided with a second air inlet and a second air outlet, and the second air inlet and the second air outlet are connected by virtue of an air flue; the mask is provided with a first electrical contact which is used for connecting a power supply; the cyclone separation device is provided with a second electrical contact connected with the power supply of the suction device;; and the mask and the cyclone separation device are connected in a dismountable way. The handheld cleaning system provided by the invention is convenient to operate, and no hot-line work is required, thus the safety is improved.

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DESCRIPTION CN102217912

The present invention provides a hand-held cleaning system, and the mask means includes a cyclone, the cyclone dust separating apparatus comprises a cyclone dust cyclone barrel and the barrel located suction means, the outer wall of the cyclone dust bucket provided with a handle and a first inlet, both ends of the cyclone dust barrel and cap assembly has a base assembly, the first outlet is provided on the base assembly; also includes a mask, the mask provided with a second air inlet, the second outlet and the second inlet and the second outlet is connected by a duct; a mask provided with a first electrical connector for connecting the power; the cyclone separation device is provided with a suction device the power supply is connected to a second electrical connector; the mask and said cyclone separation means is a detachable connection. The present invention is easy to operate, and do not live operation, improved security.

Handheld Cleaning System

TECHNICAL FIELD

The present invention relates to a cleaning system, in particular a hand-held cleaning system

Background technique

With the continuous improvement of living standards and technological capabilities, a variety of home service robots with different functions have gradually entered the ordinary people home, to people's lives with varying degrees of convenience. In a variety of home service robots, especially the most popular vacuum cleaner.

In the prior art, a kind of typical vacuum cleaner cyclone vacuum cleaner, the current cyclone vacuum cleaner body is provided with a cyclone unit and a suction device, a cyclone separation device comprises a cyclone with an air inlet and an air outlet of the cyclone the dust collection chamber has a suction means for sucking air flow to gas-solid separation in a cyclone, the clean gas after the suction at the suction apparatus is discharged into the atmosphere. Most conventional vacuum cleaner suction means are located outside the cavity of the cyclone separation means. In general, the suction device is located above or below the cyclone separation device, characterized in that the technology Publication No. CN1434688A, applicant LG Electronics Corporation has been disclosed in the patent literature. Suction means working stream with dust particles was directed through the air inlet into the cyclone tangential separation means, under the action of centrifugal force, gas dust separation, with the impurities such as dust particles remaining in the cyclone dust collecting chamber means the clean air suction under the suction device is released into the atmosphere, to achieve the purpose of cleaning.

However, this type of vacuum cleaner dust barrel, suction outlet / tube, such as one in the ashes at very inconvenient, and, since the power supply from the body of the cleaner extends, if the ashes when forgot to unplug the power, live action, there is a potentially dangerous

SUMMARY

Technical problem to be solved by the present invention is to provide a hand-held cleaning system, hold a clean and dust bucket can be removed to facilitate the ashes; small size, high cleaning efficiency.

To solve the above technical problem, the present invention provides a hand-cleaning system, comprising cyclone separation means, said separation means comprises a cyclone dust cyclone barrel and the barrel located suction means, the outer wall of the cyclone dust bucket with handles and a first air inlet ends of the cyclone dust barrel and cap assembly has a base assembly, the first outlet is provided on the base assembly; also includes a mask, the mask has a second air inlet, a second outlet and the second inlet and the second outlet is connected by a duct; a mask provided with a first electrical connector for connecting the power; the cyclone separation device is provided with suction means connected to the power supply second electrical connector; the face mask with the cycicne separation means is detachably connected with the mask when the cycicne separation means connected together, a first electrical contact on the mask connected to the second joint corresponding to the said cyclone separation means, a second outlet on the mask and the first inlet of the cyclone separating means relative access, a stream of air along a first tangential inlet into the cyclone dust

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barrel .

More handheld cleaning system in the cyclone device and the mask is removable connection, while using the cleaning system for cleaning the mask mounted on the cyclone separation device, the power, they can work, can be hand-held back, when not in use or when you need to clear the dust bucket dust mask can be removed from the cyclone separation device, easy to operate, and do not live operation, improved security.

BRIEF DESCRIPTION

Figure 1 is an exploded view of the invention of the handheld cleaning system;

Figure 2 is a side cyclone separation apparatus of the invention is a cross-sectional view;

Figure 3 is an expicded assembly view of a first separating apparatus of the invention cyclone;

Figure 4 is an exploded view of a second separating device assembly of the whirlwind;

Figure 5 is a cyclone separation apparatus of the invention in an exploded view of the assembly;

Figure 6 is a perspective view of the mask of the invention;

Figure 7 is an exploded view of the mask of the invention;

Figure 8 is a circuit diagram of the power source switch of the invention;

Figure 9 is a perspective view of the inventive hose.

detailed description

1, the present invention is an exploded view of the hand-held cleaning system, the cleaning system includes a hand-held cyclonic separation apparatus 2 and a mask 1, the mask 1 and 2 for the cyclone separation apparatus is detachably connected, in the said cyclone separation means on the base assembly and the cap assembly 2 are each provided at both ends of the connection holes for connecting the strap. Mask air inlet 1 may also be connected to a hose.

The present invention comprises a cyclone separation means 2 cyclone dust bucket 21 and the suction means in said cyclone dust barrel 22, see FIG sectional view of the invention, the separation device side of the cyclone 2, and 3, Figures 4 and 5, the outer wall 21 of the cyclone dust barrel 211 has a handle 3 and a first air inlet 212, both ends of the cyclone dust barrel assembly 21 is provided with a base 4 and lid assembly 5, the base assembly is provided with a first outlet 41 on 4.

Side wall 21 of the cyclone dust tub 211 disposed around the dust chamber 20 is formed, the first air inlet 212 is provided on the sidewall of the dust chamber 20; in the dust chamber 20 equipped with 25 mesh filter; One end of the mesh filter 25 of the lid assembly 5 is connected to the other end of the bottom plate 251 has a central bore;

The suction device 22 comprises a housing 221 enclosed into an aspiration lumen 220 and provided with a power source 222 to the suction chamber 220; and a gap between the housing 221 and the power source 222, and with a base connecting assembly 4, the other end 221 of the housing 223 to form a channel, extending into the mesh filter 25 through the central hole

In the mesh filter 25, also has a spacer tube 26 and cone filter 27, one end of the spacer tube 26 through the center hole of the mesh filter 25 on the base plate 251 and the suction device 22 the cover 221 is fixed and the other end of the cone filter 27.

The cone filter 27 includes a through cavity 270, 271 and a plurality of cones around the cap assembly 270 connected through lumen 272, the cone 271 with a stream of imports 2710; the cap assembly 272 has the center hole 270 with the through cavity and toward the cone and the cone of 271 corresponding to the inside of the tube 2721.

In the above tapered bore 27 is provided with a filter 28 and filter cotton cotton filter for receiving said third chamber 280, the third chamber 280 by the cover assembly 272 and the annular cylindrical configuration, said annular cylinder 2811 inner cylinder, the outer cylinder 2812 and inner cylinder 2811 is connected between the bottom of the outer cylinder 2812 2813 constituting the inner cylinder 2811 and the central bore 272 of the cap assembly fitted, the inner and outer cylinders of the 2813 provided between the bottom of the flow exit 2814, with a gap between said cap and said annular cylinder assembly 5.

In the third chamber 280 is covered with the top cover assembly 5, the annular cylinder 5 and the cover component third chamber 280 has a gap.

In the above structure, the bottom of the filter mesh and the outer wall 25 and the partition cylinder head assembly 26 is formed of a first filter 272 O space, a space 271 is formed a plurality of cones space the P second filter, the third chamber section 280 is formed three filter space Q, the first filter space O stream from the gas stream into the second filter inlet space P, the second space P filter air from the tube 2721 into the third filter space Q, the third filtered air from the open space Q 2813 into the third chamber 5 with the gap of the header assembly, through the annular channel formed tube tube tube wall, the cavity 270 through the power source 222 into the space 221 between the housing and into the base assembly 4, from provided with a first outlet 41 out of the base assembly 4.

When the power source 222 is driven, a negative pressure in the cyclone dust bucket 21, an air flow along the "A" direction from the first inlet 212 tangentially into the cyclone dust barrel 21, as shown in Figure 2. Then along the direction "B", the intake air against the inner wall of the dust chamber 20 spiral sink. At this point most of the air containing dust in the direction of "C2" through the hole into the net inside the filter 25, most of the dust particles blocked at the bottom of the dust chamber. Through the mesh filter 25 first filtered air along the "D" direction into the cone filter 27, the air containing dust

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through the second filter in the filter cone 27, along the "E" direction through filter cotton dust filter 28 for the third time, and then along the "F" into the power source 222, and finally along the "G" direction cyclone dust discharge barrel 21.

in the above element, the two forming a sealed space, generally increases seals or seal, seal tapes between two connections. E.g., having a filter mesh 25 between the seals 70 and the cyclone dust barrel sidewall of 21,121, with the spacer ring 71 in the cylinder housing 26 and the suction device 22 is fixed at 221, the header assembly the seals 72 and so on.

in the present invention, the power source for the motor or motor and fan combination.

When assembled, the components can be mounted together in the present invention as shown in Figure 5.

The present invention means 2 by a cyclone cyclone, three filters, therefore, the air clean is very high, and, as previously described structure, compact structure, small size, ideal for hand-held.

As illustrated, an exploded view of the face mask, the mask 61 with a second air inlet 11, second outlet 12, the second air inlet 11 and the outlet 12 through a second duct 13 are connected; the mask 1 is provided with a first electrical connector 14 and the power supply line and the first electrical connector 14 is connected to 15 to connect the power supply. The mask 1 is also provided with two sliding the hook 16, corresponding to the separation means provided in the cyclone on 2 slot (not shown).

When the mask 1 of the cyclone separation apparatus 2 together with the face mask connected to a first electrical connector 14 on the second electrical connector 24 corresponding to 2 on the cyclone separation apparatus 1 on the first mask two outlet 12 and the cyclone separation means 2 first inlets 212 on relative access.

A switch is provided in the mask 17, shown in Figure 8, a circuit diagram of the power source switch, when the facepiece 12 is connected with the cyclone separation means and, if the connection to the mains through a power line 15, as shown in Figure 8 , when the press under the mask of a switch 17, the power source 222 is started, start sucking air.

in order to extend the inlet air with connection interface on the mask 1 of the second air inlet 11, the hose can be connected as shown in Figure 9.

When the mask 1:00 the cyclone separation apparatus 2 are connected together and people can strap (shown in Figure 1, the strap assembly 4 disposed on the base and cover components 5 are each provided with connection holes) destroyed in the body and a handle 3 in one hand, one hand holding a hose handheld operation. Cleaning rate and easy operation.

When you need the ashes, you can mask off, thereby cut off power supply 2 cyclone means to improve the safety of operation.

Finally, it should be noted that: The above embodiments are merely provided for describing the technical solutions of the present invention, not limitation. Although the reference to the embodiment of the present invention has been described in detail, those skilled in the art will appreciate that, still the technical solutions of the present invention, modifications and equivalents may be substituted without departing from the spirit and scope of the technical solution, which should be covered among the scope of the claimed invention requirements.

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CLAIMS CN102217912

[1]

1. A handheld cleaning system including a cyclone means (2), the cyclone separation device (1) comprises a cyclone dust barrel (21) and the suction means (22) located in said barrel cyclone dust, the cyclone dust barrel (21) of the outer wall (211) is provided with a handle (3) and a first inlet (212), both ends of the dust cyclone barrel (21) is provided with a base component (4) and the top cover assembly (5), provided with a first outlet (41) in the base assembly (4); Characterized by further comprising a mask (1), the second mask provided with the air inlet (11), a second outlet (12), said second air inlet (11) and the second air outlet (12) connected through a duct (13); the mask (1) with a first electrical connector (14) for connection to the power supply; The cyclone separating means (2) is provided with a suction power supply means (22) connected to a second electrical contact (24); The mask (1) and the cyclone separation device (2) for the detachable connection, when the mask (1) and the cyclone separation device (2) are connected together, the first mask (1) on an electrical connector (14) and the cyclone separation means second electrical connector (2) on (24) corresponding connector, the mask of the second outlet (1) on (12) and the cyclone separation device (2) a first inlet (212) relative access, a stream of air along a first inlet (212) tangentially into the cyclone dust barrel (21).

[2]

2. Handheld cleaning system as claimed in claim 1, characterized in that a sidewall of the cyclone dust barrel (21) (211) disposed around the forming dust chambers (20), said first air inlet (212) provided the dust chamber (20) on a side wall; In the dust chamber (20) is provided with a mesh filter (25); one end of the mesh filter (25) with the cap assembly (5) connected to the other end of the bottom plate (251) is provided Center hole; The suction means (22) comprises a housing (221) is provided to enclose the suction chamber (220) and disposed in the suction chamber (220) of the power source (222); said cover (221) and power left between the source (222) gap, and with a base assembly (4) is connected, said housing (221) formed in the other end of the channel (223), by said central bore (252) extending into the mesh filter (25) inside.

[3]

3. (25) inside the cylinder compartment (26) located in said filter mesh; handheld cleaning system as claimed in claim 2, characterized by further comprising a spacer sleeve (26) and the filter cone (27) central hole and the suction means (22) (251) on one end through the mesh filter housing base plate (221) fixed to the other end of the filter cone (27); said cone hole filter (27) comprises a through cavity (270), around said through-chamber (270) connected to a plurality of cones (271) and a cap assembly (272), said cone (271) is provided with gas flow import; the cover assembly (272) having said through cavity (270) with a central hole and the corresponding cone toward the cone (271) inside the tube (2721).

[4]

4. Handheld cleaning system as claimed in claim 3, characterized by further comprising a receiving filter cotton cotton filter chamber (2.8) and for the third chamber (280), said third chamber (280) by the the cover assembly (272) and the annular cylinder constituted by the inner cylinder of the annular cylinder (2811), the outer cylinder (2812) and connected to the inner tube (2811), at the bottom of the outer cylinder (2812) between the (2813) constitution , the inner tube (2811) and the cap assembly (272) fitted in the center hole, the bottom between the inner cylinder and an outer cylinder (2.813) is provided with a gas flow outlet (2814), and the annular cylinder having a gap between the cap assembly (5).

[5]

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5. Handheld cleaning system as claimed in claim 1, characterized in that the mask is provided on a power switch (1).

[6]

6. Handheld cleaning system as claimed in claim 1, characterized in that the base assembly (4) and the top cover assembly (5) each provided with connection holes for connecting the strap.

[7]

7. Handheld cleaning system as claimed in claim 1, wherein said second air inlet face mask (1) on (11) having a connection interface for connecting a hose.

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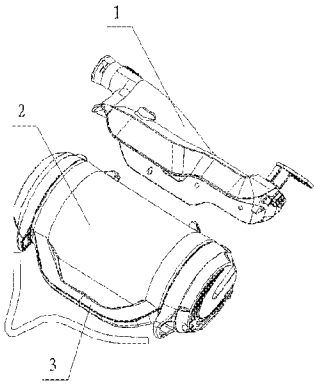
权利要求书 1 页 说明书 4 页 附图 7 页

(54)发明名称

手持式清洁系统

(57)摘要

本发明提供了一种手持式清洁系统，包括旋风分离装置和面罩，所述旋风分离装置包括旋风尘桶和位于所述旋风尘桶内的抽吸装置，所述旋风尘桶的外壁设有手柄和第一进风口，所述旋风尘桶的两端设有底座组件和顶盖组件，在所述底座组件上设有第一出风口；还包括面罩，所述面罩设有第二进风口、第二出风口，所述第二进风口与所述第二出风口通过一风道相连；所述面罩设有第一电接头，用于连接电源；所述旋风分离装置设有与抽吸装置的电源相连的第二电接头；所述面罩与所述旋风分离装置为可拆卸连接。本发明操作方便，并且不用带电操作，提高了安全性。



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1. 一种手持式清洁系统，包括旋风分离装置 (2)，所述旋风分离装置 (1) 包括旋风尘桶 (21) 和位于所述旋风尘桶内的抽吸装置 (22)，所述旋风尘桶 (21) 的外壁 (211) 设有手柄 (3) 和第一进风口 (212)，所述旋风尘桶 (21) 的两端设有底座组件 (4) 和顶盖组件 (5)，在所述底座组件 (4) 上设有第一出风口 (41)；

其特征在于，还包括面罩 (1)，所述面罩设有第二进风口 (11)、第二出风口 (12)，所述第二进风口 (11) 与所述第二出风口 (12) 通过一风道 (13) 相连；所述面罩 (1) 设有第一电接头 (14)，用于连接电源；

所述旋风分离装置 (2) 设有与抽吸装置 (22) 的电源相连的第二电接头 (24)；

所述面罩 (1) 与所述旋风分离装置 (2) 为可拆卸连接，当所述面罩 (1) 与所述旋风分离装置 (2) 连接在一起时，所述面罩 (1) 上的第一电接头 (14) 与所述旋风分离装置 (2) 上的第二电接头 (24) 对应连接，面罩 (1) 上的第二出风口 (12) 与所述旋风分离装置 (2) 上的第一进风口 (212) 相对接，空气气流沿第一进风口 (212) 切向进入旋风尘桶 (21)。

2. 如权利要求 1 所述的手持式清洁系统，其特征在于，所述旋风尘桶 (21) 的侧壁 (211) 围设形成尘室 (20)，所述第一进风口 (212) 设置在所述尘室 (20) 侧壁上；

在所述尘室 (20) 内设有网孔过滤器 (25)；所述网孔过滤器 (25) 的一端与所述顶盖组件 (5) 连接，另一端的底板 (251) 设有中心孔；

所述抽吸装置 (22) 包括由一外罩 (221) 围设成的抽吸腔 (220) 及设置于该抽吸腔 (220) 的动力源 (222)；所述外罩 (221) 与动力源 (222) 之间留有间隙，并与一底座组件 (4) 连接，所述外罩 (221) 的另一端形成通道 (223)，通过所述中心孔 (252) 伸进所述网孔过滤器 (25) 内。

3. 如权利要求 2 所述的手持式清洁系统，其特征在于，还包括隔筒 (26) 和锥孔过滤器 (27)；所述隔筒 (26) 位于所述网孔过滤器 (25) 内部，一端穿过所述网孔过滤器底板 (251) 上的中心孔与所述抽吸装置 (22) 的外罩 (221) 固定，另一端连接所述锥孔过滤器 (27)；所述锥孔过滤器 (27) 包括一个通腔 (270)、围绕所述通腔 (270) 连接的多个锥体 (271) 和盖组件 (272)，所述锥体 (271) 设有气流进口；所述盖组件 (272) 具有与所述通腔 (270) 配合的中心孔和与所述锥体对应的伸向所述锥体 (271) 内部的管 (2721)。

4. 如权利要求 3 所述的手持式清洁系统，其特征在于，还包括过滤棉 (2.8) 及用于容纳所述过滤棉的第三腔室 (280)，所述第三腔室 (280) 由所述盖组件 (272) 和环形筒构成，所述环形筒由内筒 (2811)、外筒 (2812) 和连接在内筒 (2811)、外筒 (2812) 之间的底部 (2813) 构成，所述内筒 (2811) 与所述盖组件 (272) 的中心孔相配合，在所述内筒和外筒之间的底部 (2813) 设有气流出口 (2814)，所述环形筒与所述顶盖组件 (5) 之间具有间隙。

5. 如权利要求 1 所述的手持式清洁系统，其特征在于，在所述面罩 (1) 上设有电源开关。

6. 如权利要求 1 所述的手持式清洁系统，其特征在于，底座组件 (4) 和顶盖组件 (5) 上各设有连接孔，用于连接背带。

7. 如权利要求 1 所述的手持式清洁系统，其特征在于，所述面罩 (1) 上的第二进风口 (11) 具有连接接口，用于连接软管。

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手持式清洁系统

技术领域

[0001] 本发明涉及一种清洁系统，尤其是一种手持式清洁系统。

背景技术

[0002] 随着生活水平和科技能力的不断提高，各种不同功能的家用服务机器人已逐渐进入平常百姓家庭，为人们的生活带来不同程度的便利。在各种家用服务机器人中，尤其是吸尘器最为普及。

[0003] 在现有技术中，一类典型的吸尘器旋风吸尘器，目前的旋风吸尘器本体中都设置有旋风分离装置和抽吸装置，旋风分离装置包括带有空气入口和空气出口的旋风分离器，旋风分离器中设有灰尘收集室，抽吸装置用于抽吸气流，使其进入旋风分离器中进行气固分离，之后干净的气体在抽吸装置的抽吸作用下排出释放到大气中。现有大部分吸尘器中的抽吸装置均位于旋风分离装置的腔体外部。一般而言，抽吸装置位于旋风分离装置的上方或是下方，该技术特征在公开号为 CN1434688A、申请人为 LG 电子株式会社的专利文献中有所揭示。抽吸装置工作，带有灰尘等颗粒的气流经过空气入口切向的进入旋风分离装置，在离心力的作用下，气灰分离，将带有灰尘等颗粒的杂质滞留在旋风分离装置的灰尘收集室中，干净的空气在抽吸装置的抽吸作用下释放到大气中，达到清洁的目的。

[0004] 然而，这类吸尘器的尘桶、吸风口 / 管等为一体，在倒灰时非常不便，而且，由于电源从吸尘器的本体伸出，如果在倒灰时忘记了拔掉电源，带电操作，存在着潜在的危险。

发明内容

[0005] 本发明要解决的技术问题在于，提供一种手持式清洁系统，可以手持进行清洁，并且尘桶可以拆卸，倒灰方便；体积小、清洁效率高。

[0006] 为解决上述技术问题，本发明提供一种手持式清洁系统，包括旋风分离装置，所述旋风分离装置包括旋风尘桶和位于所述旋风尘桶内的抽吸装置，所述旋风尘桶的外壁设有手柄和第一进风口，所述旋风尘桶的两端设有底座组件和顶盖组件，在所述底座组件上设有第一出风口；还包括面罩，所述面罩设有第二进风口、第二出风口，所述第二进风口与所述第二出风口通过一风道相连；所述面罩设有第一电接头，用于连接电源；所述旋风分离装置设有与抽吸装置的电源相连的第二电接头；所述面罩与所述旋风分离装置为可拆卸连接，当所述面罩与所述旋风分离装置连接在一起时，所述面罩上的第一电接头与所述旋风分离装置上的第二电接头对应连接，面罩上的第二出风口与所述旋风分离装置上的第一进风口相对接，空气气流沿第一进风口切向进入旋风尘桶。

[0007] 以上的手持式清洁系统中的旋风分离装置和面罩为可拆卸连接，在使用该清洁系统进行清洁工作时，将面罩安装在旋风分离装置上，接通电源，便可以工作，可背可手持，在不用时或需要清除尘桶中的灰尘时，可将面罩从旋风分离装置上卸下，操作方便，并且不用带电操作，提高了安全性。

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附图说明

[0008] 图 1 为本发明所述手持式清洁系统的分解图；

[0009] 图 2 为发明所述旋风分离装置的侧面剖视图；

[0010] 图 3 为发明所述旋风分离装置的第一组件的分解图；

[0011] 图 4 为发明所述旋风分离装置的第二组件的分解图；

[0012] 图 5 为发明所述旋风分离装置的装配分解图；

[0013] 图 6 为发明所述面罩立体图；

[0014] 图 7 为发明所述面罩分解图；

[0015] 图 8 为发明所述动力源开关电路图；

[0016] 图 9 为发明所述软管立体图。

具体实施方式

[0017] 如图 1 所示，为本发明所述手持式清洁系统的分解图，所述手持式清洁系统包括旋风分离装置 2 和面罩 1，所述面罩 1 与旋风分离装置 2 为可拆卸连接，在所述旋风分离装置 2 两端的底座组件和顶盖组件上各设有连接孔，用于连接背带。面罩 1 的进风口处还可以连接软管。

[0018] 本发明中的旋风分离装置 2 包括旋风尘桶 21 和位于所述旋风尘桶内的抽吸装置 22，参见图 2 所示，为发明所述旋风分离装置中的侧面剖视图，同时参考图 3、图 4 和图 5，所述旋风尘桶 21 的外壁 211 设有手柄 3 和第一进风口 212，所述旋风尘桶 21 的两端设有底座组件 4 和顶盖组件 5，在所述底座组件 4 上设有第一出风口 41。

[0019] 所述旋风尘桶 21 的侧壁 211 围设形成尘室 20，所述第一进风口 212 设置在所述尘室 20 侧壁上；在所述尘室 20 内设有网孔过滤器 25；所述网孔过滤器 25 的一端与所述顶盖组件 5 连接，另一端的底板 251 设有中心孔；

[0020] 所述抽吸装置 22 包括由一外罩 221 围设成的抽吸腔 220 及设置于该抽吸腔 220 的动力源 222；所述外罩 221 与动力源 222 之间留有间隙，并与一底座组件 4 连接，所述外罩 221 的另一端形成通道 223，通过所述中心孔伸进所述网孔过滤器 25 内。

[0021] 在网孔过滤器 25 内，还设有隔筒 26 和锥孔过滤器 27，所述隔筒 26 的一端穿过所述网孔过滤器 25 底板 251 上的中心孔与所述抽吸装置 22 的外罩 221 固定，另一端连接所述锥孔过滤器 27。

[0022] 所述锥孔过滤器 27 包括一个通腔 270、围绕所述通腔 270 连接的多个锥体 271 和盖组件 272，所述锥体 271 设有气流进口 2710；所述盖组件 272 具有与所述通腔 270 配合的中心孔和与所述锥体对应的伸向所述锥体 271 内部的管 2721。

[0023] 在锥孔过滤器 27 的上面设有过滤棉 28 及用于容纳所述过滤棉的第三腔室 280，所述第三腔室 280 由所述盖组件 272 和环形筒构成，所述环形筒由内筒 2811、外筒 2812 和连接在内筒 2811、外筒 2812 之间底部 2813 构成，所述内筒 2811 与所述盖组件 272 的中心孔相配合，在所述内筒和外筒之间的底部 2813 设有气流出口 2814，所述环形筒与所述顶盖组件 5 之间具有间隙。

[0024] 在第三腔室 280 的上面盖有顶盖组件 5，顶盖组件 5 与第三腔室 280 的环形筒具有间隙。

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[0025] 在上述结构中，网孔过滤器 25 与隔筒 26 的外壁及盖组件 272 的底部形成第一过滤空间 O，多个锥体 271 的空间形成第二过滤空间 P，第三腔室 280 形成第三过滤空间 Q，第一过滤空间 O 的气流从气流入口进入到第二过滤空间 P，第二过滤空间 P 的气流从管 2721 进入到第三过滤空间 Q，第三过滤空间 Q 的气流从开口 2813 进入到第三腔室的与顶盖组件 5 的间隙处，经环形筒内筒筒壁构成的通道、通腔 270 进入到动力源 222 与外罩 221 之间的空隙，进入底座组件 4，从底座组件 4 上设有第一出风口 41 出去。

[0026] 当动力源 222 被驱动时，在旋风尘桶 21 内产生负压，空气气流沿“A”方向自第一进风口 212 切向进入旋风尘桶 21，如图 2 所示。再沿着“B”方向，吸入空气贴着尘室 20 内壁螺旋下沉。此时大部分含有灰尘的空气沿着“C2”方向穿过进入网孔过滤器 25 内部，大部分的灰尘颗粒被挡在尘室底部。经网孔过滤器 25 第一次过滤的空气沿着“D”方向进入锥孔过滤器 27，含有灰尘的空气在锥孔过滤器 27 中经过第二次过滤，沿着“E”方向穿过灰尘过滤棉 28 进行第三次过滤，然后沿着“F”进入动力源 222 内，最后沿着“G”方向排出旋风尘桶 21。

[0027] 在上述各元件中，在形成密封的两个空间时，通常在两个连接件中间增加密封圈或密封条、密封带等。如，网孔过滤器 25 与旋风尘桶 21 的侧壁 211 之间具有密封圈 70，在所述隔筒 26 与抽吸装置 22 的外罩 221 的固定处设有密封圈 71，在顶盖组件中的密封圈 72 等等。

[0028] 在本发明，所述的动力源为电动机或电动机与风机的结合体。

[0029] 在装配时，可以将本发明成组件地安装在一起如图 5 所示。

[0030] 本发明中的旋风分离装置 2 通过一级旋风分离、二级过滤，因此，对空气的清洁率非常高，并且，如前述结构，结构紧凑，体积小，非常适用于手持。

[0031] 如图 6 所示，为面罩 1 的分解图，所述面罩 1 设有第二进风口 11、第二出风口 12，所述第二进风口 11 与所述第二出风口 12 通过一风道 13 相连；所述面罩 1 设有第一电接头 14 和与所述第一电接头 14 相连接的电源线 15 以连接电源。所述面罩 1 上还设有两个滑动卡勾 16，对应在，在旋风分离装置 2 上设有卡槽（图中未示出）。

[0032] 当所述面罩 1 与所述旋风分离装置 2 连接在一起时，所述面罩 1 上的第一电接头 14 与所述旋风分离装置 2 上的第二电接头 24 对应连接，面罩 1 上的第二出风口 12 与所述旋风分离装置 2 上的第一进风口 212 相对接。

[0033] 在面罩 1 设有开关 17，如图 8 所示，为动力源开关电路图，当所述面罩 1 与所述旋风分离装置 2 连接在一起时，如果通过电源线 15 与市电连接，如图 8 所示，当按下设在面罩 1 上的开关 17 时，动力源 222 起动，开始抽吸空气。

[0034] 为了延长空气的进口，在所述面罩 1 的第二进风口 11 处设有连接接口，可以连接上如图 9 所示的软管。

[0035] 当所述面罩 1 与所述旋风分离装置 2 连接在一起时，人们可以用背带（如图 1 所示，背带设置在底座组件 4 和顶盖组件 5 上各设有连接孔中）挎在身上，并一手拿着手柄 3，一手拿着软管进行手持式操作。清洁率高，操作简便。

[0036] 当需要倒灰时，可以将面罩摘下来，由此可断掉旋风分离装置 2 的电源，提高了操作的安全性。

[0037] 最后应说明的是：以上实施例仅用以说明本发明的技术方案而非限制。尽管参照

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上述实施例对本发明进行了详细说明，本领域的普通技术人员应当理解，依然可以对本发明的技术方案进行修改和等同替换，而不脱离本技术方案的精神和范围，其均应涵盖在本发明的权利要求范围当中。

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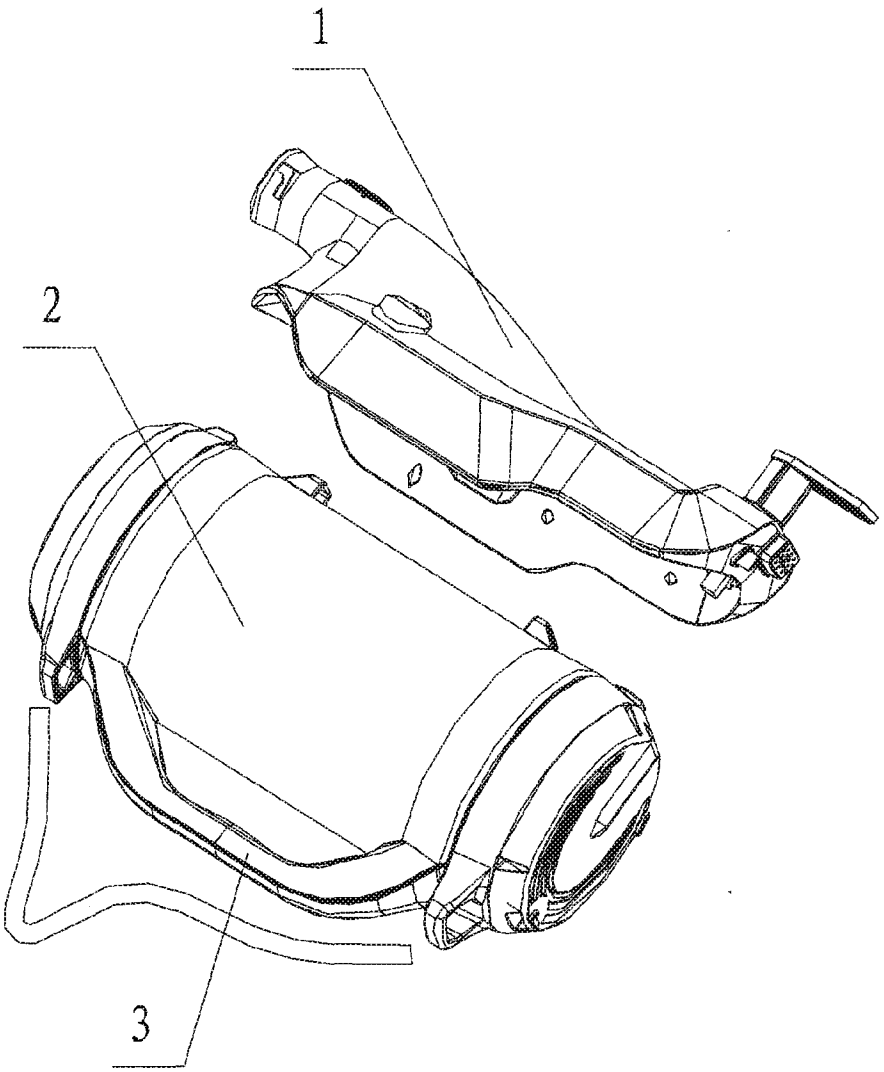

图 1

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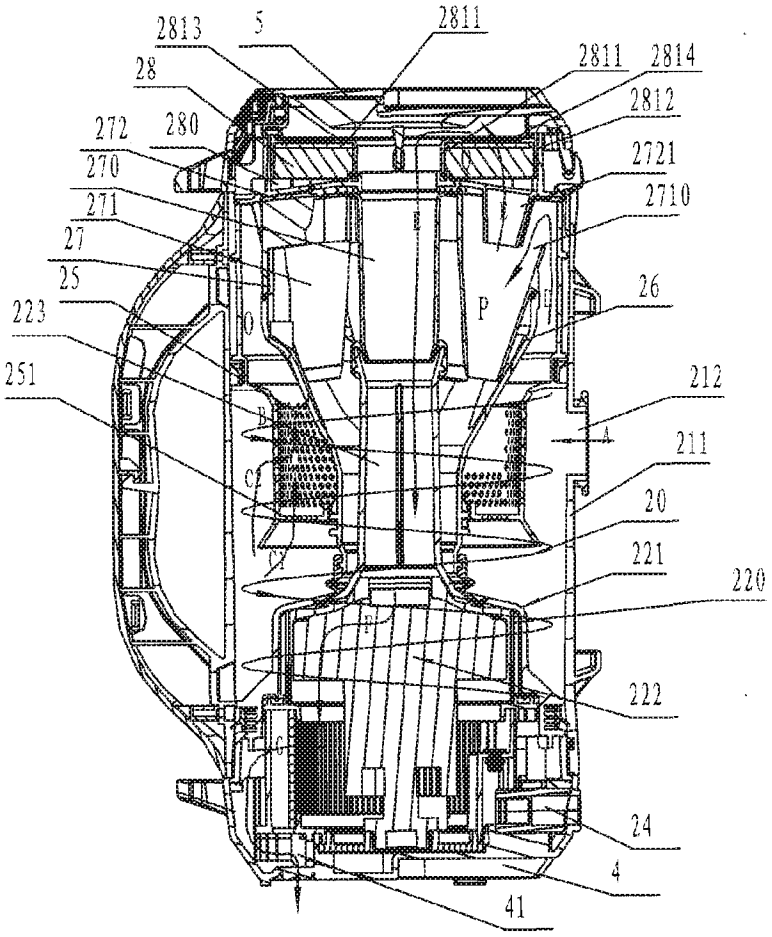

图 2

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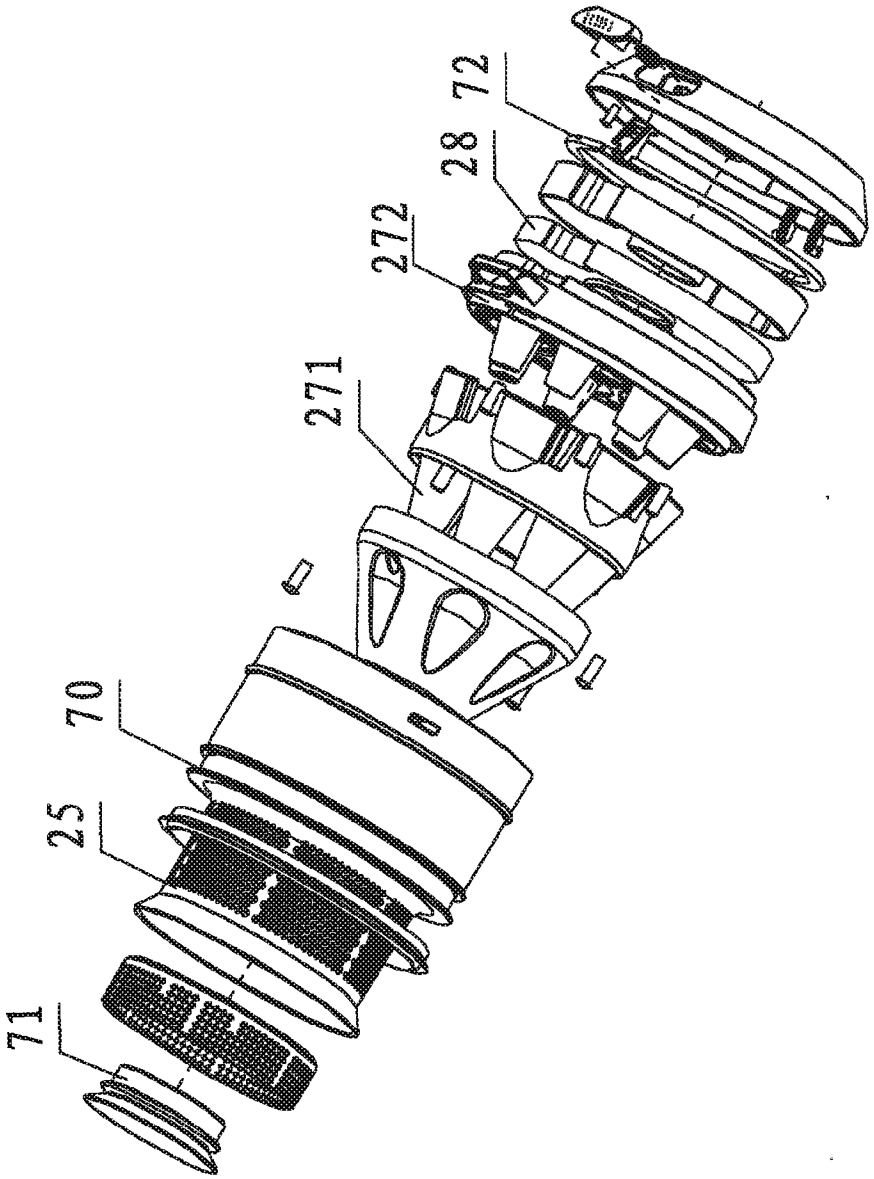

图 3

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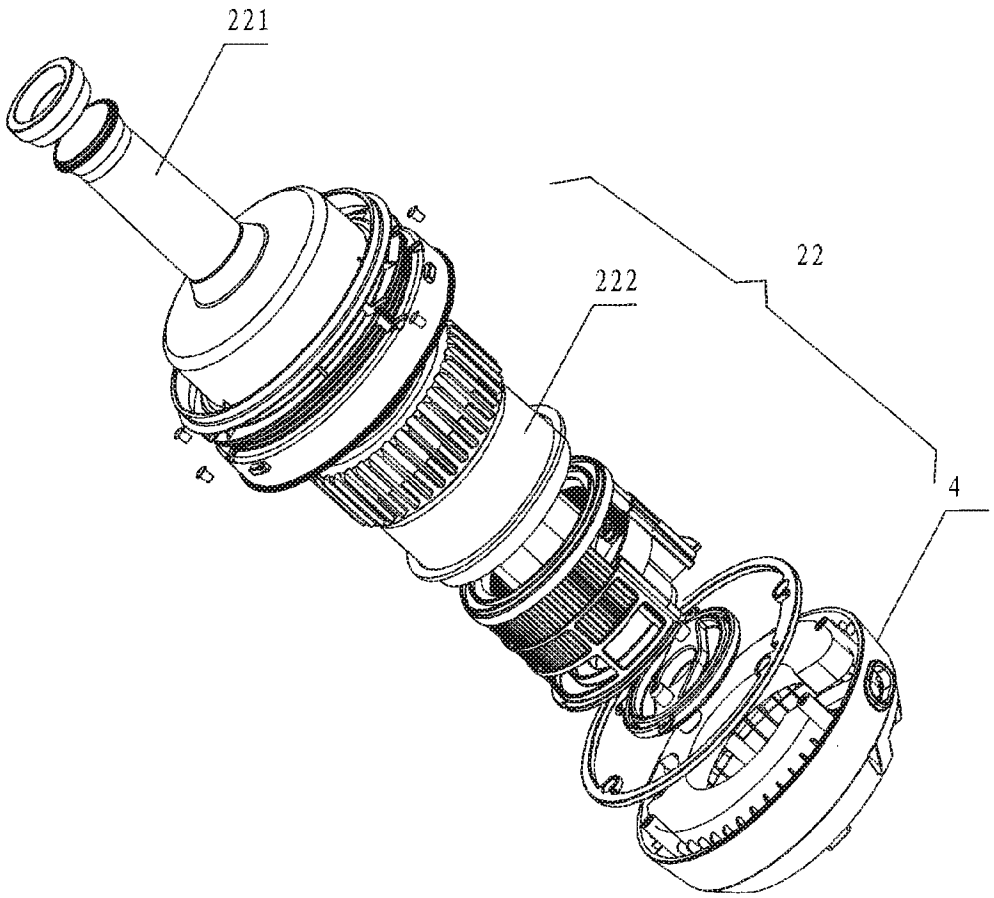

图 4

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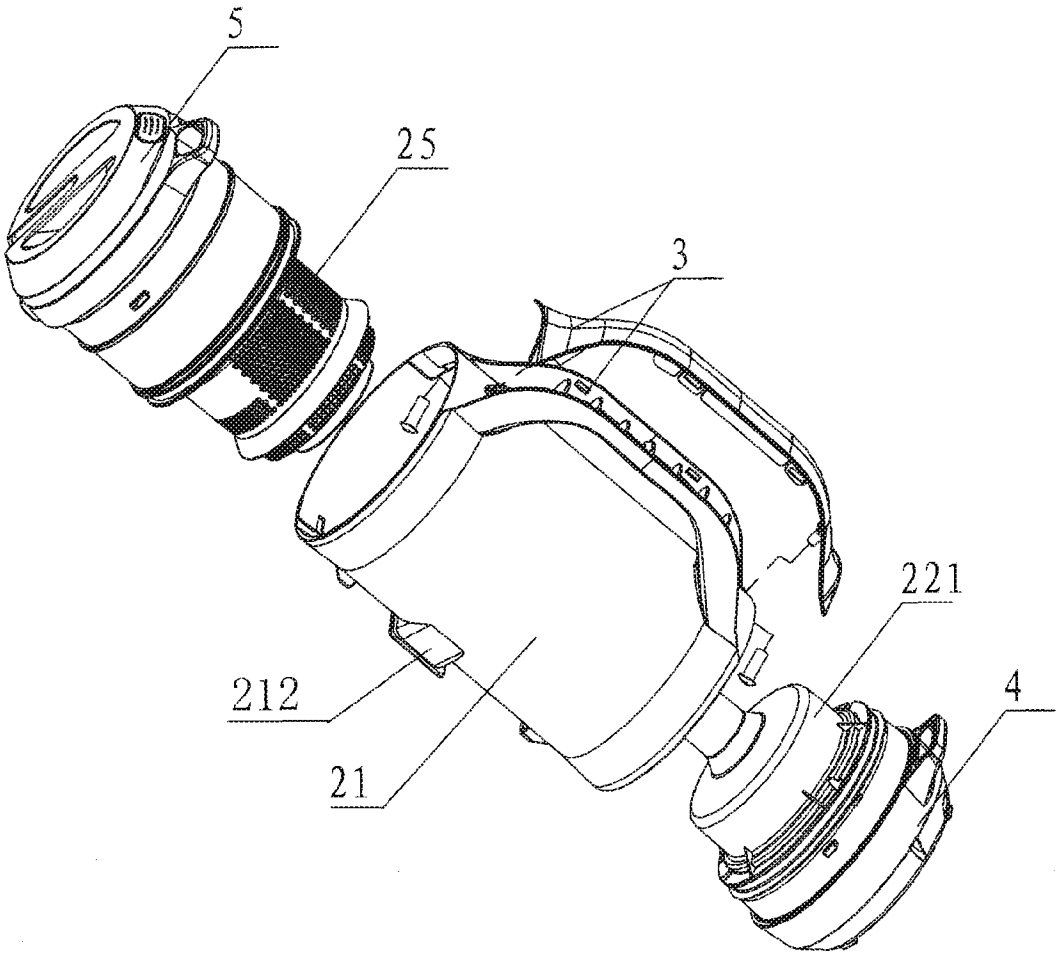

图 5

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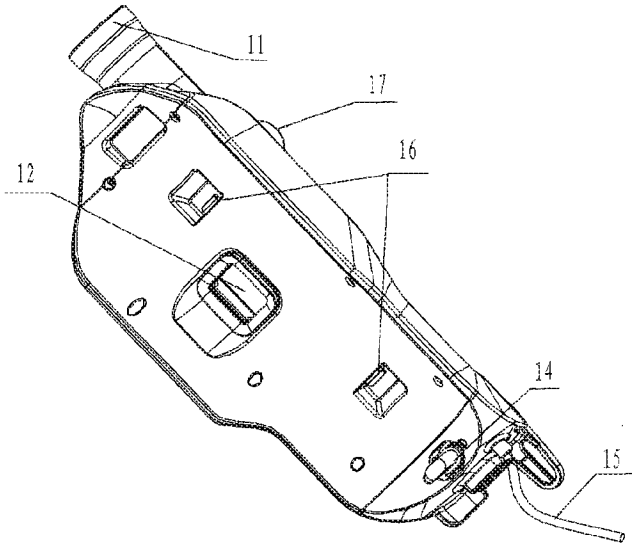

图 6

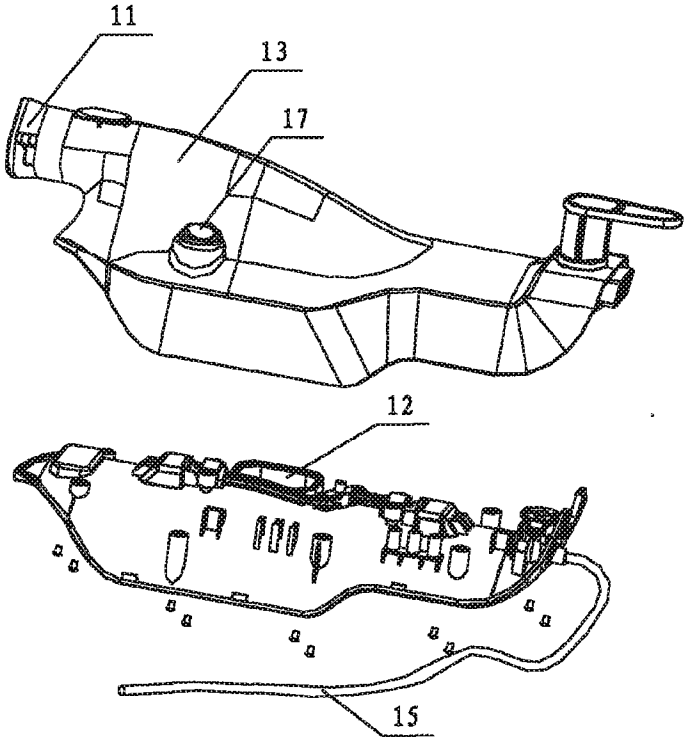

图 7

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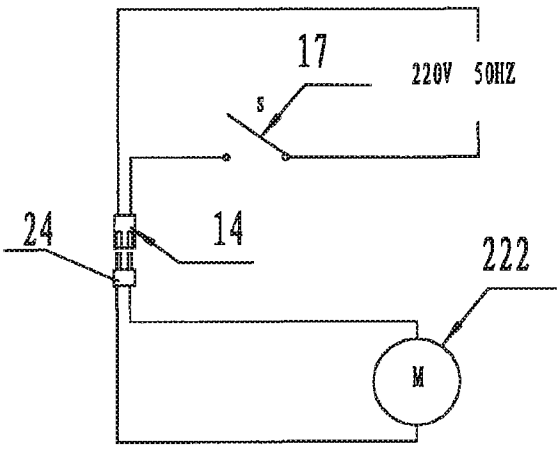

图 8

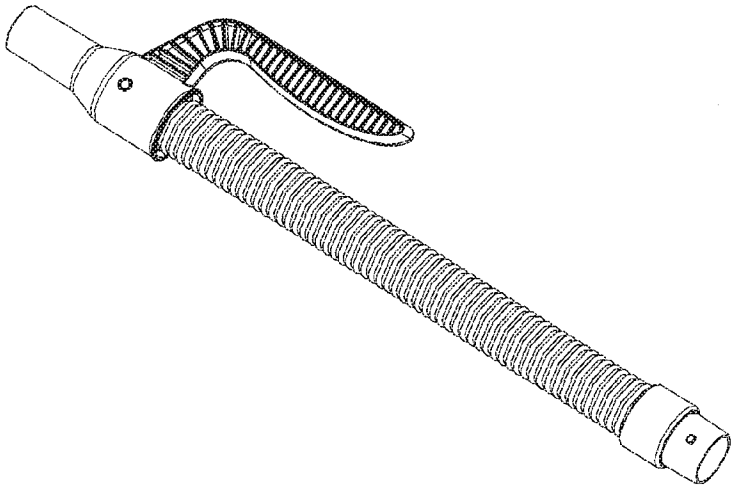

图 9

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Hand-held cleaning system

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Inventor(s):	XIAOMING LV ±
Applicant(s):	TEK ELECTRICAL SUZHOU CO LTD ±
Classification:	- international: ***A47L5/24; A47L9/16***
	- cooperative:
Application number:	CN20102161401U 20100414
Priority number(s):	CN20102161401U 20100414

Abstract of CN201755193 (U)

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The utility model discloses a hand-held cleaning system, which comprises a cyclone separator and a face shield, wherein the cyclone separator comprises a cyclone dust bin and a suction device in the cyclone dust bin. The cyclone dust bin has a handle and a first air inlet on the external wall and a base component with a first air outlet and a top cover component on both ends. The face shield comprises a second air inlet and a second air outlet connecting through a duct, and a first electric joint for connecting power supply. A second electric joint for connecting power supply of suction device is arranged on the cyclone separator. The cyclone separator is detachably connected with the face shield. Moreover, the hand-held cleaning system is convenient to use, and can be operated without live wire, thereby improving operation safety.

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DESCRIPTION CN201755193

The utility model provides a hand-held cleaning system, including a cyclone device and the mask, the cyclone separation device comprises a cyclone dust bucket and bucket located the cyclone dust suction device, the outer wall of the cyclone dust bucket provided and a first inlet handle both ends of the cyclone dust barrel and cap assembly has a base assembly, the first outlet is provided on the base assembly; also includes a mask, the mask provided with a second inlet the second outlet and the second inlet and the second outlet is connected by a duct; a mask provided with a first electrical connector for connecting the power; the cyclone separator is provided with a suction device power supply means connected to the second electrical contact; said mask and said cyclone separation means is a detachable connection. The utility model is easy to operate, and do not live operation, improved security.

Handheld Cleaning System

TECHNICAL FIELD

The utility model relates to a cleaning system, in particular a hand-held cleaning system.

Background technique

With the continuous improvement of living standards and technological capabilities, a variety of home service robots with different functions have gradually entered the ordinary people home, to people's lives with varying degrees of convenience. In a variety of home service robots, especially the most popular vacuum cleaner.

In the prior art, a kind of typical vacuum cleaner cyclone vacuum cleaner, the current cyclone vacuum cleaner body is provided with a cyclone unit and a suction device, a cyclone separation device comprises a cyclone with an air inlet and an air outlet of the cyclone the dust collection chamber has a suction means for sucking air flow to gas-solid separation in a cyclone, the clean gas after the suction at the suction apparatus is discharged into the atmosphere. Most conventional vacuum cleaner suction means are located outside the cavity of the cyclone separation means. In general, the suction device is located above or below the cyclone separation device, characterized in that the technology Publication No. CN1434688A, applicant LG Electronics Corporation has been disclosed in the patent literature. Suction means working stream with dust particles was directed through the air inlet into the cyclone tangential separation means, under the action of centrifugal force, gas dust separation, with the impurities such as dust particles remaining in the cyclone dust collecting chamber means the clean air suction under the suction device is released into the atmosphere, to achieve the purpose of cleaning.

However, this type of vacuum cleaner dust barrel, suction outlet / tube, such as one in the ashes at very inconvenient, and, since the power supply from the body of the cleaner extends, if the ashes when forgot to unplug the power, live action, there is a potentially dangerous

Utility Model Content

The technical problem to be solved by the utility model is to provide a hand-held cleaning system, hold a clean and dust bucket can be removed to facilitate the ashes; small size, high cleaning efficiency.

In order to solve the above problems, the present utility model provides a hand-held cleaning system, including a cyclone means, the cyclone separation device comprises a cyclone dust bucket and bucket located the cyclone dust suction device, the cyclone dust bucket the outer wall has a handle and a first air inlet ends of the cyclone dust barrel and cap assembly has a base assembly, the first outlet is provided on the base assembly; also includes a mask, the mask provided with a first two air inlet, a second outlet and the second inlet and the second outlet is connected by a duct; a mask provided with a first electrical connector for connecting the power; the cyclone separation device is provided with and power supply means connected to the suction of a second electrical connector; the face mask with the cyclone separation means for the detachable connection, when the mask and the cyclone separation means connected together, the first electrical facepiece connector and a second electrical contact on the cyclone separation device corresponding connector, a second outlet on the mask and the first air inlet on the cyclone separation device relative access, air flow along the first inlet tangentially into the cyclone dust barrel.

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More handheld cleaning system in the cyclone device and the mask is removable connection, while using the cleaning system for cleaning the mask mounted on the cyclone separation device, the power, they can work, can be hand-held back, when not in use or when you need to clear the dust bucket dust mask can be removed from the cyclone separation device, easy to operate, and do not live operation, improved security.

BRIEF DESCRIPTION

Figure 1 is an exploded view of the new utility of the handheld cleaning system;

Figure 2 is a sectional side view of the utility model cyclone separation means;

Figure 3 is an exploded utility model view of a first cyclone separation apparatus assembly;

Figure 4 is an exploded view of the utility model of the cyclone separation means second component;

Figure 5 is a utility model of the cyclone separation device exploded view of the assembly;

Figure 6 is a perspective view of the utility model of the mask;

Figure 7 is an exploded view of the utility model of the mask;

Figure 8 is a utility model of the power source switch circuit diagram;

Figure 9 is a perspective view of the utility model of the hose.

detailed description

As illustrated, an exploded view of the present utility model handheld cleaning system, the cleaning system 1 comprises a hand-held cyclonic separation apparatus 2 and a mask 1, the mask 1 and 2 for the cyclone separation apparatus is detachably connected, in the base assembly and the cap assembly of the cyclone separation apparatus 2 are each provided at both ends of the connection holes for connecting the strap Mask air inlet 1 may also be connected to a hose.

The utility model in the cyclone device 2 comprises a cyclone dust bucket 21 and the suction means in said cyclone dust barrel 22, see FIG. 2 is a cross-sectional view of the utility model the cyclone separation device side while referring to FIG. 3, FIG. 4 and FIG. 5, the outer wall 21 of the cyclone dust barrel 211 has a handle 3 and a first air inlet 212, both ends of the cyclone dust barrel assembly 21 is provided with a base 4 and lid assembly 5, in which the first outlet 41 is provided on said base assembly 4.

Side wall 21 of the cyclone dust tub 211 disposed around the dust chamber 20 is formed, the first air inlet 212 is provided on the sidewall of the dust chamber 20; in the dust chamber 20 equipped with 25 mesh filter; One end of the mesh filter 25 of the lid assembly 5 is connected to the other end of the bottom plate 251 has a central bore;

The suction device 22 comprises a housing 221 enclosed into an aspiration lumen 220 and provided with a power source 222 to the suction chamber 220; and a gap between the housing 221 and the power source 222, and with a base connecting assembly 4, the other end 221 of the housing 223 to form a channel, extending into the mesh filter 25 through the central hole.

In the mesh filter 25, also has a spacer tube 26 and cone filter 27, one end of the spacer tube 26 through the center hole of the mesh filter 25 on the base plate 251 and the suction device 22 the cover 221 is fixed and the other end of the cone filter 27.

The cone filter 27 includes a through cavity 270, 271 and a plurality of cones around the cap assembly 270 connected through lumen 272, the cone 271 with a stream of imports 2710; the cap assembly 272 has the center hole 270 with the through cavity and toward the cone and the cone of 271 corresponding to the inside of the tube 2721.

In the above tapered bore 27 is provided with a filter 28 and filter cotton cotton filter for receiving said third chamber 280, the third chamber 280 by the cover assembly 272 and the annular cylindrical configuration, said annular cylinder 2811 inner cylinder, the outer cylinder 2812 and inner cylinder 2811 is connected between the bottom of the outer cylinder 2812 2813 constituting the inner cylinder 2811 and the central bore 272 of the cap assembly fitted, the inner and outer cylinders of the 2813 provided between the bottom of the flow exit 2814, with a gap between said cap and said annular cylinder assembly 5.

In the third chamber 280 is covered with the top cover assembly 5, the annular cylinder 5 and the cover component third chamber 280 has a gap.

In the above structure, the bottom of the filter mesh and the outer wall 25 and the partition cylinder head assembly 26 is formed of a first filter 272 O space, a space 271 is formed a plurality of cones space the P second filter, the third chamber section 280 is formed three filter space Q, the first filter space O stream from the gas stream into the second filter inlet space P, the second space P filter air from the tube 2721 into the third filter space Q, the third filtered air from the open space Q 2813 into the third chamber 5 with the gap of the header assembly, through the annular channel formed tube tube tube wall, the cavity 270 through the power source 222 into the space 221 between the housing and into the base assembly 4, from provided with a first outlet 41 out of the base assembly 4.

When the power source 222 is driven, a negative pressure in the cyclone dust bucket 21, an air flow along the "A" direction from the first inlet 212 tangentially into the cyclone dust barrel 21, as shown in Figure 2. Then along the direction "B", the intake air against the inner wall of the dust chamber 20 spiral sink. At this point most of the air containing dust in the direction of "C2" through the hole into the net inside the filter 25, most of the dust particles blocked at the bottom of the dust chamber. Through the mesh filter 25 first filtered air along the "D" direction into the cone filter 27, the air containing dust through the second filter in the filter cone 27, along the "E" direction through filter cotton dust filter 28

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for the third time, and then along the "F" into the power source 222, and finally along the "G" direction cyclone dust discharge barrel 21.

In the above element, the two forming a sealed space, generally increases seals or seal, seal tapes between two connections. E.g., having a filter mesh 25 between the seals 70 and the cyclone dust barrel sidewall of 21,121, with the spacer ring 71 in the cylinder housing 26 and the suction device 22 is fixed at 221, the header assembly the seals 72 and so on.

In the utility model, the power source for the motor or motor and fan combination.

In assembly, the utility model can be installed into the assembly together as shown in Figure 5.

The utility model in the cyclone device 2 by a cyclone, three filters, therefore, the air clean is very high, and, as previously described structure, compact structure, small size, ideal for hand-held.

As illustrated, an exploded view of the face mask, the mask 61 with a second air inlet 11, second outlet 12, the second air inlet 11 and the outlet 12 through a second duct 13 are connected; the mask 1 is provided with a first electrical connector 14 and the power supply line and the first electrical connector 14 is connected to 15 to connect the power supply. The mask 1 is also provided with two sliding the hook 16, corresponding to the separation means provided in the cyclone on 2 slot (not shown).

When the mask 1 of the cyclone separation apparatus 2 together with the face mask connected to a first electrical connector 14 on the second electrical connector 24 corresponding to 2 on the cyclone separation apparatus 1 on the first mask two outlet 12 and the cyclone separation means 2 first inlets 212 on relative access.

A switch is provided in the mask 17, shown in Figure 8, a circuit diagram of the power source switch, when the facepiece 12 is connected with the cyclone separation means and, if the connection to the mains through a power line 15, as shown in Figure 8 , when the press under the mask of a switch 17, the power source 222 is started, start sucking air.

In order to extend the inlet air with connection interface on the mask 1 of the second air inlet 11, the hose can be connected as shown in Figure 9.

When the mask 1:00 the cyclone separation apparatus 2 are connected together and people can strap (shown in Figure 1, the strap assembly 4 disposed on the base and cover components 5 are each provided with connection holes) destroyed in the body and a handle 3 in one hand, one hand holding a hose handheld operation. Cleaning rate and easy operation.

When you need the ashes, you can mask off, thereby cut off power supply 2 cyclone means to improve the safety of operation.

Finally, it should be noted that: The above embodiments are merely to illustrate the utility of new technical solutions and not limitation. Although the reference to the embodiment of the present utility model is described in detail, those skilled in the art will appreciate, can still present utility model technology program modifications and equivalents may be substituted without departing from the spirit and scope of the technical solution, which should be among the covers of the utility model claims.

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CLAIMS CN201755193

[1]

1. A handheld cleaning system including a cyclone means (2), the cyclone separation device (1) comprises a cyclone dust barrel (21) and the suction means (22) located in said barrel cyclone dust, the cyclone dust barrel (21) of the outer wall (211) is provided with a handle (3) and a first inlet (212), both ends of the dust cyclone barrel (21) is provided with a base component (4) and the top cover assembly (5), provided with a first outlet (41) in the base assembly (4); Characterized by further comprising a mask (1), the second mask provided with the air inlet (11), a second outlet (12), said second air inlet (11) and the second air outlet (12) connected through a duct (13); the mask (1) with a first electrical connector (14) for connection to the power supply; The cyclone separating means (2) is provided with a suction power supply means (22) connected to a second electrical contact (24); The mask (1) and the cyclone separation device (2) for the detachable connection, when the mask (1) and the cyclone separation device (2) are connected together, the first mask (1) on an electrical connector (14) and the cyclone separation means second electrical connector (2) on (24) corresponding connector, the mask of the second outlet (1) on (12) and the cyclone separation device (2) a first inlet (212) relative access, a stream of air along a first inlet (212) tangentially into the cyclone dust barrel (21).

[2]

2. Handheld cleaning system as claimed in claim 1, characterized in that a sidewall of the cyclone dust barrel (21) (211) disposed around the forming dust chambers (20), said first air inlet (212) provided the dust chamber (20) on a side wall; In the dust chamber (20) is provided with a mesh filter (25); one end of the mesh filter (25) with the cap assembly (5) connected to the other end of the bottom plate (251) is provided Center hole; The suction means (22) comprises a housing (221) is provided to enclose the suction chamber (220) and disposed in the suction chamber (220) of the power source (222); said cover (221) and power left between the source (222) gap, and with a base assembly (4) is connected, said housing (221) formed in the other end of the channel (223), by said central bore (252) extending into the mesh filter (25) inside.

[3]

3. (25) inside the cylinder compartment (26) located in said filter mesh; handheld cleaning system as claimed in claim 2, characterized by further comprising a spacer sleeve (26) and the filter cone (27) central hole and the suction means (22) (251) on one end through the mesh filter housing base plate (221) fixed to the other end of the filter cone (27); said cone hole filter (27) comprises a through cavity (270), around said through-chamber (270) connected to a plurality of cones (271) and a cap assembly (272), said cone (271) is provided with gas flow import; the cover assembly (272) having said through cavity (270) with a central hole and the corresponding cone toward the cone (271) inside the tube (2721).

[4]

4. Handheld cleaning system as claimed in claim 3, characterized by further comprising a receiving filter cotton cotton filter chamber (2.8) and for the third chamber (280), said third chamber (280) by the the cover assembly (272) and the annular cylinder constituted by the inner cylinder of the annular cylinder (2811), the outer cylinder (2812) and connected to the inner tube (2811), at the bottom of the outer cylinder (2812) between the (2813) constitution , the inner tube (2811) and the cap assembly (272) fitted in the center hole, the bottom between the inner cylinder and an outer cylinder (2.813) is provided with a gas flow outlet (2814), and the annular cylinder having a gap between the cap assembly (5).

[5]

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5. Handheld cleaning system as claimed in claim 1, characterized in that the mask is provided on a power switch (1).

[6]

6. Handheld cleaning system as claimed in claim 1, characterized in that the base assembly (4) and the top cover assembly (5) each provided with connection holes for connecting the strap.

[7]

7. Handheld cleaning system as claimed in claim 1, wherein said second air inlet face mask (1) on (11) having a connection interface for connecting a hose.

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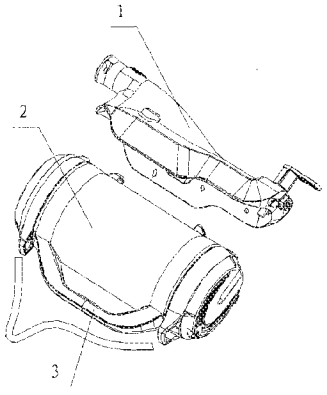
(54)实用新型名称

手持式清洁系统

(57)摘要

本实用新型提供了一种手持式清洁系统，包括旋风分离装置和面罩，所述旋风分离装置包括旋风尘桶和位于所述旋风尘桶内的抽吸装置，所述旋风尘桶的外壁设有手柄和第一进风口，所述旋风尘桶的两端设有底座组件和顶盖组件，在所述底座组件上设有第一出风口；还包括面罩，所述面罩设有第二进风口、第二出风口，所述第二进风口与所述第二出风口通过一风道相连；所述面罩设有第一电接头，用于连接电源；所述旋风分离装置设有与抽吸装置的电源相连的第二电接头；所述面罩与所述旋风分离装置为可拆卸连接。本实用新型操作方便，并且不用带电操作，提高了安全性。



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1. 一种手持式清洁系统，包括旋风分离装置 (2)，所述旋风分离装置 (1) 包括旋风尘桶 (21) 和位于所述旋风尘桶内的抽吸装置 (22)，所述旋风尘桶 (21) 的外壁 (211) 设有手柄 (3) 和第一进风口 (212)，所述旋风尘桶 (21) 的两端设有底座组件 (4) 和顶盖组件 (5)，在所述底座组件 (4) 上设有第一出风口 (41)；

其特征在于，还包括面罩 (1)，所述面罩设有第二进风口 (11)、第二出风口 (12)，所述第二进风口 (11) 与所述第二出风口 (12) 通过一风道 (13) 相连；所述面罩 (1) 设有第一电接头 (14)，用于连接电源；

所述旋风分离装置 (2) 设有与抽吸装置 (22) 的电源相连的第二电接头 (24)；

所述面罩 (1) 与所述旋风分离装置 (2) 为可拆卸连接，当所述面罩 (1) 与所述旋风分离装置 (2) 连接在一起时，所述面罩 (1) 上的第一电接头 (14) 与所述旋风分离装置 (2) 上的第二电接头 (24) 对应连接，面罩 (1) 上的第二出风口 (12) 与所述旋风分离装置 (2) 上的第一进风口 (212) 相对接，空气气流沿第一进风口 (212) 切向进入旋风尘桶 (21)。

2. 如权利要求 1 所述的手持式清洁系统，其特征在于，所述旋风尘桶 (21) 的侧壁 (211) 围设形成尘室 (20)，所述第一进风口 (212) 设置在所述尘室 (20) 侧壁上；

在所述尘室 (20) 内设有网孔过滤器 (25)；所述网孔过滤器 (25) 的一端与所述顶盖组件 (5) 连接，另一端的底板 (251) 设有中心孔；

所述抽吸装置 (22) 包括由一外罩 (221) 围设成的抽吸腔 (220) 及设置于该抽吸腔 (220) 的动力源 (222)；所述外罩 (221) 与动力源 (222) 之间留有间隙，并与一底座组件 (4) 连接，所述外罩 (221) 的另一端形成通道 (223)，通过所述中心孔 (252) 伸进所述网孔过滤器 (25) 内。

3. 如权利要求 2 所述的手持式清洁系统，其特征在于，还包括隔筒 (26) 和锥孔过滤器 (27)；所述隔筒 (26) 位于所述网孔过滤器 (25) 内部，一端穿过所述网孔过滤器底板 (251) 上的中心孔与所述抽吸装置 (22) 的外罩 (221) 固定，另一端连接所述锥孔过滤器 (27)；所述锥孔过滤器 (27) 包括一个通腔 (270)、围绕所述通腔 (270) 连接的多个锥体 (271) 和盖组件 (272)，所述锥体 (271) 设有气流进口；所述盖组件 (272) 具有与所述通腔 (270) 配合的中心孔和与所述锥体对应的伸向所述锥体 (271) 内部的管 (2721)。

4. 如权利要求 3 所述的手持式清洁系统，其特征在于，还包括过滤棉 (2.8) 及用于容纳所述过滤棉的第三腔室 (280)，所述第三腔室 (280) 由所述盖组件 (272) 和环形筒构成，所述环形筒由内筒 (2811)、外筒 (2812) 和连接在内筒 (2811)、外筒 (2812) 之间的底部 (2813) 构成，所述内筒 (2811) 与所述盖组件 (272) 的中心孔相配合，在所述内筒和外筒之间的底部 (2813) 设有气流出口 (2814)，所述环形筒与所述顶盖组件 (5) 之间具有间隙。

5. 如权利要求 1 所述的手持式清洁系统，其特征在于，在所述面罩 (1) 上设有电源开关。

6. 如权利要求 1 所述的手持式清洁系统，其特征在于，底座组件 (4) 和顶盖组件 (5) 上各设有连接孔，用于连接背带。

7. 如权利要求 1 所述的手持式清洁系统，其特征在于，所述面罩 (1) 上的第二进风口 (11) 具有连接接口，用于连接软管。

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手持式清洁系统

技术领域

[0001] 本实用新型涉及一种清洁系统，尤其是一种手持式清洁系统。

背景技术

[0002] 随着生活水平和科技能力的不断提高，各种不同功能的家用服务机器人已逐渐进入平常百姓家庭，为人们的生活带来不同程度的便利。在各种家用服务机器人中，尤其是吸尘器最为普及。

[0003] 在现有技术中，一类典型的吸尘器旋风吸尘器，目前的旋风吸尘器本体中都设置有旋风分离装置和抽吸装置，旋风分离装置包括带有空气入口和空气出口的旋风分离器，旋风分离器中设有灰尘收集室，抽吸装置用于抽吸气流，使其进入旋风分离器中进行气固分离，之后干净的气体在抽吸装置的抽吸作用下排出释放到大气中。现有大部分吸尘器中的抽吸装置均位于旋风分离装置的腔体外部。一般而言，抽吸装置位于旋风分离装置的上方或是下方，该技术特征在公开号为 CN1434688A、申请人为 LG 电子株式会社的专利文献中有所揭示。抽吸装置工作，带有灰尘等颗粒的气流经过空气入口切向的进入旋风分离装置，在离心力的作用下，气灰分离，将带有灰尘等颗粒的杂质滞留在旋风分离装置的灰尘收集室中，干净的空气在抽吸装置的抽吸作用下释放到大气中，达到清洁的目的。

[0004] 然而，这类吸尘器的尘桶、吸风口 / 管等为一体，在倒灰时非常不便，而且，由于电源从吸尘器的本体伸出，如果在倒灰时忘记了拔掉电源，带电操作，存在着潜在的危险。

实用新型内容

[0005] 本实用新型要解决的技术问题在于，提供一种手持式清洁系统，可以手持进行清洁，并且尘桶可以拆卸，倒灰方便；体积小、清洁效率高。

[0006] 为解决上述技术问题，本实用新型提供一种手持式清洁系统，包括旋风分离装置，所述旋风分离装置包括旋风尘桶和位于所述旋风尘桶内的抽吸装置，所述旋风尘桶的外壁设有手柄和第一进风口，所述旋风尘桶的两端设有底座组件和顶盖组件，在所述底座组件上设有第一出风口；还包括面罩，所述面罩设有第二进风口、第二出风口，所述第二进风口与所述第二出风口通过一风道相连；所述面罩设有第一电接头，用于连接电源；所述旋风分离装置设有与抽吸装置的电源相连的第二电接头；所述面罩与所述旋风分离装置为可拆卸连接，当所述面罩与所述旋风分离装置连接在一起时，所述面罩上的第一电接头与所述旋风分离装置上的第二电接头对应连接，面罩上的第二出风口与所述旋风分离装置上的第一进风口相对接，空气气流沿第一进风口切向进入旋风尘桶。

[0007] 以上的手持式清洁系统中的旋风分离装置和面罩为可拆卸连接，在使用该清洁系统进行清洁工作时，将面罩安装在旋风分离装置上，接通电源，便可以工作，可背可手持，在不用时或需要清除尘桶中的灰尘时，可将面罩从旋风分离装置上卸下，操作方便，并且不用带电操作，提高了安全性。

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附图说明

[0008] 图 1 为本实用新型所述手持式清洁系统的分解图；

[0009] 图 2 为实用新型所述旋风分离装置的侧面剖视图；

[0010] 图 3 为实用新型所述旋风分离装置的第一组件的分解图；

[0011] 图 4 为实用新型所述旋风分离装置的第二组件的分解图；

[0012] 图 5 为实用新型所述旋风分离装置的装配分解图；

[0013] 图 6 为实用新型所述面罩立体图；

[0014] 图 7 为实用新型所述面罩分解图；

[0015] 图 8 为实用新型所述动力源开关电路图；

[0016] 图 9 为实用新型所述软管立体图。

具体实施方式

[0017] 如图 1 所示，为本实用新型所述手持式清洁系统的分解图，所述手持式清洁系统包括旋风分离装置 2 和面罩 1，所述面罩 1 与旋风分离装置 2 为可拆卸连接，在所述旋风分离装置 2 两端的底座组件和顶盖组件上各设有连接孔，用于连接背带。面罩 1 的进风口处还可以连接软管。

[0018] 本实用新型中的旋风分离装置 2 包括旋风尘桶 21 和位于所述旋风尘桶内的抽吸装置 22，参见图 2 所示，为实用新型所述旋风分离装置中的侧面剖视图，同时参考图 3、图 4 和图 5，所述旋风尘桶 21 的外壁 211 设有手柄 3 和第一进风口 212，所述旋风尘桶 21 的两端设有底座组件 4 和顶盖组件 5，在所述底座组件 4 上设有第一出风口 41。

[0019] 所述旋风尘桶 21 的侧壁 211 围设形成尘室 20，所述第一进风口 212 设置在所述尘室 20 侧壁上；在所述尘室 20 内设有网孔过滤器 25；所述网孔过滤器 25 的一端与所述顶盖组件 5 连接，另一端的底板 251 设有中心孔；

[0020] 所述抽吸装置 22 包括由一外罩 221 围设成的抽吸腔 220 及设置于该抽吸腔 220 的动力源 222；所述外罩 221 与动力源 222 之间留有间隙，并与一底座组件 4 连接，所述外罩 221 的另一端形成通道 223，通过所述中心孔伸进所述网孔过滤器 25 内。

[0021] 在网孔过滤器 25 内，还设有隔筒 26 和锥孔过滤器 27，所述隔筒 26 的一端穿过所述网孔过滤器 25 底板 251 上的中心孔与所述抽吸装置 22 的外罩 221 固定，另一端连接所述锥孔过滤器 27。

[0022] 所述锥孔过滤器 27 包括一个通腔 270、围绕所述通腔 270 连接的多个锥体 271 和盖组件 272，所述锥体 271 设有气流进口 2710；所述盖组件 272 具有与所述通腔 270 配合的中心孔和与所述锥体对应的伸向所述锥体 271 内部的管 2721。

[0023] 在锥孔过滤器 27 的上面设有过滤棉 28 及用于容纳所述过滤棉的第三腔室 280，所述第三腔室 280 由所述盖组件 272 和环形筒构成，所述环形筒由内筒 2811、外筒 2812 和连接在内筒 2811、外筒 2812 之间底部 2813 构成，所述内筒 2811 与所述盖组件 272 的中心孔相配合，在所述内筒和外筒之间的底部 2813 设有气流出口 2814，所述环形筒与所述顶盖组件 5 之间具有间隙。

[0024] 在第三腔室 280 的上面盖有顶盖组件 5，顶盖组件 5 与第三腔室 280 的环形筒具有间隙。

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[0025] 在上述结构中，网孔过滤器 25 与隔筒 26 的外壁及盖组件 272 的底部形成第一过滤空间 O，多个锥体 271 的空间形成第二过滤空间 P，第三腔室 280 形成第三过滤空间 Q，第一过滤空间 O 的气流从气流入口进入到第二过滤空间 P，第二过滤空间 P 的气流从管 2721 进入到第三过滤空间 Q，第三过滤空间 Q 的气流从开口 2813 进入到第三腔室的与顶盖组件 5 的间隙处，经环形筒内筒筒壁构成的通道、通腔 270 进入到动力源 222 与外罩 221 之间的空隙，进入底座组件 4，从底座组件 4 上设有第一出风口 41 出去。

[0026] 当动力源 222 被驱动时，在旋风尘桶 21 内产生负压，空气气流沿“A”方向自第一进风口 212 切向进入旋风尘桶 21，如图 2 所示。再沿着“B”方向，吸入空气贴着尘室 20 内壁螺旋下沉。此时大部分含有灰尘的空气沿着“C2”方向穿过进入网孔过滤器 25 内部，大部分的灰尘颗粒被挡在尘室底部。经网孔过滤器 25 第一次过滤的空气沿着“D”方向进入锥孔过滤器 27，含有灰尘的空气在锥孔过滤器 27 中经过第二次过滤，沿着“E”方向穿过灰尘过滤棉 28 进行第三次过滤，然后沿着“F”进入动力源 222 内，最后沿着“G”方向排出旋风尘桶 21。

[0027] 在上述各元件中，在形成密封的两个空间时，通常在两个连接件中间增加密封圈或密封条、密封带等。如，网孔过滤器 25 与旋风尘桶 21 的侧壁 211 之间具有密封圈 70，在所述隔筒 26 与抽吸装置 22 的外罩 221 的固定处设有密封圈 71，在顶盖组件中的密封圈 72 等等。

[0028] 在本实用新型，所述的动力源为电动机或电动机与风机的结合体。

[0029] 在装配时，可以将本实用新型成组件地安装在一起如图 5 所示。

[0030] 本实用新型中的旋风分离装置 2 通过一级旋风分离、二级过滤，因此，对空气的清洁率非常高，并且，如前述结构，结构紧凑，体积小，非常适用于手持。

[0031] 如图 6 所示，为面罩 1 的分解图，所述面罩 1 设有第二进风口 11、第二出风口 12，所述第二进风口 11 与所述第二出风口 12 通过一风道 13 相连；所述面罩 1 设有第一电接头 14 和与所述第一电接头 14 相连接的电源线 15 以连接电源。所述面罩 1 上还设有两个滑动卡勾 16，对应在，在旋风分离装置 2 上设有卡槽（图中未示出）。

[0032] 当所述面罩 1 与所述旋风分离装置 2 连接在一起时，所述面罩 1 上的第一电接头 14 与所述旋风分离装置 2 上的第二电接头 24 对应连接，面罩 1 上的第二出风口 12 与所述旋风分离装置 2 上的第一进风口 212 相对接。

[0033] 在面罩 1 设有开关 17，如图 8 所示，为动力源开关电路图，当所述面罩 1 与所述旋风分离装置 2 连接在一起时，如果通过电源线 15 与市电连接，如图 8 所示，当按下设在面罩 1 上的开关 17 时，动力源 222 起动，开始抽吸空气。

[0034] 为了延长空气的进口，在所述面罩 1 的第二进风口 11 处设有连接接口，可以连接上如图 9 所示的软管。

[0035] 当所述面罩 1 与所述旋风分离装置 2 连接在一起时，人们可以用背带（如图 1 所示，背带设置在底座组件 4 和顶盖组件 5 上各设有连接孔中）挎在身上，并一手拿着手柄 3，一手拿着软管进行手持式操作。清洁率高，操作简便。

[0036] 当需要倒灰时，可以将面罩摘下来，由此可断掉旋风分离装置 2 的电源，提高了操作的安全性。

[0037] 最后应说明的是：以上实施例仅用以说明本实用新型的技术方案而非限制。尽管

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参照上述实施例对本实用新型进行了详细说明，本领域的普通技术人员应当理解，依然可以对本实用新型的技术方案进行修改和等同替换，而不脱离本技术方案的精神和范围，其均应涵盖在本实用新型的权利要求范围当中。

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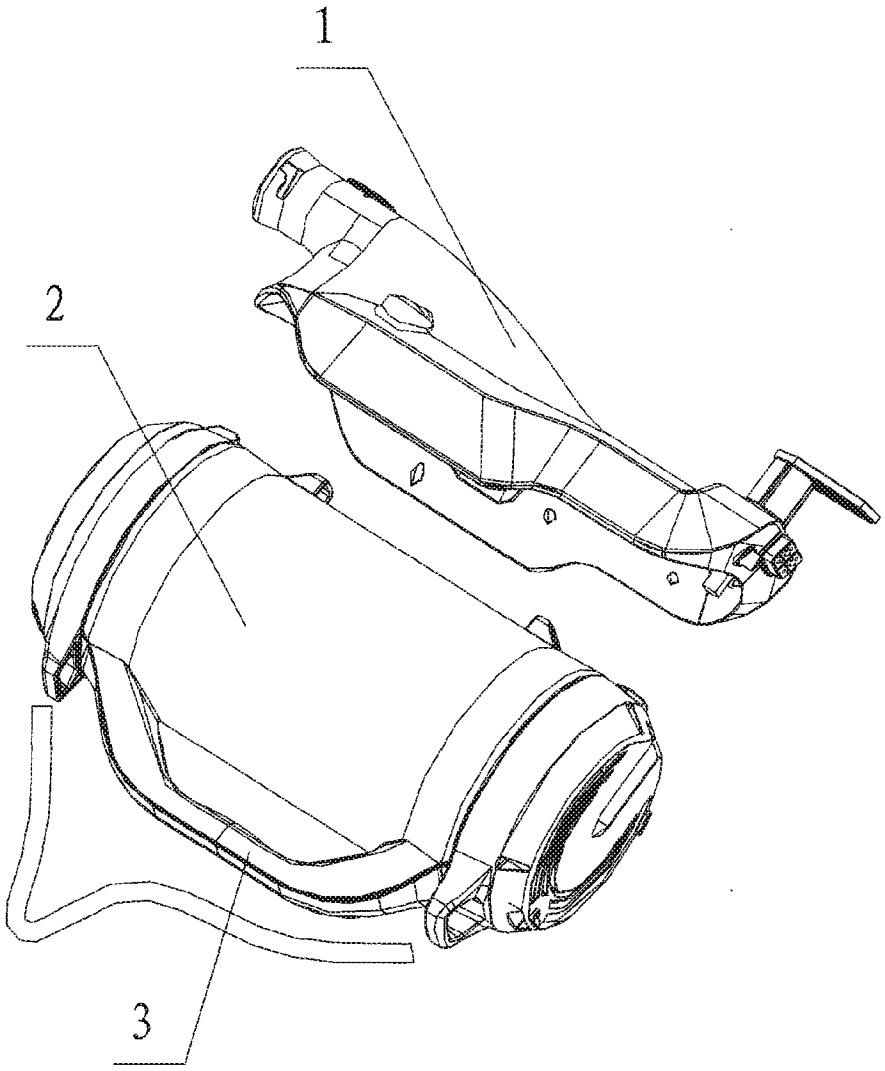

图 1

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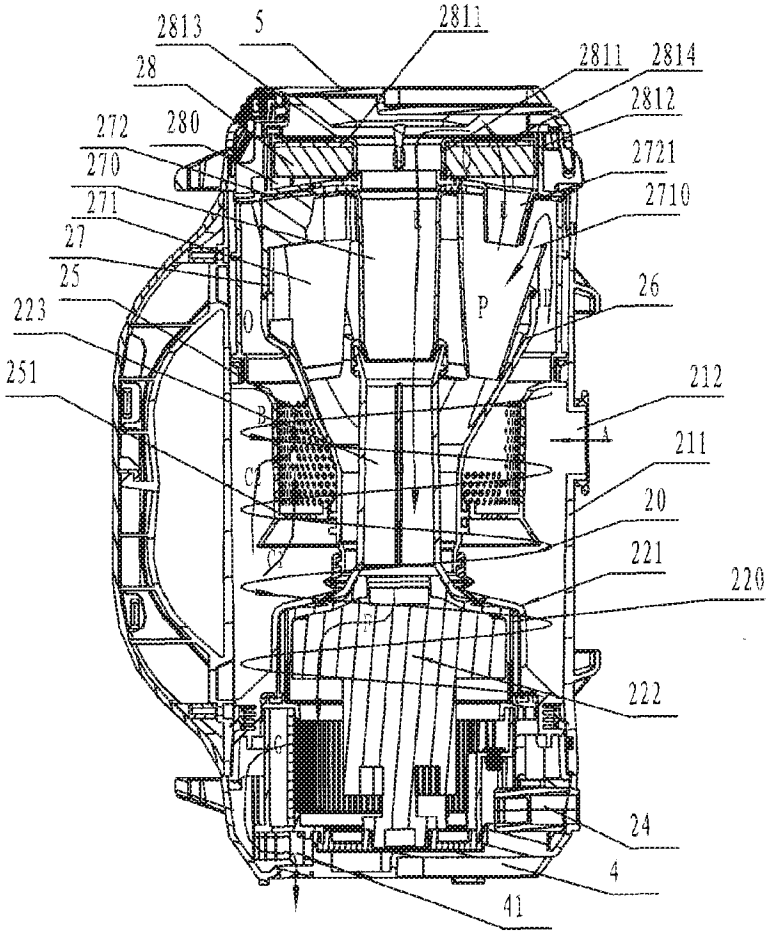

图 2

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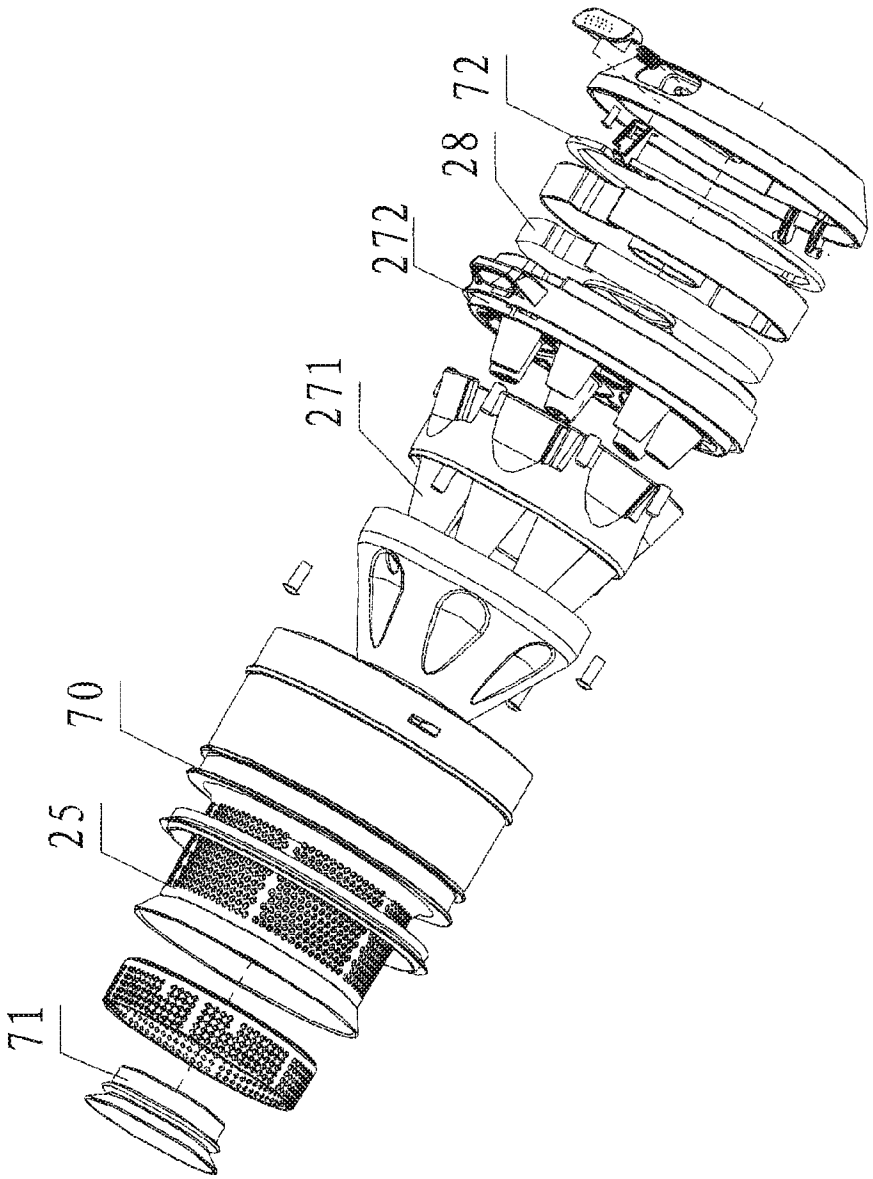

图 3

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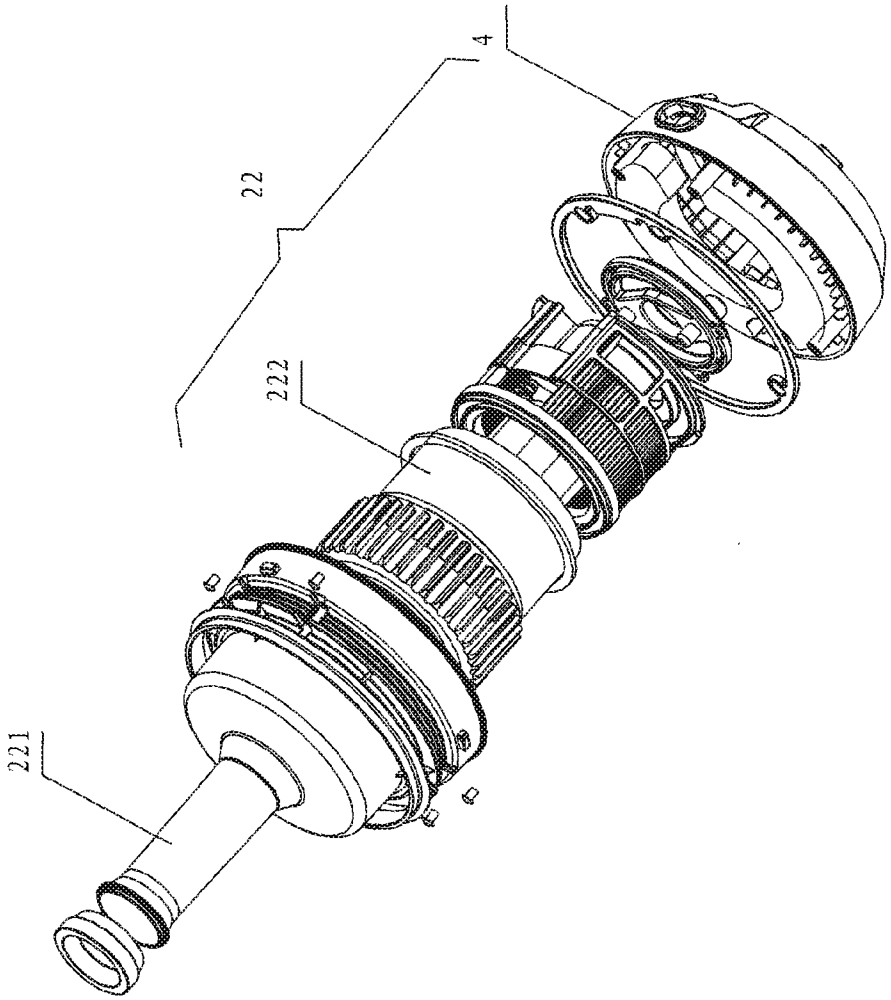

图 4

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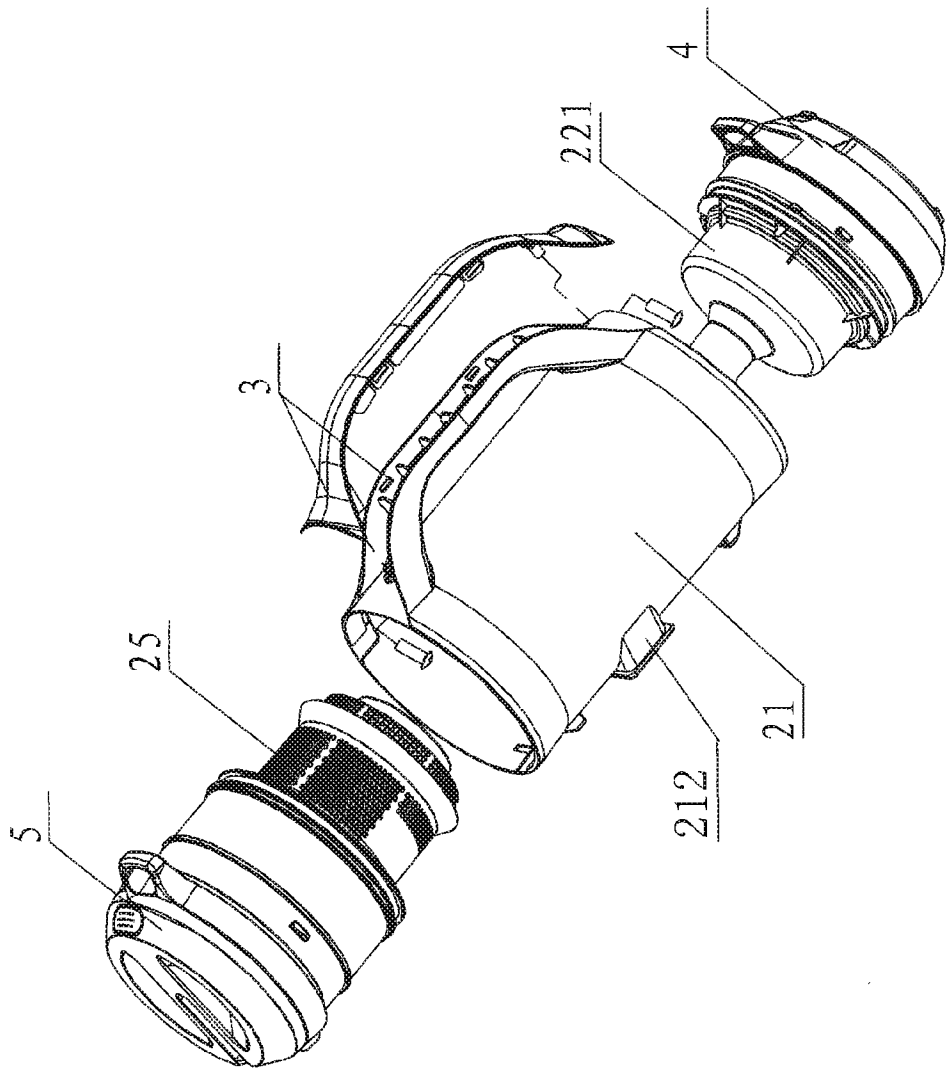

图 5

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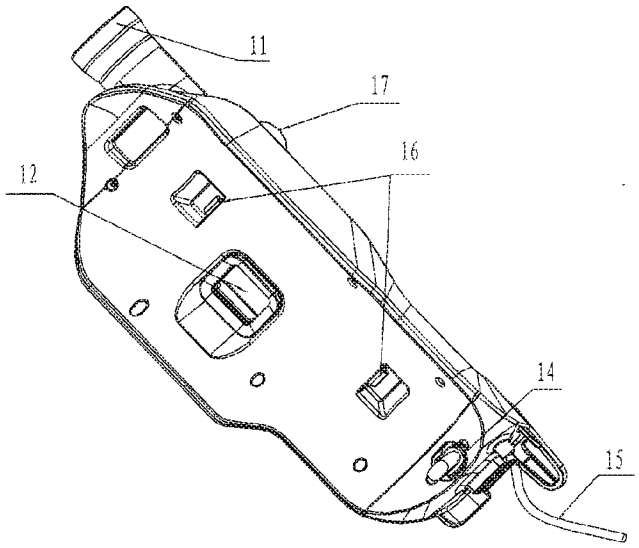

图 6

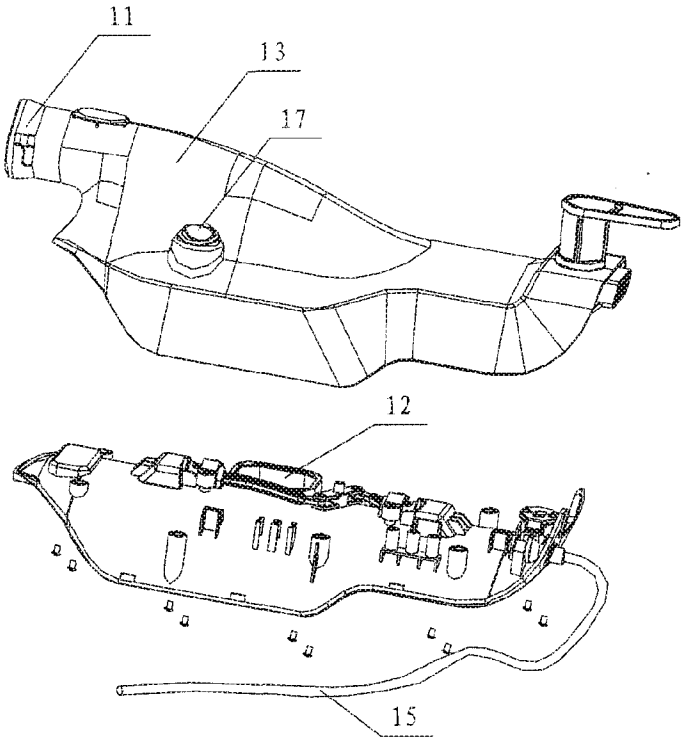

图 7

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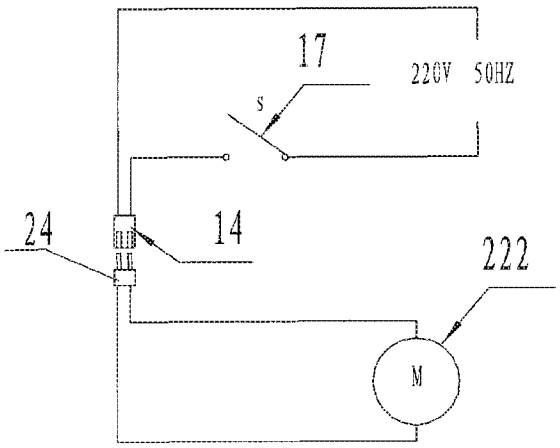

图 8

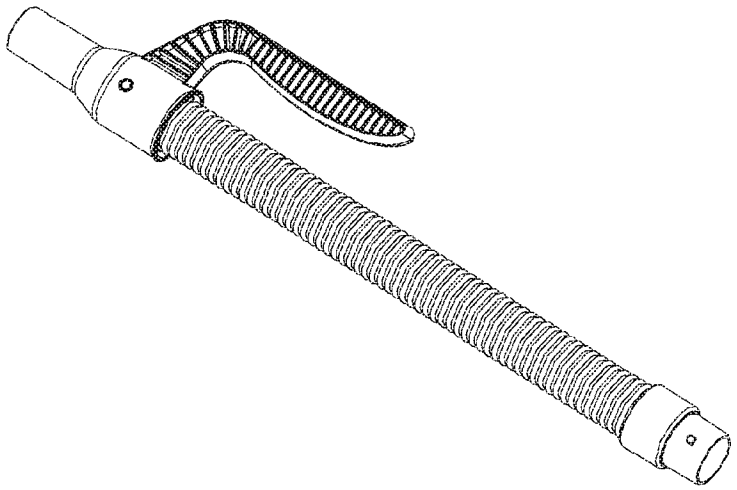

图 9

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DESCRIPTION KR20100134889

Handheld Vacuum Cleaners (HANDY VACUUM CLEANER)

The present invention relates to a handy relates to a vacuum cleaner, and more particularly, as well as foreign matter having a suction function than the tapping function and sterilizing function Handheld vacuum cleaner.

In general, vacuum cleaners are widely used to remove dust such as the inside of the home or office. Knowledge about these vacuum cleaners are developing day by day, further led to the advent of wireless control and cleaner robot vacuum cleaner from a manually operated. As such, if the type of vacuum cleaner and various, (hereinafter simply referred to as "Mini Vac 'it), especially among small vacuum cleaner they are mainly used for cleaning of bedding, clothing, etc. inside the vehicle. Mini Vac is only if there is or is having only a function of sucking the foreign matter such as dust or hair, in addition has a built-in UV disinfection functions, or having a striking rod intended to clean off the debris from the object. However, that in such handy cleaner, referring to the air flow path of the air flow path that is, to the air outlet from the foreign matter suction unit to the suction motor, a filter coupled to its collector passage inside for collecting the foreign substances in the air flow path is disposed directly the filtration through a filter during cleaner operation can no longer be smoothly carried out due to the. Thus, such handy cleaners are due to the vulnerability of the structure of a filter for filtering foreign materials or structure of the dust collector to collect the foreign matter failure occurs frequently or is effected a reduced life of the cleaner. In the case of the conventional handy cleaner, it can not determine whether the amount of dust to some extent foreign matter during the cleaning operation or decrease in efficiency is frequently the case that a malfunction occurs in the vacuum cleaner.

Accordingly, the present invention can increase the life of the cleaner as been made to improve upon the above problems, object of the present invention is to solve the structural problem of the dust collector which collects foreign matters in the conventional Mini Vac that to provide an improved Handheld vacuum cleaner. Other challenges to the invention is resolved, providing the conventional operation of the Mini Vac some degree of improved Handheld Vacuum Cleaners No foreign substance to determine whether the dust cleaning efficiency degradation or to correct the problem that a malfunction of the cleaner caused to. Another object of the present invention is to provide a Handheld vacuum cleaner further comprising a negative ion generating function with, foreign matter separation, sterilization, and the suction function. And secondary body portion for vacuum cleaners, sterilization, separation and suction the main body portion, the foreign material on the cleaning object to a vacuum motor assembly generating a suction force in accordance with an aspect of the present invention for solving the above problems, the is coupled to a main body portion comprising: a dust collecting section for revolving the inhaled foreign material from the inside, the first air flow path between the main body section and the dust collecting section is formed, the second air flow path between the secondary body portion and the dust collecting section It is formed. Preferably, the hair and lint unit for separating the foreign materials from the cleaning object to the secondary body portion, the foreign materials on the cleaning object comprises a UV disinfection to UV disinfection. Preferably, the foreign matter comprises a removable brush hairs portion intended to isolate the foreign matter from the cleaning object. Advantageously, the unit comprises a removable debris hairy tapping rod intended to isolate the foreign matter from the cleaning object. Preferably, the secondary body portion further includes a negative ion generator. Preferably, the dust collecting part is a first cyclone wing, and the first to form a vortex to orbital debris flowing through the main filter, the second air flow path to filter the foreign substances flowing through the second air passage and a second cyclone wings to enhance the vortex formed by the cyclone wings.

Preferably, the main filter is a compressed fiber filter, may be formed in a hemispherical shape or arch shape. Preferably, the vacuum cleaner is not directly introduced into the first air flow path in the dust collecting foreign substances, a secondary filter unit is fastened to the main body on the first air flow path. Advantageously, the vacuum cleaner comprises a rotatably combined exhaust air to regulate the discharging direction of the exhaust air on a side of the main body. Preferably, the vacuum cleaner comprises a cleaning rod which is fastened to the secondary body portion having a brush, and intended to isolate the foreign matter from the cleaning object to provide a third air flow passage of the to the dust collecting unit via a the auxiliary body do. Preferably, the vacuum cleaner comprises a part or all of

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the outer wall of the dust collecting section is formed of a transparent material. Preferably, the dust collecting part comprises a cap capable naedcrok baechulhae the foreign matter collected in the inner opening, the inner surface of the cap is a horizontal cross-section is ring-shaped in groove and a horizontal section, at least one of any one or two or more of the grooves is circular a shape including a. The vacuum cleaner according to another aspect of the present invention for solving the above problems, a main body portion including a vacuum motor assembly generating a suction force and; And a UV sterilization lamp unit for ultraviolet sterilization of foreign matter on the cleaning object, and the foreign matter intake formed separated by the ultraviolet sterilizing lamp unit and the partition wall, disposed on the debris inlet and hair debris intended to isolate the foreign matter from the cleaning object and secondary body portion including a; Filtered into the two cyclone blade unit and the first air flow path to provide a first air flow passage is fastened to the main body portion, forming a vortex for orbiting the foreign substances is disposed on the first air flow passage intake and the dust collecting part comprising a compressed fiber filter to ensure that air flows; Connecting the said main body and said secondary body, and comprises a bridge that provides a second air flow path between the secondary body portion and the dust collecting part. As described above, the present invention by providing an improved Handheld vacuum cleaners, there is an effect that can increase the life of the cleaner by improving the problem of the dust passing through the filter of the conventional Mini Vac.

In addition, the present invention by providing an improved Handheld vacuum cleaner, the dust collector can grasp the degree of debris during operation of the vacuum cleaner there is an effect that can increase the cleaning efficiency and easily grasp the state of the filter. In addition, the present invention is effective to further provide a feature with a negative ion generator, by providing an improved Handheld vacuum cleaner, debris separation, sterilization, and the suction function. The invention also Handheld the cap of the dust collecting unit of a vacuum cleaner, the first cyclone blade unit, the second cyclone blade unit and the groove is a horizontal section of the inner surface of the ring-shaped with a horizontal section any one of the at least one groove in a circular or by being formed to include two or more, it is possible to further increase the separation effect of the foreign matter from the air cleaner during operation.

It will be described below by referring to the preferred embodiments of the present invention. The accompanying drawings and the description below is indicating an be simplified with the intention illustrated to aid understanding of the present invention causes as one of ordinary skill in the art, these drawings and the description the scope of the invention intended to be construed in a collapse will not. 1 is a cross-sectional view of a dissection Handheld vacuum cleaner according to an embodiment of the present invention. Referring to Figure 1, the Handheld vacuum cleaners are largely comprises a main body portion 10, a secondary body portion (30, 40) and the dust collecting part (20). Main body portion first air flow path (arrow A1) between 10 and the dust collecting part (20) is formed, it is formed in the second air flow path (arrow A2) between the auxiliary body part 30 and the dust collecting part (20). The main body portion 10 includes a vacuum motor assembly (12) for to generate a suction force by vacuum. Such vacuum motor assembly 12 may be used as a vacuum motor assembly of known for use in conventional vacuum cleaners. In addition, the main body portion 10, handle 13 is engaged and, the handle 13 has a vacuum cleaner on / off, etc. of the control for the control switch 14 and a control handle for the circuit is formed in the printed circuit board (PCB) it can be further provided. In addition, the main body portion 10 has to be further provided display unit 16 for displaying the operating conditions of the cleaner. Here, the handle 13 is formed separately from or integrally formed may be coupled to the handle 13 by a predetermined fastening means. In addition, the wire (W) is connected to the main body section 10 may supply power to, a built-in charger (not shown) may be operated by charging method. The secondary body part 30 is provided with the ability to sterilize the foreign substances on the cleaning object (not shown), or naegeona off the foreign material from the cleaning object, this suction. Here, the cleaning object can be varied, such as bedding or baegae such as bedding, as well as the vehicle interior, couch, or pallet of textile materials. Also, for convenience, sterilization in this specification is defined to include the concept of the insecticide as well as insect pests, such as fungi or bacteria killing mites.

In addition, foreign matter is defined to include any substance to be normally removed from the cleaning object, such as dust, paper pieces of large dust particles from the hair, small particles. Secondary body part 30 is because it is more particularly shown in Figure 3a and 3b, will be described with reference to FIGS. 1 and 3a and 3b. Figure 3a is the removal of the secondary body portion the outer frame 38, the state diagram, Figure 3b is a view of a state that combines the secondary body portion the outer frame (38). The secondary body part 30 comprises a UV sterilizing unit (34) for foreign hairs part sterilizing ultraviolet (32, 32a, 32b, 32c, 32d) and a foreign substance on the cleaning object intended to isolate the foreign matter from the cleaning object . In addition, lance coupler for locking the lance 80, 37 and lance zipper zipper cap 36 for opening and closing (37 in FIG. 8) is formed. Since foreign hairs part is illustrated in Figures 4a and 4b, Figure 4a and Figure Referring to 4b, foreign hairs part (32, 32a, 32b, 32c, 32d) is a removable tapping rod (32, 32a), the motor assembly (32b) and a belt (32c may include a), may be removable brush (32d, instead of a removable tapping rod (32, 32a) according to the user's taste or cleaning properties of the object) it is to be used. Foreign hairs part (32, 32a, 32b, 32c, 32d) is preferably arranged in the inlet (33). Inlet 33 forms part of the second air flow path (arrow A2) between the main body portion 10 and secondary body portion 30. The UV disinfection unit 34, and performs a function of UV germicidal lamp can be used, the sterilization of bacteria or pests cleaning object. Secondary body part 30 is the inlet (33), ultraviolet sterilization unit (34), and in addition to foreign hairs comprising a portion (32, 32a, 32b, 32c, 32d) may further include a negative ion generator (100) . The negative ion generator 100 may be operated regardless of the cleaning operation of the cleaner, it is better to not to work when the cleaning process.

Also, in Fig. 1, the main body portion 10 and secondary body portion 30, but are illustrated only an integral structure, and furthermore the main body portion 10 and the UV disinfection unit (34 in the connection structure between the secondary body part 30) and the second air between foreign hairs

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part (32) part of the portion other than that provided with the main body portion 10 and secondary body portion 30 connected between and secondary body portion 10 and the dust collecting part (20) it may be formed of the structure identified by the bridge portion 40 serves to provide a flow path (A2). The dust collecting part (20) is by-time (not shown), the foreign matter is coupled to the main body suction unit 10, the inside of the dust collecting part (20) performs the function of separating air and foreign matter between. Dust collection section 20 is 2a and because it is in more detail shown in 2b, Fig. 1, Figs. 2a and will be described with reference with the 2b, the dust collecting part (20) is the suction port 33 through the second air flow (A2) the main filter 60, the second first cyclone wing unit (26a) to form a vortex to-time foreign matters flowing from through the air flow path (A2), the inlet (33) for filtering the foreign matter flowing from, and a first and a second cyclone unit wings (26b) to strengthen the vortex formed by the cyclone wing unit (26a). Dust collection section 20 can freely ride, attached via the fastening part 29 to the main body section 10 and fastening section (29) portion has a first provided second air flow path (A2) with a secondary body portion 30 of the hole 28 for the further forming. The function of first cyclone wing unit (26a) and the second cyclone blade unit (26b) is when the air is drawn through the first air flow (A1) during the operation of the suction motor assembly generating a vortex inside the dust collecting part (20) performs. The number of the first cyclone wing unit (26a) and the second cyclone blade unit (26b), each of the blades is shown three, but not particularly limited to three, may be four, five or more. Main filter 60 may be a compressed fiber filter. The compressed fiber filter as a filter formed by compressing the fibers, because the density of the air gap increases, the conventional filter, that is excellent in air permeability to air permeability than the filter assembly of the plastic injection mold.

Some or all of the outer wall 24 of the dust collecting part (20) is formed of a transparent material, and to grasp the situation of the foreign substance collecting cleaner. Therefore, the dust collecting part (20) of the outer wall 24, the forming material is above some or all, and to be transparent to form a main filter 60, the first and second cyclone wing unit (26a, 26b) therein, such and, any material but may be used by the revolution of the foreign matter if it can be formed to have a strength enough not to be damaged. Further, the dust collecting unit 20 has the dust collecting part (20) there is a open cap (cap) (22) in order to baechuihae debris collected therein may be further formed on the inner surface of the horizontal plane of the cap 22, the ring-shaped grooves (22a) and a horizontal section of a circular recess (22b) shaped to include all of either or both can be formed. it is formed in only one of the grooves (22b) On the drawings, but may be formed of several. These ring-shaped groove (22a) and a circular groove (22b) is a dust collecting part (20) by increasing the strength of the vortex formed by the assisting a formation of the eddy current, in particular the first and second cyclone wing unit (26a, 26b) inside by increasing the centrifugal force of the incoming material to be foreign matter so that this can be better separated from the air. In addition, the main body portion 10 has a filter (90) can be further tightened. This secondary filter (90), the main body section 10 and the dust collection section 20, because of the detachable ease of, when recombined after desorbing and replacing the dust collecting part (20), cleaning or main filter 60 of the reason, the main filter do not combine 60, foreign matter in the main body portion 10, the dust collecting part (20) as with the first air flow path by tightening the defective (A1) is directly drawn, so frequently the case of shortening the failure or the life of the cleaner , it is to resolve these disadvantages. Type of secondary filter 90 does not significantly limit, for example, may be used a conventional mesh filter. Furthermore, Handheld wheel (50a, 50b) in order to to facilitate the cleaning operation of the vacuum cleaner can be further provided.

Handheld vacuum cleaner according to an embodiment of the present invention, the main body portion 10 side that is, rotation in the opposite direction of the foreign matter collector (33) of the secondary body portion (30) to adjust a discharge direction of the air discharged in a possibly combined exhaust air can be further included. Since these air discharge unit is shown in Fig. 5, a, and the air outlet section 70 includes an air outlet 72, a combination that the exhaust air according to the user's situation is rotatable not point toward the user do. For example, when the right hand grabbing the handle 13, the air outlet 72 is turning not point toward the user (the arrow A3) may be used, if the left hand grabbing the handle (13) as shown in Figure 5 to the air outlet (72) facing in the direction can be used not point toward the user. On the other hand, during the operation of the Handheld vacuum cleaner according to an embodiment of the present invention, the user there is the clean holding the handle 13, when holding the handle 13, the main body including a vacuum motor assembly 12 part the user in consideration of the sum of the weight of the weight and the dust collecting part (20) and the secondary body portion 30 of 10 and is designed to feel less heaviness. 6 is a view for explaining another example of use of Handheld vacuum cleaner according to an embodiment of the present invention. 6, a Handheld vacuum cleaner is cleaned that is fastened to the secondary body portion 30 via the secondary body portion 30 to provide a third air passage (not shown) to the dust collecting part (20) rod (80) it can be further included. A lance (80) part which is fastened to the body (sign mipyogi), includes a tail 82 and the head 84, the tail 82 is cleaning rod coupler of the secondary body part 30 (37), head 84 may be entered into more brushes (not shown) intended to isolate the foreign matter from the cleaning object. Thus, in the present invention an exemplary Handheld vacuum cleaner, prior Handheld vacuum cleaner according to an example of, in the air flow path of the air flow path that is, to the air outlet from the foreign matter suction unit to the suction motor, dust collecting the foreign matter on the air flow a filter coupled to the inner passage thereof filtration through a vacuum cleaner filter during operation, due to that is disposed directly can improve the problem that is not smoothly performed, and further increases the service life of the vacuum cleaner, will have the advantage to increase the cleaning efficiency .

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CLAIMS KR20100134889

1.

A main body portion including a vacuum motor assembly generating a suction force and; Panel auxiliary body for sterilization, separation and suction cleaning debris on the subject; is coupled to the main body portion comprising: a dust collecting section for revolving the inhaled foreign material from the inside, The main body portion and the first air flow path is formed between the dust collection, the vacuum cleaner to which the second air flow path is formed between the body portion and the secondary dust collecting part.

2.

The method according to claim 1, wherein the secondary body portion Foreign hairs unit for separating the foreign materials from the cleaning object; And Vacuum cleaner comprising an ultraviolet sterilization for UV disinfection foreign substances on the cleaning object.

3.

The method according to claim 2, wherein the foreign substance portion hairy vacuum cleaner comprising a removable brush bet for separating the foreign materials from the cleaning object.

4.

The method according to claim 2, wherein the foreign substance portion hairy vacuum cleaner comprising a removable tapping rod bet for separating the foreign materials from the cleaning object.

5.

The method according to claim 2, wherein the vacuum cleaner further comprising a secondary body portion negative ion generator.

6.

The method according to claim 1, wherein the dust collecting part is A main filter for filtering foreign substances flowing through the second air passage; A first wing that forms a cyclone vortex foreign substances flowing through the second air flow path so as to revolve; And Vacuum cleaner comprising a cyclone 2 wings to enhance the vortex formed by the first cyclone wings.

7.

According to claim 6, wherein said main filter is compressed fiber filter of the vacuum cleaner.

8.

According to claim 6, wherein said main filter is vacuum formed in a semi-spherical or arcuate.

9.

According to claim 1 and any one of 6, so that the foreign substances within the dust collection is not drawn directly into the first air flow path, the vacuum cleaner comprises a secondary filter unit is fastened to the main body on the first air flow path.

10.

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The method according to claim 9, wherein the main body has a side of the vacuum cleaner including a rotatable discharging the combined air to control the discharging direction of the exhaust air.

11.

The method according to claim 9, provided with a brush intended to isolate the foreign matter from the cleaning object, and is fastened to the secondary body portion vacuum cleaner comprising a cleaning rod to provide a third air flow passage of the to the dust collecting unit via a the auxiliary body .

12.

The method according to claim 9, some or all of the vacuum cleaner which is formed of a transparent material of the outer wall of the dust collecting part.

13.

The method according to claim 9, wherein the dust collecting part comprises a cap capable naedorok baechulhae the foreign matter collected in the internal opening, said inner surface of the cap is either or both of the at least one groove of the horizontal cross section is ring-shaped in groove and a horizontal section is circular shaped vacuum cleaner comprising at least.

14.

A main body portion including a vacuum motor assembly generating a suction force and; And a UV sterilization lamp unit for ultraviolet sterilization of foreign matter on the cleaning object, and the foreign matter intake formed separated by the ultraviolet sterilizing lamp unit and the partition wall, disposed on the debris inlet and hair debris intended to isolate the foreign matter from the cleaning object , a secondary body portion including; The main service of the first air flow passage is fastened to the body part, it filters the two cyclone blade unit is disposed on the first air flow path to form a vortex for orbiting the inhaled foreign substances, into the first air flow path the air containing the compressed fiber filter to ensure that the inlet, the dust collecting unit, And Connecting the said main body and said secondary body, and a vacuum cleaner including a bridge to provide a second air flow path between the secondary body portion and the dust collecting part.

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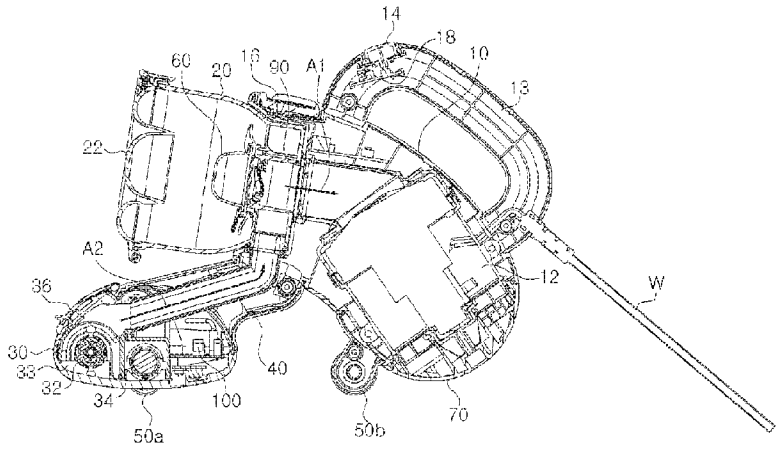
공개:
— 국제조사보고서와 함께 (조약 제 21 조(3))

(54) Title: HANDY VACUUM CLEANER

(54) 발명의 명칭 : 핸디형 진공 청소기

[Fig. 1]



(57) Abstract: Disclosed is a handy vacuum cleaner. The handy vacuum cleaner includes a main body including a vacuum motor assembly for generating a suction force, an auxiliary body for sterilizing, isolating and inhaling impurities from an object to be cleaned, and a dust collecting part coupled with the main body for inhaled impurities to spin inside. A first air channel is formed between the main body and the dust collecting part, and a second air channel is formed between the auxiliary body and the dust collecting part. Therefore, the handy vacuum cleaner may resolve the structural defects of a conventional dust collection box including filters, increase cleaning efficiency and decrease the failure rate thereof.

(57) 요약서: 핸디형 진공 청소기가 개시된다. 그러한

[다음 쪽 계속]

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핸디형 진공 청소기는, 흡입력을 발생시키는 진공모터 조립체를 포함하는 주 몸체부와, 청소 대상물 상의 이물질을 살균, 분리 및 흡입하기 위한 보조 몸체부와, 주 몸체부에 결합되어 흡입된 이물질을 내부에서 공전시키는 집진부를 포함하되, 주 몸체부와 집진부 사이에 제 1 공기 유로가 형성되고, 보조 몸체부와 집진부 사이에 제 2 공기 유로가 형성되어, 종래의 필터를 포함하는 집진통의 구조적 결함 문제를 해결하여, 청소 효율을 높이고 청소기의 고장 발생율을 줄일 수 있다.

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명세서

핸디형 진공 청소기

기술분야

[1] 본 발명은 핸디형 진공 청소기에 관한 것으로서, 보다 상세하게는 이물질 흡입 기능 뿐만 아니라 두드림 기능 및 살균 기능을 구비한 핸디형 진공 청소기에 관한 것이다.

배경기술

[2] 일반적으로, 가정이나 사무실 등의 내부의 먼지를 제거하기 위해 진공 청소기가 널리 사용되고 있다. 이러한 진공 청소기에 관한 기술은 나날이 발전되어, 수동으로 조작하는 것에서 더 나아가 무선 제어 청소기나 로봇 청소기 등이 나오기에 이르렀다. 진공 청소기의 종류는 이렇듯 다양하며, 그들 중 특히 소형의 진공 청소기(이하에서는 이를 단지 '핸디형 청소기' 이라고도 함)의 경우에는 침구류, 의류, 차량 내부 등의 청소에 주로 사용되고 있다.

[3] 핸디형 청소기는 단지 먼지나 머리카락 등의 이물질을 흡입하는 기능만을 구비하고 있다거나, 이에 더하여 자외선 살균 기능을 내장하고 있다거나, 청소 대상물로부터 이물질을 털어내기 위한 타격봉을 구비하는 경우가 있다.

[4] 그러나, 이러한 핸디형 청소기들에서, 흡입 모터까지의 공기 유로 즉, 이물질 흡입부에서부터 공기 배출구까지의 공기 유로를 살펴보면, 공기 유로 상에 이물질을 수집하는 집진통과 이의 내부에 결합되는 필터가 직접 배치되어 있음으로 인해 청소기 작동시 필터를 통한 여과가 원활하게 수행되지 않게 된다.

[5] 따라서, 이러한 핸디형 청소기들은 이물질을 수집하는 집진통의 구조나 이물질을 여과하기 위한 필터의 구조의 취약성으로 인해 고장 발생이 빈번하거나 청소기의 수명 단축이 초래된다.

[6] 또한, 종래의 핸디형 청소기의 경우에는, 작동시 집진된 이물질의 양이 어느 정도인지를 파악할 수 없어 청소 효율이 저하되거나 청소기의 오작동이 발생하는 경우가 빈번하다.

발명의 상세한 설명

기술적 과제

[7] 따라서, 본 발명은 상기와 같은 제 문제점들을 개선하기 위해 안출된 것으로서, 본 발명이 해결하고자 하는 과제는 종래의 핸디형 청소기의 이물질을 수집하는 집진통의 구조적 문제점을 해결하여 청소기의 수명을 증가시킬 수 있는 개선된 핸디형 진공 청소기를 제공하는 것이다.

[8] 본 발명이 해결하고자 하는 다른 과제는, 종래의 핸디형 청소기의 작동시 어느 정도의 이물질이 집진되었는지를 파악할 수 없어 청소 효율이 저하되거나 청소기의 오작동이 발생하는 문제를 해결하는 개선된 핸디형 진공 청소기를 제공하는 것이다.

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[9] 본 발명이 해결하고자 하는 또 다른 과제는, 이물질 분리, 살균 및 흡입 기능과 함께 음이온 발생 기능을 더 구비하는 핸디형 진공 청소기를 제공하는 것이다.

기술적 해결방법

[10] 상기 과제를 해결하기 위한 본 발명의 일 양상에 따른 진공 청소기는, 흡입력을 발생시키는 진공모터 조립체를 포함하는 주 몸체부와, 청소 대상물 상의 이물질을 살균, 분리 및 흡입하기 위한 보조 몸체부와, 상기 주 몸체부에 결합되어 흡입된 이물질을 내부에서 공전시키는 집진부를 포함하되, 상기 주 몸체부와 상기 집진부 사이에 제1 공기 유로가 형성되고, 상기 보조 몸체부와 상기 집진부 사이에 제2 공기 유로가 형성된다.

[11] 바람직하게는, 상기 보조 몸체부는 상기 청소 대상물로부터 이물질을 분리하기 위한 이물질 털이부와, 상기 청소 대상물 상의 이물질을 자외선 살균하기 위한 자외선 살균부를 포함한다.

[12] 바람직하게는, 상기 이물질 털이부는 상기 청소 대상물로부터 이물질을 분리해 내기 위한 착탈식 브러쉬를 포함한다.

[13] 바람직하게는, 상기 이물질 털이부는 상기 청소 대상물로부터 이물질을 분리해 내기 위한 착탈식 두드림봉을 포함한다.

[14] 바람직하게는, 상기 보조 몸체부는 음이온 발생기를 더 포함한다.

[15] 바람직하게는, 상기 집진부는 상기 제2 공기 유로를 통해 인입되는 이물질을 필터링하는 메인 필터, 상기 제2 공기 유로를 통해 인입되는 이물질이 공전하도록 와류를 형성하는 제1 싸이클론 날개, 및 상기 제1 싸이클론 날개에 의해 형성되는 와류를 강화하기 위한 2 싸이클론 날개를 포함한다.

[16] 바람직하게는, 상기 메인 필터는 압축섬유 필터이고, 반구형상 또는 아치형상으로 형성될 수 있다.

[17] 바람직하게는, 상기 진공 청소기는 상기 집진부 내의 이물질이 직접 상기 제1 공기 유로로 인입되지 않도록, 상기 제1 공기 유로 상에서 상기 주 몸체부에 체결되는 보조 필터를 포함한다.

[18] 바람직하게는, 상기 진공 청소기는 상기 주 몸체부의 일측에 배출 공기의 배출 방향을 조절하도록 회전가능하게 결합된 공기 배출부를 포함한다.

[19] 바람직하게는, 상기 진공 청소기는 청소 대상물로부터 이물질을 분리해 내기 위한 브러쉬를 구비하고, 상기 보조 몸체부에 체결되어 상기 보조 몸체부를 경유하여 상기 집진부까지의 제3 공기 유로를 제공하는 청소봉을 포함한다.

[20] 바람직하게는, 상기 진공 청소기는 상기 집진부의 외벽의 일부 또는 전부가 투명 재질로 형성된다.

[21] 바람직하게는, 상기 집진부는 내부에 수집된 이물질을 배출해 내도록 개폐가능한 캡을 포함하며, 상기 캡의 내부 표면은 수평 단면이 링형인 홈과 수평 단면이 원형인 적어도 하나의 요홈 중 어느 하나 또는 둘 이상을 포함하는 형상이다.

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[22] 상기 과제를 해결하기 위한 본 발명의 다른 양상에 따른 진공 청소기는, 흡입력을 발생시키는 진공모터 조립체를 포함하는 주 몸체부와; 청소 대상물 상의 이물질을 자외선 살균하기 위한 자외선 살균 램프부와, 상기 자외선 살균 램프부와 격벽에 의해 분리 형성된 이물질 흡입구와, 상기 이물질 흡입구 상에 배치되고 상기 청소 대상물로부터 상기 이물질을 분리해 내기 위한 이물질 털이부를 포함하는 보조 몸체부와; 상기 주 몸체부에 체결되어 제1 공기 유로를 제공하고, 상기 제1 공기 유로 상에 배치되어 흡입된 이물질을 공전시키기 위한 와류를 형성하는 두 개의 싸이클론 날개 유닛과 상기 제1 공기 유로 내로 필터링된 공기가 유입되도록 하기 위한 압축섬유 필터를 포함하는 집진부와; 상기 주 몸체부와 상기 보조 몸체부를 연결하고, 상기 보조 몸체부와 상기 집진부 사이에 제2 공기 유로를 제공하는 브릿지부를 포함한다.

유리한 효과

[23] 상술한 바와 같이, 본 발명은 개선된 핸디형 진공 청소기를 제공함으로써, 종래의 핸디형 청소기의 집진통과 필터의 문제점을 개선함으로써 청소기의 수명을 증가시킬 수 있는 효과가 있다.

[24] 또한, 본 발명은 개선된 핸디형 진공 청소기를 제공함으로써, 청소기의 작동시 이물질의 집진 정도를 파악할 수 있어 청소 효율을 증가시키고 필터의 상태를 쉽게 파악할 수 있는 효과가 있다.

[25] 또한, 본 발명은 개선된 핸디형 진공 청소기를 제공함으로써, 이물질 분리, 살균 및 흡입 기능과 함께 음이온 발생 기능을 더 제공하는 효과가 있다.

[26] 또한, 본 발명은 핸디형 진공 청소기의 집진부의 캡이, 제1 싸이클론 날개 유닛, 제2 싸이클론 날개 유닛 및 내부 표면의 수평 단면이 링형인 홈과 수평 단면이 원형인 적어도 하나의 요홈 중 어느 하나 또는 둘 이상을 포함하도록 형성됨으로써, 청소기 작동시 이물질의 공기로부터의 분리 효과를 더욱 증가시킬 수 있다.

도면의 간단한 설명

[27] 도 1은 본 발명의 일 실시예에 따른 핸디형 진공 청소기의 해부 단면도.

[28] 도 2 및 도 3은 도 1의 핸디형 진공 청소기의 집진부를 설명하기 위한 도면.

[29] 도 4 및 도 5는 도 1의 보조 몸체부를 설명하기 위한 도면.

[30] 도 6 및 도 7은 도 1의 이물질 털이부를 설명하기 위한 도면.

[31] 도 8은 도 1의 공기 배출부를 설명하기 위한 도면.

[32] 도 9는 본 발명의 일 실시예에 따라 청소봉이 결합된 핸디형 진공 청소기의 사시도.

발명의 실시를 위한 최선의 형태

[33] 이하에서는 본 발명의 바람직한 실시예를 첨부된 도면들을 참조하여 설명한다. 첨부된 도면들 및 이하의 설명은 본 발명이 속하는 기술 분야에서 통상의 지식을 가진 자로 하여금 본 발명에 대한 이해를 돕기 위한 의도로 간략화되고 예시된

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것이므로, 이러한 도면들 및 설명이 본 발명의 보호 범위를 축소하려는 의도로 해석되어서는 아니될 것이다.

[34] 도 1은 본 발명의 일 실시예에 따른 핸디형 진공 청소기의 해부 단면도이다.

[35] 도 1을 참조하면, 상기 핸디형 진공 청소기는 크게 주 몸체부(10), 보조 몸체부(30, 40) 및 집진부(20)를 포함한다. 주 몸체부(10)와 집진부(20) 사이에 제1 공기 유로(화살표 A1)가 형성되고, 보조 몸체부(30)와 집진부(20) 사이에 제2 공기 유로(화살표 A2)가 형성된다.

[36] 주 몸체부(10)는 진공에 의한 흡입력을 발생시키도록 하기 위한 진공모터 조립체(12)를 포함한다. 이러한 진공모터 조립체(12)는 종래의 진공 청소기에 사용되는 공지의 진공모터 조립체가 사용될 수 있다. 또한, 주 몸체부(10)에는 손잡이(13)가 결합되고, 손잡이(13)에는 청소기의 온/오프 등의 제어를 위한 제어 스위치(14) 및 제어 처리를 위한 회로가 형성된 인쇄회로기판(PCB)이 더 구비될 수 있다. 또한, 주 몸체부(10)에는 청소기의 작동 상황을 표시하기 위한 표시부(16)가 더 구비될 수 있다. 여기서, 손잡이(13)는 일체로 형성되거나 별도로 형성되어 소정의 체결수단에 의해 손잡이에 결합될 수도 있다.

[37] 보조 몸체부(30)는 청소 대상물(미도시) 상의 이물질을 살균하거나, 청소 대상물로부터 이물질을 털이내기나, 이를 흡입할 수 있는 기능을 구비한다. 여기서, 청소 대상물은 이불이나 배개 등의 침구류 뿐만 아니라, 차량 내부, 소파, 또는 섬유 재질의 깔판 등 다양할 수 있다. 또한, 편의상, 본 명세서에서의 살균은 곰팡이나 세균을 죽이는 것 뿐만 아니라 진드기 등의 해충을 살충하는 개념을 포함하는 것으로 정의한다. 또한, 이물질은 머리카락, 작은 입자의 먼지에서부터 큰 입자의 먼지, 종이 조각 등 일반적으로 청소 대상물로부터 제거하고자 하는 모든 물질을 포함하는 것으로 정의된다.

[38] 보조 몸체부(30)는 도 4 및 도 5에 더욱 상세히 도시되어 있으므로, 도 1 및 도 4 및 도 5를 함께 참조하여 설명한다. 도 4는 보조 몸체부의 외부 프레임(38)을 제거한 상태의 도면이고, 도 5는 보조 몸체부의 외부 프레임(38)을 결합한 상태의 도면이다.

[39] 보조 몸체부(30)는 청소 대상물로부터 이물질을 분리해 내기 위한 이물질 털이부(32, 32a, 32b, 32c, 32d)와, 청소 대상물 상의 이물질을 자외선 살균하기 위한 자외선 살균부(34)를 포함한다. 또한, 청소봉(80)을 체결하기 위한 청소봉 결합구(37) 및 청소봉 결합구(도 8의 37)를 개폐하는 결합구 캡(36)이 형성된다.

[40] 이물질 털이부는 도 6 및 도 7에 예시되어 있으므로, 도 6 및 도 7을 함께 참조하면, 이물질 털이부(32, 32a, 32b, 32c, 32d)는 착탈식 두드림봉(32, 32a), 모터 조립체(32b) 및 벨트(32c)를 포함할 수도 있고, 사용자의 취향이나 청소 대상물의 특성에 따라서 착탈식 두드림봉(32, 32a) 대신에 착탈식 브러쉬(32d)가 사용될 수도 있다. 이물질 털이부(32, 32a, 32b, 32c, 32d)는 흡입구(33) 내에 배치되는 것이 바람직하다. 흡입구(33)는 주 몸체부(10)와 보조 몸체부(30) 사이의 제2 공기 유로(화살표 A2)의 일부를 이룬다.

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[41] 자외선 살균부(34)는 자외선 살균 램프가 사용될 수 있으며, 청소 대상물의 세균이나 해충을 살균하는 기능을 수행한다.

[42] 보조 몸체부(30)는 흡입구(33), 자외선 살균부(34), 및 이물질 털이부(32, 32a, 32b, 32c, 32d)를 포함하는 것에 더하여 음이온 발생기(100)를 더 구비할 수 있다. 이러한 음이온 발생기(100)는 청소기의 청소 작업에 관계없이 작동될 수 있으나, 청소 작업을 하지 않는 경우에 작동하도록 하는 것이 더 바람직하다.

[43] 또한, 도 1에는 주 몸체부(10)와 보조 몸체부(30)가 일체화된 구조만 예시되어 있으나, 나아가 주 몸체부(10)와 보조 몸체부(30) 간의 연결 구조에서 자외선 살균부(34)와 이물질 털이부(32)가 구비된 부분 이외의 부분은 주 몸체부(10)와 보조 몸체부(30) 간을 연결하고, 보조 몸체부(10)와 집진부(20) 사이의 제2 공기 유로(A2) 역할을 제공하는 브릿지부(40)에 의해 구별되는 구조로 형성될 수도 있다.

[44] 집진부(20)는 주 몸체부(10)에 결합되어 흡입된 이물질(미도시)을 집진부(20)의 내부에서 공전시킴으로써 공기와 이물질 간을 분리시키는 기능을 수행한다. 집진부(20)는 도 2 및 도 3에 더욱 상세히 도시되어 있으므로, 도 1, 도 2 및 도 3을 함께 참조하여 설명하면, 집진부(20)는 제2 공기 유로(A2)를 통해 흡입구(33)로부터 인입되는 이물질을 필터링하기 위한 메인 필터(60), 제2 공기 유로(A2)를 통해 흡입구(33)로부터 인입되는 이물질을 공전시키기 위해 와류를 형성하는 제1 싸이클론 날개 유닛(26a), 및 제1 싸이클론 날개 유닛(26a)에 의해 형성된 와류를 상화하기 위한 제2 싸이클론 날개 유닛(26b)를 포함한다. 집진부(20)는 주 몸체부(10)에 체결부(29)를 통해 자유롭게 탈, 부착가능하며, 체결부(29)의 일부에는 보조 몸체부(30)와의 제2 공기 유로(A2) 제공을 위한 홀(28)이 더 형성된다.

[45] 제1 싸이클론 날개 유닛(26a) 및 제2 싸이클론 날개 유닛(26b)은 흡입모터 조립체의 작동시 제1 공기 유로(A1)를 통해 공기가 흡입되면 집진부(20) 내부에 와류를 발생시키는 기능을 수행한다. 제1 싸이클론 날개 유닛(26a) 및 제2 싸이클론 날개 유닛(26b) 각각의 날개의 개수는 3 개로 도시되어 있으나, 특별히 3 개로 제한되는 것은 아니고, 4 개, 5 개 또는 그 이상일 수도 있다.

[46] 메인 필터(60)는 압축섬유 필터일 수 있다. 이러한 압축섬유 필터는 원사를 압축하여 형성한 필터로서, 공극의 밀도가 높으므로, 통상적인 필터, 즉 사출 금형된 플라스틱의 필터 조립체에 비해 공기 투과성 내지 통기성이 뛰어나다.

[47] 집진부(20)의 외벽(24)의 일부 또는 전부는 투명 재질로 형성되어, 청소기의 이물질 수집 상황을 파악할 수 있도록 한다. 따라서, 집진부(20)의 외벽(24)을 이루는 재료는 위와 같이 일부 또는 전부가 투명하도록 하고 내부에 메인 필터(60), 제1 및 제2 싸이클론 날개 유닛(26a, 26b)을 형성할 수 있고, 이물질의 공전에 의해 파손되지 않을 정도의 강도를 갖도록 형성될 수 있다면 어떠한 재료가 사용되어도 무방하다.

[48] 또한, 집진부(20)는 집진부(20) 내부에 수집된 이물질을 배출해 내기 위해

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개폐가능한 캡(cap)(22)이 더 형성될 수 있는데, 이러한 캡(22)의 내부 표면은 수평 단면이 링형인 홈(22a)과 수평 단면이 원형인 요홈(22b) 중 어느 하나 또는 둘 모두를 포함하는 형상이 형성될 수 있다. 도면상에서는 하나의 요홈(22b)만 형성되어 있으나 여러 개 형성될 수도 있다. 이러한 링형 홈(22a) 및 원형의 요홈(22b)은 와류의 형성을 도우며, 특히 제1 및 제2 싸이클론 날개 유닛(26a, 26b)에 의해 형성되는 와류의 강도를 높임으로써 집진부(20) 내부로 인입된 물질의 원심력을 증가시켜 이물질이 공기로부터 더 잘 분리될 수 있도록 한다.

[49] 또한, 주 몸체부(10)에는 보조 필터(90)가 더 체결될 수 있다. 이러한 보조 필터(90)는, 주 몸체부(10)와 집진부(20)의 탈부착이 용이함으로 인해, 집진부(20)의 청소나 메인 필터(60)의 교체 등을 이유로 탈착 이후 재결합시, 메인 필터(60)를 결합하지 않거나, 주 몸체부(10)와의 체결이 불량하여 제1 공기 유로(A1)로 집진부(20) 내의 이물질이 직접 인입되어, 청소기의 고장이나 수명을 단축하는 경우가 빈번하므로, 이러한 단점을 해결하기 위함이다. 보조 필터(90)의 종류는 크게 제한되지는 않으며, 예를 들면 통상의 그물형 필터가 사용될 수 있다.

[50] 나아가, 핸디형 진공 청소기의 작동시 청소 작업을 용이하게 수행하도록 하기 위해 휠(50a, 50b)가 더 구비될 수 있다.

[51] 본 발명의 일 실시예에 따른 핸디형 진공 청소기는, 주 몸체부(10)의 일측 즉, 보조 몸체부(30)의 이물질 흡입부(33)의 반대 방향에는 배출되는 공기의 배출 방향을 조절하도록 회전가능하게 결합된 공기 배출부를 더 포함할 수 있다.

[52] 이러한 공기 배출부는 도 8에 도시되어 있으므로, 도 8을 참조하면, 공기 배출부(70)는 공기 배출구(72)를 포함하며, 사용자의 상황에 따라서 배출되는 공기가 사용자 측으로 향하지 않도록 회전가능하도록 결합된다. 예를 들면, 오른손으로 손잡이(13)를 잡는 경우에는 공기 배출구(72)가 사용자 측으로 향하지 않도록 돌려서(화살표 A3) 사용할 수도 있고, 왼손으로 손잡이(13)를 잡는 경우에는 도 5에 도시된 바와 같은 방향으로 공기 배출구(72)가 향하도록 하여 사용자 측으로 향하지 않도록 사용할 수도 있다.

[53] 한편, 본 발명의 일 실시예에 따른 핸디형 진공 청소기의 작동시, 사용자는 손잡이(13)를 잡고 청소를 하게 되는데, 손잡이(13)를 잡은 경우, 진공모터 조립체(12)를 포함하는 주 몸체부(10)의 무게와, 집진부(20)와 보조 몸체부(30)의 무게의 합을 고려하여 사용자가 중량감을 덜 느끼도록 설계되어 있다.

[54] 도 9는 본 발명의 일 실시예에 따른 핸디형 진공 청소기의 다른 사용예를 설명하기 위한 도면이다. 도 9를 참조하면, 핸디형 진공 청소기는 보조 몸체부(30)에 체결되어 보조 몸체부(30)를 경유하여 집진부(20)까지의 제3 공기 유로(미도시)를 제공하도록 하는 청소봉(80)을 더 포함할 수 있다. 청소봉(80)은 바디(부호 미표기), 테일(82) 및 헤드(84)를 포함하며, 테일(82)은 보조 몸체부(30)의 청소봉 결합구(37)에 체결되는 부분이고, 헤드(84)에는 청소 대상물로부터 이물질을 분리해 내기 위한 브러쉬(미도시)가 더 체결될 수 있다.

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[55] 그리하여, 본 발명의 일 실시예에 따른 핸디형 진공 청소기는, 종래 핸디형 청소기들에서, 흡입 모터까지의 공기 유로 즉, 이물질 흡입부에서부터 공기 배출구까지의 공기 유로에서, 공기 유로 상에 이물질을 수집하는 집진통과 이의 내부에 결합되는 필터가 직접 배치되어 있음으로 인해 청소기 작동시 필터를 통한 여과가 원활하게 수행되지 않는 문제를 개선할 수 있으며, 나아가 청소기의 수명을 증가시키고, 청소 효율을 높이는 이점을 갖게 된다.

청구범위

[1] 흡입력을 발생시키는 진공모터 조립체를 포함하는 주 몸체부와;
청소 대상물 상의 이물질을 살균, 분리 및 흡입하기 위한 보조 몸체부와;
상기 주 몸체부에 결합되어 흡입된 이물질을 내부에서 공전시키는
집진부를 포함하되,
상기 주 몸체부와 상기 집진부 사이에 제1 공기 유로가 형성되고, 상기 보조 몸체부와 상기 집진부 사이에 제2 공기 유로가 형성되는 진공 청소기.

[2] 청구항 1에 있어서, 상기 보조 몸체부는
상기 청소 대상물로부터 이물질을 분리하기 위한 이물질 털이부; 및
상기 청소 대상물 상의 이물질을 자외선 살균하기 위한 자외선 살균부를
포함하는 진공 청소기.

[3] 청구항 2에 있어서, 상기 이물질 털이부는 상기 청소 대상물로부터
이물질을 분리해 내기 위한 착탈식 브러쉬를 포함하는 진공 청소기.

[4] 청구항 2에 있어서, 상기 이물질 털이부는 상기 청소 대상물로부터
이물질을 분리해 내기 위한 착탈식 두드림봉을 포함하는 진공 청소기.

[5] 청구항 2에 있어서, 상기 보조 몸체부는 음이온 발생기를 더 포함하는 진공
청소기.

[6] 청구항 1에 있어서, 상기 집진부는
상기 제2 공기 유로를 통해 인입되는 이물질을 필터링하는 메인 필터;
상기 제2 공기 유로를 통해 인입되는 이물질이 공전하도록 와류를
형성하는 제1 싸이클론 날개; 및
상기 제1 싸이클론 날개에 의해 형성되는 와류를 강화하기 위한 2 싸이클론
날개를 포함하는 진공 청소기.

[7] 청구항 6에 있어서, 상기 메인 필터는 압축섬유 필터인 진공 청소기.

[8] 청구항 6에 있어서, 상기 메인 필터는 반구형 또는 아치형으로 형성되는
진공 청소기.

[9] 청구항 1 및 6 중 어느 한 항에 있어서, 상기 집진부 내의 이물질이 직접
상기 제1 공기 유로로 인입되지 않도록, 상기 제1 공기 유로 상에서 상기 주
몸체부에 체결되는 보조 필터를 포함하는 진공 청소기.

[10] 청구항 9에 있어서, 상기 주 몸체부의 일측에는 배출 공기의 배출 방향을
조절하도록 회전가능하게 결합된 공기 배출부를 포함하는 진공 청소기.

[11] 청구항 9에 있어서, 청소 대상물로부터 이물질을 분리해 내기 위한
브러쉬를 구비하고, 상기 보조 몸체부에 체결되어 상기 보조 몸체부를
경유하여 상기 집진부까지의 제3 공기 유로를 제공하는 청소봉을 포함하는
진공 청소기.

[12] 청구항 9에 있어서, 상기 집진부의 외벽의 일부 또는 전부는 투명 재질로
형성되는 진공 청소기.

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[13] 청구항 9에 있어서, 상기 집진부는 내부에 수집된 이물질을 배출해 내도록 개폐가능한 캡을 포함하며, 상기 캡의 내부 표면은 수평 단면이 링형인 홈과 수평 단면이 원형인 적어도 하나의 요홈 중 어느 하나 또는 둘 이상을 포함하는 형상인 진공 청소기.

[14] 흡입력을 발생시키는 진공모터 조립체를 포함하는 주 몸체부와;
청소 대상물 상의 이물질을 자외선 살균하기 위한 자외선 살균 램프부와,
상기 자외선 살균 램프부와 격벽에 의해 분리 형성된 이물질 흡입구와,
상기 이물질 흡입구 상에 배치되고 상기 청소 대상물로부터 상기 이물질을 분리해 내기 위한 이물질 털이부를 포함하는, 보조 몸체부;
상기 주 몸체부에 체결되어 제1 공기 유로를 제공하고, 상기 제1 공기 유로 상에 배치되어 흡입된 이물질을 공전시키기 위한 와류를 형성하는 두 개의 싸이클론 날개 유닛과, 상기 제1 공기 유로 내로 필터링된 공기가 유입되도록 하기 위한 압축섬유 필터를 포함하는, 집진부; 및
상기 주 몸체부와 상기 보조 몸체부를 연결하고, 상기 보조 몸체부와 상기 집진부 사이에 제2 공기 유로를 제공하는 브릿지부를 포함하는 진공 청소기.

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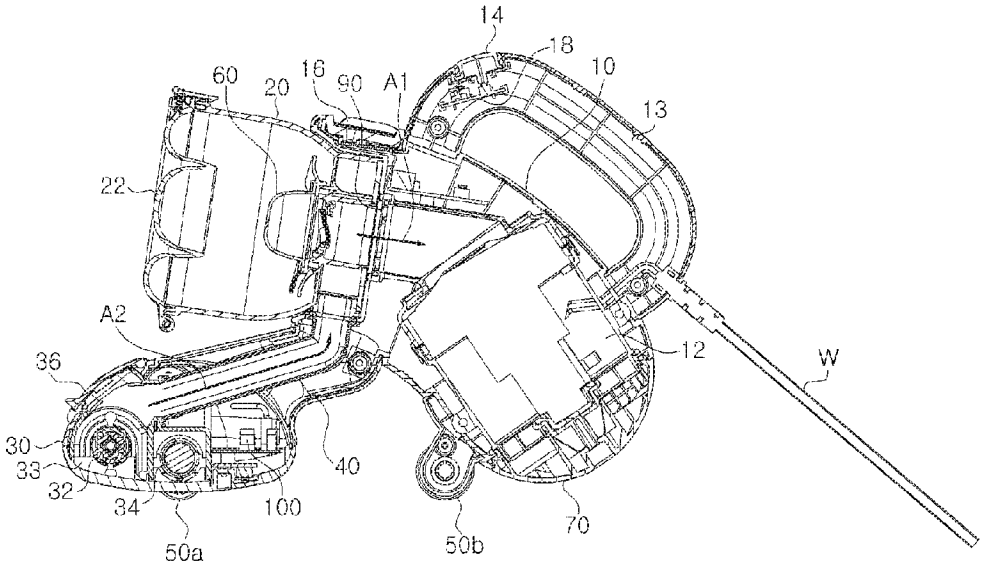
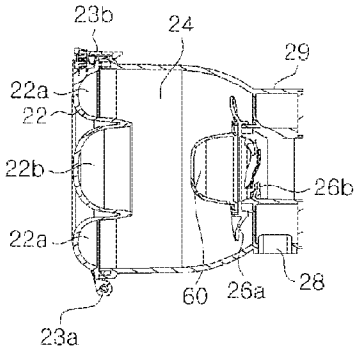
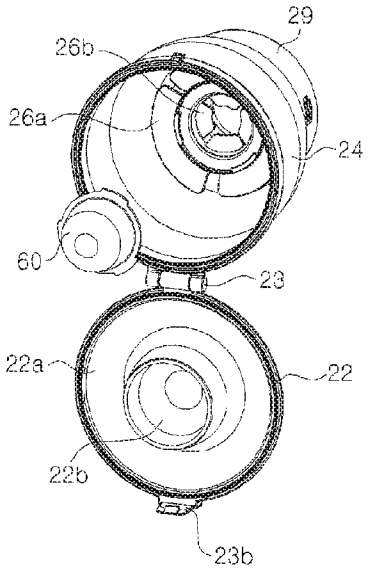
[Fig. 1]



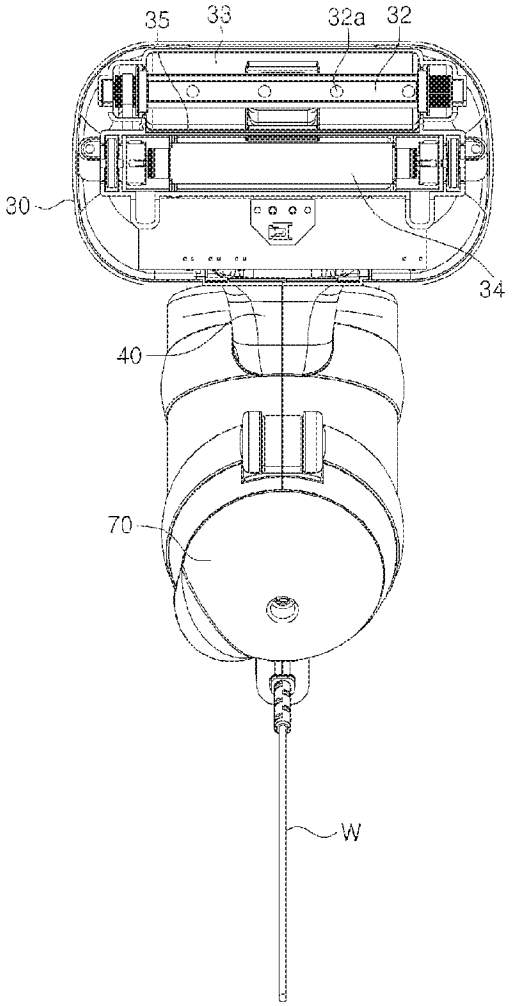
[Fig. 2]



[Fig. 3]



[Fig. 4]



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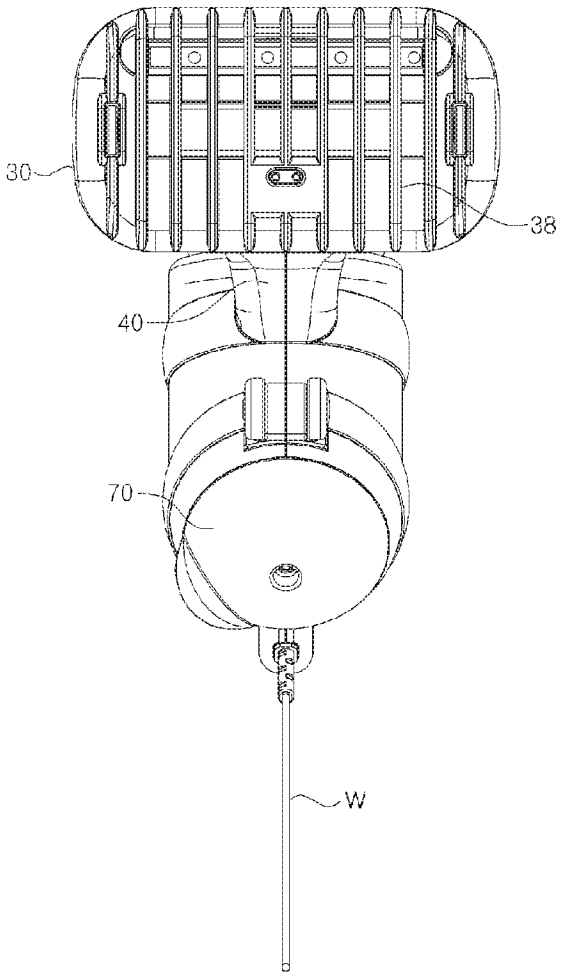
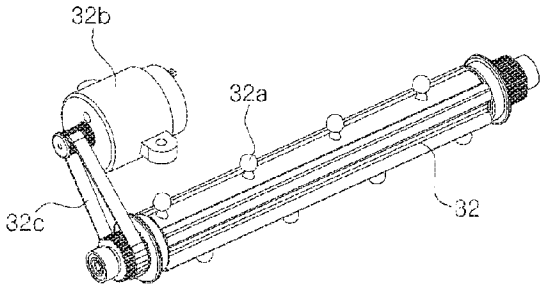
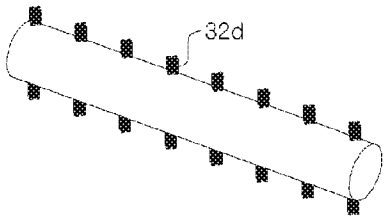
[Fig. 5]



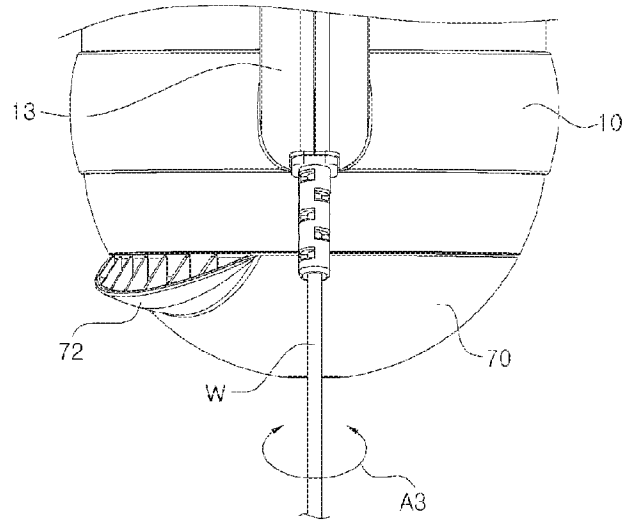
[Fig. 6]



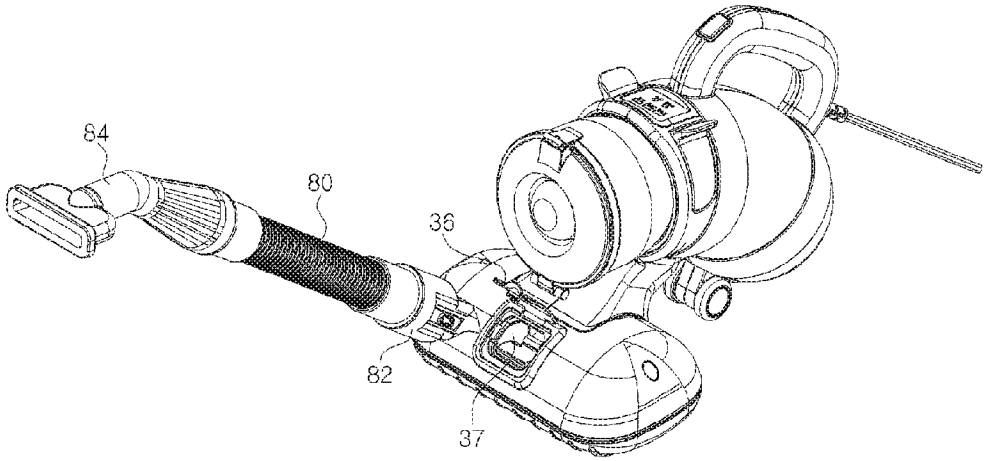
[Fig. 7]



[Fig. 8]



[Fig. 9]



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2009/003258

A. CLASSIFICATION OF SUBJECT MATTER

A47L 5/24(2006.01)i, A47L 7/02(2006.01)i, A47L 9/16(2006.01)i, A47L 9/12(2006.01)i

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 5/24; A47L 11/20; A47L 11/34; A47L 5/28; A47L 5/30; A47L 7/00; A47L 9/00; A47L 9/10; A47L 9/16

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility models: IPC as above
Japanese Utility models and applications for Utility models: IPC as above

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

eKOMPASS (KIPO internal) & Keywords: cleaner, dust collection, filter, vortex

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 2004-313249 A (TOSHIBA TEC CORP.) 11 November 2004 See figure 3.	1-10,12,14 11,13
Y A	KR 10-0661619 B1 (BUKANG SEMS CO., LTD.) 26 December 2006 See figures 4-8.	1-10,12,14 11,13
Y A	KR 20-0370486 Y1 (KIM, DONG SEUB et al.) 17 December 2004 See figure 1.	5 1-4,6-14
Y A	KR 10-2002-0062558 A (TWINBIRD CORPORATION) 26 July 2002 See figures 3-8.	6-10,12,14 1-5,11,13
A	KR 20-0410348 Y1 (KIM, YOU DON) 08 March 2006 See figure 3.	1-14

☐ 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 application or patent 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	Date of mailing of the international search report
11 MAY 2010 (11.05.2010)	**11 MAY 2010 (11.05.2010)**
Name and mailing address of the ISA/ Korean Intellectual Property Office Government Complex-Daejeon, 139 Sconsa-ro, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 2008)

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2004-313249 A	11.11.2004	NONE	
KR 10-0661619 B1	26.12.2006	CN 101146469 A0	19.03.2008
		EP 1879491 A1	23.01.2008
		JP 2008-543356 A	04.12.2008
		KR 10-0518620 B1	04.10.2005
		US 2008-0052872 A1	06.03.2008
		WO 2006-121286 A1	16.11.2006
KR 20-0370486 Y1	17.12.2004	NONE	
KR 10-2002-0062558 A	26.07.2002	EP 1224898 A1	24.07.2002
		JP 03-635657 B2	06.04.2005
		JP 2002-209814 A	30.07.2002
		US 2002-0095741 A1	25.07.2002
		US 6889403 B2	10.05.2005
KR 20-0410348 Y1	08.03.2006	NONE	

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국 제 조 사 보 고 서

국제출원번호
PCT/KR2009/003258

A. 발명이 속하는 기술분류(국제특허분류(IPC))

A47L 5/24(2006.01)i, A47L 7/02(2006.01)i, A47L 9/16(2006.01)i, A47L 9/12(2006.01)i

B. 조사된 분야

조사된 최소문헌(국제특허분류를 기재)
A47L 5/24; A47L 11/20; A47L 11/34; A47L 5/28; A47L 5/30; A47L 7/00; A47L 9/00; A47L 9/10; A47L 9/16

조사된 기술분야에 속하는 최소문헌 이외의 문헌
한국등록실용신안공보 및 한국공개실용신안공보: 조사된 최소문헌란에 기재된 IPC
일본등록실용신안공보 및 일본공개실용신안공보: 조사된 최소문헌란에 기재된 IPC

국제조사에 이용된 전산 데이터베이스(데이터베이스의 명칭 및 검색어(해당하는 경우))
eKOMPASS(특허청 내부 검색시스템) & 키워드: cleaner, dust collection, filter, vortex

C. 관련 문헌

카테고리*	인용문헌명 및 관련 구절(해당하는 경우)의 기재	관련 청구항
Y A	JP 2004-313249 A (TOSHIBA TEC CORP.) 2004.11.11 도면 3 참조.	1-10,12,14 11,13
Y A	KR 10-0661619 B1 (주식회사 부강셈스) 2006.12.26 도면 4-8 참조.	1-10,12,14 11,13
Y A	KR 20-0370486 Y1 (김동섭 외 4명) 2004.12.17 도면 1 참조.	5 1-4,6-14
Y A	KR 10-2002-0062558 A (트윈버드 고교 가부시키가이샤) 2002.07.26 도면 3-8 참조.	6-10,12,14 1-5,11,13
A	KR 20-0410348 Y1 (김유돈) 2006.03.08 도면 3 참조.	1-14

☐ 추가 문헌이 C(계속)에 기재되어 있습니다.

☒ 대응특허에 관한 별지를 참조하십시오.

* 인용된 문헌의 특별 카테고리:

"A" 특별히 관련이 없는 것으로 보이는 일반적인 기술수준을 정의한 문헌

"E" 국제출원일보다 빠른 출원일 또는 우선일을 가지나 국제출원일 이후에 공개된 선출원 또는 특허 문헌

"L" 우선권 주장에 의문을 제기하는 문헌 또는 다른 인용문헌의 공개일 또는 다른 특별한 이유(이유를 명시)를 밝히기 위하여 인용된 문헌

"O" 구두 개시, 사용, 전시 또는 기타 수단을 언급하고 있는 문헌

"P" 우선일 이후에 공개되었으나 국제출원일 이전에 공개된 문헌

"T" 국제출원일 또는 우선일 후에 공개된 문헌으로, 출원과 상충하지 않으며 발명의 기초가 되는 원리나 이론을 이해하기 위해 인용된 문헌

"X" 특별한 관련이 있는 문헌. 해당 문헌 하나만으로 청구된 발명의 신규성 또는 진보성이 없는 것으로 본다.

"Y" 특별한 관련이 있는 문헌. 해당 문헌이 하나 이상의 다른 문헌과 조합하는 경우로 그 조합이 당업자에게 자명한 경우 청구된 발명은 진보성이 없는 것으로 본다.

"&" 동일한 대응특허문헌에 속하는 문헌

국제조사의 실제 완료일	국제조사보고서 발송일
2010년 05월 11일 (11.05.2010)	**2010년 05월 11일 (11.05.2010)**

ISA/KR의 명칭 및 우편주소
대한민국 특허청
(302-701) 대전광역시 서구 선사로 139,
성부대전정사
팩스 번호 82-42-472-7140

심사관
이정혜

전화번호 82-42-481-8437

서식 PCT/ISA/210 (두 번째 용지) (2008년 7월)

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국제조사보고서에서 인용된 특허문헌	공개일	대응특허문헌	공개일
JP 2004-313249 A	2004.11.11	없음	
KR 10-0661619 B1	2006.12.26	CN 101146469 A0	2008.03.19
		EP 1879491 A1	2008.01.23
		JP 2008-543356 A	2008.12.04
		KR 10-0518620 B1	2005.10.04
		US 2008-0052872 A1	2008.03.06
		WO 2006-121286 A1	2006.11.16
KR 20-0370486 Y1	2004.12.17	없음	
KR 10-2002-0062558 A	2002.07.26	EP 1224898 A1	2002.07.24
		JP 03-635657 B2	2005.04.06
		JP 2002-209814 A	2002.07.30
		US 2002-0095741 A1	2002.07.25
		US 6889403 B2	2005.05.10
KR 20-0410348 Y1	2006.03.08	없음	

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Office de la Propriété Intellectuelle du Canada
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(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(22) Date de dépôt/Filing Date: 2009/03/20

(41) Mise à la disp. pub./Open to Public Insp.: 2010/09/20

(62) Demande originale/Original Application: 2 659 212

(51) Cl.Int./Int.Cl. *A47L 9/16* (2006.01), *A47L 5/24* (2006.01), *A47L 5/28* (2006.01), *A47L 9/28* (2006.01)

(71) Demandeur/Applicant:
OMACHRON INTELLECTUAL PROPERTY INC., CA

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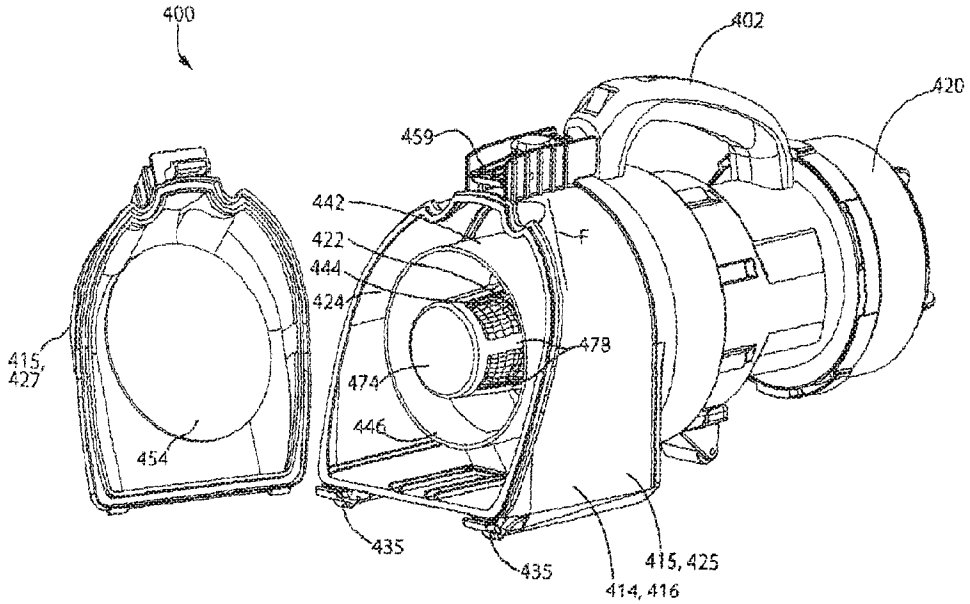
CONRAD, WAYNE ERNEST, CA

(74) Agent: BERESKIN & PARR LLP/S.E.N.C.R.L.,S.R.L.

(54) Titre : CONFIGURATION D'UN ASPIRATEUR MANUEL
(54) Title: CONFIGURATION OF A HAND VACUUM CLEANER



(57) Abrégé/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.

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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 at the front end of the vacuum cleaner.

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TITLE: CONFIGURATION OF A HAND VACUUM CLEANER

FIELD

The specification relates to the constructions of a surface cleaning apparatus. In a preferred embodiment, the specification relates to a cyclone unit that comprises a cyclone and a dirt chamber that is external the cyclone. In another embodiment, the specification relates to a first stage cyclone for an upright or stick vacuum cleaner wherein the first stage cyclone is inverted.

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.

Cyclonic separators, including those used in vacuum cleaners are known in the art. Typically, a cyclonic separator has an inlet for fluid (air, liquid or and air and liquid mix) to be treated and an outlet for treated fluid. Dirt may be collected either in the cyclone chamber itself (e.g. in the bottom) or in a collection chamber in fluid communication with the cyclone separator. Various such constructions are known in the art.

Cyclonic hand vacuum cleaners have also been developed. These vacuum cleaners have typically used similar operating principles as full size cyclonic vacuum cleaners. See for example PCT publication WO 2008/009890; PCT publication WO 2008/009888; PCT publication WO 2008/009883; and United States patent 7,370,387.

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 surface cleaning apparatus is provided that comprising an inverted first stage cyclone mounted to an upright

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section of an upright surface cleaning apparatus, and preferably of a stick vacuum cleaner. When the surface cleaning apparatus is in use, dirt is entrained in an air stream that is drawn into the cyclone, separated by the cyclonic action of the cyclone and then deposited in a dirt chamber. Preferably the dirt chamber is external cyclone so that the accumulation of dirt within the dirt collection chamber may not affect the performance of the cyclone. In a preferred embodiment, the cyclone may have a cylindrical housing or perimeter wall with an upward facing dirt outlet that is surrounded by, e.g., a generally annular shaped dirt collection chamber. In this embodiment, dirt that is separated from the air stream may be ejected from the dirt outlet of the cyclone and fall into, and collect within, the surrounding dirt collection chamber.

According to another broad aspect, a surface cleaning apparatus is provided that comprising a cyclonic unit mounted to an upright section of an upright surface cleaning apparatus, and preferably of a stick vacuum cleaner. When the surface cleaning apparatus is in use, dirt is entrained in an air stream that is drawn into the cyclone, separated by the cyclonic action of the cyclone and then deposited in a dirt chamber. The cyclonic unit comprises a cyclone and a dirt chamber that is external cyclone. In a preferred embodiment, the cyclone may have a cylindrical housing or perimeter wall with a dirt outlet that is surrounded by, e.g., a generally annular shaped dirt collection chamber. In this embodiment, dirt that is separated from the air stream may be ejected from the dirt outlet of the cyclone and pass into, and collect within, the surrounding dirt collection chamber.

In one embodiment, a surface cleaning apparatus may comprise a floor cleaning unit comprising a surface cleaning head. The surface cleaning head may have a dirty air inlet, a cleaning head air outlet and an upright section comprising a handle drivingly connected to the surface cleaning head. The surface cleaning apparatus may also comprise a cyclone unit mounted on the upright section and positioned in the air flow passage. The cyclone unit may

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comprise a cyclone having an air inlet and an air outlet, and a dirt collection chamber exterior to the cyclone. The surface cleaning apparatus may also comprise a suction motor positioned in the air flow path.

In one embodiment, a surface cleaning apparatus may comprise a floor cleaning unit comprising a surface cleaning head having a dirty air inlet, a cleaning head air outlet and an upright section comprising a handle drivingly connected to the surface cleaning head; A first stage cyclone unit may be mounted on the upright section and positioned in the air flow passage. The cyclone unit may comprise an inverted cyclone having an air inlet and an air outlet, and a dirt outlet at an upper end with a suction motor positioned in the air flow path.

In some examples, the surface cleaning apparatus may comprise a surface cleaning unit removably mounted to the handle wherein the surface cleaning unit comprises the cyclone unit and the suction motor.

In some examples, the cyclone comprises a dirt outlet provided at an upper end of the cyclone.

In some examples, the cyclone and the dirt collection chamber are concurrently openable.

In some examples, the cyclone is positioned interior of the dirt collection chamber.

In some examples, the upright section has an absence of a housing defining a recess for receiving the portable surface cleaning apparatus.

In some examples, the upright section may comprise at least one support rod.

In some examples, the dirt outlet may comprise an open end of the cyclone and the apparatus further comprises a plate facing the dirt outlet.

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In some examples, the plate has a diameter about the same as a diameter of the dirt outlet.

In some examples, the plate is mounted to an upper end of the cyclone unit.

In some examples, the air outlet of the cyclone comprises a vortex finder and a shroud is provided in the air flow path from a cyclone chamber in the cyclone to the air outlet of the cyclone.

In some examples, the surface cleaning may comprise a plurality of pre-motor filters.

In some examples, the pre-motor filters comprise an upstream filter and a downstream filter, the downstream filter having smaller pores then the upstream filter.

It will be appreciated that an embodiment may contain one or more of features set out in the examples.

DRAWINGS

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

Figure 1 is a front elevation view of an example of a vacuum cleaner;

Figure 2 is a back perspective view of the vacuum cleaner of Figure 1 with a portable surface cleaning apparatus mounted to a support structure;

Figure 3a is a back perspective view of the vacuum cleaner of Figure 1 with the portable surface cleaning apparatus removed from the support structure and in a position in which it may be carried by hand;

Figure 3b is a side elevation view of the portable surface cleaning apparatus of Figure 3a wherein the portable surface cleaning apparatus has

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been removed from the support structure and is in a position in which it may be carried by hand with flexible hose detached from the surface cleaning head;

Figure 4 is a partially exploded side perspective view of the vacuum cleaner of Figure 1 with the portable surface cleaning apparatus removed from air flow communication with the floor cleaning unit;

Figure 5 is a front isometric view of the vacuum cleaner of Figure 1 with the portable surface cleaning apparatus removed;

Figure 6 is side elevation view of a hand vacuum cleaner;

Figure 7 is a front elevation view of the hand vacuum cleaner of Figure 6;

Figure 8 is a bottom isometric view the hand vacuum cleaner of Figure 6;

Figure 9 is a bottom isometric view of the hand vacuum cleaner and an attachment member;

Figure 10 is a partially exploded bottom isometric view of the hand vacuum cleaner and an attachment member of Figure 9;

Figure 11 is a side isometric view of the attachment member of Figure 9;

Figure 12 is a front elevation view of the attachment member of Figure 11;

Figure 13 is a side isometric view of the attachment member of Figure 11;

Figure 14 is a partially exploded isometric view of the attachment member of Figure 11;

Figure 15 is a front isometric view of an alternate example of a vacuum cleaner with a portable surface cleaning apparatus mounted thereto;

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Figure 16 is a partial rear isometric view of the vacuum cleaner of Figure 15;

Figure 17 is a rear isometric view of an alternate example of a vacuum cleaner with a portable surface cleaning apparatus mounted thereto;

Figure 18 is a partial front isometric view of the vacuum cleaner of Figure 17 with the portable surface cleaning apparatus removed;

Figure 19 is a partial top view of the surface cleaning head of the vacuum cleaner of Figure 17;

Figure 20 is a side elevation view of a portable surface cleaning apparatus having a partially transparent dirt chamber;

Figure 21 is an isometric view of the portable surface cleaning apparatus of Figure 20 with the dirt chamber door removed; and,

Figure 22 is a section view of the portable surface cleaning apparatus of Figure 20.

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 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.

Figures 1-5 exemplify an upright vacuum cleaner optionally having a removably mounted portable surface cleaning apparatus, optionally a hand vacuum cleaner, wherein the portable surface cleaning apparatus preferably has

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a nozzle having an open sided air flow chamber. It will be appreciated that the portable surface cleaning apparatus may be of any construction (e.g., a hand vacuum cleaner) and may use any particular air treatment member (e.g., one or more cyclones comprising one or more cyclonic cleaning stages and one or more filters). It will also be appreciated that the upright structure to which the portable surface cleaning apparatus is removably attached may be of any particular design. Further, the floor cleaning unit may alternately, or in addition, use an open sided nozzle and may selectively receive an auxiliary cleaning tool.

Referring to Figures 1 to 5, a first example of a surface cleaning apparatus 100 is shown. The surface cleaning apparatus 100 is a vacuum cleaner that comprises a floor cleaning unit 200 comprising a surface cleaning head 300 having a support structure 210 pivotally mounted thereto and a portable surface cleaning apparatus 400 that is removably mounted to support structure 210. Support structure 210 may also be referred to as a handle, a backbone or an upright section.

In the example shown, the handle 210 has an upper portion 214 and a lower portion 216 that are optionally pivotally connected by a hinge 218. The handle 210 is attached to the surface cleaning head 300 and a user can move the surface cleaning head 300 along a surface to be cleaned by gripping and maneuvering the handle 210. Optionally, the lower portion 216 of the handle 210 can be hingedly or pivotally attached to the surface cleaning head 300, so that the lower portion 216 of the handle 210 can move relative to the surface cleaning head 300 during use. This may enable the user to move the surface cleaning head 300 beneath cabinets, furniture or other obstacles.

The upper portion 214 of the handle optionally includes a grip 212 that is shaped to be gripped by a user. In the example shown, the grip 212 is at the top, or upper end of the upper portion 214 of the handle 210 and is formed in a closed loop-type shape having surfaces that are rounded to increase user

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comfort. In other examples, the grip 212 may be of a different configuration or may be located at a different position on the upper portion 214 of the handle 210.

In addition to the grip 212, the upper portion 214 of the handle 210 optionally includes a bracket 113 that supports an auxiliary, or accessory or supplemental cleaning tool 112. In the example shown, the bracket 113 is configured to hold a single auxiliary cleaning tool 112, but in other examples the bracket 113 may be configured to hold more than one auxiliary cleaning tool 112. Also, while shown attached to the upper portion 214, it is understood that the bracket 113 may be attached to other locations on the surface cleaning apparatus, including the lower portion 216, the surface cleaning head 300 and/or the hand vacuum 400.

In the example shown, the upper and lower portions 214, 216 have a generally cylindrical or tube-like shape. However, in other examples, the upper and lower portions 214, 216 may any other type of thin support members having suitable cross-sectional shape including square, rectangular or polygonal. In addition, the upper and lower portions 214, 216 may be solid or hollow and may be formed from any suitable material, including plastic and metal. In other embodiments, it will be appreciated that handle may be a single unit, e.g., a support rod such that upper and lower portions 214, 216 are part of the same element. Alternately, upright section 210 may comprise a frame for removably receiving a portable surface cleaning apparatus.

The upper and lower portions 214, 216 of the handle 210 are optionally pivotally joined by hinge 218. When the hinge 218 is in a first position, as shown in Figures 1, 2, 4 and 5 the upper and lower portions 214, 216 of the handle 210 are generally aligned with each other. The hinge 218 is retained in this first position by a biasing or locking means so that first portion 214 of the handle 210 remains in a generally vertical aligned with lower portion 216 when not in use and so that movements of the first portion 214 of the handle 210 can be translated to the second portion 216. In use, the hinge 218 can be unlocked,

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or released from the first position and can move into a second position, wherein the grip 212 is preferably rotated forwardly.

In the example shown, the grip 212 comprises a hinge release 213 that can be activated by a user during use of vacuum cleaner 100 to unlock the hinge 218. When a user activates the hinge release 213, the retaining or locking means used to secure the hinge 218 in the first position is disengaged, allowing the hinge 218 to rotate or pivot, as shown in Figure 3a. As the hinge 218 rotates, the first portion 214 of the handle 210 can be moved into a plurality of angular positions relative to the second portion 216 handle 210. Optionally, the hinge 218 may rotate between, and lock into, a given number of set or indexed angular positions. Alternatively, the rotation of the hinge 218 may be continuously variable, after being initially unlocked, allowing for the first portion 214 to be moved into an indefinite number of angular positions relative to the second portion 216 (e.g., freely rotatable).

In the example of the vacuum cleaner 100 shown, the lower portion 214 of the handle 210 extends from the hinge 218 to the surface cleaning head 300 and optionally comprises the portable surface cleaning apparatus mount 220 for receiving and supporting the hand vacuum 400. The lower portion 216 also optionally comprises a hose guide 230 for keeping the flexible hose 124 in close proximity to the backbone 200. When the portable surface cleaning apparatus 400 is detached or removed from the backbone 200 the flexible hose 124 may be removed from the hose guide 230, as shown in Figure 3a.

The surface cleaning head 300 serves as a base portion of the vacuum cleaner 100 and is preferably in rolling contact with the surface to be cleaned. When the vacuum cleaner is 100 in an upright position (as exemplified in Figures 1, 2, 4 and 5) the surface cleaning head 300 is supported by optional main or rear wheels 320 and/or optional front wheels (not shown). However, when the vacuum cleaner 100 is moved into an angled position during use (as exemplified in Figure 3a) additional optional support wheel 321 that is provided

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on upright section 210 may also roll across the surface to be cleaned. In other examples of the vacuum cleaner 100 the surface cleaning head 300 may include a greater or fewer number of wheels.

The surface cleaning head 300 also comprises a dirty air inlet 310 that is connected in fluid communication with a dirty air outlet 312 by one or more dirty air conduits (not shown). Preferably, the dirty air conduit is an air flow chamber wherein at least a portion of the lower side is open.

If the upright section includes a suction motor and/or an air treatment unit, then the dirty air outlet 312 may, in turn, be coupled, optionally removably coupled, to the upstream end of the conduit, preferably a flexible hose 124, that extends from the dirty air outlet 312 of the surface cleaning head 300 to the upright section, such as the attachment member air inlet 126. The fluid pathway may continue through the attachment member passageway 128, which terminates in attachment portion air outlet 127, and through attachment portion air outlet 127 which mates with the opening 438 of the portable cleaning apparatus 400. The connection between the attachment portion 120 and the portable cleaning apparatus 400 is discussed in greater detail below.

Mount 220 is preferably configured to removably receive a portion of the portable surface cleaning apparatus and/or an attachment member removably mounted to the portable surface cleaning apparatus. The mount is preferably configured to retain portable surface cleaning apparatus therein under the influence of gravity. Accordingly, a mechanical lock need not be used. In particular, a user may lift the portable surface cleaning apparatus off of upright section 210 without having to press a button or otherwise release a mechanical lock.

As exemplified in Figures 1-5 the mount 220 may be generally U-shaped and may be sized to receive collar 140 or other mounting portion of the attachment member 120. The inner surface of the mount 220 comprises a

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protrusion 222 that extends outward from the inner surface of the mount 220 and removably seats within the generally U-shaped channel 144 of the collar 140. It will be appreciated that mount 220 may comprise more than one member, as exemplified in Figures 14-15.

The mount 220 may be located in a variety of locations along the length of the second portion 216. Preferably, the mount 220 is positioned at approximately the waist height of the intended user (e.g., 2.5 – 3.5 feet above the floor) so that the user can attached or detach the hand vacuum 400 from the backbone 200 without bending over. This may decrease the stress and strain experienced by the user when the user removes the hand vacuum 400 from the backbone 200.

When attached to the portable surface cleaning apparatus 400 and seated in the mount 220 (as shown in Figures 1 and 2), the attachment member 120 transfers all or a portion of the load (i.e. the weight) of the hand vacuum 400 to the mount 220. Another portion of the load of the hand vacuum 400 may be supported by an additional mounting bracket, such as mount bracket 224, which receives and supports optional rear wheel 480 of the portable surface cleaning apparatus 400. The surface of the mount bracket 224 may be complimentary to the curved shape of the optional rear wheel 480 so that the optional rear wheel 480 can at least partially nest within mount bracket 224. In addition to supporting the weight of the portable surface cleaning apparatus 400, the attachment portion 120 also preferably serves as a fluid conduit establishing a fluid flow connection between the hand vacuum 400 and the airflow conduit 110, which is preferably a flexible hose 124.

Loads placed on the mount 220 (via both the U-shaped opening and/or the mount bracket 224) are in turn transferred via the lower portion 216 of the handle 210 to the surface cleaning head 300 and ultimately to the floor or other type of surface being cleaned. The mount 220 may be made from any

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material that can support the weight of the hand vacuum 400, including plastic and metal.

In the example of the vacuum cleaner 100 shown, the optional rear wheel 480 of hand vacuum 400 and the attachment member 120 are each preferably freely received by the mount 220 and held in place by gravity. The protrusion 222 that seats within the channel 144 of the attachment member 120 also provides a degree of lateral support, restraining the movement of the attachment member 120 (and therefore the hand vacuum 400) when the handle 210 is moved from a vertical position to an angled position when in use. Further protrusion 222 may comprise a cam surface to assist in guiding protrusion 222 into channel 144 as the portable surface cleaning apparatus is lowered onto mount 220. Accordingly, the attachment member 120 and the optional rear wheel 480 are preferably not held in place by clips, straps or any other type of mechanical fastening means.

The absence of mechanical fasters allows for simple, one-handed removal of the attachment member 120 and the hand vacuum 400 from the mount 220, without the need to unlock or undo any fasteners. One-handed detachment of the hand vacuum 400 may be advantageous as it allows a user to control and maneuver the backbone 200 with one hand while simultaneously removing the hand vacuum 400 from the mount 220 with the other hand. In use, this may allow a user to frequently attach and detach the portable surface cleaning apparatus 400 from the mount 220 in response to the user's needs, for example navigating around furniture, stairs or other obstacles on the surface to be cleaned.

While in the preferred example described above the mount 220 is free of fasteners, in another example the mount 220 may be outfitted with fastening devices for retaining the attachment member 120 and the additional wheel 480. Examples of possible fasteners include clips, snaps, and straps. Magnets may alternately or in addition be used. An advantage of using magnets

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may assist in holding the portable surface cleaning apparatus on the backbone but still permit one handed removal as no lock need be released.

Optionally, instead of removing the attachment portion 120 from the mount 220, the hand vacuum 400 may be decoupled from the attachment portion while the attachment portion is positioned in mount 220, as shown in Figure 5. In an embodiment, it will be appreciated that attachment member 120 may not be removable from mount 220.

Referring to Figures 15-19, other examples of the vacuum cleaner 100 are shown. These figures exemplify features of a surface cleaning apparatus that may be used with any embodiment disclosed in herein, either individually or in any particular combination or sub-combination. The features exemplified in these figures include a surface cleaning head, a support structure for an upright or stick vacuum cleaner, and a handle mount for a surface cleaning apparatus.

In this description, an alternate structure for supporting an air treatment unit and/or a suction motor is provided. As exemplified, the second portion 216 may include a generally upside down U-shaped wishbone portion 250. The wishbone 250 is optionally provided with a hinge 218 at the centre of an upper portion of the wishbone 252, and each prong 254 of the wishbone extends downward, and connects to a rib 256. The ribs 256 are preferably substantially parallel and cooperate to define an optional mount for receiving a removable surface cleaning unit, such as the split saddle configuration that is exemplified. Optionally, the ribs 256 may be integrally formed with the prongs 254 of the wishbone portion 250, or they may be separate tubes or rods fastened to the prongs 254 of the wishbone 250, as shown.

A preferred mount comprises a pair of generally opposing saddle flanges 280 (one on each rib) that cooperate to provide a mount or a mounting location for the attachment member 120 that is connected to the hand vacuum

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400. Due to the spacing of the ribs 256 and the general curvature of the hand vacuum 400, the hand vacuum 400 is preferably positioned in front of ribs 256. The attachment member 120 extends rearward of hand vacuum 400 and may be received on split saddle flanges 280 in a similar manner to mount 220. Alternately, it will be appreciated that hand vacuum 400 may be partially nest between, or be received between, the ribs 256.

As exemplified, to supportingly engage the attachment member 120, each saddle flange 280 preferably includes a projection or protrusion (not shown) that is received within the channel 142 of the collar 140 (as described in more detail with reference to Figures 11-14 below). The generally curved profile of the collar 140 and channel 142 may enable the attachment member 120 (and the associated hand vacuum 400) to generally self-level or self-register between the ribs 256 when the user initially places the attachment member 120 on the saddle flanges 280. Like the mount 220 described above, the saddle flanges 280 may include magnets or other fastening devices to secure or retain the attachment member 120. Optionally, the mount 220 or any other suitable type of mounting hardware may replace the saddle flanges 280 in this example.

The lower ends of the ribs 256 may be attached to a bracket 260 having a generally opposite configuration than the wishbone. That is, the bracket may include two, upward facing projections 262, for attaching to the ribs 256, that are connected by a cross-member 264 to provide a single downward facing coupling point 266. The spaced apart ribs provide two mounting points. Various of such structure may be used.

Preferably, lower portion 216 is rotatably mounted to the cleaning head. Accordingly, a user may rotate grip 212 clockwise or counterclockwise to assist in steering the cleaning head. Accordingly an advantage of providing a single, downward facing coupling point may be the fact that a single coupling point can be pivotally and rotationally connected to the surface cleaning head

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300. Another advantage is that a narrower rear end may be utilized for the floor cleaning unit.

Accordingly, as exemplified, the bracket 260 preferably also includes a housing 268, which is preferably hollow, having a lower opening 270 that connects to the surface cleaning head 300. As exemplified, housing 268 may be pivotally mounted to surface cleaning head, preferably at about the location of rear wheels 320, such as by having a portion pivotally mounted to the axle of rear wheels 320. Optionally, the connection between the lower opening 270 and the surface cleaning head 300 can be a rotatable and pivotal connection. The hollow housing 268 may extend from the lower opening 270, through the cross-member 264 to define an upper collar 272.

Optionally, as in this example, the surface cleaning head 300 includes a hollow conduit member 330 and a second air conduit 334. As exemplified in Figures 17-19, one example of the second air conduit 334 is a second flexible hose 335. In the preferred arrangement shown, the dirty air outlet 312 of the surface cleaning head 300 is connected to the second or upstream flexible hose 335 and the second flexible hose 335 extends from the dirty air outlet 312, through the hollow conduit member 330, through the hollow housing 268 to the upper collar 272. The downstream end of the second flexible hose 335 may be fixedly connected to the upper collar 272, or it may have a fitting that seats upon a surface of the upper collar 272 preventing the second flexible hose 335 from retracting within the hollow housing 268 while leaving the downstream end of the second flexible hose 335 free to extend upward, away from the upper collar 272.

The second flexible hose 335 forms part of the continuous airflow passageway that connects the dirty air outlet 312 of the surface cleaning head 300 to the opening 438 on the hand vacuum 400. To establish the continuous airflow passageway, the downstream end of the second upstream flexible hose 335 may be connected to the upstream end of the downstream flexible hose 124.

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The connection between the flexible hose 124 and the downstream end of the second flexible hose 335 is preferably a detachable connection so that the flexible hose 124 can be detached from the surface cleaning head 300 as described above.

Optionally, the second flexible hose 335 is also an extensible, or stretchable, hose that can extend when pulled on by the user. In some examples, the second flexible hose 335 is a stretch hose and may have a stretched length to non-stretched length ratio of between 2:1 – 6:1. In examples where the second flexible hose 335 is not stretchable, when a user removes the hand vacuum 400 from its mount during use, the maximum distance that the hand vacuum 400 can be separated from the backbone 200 and the surface cleaning head 300 is determined by the length of the flexible hose 124. However, in some instances, a user may wish to move the hand vacuum 400 a greater distance from the backbone 200, for example to pass the surface cleaning head 300 under a bed or other large piece of furniture. When a stretchable second flexible hose 335 is used, the downstream end of the second flexible hose 335 can unseat from the upper collar 272 and extend away from the bracket 260, whereby some of hose 335 may pass through housing 268 thereby lengthening the airflow conduit connecting the hand vacuum 400 to the surface cleaning head 300 and allowing the hand vacuum 400 to be moved further from the backbone 200 in use. Accordingly, it will be appreciated that some or all of the conduit that may be extended to provide additional length for an air flow passage may be stored on the surface cleaning head 300.

It will be appreciated that lower section 216 may be rotatably mounted on cleaning head 300 without hose 335 extending through a housing 268. Further, a housing 268 may be used even if lower section 216 is not rotatably mounted to cleaning head 300. Such a housing need not be pivotally mounted to surface cleaning head.

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Preferably, the second flexible hose 335 is also resilient so that it will return to its original, un-stretched length when it is released by the user. The resilience of the second flexible hose 335 may tend to retract the second flexible hose 335 through the hollow housing 268 and the hollow conduit member 330 and may serve to re-seat the downstream end of the second flexible hose 335 on the upper collar 272. In this example, the second flexible hose 335 functions as a variable length air conduit and may reduce the need for a user to add extra hoses or conduit members to the vacuum 100 during use.

To allow for easy and repeated extension of the second flexible hose 335, the second flexible hose 335 may be sized to freely pass through both the hollow conduit member 330 of the surface cleaning head 300 and the hollow housing 268 of the bracket 260.

In the example shown in Figure 15-19, the hollow housing 268 is integral the bracket 260 and also serves as the coupling means that connects the lower portion 216 to the surface cleaning head 300. As shown, the coupling between the lower portion 216 and the surface cleaning head 300 may be the telescoping or overlapping engagement of the lower opening 270 over the surface cleaning head 300 hollow conduit member 330. In other examples, the coupling or attachment between the lower portion 216 and the surface cleaning head 300 may be any type of connection including a threaded connection, clamps or tabs. The connection between the lower portion 216 and the surface cleaning head 300 may be fixed or selectively releasable. An advantage of providing a single, downward facing coupling point 266 may be the fact that a single coupling point 266 can be pivotally and rotationally connected to the surface cleaning head 300. Further, the hollow conduit member 330 may be pivotally connected to the surface cleaning head 300, as exemplified in Figures 15-19, and in other examples, the hollow conduit member 330 may be fixedly connected to the surface cleaning head 300, or integrally formed therewith.

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