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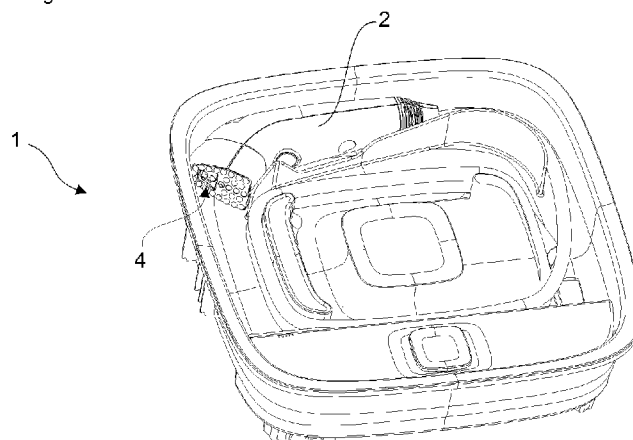
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(54) Title: A PORTABLE CLEANING DEVICE

Figure 1



(57) Abstract: The present invention relates to a portable cleaning device (1), which is used for regionally cleaning the dirt on the textile by means of pressurized water and/or air, comprising a body (2) which can be gripped by hand; a pump (3) which is provided in the body (2) and which pressurizes the air and/or water; and a cleaning head (4) which is provided at the end of the body (2) and which transfers the air or water coming from the pump (3) onto the textile.



Description**A PORTABLE CLEANING DEVICE**

- [0001] The present invention relates to a portable cleaning device which enables local dirt and stains on fabrics to be removed.
- [0002] Today, there is an increasing demand for portable cleaning devices which enable dirt and stains on fabrics to be quickly and easily removed by means of a local cleaning process. Portable cleaning devices can be vibrating cleaning devices which apply vibration to the textiles, or liquid jet cleaning devices which enable the stains to be removed by means of pressurized air and/or pressurized water. The local cleaning process is realized by applying a cleaning agent such as detergent, bleach, etc. onto the dirty/stained area and moving the portable cleaning device on the dirt/stain. The dirt and stains on the textiles can be effectively removed by means of the chemical effect of the cleaning agent and mechanical effects such as vibration and pressure created by the portable cleaning device. However, the inability of the portable cleaning device to come into contact with every area on the textile which is intended to be cleaned reduces the effectiveness of the cleaning process, resulting in reduced user satisfaction. Moreover, the use of a portable cleaning device in a fixed use mode in case the fabric type, color and dirt density of the textile to be cleaned is different causes the cleaning efficiency to decrease.
- [0003] In the state of the art European Patent Application Document No. EP1056830, a portable cleaning device is disclosed, which enables the stains in the textiles to be eliminated.
- [0004] The aim of the present invention is the realization of a portable cleaning device which is prevented from causing damage on the textiles.
- [0005] The portable cleaning device realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises an ergonomic body which can be conveniently gripped by the user. By means of a pump provided in the body, air, water or cleaning agent diluted with water can be delivered to the cleaning head in a pressurized state. By moving the cleaning head on the textile, the precleaning process is performed.

- [0006] The portable cleaning device of the present invention comprises a housing which is provided on the body. A movement member with one end connected to the cleaning head is provided on the housing. By means of the movement member, the cleaning head makes rotational movement. Thus, while the user makes the cleaning head come into contact with the textile, the cleaning head easily moves on the textile and reaches the corners of the textile, efficiently removing dirt and stains.
- [0007] In an embodiment of the present invention, the portable cleaning device of the present invention comprises a motor as the movement member. The mechanical effect generated with the operation of the motor is transmitted to the cleaning head by means of moving gearwheels or shaft. Thus, the cleaning head is rotated to perform the cleaning process.
- [0008] In an embodiment of the present invention, the portable cleaning device of the present invention comprises a propeller as the movement member. The mechanical effect generated as the air, water or cleaning agent diluted with water delivered by the pump hits the blades of the propeller is transmitted to the cleaning head. Thus, the cleaning head is enabled to be rotated to perform the cleaning process.
- [0009] In another embodiment of the present invention, the portable cleaning device comprises at least one detection member which is positioned at the portion of the cleaning head in contact with the textile and which determines at least one physical or chemical characteristic of the textile or the cleaning agent applied onto the textile. Thus, the operating parameters of the movement member are changed by means of a control unit in accordance with the data such as conductivity and color received from the cleaning area. By positioning the detection member at the portion of the cleaning head in contact with the textile, data is collected from the cleaning environment during the cleaning process. Therefore, during the cleaning process, instant changes in the cleaning environment such as the amount of cleaning agent, cleaning an area of the textile with a different color are monitored instantaneously and the operating parameters of the movement member are changed in accordance with the data received by the detection member of the control unit. Thus, the mechanical effect is

applied onto the textile in a controlled manner, preventing the textile from being damaged.

[0010] In another embodiment of the present invention, the portable cleaning device comprises a control unit which prevents the operation of the movement member and which sends a warning to the user by means of a warning means when a cleaning head, which does not comply with the characteristics of the textile or the cleaning agent applied onto the textile determined in accordance with the data received from the detection member, is attached to the body. Thus, the textile is prevented from getting damaged due to the performance of a cleaning process not suitable to the determined characteristics.

[0011] In another embodiment of the present invention, the portable cleaning device comprises the cleaning head which is detachably attached to the end portion of the body in contact with the textile. In case the cleaning head wears down or gets damaged, the user can replace the cleaning head with a new one, thus enabling the portable cleaning device to be used for a long time. Moreover, by using a cleaning head suitable for the textile desired to be precleaned or the cleaning agent applied onto the textile, the user is provided with ease of use.

[0012] In another embodiment of the present invention, the portable cleaning device comprises the cleaning head having nozzles in different numbers and types so as to be positioned at the end portion of the body in contact with the textile and so as to comply with the characteristics of the textile or the cleaning agent applied onto the textile. For example, the amount of air, water or cleaning agent diluted with water which must be delivered in order to perform an effective precleaning process for a textile with dense dirt and a textile with delicate structure is different. By attaching the cleaning head with a different number and type of nozzles on the portable cleaning device, the effectiveness of the precleaning process is increased, preventing the textile from getting damaged.

[0013] By means of the present invention, the user can easily move the portable cleaning device under favour of the cleaning head which can rotate on the textile, and reach the corners of the textile, efficiently removing dirt and

stains from the textile.

[0014] The portable cleaning device realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

[0015] Figure 1 - is the top perspective view of the portable cleaning device in an embodiment of the present invention.

[0016] Figure 2 - is the partial view of the portable cleaning device in an embodiment of the present invention.

[0017] Figure 3 - is the schematic view of the portable cleaning device in an embodiment of the present invention.

[0018] Figure 4 - is the view of the portable cleaning device comprising a motor as the movement member in an embodiment of the present invention.

[0019] Figure 5 - is the view of the portable cleaning device comprising a propeller as the movement member in an embodiment of the present invention.

[0020] Figure 6 - is the perspective view of the portable cleaning device comprising a warning means in an embodiment of the present invention.

[0021] The elements illustrated in the figures are numbered as follows:

1. Portable cleaning device
2. Body
3. Pump
4. Cleaning head
5. Housing
6. Movement member
7. Motor
8. Propeller
9. Detection member
10. Control unit
11. Warning means
12. Nozzle

[0022] The portable cleaning device (1) comprises an ergonomic body (2) which can be conveniently gripped by the user. By means of a pump (3) provided in the body (2), air, water or cleaning agent diluted with water can be delivered in a pressurized state to the cleaning head (4) which is attached

to the portion of the body (2) in contact with the textile. By moving the cleaning head (4) on the textile, the dirt and stains on the textile are removed, thus performing the precleaning process.

- [0023] The portable cleaning device (1) of the present invention comprises a housing (5) on the body (2). A movement member (6) with one end connected to the cleaning head (4) is placed into the housing (5). By means of the movement member (6), the cleaning head (4) makes rotational movement. Thus, while the user makes the cleaning head (4) come into contact with the textile, the cleaning head (4) easily moves on the textile and reaches the corners of the textile. Thus, the dirt and stains on the textile are efficiently removed.
- [0024] In an embodiment of the present invention, the portable cleaning device (1) of the present invention comprises the movement member (6) having a motor (7). The mechanical effect generated with the operation of the motor (7) is transmitted to moving gearwheels or shaft, thus enabling the cleaning head (4) to make rotational movement.
- [0025] In another embodiment of the present invention, the portable cleaning device (1) of the present invention comprises the movement member (6) having a propeller (8). A plurality of blades are provided on the propeller (8). The air, water or cleaning agent diluted with water delivered by the pump (3) hits the blades of the propeller (8). By transmitting the mechanical effect generated to the cleaning head (4), the cleaning head (4) performs the rotational movement and the cleaning process is carried out.
- [0026] In another embodiment of the present invention, the portable cleaning device (1) comprises at least one detection member (9) which is positioned at the portion of the cleaning head (4) in contact with the textile and which determines at least one physical or chemical characteristic of the textile or the cleaning agent applied onto the textile. In accordance with the data received from the detection member (9), at least one operating parameter of the movement member (6) is changed by a control unit (10), thus ensuring an effective cleaning process. For example, the conductivity of the cleaning agent to be applied onto the area to be cleaned can be

determined by means of the detection member (9). The control unit (10) determines the cleaning agent concentration depending on the determined conductivity value and changes at least one of the operating parameters of the movement member (6). During the cleaning process the detection member (9) which is positioned at the part in contact with the textile constantly collects data from the cleaning environment. Therefore, during the cleaning process, instant changes such as the amount of cleaning agent, cleaning an area of the textile with a different color are monitored instantaneously and the operating parameters of the movement member (6) are changed by the control unit (10), thus efficiently removing the dirt and stains.

[0027] In another embodiment of the present invention, in the portable cleaning device (1), the control unit (10) prevents the operation of the movement member (6) and sends a warning to the user by means of a warning means (11) when a cleaning head (4), which does not comply with the characteristics of the textile or the cleaning agent applied onto the textile determined in accordance with the data received from the detection member (9), is attached to the body (2). Thus, the textile is prevented from getting damaged due to the performance of a cleaning process not suitable to the determined characteristics.

[0028] In another embodiment of the present invention, the portable cleaning device (1) comprises the cleaning head (4) which is detachably attached to the end portion of the body (2) in contact with the textile. In case the cleaning head (4) wears down or gets damaged, the user can replace the cleaning head (4) with a new one. Thus, the portable cleaning device (1) is enabled to be used for a long time. Moreover, a plurality of cleaning heads (4) suitable for the textile desired to be precleaned or the cleaning agent applied onto the textile can be used, providing the user with ease of use.

[0029] In another embodiment of the present invention, the portable cleaning device (1) comprises the cleaning head (4) having nozzles (12) in different numbers and types so as to be positioned at the end portion of the body (2) in contact with the textile and so as to comply with the characteristics of the textile or the cleaning agent applied onto the textile. In case the type,

color, dirt amount of the textile to be precleaned is different from each other, the air, water or cleaning agent diluted with water which must be delivered to the textile may also be different.

For example, the amount of air, water or cleaning agent diluted with water which must be delivered in order to perform an effective precleaning process for a textile with dense dirt and a textile with delicate structure is different. By attaching the cleaning head (4) with a different number and type of nozzles (12) on the portable cleaning device (1), the effectiveness of the precleaning process is increased, preventing the textile from getting damaged.

[0030] By means of the present invention, a portable cleaning device (1) is realized, wherein the mechanical effect to be applied onto the textile is automatically determined depending on the conditions of the cleaning environment. Thus, the partial cleaning process is enabled to be always performed in ideal conditions, providing ease of use and increasing customer satisfaction.

Claims

1. A portable cleaning device (1), which is used for regionally cleaning the dirt on the textile by means of pressurized water and/or air, **comprising** a body (2) which can be gripped by hand; a pump (3) which is provided in the body (2) and which pressurizes the air and/or water; and a cleaning head (4) which is provided at the end of the body (2) and which transfers the air or water coming from the pump (3) onto the textile, **characterized by** a housing (5) which is provided on the body (2) and a movement member (6) which is disposed into the housing (5) and which enables the cleaning head (4) to rotate with one end being connected to the cleaning head (4).
2. A portable cleaning device (1) as in Claim 1, **characterized by** the movement member (6) which is a motor (7).
3. A portable cleaning device (1) as in Claim 1, **characterized by** the movement member (6) which is a propeller (8).
4. A portable cleaning device (1) as in any one of the above claims, **characterized by** at least one detection member (9) which is positioned at the portion of the cleaning head (4) in contact with the textile and which determines at least one physical or chemical characteristic of the textile or the cleaning agent applied onto the textile, and by a control unit (10) which controls the operation of the movement member (6) depending on the data received from the detection member (9).
5. A portable cleaning device (1) as in Claim 4, **characterized by** the control unit (10) which stops the operation of the movement member (6) and sends a warning to the user by means of a warning means (11) when a cleaning head (4), which does not comply with the characteristics of the textile or the cleaning agent applied onto the textile determined in accordance with the data received from the detection member (9), is attached to the body (2).
6. A portable cleaning device (1) as in any one of the above claims, **characterized by** the cleaning head (4) which is detachably attached to the end portion of the body (2) in contact with the textile.

Figure 1

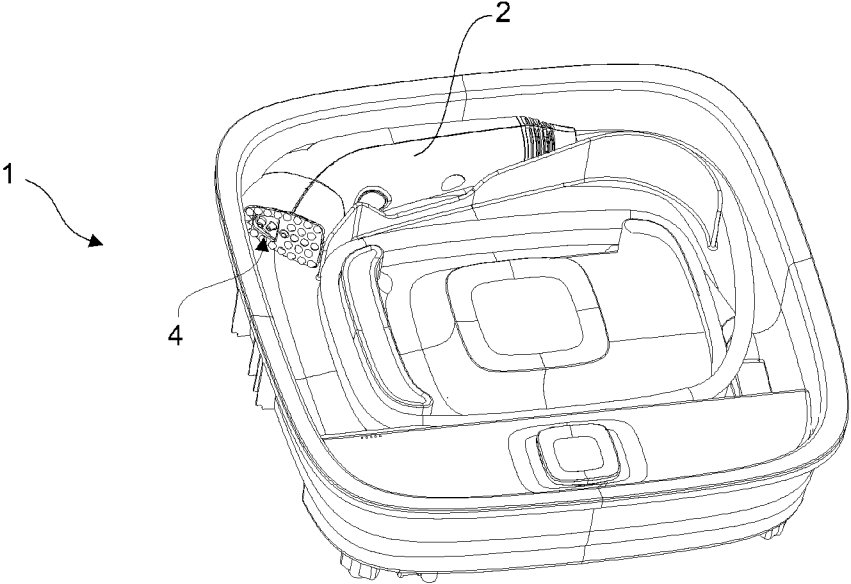


Figure 2

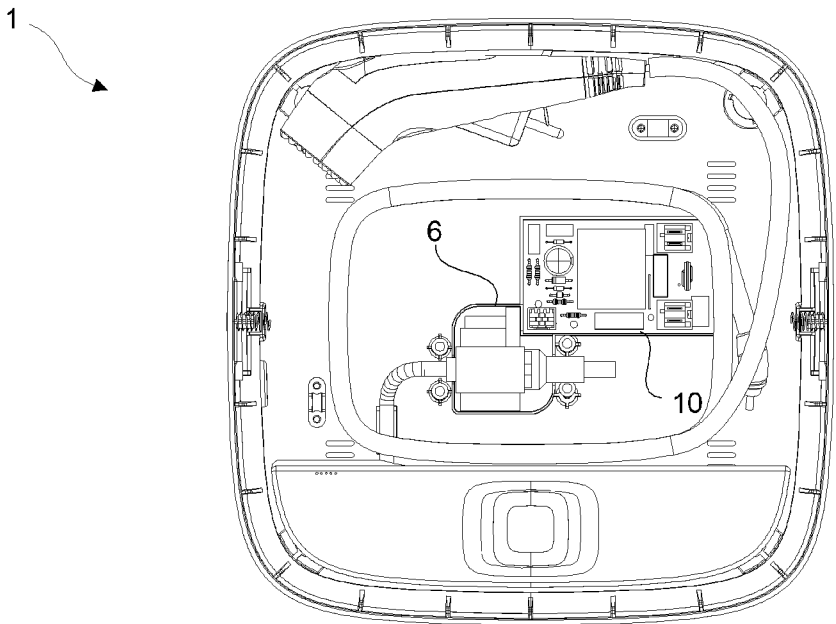


Figure 3

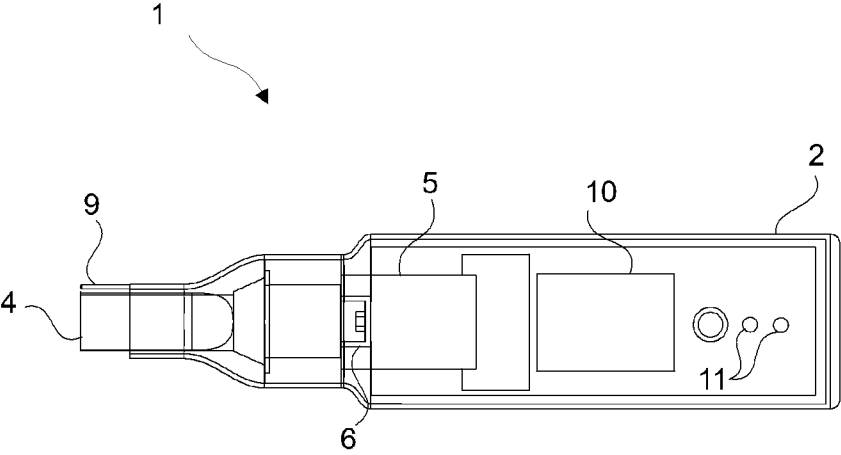


Figure 4

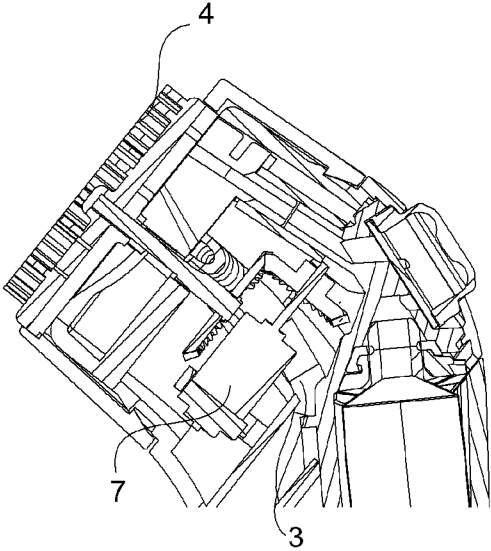


Figure 5

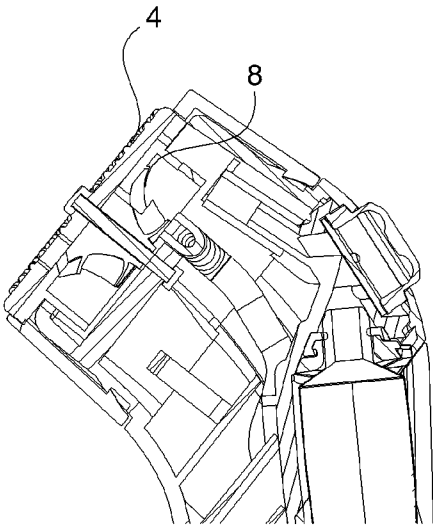
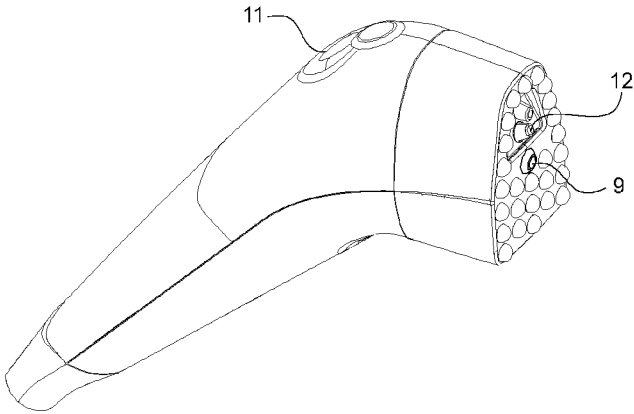


Figure 6



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2020/058317

A. CLASSIFICATION OF SUBJECT MATTER INV. A47L25/08 B08B3/10 A47L11/34 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 B08B		
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.
A	US 2011/119843 A1 (NIKITCZUK JASON J [US] ET AL) 26 May 2011 (2011-05-26) paragraph [0052] - paragraph [0069]; figures 3-5 -----	1-6
A	DE 39 12 655 A1 (MUSITU OCHOA JUAN ANTONIO [ES]) 2 November 1989 (1989-11-02) abstract; figures 1,2 -----	1-6
A	JP 2017 088227 A (WELCO CO LTD) 25 May 2017 (2017-05-25) paragraph [0010] - paragraph [0019]; figures 1-5 -----	1-6
☐ 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		
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Blumenberg, Claus

INTERNATIONAL SEARCH REPORT

Information on patent family members

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