



(12)

EUROPEAN PATENT APPLICATION

- (43)

Date of publication:
12.06.2024 Bulletin 2024/24
- (51)

International Patent Classification (IPC):
A47L 11/34^(2006.01) A47L 11/40^(2006.01)
- (21)

Application number: 23214446.9
- (52)

Cooperative Patent Classification (CPC):
A47L 11/4083; A47L 11/34; A47L 11/4086;
A47L 11/4088; A47L 11/4091
- (22)

Date of filing: 05.12.2023

- (84)

Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL
NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN
- (30)

Priority: 07.12.2022 CN 202223276819 U
- (71)

Applicant: Alfred Kärcher SE & Co. KG
71364 Winnenden (DE)
- (72)

Inventors:
• TAO, Fei
71364 Winnenden (DE)
- (74)

Representative: Hoeger, Stellrecht & Partner
Patentanwälte mbB
Uhlandstrasse 14c
70182 Stuttgart (DE)
- ZHANG, Jianping
71364 Winnenden (DE)

• LIU, Fei
71364 Winnenden (DE)

• WANG, Weihao
71364 Winnenden (DE)

• AN, Yuxiang
71364 Winnenden (DE)

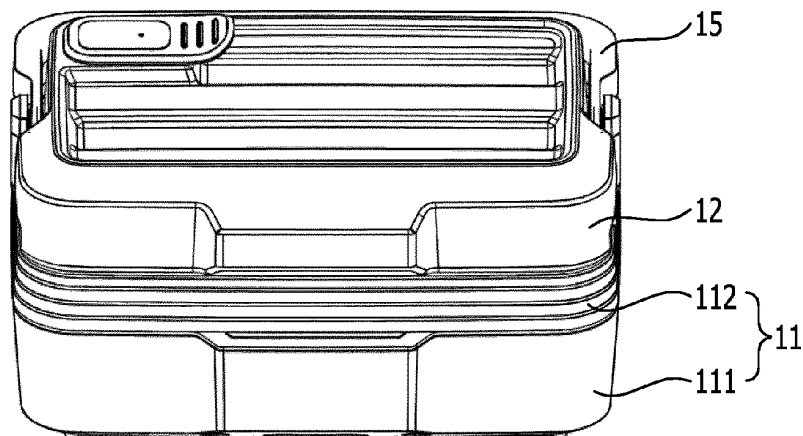
(54)

STEAM CLEANING APPARATUS

- (57)

The present disclosure discloses a steam cleaning apparatus, including: a box body (11) having a receiving space; a box cover (12) connected with the box body (11) in an opening and closing manner, wherein the box cover (12) is configured as a water tank for the steam cleaning apparatus; a steam control device arranged in
- the box body (11) and outside the receiving space; and an accessory in fluid communication or connection with the steam control device and adapted to be accommodated in the receiving space. With this arrangement, a continuous operating time of the steam cleaning apparatus can be prolonged.

FIG.1



Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of priority to Chinese patent application No. 202223276819.X, filed on December 7, 2022, entitled "STEAM CLEANING APPARATUS", the entire disclosure of which is incorporated herein by reference.

TECHNICAL FIELD

[0002] The present disclosure relates to the technical field of cleaning appliances, and more particularly to a steam cleaning apparatus.

BACKGROUND OF THE INVENTION

[0003] A steam cleaning apparatus is a tool for dissolving stubborn dirt attached to objects and performing sterilization and disinfection by high-temperature steam. For example, the steam cleaning apparatus can be used for sterilization, fine dust removal, decontamination, oil stain removal, and is widely used in personal household deep cleaning and housekeeping fields.

[0004] In order to enable the steam cleaning apparatus to perform cleaning work on different surfaces to be cleaned, existing steam cleaning apparatus typically include a plurality of accessories. Steam cleaning apparatus are usually equipped with a receiving box for accommodating all accessories.

[0005] However, existing steam cleaning apparatus have a short continuous operating time and are not convenient to use.

SUMMARY OF THE INVENTION

[0006] An object of the present invention is to prolong a continuous operating time of a steam cleaning apparatus.

[0007] According to some embodiments, a steam cleaning apparatus includes: a box body having a receiving space; a box cover connected with the box body in an opening and closing manner, wherein the box cover is configured as a water tank for the steam cleaning apparatus; a steam control device arranged in the box body and outside the receiving space; and an accessory in fluid communication or connection with the steam control device and adapted to be accommodated in the receiving space.

[0008] According to some embodiments, the box cover is removably connected with the box body.

[0009] According to some embodiments, the box cover is provided with a buckle fitting part, and the box body is provided with a buckle for connecting with the buckle fitting part to lock the box cover and the box body.

[0010] According to some embodiments, two sides of the box cover opposite each other are respectively pro-

vided with a buckle.

[0011] According to some embodiments, the buckle is arranged on a side of the box cover away from a water outlet.

5 **[0012]** According to some embodiments, the box cover is further provided with a lifting part for lifting the box cover.

[0013] According to some embodiments, the box cover includes: a water tank body; a water inlet arranged on one side of the water tank body; and a water outlet arranged on the opposite side of the water tank body; wherein the water tank body is in fluid communication with the steam control device via the water outlet.

10 **[0014]** According to some embodiments, the box cover further includes a water tank cover connected with the water inlet in an opening and closing manner.

[0015] According to some embodiments, the water tank body is provided with a groove on one side of the water tank body facing the box body.

20 **[0016]** According to some embodiments, the steam control device includes: a controller; a water pump connected with the controller; and a boiler having a first port connected with the water pump and having a second port connected with a steam pipe.

25 **[0017]** According to some embodiments, the steam control device further includes a safety valve connected with the water pump for controlling a pressure of the water pump.

[0018] According to some embodiments, the steam control device further includes a status indicator light arranged on the box body and connected with the controller for indicating a status of the steam cleaning apparatus.

30 **[0019]** According to some embodiments, the steam control device further includes an inlet component for providing an inlet of the steam control device and a water level detector suitable for the inlet of the steam control device.

35 **[0020]** According to some embodiments, the steam control device further includes a descaling bucket comprising a first port connected with the inlet component and a second port connected with the water pump.

40 **[0021]** According to some embodiments, the steam cleaning apparatus further includes a handle arranged outside of the box cover and connected with the box body.

45 **[0022]** According to some embodiments, the box body has a handle connecting part, and the handle has an installing part for mating with the handle connecting part.

[0023] According to some embodiments, the handle connecting part is rotatably connected with the installing part and remains fixed relative to the installing part when rotated to a position above the box cover.

50 **[0024]** According to some embodiments, the steam cleaning apparatus further includes a power cord, wherein a side wall of the box body is provided with a cord outlet, and the power cord extends to outside of the box body via the cord outlet.

[0025] According to some embodiments, the box body is provided with a mesh part for accommodating the pow-

er cord on the side wall of the box body provided with the cord outlet.

[0026] According to some embodiments, the box body has a steam pipe outlet.

[0027] Compared with conventional technology, the technical solution of the embodiment of the present invention has following advantages:

[0028] According to the embodiment of the present invention, on the one hand, the box cover is connected with the box body in an opening and closing manner, and serves as a cover of the box body, and on the other hand, the box cover also serves as a water tank of the steam cleaning apparatus for providing a water source for the steam cleaning apparatus. Since the box cover is arranged on the box body, the size of the water tank can be larger compared to being arranged in the receiving space provided by the box body, which can increase the volume of the water tank and increase the continuous operating time of the steam cleaning apparatus. In addition, the receiving space provided by the box body can meet accommodating needs, and prolong the continuous operating time of the steam cleaning apparatus while meeting the accommodating needs.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029]

FIG. 1 is a schematic view of a steam cleaning apparatus in a closed state according to an embodiment of the present invention;

FIG. 2 is a schematic view of the steam cleaning apparatus in an opened state according to an embodiment of the present invention;

FIG. 3 is a schematic top view of a box cover according to an embodiment of the present invention;

FIG. 4 is a schematic bottom view of the box cover according to an embodiment of the present invention;

FIG. 5 is a schematic perspective view of the steam cleaning apparatus with a steam pipe extending out according to an embodiment of the present invention;

FIG. 6 is a schematic side view of the steam cleaning apparatus in a closed state according to an embodiment of the present invention;

FIG. 7 is a schematic rear view of a steam cleaning apparatus in a closed state according to an embodiment of the present invention; and

FIG. 8 is a structural schematic view of a steam control device according to an embodiment of the

present invention.

DETAILED DESCRIPTION

[0030] Existing steam cleaning apparatus are usually equipped with a receiving box for accommodating accessories of the steam cleaning apparatus, including a water tank, a steam pipe, a steam handle, a steam nozzle, a steam brush, a circular brush and a detail nozzle, etc.

[0031] Since the water tank is also accommodated in the receiving box, the size of the water tank is limited. During use of the steam cleaning apparatus it is often necessary to stop working and to flush water into the water tank, and then to restart work again, thus a continuous operating time of the steam cleaning apparatus is relatively short.

[0032] Therefore, the present invention provides a steam cleaning apparatus. In the steam cleaning apparatus, on the one hand, a box cover is connected with a box body in an opening and closing manner, and serves as a cover of the box body, and on the other hand, the box cover also serves as a water tank of the steam cleaning apparatus for providing a water source for the steam cleaning apparatus. Since the box cover is arranged on the box body, the size of the water tank can be larger compared to being arranged in the receiving space provided by the box body, which can increase a volume of the water tank and increase a continuous operating time of the steam cleaning apparatus.

[0033] In order to make above purposes, features and advantages of the present invention more obvious and understandable, specific embodiments of the present invention will be explained in detail below in conjunction with the accompanying drawings

[0034] According to some embodiments, a steam cleaning apparatus includes: a box body having a receiving space; a box cover connected with the box body in an opening and closing manner, wherein the box cover is configured as a water tank for the steam cleaning apparatus; a steam control device arranged in the box body and outside the receiving space; and an accessory in fluid communication or connection with the steam control device and adapted to be accommodated in the receiving space.

[0035] The box body provides the receiving space, which allows the accessories to be accommodated in the receiving space, thus the storage of various accessories of the steam cleaning apparatus can be more tidy. In addition, as a cover of the box body, the box cover can convert the receiving space into a closed space, which can facilitate the movement of the steam cleaning apparatus. The box cover also serves as the water tank for providing a water source and is not limited by the receiving space, which prolongs the continuous operating time of the steam cleaning apparatus without an additional water tank and water tank cover, thereby reducing the overall weight of the steam cleaning apparatus.

[0036] FIG. 1 is a schematic view of a steam cleaning

apparatus in a closed state according to an embodiment of the present invention, and FIG. 2 is a schematic view of the steam cleaning apparatus in an opened state according to an embodiment of the present invention;

[0037] Referring to FIGS. 1 and 2, the steam cleaning apparatus includes a box body 11, a box cover 12 and a steam control device. The box body 11 provides a receiving space, and the box cover 12 serves as an upper cover and a water tank of the box body 11. The box body 11 includes a lower cover 111 and a middle frame 112, and the receiving space is located in the middle frame 112. The steam control device is arranged in the lower cover 111 and outside the middle frame 112, and the receiving space can partially surround the steam control device. The box cover 12 is connected with the box body 11 in an opening and closing manner, that is, the box cover 12 can be in a closed position or in an open position relative to the box body 11. When the box cover 12 is in the closed position relative to the box body 11, the receiving space is closed and an overall storage is more tidy.

[0038] In some embodiments, the shape of the receiving space is not limited as long as it can accommodate various accessories.

[0039] In some embodiments, the box cover 12 has a hollow structure suitable for receiving water. The material of the box cover 12 may be polypropylene (PP) or high density polyethylene (HDPE). A thickness of a side wall of the box cover 12 ranges from 1 mm to 3mm. If the side wall of the box cover 12 is too thick, a volume of the water tank can be reduced. If the side wall of the box cover 12 is too thin, the box cover 12 cannot withstand enough pressure and is easy to crack.

[0040] In some embodiments, a shape of the box body 11 matches with a shape of the box cover 12. For example, both the box body 11 and the box cover 12 may have a rectangular shape. Certainly, the box body 11 and the box cover 12 may also have other shapes, which are not limited herein.

[0041] In some embodiments, there may be multiple ways of connecting the box cover to the box body in an opening and closing manner, which are not limited herein.

[0042] In some embodiments, the box cover 12 may be fixedly connected with the box body 11 (such as a hinge connection), that is, the box cover 12 may be non-removably connected with the box body 11. At this time, the box body 11 remains fixed and the box cover 12 can rotate around a connection axis between the box body 11 and the box cover 12.

[0043] In some embodiments, since the box cover 12 serves as the water tank, the box cover 12 may be removably connected with the box body 11, which can facilitate the removal of the box cover 12 from the box body 11 so that box cover 12 can be filled with water.

[0044] FIG. 3 is a schematic top view of a box cover according to an embodiment of the present disclosure, and FIG. 4 is a schematic bottom view of the box cover

according to an embodiment of the present disclosure.

[0045] Referring to FIGS. 3 and 4, in some embodiments, the box cover 12 may be provided with a buckle fitting part 121, and the box body 11 may be provided with a buckle 113 (referring to FIG. 2). The buckle 113 is adapted to be connected with the buckle fitting part 121 to lock the box cover 12 and the box body 11. The buckle 113 and the buckle fitting part 121 can match with each other in shape and size.

[0046] In some embodiments, two buckle fitting parts 121 may be symmetrically arranged on two opposite sides of the box body 11 in the form of a triangular protrusion. The buckle 113 can clamp a top of the buckle fitting part 121 to lock the box cover 12 and the box body 11, which can prevent the box cover 12 from falling off the box body 11 during the movement of the steam cleaning apparatus, thus the closure of the box cover 12 and the box body 11 is more stable, which is beneficial to the movement of the steam cleaning apparatus.

[0047] In other embodiments, the buckle may also be arranged on a side of the box cover away from a water outlet. In this case, only one buckle is arranged on the box cover, and correspondingly, only one buckle fitting part is arranged on the box body. The buckle on the box cover can be mated with the buckle fitting part on the box body to lock one side of the box cover and the box body.

[0048] In addition, on the other side of the box cover and the box body, the steam control device has an inlet component that can provide an inlet for the steam control device. The inlet of the steam control device can match with a water outlet of the box cover, so that the water in the box cover can flow into the steam control device without leakage. The inlet of the steam control device and the water outlet of the box cover are usually made of a soft rubber material. Thus, an interference fit is formed between the inlet of the steam control device and the water outlet of the box cover, making the inlet of the steam control device and the water outlet of the box cover tightly connected with each other, thereby locking the other side of the box cover and the box body. Therefore, an additional buckle and buckle fitting part are not needed to be installed on the other side of the box cover and the box body, which can simplify manufacturing complexity and save costs.

[0049] In some embodiments, referring to FIGS. 3 and 4, the box cover 12 is further provided with a lifting part 122 suitable for lifting the box cover 12. Specifically, after the box cover 12 is unlocked, the box cover 12 can be lifted from the box body 11 by holding the lifting part 122 and pulling the lifting part 122 upwards. During installation, by holding the lifting part 122, the box cover 12 can be installed on the box body 11, and then the buckle fitting part is tightly locked by the buckle.

[0050] In some embodiments, the box cover 12 can have various shapes. In general, for better appearance, the box cover 12 and the box body 11 can be arranged symmetrically. After removing the box cover 12 from the box body 11, the box cover 12 can be used as a handheld

part to fill the box cover 12 with water, or both sides of the box cover 12 can be used as handheld parts to fill the box cover 12 with water.

[0051] In some embodiments, referring to FIGS. 3 and 4, the box cover 12 may include a water tank body 123, a water inlet 124 arranged on one side of the water tank body 123 and a water outlet 125 arranged on the other side of the water tank body 123. The water tank body 123 is in fluid communication with the steam control device through the water outlet 125.

[0052] In some embodiments, the water can be filled into the water tank body 123 through the water inlet 124. The water in the water tank body 123 flows into the steam control device through the water outlet 125.

[0053] In some embodiments, a plurality of reinforcing ribs 127 may be arranged on an upper surface of the water tank body 123, which can increase a strength of the water tank body 123 and improve a pressure resistance of the box cover 12.

[0054] In some embodiments, the box cover 12 may also include a water tank cover 128 having a sealing function. The water tank cover 128 can tightly cover the water inlet 124 to prevent the water tank from leaking. The water tank cover 128 can be made of any suitable elastomer, such as silicone.

[0055] In some embodiments, in order to increase the receiving space, a groove may be arranged on a side of the water tank body 123 facing the box body 11. The groove may be recessed towards the upper surface of the water tank body 123, which can increase the receiving space to accommodate more accessories.

[0056] Referring to FIG. 2, the accessories may include a steam handle 131 and a steam pipe 132. In other embodiments, the accessories may also include a steam nozzle, a steam brush, a circular brush, a detail nozzle, and a shovel, etc. In some embodiments, not all accessories are shown for the sake of simplification.

[0057] In some embodiments, referring to FIG. 2, a handle fixing portion 133 is arranged in the receiving space. The handle fixing portion 133 can fix the steam handle 131 in the receiving space to avoid shaking due to displacement. Other accessories can be arranged in a gap between the steam handle 131, the steam pipe 132 and the receiving space.

[0058] In some embodiments, referring to FIG. 8, the steam control device includes a controller (not shown in the figure), a water pump 144 connected with the controller and a boiler 145 with one end connected with the water pump 144 and the other end connected with a steam pipe.

[0059] In some embodiments, referring to FIG. 8, the steam control device further includes an inlet component 141 for providing an inlet of the steam control device and a water level detector suitable for the inlet of the steam control device. The inlet component 141 may be connected with the controller to send water level detection results to the controller, which controls the operation of the steam cleaning apparatus based on the water level

detection results.

[0060] In some embodiments, the steam control device may further include a safety valve 146. The safety valve 146 is connected with the water pump 144 for adjusting a pressure of the water pump 144 under the control of the controller. The pressure of the water pump 144 varies, and the amount of water pumped by the water pump 144 from the water tank per unit time also varies.

[0061] In some embodiments, the steam control device may further include a descaling bucket 142. One end of the descaling bucket 142 is connected with the inlet component 141, and the other end is connected with the water pump 144. The water in the water tank body is filtered by the descaling bucket 142 and then output to the boiler 145. The descaling bucket 142 can filter calcified substances in the water, avoiding a formation of scale due to an accumulation of the calcified substances in a pipe and blocking the pipe of the steam cleaning apparatus.

[0062] In some embodiments, the controller can control the operation of the water pump. Referring to FIG. 8, the water outlet 125 of the box cover 12 is connected with the inlet component 141. Under the control of the controller, the water in the box cover 12 is filtered by the descaling bucket 142 and then flows into the boiler 145 by way of the water pump. The boiler 145 can heat the pumped water to form steam, and then the steam is output to the steam handle 131 through the steam pipe. Referring to FIGS. 2, 5 and 6, one side of the box body 11 is equipped with a steam pipe outlet 114. One end of the steam pipe 132 is connected with the boiler, and the other end extends to an outer side of the box body 11 through the steam pipe outlet 114 and is connected with the steam handle 131. The steam handle 131 is in communication with the fluid, so that the steam in the steam pipe 132 can be output through the steam handle 131 to other accessories that can match with the steam handle 131 to complete cleaning.

[0063] In some embodiments, referring to FIG. 2, the steam control device may further include a status indicator light 143 arranged on the box body 11. The status indicator light 143 is connected to the controller for indicating a status of the steam cleaning apparatus. Specifically, the status indicator light 143 may be an LED light, which can be arranged on the middle frame 112. The LED light may be displayed in different colors and flashing frequencies. Based on the differences in color and flashing frequency, the LED light provides status indication, making the status indication more intuitive.

[0064] For example, when the LED light is green and constantly on, it is indicated that the steam cleaning apparatus is ready to use. When the LED light is red and constantly on, it is indicated that the steam cleaning apparatus is heating up. When the LED light is red and flashes quickly, it is indicated that the descaling bucket 142 of the steam cleaning apparatus cannot work normally.

[0065] In some embodiments, the middle frame 112 may also be provided with components such as a control

panel, and the control panel may be provided with a plurality of touch buttons. The plurality of touch buttons may be connected with the controller. By using touch buttons for receiving user control instructions, the operation of the steam cleaning apparatus can be controlled.

[0066] In other embodiments, the steam control device may also be equipped with a wireless communication module. The wireless communication module may be connected to user terminals such as mobile phones, and control instructions are sent to the controller through the user terminals such as mobile phones, thereby enabling remote wireless control of the operation of the steam cleaning apparatus.

[0067] Referring to FIGS. 1, 2, 5 to 7, in some embodiments, the steam cleaning apparatus may further include a handle 15 arranged outside of the box cover 12 and connected with the box body 11, which is convenient for carrying the steam cleaning apparatus.

[0068] In some embodiments, the handle 15 is roughly C-shaped and is arranged on one side of the box cover 12.

[0069] In some embodiments, the box body 11 has a handle connecting part 115, and the handle 15 has an installation part (not shown) for matching with the handle connecting part 115. The handle connecting part 115 may be fixed on the installation part, thereby connecting the handle 15 to the box body 11. Therefore, by pulling the handle 15, the steam cleaning apparatus can be moved.

[0070] In some embodiments, the handle connecting part 115 may be rotatably connected with the installation part and remains fixed relative to the installing part when rotated to a position above the box cover 12. That is to say, the handle connecting part 115 can rotate around the installation part and rotate from one side of the box cover 12 to a top of the box cover 12, and then the connection between the handle connecting part 115 and the installation part is fixed, so that the handle 15 is fixed above the box cover, and the steam cleaning apparatus can be moved stably.

[0071] In some embodiments, referring to FIG. 7, the steam cleaning apparatus may further include a power cord 16. A side wall of the box body 11 is provided with a cord outlet, and the power cord 16 extends to outside of the box body through the cord outlet.

[0072] In some embodiments, referring to FIG. 7, in order to make the steam cleaning apparatus more tidy, the box body 11 is provided with a mesh part 17 for accommodating the power line 16 on the side wall of the box body 11 provided with the line outlet.

[0073] In actual use, the power line is removed firstly, and then the water tank is removed and is filled with water. Then, the steam handle is removed, and the steam pipe is fixed, the steam handle is connected to the steam pipe, and finally the plug of the power cord is inserted. Then, the steam control device starts working, and the steam is sprayed out through an outlet of the steam handle.

[0074] In some embodiments, referring to FIG. 7, a bot-

tom plate of the steam cleaning apparatus may be provided with universal wheels 18, which can facilitate the movement of the steam cleaning apparatus.

[0075] Although preferred embodiments of the invention have been disclosed above, the present invention is not limited thereto. Changes and modifications may be made by those skilled in the art without departing from the spirit and scope of the present invention, and the scope of the invention should be determined by the appended claims.

Claims

1. A steam cleaning apparatus, comprising:
 - a box body (11) having a receiving space;
 - a box cover (12) connected with the box body (11) in an opening and closing manner, wherein the box cover (12) is configured as a water tank for the steam cleaning apparatus;
 - a steam control device arranged in the box body (11) and outside the receiving space; and
 - an accessory in fluid communication or connection with the steam control device and adapted to be accommodated in the receiving space.
2. The steam cleaning apparatus according to claim 1, wherein the box cover (12) is removably connected with the box body (11).
3. The steam cleaning apparatus according to claim 1, wherein the box cover (12) is provided with a buckle fitting part (121), and the box body (11) is provided with a buckle (113) for connecting with the buckle fitting part (121) to lock the box cover (12) and the box body (11).
4. The steam cleaning apparatus according to claim 3, wherein two sides of the box cover (12) opposite each other are respectively provided with a buckle (113).
5. The steam cleaning apparatus according to claim 3, wherein the buckle (113) is arranged on a side of the box cover (12) away from a water outlet (125).
6. The steam cleaning apparatus according to claim 1, wherein the box cover (12) is further provided with a lifting part (122) for lifting the box cover (12).
7. The steam cleaning apparatus according to claim 1, wherein the box cover (12) comprises:
 - a water tank body (123);
 - a water inlet (124) arranged on one side of the water tank body (123); and
 - a water outlet (125) arranged on the opposite

- side of the water tank body (123);
wherein the water tank body (123) is in fluid communication with the steam control device via the water outlet (125).
8. The steam cleaning apparatus according to claim 7, wherein the box cover (12) further comprises a water tank cover (128) connected with the water inlet (124) in an opening and closing manner.
9. The steam cleaning apparatus according to claim 7, wherein the water tank body (123) is provided with a groove on one side of the water tank body (123) facing the box body (11).
10. The steam cleaning apparatus according to claim 7, wherein the steam control device comprises:
- a controller;
a water pump (144) connected with the controller; and
a boiler (145) having a first port connected with the water pump (144) and having a second port connected with a steam pipe (132).
11. The steam cleaning apparatus according to claim 10, wherein the steam control device further comprises a safety valve (146) connected with the water pump (144) for controlling a pressure of the water pump (144).
12. The steam cleaning apparatus according to claim 10, wherein the steam control device further comprises a status indicator light (143) arranged on the box body (11) and connected with the controller for indicating a status of the steam cleaning apparatus.
13. The steam cleaning apparatus according to claim 10, wherein the steam control device further comprises an inlet component (141) for providing an inlet of the steam control device and a water level detector suitable for the inlet of the steam control device.
14. The steam cleaning apparatus according to claim 13, wherein the steam control device further comprises a descaling bucket (142) comprising a first port connected with the inlet component (141) and a second port connected with the water pump (144).
15. The steam cleaning apparatus according to claim 10, further comprising a handle (15) arranged outside of the box cover (12) and connected with the box body (11).
16. The steam cleaning apparatus according to claim 10, wherein the box body (11) has a handle connecting part (115), and the handle (15) has an installing part for mating with the handle connecting part (115).
17. The steam cleaning apparatus according to claim 16, wherein the handle connecting part (115) is rotatably connected with the installing part and remains fixed relative to the installing part when rotated to a position above the box cover (12).
18. The steam cleaning apparatus according to claim 1, further comprising a power cord (16), wherein a side wall of the box body (11) is provided with a cord outlet, and the power cord (16) extends to the outside of the box body (11) via the cord outlet.
19. The steam cleaning apparatus according to claim 18, wherein the box body (11) is provided with a mesh part (17) for accommodating the power cord (16) on the side wall of the box body (11) provided with the cord outlet.
20. The steam cleaning apparatus according to claim 1, wherein the box body (11) has a steam pipe outlet (114).

FIG.1

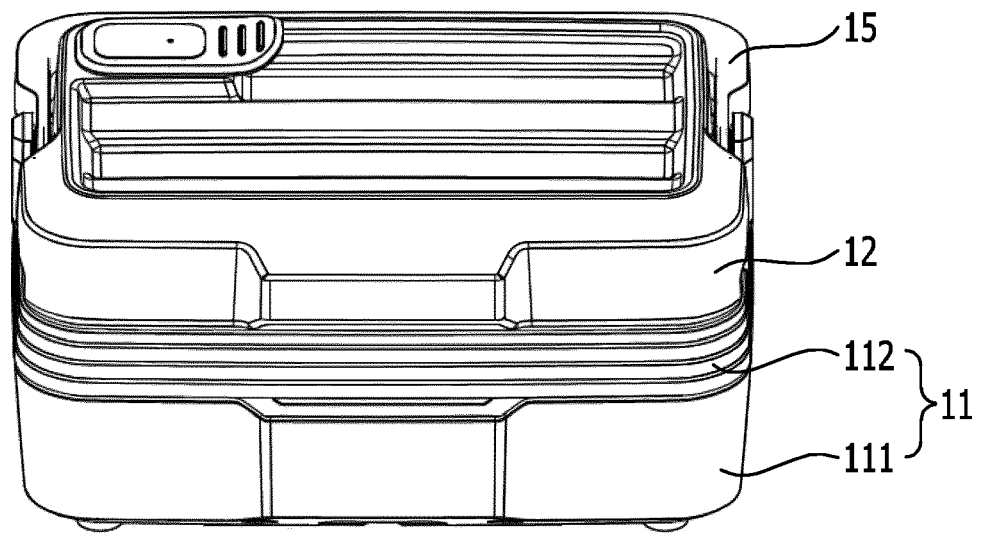


FIG.2

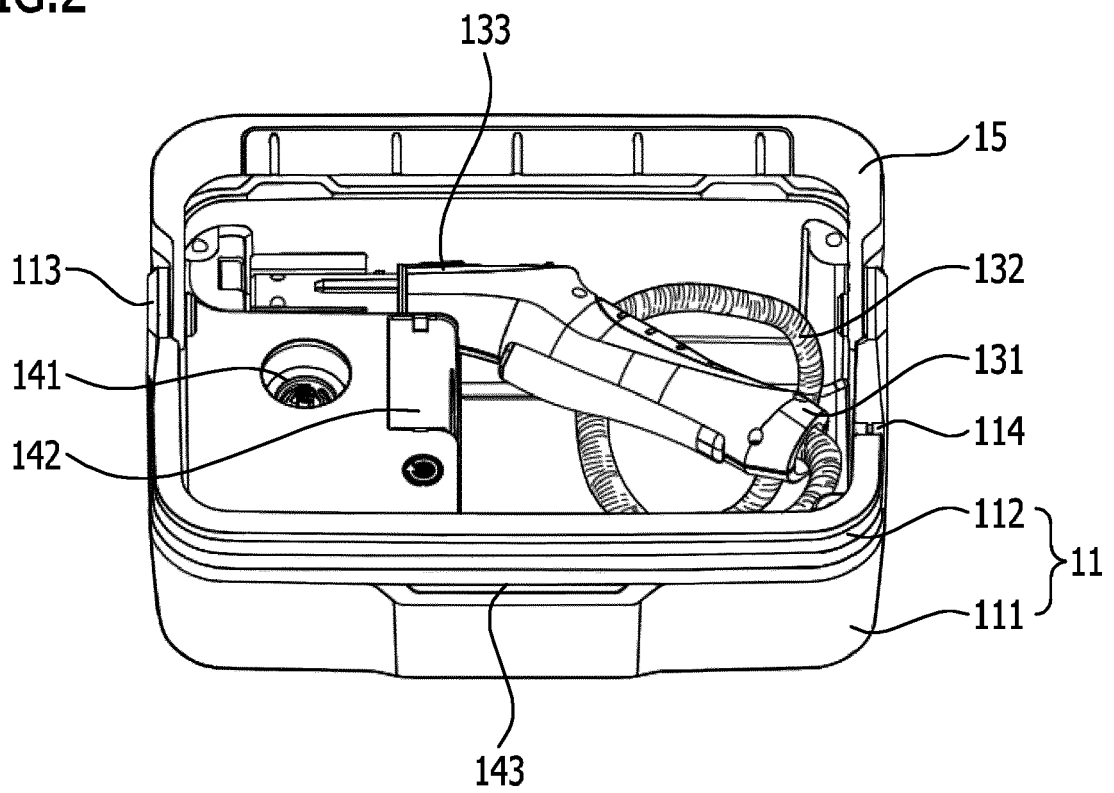


FIG.3

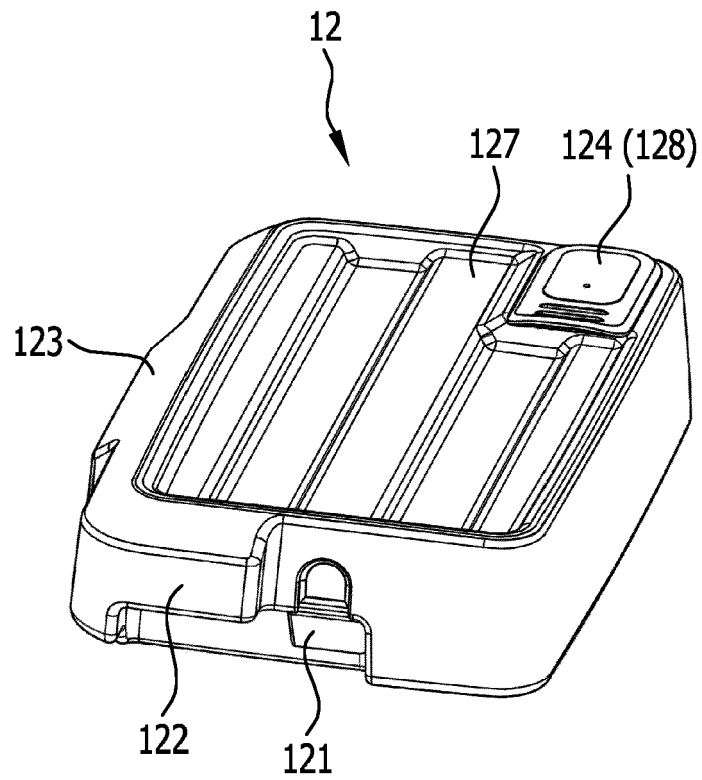


FIG.4

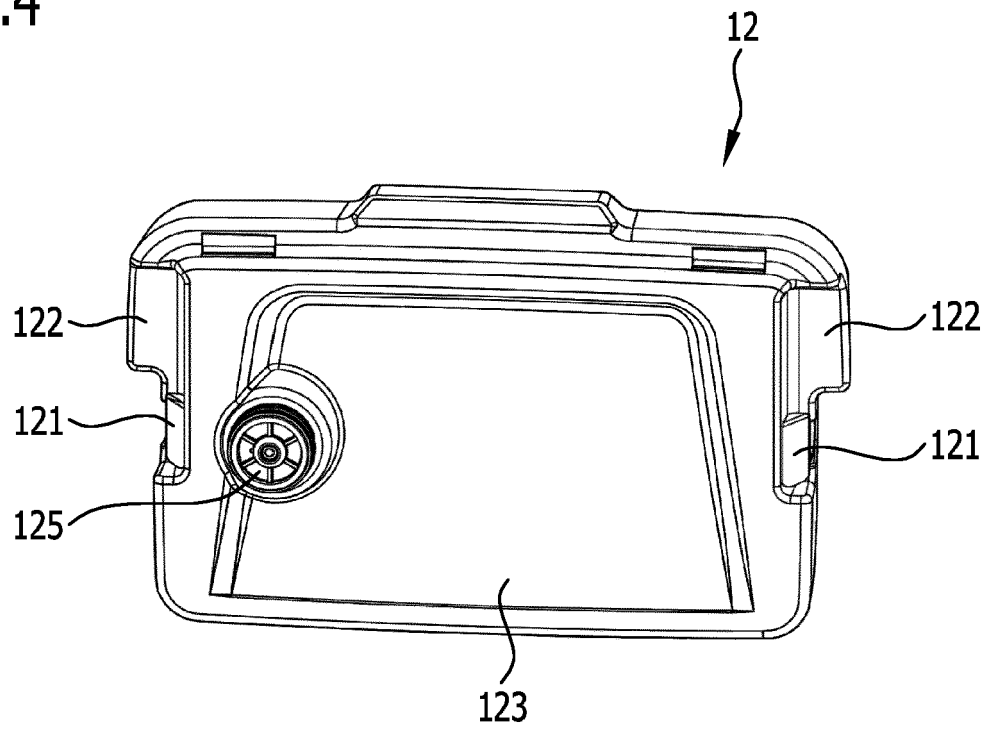


FIG.5

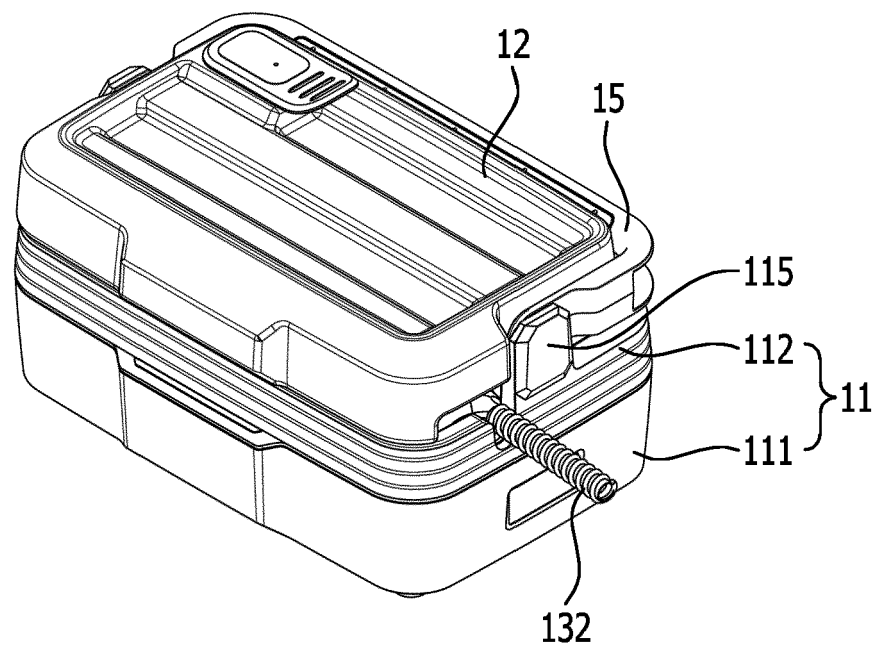


FIG.6

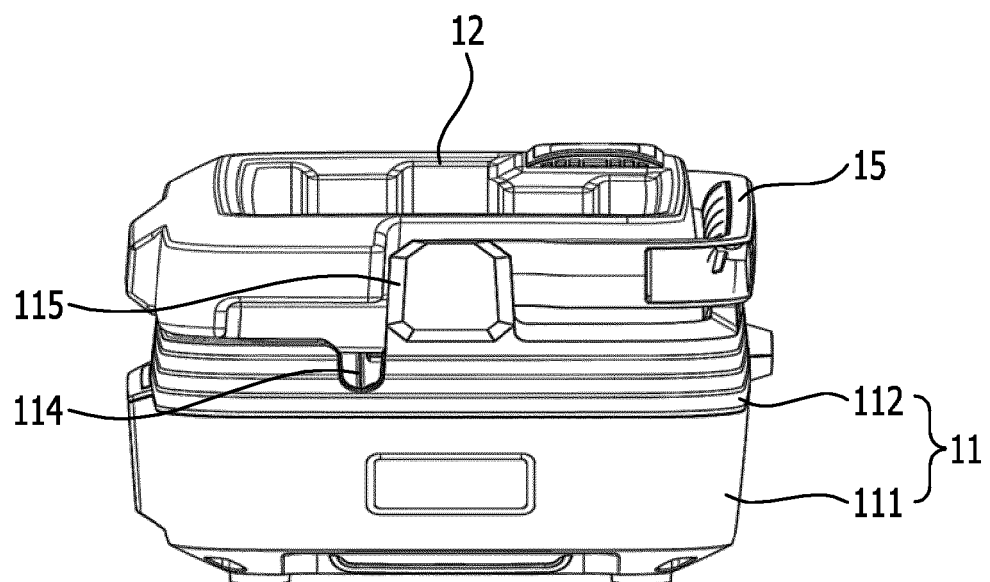


FIG.7

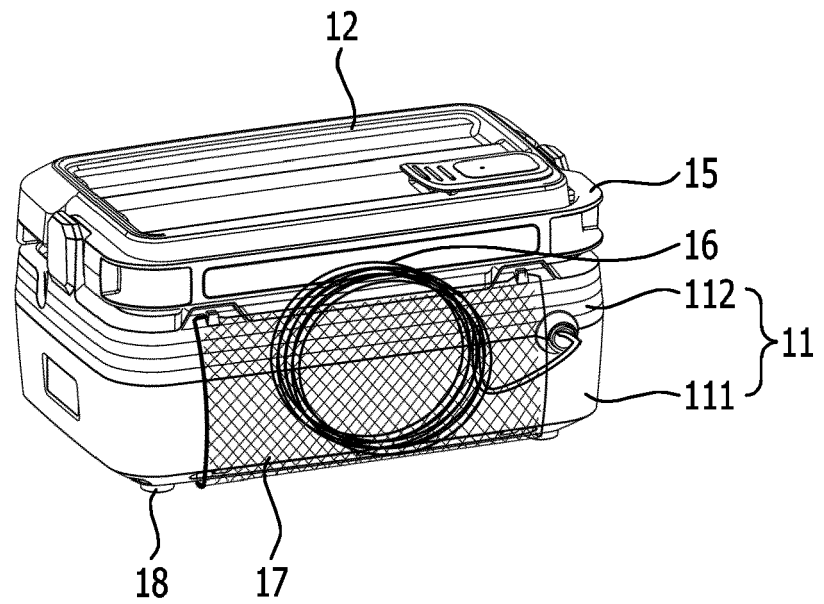
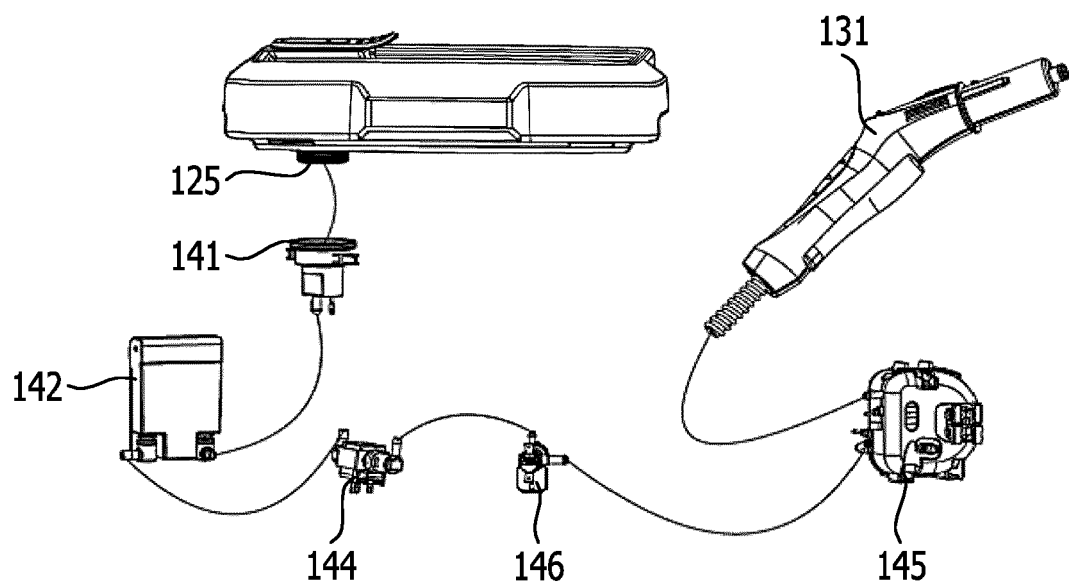


FIG.8





EUROPEAN SEARCH REPORT

Application Number

EP 23 21 4446

5

10

15

20

25

30

35

40

45

50

55

1

EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 8 549 697 B1 (MOYHER JR GEORGE [US] ET AL) 8 October 2013 (2013-10-08) * column 4, line 51 - column 8, line 39; figures 1-3 *	1-20	INV. A47L11/34 A47L11/40
A	US 2006/272120 A1 (BARRICK KENNETH [US] ET AL) 7 December 2006 (2006-12-07) * paragraph [0057]; figures 1,7 *	1	
A	US 2014/373306 A1 (TOMASIAK MARK J [US]) 25 December 2014 (2014-12-25) * paragraph [0048] - paragraph [0051]; figures 1,10-11 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47L
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 17 April 2024	Examiner Masset, Markus
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 23 21 4446

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

17-04-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 8549697 B1	08-10-2013	US 8549697 B1	08-10-2013
		US 9532693 B1	03-01-2017
		US 2016367100 A1	22-12-2016
		US 2020029770 A1	30-01-2020
		US 2022192452 A1	23-06-2022

US 2006272120 A1	07-12-2006	NONE	

US 2014373306 A1	25-12-2014	NONE	

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 202223276819X [0001]