(11) **EP 4 467 731 A1**

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication: **27.11.2024 Bulletin 2024/48**

(21) Application number: 23174923.5

(22) Date of filing: 23.05.2023

(51) International Patent Classification (IPC): **E03B 3/03** (2006.01) E03B 5/02 (2006.01) E03B 11/02 (2006.01)

(52) Cooperative Patent Classification (CPC): **E03B 3/03;** E03B 5/025; E03B 11/02

(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

(71) Applicant: Husqvarna AB 561 82 Huskvarna (SE)

(72) Inventor: Rauch, Martin 70191 Stuttgart (DE)

(74) Representative: Finkele, Rolf Gardena Manufacturing GmbH Hans-Lorenser-Straße 40 89079 Ulm (DE)

Remarks:

Amended claims in accordance with Rule 137(2) EPC.

(54) WATER COLLECTION MODULE

(57) A base element (100, 100') of a water collection module (300) includes a bottom side (102). The base element (100, 100') also includes a top side (104), which is opposite to the bottom side (102) and connected to the bottom side (102) via a side surface (106). The bottom side (102) forms a base face for standing the base element (100, 100') on an underlying surface (G) and the opposite side, i.e., the top side (104) forms a mounting face to hold any other device, in particular a water reservoir (200), mounted to it. Further, at least one electric

device having a connection line (114) is housed within the base element (100, 100') such that the connection line (114) extends into an exterior (112) of the base element (100,100'). The base element (100, 100') is characterized in that the base element (100, 100') is formed with at least one recess (116) to house the connection line (114). Further, the base element (100, 100') is formed to hold an external component (122) to which the connection line (114) extends.

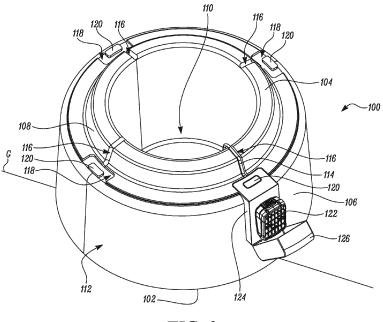


FIG. 3

20

40

45

50

55

1

Description

TECHNICAL FIELD

[0001] The present disclosure relates to a water collection module, and more particularly to a base element of a water collection module that may allow simple and ergonomic access of collected water.

BACKGROUND

[0002] Many areas of the world rely upon the collection and use of reclaimed precipitation as a primary source of usable water. Water reservoirs and other devices are utilized for the purpose of collecting and storing water runoff from impervious surfaces such as the rooftops of dwellings. While generally unpotable, such systems provide a useful source of water for tasks such as irrigation, washing cars or driveways, and the like.

[0003] Many such water reservoirs and other similar rainwater recollection systems store the water in a stagnant, manually accessed manner. Items such as pails or buckets are often the only means of accessing and transporting the water. As such, the process of utilizing the reclaimed water is often tedious or impossible, thus reducing the efficiency of employing such methods and resulting in the use of municipal wells or other sources of water for many tasks, which in turn eliminates the usefulness and purposes of such water reservoir systems.

[0004] Further, because of continuous innovation to allow easy access of collected water, systems have been developed in which the water reservoir are mounted on a base element to elevate the water reservoir for access to the water. The water is extracted from the water reservoir by opening a spigot provided near the bottom of the water reservoir and filling a container such as a watering can. A soaker hose may also be attached to the bottom of the water reservoir to water nearby plants.

[0005] However, such systems do not provide an adequate means for the varied reuse of the collected water according to a user's needs. Further, such systems do not provide adequate storage means and pressurizing means with their electrification thereof to allow a user to use the water in a simple and conventional manner upon collection. Accordingly, there exists a need for a rainwater collection system or module for facilitating easy access to the stored water from the water reservoir for further usage in an ergonomic and efficient manner.

[0006] An example of an improved water collection module is provided in United States Patent US 8,578,976 B1 (hereinafter referred to as '976 reference). The '976 reference provides a water collection module with a water reservoir mounted on top of a hollow base element. At the bottom of the water reservoir there is a water outlet to which a water pressurization apparatus is fixed, and which is then housed inside a free space surrounded by the base element. The water pressurization apparatus includes an electric pump with its power

line. The power line includes a plug at its end that extends into an exterior of the base element in order to be switched into a power socket.

SUMMARY OF THE INVENTION

[0007] In view of the above, it is an objective of the present invention to solve or at least reduce the drawbacks discussed above. The objective is at least partially achieved by a base element of a water collection module. [0008] According to an aspect of the present invention, the base element of a water collection module includes a bottom side. The base element also includes a top side, which is opposite to the bottom side, and connected to the bottom side via a side surface. The bottom side forms a base face for standing the base element on an underlying surface and the opposite side, i.e., the top side forms a mounting face to hold any other device, in particular a water reservoir, mounted to it. Further, at least one electric device having a connection line is housed within the base element such that the connection line extends into an exterior of the base element. The base element is characterized in that the base element is formed with at least one recess to house the connection line. Further, the base element is formed to hold an external component to which the connection line extends.

[0009] Thus, the present disclosure provides an improved base element for the water reservoir. The base element may provide a certain height to the water reservoir relative to the underlying surface, which may allow easy access of the water stored in the water reservoir, for example by opening a tap provided proximate to a bottom of the water reservoir. The base element may further provide provision to house at least one electric device which may facilitate easy access of the collected or stored water in the water reservoir. For example, the electric device may be a pump, which may pump out the collected water for various domestic and industrial applications. The base element may further include the at least one recess to allow electrification of the at least one electric device housed in the base element. For example, the base element may allow an electric cable connected with pump to extend outside the base element via the recess such that the electric cable may be connected to a power supplying means for running the pump. The base element may further be able to hold an external component that may be required to run the at least one electric device. For example, the base element may hold a battery to run the pump housed in the base element. The base element thus may be a versatile base element that may advantageously house the at least electric device, and further hold the external component to run the at least one electric device while allowing easy connection between the at least one electric device and the external component.

[0010] Further, the base element other than its usage may be advantageously aesthetically pleasing. The base element may allow ergonomic, simple, and effortless

20

access to the collected water for further application in industries and households. Further, the design of the base element may allow compact storage and transport of a plurality of base elements such as by stacking of the plurality of base elements.

[0011] The water collection module according to the present invention may denote an assembly of the water reservoir and the base element such that the water reservoir may be mounted on the base element.

[0012] According to an exemplary embodiment of the invention, the base element may have a tapered cylinder, or frustum like shape. However, the base element may have any other shape and size without limiting the scope of the present invention. It is obvious that the circumference of the base element may have any shape and is not limited to a circular shape, but also could as well exhibit corners.

[0013] According to an exemplary embodiment of the invention, the at least one recess may be linear, curvy, or may have any other shape without limiting the scope of the present invention. The at least one recess may ensure smooth passage of connection there through.

[0014] According to an exemplary embodiment of the invention, the external component is removably held on the base element. The external component may be removably held with the base element for easy replacement of the external component. For example, if the battery is discharged completely, then it may be easily replaced with a new fully charged battery. Further, if the base element is not housing any electric device, then there may be no need of the battery and hence the battery may be removed from the base element and may be used elsewhere.

[0015] According to an exemplary embodiment of the invention, the external component is hung in a form-fitting manner on the base element. The external element may simply be hooked to the base element without using any tool or fixing element.

[0016] According to an exemplary embodiment of the invention, the side surface of the base element is formed to at least partially enclose the external component. The external component may be hung or removably held on the base element without adding to the width of the water collection module. In other words, the external component may be held within the boundaries of the base element. This may ensure uniformity in the structure of the base element.

[0017] According to an exemplary embodiment of the invention, the external component is one of a battery, a battery housing, a control housing, or a watering computer. The external component may be such that it may be configured to support the working of the at least one electric device housed in the base element.

[0018] According to an exemplary embodiment of the invention, the water collection module includes the water reservoir housed on top of the base element. The water reservoir may be a water tank, and the like that may be stably held, housed, or mounted on top of the base

element. The water reservoir may further be covered with a cover to prevent contamination of the collected water.

[0019] Before discussing the invention with the help of the drawings the invention will be briefly discussed in general. A base element is designed to be placed below a water reservoir. The base element includes a gap between the water reservoir and the base element as a functional joint. The functional joint may have several identical docking points recessed in a plastic body of the base element into which optionally any external component may be hung in a form fitting manner without the use of any tool, or fixing element. The external component may simply be hooked in the form-fitting manner. The external component may preferably be a battery, whose housing may rest backpack like on an outer surface of the base element. However, other external components such as a hose, a syringe, a shower holder, etc., are also conceivable. The external component is completely secured when the water reservoir is placed on the base element.

[0020] The base element according to the present invention may be cost-effective such that an additional cost after purchase of the base element may only be due to the external component. The base element according to the present invention may retain aesthetic properties without any impact due to hanging of the external component. The base element according to the present invention may include a generous shadow gap between the water reservoir and the base element. The gap may be aesthetically advantageous as it contributes to a solid impression.

[0021] According to an exemplary embodiment of the invention, there may be the functional joint between the base element and the water reservoir into which various external components such as a battery pack may be easily hooked or docked without using any tool.

[0022] Other features and aspects of this invention will be apparent from the following description and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] The invention will be described in more detail with reference to the enclosed drawings, wherein:

FIG. 1 illustrates a perspective view of a water collection module, in accordance with an exemplary embodiment of the present disclosure;

FIG. 2 illustrates a perspective view of a base element, in accordance with an exemplary embodiment of the present disclosure;

FIG. 3 illustrates a perspective view of a base element and an external component in an assembled state, in accordance with an exemplary embodiment of the present disclosure;

55

25

FIG. 4 illustrates a perspective view of a base element and an external component in an unassembled state, in accordance with an exemplary embodiment of the present disclosure;

FIG. 5 illustrates another perspective view of a base element and an external component in an assembled state, in accordance with an exemplary embodiment of the present disclosure;

FIG. 6 illustrates a perspective view of a water collection module and an external component removably hung on a base element of the water collection module, in accordance with an exemplary embodiment of the present disclosure;

FIG. 7 illustrates another perspective view of a water collection module and an external component removably hung on a base element of the water collection module, in accordance with an exemplary embodiment of the present disclosure;

FIG. 8 illustrates a perspective view of a base element with a mounting groove, in accordance with an exemplary embodiment of the present disclosure; and

FIG. 9 illustrates a side view of a plurality of base elements assembled in a stacked configuration, in accordance with an exemplary embodiment of the present disclosure.

DETAILED DESCRIPTION OF THE DRAWINGS

[0024] The present invention will be described more fully hereinafter with reference to the accompanying drawings, in which example embodiments of the invention incorporating one or more aspects of the present invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. For example, one or more aspects of the present invention may be utilized in other embodiments and even other types of structures and/or methods. In the drawings, like numbers refer to like elements.

[0025] Certain terminology is used herein for convenience only and is not to be taken as a limitation on the invention. For example, "upper", "lower", "front", "rear", "side", "longitudinal", "lateral", "transverse", "upwards", "downwards", "forward", "backward", "sideward", "left," "right," "horizontal," "vertical," "upward", "inner", "outer", "inward", "outward", "top", "bottom", "higher", "above", "below", "central", "middle", "intermediate", "between", "end", "adjacent", "proximate", "near", "distal", "remote", "radial", "circumferential", or the like, merely describe the

configuration shown in the Figures. Indeed, the components may be oriented in any direction and the terminology, therefore, should be understood as encompassing such variations unless specified otherwise.

5 [0026] FIG. 1 illustrates a perspective view of a water collection module 300. The water collection module 300 includes a base element 100 and a water reservoir 200. The water reservoir 200 is housed on top of the base element 100. In other words, the water reservoir 200 is removably mounted on the base element 100 in an upright manner.

[0027] FIG. 2 illustrates a perspective view of the base element 100. The base element 100 includes a bottom side 102. The base element 100 also includes a top side **104.** The top side **104** is opposite to the bottom side **102**. The top side 104 is connected to the bottom side 102 via a side surface 106. The side surface 106 has a neck portion 108 that connects the side surface 106 with the top side 104. The bottom side 102 and the top side 104 have a circular cross-section and the cross-section area of the bottom side 102 is at least marginally greater than the cross-section area of the top side 104. Further, the bottom side 102 forms a base face for standing the base element 100 on an underlying surface "G". A boundary or circumferential surface of the bottom side 102 may form the actual base face for standing the base element 100 on the underlying surface "G". In a possible embodiment, several or even all other portions of the base element 100 interior to the boundary or circumferential surface of the bottom side 102 are structurally lifted marginally relative to the boundary or circumferential surface of the bottom side 102. In other words, only the boundary or circumferential surface of the bottom side 102 touches the underlying surface "G" when the base element 100 stands on the underlying surface "G" and a gap exists between the underlying surface "G" and the other portions of the base element 100 interior to the boundary or circumferential surface of the bottom side 102 when the base element 100 stands on the underlying surface "G".

40 [0028] Further, the side opposite to the bottom side 102, i.e., the top side 104 forms a mounting face to hold any other device. The other device is the water reservoir 200 such that the water reservoir 200 is removably and securely mounted to the top side 104 of the base element 100.

[0029] The base element 100 is further formed with at least one recess 116. The at least one recess 116 extends from the top side 104 to the neck portion 108 of the base element 100. The at least one recess 116 is along a horizontal plane at the top side 104 with respect to the underlying surface "G". The at least one recess 116 is along a substantially slanted plane at the neck portion 108 with respect to the underlying surface "G". The at least one recess 116 is a hollow space extending from the top side 104 to the neck portion 108. The at least one recess 116 is four in number. The end of the each of the four recesses 116 is accompanied by a docking area 118. The four docking areas 118 are identical to each other.

35

45

50

55

Each of the four docking areas 118 are recessed in a portion of the side surface 106 of the base element 100 that is parallel to the underlying surface "G". Each of the four docking areas 118 are recessed in a portion of the side surface 106 of the base element 100 that is annular to the neck portion 108.

[0030] Further each of the four docking areas 118 include a protrusion 120. The protrusion 120 corresponding to each of the four docking areas 118 is rectangular in shape. The docking area 118 is greater than an area of the protrusion 120. The protrusion 120 is enclosed by the docking area 118. In other words, the docking area 118 is substantially an empty space with the protrusion 120 occupying a nominal space within the docking area 118. Further, a center of the protrusion 120 is equidistant from the edges of the docking area 118. Further, the size of the protrusion 120 is such that the protrusion 120 does not obstruct the removable coupling between the base element 100 and the water reservoir 200.

[0031] With continuous reference to FIG. 2, the base element 100 includes an interior 110 and an exterior 112 such that the interior 110 is opposite to the exterior 112. The exterior 112 of the base element 100 is visible from outside when the water reservoir 200 is removably mounted on the base element 100. The interior 110 of the base element 100 is not visible from outside when the water reservoir 200 is removably mounted on the base element 100.

[0032] Further, the base element 100 is configured to house at least one electric device (not shown) in the interior 110 of the base element 100. The at least one electric device is configured to be operable by an external power supply. The at least one electric device has a connection line 114 via which the at least one electric device receives external power supply.

[0033] FIG. 3 illustrates a perspective view of the base element 100 with the connection line 114 housed in the at least one recess 116. The at least one recess 116 is configured to house only one connection line 114. In other words, only one connection line 114 may be housed in the corresponding connection line 114. The connection line 114 at one end is connected to the at least one electric device housed in the interior 110 of the base element 100 while the other end of the connection line 114 extends into the exterior 112 of the base element 100. The connection line 114 extends from the interior 110 to the exterior 112 via the at least one recess 116. The connection line 114 follows a path formed by the at least one recess 116 to easily pass from the interior 110 of the base element 100 to the exterior 112 of the base element 100. In other words, the connection line 114 adapts to the shape of the at least one recess 116. Further, the end of the connection line 114 that extends to the exterior 112 of the base element 100 is connected to an external component 122. The base element 100 is formed to hold the external component 122 to which the connection line 114

[0034] The external component 122 is one of a battery,

a battery housing, a control housing, or a watering computer to support the working of the at least one electric device housed in the base element 100. However, the external component 122 described in the present invention is the battery. The external component 122 is held on the side surface 106 of the base element 100 via a bracket 124. In other words, the external component 122 is coupled to the bracket 124 and the bracket 124 is further coupled to the protrusion 120 in the docking area 118 of the base element 100. The bracket 124 is also further hingedly connected to a cover 126. The cover 126 has an open state and a closed state. In the open state of the cover 126, the external component 122 is accessible to a user. In the closed state of the cover 126, the external component 122 is completely shielded by the cover 126 and the external component 122 is not accessible to the user. FIG. 3 shows the cover 126 in the open state.

element 100 and the bracket 124. The bracket 124 is an L-shaped bracket with a first part 123 and a second part 125. The first part 123 is orthogonal to the second part 125. The first part 123 is parallel to the plane of the underlying surface "G" and the second part 125 is perpendicular to the plane of the underlying surface "G". The first part 123 includes a cavity 128. The shape of the cavity 128 is similar to the shape of the protrusion 120. However, the area of the cavity 128 is marginally greater than the area of the protrusion 120. The protrusion 120 and the cavity 128 allows the external component 122 to be removably held on the base element 100. The cavity 128 allows the bracket 124 to be hooked at the docking area 118 via virtue of the protrusion 120.

[0036] FIG. 5 illustrates a perspective view of the base element 100 with the bracket 124 removably held or hooked on the base element 100. When the bracket 124 is hooked, the edges of the cavity 128 removably engages with the edges of the protrusion 120. Further, the connection between the bracket 124 and the docking area 118 is secured by the weight of the bracket 124, the cover 126, and the external component 122. The weight of the bracket 124, the cover 126, and the external component 122 produces a force vector in a downward direction perpendicular to the plane of the underlying surface "G" such that the connection or engagement between the cavity 128 and the protrusion 120 may not be tempered without any external influence or force such as that produced by the user while attempting to lift the bracket 124. The bracket 124 and hence the external component 122 is hung in a form-fitting manner on the base element 100. Further, FIG. 5 shows the cover 126 in the closed state such that the external component 122 is completely shielded between the bracket 124 and the

[0037] FIG. 6 illustrates a perspective view of the water collection module 300 and the external component 122 removably held on the base element 100 of the water collection module 300. The water collection module 300 includes the base element 100 and the water reservoir

200. The bottom side 102 of the base element 100 forms the base face for standing the base element 100 on the underlying surface "G". Further, the external component 122 with the help of the bracket 124 is removably held in the form-fitting manner on the base element 100. The external component is configured to support the working of the at least one electric device housed in the base element 100. The docking area 118, where the connection between the base element 100 and the bracket 124 takes place is not visible when the water reservoir 200 is removably mounted on the base element 100.

[0038] Further, FIG. 7 illustrates a perspective view of the water collection module 300 and the external component 122 removably held on the base element 100 of the water collection module 300 such that the external component 122 is completely shielded by the bracket 124 and the cover 126.

[0039] FIG. 8 illustrates a perspective of a base element 100' according to another embodiment. The base element 100' is substantially similar to the base element 100. The base element 100' additionally includes a mounting groove 130 below the docking area 118. The base element 100' includes the mounting groove 130 corresponding to each of the docking area 118. The mounting groove 130 is formed in the side surface 106 of the base element 100'. The shape of the mounting groove 130 corresponds to the shape of the second part 125 of the bracket 124. Further, the area of the mounting groove 130 is just marginally greater than the second part 125 of the bracket 124 such that the second part 125 and the mounting groove 130 frictionally engage with each other when the external component 122 or the bracket 124 is removably hung on the base element 100' in the form-fitting manner. In other words, the side surface 106 of the base element 100' is formed to at least partially enclose the external component 122. Further, the side surface 106 with the help of the mounting groove 130 provides lateral support to the bracket 124 and prevents any lateral movement in the bracket 124 due to any external influence.

[0040] FIG. 9 illustrates a side view of a plurality of base elements 100 assembled in a stacked configuration. For illustration of the present invention, the plurality of base elements 100 are four in number, namely a first base element 100, a second base element 100, a third base element 100, and a fourth base element 100.

[0041] In the stacked configuration, the bottom side 102 of the first base element 100 rests on the underlying surface "G". Further, the second base element 100 is stacked on the first base element 100 such that the first base element 100 is at least partially stuck in the second base element 100. In other words, when the second base element 100 is stacked on the first base element 100, the top side 104 and the neck potion 108 of the first base element 100 is completely stuck in the second base element 100. Further, the remaining side surface 106 of the first base element 100 is at least partially stuck in the second base element 100. In other words, when the

first base element 100 and the second base element 100 are stacked together, then the top side 104, the neck portion 108 of the first base element 100 are completely covered by the overlying first base element 100 and the remaining portion of the side surface 106 below the neck portion 108 of the first base element 100 is at least partially covered by the overlying second base element 100. Likewise, the third base element 100 is stacked on the second base element 100 and the fourth base element 100 is stacked on the third base element 100.

[0042] In the drawings and specification, there have been disclosed exemplary embodiments and examples of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for the purpose of limitation of the scope of the invention being set forth in the following claims.

LIST OF ELEMENTS

[0043]

15

	100, 100'	Base Element
	102	Bottom Side
	104	Top Side
25	106	Side Surface
	108	Neck Portion
	110	Interior
	112	Exterior
	114	Connection Line
30	116	Recess
	118	Docking Area
	120	Protrusion
	122	External Component
	123	First Part
35	124	Bracket
	125	Second Part
	126	Cover
	128	Cavity
	130	Mounting Groove
10	200	Water Reservoir
	300	Water Collection Module
	G	Underlying Surface

Claims

45

1. A base element **(100, 100')** of a water collection module **(300)**, comprising:

a bottom side (102); a top side (104) opposite to the bottom side (102) and connected via a side surface (106);

wherein the bottom side (102) forms a base face for standing the base element (100, 100') on an underlying surface (G), and wherein the opposite side forms a mounting face to hold any other device, in particular a water reservoir (200), mounted to it;

10

15

20

at least one electric device having a connection line (114) is housed within the base element (100, 100');

with the connection line (114) extending into an exterior (112) of the base element (100, 100');

characterized in that:

the base element (100, 100') is formed with at least one recess (116) to house the connection line (114), and

wherein the base element (100, 100') is formed to hold an external component (122) to which the connection line (114) extends.

- 2. The base element (100, 100') according to claim 1, wherein the external component (122) is removably held on the base element (100, 100').
- 3. The base element (100, 100') according to one of claims 1 or 2, wherein the external component (122) is hung in a form-fitting manner on the base element (100, 100').
- 4. The base element (100') according to claim 1, wherein the side surface (106) of the base element (100') is formed to at least partially enclose the external component (122).
- 5. The base element (100, 100') according to any one of the preceding claims, wherein the external component (122) is one of a battery, a battery housing, a control housing, or a watering computer.
- **6.** A water collection module **(300)**, comprising of a water reservoir **(200)** housed on top of a base element **(100, 100')** according to any one of claims 1-5.

Amended claims in accordance with Rule 137(2) EPC.

1. A base element **(100, 100')** of a water collection module **(300)**, comprising:

a bottom side (102); a top side (104) opposite to the bottom side (102) and connected via a side surface (106);

wherein the bottom side (102) forms a base face for standing the base element (100, 100') on an underlying surface (G), and wherein the opposite side forms a mounting face to hold a water reservoir (200) mounted to it:

at least one electric device having a connection line (114) is housed within the base element (100, 100');

with the connection line (114) extending into an exterior (112) of the base element (100, 100');

characterized in that:

the base element (100, 100') is formed with at least one recess (116) to house the connection line (114), and

wherein the base element (100, 100') is formed to hold an external component (122) to which the connection line (114) extends.

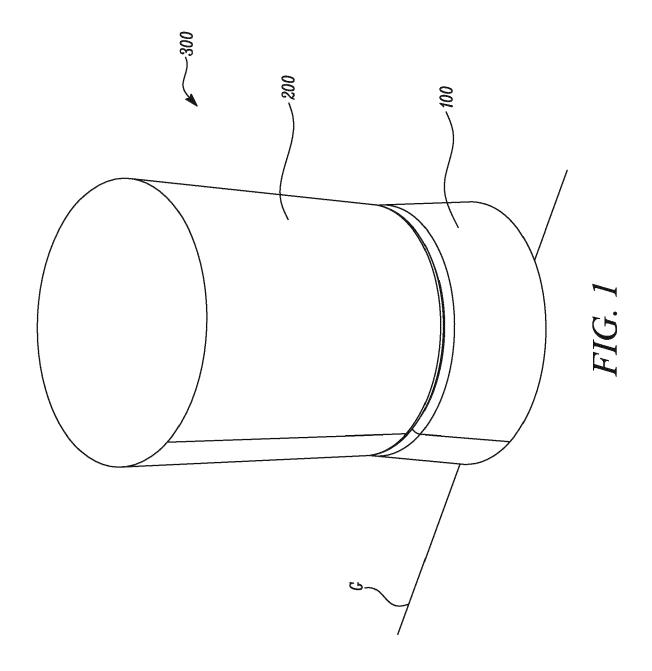
- 2. The base element (100, 100') according to claim 1, wherein the external component (122) is removably held on the base element (100, 100').
- 3. The base element (100, 100') according to one of claims 1 or 2, wherein the external component (122) is hung in a form-fitting manner on the base element (100, 100').
- 4. The base element (100') according to claim 1, wherein the side surface (106) of the base element (100') is formed to at least partially enclose the external component (122).
- 5. The base element (100, 100') according to any one of the preceding claims, wherein the external component (122) is one of a battery, a battery housing, a control housing, or a watering computer.
- 6. A water collection module (300), comprising of a base element (100, 100') and a water reservoir (200), wherein the water reservoir (200) is housed on top of the base element (100, 100') according to any one of claims 1-5.

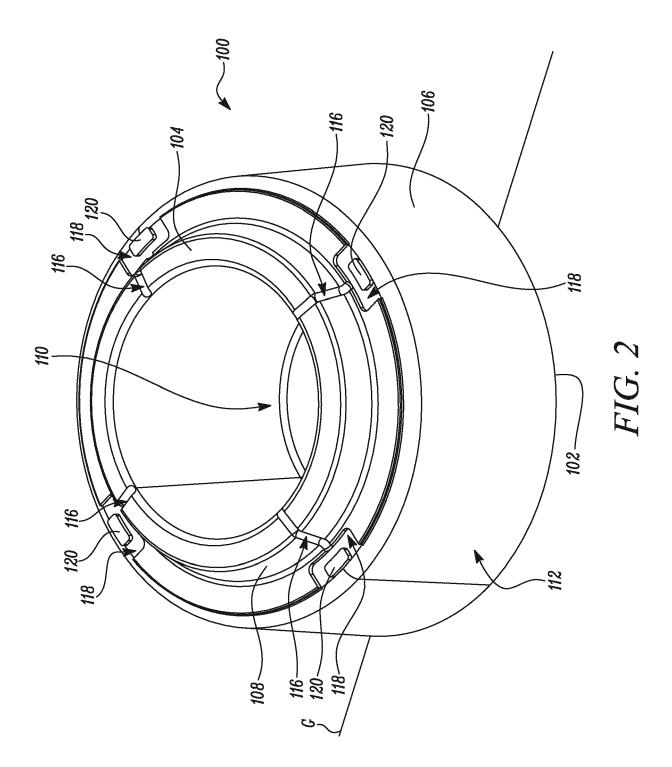
55

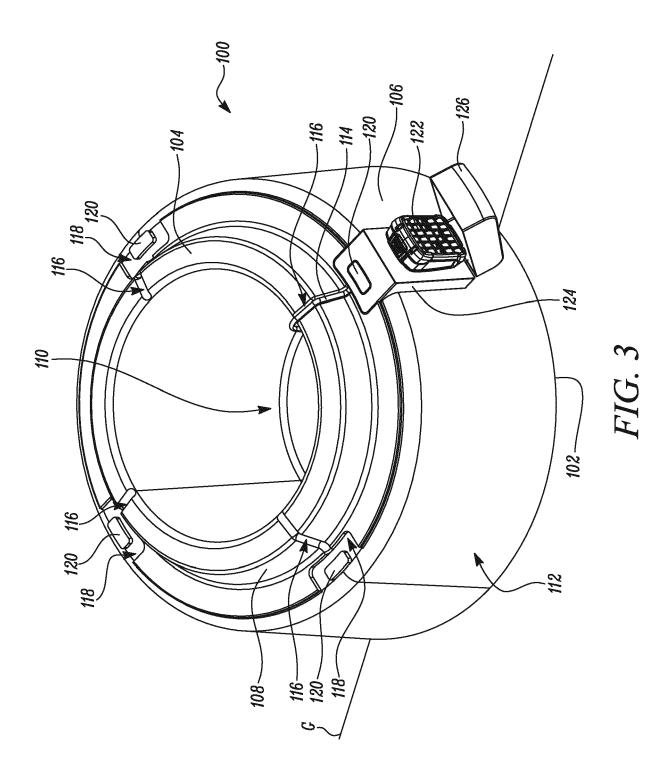
40

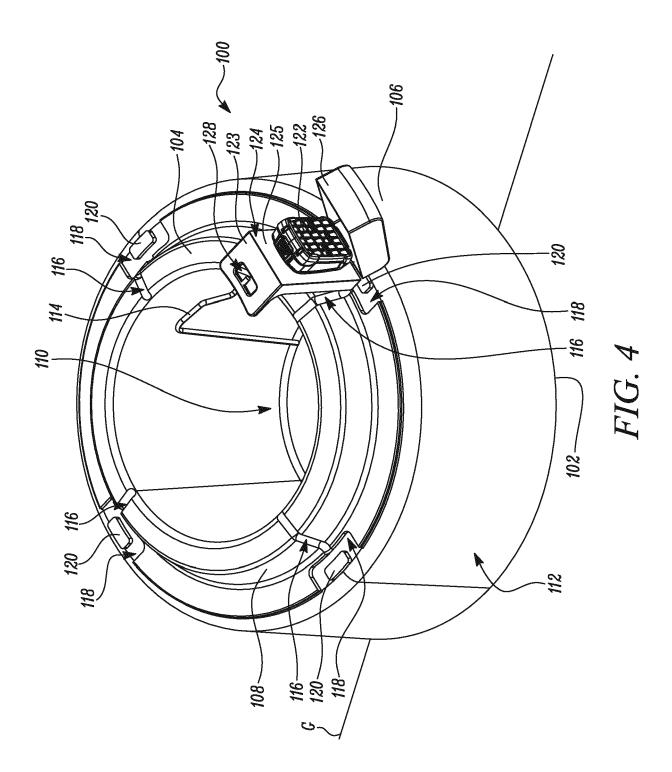
45

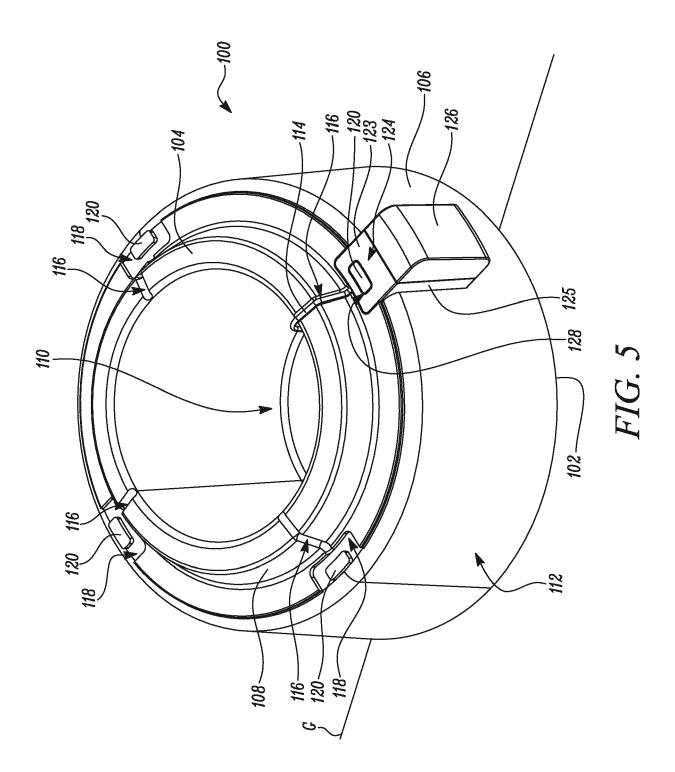
50

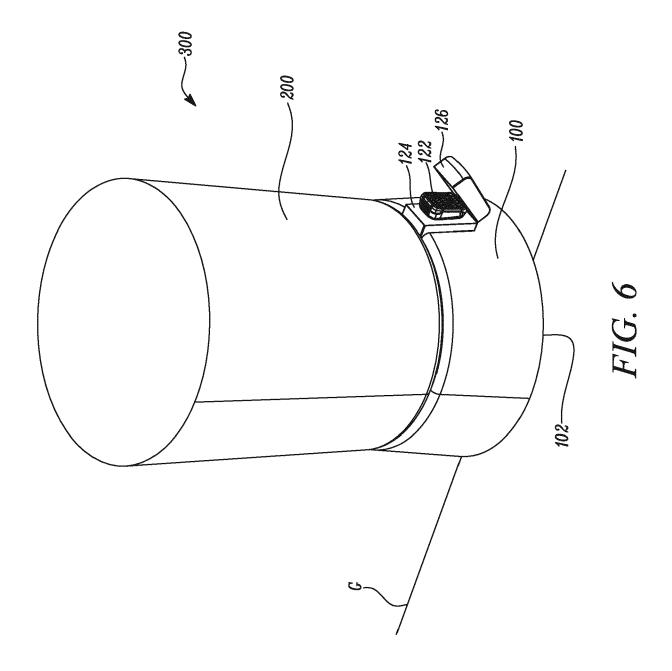


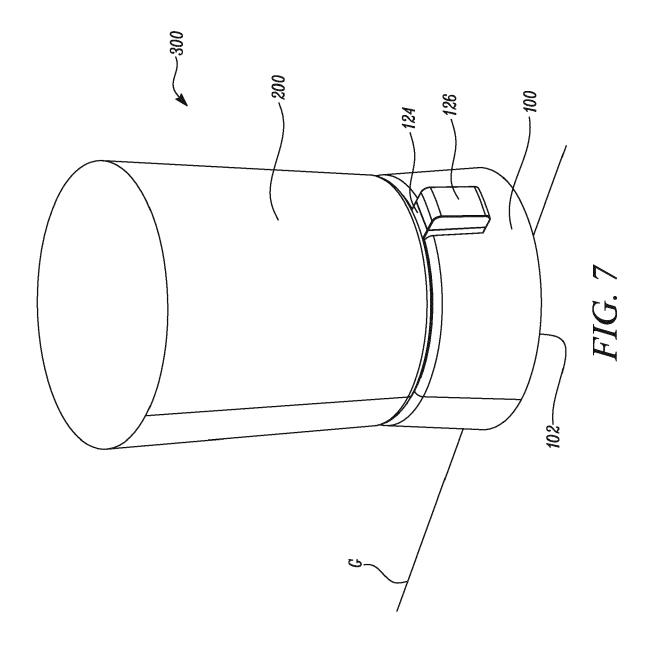


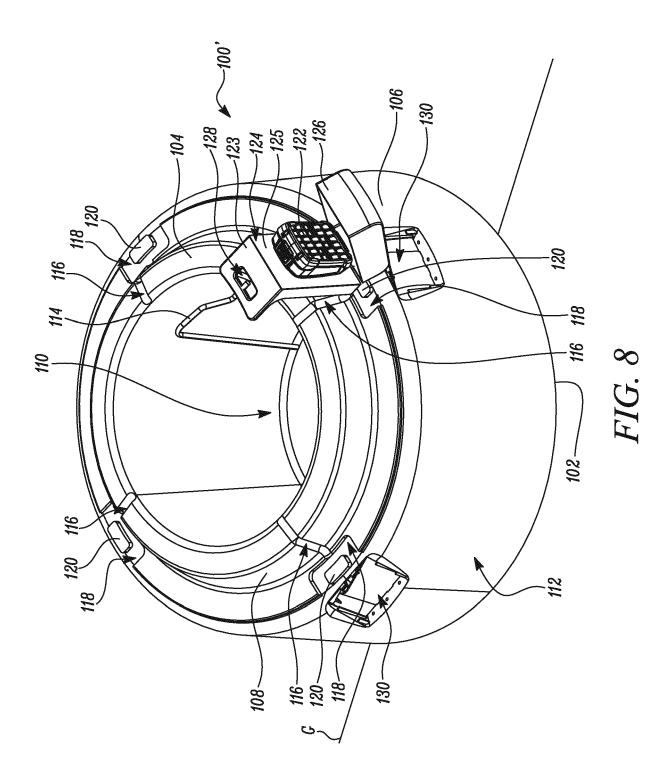












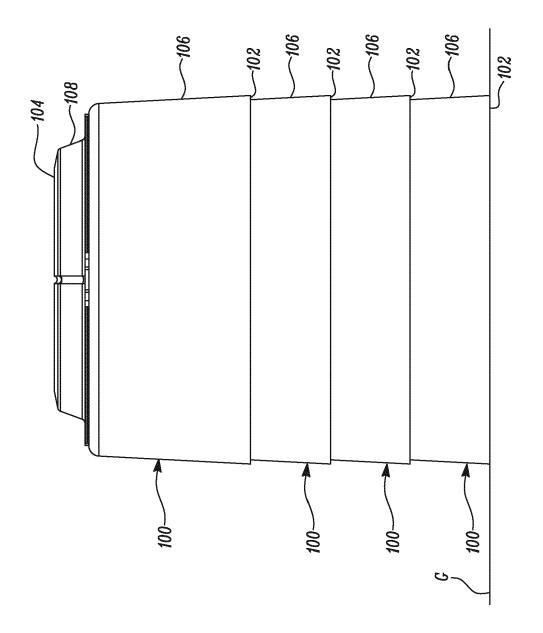


FIG. 9



EUROPEAN SEARCH REPORT

Application Number

EP 23 17 4923

10	
15	
20	
25	
30	
35	
40	
45	
50	

55

	DOCUMENTS CONSIDI	RED TO BE RELEVANT		
Category	Citation of document with in of relevant passa	dication, where appropriate, ages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
x	FR 2 948 702 A1 (AQ 4 February 2011 (20		1,2,5	INV. E03B3/03
A.	* pages 1-9; figure		3,4,6	ADD.
ĸ	EP 3 827 664 A1 (BO 2 June 2021 (2021-0	SCH GMBH ROBERT [DE])	1-5	E03B5/02 E03B11/02
7	-	- [0058]; figure 1 *	6	103511, 02
7	AU 2008 221 635 B1 19 March 2009 (2009 * abstract; figures	-03-19)	1-6	
A,D	US 8 578 976 B1 (DA 12 November 2013 (2 * abstract; figure	013-11-12)	1-6	
L	DE 299 20 606 U1 (M 3 February 2000 (20 * pages 1-10; figure	•	1-6	
				TECHNICAL FIELDS SEARCHED (IPC)
				E03B B65D
1	The present search report has b	een drawn up for all claims		
	Place of search	Date of completion of the search		Examiner
	Munich	11 October 202	3 Pos	savec, Daniel
X : part Y : part docu	ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with anothument of the same category inological background	E : earlier paten after the filing ner D : document cit L : document cit	ted in the application ed for other reasons	ished on, or
O : non	-written disclosure rmediate document		ne same patent famil	

EP 4 467 731 A1

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

EP 23 17 4923

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.

11-10-2023

c	Patent document ited in search report		Publication date	Patent family member(s)	Publication date
FI	R 2948702	A1	04-02-2011	NONE	
	9 382766 4		02-06-2021	CN 112868510 A DE 102019218518 A1 EP 3827664 A1	01-06-2021 02-06-2021 02-06-2021
	 J 2008221635	в1			
U:	 S 8578976			NONE	
ם	E 29920606			NONE	
P0459					
ORM P0459					

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

EP 4 467 731 A1

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

• US 8578976 B1 [0006]