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(54) PUMP AND HANDLE ASSOCIATED WITH PUMP

(57) A pump **(100)** includes a pump body **(114)** and a handle **(116)** adapted to couple with the pump body **(114).** The handle **(116)** includes a first part **(118)** which defines a top element **(120)** and a bottom element **(122).** The handle **(116)** also includes a second part **(144)** which defines a seating element **(124).** Either the seating element **(124)** of the second part **(144)** at least partially covers the top element **(120)** of the first part **(118)**, or the top element **(120)** of the first part **(118)** at least partially covers the seating element **(124)** of the second part **(144).** Further, the first part **(118)** and the second part **(144)** are movable relative to each other. The pump **(100)** is characterized in that the first part **(118)** is coupled with the second part **(144)** such that the top element **(120)** of the first part **(118)** is removable therefrom.

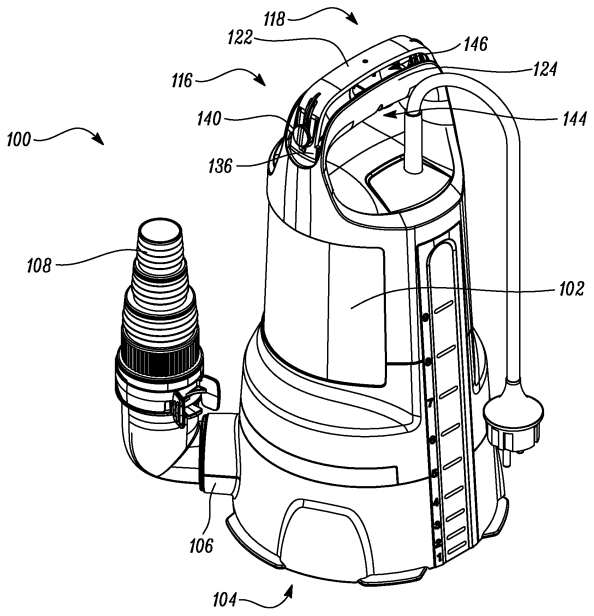

FIG. 5

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to pumps. More specifically, the present disclosure relates to a submersible pump and a handle associated with the pump.

BACKGROUND

[0002] A pump, such as a submersible pump (or sub pump or electric submersible pump), is a device which can be submerged in a fluid medium to be pumped. Generally, submersible pumps are used in different applications, such as clear water operations, dirty water operations, and the like. These applications may require height adjustment of the pump, transportation of the pump from one point to another, and the like.

[0003] Some pumps may include a height adjustment mechanism that allows adjustment in a height of the pump. However, the height adjustment mechanism is complex in design and includes multiple parts that move relative to each other. Such a height adjustment mechanism also includes multiple contact surfaces associated with the movable parts. Further, dirt particles present in the fluid that is being pumped may get trapped between the movable parts. In some cases, the dirt particles may block one or more parts of the height adjustment mechanism which may in turn affect an operation of the submersible pump.

[0004] Further, conventional submersible pumps include a handle that allows transportation of the pump from one place to another. The handle works as a "trigger" to allow change in a position of the pump. A design of the handle that is currently associated with the pump may expose multiple parts of the handle thereby allowing ingress of foreign particles. Further, such handles may also impart difficulties in cleaning and other maintenance work of the handle. Thus, there is a need for an improved handle design for the submersible pump that is user-friendly and has an ergonomic design. Further, it is also desirable that the handle provides easy cleaning and maintenance of the handle.

[0005] CN utility patent application 21,0961,650 (hereinafter referred to as '650 reference) describes a low-noise food processor. The low-noise food processor includes a handle, a handle flip cover, and a limiting groove. The handle flip cover and the side wall of a machine shell can be directly detachably connected, so that a user can remove the handle flip cover. Further, the handle flip cover is hingedly connected with the side wall thorough a hinge shaft around a bottom of the handle flip cover. However, the handle described in the '650 reference is associated with the food processor. Further, this arrangement of the handle flip cover and the handle is complex and may lead to the handle being prone to intrusion of foreign particles.

SUMMARY

[0006] In view of the above, it is an objective of the present disclosure to solve or at least reduce the drawbacks discussed above. The objective is at least partially achieved by a new design of a handle for a pump. The pump includes a pump body. The pump also includes the handle which couples with the pump body. The handle includes a first part which defines a top element and a bottom element. The handle also includes a second part which defines a seating element. Either the seating element of the second part at least partially covers the top element of the first part, or the top element of the first part at least partially covers the seating element of the second part. Further, the first part and the second part are movable relative to each other. The pump is characterized in that the first part is coupled with the second part such that the top element of the first part is removable therefrom.

[0007] The handle of the present disclosure includes a user-friendly and ergonomic design which provides easy cleaning and maintenance of the handle of the pump. The handle described herein also reduces exposure of any gaps between the movable parts (i.e. the first part or the second part) of the handle to a fluid. This feature may in turn reduce any risk of blockage of the movable parts due to foreign particles. Further, the top element can be easily attached/detached to allow easy access for cleaning of the handle parts, herein the bottom element and the second part.

[0008] According to an embodiment of the present disclosure, the removal of the top element of the first part allows access to the seating element of the second part. This feature provides easy access to the handle parts i. e. the seating element of the second part, for cleaning in order to remove any obstructions or foreign materials from the movable parts of the handle.

[0009] According to an embodiment of the present disclosure, the first part and the second part are removably coupled by one or more of a screws, a snap-fit, and pins. Such coupling techniques provide quick attachment and detachment of the first part and the second part.

[0010] According to an embodiment of the present disclosure, the handle defines a left arm and a right arm. The top element of the first part removably couples on one or more of the left arm and the right arm. This feature allows easy and quick removal of the top element for accessing the seating element without requirement of additional tools.

[0011] According to an embodiment of the present disclosure, the left arm, and the right arm of the handle at least partially engage with a mechanism of the pump. This provides a robust arrangement for the handle and the mechanism of the pump, and also facilitates simplified technique of triggering a movable basket of the mechanism.

[0012] According to an embodiment of the present disclosure, the pump further includes the movable basket

which moves between a first position and a second position. Actuation of the first part of the handle biases the movable basket in one of the first position and the second position. This feature allows simple and user-friendly operation for switching the movable basket between the first and second positions. Moreover, this feature may allow usage of the pump in different modes, such as a clean water mode and a dirt water mode.

[0013] According to an embodiment of the present disclosure, the mechanism includes the movable basket. The movable basket allows usage of the pump for different applications and modes.

[0014] According to an embodiment of the present disclosure, the pump is a submersible pump. The submersible pump finds applications in the clean water and dirty water modes, although the pump may be any pump as used or known in the art.

[0015] Other features and aspects of this disclosure will be apparent from the following description and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The disclosure will be described in more detail with reference to the enclosed drawings, wherein:

FIG. 1 shows a perspective view of a submersible pump, in accordance with an aspect of the present disclosure;

FIG. 2 shows a partial cross sectional view of the submersible pump, in accordance with an aspect of the present disclosure;

FIG. 3 show a perspective view of a top element associated with the submersible pump, in accordance with an aspect of the present disclosure;

FIG. 4 shows a top view of the submersible pump illustrating the top element, in accordance with an aspect of the present disclosure;

FIG. 5 shows a perspective view of the submersible pump illustrating a bottom element associated with the submersible pump, in accordance with an aspect of the present disclosure; and

FIG. 6 shows a top view of the submersible pump illustrating the bottom element, in accordance with an aspect of the present disclosure.

DESCRIPTION OF EMBODIMENTS

[0017] The present disclosure will be described more fully hereinafter with reference to the accompanying drawings, in which example embodiments of the disclosure incorporating one or more aspects of the present disclosure are shown. This disclosure 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 disclosure to those skilled in the art. For example, one or more aspects of the present disclosure may be utilized in other embodiments and even other types of structures and/or methods. In the drawings, like numbers refer to like elements.

[0018] Certain terminology is used herein for convenience only and is not to be taken as a limitation on the disclosure. 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.

[0019] **FIG. 1** illustrates a perspective view of a pump **100.** The present disclosure relates to the pump **100.** The pump **100** is a submersible pump **100.** However, the present disclosure may be readily implemented with any pump as used or known in the art. The pump **100** may be used in a number of fluid handling operations to pump a fluid. The fluid may include water or any other fluids having different viscosity. In an example, the pump **100** may include a multistage centrifugal pump, operating in a vertical position.

[0020] The pump **100** includes a pump housing **102.** The pump housing **102** is generally hollow and holds multiple components of the pump **100** therein. The pump **100** includes a prime mover (not shown) that is disposed in the pump housing **102.** The prime mover generates operational power and may include a hermetically sealed motor (not shown). The pump housing **102** has an inlet **104** and an outlet **106** for the fluid. The fluid is pumped in from the inlet **104** and pumped out from the outlet **106.** The outlet **106** is connected with a hose connector **108** which may allow connection of a hose (not shown) for pumping of the fluid. The pump **100** may also include other components (not shown), such as an impeller, a shaft, a bearing, and the like.

[0021] As illustrated in **FIG. 2,** the pump **100** includes a mechanism **110.** Further, the mechanism **110** incudes a movable basket **112.** The movable basket **112** is adapted to move between a first position **"P1"** (not shown) and a second position **"P2",** as illustrated in the accompanying figures. The mechanism **110** allows the movable basket **112** to switch between the first position **"P1"** and the second position **"P2".** The first position **"P1"** is an extended position of the movable basket **112.** Further, the second position **"P2"** is a retracted position of the movable basket **112.** The first and second positions "**P1**",

"P2" of the movable basket **112** provides necessary changes in an inlet area of the inlet **104.** Further, the first and second positions "**P1**", **"P2",** adjust the inlet **104** of the pump **100** to operate the pump **100** in a dirty water mode and a clean water mode. More particularly, the first and second positions "**P1**", **"P2"** of the movable basket **112** correspond to the dirty water mode and the clean water mode, respectively. As the dirty water mode requires larger inlet area to ensure efficient functioning of the pump **100** compared to the clean water mode, the movable basket **112** is moved to the first position "**P1**" for operating the pump **100** in the dirty water mode.

[0022] The operation of the pump **100** in the first position "**P1**" allows handling of dirty water, wherein dirt particles of different sizes can enter without any obstruction. In order to switch to the first position "**P1**", the movable basket **112** moves within and relative to the pump housing **102.** The movement of the movable basket **112** to the first position "**P1**" allows increase in an overall height of the pump **100.**

[0023] The first position "**P1**" of the movable basket **112** allows exposure of one or more inlet openings (not shown) provided on the movable basket **112.** The inlet openings are disposed proximate to the inlet **104.** In an example, the pump **100** may include a number of inverted "U" shaped inlet openings. However, the inlet openings may have any other shape, size, number, and dimensions, without any limitations. The first position "**P1**" and the second position **"P2"** of the movable basket **112** allow setup of the pump **100** for different applications as per desired size of the inlet openings, based on switching of the movable basket **112** between the first position "**P1**" and the second position **"P2".**

[0024] Further, the operation of pump **100** in the second position **"P2"** allows handling of clean water. In the second position **"P2",** clean water may enter the pump **100** from the inlet **104.** The second position **"P2"** of the movable basket **112** restricts a flow of any large sized particles. In order to switch to the second position **"P2",** the movable basket **112** moves relative and within the pump housing **102.** The movement of the movable basket **112** to the second position **"P2"** allows to decrease the overall height of the pump **100.** Moreover, in the second position **"P2"** of the movable basket **112,** the inlet openings are partially or completely covered by the pump housing **102,** as per application requirements.

[0025] Although the present disclosure discloses two positions, i.e. the first position "**P1**" and the second position **"P2",** an actual implementation of the present disclosure may have multiple number of positions of the movable basket **112** between the first and second positions "**P1**", **"P2".** More particularly, the movable basket **112** may assume any other position between the first and second positions "**P1**", **"P2".** Moreover, the multiple positions may then allow multiple modes of operation of the pump **100.**

[0026] Further, the pump **100** includes a pump body **114.** The pump body 114 or the mechanism 110 may include any technique, means, components to allow movement and actuation of the movable basket **112** between the first and second positions "**P1**", **"P2".** The pump **100** also includes a handle **116** adapted to couple with the pump body **114.** In some embodiments, handle **116** may be adapted to couple with the housing **114,** or any other part of the pump **100** without any limitation to the present disclosure. The handle **116** allows handling of the pump **100** by a user. Further, the handle **116** works as a "trigger" for switching of the movable basket **112** between the first position "**P1**" and the second position **"P2".** The handle **116** includes a first part **118** which defines a top element **120** and a bottom element **122** (best shown in **FIG. 5).** Further, actuation of the first part **118** of the handle **116** is adapted to bias the movable basket **112** in one of the first position "**P1**" and the second position **"P2".** The first part **118** works as an actuator to change the position of the movable basket **112.** Further, the first part **118** of the handle **116** may be actuated based on a touch, a push, a push and hold, and the like. In some embodiments, the handle **116** may include additional parts or combination of parts to realize an intended function of actuating or triggering the movement of the movable basket **112.**

[0027] The present disclosure relates to the top element **120.** The top element **120** will now be explained in detail. **FIG. 3** illustrates a perspective view of the top element **120** of the first part **118.** It should be noted that the shape of the top element **120** generally corresponds to a shape proximate to an upper portion **123** (see **FIG. 2)** of the bottom element **122** (see **FIG. 2).** The top element **120** includes a "C"-shaped design. However, the top element **120** of the first part **118** may have any shape and size depending upon the design of the handle **116** such that the top element **120** covers a seating element **124** (see **FIGS. 4, 5,** and **6).**

[0028] A material of the top element **120** may include plastic, metal, wood, and the like. The top element **120** defines a first end **126** and a second end **128.** The top element **120** defines an inner surface **129** and an outer surface **131** that is opposite to the inner surface **129.** Further, the top element **120** includes a first hole **130** defined at the first end **126** and a second hole **132** defined at the second end **128.** The first hole **130** is in alignment with the second hole **132.** In the illustrated embodiment, the first and second holes **130, 132** are circular in shape. Alternatively, the first and second holes **130, 132** may have a square shape, a rectangular shape, an oval shape, and the like. It should be noted that the top element **120** may include any number of holes with various shapes and sizes, without limiting the scope of the present disclosure. In the illustrated example, the first and second holes **130, 132** are embodied as through-holes. In some embodiments, the top element **120** may include a pair of protrusions, grooves or any other connecting elements projecting from the outer surface **131** or the inner surface **129** of the top element **120** to engage with corresponding mating elements on the bottom ele-

ment **122.**

[0029] Further, the top element **120** includes a pair of side portions **134,** only one of which is illustrated herein. In some examples, the pair of side portions **134** may be parallel to each other. In other examples, each side portion **134** may be angularly disposed, such that the pair of side portions **134** are not parallel to each other. Moreover, the top element **120** defines an opening **135** to accommodate the bottom element **122** when the top element **120** is coupled to the bottom element **122** and the seating element **124.** Further, a length **"L"** defined by the top element **120** may be substantially equal to or slightly greater than a distance between left and right arms **136, 138.**

[0030] As shown in **FIG. 2,** the handle **116** defines the left arm **136** and the right arm **138,** wherein the top element **120** of the first part **118** removably couples (or say clicks) on one or more of the left arm **136** and the right arm **138.** The left and right arms **136, 138** form a part of the bottom element **122.** The bottom element **122** includes a generally inverted "U"-shaped design. In some embodiments, the bottom element **122** is designed like a bridge with the left arm **136** and the right arm **138.** This allows the bottom element **122** to allow easy and stable coupling with the top element **120.** A material of the bottom element **122** may include plastic, metal, wood, and the like. In some embodiments, removal of the top element **120** may allow assembly or disassembly of different parts or components of the mechanism **110,** or of the pump **100.** More particularly, removal of the top element **120** may allow assembly or disassembly of the left and right arms **136, 138** or any other parts of the handle **116.** Such a simple, and easily removal arrangement of the top element **120** may thus allow effective and user-friendly cleaning in situ, or even after taking the parts or components outside of the handle **116.**

[0031] The left arm **136** and the right arm **138** of the bottom element **122** extend downwards towards the inlet **104** of the pump **100.** The left arm **136** and the right arm **138** of the handle **116** are adapted to at least partially engage with the mechanism **110** of the pump **100.** The engagement of the left and right arms **136, 138** with the mechanism **110** may allow switching of the movable basket **112** between the first and second positions **"P1", "P2",** based on the actuation of the first part **118** of the handle **116.**

[0032] The bottom element **122** of the first part **118** includes a first engaging element **140** (shown in **FIG. 5)** and a second engaging element **142** (shown in **FIG. 2).** The first engaging element **140** is disposed on the left arm **136,** whereas the second engaging element **142** is disposed on the right arm **138.** Further, the first engaging element **140** engages with the first hole **130** (see **FIG. 3)** of the top element **120** and the second engaging element **142** engages with the second hole **132** (see **FIG. 3)** of the top element **120** to secure the top element **120** with the bottom element **122.** A shape and a size of the first and second engaging elements **140, 142** corresponds to the shape and the size of the first and second holes **130, 132,** respectively. In the illustrated embodiment, the first engaging element **140** and the second engaging element **142** are circular in shape. Alternatively, the first and second engaging elements **140, 142** may have a square shape, a rectangular shape, an oval shape, and the like.

[0033] Further, the first and second engaging elements **140, 142** include mechanical fasteners herein. The mechanical fasteners may be embodied as bolts, screws, pine, rivets, and the like. In alternate embodiments, the first and second engaging elements **140, 142** may include tabs extending from the left and right arms **136, 138,** respectively. It should be noted that the present disclosure is not limited to the shape or the design of the first and second engaging elements **140, 142,** and the first and second engaging elements **140, 142** may include various other shapes and designs. Further, in some examples, a bayonet structure may be used to removably couple the top element **120** with the bottom element **122.** Although the bottom element **122** includes two engaging elements **140, 142** herein, a total number of the engaging elements **140, 142** may vary based on the total number of the holes **130, 132** in the top element **120.**

[0034] Referring to **FIGS. 4** and **5,** the handle **116** also includes a second part **144** which defines the seating element **124.** Further, either the seating element **124** of the second part **144** at least partially covers the top element **120** of the first part **118,** or the top element **120** of the first part **118** at least partially covers the seating element **124** of the second part **144.** More particularly, in an example, the seating element **124** is designed to partially or totally cover the top element **120,** such that there is no gap between the seating element **124** and the top element **120.** The present disclosure illustrates the seating element **124** partially covering the side portions **134** of the top element **120** (as best shown in **FIG. 1).** This will allow the seating element **124** to disallow any foreign particles to move between the seating element **124** and the top element **120.** In another example, the top element **120** is designed to partially or totally cover the seating element **124,** such that there is no gap between the seating element **124** and the top element **120.** This arrangement of the top element **120** and the seating element **124** limits any gaps between the top element **120** and the seating element **124** to avoid penetration of any foreign particles therethrough. It should be noted that the bottom element **122** of the first part **118** is disposed between the top element **120** and the seating element **124.**

[0035] The first part **118** is movable relative to the second part **144.** Further, movement of the first part **118** relative to the second part **144** allows actuation of the mechanism **110,** based on the user's action on the top element **120** of the first part **118.** In some examples, the seating element **124** of the second part **144** may at least partially receive the first part **118** when the movable basket **112** is in the second position **"P2".** In an embodiment, the second part **144** may be fixed to the pump housing **102.**

[0036] Further, the first part **118** is coupled with the second part **144,** such that the top element **120** of the first part **118** is removable therefrom. As shown in **FIGS. 5** and **6,** when the top element **120** is removed, a gap **146** exists between the bottom element **122** and the second part **144.** Further, when the top element **120** is coupled to the bottom element **122,** the pair of side portions **134** may cover the gap **146.** Removal of the top element **120** of the first part **118** allows access to the seating element **124** of the second part **144.** Further, the first part **118** and the second part **144** may be removably coupled by one or more of a screws, a snap-fit, and pins, in some embodiments. In the illustrated embodiment, the first part **118** and the second part **144** are removably coupled by a snap fit arrangement. Alternatively, the first part **118** and the second part **144** may be removably coupled by any other means generally used or known in the art.

[0037] The present disclosure provides improvement in the handle **116** for the pump **100,** which is preferably the submersible pump **100.** The first part **118** and the second part **144** are designed in such a way that the user may easily grip the handle **116** for movement of the pump **100** or cleaning and other maintenance purposes. The parts of the handle **116** described herein are designed ergonomically so that the user may comfortably actuate the top element **120** of the first part **118** to switch the position of the movable basket **112** between the first position "**P1**" and the second position **"P2".** Further, the present disclosure may be readily applicable with any other multiple part arrangement of the pump **100,** even other than the handle **116.** The techniques of the present disclosure may be easily applied with different movable parts of the mechanism **110,** particularly parts which are susceptible to intrusion of foreign particles.

[0038] Further, the handle **116** includes the top element **120** that is removably coupled to the bottom element **122.** The top element **120** includes a simple design and is a cost-effective component. Moreover, the top element **120** restricts passage and settling of foreign particles in the seating element **124.** Removal of the top element **120** provides ease in accessibility to the seating element **124** for cleaning thereof. Further, the removable coupling arrangement of the top element **120** with the bottom element **122** provides quick and easy attachment/detachment of the top element **120** with the bottom element **122.**

[0039] In the drawings and specification, there have been disclosed preferred embodiments and examples of the disclosure 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 disclosure being set forth in the following claims.

LIST OF ELEMENTS

[0040]

100	Pump
102	Pump Housing
104	Inlet
106	Outlet
108	Hose Connector
110	Mechanism
112	Movable Basket
114	Pump Body
116	Handle
118	First Part
120	Top Element
122	Bottom Element
123	Upper Portion
124	Seating Element
126	First End
128	Second End
129	Inner Surface
130	First Hole
131	Outer Surface
132	Second Hole
134	Side Portions
135	Opening
136	Left Arm
138	Right Arm
140	First Engaging Element
142	Second Engaging Element
144	Second Part
P1	First Position
P2	Second Position
L	Length

Claims

1. A pump **(100)** comprising:

a pump body **(114),** and
a handle **(116)** adapted to couple with the pump body **(114),** the handle **(116)** comprising:

a first part **(118)** which defines a top element **(120)** and a bottom element **(122);** and
a second part **(144)** which defines a seating element **(124),** wherein either the seating element **(124)** of the second part **(144)** at least partially covers the top element **(120)** of the first part **(118),** or the top element **(120)** of the first part **(118)** at least partially covers the seating element **(124)** of the second part **(144),** and
wherein the first part **(118)** and the second part **(144)** are movable relative to each other;

characterized in that:
the first part **(118)** is coupled with the second part **(144)** such that the top element **(120)** of the first part **(118)** is removable therefrom.

2. The pump **(100)** of claim 1, wherein removal of the top element **(120)** of the first part **(118)** allows access to the seating element **(124)** of the second part **(144).**

3. The pump **(100)** of claim 1, wherein the first part **(118)** and the second part **(144)** are removably coupled by one or more of a screws, a snap-fit, and pins.

4. The pump **(100)** of claim 3, wherein the handle **(116)** defines a left arm **(136)** and a right arm **(138),** wherein the top element **(120)** of the first part **(118)** removably couples on one or more of the left arm **(136)** and the right arm **(138).**

5. The pump **(100)** of claim 4, wherein the left arm **(136)** and the right arm **(138)** of the handle **(116)** are adapted to at least partially engage with a mechanism **(110)** of the pump **(100).**

6. The pump **(100)** of claim 1, wherein the pump **(100)** further includes a movable basket **(114)** adapted to move between a first position **(P1)** and a second position **(P2),** wherein actuation of the first part **(118)** of the handle **(116)** is adapted to bias the movable basket **(114)** in one of the first position **(P1)** and the second position **(P2).**

7. The pump **(100)** of claim 5 and 6, wherein the mechanism **(110)** includes the movable basket **(114).**

8. The pump **(100)** of any of the preceding claims, wherein the pump **(100)** is a submersible pump **(100).**

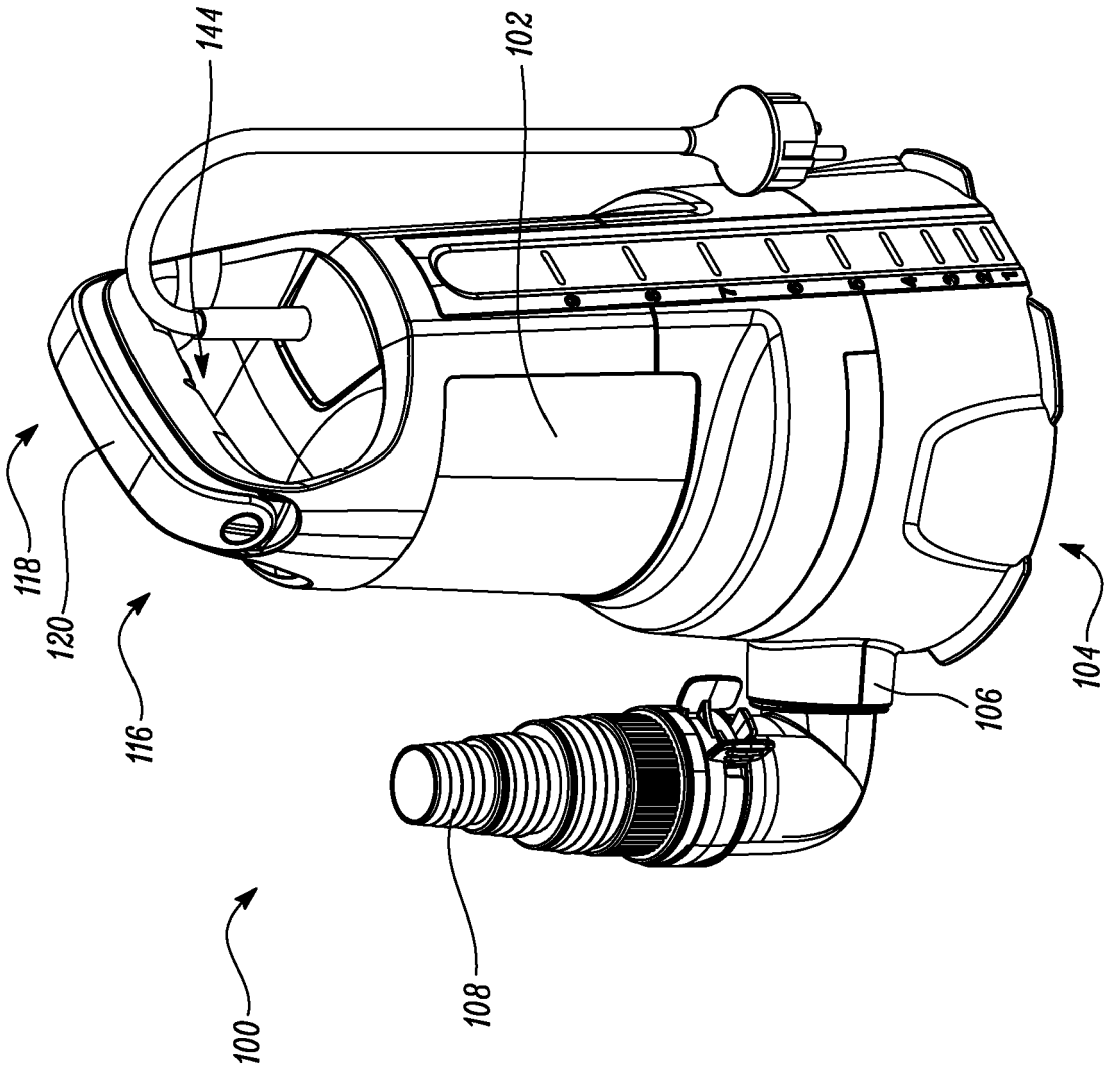

FIG. 1

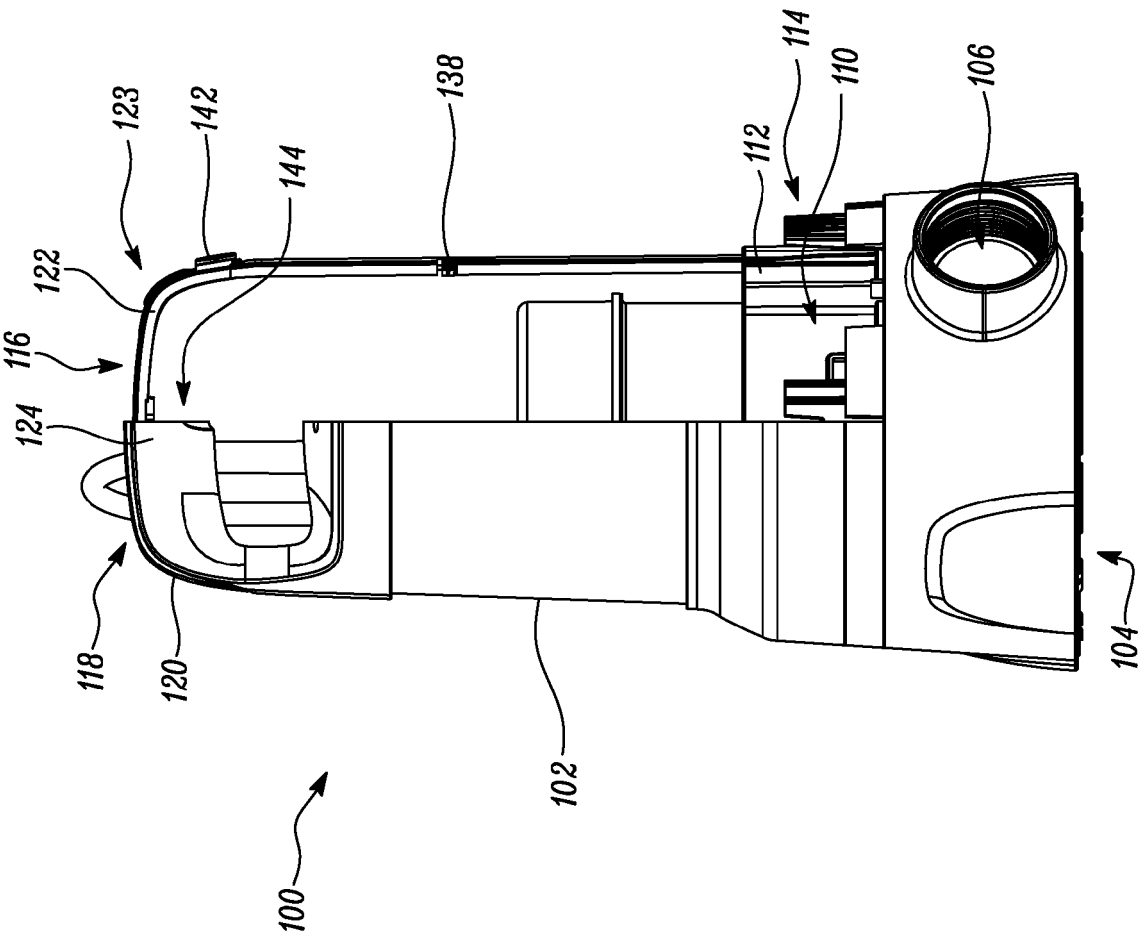

FIG. 2

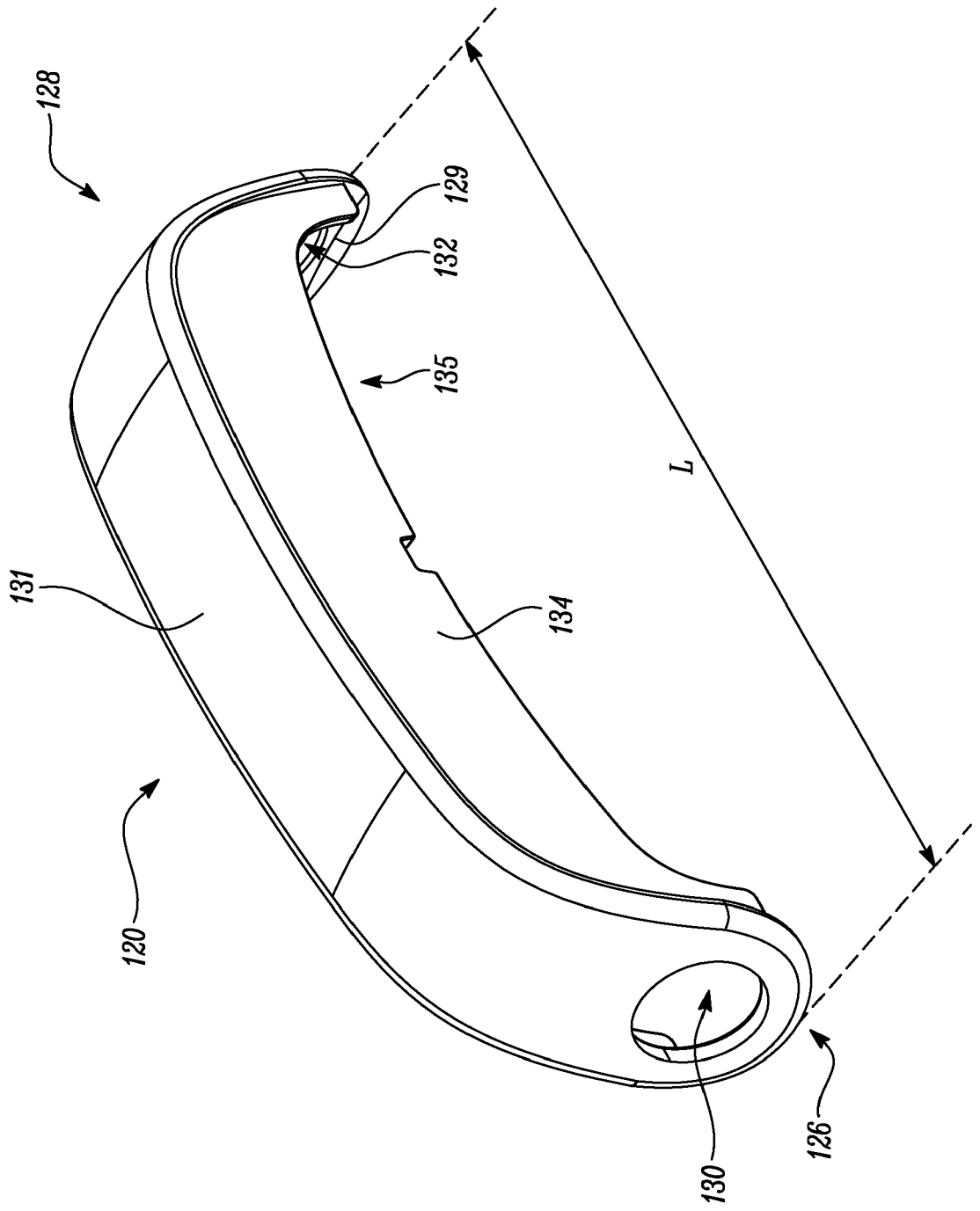

FIG. 3

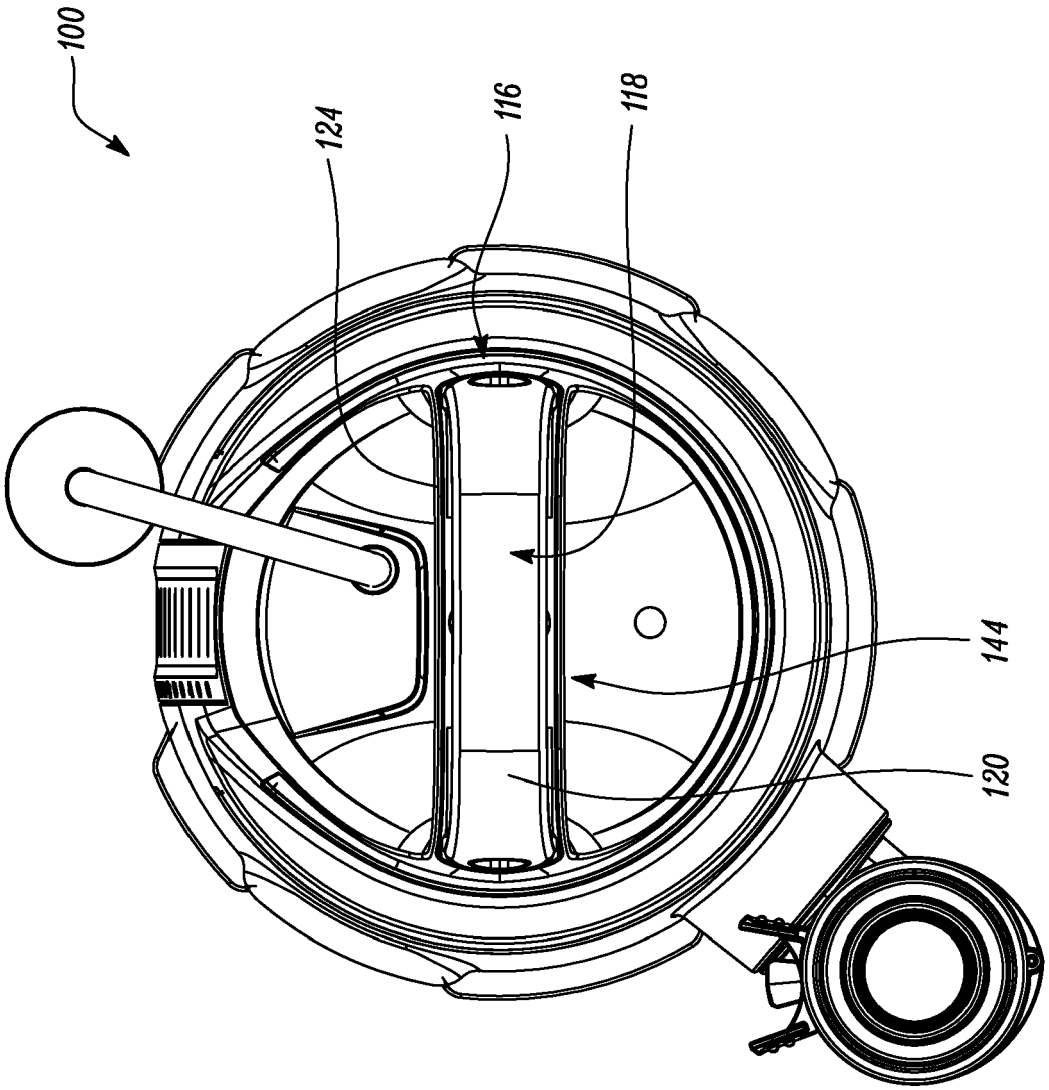

FIG. 4

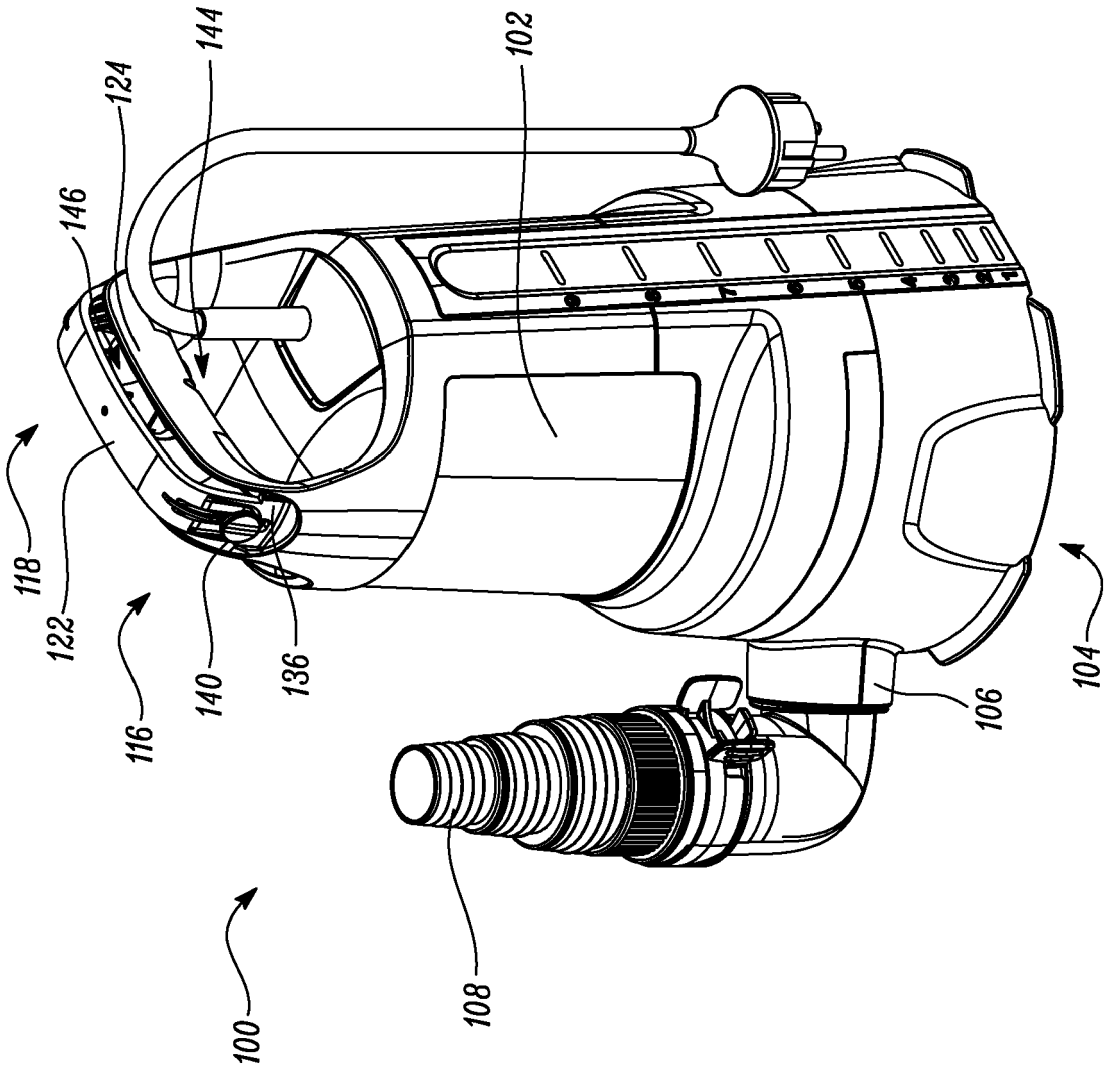

FIG. 5

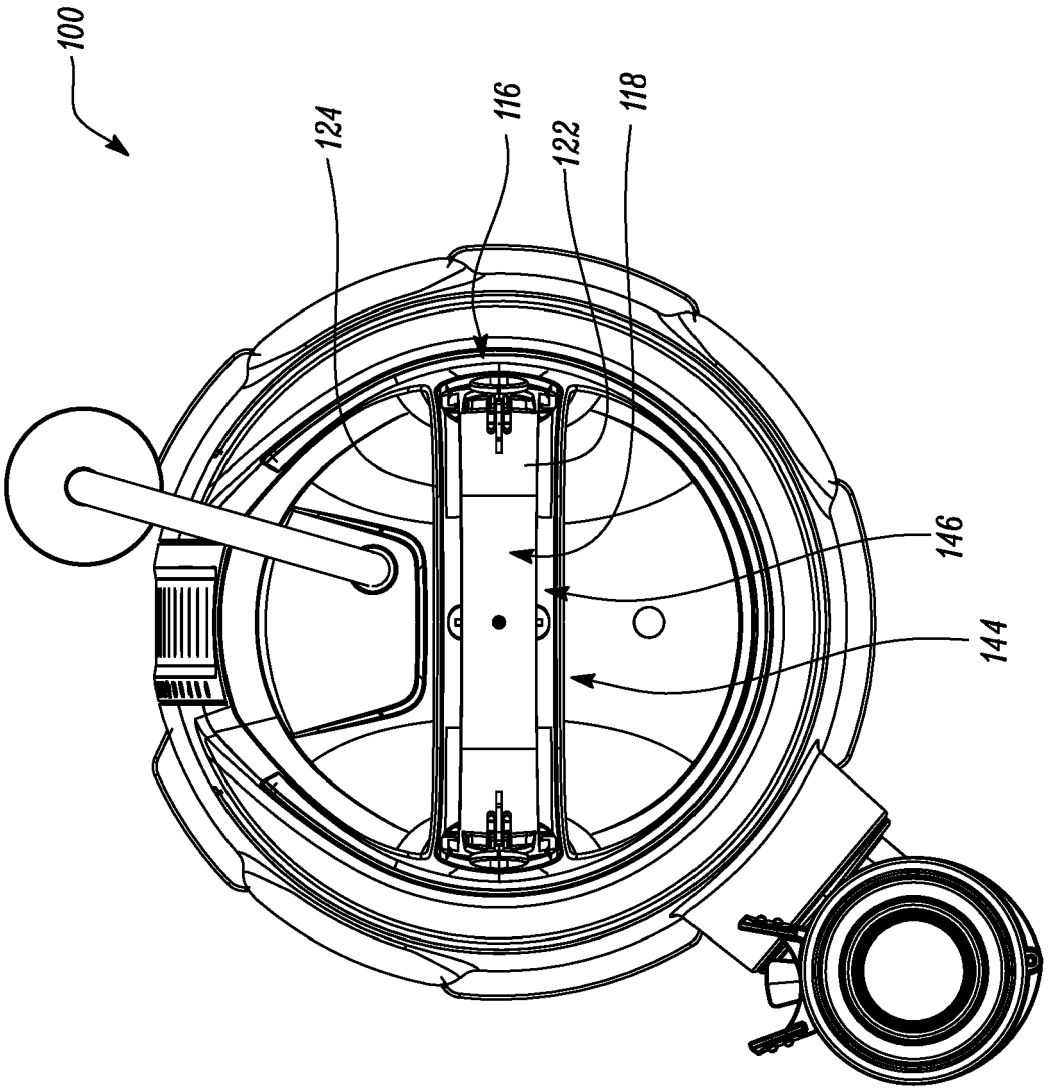

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 20 20 4388

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 204 226 273 U (JUNHE PUMPS CO LTD) 25 March 2015 (2015-03-25)	1-5,7,8	INV. F04D13/08 F04D15/00 F04D29/70
A	* figures 1-8 *	6	

A	WO 2020/098965 A1 (HUSQVARNA AB [SE]) 22 May 2020 (2020-05-22) * figures 1-8 * * page 8, paragraph 2 - page 9, paragraph 3 *	1-8	

TECHNICAL FIELDS SEARCHED (IPC)

F04D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	12 March 2021	Ingelbrecht, Peter

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WO 2020098965 A1	22-05-2020	NONE	

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