



(11) **EP 4 115 087 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention  
of the grant of the patent:  
**25.09.2024 Bulletin 2024/39**

(21) Application number: **21700198.1**

(22) Date of filing: **08.01.2021**

(51) International Patent Classification (IPC):  
**F04D 13/08** <sup>(2006.01)</sup> **F04D 29/60** <sup>(2006.01)</sup>

(52) Cooperative Patent Classification (CPC):  
**F04D 29/605; F04D 13/08; F05D 2260/36;**  
**F05D 2260/50**

(86) International application number:  
**PCT/EP2021/050238**

(87) International publication number:  
**WO 2021/175501 (10.09.2021 Gazette 2021/36)**

(54) **PUMP COMPRISING A PLURALITY OF FEET**  
**PUMPE MIT MEHREREN FÜSSEN**  
**POMPE COMPRENANT UNE PLURALITÉ DE PIEDS**

(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 MK MT NL NO**  
**PL PT RO RS SE SI SK SM TR**

(30) Priority: **02.03.2020 EP 20160316**

(43) Date of publication of application:  
**11.01.2023 Bulletin 2023/02**

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## Description

### TECHNICAL FIELD

**[0001]** The present disclosure relates to a pump. More specifically, the present disclosure relates to a pump having feet which provide simple and convenient methods to adjust or manage different heights of the pump as per the requirements of common users.

### BACKGROUND

**[0002]** A pump is a device that allows transport of fluids such as liquids or gases, or sometimes slurries, by mechanical actions. For example, a submersible pump is a device which has a hermetically sealed motor close-coupled to a pump body. The submersible pump may be submerged in a fluid to be pumped. Generally, the pumps are used to pump water from wells, or to filter aquariums, ponds, or may be used in car industries or energy industries for desired purposes. The pump may include a foot. The foot may help to attain desired heights depending on a liquid level in which the pump is submersed.

**[0003]** However, there may be instances where working with adjustment of pump heights with the help of feet of the pump may become troublesome process. Generally, an additional structure (such as base of a pump) may be coupled or uncoupled with the pump to get the desired height of the pump. Further, the coupling and uncoupling of additional parts to the pump may lead to formation of unrequired complex construction of the pump. Moreover, many technical issues may occur during assembly or disassembly of the additional structures with the pump.

**[0004]** United States patent application US2016161051 provides a system for lifting tables, chairs, bed bases and the like. The system is lockable and unlockable automatically through at least one universal telescopic snap movement or in a known way including at least one pantograph-a vertically moveable load-bearing structure arranged between a base and the bottom of a piece of furniture or element to be lifted. Further, a stopping device is provided to keep the pantograph in a desired height position. Moreover, the load-bearing structure is formed by at least one pantograph having a plurality of parallelograms articulated to one another whose lower vertex is articulated to the base and upper vertex is articulated to the bottom of the furniture or object to be lifted and the stopping device is an integral part of telescopic snap movement. However, the system seems short of providing an improved arrangement for changing different positions (say lifting or lowering) of a pump which may be easy and user-friendly. Further, there also seems to be no role of an improved foot of a pump which may make the system simple, efficient and less prone to downtime due to a large number and complex linking of movable parts of the system.

**[0005]** The German patent application

DE102006016981 describes a submersible pump. The lower side of the housing of that pump forms feet that allow the pump to stand on a surface in operational mode. In addition to these feet the pump includes pivotably mounted foot parts that can be pivoted below the feet and into the inner side of the housing. Thus the foot parts can be pivoted-in or pivoted out with respect to the feet of the pump. By this action the pump housing and thus its water inlet can be lifted or lowered in respect to the surface it stands on. In the pivoted-in arrangement, the pivotably mounted foot part move into respective receiving spaces around bottom of the pump. Further, when in the receiving spaces, the pivotably mounted foot part are no longer visible or accessible from outside. This may make application of the pump with the pivotably mounted foot part cumbersome, and involve lifting/movement of the pump in order to access the pivotably mounted foot part. Further, the pump of the present application involves two-different "foots" i.e., the pivotably mounted foot part and the feet formed with the housing of the pump. The feet of the pump rest on the standing surface when the pivotably mounted foot part are pivoted-in (and not accessible therefor) into the respective receiving spaces. This arrangement with the two-different "foots" needs the user to shift the pump out of its operational position when wanting to manipulate the foot parts.

**[0006]** In a somewhat similar manner the Chinese utility model CN 201 568 282 U also describes a pump that has pivotable feet attached to its pump housing from underneath. These feet are connected to their respective housing via a hinge. The hinge and thus the coupling is sturdily secured by a securing element that is at the hinge screwed onto the base body after coupling. The feet of the pump can be pivoted between a first stabile position and a second stabile position in respect to the base body. Doing this changes the height of the pumps water inlet in respect to the ground when the pump is back in its operational position. Again accessing the feet from underneath the housing need to shift the pump out of its operational position.

**[0007]** With the Chinese patent publication CN 103 206 386 B a submersible pump is described that allows to adjust the height of the pump housing, and thus the water inlet with the help of a at least two stepped groves on opposite sides of the pump housing. Within each of these stepped grooves an inlay can be removably fixed with the help of a screw into different height locations. During assembly of the pump the bottom side of each of the inlays comes to sit in on seat on top of a bottom element. Thus by fixing the inlays at different height locations on the pump housing the water inlet can be varied in height with the pumps final assembly.

**[0008]** The pump with the publication EP 1 186 782 A1 makes use of feet with its back being rotationally fixed to the pump housing and its front panel being accessible during operational position of the pump. Via the access to the feet they can be rotated to adjust the height of the pump housing, and thus the water inlet.

**[0009]** Thus, there is a need for an improved pump which allows safe, convenient and trouble-free adjustments of heights of the pump.

#### SUMMARY

**[0010]** 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 pump having a pump housing and feet as defined by claim 1. Each foot includes a base body and a coupling structure coupled to the base body. The coupling structure includes a front panel that is configured to remain in a first stable position and a second stable position in respect to the base body. Herein, the front panel is accessible during the operational position of the pump from the side of its pump housing. The base body rests on the foot in the first stable position and the second stable position. And, pushing and pulling of the foot keeps (or moves) it between the first stable position and the second stable position. Thus, the present disclosure provides a simple, efficient, and convenient foot to adjust different heights of the pump.

**[0011]** According to first embodiment of the present invention, there is provided a first arm which is coupled to the base body at a first end, a second arm which is coupled to the base body at a second end and a third arm which is positioned to actuate both the first arm and the second arm. Moreover, the first arm, the second arm and the third arm are cooperatively movable relative to each other between the first stable position and the second stable position, such that the front panel is adapted to actuate the third arm to move against the first arm and the second arm. This helps in engagement of the front panel with the base body. A general bistable mechanism is described by U.S. patent 6,215,081 whether naming any exemplary use, in particular not for use for the feet of pumps, nor describing any featural additions necessary for a certain use case.

**[0012]** According to a second embodiment of the present invention, the coupling structure includes a first end and a second end. The first end of a coupling structure adapted to be pivotally coupled to the base body. The coupling structure is engaged with at least one of a first structural feature and a second structural feature defined on the base body. The coupling structure engages with the first structural feature in the first stable position and the coupling structure engages with the second structural feature in the second stable position of the coupling structure. This provides the foot with an ability to stay in the first stable position and the second stable position without power input and despite small external disturbances.

**[0013]** According to this second embodiment of the present invention, the front panel is coupled to the second end of the coupling structure. This allows free movement or actuation of the front panel by the common user.

**[0014]** According to the present invention, the first sta-

ble position corresponds to a first height of the pump base and the second stable position corresponds to a second height of the pump base. This may help in achieving the desired heights which are meant to suck/pump a large quantity of liquid in which the pump is submerged.

**[0015]** According to the present invention, the second height is greater than the first height. This may allow suction or pumping of liquid when the liquid level is relatively high.

**[0016]** According to an embodiment of the present invention, the first height and the second height are 1mm and 5mm respectively. This may allow the pump to force the liquid entry at both desired liquid heights.

**[0017]** According to an embodiment of the present invention, the front panel include at least one tab. This may allow the front panel to get engaged with the base body.

**[0018]** According to an embodiment of the present invention, the base body is structurally integrated with the pump. This may prevent strength to the foot of the pump.

**[0019]** According to an embodiment of the present invention, the foot is removably coupled with the pump. This may allow assembly of the foot to the pump as per the applicational requirements of the common users.

**[0020]** According to an embodiment of the present invention, the first arm and the second arm are coupled by flexible hinges. As durability of the flexible hinges may allow repetitional movements of the foot. The flexible hinges may experience little friction when the first arm, the second arm, and the third arm are actuated. Further, the flexible hinges may typically result in a long service life. Moreover, an integration of the flexible hinges may eliminate the need of extra components.

**[0021]** According to an embodiment of the present invention, the first arm and the third arm are coupled by a snap connection. The snap connection may provide simple and cost-effective ways to assemble different parts of the foot.

**[0022]** According to an embodiment of the present invention, the base body includes one or more recesses/grooves. This may allow assembly of the foot to the on remainder part of the pump housing through the one or more recesses/grooves.

**[0023]** According to an embodiment of the present invention, the base body is engaged to the pump through the one or more recesses/grooves. This may connect the foot to the pump to form a single body.

**[0024]** According to an embodiment which is not claimed, the foot may be manufactured using a three-dimensional (3-D) printing process. Further, the present disclosure provides a data file, corresponding pre-stored instructions that include a digital representation of the foot, and that when run in a processor controlling an operation of three-dimensional printer makes the three-dimensional printer manufacture the foot. Use of three-dimensional printing (alternatively, 3D printing) may provide versatility of using different materials along with lower lead-time in manufacturing and design of the foot.

**[0025]** Other features and aspects of this invention will

be apparent from the following description and the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0026]** The invention will be described in more detail with reference to the enclosed drawings, wherein:

**FIG. 1** illustrates a pump base with one or more feet, in accordance with an aspect of the present disclosure;

**FIG. 2A** illustrates a side view of the foot for the pump in a first stable position, in accordance with an aspect of the present disclosure;

**FIG. 2B** illustrates a front view of the foot for the pump in the first stable position, in accordance with an aspect of the present disclosure;

**FIGS. 3A and 3B** illustrate side and front views of the foot in a second stable position, in accordance with an aspect of the present disclosure;

**FIGS. 4A and 4B** illustrate front and side views of another embodiment of the foot, in accordance with an aspect of the present disclosure;

**FIGS. 5A and 5B** illustrate front and side views of another embodiments of the foot in the first stable position, in accordance with another aspect of the present disclosure;

**FIGS. 6A and 6B** illustrate front and side views of another embodiments of the foot in the second stable position, in accordance with another aspect of the present disclosure;

**FIG. 7** illustrates the pump base in the first stable position, in accordance with another aspect of the present disclosure; and

**FIG. 8** illustrates the pump base in the second stable position, in accordance with another aspect of the present disclosure.

#### DESCRIPTION OF EMBODIMENTS

**[0027]** 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 which is solely defined by the appended claims. In the drawings, like numbers refer to like elements.

**[0028]** 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.

**[0029]** **FIG. 1** illustrates a pump base **100** of a pump **150**. The pump **150** is a mechanical device which pumps fluids such as liquids, gases, or sometimes slurries. The pump **150** may be used indoors or outdoors according to applicational needs of a common user. In the depicted example the pump **150** includes a handle **103** to lift or displace the pump **150**. The body includes a water inlet **102** (not visible). The water inlet **102** is present at the bottom of the pump housing **105**, that is at the bottom of its pump base **100** and allows a liquid to be sucked by the pump **150**. Further, the pump **150** has an outlet **104**. The outlet **104** discharges the liquid. The discharged liquid may be used to different applications such as irrigation, washing etc.

**[0030]** **FIG. 1** shows the pump **150** in its operational position that allows to suck water via its water inlet **102** (not visible) on the bottom of the pump housing **105** that find itself on the bottom of the pump **150** in its operational position. The pump housing **105** comprising a pump base **100** including a plurality of feet **106**. The feet **106** are accessible during the normal operation of pump **150** from side of the pump housing **105**. This allows to adjust desired heights of the pump **150** being in its operational position. The common user may need the pump **150** to get adjusted at different heights. The pump **150** at different heights may cater to different application requirements. Pushing and pulling of the foot (**106**) moves it between its first stable position and its second stable position. The pump base **100** may be an integral part of the pump housing **105** or may be assembled or disassembled with a pump housing **105** through one or more pump base connectors **132** connecting the pump base **100** to the remainder part of the pump housing **105**.

**[0031]** In some embodiments, the feet **106** may be manufactured by three-dimensional printing. In some embodiments, the present disclosure provides a data file, corresponding pre-stored instructions that include a digital representation of the foot **106**, and that when run in a processor controlling an operation of three-dimensional printer makes the three-dimensional printer manufacture the foot **106**. Use of three-dimensional printing (alternatively, 3D printing) may provide versatility of using different materials along with lower lead-time in manufacturing and design of the feet **106**.

**[0032]** In some embodiments, the feet **106** may be made up of a material selected from steel, brass, stainless steel, aluminum or plastic. Nature of the material is chosen as per the requirements of the common user. The desired nature of the material provides the feet **106** with certain characteristic features such as flexibility,

elasticity, rigidity, heat or vibrations resistant properties.

**[0033]** FIG. 2A illustrates a side view of the foot 106 for the pump 150 in a first stable position. As from the point of clarity and consideration only one foot 106 is discussed in further figures. Another, one or more feet 106 may be similar or variant from the foot 106 described in the FIG. 2A. The foot 106 includes a base body 110. The foot 106 further includes a coupling structure 112. The coupling structure 112 is coupled to the base body 110. The base body 110 has a first end 116 and a second end 118. The coupling structure 112 allows the foot 106 to pivotally move between the first stable position and a second stable position (shown in FIGS. 3A and 3B respectively).

**[0034]** Moreover, the pump 150 further includes a front panel 114. The front panel 114 is actuated by a user to move the foot 106 between the first stable position and the second stable position. The front panel 114 includes a tab 120. The tab 120 allows an engagement (shown in FIGS. 3A and 3B) and disengagement of the front panel 114 with the second end 118 of the base body 110. The foot 106 further includes a first arm 122, a second arm 124 and a third arm 126. The first arm 122 is coupled to the base body 110 at the first end 116. Further, the second arm 124 is coupled to the base body 110 at the second end 118. Moreover, the third arm 126 is positioned to actuate both the first arm 122 and the second arm 124. The first arm 122, the second arm 124 and the third arm 126 are cooperatively movable relative to each other between the first stable position and the second stable position.

**[0035]** As illustrated in FIG. 2A, the first arm 122 and the second arm 124 are coupled by one or more flexible hinges 128. As durability of the one or more flexible hinges 128 may allow repetitional movements of the foot 106. The one or more flexible hinges 128 may experience little friction when the first arm 122, the second arm 124, and the third arm 126 are actuated. Further, the one or more flexible hinges 128 may typically result in a long service life. An integration of the one or more living hinges 128 may eliminate the need of extra components. The first arm 122 and the third arm 126 are coupled by a snap connection 130. Moreover, the snap connection 130 may provide simple and cost-effective ways to assemble different parts of the foot 106.

**[0036]** FIG. 2B illustrates a front view of the foot 106 in the first stable position. The base body 110 is directly coupled to the pump 150. The foot 106 includes one or more recesses/grooves 132. This may connect the foot 106 to the pump 150 to form a single body. In some embodiments, the base body 110 is structurally integrated with the pump base 100. This may provide strength/ rigidity to the foot 106 of the pump 150. In some other embodiments, the foot 106 is removably coupled with the pump base 100. This may allow assembly or disassembly of the foot 106 with the pump base 100 as per the applicational requirements of the common users.

**[0037]** The base body 110 may engage with the pump

base 100 through the one or more recesses/grooves 132. The base body 110 of the foot 106 may be engaged with the pump base 100 by both temporary and permanent means. The temporary connection may be done by gluing, screwing, tying with threads and the like. The permanent connection may be done by welding, riveting and any other fabrication technique which is used or known in the art. Alternatively, and additionally, the base body 110 and the pump base 100 may be connected by snap connections.

**[0038]** FIGS. 3A and 3B illustrate side and front views of the foot 106 in the second stable position respectively. The front panel 114 is adapted to actuate the third arm 126 to move against the first arm 122 and the second arm 124. This helps in engagement of the front panel 114 with the base body 110. The actuation of the front panel 114 engages the tab 120 with the second end 118 of the base body 110. The front panel 114 may engage with the base body 110 by pressing or pushing the front panel 114 towards the base body 110. The front panel 114 may be actuated by pressing a top portion 133 of the front panel 114. The front panel 114 may engage with the base body 110 manually or by using simple tools. The second stable position of the front panel 114 with the base body 110 increases height of the pump 150 (shown in FIG. 8).

**[0039]** In some embodiments, the front panel 114 may be provided by some grooves. The grooves may help to actuate the front panel 114. The user may actuate the front panel 114 by inserting fingers into the grooves or by using some simple tool to actuate the front panel 114.

**[0040]** In some embodiments, the tab 120 may be made up of any material selected from one or more of a plastic, steel, nylon, rubber etc. The tab 120 may provide support to the front panel 114 to stay engaged with the second end 118 of the base body 110. In some embodiments, the second end 118 of the base body 110 may have some protrusions which may lock or engage with grooves present on the front panel 114. This arrangement may also provide firmness to the second stable position. Alternatively, or additionally, some designed structures may be present on the front panel 114. The designed structures may get engaged with complementary designed structures present on the second end 118 of the base body 110.

**[0041]** FIGS. 4A and 4B illustrate front and side views of another embodiment of the present invention. The foot 106 includes a coupling structure 134. The coupling structure 134 includes a first end 136 and a second end 138. The coupling structure 134 further includes a first portion 140 towards the first end 136 of the coupling structure 134. Moreover, the coupling structure 134 includes a second portion 142 towards the second end 138 of coupling structure 134. The first end 136 of the coupling structure 134 is adapted to be pivotally coupled to the base body 110. The base body 110 of the foot 106 includes a first structural feature 144. Further, the base body 110 of the foot 106 includes a second structural feature 146. The coupling structure 134 engages with

the first structural feature **144** in the first stable position and the coupling structure **134** engages with the second structural feature **146** in the second stable position. The base body **110** further includes a slanting portion **148**. The coupling structure **134** engages at least one of the first structural feature **144** and the second structural feature **146** of the base body **110**.

**[0042]** In some embodiments, the coupling structure **134** and the slanting portion **148** may be made up of three-dimensional printing. Use of three-dimensional printing (alternatively, 3D printing) may provide versatility of using different materials along with lower lead-time in manufacturing and design of the coupling structure **134** and the slanting portion **148**. In some embodiments, the coupling structure **134** and the slanting portion **148** may be made up of a material selected from steel, brass, stainless steel, aluminum or plastic and the like.

**[0043]** **FIGS. 5A** and **FIG. 5B** illustrate front and side views of the foot **106** in the first stable position. The coupling structure **134** is engaged with the first structural feature **144** of the base body **110**. The coupling structure **134** engages with the first structural feature **144** in the first stable position. The first end **136** of the coupling structure **134** may act as pivot for the engagement or disengagement of the front panel **114** with the first structural feature **144** and the second structural feature **146** (shown in **FIG. 6A** and **6B**). The engagement of the front panel **114** with the first structural feature **144** and the second structural feature **146** may be done manually or by using some basic techniques used or known in the art.

**[0044]** **FIGS. 6A** and **6B** illustrate front and side views of the foot **106** in the second stable position. The coupling structure **134** is engaged with the second structural feature **146**. The coupling structure **134** engages with the second structural feature **146** in the second stable position. The slanting portion **148** may provide support to the second portion **142** of the coupling structure **134** to stay engaged in the second stable position. The top portion **133** of the front panel **114** along with the tab **120** help to engage the front panel **114** with the second structural feature **146** of the base body **110**. On actuating the front panel **114**, the front panel **114** may engage with the first structural feature **144** and the second structural feature **146** as per the requirements.

**[0045]** In some embodiments, a control unit may be present to control different movements of the front panel **114**. An increase or decrease in water level may be sensed by sensors present over the pump **150**. The sensors may actuate the front panel **114** to move between the first stable position and the second stable position. On an increase in liquid level, the pump **150** may attain second stable position. Similarly, on lowering of liquid level, the pump **150** may attain the first stable position.

**[0046]** **FIG. 7** illustrates the pump base **100** in the first stable position. The first stable position is attained by the pump **150**, whenever the liquid level is quite low. The first stable position corresponds to a first height of the pump base **100**. In an embodiment, the first height is 1mm. The

first height of the pump **150** may help in sucking or pumping of water, even when the water level is quite low. **FIGS. 2A, 2B** and **5A, 5B** corresponds to **FIG. 7**. The movement of the front panel **114** between the first stable position and the second stable position may eliminate need of external resources to lift or drop the pump **150**.

**[0047]** The front panel **114** may stay only in the first stable position and the second stable position. The front panel **114** may not stay in any intermediate position between the first stable position and the second stable position. Therefore, the front panel **114** may follow a bi-stable mechanism. This may provide stability to the front panel **114** to stay in the first stable position and the second stable position without much power input and despite small external disturbances.

**[0048]** **FIG. 8** illustrates the pump base **100** in the second stable position. The second stable position is attained by the pump **150**, whenever the liquid level is quite high. With the feet of the pump in this second stable position that particles of a size by 5 mm can pass the pump. The second stable position corresponds to a second height of the pump base **100**. In an embodiment, the second height is 5mm. The second height of the pump **150** may help in sucking or pumping of water, even when the water level is quite high. **FIGS. 3A, 3B** and **6A, 6B** corresponds to **FIG. 8**. The second height is greater than the first height. The first height and the second height may allow the pump **150** to force the liquid entry at both desired liquid heights.

**[0049]** The present disclosure provides a method of actuating the foot **106** of the pump **150**. The method provides the coupling structure **112** and includes the steps of providing the first arm **122** adapted to be coupled to the base body **110** at the first end **116**. The method also includes providing the second arm **124** adapted to be coupled to the base body **110** at the second end **118**. The method further includes providing the third arm **126** positioned to actuate both the first arm **122** and the second arm **124**. The first arm **122**, the second arm **124** and the third arm **126** are cooperatively movable relative to each other between the first stable position and the second stable position, such that the front panel **114** is adapted to actuate the third arm **126** to move against the first arm **122** and the second arm **124**.

**[0050]** The present disclosure provides the pump **150** having the pump housing **105** and the foot **106**. The foot **106** includes the base body **110**. The foot **106** includes the coupling structure **112, 134** coupled to the base body **110**. The coupling structure **112, 134** includes the front panel **114**. The front panel **114** is configured to remain in the first stable position and the second stable position in respect to the base body **110**. The front panel **114** is accessible during the operational position of the pump **150** from the side of its pump housing **105**. The base body **110** rests on the foot **106** in the first stable position and the second stable position. And, pushing and pulling (or actuation, or engagement) of the foot **106** keeps it between the first stable position and the second stable

position.

**[0051]** In the drawings and specification, there have been disclosed preferred 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

##### [0052]

<b>100</b>	Pump Base	
<b>102</b>	Water Inlet	
<b>103</b>	Handle	
<b>104</b>	Outlet	5
<b>105</b>	Pump Housing	
<b>106</b>	Foot/ One or more feet	
<b>110</b>	Base Body	
<b>112</b>	Coupling Structure	10
<b>114</b>	Front Panel	
<b>116</b>	First end	
<b>118</b>	Second end	
<b>120</b>	Tab	
<b>122</b>	First Arm	15
<b>124</b>	Second Arm	
<b>126</b>	Third Arm	
<b>128</b>	One or more flexible hinges	
<b>130</b>	Snap Connection	
<b>132</b>	Pump Base Connectors	20
<b>133</b>	Top Portion	
<b>134</b>	Coupling structure	
<b>136</b>	First End	
<b>138</b>	Second End	
<b>140</b>	First Portion	25
<b>142</b>	Second Portion	
<b>144</b>	First structural feature	
<b>146</b>	Second structural feature	
<b>148</b>	Slanting Portion	
<b>150</b>	Pump	30
		35
		40

#### Claims

1. A pump **(150)** having a pump housing **(105)**, a water inlet **(102)** and an outlet **(104)**,

with the water inlet **(102)** being at the bottom of the pump housing **(105)**, that is the bottom of its pump base **(100)**, and allowing a liquid to be sucked by the pump **(150)**, and the pump **(150)** further having feet **(106)** comprising:

a base body **(110)**;  
a coupling structure **(112, 134)** coupled to the base body **(110)**,  
the coupling structure **(112, 134)** comprises

a front panel **(114)**, wherein the front panel **(114)** is configured to remain in a first stable position and a second stable position in respect to the base body **(110)**; the pump base **(100)** including the feet **(106)**, the front panel **(114)** of each of the feet **(106)** is accessible during the operational position of the pump **(150)** from a side of the pump housing **(105)**; for each foot, the base body **(110)** rests on the front panels **(114)** in the first stable position and the second stable position, wherein the first stable position corresponds to a first height of the pump base **(100)** and the second stable position corresponds to a second height of the pump base **(100)**, wherein the second height is greater than the first height;

#### characterized in that:

for each foot, the front panel **(114)** is configured to be pushed towards and pulled away from the base body to move the feet **(106)** in the first stable position and the second stable position.

2. The pump **(150)** of claim 1, each foot comprising:

a first arm **(122)** coupled to the base body **(110)** at a first end **(116)**;  
a second arm **(124)** coupled to the base body **(110)** at a second end **(118)**; and  
a third arm **(126)** to actuate both the first arm **(122)** and the second arm **(124)**;  
wherein one or more flexible hinges **(128)** couple the first arm **(122)** and the base body **(110)**, the second arm **(124)** and the base body **(110)**, and the first and second arms **(122, 124)**, wherein the first arm, the second arm and the third arm are cooperatively movable relative to each other between the first stable position and the second stable position, such that the front panel is adapted to actuate the third arm to move against the first arm and the second arm, and wherein a snap connection **(130)** couples the first arm **(122)** and the third arm **(126)**.

3. The pump **(150)** of claim 1, wherein for each foot, the coupling structure **(134)** includes:

a first end **(136)** of the coupling structure **(134)** adapted to be pivotally coupled to the base body **(110)**;  
the coupling structure **(134)** adapted to engage at least one of a first structural feature **(144)** and a second structural feature **(146)** defined on the base body **(110)**;  
wherein the coupling structure **(134)** engages

with the first structural feature (144) in the first stable position and the coupling structure (134) engages with the second structural feature (146) in the second stable position.

4. The pump (150) of claim 3, wherein for each foot, the front panel (114) is coupled to a second end (138) of the coupling structure (134). 5
5. The pump (150) of any of preceding claims, wherein for each foot the coupling structure (112, 134) is operatively coupled to the base body (110). 10
6. The pump (150) of any of preceding claims, wherein for each foot, the front panel (114) include at least one tab (120). 15
7. The pump (150) of any of preceding claims, wherein for each foot, the base body (110) is structurally integrated with the pump (150). 20
8. The pump (150) of any of preceding claims, wherein each foot (106) is removably coupled with the pump (150). 25
9. The pump (150) of any of preceding claims, wherein for each foot, the base body (110) is engaged to the remainder part of the pump housing (105) through a one or more recesses/grooves (132). 30

#### Patentansprüche

1. Pumpe (150), die ein Pumpengehäuse (105), einen Wassereinlass (102) und einen Auslass (104) aufweist, wobei sich der Wassereinlass (102) an der Unterseite des Pumpengehäuses (105), das heißt an der Unterseite seiner Pumpenbasis (100), befindet und ermöglicht, dass eine Flüssigkeit durch die Pumpe (150) gesaugt wird, und die Pumpe (150) ferner Füße (106) aufweist, umfassend: 35

einen Basiskörper (110);  
 eine Kopplungsstruktur (112, 134), die mit dem Basiskörper (110) gekoppelt ist, die Kopplungsstruktur (112, 134) eine Frontplatte (114) umfasst, wobei die Frontplatte (114) konfiguriert ist, um in Bezug auf den Basiskörper (110) in einer ersten stabilen Position und einer zweiten stabilen Position zu verbleiben; die Pumpenbasis (100), die Füße (106) einschließt, die Frontplatte (114) jedes der Füße (106) während der Betriebsposition der Pumpe (150) von einer Seite des Pumpengehäuses (105) aus zugänglich ist; für jeden Fuß der Basiskörper (110) in der ersten 45

stabilen Position und der zweiten stabilen Position auf den Frontplatten (114) ruht, wobei die erste stabile Position einer ersten Höhe der Pumpenbasis (100) entspricht und die zweite stabile Position einer zweiten Höhe der Pumpenbasis (100) entspricht, wobei die zweite Höhe größer als die erste Höhe ist;

**dadurch gekennzeichnet, dass:**

für jeden Fuß die Frontplatte (114) konfiguriert ist, um zu dem Basiskörper hin gedrückt und von diesem weggezogen zu werden, um die Füße (106) in die erste stabile Position und die zweite stabile Position zu bewegen.

2. Pumpe (150) nach Anspruch 1, jeder Fuß umfassend: 15

einen ersten Arm (122), der an einem ersten Ende (116) mit dem Basiskörper (110) gekoppelt ist;

einen zweiten Arm (124), der an einem zweiten Ende (118) mit dem Basiskörper (110) gekoppelt ist; und

einen dritten Arm (126), um sowohl den ersten Arm (122) als auch den zweiten Arm (124) zu betätigen;

wobei ein oder mehrere flexible Scharniere (128) den ersten Arm (122) und den Basiskörper (110), den zweiten Arm (124) und den Basiskörper (110) und den ersten und den zweiten Arm (122, 124) koppeln, 25

wobei der erste Arm, der zweite Arm und der dritte Arm relativ zueinander zwischen der ersten stabilen Position und der zweiten stabilen Position zusammenwirkend beweglich sind, derart, dass die Frontplatte angepasst ist, um den dritten Arm zu betätigen, um sich gegen den ersten Arm und den zweiten Arm zu bewegen, und 30

wobei eine Schnappverbindung (130) den ersten Arm (122) und den dritten Arm (126) koppelt.

3. Pumpe (150) nach Anspruch 1, wobei die Kopplungsstruktur (134) für jeden Fuß einschließt: 35

ein erstes Ende (136) der Kopplungsstruktur (134), das angepasst ist, um mit dem Basiskörper (110) schwenkbar gekoppelt zu werden;

wobei die Kopplungsstruktur (134) angepasst ist, um mit mindestens einem ersten Strukturmerkmals (144) und eines zweiten Strukturmerkmals (146), die auf dem Basiskörper (110) definiert sind, in Eingriff zu stehen; 40

wobei die Kopplungsstruktur (134) in der ersten stabilen Position mit dem ersten Strukturmerkmal (144) in Eingriff steht und die Kopplungsstruktur (134) in der zweiten stabilen Position mit dem zweiten Strukturmerkmal (146) in Ein- 55



griff steht.

4. Pompe (150) nach Anspruch 3, wobei für jeden Fuß die Frontplatte (114) mit einem zweiten Ende (138) der Kopplungsstruktur (134) gekoppelt ist. 5
5. Pompe (150) nach einem der vorstehenden Ansprüche, wobei für jeden Fuß die Kopplungsstruktur (112, 134) mit dem Basiskörper (110) wirkgeköpelt ist. 10
6. Pompe (150) nach einem der vorstehenden Ansprüche, wobei für jeden Fuß die Frontplatte (114) mindestens eine Lasche (120) einschließt. 15
7. Pompe (150) nach einem der vorstehenden Ansprüche, wobei für jeden Fuß der Basiskörper (110) in die Pumpe (150) strukturell integriert ist. 20
8. Pompe (150) nach einem der vorstehenden Ansprüche, wobei jeder Fuß (106) mit der Pumpe (150) abnehmbar gekoppelt ist. 25
9. Pompe (150) nach einem der vorstehenden Ansprüche, wobei für jeden Fuß der Basiskörper (110) durch eine oder mehrere Aussparungen/Rillen (132) mit dem übrigen Teil des Pumpengehäuses (105) in Eingriff steht. 30

## Revendications

1. Pompe (150) présentant un carter de pompe (105), une entrée d'eau (102) et une sortie (104),  
  
l'entrée d'eau (102) se trouvant au fond du carter de pompe (105), c'est-à-dire au fond de sa base de pompe (100), et permettant à un liquide d'être aspiré par la pompe (150),  
et la pompe (150) présentant en outre des pieds (106) comprenant : 35  
  
un corps de base (110) ;  
une structure d'accouplement (112, 134) accouplée au corps de base (110),  
la structure d'accouplement (112, 134) comprend un panneau avant (114), dans lequel le panneau avant (114) est conçu pour rester dans une première position stable et une seconde position stable par rapport au corps de base (110) ; 45  
la base de pompe (100) comportant les pieds (106),  
le panneau avant (114) de chacun des pieds (106) est accessible en position fonctionnelle de la pompe (150) depuis un côté du carter de pompe (105) ; 50  
pour chaque pied, le corps de base (110) repose sur les panneaux avant (114) dans 55

la première position stable et la seconde position stable,  
dans laquelle la première position stable correspond à une première hauteur de la base de pompe (100) et la seconde position stable correspond à une seconde hauteur de la base de pompe (100), dans laquelle la seconde hauteur est supérieure à la première hauteur ;  
**caractérisée en ce que :**  
pour chaque pied, le panneau avant (114) est conçu pour être poussé vers le corps de base et éloigné de celui-ci afin de déplacer les pieds (106) dans la première position stable et la seconde position stable.

2. Pompe (150) selon la revendication 1, chaque pied comprenant :

un premier bras (122) accouplé au corps de base (110) à une première extrémité (116) ;  
un deuxième bras (124) accouplé au corps de base (110) à une seconde extrémité (118) ; et  
un troisième bras (126) pour actionner à la fois le premier bras (122) et le deuxième bras (124) ;  
dans laquelle une ou plusieurs charnières flexibles (128) accouplent le premier bras (122) et le corps de base (110), le deuxième bras (124) et le corps de base (110), et le premier et le deuxième bras (122, 124),  
dans lequel le premier bras, le deuxième bras et le troisième bras sont conjointement mobiles l'un par rapport à l'autre entre la première position stable et la seconde position stable, de telle sorte que le panneau avant est adapté pour actionner le troisième bras afin qu'il se déplace contre le premier bras et le deuxième bras, et  
dans lequel un raccord à encliquetage (130) accouple le premier bras (122) et le troisième bras (126).

3. Pompe (150) selon la revendication 1, dans laquelle pour chaque pied, la structure d'accouplement (134) comporte :

une première extrémité (136) de la structure d'accouplement (134) adaptée pour être accouplée de manière pivotante au corps de base (110) ;  
la structure d'accouplement (134) adaptée pour venir en prise avec au moins une parmi une première caractéristique structurelle (144) et une seconde caractéristique structurelle (146) définies sur le corps de base (110) ;  
dans laquelle la structure d'accouplement (134) vient en prise avec la première caractéristique structurelle (144) dans la première position stable et la structure d'accouplement (134) vient en

prise avec la seconde caractéristique structurelle (146) dans la seconde position stable.

4. Pompe (150) selon la revendication 3, dans laquelle pour chaque pied, le panneau avant (114) est accouplé à une seconde extrémité (138) de la structure d'accouplement (134). 5
5. Pompe (150) selon l'une quelconque des revendications précédentes, dans laquelle pour chaque pied la structure d'accouplement (112, 134) est accouplée de manière fonctionnelle au corps de base (110). 10
6. Pompe (150) selon l'une quelconque des revendications précédentes, dans laquelle pour chaque pied, le panneau avant (114) comporte au moins une languette (120). 15
7. Pompe (150) selon l'une quelconque des revendications précédentes, dans laquelle pour chaque pied, le corps de base (110) est structurellement intégré à la pompe (150). 20
8. Pompe (150) selon l'une quelconque des revendications précédentes, dans laquelle chaque pied (106) est accouplé de manière amovible à la pompe (150). 25
9. Pompe (150) selon l'une quelconque des revendications précédentes, dans laquelle pour chaque pied, le corps de base (110) est en prise avec la partie restante du carter de pompe (105) par un ou plusieurs évidements/rainures (132). 30

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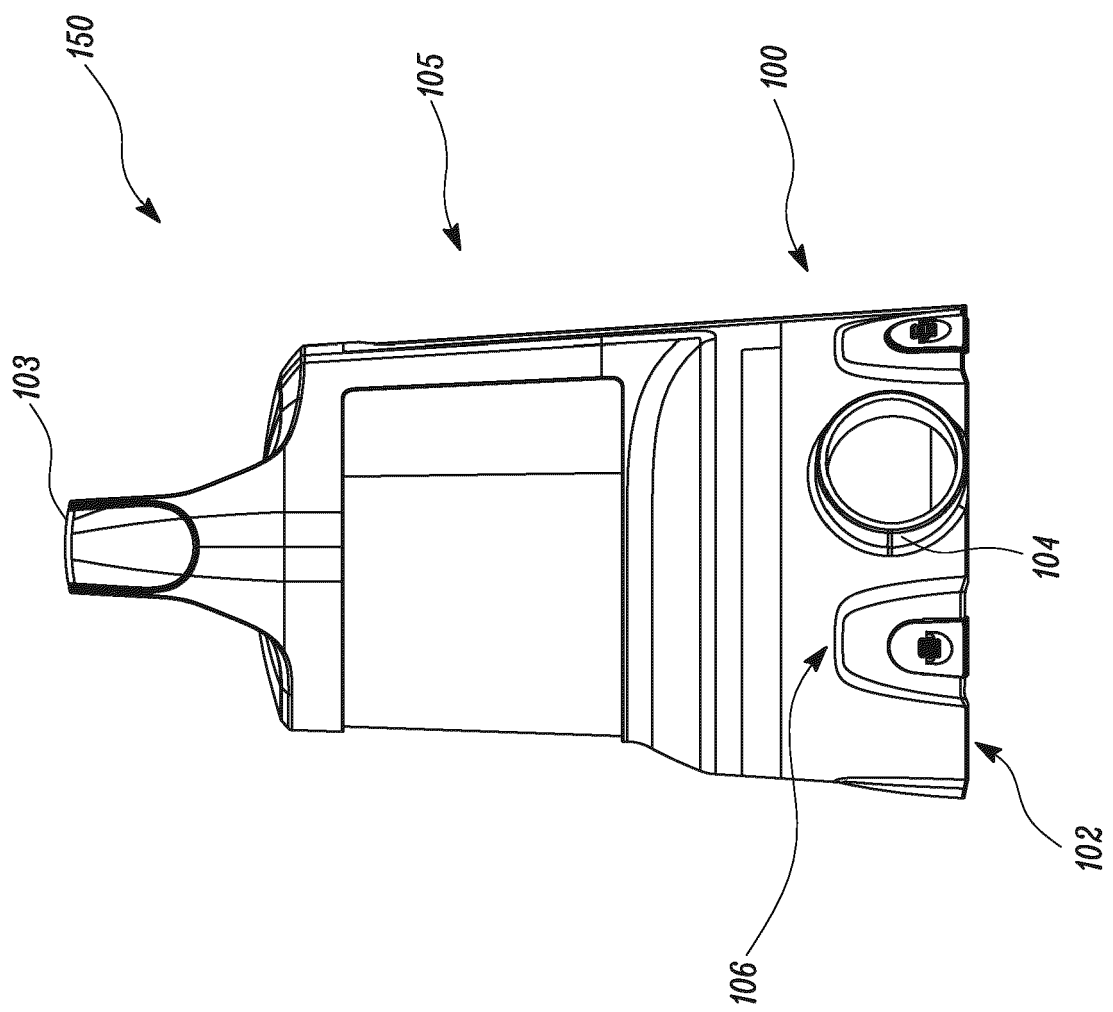
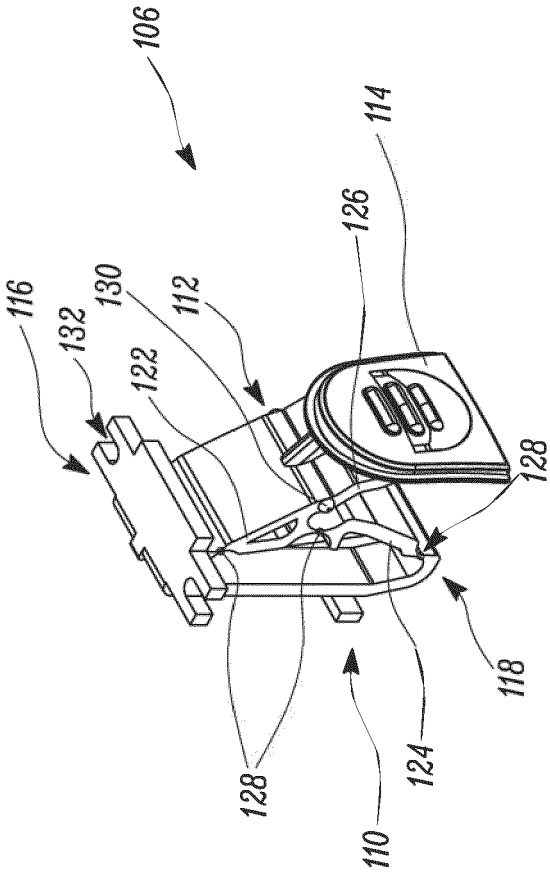
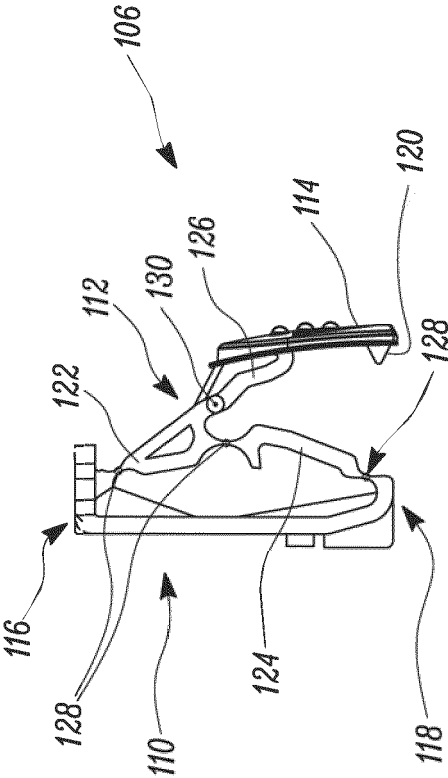
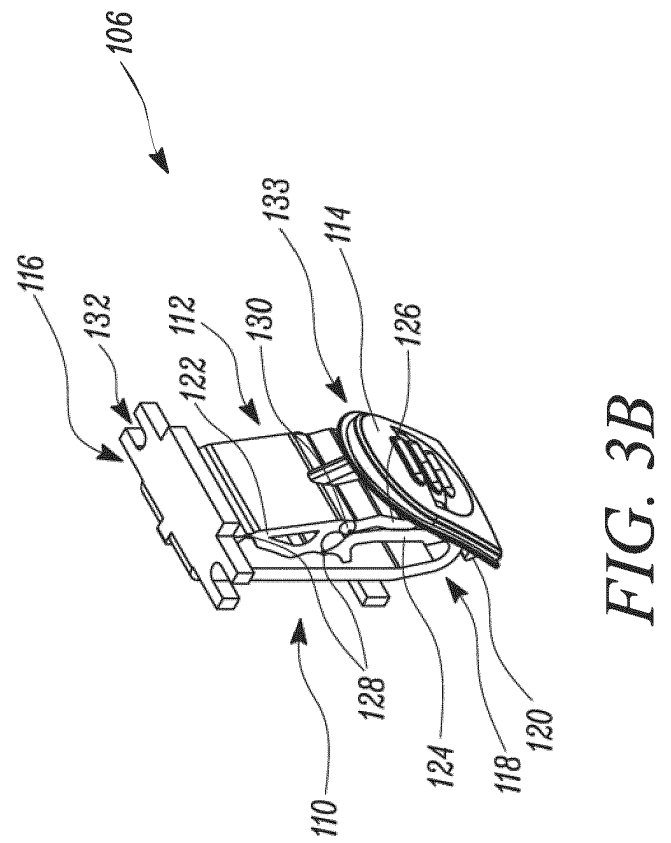
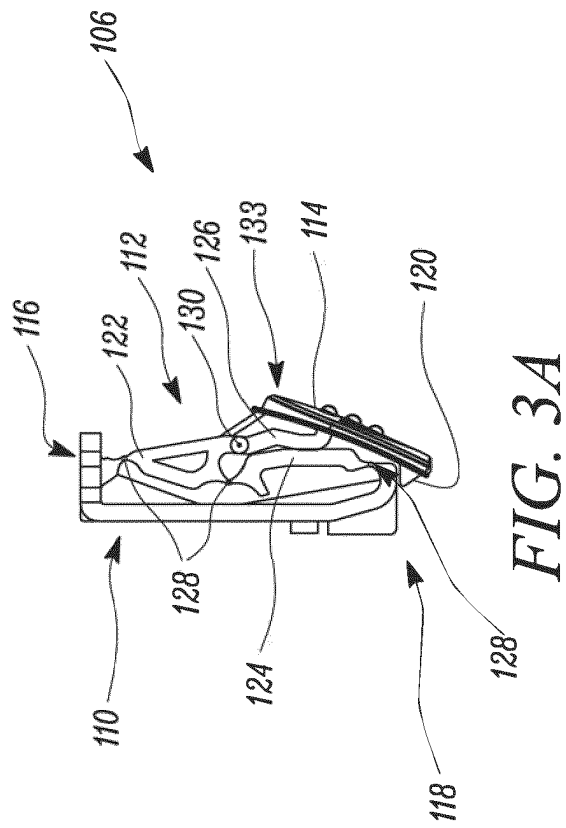


FIG. 1





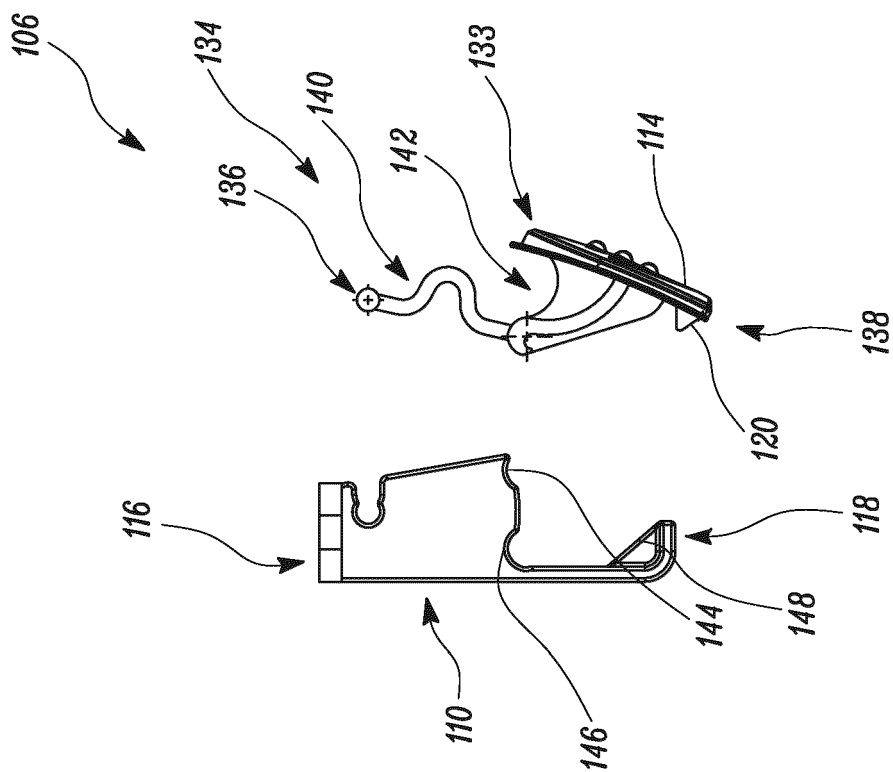


FIG. 4B

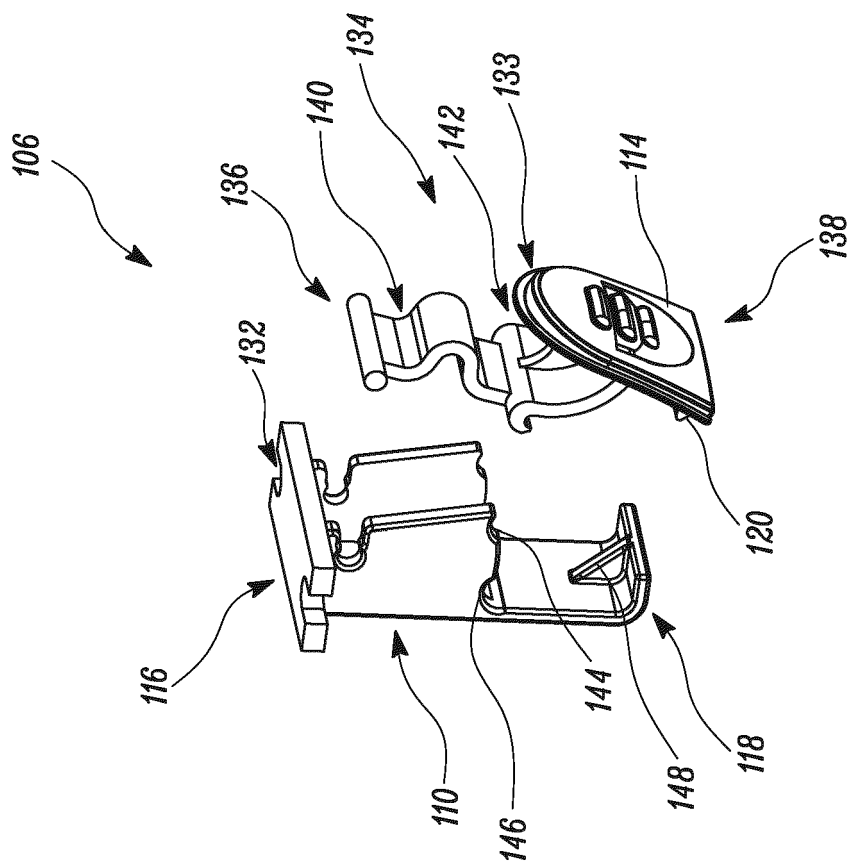


FIG. 4A

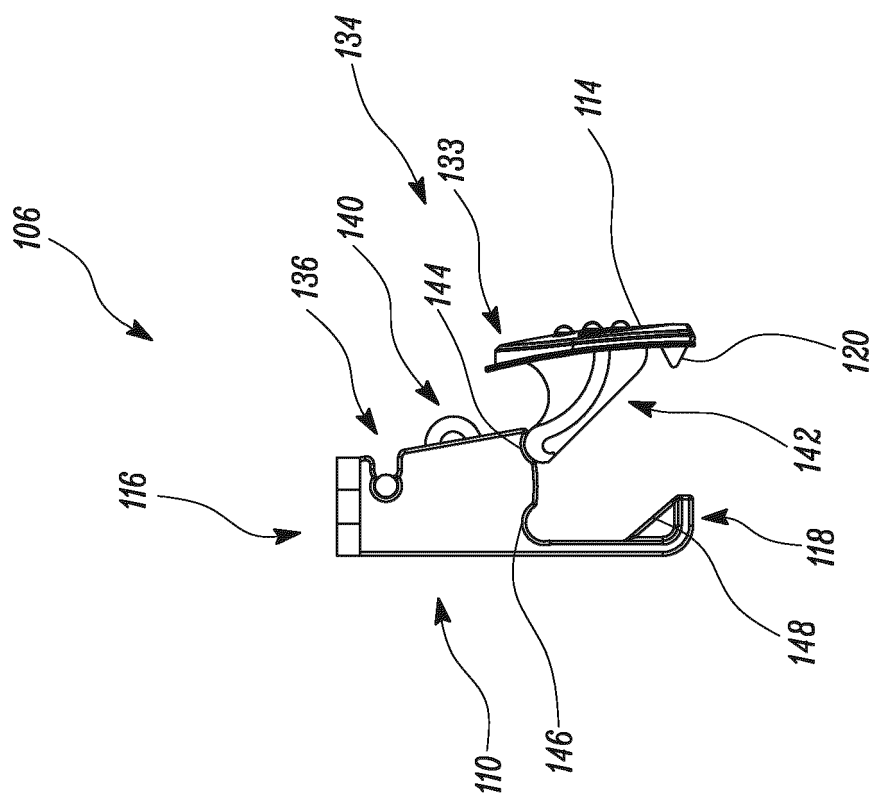


FIG. 5B

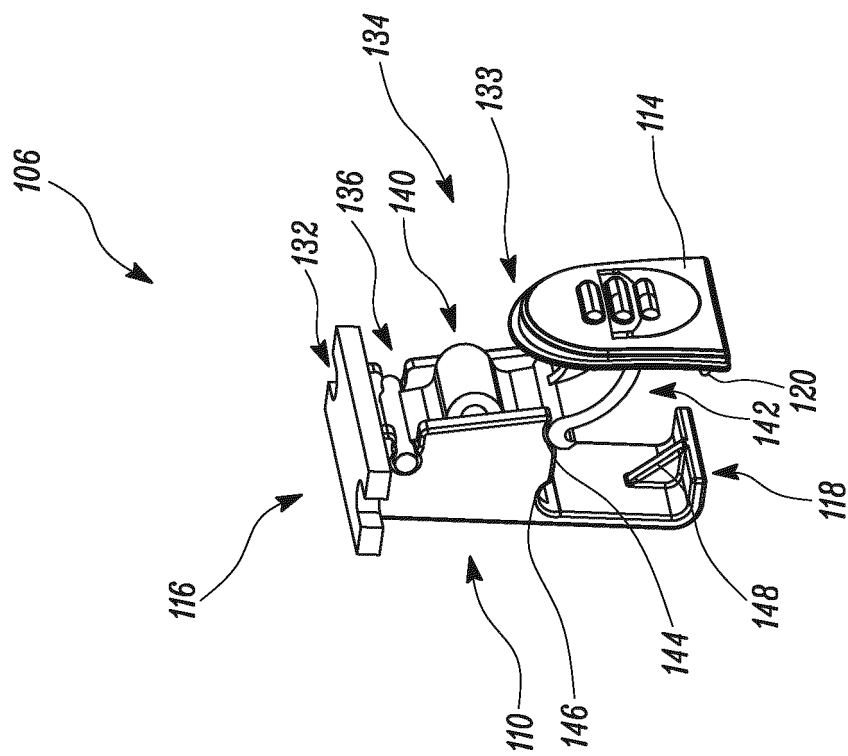


FIG. 5A

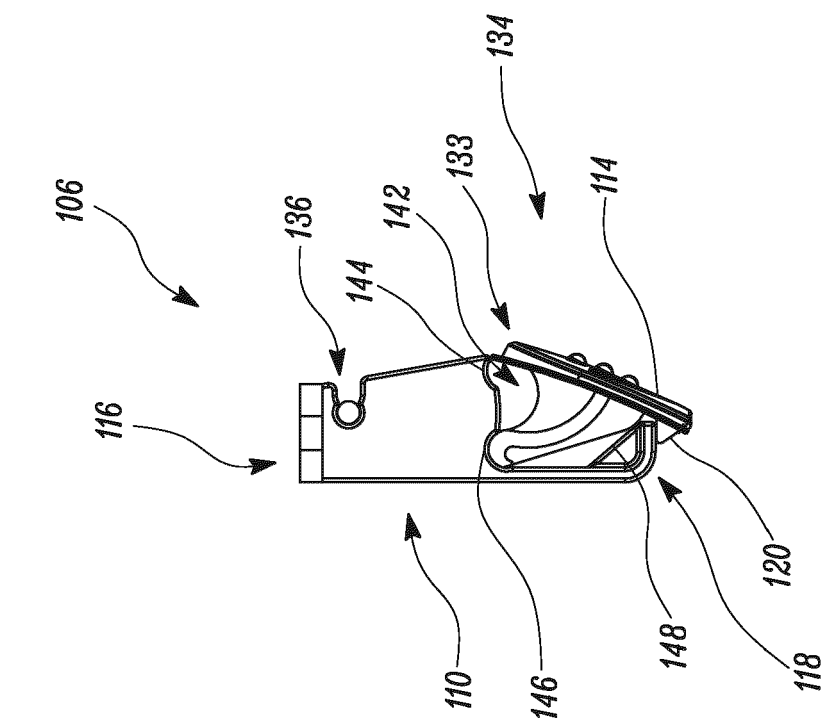


FIG. 6A

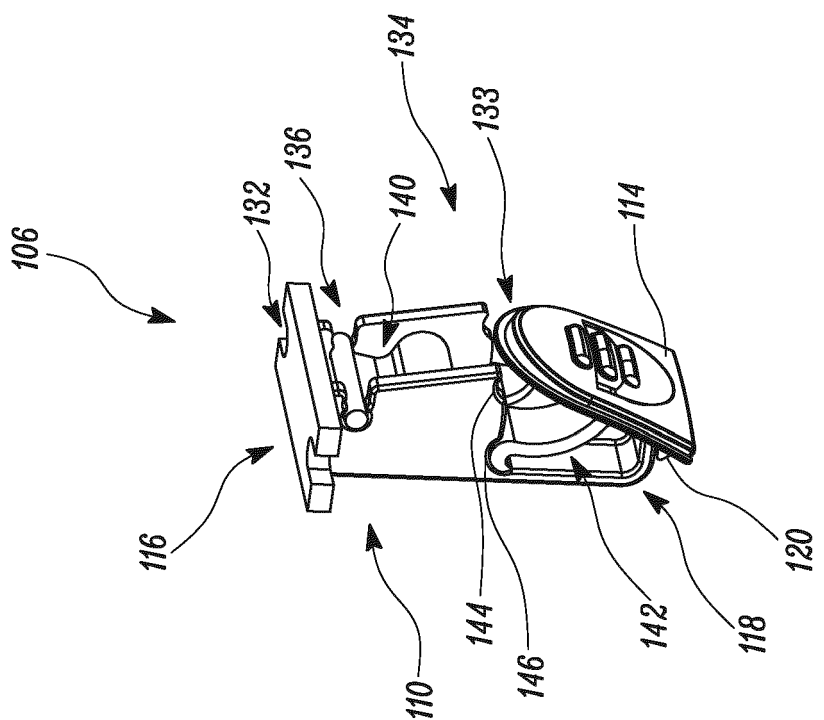


FIG. 6B



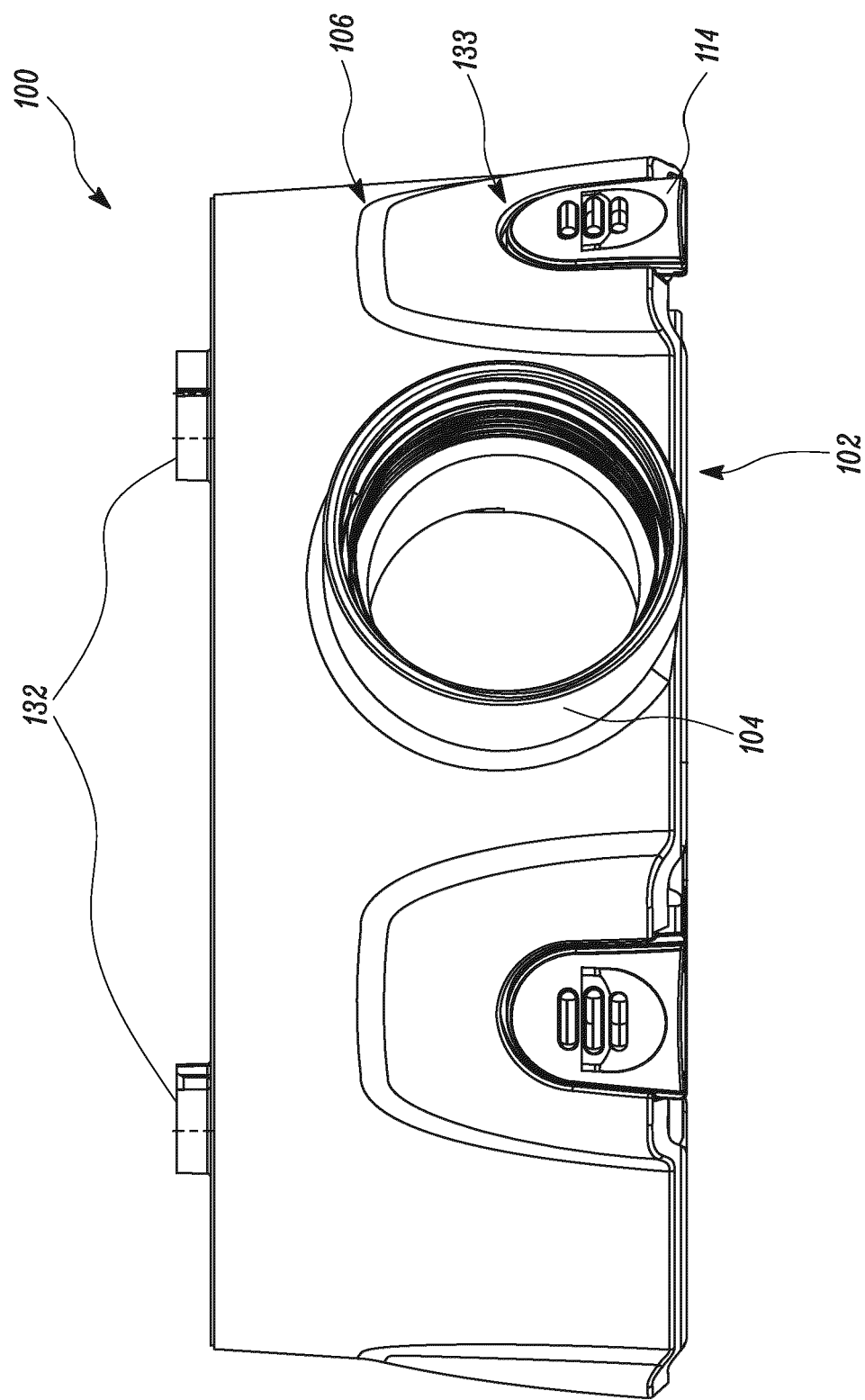


FIG. 7

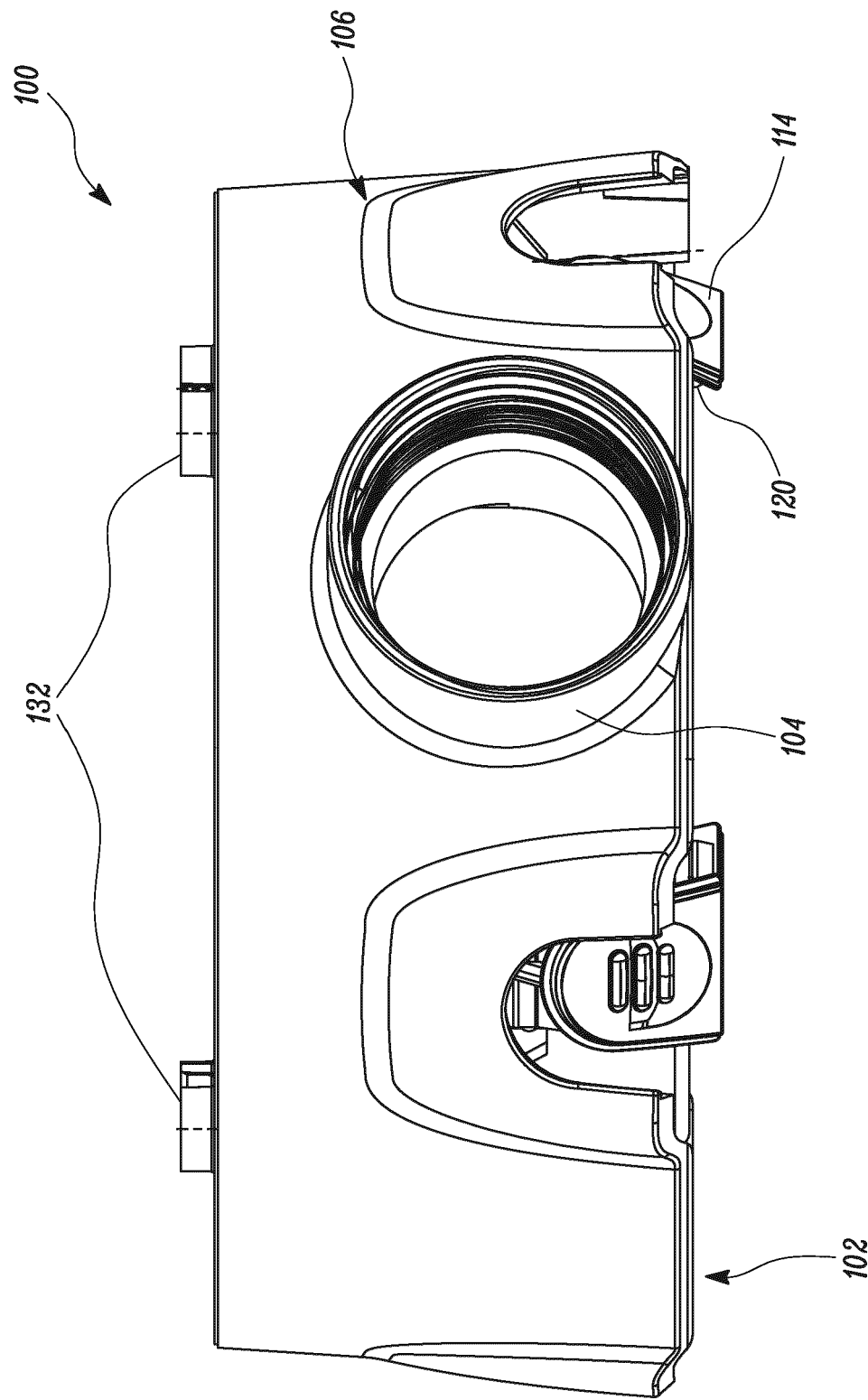


FIG. 8

**REFERENCES CITED IN THE DESCRIPTION**

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