US Patent & Trademark Office
Patent Public Search | Text View

United States Patent	12392359
Kind Code	B2
Date of Patent	August 19, 2025
Inventor(s)	Arango; Jonathan et al.

Marine pump with nozzle interface and detachable strainer base

Abstract

A marine pump may have a nozzle interface and a detachable strainer base. The nozzle interface may have an aperture for removably receiving a nozzle, and a detent channel defined therein. The detent channel may be configured to receive portion of a detent, which may be configured to contact the nozzle and hold the nozzle in place when inserted into the nozzle interface. The detachable strainer base may have a plurality of slots and a plurality of holes configured to interact with and stop particulates in a fluid passing through the strainer base.

Inventors: **Arango; Jonathan (Ft. Myers, FL), Spetich; Scott David (Ft. Meyers, FL), Nelson; John Logan (Ft. Myers, FL)**

Applicant: **T-H Marine Supplies, LLC** (Huntsville, AL)

Family ID: **1000008765530**

Assignee: **T-H Marine Supplies, LLC (Huntsville, AL)**

Appl. No.: **18/628121**

Filed: **April 05, 2024**

Prior Publication Data

Document Identifier	Publication Date
US 20240263648 A1	Aug. 08, 2024

Related U.S. Application Data

continuation parent-doc US 18130681 20230404 US 11953025 child-doc US 18628121
us-provisional-application US 63327202 20220404

Publication Classification

Int. Cl.: **F04D29/70** (20060101); **F04D13/08** (20060101); **F04D29/60** (20060101); **F04D29/66** (20060101)

U.S. Cl.:

CPC **F04D29/708** (20130101); **F04D13/08** (20130101); **F04D29/605** (20130101); **F04D29/669** (20130101); F05D2260/02 (20130101)

Field of Classification Search

CPC: F04D (29/708); F04D (13/08)

References Cited

U.S. PATENT DOCUMENTS

Patent No.	Issued Date	Patentee Name	U.S. Cl.	CPC
6715994	12/2003	Patel et al.	N/A	N/A
7625187	12/2008	Collins et al.	N/A	N/A
9121399	12/2014	Bovill	N/A	N/A
11953025	12/2023	Arango	N/A	F04D 29/708
2012/0024767	12/2011	Bovill	N/A	N/A
2014/0210203	12/2013	Lorkowsi	N/A	N/A
2021/0299685	12/2020	Pelletier et al.	N/A	N/A
2023/0313816	12/2022	Arango et al.	N/A	N/A

OTHER PUBLICATIONS

International Search Report and written Opinion for International Application No. PCT/US23/17478, dated Jun. 21, 2023. cited by applicant

---

Primary Examiner: Peters; Brian O

Attorney, Agent or Firm: Bradley Arant Boult Cummings, LLP

Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS

(2) This application claims priority to U.S. Nonprovisional application Ser. No. 18/130,681, filed Apr. 4, 2023 and entitled “Marine Pump with Nozzle Interface and Detachable Strainer Base,” and U.S. Provisional Patent Application Ser. No. 63/327,202, filed Apr. 4, 2022 and entitled “Marine Pump with Nozzle Interface and Detachable Strainer Base,” which is incorporated herein by reference in its entirety.

BACKGROUND

(3) Marine pumps are frequently installed in locations where a user may experience difficulty accessing the pump and its parts. It may be difficult to remove or install lines or other connections

to the pump. In addition, it may be difficult to clean or maintain the pump. Improved techniques for providing a serviceable marine pump are generally desirable.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) The disclosure can be better understood with reference to the following drawings. The elements of the drawings are not necessarily to scale relative to each other, emphasis instead being placed upon clearly illustrating the principles of the disclosure. Furthermore, like reference numerals designate corresponding parts throughout the several views.

(2) FIG. **1** is a three-dimensional view of a marine pump with nozzle interface and strainer base.

(3) FIG. **2** is a three-dimensional view of nozzle interface of a marine pump, with nozzle inserted.

(4) FIG. **3** is a side view of a nozzle interface of a marine pump, with nozzle inserted.

(5) FIG. **4** is a cross-sectional side view of a nozzle interface of a marine pump taken along and in the direction of line **1-1** of FIG. **1**, with nozzle inserted.

(6) FIG. **5**A is a cross-sectional side view of a nozzle interface of a marine pump taken along and in the direction of line **1-1** of FIG. **1**, with nozzle inserted and an interior volume of the pump.

(7) FIG. **5**B is a cross-sectional side view of a nozzle interface of a marine pump.

(8) FIG. **5**C is a cross-sectional perspective view of a nozzle interface of a marine pump.

(9) FIG. **6** is a cross-sectional side view of a nozzle interface of a marine pump with a detent locking arm in an unlocked position, a detent in an engaged position, and nozzle removed.

(10) FIG. **7** is a cross-sectional side view of a nozzle interface of a marine pump with a detent locking arm in an unlocked position, a detent in a release position, and nozzle removed.

(11) FIG. **8** is a cross-sectional side view of a nozzle interface of a marine pump with a detent locking arm in an unlocked position, a detent in a release position, and nozzle inserted.

(12) FIG. **9** is a cross-sectional side view of a nozzle interface of a marine pump with a detent locking arm in a locked position, a detent in a engaged position, and nozzle inserted.

(13) FIG. **10** is a side view of a strainer base of a marine pump.

(14) FIG. **11** is a three-dimensional interior view of a flow deflection plate of a marine pump.

(15) FIG. **12** is a view of turbulence reducing vanes of a pump housing of a marine pump.

(16) FIG. **13** is a three-dimensional perspective view of a pump cartridge of a marine pump.

(17) FIG. **14** is a three-dimensional perspective view of a surface of a pump cartridge of a marine pump having alignment arrows.

(18) FIG. **15** is a three-dimensional perspective view of a locking button surface of a pump cartridge of a marine pump.

(19) FIGS. **16**A-D depict respective side, back, front, top and bottom views of a strainer base of a marine pump.

(20) FIGS. **17**A-E depict respective side, back, front, top and bottom views of an alternative embodiment of a strainer base of a marine pump.

DETAILED DESCRIPTION

(21) Reference will now be made in detail to embodiments of the present disclosure, one or more drawings of which are set forth herein. Each drawing is provided by way of explanation of the present disclosure and is not a limitation. In fact, it will be apparent to those skilled in the art that various modifications and variations can be made to the teachings of the present disclosure without departing from the scope of the disclosure. For instance, features illustrated or described as part of one embodiment can be used with another embodiment to yield a still further embodiment.

(22) Thus, it is intended that the present disclosure covers such modifications and variations as come within the scope of the appended claims and their equivalents. Other objects, features, and aspects of the present disclosure are disclosed in, or are obvious from, the following detailed

description. It is to be understood by one of ordinary skill in the art that the present discussion is a description of exemplary embodiments only and is not intended as limiting the broader aspects of the present disclosure.

(23) The words “connected”, “attached”, “joined”, “mounted”, “fastened”, and the like should be interpreted to mean any manner of joining two objects including, but not limited to, the use of any fasteners such as screws, nuts and bolts, bolts, pin and clevis, and the like allowing for a stationary, translatable, or pivotable relationship; welding of any kind such as traditional MIG welding, TIG welding, friction welding, brazing, soldering, ultrasonic welding, torch welding, inductive welding, and the like; using any resin, glue, epoxy, and the like; being integrally formed as a single part together; any mechanical fit such as a friction fit, interference fit, slidable fit, rotatable fit, pivotable fit, and the like; any combination thereof; and the like.

(24) Unless specifically stated otherwise, any part of the apparatus of the present disclosure may be made of any appropriate or suitable material including, but not limited to, metal, alloy, polymer, polymer mixture, wood, composite, or any combination thereof.

(25) Referring to FIG. **1**, an improved marine pump **2** is shown. The improved marine pump **2** may also be referred to herein as a marine pump **2**. The marine pump **2** may include a nozzle interface **4** and a detachable strainer base **6**. The detachable strainer base **6** may also be referred to herein as a strainer base **6**. As shown in additional detail in FIGS. **4-7**, the nozzle interface **4** may have a nozzle aperture **30** configured to receive a nozzle **8**. The nozzle aperture **30** may also be referred to herein as a nozzle interface aperture **30** or an aperture **30**. The nozzle interface **4** may further include a detent channel **32**. The detent channel **32** may be positioned within a portion of the nozzle interface **4** and configured to selectively receive a portion of a detent **26**. As shown and described further below, the detent **26** may be configured to contact and engage the nozzle **8** and hold the nozzle **8** in place when inserted into the nozzle aperture **30** of the nozzle interface **4**. The detent **26** may move within the channel **32**; when pressure in the negative Y-axis direction is applied to the actuation surface **14**, the detent **26** may move within the channel in the negative Y-axis direction from a first position (e.g., engaged position **70**) to a second position (e.g., release position **72**) to permit insertion or removal of a nozzle **8** from the interface **4**. When pressure is released, a spring tab **28** may return the detent **26** to its first position, to cause the detent **26** to engage the nozzle **8** and lock it into place within the nozzle aperture **30** of the nozzle interface **4**.

(26) The detachable strainer base **6** may include a plurality of slots **38** and a plurality of holes **40** configured to interact with and stop particulates in a fluid passing through the strainer base **6**. The improved marine pump **2** may easily be serviced, repaired, and/or replaced by detaching a pump housing **10** of the improved marine pump **2** from the detachable strainer base **6** and from the nozzle **8**, as will be described in further detail below.

(27) Referring to FIGS. **2-5**, an embodiment of the nozzle interface **4** is shown in greater detail. The nozzle aperture **30** may be cylindrical, or more specifically define an essentially cylindrical volume along at least a first portion of a length in the positive x-axis direction of the nozzle interface **4**. In certain optional embodiments, the detent channel **32** may be open to a portion of an interior surface area of the nozzle aperture **30**. In other optional embodiments, the detent channel **32** may be open between a portion of the outer surface **5** of the nozzle interface **4** and the nozzle aperture **30**. In further optional embodiments, a portion of the detent **26** may extend from the outer surface **5**, for example, above and/or below an underside of the nozzle interface **4**.

(28) The detent **26** may include an essentially circular aperture **27**. A circumference of the circular aperture **27** may be at least as great as a circumference of the nozzle aperture **30**, for example, such that the circular aperture **27** of the detent **26** does not interfere with the nozzle **8** as it is inserted into the nozzle aperture **30**. As illustrated in at least FIGS. **4-5**, the detent **26** may include a catch **34** configured to contact the outer surface **5** of the nozzle interface **4** when the detent **26** is in an engaged position **70**.

(29) The detent **26** may include an actuation surface **14** configured to be engaged from an exterior

of the nozzle interface **4**. For example, the actuation surface **14** may be positioned above the outer surface **5** of the nozzle interface **4**. In certain optional embodiments, the detent channel **32** may be configured to allow the circular aperture **27** of the detent **26** to move out of a surface area (e.g., a cross-sectional area) of the nozzle aperture **30** when a release pressure is applied to the actuation surface **14**, defining a release position **72** (as illustrated in FIG. **7** and further discussed below). For example, a user may apply pressure in essentially apply pressure in the negative Y-axis direction to depress the detent **26** downward into the detent channel **32**, thus allowing clearance for insertion or removal of the nozzle **8** from the nozzle aperture **30** of the nozzle interface **4**. In other optional embodiments, the detent channel **32** may be configured to allow a portion of the detent **26** to move into the surface area of the nozzle aperture **30** when the release pressure is removed from the actuation surface **14**. In further optional embodiments, the detent **26** may include a spring tab **28** positioned below the actuation surface **14**. The spring tab **28** may be configured to engage a protrusion **29** extending from the outer surface **5** of the nozzle interface **4** for biasing the detent **26** towards the engaged position **70** (e.g., for biasing the detent **26** in the positive Y-axis direction). In certain optional embodiments, the protrusion **29** may be integrally formed with the nozzle interface **4**. The detent **26** advantageously provides the nozzle interface **4** with an efficient and user-friendly way to quickly release the nozzle **8**, while also securely locking the nozzle **8** in place when disengaged, via the spring tab **28**.

(30) As illustrated in FIGS. **4-5**, an embodiment of the nozzle **8** may include an interface portion **35** configured to be received by the nozzle aperture **30** and a barbed portion **37** opposite the interface portion **35**. The barbed portion **37** may be configured to receive a hose for transferring water from the marine pump **2** to its destination. The interface portion **35** may include gasket **36** configured to create a seal between the nozzle **8** and the nozzle aperture **30**. The interface portion **35** of the nozzle **8** may further include an indentation configured to receive a portion of the detent **26** when in the engaged position **70**. The indentation may be circumferential so as to be easily accessible by the detent **26** regardless of a rotational orientation of the nozzle **8**.

(31) Referring to FIGS. **6-9**, another embodiment of the nozzle interface **4** is shown, details and/or differences being described below. In certain optional embodiments, the actuation surface **14** of the detent **26** may include an opening **15** configured to receive a detent locking arm **31** of the nozzle interface **4**. The detent locking arm **31** may extend from the outer surface **5** of the nozzle interface **4**. In certain optional embodiments, the detent locking arm **31** may include the protrusion **29**, described above, or alternatively, may extend from said protrusion **29**. In other optional embodiments, the detent locking arm **31** may be integrally formed with the nozzle interface **4**. In further optional embodiments, the detent locking arm **31** may be configured to engage one or more of an upper surface **14**_U or a lower surface **14**_L of the actuation surface **14** when the detent locking arm **31** is in a locked position **80**, as illustrated in FIG. **9**. Neither the upper surface **14**_U nor the lower surface **14**_L are engaged by the detent locking arm **31** when in an unlocked position **82**, as illustrated in FIGS. **6-8**. The detent locking arm **31** may be biased towards the locked position **80**.

(32) As illustrated in FIGS. **6-9**, the nozzle aperture **30** may include a first cylindrical portion **60** and a second cylindrical portion **62**. The first cylindrical portion **60** may be closer to an outer opening **68** of the nozzle aperture **30** than the second cylindrical portion **62**. The detent channel **32** may be defined along the second cylindrical portion **62**. The first cylindrical portion **60** may have a circumference larger than that of the second cylindrical portion **62**. The nozzle **8**, or more specifically, the interface portion **35** of the nozzle **8** may include respective portions corresponding to the first and second cylindrical portions **60**, **62**. In certain optional embodiments, the nozzle aperture **30** may include a circumferential channel **64** configured to receive a gasket **66**. The gasket **66** may be configured to create an improved seal between the nozzle **8** and the nozzle aperture **30** such that fluid does not leak when transferring from the pump housing **10** through the nozzle **8**. In certain optional embodiments, the circumferential channel **64** and the gasket **66** may be positioned

between the outer opening **68** and the second cylindrical portion **62** of the nozzle aperture **30**. The gasket **36** of the nozzle **8** may be offset from the gasket **66** of the nozzle aperture **30**. The gasket **36** may, for example, be configured to engage the first cylindrical portion **60**.

(33) As illustrated in FIG. **6**, a user may apply pressure to the detent locking arm **31** in essentially the positive X-axis direction to move the detent locking arm **31** from a first position (e.g., the locked position **80**) to a second position (e.g., the unlocked position **82**). As illustrated in FIG. **7**, a user may then apply pressure to the actuation surface **14** of the detent **26** in the negative Y-axis direction to move the detent **26** from the engaged position **70** to the release position **72**. As illustrated in FIG. **8**, the nozzle **8** may be inserted into the nozzle aperture **30** may moving the nozzle **8** in the positive X-axis direction. As illustrated in FIG. **9**, the detent **26** may automatically return from the release position **72** to the engaged position **70** via the spring tab **28**. Similarly, the detent locking arm **31** may automatically return from the unlocked position **82** to the locked position **80**. Optionally, a positive Y-axis direction pressure may be applied to a lower portion of the detent **26** to aid in the movement from the release position **72** to the engaged position **70**.

(34) The strainer base **6** may be positioned on a bottom side of the marine pump **2** so that the marine pump **2** rests on the strainer base **6** and a bottom surface of the strainer base **6** is in contact with a surface on which the marine pump **2** is mounted. In certain optional embodiments, the strainer base **6** may include a surface profile shape configured to allow for mounting of the marine pump **2** on various surfaces, including uneven surfaces.

(35) Referring to FIGS. **1**, **10** and **16**A-**17**E, various embodiments of the strainer base **6** are illustrated. The various embodiments of the strainer base **6** differ only in shape (e.g., for receiving different pump housing **10** sizes), and as such the following description is equally applicable to all of the shown embodiments. In certain optional embodiments, the strainer base **6** may include a strainer base arm **16** having an arm release surface **18** configured to contact an interior portion of a release aperture **20** of the pump housing **10**, as illustrated in FIG. **1**. The arm **16** and arm release surface **18** may be configured to move with respect to the release aperture **20** of the pump housing **10** when a pressure is applied to the arm release surface **18**.

(36) As illustrated in FIGS. **16**A-**17**E, the strainer base **6** may further include a second strainer base arm **50** having a second arm release surface **52**. The second strainer base arm **52** may be offset from the strainer base arm **16**. For example, the second strainer base arm **52** may be positioned opposite from the strainer base arm **16**. When both arms are included, the arm release surface **18** and the second arm release surface **52** may necessarily be engaged (e.g., having pressure applied), simultaneously, to be released from the pump housing **10**.

(37) In certain optional embodiments, the strainer base **6** may include a bottom surface **54** and a side surface **55**. The plurality of holes **40** of the strainer base **6** may be positioned on, or define through, the bottom surface **54** of the strainer base **6**. The plurality of slots **38** may be positioned on, or defined through, the side surface **55** of the strainer base **6**. The bottom surface **54** of the strainer base **6** may be offset below a lower edge **57** of the side surface **55** of the strainer base **6**. Such a configuration may permit fluid drawn through the strainer base **6** during pump operation to more completely pass through one or more holes **38** positioned on a bottom surface of the strainer base **6**. In certain optional embodiments, the offset may be about 1 mm. In other optional embodiments, the offset may be between about 1 mm and 5 mm. In further optional embodiments, the offset may be less than or equal to about 10 mm. In certain optional embodiments, an interior surface **56** of the strainer base **6** may be offset above the lower edge **57** of the side surface **55** of the strainer base **6**. In other optional embodiments, the plurality of slots **38** may be open to the lower edge **57**. By varying dimensions of the bottom surface **54** and/or the offsets of the strainer base **6**, flow rate of a fluid passing through the strainer 6 base may be sustained or even improved.

(38) Referring to FIGS. **5**A-**5**C, the pump housing **10** may include an interior having a cylindrical interior upper portion **74** and a conical interior lower portion **75** with an intake opening **76** at its lowest point. The pump housing **10** may further include an output opening **77** defined in the

cylindrical interior upper portion **74** leading to the nozzle interface **4**.

(39) Referring to FIGS. **5**B-**5**C and **11**, the marine pump **2** may further include a flow deflection plate **42** positioned within the pump housing **10**. The flow deflection plate **42** may extend from an interior surface **78** of the pump housing **10** and be positioned, for example, within the cylindrical interior upper portion **74**. The flow deflection plate **42** may be configured to redirect a fluid (indicated by the flow direction arrow **90**) moving within the housing into the output opening **77** and out of the marine pump **2** via the nozzle interface **4**. In certain optional embodiments, the flow deflection plate **42** may include a height **43** generally greater than or equal to a height **79** (or inner diameter) of the output opening **77** of the pump housing **10**. In other optional embodiments, a midpoint of the height of the flow deflection plate **42** may be aligned with a midpoint of the height of the opening from the pump housing **10** to the nozzle interface **4**. In further optional embodiments, the height **43** of the flow deflection plate **42** may be one-point-five times (1.5×) the height **79** of the output opening **77**. In certain optional embodiments, the flow deflection plate **42** may be integrally formed with the pump body **10**. In other optional embodiments, the flow deflection plate **42** may be coupled within the pump body **10**. The flow deflection plate **42** may advantageously increase the efficiency of the marine pump **2** and reduce the outflow bypass.

(40) Referring to FIGS. **5**A-**5**C and **12**, the marine pump **2** may further include turbulence reducing vanes **44** positioned within the pump housing **10**. The turbulence reducing vanes **44** may extend from the interior surface **78** of the pump housing **10** and be positioned, for example, within one or more of the cylindrical interior upper portion **74** or the conical interior lower portion **75**. The turbulence reducing vanes **44** may be ramp shaped along the flow direction **90** so as to help force a fluid moving within the pump from the intake opening **76** towards the output opening **77**. In certain optional embodiments, each of the turbulence reducing vanes **44** may include a coupling height **84** extending (e.g., vertically) along the interior surface **78** of the pump housing **10**. The coupling height **84** may be between about ten (10) millimeters (mm) and about thirty (30) mm. Alternatively, the coupling height **84** may be about twenty (20) mm plus or minus one (1) mm. In other optional embodiments, each of the turbulence reducing vanes **44** may include a width **85** extending from the interior surface **78** of the pump housing **10**. The width **85** may be between about five (5) mm and about fifteen (15) mm. Alternatively, the width **85** may be about ten (10) mm plus or minus zero-point-two-five (0.25) mm. In further optional embodiments, an upper portion of the turbulence reducing vanes **44** may overlap with a lower portion of the flow deflection plate **42** with the upper portion being offset from the lower portion, respectively, along the interior surface **78** of the pump housing **10**. In certain optional embodiments, the turbulence reducing vanes **44** may be integrally formed with the pump body **10**. In other optional embodiments, the turbulence reducing vanes **44** may be coupled within the pump body **10**. The turbulence reducing vanes **44** may be configured to help direct flow and reduce the turbulence inside the pump housing **10**, especially during start up thereof.

(41) Referring to FIGS. **1**, **13**, **14**, and **15**, the marine pump **2** may further include a pump cartridge **12**. As illustrated in FIGS. **1** and **13**, the pump cartridge **12** may include cartridge grip scallops **46** (e.g., notches) defined along a top edge of the pump cartridge **12**. The cartridge grip scallops **46** may be provided as a user gripping surface to aid a user in gripping the pump cartridge **12**, which may be configured to unscrew from the pump housing **10** to allow a user to access the pump motor for maintenance or repair.

(42) In certain optional embodiments, as illustrated in FIGS. **1** and **14**, the pump cartridge **12** may include at least one alignment arrow **24** positioned along a bottom edge of the pump cartridge **12**. The at least one alignment arrow **24** may aid a user in aligning the pump cartridge **12** during installation. In certain optional embodiments, the at least one alignment arrow **24** may comprise two alignment arrows. In other optional embodiments, the pump housing **10** may include at least one corresponding alignment arrow (not shown). The at least one alignment arrow **24** may comprise a 1.5 mm raised arrow, however, in other optional embodiments, the at least one

alignment arrow **24** may have different dimensions.
(43) As illustrated in FIGS. **1** and **15**, the marine pump **2** may further include a cartridge lock **22**. The cartridge lock **22** may enable the pump cartridge **12** to be installed in two orientations for user convenience and improved cable management capabilities. The cartridge lock **22** may biased towards a locked position and may include a locking button surface **48** which is configured to be engaged for unlocking the pump cartridge **12** prior to removal of the pump cartridge **12**.
(44) Throughout the specification and claims, the following terms take at least the meanings explicitly associated herein, unless the context dictates otherwise. The meanings identified below do not necessarily limit the terms, but merely provide illustrative examples for the terms. The meaning of “a,” “an,” and “the” may include plural references, and the meaning of “in” may include “in” and “on.” The phrase “in one embodiment,” as used herein does not necessarily refer to the same embodiment, although it may.
(45) Although embodiments of the present invention have been described in detail, it will be understood by those skilled in the art that various modifications can be made therein without departing from the spirit and scope of the invention as set forth in the appended claims.
(46) This written description uses examples to disclose the invention and also to enable any person skilled in the art to practice the invention, including making and using any devices or systems and performing any incorporated methods. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are intended to be within the scope of the claims if they have structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal languages of the claims.
(47) It will be understood that the particular embodiments described herein are shown by way of illustration and not as limitations of the invention. The principal features of this invention may be employed in various embodiments without departing from the scope of the invention. Those of ordinary skill in the art will recognize numerous equivalents to the specific procedures described herein. Such equivalents are considered to be within the scope of this invention and are covered by the claims.
(48) All of the compositions and/or methods disclosed and claimed herein may be made and/or executed without undue experimentation in light of the present disclosure. While the compositions and methods of this invention have been described in terms of the embodiments included herein, it will be apparent to those of ordinary skill in the art that variations may be applied to the compositions and/or methods and in the steps or in the sequence of steps of the method described herein without departing from the concept, spirit, and scope of the invention. All such similar substitutes and modifications apparent to those skilled in the art are deemed to be within the spirit, scope, and concept of the invention as defined by the appended claims.
(49) The previous detailed description has been provided for the purposes of illustration and description. Thus, although there have been described particular embodiments of a new and useful invention, it is not intended that such references be construed as limitations upon the scope of this disclosure except as set forth in the following claims.

Claims

1. A marine pump, comprising: a nozzle interface comprising a nozzle aperture, a detent channel, and a detent locking arm; and a detent configured to be selectively received by the detent channel of the nozzle interface, the detent having an actuation surface configured to selectively receive the detent locking arm of the nozzle interface.
2. A marine pump, comprising: a nozzle interface comprising a nozzle aperture and a detent channel; and a detent configured to be selectively received by the detent channel of the nozzle interface, the detent movable between an engaged position and a disengaged position, wherein the

detent is biased toward the engaged position, wherein a portion of the detent being positioned in a surface area of the nozzle aperture when in the engaged position.

3. The marine pump of claim 2, wherein: the nozzle aperture defines a cylindrical volume; and the detent channel opens into the nozzle aperture.

4. The marine pump of claim 3, wherein: the detent channel is a portion of a circumference of the nozzle aperture; and a portion of the detent extends below an underside of the nozzle aperture.

5. The marine pump of claim 2, wherein: the detent has a circular aperture; and a circumference of the circular aperture is at least as great as a circumference of the nozzle aperture.

6. The marine pump of claim 2, wherein: the detent has a catch; and the catch is in contact with an outer surface of the nozzle aperture when the detent is in an engaged position.

7. The marine pump of claim 2, wherein: the detent includes an actuation surface; the detent channel is configured to allow a circular aperture of the detent to move out of the surface area of the nozzle aperture when a release pressure is applied to the actuation surface associated with the disengaged position; and the detent channel is configured to allow a portion of the detent to move into the surface area of the nozzle aperture when the release pressure is removed associated with the engaged position.

8. The marine pump of claim 7, wherein: the detent further comprises a spring tab positioned below the actuation surface and configured to engage a protrusion of the nozzle interface for biasing the detent towards the engaged position.

9. The marine pump of claim 2, wherein: the nozzle interface includes a detent locking arm extending outwardly therefrom; and the detent includes an actuation surface configured to selectively receive the detent locking arm.

10. The marine pump of claim 9, wherein: the detent locking arm is configured to engage both an upper surface and a lower surface of the actuation surface when in a locked position.

11. The marine pump of claim 10, wherein: the detent locking arm is biased towards the locked position.

12. The marine pump of claim 2, further comprising: a detachable strainer base including an arm having an arm release surface configured contact an interior portion of a release aperture of a pump housing of the marine pump when the detachable strainer base is attached to the marine pump, wherein the detachable strainer base has a plurality of openings configured to interact with and stop particulates in a fluid passing through the detachable strainer base.

13. The marine pump of claim 12, wherein: the arm release surface is configured to move with respect to the release aperture of the pump housing when a pressure is applied to the arm release surface.

14. The marine pump of claim 12, wherein: a plurality of holes of the plurality of openings are positioned on a bottom surface of the detachable strainer base.

15. The marine pump of claim 12, wherein: a plurality of slots of the plurality of openings are positioned on a side surface of the detachable strainer base.

16. The marine pump of claim 15, wherein: a bottom surface of the detachable strainer base is offset below the plurality of slots.

17. The marine pump of claim 2, wherein: the nozzle aperture includes a circumferential channel configured to receive a gasket.

18. The marine pump of claim 17, wherein: the circumferential channel is positioned between a distal opening of the nozzle aperture and the detent channel.

19. The marine pump of claim 2, wherein: the nozzle aperture includes a first cylindrical portion and a second cylindrical portion; and the first cylindrical portion has a circumference larger than that of the second cylindrical portion.

20. The marine pump of claim 19, wherein: the detent channel intersects the second cylindrical portion.
