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Haught et al.

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(54) **GRAVITY OILER IMPROVEMENT**

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(71) Applicant: **Esco Products, Inc.**, Houston, TX (US)

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(72) Inventors: **Christopher Haught**, Houston, TX (US); **David Haught**, Houston, TX (US)

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(73) Assignee: **Esco Products, Inc.**, Houston, TX (US)

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Primary Examiner — Michael R Mansen

Assistant Examiner — Mark K Buse

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(74) *Attorney, Agent, or Firm* — Shannon Warren

(65) **Prior Publication Data**

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(57) **ABSTRACT**

A gravity oiler assembly for for passively managing a fluid within an input fluid reservoir for use in an equipment fluid reservoir. The gravity oiler assembly comprises a fitting, the input fluid reservoir, and a nozzle. The fitting comprises an outer surface, an inner cavity, a top aperture, and a side aperture. The input fluid reservoir comprises a bottle being arranged with a fluid passage attached to the nozzle. The nozzle is arranged below the input fluid reservoir and inserted into the top aperture of the fitting. The gravity oiler assembly is configured to allow the fluid in the input fluid reservoir to enter a portion of the nozzle, the inner cavity and the side aperture. The gravity oiler assembly is configured to store the fluid in the input fluid reservoir and passively dispense the fluid into an equipment fluid cavity of the equipment fluid reservoir.

Related U.S. Application Data

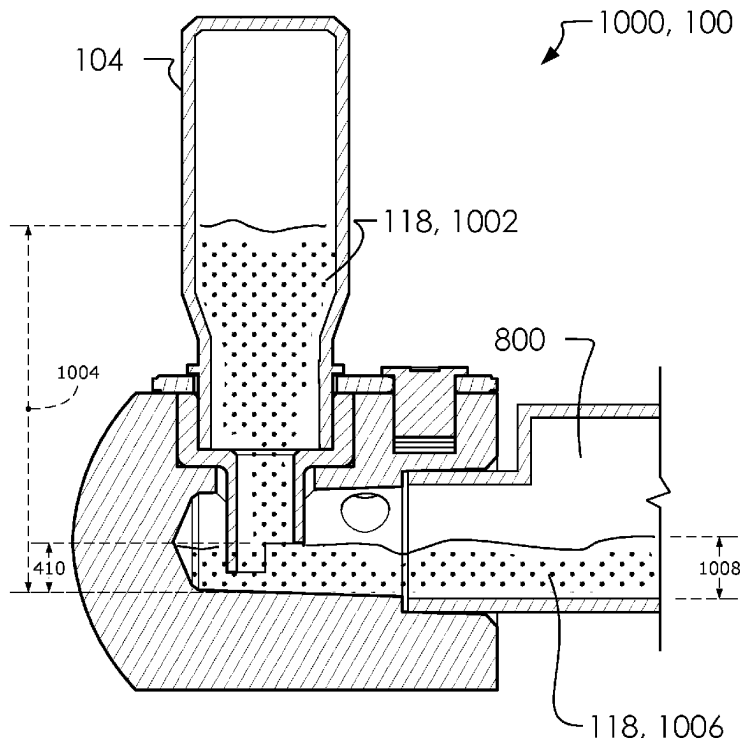
(60) Provisional application No. 63/310,104, filed on Feb. 15, 2022.

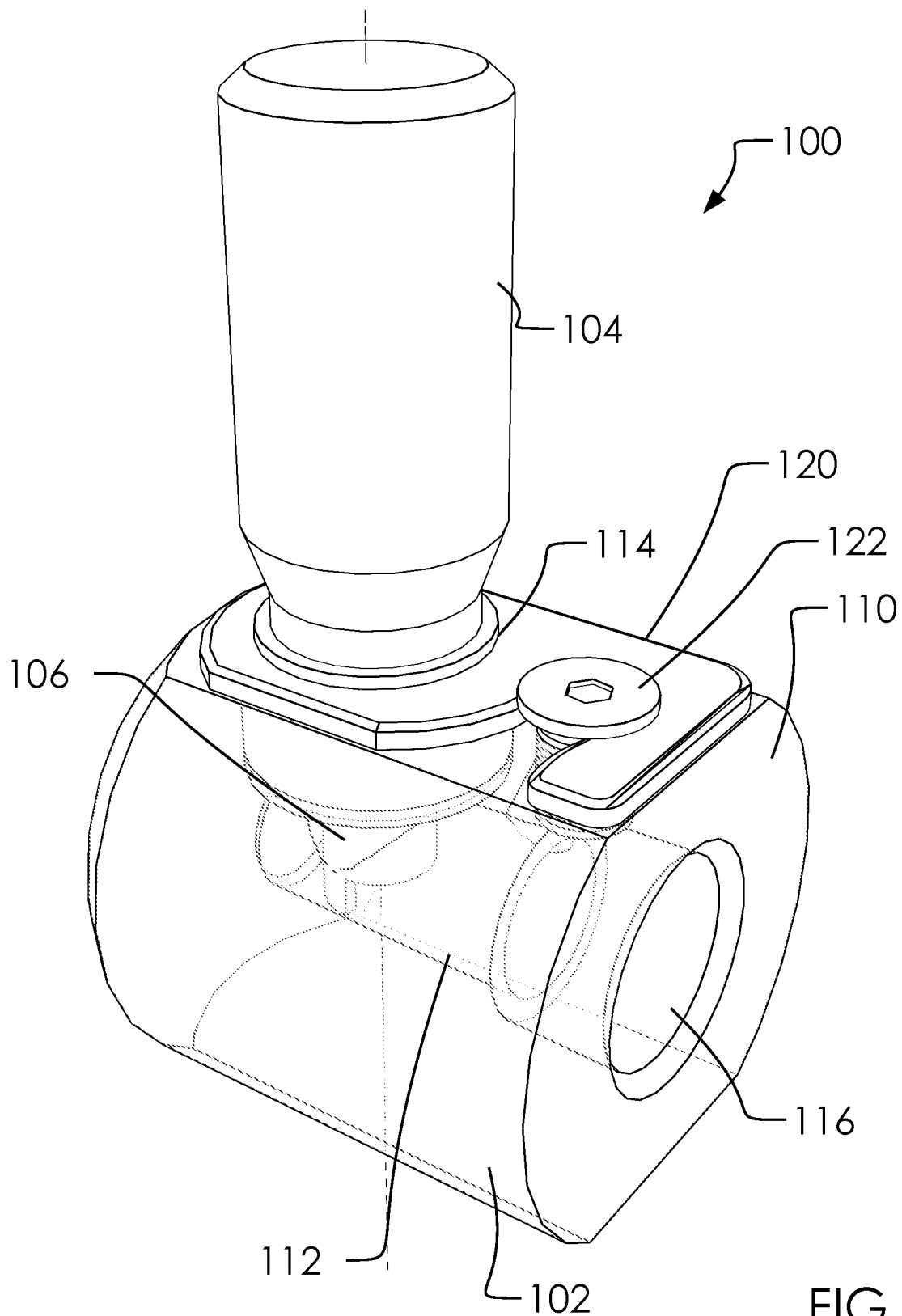
(51) **Int. Cl.**
F16N 7/02 (2006.01)

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CPC **F16N 7/02** (2013.01)

(58) **Field of Classification Search**
CPC F16N 7/02; F16N 29/00; G01C 9/00
USPC 184/65; 137/454
See application file for complete search history.

15 Claims, 16 Drawing Sheets





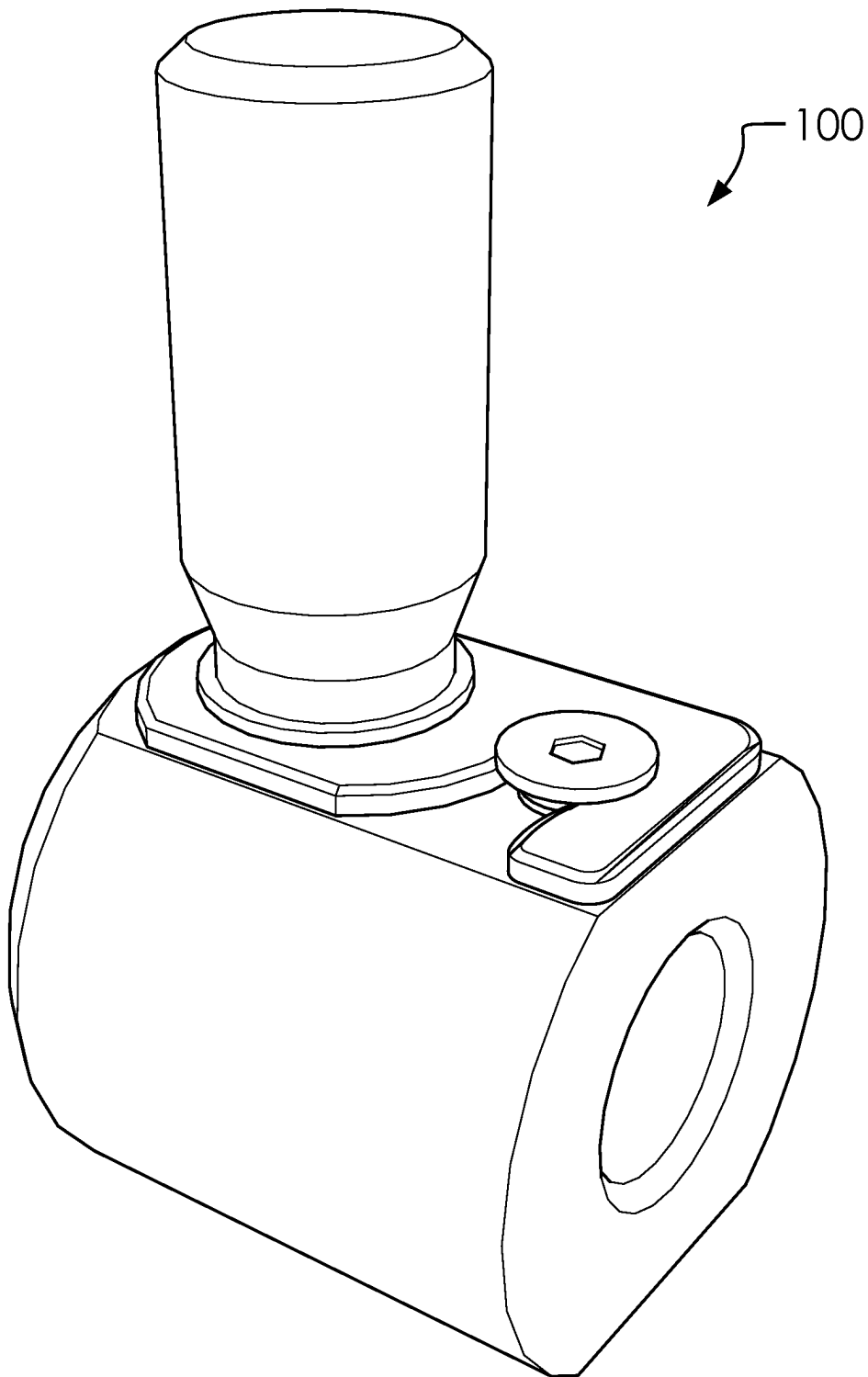


FIG. 2

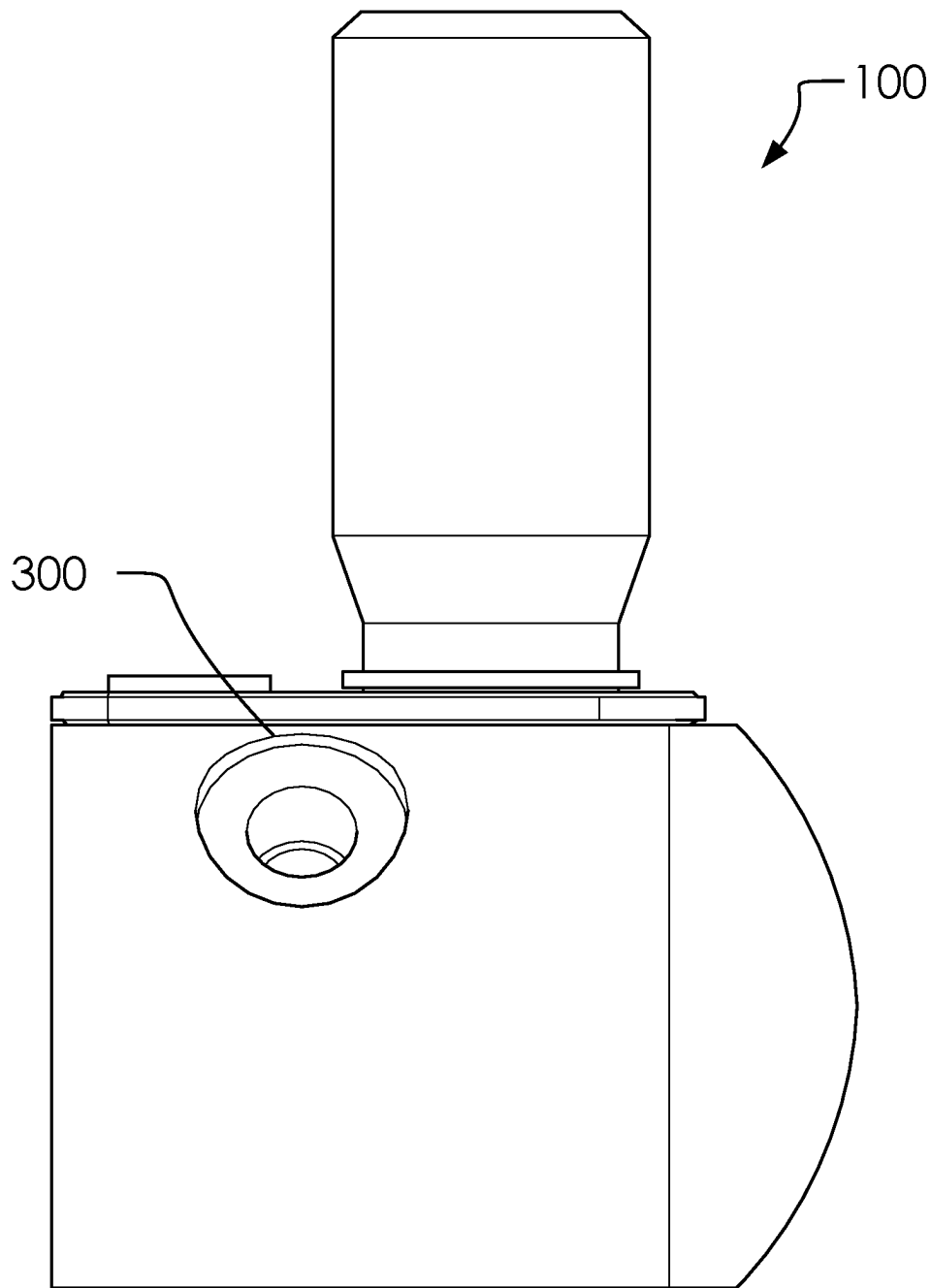


FIG. 3

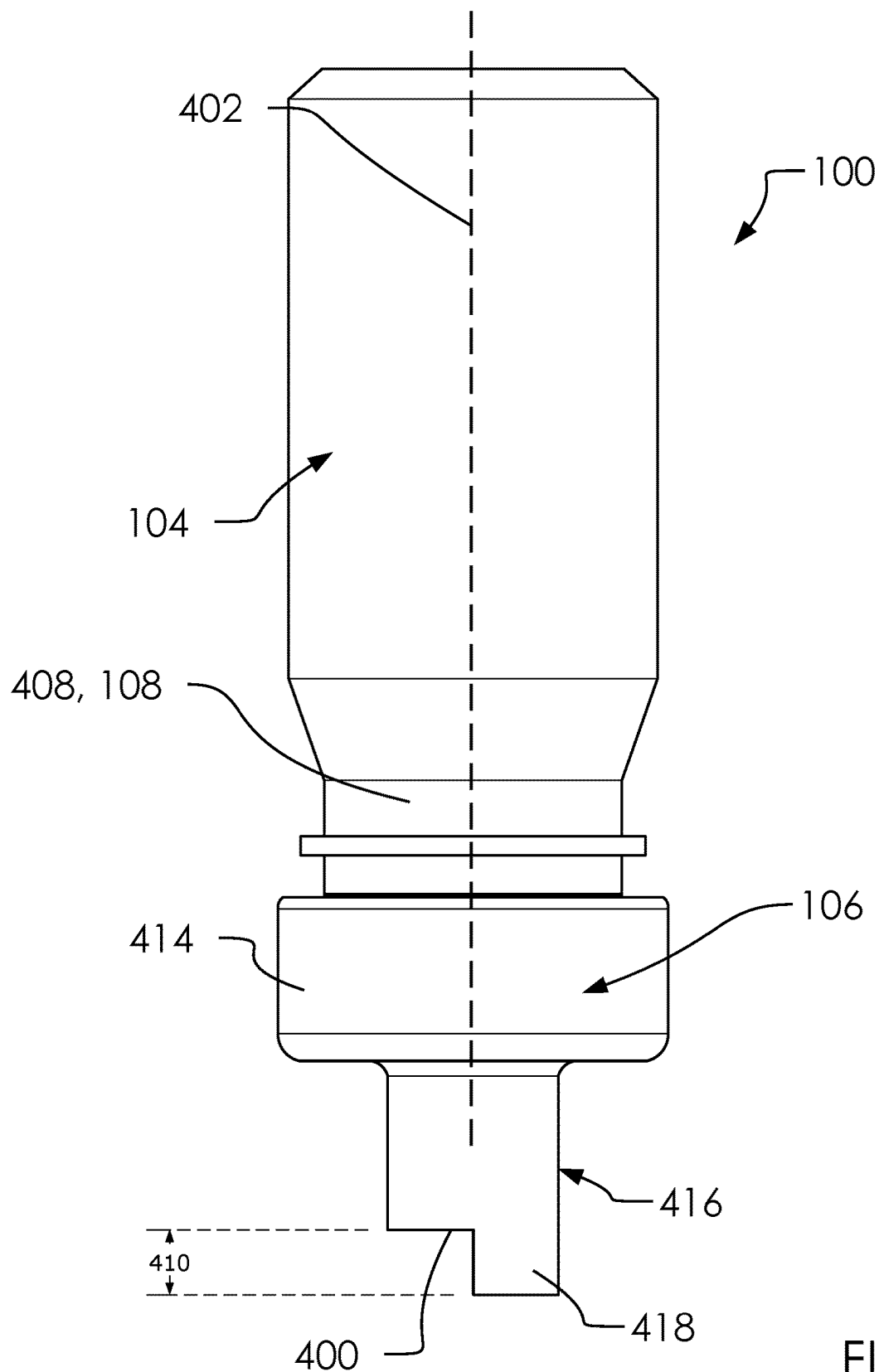
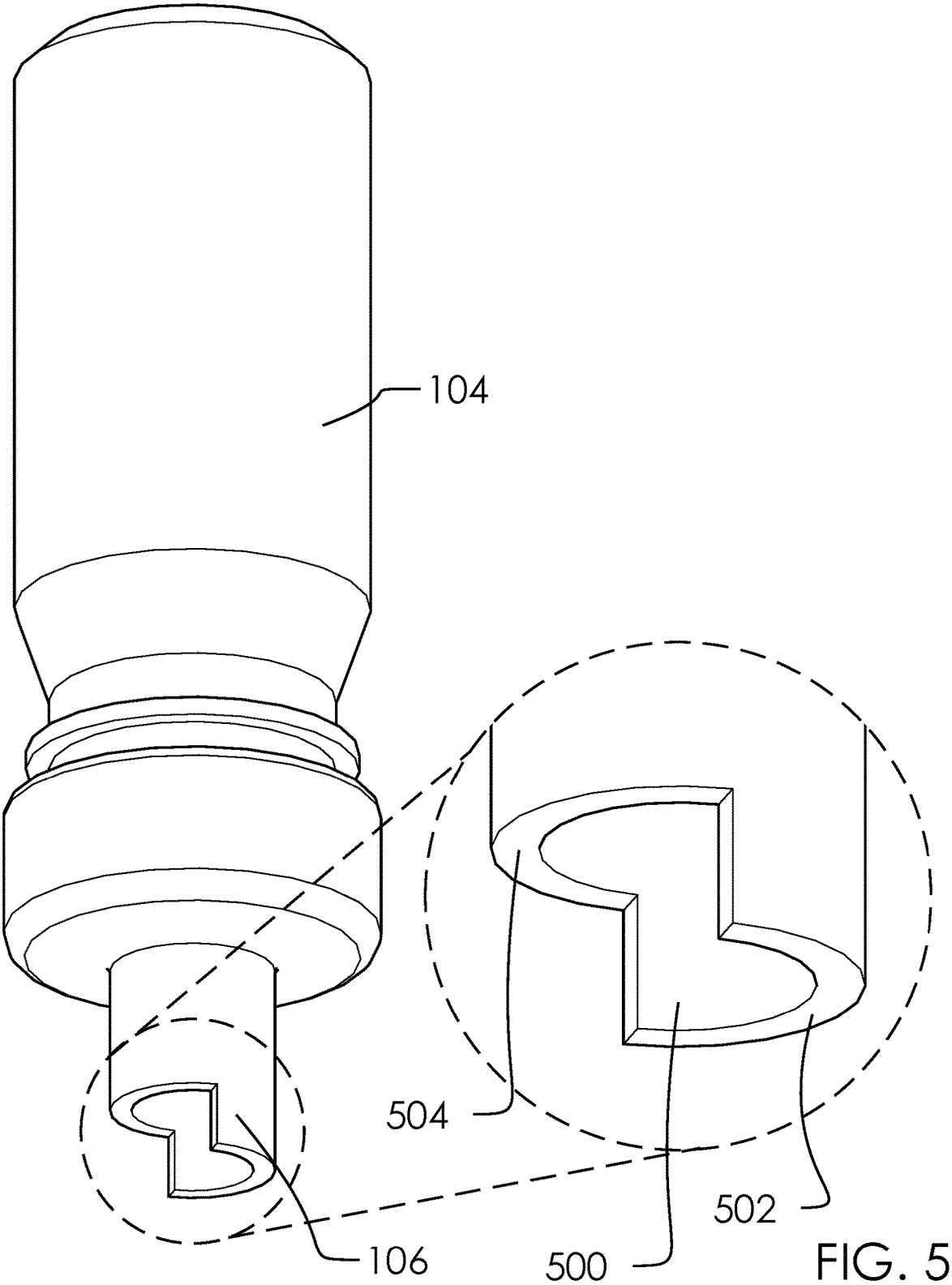
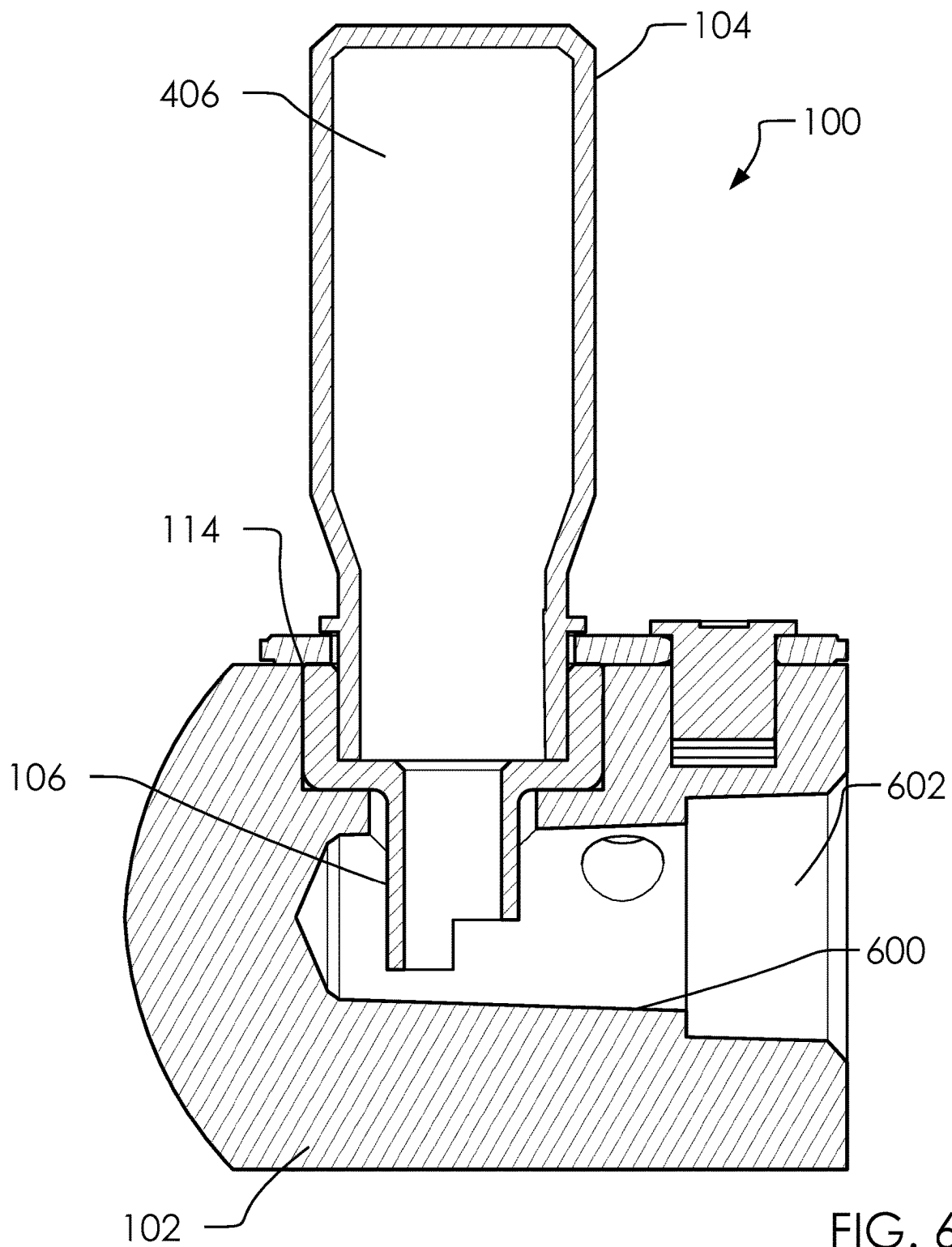


FIG. 4





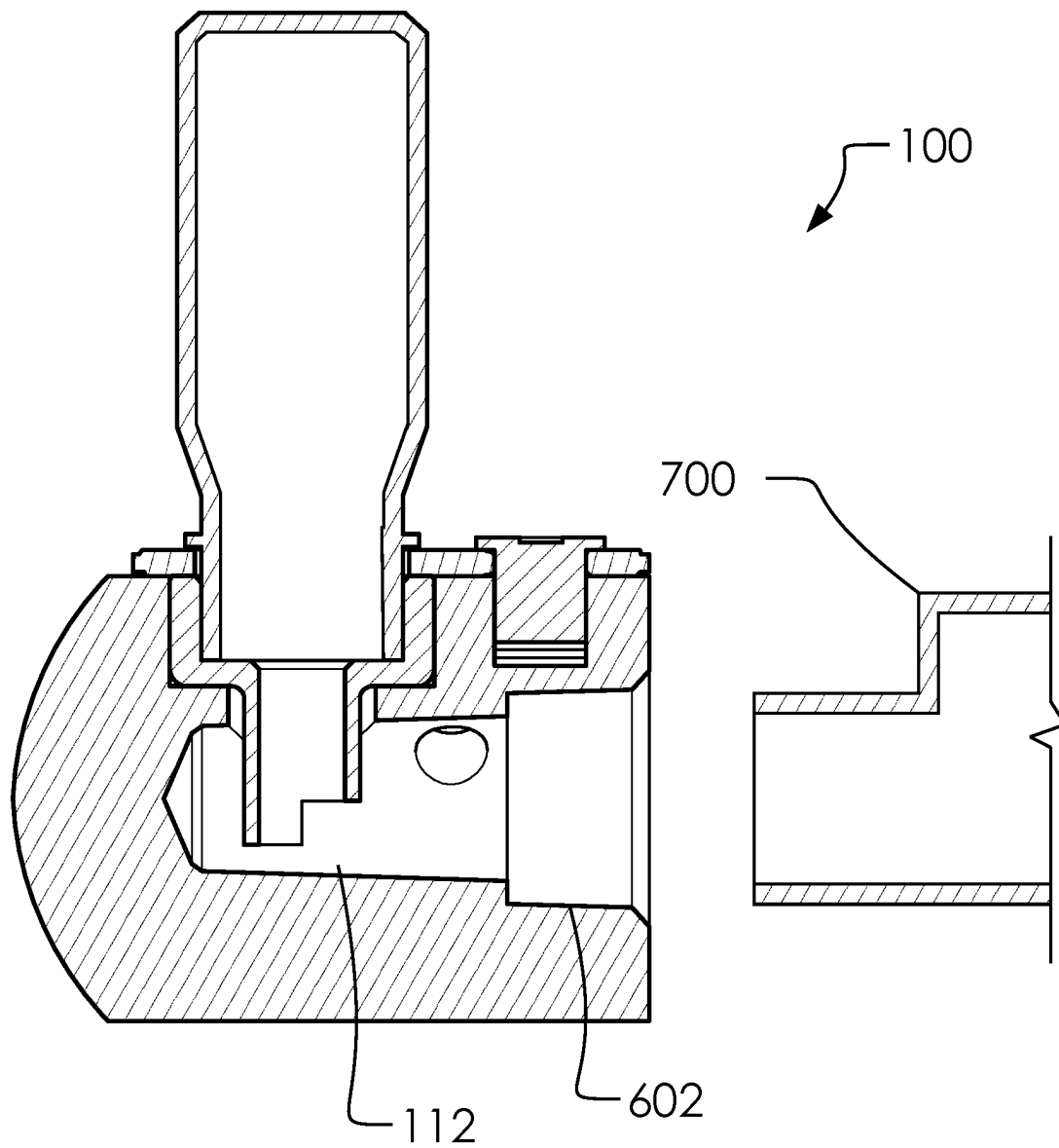


FIG. 7

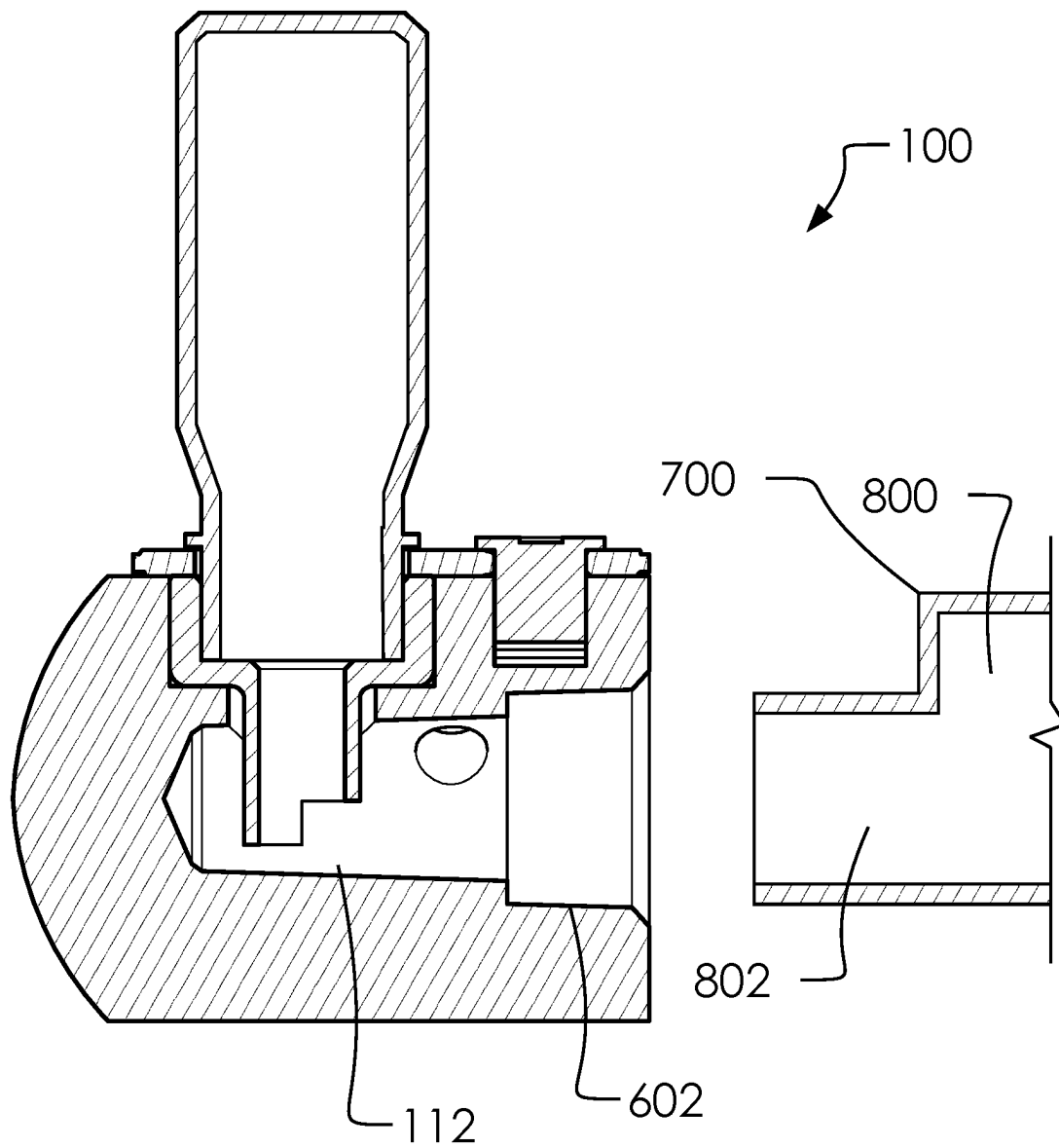


FIG. 8

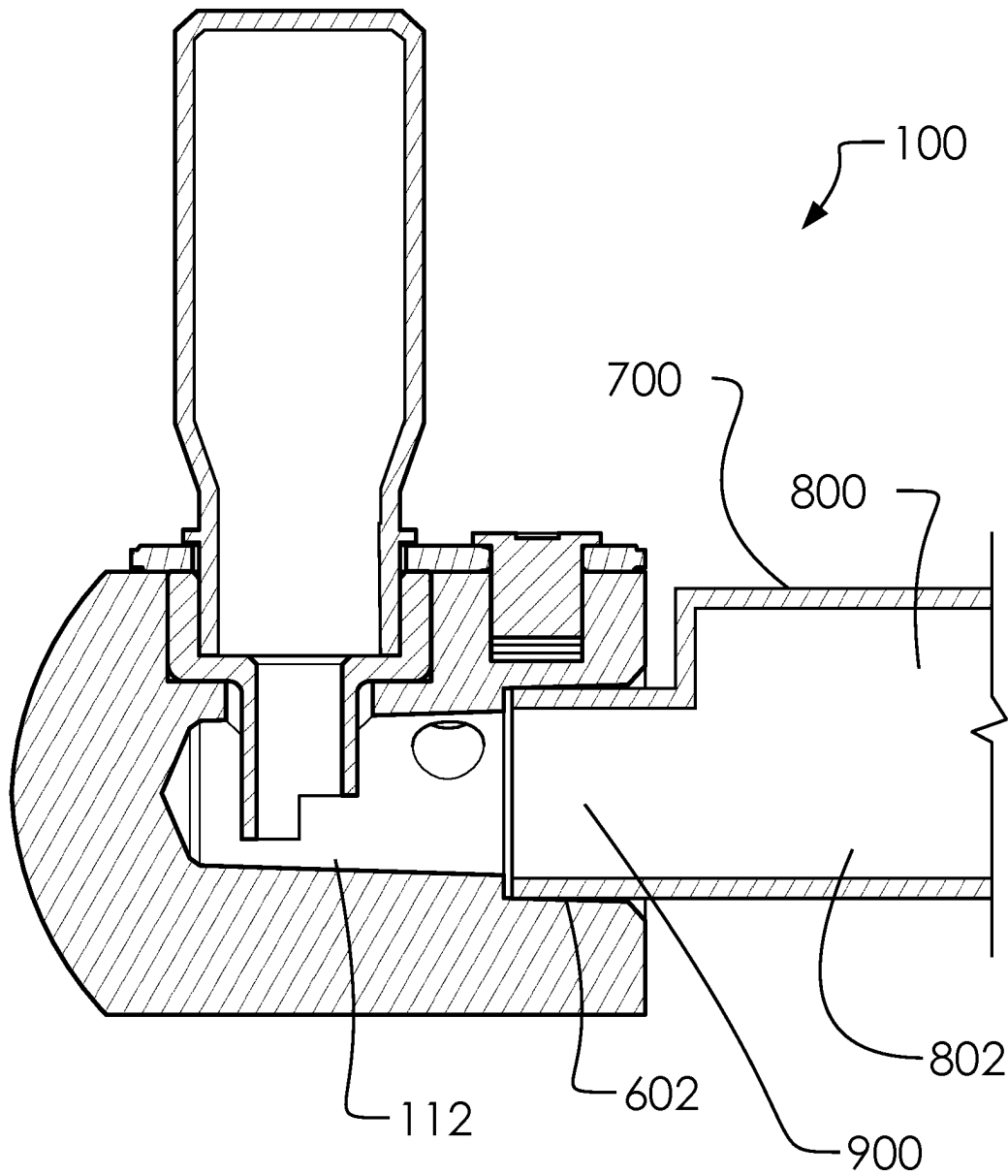


FIG. 9

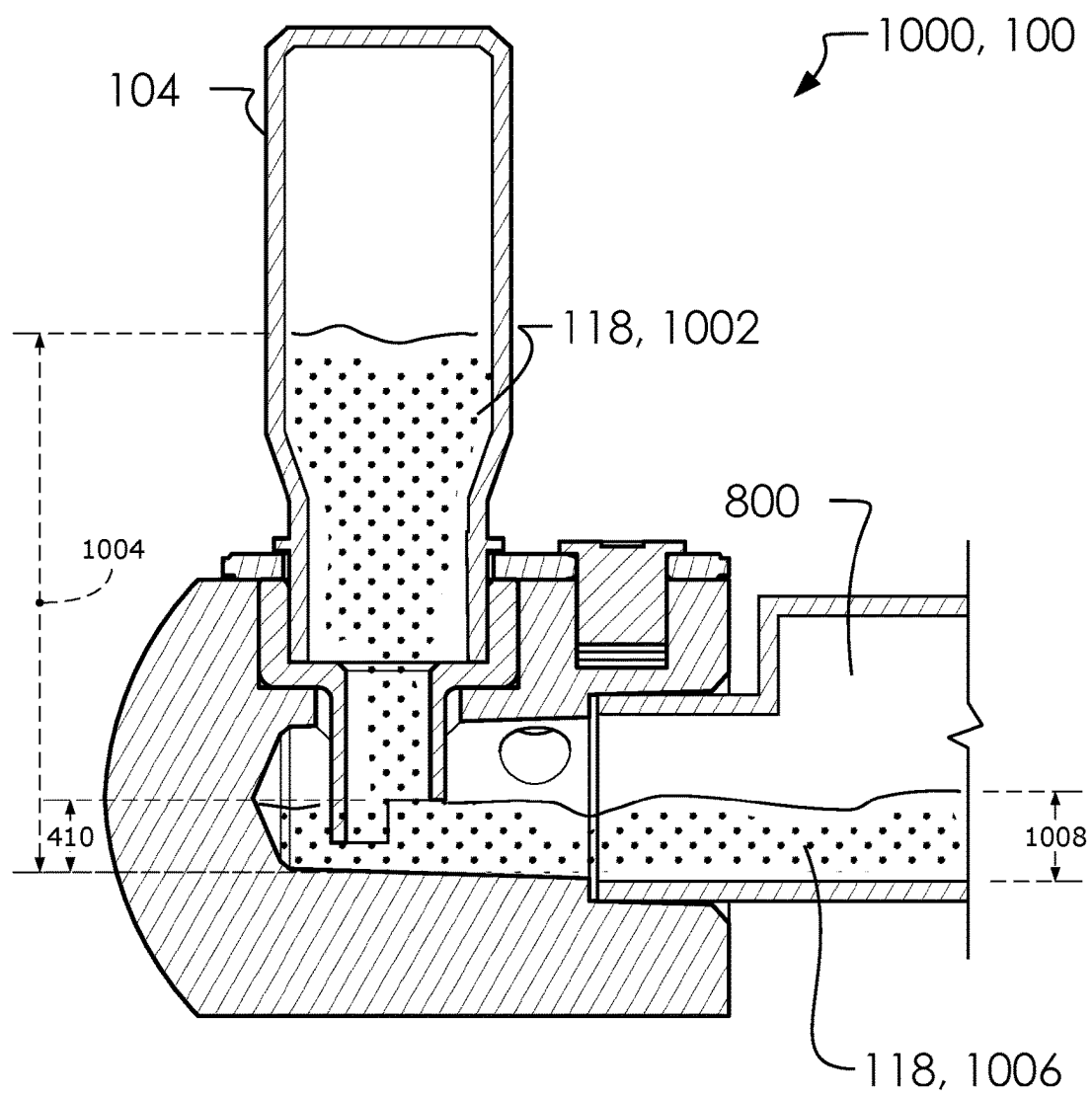


FIG. 10

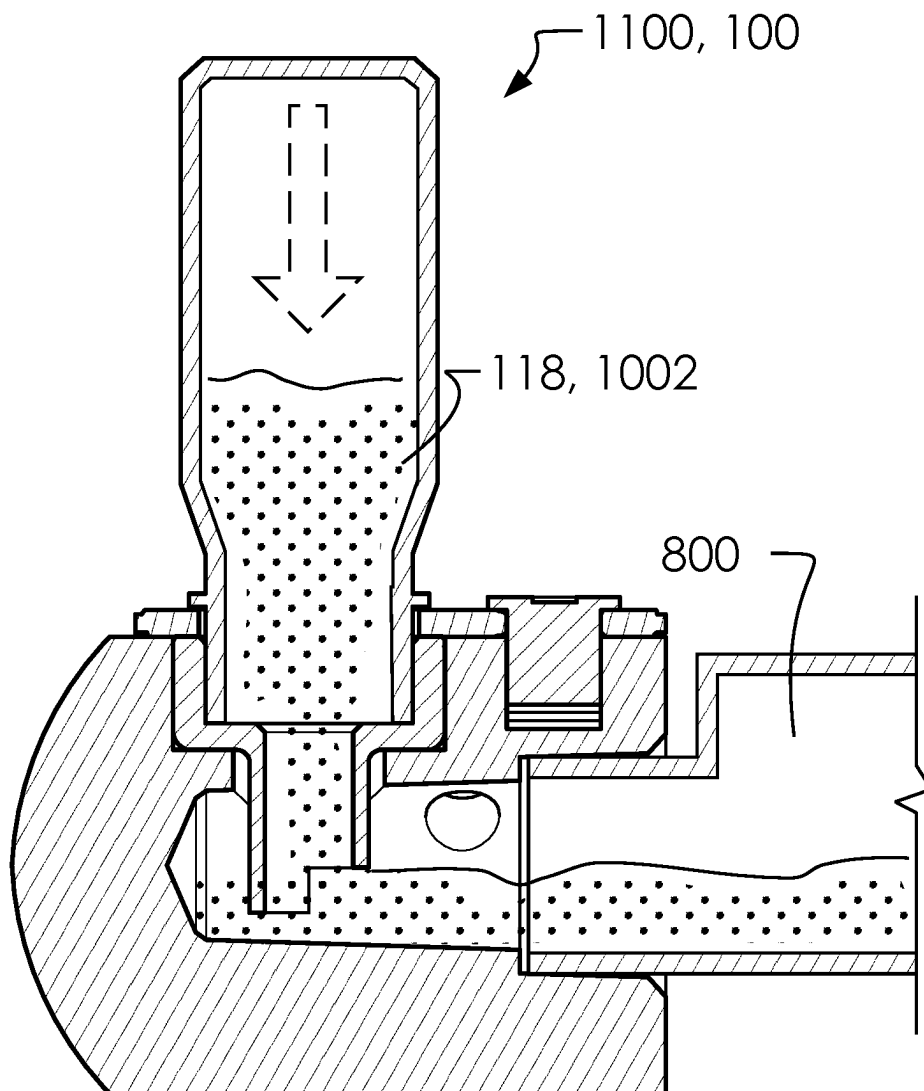


FIG. 11

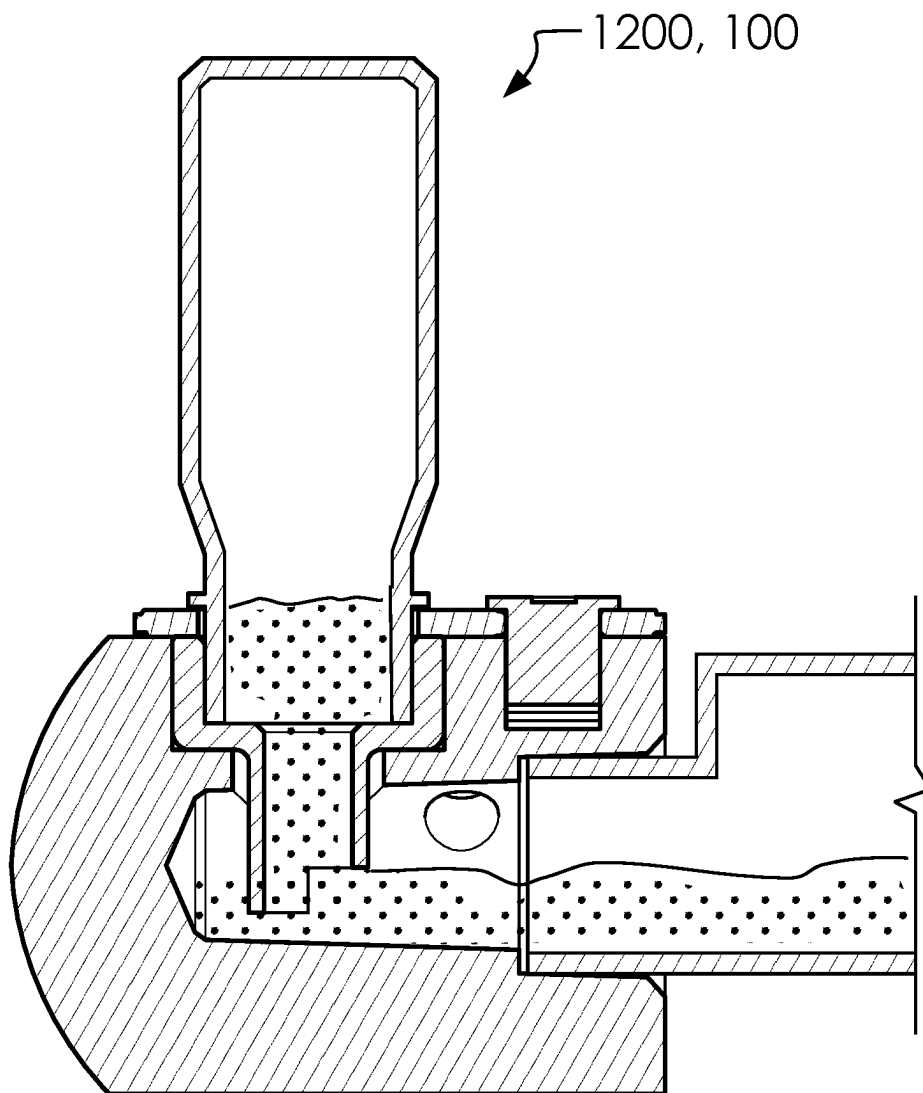


FIG. 12

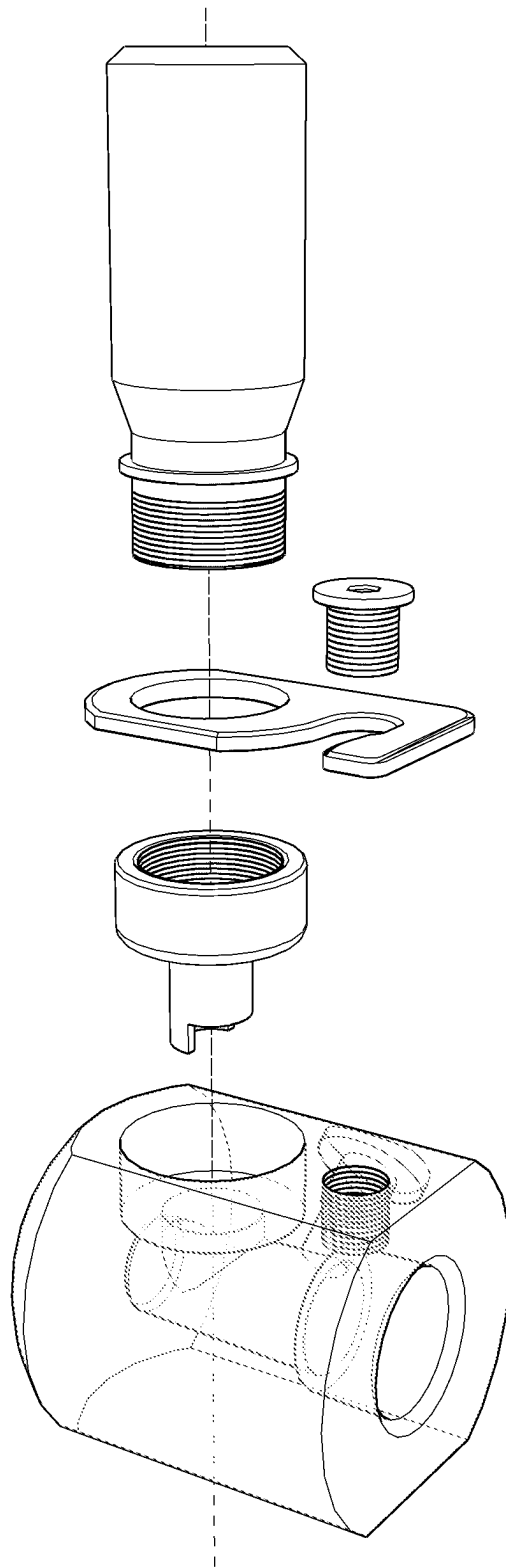


FIG. 13

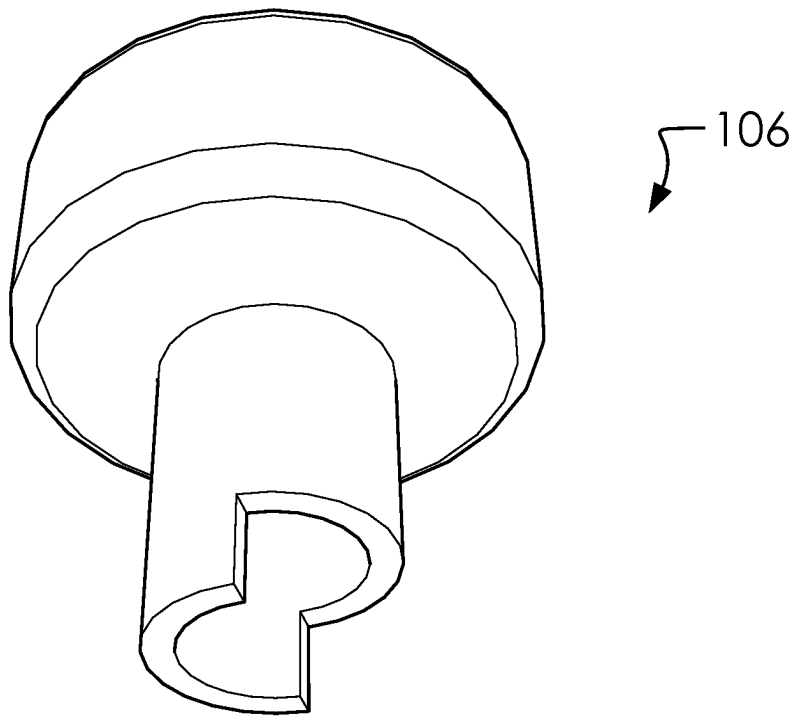


FIG. 14A

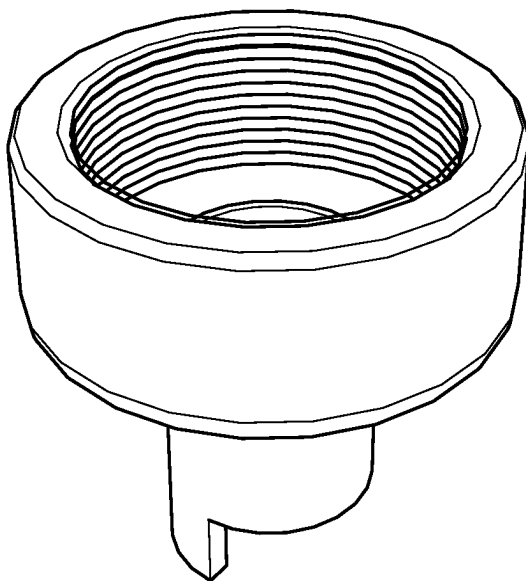


FIG. 14B

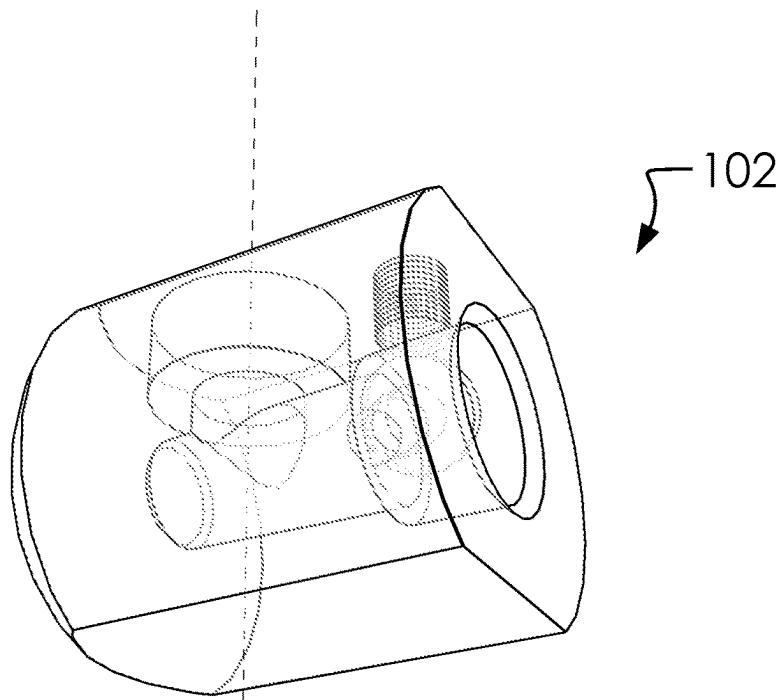


FIG. 15A

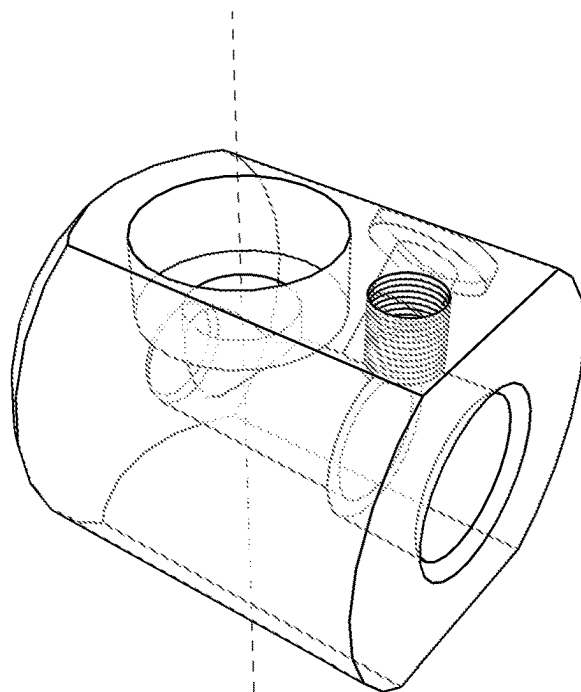


FIG. 15B

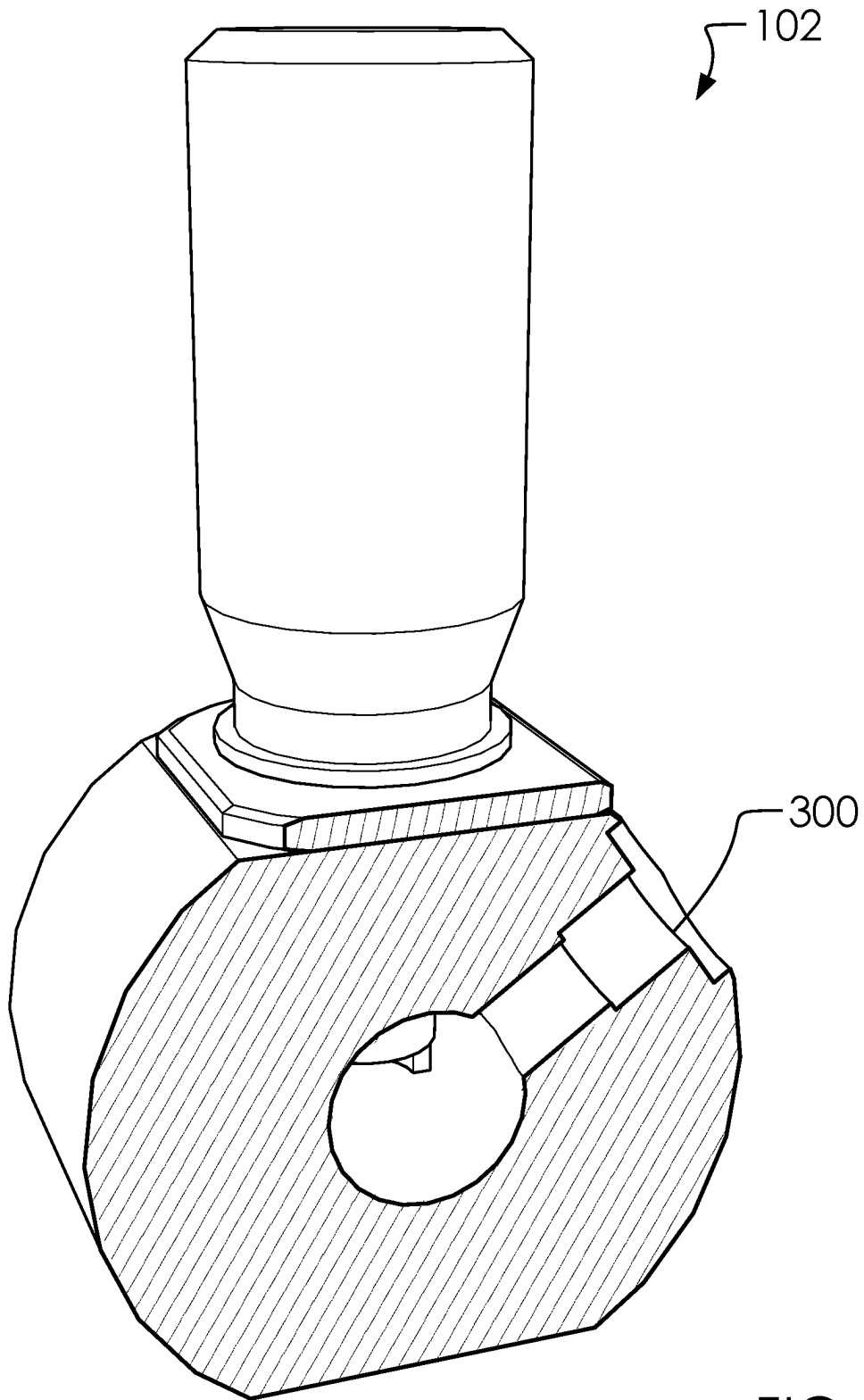


FIG. 16

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GRAVITY OILER IMPROVEMENT**CROSS-REFERENCE TO RELATED APPLICATIONS**

This application claims benefit to U.S. provisional application 63/310,104 filed 2022 Feb. 15.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT (IF APPLICABLE)

Not applicable.

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING COMPACT DISC APPENDIX (IF APPLICABLE)

Not applicable.

BRIEF SUMMARY OF THE INVENTION

A gravity oiler assembly for passively managing a fluid within an input fluid reservoir for use in an equipment fluid reservoir. The gravity oiler assembly comprises a fitting, the input fluid reservoir, and a nozzle. The fitting comprises an outer surface, an inner cavity, a top aperture, and a side aperture. The input fluid reservoir comprises a bottle being arranged with a fluid passage attached to the nozzle. The nozzle is arranged below the input fluid reservoir and inserted into the top aperture of the fitting. The gravity oiler assembly is configured to allow the fluid in the input fluid reservoir to enter a portion of the nozzle, the inner cavity and the side aperture. The gravity oiler assembly is configured to store the fluid in the input fluid reservoir and passively dispense the fluid into an equipment fluid cavity of the equipment fluid reservoir.

BACKGROUND OF THE INVENTION

No relevant prior art is known to the Applicant.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. 1 illustrates a perspective overview of a gravity oiler assembly 100.

FIG. 2 illustrates a second perspective overview of said gravity oiler assembly 100.

FIG. 3 illustrates an elevated side view of said gravity oiler assembly 100.

FIG. 4 illustrates an elevated side view of an input fluid reservoir 104 and a nozzle 106.

FIG. 5 illustrates a perspective lower view of said input fluid reservoir 104 and said nozzle 106, and a detailed lower view of a fluid notch 400 of said nozzle 106.

FIG. 6 illustrates an elevated cross-section side view of said gravity oiler assembly 100.

FIG. 7 illustrates a perspective overview of said gravity oiler assembly 100 attached to an equipment fluid reservoir 700.

FIG. 8 illustrates an elevated cross-section side view of said gravity oiler assembly 100 unattached to said equipment fluid reservoir 700.

FIG. 9 illustrates an elevated cross-section side view of said gravity oiler assembly 100 attached to said equipment fluid reservoir 700.

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FIGS. 10-12 illustrate an elevated cross-section side view of said gravity oiler assembly 100 attached to said equipment fluid reservoir 700, with a fluid 118 illustrated in a first configuration 1000, a second configuration 1100 and a third configuration 1200, respectively.

FIG. 13 illustrates an exploded perspective overview of said gravity oiler assembly 100.

FIGS. 14A, and 14B illustrate a perspective overview and lower view of said nozzle 106.

FIGS. 15A, and 15B illustrate a perspective lower and upper view of a fitting 102.

FIG. 16 illustrates a perspective overview of said gravity oiler assembly 100 with a cross-section cut through a vent port 300.

DETAILED DESCRIPTION OF THE INVENTION

The following description is presented to enable any person skilled in the art to make and use the invention as claimed and is provided in the context of the particular examples discussed below, variations of which will be readily apparent to those skilled in the art. In the interest of clarity, not all features of an actual implementation are described in this specification. It will be appreciated that in the development of any such actual implementation (as in any development project), design decisions must be made to achieve the designers' specific goals (e.g., compliance with system- and business-related constraints), and that these goals will vary from one implementation to another. It will also be appreciated that such development effort might be complex and time-consuming, but would nevertheless be a routine undertaking for those of ordinary skill in the field of the appropriate art having the benefit of this disclosure. Accordingly, the claims appended hereto are not intended to be limited by the disclosed embodiments, but are to be accorded their widest scope consistent with the principles and features disclosed herein.

FIG. 1 illustrates a perspective overview of a gravity oiler assembly 100.

In one embodiment, said gravity oiler assembly 100 can comprise a fitting 102, an input fluid reservoir 104, and a nozzle 106. Said input fluid reservoir 104 can comprise a bottle being arranged with a fluid passage 108 (illustrated below) attached to said nozzle 106.

In one embodiment, said fitting 102 can comprise an outer surface 110, an inner cavity 112, a top aperture 114, and a side aperture 116.

In one embodiment, said nozzle 106 can be inserted into said top aperture 114 of said fitting 102 and allow a fluid 118 in said input fluid reservoir 104 to enter a portion of said nozzle 106, said inner cavity 112 and said side aperture 116, illustrated below.

Said gravity oiler assembly 100 can further comprise a dust shield 120 and a dust shield fastener 122.

In one embodiment, said fitting 102 can comprise a transparent material, as illustrated. On example can comprise a plastic, glass, or similar, as is known in the art.

FIG. 2 illustrates a second perspective overview of said gravity oiler assembly 100.

FIG. 3 illustrates an elevated side view of said gravity oiler assembly 100.

In one embodiment, said fitting 102 can further comprise a vent port 300.

FIG. 4 illustrates an elevated side view of said input fluid reservoir 104 and said nozzle 106.

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In one embodiment, said nozzle **106** can comprise a fluid notch **400**, a center axis **402**, a bottle receiver **414**, and a lower nozzle **416**.

In one embodiment, said lower nozzle **416** can comprise an extended lower portion **418** and said fluid notch **400**. Wherein, said fluid notch **400** can comprise a portion of said lower nozzle **416** to be open to allow said fluid **118** within said input fluid reservoir **104** to flow out. In one embodiment, said fluid notch **400** can be nozzle exit height **410** compared with said extended lower portion **418**.

In one embodiment, said nozzle exit height **410** can comprise a distance between the bottom of said fluid notch **400** and an upper edge of said fluid notch **400**.

In one embodiment, said input fluid reservoir **104** can comprise said fluid passage **108**; wherein, said input fluid reservoir **104** can be attached to said nozzle **106** by placing said fluid passage **108** at a lower end **408** of said input fluid reservoir **104** and attaching said input fluid reservoir **104** to a portion of said nozzle **106**. In this manner, said input fluid reservoir **104** can be considered an upside down fluid reservoir being designed to naturally empty said fluid **118** from a fluid cavity **406** (illustrated below) in said input fluid reservoir **104**.

In one embodiment, a portion of said input fluid reservoir **104** and said nozzle **106** can comprise male and female threading configured to mate with one another.

FIG. **5** illustrates a perspective lower view of said input fluid reservoir **104** and said nozzle **106**, and a detailed lower view of said fluid notch **400** of said nozzle **106**.

In one embodiment, said fluid notch **400** can comprise a fluid exit **500**, a lower edge **502** and an upper edge.

In one embodiment, said fluid exit **500** can be located in a lowest portion of said nozzle **106**. Said lower edge **502** can comprise a surface around said fluid exit **500**.

Said fluid notch **400** can comprise a cut in a portion of said nozzle **106**. Said fluid notch **400** can comprise said lower edge **502** and said upper edge **504**. In one embodiment, said lower edge **502** and said upper edge **504** can be substantially parallel with one another and perpendicular to said center axis **402**. Said lower edge **502** and said upper edge **504** can be separated by said nozzle exit height **410**. In one embodiment, said fluid notch **400** can allow said fluid **118** to break surface tension when emptying out of said input fluid reservoir **104** and into a portion of said fitting **102**.

FIG. **6** illustrates an elevated cross-section side view of said gravity oiler assembly **100**.

In one embodiment, said input fluid reservoir **104** can fit within a portion of said nozzle **106**, and said nozzle **106** can fit in said top aperture **114** of said fitting **102**. Wherein, said fluid cavity **406** of said input fluid reservoir **104** can be in fluid connection with said inner cavity **112** of said fitting **102**, as illustrated.

In one embodiment, said inner cavity **112** can comprise a threaded socket **602** at said side aperture **116**, as discussed below. Likewise, a threading can hold a portion of said input fluid reservoir **104** to said nozzle **106**, as is known in the art.

In one embodiment, an O-ring can be included between a portion of said top aperture **114** and said nozzle **106** and/or said input fluid reservoir **104**.

FIG. **7** illustrates a perspective overview of said gravity oiler assembly **100** attached to an equipment fluid reservoir **700**.

In one embodiment, said equipment fluid reservoir **700** can comprise an industrial equipment and said fluid **118** can comprise oil for lubricating said equipment, as is known in the art.

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FIG. **8** illustrates an elevated cross-section side view of said gravity oiler assembly **100** unattached to said equipment fluid reservoir **700**.

In one embodiment, said equipment fluid reservoir **700** can comprise said equipment fluid cavity **800** and a fluid intake **802**, as illustrated.

FIG. **9** illustrates an elevated cross-section side view of said gravity oiler assembly **100** attached to said equipment fluid reservoir **700**.

In one embodiment, said fluid intake **802** and said equipment fluid cavity **800** of said equipment fluid reservoir **700** can be in fluid connection with said inner cavity **112** of said fitting **102**. Wherein, a fluid intake receiver **900** can selectively attach to said threaded socket **602** of said fitting **102**. Further wherein, said threaded socket **602** can comprise an inner threading and a portion of said equipment fluid reservoir **700** can comprise an external threading around a portion of said fluid intake receiver **900** which can be adapted for sealing with one another.

FIGS. **10-12** illustrate an elevated cross-section side view of said gravity oiler assembly **100** attached to said equipment fluid reservoir **700**, with said fluid **118** illustrated in a first configuration **1000**, a second configuration **1100** and a third configuration **1200**, respectively.

In one embodiment, said fluid **118** can be stored in said input fluid reservoir **104** and dispensed into said equipment fluid cavity **800** of said equipment fluid reservoir **700** as needed. Wherein, a reservoir fluid portion **1002** within said input fluid reservoir **104** can comprise a first fluid level **1004**, and a second fluid portion **1006** within a portion of said inner cavity **112** and said equipment fluid cavity **800** can comprise a fitting fluid level **1008**, as illustrated.

As shown in said second configuration **1100** and said third configuration **1200**, in one embodiment, as said second fluid portion **1006** falls below said nozzle exit height **410**, said input fluid reservoir **104** is configured to allow said reservoir fluid portion **1002** to drain down into said inner cavity **112** and into said second fluid portion **1006**.

FIG. **13** illustrates an exploded perspective overview of said gravity oiler assembly **100**.

FIGS. **14A**, and **14B** illustrate a perspective overview and lower view of said nozzle **106**.

FIGS. **15A**, and **15B** illustrate a perspective lower and upper view of said fitting **102**.

FIG. **16** illustrates a perspective overview of said gravity oiler assembly **100** with a cross-section cut through said vent port **300**.

In one embodiment, said vent port **300** can comprise an aperture through said outer surface **110** and into said inner cavity **112**. Said vent port **300** can be used to equalize pressure from said inner cavity **112** and an ambient air pressure outside of said fitting **102**. In one embodiment, said vent port **300** can be used to recycle fluids into said gravity oiler assembly **100** where said gravity oiler assembly **100** is used in a closed loop system.

PARTS LISTING

said gravity oiler assembly **100**,
Said fitting **102**,
Said input fluid reservoir **104**,
Said nozzle **106**,
Said fluid passage **108**,
Said outer surface **110**,
Said inner cavity **112**,
Said top aperture **114**,
Said side aperture **116**,

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Said fluid **118**,
 Said dust shield **120**,
 Said dust shield fastener **122**,
 Said vent port **300**,
 Said fluid notch **400**,
 Said center axis **402**,
 Said bottle receiver **414**,
 Said lower nozzle **416**,
 Said extended lower portion **418**,
 Said nozzle exit height **410**,
 Said lower end **408**,
 Said fluid cavity **406**,
 Said fluid exit **500**,
 Said lower edge **502**,
 Said threaded socket **602**,
 Said equipment fluid reservoir **700**,
 Said equipment fluid cavity **800**,
 Said fluid intake **802**,
 Said fluid intake receiver **900**,
 Said first configuration **1000**,
 Said second configuration **1100**,
 Said third configuration **1200**,
 Said reservoir fluid portion **1002**,
 Said first fluid level **1004**,
 Said second fluid portion **1006**, and
 said fitting fluid level **1008**.

Various changes in the details of the illustrated operational methods are possible without departing from the scope of the following claims. Some embodiments may combine the activities described herein as being separate steps. Similarly, one or more of the described steps may be omitted, depending upon the specific operational environment the method is being implemented in. It is to be understood that the above description is intended to be illustrative, and not restrictive. For example, the above-described embodiments may be used in combination with each other. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description. The scope of the invention should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled. In the appended claims, the terms “including” and “in which” are used as the plain-English equivalents of the respective terms “comprising” and “wherein”.

The invention claimed is:

1. A gravity oiler assembly for passively managing a fluid within an input fluid reservoir for use in an equipment fluid reservoir, wherein:

said gravity oiler assembly comprises a fitting, said input fluid reservoir, and a nozzle;
 said fitting comprises an outer surface, an inner cavity, a top aperture, and a side aperture;
 said input fluid reservoir comprises a bottle being arranged with a fluid passage attached to said nozzle;
 said nozzle is arranged below said input fluid reservoir and inserted into said top aperture of said fitting;
 said gravity oiler assembly is configured to allow said fluid in said input fluid reservoir to enter a portion of said nozzle, said inner cavity and said side aperture;
 said gravity oiler assembly is configured to store said fluid in said input fluid reservoir and passively dispense said fluid into an equipment fluid cavity of said equipment fluid reservoir as a fitting fluid level drops below a upper edge of said nozzle;
 said input fluid reservoir is configured to fit within a portion of said nozzle;

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said nozzle is configured to fit in said top aperture of said fitting; and

a fluid cavity of said input fluid reservoir is in fluid connection with said inner cavity of said fitting.

2. The gravity oiler assembly of claim **1**, wherein:
 said fitting can further comprise a vent port; and
 said vent port comprises an aperture through said outer surface and into said inner cavity.

3. The gravity oiler assembly of claim **2**, wherein:
 said vent port is used to equalize pressure from said inner cavity and an ambient air pressure outside of said fitting.

4. The gravity oiler assembly of claim **2**, wherein:
 said vent port is used to vent fluids, such as air, between said gravity oiler assembly and said input fluid reservoir where said gravity oiler assembly is used in a closed loop system.

5. The gravity oiler assembly of claim **1**, wherein:
 said nozzle comprises a fluid notch, a center axis, a bottle receiver, and a lower nozzle;
 said lower nozzle comprises an extended lower portion and said fluid notch;
 said fluid notch comprises a portion of said lower nozzle to be open to allow said fluid within said input fluid reservoir to flow out;

said fluid notch comprises a cut in a portion of said nozzle;

said fluid notch comprises a lower edge and an upper edge;

said lower edge and said upper edge are substantially parallel with one another;

said lower edge and said upper edge are separated by said nozzle exit height;

said nozzle exit height comprises a distance between the bottom of said fluid notch and an upper edge of said fluid notch;

said input fluid reservoir comprises said fluid passage; and
 said input fluid reservoir is attached to said nozzle by placing said fluid passage at a lower end of said input fluid reservoir and attaching said input fluid reservoir to a portion of said nozzle.

6. The gravity oiler assembly of claim **5**, wherein:
 said lower edge and said upper edge are perpendicular to said center axis.

7. The gravity oiler assembly of claim **1**, wherein:
 said fluid notch comprises a fluid exit, and a lower edge;
 said fluid exit is located in a lowest portion of said nozzle;
 said lower edge comprises a surface around said fluid exit;
 said fluid notch comprises a cut in an upper portion of said lower edge; and

said fluid notch can allow said fluid to break surface tension when emptying out of said input fluid reservoir and into a portion of said fitting.

8. The gravity oiler assembly of claim **1**, wherein:
 a portion of said input fluid reservoir and said nozzle comprises male and female threading configured to mate with one another.

9. A gravity oiler assembly for passively managing a fluid within an input fluid reservoir for use in an equipment fluid reservoir, wherein:

said gravity oiler assembly comprises a fitting, said input fluid reservoir, and a nozzle;

said fitting comprises an outer surface, an inner cavity, a top aperture, and a side aperture;

said input fluid reservoir comprises a bottle being arranged with a fluid passage attached to said nozzle;

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said nozzle is arranged below said input fluid reservoir and inserted into said top aperture of said fitting;
 said gravity oiler assembly is configured to allow said fluid in said input fluid reservoir to enter a portion of said nozzle, said inner cavity and said side aperture;
 said gravity oiler assembly is configured to store said fluid in said input fluid reservoir and passively dispense said fluid into an equipment fluid cavity of said equipment fluid reservoir as a fitting fluid level drops below a upper edge of said nozzle;
 said nozzle comprises a fluid notch, a center axis, a bottle receiver, and a lower nozzle;
 said lower nozzle comprises an extended lower portion and said fluid notch;
 said fluid notch comprises a portion of said lower nozzle to be open to allow said fluid within said input fluid reservoir to flow out;
 said fluid notch comprises a cut in a portion of said nozzle;
 said fluid notch comprises a lower edge and an upper edge;
 said lower edge and said upper edge are substantially parallel with one another;
 said lower edge and said upper edge are separated by said nozzle exit height;
 said nozzle exit height comprises a distance between the bottom of said fluid notch and an upper edge of said fluid notch;
 said input fluid reservoir comprises said fluid passage;
 said input fluid reservoir is attached to said nozzle by placing said fluid passage at a lower end of said input fluid reservoir and attaching said input fluid reservoir to a portion of said nozzle;
 said fluid notch comprises a fluid exit, and a lower edge;
 said fluid exit is located in a lowest portion of said nozzle;
 said lower edge comprises a surface around said fluid exit;
 said fluid notch comprises a cut in an upper portion of said lower edge; and
 said fluid notch can allow said fluid to break surface tension when emptying out of said input fluid reservoir and into a portion of said fitting.
10. The gravity oiler assembly of claim 9, wherein:
 said fitting can further comprise a vent port; and

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said vent port comprises an aperture through said outer surface and into said inner cavity.

11. The gravity oiler assembly of claim 10, wherein:
 said vent port is used to equalize pressure from said inner cavity and an ambient air pressure outside of said fitting.

12. The gravity oiler assembly of claim 10, wherein:
 said vent port is used to vent fluids, such as air, between said gravity oiler assembly and said input fluid reservoir where said gravity oiler assembly is used in a closed loop system.

13. The gravity oiler assembly of claim 9, wherein:
 a portion of said input fluid reservoir and said nozzle comprises male and female threading configured to mate with one another.

14. The gravity oiler assembly of claim 9, wherein:
 said input fluid reservoir can fit within a portion of said nozzle;

said nozzle can fit in said top aperture of said fitting; and
 a fluid cavity of said input fluid reservoir is in fluid connection with said inner cavity of said fitting.

15. A gravity oiler assembly for passively managing a fluid within an input fluid reservoir for use in an equipment fluid reservoir, wherein:

said gravity oiler assembly comprises a fitting, said input fluid reservoir, and a nozzle;

said fitting comprises an outer surface, an inner cavity, a top aperture, and a side aperture;

said input fluid reservoir comprises a bottle being arranged with a fluid passage attached to said nozzle;

said nozzle is arranged below said input fluid reservoir and inserted into said top aperture of said fitting;

said gravity oiler assembly is configured to allow said fluid in said input fluid reservoir to enter a portion of said nozzle, said inner cavity and said side aperture;

said gravity oiler assembly is configured to store said fluid in said input fluid reservoir and passively dispense said fluid into an equipment fluid cavity of said equipment fluid reservoir as a fitting fluid level drops below a upper edge of said nozzle; and

a portion of said input fluid reservoir and said nozzle comprises male and female threading configured to mate with one another.

* * * * *