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Batson

(54) TANK LID LIFTER AND METHODS

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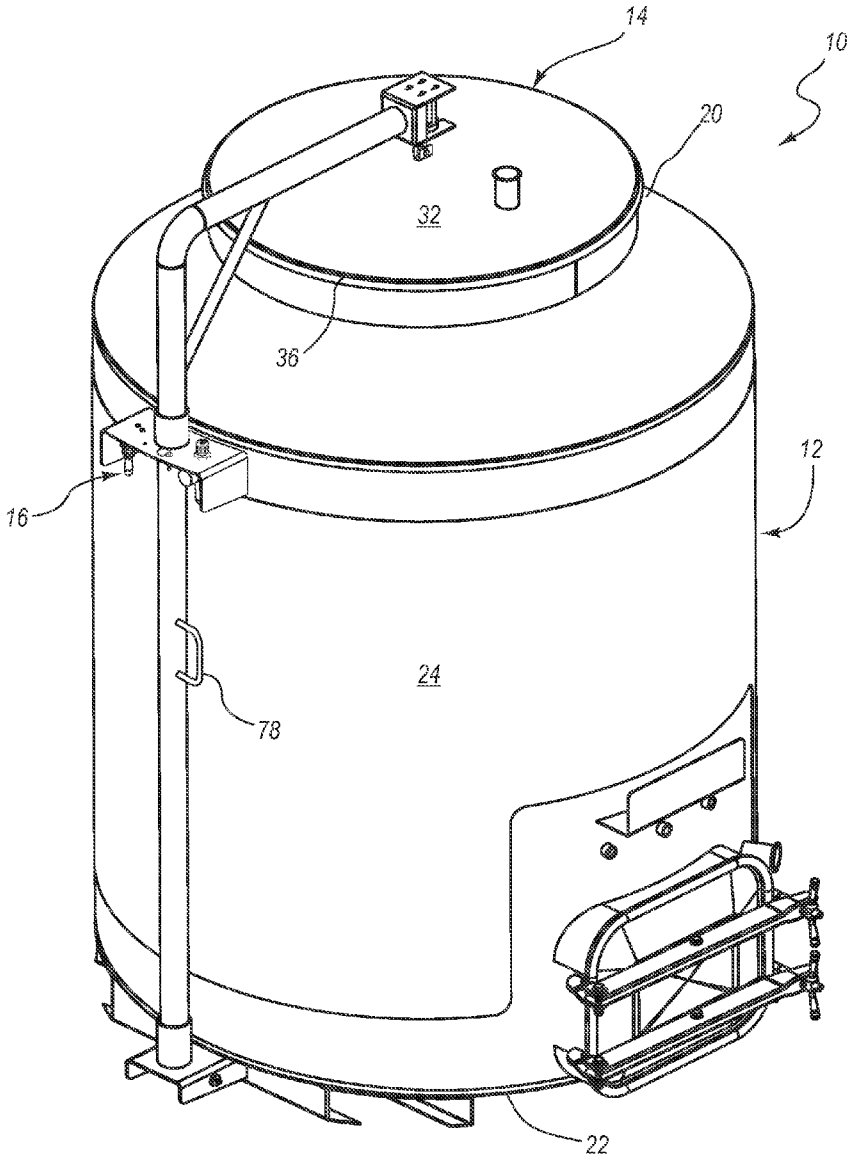
(57) **ABSTRACT**

A tank assembly including a tank, a lid, and an actuator assembly. The tank defines a tank volume and has an opening defined therein. The lid is sized to cover the opening in sealing engagement with the tank. The actuator assembly includes a first actuator arrangement and a second actuator arrangement. The first actuator arrangement is configured to move the lid into and out of sealing engagement with the tank. The second actuator arrangement is configured to move the lid between a first position in alignment with the opening, and a second position removed from alignment with the opening to permit access into the opening.



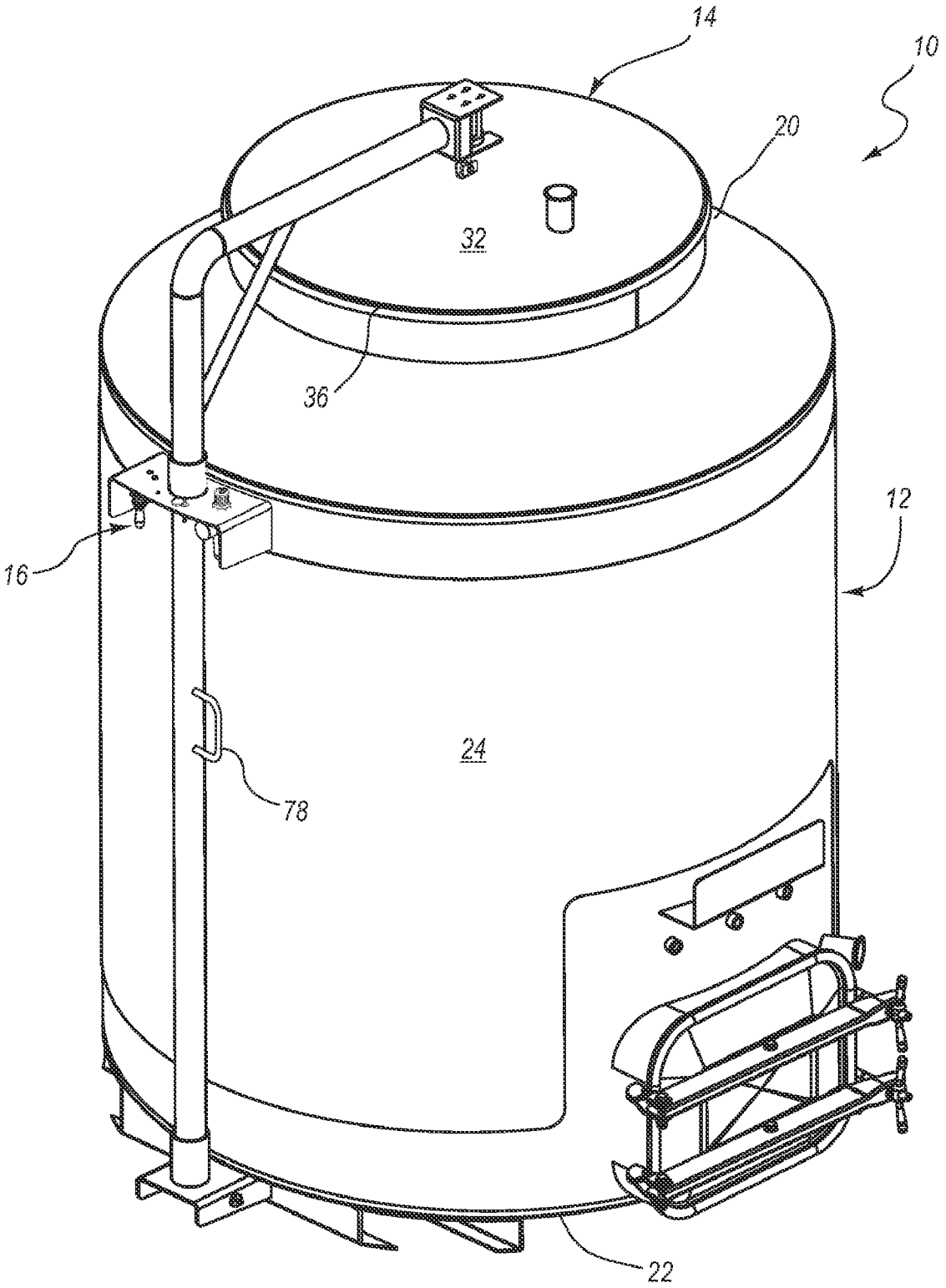


FIG. 1

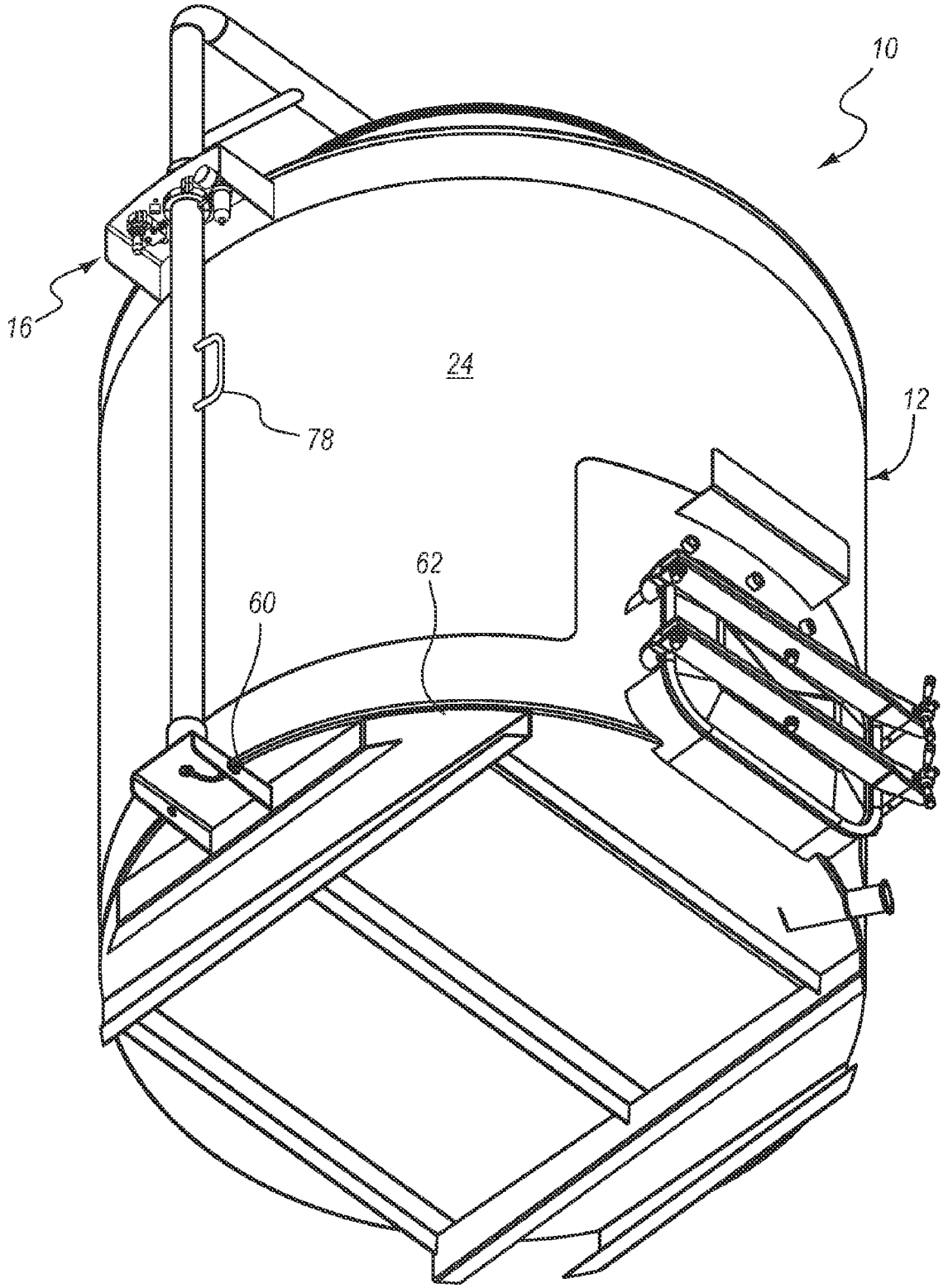


FIG. 2

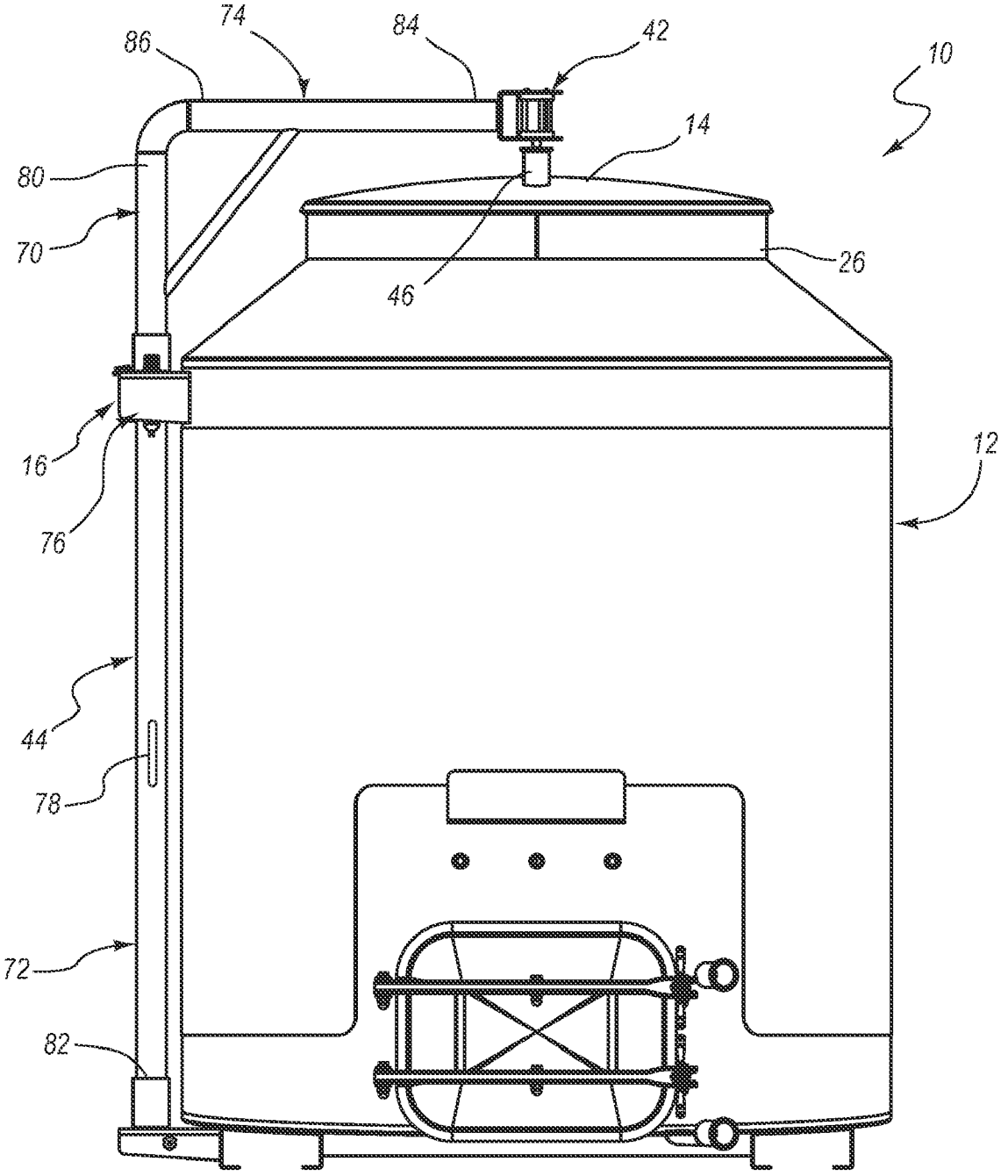


FIG. 3

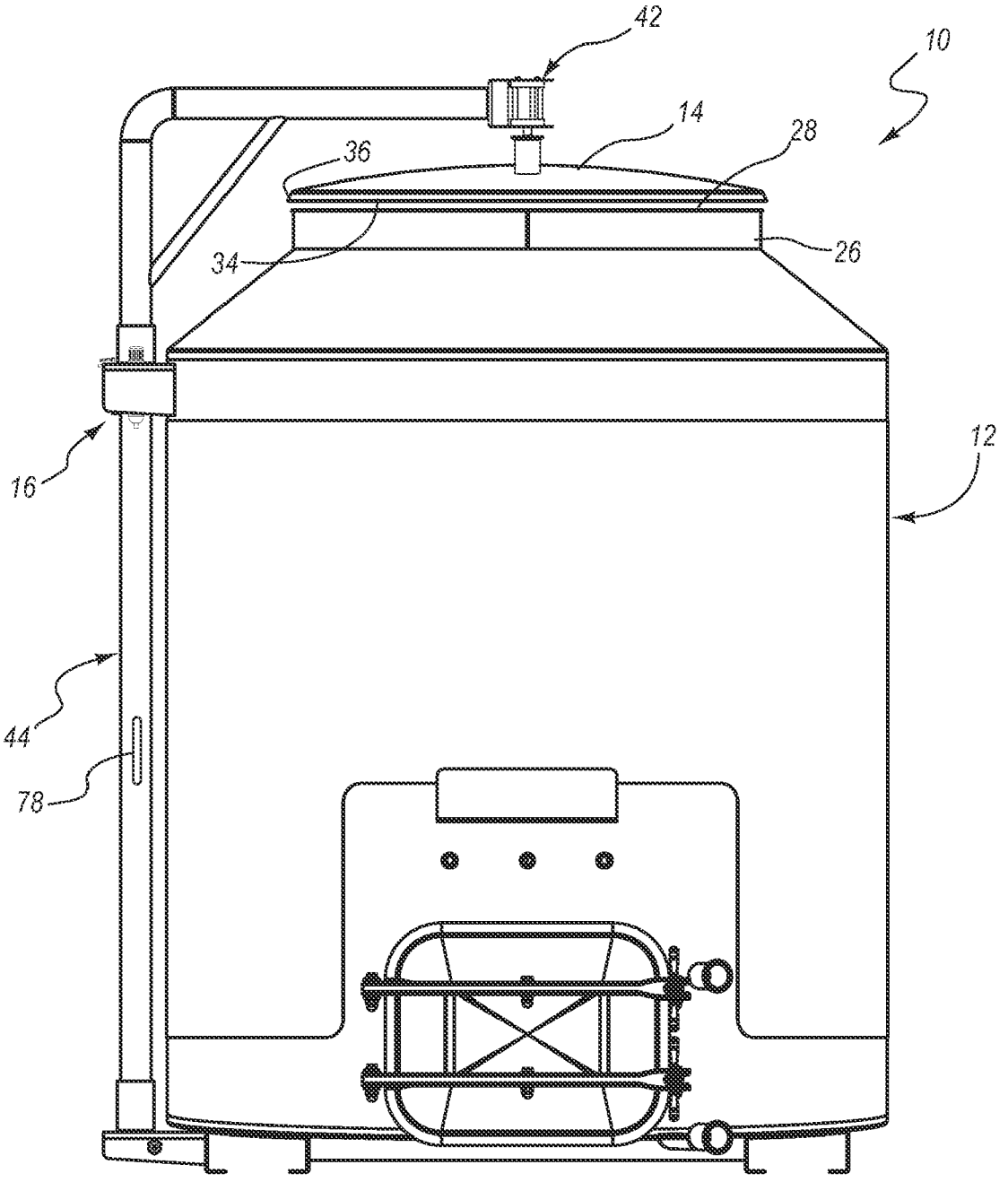


FIG. 4

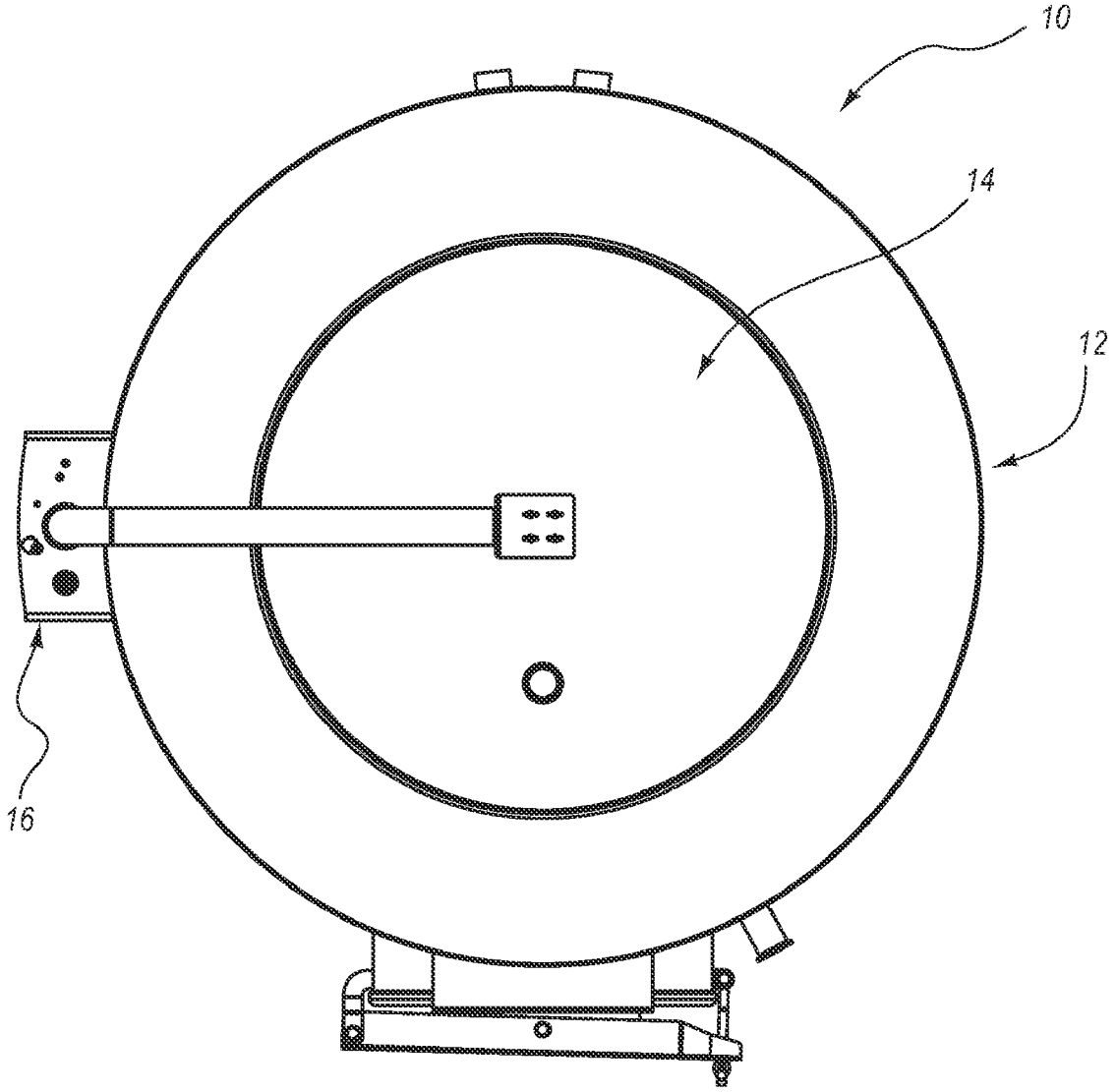


FIG. 5

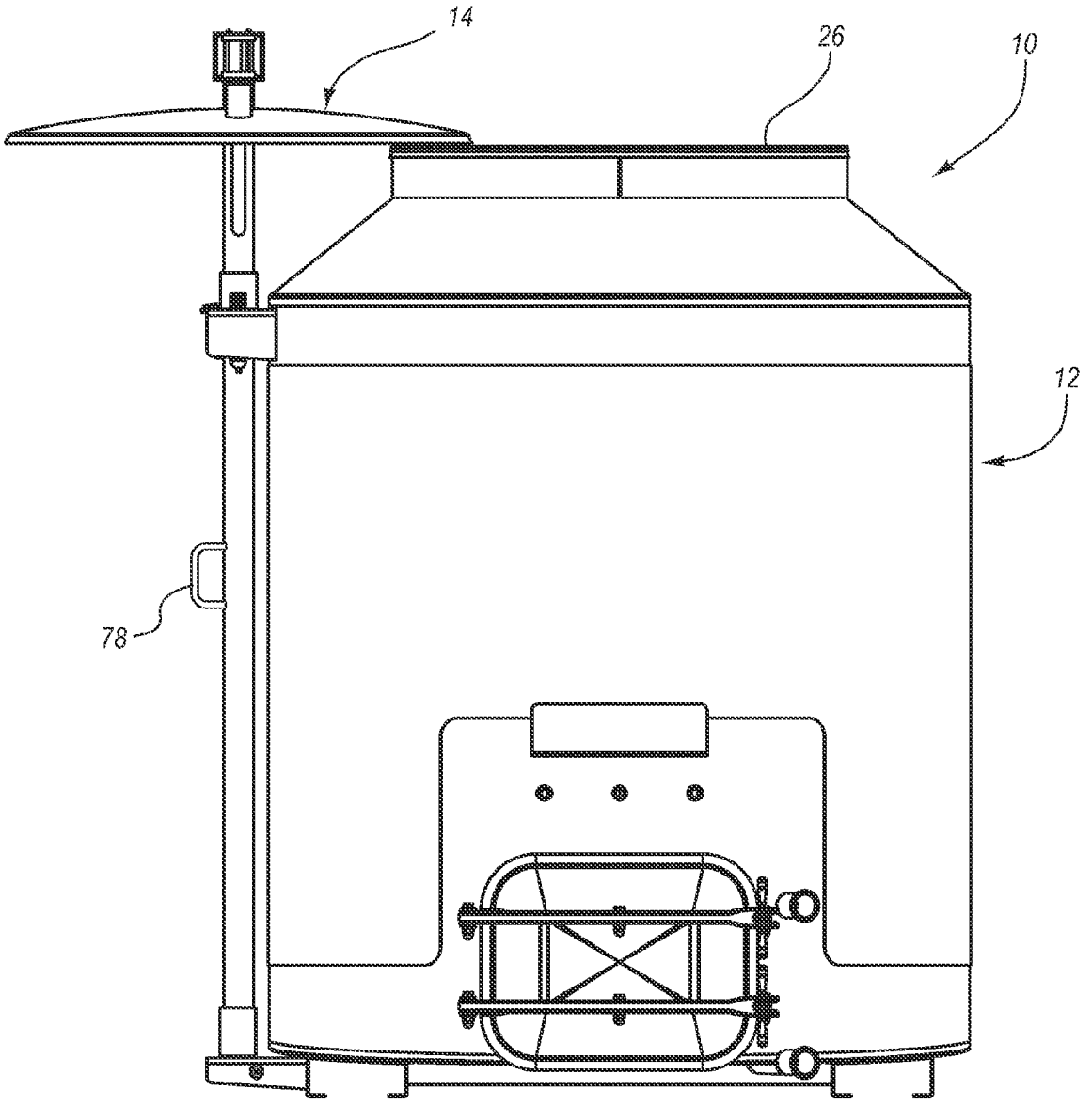


FIG. 6

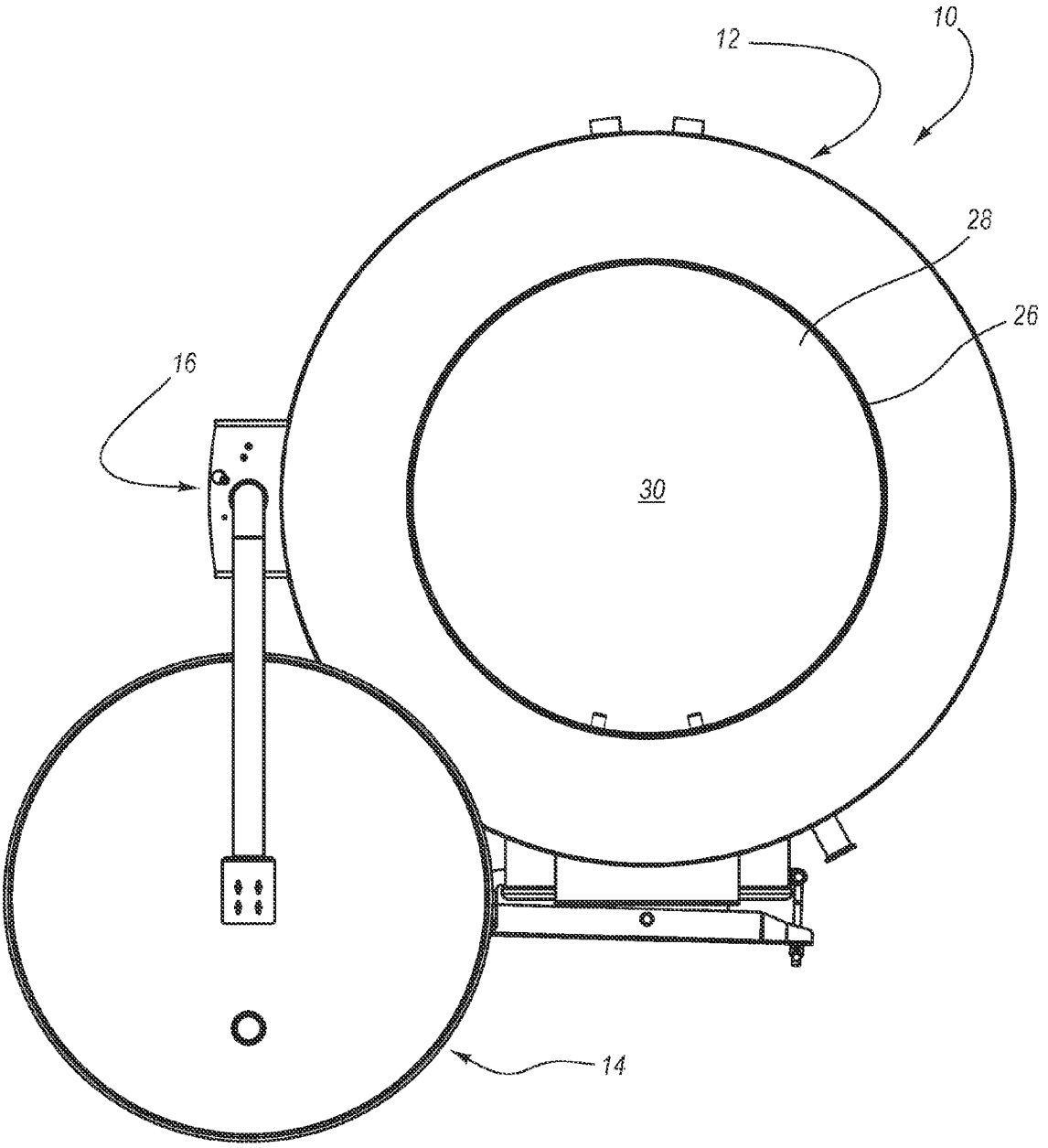


FIG. 7

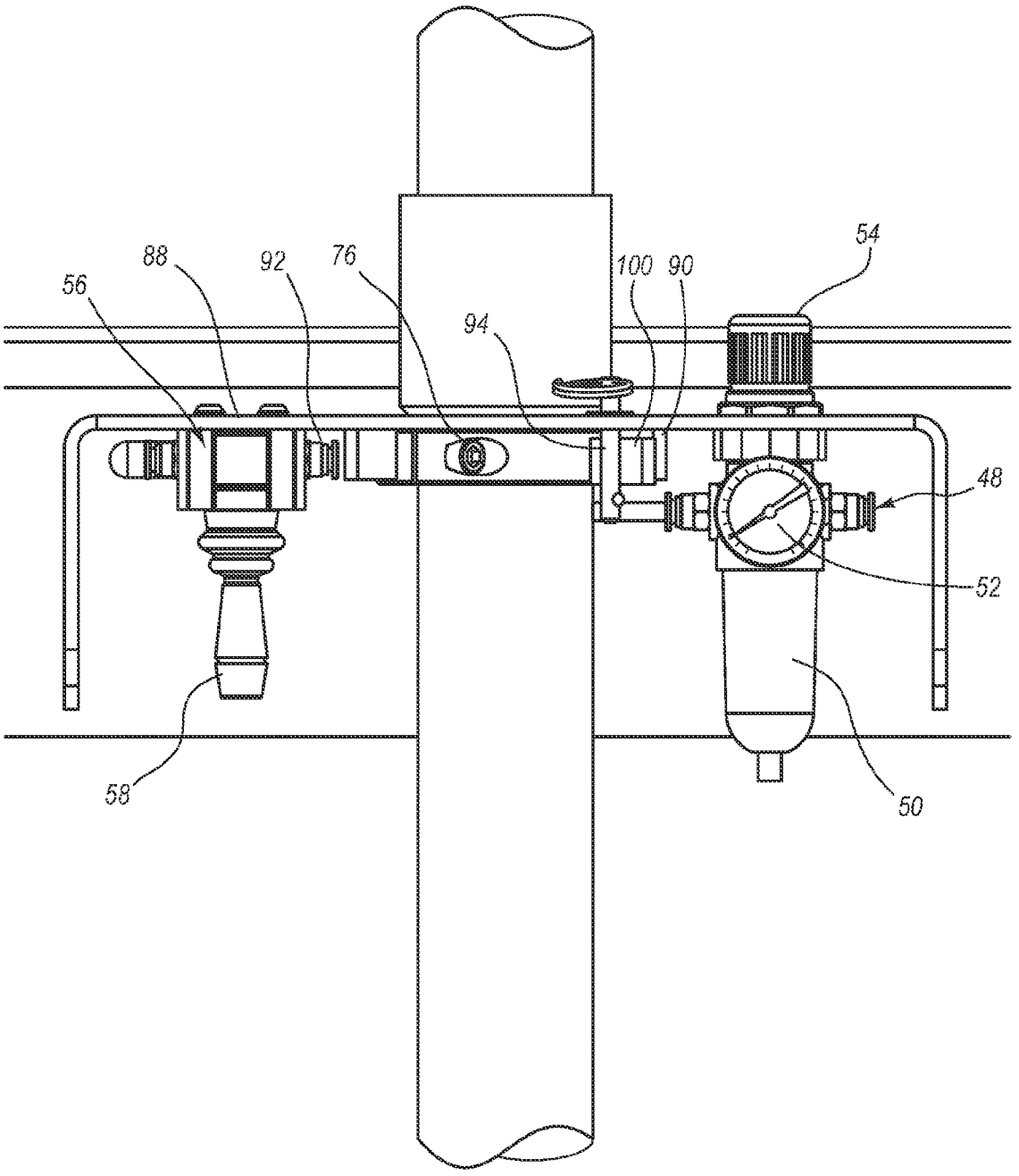


FIG. 8

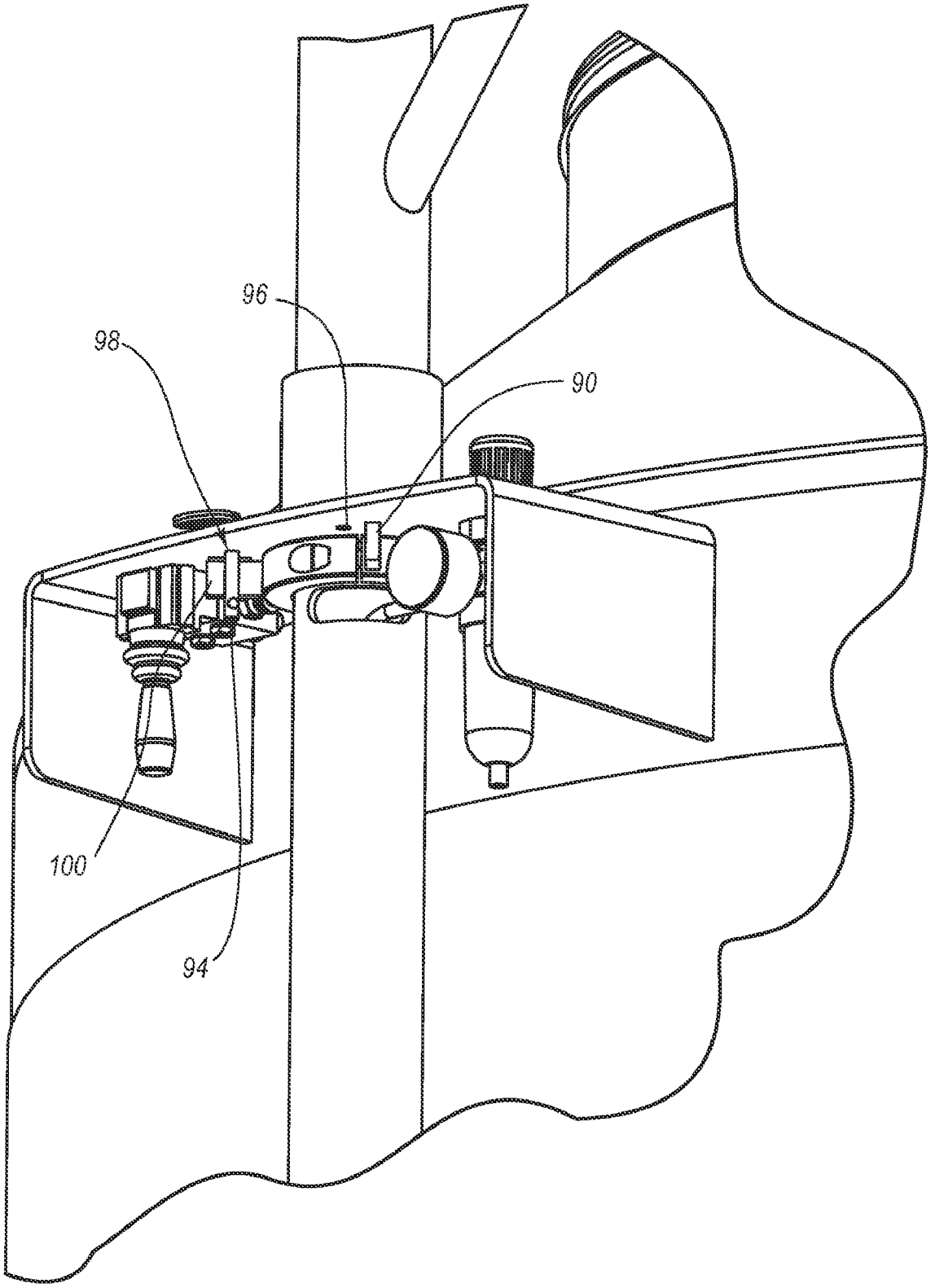


FIG. 9

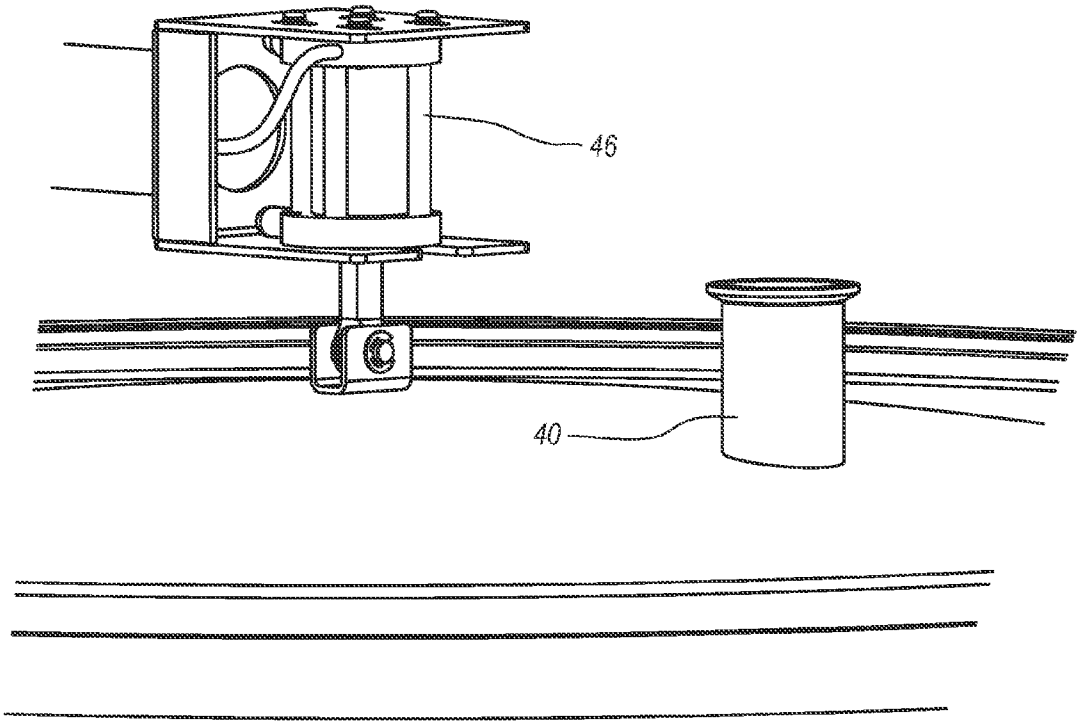


FIG. 10

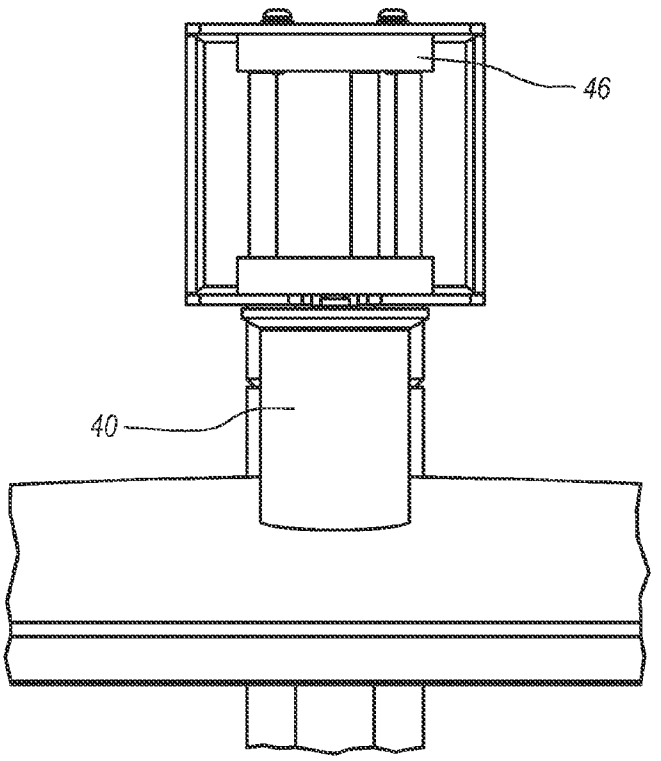


FIG. 11

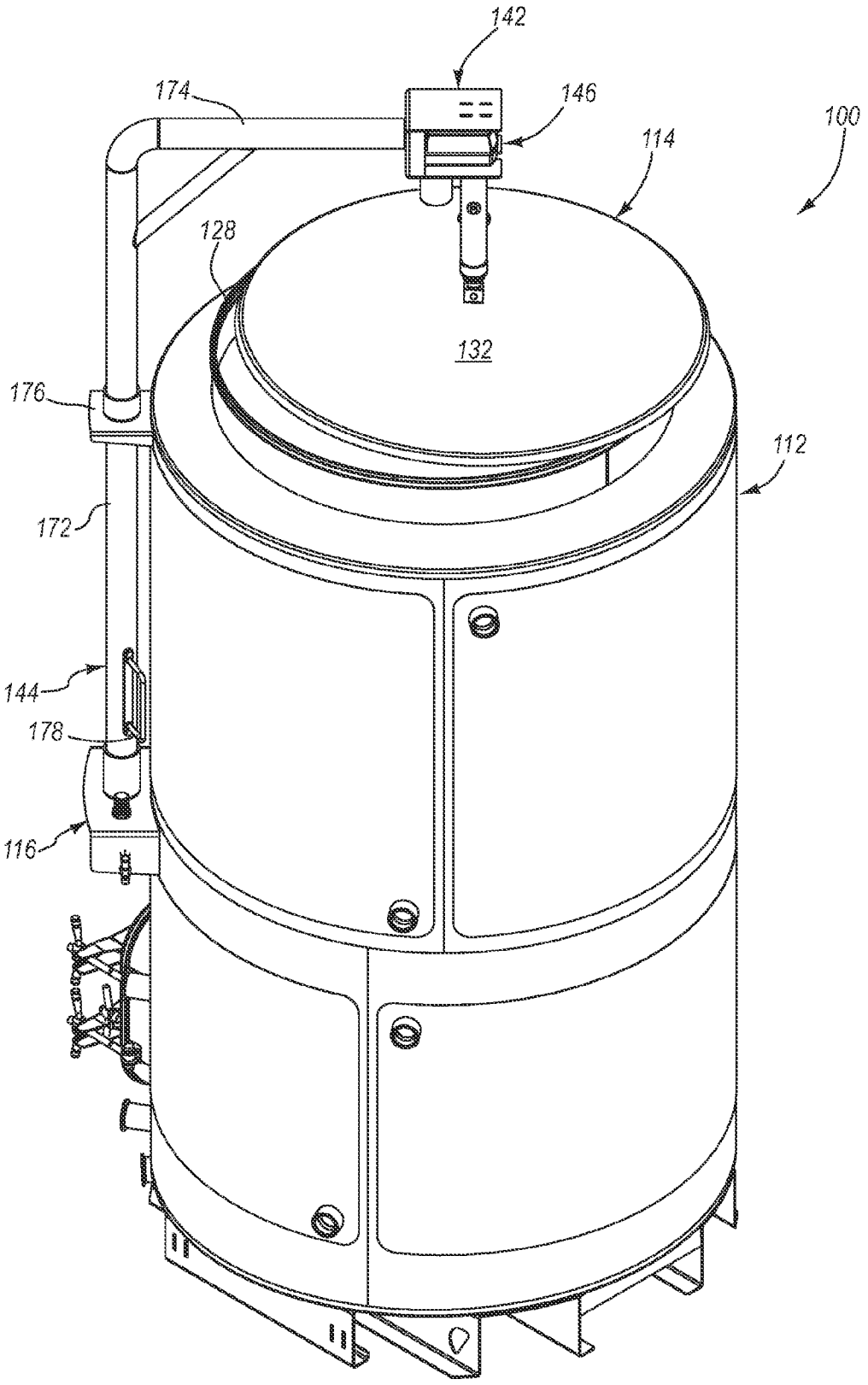


FIG. 12

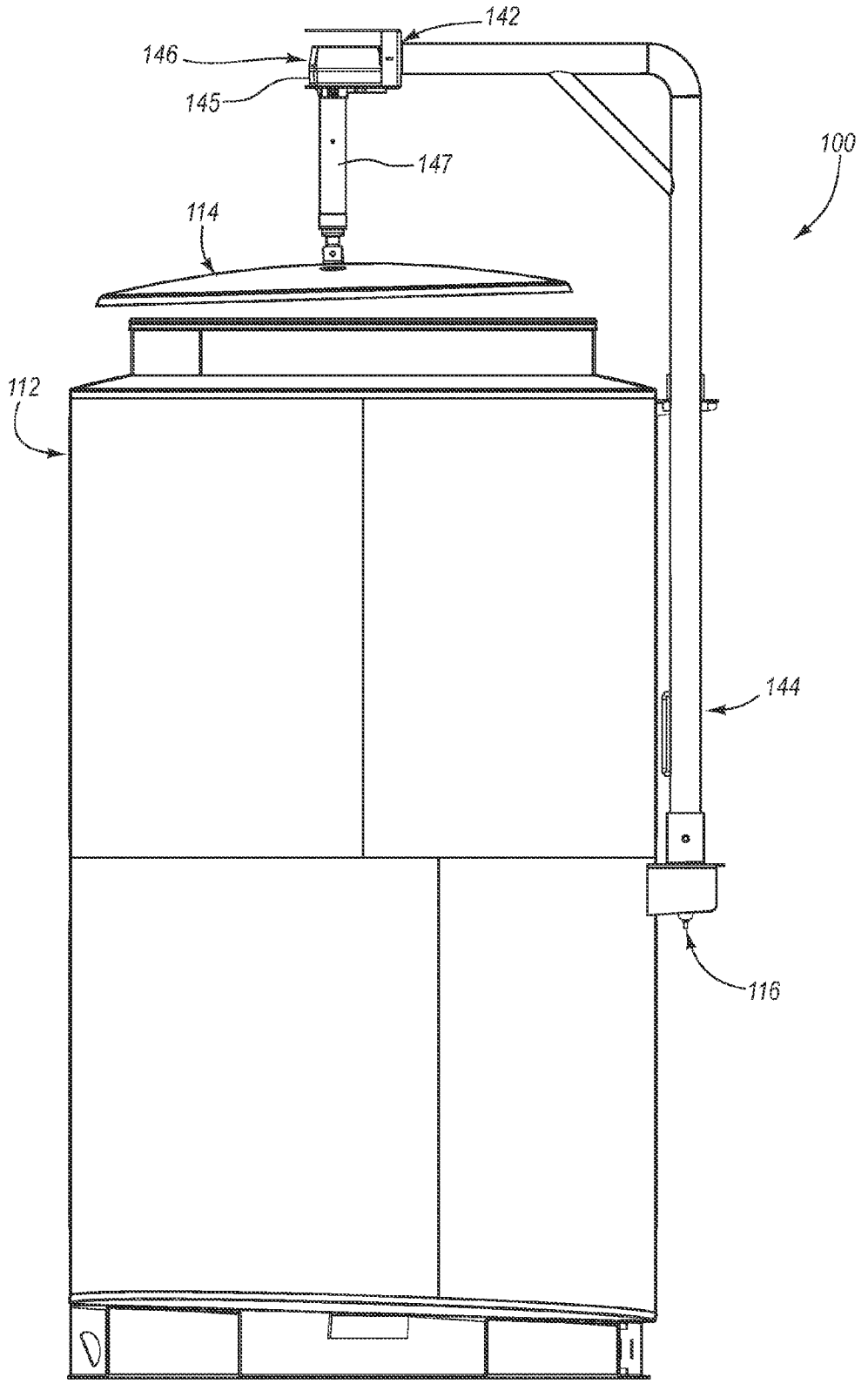


FIG. 13

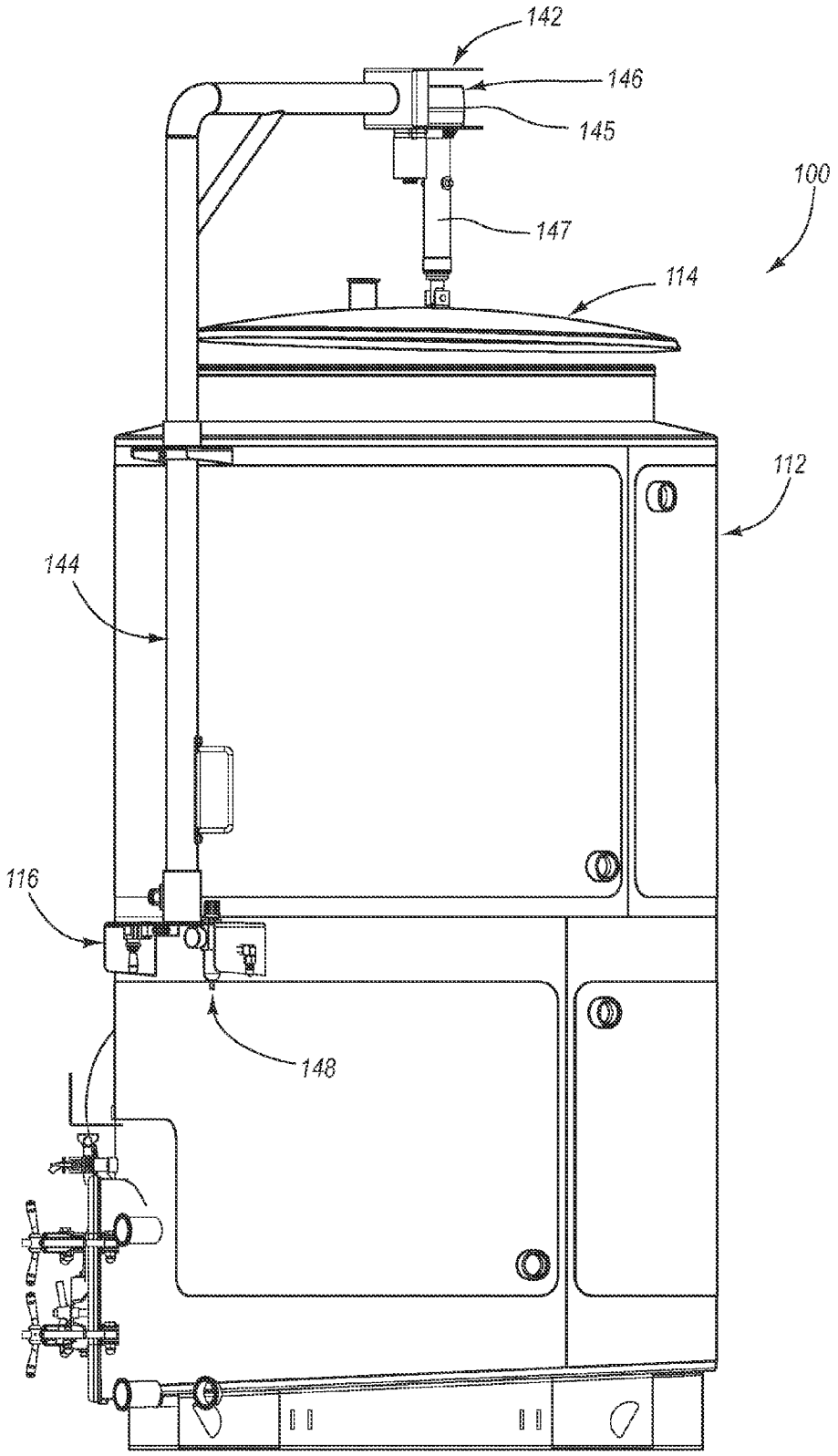


FIG. 14

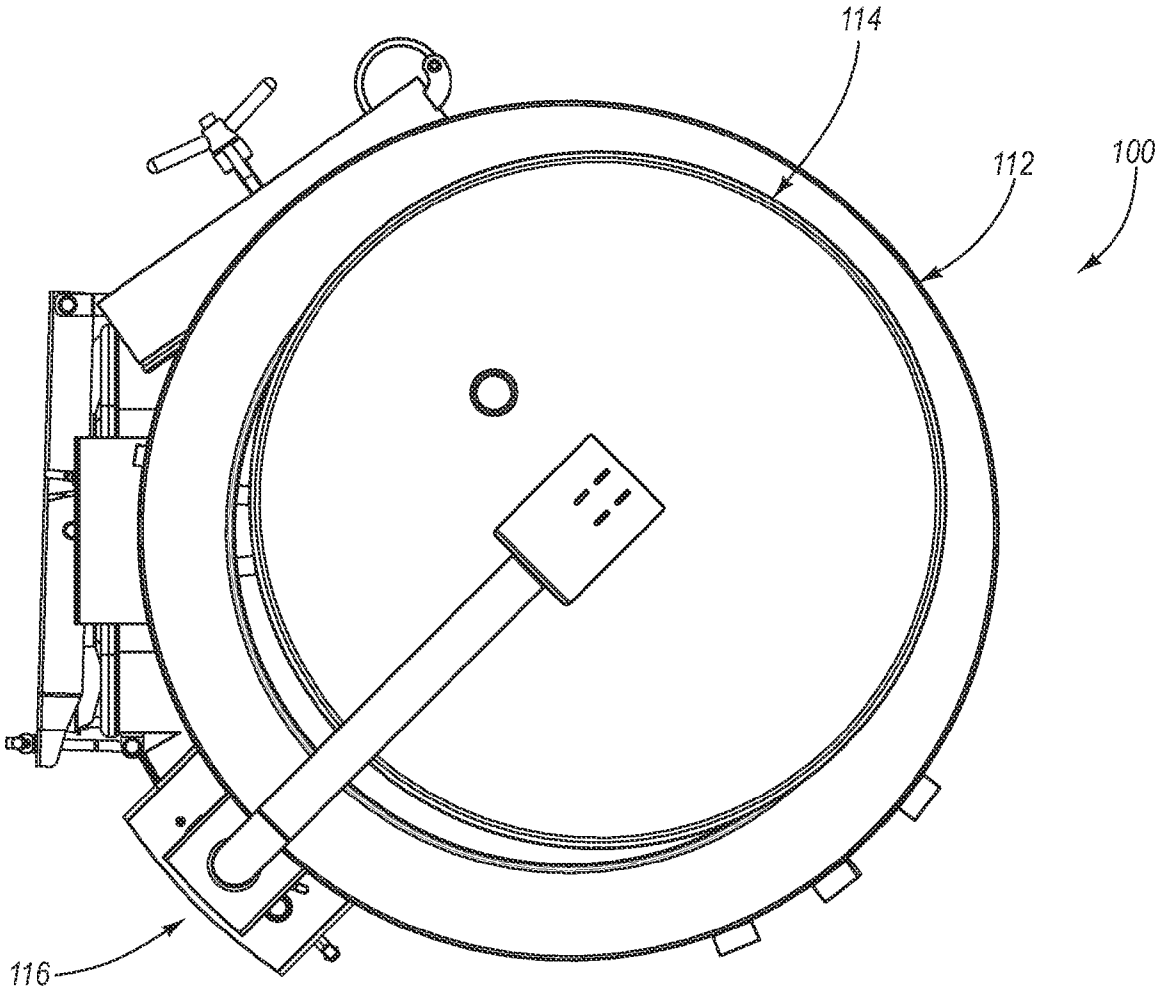


FIG. 15

TANK LID LIFTER AND METHODS

TECHNICAL FIELD

[0001] The present disclosure relates to tank assemblies having a removable lid, and more particularly relates to actuator assemblies for use in moving the lid and related methods.

BACKGROUND

[0002] The process of fermentation of red wines requires the management of the wine cap. The cap is primarily composed of solid grape skins and grape seeds. For the extraction of color and tannins, the cap must remain in intimate contact with the grape juice. As the wine ferments, carbon dioxide is generated. The carbon dioxide gets trapped in the solids and in turn raises the solids to the top of the juice, thus forming the cap. Typically, the cap rises out of the liquid as the carbon dioxide rises. When the cap is exposed out of the liquid, a combination of acetic bacteria, warmth and oxygen that is present can convert the juice to vinegar in a relatively short time.

[0003] Several methods are used to submerge the cap and keep it in contact with the juice. For small batch, premium wines the preferred method is the "punch down" method. The punch down method involves manually punching down the cap into the juice several times per day using a pole with a disk on the end. While the punch down method can be a tedious process, it is also a relatively gentle method as compared to alternative methods, thus causing minimal disturbance to the solids and avoiding the harmful abrasion that can release hard tannins from the outer layer of the skins into the juice.

[0004] Typically, exposure of the juice to oxygen in the air is limited by sealing the tank holding the juice with a sealing lid that is positioned on top of the tank. Handling the lid can be a time-consuming, labor-intensive task. Usually two to three people are required to handle a lid needed for a typical sized wine tank (e.g., a 250-1000 gallon tank). Handling the tank can require manually climbing up step ladders, carrying the lid, setting the lid in place, and latching the lid down with a latch mechanism. To punch down the cap, the operators typically climb a step ladder, undo the latch mechanism, remove the lid, carry the lid down, and place the lid on the ground next to the tank while the punch down operation is performed. After the punch down operation is performed, the lid must then be carried up the step ladder, lifted into place over the tank opening, manually aligned with the edge seal, and latched down with the latch mechanism. This process of handling the lid may permit contamination to enter the tank interior as debris off of the top of the lid, debris collected on the sides and bottom of the lid from setting the lid on the ground, and other contaminants collected from excessive handling pass into the tank. This process of handling also requires multiple operators for every punch down operation. Handling a lid manually can also pose a higher safety risk as the punch down operation must be performed several times per day on every tank of wine being fermented.

SUMMARY

[0005] One aspect of the present disclosure relates to a tank assembly. The tank assembly includes a tank, a lid, and an actuator assembly. The tank defines a tank volume and has an opening defined therein. The lid is sized to cover the opening in sealing engagement with the tank. The actuator assembly includes a first actuator arrangement and a second actuator arrangement The first actuator arrangement is configured to move the lid into and out of sealing engagement with the tank. The second actuator arrangement is configured to move the lid between a first position in alignment with the opening, and a second position removed from alignment with the opening to permit access into the opening.

[0006] Another aspect of the present disclosure relates to a method of opening and closing a tank assembly. The tank assembly includes a tank, a lid, and an actuator assembly. The tank has an opening at a top side thereof. The actuator assembly includes at least first and second actuator arrangements. The method includes moving the lid with the first actuator arrangement into and out of sealing engagement with the tank, and moving the lid with the second actuator arrangement between a first position in alignment with the opening and a second position substantially removed from alignment with the opening to permit access into the opening.

[0007] Other objects, features, and advantages of the invention will become apparent from the following detailed description of the invention with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. **1** is a top perspective view of an example tank assembly in accordance with the present disclosure.

[0009] FIG. **2** is a bottom perspective view of the example tank assembly shown in FIG. **1**.

[0010] FIG. **3** is a front view of the tank assembly shown in FIG. **1** with the lid in a closed state in engagement with the tank.

[0011] FIG. **4** is a front view ofthe tank assembly shown in FIG. **1** with the lid in an open state out of engagement with the tank and aligned with the tank opening.

[0012] FIG. **5** is a top view of the tank assembly shown in FIG. **4**.

[0013] FIG. **6** is a front view of the tank assembly shown in FIG. **1** with the lid moved laterally out of alignment with the tank opening.

[0014] FIG. **7** is a top view of the tank assembly shown in FIG. **6**.

[0015] FIG. **8** is a close-up view of the lid controls of the tank assembly shown in FIG. **1** with the lid arranged in alignment with the tank opening.

[0016] FIG. **9** is a close-up view of the lid controls of the tank assembly shown in FIG. **6** with the lid arranged out of alignment with the tank opening.

[0017] FIG. **10** is a close-up view of the pneumatic actuator shown in FIG. **1** prior to being activated to move the lid out of engagement with the tank.

[0018] FIG. **11** is a close-up view of the pneumatic actuator shown in FIG. **4** in an activated state to move the lid out of engagement with the tank.

[0019] FIG. **12** is a top perspective view of another example tank assembly in accordance with the present disclosure.

[0020] FIG. **13** is a first side view of the tank assembly shown in FIG. **12**.

[0021] FIG. **14** is a second side view of the tank assembly shown in FIG. **12**.

[0022] FIG. **15** is a top view of the tank assembly shown in FIG. **12**.

DETAILED DESCRIPTION

[0023] The present disclosure is directed to an actuator assembly for use in moving a lid relative to a tank of a tank assembly. The examples referred to herein provide for an apparatus and related methods that permit a single person to lift the lid, move the lid away from obstructing an opening of the tank, and securing the lid in the removed position. With the lid removed out of the way, an operator is able to access the interior of the tank via the tank opening to perform, for example, a punch down operation in a wine making process. When the operator has completed his access to the tank interior, the lid may be moved back into position, self-aligned with the tank opening, and moved into sealing engagement with the tank to close the opening by a single operator.

[0024] This process of handling the lid may reduce contamination to the contents ofthe tank because contact with the lid by the operator (i.e., a single operator) may be limited, and thus the lid may remain suspended out of contact with other objects while the tank interior is being accessed by the operator.

[0025] The actuator assembly may be operated at least in part using a pneumatic actuator and compressed air supply. Other aspects of the actuator assembly may be activated manually. In some arrangements, some aspects of the actuator may be powered and operated using alternative power sources such as hydraulic or electronic power sources.

[0026] When using pneumatics, a small compressed air supply may be provided to the location of the tank and connected at a tank air fitting. In one example, a two-way, normally closed actuator valve may be manually actuated by the operator, allowing the air supply to reach a pneumatic cylinder attached to the lid. The action of the pneumatic cylinder may then lift the lid, freeing the lid from the tank and holding the lid in a raised position.

[0027] The pneumatic cylinder may be supported by a support member that may be pivoted or rotated to move the lid away from alignment with the tank opening. A position stop may be used to control the start and end rotated positions of the support member. A locking member may be used to retain the support member in at least the start and end rotated positions. Reverse steps may be taken to reposition and close the lid relative to the tank opening.

[0028] An example tank assembly **10** that may include these and related features is shown and described with reference to FIGS. **1-11**. The tank assembly **10** includes a tank **12**, a lid **14**, and an actuator assembly **16**. The actuator assembly **16** is configured to move the lid **14** relative to an opening in the tank as will be described in further detail below.

[0029] The tank **12** includes a top end **20**, a bottom end **22** and a sidewall **24** that define an internal volume **30** (see FIG. **7**). A top opening **28** is defined by an opening edge **26** at the top end **20** (see FIGS. **1** and **7**). As noted above, the tank **12** may retain a volume of grapes in a process for making wine. The tank **12** holds both grape juice as well as grape solids that are separated from the juice. Typically, it is important to be able to access the internal volume **30** of the tank **12** in order to submerge the solids (also referred to as a "cap" of solids) inthejuice on aperiodic basis. One aspect of the present disclosure relates to improved management ofthe lid **14** relative to the top opening **28** to reduce the total amount of time and manual effort involved in accessing the internal volume **30** to submerge the cap during the process of maling wine.

[0030] The lid **14** includes a top surface **32**, a bottom surface **34** and a peripheral edge **36**. In some arrangements, the lid **14** may also include a seal member (not shown) arranged around the peripheral edge **36** or along the bottom surface **34** where the lid **14** mates with the opening edge **26** of the tank **12**. In some arrangements, the seal member may be mounted to the tank **12** rather than to the lid **14**. Preferably, engagement between the lid **14** and the tank **12** along the opening edge **26** provides sealing engagement. The sealing engagement may be an air-tight seal to help reduce inflow of oxygen into the internal volume **30**. The lid **14** may also include a connector **40** (see FIGS. **9** and **10**). The connector **40** may be used as an interface between the lid **14** and features of the actuator assembly **16**.

[0031] The lid **14** may generally have a circular shape when viewed from above that corresponds to the generally circular shape of the top opening **28** of the tank **12**. In alternative arrangements, the top opening **28** may have alternative shapes and sizes, such as rectangular or oval shapes. The shape of the lid **14** may generally correspond to the shape of the top opening **28**. Alternatively, a portion of the lid **14** that is in sealing engagement with the opening edge **26** may have a shape and size that corresponds to the shape and size of the top opening **28**, while an exterior or peripheral edge portion ofthe lid may comprise shapes and sizes that are different from the shape and size of the top opening **28**.

[0032] The lid **14** may include a dome shaped upper surface to reduce collection of moisture and dirt on the lid **14**. The bottom surface of the lid **14** may have a dome shape or concave shape.

[0033] The size and weight of the lid **14** may be significant in some tank assembly arrangements given the size and volume of the tank **12** and the size and shape of the top opening **28**. In one example, the tank **12** may have an internal volume in the range of about 250-2,000 gallons, and more specifically about 600-900 gallons. Further, the tank **12** may comprise ametallic material, such as stainless steal. The lid **14** may comprise a similar material. The actuator assembly **16** described below may be helpful in moving a relatively heavy, large lid **14** into and out of engagement withthe tank **12** and into and out of alignment covering the top opening **28**. Further, the actuator assembly may be used with a single operator.

[0034] The actuator assembly **16** includes first and second actuator arrangements **42**, **44**. The first actuator arrangement **42** may comprise a plurality of features that may help to move the lid **14** into and out of engagement with the tank **12**. Second actuator assembly **44** may comprise a variety of features that help move the lid, once out of engagement with the tank **12**, into and out of a position covering the opening **28**.

[0035] The first actuator assembly **42** may include an actuator cylinder **46** and a control assembly **48**. The actuator cylinder **46** may be positioned adjacent to the top surface **32** of the lid **14**. The actuator cylinder **46** is operable between extended and retracted positions. In the extended position (see FIG. **10**), the lid **14** may be positioned in sealing engagement with the tank **12**. The extended position of cylinder **46** may also be referenced as a rest position wherein no application of force or activation of the cylinder **46** is needed in order for the lid **14** to maintain sealing engagement with the tank **12**.

In the retracted, or activated, position, the cylinder **46** lifts or otherwise moves the lid **14** out of engagement with the tank **12** (see FIG. **11**).

[0036] The control assembly **48** may be mounted to the tank **12**, such as along the sidewall **24** at a location that may be easily accessible by the operator. The control assembly **48** may include a regulator **50**, a regulator gauge **52**, a regulator adjustor **54**, a valve **56**, a valve actuator **58**, an air supply connector **60**, and an air supply **62**. The regulator adjustor **54** may be used to adjust the air pressure applied to the cylinder **46** upon opening of the valve **56** with the valve actuator **58**. The regulator gauge **52** may provide a visual indicator of the pressure levels. The air supply **62** is attached to the regulator **50** via the air supply connector **60**. The air supply connector **60** may be positioned at any desired location, such as at the bottom end **22** of the tank **12** (see FIG. **1**). The air supply **62** may be provided from an external air pressure source or may be generated by an air pressure generating unit mounted to the tank assembly **10**.

[0037] While a pneumatic system is described with reference to tank assembly **10** for the first actuator arrangement **42**, other system configurations are possible. For example, a hydraulic supply may be used to actuate the cylinder **46**. Alternatively, electrical motors, electronic actuators, and other electronic devices may be used to raise and lower the lid **14** and rotate the lid **14** away from the tank opening **28**. For example, an electric linear actuator may be used to raise and lower the lid **14** as described in more detail below with reference to the embodiment of FIGS. **12-14**. In still further arrangements, a manually activated system may be used in place of a powered device, such as the actuator cylinder **46**, motor or other powered device. An example manually activated system may include an assembly of linkage members and may include an eccentric or cam member on a lever that provides a lifting action when manually activated. Another example manually activated system includes a cable with an eccentric on a lever, and activation of the lever manually raises and lowers the lid relative to the tank. Any combination of power supplies and manually activated features may be used to move the lid **14** into and out of engagement with the tank **12**.

[0038] The second actuator arrangement **44** may include a support arm having first and second segments **72**, **74**, a collar assembly **76**, and an actuator handle **78**. The first segment **72** has first and second ends **80**, **82** and is arranged generally vertically along the sidewall **24** of the tank **12**. The second segment **74** includes first and second ends **84**, **86** and is arranged generally horizontally across the top side of the tank **12** and vertically above the lid **14**. The first end **80** of the first segment **72** is connected to the second end **86** of the second segment **74**. The second end **82** of the first segment **74** is supported at the bottom end **22** of the tank **12**. The first segment **72** is rotatable about its longitudinal axis, which extends vertically along the sidewall **24** of tank **12**. The actuator handle **78** may be used to manually rotate the first segment **72**. The first end **84** of the second segment **74** supports the actuator cylinder **46** at a central location above the lid **14**.

[0039] The collar assembly **76** may include abase **8 8**, first and second position stops **90**, **92**, at least one stop pin **94**, first and second pin apertures **96**, **98**, and a stop member **100** (see FIGS. **8** and **9**). The collar assembly **76** is shown positioned adjacent to the controls assembly **48** of the first actuator arrangement **42**. In other arrangements, the collar assembly **76** may be positioned at a location removed from the controls assembly **48**. Positioning the collar assembly **76** at the same general location as the controls assembly **48** may provide a convenience for the operator of the tank assembly **10**.

[0040] The first and second position stops **90**, **92** define two specific rotated positions of the lid **14** relativeto thetank **12**. The firstposition stop **92** defines afirstposition inwhichthe lid **14** may be arranged in alignment with and covering the top opening **28**. By maintaining the stop member **100** in engagement with the first position stop **90**, the operator may be able to determine that the lid **14** is in proper alignmnent with the top opening **28**. The operator may then activate the cylinder **46** to move the lid **14** into sealing engagement with the tank **12**. Similarly, maintaining the stop member **100** in engagement with the second position stop **92** may enable the operator to determine that the lid **14** is moved out of a position covering the top opening **28** so that the operator may access the internal volume **30** of the tank **12**.

[0041] The position of stop member **100** in engagement with one of the first or second position stops **90**, **92** may be maintained using the stop pin **94**. The stop pin **94** may be inserted through one of the first and second apertures **96**, **98**, which are associated with the first and second position stops **90**, **92**, respectively, to hold the stop member **100** in a specific rotated position.

[0042] Many other configurations are possible to provide desired rotated positions of the lid **14** relative to the tank **12**. For example, a pneumatic cylinder could be used to rotate the first segment **72** ofthe support member **70** with preset settings ofthe cylinder defining the desired rotated positions of the lid **14**. Variations of the collar assembly **76** may be used to provide the same or similar functionality as described above for collar assembly **76**. For example, additional stop members **100** and stop pins **94** may be used. Further, the position of the position stops **90**, **92** may vary to provide the different rotated position of the lid **14** relative to tank **12**.

[0043] The first and second segment **72**, **74** of the support member **70** are shown arranged in a generally perpendicular arrangement with the first segment **72** arranged generally vertically and the second segment **74** arranged generally horizontally. In other configurations, at least a portion of the second segment **74** may include a portion that is arranged out of a horizontal plane, such as at an angle between 0 degrees and 90 degrees relative to the vertically arranged first segment **72**. Generally, the second segment **74** may be arranged at an angle relative to the first segment **72** to provide a non-parallel arrangement between the first and second segments **72**, **74**.

[0044] The first segment **72** of the support member **70** is shown extending from the top end **20** to the bottom end **22** of the tank **12**. Alternatively, the first segment **72** may extend along only a portion of the total height of the tank **12**, such as along only a portion of the sidewall **24** between the top and bottom ends **20**, **22**.

[0045] The actuator assembly **16** may be modified to accommodate different tank designs, such as a tank having an opening along the sidewall **24** of the tank **12** or at any other suitable location as an alternative arrangement to the top most end of the tank as shown with reference to FIGS. **1-11**.

[0046] Further, the actuator assembly **16** may have many other configurations and alternative embodiments that may provide, for example, moving the lid into and out of engagement with the tank in the same motion as moving the lid into and out of alignment covering the opening.

[0047] The support member **70** may be configured with a hollow interior sized to retain, for example, cables, wiring,

supply lines, and other features needed for operation of the controls assembly **48**, actuator cylinder **46** or other features associated with the first and second actuator arrangements **42**, **44**.

[0048] Referring now to FIGS. **12-15**, another example tank assembly **100** is shown and described. The tank assembly **100** includes a tank **112**, a lid **114**, and an actuator assembly **116**. The actuator assembly **116** is configured to move the lid **114** relative to an opening in the tank as will be described in filter detail below. The tank **112** and lid **114** may include similar features and constructions as the tank **12** and lid **14** described above with reference to FIGS. **1-11**. The actuator assembly **116** may include an electronic actuator, such as an electronic linear actuator **146**, to raise and lower the lid **114** relative to the tank **112**.

[0049] The actuator assembly **116** includes first and second actuator arrangements **142**, **144**. The first actuator arrangement **142** may comprise aplurality of features that may help to move the lid **114** into and out of engagement with the tank **112**. Second actuator arrangement **144** may comprise a variety of features that help move the lid, once out of engagement with the tank **112**, into and out of a position covering an opening **128** of the tank **112**. For example, the second actuator arrangement **144** may include a support arm having first and second segments **172**, **174**, a collar assembly **176**, and an actuator handle **178**.

[0050] The first actuator arrangement **142** may include a electronic linear actuator **146** and a control assembly **148**. The electronic linear actuator **146** may be positioned adjacent to a top surface **132** of the lid **114**. The electronic linear actuator **146** may include a motor **145** and an actuator **147** that is driven by the motor **145**.

[0051] The electronic linear actuator **146** is operable between extended and retracted positions. In the extended position the lid **114** may be positioned in sealing contact with the tank **112** (e.g., see lid **14** in contact with tank **112** in FIGS. **1-3**) along a top opening **128**. The extended position of the electronic linear actuator **146** may also be referenced in some arrangements as a rest position wherein no application of force or activation of the electronic linear actuator **146** is needed in order for the lid **114** to maintain sealing engagement with the tank **112**. In other arrangements, the extended position of the electronic linear actuator **146** may provide application of a downward force to the lid **114** by the electronic linear actuator **146** to provide an improved seal between the lid **114** and the tank **112**.

[0052] In a retracted or activated position, the electronic linear actuator **146** lifts or otherwise moves the lid **114** out of engagement withthe tank **112** (e.g, see raised position of lid **114** in FIG. **11**).

[0053] The control assembly **148** may be mounted to the tank **112**, such as along the sidewall **124** at a location that may be easily accessible by the operator. The control assembly **148** may include a plurality of control features used, for example, to operate the electronic linear actuator **146**, provide an indication to the operator of a position of the lid **114** relative to the tank **112**, and provide power usage and applied pressure information to the operator.

[0054] The actuator assemblies described herein may be operable to lift a lid relative to a tank opening, and return the lid to a position in contact with the tank to seal closed the tank opening. In some arrangements, the actuator assemblies may be configured to apply a force to the lid in a direction toward the tank. For example, an actuator assembly may be configured to lift a lid vertically out of contact with the tank to provide access to an opening into the tank, and also apply a downward force to the lid when the lid is in contact with the tank to create a seal between the lid and the tank. The downward force applied to the lid by the actuator assembly may be greater than a downward force applied solely by the weight of the lid.

[0055] In at least some arrangements, the weight of the lid alone is insufficient to create the desired seat between the lid and tank when the tank assembly is used for certain applications. For example, the weight of the lid may be sufficient when the tank assembly is used for liquid storage only (storage tank application), but a greater downward force applied by the actuator assembly is needed when the tank assembly is used for closed top red wine fermentation, open top red wine fermentation, closed top white wine fermentation, and variable capacity (i.e., with a Nitrogen purge) juice storage. Using an actuator assembly that can apply varying amounts of downward force to the lid provides the tank assembly with improved versatility in producing and storing many different types of wine, wherein multiple tank assemblies were needed previously.

[0056] While this invention has been described with reference to certain specific embodiments and examples, it will be recognized by those skilled in the art that many variations are possible without departing from the scope and spirit of this invention. The invention, as described by the claims, is intended to cover all changes and modifications of the invention which do not depart from the spirit of the invention. The words "including" and "having," as used in the specification, including the claims, shall have the same meaning as the word "comprising."

1. A tank assembly, comprising:
- a tank defining a tank volume and having an opening defined therein;
- a lid sized to cover the opening in sealing engagement with the tank;
- an actuator assembly, comprising:
  - a first actuator arrangement configured to move the lid into and out of sealing engagement with the tank;
  - a second actuator arrangement configured to move the lid between a first position in alignment with the opening and a second position removed from alignment with the opening to permit access into the opening.

2. The tank assembly of claim **1**, wherein a periphery of the opening is defined by a cylindrical shaped lip.

3. The tank assembly of clain **1**, wherein the opening is arranged on a top side of the tank.

4. The tank assembly of claim **1**, wherein the first actuator arrangement moves the lid vertically into and out of sealing engagement with the tank.

5. The tank assembly of claim **1**, wherein the second actuator arrangement moves the lid horizontally between the first and second positions.

6. The tank assembly of claim **1**, further comprising a support member arranged to support the lid vertically above the tank when the lid is out of sealing engagement with the tank.

7. The tank assembly of claim **6**, wherein the support member includes a first segment arranged vertically, the support member being rotatable about a longitudinal axis ofthe first segment.

8. The tank assembly of claim **1**, wherein the first actuator arrangement comprises one of a pneumatic actuator and an electronic actuator.

9. The tank assembly of claim **1**, wherein the second actuator arrangement comprises a handle for manually rotating a portion of the second actuator arrangement to move the lid between the first and second positions.

10. The tank assembly of claim **1**, wherein the actuator assembly further includes at least one position stop, the at least one position stop being configured to define at least one of the first and second positions of the lid.

11. The tank assembly of claim **10**, wherein the actuator assembly includes first and second position stops, the first position stop defining the first position of the lid and the second position stop defining the second position of the lid.

12. The tank assembly of claim **1**, wherein the actuator assembly further includes at least one locking member, the at least one locking member being operable to maintain the lid in at least one of the first position and the second position.

13. The tank assembly of claim **7**, wherein the support member includes a second segment, the second segment extending from the first segment at a non-parallel angle relative to the longitudinal axis of the first segment, the first segment supporting the lid and at least a portion of the first actuator arrangement.

14. The tank assembly of claim **1**, wherein the tank is a wine vat configured to retaining a volume of fermented grapes.

15. A method of opening and closing a tank assembly, the tank assembly including a tank, a lid, and an actuator assembly, the tank including an opening at a top side thereof, the actuator assembly including at least first and second actuator arrangements, the method comprising:

moving the lid with the first actuator arrangement into and out of sealing engagement with the tank; and

moving the lid with the second actuator arrangement between a first position in alignment with the opening and a second position substantially removed from alignment with the opening to permit access into the opening.

16. The method of claim **15**, wherein the first actuator arrangement includes a pneumatic actuator, and moving the lid with first actuator arrangement including activating the pneumatic actuator.

17. The method of claim **15**, wherein the second actuator arrangement includes a support member, the support member including a first segment arranged vertically and a second segment extending from the first segment at an angle, the second segment supporting the lid and at least a portion of the first actuator arrangement, and the step of moving the lid with the second actuator arrangement includes rotating the support member about a longitudinal axis of the first segment.

18. The method of claim **17**, wherein the second actuator arrangement further includes an actuator handle that extends from the second segment, and rotating the support member includes applying a rotational force to the support member with the handle.

19. The method of claim **15**, wherein in the second position the lid is at least partially covering the opening.

20. The method of claim **15**, wherein the second actuator assembly further comprises at least one position stop that defines at least one of the first and second positions of the lid, and a locking member that maintains the lid in at least one of the first and second positions.

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