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(54) **LOW PROFILE DRAIN WITH WATER TRAP**

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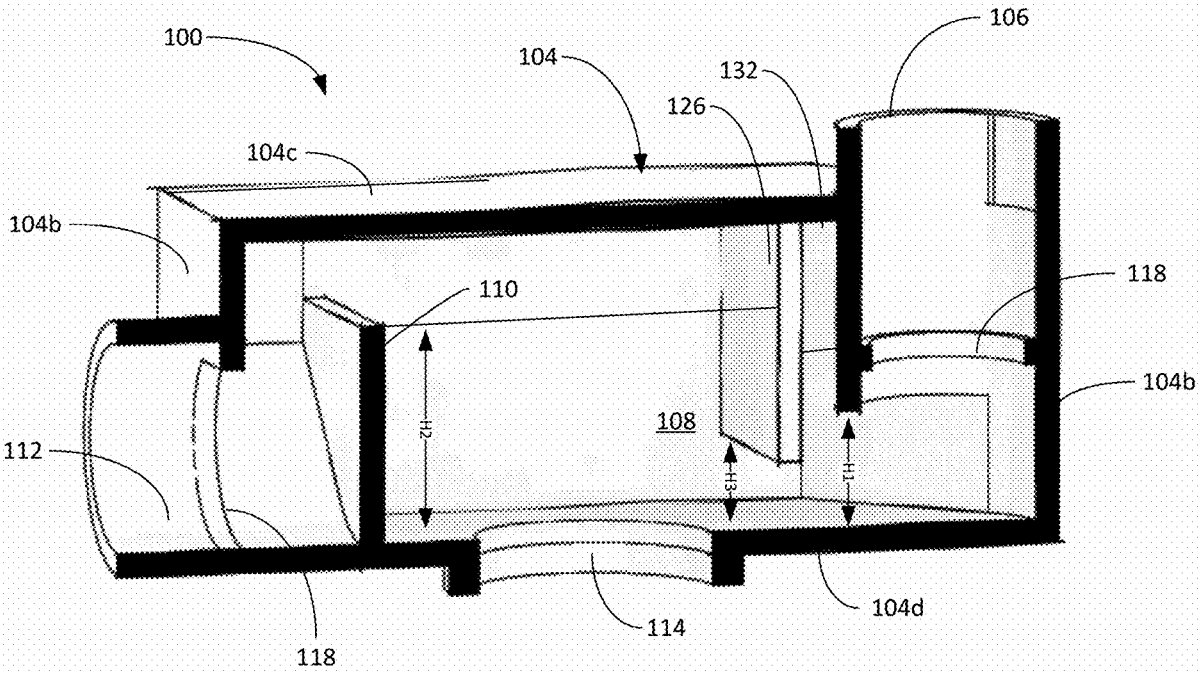
(57) **ABSTRACT**

A water trap for use in connection with a wash basin or other plumbing fixture includes a housing, an inlet extending into the housing and an outlet extending out of the housing. The water trap also includes a weir inside the housing between the inlet and the outlet, and a trap chamber defined by the space within the housing on an upstream side of the weir. The trap chamber is designed to retain liquid following a drain cycle from the wash basin or other plumbing fixture.



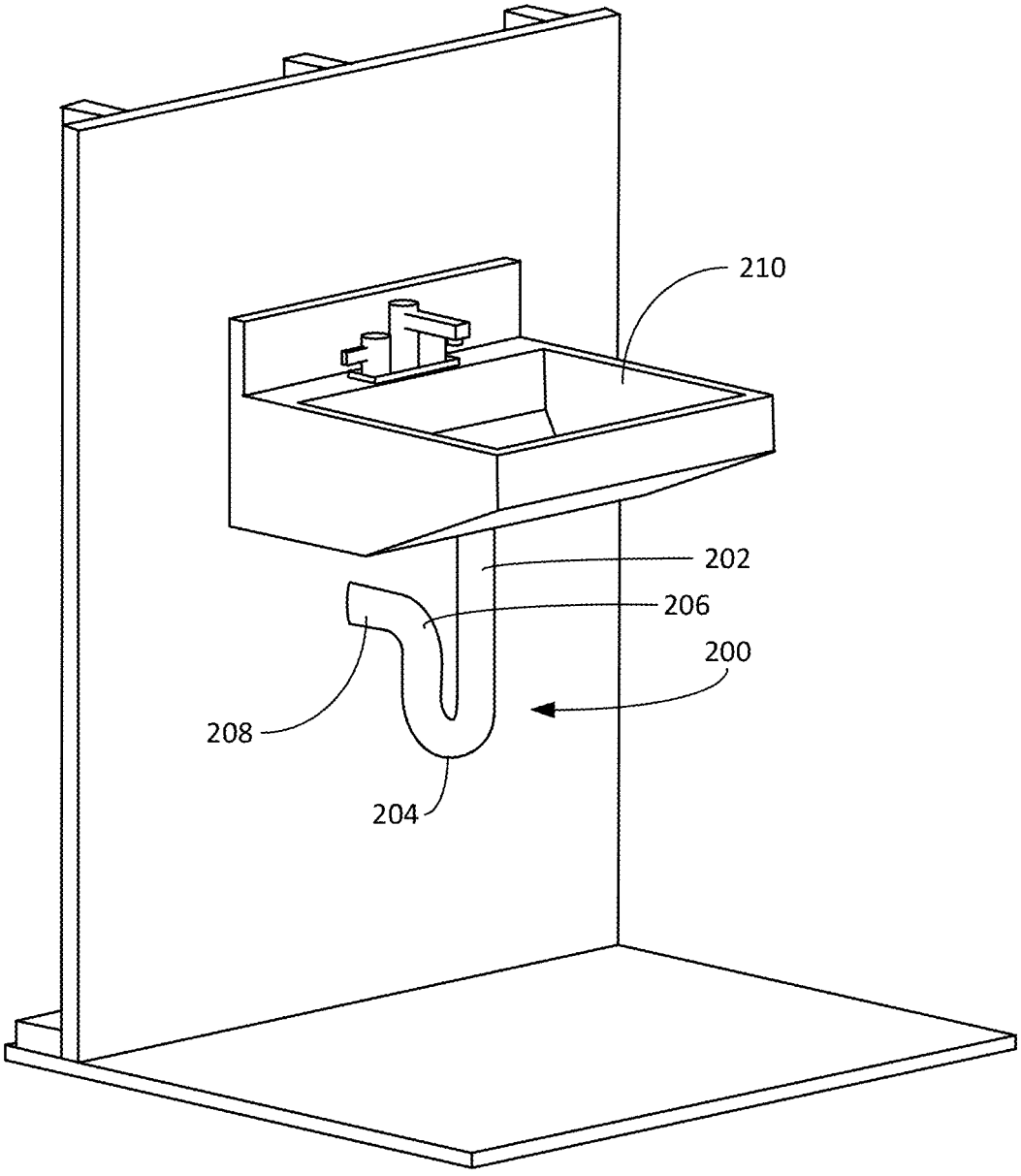


FIG. 1

PRIOR ART

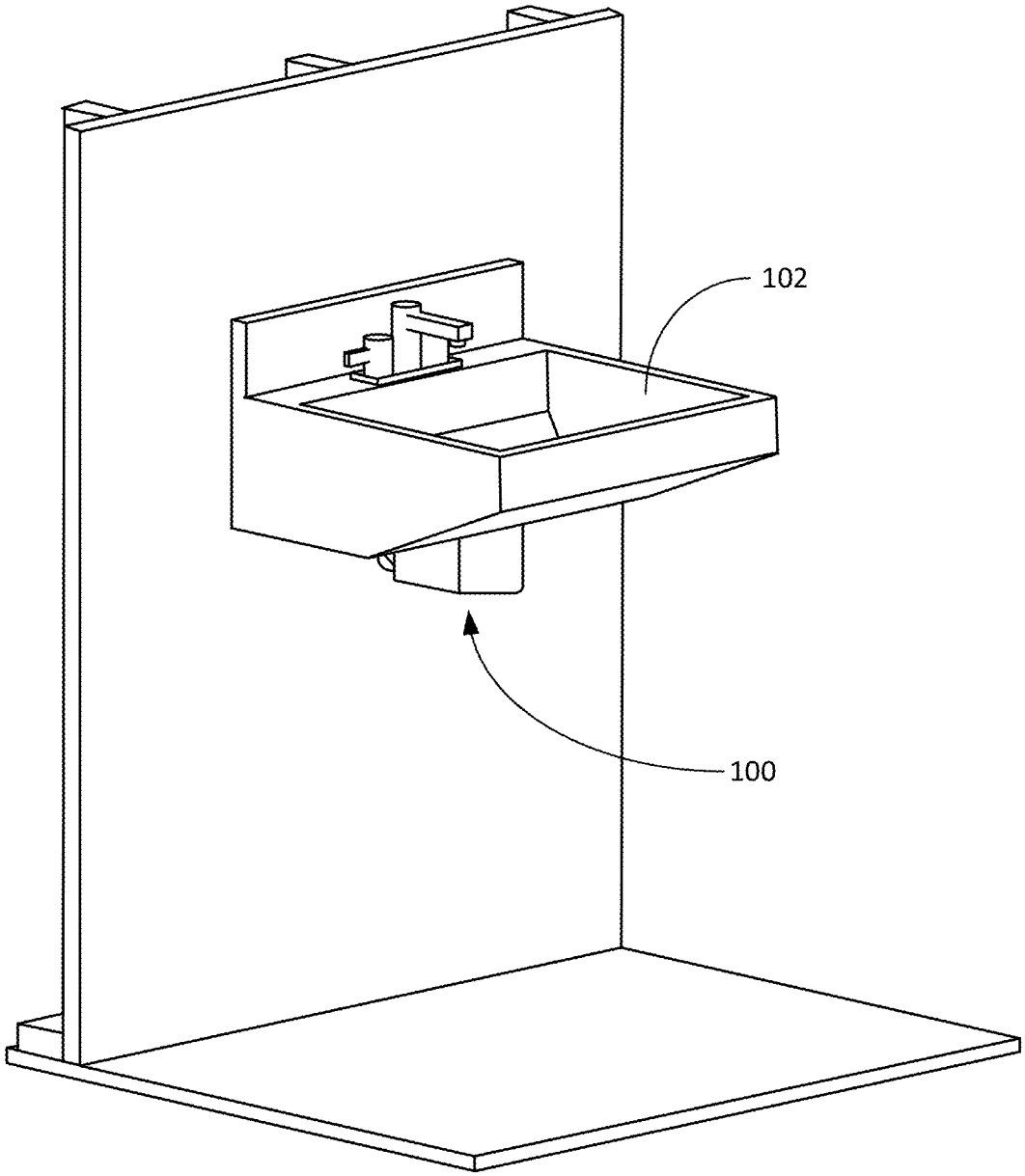


FIG. 2

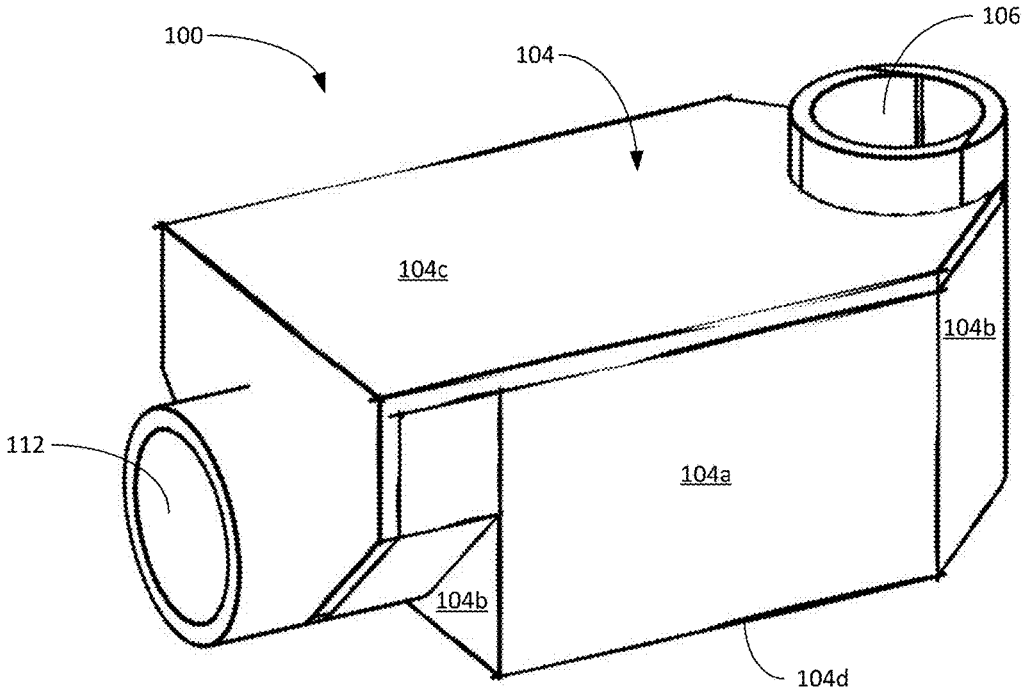

100
104
106
104c
104b
112
104a
104b
104d

FIG. 3

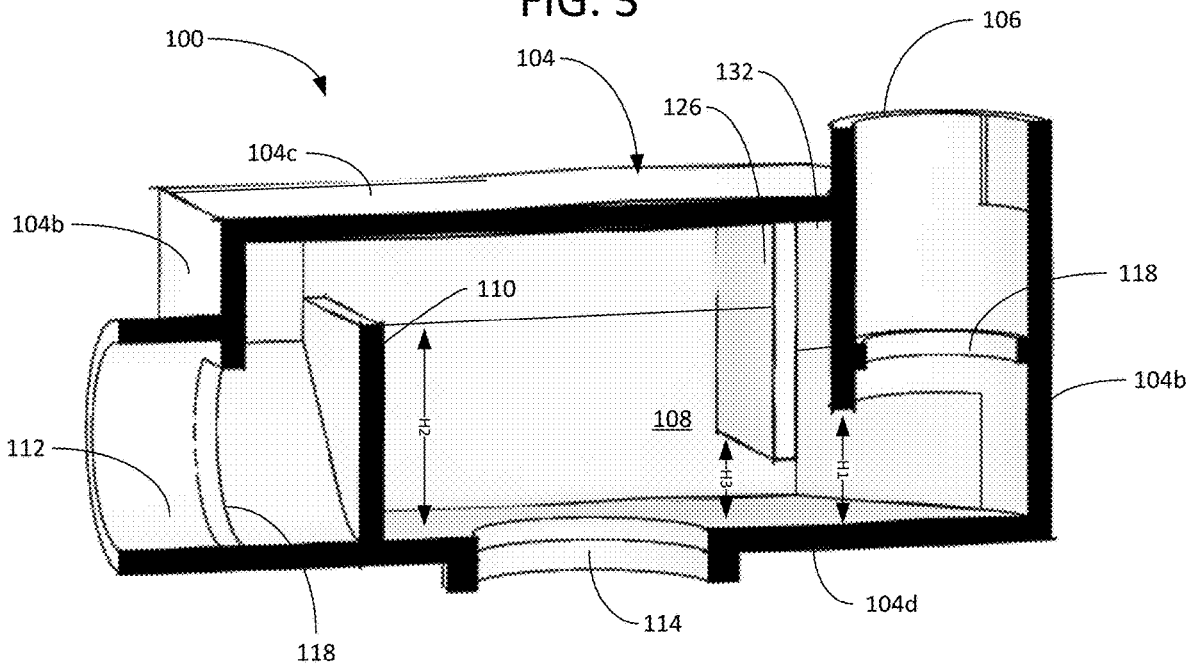

100
104
132
106
126
104c
104b
110
118
112
H2
108
H3
H1
104b
104d
114
118

FIG. 4

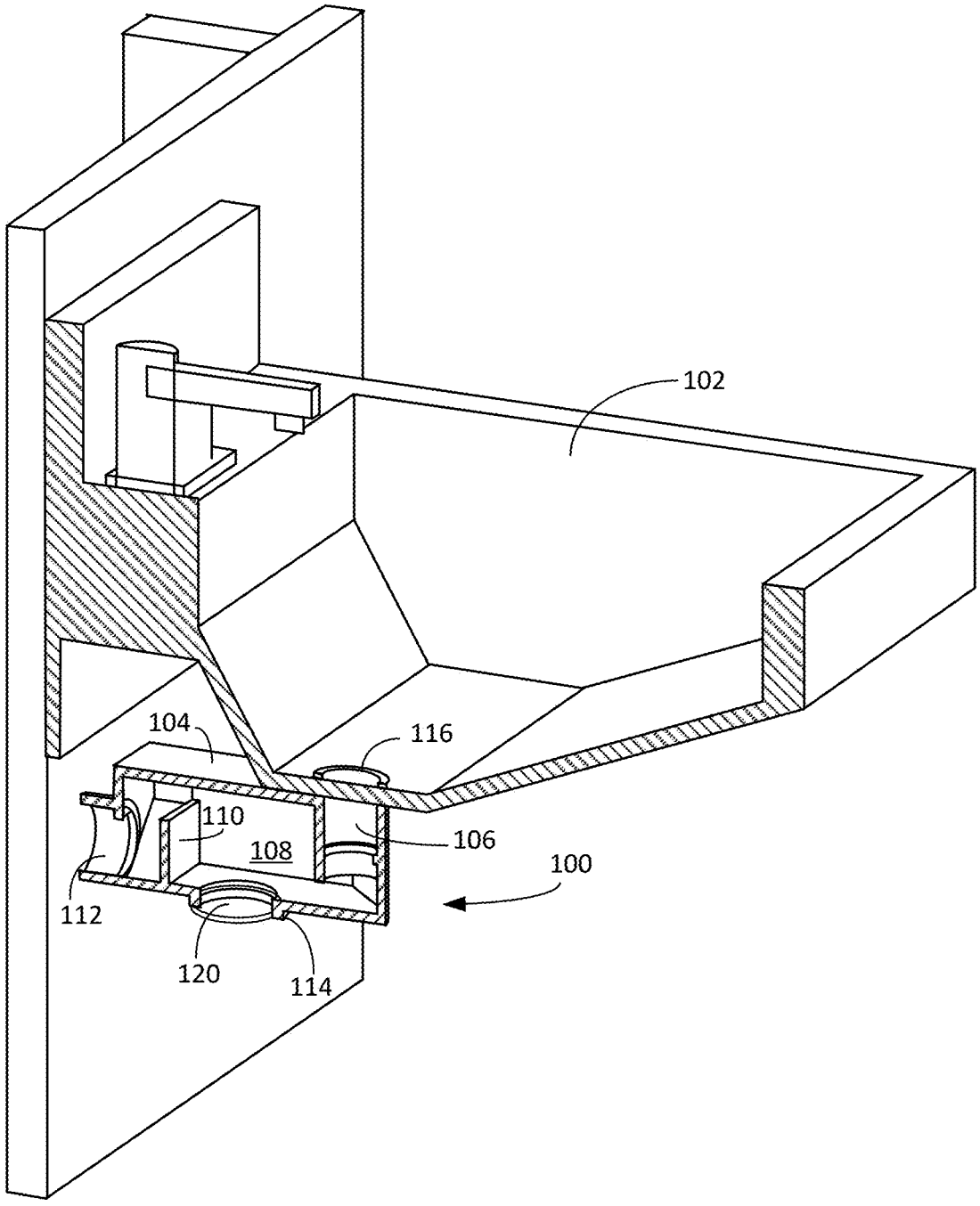


FIG. 5

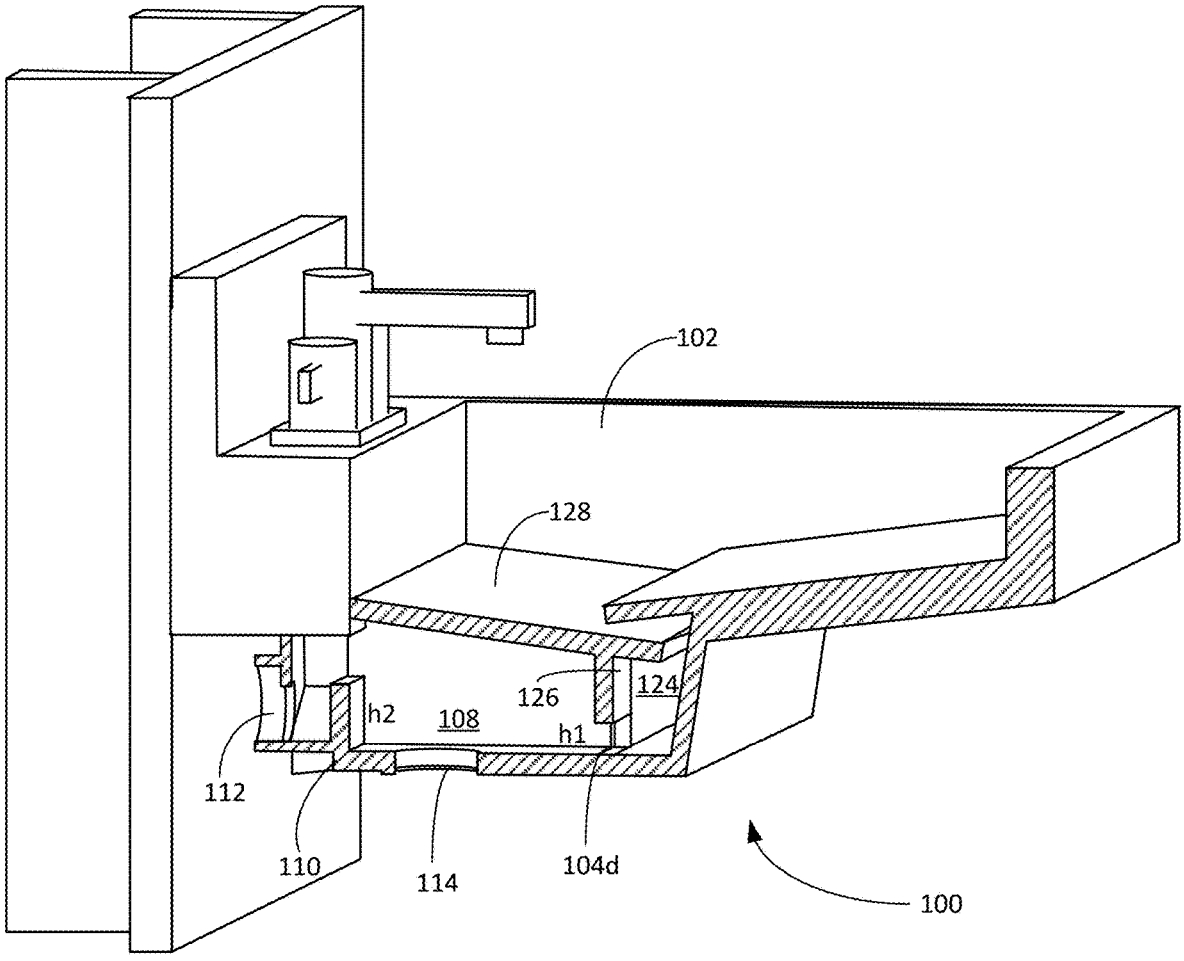


FIG. 6

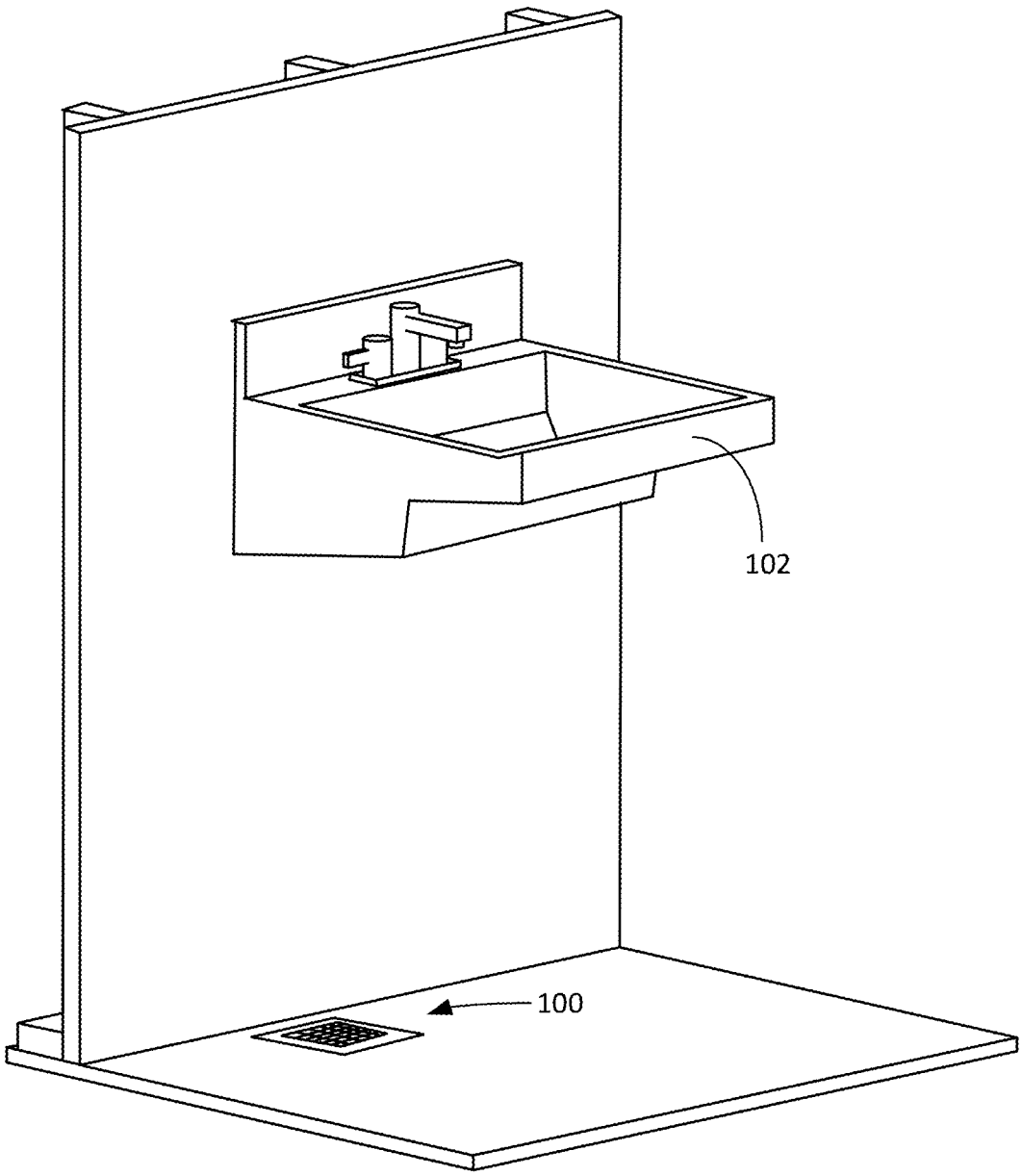


FIG. 7

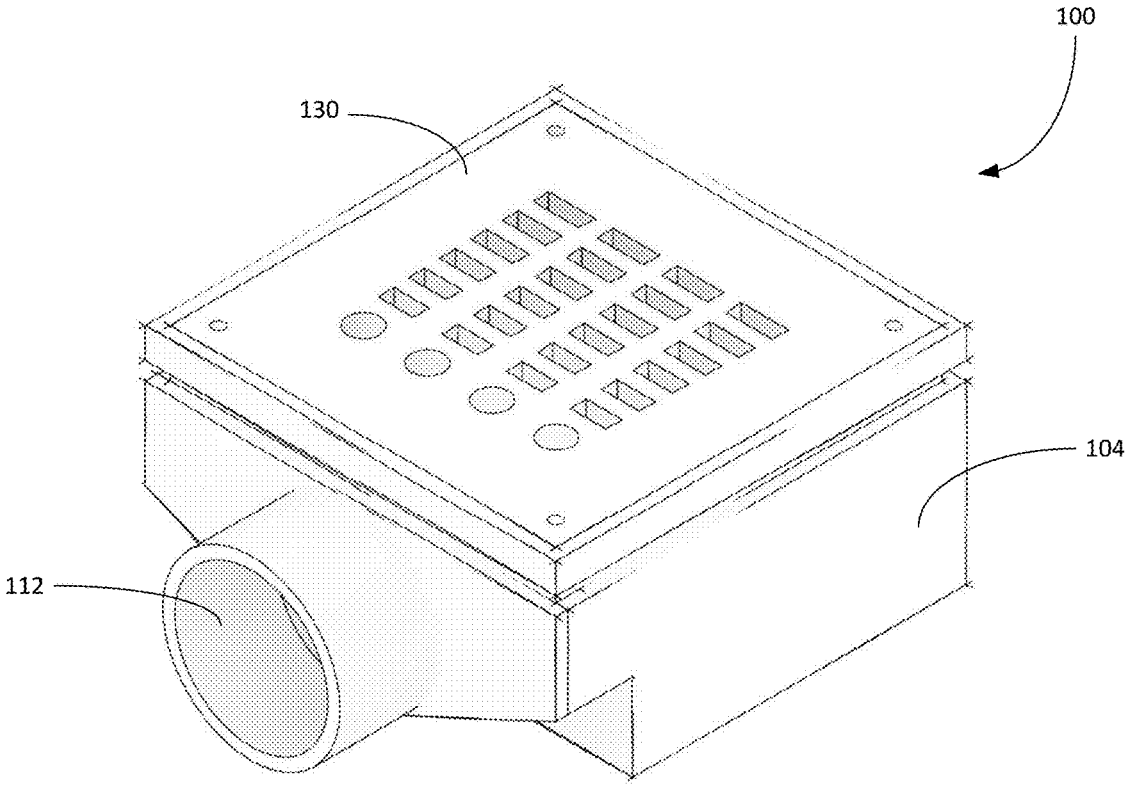


FIG. 8

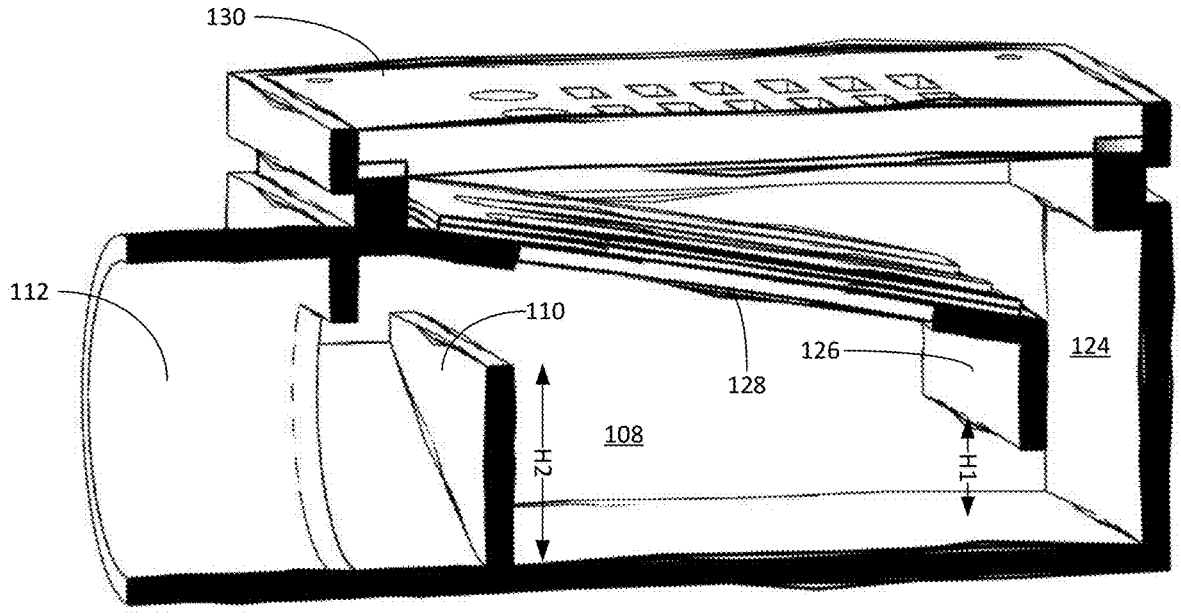


FIG. 9

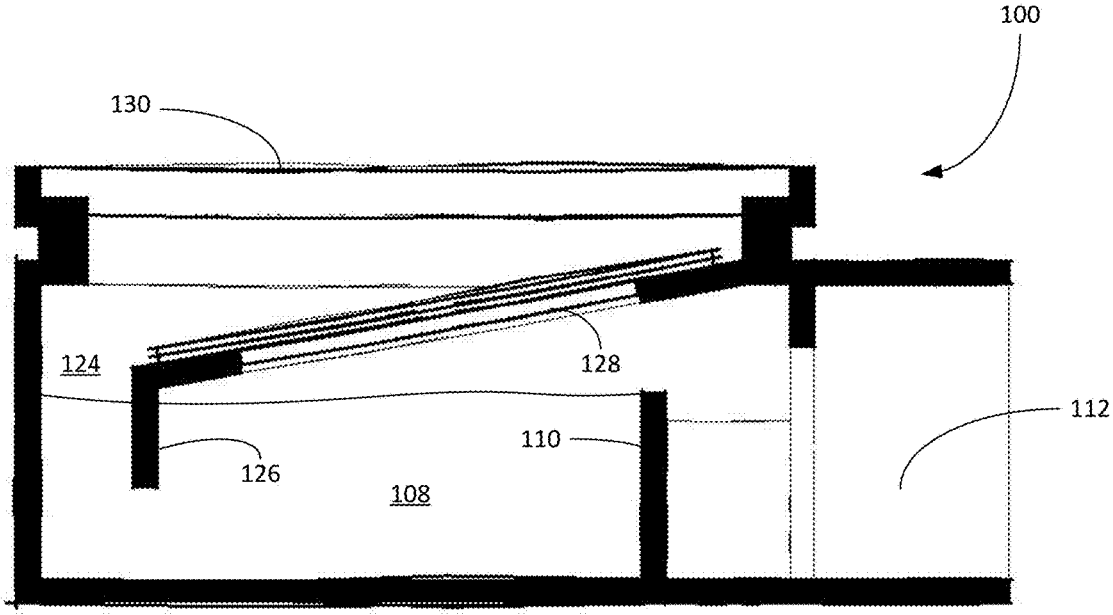


FIG. 10

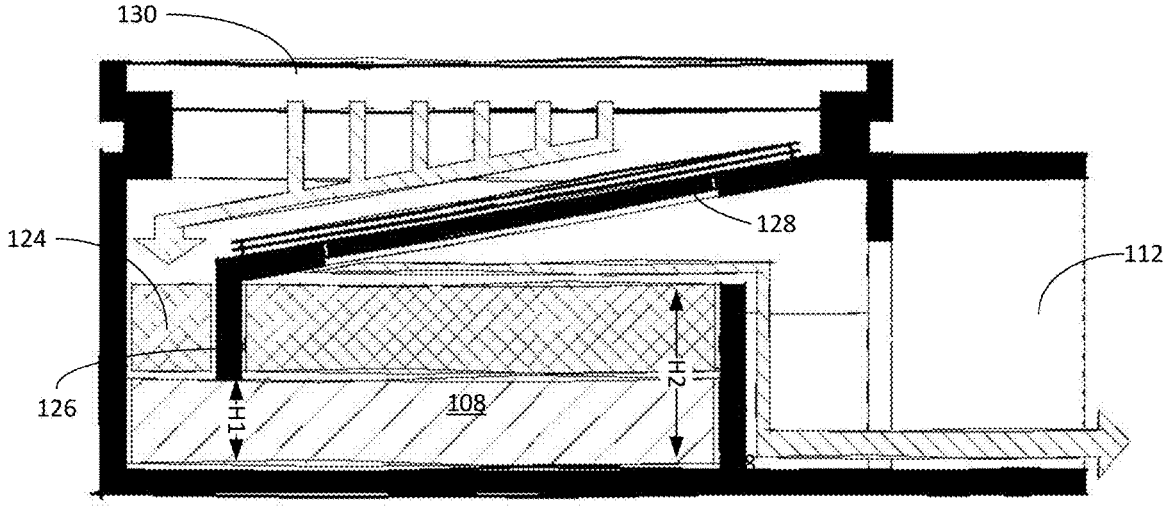


FIG. 11

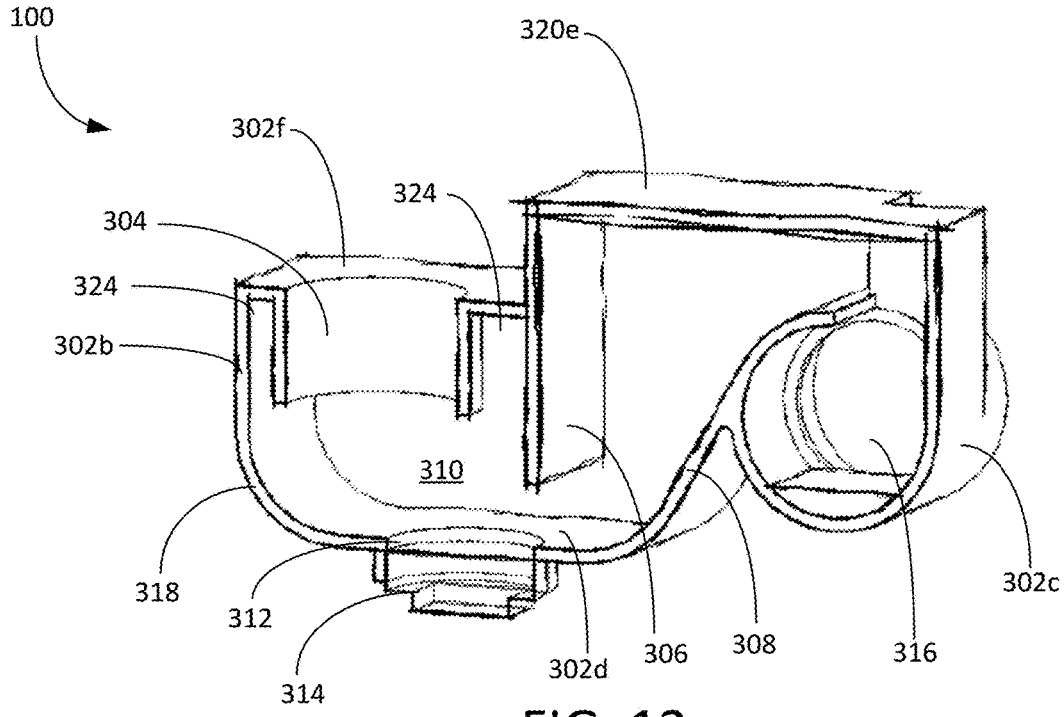

100
320e
302f
324
304
324
302b
310
318
312
314
302d
306
308
316
302c

FIG. 12

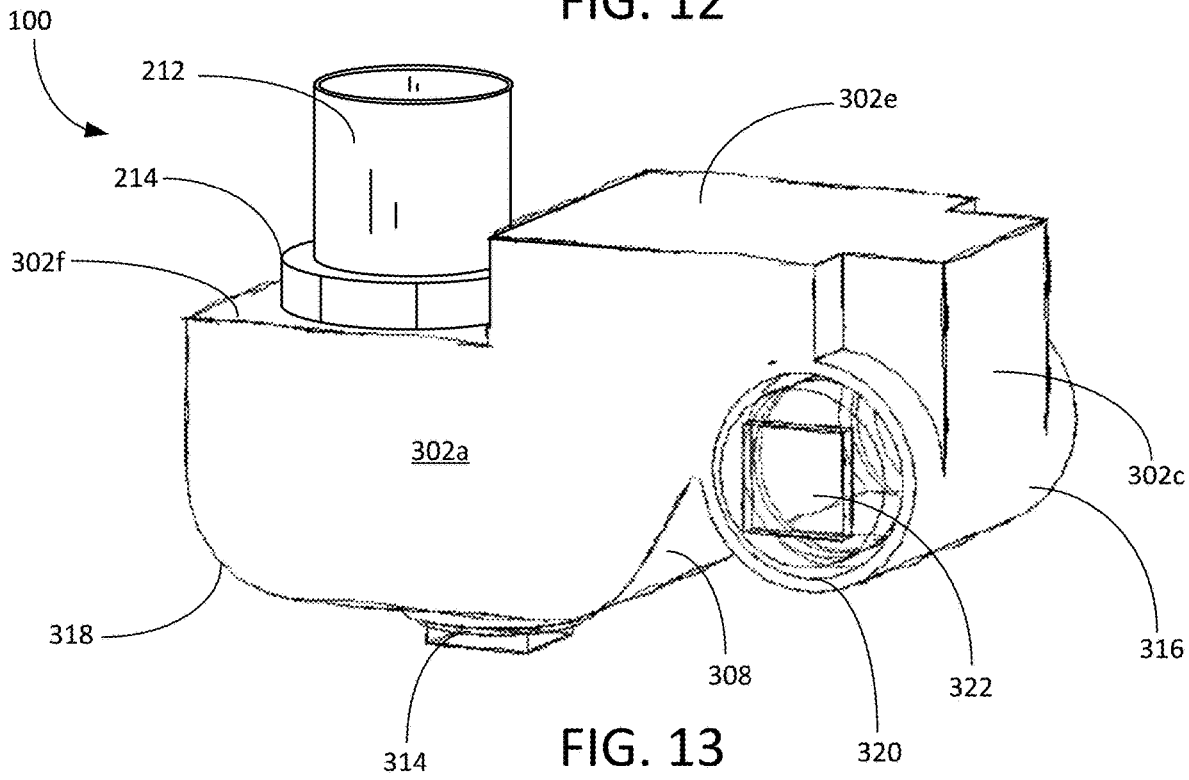

100
212
214
302f
302e
302a
302c
318
308
322
316
314
320

FIG. 13

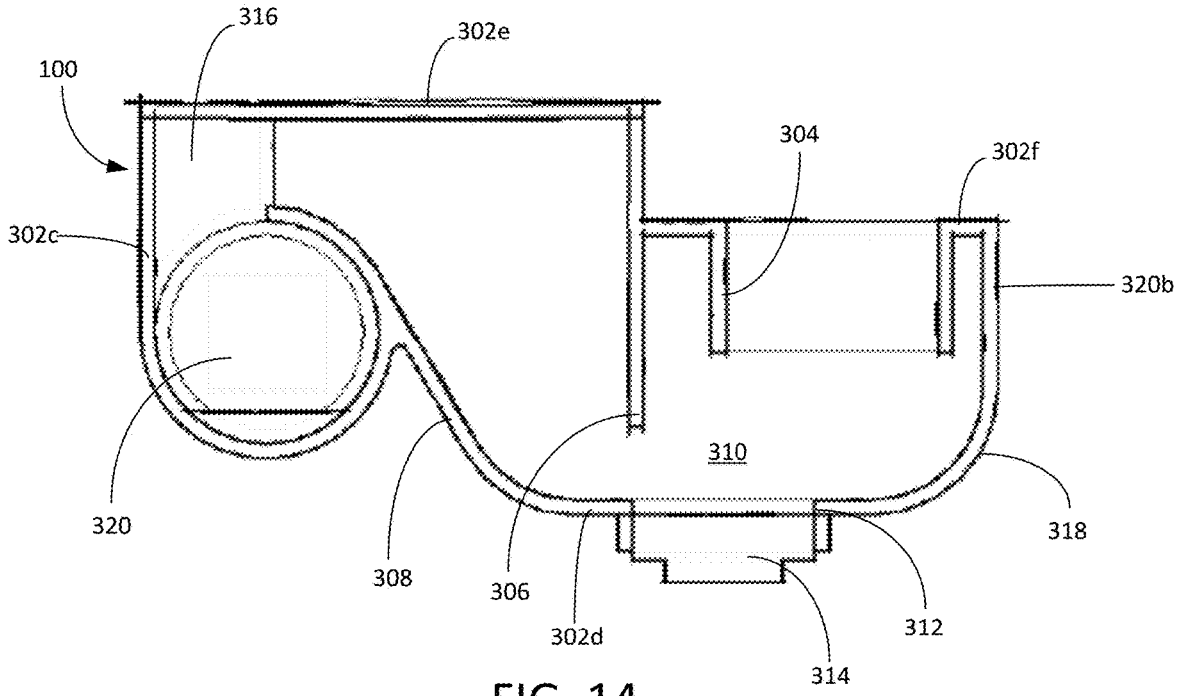

316
302e
100
304
302f
302c
320b
310
320
318
308
306
302d
312
314

FIG. 14

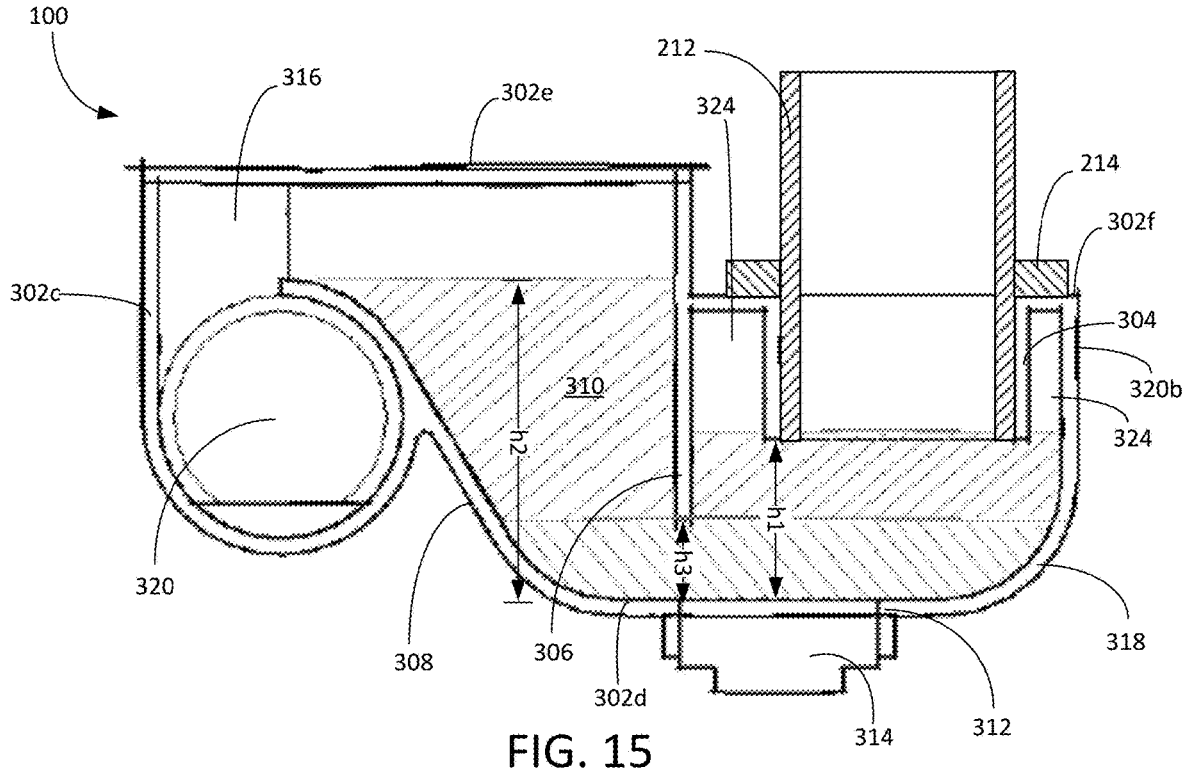

100
212
316
302e
324
214
302f
302c
304
310
320b
h2
324
h1
h3
320
318
308
306
302d
314
312

FIG. 15

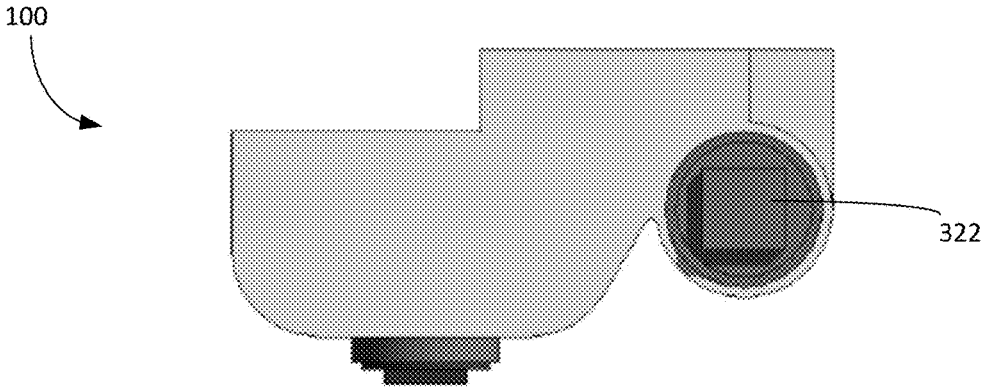


FIG. 16

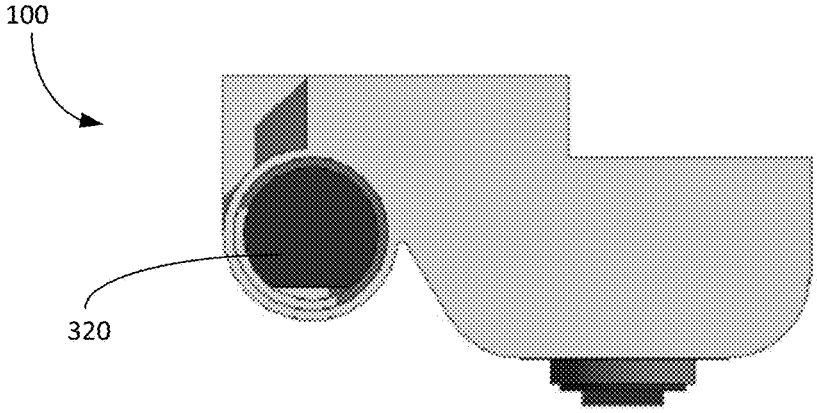


FIG. 17

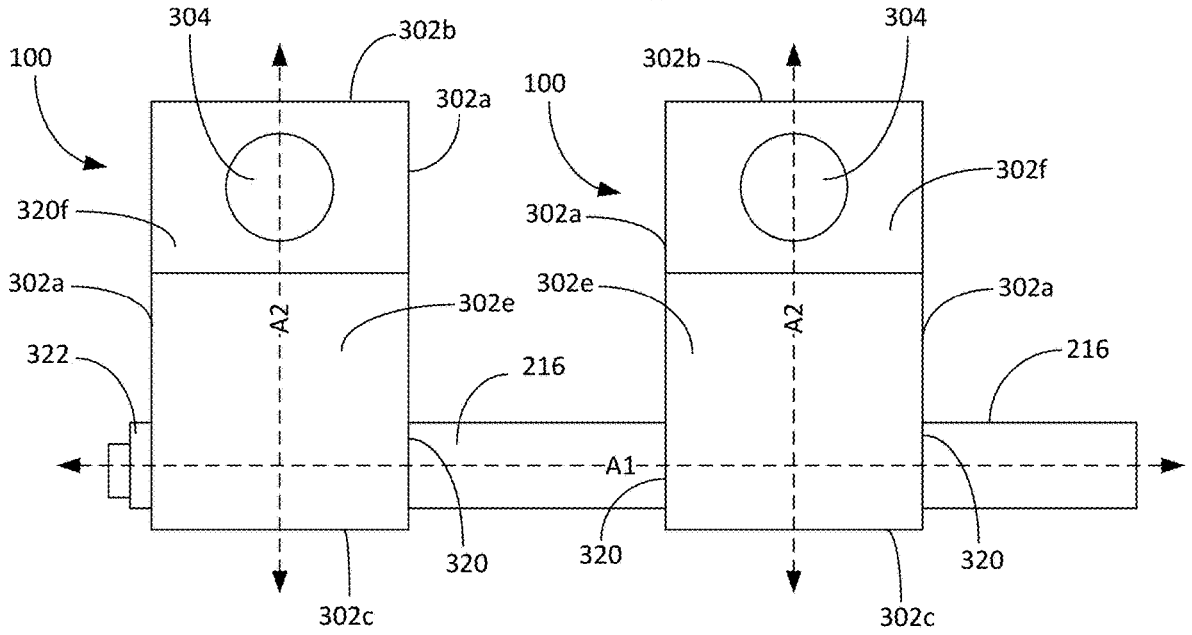


FIG. 18

LOW PROFILE DRAIN WITH WATER TRAP

RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Patent Application Ser. No. 63/174,012 filed Apr. 12, 2021 entitled, "Low Profile Drain with Water Trap," the disclosure of which is herein incorporated by reference.

FIELD OF THE INVENTION

[0002] The present invention is generally directed at plumbing fixtures, and more particularly, but not by way of limitation, to an improved water trap for use in connection with a drain.

BACKGROUND

[0003] Traps or "water traps" are commonly used to prevent sewer gases from traveling upward from the sewer or septic system through drains located in kitchens, bathrooms or other indoor facilities. In domestic applications, traps are typically configured as "U," "S," "Q" or "J" shaped pipes that are located below or within a plumbing fixture. In the United States, water traps are commonly referred to as "P-traps," and include a right angle turn on the exit of a U-shaped bend (thus forming a horizontally oriented "P").

[0004] A conventional P-trap **200** is depicted in the PRIOR ART drawing of FIG. **1**. The P-trap **200** includes an inlet **202**, a U-bend **204**, a crown **206**, and an outlet **208**. In most applications, the outlet **208** is disposed in a substantially horizontal orientation and the inlet **202** is disposed in a substantially vertical orientation. During use, water or other liquids enter the inlet **202** from an upstream fixture **210** (such as a sink), flow through a fixture drain pipe **212** into the P-trap **200**, where the liquid flows through the inlet **202** and U-bend **204** before exiting the P-trap **200** through the outlet **208**. Following a drain cycle, a small volume of water or other liquid is retained in the portion of the U-bend **204** below the outlet **208**. The residual water in the U-bend **204** forms a "water seal" that prevents gases from passing upward from the sewer through the P-trap **200**.

[0005] Although widely adopted, the conventional P-trap **200** suffers from several deficiencies. First, the P-trap **200** requires a significant vertical drop between the fixture **210** and the bottom of the U-bend **204**. The space required for the conventional P-trap **200** creates design restrictions that can be particularly problematic when designing plumbing connections for fixtures **210** that are capable of accommodating access by wheelchair. The P-trap **200** suspended below a sink **210** presents aesthetic and clearance issues that limit functional applications and obstruct accessibility to the sink and faucet especially with regard to wheelchair access. There is, therefore, a need for an improved water trap that overcomes these and other deficiencies of the prior art.

SUMMARY OF THE INVENTION

[0006] Exemplary embodiments disclosed herein include a water trap for use in connection with a wash basin or other plumbing fixture. The water trap has a housing, an inlet extending into the housing, an outlet extending out of the housing, a weir inside the housing between the inlet and the outlet, and a trap chamber defined by the space within the housing on an upstream side of the weir. The trap chamber is designed to retain liquid in a substantially horizontal chamber following a drain cycle from the wash basin or other plumbing fixture.

[0007] In another embodiment, the present disclosure is directed to a water trap for use in connection with a floor drain. In this embodiment, the water trap includes a housing, an exterior grate on the top of the housing, a deflector plate under the exterior grate, an inlet baffle connected to a distal end of the deflector plate, an intake channel between the inlet baffle and the housing, an outlet extending from the housing, a weir inside the housing between the inlet baffle and the outlet, and a trap chamber defined by the space within the housing on an upstream side of the weir. The trap chamber is designed to retain liquid following a drain cycle from the floor drain.

[0008] In yet another embodiment, this disclosure is directed to a water trap for use in connection with an integrated wash basin. In this embodiment, the water trap includes a housing, a deflector plate on top of the housing, an inlet baffle connected to a distal end of the deflector plate, an intake channel between the inlet baffle and an end wall of the housing, an outlet extending from the housing, a weir inside the housing between the inlet baffle and the outlet, and a trap chamber defined by the space within the housing on an upstream side of the weir. The trap chamber is designed to retain liquid following a drain cycle from the integrated wash basin.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. **1** is a perspective view of a PRIOR ART P-trap installation on a wash basin.

[0010] FIG. **2** is a perspective view of a wash basin installation of a water trap constructed in accordance with a first embodiment of the present invention.

[0011] FIG. **3** is a perspective view of the water trap depicted in FIG. **2**.

[0012] FIG. **4** is a cross-sectional view of the water trap of FIG. **3**.

[0013] FIG. **5** is a cross-sectional view of a wash basin installation of the water trap of FIG. **2**.

[0014] FIG. **6** is a cross-sectional view of a water trap constructed in accordance with a second embodiment in which the water trap is integrated into the wash basin.

[0015] FIG. **7** is a perspective view of a floor drain installation of a water trap constructed in accordance with a third embodiment of the present invention.

[0016] FIG. **8** is a perspective view of the floor drain water trap of FIG. **7**.

[0017] FIG. **9** is a cross-sectional view of the water trap of FIG. **8**.

[0018] FIG. **10** is a cross-sectional view of the water trap of FIG. **9**.

[0019] FIG. **11** is a cross-sectional view of the water trap of FIG. **9**.

[0020] FIG. **12** is a cross-sectional perspective view of a water trap constructed in accordance with a fourth embodiment of the present invention.

[0021] FIG. **13** is a perspective depiction of the water trap of FIG. **12**.

[0022] FIG. **14** is a side cross-sectional view of the water trap of FIG. **12**.

[0023] FIG. **15** is a side cross-sectional view of the water trap of FIG. **12**.

[0024] FIG. **16** is a right side view of the water trap of FIG. **12**.

[0025] FIG. **17** is a left side view of the water trap of FIG. **12**.

[0026] FIG. **18** is a top view of two water traps ganged together.

WRITTEN DESCRIPTION

[0027] Referring first to FIGS. **2-5**, shown therein are various depictions of a water trap **100** constructed in accordance with a first embodiment. In FIGS. **2** and **5**, the water trap **100** is depicted in connection with an installation on the drain of a wash basin **102**. In the embodiment depicted in FIGS. **2-5**, the water trap **100** includes a housing **104**, an inlet **106**, an internal trap chamber **108**, a weir **110**, an outlet **112**, and a cleanout port **114**. Although the covered embodiments are not so limited, the housing **104** generally resembles an irregular box that includes closed side walls **104***a*, end walls **104***b*, a top **104***c* and a bottom **104***d*. The water trap **100** is connected to a basin drain **116** below the wash basin **102** such that gravity will draw liquid out of the basin drain **116** of the wash basin **102** into the water trap **100**. As used herein, the terms "upstream" and "downstream" are used as relational descriptors for identifying components or portions of the water trap **100** according to the intended flow of liquids through the water trap **100** (i.e., from the inlet **106**, through the trap chamber **108**, to the outlet **112**). Thus, by way of example, the trap chamber **108** and weir **110** are "downstream" from the inlet **106** and "upstream" from the outlet **112**.

[0028] The inlet **106** is tubular and extends into the housing **104** through the top **104***c* of the water trap **100**. The inlet **106** has a first end connected directly or indirectly to the basin drain **116** and a second "discharge" end located inside the water trap **100** at a height (h**1**) above the bottom **104***d* of the housing **104**. The space between the second end of the inlet **106** and the bottom **104***d* of the housing **104** permits liquids to enter the trap chamber **108** from the inlet **106**. The inlet **106** can be oriented in a substantially vertical position.

[0029] The outlet **112** is also tubular and extends into the housing **104** through an end wall **104***b* on an opposite side of the water trap **100** from the inlet **106**. The outlet **112** is oriented in a substantially horizontal position at, or adjacent to, the bottom **104***d* of the housing **104**. The housing **104** may include a V-shaped or U-shaped funnel section near the outlet **112** (as depicted in FIGS. **3-4**) to encourage thorough removal of liquids from the water trap **100** through the outlet **112**. The inlet **106** and outlet **112** may include internal flanges **118** to facilitate connection with upstream and downstream piping or other connections. The outlet **112** is lower than the inlet **106** to allow gravity to pull liquids through the water trap **100**. In some applications, the inlet **106** and outlet **112** are configured for slip, threaded and compression fittings. As used herein, the term "tubular" refers to a member with a hollow interior, including members with circular and rectangular cross-sections.

[0030] The cleanout port **114** includes a removable plug **120** (shown in FIG. **5**) that can be configured for a threaded connection with the cleanout port **114**. The removal of the plug **120** from the cleanout port **114** permits direct access to the internal trap chamber **108** for servicing the water trap **100**. In exemplary embodiments, the water trap **100** is manufactured using composite materials or polymers, such as polyvinyl chloride (PVC). In other applications, the water trap **100** can be constructed from ceramic materials or metals, such as stainless steel, aluminum or copper.

[0031] The trap chamber **108** is located inside the housing **104** and defined by the space within the housing **104** on the upstream side of the weir **110**. As depicted in the cross-sectional views in FIGS. **4-5**, the weir **110** is a substantially vertical component that acts as a wall to separate the trap chamber **108** from the downstream outlet **112**. The weir **110** has a height (h**2**) that is greater than the height (h**1**) between the inlet **106** and the bottom **104***d* of the housing **104**. The height (h**2**) of the weir **110** defines the depth of the trap chamber **108** within the housing **104**. In this way, the water trap **100** provides a substantially horizontal trap chamber **108**.

[0032] During use, liquid enters the water trap **100** through the inlet **106** and fills the trap chamber **108** until the volume of liquid in the water trap **100** exceeds the volume of the trap chamber **108**. The liquid then flows over the weir **110** and exits the water trap **100** through the outlet **112**. Once the liquid from an upstream source is no longer flowing, the water trap **100** maintains a volume of liquid in the trap chamber **108** with an initial depth that is substantially the same as the height (h**2**) of the weir **110**. Because the discharge of the inlet **106** is below the top of the weir **110**, the discharge end of the inlet **106** remains submerged when the trap chamber **108** contains liquid at a depth greater than (h**1**). This prevents any sewer gases entering the water trap **100** from the outlet **112** from passing upward through the inlet **106**. In this way, the liquid retained within the trap chamber **108** acts as a water seal to prevent gases from passing upward through the water trap **100**.

[0033] As depicted in FIG. **4**, the water trap **100** optionally includes an inlet baffle **126** that extends downward from the top of the housing **104***c* into the trap chamber **108**. The lower end of the inlet baffle **126** is spaced apart from the bottom **104***d* of the housing **104** by a height (h**3**), which is the same or less than the height (h**1**) between the housing bottom **104***d* and the bottom of the inlet **106**. The optional inlet baffle **126** reduces turbulence and increases the performance of the liquid seal provided by fluid inside trap chamber **108** by reducing the amount of liquid within the trap chamber **108** needed to prevent sewer gases from passing through the trap chamber **108**. As long as the level of fluid in the trap chamber **108** is higher than the height (h**3**) of the space between the inlet baffle **126** and the housing bottom **104***d*, the retained liquid inside the trap chamber **108** will prevent gases from passing through the inlet **106**. Moreover, the optional inlet baffle **126** creates an air pocket **132** in the space between the inlet **106** and the inlet baffle **126**. During use, the air inside the air pocket **132** is pressurized by the rising liquid level in the trap chamber **108**. The increased pressure of the air within the air pocket **132** lowers the liquid level on the inlet side of the inlet baffle **126** compared to the outlet side of the inlet baffle **126** (which is exposed to atmospheric pressure through the trap discharge pipe **216**. Without the inlet baffle **126** and air pocket **132**, the liquid level in the trap chamber **108** should equalize on either side of the inlet **106**.

[0034] The water trap **100** provides a number of advantages over common P-traps. The volume of the trap chamber **108** is larger than conventional P-traps. This increases the effectiveness of the water trap **100** by reducing the risk that water in the trap chamber **108** evaporates between drain

cycles. Because the trap chamber **108** is substantially horizontal, the water trap **100** requires less vertical space under the wash basin **102**, which facilitates installation in wheelchair accessible applications, while also improving storage space and aesthetics. The water trap **100** is also easier to service than conventional P-traps. Rather than removing the entire P-trap, the water trap **100** can be cleaned by simply removing the plug **120** from the cleanout port **114**.

[0035] FIG. **6** presents a second embodiment of the water trap **100** in which the water trap **100** is made an integral part of the wash basin **102**. In this second embodiment depicted in FIG. **6**, the inlet **106** is replaced by an intake channel **124**, an inlet baffle **126** and a deflector plate **128**. The deflector plate **128** may be integrated into the bottom of the wash basin **102** and is declined to encourage liquids to flow into the intake channel **124**. The intake channel **124** can be covered by an overhanging portion of the wash basin **102** (as illustrated in FIG. **6**). In other embodiments, the intake channel **124** is exposed. The inlet baffle **126** extends downward from a distal end of the deflector plate **128** into the water trap **100** and is suspended above the bottom **104***d* of the housing **104** by a height (h**1**). In this way, the lower portion of the inlet baffle **126** is submerged in the liquid retained within the trap chamber **108**. This prevents sewer gases in the water trap **100** from escaping through the intake channel **124**. In some embodiments, portions of the lower end of the inlet baffle **126** are connected to the bottom **104***d* of the housing **104**, with designated cutouts below the water line within the trap chamber **108**. If the water trap **100** becomes clogged, the trap chamber **108** can be easily accessed by removing the plug **120** from the cleanout port **114**.

[0036] Turning to FIGS. **7-11**, shown therein is a third embodiment of the water trap **100** configured for installation as a floor drain. In this embodiment, an exterior grate **130** is used to cover the deflector plate **128**, which is connected to the inlet baffle **126**. The grate **130** can be installed such that it is flush or level with the floor. The water trap **100** is located under the floor and connected to drain piping (not shown). The inlet baffle **126** is substantially vertically oriented and connected to a distal end of the deflector plate **128**. In this embodiment, the intake channel **124** is formed between the inlet baffle **126** and the outer end wall of the housing **104**. The exterior grate **130** is designed to allow liquids to pass into the water trap **100**, while supporting the weight of a person or heavy objects.

[0037] The deflector plate **128** is disposed with an angular declination that encourages liquids to flow downward toward the intake channel **124**. In some embodiments, the proximal end of the deflector plate **128** is hinged to permit the deflector plate **128** to be raised into an open position without removing the deflector plate **128**. In other embodiments, the deflector plate **128** is secured within the water trap **100** with screws or other fasteners. In yet other embodiments, the deflector plate **128** is simply sized and configured to be held in place by gravity on a supporting frame structure within the water trap **100**. The deflector plate **128** optionally includes recessed grooves that encourage flow into the trap chamber **108**.

[0038] During use, liquids fall downward through the exterior grate **130** and are captured by the deflector plate **128**, which directs the liquids toward the intake channel **124**. The liquids falling through the intake channel **124** pass under the inlet baffle **126** to enter the trap chamber **108**. As with the other embodiments disclosed herein, the liquid fills the trap chamber **108** and then passes over the weir **110** to exit the water trap **100** through the outlet **112**. Liquid trapped inside the trap chamber **108** following a drain cycle prevents sewer gases from passing under the lower end of the inlet baffle **126**, which remains submerged in the liquid retained in the trap chamber **108**. If the water trap **100** becomes clogged, the exterior grate **130** and deflector plate **128** can be easily removed or opened to provide access to the internal portions of the water trap **100**. This also facilitates removal of any items that were unintentionally dropped through the exterior grate **130**.

[0039] Turning to FIGS. **12-18**, shown therein is yet another embodiment of the water trap **100**. In the embodiment depicted in FIGS. **12-17**, the water trap **100** includes a housing **302**, an inlet **304**, an inlet baffle **306**, a sloped outlet weir **308**, an internal trap chamber **310**, a cleanout port **312**, a cleanout plug **314**, and a dual horizontal outlet **316**. The housing **302** includes sides **302***a*, an inlet end **302***b*, an outlet end **302***c*, a bowl-shaped bottom **302***d*, an outlet top **302***e*, and an inlet top **302***f*. The inlet top **302***f* is stepped down (lower) than the outlet top **302***e* so that the inlet **202** from the fixture drain pipe **212** from the fixture **210** can be secured to the inlet **304** of the water trap **100** with a fitting **214**, as depicted in FIG. **13**. In some applications, the inlet **304** includes a threaded portion (not shown) that engages the fitting **214** such that tightening the fitting **214** compressively retains the fixture drain pipe **212** within the inlet **304**. The stepped down inlet top **302***f* permits the raised output top **302***e* to be secured directly, or closer, to the bottom of the fixture **210**.

[0040] The cleanout port **312** port is located in the bowl-shaped housing bottom **302***d*. The cleanout plug **314** can be removed from the cleanout port **312** to gain access to the trap chamber **310**. The bowl-shaped housing bottom **302***d* includes a rounded end **318** on the inlet-side of the water trap **100**. The rounded end **318** encourages the efficient removal of liquids and particulates from the water trap **100**. The bowl-shaped housing bottom **302***d* transitions along a common slope to the outlet weir **308** adjacent the outlet-side of the water trap **100**. The outlet weir **308** terminates at the top of a dual-sided outlet **316**. The interior space between the top of the outlet weir **308** and the inlet **304** defines the trap chamber **310**.

[0041] The inlet baffle **306** extends downward from the inside of the housing outlet top **302***e* into the trap chamber **310**. The bottom of the inlet baffle **306** is spaced apart from the bowl-shaped housing bottom **302***d* by a height (h**3**), which is less than the vertical distance (h**2**) between the top of the sloped outlet weir **308** and the housing bottom **302***d*. The distance (h**3**) between the housing bottom **302***d* and the bottom of the inlet baffle **306** is also less than the vertical distance (h**1**) between the bottom of the inlet **304** and the housing bottom **302***d*. This ensures that the bottom of the inlet baffle **306** remains submerged in liquid within the trap chamber **310**.

[0042] The space between the inlet baffle **306** and the inlet **304** creates an air pocket **324**, which increases in pressure as the fluid level in the trap chamber **310** rises. As illustrated in FIG. **15**, the pressurized air in the air pocket **324** lowers the liquid level on the inlet side of the inlet baffle **306** compared to the liquid level on the outlet side of the inlet baffle **306** (which is typically exposed to atmospheric pressure through the discharge ports **320**). In this way, the air pocket **324**

reduces the risk of liquid backing up into the inlet **304**, which improves the performance of the water trap **100** and permits the use of shallower trap chambers **310**.

[0043] As depicted in FIG. **18**, the dual-sided outlet **316** includes two discharge ports **320** on opposite sides of the water trap **100**. The dual-sided outlet **316** is oriented along a lateral axis (A**1**) that is substantially orthogonal to the general longitudinal axis (A**2**) that runs along the length of the water trap **100** from the inlet **304** to the outlet **316**. Each of the discharge ports **320** is configured for connection with upstream or downstream discharge piping. In this way, two or more water traps **100** can be connected or "ganged" to one another by connecting a trap discharge pipe **216** between the discharge ports **320** on adjacent water traps **100**. If one of the discharge ports **320** is not connected to a trap discharge pipe **216**, a discharge plug **322** can be used to seal that discharge port **320**. Thus, the dual-sided outlet **316** permits the use of multiple water traps **100** along a common drain line, which has particular application for installations involving multiple sinks, drains or other fixtures **210**. The laterally-oriented discharge ports **320** also facilitates connecting the trap discharge pipe **216** to downstream drain piping, particularly in shallow installations where there is limited space between the water trap **100** and the wall along the general longitudinal axis (A**2**). The ability to easily remove the discharge plug **322** also provides access to the downstream drain piping through the trap discharge pipe along the lateral axis (A**1**).

[0044] While the present disclosure has been described in connection with certain embodiments so that aspects thereof may be more fully understood and appreciated, it is not intended that the present disclosure be limited to these particular embodiments. On the contrary, it is intended that all alternatives, modifications and equivalents are included within the scope of the present disclosure. Thus, the examples described above, which include particular embodiments, will serve to illustrate the practice of the present disclosure, with it being understood that the particulars shown are by way of example and for purposes of illustrative discussion of particular embodiments only and are presented in the cause of providing what is believed to be the most useful and readily understood description of procedures, as well as of the principles and conceptual aspects of the presently disclosed methods and compositions. Changes may be made in the structures of the various components described herein, or the methods described herein without departing from the spirit and scope of the present disclosure.

It is claimed:

1. A water trap for use in connection with a wash basin or other plumbing fixture, the water trap comprising:

a housing;

an inlet extending into the housing;

an outlet extending out of the housing;

a weir inside the housing between the inlet and the outlet; and

a trap chamber defined by the space within the housing on an upstream side of the weir, wherein the trap chamber is designed to retain liquid following a drain cycle from the wash basin or other plumbing fixture.

2. The water trap of claim **1**, wherein the inlet includes a discharge end that is configured to be submerged within the liquid retained within the trap chamber.

3. The water trap of claim **1**, further comprising:

a cleanout port that provides access to the trap chamber; and

a removable plug connected to the cleanout port.

4. The water trap of claim **1**, wherein the housing comprises:

a top;

a bottom;

a plurality of side walls; and

a plurality of end walls.

5. The water trap of claim **4**, wherein the inlet includes a discharge end that is spaced above the bottom of the housing at a first height (h**1**); and wherein the weir extends upward from the bottom of the housing to a second height (h**2**).

6. The water trap of claim **5**, wherein the second height (h**2**) is greater than the first height (h**1**), such that the discharge end of the inlet is located closer to the bottom of the housing than an upper portion of the weir.

7. The water trap of claim **6**, wherein the outlet is a dual-sided outlet that includes a pair of discharge ports aligned along a lateral axis that is substantially orthogonal to a longitudinal axis extending between the plurality of end walls.

8. The water trap of claim **4**, further comprising:

an inlet baffle extending downward from the top of the housing into the trap chamber; and

an air pocket between the inlet baffle and the inlet, wherein the air pocket contains pressurized air during use.

9. The water trap of claim **1**, wherein the housing includes a funnel section proximate to the outlet and downstream from the weir.

10. The water trap of claim **1**, wherein the inlet is substantially vertical and the outlet is substantially horizontal.

11. A water trap for use in connection with a floor drain, the water trap comprising:

a housing;

an exterior grate on the top of the housing;

a deflector plate under the exterior grate;

an inlet baffle connected to a distal end of the deflector plate;

an intake channel between the inlet baffle and the housing;

an outlet extending from the housing;

a weir inside the housing between the inlet baffle and the outlet; and

a trap chamber defined by the space within the housing on an upstream side of the weir, wherein the trap chamber is designed to retain liquid following a drain cycle from the floor drain.

12. The water trap of claim **11**, wherein a lower end of the inlet baffle is configured to be submerged within the liquid retained within the trap chamber.

13. The water trap of claim **11**, wherein the housing includes a bottom, a plurality of ends and a plurality of sides.

14. The water trap of claim **13**, wherein the lower end of the inlet baffle is spaced above the bottom of the housing by a first height (h**1**).

15. The water trap of claim **14**, wherein the weir extends above the bottom of the housing by a second height (h**2**) that is greater than the first height (h**1**).

16. The water trap of claim **11**, wherein the deflector plate is removable to provide access to the trap chamber located under the deflector plate.

17. The water trap of claim **11**, wherein the deflector plate is hinged to permit the deflector plate to be opened to provide access to the trap chamber located under the deflector plate.

18. A water trap for use in connection with an integrated wash basin, the water trap comprising:

a housing;

a deflector plate on top of the housing;

an inlet baffle connected to a distal end of the deflector plate;

an intake channel between the inlet baffle and an end wall of the housing;

an outlet extending from the housing;

a weir inside the housing between the inlet baffle and the outlet; and

a trap chamber defined by the space within the housing on an upstream side of the weir, wherein the trap chamber is designed to retain liquid following a drain cycle from the integrated wash basin.

19. The water trap of claim **18**, wherein the outlet extends horizontally away from the housing.

20. The water trap of claim **18**, further comprising:

a cleanout port that provides access to the trap chamber; and

a removable plug connected to the cleanout port.

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