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(54) **PLUMBING FIXTURE**

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(57) **ABSTRACT**

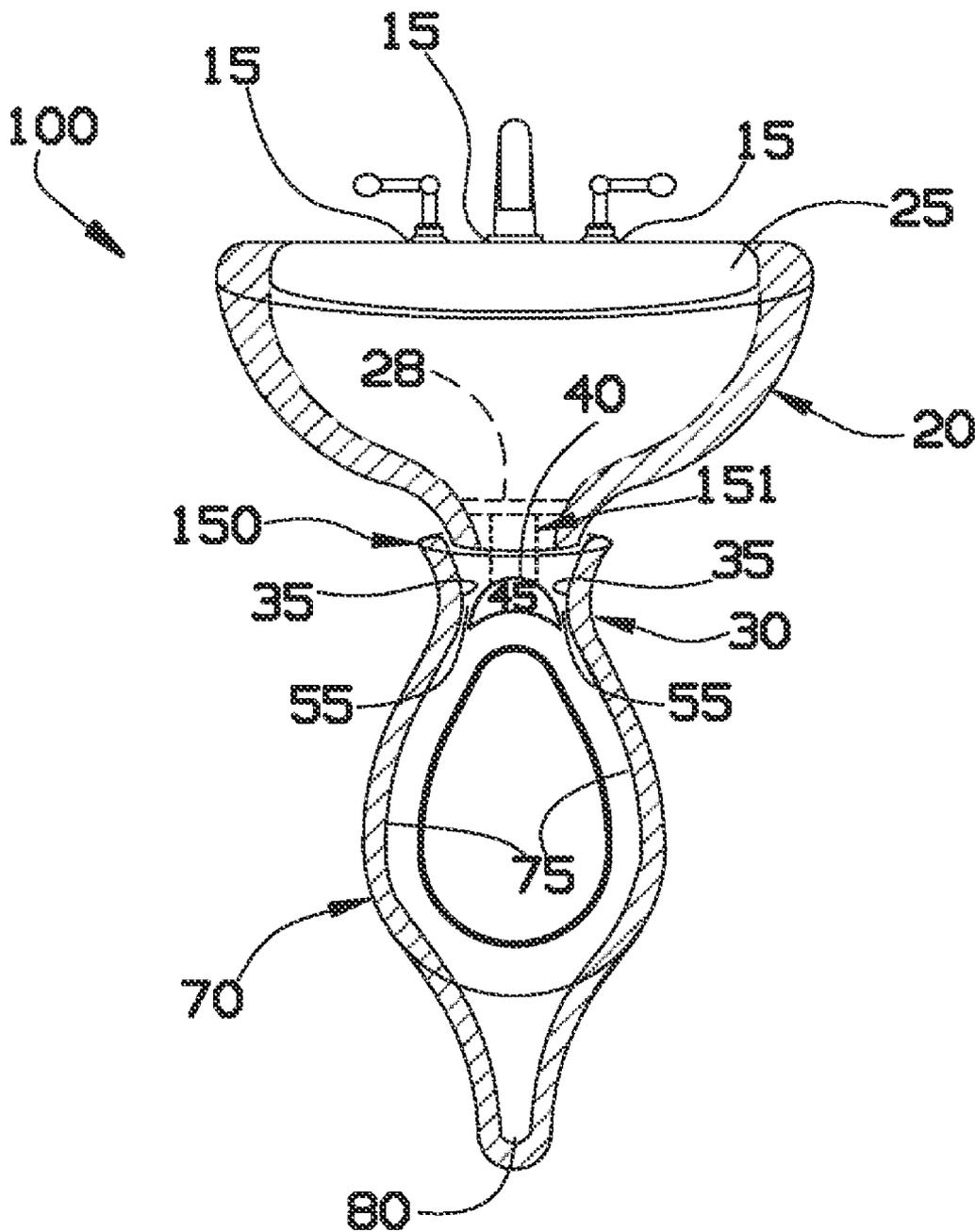
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A plumbing fixture is disclosed which may include a wash basin positioned above a bodily waste. A transition compartment may be connected between the wash basin and the bodily waste basin for directing flow of fluid from the wash basin into the bodily waste basin.

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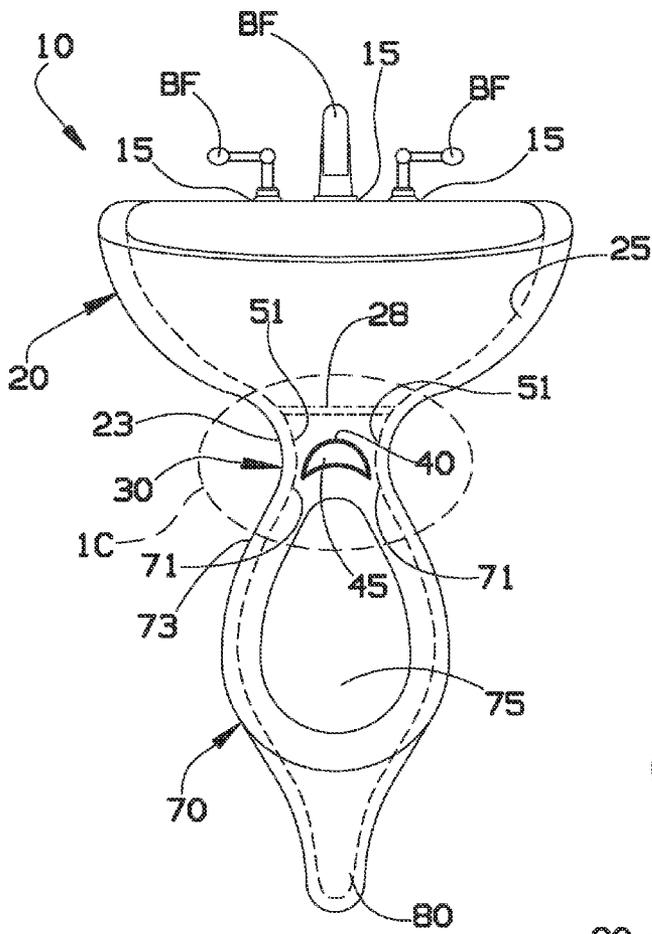


FIG. 1A

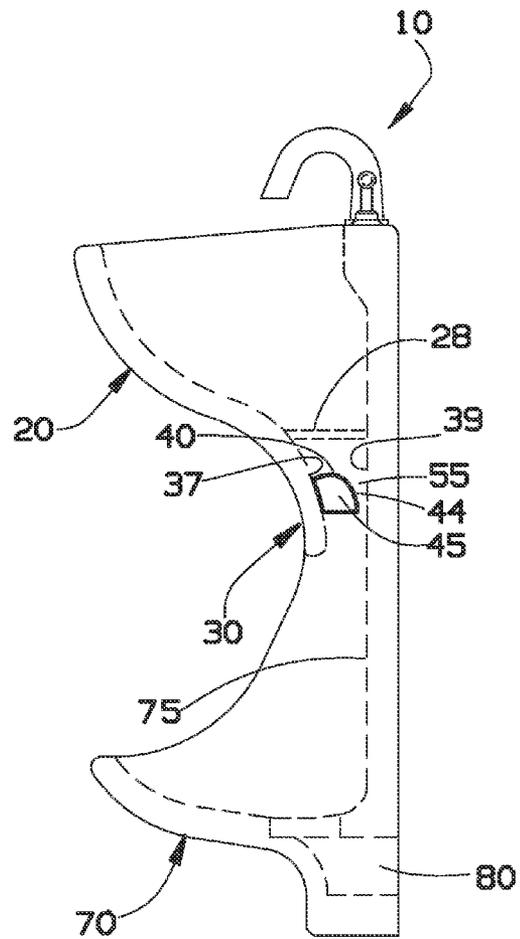


FIG. 1B

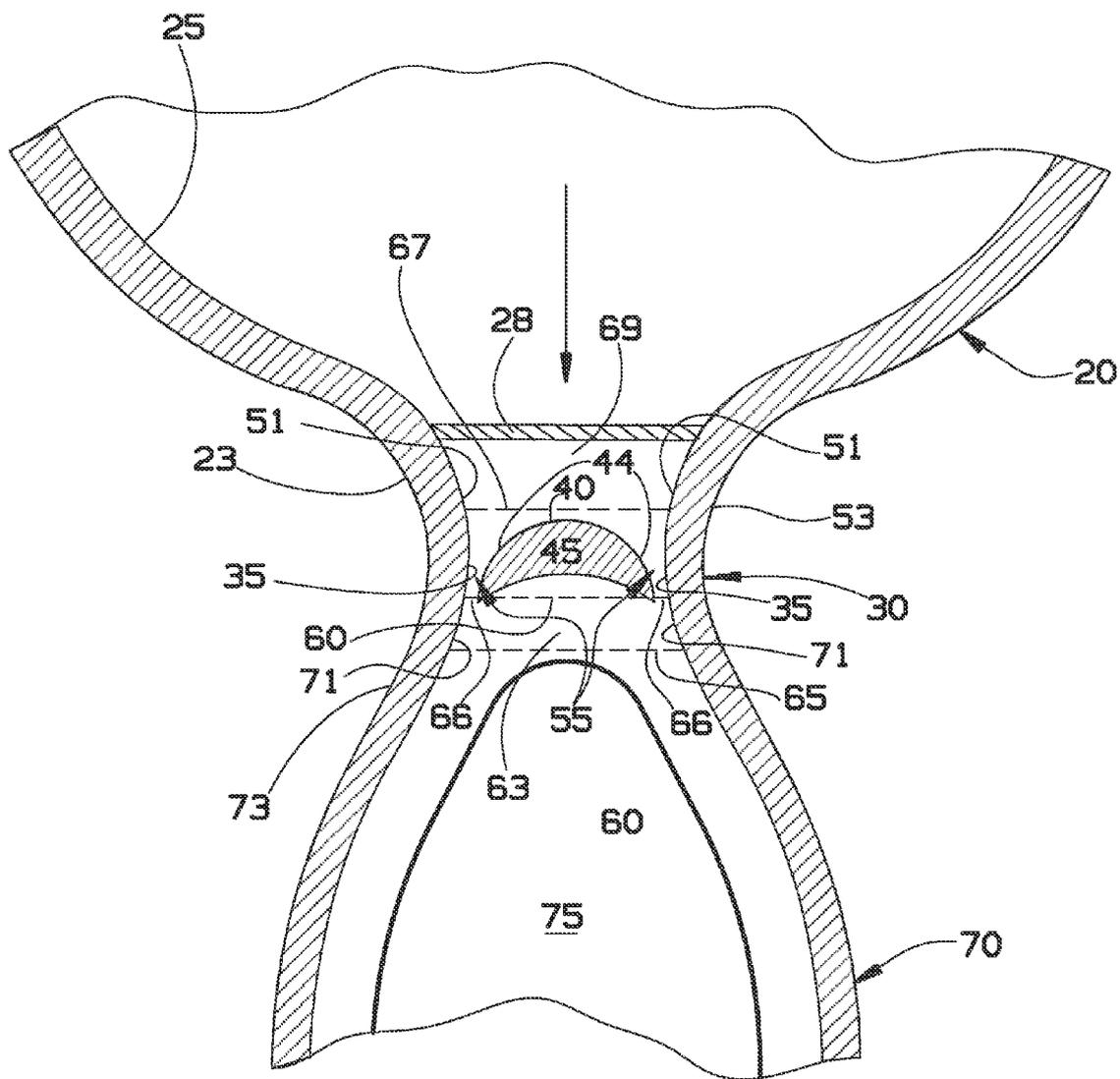
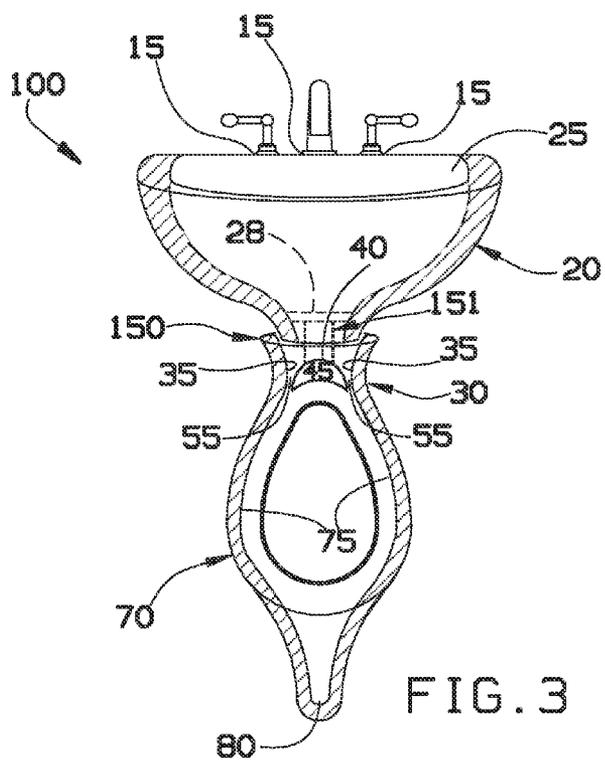
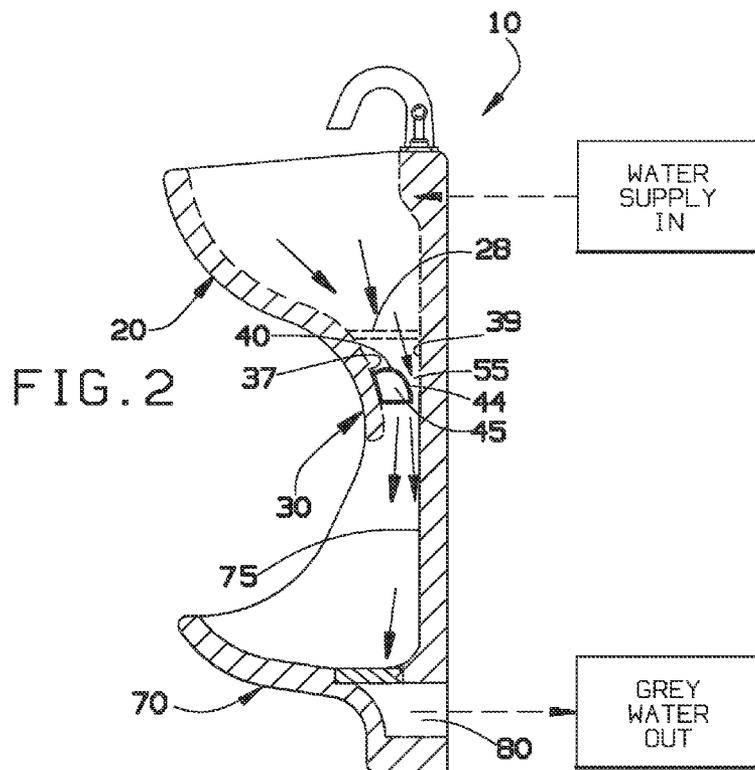


FIG. 1C



PLUMBING FIXTURE

BACKGROUND OF THE INVENTION

[0001] The present invention generally relates to a plumbing fixture, and more particularly, to a combination wash basin and bodily waste basin fixture.

[0002] Facilities such as public restrooms and homes may be scrutinized for space saving measures. Additionally, some public concerns may exist to find ways to recycle resources such as water.

[0003] In one exemplary scenario, the general public, in facilities such as an airport, may need to have many individual toilets and urinals as well as several wash basins. In some large scale airports, this may include several hundred separate wash basins, urinals, and toilets. Each wash basin, urinal and toilet may require its own respective water source for operation. The operation of a wash basin and a urinal or toilet separately may result in the use of many gallons of water per use.

[0004] On structure proposed by U.S. Pat. No. 6,119,285 includes a lavatory fixture including a urinal and a hand sink combined in a single lavatory unit. In this type of structure, the faucet appears to be within the same cavity as the urinal unit. A sensor detects when a user walks away from the fixture and releases a water flow to flush the urinal.

[0005] As can be seen, there is a need for a plumbing fixture that may recycle use of one fixture's water for use in a separate fixture's water.

SUMMARY OF THE INVENTION

[0006] In one aspect of the present invention, a plumbing fixture comprises a wash basin; a bodily waste basin; and a transition compartment connected between the wash basin and the bodily waste basin, wherein the wash basin is positioned above and external to the bodily waste basin.

[0007] In another aspect of the present invention, a plumbing fixture connectable to a wash basin comprises a bodily waste basin removably connected to the wash basin, wherein the bodily waste basin is connected to a drain of the wash basin and the bodily waste basin includes a first flow area; and a transition compartment connected to the bodily waste basin wherein the transition compartment is positioned below the drain and above the bodily waste basin wherein the transition compartment includes a second flow area smaller than the first flow area

[0008] These and other features, aspects and advantages of the present invention will become better understood with reference to the following drawings, description and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1A is a front view of a plumbing fixture in accordance with an exemplary embodiment of the present invention;

[0010] FIG. 1B is a side view of the plumbing fixture of FIG. 1A;

[0011] FIG. 1C is an enlarged view of the circle 1C depicted in FIG. 1A;

[0012] FIG. 2 is a side view of the plumbing fixture shown in FIG. 1A depicting an exemplary fluid flow; and

[0013] FIG. 3 is a front view of a plumbing fixture accordance with a second exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0014] The following detailed description is of the best currently contemplated modes of carrying out exemplary embodiments of the invention. The description is not to be taken in a limiting sense, but is made merely for the purpose of illustrating the general principles of the invention, since the scope of the invention is best defined by the appended claims.

[0015] Various inventive features are described below that can each be used independently of one another or in combination with other features.

[0016] Broadly, exemplary embodiments of the present invention generally provide a plumbing fixture combining a wash basin integrated with a bodily waste basin. Embodiments of the present invention may be beneficial for use in lavatories as a mechanism for using space efficiently. Embodiments of the present invention may also allow for recycled use of wash water originating from the wash basin for use in flushing bodily waste out of the bodily waste basin. Furthermore, exemplary embodiments may, in general, comprise an integrated structure or may comprise a bodily waste basin removably connectable to a wash basin.

[0017] Referring to FIGS. 1A-1C and 2, an exemplary embodiment of a plumbing fixture 10 may generally include a wash basin 20, a bodily waste basin 70, and a transition compartment 30. It will be understood that the plumbing fixture 10 may be attached to plumbing (not shown) of a lavatory (not shown).

[0018] The wash basin 20 may include an inner surface 25, a drain 28, and fixtures ports 15. It will be understood that wash basin fixtures BF may optionally be connected to the fixture ports 15. It will also be understood that the wash basin 20 may generally be concave shaped and the inner surface 25 may slope downward toward the drain 28. Transition side surfaces 51 may be positioned near a bottom periphery 23 below the drain 28 defining a gradual constriction of a flow area 67. The flow area 67 may be defined by a passage 69 spanning between the two side surfaces 51. The drain 28 may be a free flowing drain or may be a controlled flow drain where fluid may be held in the wash basin 20 until a desired fluid capacity for release is achieved.

[0019] The bodily waste basin 70 may include a generally sloped inner surface 75 configured to receive bodily waste (not shown) and move the bodily waste down toward an outlet 80. An upper periphery 73 of the bodily waste basin 70 may include side inner surfaces 71 defining a passage 63 permitting flow of fluid from the transition compartment 30 onto the inner surface 75. A bodily waste basin flow area 65 may be defined by a gradual expansion of the passage 63 spanning between the inner surfaces 71. The bodily waste basin may in one exemplary embodiment, be a urinal. In another exemplary embodiment, the bodily waste basin 70 may be a toilet.

[0020] The transition compartment 30 may be positioned between the wash basin 20 and the bodily waste basin 70. The transition compartment 30 may be connected to the bottom periphery 23 of the wash basin 20 and the upper periphery 73 of the bodily waste basin 70. The transition compartment 30 may include a water deflector 45 positioned underneath the drain 28. It will be understood that the water deflector 45 may be a separable element or may be molded into the transition compartment 30. It will also be understood that the water

deflector **45** may be hollow or solid. The water deflector **45** may include a generally rounded deflection surface **40**. The deflection surface **40** may also include a deflection edge surface **44** extending along the sides of the water deflector **45**. The transition compartment **30** may be lengthened for increased water flow velocity due to gravity, however, for ease of illustration, the transition compartment **30** is shown relatively compact in relation to the wash basin **20** and bodily waste basin **70**.

[0021] The transition compartment **30** may include an outer side surface **53** defining a generally hourglass shape between the wash basin **20** and the bodily waste basin **70**. The outer side surface **53** may cooperate with the inner side walls **35**, inner front wall **37**, inner rear wall **39** and the water deflector **45** to define fluid choke areas **55**. Transition compartment fluid flow areas **60** may be defined by passages **66** spanning between the inner side walls **35** and the water deflector **45**. In one exemplary embodiment, the water deflector **45** may be attached to the inner front wall **37** leaving the sides and rear of the water deflector disconnected for passage of fluid between the inner side walls **35** and the inner rear wall **39**. Thus, the passages **66** may comprise a circular arc passage circumventing the water deflector **45** along its sides and rear deflecting fluid flow against the side inner surfaces **35** and inner rear wall **39**. It will be understood however, that other attachments of the water deflector **45** to the transition compartment **30** may be contemplated such as bridging sides of the water deflector **45** to the inner side walls **35** or by suspending the water deflector **45** from the drain **28** while achieving similar fluid flow.

[0022] In operation, a user (not shown) may use the bodily waste basin **70** for disposal of bodily wastes. When the user is done with using the bodily waste basin **70**, the user may operate fixtures BF on the wash basin **20** to wash the user's hands with fluid. In one exemplary use, the fluid may be water originating from the fixtures BF. As the water flows down the inner surface **25**, it may build up momentum due to gravity as the water flows toward the drain **28**. As the water is released through the drain **28**, it begins to encounter lower pressure as it crosses through the flow area **67** and transitions into the transition compartment **30** commencing a build-up of velocity. If desired, the water may be temporarily detained in the wash basin **20** to build up a sufficient volume of water by control of the drain **28**. Upon release, the detained volume of water may flush down through plumbing fixture **10**.

[0023] As water flows into the transition compartment **30**, it may encounter the water deflector **45** by making contact with the deflection surface **40**. Water encountering the water deflector **45** may flow around the deflection surface **40** and onto the deflection edge surface **44** into the fluid choke area **55** and the passages **66** without flowing outward toward the user thus, assisting in mitigating the occurrence of splashing on the user. The deflection edge surface **44** may cooperate with the inner side walls **35** and inner rear wall **39** to create a venturi effect on the water flow through the passage **66**. The velocity of water may increase as it flows through the flow area **60** which may be smaller in area and thus, lower in pressure relative to the both the flow area **67** and the flow area **65**. As the flow of water passes through the flow area **65** of the bodily waste basin **70**, a higher pressure may result from the water flow exiting the constricted transition compartment **30** and entering the bodily waste basin **70**. The increase of pres-

sure may assist in the water flow traveling along the inner surface **75** and flushing any bodily waste out of the bodily waste basin **70**.

[0024] Referring to FIG. 3, another exemplary embodiment of a plumbing fixture **100** is shown. Plumbing fixture **100** is similar to plumbing fixture **10** except that the wash basin **20** and the bodily waste basin **70** may be disconnected and separate elements that may be connectable to one another. The transition compartment **30** may be connected to either the wash basin **20** or the bodily waste basin **70**. In one exemplary embodiment illustrated, the transition compartment **30** is depicted as being part of the bodily waste basin **70** connected to the bodily waste basin **70** at an upper periphery. The water deflector **45** may be suspended from the drain **28** via suspender **151** as illustrated and inserted into the transition compartment **30** during connection of the wash basin **20** and the bodily waste basin **70**, or the water deflector **45** may be affixed to an anterior portion of the transition compartment **30** as illustrated previously in FIG. 1B and FIG. 2. A connector **150** may be employed to connect the wash basin **20** to the bodily waste basin **70**. The connector **150** may be, in exemplary embodiments, a threaded connection or may be an interference fit. In one exemplary embodiment, a wash basin **20** may be a fixture previously installed in a lavatory and may thus, be adapted by installing the bodily waste basin **70** underneath the wash basin **20**. It will be understood that sealing elements such as gaskets or silicone may be applied around the connector **150** providing a water tight seal.

[0025] It should be understood, of course, that the foregoing relates to exemplary embodiments of the invention and that modifications may be made without departing from the spirit and scope of the invention as set forth in the following claims.

I claim:

1. A plumbing fixture, comprising:

a wash basin;

a bodily waste basin; and

a transition compartment connected between the wash basin and the bodily waste basin, wherein the wash basin is positioned above and external to the bodily waste basin.

2. The plumbing fixture of claim 1, further comprising a water deflector disposed in the transition compartment wherein the water deflector includes a deflection surface disposed to direct fluid draining out of the wash basin onto an inner surface of the bodily waste basin.

3. The plumbing fixture of claim 1, further comprising a venturi surface disposed in the transition compartment wherein the venturi surface cooperates with a transition compartment side wall to create a venturi effect on fluid flowing from the wash basin into the bodily waste basin.

4. The plumbing fixture of claim 1, wherein the wash basin defines a first fluid flow area and the bodily waste basin defines a second fluid flow area and the transition compartment defines a third fluid flow area wherein the third fluid flow area is smaller than the first and second fluid flow areas.

5. The plumbing fixture of claim 1, wherein the transition compartment includes a fluid choke area wherein the fluid choke area includes, a first flow area defined as a first passage

between a first transition compartment side wall and the water deflector, and

the transition compartment further includes a second flow area defined as a second passage between the first transition compartment side wall and a second transition compartment side wall.

6. The plumbing fixture of claim 1, wherein the bodily waste basin is a urinal.

7. The plumbing fixture of claim 1, wherein the bodily waste basin is a toilet.

8. A plumbing fixture connectable to a wash basin, comprising:

a bodily waste basin removably connected to the wash basin, wherein the bodily waste basin is connected to a drain of the wash basin and the bodily waste basin includes a first flow area; and

a transition compartment connected to the bodily waste basin wherein the transition compartment is positioned below the drain and above the bodily waste basin wherein the transition compartment includes a second flow area smaller than the first flow area.

9. The plumbing fixture of claim 8, further comprising a rounded deflection surface in the transition compartment disposed beneath the drain and positioned to deflect fluid around the deflection surface and onto an inner surface of the bodily waste basin.

10. The plumbing fixture of claim 8, wherein the transition compartment includes a restricted flow area configured to pass fluid from the wash basin out of the transition compartment and into the bodily waste basin to flush material from the bodily waste basin.

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