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(54) **SUCTION ASSISTED URINE COLLECTOR**

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(76) **Inventor: Barbara Scott, San Francisco, CA (US)**

(57) **ABSTRACT**

Correspondence Address:

**Barbara Scott**  
**1472 La Playa St., #3**  
**San Francisco, CA 94122-2823 (US)**

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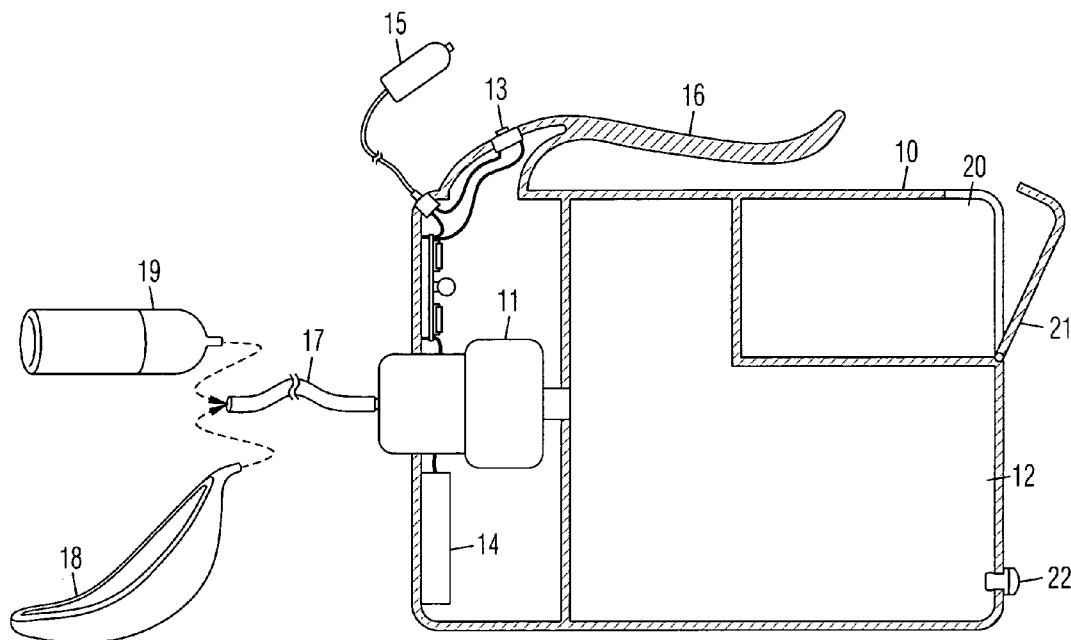
**Related U.S. Application Data**

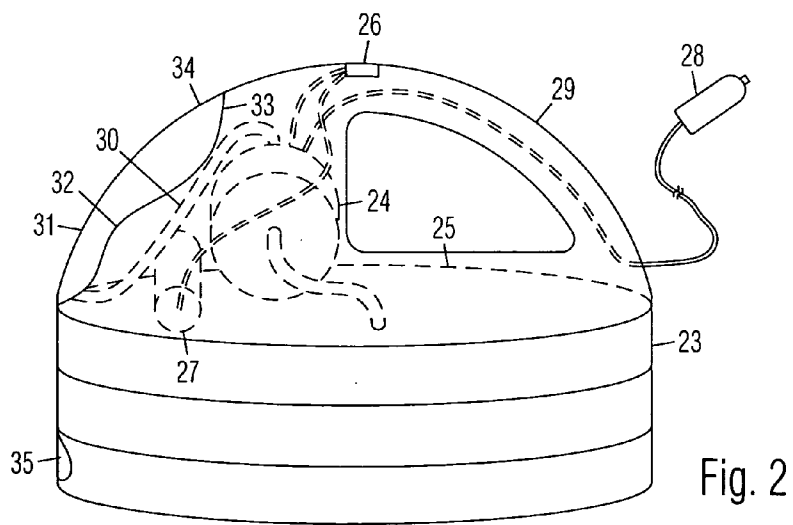
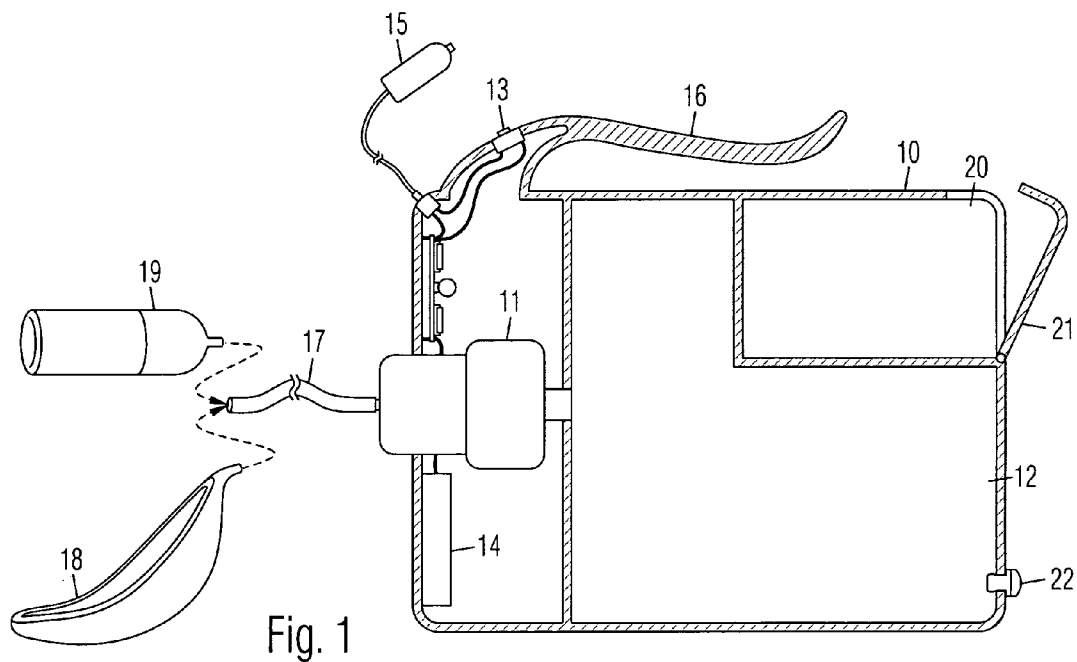
(63) **Continuation-in-part of application No. 10/152,964, filed on May 22, 2002, now Pat. No. 6,732,384.**

**Publication Classification**

(51) **Int. Cl.<sup>7</sup> ..... A47K 11/00**

A urine collector is comprised of a container with an electric suction pump. A hose extending from the pump is connected to a funnel for collecting urine. The funnel is comprised of an interchangeable female or male funnel. The funnel can be positioned against the body through a fly in the pants, through a loosened waistband, or under a dress. Urine deposited in the funnel is rapidly drawn into the container by the motor even when the funnel and the top end of the tube are angled up and define an initially uphill path for the urine, such as when the user is seated. An alternative embodiment includes a urine container connected to the hose, and a vacuum device connected to the container for drawing urine and air into the container, and expelling only air from the container.





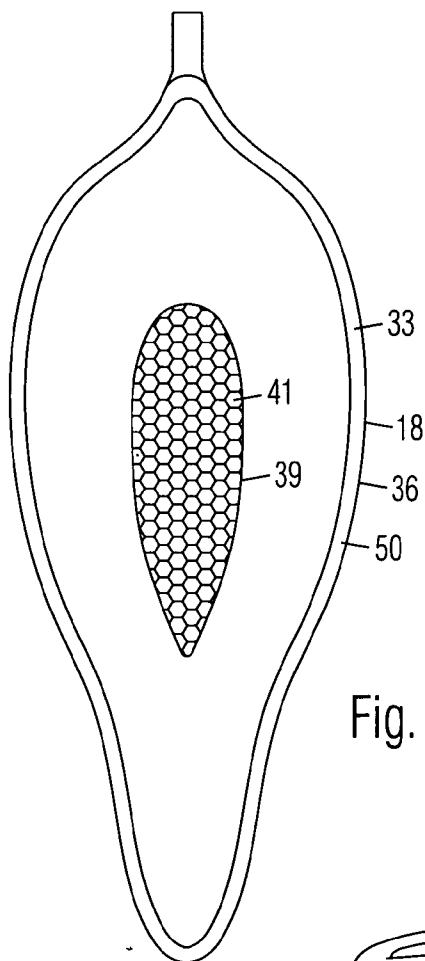


Fig. 3

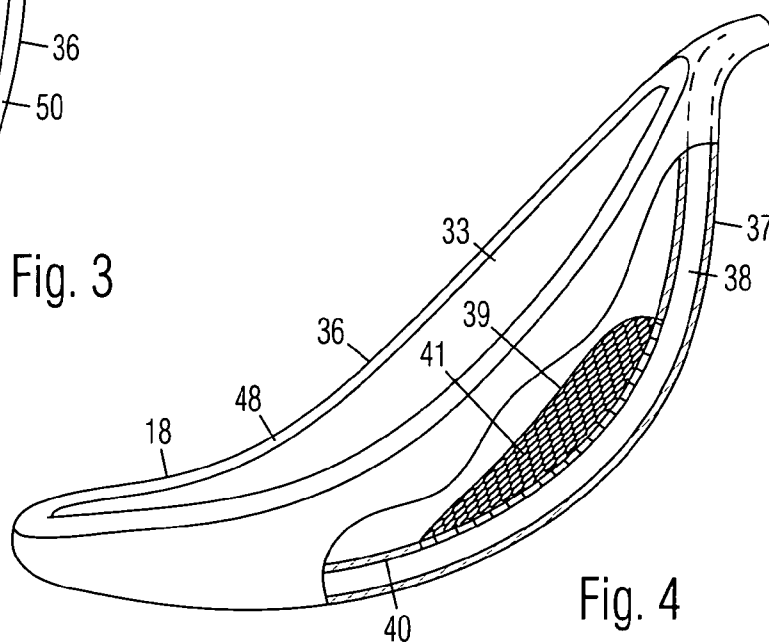


Fig. 4

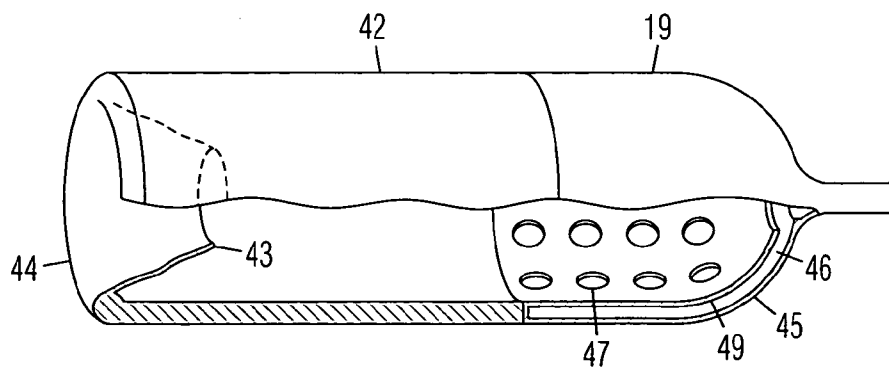


Fig. 5

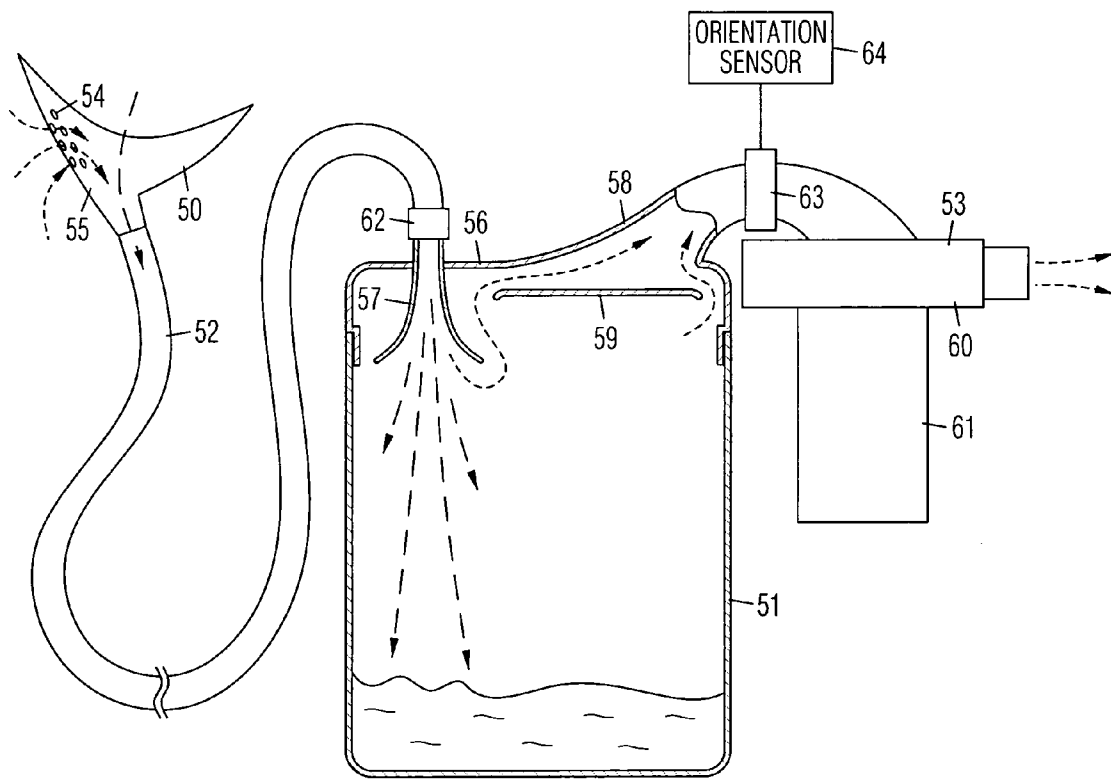


Fig. 6

**SUCTION ASSISTED URINE COLLECTOR**

**CROSS REFERENCE TO RELATED APPLICATIONS**

[0001] This is a continuation-in-part of application Ser. No. 10/152,964 filed on 22 May 2002, now abandoned.

**BACKGROUND OF THE INVENTION**

[0002] 1. Field of the Invention

[0003] This invention relates generally to devices that enable a person to urinate in a seated position without undressing.

[0004] 2. Prior Art

[0005] People often need to urinate when they are unable to find a toilet, for example, when they are traveling in vehicles. When restrooms are found, they are often highly unsanitary gas station or other public restrooms. Even when a public restroom is available but relatively distant, some people would like to be able to urinate without having to walk to the restroom.

[0006] Various urine collectors are known among the prior art that enable people to urinate anywhere. One type of collector is comprised of a container with an integral rigid funnel. Since the user must drop his or her pants and position it under the crotch, it cannot be used in a seated position or where subject to possible public view, which severely limits its usefulness. Another type of collector designed for female use is comprised of a funnel attached to a bag with a flexible hose. The entire device can be slipped inside the clothing; however, the user must be standing to let the urine drain from the funnel into the container. If the user is in a seated position, especially on a car seat which is tilted slightly upward at the front, the funnel and hose will be angled upward and prevent the urine from draining into the container. Urinating in a seated position can result in much of the urine spilling, thus creating a mess and an embarrassing situation.

**OBJECTS OF THE INVENTION**

[0007] The objects of the present urine collector are:

[0008] to enable a user to urinate without undressing;

[0009] to enable a user to urinate discreetly in a private space, such as a car, without anyone noticing; and

[0010] to enable a user to urinate in a seated position without spillage.

[0011] Further objectives of the present invention will become apparent from a consideration of the drawings and ensuing description.

**BRIEF SUMMARY OF THE INVENTION**

[0012] A urine collector is comprised of a container with an electric suction pump. A hose extending from the pump is connected to a funnel for collecting urine. The funnel is comprised of an interchangeable female or male funnel. The female funnel is comprised of a cup with an elongated and curved opening for closely fitting under and against a vulva. The male funnel is comprised of a penis-shaped tube with a resilient sealing ring around an open end for sealing around

an inserted penis. The funnel can be arranged to engage the body through a fly in the pants, through a loosened waistband, or under a dress. Urine deposited in the funnel is rapidly drawn into the container by the pump even when the funnel and the top end of the tube are angled up and define an initially uphill path for the urine, such as when the user is seated. An alternative embodiment includes a urine container connected to the hose, and a vacuum device connected to the container.

**BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING**

[0013] FIG. 1 is a cutaway view of the present urine collector.

[0014] FIG. 2 is a side perspective view of a second embodiment thereof.

[0015] FIG. 3 is a top view of a female funnel thereof.

[0016] FIG. 4 is a cutaway side perspective view of the female funnel.

[0017] FIG. 5 is a cutaway side perspective view of a male funnel thereof.

**DRAWING REFERENCE NUMERALS**

- [0018] 10. Urine Collector Housing
- [0019] 11. Suction Pump
- [0020] 12. Collection Container
- [0021] 13. Switch
- [0022] 14. Battery
- [0023] 15. Cigarette Lighter Plug
- [0024] 16. Handle
- [0025] 17. Hose
- [0026] 18. Female Funnel
- [0027] 19. Male Funnel
- [0028] 20. Storage Compartment
- [0029] 21. Hinged Cover
- [0030] 22. Drain Plug
- [0031] 23. Urine Collector Housing
- [0032] 24. Suction Motor
- [0033] 25. Collection Container
- [0034] 26. Switch
- [0035] 27. Battery
- [0036] 28. Cigarette Lighter Plug
- [0037] 29. Handle
- [0038] 30. Hose
- [0039] 31. Female Funnel
- [0040] 32. Notch
- [0041] 33. Opening
- [0042] 34. Curved Contour
- [0043] 35. Drain Plug

- [0044] 36. Cup
- [0045] 37. Outer Wall
- [0046] 38. Chamber
- [0047] 39. Drain Hole
- [0048] 40. Inner Wall
- [0049] 41. Screen
- [0050] 42. Tube
- [0051] 43. Sealing Ring
- [0052] 44. Open Front End
- [0053] 45. Outer Wall
- [0054] 46. Chamber
- [0055] 47. Drain Holes
- [0056] 48. Sealing Strip
- [0057] 49. Inner Wall
- [0058] 50. Funnel
- [0059] 51. Urine Container
- [0060] 52. Hose
- [0061] 53. Vacuum Device
- [0062] 54. Hole
- [0063] 55. Outer Front Wall
- [0064] 56. Cap
- [0065] 57. Entry Nozzle
- [0066] 58. Exit Nozzle
- [0067] 59. Exit Nozzle Guard
- [0068] 60. Compressor Fan
- [0069] 61. Motor
- [0070] 62. One-Way Valve
- [0071] 63. Shut-Off Valve
- [0072] 64. Orientation Sensor

DETAILED DESCRIPTION OF THE  
INVENTION

[0073] FIG. 1:

[0074] A first embodiment of the present urine collector is shown in a side cutaway view in FIG. 1. It is comprised of a urine collector housing 10 with an electric suction pump 11 connected to a urine collection container 12. An on/off switch 13 is connected between a battery 14 and pump 11, and between a cigarette lighter plug 15 and pump 11. Plug 15 may be used when in a car to conserve battery 14, or when battery 14 is dead. A handle 16 is attached to housing 10. Switch 13 is preferably positioned in handle 16 for easy reach. A hose 17 has a proximal end connected to pump 11 and a distal end attachable to either a female funnel 18 or a male funnel 19. A storage compartment 20 with a hinged cover 21 is provided in housing 10 for storing the funnels when they are not in use. A drain plug 22 is provided at the bottom of container 12.

[0075] Pump 11 is started prior to urinating into either funnel. Urine deposited in the funnel is rapidly drawn into container 12 by pump 11. Even if the funnel and the top end of hose 17 are angled upward to define an uphill path for the urine, such as when the user is seated, the urine is still positively drawn from the funnel by pump 11. The pumping rate of pump 11 is greater than the highest anticipated urination rate to avoid spillage.

[0076] FIG. 2:

[0077] A second embodiment of the urine collector is shown in a side perspective view in FIG. 2. It is comprised of a urine collector housing 23 with an electric suction pump 24 connected to a urine collection container 25. Urine collector housing 23 preferably has a rounded top contour. An on/off switch 26 is connected between a battery 27 and pump 24, and between a cigarette lighter plug 28 and pump 24. A handle 29 is attached to housing 23. Switch 26 is preferably positioned in handle 29 for easy reach. A hose 30 is connected between pump 24 and a female funnel 31. A storage notch 32 is provided on housing 23 for storing female funnel 31 when it is not in use. Notch 32 is shaped for mating with an opening 33 of funnel 31. When female funnel 31 is attached to notch 32, a continuously curved contour 34 is formed by female funnel 31 and housing 23. A male funnel can also be connected to the end of hose 30, and a storage compartment may be provided in the housing for the male funnel. A drain plug 35 is provided at the bottom of container 25.

[0078] FIGS. 3-4:

[0079] Female funnel 18 is shown in a top view in FIG. 3 and a side cutaway view in FIG. 4. It is comprised of a cup 36 with an opening 33 which is elongated when seen in a top view, and curved when seen in a side view for closely fitting under a vulva. Cup 36 has an outer wall 37 that defines an interior chamber 38 which is communicably connectable to the hose at a front end of cup 36. A drain hole 39 is positioned at the bottom of an inner wall 40 for draining urine into chamber 38. A screen 41 is positioned across drain hole 39. A resilient sealing strip 48 is arranged around opening 33. Alternatively, hose 17 (FIG. 1) and hose 30 (FIG. 2) may be connected near a front end of cup 36. The urine collector can thus be used by a woman without undressing by positioning female funnel 18 through clothing, such as through a loosened waistband, or under a dress and into her underwear.

[0080] FIG. 5:

[0081] Male funnel 19 shown in FIG. 5 is comprised of a penis-shaped tube 42 with a resilient, inwardly tapered conical sealing ring 43 around an open end 44 for sealing around a penis. Penis-shaped tube 42 is comprised of an inner wall 49 and an outer wall 45 that defines an interior chamber 46 which is communicably connectable to the hose at the rear of penis-shaped tube 42. Drain holes 47 are distributed around an inner wall 49 for draining urine into chamber 46. The urine collector can be used by a man without undressing by positioning male funnel 19 through clothing, such as a fly in a pair of pants.

[0082] FIG. 6:

[0083] An alternative embodiment of the urine collector is comprised of a funnel 50 connected to a urine collection

container **51** by a hose **52**, and a vacuum device **53** comprised of a compressor fan **60** and motor **61**, connected to container **51** for sucking air and urine from funnel **50**. Urine is drawn in from the inside of funnel **50** as indicated by the larger dashed line, and air is drawn in through air holes **54** on an outer front wall **55** of funnel **50**, as indicated by the smaller dashed lines. The air drives the urine through hose **52**. A female funnel is shown as an example, but a male funnel may be connected. The male funnel will also include air holes for drawing in air.

[0084] A proximal end of hose **52** is connected to container **51**, which includes a cap **56**. A divergent entry nozzle **57** is attached to hose **52** for slowing the flow of air and urine to reduce splashing. The heavier urine falls to the bottom of container **51**, and the lighter air is drawn out of container **51** through a convergent exit nozzle **58** for accelerating the air outward. An exit nozzle guard **59** is positioned adjacent to exit nozzle **58** to prevent any splashing liquid from being drawn out. Exit nozzle **58** is slanted and curved to reduce the need for headroom above container **51**. Entry and exit nozzles **57** and **58** are preferably connected to cap **56**. Vacuum device **53** is connected to the outer end of exit nozzle **58**, and is comprised of a compressor fan **60** connected to a motor **61**. The air is expelled to the outside environment from vacuum device **53**.

[0085] A one-way valve **62** is connected to hose **52** to prevent backflow when vacuum device **53** is turned off. A shut-off valve **63** is connected to exit nozzle **58** and controlled by an orientation sensor **64**, which is arranged to open shut-off valve **63** when container **51** is upright and close shut-off valve **63** when container **51** is tilted beyond a predetermined angle to prevent urine from entering vacuum device **53**.

#### SUMMARY AND SCOPE

[0086] Accordingly, the present suction assisted urine collector enables a user to urinate without undressing. It enables a user to urinate in a private space such as a vehicle without anyone noticing. It also enables a user to urinate in a seated position without spillage.

[0087] Although the foregoing description is specific, it should not be considered as a limitation on the scope of the invention, but only as an example of the preferred embodiments. Many variations are possible within the teachings of the invention. For example, different attachment methods, fasteners, materials, dimensions, etc. can be used unless specifically indicated otherwise. The relative positions of the elements can vary, and the shapes of the elements can vary. Therefore, the scope of the invention should be determined by the appended claims and their legal equivalents, not by the examples given.

I claim:

1. A urine collector, comprising:

a funnel for being pressed against a crotch of a user for collecting urine, wherein said funnel includes air holes for drawing in air to propel said urine;

a hose with a distal end connected to said funnel;

a urine collection container connected to a proximal end of said hose;

an entry nozzle connected to said proximal end of said hose;

an exit nozzle connected to said container; and

a vacuum device connected to said exit nozzle for sucking said urine and said air from said funnel through said hose said container, and sucking only said air out of said urine container.

2. The urine collector of claim 1, wherein said funnel is comprised of a cup with an opening which is elongated when seen in a top view, and curved when seen in a side view for closely fitting under a vulva.

3. The urine collector of claim 1, wherein said funnel is comprised of a cup with an opening which is elongated when seen in a top view, and curved when seen in a side view for closely fitting under a vulva, said cup includes a double wall that defines an interior chamber which is communicably connected to said distal end of said hose, a drain hole at a bottom of an inner wall for draining said urine into said interior chamber, a screen across said drain hole, and a resilient sealing strip around said opening.

4. The urine collector of claim 1, wherein said funnel is comprised of a penis-shaped tube for sealing around a penis.

5. The urine collector of claim 1, wherein said funnel is comprised of a penis-shaped tube with a resilient, inwardly tapered conical sealing ring around an open end for sealing around a penis, a front portion of said penis-shaped tube is comprised of a rigid tube with a double wall that defines an interior chamber which is communicably connectable to said hose, said penis-shaped tube further including drain holes around an inner wall for draining said urine into said chamber.

6. The urine collector of claim 1, further including a housing enclosing said vacuum device and said collection container, a handle attached to said housing, and an on/off switch connected to said pump and position on said handle for facilitating operation while a user is gripping said handle.

7. The urine collector of claim 1, further including a housing enclosing said vacuum device and said collection container, and a storage compartment in said housing with a hinged cover for storing said funnel when said funnel is not in use.

8. The urine collector of claim 1, further including a drain plug on a bottom of said collection container.

9. The urine collector of claim 1, wherein said entry nozzle is divergent for slowing said urine and said air for reducing splashing.

10. The urine collector of claim 1, wherein said exit nozzle is convergent for accelerating said air out of said container.

11. The urine collector of claim 1, further including an exit nozzle guard adjacent said exit nozzle for preventing any splashing urine from being sucked out of said container.

12. The urine collector of claim 1, wherein:

said funnel is comprised of a female funnel for being pressed against a vulva of a female user for collecting urine, wherein said female funnel is comprised of a cup with an opening which is elongated when seen in a top view, and curved when seen in a side view for closely fitting under said vulva; and further including

a housing with a storage notch for storing said female funnel when said female funnel is not in use, wherein said storage notch is shaped for mating with said

opening of said female funnel, and when said female funnel is attached to said storage notch, a continuously curved contour is formed by a bottom of said female funnel and said top contour of said housing.

**13.** The urine collector of claim 1, further including a one-way valve connected to said hose to prevent backflow when said vacuum device is turned off, a shut-off valve connected to said exit nozzle, and an orientation sensor connected to said shut-off valve and arranged to open said shut-off valve when said container is upright and close said shut-off valve when said container is tilted beyond a predetermined angle to prevent said urine from entering said vacuum device.

**14.** A urine collector, comprising:

a funnel for being pressed against a crotch of a user for collecting urine, wherein said funnel includes air holes for drawing in air to propel said urine;

a hose with a distal end connected to said funnel;

a urine collection container connected to a proximal end of said hose;

a divergent entry nozzle connected to said proximal end of said hose for slowing said urine and said air for reducing splashing;

a convergent exit nozzle connected to said container for accelerating said air out of said container;

an exit nozzle guard adjacent said exit nozzle for preventing any splashing urine from being sucked out of said container; and

a vacuum device connected to said exit nozzle for sucking said urine and said air from said funnel through said hose said container, and sucking only said air out of said urine container.

\* \* \* \* \*