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DESCRIPTION**Automatic Bladder Relief System****BACKGROUND ART**

The use of human urinary collection and disposal systems is known in the
prior art. For example U.S. Patent 4,886,508 (Washington, 1989) discloses a ladies'
external catheter assembly, however this device does not use a vacuum pump for
drainage or utilize a moisture sensor. Also U.S. Patent No. 4,610,675 (Triunfol,
1986) teaches a device for collecting fluid discharged from female organs that is
designed solely for incontinent women, not female aircrew members and the design
includes a pad, vacuum pump and liquid sensor, however, the pad is more invasive
because it is formed of plastic and has ridges to move the labia to an open position
for free flow of liquid. The vacuum pump of the Triunfol patent is powered by an
electrical outlet and does teach battery operation of these devices. In U.S. Patent
No. 5,662,631 (Marx, Sept. 2, 1997) a male external catheter assembly with
vacuum retention is disclosed wherein a male external catheter attachment
incorporates a vacuum or a means to produce reduced pressure to aid in installing
and keeping the device in place. U.S. Patent No. 5,499,977 (Marx, Mar. 19, 1996)
teaches another form of male external catheter with vacuum assist utilizing a rubber
bulb that functions as a vacuum. As such, the basic concept of bladder discharge
collection systems and their use are disclosed.

There are no acceptable bladder relief systems for incontinent adults.
Urinary incontinence affects more than 13 million Americans in community and
institutional settings. Thirty-eight percent of non-institutionalized patients older
than 60 years of age experienced urinary incontinence, and almost 50 percent of
institutionalized patients. The annual costs of bladder control problems in the

United States for people older than 65 years of age was estimated at \$26.3 billion in 1995, or \$3,565 per affected person. Many incontinent males use commercially available diapers, which cannot contain urine from multiple urinations, and become heavy and uncomfortable when wet.

5 While each of these prior art patents disclose bladder relief systems which fulfill their respective particular objectives and requirements, and are most likely quite functional for their intended purposes, it will be noticed that none of the prior art cited disclose an apparatus and/or method that allow a user the comfort of automatic operation and large volume capacity. As such, there apparently still
10 exists the need for new and improved bladder relief system to maximize the benefits to the user and minimize the risks of injury from its use.

 There is also no acceptable bladder relief system for male aircrew members flying extended flight operations in single or dual-seat fighter and reconnaissance aircraft that do not have toilet facilities. Male aircrew members use two types of
15 bladder relief devices, "piddle pack" bag systems and uncomfortable external catheters with tubing. The entire procedure for using the piddle pack takes several minutes. During this procedure the pilot is significantly distracted from flying the aircraft, which can place both himself and his aircraft in danger. The current piddle pack bag system can also be dangerous to use if the pilot needs to eject from the
20 aircraft while urinating. The optimum bladder relief system would allow the pilot to eject from the aircraft even while urinating, which would require it to be hands-free and at least semi-automatic. In this respect, the present invention disclosed herein substantially fulfills this need.

 An automated or semi-automated bladder relief device is important not just
25 for the aircrew member's comfort, health and safety, but also for the safety of the aircraft and squadron. The system will significantly reduce the pilot's distraction or downtime during bladder relief, which will improve pilot and aircraft safety.

 Similarly, there is also no acceptable bladder relief system for female aircrew members flying extended flight operations in aircraft that do not have toilet
30 facilities. Male aircrew members use two types of bladder relief devices, piddle pack bag systems and external catheters with tubing. Female aircrew members cannot use the catheter/tubing assemblies designed for males. Instead, most use

commercially available adult diapers. These diapers have the following drawbacks:

- 1 Neither the Disposable Absorption Containment Device (DACD)
developed by NASA nor commercially available diapers have the capacity
to hold the 1000 cc of urine produced during some long duration flights.
- 5 2 High g maneuvers force the female aircrew member downward into the
seat, displacing urine from the diaper and leaving the female to sit in a wet
flight suit and seat for the duration of the flight.
- 3 Prolonged exposure to urine can cause skin irritation and may develop into
more serious conditions such as ulcers.

10 In this respect, the present invention disclosed herein substantially corrects these
problems and fulfills the need for such a device.

Lastly the present invention may also be effectively used by passengers in
aircraft without toilet facilities, glider pilots, non-ambulatory patients, incontinent
adults, astronauts, rescue workers in hazmat suits, and long-distance truckers and
15 race car drivers.

DISCLOSURE OF THE INVENTION

In view of the foregoing limitations inherent in the known types of bladder relief
systems now present in the prior art, the present invention provides an apparatus
20 that has been designed to automatically or semi-automatically collect urine in an
environmentally challenging setting in a sanitary, safe and comfortable manner
which are improvements which are patently distinct over similar devices and
methods which may already be patented or commercially available. As such, the
general purpose of the present invention, which will be described subsequently in
25 greater detail, is to provide a field designed apparatus and method of use that
incorporates the present invention. There are many additional novel features
directed to solving problems not addressed in the prior art.

To attain this the present invention generally comprises a secure gender specific
leakproof urine collection means, a fluid sensing unit, a suction means, and a
30 storage and disposal means.

Several objects and advantages of the present invention are:

unlike the prior art urinary collection and disposal systems the present invention provides an automated or semi-automated collection system with a large urinary storage capacity. Also, unlike prior art this invention does provide a comfortable collection system that requires no manipulation to utilize leaving the user's hand
5 free for vital tasks;

the present invention also provides for ease of set up, use, urine storage and disposal; and

the present invention also provides an advancement in ecological protection by eliminating the need for disposal of environmentally damaging and bulky diaper
10 materials.

These together with other objects of the invention, along with the various features of novelty which characterize the invention, will be pointed out with particularity in the claims which will be annexed to and forming a part of the full patent application once filed. For a better understanding of the invention, its
15 operating advantages and the specific objects attained by its uses, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

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FIG. 1 is a perspective view of the female user embodiment.

FIG. 2 is a perspective view of the invention attached to a user and in use.

FIG. 3 is an expanded cut-away perspective view of the female pad of the female user embodiment depicted in **FIG. 1**.

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FIG. 4 is a perspective view of the male user embodiment.

FIG. 5 is a cut-away perspective view of the male cup of the male user embodiment depicted in **FIG. 4**.

FIG. 6 is a cut-away perspective view of the suction control unit.

FIG. 7 is a cut-away perspective view of the flow chamber.

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BEST MODES FOR CARRYING OUT THE INVENTION

I. PREFERRED EMBODIMENTS

With reference now to the drawings, and in particular to Figures 1-8 thereof, a new and novel apparatus for an automatic bladder relief system embodying the principles and concepts of the present invention and generally designated collectively comprising two main components in the female user embodiment by the reference numeral 1 and 11 in Figures 1, and in the male user embodiment by the reference numeral 1 and 57 in Figure 4.

10 List and Description of:

General Description of Reference Numerals in the Description and Drawings

Any actual dimensions listed are those of the preferred embodiment. Actual dimensions or exact hardware details and means may vary in a final product or most preferred embodiment and should be considered means for so as not to narrow the claims of the patent.

- (1) Suction Control Unit
- (2) Suction Vacuum Pump
- (3) Urine Collection Bag
- (5) DC Motor
- 20 (7) Rechargeable Battery Pack
- (9) Recharge Circuitry
- (11) Female Pad
- (13) Suction Hose
- (17) Quick-Disconnect Hose Couplings
- 25 (19) Power ON/OFF Button
- (21) Timed Interval ON/OFF Button
- (23) Vacuum Pump Impeller
- (25) Filter
- (27) Battery Pack
- 30 (29) LCD Status Display
- (31) Flow Chamber
- (33) Suction Control Unit Air/Liquid Inlet
- (35) Suction Control Unit Liquid Outlet
- (37) Suction Control Unit Air Exhaust Outlet
- 35 (39) Facing Layer (Female User Embodiment)
- (39M) Facing Layer (Male User Embodiment)
- (41) Wicking Layer (Female User Embodiment)
- (41M) Wicking Layer (Male User Embodiment)
- (43) Urine Collection Layer (Female User Embodiment)
- 40 (43M) Urine Collection Layer (Male User Embodiment)

- (45) Moisture-Proof Outer Layer (Female User Embodiment)
- (45M) Moisture-Proof Outer Layer (Male User Embodiment)
- (46) Outer Layer Wall (Female User Embodiment)
- (46M) Outer Layer Wall (Male User Embodiment)
- 5 (47) One-Way Airflow Inlet Holes (Female User Embodiment)
- (48) One-Way Airflow Inlet Holes (Male User Embodiment)
- (49) Soft Sealing Strips
- (50) Isolation Membrane
- (51) Quick-Disconnect Plug
- 10 (52) Cup Front
- (53) Inside Cup Area (Female User Embodiment)
- (53M) Inside Cup Area (Male User Embodiment)
- (55) Moisture Sensor
- (56) Urine Cavity
- 15 (57) Male Cup

Detailed Description of the Preferred Embodiments:

1. Suction Control Unit

20 The Suction Control Unit (1) is a re-usable piece of hardware containing a suction vacuum pump (2), DC motor (5), rechargeable battery pack (7) and recharge circuitry (9). A built-in, battery-powered suction vacuum pump (2) sucks the urine from the Male Cup (57) in the male user embodiment and Female Pad

25 (11) of the female user embodiment through a suction hose (13) and deposits the collected fluid into a Urine Collection Bag (3). Quick-disconnect hose couplings (17) connect and disconnect the Urine Collection Bag (3) and suction hose (13) from the Suction Control Unit (1). The Suction Control Unit (1) has two modes of operation: one power "ON/OFF" button (19) and one button that turns the unit

30 "ON" and then "OFF" after a timed interval (21). A small, high-power DC motor is used, similar to those used in cordless vacuum cleaners. The DC motor (5) spins the vacuum pump impeller (23) to provide the suction required to draw the urine from the urine cavity (56) of the Male Cup (57). The system uses a filter (25) of charcoal or other material to deodorize the exhaust air. In the preferred

35 embodiment, a battery pack (27) of rechargeable Nickel-Metal Hydride (NIMH) batteries are used to provide the power supply for the DC motor (5). A two-digit LCD Status Display (29) with backlight indicates the amount of time remaining in the battery charge, and the number of bladder relieves left in the power supply

charge. There are other power supplies available for other applications of this invention, from lithium batteries to 110-volt wall outlets. The recharge circuitry allows the battery pack to be plugged into a wall outlet for recharging without damaging the batteries.

5 A flow chamber (31) is contained in the Suction Control Unit (5). The flow chamber (31) begins at the Suction Control Unit Air/Liquid Inlet (33) and ends at both the Suction Control Unit Liquid Outlet (35) and the Suction Control Unit air exhaust outlet (37). This flow chamber (31) separates moisture from the vacuum airflow and channels the liquid to the Suction Control Unit Liquid Outlet (35) and
10 the air to the Suction Control Unit Air Exhaust Outlet (37). The Suction Control Unit Air Exhaust Outlet (37) is fitted with a deodorizing air Filter (25).

2. Male Cup

 The Male Cup (57) is a disposable soft cup, approximately the same size and shape as a men's athletic protective cup. Figure 5 shows a cut-away view of a Male
15 Cup (37). The cup has four layers: a facing layer (39M), wicking layer (41M), urine collection layer (43M) and Moisture Proof Outer Layer (45M). The Moisture Proof Outer Layer (45M) is attached to and contains the facing layer (39M), wicking layer (41M), urine collection layer (43M) along the edges thereof by means of the Outer Layer Wall (46M). A Urine Cavity (56) is defined by the urine
20 collection layer (43M) and the Moisture Proof Outer Layer (45M) in the inside cup area (53M). The facing layer (39M), which lies against the skin, is made of a soft, non-woven, non-absorbent polymer. The wicking layer (41M) is made of a woven polymer. It pulls moisture away from the facing layer (39M) and prevents it from going back through the facing layer (39M), much like a one-way fluid check valve.
25 The urine collection layer (43M) is made of an open cell foam material or other material capable of collecting fluid, and provides a Urine Cavity (56) in its placement juxtaposed to the Moisture Proof Outer Layer (45M) for the vacuum suction airflow produced by the Suction Vacuum Pump (2) to suck fluids and moisture out of the Male Cup (57) and away from the body.

30 One-way airflow inlet holes (48) in the top of the Male Cup (57) facilitate the evacuation of liquids and provide air flow for drying the Male Cup's (57) layers. An isolation membrane (50) made of a thin, flexible material such as silicon rubber

comfortably keeps a man's penis inside the Male Cup (57) compartment and prevents any leaking. The cup front (52) is made of a stretchable material such as silicon rubber that opens automatically to accommodate size changes.

5 The suction hose (13) at the front of the Male Cup (57) is connected to the Suction Control Unit (1). The Suction Control Unit (1) sucks all fluids from the Male Cup (57) through the suction hose (13) and deposits them into the Urine Collection Bag (3). In the preferred embodiment, the flexible, disposable suction hose (13) is outfitted with a quick-disconnect plug (51) on the end that connects to the Suction Control Unit (1). The suction hose (13) may be made of a
10 convoluted, easily bendable material with spiral construction. This allows a smaller bending radius so that the suction hose (13) can be stowed in a person's clothing or flight suit while not in use, and permits all of the urine to drain out of the suction hose (13).

The Moisture-Proof Outer Layer (45M) of the Male Cup (57) is made of dense
15 rubber to hold the Male Cup (57) in place. The Male Cup (57) is also held in place with a standard athletic jock strap. Most of the outer portion of the Male Cup (57) is constructed of soft rubber.

3. Urine Collection Bag in Male User Embodiment

The system is compatible with many types of Urine Collection Bags (3)
20 including a disposable plastic bag containing super absorbent polymer crystals with a 500 cc urine capacity, and a larger, 1600 cc capacity Urine Collection Bag (3). Users who do not want to wear a Urine Collection Bag (3) for a long period of time can use smaller Urine Collection Bags (3). A zip lock top on the smaller Urine Collection Bags (3) allows its use as a standard piddle pack. Users who prefer not
25 to change Urine Collection Bags (3) after each urination can wear a larger leg or pocket Urine Collection Bag (3). A quick-disconnect similar to the quick-disconnect plug (51) can also be built into the Urine Collection Bags (3) for easy attachment and replacement.

Use By Male Air Crew Members

30 The Suction Control Unit (1) can be packaged to double as a pilot's kneeboard as depicted in Figure 2. The kneeboard is molded and adjustable to fit the curve of the thigh. The aircrew member can carry the Suction Control Unit (1) in his helmet

bag or wear it strapped to a thigh without giving the appearance of wearing bladder relief equipment. The quick-disconnect plug (51) hose couplings allow aircrew members to wait until they are seated in their aircraft or until they have to urinate to connect the Urine Collection Bag (3) and the suction hose (13) of the Male Cup (57) to the Suction Control Unit (1). The size and shape of the Urine Collection Bag (3) is designed to fit within the limited confines of the aircraft cockpit and navigator's seat. Piddle packs used by some male pilots are too long and difficult to open to its full length in a cockpit.

Use for Male Urinary Incontinence

Wheelchair users require a quieter, more discreet version of the Suction Control Unit (1) (i.e. with concealed hoses). The Suction Control Unit (1) can be mounted to the person's wheelchair and the hoses concealed under the person's clothing. Many urinary incontinent adults are not in wheelchairs, but are bedridden. A larger urine collection bag (3) that does not contain super-absorbent polymer can be attached to the Suction Control Unit (1) that can be emptied and reused. For ambulatory adults and children, a quiet Suction Control Unit (1) can be housed in a fanny pack that can also hold a concealed Urine Collection Bag (3).

Many urinary incontinent adults do not know in advance that they are about to urinate. It is therefore impractical to expect them to activate the Suction Control Unit (1) before urinating. Instead, a moisture sensor (55) is installed in the Male Cup (57) to automatically activate the Suction Control Unit (1) when moisture is sensed in the urine cavity (56).

4. Suction Control Unit in use with Female User Embodiment

The Suction Control Unit (1) is a reusable piece of hardware containing a suction vacuum pump (2), DC motor (5), rechargeable battery pack (7) and recharge circuitry (9). A built-in, battery-powered suction vacuum pump (2) sucks the urine from the Female Pad (11) through a suction hose (13) at the front of pad and deposits the urine into a Urine Collection Bag (3). Quick-disconnect hose couplings (17) connect and disconnect the Urine Collection Bag (3) and the suction hose (13) from the Suction Control Unit (1). The Suction Control Unit (1) has two modes of operation: one power "ON/OFF" button (19) and one button that turns the unit "ON" and then "OFF" after a timed interval (21).

A small, high-power DC motor (5) is used, similar to those used in cordless vacuum cleaners. The DC motor (5) spins the vacuum pump impeller (23) to provide the suction required to draw the urine from the Female Pad (11). The system uses a filter (25) of charcoal or other material to deodorize the exhaust air.

5 In the preferred embodiment, a battery pack (27) of rechargeable Nickel-Metal Hydride (NIMH) batteries are used to provide the power supply for the DC motor. A two-digit LCD Status Display (29) with backlight indicates the amount of time remaining in the battery charge, and the number of bladder relieves left in the power supply charge. There are other power supplies available for other applications of

10 this invention, from lithium batteries to 110-volt wall outlets. The recharge circuitry allows the battery pack (27) to be plugged into a wall outlet for recharging without damaging the batteries.

A flow chamber (31) is contained in the Suction Control Unit (1). The flow chamber (31) begins at the Suction Control Unit Air/Liquid Inlet (33) and ends at

15 both the Suction Control Unit Liquid Outlet (35) and the Suction Control Unit Air Exhaust Outlet (37). This flow chamber (31) separates moisture from the vacuum airflow and channels the liquid to the Suction Control Unit Liquid Outlet (35) and the air to the Suction Control Unit Air Exhaust Outlet (37). The Suction Control Unit Air Exhaust Outlet (37) is fitted with a deodorizing air filter (25).

20 5. Female Pad

The Female Pad (11) is a disposable urine collection pad similar in size to a large feminine pad used for menstruation. Figure 3 shows an expanded view of the Female Pad (11). The Female Pad (11) has four layers: a facing layer (39), wicking layer (41), urine collection layer (43) and moisture-proof outer layer (45). The

25 Moisture Proof Outer Layer (45) is attached to and contains the facing layer (39), wicking layer (41), urine collection layer (43) along the edges thereof by means of the Outer Layer Wall (46). A Urine Cavity (56) is defined by the urine collection layer (43) and the Moisture Proof Outer Layer (45) in the inside cup area (53). The facing layer (39), which lies directly against the skin, is made of a soft, non-

30 woven, non-absorbent polymer. The wicking layer (41) is made of a woven polymer. It pulls moisture away from the facing layer (39) and prevents it from going back through the facing layer (39), much like a one-way fluid check valve.

The urine collection layer (43) is made of open cell foam or other material or other material capable of collecting fluid, and provides a Urine Cavity (56) in its placement juxtaposed to the Moisture Proof Outer Layer (45) for the vacuum suction airflow produced by the Suction Vacuum Pump (2) to suck fluids and moisture out of the Female Pad (11) and away from the body. The Moisture Proof Outer Layer (45), a moisture-proof barrier made of soft, flexible plastic, wraps around the sides of the Female Pad (11) to prevent side leakage.

One-way airflow inlet holes (47) in the back end of the Female Pad (11) facilitate the evacuation of liquids and provide air flow for drying the Female Pad's (11) layers. The Female Pad (11) has a contoured shape for a more comfortable and reliable fit. Soft sealing strips (49) around the Female Pad (11) face perimeter prevent side leaks. The Female Pad (11) is held in place with a comfortable but sturdy undergarment available in women's apparel stores.

The suction hose (13) at the front of the Female Pad (11) is connected to the Suction Control Unit (1). The Suction Control Unit (1) sucks all fluids from the Female Pad (11) through the suction hose (13) and deposits them into the Urine Collection Bag (3). In the preferred embodiment, the flexible, disposable suction hose (13) is outfitted with a quick-disconnect plug (51) on the end that connects to the Suction Control Unit (1). The suction hose (13) may be made of a convoluted, easily bendable material with spiral construction. This allows a smaller bending radius so that the suction hose (13) can be stowed in a person's clothing or flight suit while not in use, and permits all of the urine to drain out of the suction hose (13).

6. Urine Collection Bag in Female User Embodiment

The system is compatible with many types of Urine Collection Bags (3) including a disposable plastic bag containing super absorbent polymer crystals with a 500 cc urine capacity, and a larger, 1600 cc capacity bag. Users who do not want to wear a Urine Collection Bag (3) for a long period of time can use smaller Urine Collection Bags (3). Users who prefer not to change Urine Collection Bags (3) after each urination can wear a larger leg or pocket Urine Collection Bags (3). A quick-disconnect similar to the quick-disconnect plug (51) can also be built into the Urine Collection Bags (3) for easy attachment and replacement.

Use By Female Air Crew Members

The Suction Control Unit (1) can be packaged to double as a pilot's kneeboard as depicted in Figure 2. The kneeboard is molded and adjustable to fit the curve of the thigh. The aircrew member can carry the Suction Control Unit (1) in her helmet bag or wear it strapped to a thigh without giving the appearance of wearing bladder relief equipment. The quick-disconnect plug (51) suction hose (13) couplings allow aircrew members to wait until they are seated in their aircraft or until they have to urinate to connect the Urine Collection Bag (3) and the Female Pad (11) suction hose (13) to the Suction Control Unit (1). The size and shape of the Urine Collection Bag (13) is designed to fit within the limited confines of the aircraft cockpit and navigator's seat

Use for Female Urinary Incontinence

Wheelchair users require a quieter, more discreet version of the Suction Control Unit (1) (i.e. with concealed hoses). The Suction Control Unit (1) can be mounted to the person's wheelchair and the hoses concealed under the person's clothing. Many urinary incontinent adults are not in wheelchairs, but are bedridden. A larger urine collection bag (3) that does not contain super absorbent polymer can be attached to the Suction Control Unit (1) that can be emptied and reused. For ambulatory adults and children, a quiet Suction Control Unit (1) can be housed in a fanny pack that can also hold a concealed Urine Collection Bag (3).

Many urinary incontinent adults do not know in advance that they are about to urinate. It is therefore impractical to expect them to activate the Suction Control Unit (1) before urinating. Instead, a moisture sensor (55) is installed in the Female Pad (11) to automatically activate the Suction Control Unit (1) when moisture is sensed in the urine cavity (56).

Summary of Incontinent User Embodiments:

A quieter, more discreet version of the Suction Control Unit (1) for wheelchair users (i.e. with concealed hoses). The Suction Control Unit (1) could be mounted to the person's wheelchair and the suction hoses (13) concealed under the person's clothing. Many urinary incontinent adults are not in wheelchairs, but are bedridden. A larger urine collection bag (3) that does not contain super-

absorbent polymer can be used that can be emptied by staff/care-givers and reused.

Many urinary incontinent adults do not know in advance that they are about to urinate. It is therefore impractical to expect them to activate the suction control unit (1) before urinating. Instead, a moisture sensor (55) can be installed in the
5 Female Pad (11) and Male Cup (57) that will automatically activate the Suction Control Unit (1) when moisture is sensed in the urine cavity (56).

While my above descriptions of the invention, its parts, and operations contains many specificities, these should not be construed as limitations on the scope of the invention, but rather as exemplifications of present embodiments
10 thereof. Many other variations are possible, for example, other embodiments, shapes, and sizes of the device can be constructed to fit on a user and work with a unit designed to work by the principles of the present invention; various materials, pumps, colors and configurations can be employed in the unit's design that would provide interesting embodiment differences to users including such practical designs
15 as would, for instance conceal the unit.

Accordingly, the scope of the invention should be determined not by the embodiments illustrated, but by the claims and their legal equivalents as filed herewith.

20 Having described my invention, I claim:

5 **CLAIM 1.** An automatic bladder relief system comprised of:
 a urine depository means;
 a urine transport means attached to the urine depository means;
 a urine storage means attached to the urine transport means;
 the urine depository means is comprised of:
10 a facing layer;
 the facing layer having a user side, a wicking side and a facing layer
 edge;
 a wicking layer;
 the wicking layer having a facing side, a urine collection side and a
 wicking layer edge;
 the facing side of the wicking layer being juxtaposed to the wicking
 side of the facing layer;
 a urine collection layer;
 the urine collection layer having a urine intake side, a urine output
20 side and a urine collection layer edge;
 the urine intake side of the urine collection layer being juxtaposed
 to the urine collection side of the wicking layer;
 an outer layer;
 the outer layer having an inside cup area, an outer layer wall
 attached to the inside cup area, a urine outlet and an outer surface;
 the inside cup area of the outer layer being juxtaposed to the urine
 output side of the urine collection layer forming therebetween a urine cavity;
 the outer layer wall of the outer layer being attached to the facing
 layer edge, the wicking layer edge and the urine collection layer edge;
30 the urine outlet having a collection end and a transport end;
 the collection end of the urine outlet being juxtaposed to the urine
 cavity and the transport end of the urine outlet passing through the outer layer from
 the urine cavity formed in the inside cup area to the outer surface of the outer layer;
 and

5 the urine transport end of the urine outlet having a urine transport hose coupling means.

CLAIM 2. An automatic bladder relief system comprised of:

a urine depository means;

a urine detection means attached to the urine depository means;

10 a urine transport means attached to the urine depository means and the urine detection means wherein the urine transport means is activated to transport urine from the urine depository means by the urine detection means when urine is present in the urine depository means;

a urine storage means attached to the urine transport means;

15 the urine depository means is comprised of:

a facing layer;

the facing layer having a user side, a wicking side and a facing layer edge;

a wicking layer;

20 the wicking layer having a facing side, a urine collection side and a wicking layer edge;

the facing side of the wicking layer being juxtaposed to the wicking side of the facing layer;

a urine collection layer;

the urine collection layer having a urine intake side, a urine output side and a urine collection layer edge;

the urine intake side of the urine collection layer being juxtaposed to the urine collection side of the wicking layer;

an outer layer;

30 the outer layer having an inside cup area, an outer layer wall attached to the inside cup area, a urine outlet and an outer surface;

the inside cup area of the outer layer being juxtaposed to the urine output side of the urine collection layer forming therebetween a urine cavity;

35 the outer layer wall of the outer layer being attached to the facing layer edge, the wicking layer edge and the urine collection layer edge;

5 the urine outlet having a collection end and a transport end;
 the collection end of the urine outlet being juxtaposed to the urine
cavity and the transport end of the urine outlet passing through the outer layer from
the urine cavity formed in the inside cup area to the outer surface of the outer layer;
and
10 the urine transport end of the urine outlet having a urine transport
hose coupling means.

CLAIM 3. The automatic bladder relief system of **CLAIM 1** wherein the urine
storage means is comprised of:

 a leakproof storage bag;
15 the leakproof storage bag having an air vent that allows only air to
escape.

CLAIM 4. The automatic bladder relief system of **CLAIM 2** wherein the urine
storage means is comprised of:

 a leakproof storage bag;
20 the leakproof storage bag having an air vent that allows only air to
escape.

CLAIM 5. The automatic bladder relief system of **CLAIM 3** wherein the
leakproof storage bag contains absorbent polymer crystals.

25 **CLAIM 6.** The automatic bladder relief system of **CLAIM 4** wherein the
leakproof storage bag contains absorbent polymer crystals.