

## **Off Grid Shower – Patent Application**

Dwellers of Streets, Slums, Tents and poor Housings are Deprived of Private Shower and or Sink.

Current camp showers, a water bag with a foot pump or hung from a tree, fail in at least following criteria :

- a- Their semi spherical water bags have low exposure to sun, flame, room or body, per volume,
- b- They use a pump to push water up, requiring awkward repeated pumping, or undesirable larger volume, as their proposed option of hanging from a tree or ceiling is often impractical,
- c- They splash waste water, not usable indoor, in public places or close to neighbors,
- d- They dispose waste water on the ground, not usable indoors,
- e- They use a Tent for privacy, too large for a backpack and indoor erection, stolen and unsafe if outside,
- f- Their Solid & Bulky flow controls and shower heads, are awkward to fit in small packs,
- g- They or their private tents have No Auxiliary Utility to entice use of scarce space and funds,
- h- Their basic versions are cheap, but privacy and other essentials are costly or unavailable.

**Novel techniques introduced here Resolve or Avoid all above issues and enable making and or using:**

- Off Grid, Showers and Sinks without Plumbing, Pipes or Power to Heat, Pump, Collect & Dispose waste,
- Water Sacks, Showers, Privacy, Waste Collection & Disposal and other Gear which are Portable, Light, Flexible, Shrinkable, Small to fit, all Combined, in a corner of a backpack, with Minute Footprint in use,
- Soft, tiny, flexible and cheap versions of typically hard, bulky, costly flow controls and other components,
- Showers optimized to keep & use at work or for sports, hiking, nature excursions, etc.
- Showers designed for field workers, soldiers, truckers, gypsies, nomads, cowboys and others,
- Waterless body cleansing, powders applied to skin or scalp to absorb oil & dirt, shaken off when dried,
- Extra Utilities such as Water storage, body warming & cooling, pad,, seat, mattress, pillow and more,
- Hide out for off toilet discharge plus protection from rain and wind, dire needs in some countries,
- Alternatives to existing solutions, methods and products to deliver a number of desired results,
- All with Ultra Cheap Versions, affordable by the cash strapped and or charities.

**Description of the Invention(s)** – Reference to drawings style is adopted for clarity and briefness.

**Fig.1a** shows a water Sack 1, preferably of (paper) thin, very flexible material, such as PVC, preferably, woven versions, heat absorbing and or sun heat absorbing, with at least one water and air Inlet 2, which inlet has means 3 to adapt to a feed source, at least one Outlet 4 with means 5 to adapt to another sack's inlet and or to a shower Hose, which inlets and outlets should have means, such as Valves, to prevent reversing of the water and or air out. Preferably a number of Attachment and or Hooking means such as a Loop or Ring 6, with preferably strengthened periphery, to attach to suitable means of other sack(s) or allow a hook in. The sack better be constructed to resist bulging under water and or air pressure and remain substantially flat, as in floating or bed air mattresses where the top and bottom surfaces are attached and or welded together at certain points 7. Another construction is that the sack has a number of flexible but non-stretch bands or strings with each end attached to one of the sack's larger (non thickness) opposing surfaces. Another yet is that the sack is made of a number of interconnected Chambers, one version being quasi-Cylinders, sharing a wall with adjacent ones, which wall has opening(s) for easy flow of water between chambers. Other techniques also exist, not elaborated as various sack designs are known to the skilled.

**Fig.1b** is a top or bottom view of Fig.1a, where the five shown circles represent top view of one of welded points.

**Fig.1c** is a side view of Fig.1a.

Running a rope handle through one of said rings, to hold the sack high with one hand while the other hand uses the head of a shower hose enables showering. The sack can be suspended from a tree. The user can stand on the sack and use heel pressure to pump the water to and off the shower head.

**Fig.1d** shows a more realistic view of one Sack, deliberately somewhat different from Fig.1a.

**Fig.2** shows a number of sacks, outlet of one entering the inlet of another, finally to a shower hose 1, with hose Handle 2 leading to a hose Exit 3, to which a shower Head can but need not be attached. A hand or preferably foot air Pump 5, can provide pressure to push the water into and out of the hose. Adjacent sacks can be attached via their attachment means 4, for example by a semi rigid like Pulley that runs through their attachment rings to hold said rings together inside pulley's peripheral valley. For simplicity, each sack is shown as a block, no details.

**Fig.3** shows a number of Sacks in Fig.2 stacked on the ground 1, their water inlet outlets are connected 2 & 3, leading to shower hose 4. Their attachment means ( loops) can also be connected. A User 6 puts one or both feet over the top sack to provide pressure for pushing water to and off the hose. An optional rigid ( such as meat cutting ) Board 5 can be placed under the pressing foot to provide stability and spread the pressure on the sacks.

**Fig.4** shows how to provide privacy when showering.

**Fig.4a** shows a Skirt 1, suspended from user's waist, with a Belt 3, preferably a string, running through loops or a skirt rim tunnel, as in pajamas. The belt can be loose to let hand(s) and shower handle under the skirt. Parts of the skirt's waist can be belt free to form one, two or more openings 2 into the skirt for hands and shower handle. Open end Pockets or Slits on the skirt body can enable shower hands and shower handle in too. The skirt can be designed to be suspended from neck or shoulders too.

**Fig.4b** shows a Gown 1, supported by shoulders and or around user's neck, with means such as a necklace type belt, which as described for the skirt of Fig.4a, can have openings, to let steam out of the gown. Slit(s) 2, preferably two or more, to let hand(s) and shower handle in, can be added, preferably like open bottom pant pockets to hide user's breast, even when their hand entering mouth is opened.

**Fig.4c** shows a Vail 1, suspended from above the head of a user. A Soap Pocket or Holder 2, with a soap 3 inside and or a Shampoo Pocket or Holder 4 with a Shampoo bottle 5 are suspended from the Vail's material, which Holders better be Net like to let excess water off the soap and or shampoo bottle. Slit(s) described for the Gown described before can be added to the Vail to let hands out to grab needed soap, shampoo or other. Opening(s) of the Skirt or the Gown can also be added to the Vail which is a longer version either. Soap and or shampoo holders of the Vail can also be added to the Skirt and the Gown, better on their outside. The Shower Handle and or Hose can enter the Vail from its open underside or from above slits, not shown as describe with figures elsewhere here.

**Skin Separation** : Skirts, Gowns and Vails can have means to keep them away from user's skin. For example, gears that hold umbrellas over the head can be placed on users head and under the top of the Vail. Frames suspended from waist to hold Skirts away from body are used to the skilled and can be adapted to be suspended from neck to hold a gown away from user's skin. Also, inflatable frames and structures that rest on waist, neck, shoulders or head and hold the skirt, gown or vail away from skin are possible.

**Fig.5** shows a waste water Collector 5, such as a bucket, inflatable puddle or the like, but for portability, a soft bucket made of thin, flexible, impermeable material, whose walls are kept erected by String(s) 6, attaching them to a dedicated belt 7, or to the skirt belt 3, or to exterior of user's Gown or Vail, via zip, buttons, loops, hooks, etc. The water sacks 2 better be inside the collector, to hold it over the ground 1 and ease erecting its walls. User 4 skirt, gown or vail should be inside the collector to lead the waste water into it. Collector's top rim, base edges and or wall joints can have inserted Rods, for easier upright standing. Collector can be carried, perhaps by grabbing said strings, to a water disposal. Collector's walls better be tall enough to enable them to create a neck, closed by said or other rope(s), after detachment from the user, to hold water for disposal.

**Fig.6** shows a Multi Sack version of the Invention, where a String 1 goes through Ring(s) 7 of a number of Sacks, then connects to Hook 2, suspended from a load Bearer 3 such as a tree branch. Sacks water outlet(s) 6 lead to Inlet(s) 5 then to a short or shortened Shower Hose 4, under which a User can receive the water.

**Fig.7** shows a Hand Washing Sink 1, like a trash bag made of thin flexible water impermeable material, which bag's opening rim has a Frame, made of at least two Rods meeting at Joint 11, while the other ends of said Rods are connected via a String 4 or the like that rests on User's mid body, which Rod ends are also connected via another string or Band 2 that runs over the back of User's neck. Said Rods are similarly suspended from another string or band 3, from along their length, which band is directly or indirectly suspended from User's neck or shoulders. Shower Sacks 7 pressurized by user's foot or pump 10, push water through the Hose 6 to the Faucet ( shower handle and or head) 11 that can be made curved up to rest on the Sink's ( Bag's) Rim. A Soap holder 5 can be suspended from the Sink body or said rods. Waste water 8 is collected in the Sink for later disposal. Said Rod's Joint is preferably flexible to allow the bag to be flattened and folded. Said Rods better be made of shorter rods, connected via joints and known to the skilled and used in camping tents.

**Fig.8** shows a Carrying and or Warming Bag 1, to hold and carry Shower Sacks 5. Said Bag has a heat resistant bottom layer 2, preferably flexible or rubberlike which resists at least some heat, such as warm or hot water in a pan or from electric blanket or element 8, a preferably airtight sealing means such as a Zip 3, entry 4 ( or zip partially opened ) for a heating element or flame 7 cable, optional Handle 9, shoulder Strap 10, optional room for Privacy Skirt, Gown and or Vail 6 and a Sun Absorbing outer skin. Thus Bag's inside, hence the water sacks and water inside them can be warmed up by heating inside the bag, using sun, electric heater, heating plate, etc.

**Fig.9** shows a cold water shower sacks 1 supplying hose 5 and hot water shower sacks 2 supplying hose 4, which hoses join to make mixed water hose 6, held via handle 7 to direct the water out of shower exit 8. Both sack assemblies pressured by pump or User 9 weight, on optional rigid board(s) 3.

**Fig.10** shows an air and or water Flow Controller, along a Flexible Hose 1, using a Cave 2 along the hose, inside which is a Ball 3, held by the Rubberlike Cave's Shell. User's Fingers can push said Ball further out of the Cave to restrict the flow 4 or into the Cave to ease said flow.

**Fig.11a** shows a Hot and Cold Water Mixer, mixing cold flow 1 with hot flow 2 to form warm flow 5. A rigid or semi rigid Control Ring Ball (CRB) 3 inside a flexible, preferably rubberlike Shell 4. CRB can be moved sideways from outside said shell by user's fingers to restrict flow 1 and increase flow 2 and vice versa, through said Ring. To close both cold and hot flows, CRB is twisted around its long axis so that its solid closed sides block both.

**Fig.11b** shows the Ring view of said CRB, enabling water flows through said Ring's Hole.

**Fig.11c** shows the Closed side of the CRB, which better have Ridges 1 on its surface to provide better flow blockage and prevent CRB slipping from the placed location inside said Shell.

**Fig.11d** shows CRB view from viewpoint 3 in Fig.11a and or 2 in Fig.11c. Ridges 1 as shown in Fig.11c can also be used over the Ball as described in Fig.10.

**Fig.12a** shows a Vail 1 whose bottom section is a Soft Impermeable Waste Water Bucket Bag 2 with an Outlet 3, above which bottom segment is an Inlet 4 for User and Shower, such as a Slit, better with overlapped Lips 5, like a wide open bottom pant pocket, to prevent water spill out. This can be modified and applied to Gowns and Skirts too. The Slit can also be at the top of the Vail, above the user's head. The Vail can have an Open top to be closed by a String, Ties, Zip, or other means, like a cloth bag closing string. A flexible, soft, transparent sheet or net 8 Window is desirable. Other Head or Shoulder supported means to keep the Vail off user's skin, such as umbrella frames can be used, An Inflatable attached or detachable Tire, Tray or Turban 6, supported by User's head, inflated via inlet 7, with a Valve 12 ( which valve has been part of many of our devices but not shown, being obvious to the skilled ), can hold the Vail off user's skin. Said Valve has been Strings 10 attached to the inside or outside of the Vail, near the Rim of waste water Bucket, can be tied to Strings attached to mid section 11 of the Vail, such that said Rim is upright when user's height is insufficient, causing slacks 9. Upright holding of said Bucket can be done by Velcro, Zip, Buttons, via various other means known to the skilled.

**Fig. 12b** shows a Cylindrical Frame, which can have other shapes, made of tent erecting Rods or Inflatable Tubes 1, using Pump 2, to be placed inside a Skirt, Gown or Vail, to hold it Erect and Distant from user's skin and head.

**Fig.12c** shows a Vail 1 suspended and held expanded by a Frame 2 via Strings 6 to, made of preferably short Rods 3, connected to other rods via Joints 4 to form longer Rods, which are attached via Corner Joints 5, which Rods can be detached for storage and haulage. Said Frame can have tubes along its edges to conceal the Frame and for better overall shape. The Frame also can be made of inflatable tubes.

**Heating Options:** Water in the Sacks can be warmed up by Sun, Room temperature, Fireplace, Flame proximity, placing over auto Engine, perhaps separated by a blanket to protect the sacks walls from heat damage, Filling with hot water, placing inside hot water pan or tray, placing inside foot warmers used in some countries, Body Head using using the sacks assembly as an under pad, seat or mattress and other heating methods.

**Extra Utility(s) :** Each inflated Water Sack can be used as an under pad, pillow and or water storage. Stacked Inflated Sacks can be used as a Seat. Inflated Sacks joined serially can be a Mattress. Sacks filled with warm water can be body warmer if filled with warm water or cooler with cold water. Privacy Skirts, Gowns or Vails can conceal off toilet discharging. All essentials for the homeless and other off grid dwellers.

**Complete Washroom:** The components described so far enable construction of a small cheap and portable washroom, using a small footprint Tent, such as those for campers shower privacy, with described cold and hot water bag or bag assemblies, using user's weight, foot or hand pump(s) to push one or both currents to a shower handle and head, hand held or suspended from Tent's side wall(s) or the ceiling. A Waste Water Bag, whose opening rim is tied, zipped, hooked or otherwise suspended from and or attached to the Tent walls and or frame(s), to hold the bag upright like a bucket for waste water which can be removed for content disposal. Said bag's bottom rests on the Tent floor, inside which the user stands while showering, on an optional stool to keep her feet out of waste water. Same bag can be used as a hand washing Sink, as the user stands outside it. Preferably a dedicated Sink Bag, as in Fig.7, which Rim Rods run along adjoining Tent walls and meet substantially along said walls vertical joint, instead of being suspended from user's neck. Soap and Shampoo Holder(s) can also be similarly suspended from / attached to the Tent's wall(s) and or Frame(s).

Tent Frames can be short Rods that end to end to form longer Rods and detach for storage and transport.

**Notes:**

Where Flexible is used, it means cloth like materials such as PVC that can be deformed and reformed, without being damaged. Some are of woven versions, from which camping tents are made.

Rubber or Rubberlike in this specification, means Flexible, Stretchable and Retractable, often of Silicone.

One good material for Sacks, Hoses and some other components is paper thin rubberlike (stretchable and retractable) sheets sandwiching a net sheet made of flexible but non-stretch fibers. A sack made from such a sandwich sheet can shrink, collapse and flex but has limited stretch and bulging when inflated.

Even the typically solid parts including shower heads and structural rods, tube joints and components can be made from semi rigid rubberlike material to flex, flatten, bend and or fold, when needed.

For water and air transfer from one Sack to another, Outlet Male of feeding sack can be Rigid or Semi Rigid pipe head, entering into and held firmly by Inlet Female of the receiving sack which can be soft Rubberlike material.

Even air foot pumps are available made of flexible and or rubberlike material with no or tiny solid parts.

The Skirt, Gown and Vail can have many features such as window facing the user, with or without a shield.

Drawings (Figures) are meant to be the simplest to describe the Concept, do not show details which are obvious to the skilled, especially in view of the description, and need not be accurate or to scale.

The Techniques shown here serve only as examples and can be used in many ways to construct many other versions of the products described.