A device for safely storing water for later human consumption and other uses comprising a bladder sized to fit in desired location, such as a bathtub or kitchen sink. The bladder preferably includes a sleeve-like member which serves as a water entry or fill point. The bladder also has a port for inserting a pump to remove the water stored within the bladder. A string tie or lanyard can be provided with the sleeve to maintain the securement of the sleeve to the water faucet during filling of the bladder. For larger bladders an extractor tube can be disposed within the bladder and is in fluid communication with the pump assembly. With the storage device safe potable liquid is made available for use and consumption during an emergency situation or other times, when safe water is otherwise unavailable.
WATER STORAGE DEVICE

[0001] This application claims priority to and the benefit of U.S. Application No. 60/806,003, filed Jun. 28, 2006, which is incorporated by reference in its entirety.

FIELD OF THE INVENTION

[0002] The present invention relates generally to water storage devices and particularly to a water storage device preferably for use in emergency situations.

BACKGROUND OF THE INVENTION

[0003] During emergency situations, such as natural disasters like hurricanes, earthquakes, etc., drinking water from a city’s water supply line often becomes inaccessible or contaminated. Depending on the extent of the emergency situation, days or weeks may pass before water is again available from the city, well, county, or other water source. The present invention is directed to a novel approach of storing water suitable for drinking for an extended period of time, such that, the drinking water is available for consumption during an emergency situation.

SUMMARY OF THE INVENTION

[0004] The present invention provides a water storage device preferably for storing water that is available and suitable for human consumption during an emergency situation where the water source from a conventional water supply line, such as, but not limited to, a city or county water source, well, pond water, lake, or other water source, has been disrupted. In one embodiment the water storage device comprises a bladder preferably shaped and/or sized to fit in a standard bathtub or kitchen sink. The bladder preferably includes a sleeve-like member which serves as a water entry or fill point. The bladder also has a port for inserting a pump to remove the water stored within the bladder. The port can comprise a threaded aperture. The bladder can be constructed from a light weight plastic, such as, but not limited to, a triple layer food grade material. A string tie, lanyard, rubber band, or other mechanism can be provided with the sleeve member to tie and seal the bladder once the water to be stored has been received within the bladder.

[0005] The pump inserted within the port for removing stored water can be of a siphon type having an accordion type pump ball. The pump can be provided with two check valves which keep the water from going in reverse. The pump can have a screw on port or flange which mates with the bladder for securing the pump to the bladder.

[0006] With water stored within the bladder, to retrieve at least a portion of the stored water, the user squeezes the ball portion of the pump which causes water to travel through the extractor tube (for larger bladder sizes) which is disposed within the bladder through the bladder port or directly into a manifold of the pump assembly (for smaller bladder sizes). Exiting water is prevented from reentering the bladder through a first check valve disposed within the manifold and is directed to a discharge tube associated with the manifold. The discharge tube can be, but is not limited to, a flexible hose or tubing for directing the exiting watering to its desired location. A second check valve disposed within the manifold prevents the water entering the hose from reentering into the manifold.

[0007] Though not considered limiting, the bladder is preferably for one time use to prevent contamination. As such, the bladder can be labeled for one time use. Additionally, once the stored water has been retrieved, the bladder can be sliced opened, such as, but not limited to, by a knife, scissors, box cutter, etc. and discarded, which will ensure that the bladder is used one time only. However, it should be recognized, that the present invention is not limited to a one-time use only. As a non-limiting example, where the water being stored is for non-drinking uses (i.e. flush a toilet, etc.), bladder 20 can be reused for storing water once the originally stored water has been used. Other use examples are also possible and all are considered within the scope of the invention.

[0008] The size and shape of the bladder are chosen to permit it to fit within the location of a traditional water source, such as, but not limited to, a bathtub, a kitchen sink, a wash tub, etc. The present invention provides a storage device preferably having a smooth rigid or semi rigid container wall which makes potable liquid available when needed, such as, in an emergency situation. For certain bladder embodiments, preferably once the water is contained with the bladder and sealed, the bladder is placed in a safe location and not moved until needed. Other bladder embodiments, such as, but not limited to, a fifty-five gallon bladder, are designed to be portable and thus most likely will be moved prior to use.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 illustrates the bladder or bag of the water storage device in accordance with one embodiment of the present invention shown in the process of being filled with water from a bathtub with the bathtub shown in sectional; FIG. 2 illustrates the bladder or bag of the water storage device of FIG. 1 residing in a bathtub, filled with water, tied/sealed and with the pump assembly in accordance with one embodiment of the present invention secured thereto for removing water from the bag and with the bathtub shown in sectional; FIG. 3 illustrates in more detail a pump assembly of the water storage device in accordance with one embodiment of the present invention; FIG. 4 illustrates a portion of the pump assembly of FIG. 3 with the extractor tube removed in accordance with certain embodiment of the present invention; FIG. 5 illustrates an exploded view of a sink version of the present invention; FIG. 6 illustrates a perspective view of the sink version of FIG. 5 being use to fill a glass of water; and FIG. 7 illustrates a portable version of the present invention water storage device shown disposed within a truck bed.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0010] As seen in the drawings, the present invention provides a water storage device which is generally designated as reference number 10. Water storage device 10 comprises a bag or bladder 20 and a pump assembly 50. Water storage device 10 can be preferably used for storing water that is available and suitable for human consumption during an emergency situation where the water source from
a conventional water supply line, such as, but not limited to, a city or county water source, has been disrupted.

[0017] Bladder 20 can be preferably shaped to fit in a standard bathtub 21, washtub or kitchen sink. Bladder 20 preferably includes a sleeve-like member 22 which serves as a water entry or fill point. Fill sleeve 22 is preferably constructed integral or monolithically formed with the remaining portion of bladder 20, such as through welding, heat sealing, and other permanent attachment means (collectively referred to as “welding” throughout). Bladder 20 contains an aperture 24, preferably threaded, which serves as a port for inserting and securing pump assembly 50, discussed in more detail below, in order to remove the water stored within bladder 20. Prior to retrieving the stored water within bladder 20 through pump assembly 50, a cap 27 is secured to threads 28 of close off aperture 24.

[0018] Bladder 20 can be constructed from a light weight plastic, such as, but not limited to, a triple layer food grade material. A tie string or lanyard 26, or other tying/sealing mechanism (collectively referred to as “lanyard 26”) can be provided with fill sleeve 22 to tie and/or seal bladder 20 once the water to be stored has been retrieved within bladder 20. Lanyard 26 can be preferably permanently attached to fill sleeve 22 though such is not considered limiting. Lanyard 26 can also be used to help secure or maintain sleeve 22 on spicket, faucet or water spout 23 when filling bladder 20 with water 25, preferably, though not limiting, while bladder 20 resides within bathtub 21. Alternatively, once bladder 20 is filled to the desired level, sleeve 22 itself can be tied into a knot to seal the contents of bladder, without using lanyard 26.

[0019] Though not considered limiting, bladder 20 is preferably constructed from a transparent, clear or translucent material so that the stored water content within bladder 20 can be viewed to determine if there are any contaminants or other undesired objects floating in the stored water.

[0020] Pump assembly 50 includes a plumbing portion 60 generally comprising a manifold 62 having a first port 63 (water inlet port), a second port 64 and a third port 66 (water discharge or outlet port). A flange 68 is provided at first port 62 and can be provided or configured with at least one thread 65 to mate with threaded portion 28 associated with aperture 24 when securing pump assembly 50 to bladder 20. A pump extractor tube 70 is in fluid communication with manifold 62 through first port 63 and is positioned within bladder 20 when pump assembly 50 is properly secured to bladder 20 (See FIG. 2). The length of extractor tube can be preferably chosen to reach the bottom of bladder 20 in order to remove all or substantially all of the water stored within bladder 20.

[0021] Additionally, when bladder 20 is used in non-bathtub settings, such as, but not limited to, for a kitchen sink or with the portable version bladder, pump assembly 50 may be capable of removing the desired stored water without the necessity of extractor tube 70, and these versions of pump assembly 50 can eliminate extractor tube 70. However, it is within the scope of the invention to also provide an extractor tube (the same length, longer or shorter, as needed, as compared to the length of extractor tube 70) for these versions or uses of the present invention. Though not preferred, it is also within the scope of the present invention to use a pump assembly 50 without an extractor tube 70, for the bathtub version of the present invention. Extractor tube 70 is preferred for the bathtub version in view of the wall of the bathtub 21. As bladder 20 is emptied, it continues to sink within bathtub 21 (water level within bladder 20 goes down), along with the attached pump assembly 50, as such the discharge tube 78, discussed in more detail below, is also withdrawn within the bathtub and at some point may no longer reach over the wall of bathtub 21. The addition of extractor tube 70 allows the water of a near empty bladder 20 to be accessed while at the same time allowing pump assembly 50 to be raised up so that discharge tube 78 can be reach over the bathtub wall to its intended receptacle, vessel, glass, etc.

[0022] Additionally, in non-bathtub uses, bladder 20 can be provided without a sleeve and its associated opening. In these versions of bladder 20, aperture 24 serves as the opening for the entry water into bladder 20 and water exit from bladder 20. A cap can be disposed at aperture 24 prior to exiting the water through pump assembly 50, or pump assembly 50 can be secured to aperture once bladder 20 is filled, thus, eliminating the need for a separate cap.

[0023] A first internal check valve can be disposed internally within manifold 62 near or at first port 63 and a second internal check valve can be disposed internally within manifold 62 near or at third port 66. Discharge tube 78, which can be preferably a flexible hose or tubing, can be secured to third port 66 and is in fluid communication with manifold 62 through third port 66. Preferably, though not limiting, a first end of discharge tube 78 can be permanently secured to third port 66. Pump assembly 50 also comprises a squeeze ball 80, having an anti siphon relief cap 82, which is secured at second port 64 of manifold 62. Though not considered limiting, squeeze ball 80 can be of a accordion type pump ball.

[0024] The internal check valves prevent the water from going in reverse. Thus, the first internal check valve prevents exited water from reentering bladder 20 through extractor tube 70 or port 63 (where no extractor tube provided) and the second internal check valve prevents discharged water from reentering manifold 62 through flexible hose or tubing 78. As mentioned above flange 68, in connection with aperture 24, can provide a screw on securement of pump assembly 50 to bladder 20, with extractor tube 70 (where needed) disposed within bladder 20.

[0025] With water stored within bladder 20, to retrieve at least a portion of the stored water, the user squeeze the ball portion 80 of pump assembly 50 to create a siphon to cause water to travel through extractor tube 70 and into manifold 62. Check valve 72 prevents the water from going back down extractor tube 70 and the water is directed through second check valve 74 and into discharge tube or hose 78 to its desired location. Siphon relief cap 82 permits the user or operator to break the siphon to prevent further water removal from bladder 20 until again desired. Second check valve 74 prevents the water entering hose 78 from reentering into manifold 62.

[0026] A cap member 79 can be provided on manifold 62 for receipt of an outer end 77 of hose 78. When hose 78 is not in use, outer end 77 is preferably disposed within cap member 79, which acts to greatly reduce if not completely prevent bugs and other contaminants from entering within the internal area of bladder 20 through hose 78. Though shown secured to manifold 62, cap member 79 can be disposed at other locations of storage device 10 within reach of hose 78 and all other locations are also considered within the scope of the invention.
Though not considered limiting, bladder 20 is preferably for one time use to prevent contamination. As such, bladder 20 can be labeled for one time use. Additionally, once the stored water has been retrieved, bladder 20 can be sliced opened, such as, but not limited to, by a knife, scissors, box cutter, etc. and discarded, which will ensure that bladder 20 is used one time only. The size and shape of bladder 20 are chosen to permit it to fit within the location of a traditional water source, such as, but not limited to, a bathtub, a kitchen sink (FIG. 5), a wash tub, truck bed (FIG. 7) etc. The bladder can also be portable, such as, but not limited to the truck bed bladder 20. Bladder 20 can be two ply in the portable version to help bladder 20 form its shape by itself, such as when it may be resting on the floor in a dwelling or garage. However, it should be recognized that any embodiment of bladder 20 can be constructed from one ply, two ply, three ply, etc. and all variations are considered within the scope of the invention.

Bladder 20 and/or pump assembly 50 can also be provided with a built-in or non-built in filter to help filter the water stored within bladder 20 prior to its end use. Other additives can also be added to the water for sanitizing purposes.

The present invention provides a storage device preferably having a smooth rigid or semi rigid container wall which makes potable liquid available when needed, such as, in an emergency situation. Preferably once the water is contained with bladder 20 and sealed through the use of tie string or lanyard 26, or other mechanism, bladder 20 is placed in a safe location and not moved until needed.

It should also be recognized that other pump assemblies can be used with the present invention, such as, but not limited to, a D.C. battery operated pump, rotary pump, filter pump, etc. and all are considered within the scope of the invention.

Where a single ply bladder is provided (such as but not limited to, bathtub and sink bladders) the material in one non-limiting preferred embodiment can be a clear, three-layer, non-barrier laminate film. Where a two ply bladder is provided (such as but not limited to the portable, stand alone version) the material in one non-limiting preferred embodiment can comprise the single ply material described in the preceding sentence for the outer ply and for the inner ply a single layer, linear-low density polyethylene, non-barrier film. These material description are not to be considered limiting and are provided by way of example. It is preferred, though not considered limiting, that the material used for bladder 20 be of a food/beverage grade.

Though bladder 20 has been shown and described as being sized and shaped for certain locations (i.e. bathtub, kitchen sink, truck bed, etc.) it should be recognized that bladder 20 is not considered limited to any specific size(s) and/or shape(s) and various size, shapes and dimensions can be used and all are considered within the scope of the invention.

In addition to its emergency use, various embodiments of the present invention can be used for other non-emergency uses, such as, but not limited to, recreational, boating, camping, etc.

While the invention has been described and disclosed in certain terms and has disclosed certain embodiments or modifications, person skilled in the art who have acquainted themselves with the invention, will appreciate that it is not necessarily limited by such terms, nor to the specific embodiments and modifications disclosed herein. Thus, a wide variety of alternatives, suggested by the teachings herein, can be practiced without departing from the spirit of the invention, and rights to such alternatives are particularly reserved and considered within the scope of the invention.

What is claimed is:

1. A water storage device, comprising: a bladder defining an internal area, said bladder having a first opening serving as a water entrance; and an external sleeve having a first open end and a second open end, said external sleeve secured at its first open end to said bladder over the first opening of said bladder, said sleeve having an internal passageway therethrough in communication with the internal area of said bladder through said first opening.

2. The water storage device of claim 1 wherein said bladder having a second opening serving as a water exit.

3. The water storage device of claim 1 wherein said external sleeve is permanently secured to said bladder.

4. The water storage device of claim 3 wherein a first end of said external sleeve is heat sealed or welded to said bladder.

5. The water storage device of claim 1 wherein said bladder is constructed from a food grade plastic.

6. The water storage device of claim 1 wherein said bladder is sized to be snugly received with a bathtub, washtub or sink when said internal area of said bladder is at least substantially filled with water.

7. The water storage device of claim 1 wherein said second open end of said sleeve is adapted for securement to a faucet or spicket.

8. The water storage device of claim 7 further comprising means for maintaining securement of said sleeve to the water faucet or spicket.

9. The water storage device of claim 8 wherein said means for maintaining is a tie string or lanyard attached to said external sleeve.

10. The water storage device of claim 8 wherein once said bladder is filled to a desired water level, said sleeve is tied into a knot to seal the bladder.

11. A water storage and retrieval device, comprising: a bladder defining an internal area, said bladder having a first opening serving as a water entrance and a second opening serving as a water exit; and a water pump secured to said bladder at the second bladder opening.

12. The water storage and retrieval device of claim 11 wherein said external sleeve having a first open end and a second open end, said external sleeve secured at its first open end to said bladder over the first opening of said bladder, said sleeve having an internal passageway therethrough in communication with the internal area of said bladder through said first opening.

13. The water storage and retrieval device of claim 12 wherein a first end of said external sleeve is welded to said bladder.

14. The water storage and retrieval device of claim 11 wherein said bladder is constructed from a food grade plastic.

15. The water storage and retrieval device of claim 11 wherein said bladder is sized to be snugly received with a bathtub, washtub or sink when said internal area of said bladder is at least substantially filled with water.
16. The water storage and retrieval device of claim 12 wherein said second open end of said sleeve is adapted for securement to a water faucet or spicket.

17. The water storage and retrieval device of claim 12 further comprising means for maintaining securement of said sleeve to the water faucet or spicket.

18. The water storage and retrieval device of claim 17 wherein said means for maintaining is a tie string or lanyard attached to said external sleeve.

19. The water storage and retrieval device of claim 12 further comprising a water extractor tube disposed within the internal area of said bladder and in fluid communication with said water pump.

20. A water storage and retrieval device, comprising:
   a bladder constructed from a food grade plastic material and defining an internal area, said bladder having a first opening serving as a water entrance and a second opening serving as a water exit;
   an external sleeve having a first open end and a second open end, said external sleeve permanently secured and welded at its first open end to said bladder over the first opening of said bladder, said sleeve having an internal passageway therethrough in communication with the internal area of said bladder through said first opening;
   means for maintaining securement of said sleeve to a water faucet or spicket; and
   a manual water pump secured to said bladder at the second bladder opening;
   wherein said second open end of said sleeve is adapted for securement to a water faucet or spicket.

21. The water storage and retrieval device of claim 20 wherein said bladder is sized to be snugly received with a bathtub, washtub or sink when said internal area of said bladder is at least substantially filled with water.

22. The water storage and retrieval device of claim 21 wherein said means for maintaining is a tie string or lanyard attached to said external sleeve.

23. The water storage and retrieval device of claim 20 further comprising a water extractor tube disposed within the internal area of said bladder and in fluid communication with said manual water pump.

24. The water storage and retrieval device of claim 20 wherein said manual water pump having a hose and manifold, said hose having a first outer end which is received within a cap member secured to said manifold when said hose is not in use.