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(71) Applicant(s):  
**BW Technologies Limited**  
 (Incorporated in the United Kingdom)  
 Abbey Business Park, Monks Walk, FARNHAM,  
 Surrey, GU9 8HT, United Kingdom

(72) Inventor(s):  
**Jon Grant**

(74) Agent and/or Address for Service:  
**Agile IP LLP**  
 Airport House, Purley Way, Croydon, Surrey,  
 CR0 0XZ, United Kingdom

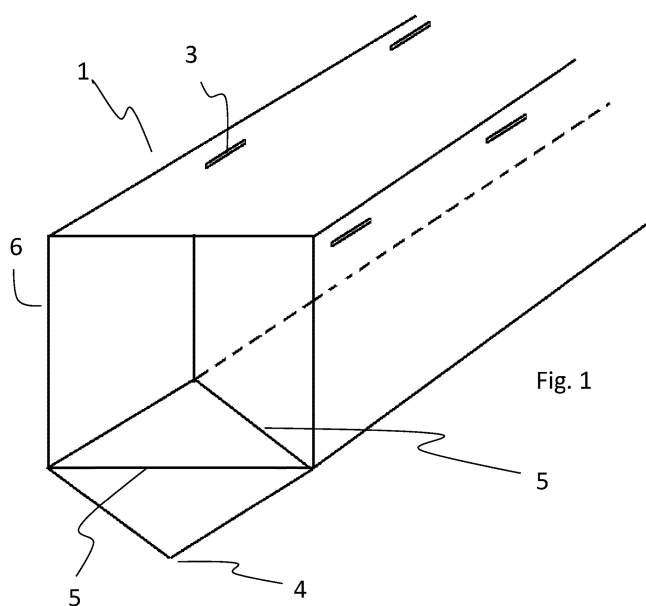
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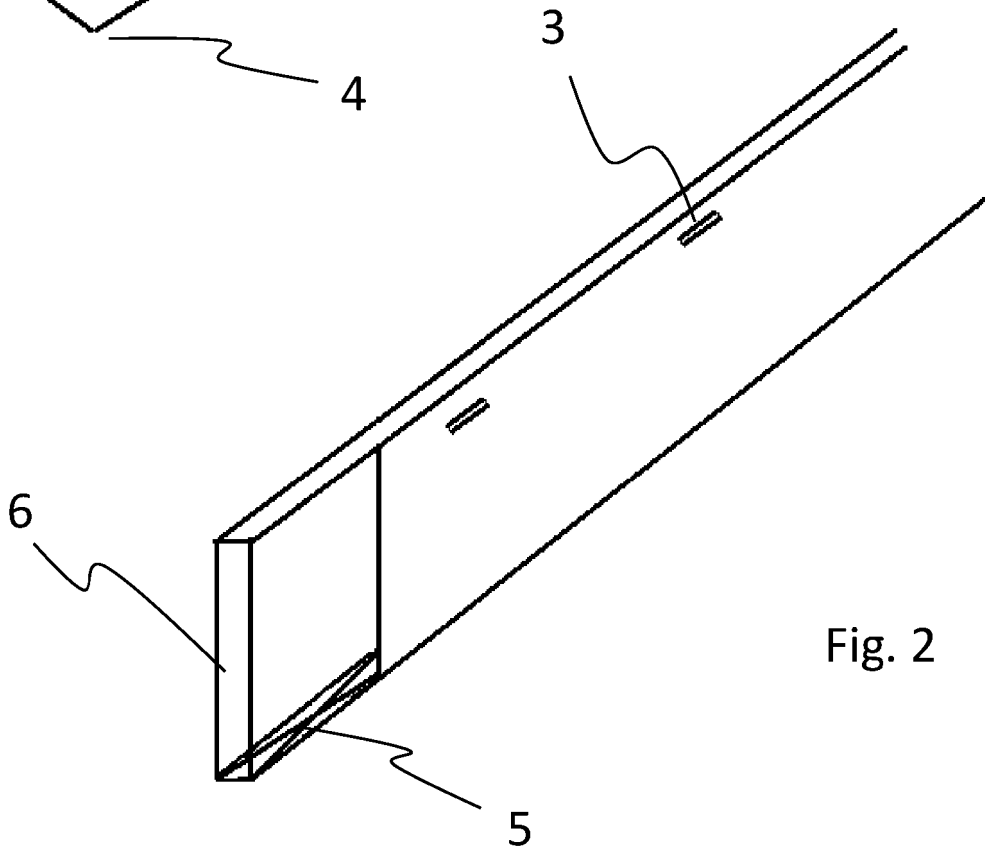
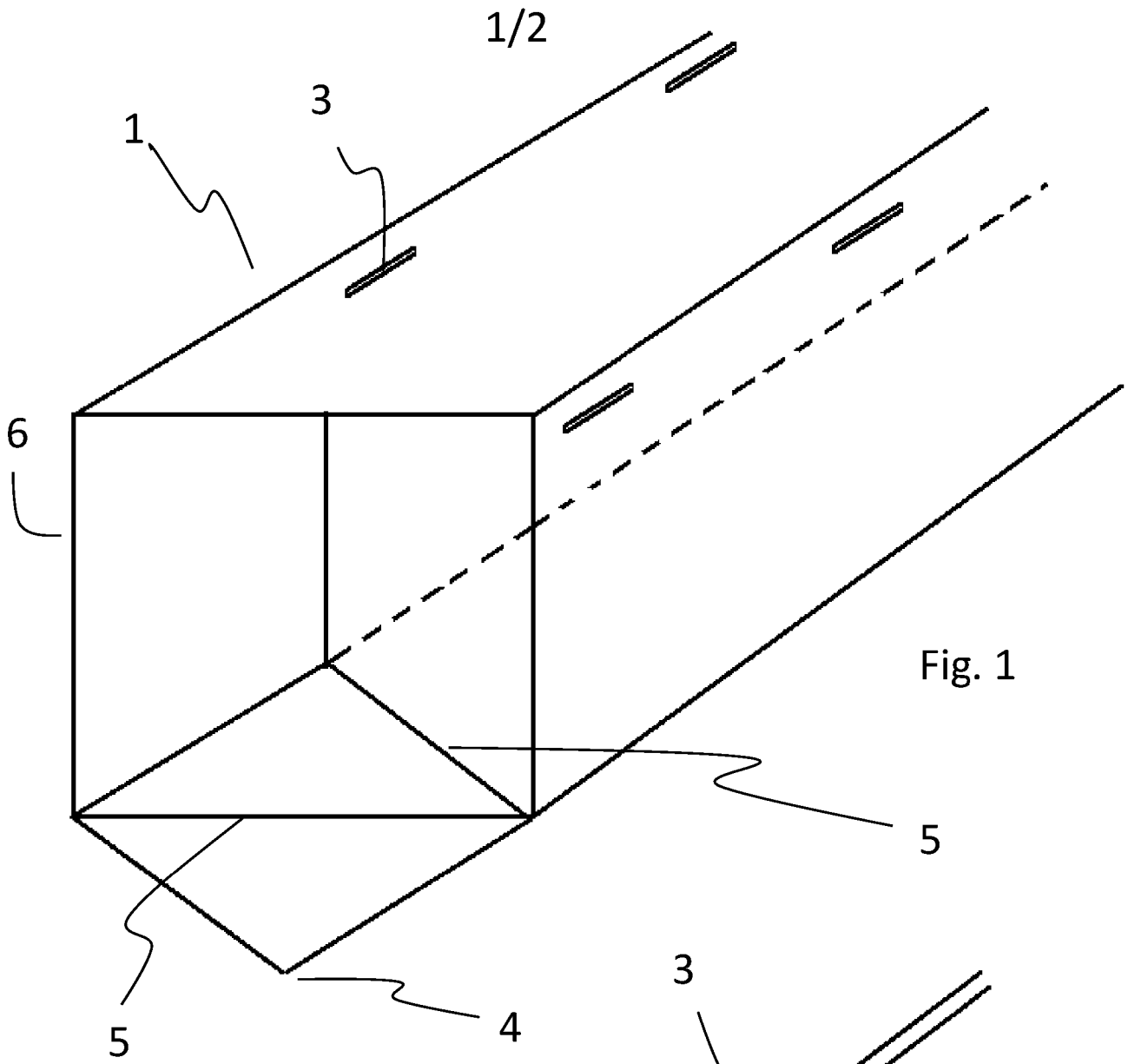
(56) Documents Cited:  
**GB 1257655 A**                      **GB 0693601 A**  
**WO 2012/012766 A2**              **WO 2008/075976 A1**  
**US 3224586 A**                      **US 20130319927 A1**

(58) Field of Search:  
 INT CL **C02F**  
 Other: **WPI, EPODOC**

(54) Title of the Invention: **Purified water supply system**  
 Abstract Title: **Purified water supply system**

(57) A purified water supply system comprises a water container having an outlet leading to a purification device (10, Fig. 3) through which water within the container flows prior to being made available to the consumer. The container is a foldable bag (2, Fig. 3) and has a filter sleeve 1 which is foldable with the bag. The filter forms a pointed tip 4 when unfolded. Preferably, the filter extends across the entire width of the container. The filter can be made from a polymer fibre material, for example polypropylene. The filter may have, or be treated with, a surfactant. The filter may be secured to the inner sides of the bag through connecting tabs 3. Alternatively, the opening edge of the filter may be stitched along each side of the inner surface of the bag. The periphery of the opening of the bag can be provided with a belt or tie (12, Fig. 3) with clips (13, Fig. 3) at each end to allow the bag to be hung up, for example from a post or tree. Thus, water can flow through the system by gravity. Suitably, the invention relates to a portable system for supplying purified water.





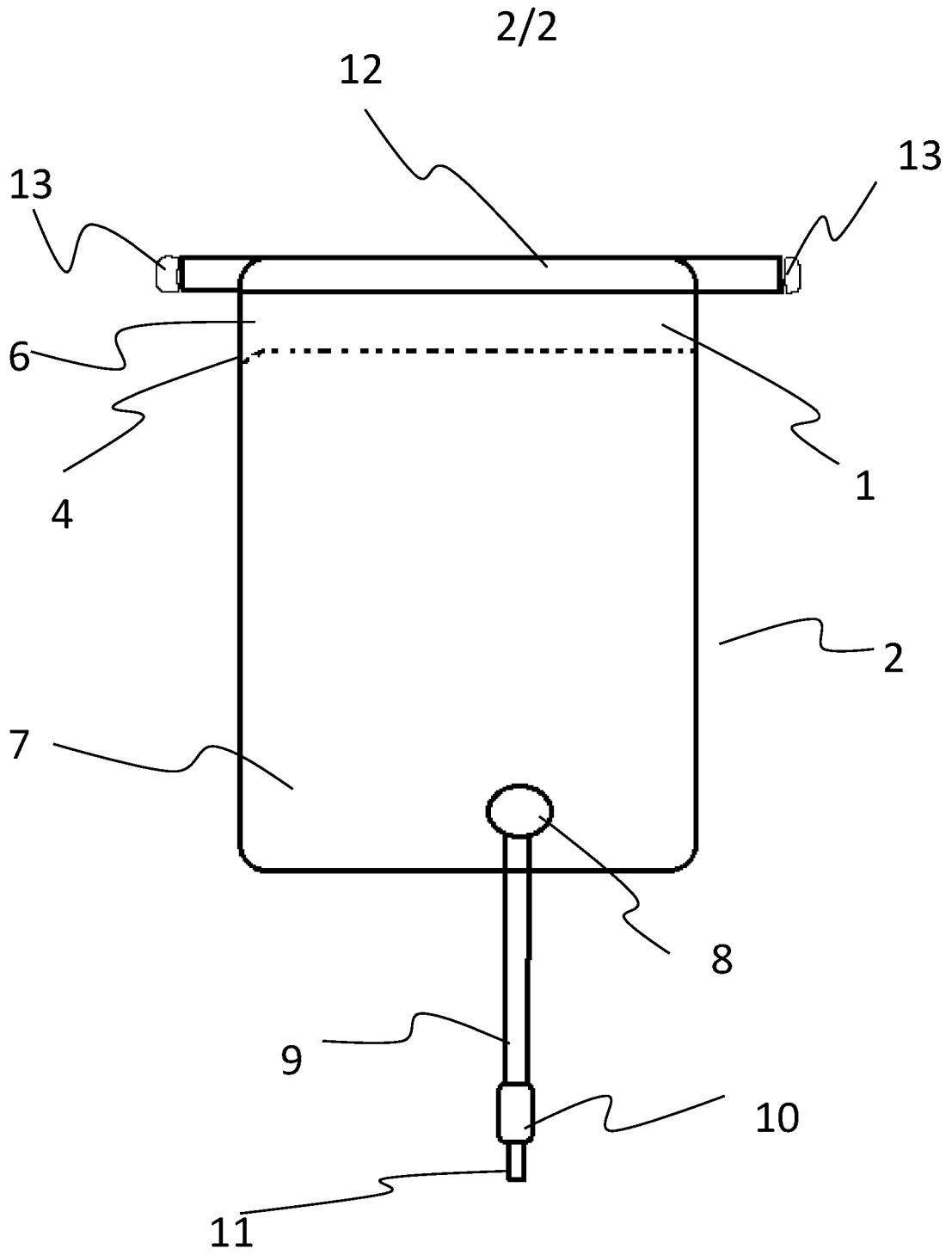


Fig. 3

Purified Water Supply SystemField of invention

5 The present invention relates to a purified water supply system. More especially the invention relates to a portable supply system for purified water.

Background to the invention

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Many different types of water purification systems are known. Portable systems are also known. Such systems generally comprises a water container, such as a plastic container or bag, which has an outlet leading to a purification device through which water within the  
15 container exits prior to being available as drinking water to the consumer.

One problem with many portable systems is the longevity  
20 limitations of the purification device within the system which can quickly get clogged up by physical contaminants in the water, particularly if the source of the water is unclean, which is often the case for systems designed for use in disaster zones or war-torn countries.

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One aim of the present invention is to provide a portable purified water supply system including a pre-filter within the water container.

30 Portable purified water supply systems for use on a commercial scale within disaster zones or war-torn countries must be compactable to a minimal size for storage and transportation to the desired location. Consequently the water container of choice is preferably a

bag structure which, by its nature, can be folded to a minimal size when empty. Any form of pre-filter therefore must not be complex and must fold with the bag in which it is located.

5

Moreover, it is important that the presence of a pre-filter must be suitable for continued, often extensive, use and not hinder or otherwise reduce the speed at which the water travels through the system to be available for the consumer. Consequently it is preferable that the pre-filter forms a pointed tip when unfolded to accelerate the water flow through the pre-filter to the purification device.

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#### Statement of invention

According to a first aspect of the invention there is provided a purified water supply system comprising a water container having an outlet leading to a purification device through which water within the container flows prior to being made available the consumer, the container having a foldable bag structure and having therein a filter sleeve which is foldable with the bag whereby the filter forms a pointed tip when unfolded.

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Preferably the filter extends across the entire width of the container.

Preferably the filter is made from a polymer fibre material. Preferably still the filter is made from polypropylene.

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Preferably the filter has, or is treated with, a surfactant.

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Brief description of the drawings

One embodiment of the invention will now be described by way of example only, with reference to the accompanying  
10 figures in which :

Figure 1 is a schematic view of a filter for use in a purified water supply system constructed in accordance with the present invention;

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Figure 2 is a schematic view of the filter of figure 1 in a folded position when not in use; and

Figure 3 is a schematic illustration of a purified water  
20 system.

Detailed description of preferred embodiments

25 Figure 1 shows a pre-filter 1 for use with a purified water supply system. The filter 1 sits within an outer bag 2 (see figure 3) which, in use, contains the water for purification. The filter 1 is secured to the inner sides of the bag 2 through connecting tabs 3. Alternatively,  
30 the opening edge of filter 1 may be stitched along each side of the inner surface of the bag 2 near to its opening. The filter 1 is generally rectangular in shape and extends across the bag opening along the width of the bag 2 to ensure that all water that is poured into the bag

opening is captured first within the pre-filter 1 before entering the rest of the bag containment area 7 directly below the filter 1.

5 In an alternative embodiment the filter 1 only extends across the opening in a middle part of the bag 2 and may, for example, be cone shaped. A funnel may be used to direct water into the filter before it enters the rest of the bag.

10

The filter is made from a polymer fibre material such as polypropylene. This paper-like material is malleable and foldable but also has sufficient strength for continued use without disintegration, which would be the case with  
15 paper filters of this nature, commonly designed for single use in coffee machines and the like.

The polymer fibre chosen for the filter 1 must be food grade.

20

One problem with using polymer fibre material is the material's inherent hydrophobic property in its natural state. Consequently the flowrate of the water through the filter is impeded and drastically reduced.

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The Applicant has found that the flowrate through the filter 1 can be greatly enhanced by first dipping the filter into a surfactant. A suitable surfactant found to provide this affect is one commonly referred to as  
30 "Washing Up liquid".

Applying a surfactant to the polymer fibre filter increases the filter flow rate whilst all other filtration

properties relating to containment collection remain unaffected.

As can be seen in Figures 1 and 2, the polymer fibre  
5 material of the filter 1 allows the filter 1 to fold and collapse with the bag 2 for the purposes of storage and transportation.

To increase the flow rate through the filter further, the  
10 filter 1 is formed with a delivery end which, when unfolded, forms a downwardly pointing tip 4. A series of folds 5 in one end 6 of the filter 1 provide the tip formation 4 when the filter is opened, which automatically occurs when bag 2 is opened for filling.

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As can be seen in figure 2, the filter 1 is naturally creased or folded along its longitudinal axis, and along the fold lines 5 when the opening of the bag 2 is closed flat.

20

When the bag 2, and hence the filter 1 are opened, the filter 1 effectively provides an inner sleeve for water entering the bag 2 to initially be collected before being directed through the tip 4 of the filter 1 and further to  
25 the main bag 7 containment area below.

An outlet 8 is provided at the bottom of the bag 2 which is connected through a tube 9 to a purification device 10. At this point the water is largely free of physical  
30 contaminants (that are trapped in the pre-filter 1) and, as such, the purification device is less likely to become clogged or blocked thereby increasing the working life of the purification device.



Once purified the water leaves the purification device 10 through a second tube 11 to a final outlet for delivery to the consumer.

- 5 The periphery of the opening of the bag 2 is provided with a belt or tie 12 with clips 13 at each end to allow the bag 2 to be hung up (for example from a post or tree) so that the water is fed through the system through gravity.

Claims

1. A purified water supply system comprising a water container having an outlet leading to a purification device through which water within the container flows prior to being made available to the consumer, the container having a foldable bag structure and having therein a filter sleeve which is foldable with the bag.

2. A system according to claim 1, wherein the filter forms a pointed tip when unfolded.

3. A system according to claim 1 or claim 2, wherein the filter extends across the entire width of the container.

4. A system according to any one of claims 1 to 3, wherein the filter is made from a polymer fibre material.

5. A system according to claim 4, wherein the filter is made from polypropylene.

6. A system according to any one of claims 1 to 5, wherein the filter has, or is treated with, a surfactant.

7. A system as hereinbefore described or referred to in the accompanying figures.



**Application No:** GB1402867.4

**Examiner:** Mr Alun Owen

**Claims searched:** 1-7

**Date of search:** 17 August 2015

**Patents Act 1977: Search Report under Section 17**

**Documents considered to be relevant:**

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X,Y	X: 1-5 Y: 6	WO 2008/075976 A1 (KELLY) See especially Figures 1 and 2, noting bag reservoir "1", bag filter "2" which in use is placed in the bag reservoir and purification device "4"
X,Y	X: 1-5 Y: 6	GB 693601 A (QUINN) See whole document, noting flexible liquid container "1", filter bag "1a" and purification device "6"
X,Y	X: 1-5 Y: 6	US 2013/0319927 A1 (LIN) See the Figures, for example noting outer bag "22" and filter bag "21" in Figures 4A and 4B
X,Y	X: 1-5 Y: 6	US 3224586 A (WADE) See especially Figures 10-12, noting flexible outer bag "80", inner bag "84" and filter compartment "90" located in a lower portion of the inner bag
X,Y	X: 1-5 Y: 6	WO 2012/012766 A2 (UVCLEANING SYSTEMS) See for example Figure 6, noting bag "150" and foldable enclosure "250" comprising a mesh fabric, which constitutes a filter sleeve
Y	6	GB 1257655 A (ETHYL CORPORATION) See whole document

**Categories:**

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

**Field of Search:**

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>X</sup> :

Worldwide search of patent documents classified in the following areas of the IPC

C02F

The following online and other databases have been used in the preparation of this search report



WPI, EPODOC

**International Classification:**

<b>Subclass</b>	<b>Subgroup</b>	<b>Valid From</b>
C02F	0001/00	01/01/2006