

(21) Application No: 0622112.1  
(22) Date of Filing: 07.11.2006

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(51) INT CL:  
**B01D 35/02** (2006.01) **B01D 35/027** (2006.01)  
**B01D 35/14** (2006.01) **B01D 35/31** (2006.01)  
**E03F 5/14** (2006.01)

(56) Documents Cited:  
**WO 2005/056942 A1** **KR 200440976 A**  
**KR 100714278 B** **US 6231762 B1**  
**US 4949406 A** **US 4766860 A1**  
**US 3909415 A** **US 20070144950 A1**

(58) Field of Search:  
INT CL **B01D, E03F**  
Other: **PAJ, WPI and EPODOC**

(54) Abstract Title: **A combined particle filter and water trap for waste water**

(57) A filter container 1 is described, fitted with inlet closure mechanism(s) 5 below the inlet(s) 2 that are opened when a filter 3 is placed in the container 1. The outlet 8 of the container 1 is arranged so that the outlet shroud 9 creates a water seal between the container 1 and the outlet 8. The removal of the filter 3 will close of the inlet closure device(s) 5. The container 1 may be fitted with electrical sensor(s) (figure 3, 10; figure 4, 11) to indicate that the filter 3 is missing and that the liquid level inside the container 1 is continuously above that required. The sensor(s) may comprise a float switch (figure 4,11) and/or a location sensor (figure 3, 10).

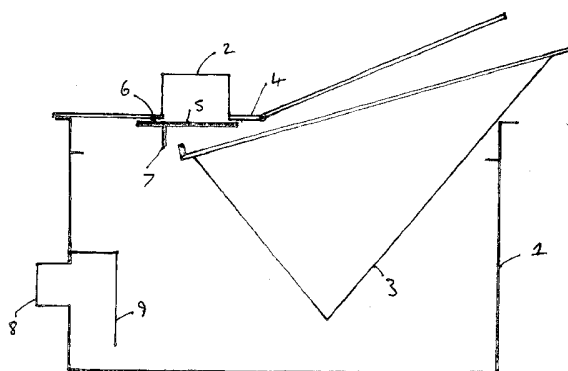


FIGURE 2

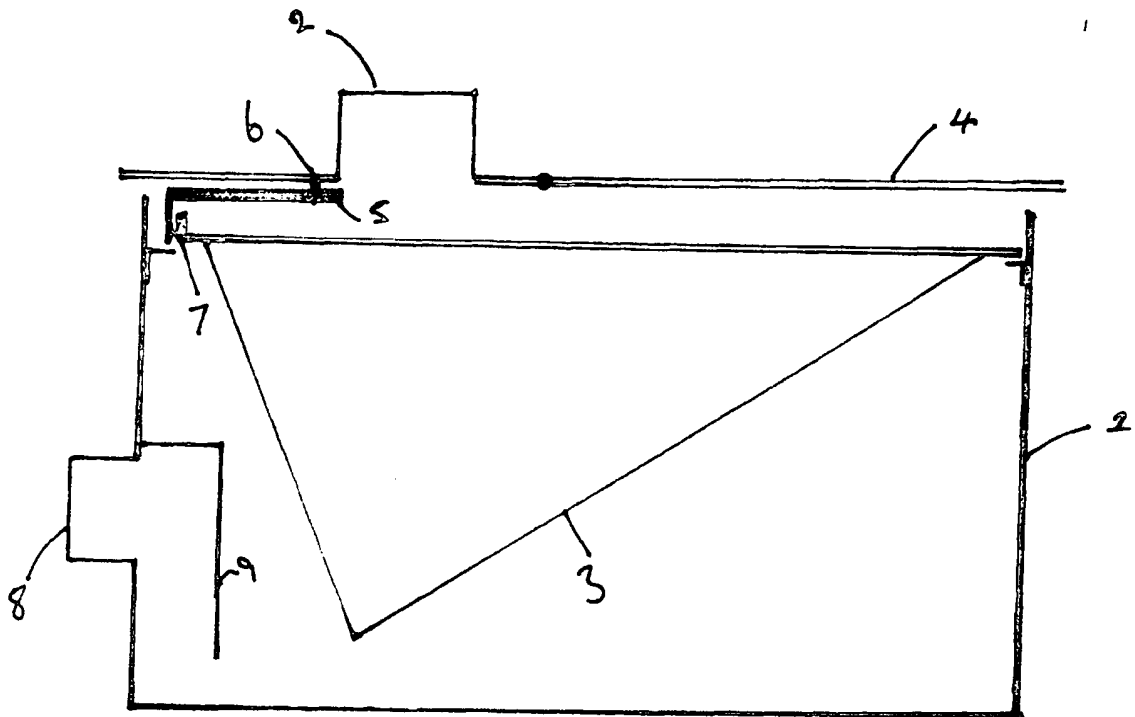


FIGURE 1

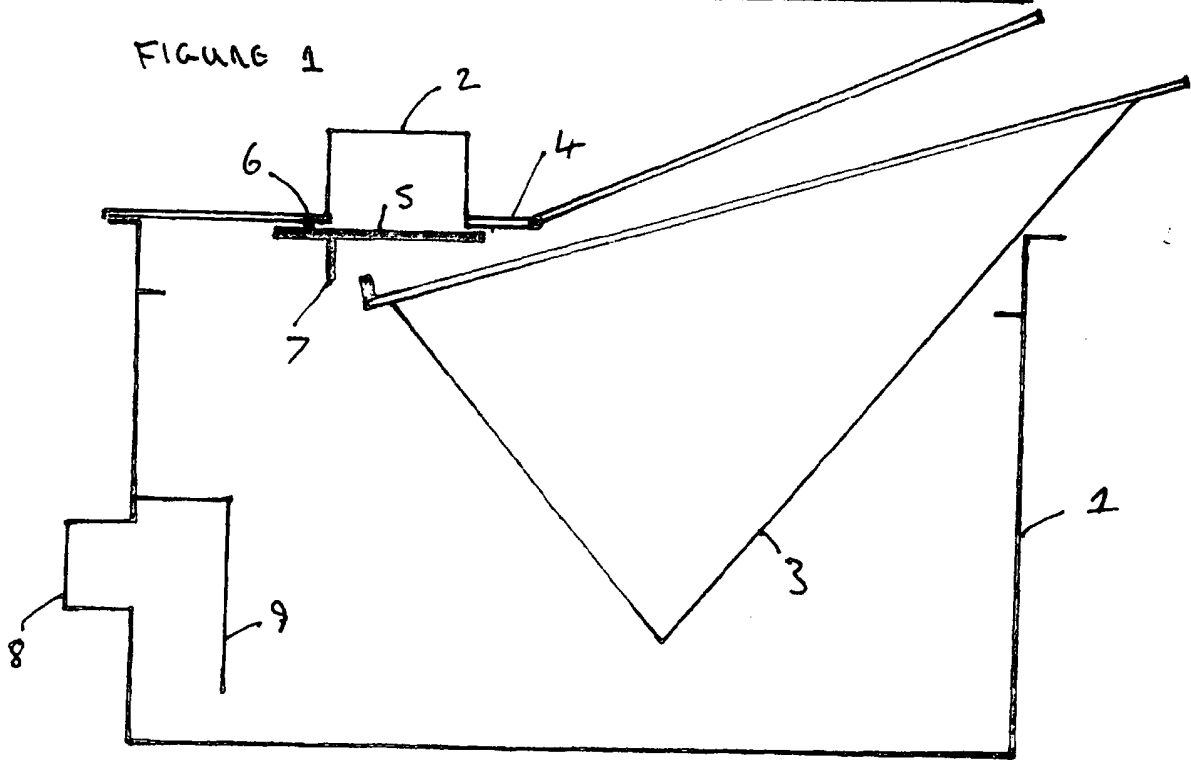


FIGURE 2

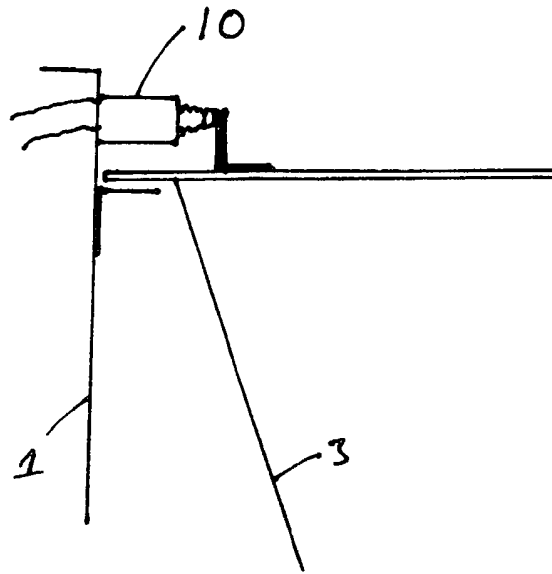


FIGURE 3

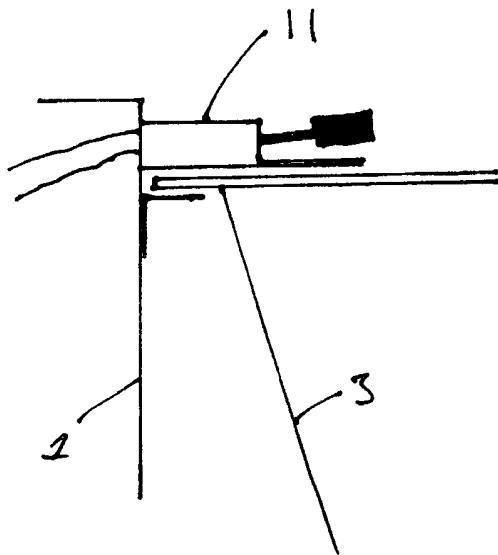


FIGURE 4

## **Filter trap for waste water**

### **Background**

This invention relates to a combined particle filter and water trap for wastewater, which includes a closure device and alarm system.

Kitchens, whether industrial, commercial or domestic discharge varying degrees of food and other waste particles in their waste water, these can be a major contributor to pipe blockages of particular relevance would be Coffee shops or kitchens involved in the preparation of rice and pasta.

### **Statement of Invention**

To remove these particles the present invention proposes a container, which comprise a removable filter. The interchangeable/ cleanable filter when removed allows a closure device, which is located prior to the filter to operate thus preventing contaminated effluent from passing through the container until the filter is replaced.

The invention provides for the container to be fitted with electrical sensors to indicate if the filter is not in place or that the filter material is 'blinded' The container also creates the water seal between the kitchen device and the drainage system required under plumbing codes/regulations.

### **Advantages**

The containment of the waste particles present with wastewater will assist in the prevention of blocked drainage pipe work.

The invention described here within will perform this task in a manner that will not allow the liquid discharging device to operate if the filter is removed or full.

It can also provide a visual or audible warning to operatives if the above condition exists.

Varying filter medias can be utilised dependent on the operating conditions. The invention can be manufactured in a variety of materials and in a variety of sizes.

## **Drawings and Description.**

The invention will now be described solely by way of example and with reference to the accompanying drawings in which:

- Figure 1 shows a cross-section of a liquid filter container according to the invention with the filter in place.
- Figure 2 shows a cross-section of a liquid filter according to the invention with the filter partially removed.
- Figure 3 shows a partial cross section of a liquid filter according to the invention, which shows the arrangement for indicating the presence of the filter.
- Figure 4 shows a partial cross-section of a liquid filter according to the invention, which shows the arrangement for indicating the continuous high liquid level.

A container (1) in figure 1 which has one or more inlets (2) that allow liquid to enter the container (1). The inlet/s are arranged in the lid (4), which also comprises one or more closure devices (5). The liquid passes through the filter (3) where the particles to be removed are retained. The liquid passes under the outlet shroud (9) and exits the container via outlet (8).

The closure device (5), which is normally held closed by either counterbalance or tension is opened by the action of installing the filter (3), which operates against the actuator (7). The closure device moves around axis (6) this movement may be to swivel, slide, swing, pivot, depress or raise the closure mechanism to create the necessary opening to allow liquid to enter the container (1).

The action of removing the filter (3) (figure 2) for replacement or cleaning allows the tension or counterbalance acting upon the closure device (5) to return it to the normally closed position.

The outlet shroud (9) creates a water seal between the container (1) and the outlet (8).

In figure 3 the filter (3) activates the location sensor (10), which completes or breaks an electrical circuit to indicate the filter 3 is either present or removed.

In figure 4 the continuous high liquid level sensor (11) is shown, this sensor, which is either a liquid sensor or a float switch completes or breaks an electrical circuit when the liquid level within the container (1) reaches a prescribed level the electrical circuit includes a timer relay to allow time for the liquid to seep through the filter (3). The activation of the sensor (11) beyond the time limit set within the timer relay will send an electrical signal to indicate this occurrence.

**Claims**

1. A filter container to remove particles from liquid, which has one or more inlets fitted with a closure mechanism, which prevents liquid flow if the filter is not present within the container.
2. A filter container in accordance with claim 1 which has an outlet arrangement which creates a water seal between the container and the outlet
3. A filter container in accordance with claim 1, which is fitted with sensors to indicate the filter is not present within the container.
4. A filter container in accordance with claim 1, which is fitted with at least one sensor to indicate the presence of continuous high liquid level.

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**Application No:** GB0622112.1

**Examiner:** Miss Marian Challis

**Claims searched:** 1-4

**Date of search:** 6 March 2008

**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	1,2	US 6231762 B1 (MARSHALL) Figures 1-6, columns 1 and 2
X,Y	X:1, Y:2	KR200440976 A (TTMEC) Figures 1-6, abstract
X,Y	X:1, Y:4	US 3909415 A (YOUNG) Figures 1-3
X,Y	X:1, Y:3	WO2005/056942 A1 (SPECIALITY) Figures 1-5, pages 3 and 4
Y	2	US4949406 A (CANELLI) Figures 1-12
Y,&	3	KR100714278 B (CHOI) See equivalent US application below for more detail
&	3	US 2007/0144950 A1 (CHOI) Figures 1-4, paragraph [0015]
Y	4	US4766860 A1 (ABE) Figures 2 and 8, column 5, lines 4-14

**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>:

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

B01D; E03F

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

PAJ, WPI and EPODOC

**International Classification:**

<b>Subclass</b>	<b>Subgroup</b>	<b>Valid From</b>
B01D	0035/02	01/01/2006
B01D	0035/027	01/01/2006
B01D	0035/14	01/01/2006
B01D	0035/31	01/01/2006
E03F	0005/14	01/01/2006