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(56) Documents Cited:
DE 020117749 U **US 5004535 A**
US 20070196176 A1

(58) Field of Search:
INT CL **A01K, F04D**
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(54) Title of the Invention: **Pond pump units**
Abstract Title: **Pond pump unit**

(57) A pond pump unit comprises a container 12 which can house a pump 11 for pumping pond water and auxiliary parts 2, 3 such as inlet and outlet hose accessories, which can be moved from storage locations within the container to operative positions in which they are connected to the pump or the container. The pump unit can have a storage configuration in which the moveable auxiliary parts are housed within the container 12 and an operational configuration in which each auxiliary part is in an operative position. Water drawn into the pump can be filtered by a cage formed by the container and by a finer removable filter 4. The pump outlet can be orientated so that its outlet is disposed either opposite or adjacent a face of the container on which it is stood. The container can comprise two parts 12a, 12b and a handle (fig 1, 12C) and be used as a filter through which the pump, outside the container, either draws or delivers water via a hose. When in its storage configuration the pump unit can form a point of sale packaged product including a sleeve (fig 5, 6).

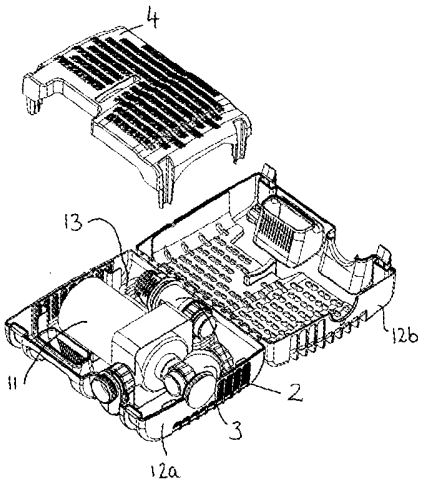

Fig. 3

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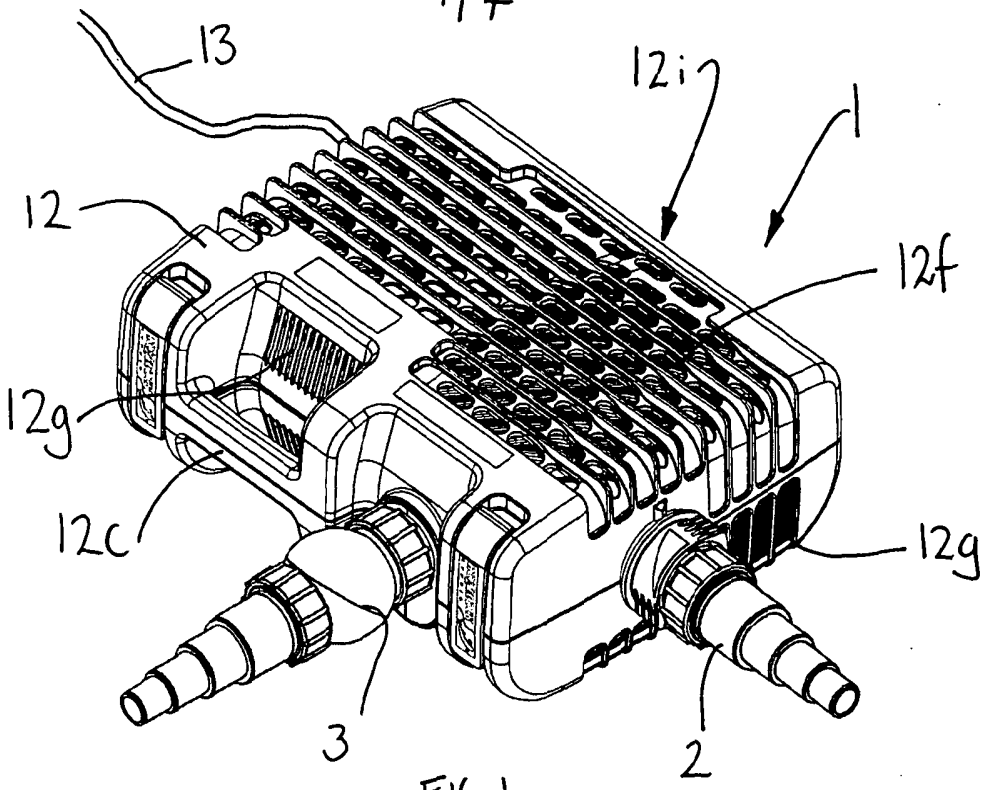

FIG. 1

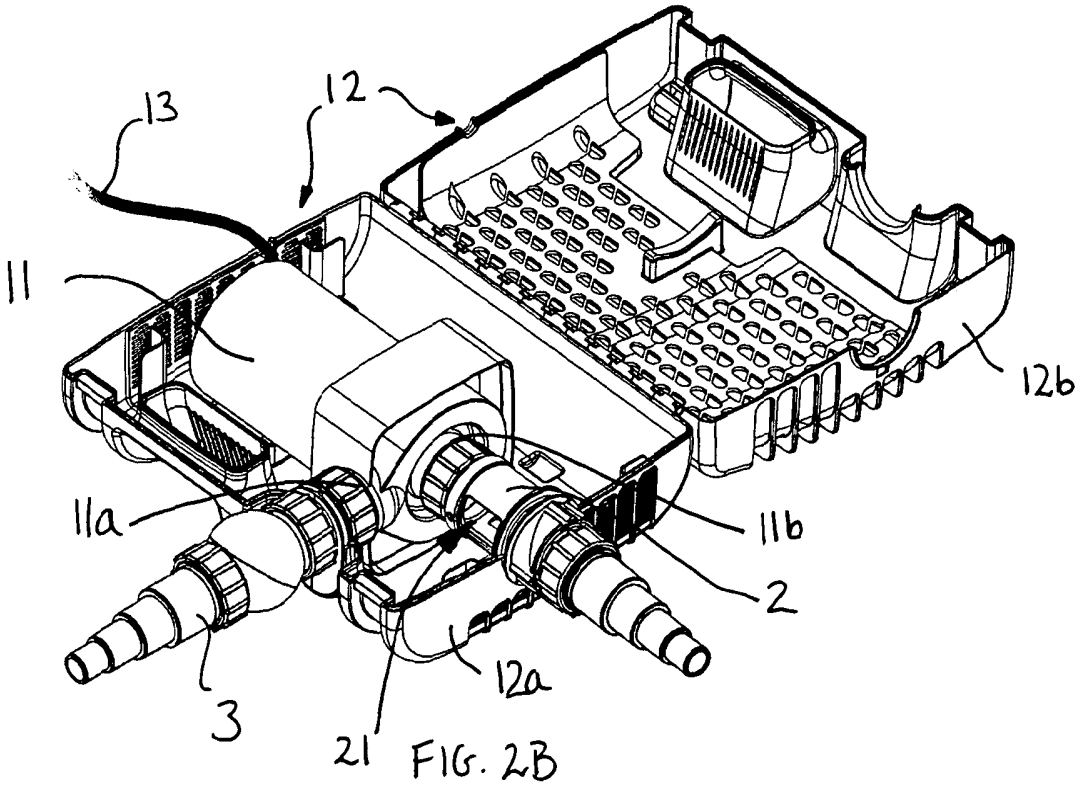

FIG. 2B

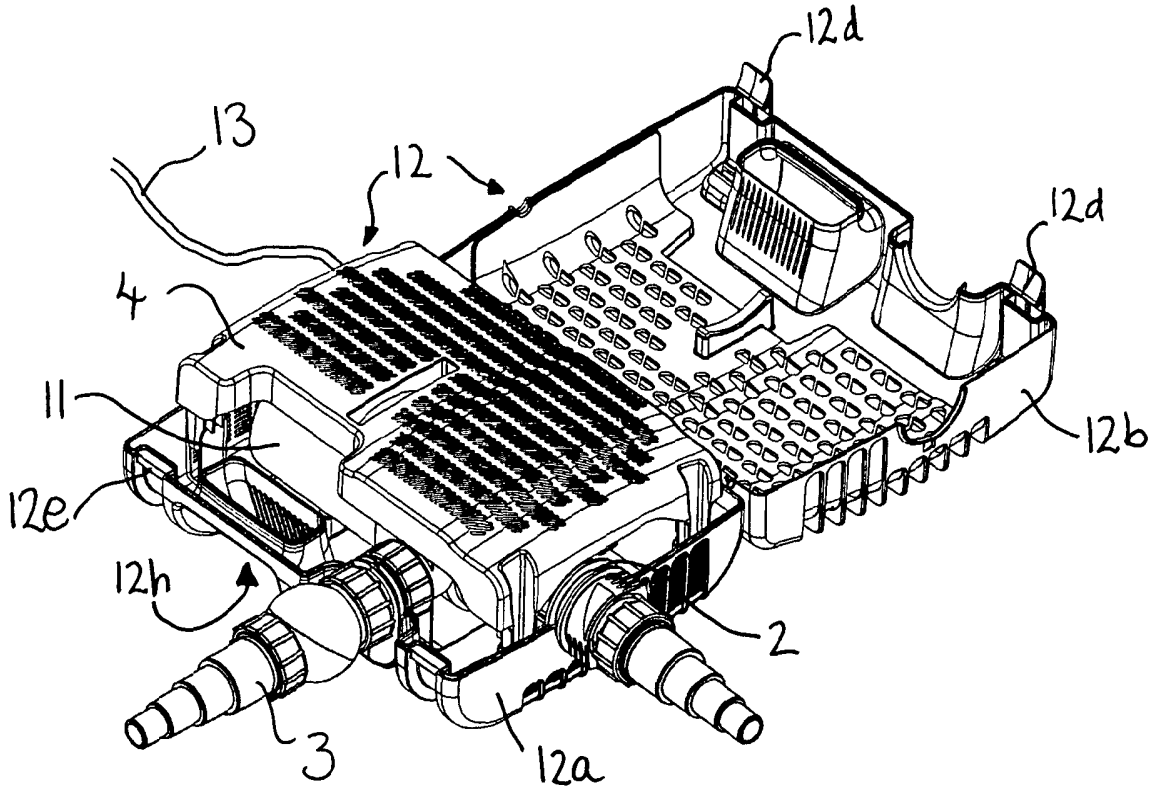

FIG. 2A

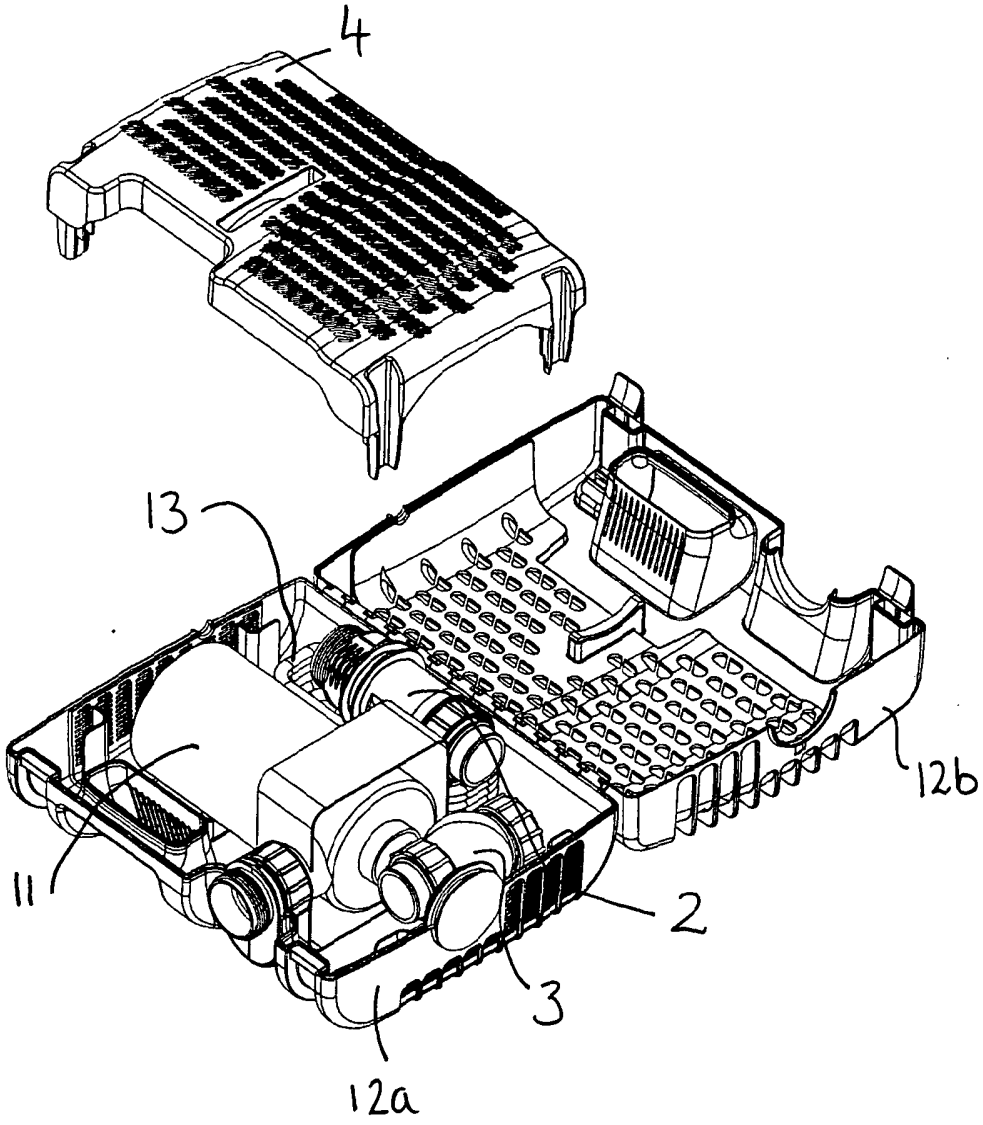

FIG. 3

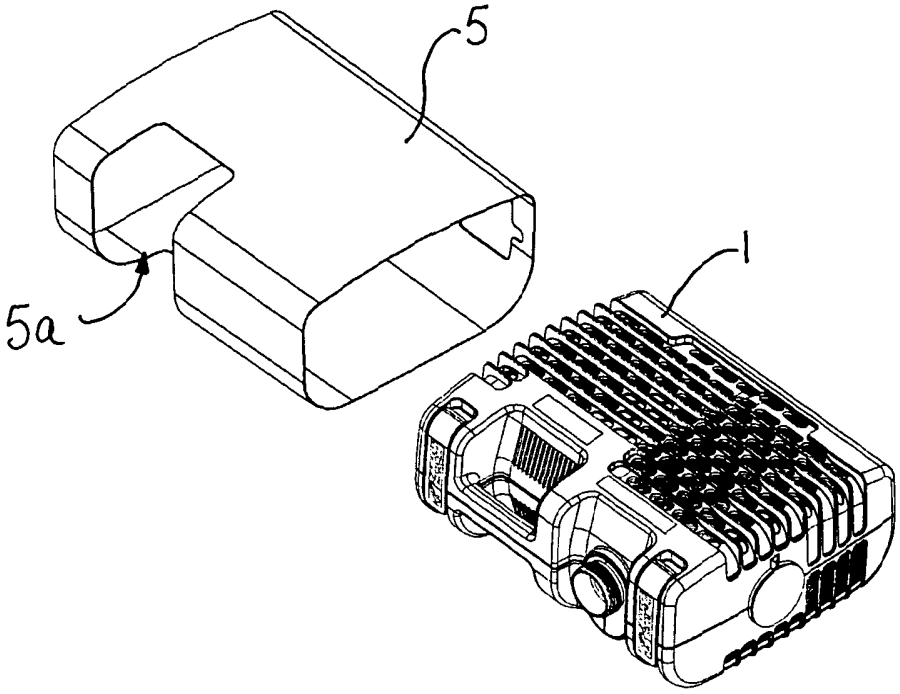

FIG. 4

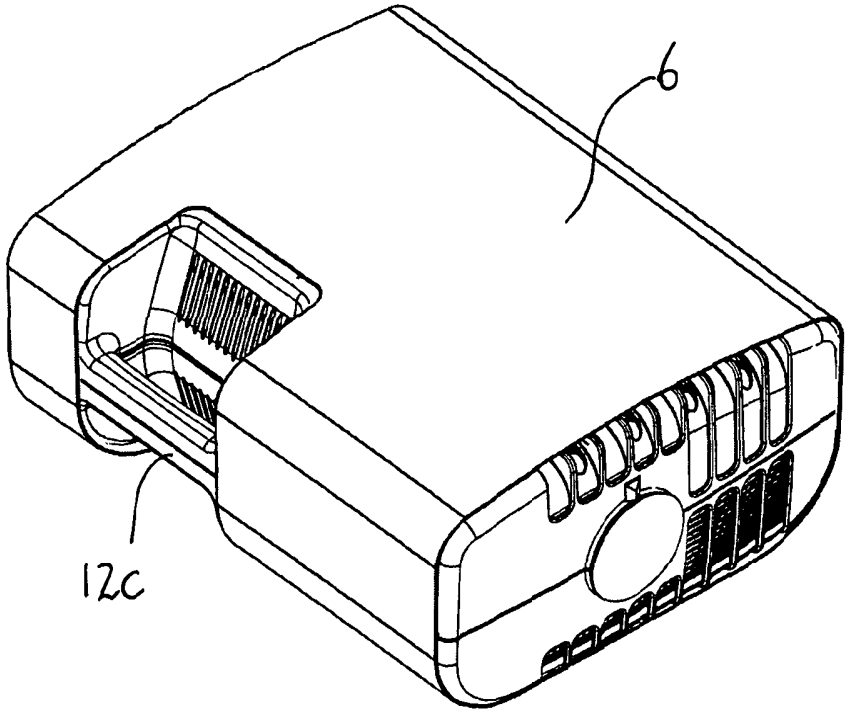

FIG. 5

POND PUMP UNITS

This invention relates to pond pump units which can be used, for example, in a garden pond for pumping water in order that the water is, for example, fed to a fountain or drawn through or fed to a filter.

With existing pond pump units there is a concern that excessive amounts of packaging are used for transport and/or sale. Furthermore, in some cases there can be limitations on the types of uses to which any one unit can be put.

It would be desirable to alleviate one or more of these problems so as to allow more efficient manufacturing and less waste of packaging material.

According to one aspect of the present invention there is provided a pond pump unit comprising a pump for pumping pond water, a container within which the pump is housable in use and a plurality of moveable auxiliary parts which are connected to, or connectable to, the pump, when housed in the container, and/or the container, the moveable auxiliary parts being moveable between one or more storage locations provided within the container and operative positions in which the moveable auxiliary parts are connected to the pump, when housed in the container, and/or the container such that the pump unit has a storage configuration in which each of the plurality of moveable auxiliary parts is housed within the container and an operational configuration in which each of the plurality of moveable auxiliary parts is in a respective operative position.

The container can thus act both as an operative part of the pond pump unit when the unit is in use and as a storage container when the unit is not in use.

The plurality of moveable auxiliary parts may be housed wholly within the container when the pond pump unit is in the storage configuration.

The pump unit can be considered to have a storage configuration envelope, that is, a boundary defined by all of the outermost portions of the pump unit, when the pump unit is the storage configuration.

At least one of the moveable auxiliary parts, when in its operative position, may be disposed outside of the container, and/or project outside of the storage configuration envelope of the pump unit.

At least one of the moveable auxiliary parts may be stored within the container without being attached thereto and may be removable as a completely independent part from the container. Such a part may then be connected to the container and/or pump for use.

It will, of course, be appreciated that the container may also be used to house other parts that may be used with the pump unit without being connected directly or indirectly to the unit.

The container may comprise two parts which are moveable relative to one another between a closed position and an open position which allows access to the interior of the container to be obtained. The two parts of the container may be hingedly connected to one another.

The container may be a cage which is arranged as a mechanical filter capable of filtering at least some of the water drawn into the pump unit in use.

The pond pump unit may comprise a handle. The handle may be formed integrally with the container.

The moveable auxiliary parts may comprise any one of, or any combination of: a power cable; outlet accessories – for example, an outlet hose connector; inlet accessories – for example, an inlet hose connector; a ball joint connector; fountain accessories; and a removable filter.

The outlet accessories typically will be arranged for connection (directly, or indirectly) to an outlet of the pump. The inlet accessories typically will be arranged for connection (directly, or indirectly) to an inlet of the pump.

The removable filter may be a clip in filter. The removable filter may, for example, be a push fit with, a sliding fit with, or just loosely contained within a container.

The removable filter may be a wildlife protection filter. Where the container is a cage the removable filter may be a finer filter than at least a portion of the mechanical filter formed by the cage.

The removable filter may be arranged for location adjacent said portion of the mechanical filter formed by the cage, when the unit is in use.

The unit may be arranged to be operated selectively in one of at least two different orientations. The unit thus may be arranged to be stable if stood on one of at least two distinct faces of the container. In one orientation an outlet of the pump unit may be opposite a face of the container on which the unit is stood. This can facilitate use of the pump unit as a fountain pump. In another orientation the outlet of the pump unit may be adjacent a face of the container on which the unit is stood. This can facilitate use of the pump unit as a filter pump.

The pump may be removable from the container. This can allow the container to be used as a filter unit with a remote pump. In such a case the remote pump may be the pump of the pump unit. In such a case, in use, the pump may be disposed in a body of water in which the container resides or outside of that body of water.

According to another aspect of the invention there is provided a pond filtering system comprising a pond pump unit as defined above wherein the pump is disposed outside of the container and connected thereto by hose, the container operates as a

filter and the pump is arranged to draw water from the container, or deliver water to the container, via the hose.

According to another aspect of the present invention there is provided a packaged product comprising point of sale packaging and a pond pump unit as defined above wherein the pond pump unit is in its storage configuration and the point of sale packaging comprises a sleeve within which the pond pump unit is disposed. The point of sale packaging may consist only of said sleeve. The point of sale packaging may consist of only said sleeve plus shrink wrapping.

Where the pond pump unit comprises a handle the handle may be usable as a handle even when the unit is disposed in the point of sale packaging.

The present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 schematically shows a pond pump unit embodying the present invention in an operational configuration;

Figure 2A shows the pond pump unit of Figure 1 with a cage of the pond pump unit open;

Figure 2B shows the pond pump unit of Figure 1 with the cage open and a removable filter removed;

Figure 3 shows the pond pump unit of Figure 1 whilst internal components of the pond pump unit (besides the removable filter) are in storage locations and the cage of the unit is open;

Figure 4 shows the pond pump unit of Figure 1 in a storage configuration and separately shows a point of sale packaging sleeve in which the pond pump unit is arranged to be disposed; and

Figure 5 shows the pond pump unit of Figure 1 disposed within the point of sale sleeve shown in Figure 4 so as to form a packaged product.

Figures 1, 2A and 2B show a pond pump unit 1. The pond pump unit 1 comprises a pump 11 and a containing cage 12 which is shown in a closed and operative position in Figure 1 and in an open position in Figures 2A and 2B. Attached to the pump 11 is a power supply lead 13. Inlet accessories 2 and outlet accessories 3 are also connected to the pump 11 when it is in the operational configuration as shown in Figure 1. The inlet accessories 2 are connected to an inlet 11b of the pump and the outlet accessories 3 are connected to an outlet 11a of the pump (see Figure 2B). The accessories 2, 3 are arranged to allow a length of hose or tubing to be connected thereto, to carry water towards and away from the pump unit from, for example, another filter unit or a remote intake site and to, for example, a fountain or another remote outlet site. These inlet and outlet accessories 2, 3 are also shown connected to the pump 11 in Figure 2 where the cage 12 is open.

A removable wildlife protection mechanical filter 4 is provided in the pond pump unit 1 and sits in the cage 12 when the pond pump unit is in the operational configuration. This wildlife protection filter 4 cannot be seen in Figure 1 but is shown in position in Figure 2A where the cage 12 is open. On the other hand the

wildlife protection filter 4 is omitted from Figure 2B to allow the other internal components of the unit to be more clearly seen.

The containing cage 12 has two parts 12a, 12b, which are hingedly mounted to one another to allow the cage to move between the closed position shown in Figure 1 and the open position shown in Figures 2A and 2B. The two cage parts 12a, 12b, include appropriately moulded parts so that when the cage 12 is in the closed position shown in Figure 1, an integral handle 12c is provided. Referring to Figure 2A, one part of the cage 12b comprises clips 12d which are arranged to engage with respective engaging portions 12e of the other part 12a of the cage to releasably hold the cage 12 in the closed position shown in Figure 1.

The inlet accessory 2 mounted on the pump 11 includes an aperture 21 which provides a fluid flow path from the interior of the cage 12 into the inlet 11b of the pump 11. There is, of course, also a fluid flow path through the inlet accessory 2 into the inlet 11b of the pump 11.

The cage 12 acts as a mechanical filter for filtering water drawn into the interior of the cage 12 and towards the aperture 21 by the pump 11 during operation. The cage 12 is provided with a plurality of apertures through which water can be drawn. In the present embodiment these apertures are provided in one side face 12f (behind which is located the removable filter 4 when the unit is in its operative configuration and the user chooses to include the filter 4) and three end faces 12g of the cage 12. This leaves one side face 12h (what can be termed the bottom of the unit)

unapertured and one edge face 12i (what can be termed the back of the unit) unapertured. Whilst these faces 12h, 12i, are generally indicated in Figures 1 and 2, they cannot be clearly seen as they are facing downwards and away from the viewer with the unit 1 in the orientation shown in Figures 1 and 2.

These two faces 12h, 12i, are useful for standing the pump unit on during operation. The pump unit 1 has two distinct stable orientations. One is the orientation shown in Figures 1 and 2, where the unapertured side face 12h is being used as the face in contact with the ground and the other is an orientation where the unapertured edge face 12i is used as the surface to contact the ground. It is not essential but it is desirable for these surfaces 12h, 12i upon which the unit may be stood in use to be unapertured.

With the unit 1 in the orientation shown in Figures 1 and 2, it is, for example, suitable for use as a filter pump. In the alternative orientation where the unit is stood on the unapertured end face 12i, it is suitable for use, for example, as a fountain pump as the outlet 11a and outlet accessories 3 then point upwards.

The removable filter 4 offers a finer mechanical filter than that provided by the cage 12. It is an optional component which can be used, for example, where it is desired to try to prevent small waterborne pond life from being sucked into the pump unit 1 through the apertured side wall of 12h of the cage 12.

Figure 3 shows the pump unit shown in Figures 1 and 2 with the cage 12 open and the power lead 13, inlet accessories 3 and outlet accessories 2 disposed in storage locations within the cage 12. In Figure 3 the removable filter 4 is shown separately from the cage to help illustrate this feature but this component also has a storage location provided within the cage which, in this embodiment, corresponds to its operative position as shown in Figure 2A.

Thus, it will be seen that all of the moveable auxiliary parts of the pump unit 1 can be housed within the cage 12 which allows the pump unit 1 to adopt a storage configuration as shown in Figure 4, ie the same configuration shown as Figure 3 but with the removable filter 4 in position and the cage closed. This means that all of the parts required to set up and operate the pump unit 1 are provided within the cage 12 in the storage configuration which allows the pump unit 1 to be stored for sale or otherwise in a particularly compact and robust form where the cage 12 acts as a container or housing for all of the parts required in operation of the pump unit 1.

When the pump unit 1 is in the storage configuration as shown in Figure 4, the inlet and outlet accessories 2, 3 and power lead 13, are neatly housed within the cage 12 and do not project outside of it. When the pump unit 1 is in its operational configuration the inlet and outlet accessories 2, 3 and power lead 13, do project outside of the cage 12 and outside of the storage configuration envelope of the pump unit 1.

As well as showing the pump unit 1 in a storage configuration, Figure 4 also shows a packaging sleeve 5 which is arranged to be slid over the pump unit 1 whilst in its storage configuration to provide a packaged product 6 as shown in Figure 5. It will be noted that the point of sale packaging 5 thus consists only of a sleeve which wraps around the pump unit 1 when in its storage configuration. It will be appreciated of course that the provision of such a sleeve is optional as the cage itself 12 is doing the job of containing and safely storing all of the component parts of the pump unit 1. Optionally, the unit may be (heat) shrink wrapped either over the sleeve, under the sleeve, or without the sleeve at all.

This arrangement avoids the need for separate packaging such as a cardboard box which would normally be used to house a pump unit of the current type with the moveable auxiliary parts of the pump unit being stored within the box and not within the cage 1 as in the present arrangement.

The sleeve 5 has a cut out 5a which allows the handle 12c of the cage 12 to be used even when the sleeve is in place to form the packaged product 6.

In the present embodiment the pump 11 is removable mounted in the cage 12. This means that the user can choose to remove the pump from the cage 12 and use the cage 12 as a filter unit. A remote pump, which may be the pump 11 of the pump unit 1 may then be connected to the cage by suitable hose to form a filtering system. In fact several such filter units made up using the present type of cage 12, might be

used in one filtering system for a large pond. The remote pump might be disposed in the pond or outside of the pond in any such system.

CLAIMS

1. A pond pump unit comprising a pump for pumping pond water, a container within which the pump is housable in use and a plurality of moveable auxiliary parts which are connected to, or connectable to, the pump, when housed in the container, and/or the container, the moveable auxiliary parts being moveable between one or more storage locations provided within the container and operative positions in which the moveable auxiliary parts are connected to the pump, when housed in the container, and/or the container such that the pump unit has a storage configuration in which each of the plurality of moveable auxiliary parts is housed within the container and an operational configuration in which each of the plurality of moveable auxiliary parts is in a respective operative position.

2. A pond pump unit according to claim 1, in which the plurality of moveable auxiliary parts is housed wholly within the container when the pond pump unit is in the storage configuration.

3. A pond pump unit according to claim 1 or claim 2, in which at least one of the moveable auxiliary parts, when in its operative position, is disposed outside of the container, and/or projects outside of the storage configuration envelope of the pump unit.

4. A pond pump unit according to any one of claims 1 to 3, in which the container is a cage which is arranged as a mechanical filter capable of filtering at least some of the water drawn into the pump unit in use.

5. A pond pump unit according to claim 4, which comprises a removable filter which is a finer filter than at least a portion of the mechanical filter formed by the cage.

6. A pond pump unit according to any preceding claim, which is arranged to be operated selectively in one of at least two different orientations, in one of said orientations an outlet of the pump unit being opposite a face of the container on which the unit is stood and in another of said orientations the outlet of the pump unit being adjacent a face of the container on which the unit is stood.

7. A pond pump unit according to any preceding claim, which comprises a handle which is formed integrally with the container.

8. A pond pump unit according to any preceding claim in which the container comprises two parts which are moveable relative to one another between a closed position and an open position which allows access to the interior of the container to be obtained.

9. A pond pump unit according to any preceding claim in which the pump is removable from the container.

10. A packaged product comprising point of sale packaging and a pond pump unit according to any preceding claim, wherein the pond pump unit is in its storage configuration and the point of sale packaging comprises a sleeve within which the pond pump unit is disposed.

11. A packaged product according to claim 10, in which the pond pump unit comprises a handle which is usable as a handle whether or not the unit is disposed in the point of sale packaging.

12. A pond filtering system comprising a pond pump unit according to claim 9, wherein the pump is disposed outside of the container and connected thereto by hose, the container operates as a filter and the pump is arranged to draw water from the container, or deliver water to the container, via the hose.

Application No: GB0905580.7 **Examiner:** Robert Barrell

Claims searched: 1-12 **Date of search:** 16 July 2009

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	1-3, 7 and 8	US5004535 A (BOSKO et al) See: figs 1 and 2; column 3, lines 8-48; and column 6, line 15 - column 7, line 5
A	-	US2007/0196176 A1 (LAINE) See: the whole document
A	-	DE20117749 U (OASE WUBKER) See: the EPO abstract

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^{X} :

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

A01K; F04D

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

EPODOC, WPI

International Classification:

Subclass	Subgroup	Valid From
F04D	0029/40	01/01/2006
A01K	0063/04	01/01/2006
F04D	0029/60	01/01/2006
F04D	0029/70	01/01/2006