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(54) **WATER FEATURE CONSTRUCTION**

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(57) **ABSTRACT**

A water feature for use in landscaping applications. A water issuing device, such as a waterfall construction is provided for receiving water and discharging water onto a gravel bed. The bed is positioned below the waterfall and forms a path or surface along which the water can flow in a stream-like manner and through which the water can percolate downwardly into the bed. A perforated and tabularly shaped collection module having a plurality of openings for receiving water percolating downwardly through the bed. A cylindrically-shaped and generally vertically oriented stack is coupled to the module for receiving water therefrom. A pump in the stack receives water from the water collection member and directs water to the waterfall construction. It is noted that water from the waterfall appears to disappear into the gravel and only a shallow stream is formed.

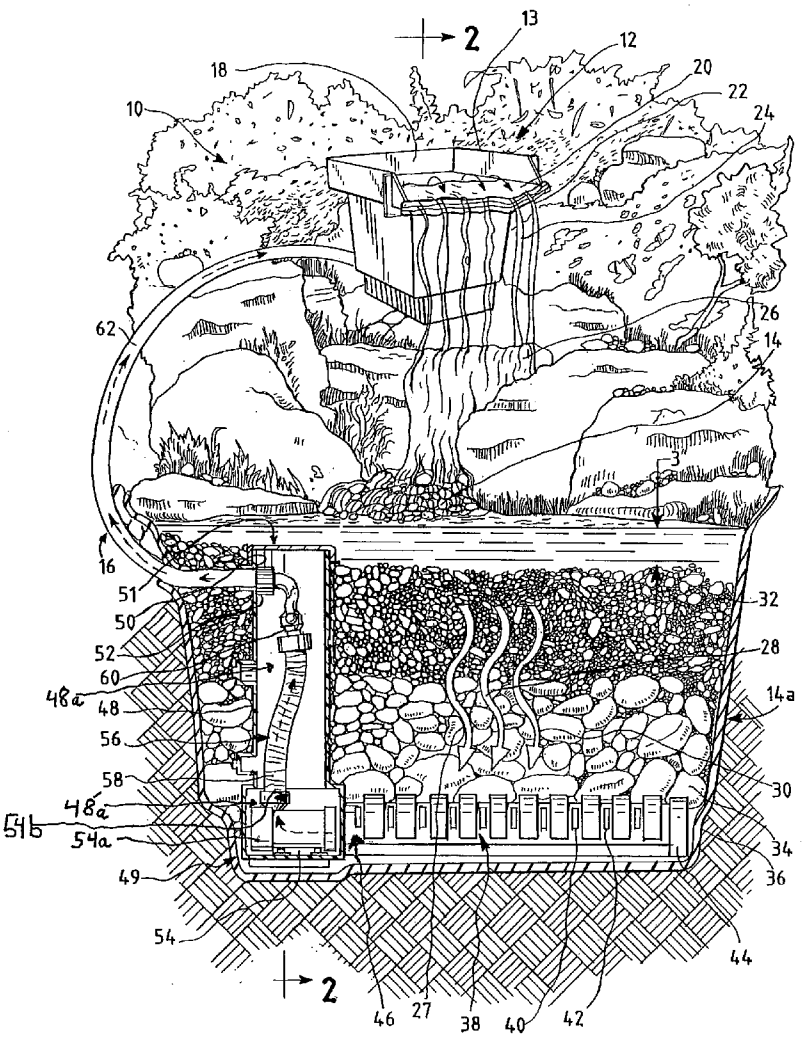


FIG. 1

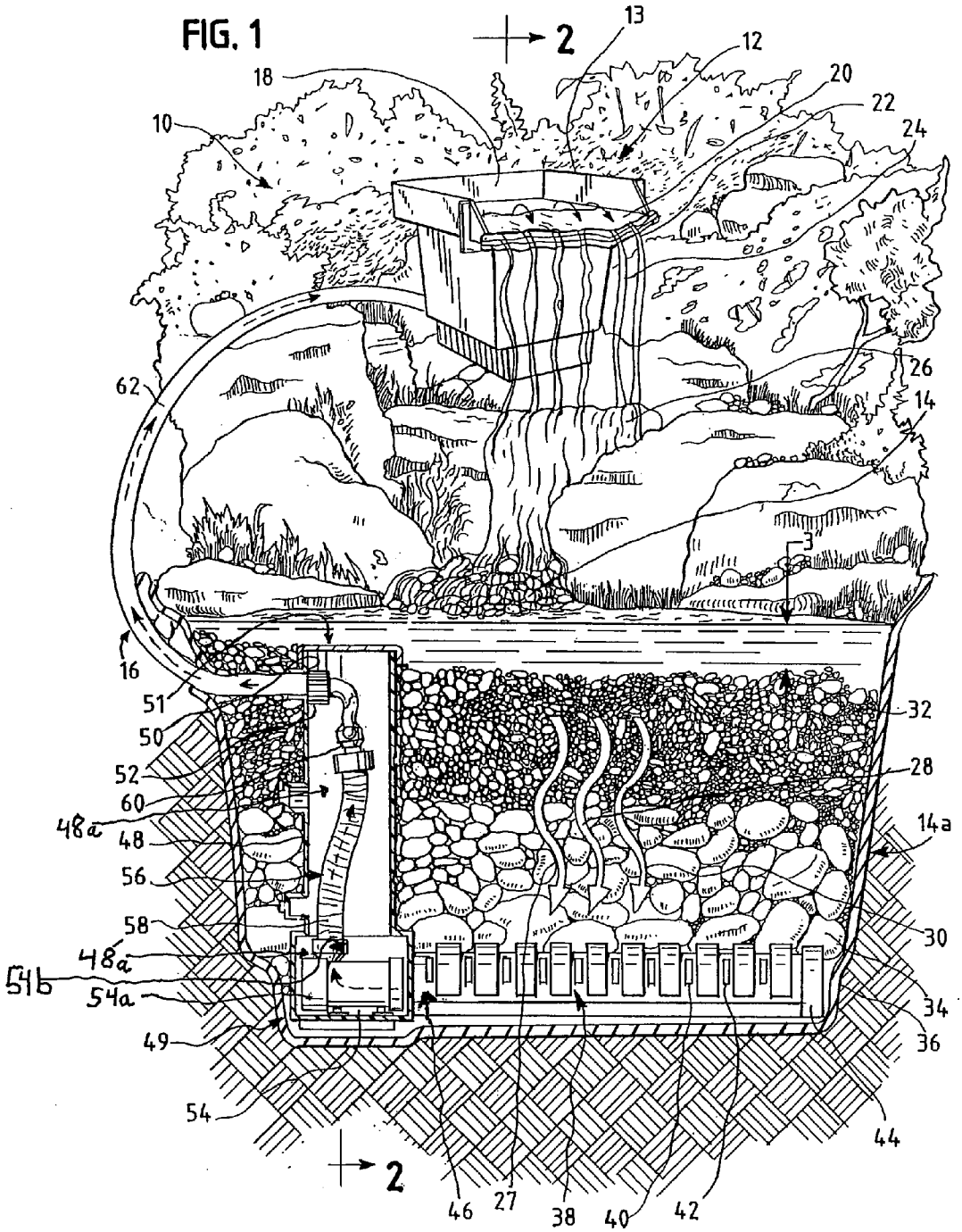

2
13
12
18
20
22
10
24
26
62
14
3
16
51
32
50
52
28
60
48a
14a
48
56
58
30
48a
54b
54a
34
49
36
54
44
2
46
27
38
40
42

FIG. 3

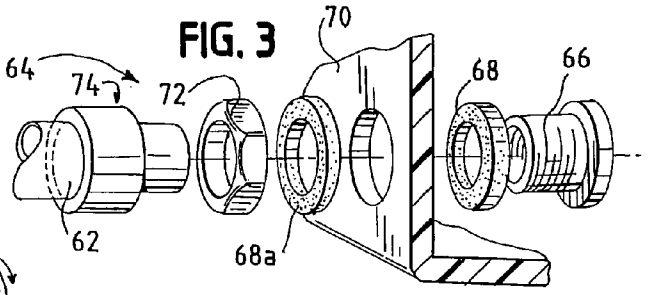


FIG. 2

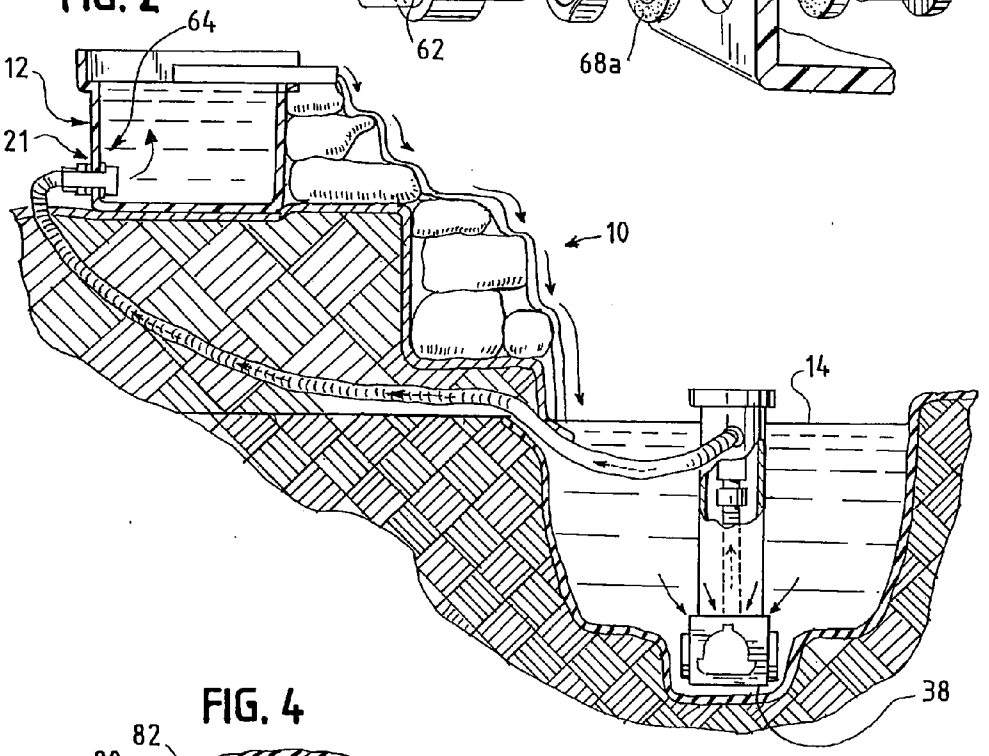


FIG. 4

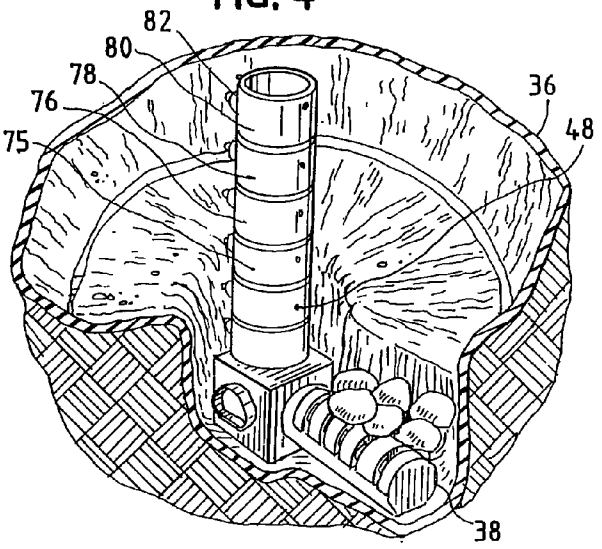


FIG. 5

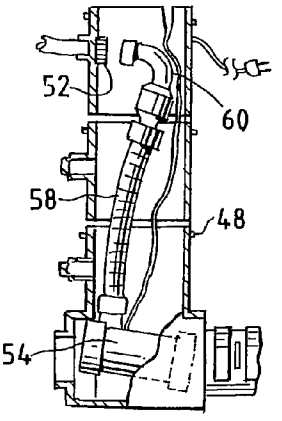


FIG. 6

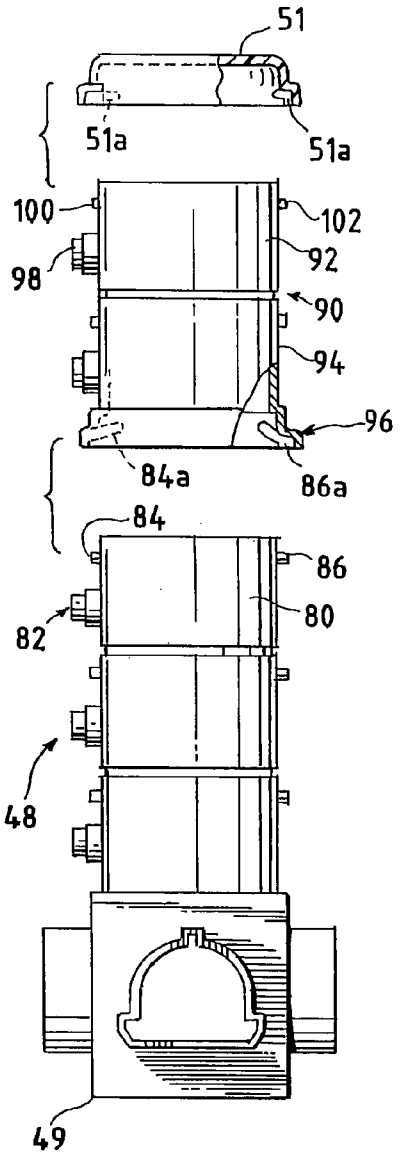
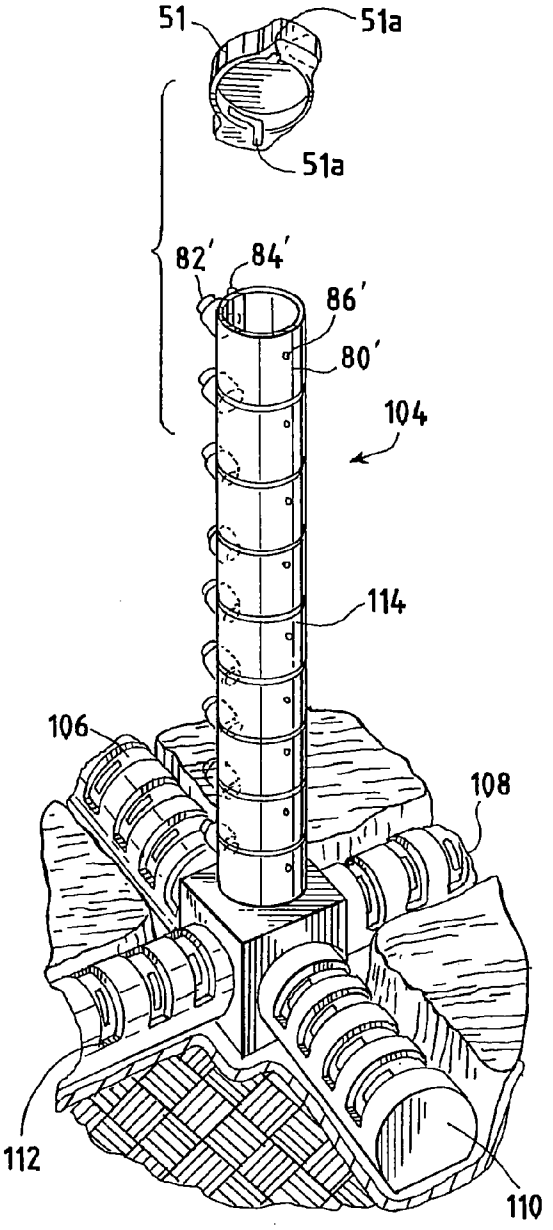

51
51a
51a
100
102
98
92
90
94
96
84a
86a
84
86
80
82
48
49

FIG. 7


51
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82'
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80'
104
114
106
108
112
110

WATER FEATURE CONSTRUCTION

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is a continuation application of U.S. application Ser. No. 10/704,346, filed Nov. 7, 2003.

FIELD OF THE DISCLOSURE

[0002] This disclosure relates to a water feature for landscaping applications and more particularly to a system where water issuing from a device flows to a bed where the water forms a surface stream and then flows downwardly within the bed so as to minimize or eliminate surface accumulation or pooling.

BACKGROUND

[0003] Water features have become increasingly popular as landscaping tools. Many water features include a pool, pond, reservoir or other accumulator for surface water and may include at least one waterfall, fountain or the like from which water flows into a pond. The pond is usually stocked with fish and may include vegetation.

[0004] In general, people have found these water features to be relaxing and soothing due to the appearance and sound of flowing water. However, in some situations, for example in public settings, it is desirable to avoid pooling or the accumulation of surface water. By avoiding or minimizing surface accumulation, safety and liability concerns, if any, can be minimized.

SUMMARY

[0005] There is described herein a water feature for landscaping use which employs a device from which water issues or flows to a stream bed, a system for collecting water from the bed and a recirculating system. The water in the bed forms a shallow surface stream (usually less than a few inches), flows downwardly into the bed and does not pool so that surface accumulation is minimized. In other words, a pond or other surface accumulator is not present and safety and liability concerns are minimized.

[0006] The system includes a device which discharges water such as a waterfall, fountain or the like. With respect to a waterfall, it is positioned at an elevated level and discharges water to the bed, preferably of gravel, therebelow. The water flows on the bed so as to form a surface stream and flows into the bed so it does not accumulate on the surface of the bed. The water percolates downwardly into the bed to an elongated perforated, generally horizontally positioned, and tubularly-shaped collection module. An elongated vertically oriented and tubularly shaped vault or stack, which defines a sump at its lower end, is provided which is coupled at its lower end to the module, extends to a position adjacent the surface and provides a housing for a pump. Water from the bed enters the module and flows through the module to the vault and sump. The pump then delivers the water to the waterfall or other discharge device. The cycle is then repeated.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. **1** is an elevational style view of the water feature showing a waterfall and stream and in section, the gravel bed, collection module, vault and pump;

[0008] FIG. **2** is a sectional view taken along line **2-2** of FIG. **1** showing the waterfall, bed, module, vault and pump;

[0009] FIG. **3** is a perspective view showing in exploded fashion the waterfall inlet connection;

[0010] FIG. **4** is a perspective style view showing an excavation with a liner for the horizontal collection module and the vertical vault which has removable sections; and

[0011] FIG. **5** is a vertical sectional view of the stack showing the pump in a position to be removed;

[0012] FIG. **6** is an elevational view showing a height extender member and a cap for the stack; and

[0013] FIG. **7** is a perspective style view showing the stack and multiple collection modules coupled thereto.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] Referring now to FIG. **1**, the water feature system **10** generally is shown. The system includes a water issuing device, such as a waterfall construction **12** generally, a gravel bed **14** generally and a water collection and recirculation system **16** generally.

[0015] The waterfall construction **12** includes a box-like member **13** which is open at the top **18** and forms a lip **20** from which water falls or is discharged. The waterfall construction includes an inlet **21** at the bottom of the waterfall box **13** so that water can be received in the waterfall construction. Water enters the box **13**, flows upwardly through filters provided therein (not shown) and exits via the lip **20**. In a landscape setting, the waterfall construction is blocked from view by surrounding soil, vegetation and/or rock formations so that only the downwardly flowing or cascading water is seen. It will be appreciated that other water-issuing devices, like a fountain can be used in place of the waterfall.

[0016] Streams of water such as **22** and **24** cascade downwardly from the waterfall construction **12** to the gravel bed **14**. The gravel bed forms an elongated and sometimes meandering surface path or stream **26** from the waterfall construction.

[0017] The water forms a surface stream which is usually shallow and since it is on a gravel bed, the water percolates downwardly. Thus as shown in the figures and described herein water received from the waterfall construction flows along the bed surface and percolates downwardly through the bed. The depth of the bed per se depends upon landscape considerations and on water collection considerations and on water collection considerations. Usually the bed is shallow near the waterfall construction and substantially deeper (e.g. 4 feet) in a position downstream from the waterfall construction **12**. The stream of water **26** is seen at the base of the waterfall construction and flows on the bed surface. At the deeper portion **14***a* of the bed, the surface water (as shown by arrows such as **27**, **28** and **30**) appears to be lost or fall into the bed.

[0018] The bed includes gravel of different sizes. The gravel generally varies in size from small gravel **32** at the top to large gravel or stones **34** (sometimes referred to as cobbles) at the bottom. Brick or other aggregate materials can be used instead of gravel.

[0019] In other words, water flows from the waterfall along the bed surface, down into the bed and disappears into the bed. Thus, a child can play in the stream on the gravel, get his or her feet wet, experience flowing water and still hear a gurgling or flowing noise. The bed is formed by an excavation which is lined by a water impervious material **36**, such as a rubber,

ethylene propylene diene monomer, concrete or the like. In fact, the liner is under the entire water feature so as to retain the water in a closed system. This includes the waterfall construction **12**, the gravel bed **14** and the water collection and recirculation system **16**.

[0020] The water collection and recirculation system **16** includes an elongated tubular and perforated water collection module **38** which is positioned below the bed surface (usually at the bed bottom) and at a generally horizontal attitude. The module includes water inlet apertures such as **40** and **42** by which water percolating through the gravel bed enters the module. It should be noted that large size gravel **34**, sometimes referred to as cobble stones, is positioned adjacent the module thereby minimizing the risk of the apertures becoming clogged with the smaller gravel such as **32**. The apertures, such as **40** and **42** are spaced along the length of the module.

[0021] One end **44** of the module is closed. The other end **46** of the module is open, forms a fluid coupling and is connected to an elongated, tubular, vertically oriented vault or stack **48**. The stack has a sump **49** at its lower end. The sump is connected or coupled to the collection module **38**. The top end **50** is closed with a cap **51** and positioned adjacent the surface of the bed. A connection opening **52** is provided in the side of the stack for use in the recirculation. In the sump **49** there is a pump **54** which receives water collected by the collection module **38** and discharges the collected water into a conduit **56** that directs collected water to the waterfall inlet **21**. As can be seen in FIG. **1** the pump includes an external housing **54***a*. As also can be seen from FIG. **1**, the structure **48** can a container or enclosure.

[0022] The conduit **56** includes a discharge pipe **58** that extends from a fluid outlet **54***b* of the pump **54** and is positioned in the sump **49**. As can be seen in FIG. **1**, the stack **48** provides a cavity, chamber or hollow **48***a*, the bottom **48***a*' of the cavity, chamber or hollow **48***a* is formed by sump **49**. A check valve **60** is positioned at the upper end of the discharge pipe. The check valve **60** is also connected to tube **62** which extends from the check valve **60** through the opening **52** to the waterfall inlet **21**. The tube **62** forms part of conduit **56**. The check valve **60** prevents reverse flow from the waterfall.

[0023] In FIG. **2**, the water feature system **10** is seen in section and it is seen that appropriate rock, vegetation and other landscape features can be placed about the various water feature components to provide an appropriate setting. The waterfall construction **12** is positioned above the gravel bed **14** so as to provide for the flow of water from the waterfall to the bed in a cascading manner, down the bed surface like a stream and to the module **38**. The collection module **38** is at the bottom of the gravel bed **14** so that water entering the gravel bed can percolate downwardly through the gravel to the module for recirculation.

[0024] The inlet to the waterfall system employs a bulkhead connection system **64**. Generally, the connection system includes a threaded fitting **66** and a gasket **68** on the inside of the waterfall construction wall **70**. A second gasket **68***a* is provided on the outside. A nut **72** secures the fitting **66** to the wall **70**. The inside of the threaded fitting **66** is threaded (but in the reverse direction) and receives a threaded slip **74** which can be tightened. The slip has an opening to receive and seal to the conduit or tubing **62**. The end of conduit **62** is slipped into the slip **74** and sealed thereto.

[0025] Referring now to FIG. **4**, an excavation is shown for the liner, gravel bed (not shown), horizontal collection module **38** and vertical stack **48**. It is seen that the stack **48** includes a plurality of tube-like sections **75**, **76**, **78** and **80**. The sections can be removed or sections added so as to adjust the height of the stack and position the top of the stack at, below or just above the surface of the gravel bed. This positioning provides access to the interior of the stack **48** for cleaning or for pump removal. Usually these sections are marked with score lines and the sections can be cut from one another. Each stack section includes a boss-like projection such as **82** (sometimes referred to as a hose tail) that can be cut open to provide for the connection or opening **52**. Each section also includes a cap or extender engaging nibs or small projections **84** and **86** which are used to secure with an extender or cap to the main stack.

[0026] The collection module **38** although generally horizontal, is slightly sloped or tipped so that entering water flows to the sump **49**.

[0027] Referring now to FIG. **5**, the pump **54**, the discharge pipe **58** and check valve **60** can be removed from the stack or sump by disconnecting from the conduit **62** and then tipping or lifting. Referring now to FIG. **6**, there is shown a stack **48** with sump **49**. Also shown is an extender section **90** and cap **51**. The stack includes three sections with the top section such as **80** including the hose tail **82** and nibs **84** and **86**. The extender **90** is shown including two tubular extender sections **92** and **94** with the lower extender section including a collar **96** that is slightly larger in diameter than the stack sections such as **80**. The collar **96**, has threads **84***a* and **86***a*, can fit on the stack section **80**, engage the nibs **84** and **86** and thus be screwed or otherwise secured and sealed to the section **80**. It is seen that the extender sections also include a hose tail such as **98** and nibs such as **100** and **102**. The cap **51** is formed similarly to the collar **96**, has threads **51***a* that engage the nibs **100** and **102** and can be screwed down and sealed to the extender. It will be appreciated that the cap can also be secured to sections such as **80** as long as nibs such as **84** and **86** are provided.

[0028] Referring now to FIG. **7**, there is shown a stack and collection module system **104** which is suitable for larger operations having a larger bed. Stack and module system includes a plurality of modules such as **106**, **108**, **110** and **112** which are connected to a vault or stack **114** having a sump **116** at the lower end thereof. This system is suitable for use in larger areas where it is desired to collect larger amounts of water so as to maintain the stream-like appearance and minimize accumulation.

[0029] Modifications and changes can be made to the foregoing without departing from the spirit and scope of the invention.

1. A water collection device of a water feature, said water collection device comprising:

(a) an elongated and vertically positionable structure selected from a group of structures consisting of a container, enclosure and stack,

(b) a removable closure, closes an opening of said structure;

(c) a pump having a pump housing disposed in said structure;

(d) said pump removable through said opening closed by said closure;

(e) an opening different from said opening closed by said closure, said different opening adapted to receive a conduit coupled to a fluid outlet of said pump.

* * * * *