

AEROPONIC COLUMN

FIELD OF THE INVENTION

[0001] This invention relates to aeroponic columns for growing plants, and more particular to improved aeroponic columns of simple construction and modifiability.

BACKGROUND OF THE INVENTION

[0002] Aeroponic devices are used for plant cultivation, often in the form of generally vertical columns where horizontal space is limited, as can be the case in an urban environment or a residential setting, for example. Known aeroponic devices have a rotatable modular planting column wherein each module includes an integrated fluid conduit, and the column is mounted in a vertical orientation to circulate a nutrient rich fluid for growing plants in a medium, often a soilless growth medium. Such vertical columns generally include a lower reservoir for holding nutrient rich fluid to be feed to plants, a planting column for holding the plants, and a watering system running through the column which pumps the fluid upward to the top of the column where it is directed back down to the column interior for watering the plants. See for example US Patent 7,055,282 to Bryan, III.

[0003] However known aeroponic and hydroponic columns have several problems. They can be relatively difficult to assemble and disassemble, and can have relatively complex structure. It would be desirable to provide an aeroponic column which is of

1 a simple and strong modular construction, which is easy to assemble and
2 disassemble, and which is aesthetically attractive.

4 SUMMARY OF THE INVENTION

6 [0004] In accordance with a first aspect, there is provided an aeroponic column
7 comprising a base, a connector body attached to the base, a nutrient distributor
8 attached to the connector body, and a conduit assembly running from the base to the
9 nutrient distributor, adapted to carry water and nutrients from the base to the nutrient
10 distributor. The conduit assembly comprises a conduit having a male threaded first
11 end and a female threaded second end, wherein the first end is adapted to be
12 threadably engaged with the second end of an adjacent conduit.

14 [0005] From the foregoing disclosure and the following more detailed description of
15 various embodiments it will be apparent to those skilled in the art that the present
16 invention provides a significant advance in the technology of aeroponic columns.
17 Particularly significant in this regard is the potential the invention affords for providing
18 a high quality aeroponic column which is of modular construction and aesthetically
19 attractive. Additional features and advantages of various embodiments will be better
20 understood in view of the detailed description provided below.

22 BRIEF DESCRIPTION OF THE DRAWINGS

24 [0006] Fig. 1 is an isometric view of an aeroponic column in accordance with one
25 embodiment, showing the column formed with hex bodies.

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2 [0007] Fig. 2 is a cross section view through the aeroponic column of Fig. 1.

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4 [0008] Figs. 3-5 are cross section view through sections of the aeroponic column of
5 Fig. 1.

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7 [0009] Figs. 6-7 are a pair of exploded isometric views showing various elements of
8 the aeroponic column of Fig. 1.

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10 [0010] Figs. 8-9 are views showing advantageous tongue and groove nesting of hex
11 bodies.

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13 [0011] Fig. 10 is a top side isometric view of the aeroponic column of Fig. 1.

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15 [0012] Fig. 11 is an isometric view of the aeroponic column of Fig. 1 shown with an
16 optional automatic nutrient controller.

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18 [0013] Fig. 12 is an underside isolated isometric view of one of the hex bodies.

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20 [0014] Fig. 13 is an isolated view of the base optionally used for storage of the
21 connector column and nutrient distributor.

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23 [0015] It should be understood that the appended drawings are not necessarily to
24 scale, presenting a somewhat simplified representation of various features illustrative
25 of the basic principles of the invention. The specific design features of the aeroponic

column as disclosed here, including, for example, the specific number of hex bodies, will be determined in part by the particular intended application and use environment. Certain features of the illustrated embodiments have been enlarged or distorted relative to others to help provide clear understanding. In particular, thin features may be thickened, for example, for clarity of illustration. All references to direction and position, unless otherwise indicated, refer to the orientation illustrated in the drawings.

DETAILED DESCRIPTION OF CERTAIN EMBODIMENTS

[0016] It will be apparent to those skilled in the art, that is, to those who have knowledge or experience in this area of technology, that many uses and design variations are possible for the aeroponic column disclosed here. The following detailed discussion of various alternate features and embodiments will illustrate the general principles of the invention with reference to an aeroponic column for use in a residential setting. Other embodiments suitable for other applications will be apparent to those skilled in the art given the benefit of this disclosure.

[0017] Turning now to the drawings, Fig. 1 is an isometric view of an aeroponic column in accordance with an embodiment formed having a base comprising a nutrient reservoir, a connector body, a nutrient distributor, and a conduit assembly . The conduit assembly is shown in the cross section view of Fig. 2 formed as a series of conduits running through openings in the connector body to operatively connect the nutrient reservoir to the nutrient distributor, that is, to carry water and nutrients from the nutrient reservoir to the nutrient distributor. The top conduit is operatively

connected to the nutrient distributor, and the bottom conduit is operatively connected to the nutrient reservoir in a manner similar to the connection between conduits positioned in each hex body. The conduits advantageously have a dual function, nutrient transport and securing the column together.

[0018] In accordance with a highly advantageous feature, the connector body is formed having a hexagonal cross section, as one or more hex bodies. This allows for ease of assembly by stacking several hex bodies together to a height as needed. The hexagonal cross section also provides stiffness to the column, to help resist dislocation of plant pots (discussed in greater detail below) from the hex bodies. The hex bodies also allow for ease in disassembly, allowing for rapid movement to a new location, if desired. Figs. 3-5 show close up cross section views of the stacked hex bodies forming a main trunk of the aeroponic column. Preferably each hex body has an opening adapted to receive the conduits, most preferably through the middle such that the remainder of the hex body hides the conduit from view.

[0019] Figs. 6 and 7 show several of the important elements of the aeroponic column. The lid of a nutrient distributor is positioned at the top of the column. A tightening nut positioned in the nutrient distributor and operatively connected to the conduit assembly allows for control of the amount of nutrients distributed to the plant growing in the column. The underside of the nutrient distributor and the connector body may each have a bottom which forms a first half of openings for corresponding pots each adapted to receive a plant. In a similar manner the connector bodies have a top having a second half of another opening for another corresponding pot. Nutrients may flow with gravity from the nutrient distributor down to through the hex

bodies via openings to allow for access to each plant on each hex body in a relatively uniform manner. The conduits carrying the nutrients are advantageously threaded and about the same length as each hex body, allowing for modular assembly of aeroponic columns of varying heights, as desired. A lid may be provided over the nutrient reservoir, optionally with a service port as shown.

[0020] In accordance with another highly advantageous element, and best shown in Figs. 8 and 9, the connector body with the hexagonal cross section also has a tongue on its lower side, and a groove on its upper side, and the tongue of one connector body is adapted to be received by the groove of an adjacent connector body. This assembly technique helps increase the strength of the column, allows for simple stacking and unstacking of hex bodies to whatever height column is desired, as well as helps prevent water from seeping out of an interior of the hex bodies.

[0021] Fig. 10 shows how the hex bodies may be stacked, with the conduit running through the middle, out of sight, with only the aesthetically attractive show surface of the hex bodies (with the pots for the plants) visible to the viewer standing adjacent the column.

[0022] Fig. 11 shows an optional automatic nutrient controller. The nutrient reservoir is shown to contain storage containers for several different types of nutrients. The nutrient controller is programmed to automatically draw nutrients at a predetermined rate from each storage container and pump these nutrients up the conduit for dispersal to the plants via the nutrient distributor.

1 [0023] Fig. 12 shows an underside of one of the hex bodies. The groove is adapted
2 to meet with the tongue on an adjacent hex body. In a further effort to help control
3 the flow of water, the hex body is provided with a splash guard and a drip line. The
4 dripline helps to keep water from reaching the areas where the hex bodies are
5 assembled together. The splash guard helps keep the nutrient solution from
6 splashing and forming large droplets over time on the wrong side of the drip line.

7
8 [0024] Fig. 13 shows how the base can serve as a storage vessel for the nutrient
9 distributor and connector body when the aeroponic column is not in use. As shown,
10 multiple hex bodies may be stowed in the base and a lid may be placed on the base,
11 helping with disassembly and reassembly at another time and/or location.

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13 [0025] From the foregoing disclosure and detailed description of certain
14 embodiments, it will be apparent that various modifications, additions and other
15 alternative embodiments are possible without departing from the true scope of the
16 invention. The embodiments discussed were chosen and described to provide the
17 best illustration of the principles of the invention and its practical application to
18 thereby enable one of ordinary skill in the art to use the invention in various
19 embodiments and with various modifications as are suited to the particular use
20 contemplated. All such modifications and variations are within the scope of the
21 invention as determined by the appended claims when interpreted in accordance
22 with the breadth to which they are fairly, legally, and equitably entitled.

CLAIMS

What is claimed is:

1. An aeroponic column comprises, in combination:
 - a base;
 - a connector body attached to the base;
 - a nutrient distributor attached to the connector body; and
 - a conduit assembly running from the base to the nutrient distributor, adapted to carry water and nutrients from the base to the nutrient distributor;wherein the conduit assembly comprises a conduit having a male threaded first end and a female threaded second end, wherein the first end is adapted to be threadably engaged with the second end of an adjacent conduit.
2. The aeroponic column of claim 1 wherein the connector body has a hexagonal cross section, a tongue and a groove, and the tongue of one connector body is adapted to be received by the groove of an adjacent connector body.
3. The aeroponic column of claim 1 defining a plurality of openings adapted to each receive a pot for a plant, wherein the connector body has a top and a bottom, and forms a first half of an opening for a corresponding pot on the bottom, and a second half of another opening for another corresponding pot on the top.