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(54) **PLANT WATERING DEVICE**

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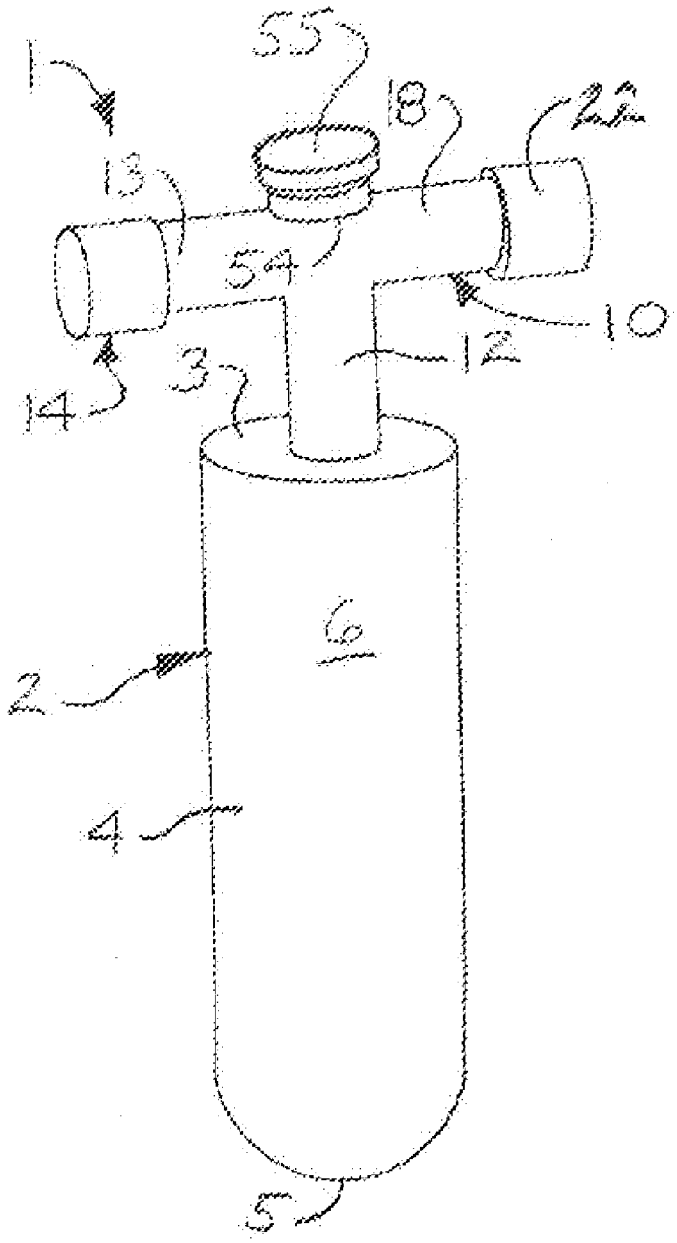
(57) **ABSTRACT**

A plant watering device includes a device insert having a substantially solid porous material with a continuously porous exterior contact surface, at least one watering cavity in the device insert and a water distribution conduit disposed in fluid communication with the at least one watering cavity.



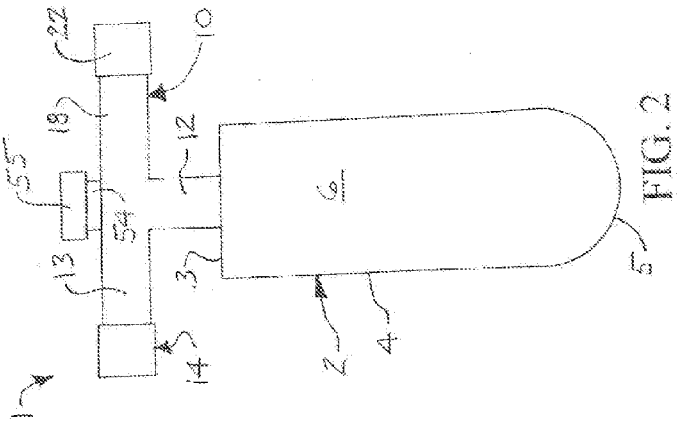


FIG. 2

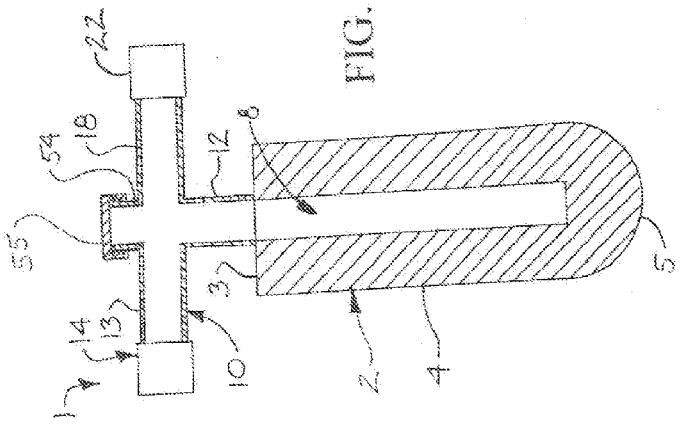


FIG. 3

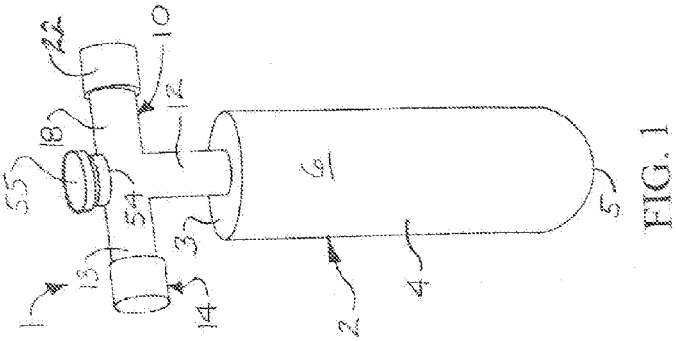


FIG. 1

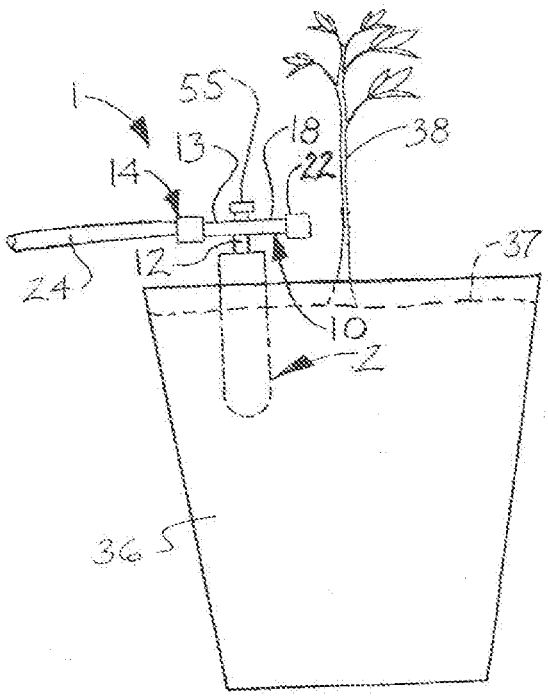


FIG. 4

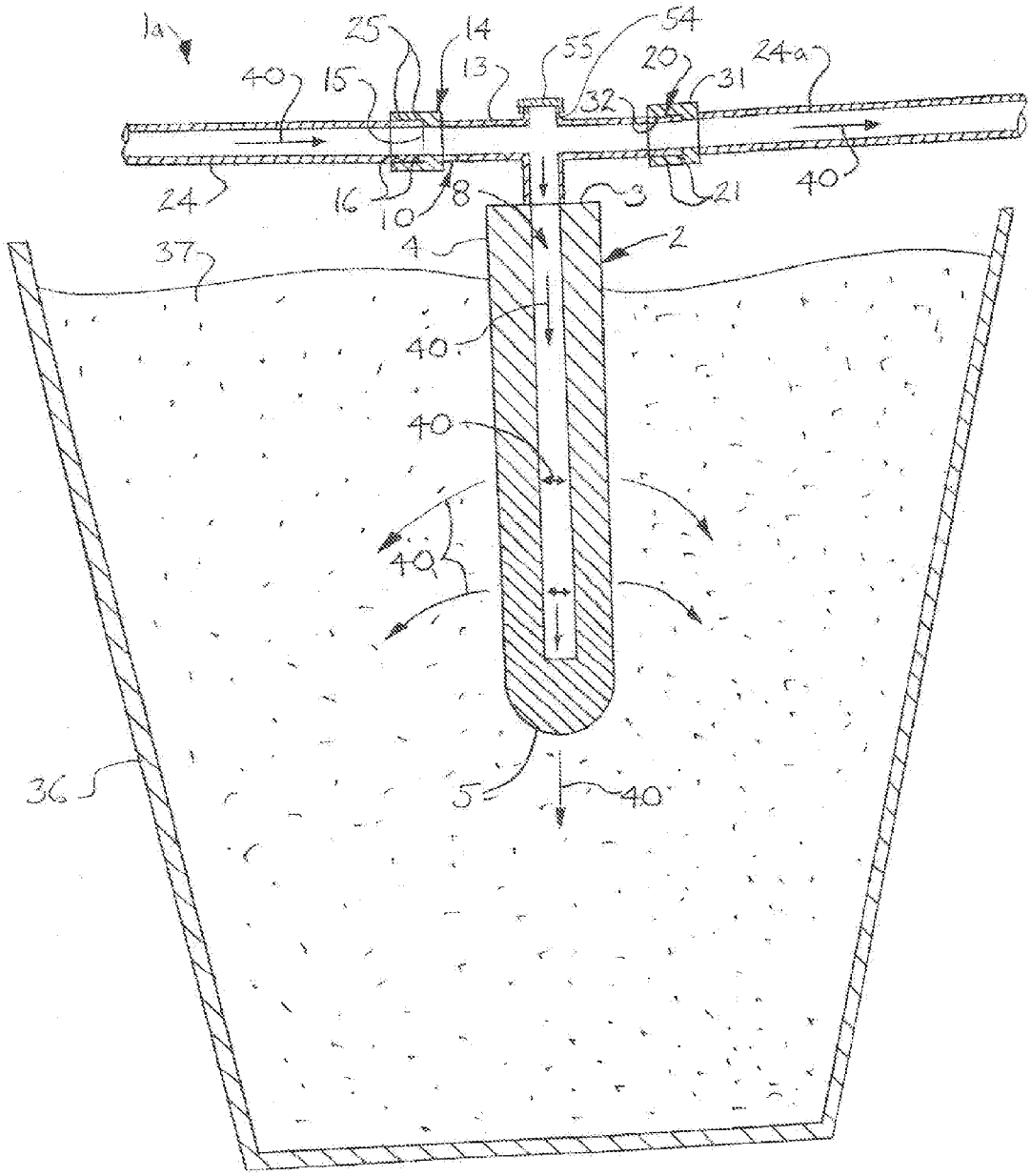

1a
25
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FIG. 5

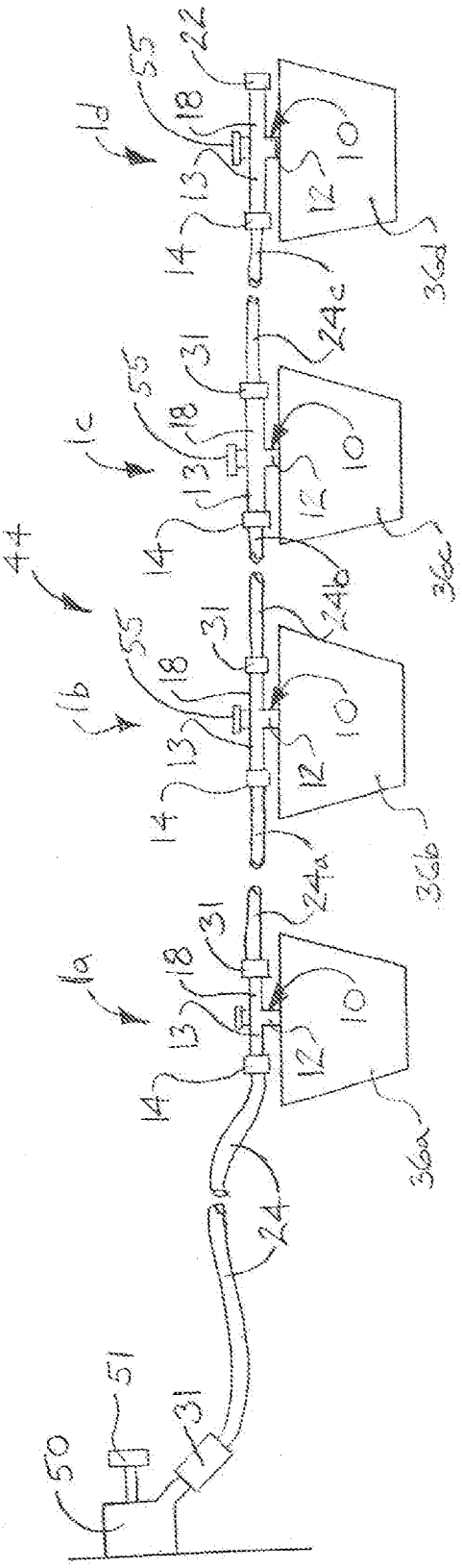
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FIG. 6

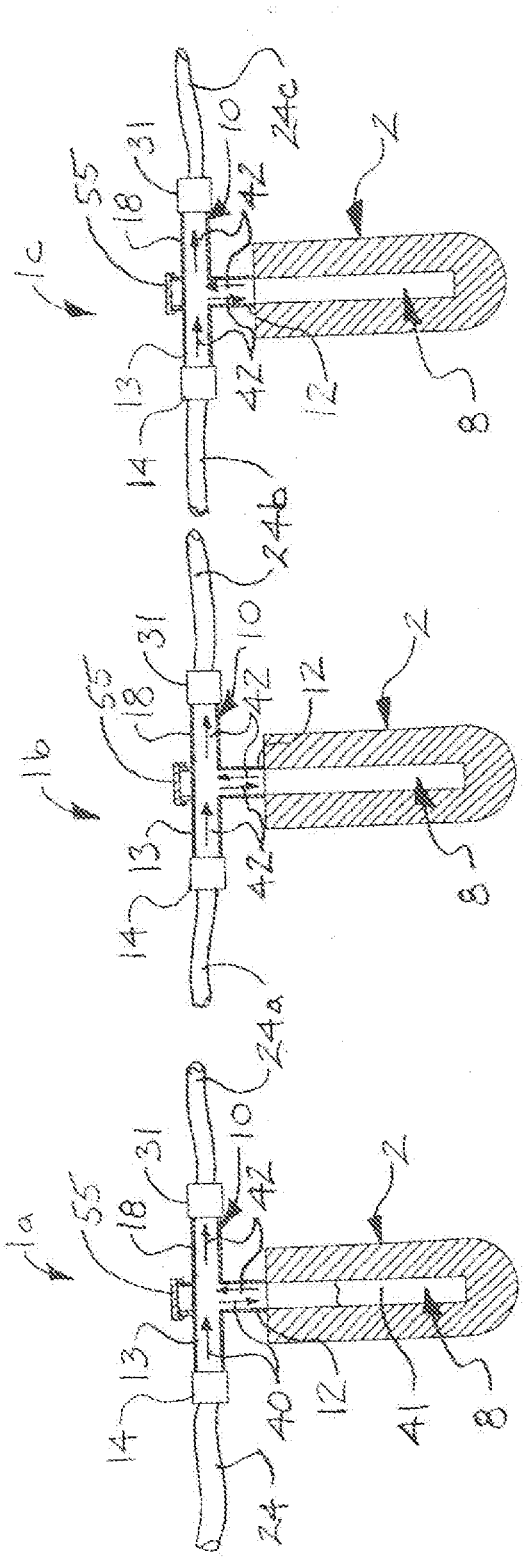

FIG. 7

PLANT WATERING DEVICE

FIELD

[0001] Illustrative embodiments of the disclosure generally relate to devices for watering plants. More particularly, illustrative embodiments of the disclosure relate to a plant watering device which can be inserted in a plant growing medium to maintain a steady supply of water and/or liquid fertilizer or the like to the medium.

BACKGROUND

[0002] A variety of flowers and other types of decorative plants or food plants are commonly grown or displayed in homes or other settings for decorative, food or other purposes. Plants may be grown in soil or other plant growing medium which is contained in a flower pot, a hanging basket, a box container or other suitable vessel. A regular supply of water typically must be delivered to the soil to maintain optimum health of the plant or plants in the soil. The soil may also require periodic fertilization for optimum health of the plant or plants.

[0003] A common method of watering plants includes periodically dispensing water from a hand-held watering can, garden hose or the like. This technique, however, may be laborious and time-consuming since a large number of plants may be scattered over a large area and each and every one of the plants may need to be watered multiple times per day.

SUMMARY

[0004] The disclosure is generally directed to a plant watering device. An illustrative embodiment of the plant watering device includes a device insert having a substantially solid porous material with a continuously porous exterior contact surface, at least one watering cavity in the device insert and a water distribution conduit disposed in fluid communication with the at least one watering cavity.

[0005] The disclosure is further generally directed to a plant watering system. An illustrative embodiment of the plant watering system includes a water source; a plurality of interconnected plant watering devices each including a device insert having a substantially solid porous material with a continuously porous exterior contact surface, at least one watering cavity in the device insert and a water distribution conduit disposed in fluid communication with the at least one watering cavity and with the water source; and a hose establishing fluid communication between the water distribution conduit of each of the plant watering devices and the water distribution conduit of each adjacent one of the plant watering devices.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] Illustrative embodiments of the disclosure will now be described, by way of example, with reference to the accompanying drawings, in which:

[0007] FIG. **1** is a perspective view of an illustrative embodiment of the plant watering device;

[0008] FIG. **2** is a front view of an illustrative embodiment of the plant watering device;

[0009] FIG. **3** is a longitudinal sectional view of an illustrative embodiment of the plant watering device;

[0010] FIG. **4** is a side view of a plant container with a plant growing medium in the container, a plant growing in the plant growing medium and a plant watering device inserted in the plant growing medium in exemplary application of the plant watering device;

[0011] FIG. **5** is a sectional view of the plant container and the plant watering device inserted in plant growing medium in the plant container, more particularly illustrating flow of water from the plant watering device into the plant growing medium in exemplary application of the plant watering device;

[0012] FIG. **6** is a side view of a string of multiple connected plant watering devices coupled to a faucet and inserted in respective plant containers in exemplary application of the plant watering devices in a plant watering system; and

[0013] FIG. **7** is a sectional view of a string of connected first, second and third plant watering devices, more particularly illustrating placement of a liquid fertilizer in the first plant watering device and flow of the liquid fertilizer with water to the second and third plant watering devices, respectively, in exemplary application of the plant watering devices.

DETAILED DESCRIPTION

[0014] The following detailed description is merely exemplary in nature and is not intended to limit the described embodiments or the application and uses of the described embodiments. As used herein, the word "exemplary" or "illustrative" means "serving as an example, instance, or illustration." Any implementation described herein as "exemplary" or "illustrative" is not necessarily to be construed as preferred or advantageous over other implementations. All of the implementations described below are exemplary implementations provided to enable persons skilled in the art to practice the disclosure and are not intended to limit the scope of the appended claims. Moreover, the illustrative embodiments described herein are not exhaustive and embodiments or implementations other than those which are described herein and which fall within the scope of the appended claims are possible. Furthermore, there is no intention to be bound by any expressed or implied theory presented in the preceding technical field, background, brief summary or the following detailed description. Relative terms such as "upper", "lower", "above", "below", "top", "horizontal" and "vertical" as used herein are intended for descriptive purposes only and are not necessarily intended to be construed in a limiting sense.

[0015] Referring to the drawings, an illustrative embodiment of the plant watering device is generally indicated by reference numeral **1**. As illustrated in FIGS. **4-6** and will be hereinafter further described, in exemplary application at least one plant watering device **1** may be inserted in a plant growing medium **37**. In some applications, the plant growing medium **37** may be contained in a plant container **36** such as a flower pot, a hanging basket, a box container or the like and sustains the life of at least one plant **38**. In other applications, the plant growing medium **37** may be placed in a garden or the like. The plant growing medium **37** may be any type of medium which is capable of sustaining the life of one or more plants **38** and includes but is not limited to dirt, sand, peat, sphagnum, compost and perlite. A faucet **50** (FIG. **6**) or other suitable source of water may be connected to the plant watering device **1**, which facilitates distribution of water **40** (FIG. **5**) from the faucet **50** into the plant growing medium **37**. In some applications, the plant watering device **1** may facilitate distribution of fertilizer (not illustrated) from a suitable source of fertilizer into the plant growing medium **37**. As illustrated in FIG. **6**, in some applications, multiple plant

watering devices (designated by reference numerals **1***a*, **1***b*, **1***c* and **1***d*, respectively) may be connected to each other in series to facilitate distribution of the water **40** to plant growing medium **37** contained in multiple plant containers **36***a*-**36***d*.

[0016] As illustrated in FIGS. **1**-**3**, the plant watering device **1** includes a device insert **2** which may be generally elongated, as illustrated. In some embodiments, the device insert **2** may have a generally flat or planar upper insert surface **3**, a generally elongated and cylindrical side insert surface **4** and a generally rounded lower insert surface **5**. As illustrated in FIGS. **1** and **2**, the side insert surface **4** of the device insert **2** may have a continuously porous exterior contact face **6** which may be disposed in direct contact with the plant growing medium **37** (FIG. **5**) in application of the plant watering device **1**. As used herein, "continuously porous" shall be construed to indicate that pores are present substantially throughout the surface area of the exterior contact face **6**. In alternative embodiments, the device insert **2** may have alternative shapes. For example and without limitation, in some embodiments the device insert **2** may have a frusto-conical shape or a generally spherical shape. The device insert **2** is a substantially solid porous material. In some embodiments, the substantially solid porous material of the device insert **2** may include fired clay. In some embodiments, the substantially solid porous material of the device insert **2** may include fired terracotta clay.

[0017] As illustrated in FIG. **3**, at least one watering cavity **8** may extend from the upper insert surface **3** into the device insert **2** toward the lower insert surface **5**. In some embodiments, the watering cavity **8** may be generally elongated, as illustrated, and may be disposed in generally parallel relationship with respect to a longitudinal axis of the device insert **2**. In some embodiments, the watering cavity **8** may generally extend the entire length of the device insert **2**, as illustrated in FIG. **3**.

[0018] A water distribution conduit **10** is disposed in fluid communication with the watering cavity **8** of the device insert **2**. The water distribution conduit **10** facilitates connection of the watering cavity **8** into fluid communication with the faucet **50** (FIG. **6**) or other source of water or other liquid and may have any design which facilitates this purpose. Accordingly, as illustrated in FIGS. **1**-**3**, in some embodiments the water distribution conduit **10** may include an insert neck **12** which communicates with the watering cavity **8**. A first insert conduit **13** and a second insert conduit **18** may be disposed in fluid communication with the insert neck **12**. As illustrated in FIG. **5**, the first insert conduit **13** of the water distribution conduit **10** may include a female coupling **14**. The female coupling **14** may include a coupling cavity **15** interior coupling threads **16** on the interior surface of the coupling cavity **15**. The interior coupling threads **16** in the coupling cavity **15** of the female coupling **14** may be adapted to threadably engage exterior hose threads **25** on a hose **24** or other suitable conduit which may be conventional and may be coupled to the faucet **50** (FIG. **6**). A male coupling **20** with exterior coupling threads **21** may be provided on the second insert conduit **18** of the water distribution conduit **10**.

[0019] In some applications, the plant watering device **1** may be used to water plant growing medium **37** in a single plant container **36**, as illustrated in FIG. **4** and will be hereinafter described. Accordingly, a cap **22** having interior cap threads (not illustrated) may be threaded on the male coupling **20** (FIG. **5**) of the second insert conduit **18** to seal the second insert conduit **18**. As illustrated in FIG. **6** and will be hereinafter described, in other applications, multiple hoses **24***a*-**24***c* may be used to connect multiple plant watering devices **1***a*-**1***d* to each other in series to water plant growing medium **37** in each of multiple plant containers **36**. Accordingly, as illustrated in FIG. **5**, the exterior coupling threads **21** on the male coupling **20** may engage interior hose coupling threads **32** in a female hose coupling **31** provided on a second or subsequent hose **24***a*-**24***c*.

[0020] In some embodiments, an accessory neck **54** may extend from the water distribution conduit **10** in communication with the insert neck **12**. A removable accessory cap **55** may be attached to the accessory neck **54** via threading or friction-fit, for example and without limitation. In application of the plant watering device **1**, which will be hereinafter described, the accessory neck **54** may facilitate addition of amendments, fertilizer and/or other additives (not illustrated) to the watering cavity **8** of the device insert **2** as desired.

[0021] Referring next to FIGS. **4**-**6** of the drawings, in exemplary application, at least one plant watering device **1** distributes water **40** (FIG. **5**) from a faucet **50** (FIG. **6**) or other source of water **40** to plant growing medium **37** which in some applications may be contained in at least one plant container **36**. The water **40** facilitates and supports the growth or life of at least one plant **38** in the plant growing medium **37**. The plant **38** may be a decorative plant or a food plant such as a tomato plant, for example and without limitation. Accordingly, a hose **24** is coupled to the faucet **50** and to the female coupling **14** on the water distribution conduit **10** of the plant watering device **1**. In some applications, one plant watering device **1** may be used to water plant growing medium **37** in one plant container **36**, as illustrated in FIG. **4**. Therefore, a cap **22** may be threaded on the male coupling **20** (FIG. **5**) of the water distribution conduit **10** to seal and prevent discharge of the water **40** from the second insert conduit **18**.

[0022] As illustrated in FIG. **6**, in some applications, multiple plant watering devices **1***a*-**1***d* may be connected in fluid communication with each other in series as part of a plant watering system **44** for the purpose of watering plant growing medium **37** in each of respective plant containers **36***a*-**36***d*. Thus, as illustrated in FIG. **6**, the female coupling **14** of a second plant watering device **1***b* is coupled to the male coupling **20** (FIG. **5**) of the first plant watering device **1***a* through a second hose **24***a*. Similarly, a third plant watering device **1***c* may be coupled to the second plant watering device **1***b* through a third hose **24***b*. A fourth plant watering device **1***d* may additionally by coupled to the third plant watering device **1***c* through a fourth hose **24***c*. Additional plant watering devices **1** may be coupled in sequential order to the fourth plant watering device **1***d* through additional hoses **24**. A cap **22** may be placed on the second insert conduit **18** of the terminal plant watering device **1** for sealing purposes, as illustrated with respect to the fourth plant watering device **1***d* in FIG. **6**.

[0023] As illustrated in FIG. **5**, the device insert **2** of each plant watering device **1** is inserted in the plant growing medium **37** in each plant container **36**. The contact face **6** (FIGS. **1**-**3**) of each device insert **2** may be disposed in direct contact with the plant growing medium **37**, which may substantially surround the device insert **2**. As illustrated in FIG. **5**, water **40** flows from the faucet **50** (FIG. **6**) through the hose **24** and then through the first insert conduit **13** and the insert neck **12**, respectively, of the water distribution conduit **10** and finally into the watering cavity **8** of the device insert **2**. Due to the positive pressure of the water **40** in the watering cavity **8**,

the water **40** enters the pores (not illustrated) in the solid porous medium of the device insert **2**. Eventually, the water **40** saturates the pores in the device insert **2** until the water **40** seeps through the pores and emerges at the contact face **6** of the device insert **2**. The plant growing medium **37**, which is initially at a lower saturation level than the device insert **2**, wicks or draws and absorbs the water **40** from the contact face **6** into the plant growing medium **37**. It will be appreciated by those skilled in the art that the water **40** enters the plant growing medium **37** throughout substantially the entire surface area of the contact face **6**. The rate of flow of the water **40** from the faucet **50** may be adjusted according to the watering requirements of the plant or plants **38** such as by adjusting the position of a faucet handle **51** (FIG. **6**) on the faucet **50** typically in the conventional manner.

[0024] In the single-container application illustrated in FIG. **4**, substantially the entire portion of the water **40** flows from the first insert conduit **13** and the second insert conduit **18** into the watering cavity **8** of the device insert **2** since the cap **22** prevents discharge of the water **40** from the water distribution conduit **10**. In the multi-plant application illustrated in FIGS. **5** and **6**, a first portion of the water **40** flows into the watering cavity **8** in the device insert **2** of the first plant watering device **1***a* and seeps through the solid porous material of the device insert **2** and is discharged into the plant growing medium **37** of the first plant container **36***a*. A second portion of the water **40** flows from the water distribution conduit **10** of the first plant watering device **1***a*, through the second hose **24***a* and into the water distribution conduit **10** of the second plant watering device **1***b*. A third portion of the water **40** flows into the watering cavity **8** of the second plant watering device **1***b* and seeps through the pores of the device insert **2** into the plant growing medium **37** in the second plant container **36***b*. A fourth portion of the water **40** flows from the water distribution conduit **10** of the second plant watering device **1***b*, through the third hose **24***b* and into the water distribution conduit **10** of the third plant watering device **1***c*. A fifth portion of the water **40** flows into the watering cavity **8** of the third plant watering device **1***c* and seeps through the pores of the device insert **2** into the plant growing medium **37** in the third plant container **36***c*. A final portion of the water **40** flows from the water distribution conduit **10** of the third plant watering device **1***c*, through the fourth hose **24***c* and into the water distribution conduit **10** of the fourth plant watering device **1***d*. The water **40** flows into the watering cavity **8** of the fourth plant watering device **1***d* and seeps through the pores of the device insert **2** into the plant growing medium **37** in the fourth plant container **36***d*. As the plant growing medium **37** which contacts and surrounds the device insert **2** of each plant watering device **1** becomes saturated with water **40**, a progressively larger quantity of the water **40** flows from the plant watering device **1** to the next downstream plant watering device **1**. In the foregoing manner, a sufficient quantity of water **40** is distributed to the plant growing medium **37** in each plant container **36** to ensure sufficient moisture to sustain growth and life of the plant or plants **38** in each plant container **36**. In some applications, the accessory cap **55** can be removed from the accessory neck **54** to facilitate addition of fertilizer and/or other additives (not illustrated) to the watering cavity **8** through the accessory neck **54**.

[0025] Referring next to FIG. **7** of the drawings, in some applications, multiple plant watering devices (designated **1***a*, **1***b* and **1***c*, respectively) may be connected with multiple hoses **24***a*, **24***b*, **24***c*. The first plant watering device **1***a* may be connected to a faucet **50** (FIG. **6**) or other suitable water source through a first hose **24**. Liquid fertilizer **41** may be placed in the watering cavity **8** of the first plant watering device **1***a*. Accordingly, upon opening of the faucet **50**, water **40** flows from the faucet **50** through the first hose **24** and the water distribution conduit **10** and into the watering cavity **8** of the first plant watering device **1***a*. In the watering cavity **8**, the water **40** mixes with the liquid fertilizer **41** and seeps through the pores in the solid porous material of the device insert **2** of the first plant watering device **1***a* into the surrounding plant growing medium **37** (FIG. **5**) in the first plant container **36***a* (FIG. **6**). A portion of the liquid/fertilizer mixture **42** is aspirated from the watering cavity **8** of the first plant watering device **1***a* through the water distribution conduit **10**, and then flows through the second hose **24***a* to the second plant watering device **1***b*.

[0026] The liquid/fertilizer mixture **42** flows through the water distribution conduit **10** into the watering cavity **8** of the second plant watering device **1***b*, from which the liquid/fertilizer mixture **42** seeps through the solid porous material of the device insert **2** of the second plant watering device **1***b* into the surrounding plant growing medium **37** (FIG. **5**) in the second plant container **36***b*. A portion of the liquid/fertilizer mixture **42** is aspirated from the watering cavity **8** and through the water distribution conduit **10** of the second plant watering device **1***b*, and then flows through the third hose **24***b* to the third plant watering device **1***c*. In the foregoing manner, both water **40** and liquid fertilizer **41** are distributed from the first plant watering device **1***a* to each of the remaining plant watering devices **1***b*, **1***c* which are disposed in fluid communication with the first plant watering device **1***a* to sustain the growth or life of plants **38** contained in multiple plant containers **36**. In applications in which a large number of plant watering devices **1** are connected to each other, it will be appreciated by those skilled in the art that a supply of liquid fertilizer **41** can initially be placed in the watering cavity **8** of each of multiple plant watering devices **1** to ensure that a sufficient quantity of the liquid fertilizer **41** is distributed to the plant growing medium **37** of each plant container **36**.

[0027] While the preferred embodiments of the disclosure have been described above, it will be recognized and understood that various modifications can be made in the disclosure and the appended claims are intended to cover all such modifications which may fall within the spirit and scope of the disclosure.

What is claimed is:

1. A plant watering device, comprising:

a device insert having a substantially solid porous material with a continuously porous exterior contact face;

at least one watering cavity in the device insert; and

a water distribution conduit disposed in fluid communication with the at least one watering cavity.

2. The plant watering device of claim **1** wherein the device insert is generally elongated.

3. The plant watering device of claim **2** wherein the device insert is generally cylindrical.

4. The plant watering device of claim **2** wherein the at least one watering cavity extends generally an entire length of the device insert.

5. The plant watering device of claim **1** wherein the substantially solid porous material comprises clay.

6. The plant watering device of claim **5** wherein the clay comprises terracotta clay.

7. The plant watering device of claim **1** wherein the water distribution conduit comprises a first insert conduit and a second insert conduit disposed in fluid communication with the watering cavity.

8. The plant watering device of claim **7** further comprising an insert neck disposed in fluid communication with the watering cavity and wherein the first insert conduit and the second insert conduit are disposed in fluid communication with the insert neck.

9. A plant watering device, comprising:

a device insert having a substantially solid porous material and a continuously porous exterior contact face;

at least one watering cavity in the device insert;

a water distribution conduit disposed in fluid communication with the watering cavity;

a first coupling carried by the water distribution conduit;

a second coupling carried by the water distribution conduit; and

an accessory neck disposed in fluid communication with the water distribution conduit.

10. The plant watering device of claim **9** wherein the first coupling comprises a female coupling and the second coupling comprises a male coupling.

11. The plant watering device of claim **9** wherein the device insert is generally elongated.

12. The plant watering device of claim **11** wherein the device insert is generally cylindrical.

13. The plant watering device of claim **11** wherein the at least one watering cavity extends generally an entire length of the device insert.

14. The plant watering device of claim **9** wherein the substantially solid porous material comprises clay.

15. The plant watering device of claim **14** wherein the clay comprises terracotta clay.

16. The plant watering device of claim **9** wherein the water distribution conduit comprises a first insert conduit and a second insert conduit disposed in fluid communication with the watering cavity, and wherein the first coupling is carried by the first insert conduit and the second coupling is carried by the second insert conduit.

17. The plant watering device of claim **16** further comprising an insert neck disposed in fluid communication with the watering cavity and wherein the first insert conduit and the second insert conduit are disposed in fluid communication with the insert neck.

18. A plant watering system, comprising:

a water source;

a plurality of interconnected plant watering devices each including:

a device insert having a substantially solid porous material with a continuously porous exterior contact face;

at least one watering cavity in the device insert; and

a water distribution conduit disposed in fluid communication with the at least one watering cavity and with the water source; and

a conduit establishing fluid communication between the water distribution conduit of each of the plant watering devices and the water distribution conduit of each adjacent one of the plant watering devices.

19. The plant watering system of claim **18** wherein the substantially solid porous material comprises clay.

20. The plant watering system of claim **19** wherein the clay comprises terracotta clay.

* * * * *