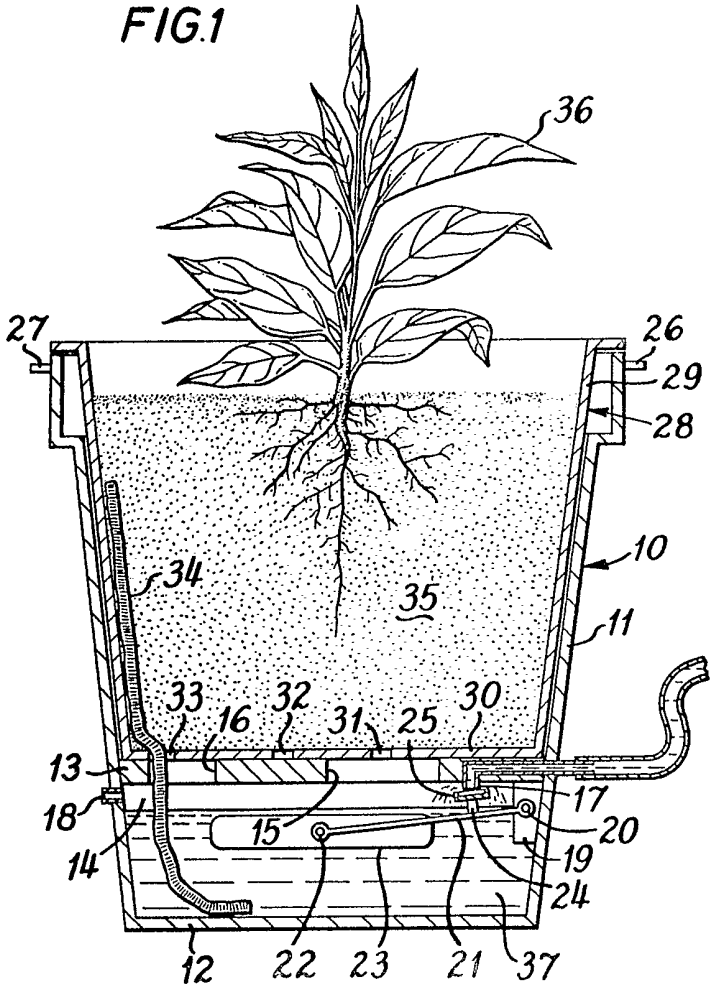
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GB 1556580
GB 1412225
GB 1192431
GB 1098067
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(54) **Automatic watering system for plants**

(57) Apparatus for supplying a plant (36) with water (37) comprises an outer receptacle (10) containing an inner receptacle (28), the outer receptacle (10) having a platform (13) therein for supporting the inner receptacle (28) and for defining a lower chamber (14) for containing the water (37), and a float valve (23, 25) for controlling supply of water (37) to the chamber (14). The platform (13) and a base (30) of the inner receptacle (28) are provided with apertures (15, 31) through which passes a wick (34) for feeding water (37) from the lower chamber (14) through the inner receptacle (28).

FIG.1



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FIG.1

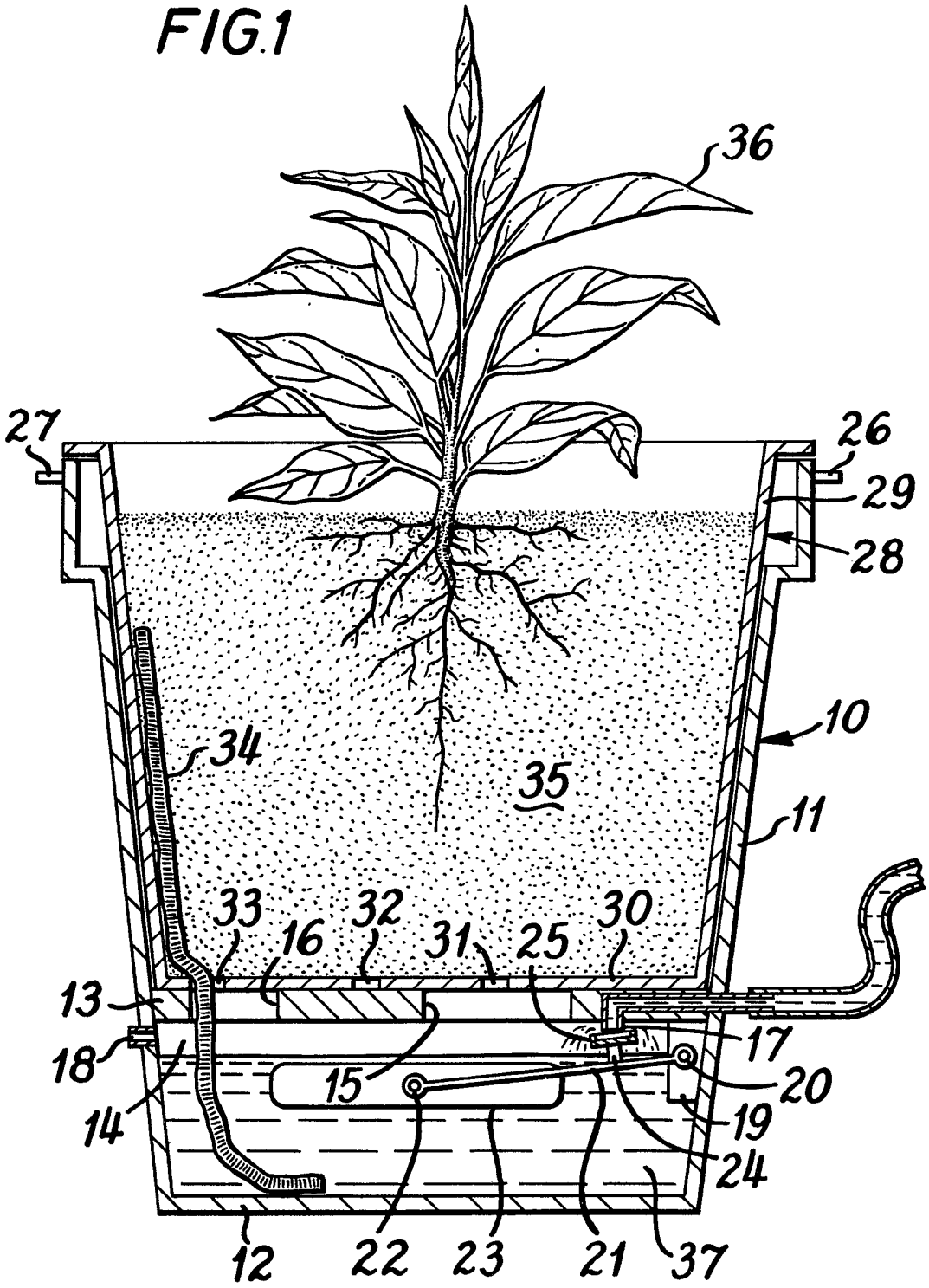

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FIG.2

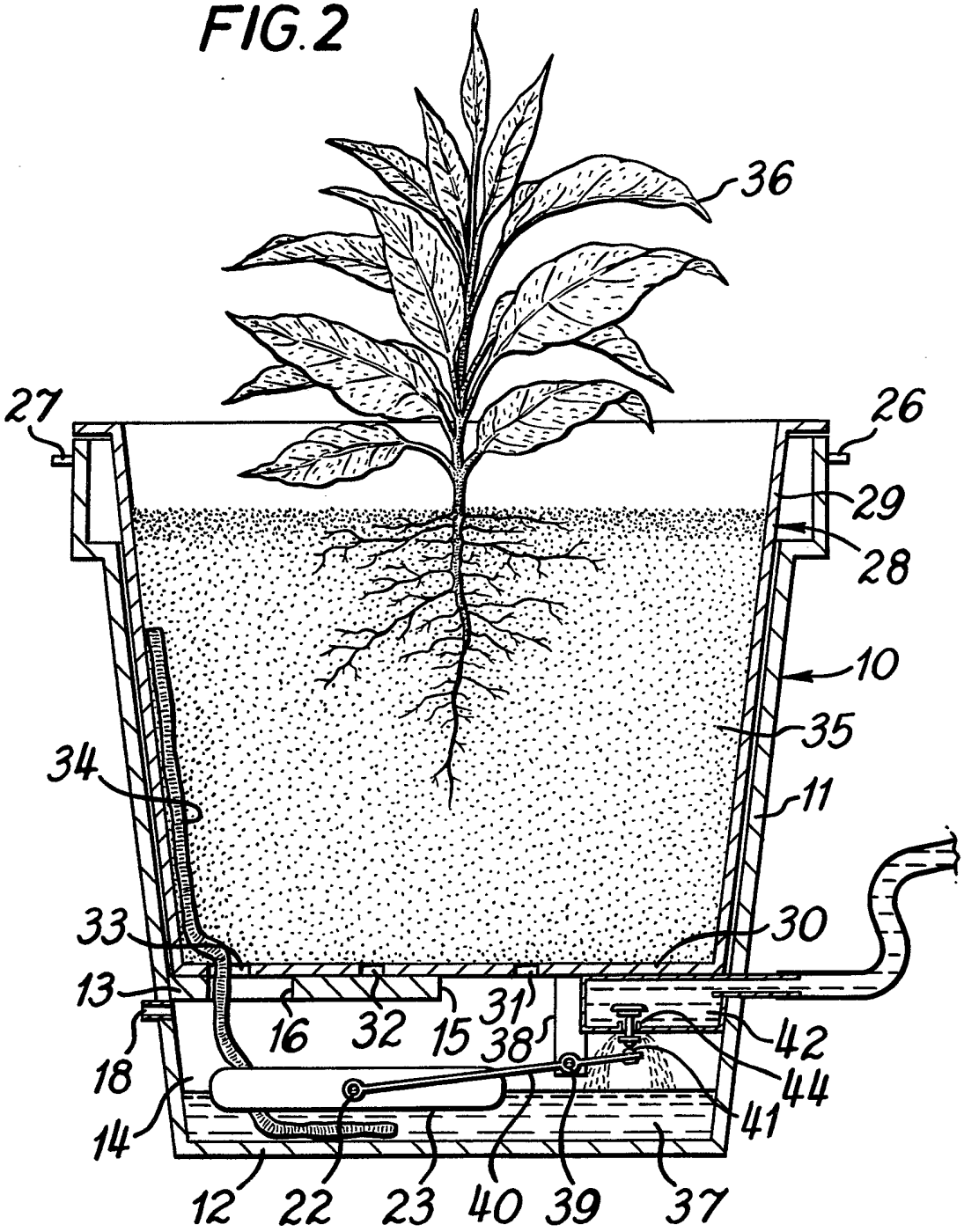
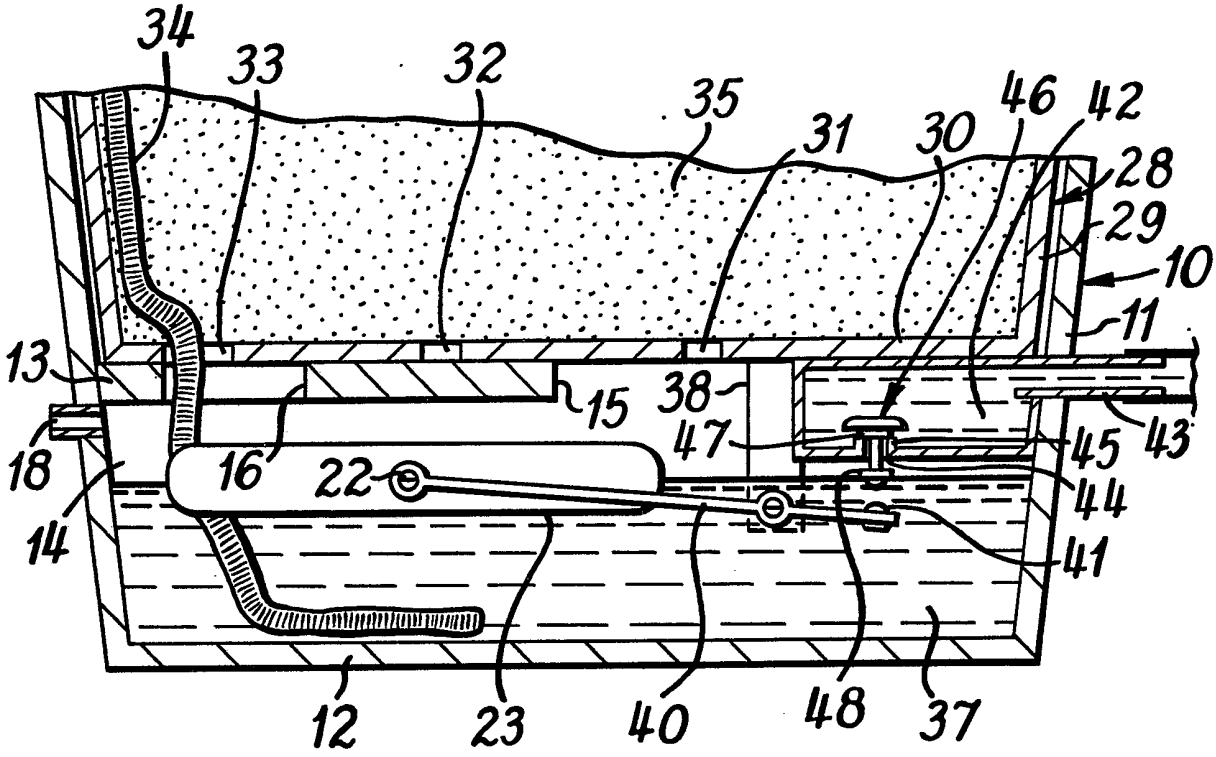

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FIG.3


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SPECIFICATION

Automatic watering system for plants

This invention relates to apparatus for supplying a plant with liquid nutrient.

It is known that plants require to be supplied with water regularly in order to insure survival. It is also known that the supply of water should be consistent since too much or too little water supplied to a plant can cause uneven growth and, in some cases, starvation. The traditional manual system of watering plants is unsatisfactory because it is often not regular enough or consistent enough. It is also labour intensive. However, apparatus for automatically watering plants also is generally unsatisfactory when supplying water to a number of plants because the supply of water from one plant to the next tends to vary.

According to the present invention, there is provided apparatus for supplying a plant with liquid nutrient comprising an upper receptacle for receiving the plant and a lower receptacle for containing the liquid, the lower receptacle having an inlet for supply of the liquid thereto and the upper and lower receptacles being adated so that a plant located in the upper receptacle is spaced from liquid in the lower receptacle and said receptacles being in communication one with another to permit a liquid supply member to extend from the plant to the liquid so that liquid is supplied from the lower receptacle to the plant by the liquid supply member.

The lower receptacle may be provided with a platform seperating the upper receptacle from the lower receptacle, the platform having an aperture therein to permit the liquid supply member to extend therethrough.

The inlet may be provided with a valve.

The valve may be a float valve adapted to shut off supply of liquid through the inlet when volume of liquid contained in the lower receptacle has increased to a predetermined value.

The valve may be operable by means of an arm connected to a float.

The platform may be provided with a plurality of apertures.

The upper receptacle may be adapted to be removably engaged by the lower receptacle.

The lower receptacle may be adapted to receive the upper receptacle therein.

The lower receptacle may be provided with means for suspending the lower receptacle.

Following is a description, by way of example only and with reference to the accompanying drawings, of one method of carrying the invention into effect.

In the drawings:—

Figure 1 is a cross section of one embodiment of apparatus in accordance with the present invention showing water being supplied to a chamber of the apparatus,

Figure 2 is a cross section of another embodiment of apparatus in accordance with the present invention showing water being supplied to a chamber of the apparatus, and

Figure 3 is an enlarged view of a lower portion of the apparatus shown in Figure 2 when supply of water to the chamber has been cut off.

Referring now to Figure 1 of the drawings, there is shown an outer cylindrical container 10 having a circumferential wall 11 and a base 12. The container 10 is provided with an inner platform 13 extending parallel to and spaced upwardly from the base 12 defining, with the base 12 and a lower inner surface of the circumferential wall 11, a lower chamber 14. The platform 13 is provided with apertures 15 and 16 permitting access to the lower chamber 14 from above. The lower chamber 14 is provided with an inlet 17 for supply of water to the chamber 14 and an outlet 18 for water contained in the chamber 14 if the surface of a volume of water contained in the chamber 14 rises beyond a predetermined level.

The chamber 14 has located adjacent a wall thereof a block 19 to which is pivotally connected, as shown at 20, one end portion of an arm 21 a remote end portion of which is pivotally connected, as shown at 22, to a float 23. The arm 21 has located thereon an upwardly extending post 24 an upper portion of which has secured thereto a stopper 25 arranged such that, as volume of water contained in the chamber 14 increases, the float 23 rises upwardly away from the base 12 of the container 10 until the stopper engages the inlet 17 cutting off supply of water to the chamber 14 through the inlet 17. The wall 11 of the outer container 10 is provided at an upper circumferential portion thereof with a pair of outwardly extending spigots 26, 27.

The platform 13 is adapted to support an inner container 28 having a circumferential wall 29 and a base 30. The base 30 is provided with a plurality of apertures 31, 32 and 33.

In use, the container 28 is located in the container 10 so that the base 30 of the container 28 seats on the platform 13 of the container 10. An end portion of a wick 34 then is fed through the aperture 33 of the base 30 of the container 28 and through the aperture 16 of the platform 13 so that a lower end portion of the wick 34 rests on the base 12 of the container 10. The inner container 28 then is filled with soil 35 and a plant 36 embedded in the soil. A supply of water 37 is introduced into the chamber 14 through the inlet 17 and continues to enter into the chamber 14 while the float 23 rises with the increase in volume of water in the chamber 14 until the stopper 25 engages the inlet 17 and inhibits further supply of water to the chamber 14 through the inlet 17. The plant 36 draws liquid from the soil 35 which remains moist due to water being drawn upwardly from the chamber 14 by means of the wick 34.

In this manner, as the plant 36 absorbs water 37, the volume of water 37 in the chamber 14 decreases with a result that the float 23 moves downwardly towards the base 12 of the outer container 10 and moves the stopper 25 away from the inlet 17 thereby permitting further supply

of water to enter the chamber 14 through the inlet 17. As the supply of water in the chamber 14 is replenished, the float 23 again moves upwardly away from the base 12 causing the stopper 25 to engage the inlet 17 and thereby cut off supply of water through the inlet 17 to the chamber 14.

It will be appreciated that the supply of water to the chamber 14 is contginually "topped up" as the water is drawn by the plant 36, provided that a head of water is continually supplied to the inlet 17.

Referring now to Figures 2 & 3 of the drawings, there is shown a modification of the apparatus illustrated in Figure 1 and portions of the apparatus shown in Figures 2 & 3 which correspond to the apparatus shown in Figure 1 are identified by corresponding reference numerals. In the apparatus shown in Figures 2 & 3, the platform 13 is provided with a depending block 38 which has pivotally connected to a lower portion thereof, as shown at 39, an arm 40, the pivot 39 being intermediate opposite ends of the arm 40. One end of the arm 40 is pivotally connected to a flat 23, as shown at 22, and the other end of the arm 40 is provided with an abutment 41. An inlet for supply of water to the lower chamber 14 comprises a reservoir 42 having a conduit 43 extending through a wall 11 of an outer container 10 for the supply of water thereto and a port 44 through which water passes from the reservoir 42 to the lower chamber 14. The port 44 has an upwardly extending circumferential valve seat 45 and has located therein a valve 46 movable axially in the port 44, the valve 46 having a pair of axially spaced, radially extending circumferential flanges 47, 48 for restricting axial movement of the valve 46 in the port 44.

The arrangement is such that a head of water is applied to the reservoir 42 forcing the valve 46 in a downward direction in the port 44 so that an upper flange 47 seats on the valve seat 45 and inhibits supply of water through the port 44 into the chamber 14, as shown in Figure 3. However, as the supply of water in the chamber 44 depletes, the float 23 moves downwardly towards the base 12 causing the arm 40 to turn about the pivot 39 in an anti-clockwise direction of Figures 2 and 3 with a result that the abutment 41 rises and engages the valve 46 effecting movement of the valve upwardly in the port 44. In consequence, the upper flange 47 is lifted from the valve seat 45 permiting water to pass through the port 44 into the chamber 14 and thereby replenish the volume of water in the chamber 14. As the supply of water in the chamber 14 is replenished the float 23 again moves in an upward direction away from the base 12 with a result that the arm 40 turns on the axis 39 in a clockwise direction of Figures 2 and 3 with a result that the abutment 41 moves downwardly out of contact with the valve 46. In consequence, the valve 46 is forced downwardly in the port 44 due to the head of water in the reservoir 42 and the upper flange 47 of the valve seats on the valve seat 45 thereby cutting off further supply of water to the lower chamber 14 through the inlet 17.

It will be appreciated that, with apparatus in accordance with the present invention, the amount of moisture in the soil 35 is maintained at a consistent level thereby providing for regular growth of a plant and generally assisting in maintenance and care for the health of the plant.

CLAIMS

1. Apparatus for supplying a plant with liquid nutrient comprising an upper receptacle for receiving the plant and a lower receptacle for containing the liquid, the lower receptacle having an inlet for supply of the liquid thereto and the upper and lower receptacles being adapted so that a plant located in the upper receptacle is spaced from the liquid in the lower receptacle and said receptacles being in communication one with another to permit a liquid supply member to extend from the plant to the liquid so that liquid is supplied from the lower receptacle to the plant by the liquid supply member.

2. Apparatus as claimed in Claim 1 wherein the lower receptacle is provided with a platform seperating the upper receptacle from the lower receptacle, the platform having an aperture therein to permit the liquid supply member to extend therethrough.

3. Apparatus as claimed in Claim 2 wherein the inlet is provided with a valve.

4. Apparatus as claimed in Claim 3 wherein the valve is a float valve adapted to shut off supply of liquid through the inlet when the volume of liquid contained in the lower receptacle has increased to a predetermined value.

5. Apparatus as claimed in Claim 4 wherein the valve is operable by means of an arm connected to a float.

6. Apparatus as claimed in any one of claims 2 to 5 wherein the platform is provided with a plurality of apertures.

7. Apparatus as claimed in any one of the preceding claims wherein the upper receptacle is adapted to be removably engaged by the lower receptacle.

8. Apparatus as claimed in claim 7 wherein the lower receptacle is adapted to receive the upper receptacle therein.

9. Apparatus as claimed in any one of the preceding claims wherein the lower receptacle is provided with means for suspending the lower receptacle.

10. Apparatus for supplying a plant with liquid nutrient substantially as hereinbefore described and as illustrated in Figure 1 or Figures 2 and 3 of the accompanying drawings.

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