

CLAIMS

1. A planter which includes
a longitudinal body defining at least two longitudinally extending liquid
5 channels; and
at least two plant holders defined in the body, the plant holders spaced on
the outer circumference of the longitudinal body, each one of the at least two plant
holders in fluid flow communication with one of the at least two longitudinally
extending liquid channels.
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2. The planter as claimed in claim 1, in which the longitudinal body
includes a longitudinal conduit which is internally divided to define the at least two
longitudinally extending liquid channels.
- 15 3. The planter as claimed in claim 1, in which each plant holder defines
a holder mouth into which a plant is receivable.
4. The planter as claimed in claim 3, in which the holder mouth is
shaped as any one of an applanated cylindrical ellipse and -circle.
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5. The planter as claimed in claim 1, in which the at least two plant
holders are located on opposed sides of the longitudinal body.
6. The planter as claimed in claim 1, in which the at least two plant
25 holders are alternatively spaced on opposed sides over the length of the
longitudinal body.
7. The planter as claimed in claim 1, in which each of the plant holders
are in fluid flow communication with a different one of the longitudinally extending
30 liquid channels.

8. The planter as claimed in claim 1, in which the longitudinal body includes connecting formations at the ends of the longitudinal body.

9. The planter as claimed in claim 8, in which the connecting formations are shaped and dimensioned to fit into corresponding connection formations of corresponding planters.

10. The planter as claimed in claim 9, in which the operative lower end of the longitudinal body of the planter has a connection formation for fitting into a corresponding connection formation on an operative upper end of a longitudinal body of a corresponding planter installed below the former planter, and in which the operative upper end of the longitudinal body of the planter has a connection formation for fitting into a corresponding connection formation on an operative lower end of a longitudinal body of a corresponding planter installed above the former planter.

11. The planter as claimed in claim 9, in which the connecting formations are in the form of socket and spigot formations shaped and dimensioned to fit into respective spigot and socket formations of corresponding planters.

12. The planter as claimed in claim 10, in which the operative lower end of the longitudinal body of the planter has a spigot formation, for fitting into a socket formation on an operative upper end of a longitudinal body of a corresponding planter installed below the former planter and in which the operative upper end of the longitudinal body of the planter has a socket formation for receiving a spigot formation on an operative lower end of a longitudinal body of a corresponding planter installed above the former planter.

13. The planter as claimed in claim 10, in which the operative lower end of the longitudinal body of the planter has a socket formation, for receiving a spigot formation on an operative upper end of a longitudinal body of a corresponding

planter installed below the former planter and in which the operative upper end of the longitudinal body of the planter has a spigot formation for fitting into a socket formation on an operative lower end of a longitudinal body of a corresponding planter installed above the former planter.

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14. The planter as claimed in claim 1, in which each plant holder includes an inlet opening and an outlet opening, which is in flow communication with its corresponding liquid channel.

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15. The planter as claimed in claim 14, in which the inlet opening is located above the outlet opening to permit gravitational liquid flow into the plant holder through the inlet opening and liquid flow from the plant holder through the outlet opening.

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16. The planter as claimed in claim 1, in which the planter includes at least one longitudinally extending gas channel, the gas channel having gas outlets spaced along its length.

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17. The planter as claimed in claim 16, in which the gas outlets open to the outside of the planter body.

18. The planter as claimed in claim 17, in which the gas outlets are in the form of nozzles.

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19. The planter as claimed in claim 8, in which the connecting formations includes liquid channel connecting formations for connecting the liquid channels of adjacent planter bodies together.

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20. The planter as claimed in claim 8, in which the connecting formations include gas channel connecting formations for connecting the gas channels of adjacent planter bodies together.

21. The planter as claimed in claim 1, in which the planter includes an external attachment formation associated with each plant holder for attaching a plant support.

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22. The planter as claimed in claim 21, in which the attachment formation is located below the plant holder mouth.

23. The planter as claimed in claim 21, in which the plant support is in the form of a creeper trellis arranged to support a creeper plant, planted in the plant holder when it grows from the plant holder mouth.

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24. The planter as claimed in claim 1, which includes planting inserts shaped and dimensioned to fit into mouths of the at least two plant holders.

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25. The planter as claimed in claim 24, in which the planting inserts are selected from any one or more of: a seedling tray, a planting tray and a seeding clip.

26. The planter as claimed in claim 25, in which the seedling tray is in the form of a cylindrical body, shaped to the shape of the plant holder and includes an inlet opening indexed with the inlet opening of the plant holder, the seedling tray includes a planar base cut in sections to provide drainage slits to permit liquid drainage without flushing seedlings from the seedling tray.

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27. The planter as claimed in claim 25, in which the planting tray is in the form of a cylindrical body shaped to the shape of the plant holder and includes an inlet opening indexed with the inlet opening of the plant holder, the planting tray includes a planar base cut in sections to provide drainage slits to permit liquid drainage without flushing seedlings from the seedling tray.

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28. The planter as claimed in claim 27, in which a portion of the planting tray sidewall also includes drainage slits.

29. The planter as claimed in claim 27, in which a portion of the sidewall is slightly tapered towards the base.

30. The planter as claimed in claim 25, in which the seeding clip has a planar body for closing the planter mouth and provided with a downwardly projecting plate having a slot shaped to engage the stem of a plant.

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31. A planter tower, which includes
a plurality of planters as claimed in any one or more of claims 1 to 30, connected together to form an elongate upright planter with plant holders extending from the sides of the planter tower.

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32. The planter tower as claimed in claim 31, in which the plant holders are alternatively spaced on opposed sides over the length of the longitudinal bodies being connected together.

20 33. The planter tower as claimed in claim 31, which includes at least one end member, shaped and dimensioned to connect onto an end of the plurality of planters connected together.

34. The planter tower as claimed in claim 33, in which the planter tower includes two end members, a top end member for connecting to the top end of the plurality of planters and a bottom end member for connecting to the bottom end of the plurality of planters.

35. The planter tower as claimed in claim 33, in which the at least one end member is shaped to fit onto an end of a longitudinal body of a planter, socket and spigot fashion.

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36. The planter tower as claimed in claim 33, in which the at least one end member includes dual liquid conduits indexed to match the longitudinally extending liquid channels.

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37. The planter tower as claimed in claim 33, in which the at least one end member includes a gas conduit indexed to match a gas channel extending through the planters.

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38. The planter tower as claimed in claim 35, in which the at least one end member includes a body with two sides, one of which is provided with a socket formation and one of which is provided with a spigot formation for fitting onto matched spigot and socket formations of the ends of the longitudinal body.

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39. The planter tower as claimed in claim 34, in which the top end member is in the form of an intake closure attached at a top end of a plurality of inter-connected planters for directing liquid into the two longitudinally extending liquid channels and for directing gas into the at least one longitudinally extending gas channel.

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40. The planter tower as claimed in claim 34, in which the bottom end member is in the form of an outlet closure attached at a bottom end of a plurality of inter-connected planters for directing liquid from the two longitudinally extending liquid channels and for directing gas from the at least one longitudinally extending gas channel.

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41. The planter tower as claimed in claim 33, in which the at least one end member includes a catchment tray, for receiving any overflow liquid.

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42. The planter tower as claimed in claim 36, in which the liquid channels extend over the length of the inter-connected planters.

43. The planter tower as claimed in claim 31, in which each planter includes a gas channel, the gas channel extends over the length of the inter-connected planters.

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44. A hydroponic greenhouse, which includes
an array of planter towers as claimed in any one or more of claims 31 to 43, the planter towers arranged in parallel spaced rows, the rows being provided with a top liquid and gas supply line, connected via an intake closure to a top of each of the planter towers, the rows further being provided with a bottom liquid and gas collection line, connected via an outlet closure to a bottom of each of the planter towers;

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a liquid circulation system, connected to the liquid supply lines and the liquid collection lines; and

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a gas circulation system, connected to the gas supply lines and the gas collection lines.

45. A hydroponic greenhouse as claimed in claim 44, in which gas outlets of the planters, are directed to the outsides of the planter bodies, the gas outlets being directed at plants in an adjacent planter tower, advantageously to provide an adequate exchange of gas on the leaves of the plants.

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46. The hydroponic greenhouse as claimed in claim 44, in which the greenhouse includes a partially closed enclosure, which is provided with any one or more of: air conditioners, high pressure fans, dampers, coiled coolers for recirculation of the liquid or gas from the liquid collection lines to the liquid supply lines or alternatively gas supply lines, geothermal heater/coolers, heat pumps, humidity controllers and infra-red controllers.

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47. The hydroponic greenhouse as claimed in claim 44, in which the greenhouse is provided with a nutrient supply dosing pump connected to the liquid circulation system for dosing nutrients into the liquid circulation system.

5 48. The hydroponic greenhouse as claimed in claim 44, in which the greenhouse is provided with a filtering arrangement connected to the liquid circulation system for filtering the liquid in the liquid circulation system.

10 49. The planter as claimed in claim 1, substantially as herein described and illustrated.

50. The planter tower as claimed in claim 31, substantially as herein described and illustrated.

15 51. The hydroponic greenhouse as claimed in claim 44, substantially as herein described and illustrated.

52. A new planter, a new planter tower and a new hydroponic greenhouse, substantially as herein described.