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(54) Hanging plant device

(57) The invention provides a hanging plant cultivation container comprising a vertical backsheet 11 supporting a vertical series of pockets thereon to contain plants and means 17, 34 for irrigating the plants in the pockets.

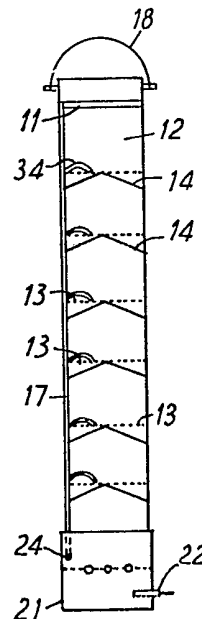


FIG. 1

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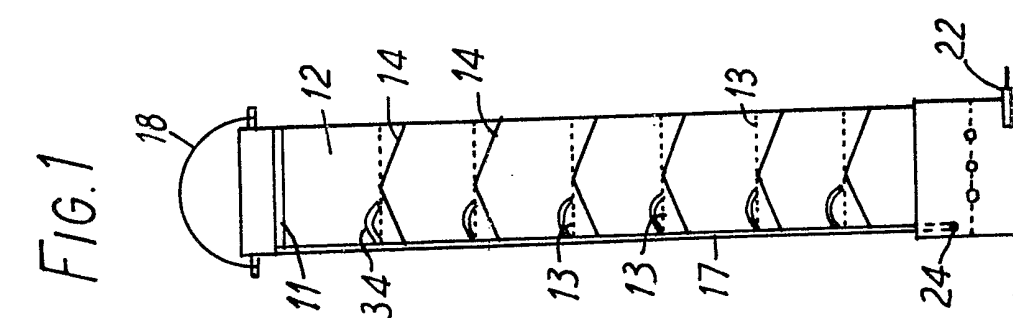
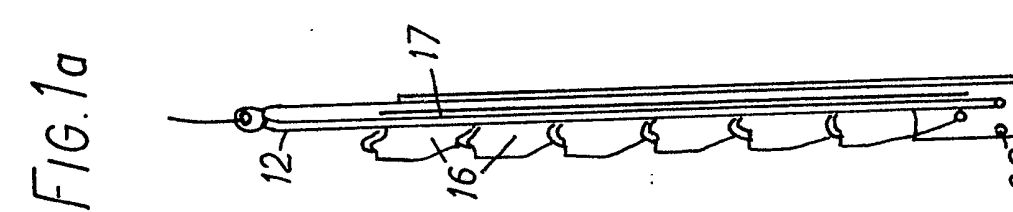
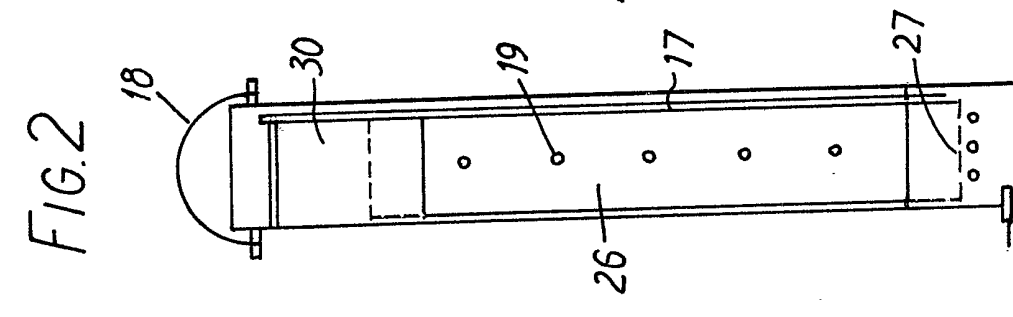
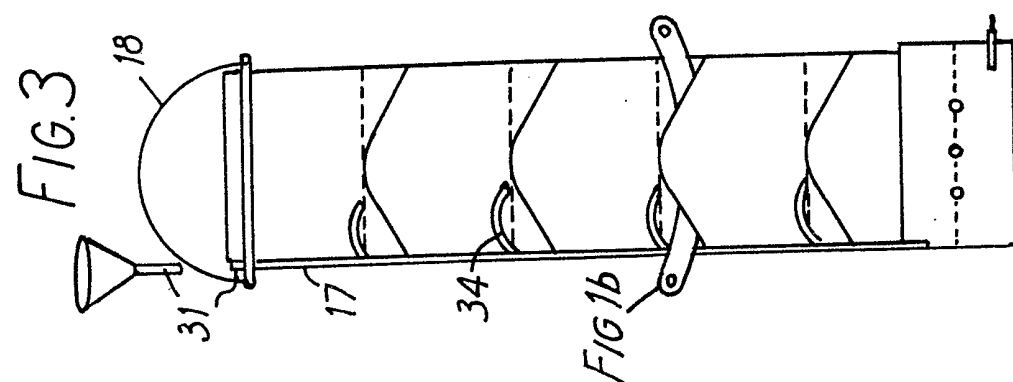
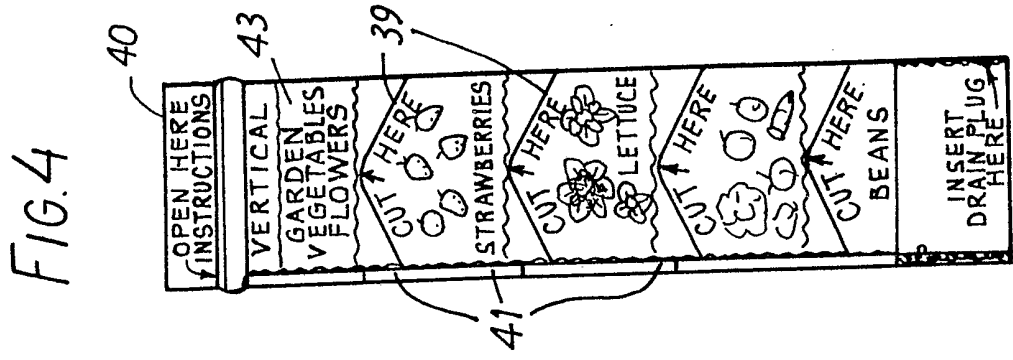


FIG. 7

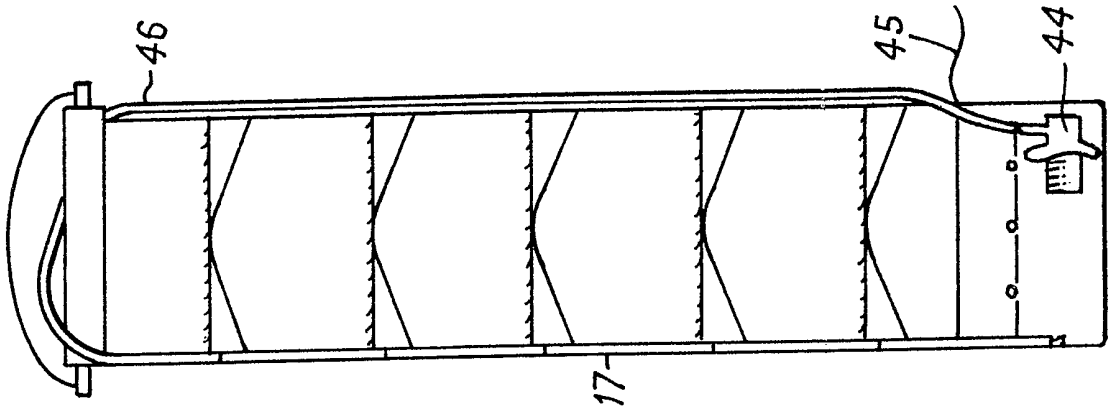


FIG. 6

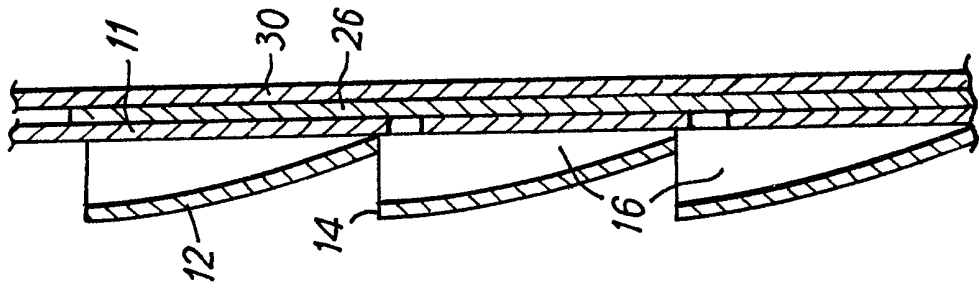


FIG. 5

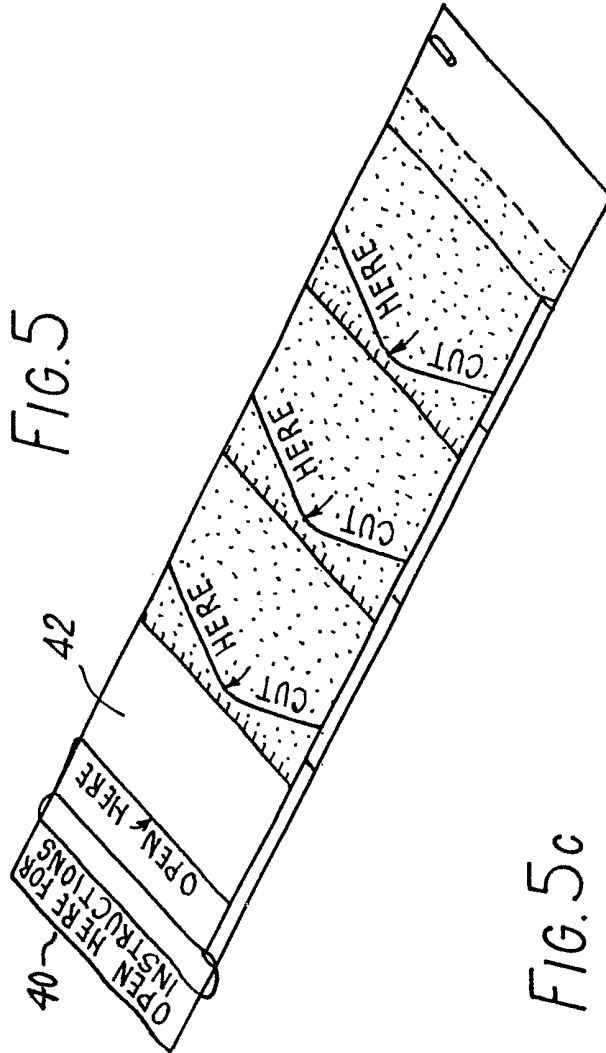


FIG. 5c



SPECIFICATION

Hanging plant device

The present invention is concerned with improvements in or relating to cultivation
5 containers.

Both for commercial and amateur production of plants, the utilisation of growing space is of utmost importance. For commercial purposes the maximum area of vertical space is essential if
10 economic production of plants is to be achieved.

For convenience of description the term "plant" is used herein generally to include fruit-bearing plants such as tomatoes and strawberries and vegetable plants such as lettuce, cabbage, french
15 beans and flower bearing and foliage plants, seedlings, plant cuttings or bulbs.

It is the object of the present invention to provide a novel form of plant cultivation container which occupies vertical space upon walls, fences or can be secured to stakes in relatively small
20 ground area.

Commercially the containers may be attached to sides of green houses or attached to vertical stakes.

The containers are used to produce a greater quantity of seedlings or plants than could be grown by normal methods in the same area.

According to the invention a plant cultivation container comprises a vertically elongated support
30 sheet, a series of pocket sheets attached to the side edges of the support sheet and across the support sheet at intervals to form a vertical series of pockets, or a single sheet which is connected to the support sheet at intervals and which can be
35 cut open to form said series of pockets, a liquid feed conduit connected to the support sheet at one side thereof, and irrigation tubes connected with said conduit and arranged for feeding liquid from the conduit to the pockets respectively.

The irrigation tubes are preferably arranged to provide a drip feed. In certain isolated instances the irrigation tubes may not be fully used e.g. the ripening of onion bulbs, the ripening of flower
40 bulbs and mushroom cultivation.

Drainage holes may be situated at the base of the pockets for the majority of plants grown but, in rare cases, the base of the pockets are completely sealed, i.e. if clay pebbles are used to grow plants in water culture methods.

The normal method is to allow for each pocket to be separately drained of water and separately irrigated.

With such a construction the space in the pockets may be filled to within 1" of the surface of
55 each pocket.

Seeds may be sown direct into the pockets and plants and bulbs may be inserted into them.

The size of the pockets may vary according to the requirements of the root system or the plants to be grown. For example, growing seedlings, or inserting cuttings, narrow pockets are required,
60 often no more than 3" to 4" deep. Crops such as lettuces, onions and strawberries require 5" to 6" to 8" deep. Tomatoes, french beans or cabbage

require 9" to 10" space. Certain crops require 10" x 18" space. The hollow tube may be 3ft to 6ft or more long but the most advantageous size is 1M x 9".

Water is placed in the feed conduit at the top of
70 the container and surplus water drains down into a base water container which has a drain plug and the irrigation tube is sealed at the base with a removable plug.

The container is disposed in a vertical position
75 either at ground level or elevated in a sheltered position. Two supporting belts are supplied in order to prevent the device from any lateral movement. Many devices may be joined together by means of the central belts.

The device may be provided with a vertical absorbent or capillary mat which is inserted at the rear of the device and the base of the mat is inserted in the water container. This is an
80 advantage for some crops but is an optional requirement.

The feed conduit may be fed with water at its upper end either by a funnel, drop-feed tank or watering can. With large models a liquid pump may be fixed into the lower end of the water
85 container and water may be pumped up a feed pipe fixed to the outside of the device so as to connect to the top of the irrigation pipe. Means are provided for driving such a pump.

The container may be supplied complete with
95 compost and irrigation tubes with, in the case of the vertical growing tube, instructions where to open to make the pockets.

Alternatively, compost of one's own choice or rock wool blocks may be used in prepared open
100 pockets.

A constructional form of the invention will be described by way of example with reference to the accompanying drawings wherein

FIGURE 1 is a front elevation of the first
105 embodiment of the plant cultivation container.

FIGURE 1a is a side elevation of a modified form of tube.

FIGURE 2 is the back view of the container.

FIGURE 3 shows a diagram with wider and
110 deeper pockets.

FIGURE 4 shows a complete bag filled with compost and instructions where to cut and further instructions how to assemble and use.

Figure 5 at 42 shows where the irrigation tubes
115 and handles are housed in the growing tube before assembly. The irrigation tube is pushed down a channel on the left hand side of the bag. This channel is slit at positions where the irrigation leads are attached, and the irrigation leads are fixed to each pocket as required.

FIGURE 5A is a sectional view on the plane 5—5 on Figure 1 but showing sheets several times normal thickness for clarity of drawing.

Referring to Figure 1, the plastic cultivation
125 container consists of a plastic tube formed by two flat sheets of 175 micron gauge polyethylene (low density). It averages 3ft high to 18" wide according to the type of crops to be grown. A rot-proof hession cover of the same size as the bag

may be used to shield from very hot sun. One sheet is a support sheet 11. The other sheet 12 is welded to sheet 11 at their side edges and at vertically spaced intervals 13. The sheet 12 is cut at intervals 14 to form pockets 16 or may be sold intact and marked with lines at 14 for the user to cut by himself.

Conveniently the tube is black, green or yellow and may be decorated with pictures of vegetables, strawberries, flowers, etc. in colour.

At the upper end is a handle 18 with a plastic cord 1/8th" thick attached. Figure 1b shows supporting belts to prevent the device swaying horizontally.

Figure 1, 17 shows the irrigation conduit which extends down one side of the container and is fixed to the support sheet 11. Drainage holes 19 are provided in the base of the pockets. A water container 21 is formed also by attachment of plastic sheets back and front of sheets 11, 12. A water container outlet and plug 22 empties the container 21. The base of the irrigation conduit is sealed at 24.

A capillary matting 26 is supported at the back of sheet 11 by a transparent cover sheet 30. The base of the capillary matting is at 27.

Small bore irrigation tubes 34 are inserted into slits in the conduit at intervals. The free ends of these tubes are cut obliquely and the pointed ends are tucked in to leave two drip feed holes 35, 36 (Figure 5C).

Figure 3 shows a larger model. The funnel is inserted at 31.

Figure 4 shows a complete tube or bag filled with compost. The words indicated are illustrative. Figure 4 at 39 shows where to cut the sheet 12 open for making of pockets. Figure 4 at 40 shows pockets for instructions of how to assemble. Figure 4 at 41 shows where the irrigation leads are inserted.

Figure 5 shows pockets completely filled with compost. Figure 5 at 42 is a pocket where irrigation leads and handle are housed.

Figure 5 (c) enlarged drawing of drip feed leads.

Figure 6 at 44 shows an electric pump. Figure 6 at 45 is an electric lead for the pump. Figure 6 at 46 is an irrigation flow pipe from electric pump leading to conduit 17. Figure 6 shows an assembly including the container of Figure 1 and a means for pumping water to it. An electric motor is housed in the base water container and a pipe 46 is connected to this which leaves the base water container at the right hand side and connects to the top of the irrigation conduit 17.

This system is only required for very large models where the water container is about 1 ft deep and 1 ft or more wide. For purposes of irrigation several models may be connected together if required.

The working pressure of the electric pump should not normally exceed 15—20 p.s.i. The electric pump is provided with a transformer and may be regulated to continuously pump water round the closed path, i.e. from the base water container through the leads to the closed ended irrigation

pipe.

It will be appreciated that the method of watering permits the provision of a continual supply of water borne nutrients. For very large models, a time switch may be provided to switch the unit on/off. For very small models irrigation will only be required for a matter of a brief period of time.

CLAIMS

1. A plant cultivation container comprising a vertically elongated support sheet, a series of pocket sheets attached to the side edges of the support sheet and across the support sheet at intervals to form a vertical series of pockets, or a single pocket forming sheet which is connected to the support sheet at intervals and which can be cut to form said series of pockets, a liquid feed conduit connected to the support sheet at one side thereof, and irrigation tubes connected with said conduit and arranged for feeding liquid from the conduit to the pockets respectively.

2. A cultivation container as claimed in claim 1 wherein the open ends of the irrigation tubes are cut obliquely to provide a drip feed to each pocket separately.

3. A cultivation container as claimed in claim 1 or 2 wherein the irrigation means comprises drainage holes in the rear bases of the pockets so that excess water from each pocket can drain separately (or independently) away behind the pocket at the rear of the support sheet adjacent to a capillary mat and a final outer transparent cover sheet.

4. A cultivation container as claimed in claim 1, 2 or 3, wherein the lower end of the container has a pocket for drainage water with an outlet which can be opened or closed.

5. A cultivation container as claimed in any of the preceding claims wherein a vertical absorbent or capillary mat is inserted at the rear of the support sheet which is perforated, the base of the mat being located in a water pocket at the bottom of the container.

6. A cultivation container as claimed in claim 4 having an electric pump arranged for pumping water from the drainage water pocket to the top pocket.

7. A cultivation container as claimed in any of the preceding claims having one or more pockets at its top end to contain instruction sheets and for irrigation tubes.

8. A cultivation container as claimed in any of the preceding claims which has a vertical transparent back sheet which is connected to the vertical support sheet and leads directly to the base water container.

9. A cultivation container as claimed in any of the preceding claims which is provided with a number of flexible belts in order to secure it from lateral movement.

10. A cultivation container which is provided with a plastics handle and a supporting cord fixed to it.

11. A cultivation container as claimed in any of

the preceding claims which contains compost and cultivation accessories in the pockets.

12. A cultivation container as claimed in any of

the preceding claims substantially as described
5 and as illustrated in any of the accompanying drawings.