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3,009,291

PLANTER

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FIG. 1

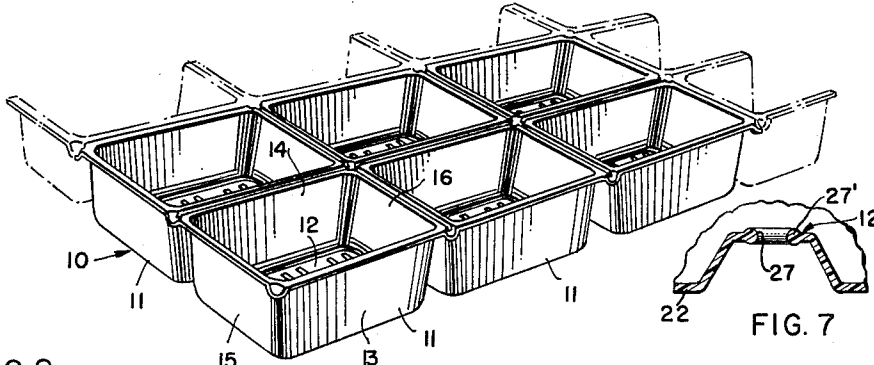


FIG. 2

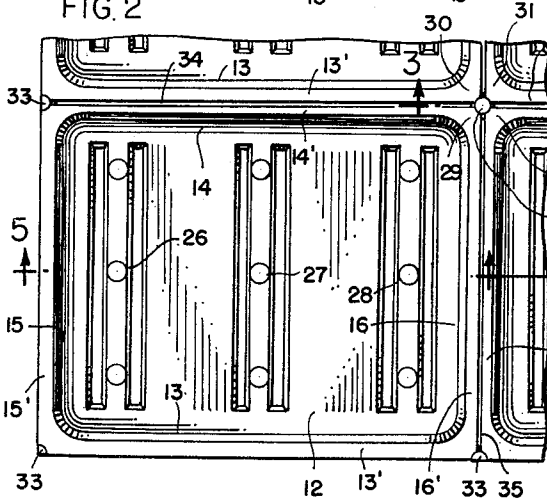


FIG. 4

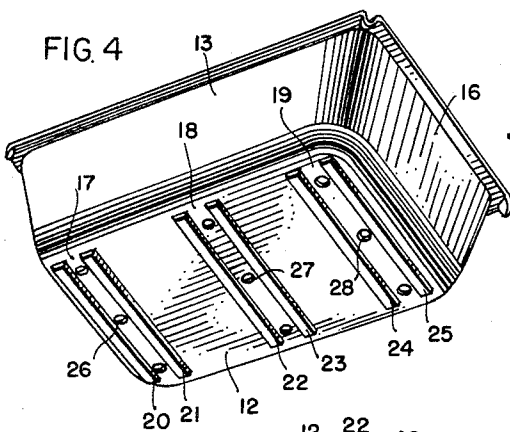


FIG. 6

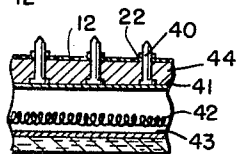
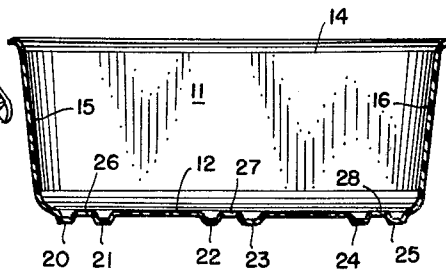


FIG. 5



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PLANTER

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This invention relates to container structures and more particularly to containers having utility as planters, as, for example, those used in culturing tomatoes, etc.

Planters heretofore have been handled and sold as individual containers from their filling to their final sale and thereby involve extensive labor and loss or damage. Such planters are filled with dirt, planted, grown, shipped and sold all as individual items and include containers made of porous material or fibers which have other objectionable characteristics for the purposes intended.

With this in mind and in order to save labor and provide better handling and growing conditions, the present invention provides numerous nestable plastic planters in a self-sustaining unitary bank of separable elements so that the users simplify and facilitate their handling, shipping and sale thereof, both without and with plants therein.

Another object of the invention is in the provision of a plurality of individual containers adapted for use as planters in a self-sustaining bank, but in which the individual planter containers are so interconnected that they may be separated readily one from another at any time desired. Still another object is in providing a bank of planters of the character described in which the containers are connected integrally one to another at marginal edges thereof, with such connections defining structural weaknesses to permit the planters to be severed or broken one from another to effect a separation thereof for sale in smaller groups or singly.

A further object of this invention is to provide a bank of plastic containers formed from sheet material and having upwardly extending side and end walls that are connected with the respectively corresponding walls of the containers adjacent thereto at spaced-apart points along the upper marginal edges of such walls; such spaced points being defined by depending wells and flanges that stiffen the bank and make the same a self-sustaining unit. Still a further object is in the provision of banks of the character described of interconnected containers in which the depending wells are thin-walled components readily and easily separated manually or mechanically on the spot into single or multiple units whenever desired without damage to the contents such as plants whereby a user may sell one or more planters to a customer, yet may handle the planters up to that time in convenient banks for filling, implanting and shipping the same.

Yet a further object is that of providing a bank of containers and single containers having bottom walls and integral side and end walls extending upwardly therefrom in diverging relation to permit nesting of like units with each other and in which the bottom wall of each container is provided with depending ribs oriented in spaced relation and preferably having apertures interposed therebetween to permit passage of moisture therethrough when used as a planter. Additional objects and advantages will appear as the specification develops.

An embodiment of the invention is illustrated in the accompanying drawing in which:

FIG. 1 is a broken perspective view of a plurality of the containers arranged in a unitary bank;

FIG. 2 is an enlarged broken top plan view of the bank illustrated in FIG. 1;

FIG. 3 is a broken longitudinal sectional view taken along the line 3-3 of FIG. 2;

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FIG. 4 is a perspective view of one of the containers after separation thereof from the bank;

FIG. 5 is a longitudinal sectional view taken along the line 5-5 of Fig. 2;

FIG. 6 is a vertical sectional view showing the elements employed in the novel process of perforating the bottoms of the containers when desired; and

FIG. 7 is an enlarged sectional view showing the preferred edge construction of the openings in the bottom of the container shown in FIG. 4.

The bank of containers illustrated in FIG. 1 is designated generally with the numeral 10 and is seen to comprise a plurality of individual containers 11. The containers 11 preferably are all identical and a bank thereof is fabricated to the form shown, for example, from a single sheet of plastic material in a single vacuum drawing or molding operation. The containers may be made of various plastics, but preferably a non-porous material is employed which is impervious to water, to the bacteria usually encountered in the growth of plants, and to fertilizers and soil conditioners used. Furthermore, the planter and its improved construction is such that it will not support mold growth or the growth of harmful bacteria; will not adhere to the soil or roots; is easily cleaned and kept clean; is pleasing in color and appearance; is a beneficial protection to plants against loss of moisture and chilling due to evaporation; and is light-weight, so as to reduce shipping costs. An example of such a material is polystyrene and advantageously, high impact polystyrene is employed to obviate inadvertent cracking or breaking of the containers. A large number of the containers may be formed simultaneously depending upon the capacity of the mold, machinery, and size of the sheet stock available, but after formation the parent bank of containers can be severed into smaller, more easily handled nesting units comprising, for example, six to eight average size containers, or more for smaller containers.

Each of the containers comprises a bottom wall 12, side walls 13 and 14, and end walls 15 and 16. The side and end walls are formed integrally with the bottom wall 12 and extend upwardly therefrom in diverging relation so that like-size containers can be nested. Thus to conserve storage and shipping space, a plurality of container banks can be nested one within another. As shown most clearly in FIGS. 2 and 4, the bottom wall 12 of each container is preferably provided with a plurality of ribs extending transversely thereacross. Such ribs are oriented in pairs denoted by the numerals 17, 18 and 19 and such pairs are spaced apart a substantial distance. The ribs defining each of the pairs, however, though spaced apart, are relatively close to each other and for identification, the ribs are designated with the numerals 20-21, 22-23, and 24-25. Interposed between the ribs forming each of the pairs 17 to 19 are a plurality of apertures 26, with reference to the pair 17, 27 with reference to the pair 18, and 28 with reference to the pair 19.

The ribs extend downwardly from the bottom wall 12 and serve to support such bottom wall above a table-top or other surface. Consequently, the various apertures are spaced above such surface and thus permit drainage of excess moisture from a soil-packed container without obstruction. On the other hand, these same apertures permit a wick-type of action to draw moisture upwardly into the container if the container is placed within a tank for watering from the bottom. The ribs are formed integrally with the bottom wall 12 as part of the vacuum-drawing operation and the apertures may be formed in the bottom wall subsequent to such operation in any suitable manner but preferably in a novel way as shown in FIG. 6 in which pins 40 of high heat conductive material,

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mounted on a plate 41 are heated to approximately 700° F. by a coiled heater 42 mounted therebelow above a reflective surface 43. A layer of glass wool bat 44 is located above the plate 41 and around the pins to conserve heat and insulate the bottoms 12 of the containers from radiated heat when pressed downwardly against the heated fingers. The heated fingers effectively melt a hole 27 through the material very quickly so that the edges 27' (FIG. 7) of the holes are thickened and reinforced against cracking and no stress raisers are incurred in the material.

The containers 11 are connected with each other at the upper ends of the side and end walls by marginal edge portions which for convenience are denoted with the primed numerical designation of the wall adjacent thereto. Thus as viewed in FIG. 2, the top and bottom containers are connected along the marginal edges 13' and 14', respectively, while the containers from left to right are connected along the edges 16' and 15'. At the juncture of four containers all of the marginal edges meet and the enlarged surfaces formed thereby are designated in FIG. 2 with the numerals 29, 30, 31 and 32. The marginal edges are provided when the containers are formed in the forming thereof and are initially integral from end to end thereof.

It will be noted that at the corners of the containers the marginal edges are provided with recessed or depending wells 33. These wells have integral side and bottom walls and are open along the top. The wells serve to rigidify the container bank and make it a self-sustaining structure. The wells are also defined in the forming process and are centrally disposed with respect to the relatively large surface areas 29 through 32. Subsequent to the formation of the containers, a partial separation of one from the others is effected by slitting the marginal edges longitudinally between the wells 33. The lines of severance along the marginal edges 13' and 14' and along the edges 16' and 15' respectively, are designated with the numerals 34 and 35.

The cleavage or severance between the containers may be effected in any suitable manner, as, for example, by sawing through the marginal edges. A procedure of this type is indicated in FIG. 3 by the broken line 36, which establishes the depth of penetration of a saw blade. It will be apparent that a plurality of blades may be ganged so that such partial separation between the various containers may be carried out simultaneously. It will be evident that at least two passes or separate cutting operations may be required. One, to make the longitudinal severance, and the other the transverse severance. Further, the partial cleavage may be carried out at the same time that the smaller banks of six or eight containers are separated from the much larger banks thereof that are made in the molding process.

As a result of this construction, the various containers are interconnected only at the corner portions thereof by the wells 33. Such wells, because they have continuous side walls extending thereabout and a bottom wall formed integrally therewith, suitably stiffen the container banks so as to make the same a self-sustaining unit. Thus the banks can be handled with facility and, as brought out before, may be shipped in nested relation to minimize the volume occupied thereby. This of course materially decreases shipping cost, which is also minimized by the lightweight character of the containers. However, the containers can be separated one from another with ease either by cutting through the wells 33 or preferably by breaking the same either by manually twisting off the well constructions when exposed or by pulling the containers straight away from each other to break the wells, or both. Separation can also be accomplished by bending the connected containers with respect to each other if there are no plants in them that might be damaged thereby. In any event, the separation may be accomplished either before or after the containers are filled

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with soil. The fact that the containers are oriented in banks facilitates filling the same with soil and seed either manually or with machinery for the soil mass can be levelled by moving a flat object across the bank thus pushing any overfill in one container into the one adjacent thereto and planting is also greatly facilitated.

The various ribs 20 through 25 not only support the bottom wall of the containers in spaced relation with a counter or other supporting flat surface, but are useful as tracks in guiding movement of the containers in event they are shifted from place to place along tracks or conveyors on support surface therefor. The ribs also reinforce the bottom wall of the container and thus add a degree of stiffness not otherwise provided by the thin plastic material. Since soil does not adhere to the material, the entire soil body may be easily removed from the container for transplanting.

While in the foregoing specification an embodiment of the invention has been described in considerable detail for purposes of making an adequate disclosure thereof, it will be apparent that those skilled in the art may make numerous changes therein without departing from the spirit and principles of the invention.

I claim:

1. A planter, comprising a vacuum-drawn plastic container of generally rectangular configuration, said container having a bottom wall and integral side and end walls extending upwardly therefrom in diverging relation to permit nesting of a like container therein, said bottom wall being provided with a plurality of depending ribs extending transversely from one side to the other thereof, said ribs being arranged in pairs spaced a substantial distance from each other, the ribs defining each pair being oriented in spaced-adjacency to form a channel therebetween extending to the periphery of the bottom wall, said bottom wall having a plurality of apertures therein disposed intermediate the ribs defining each of said pairs at the top of the channels.

2. A bank of containers adapted to be separated one from the others to provide individual planters, comprising a plurality of such containers each having a bottom wall and integral side and end walls extending divergently upward therefrom and convergently with adjacent walls of adjacent planters, at least two contiguous walls of said side and end walls of each of said containers being joined with the respectively corresponding walls of the containers adjacent thereto solely at their common corners by frangible vertically offset portions of the upper marginal edges of such walls, to provide an integral interconnection of the adjacent containers for their concurrent handling and to afford ready separation manually at will of one container from those adjacent thereto.

3. The bank of containers defined in claim 2 in which aligned pairs of adjacent walls in the bank are severed from each other intermediate the frangible offset portions along lines that are in alignment with each other.

4. The structure of claim 2 in which said frangible corner portions are offset towards the bottom walls of the planters and lines of severance are present between the frangible corner portions and pass through only a portion of said offset portions.

5. A bank of containers adapted to be separated one from the others to provide individual planters, comprising a plurality of such containers each having a bottom wall coplanar with the bottom walls of the other planters and integral side and end walls extending upwardly therefrom, the bottom wall of each of said containers being provided with a plurality of spaced ribs extending downwardly therefrom disposed in a common plane for supporting the planters and with apertures through the bottom wall interposed between said ribs for open ingress and egress of water therethrough, at least two of the contiguous side and end walls of each of said containers being joined with the respectively corresponding walls of the containers adjacent thereto solely at the upper marginal

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edges of such walls, the marginal edges of such containers being provided at the junctures thereof with frangible depending offset portions and lines of severance therebetween to afford ready separation of one container from those adjacent thereto.

6. A bank of containers comprising a plurality of non-circular plastic containers joined to one another by frangible vertically offset elements at the ends of slits disposed between the sides of adjacent containers, each container of said bank having downwardly converging smooth side walls below said slits and terminating in a bottom coplanar with the other containers of the bank and having downwardly extending ribs with perforations through the bottom defined by thickened edges.

7. A planter, comprising a container having a bottom wall and integral side and end walls extending upwardly therefrom in diverging relation to permit nesting of a like container therein, said bottom wall being provided with a plurality of spaced ribs extending downwardly therefrom to define between them channels opening horizontally at the periphery of the bottom wall and apertures interposed between said ribs in the bottom wall at the top of the channels, said apertures having the edges thereof thickened and reinforced against cracking with no stress raisers induced in the material.

8. A planter, comprising a vacuum-drawn plastic container of generally rectangular configuration, said container having a bottom wall and integral side and end walls extending upwardly therefrom in diverging relation to permit nesting of a like container therein, said bottom wall being provided with a plurality of depending ribs extending transversely thereof, said ribs being arranged in pairs spaced a substantial distance from each other, the ribs defining each pair being oriented in spaced-adjacency to form a channel therebetween extending to the periphery of the bottom wall, said bottom wall having a plurality of apertures therein disposed intermediate the

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ribs defining each of said pairs at the top of the channels, said apertures having the edges thereof thickened and reinforced against cracking with no stress raisers induced in the material.

9. A bank of containers adapted to be separated one from the others to provide individual planters, comprising a plurality of such containers each having a bottom wall coplanar with the bottom walls of the other planters and integral side and end walls extending upwardly therefrom, the bottom wall of each of said containers being provided with a plurality of spaced ribs extending downwardly therefrom disposed in a common plane for supporting the planters and with apertures through the bottom wall interposed between said ribs for open ingress and egress of water therethrough, at least two of the contiguous side and end walls of each of said containers being joined with the respectively corresponding walls of the containers adjacent thereto solely at the upper marginal edges of such walls, the marginal edges of such containers being provided at the junctures thereof with frangible depending offset portions and lines of severance therebetween to afford ready separation of one container from those adjacent thereto, said apertures have the edges thereof thickened and reinforced against cracking with no stress raisers induced in the material.

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