CARRIER FOR PLANT STARTER POTS

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ABSTRACT

A carrier for use with a plurality of plant holders has a platform having a top, a bottom and an inner region, the inner region of the platform includes a plurality of container engaging portions integral with the inner region of the platform, each container engaging portion defines an opening through the platform. A rim member is integral with the inner region of the platform and extends around the platform for providing rigidity to the platform.
CARRIER FOR PLANT STARTER POTS

BACKGROUND OF INVENTION

[0001] The present invention relates generally to a carrier for plant containers, and more particularly to a carrier that efficiently packages biodegradable plant starter pots and facilitates their transportation and storage.

[0002] Containers for planting, packaging and transporting a plurality of seedlings or young plants are well known. Typically, these containers are in the form of trays or flats formed from plastic and have numerous individual pots that are filled with potting soil and a seedling, or cutting of an appropriate plant. The potted plants grow in the individual pots of the container and the container provides the means for transporting and packaging the seedlings or young plants to be sold at greenhouses, nurseries, home and garden retailers and the like.

[0003] Although these containers provide efficient means for the packaging and transportation of a plurality of young plants, the use of these containers can complicate the transplantation of the plants when they reach a stage of development that requires them to be removed from the containers and planted for continued growth on a long term basis. As a new plant develops, its root structure becomes emmeshed in the growth medium that surrounds the plant in its individual pot. Disruption of that association of the plant’s root structure and its associated growth medium can damage the plant and its long-term survivability. With the typical container, however, the young plant must be removed from its individual pot and, thus, there is a strong possibility that the plant’s root structure will be harmed.

[0004] The problem associated with the removal of young plants from their individual pots in a tray or flat has been obviated by the use of plant containers composed of biodegradable material. With biodegradable plant pot containers, the pots themselves are plantable and, thus, can be detached from the container/carrier and directly transplanted into the ground along with the seedlings, with there being no need to remove the plants from the pots.

[0005] Although biodegradable plant containers and the individual pots thereof adequately address the problems associated with disrupting the root structure of young plants, biodegradable containers do, however, suffer from several drawbacks. Because they are composed of a biodegradable material, they do not typically possess the necessary rigidity to be easily handled, stored and packaged. When such containers are wet, they are generally flimsy and subject to easy tearing and damage. In addition, it is difficult to affix handles to such containers and, thus, the transportation of such containers can be complicated. In sum, biodegradable plant containers are difficult to package and market to consumers by themselves without some form of additional packaging support. One sort of biocompatible, degradable and plantable plant container which is known and foreseen for convenient use with the carrier described herein is described by one of the present inventors in published U.S. patent application numbers US 2002/0079074 A1, published Jun. 27, 2002, and US 2002/0148572 A1, published Oct. 17, 2002. The disclosures of these applications are incorporated herein by reference in their entirety.

[0006] For the foregoing reasons, there is a need for a carrier for biodegradable plant containers that provides sufficient rigidity and support to enable facile simultaneous carrying of a plurality of the plant containers/pots. The carrier should allow for the plant containers to be efficiently stored, and at the same time aid in preventing the container pots or holders from breaking down over a prolonged period of storage. In addition, the carrier should have a handle to enable it to be easily transported by consumers, shippers or retail handlers and that will not interfere with the insertion of the plant containers into the carrier or with the stacking and storing of the plant containers packaged by the carrier. Ideally, because the carrier will be a cost additional to that of the containers it packages, the carrier should be inexpensively manufactured and should be optionally re-usable upon the removal of a set of planting containers installed therein.

SUMMARY OF INVENTION

[0007] Accordingly, in keeping with the above objects and advantages of the invention, the present invention, is, briefly, a carrier for use with a plurality of plant holders. The carrier has a platform having a top, a bottom and an inner region, the inner region of the platform includes a plurality of container engaging portions integral with the inner region of the platform, each container engaging portion defines an opening through the platform and has a plurality of tabs integral with the inner region of the platform for releasably engaging plant holders. A rim member is integral with the inner region of the platform and extends around the platform for providing rigidity to the platform.

[0008] The invention further includes, briefly, that the platform includes apertures through the platform at opposite ends of the platform. Also, the carrier further has a handle which is a strap, the strap has opposite ends and aperture engagement structure at such opposite ends for attachment of the handle to the platform of the carrier.

[0009] The invention also includes, briefly, a method for manufacturing a carrier for use with a plurality of plant holders, the method comprising the steps of: providing a substantially planar sheet of flexible material; forming an inner region of a platform from the sheet of flexible material; forming a plurality of openings through the inner region of the platform that are longitudinally spaced on opposite sides of the longitudinal axis of the inner region of the platform, each opening having one or more voids extending from the perimeter of the opening, the voids defining one or more tabs surrounding the opening; forming a rim member that surrounds the platform and is integral with the inner region of the platform; severing the rim member and the inner region from the sheet of flexible material; downwardly bending the tabs defined by the voids extending from the perimeter of openings; and downwardly bending the rim member.

BRIEF DESCRIPTION OF DRAWINGS

[0010] For a more complete understanding of the present invention, reference should now be made to the embodiments shown in the accompanying drawings and described below. In the drawings:

[0011] FIG. 1 is a perspective view of an embodiment of a carrier for plant starter pots or similar containers according to the present invention, including a detachable handle.

[0012] FIG. 2 is a top plan view of the carrier shown in FIG. 1 without the handle installed.
FIG. 3a is a top plan view of the handle for the carrier shown in FIG.
FIG. 4 is a bottom plan view of the carrier shown in FIG. 1.
FIG. 5 is an exploded view of the carrier shown in FIG. 1, with a plurality of plant pots forming a plant container installed therein.
FIG. 6 is a side view of the carrier shown in FIG. 1 with a plant container installed therein.
FIG. 7 is a perspective view of the carrier shown in FIG. 1 with a plant container installed therein.
FIG. 8 is a schematic plan view of another embodiment of the carrier of the present invention, without a handle or pots in place for carrying.
FIG. 9 is a side elevational view of the embodiment of FIG. 8 with plant starter pots inserted and a T-shaped handle inserted in the center of the carrier.

DETAILED DESCRIPTION

Certain terminology is used herein for convenience only and is not taken as a limitation on the invention. For example, words such as “upper,” “lower,” “left,” “right,” “horizontal,” “vertical,” “upward,” and “downward” merely describe the configuration shown in the accompanying figures. Indeed, the components may be oriented in any direction and the terminology, therefore, should be understood as encompassing such variations unless specified otherwise.

Referring now to the drawings, wherein like reference numerals designate corresponding or similar elements throughout the several views, an embodiment of a carrier for containers or pots for starter plants according to the present invention is shown in FIG. 1 and generally designated at 10. The carrier 10 comprises a substantially planar platform 12. Platform 12 has a top surface 14, a bottom surface 16 and an inner region 18. A rim member 20 is formed around the periphery of the inner region 18 of platform 12. In one embodiment, rim member 20 is integral with platform 12 and depends from platform 12. A line of weakness or score line 22 may be provided on top surface 14 of the platform 12 along the periphery of the inner region 18 of platform 12 to form rim member 20 and provide some flexibility to the outer rim member 20 during handling of carrier 10.

Platform 12 and rim 20 are preferably comprised of a synthetic polymer. Suitable synthetic polymers are those that are tear resistant, relatively rigid, and relatively easy to perforate, including but not limited to, polycarbonate, polyethylene (PET), high-density polyethylene (HDPE), low-density polyethylene (LDPE), nylon polymers (i.e., polyamides) and the like. Nevertheless, the carrier 10 can be constructed using a wide variety of materials. It is understood that the scope of the invention is not intended to be limited by the materials herein, but may be carried out using any materials that allow the construction and use of the described carrier 10.

As shown in FIGS. 1, 2 and 4, a plurality of opposed plant-container-engaging portions 24 are provided in the inner region 18 of the platform 12. Container-engaging portions 24 are longitudinally spaced on opposite sides of a central longitudinal axis of the inner region 18 of the platform 12. Each container-engaging portion 24 defines an opening 26 through platform 12. Square-shaped openings 26 are depicted in the FIGS., although it is anticipated that the openings 26 can be any shape necessary to accommodate a particular plant-container shape, e.g., round or octagonal. A plurality of tabs 28 separated by voids 30 depend downwardly from the perimeter 32 of each container-engaging portion opening 26 and are integral with the inner region of the platform. Partial score lines 34 may be provided along the intersection of tabs 28 and the inner region 18 of the platform 12 to provide added flexibility to tabs 28. The tabs 28 illustrated in the FIGS., are defined by a generally X-shaped perimeter 36. It should be understood, however, that tabs 28 could be any shape necessary to reasonably accommodate the shape of the plant containers to be held by the carrier 10. Moreover, although four tabs 28 are illustrated in the FIGS., it is anticipated that a greater lesser number of tabs 28 could be formed in accordance with the present invention.

As seen in FIGS. 3 and 5, a removable handle 38 is provided for transporting the carrier 10. Handle 38 comprises a strap 40 with a middle portion 42 and pronged or otherwise modified ends 44. Handle 38 is preferably comprised of the same material used for the platform 12, however, it is contemplated that handle 38 could be composed of a wide variety of materials and of a material different from that of platform 12, as long as it sufficiently long and flexible enough to accomplish its function.

Handle 38 attaches to the inner region 18 of handle platform 12 at two apertures 46 formed through inner region 18 of platform 12 at opposite ends of the longitudinal axis of the platform 12. In the embodiment shown in FIG. 3 ends 44 of handle 38 have prongs with grooves (notches or flanges) 48 that permit handle 38 to fasten to the platform 12 when inserted through the apertures 46, as will be described below. Each aperture 46 can be generally circular in shape with opposed radial notches 50 extending outwardly from the perimeter of aperture 46. Alternatively apertures 46 can be formed as slots or other shapes and handle ends 44 can be formed as barbs, hooks or otherwise, as long as they can be connected to platform 12 and are preferably releasable therefrom.

Carrier 10 is designed to receive and support a plant container which will generally have a plurality of plant holder portions or pots 54 which are well-shaped to receive potting soil or the like and a seed, seedling or small plant. Such holders are commonly sold as a plurality of such holders, usually six such holders to one container 52. However, individual pots 54 can be readily separated from one another if desired. Thus a container may have less than the six pots 54 shown, or, conceivably more; in which case carrier 10 could also be constructed to receive a container with more than six pots, although six pots is the most common and generally preferred number.

To install plant container 52 in the carrier 10, handle 38 is preferably detached, at least at one end thereof, from platform 12. As illustrated in FIG. 5, plant container 52 is placed over carrier 10 so that each container-engaging portion opening 26 is aligned with each individual plant holder 54 of container 52. The plant container 52 is then lowered onto the carrier 10 and plant holders 54 are received
in corresponding container-engaging portions 24. As best seen in FIGS. 6 and 7, when plant container 52 is in carrier 10, outer periphery 56 of plant holders 54 are seated against the perimeter 32 of respective container-engaging portions 24. The downwardly directed tabs 28 engage outer periphery 56 of plant holders 54 as they sit in the container engaging portions 24. The voids 30 between tabs 28 permit tabs 28 to generally conform to the perimeter shape of installed plant holders 54 as necessary to accept the load and return to their original position when not in use.

[0028] Once plant container 52 is installed in carrier 10, the user attaches handle 38 to platform 12. In the FIG. 3 embodiment of the handle this is accomplished by inserting the pronged ends 44 of handle 38 through the corresponding apertures 46 in platform 12, which requires that the user position handle 38 such that pronged ends 44 align with radial notches 50 of apertures 46. The user then twists the handle so that the grooves 48 in the pronged ends 44 of the handle 38 engage the perimeter of the apertures 46. The user can then grip handle 38 and transport plant container 52 in carrier 10. To remove plant container 52 from the carrier 10, the user detaches handle 38 from platform 12 by unfastening pronged ends 44 of handle 38 from apertures 46 and lifts plant container 52 out of carrier 10.

[0029] It is anticipated that carrier 10 of the present invention will carry a plurality of like-sized plant holders 54 that are integral with each other and that are generally shaped such that they have a wider upper portion 58 than lower portion 60. However, it is understood that the carrier 10 of the present invention is not intended to be limited to such plant holders 54 or containers 52. The use of the plurality of downwardly directed tabs 28 separated by voids 30 of space as a support mechanism for holders 54 allows for numerous different sizes and shapes of plant containers 52 to be held by the carrier 10. In fact, it is anticipated that the present carrier 10 could be used to carry individual plant holders 54 that are not integral with each other and that are of different sizes and shapes. For example, round starter pots are well known and can be used efficiently with the present carrier. If preferred, however, the carrier can be formed with openings 20, which are generally circular. Further, although downwardly directed tabs 27 are preferred, it is conceivable that a useful carrier in keeping with the invention can be formed which has no tabs at all, or with tabs that are upwardly directed in use.

[0030] In addition, although a six-pack carrier 10 is illustrated in the FIGS., the size of the carrier 10 according to the present invention can be adapted to carry any number of plant holders 54, as discussed above. For example, the second embodiment of the new carrier, generally designated 100 is illustrated in FIGS. 8 and 9. As illustrated in schematic plan view in FIG. 8, the platform 112 carrier 100 has no tabs, but does define four generally square openings 126, which can each receive and retain a plant starter pot. Optional lines-of-weakness 160 are illustrated between the four pot holder segments of platform 112, which lines facilitate separation of the pot holder segments. An aperture 146 is seen defined substantially centrally in relation to the four pot holder segments. Aperture 146 serves to receive and retain a preferably semi-rigid T-shaped handle 138 and specifically to receive the detenting; e.g. button shaped end 139 which is disposed downwardly in normal carrying position of carrier 100. Unlike the view of FIG. 8, however, FIG. 9 shows optional tabs 128, which extend inwardly from openings until a pot 154 is placed in the opening in normal use position, but extend generally downwardly when a pot is positioned within a given opening 126. T-shaped handle 138 can be formed of any number of suitable materials, but is most likely and preferably formed of recycled plastic. As with the embodiment of FIG. 1, the second, four-hole embodiment 110 can accommodate or be formed to accommodate round pots, or other shapes. Other aspects of the second embodiment not specifically enumerated above or below as being different from the first embodiment can be assumed to be the same, e.g. materials and method of forming, etc.

[0031] According to the present invention, the carrier 10 can be manufactured by numerous methods known to those skilled in the art. In keeping with the objective of being inexpensive to manufacture, one embodiment of the present invention contemplates a method of manufacturing the carrier 10 utilizing a punch and die set to cut carrier 10 from a single substantially planar sheet of material. In this method, a sheet of material is provided to a punch and die set. The punch and die set forms the inner region 18 of platform 12 by cutting container-engaging portion openings 26, voids 30 of space separating tabs 28 and notched apertures 46 through the platform 12. The punch and die set also cuts the sheet of material to define the rim member 20 surrounding platform 12 and, in doing so, severs the carrier from the sheet of material. The punch and die set may also score the surface 14 of platform 12 along the intersection of tabs 28 with inner region 18 of the platform and along the intersection of inner region 18 of the platform 12 with rim member 20. Once platform 12 is formed from the sheet of material, tabs 28 in container-engaging portions 24 and rim member 20 can be conformed to their downwardly directed positions. The punch and die set forms the handle 38 by cutting the sheet of material to define the perimeter of handle 38 and its pronged ends 44 and severing handle 38 from the sheet of material.

[0032] Carrier 10 according to the present invention has many advantages, including an outer rim member which provides rigidity to support plant containers 52 held by carrier 10 and flexible tabs 28 as plant holder 54 support mechanism which allow for different sized and shaped plant holders 54 to be held by the carrier 10. The use of a removable handle 38 allows for plant container 52 to be easily installed and removed from carrier 10 while still providing an effective transportation mechanism. Similarly, the present carrier can also be used to transport other items than plants or plant pots and not withstanding any claim language specifying pots the claims are intended to be cover any use of the claimed structure.

[0033] In addition, because carrier 10 can be inexpensively manufactured, in particular when formed by the method of cutting carrier 10 out of a sheet of polymeric material, carrier 10 does not add significant packaging costs to plant containers 52 to be held thereby. Moreover, the design and semi-flexible rigidity of carrier 10 allow for individual carriers 10 to be re-used indefinitely.

[0034] Although the present invention has been shown and described in considerable detail with respect to only a few exemplary embodiments thereof, it should be understood by those skilled in the art that we do not intend to limit the
invention to the embodiments since various modifications, omissions and additions may be made to the disclosed embodiments without materially departing from the novel teachings and advantages of the invention, particularly in light of the foregoing teachings. For example, although an outer rim member 20 is shown depending from the platform 12 it is understood that an outer wall could be utilized in place of rim 20 that would more fully cover the outer periphery of carrier 10 and plant container 52 packaged thereby. Accordingly, we intend to cover all such modifications, omissions, additions and equivalents as may be included within the spirit and scope of the invention as defined by the following claims.

1. A carrier for use with a container having a plurality of holders such as plant starter pots, the carrier comprising:
   a platform having a top, a bottom, and an inner region, the inner region of the platform including:
   a plurality of container engaging portions integral with the inner region of the platform, each container engaging portion defining an opening through the platform; and
   a rim member integral with the inner region of the platform and extending around the platform for providing rigidity to the platform.

2. A carrier as recited in claim 1, wherein the platform includes apertures through the platform at opposite ends of the platform; and the carrier further comprises:
   a handle comprising a strap, the strap having opposite ends and aperture engagement structure at opposite ends of the handle for the attachment of the handle to the platform.

3. A carrier as recited in claim 1, wherein each container engaging portion has a plurality of tabs integral with the inner region of the platform for releasably engaging plant holders.

4. A carrier as recited in claim 1, wherein the container engaging portions are longitudinally spaced on opposite sides of the longitudinal axis of the inner region of the platform.

5. A carrier as recited in claim 1, wherein the container engaging portions are square shaped.

6. A carrier as recited in claim 3, wherein the plurality of tabs of the container engaging portions are separated by voids.

7. A carrier as recited in claim 3, wherein the plurality of tabs of the container engaging portions are downwardly directed towards the center of the openings in the container engaging portions.

8. A carrier’s as recited in claim 3, wherein the perimeters of the tabs of the container engaging portions are X-shaped.

9. A carrier as recited in claim 3, wherein each of the container engaging portions has four tabs.

10. A carrier as recited in claim 1, wherein partial score lines are provided on the top surface of the platform along the intersection of the tabs and the inner region of the platform.

11. A carrier as recited in claim 1, wherein the rim member is downwardly directed away from the platform.

12. A carrier as recited in claim 1, wherein partial score lines are provided on the top surface of the platform along the intersection of the inner region of the platform and the rim member.

13. A carrier as recited in claim 2, wherein said aperture engagement structure for connecting the handle to the apertures in the platform include pronged handle ends, the pronged handle ends having a groove that enables the pronged handle ends to engage the apertures at opposite ends of the platform and thereby attach the handle to the carrier.

14. A carrier as recited in claim 1, wherein the carrier is composed of a polymeric material.

15. A carrier as recited in claim 14, wherein said polymeric material is selected from the group consisting of polycarbonate, polyethylene (PET), high density polyethylene (HDPE), and nylon polymer.

16. A container carrier comprising:
   a platform having a top, a bottom, and an inner region, the inner region of the platform including:
   a plurality of container engaging portions integral with the inner region of the platform, each container engaging portion defining an opening through the platform and having a plurality of tabs integral with the inner region of the platform for releasably engaging plant holders;
   a plurality of plantable pots respectively housed within the individual container engaging portions in the platform; and
   a rim member integral with the inner region of the platform and extending around the platform for providing rigidity to the platform.

17. A container carrier as recited in claim 16, wherein the platform has opposite ends and apertures through the platform at such opposite ends thereof:
   a handle comprising a strap, the strap having opposite ends and aperture engagement structure on such opposite strap ends for engaging the apertures at opposite ends of the platform for the attachment of the handle to the platform.

18. A container carrier as recited in claim 16, wherein the container engaging portions are longitudinally spaced on opposite sides of the longitudinal axis of the inner region of the platform.

19. A container carrier as recited in claim 16, wherein the container engaging portions are square shaped.

20. A container carrier as recited in claim 16, wherein the plurality of tabs of the container engaging portions are separated by voids.

21. A container carrier as recited in claim 16, wherein the plurality of tabs of the container engaging portions are downwardly directed towards the center of the openings in the container engaging portions.

22. A container carrier as recited in claim 16, wherein the perimeters of the tabs of the container engaging portions are X-shaped.

23. A container carrier as recited in claim 16, wherein each of the container engaging portions has four tabs.

24. A container carrier as recited in claim 16, wherein partial score lines are provided on the top surface of the platform along the intersection of the tabs and the inner region of the platform.

25. A container carrier as recited in claim 16, wherein the rim member is downwardly directed away from the platform.

26. A container carrier as recited in claim 16, wherein partial score lines are provided on the top surface of the
platform along the intersection of the inner region of the platform and the rim member.

27. A container carrier as recited in claim 17, wherein said aperture engagement structure comprises pronged handle ends, the pronged handle ends having a groove that enables the pronged handle ends to engage the apertures at opposite ends of the platform to thereby attach the handle to the carrier.

28. A container carrier as recited in claim 16, wherein the plantable pots housed within the individual container engaging portions in the platform are shaped such that they have a wider upper portion than lower portion.

29. A container carrier as recited in claim 16, wherein the carrier is composed of a polymeric material.

30. A container carrier as recited in claim 29, wherein said polymeric material is selected from the group consisting of polycarbonate, polyethylene (PET), high density polyethylene (HDPE), and nylon polymer.

31. A method for manufacturing a carrier for use with a plurality of holders, the method comprising the steps of:

providing a substantially planar sheet of flexible material;

forming an inner region of a platform from the sheet of flexible material;

forming a plurality of openings through the inner region of the platform that are longitudinally spaced on opposite sides of the longitudinal axis of the inner region of the platform, each opening having one or more voids extending from the perimeter of the opening, the voids defining one or more tabs surrounding the opening;

forming a rim member that surrounds the platform and is integral with the inner region of the platform;

severing the rim member and the inner region from the sheet of flexible material;

downwardly bending the tabs defined by the voids extending from the perimeter of openings; and

downwardly bending the rim member.

32. The method of claim 31, further comprising the steps of scoring the top surface of the platform along the intersections where the tabs connect to the inner region of the platform and scoring the top surface of the platform along the intersections where the rim member connects to the inner region of the platform.

33. A method for manufacturing a carrier in accordance with claim 31, and further comprising the steps of:

forming apertures through the platform, the apertures being formed at a predetermined distance from each other at opposite ends of the platform;

forming a handle with pronged ends from the sheet of flexible material; and

severing the handle from the material.

34. A carrier for transporting a plurality of plant holders produced in accordance with the method of claim 31.

35. A carrier for transporting a plurality of plant holders produced in accordance with the method of claim 31.

36. A container carrier comprising:

a platform having a top, a bottom, and an inner region, the inner region of the platform including a plurality of container engaging portions integral with the inner region of the platform, each container engaging portion defining an opening through the platform for releasably engaging plant holders, and the platform defining a central aperture for receiving and retaining a handle end.

37. The container carrier of claim 36, and further comprising a handle, the handle having opposed ends, one end having a gripable portion and the opposite end having a detent mechanism for engaging the aperture in the platform.

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