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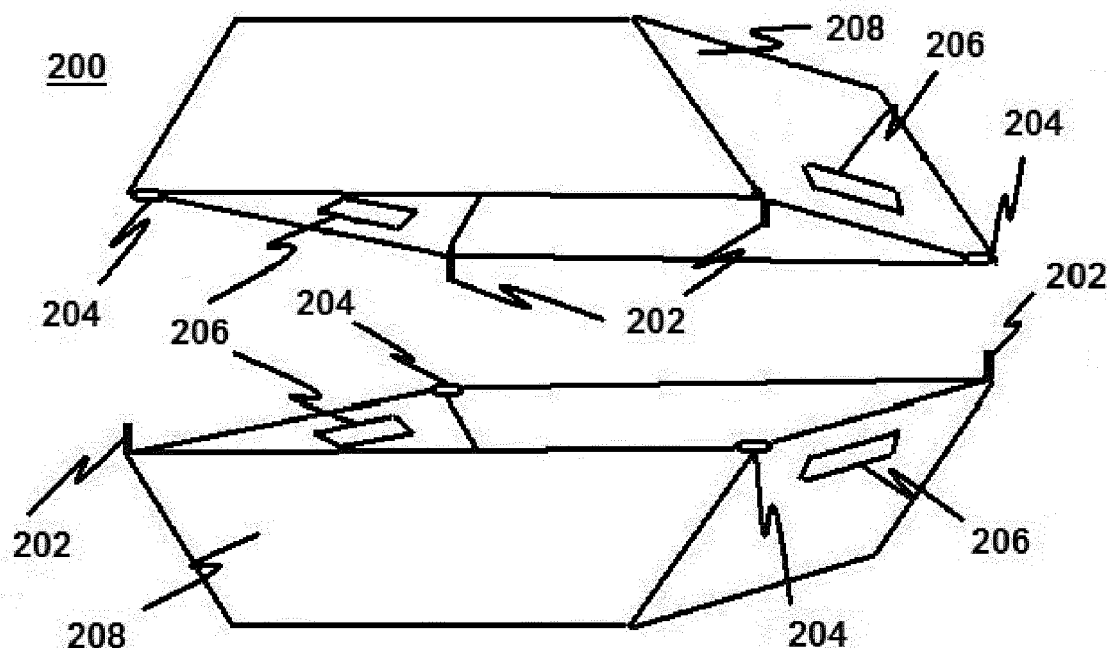
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(54) **Plant box element**

(57) This invention relates to plant boxes and especially plant boxes for accommodating or transporting plants to a planting site. A box element (100) according to the invention comprises a bottom and one or more walls fixed to the bottom and having an edge. The box

element is made from material that allows the reuse of the box. The edges of the open sides of two substantially identical box elements can be placed against each other, whereby one element forms the bottom of the box and other element forms the cover of the box.



**FIG 2**

## Description

### TECHNICAL FIELD

**[0001]** This invention relates to plant boxes and especially plant boxes for accommodating or transporting plants to a planting site.

### BACKGROUND OF THE INVENTION

**[0002]** Plants are mainly grown in disposable cardboard boxes. In Finland alone approximately 160 million plants are cultivated of which half are transported to the planting site in disposable cardboard boxes. As a result of the use of the disposable boxes, the plant cultivation produces a considerable amount of waste. Therefore, there is a need to start using reusable plant boxes instead of the disposable ones. The plant boxes according to the prior art also suffer from the disadvantage that they are difficult to assemble. Besides, the boxes are not rigid/durable enough to allow the boxes to be stacked when they are filled with plants.

### SUMMARY OF THE INVENTION

**[0003]** The object of the present invention is to eliminate or alleviate the disadvantages of the prior art plant boxes, especially the problem that the boxes have to be thrown away. The invention also aims at enhancing the logistics involved with plant cultivation.

**[0004]** The object of the invention is reached by means of a reusable plant box element according to Claim 1.

**[0005]** The plant box element according to the invention is made from a material that is strong enough to be reused. According to an embodiment, the box element is made from a natural fiber composite.

**[0006]** The plant box element according to the invention is designed to enable the use of one and the same element not only as a box bottom but as a box cover by placing the edges of the open sides of two substantially identical box elements against each other, wherein one element forms the bottom of the box and other element forms the cover of the box.

**[0007]** In an embodiment of the invention, the edges of the box element are provided with pins at two diagonally opposite positions, such as corners, and with holes at two other diagonally opposite positions so that, when two box elements are joined together, the pins of both elements are pushed into the holes of the counterelement. Alternatively or additionally, the edges of the box element can be provided with other kinds of fastening/positioning means.

**[0008]** According to an embodiment of the invention, the box element is designed to allow elements to be stacked within each other.

**[0009]** In an embodiment of the invention, the sides of the box element are provided with lift holes, which lift holes also can serve as ventilation openings. The box

element can be provided with additional openings for defrosting the plants, for instance.

**[0010]** In an embodiment of the invention, the box element is provided with an identifier, such as a RFID tag and/or bar code, that individualizes the box element. In an embodiment, the RFID tag is embedded into the box element's material. According to an embodiment, the bar code is created during the molding of the box element.

**[0011]** In an embodiment of the invention, a suitable carrying harness is used for carrying the box element and/or a box formed from box elements.

**[0012]** Preferable embodiments of the invention are also described in the dependent claims.

**[0013]** The utility of the reusable plant box element according to the invention arises from a number of facts.

**[0014]** Because the box elements are reusable, less environmentally harmful waste is produced.

**[0015]** Because one and the same box element can be used both as box bottom and as a box cover, no separate production molds are needed for the bottom and the cover, as a result of which the production costs are low. Besides, the boxes are easy to assemble since any box element can be used both as a bottom and as a cover.

**[0016]** The box element according to the invention can be made ergonomic to carry so that the box can be carried to the planting site.

**[0017]** When the box elements are individualized using a RFID tag or bar code, it is possible to track the box elements using readers and a data system.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0018]** In the following, preferred embodiments of the invention are described with reference to the accompanying Figures in which

Figure 1 is an exemplary view of a box element usable both as a box cover and as a box bottom, and Figure 2 is an exemplary view of an embodiment of the box in which two exemplary box elements from Figure 1 are joined together.

### MORE DETAILED DESCRIPTION OF THE EMBODIMENTS SHOWN IN THE FIGURES

**[0019]** Figure 1 shows the structure of a reusable box element according to an embodiment of the present invention. The box element 100 comprises a frame 108 having a bottom and walls fixed to the edges of the bottom. Preferably, there are four walls that are fixedly connected to each other and to the bottom. However, when the box element has a round or oval bottom, the wall can be continuous, having no corners. The wall has an edge on the open side of the box element. The box element is preferably made from a material that is durable and allows the box element to be reused. Preferably, the box is made from hard material, thus allowing boxes assembled from box elements to be stacked. Besides, the box

element is provided with a lift opening 106 for lifting the box element or the box.

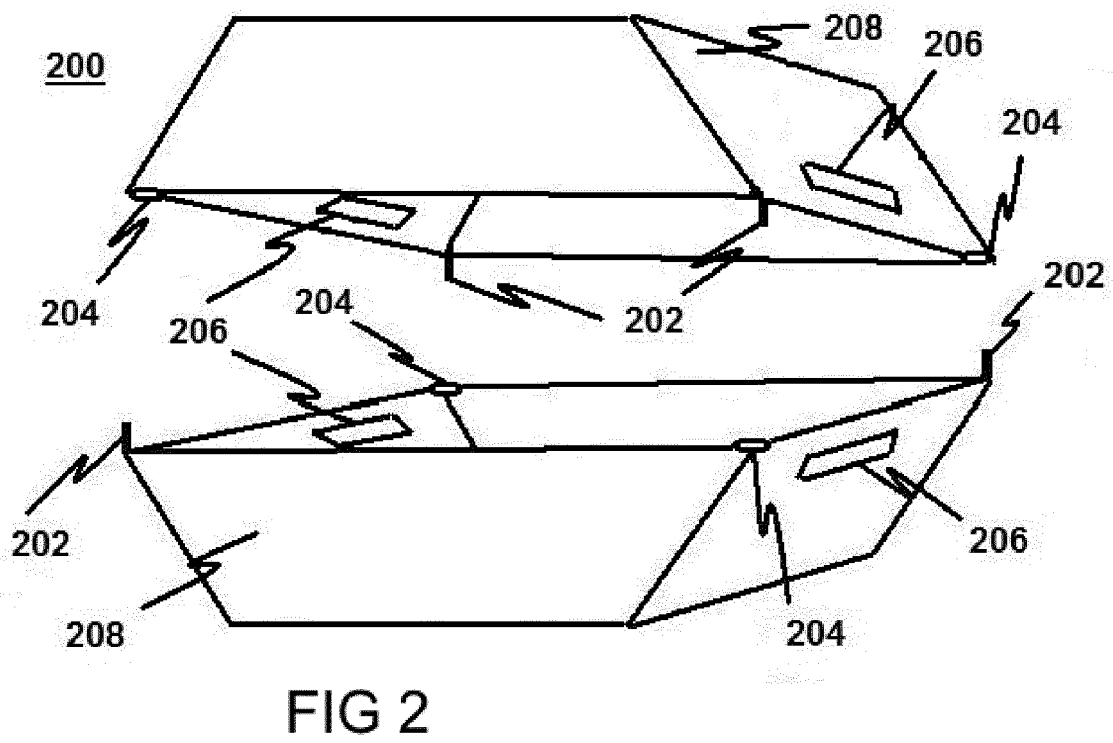
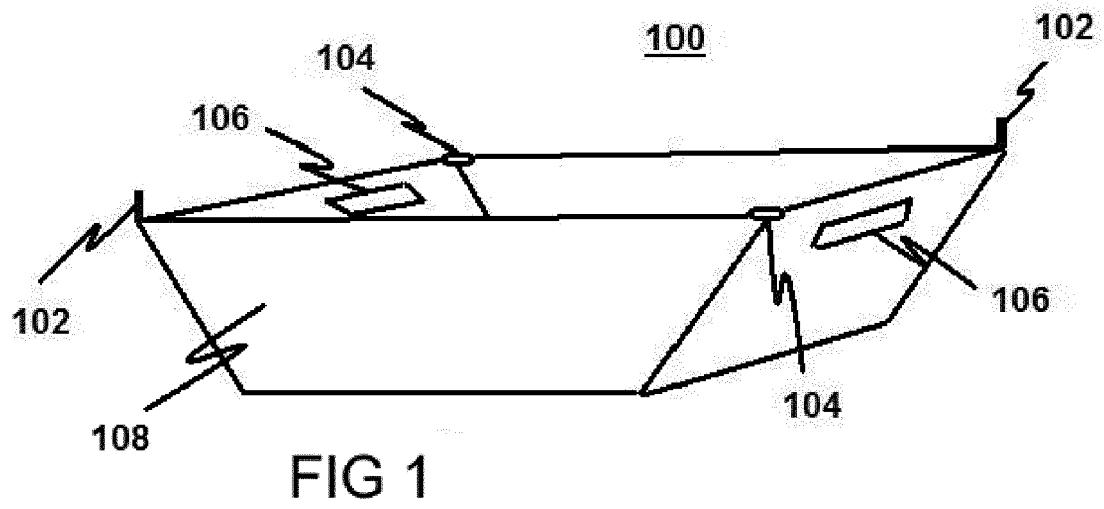
**[0020]** The box element has pins 102 at its two diagonally opposite corners and holes 104 at its two other diagonally opposite corners. Figure 2 shows how two box elements according to Figure 1 are placed against each other to form a box 200. When the edges of the open sides of the box elements are placed against each other, the pins 202 are pushed into the holes 204. It should be noted that the pins and the holes are not necessarily located at the corners but they can, alternatively or additionally, be located elsewhere on the edge.

**[0021]** When the box elements are not used as boxes, the box elements can be stacked by placing them within each other, with the open sides of the box elements facing in the same direction, usually upwards.

**[0022]** The scope of the invention is defined in the accompanying claims. However, it will be understood by a person skilled in the art that the details of the different features of the invention may vary within the inventive idea, depending on the particular embodiment of the invention.

## Claims

1. A box element (100) for accommodating and/or transporting plants, which box element comprises a bottom and one or more walls fixed to the bottom and having an edge, **characterized in that** the box element is made from material that allows the reuse of the box and **in that** the edges of the open sides of two substantially identical box elements can be placed against each other, wherein one element forms the bottom of the box and other element forms the cover of the box.
2. A box element as defined in Claim 1, **characterized in that** the material of the box is a natural fiber composite.
3. A box element as defined in any of the preceding Claims, **characterized in that** the box element has a pin (102, 202) at one edge/corner and a hole (104, 204) in an other, opposite edge/corner, the pins and the holes of two box elements thus coinciding with each other when the box elements are assembled into a box.
4. A box element as defined in any of the preceding Claims, **characterized in that** the sides of the box are provided with lift openings (206) and/or other openings for ventilating the box.
5. A box element as defined in any of the preceding Claims, **characterized in that** the box element is provided with an identifier, such as a RFID tag and/or bar code, for individualizing the box element.





## EUROPEAN SEARCH REPORT

Application Number  
EP 12 19 2010

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The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>19 February 2013</b>	Examiner <b>Balz, Oliver</b>
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

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EPO FORM 1503 03/92 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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