

## ASSEMBLY FOR ACCESSING COCONUT WATER IN COCONUT

### Technical Field

The present invention relates to an assembly for accessing coconut water in a coconut and  
5 more particularly to such assembly having the plunger for puncturing the germination pore of the coconut thereby permitting the access of the coconut water inside the coconut.

### Background Art

The young fruit of the coconut is technically a large drupe composed of a thin outer layer called exocarp; a thick and fibrous middle layer called a mesocarp, and a hard inner layer called an  
10 endocarp that surrounds a large seed. The endocarp contains three germination pores at one end, one of which the sprouting coconut palm grows through. The "meat" of the seed is endosperm tissue and a small, cylindrical embryo is embedded in this nutritive tissue just opposite the functional germination pore. The seed is surrounded by an outer layer called the seed coat or testa. This is the material that adheres to the white "meat" or endosperm when it is removed from the endocarp shell.  
15 "Coconut water" is multinucleate liquid endosperm that has not yet developed into solid tissue composed of cells. Many people enjoy the health benefits, nutrients, and taste of virgin coconut water straight from the fresh husked young coconut, roasted or boiled aromatic coconut.

WO2014129984A1 discloses an easy-to-open roasted or boiled aromatic coconut comprising a coconut from which the husk was removed until a clean shelled coconut is obtained and groove  
20 like on the shell of the coconut characterized 3/4 that said groove line is at least one converged groove line located at the bottom; of the shell of the coconut and that said groove line is made by laser engraving using a laser engraver. The easy-to-open roasted or boiled aromatic coconut further comprises an opening means fixed within one converged groove line, near the groove line. The consumers can open the coconut shell by pulling the opening means such as a pull-ring. In case  
25 where at least one converged groove line is a large circle groove and a small circle groove wherein the pull-ring fixed near the small circle groove, this allows the coconut shell within the small circle groove to be opened, revealing the coconut meat inside. Through this small hole, the consumer can insert a tube to drink the coconut water and when the juice is drunk up, the consumer can easily open the coconut shell further in order to eat the coconut meat by pulling the coconut shell within  
30 the large circle groove off by hand.

WO2014146037A1 discloses systems and methods associated with installing a valve accessing and removing liquid from within a coconut. This process involves aspects of installing a valve, wherein the valve may include a plunger constructed and arranged to pierce a coconut shell. Among other things, innovations herein may involve aspects related to installation a valve with  
5 flange and/or grommet type structures constructed and arranged to pierce a coconut husk and to stop insertion of the plunger into the coconut at a predetermined point.

Coconut valves of WO2014146037A1 are inserted into coconuts having a tooled aperture placed through or within the coconut wall having a predetermined diameter so that a valve plug seats within said aperture with a valve plug collar substantially engaging the wall of the aperture.  
10 The valve plug may include a valve plug bore for receiving a plunger sleeve having a plunger sleeve bore with a based positioned plunger sleeve membrane that seals the coconut's contents until a plunger stopper having a plunger-stopper lance and plunger-stopper lance tip is used to puncture a plunger sleeve membrane, thereby providing access to the coconut water contained within the coconut. The plunger-stopper may be tethered to the plunger sleeve. The plunger-stopper may  
15 provide access to the coconut's contents and also serves as a stopper to seal any remaining coconut contents for future use, as the plunger-stopper may seal the plunger sleeve bore.

In the production of the Easy-to-open roasted or boiled aromatic coconut and the coconut with valve plug according to the prior arts, the shell of the coconut is made to have tooled aperture to install the pulling-ring or plug valve. This may cause the coconut shell to be broken and the  
20 coconut meat under the broken coconut shell may be exposed to the contaminants and consequently rotten.

### Summary of Invention

It is one of the objects of the present invention to provide an assembly that can be readily and easily inserted through the coconut layers with relatively small force puncture through the  
25 germination pore of the coconut permitting the consumer to access the coconut water inside. In addition, utilization of the assembly, according to the invention does not wound or interfere the intact of the shell of the coconut to reduce the risk of contamination.

Another object of the invention is to provide not only the assembly of such which is inexpensive to manufacture but also to maintain its effectiveness.

30 Another object of the invention will be mentioned in the following part of the specification, wherein detailed description is for the purpose of fully disclosing the embodiments without placing limitations thereon.

**Brief description of the drawings**

The present invention is illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements and in which:

5 Fig. 1 represents the side views of one embodiment of the present invention. Fig. 1A represents the side views of the assembly of the present invention. Fig 1B-1D represents each components of the assembly of the present invention.

Fig. 2 represents side, top and perspective views of one embodiment of the present invention. Fig. 2A-2D represents the side, top and perspective views of the assembly of the present invention,  
10 respectively.

Fig. 3 is a pictorial representation of the assembly of the present invention as it is being utilized with a coconut to access the coconut water.

Unless otherwise indicated, illustrations in the figures are not necessarily drawn to scale.

**Description of Embodiments**

15 The present invention is best understood by reference to the detailed figures and description set forth herein.

Embodiments of the invention are discussed below with reference to the Figures. However, those skilled in the art will readily appreciate that the detailed description given herein with respect to these figures is for explanatory purposes as the invention extends beyond these limited  
20 embodiments. For example, it should be appreciated that those skilled in the art will, in light of the teachings of the present invention, recognize a multiplicity of alternate and suitable approaches, depending upon the needs of the particular application, to implement the functionality of any given detail described herein, beyond the particular implementation choices in the following embodiments described and shown. That is, there are modifications and variations of the invention which are too  
25 numerous to be listed but that all that fit within the scope of the invention. Also, singular words should be read as plural and vice versa where appropriate, and alternative embodiments do not necessarily imply that the two are mutually exclusive.

It is to be further understood that the present invention is not limited to the particular methodology, compounds, materials, manufacturing techniques, uses, and applications, described  
30 herein, as these may vary. It is also to be understood that the terminology used herein is used for the

purpose of describing particular embodiments only, and is not intended to limit the scope of the present invention. It must be noted that as used herein and in the appended claims, the singular forms "a," "an," and "the" include the plural reference unless the context clearly dictates otherwise. Thus, for example, a reference to "a mean" is a reference to one or more means and may include  
5 subservient means. All conjunctions used are to be understood in the most inclusive sense possible. Thus, the word "or" should be understood as having the definition of a logical "or" rather than that of a logical "exclusive or" unless the context clearly necessitates otherwise. Structures described herein are to be understood also to refer to functional equivalents of such structures.

With respect to the terms "comprising," "consisting of," and "consisting essentially of,"  
10 where one of these three terms is used herein, the presently disclosed and claimed subject matter may include the use of either of the other two terms. Thus in some embodiments not otherwise explicitly recited, any instance of "comprising" may be replaced by "consisting of" or, alternatively, by "consisting essentially of."

Referring to Fig 1, where one embodiment of the present invention is referred to. The  
15 assembly **010** for accessing coconut water of the coconut comprises:

a plunger **011** having a plunger collar **111** perpendicularly mounted to a plunger lance **211**;  
a lid **012** having a lid bore **112** for receiving and housing the tip of the plunger lance **211**;  
and  
a stopper clip **013** for holding the plunger lance **211** in order to prevent the tip of the plunger  
20 lance **211** in the lid bore **112** from puncturing the germination pore of the coconut.

The lid **012** is placed and fixed on the germination pore of the coconut by a fixing mean.

The plunger of the assembly according to the present invention has the plunger collar at one end of the plunger. The plunger collar may be a small knob or disk perpendicularly mounted to the blunt end of the elongated cylindrical plunger lance. The other end of the plunger lance is the  
25 pointed tip for piercing or puncturing the germination pore through the coconut layers of the coconut layers of the coconut.

The plunger may have a plunger bore **311** where a straw can be inserted through.

The plunger may have a length of at least 2, preferably 2-5 cm. The plunger collar may have a diameter of at least 0.5 cm, preferably 0.5-5 cm. The plunger lance may have the length of at least

2 cm, preferably 2-5 cm and the diameter of at least 0.5 cm, preferably 0.5-1.5 cm. The plunger bore may have the diameter of at least 0.4, preferably 0.4-2 cm.

5 The lid of the assembly according to the present invention may be a cover having rounded top or hemispherical roof or ceiling shaped like half of a ball or dome. The lid of the assembly according to the present invention may be formed in the rectangular top shaped like dome. The lid can be hollow or solid. The lid may have the lid bore vertically centered for receiving the plunger lance.

The lid may have the diameter or width of at least 0.5 cm, preferably 0.5-5 cm and the high of at least 0.5 cm, preferably 0.5-3.5 cm.

10 The stopper clip of the assembly according to the present invention is any one of various devices that grip, clasp, hook or hold the plunger lance in order to prevent the tip of the plunger lance in the lid bore from puncturing the germination pore of the coconut.

15 The assembly according to the present invention can be made of any one of various materials e.g. biomaterial, wood, plastic, metal, wood, resin, stone, ceramic, fiber, glass, composite material or the combination thereof.

The fixing mean for attaching the assembly of the present invention on the germination pore of the coconut including adhesive, adhesive tape, wrapping material, fastening material applied to fix the lid and entire assembly on the germination pore of the coconut without penetrating, destroying or interfering the shell of the coconut.

20 Referring to Fig 2, where one embodiment of the present invention is referred to with numeral 020. The assembly 020 for accessing coconut water of the coconut comprises:

the plunger 022 having a plunger collar 122 perpendicularly mounted to a plunger lance 222;

the lid 012 having a lid bore 112 for receiving the tip of the plunger lance 222; and

25 the stopper clip 023 for holding the plunger lance 222 in order to prevent the tip of the plunger lance 222 in the lid bore 112 from puncturing the shell of the coconut. The stopper clip 023 is tethered to the plunger collar 122 of the plunger 022 by a line 024. The lid 012 is placed and fixed on a germination pore on the shell of the coconut by a fixing mean such that the plunger lance 222 can puncture the germination pore through the coconut meat inside the coconut.

Referring to Fig 3, the coconut having an assembly for accessing coconut water of the coconut is shown. The assembly of the present invention is installed on the coconut germination pore wherein the lid is placed and fixed on the germination pore of the coconut by a fixing mean.

5 Taking away or removing the stopper clip from the plunger lance, the user can push or press against the plunger collar with his/her force in order to drive or impel the plunger lance through the germination pore of the coconut for making a hole. The straw can be inserted through the plunger bore to access the coconut water inside the coconut.

As one embodiment of the present invention, a method for preparing a coconut having an assembly for accessing coconut water of the coconut comprises:

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- a. removing an outer husk covering the germination pores of the coconut;
  - b. placing the assembly of any one of claims 1-3 on one of the germination pores of the coconut so that the plunger lance of the assembly is above the germination pore;
  - c. fixing the lid of the assembly on one of the germination pores of the coconut by a fixing mean.

Claims

1. An assembly for accessing coconut water of the coconut comprising:
  - a plunger having a plunger collar perpendicularly mounted to a plunger lance;
  - 5 a lid having a lid bore for receiving and housing a tip of the plunger lance; and
  - a stopper clip for holding the plunger lance in order to prevent the tip of the plunger lance in the lid bore from puncturing a germination pore of the coconut, wherein the lid of the assembly is placed and fixed on the germination pore of the coconut by a fixing mean.
- 10 2. The assembly of claim 1, wherein the fixing mean including adhesive, adhesive tape, wrapping material, fastening material applied to fix the lid on the germination pore of the coconut without interfering the shell of the coconut.
3. The assembly of claim 1 or 2, wherein the stopper clip is tethered to the plunger collar of the plunger.
- 15 4. The assembly of any one of claims 1-3, wherein the plunger has a plunger bore where a straw can be inserted through.
5. A coconut having an assembly for accessing coconut water of the coconut, the coconut comprising:
  - a coconut showing the germination pore; and
  - 20 an assembly of any one of claims 1-3 wherein the lid is placed and fixed on the germination pore of the coconut by a fixing mean.
6. The coconut of claim 5, wherein the fixing mean including adhesive, adhesive tape, wrapping material, fastening material to fix the lid on the germination pore of the coconut without interfering the shell of the coconut.
- 25 7. A method for preparing a coconut having an assembly for accessing coconut water of the coconut, the method comprising:
  - a. removing an outer husk covering the germination pores of the coconut;

- b. placing the assembly of any one of claims 1-3 on one of the germination pores of the coconut so that the plunger lance of the assembly is above the germination pore;
  - c. fixing the lid of the assembly on one of the germination pores of the coconut by a fixing mean.
- 5      8. The method of claim 7, wherein the fixing mean including adhesive, adhesive tape, wrapping material, fastening material applied to fix the lid on the germination pore of the coconut without interfering the shell of the coconut.