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(54) **STRUCTURAL IMPROVEMENT FOR CUP CONTAINER**

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(57) **ABSTRACT**

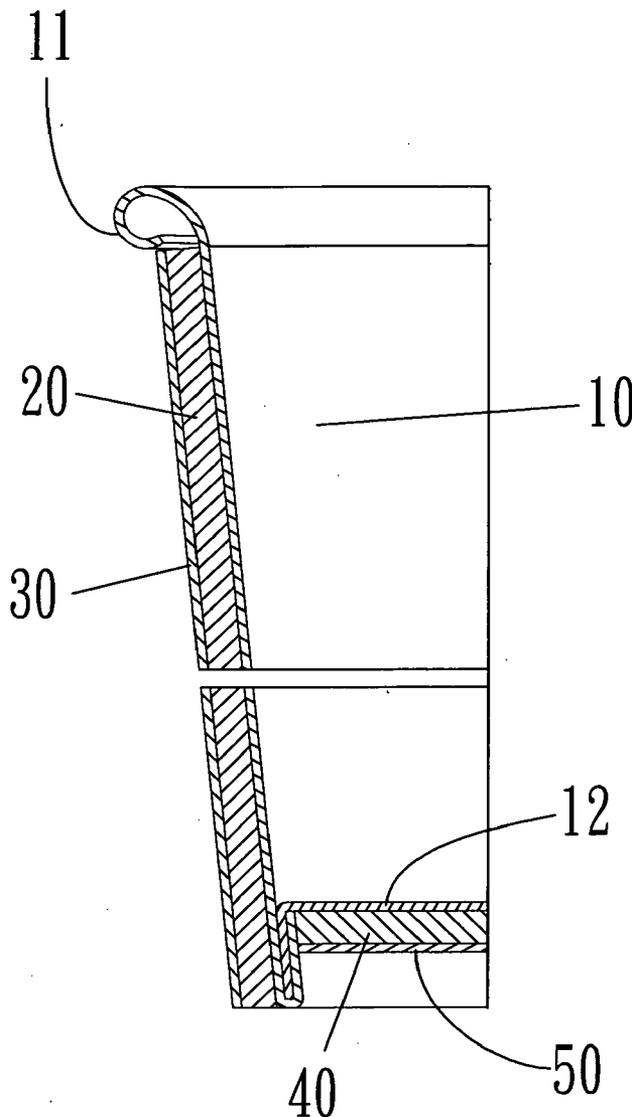
A structural improvement for a cup container includes the following structures. An internal layer paper cup having an internal paper cup bottom is bonded to a bottom of the cup container. A foam layer is bonded to an exterior of the internal layer paper cup. An external layer paper cup then is bonded to an exterior of the foam layer. A foam bottom and an external paper cup bottom are bonded to an external bottom of the internal paper cup bottom in order. The internal surface of the internal layer paper cup and an upper of the internal paper cup bottom are coated with waterproof layers. The foam material of the foam layer can be a biodegradable material, or non-biodegradable materials. The foregoing waterproof layers can be a biodegradable material, or can be a non-biodegradable material.

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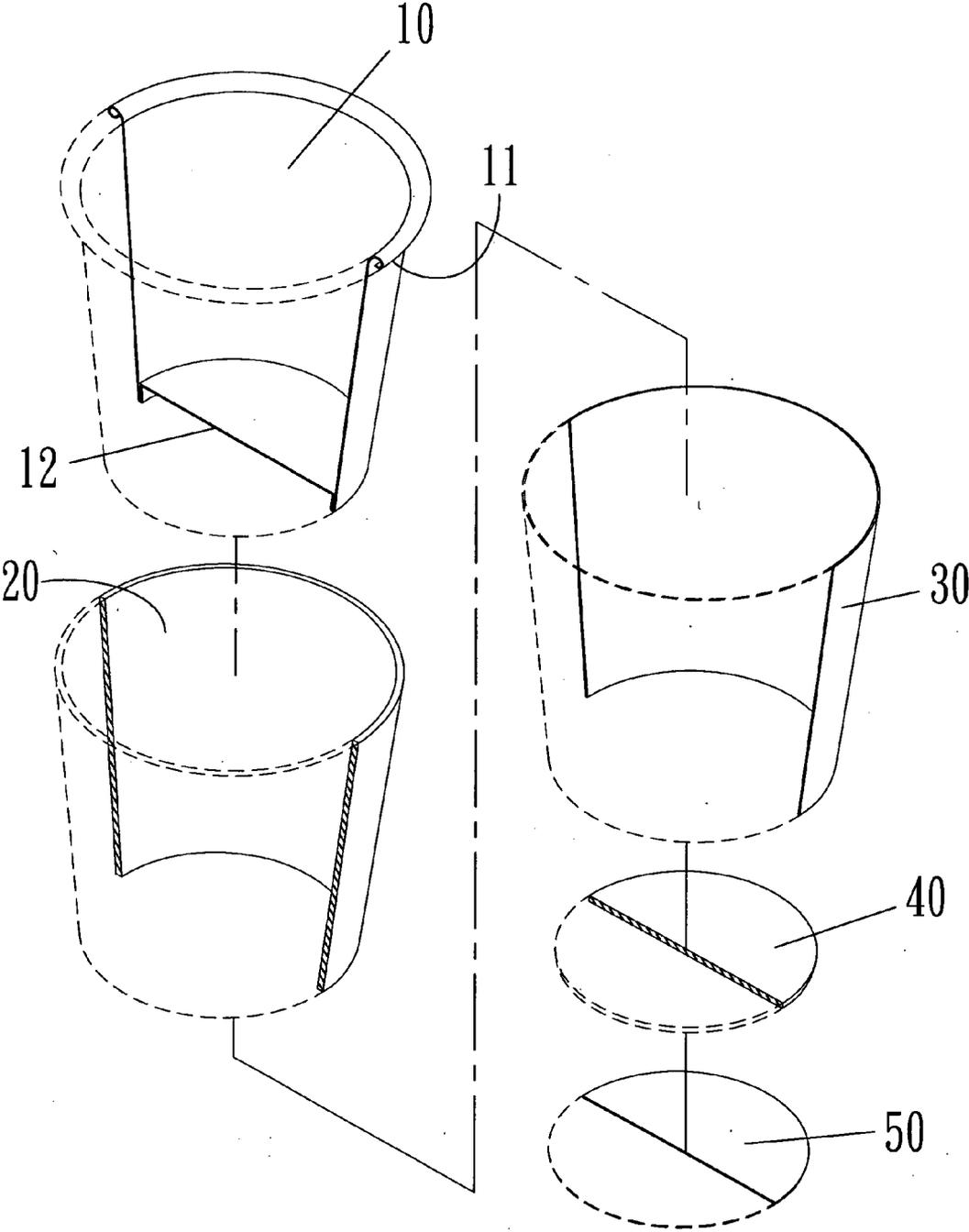


FIG 1

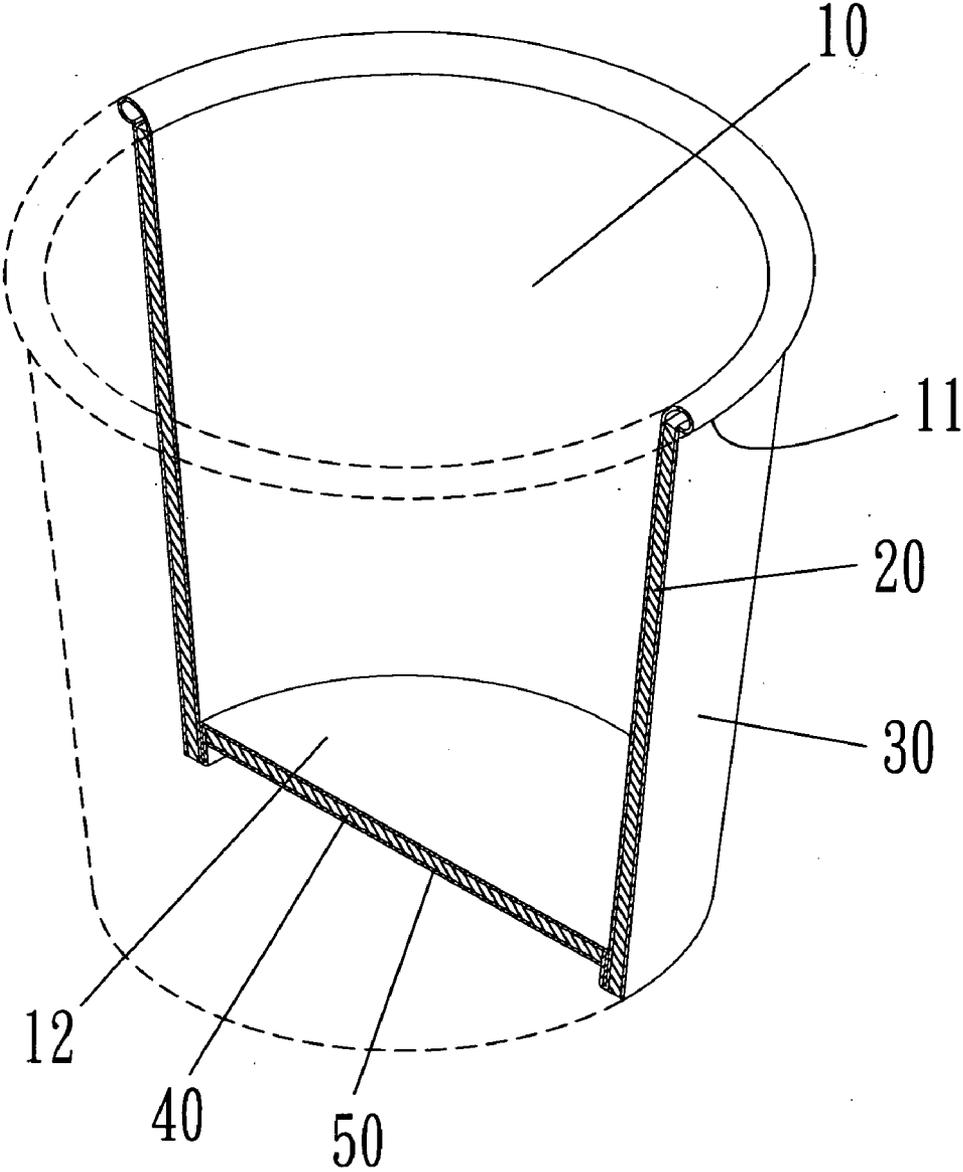


FIG 2

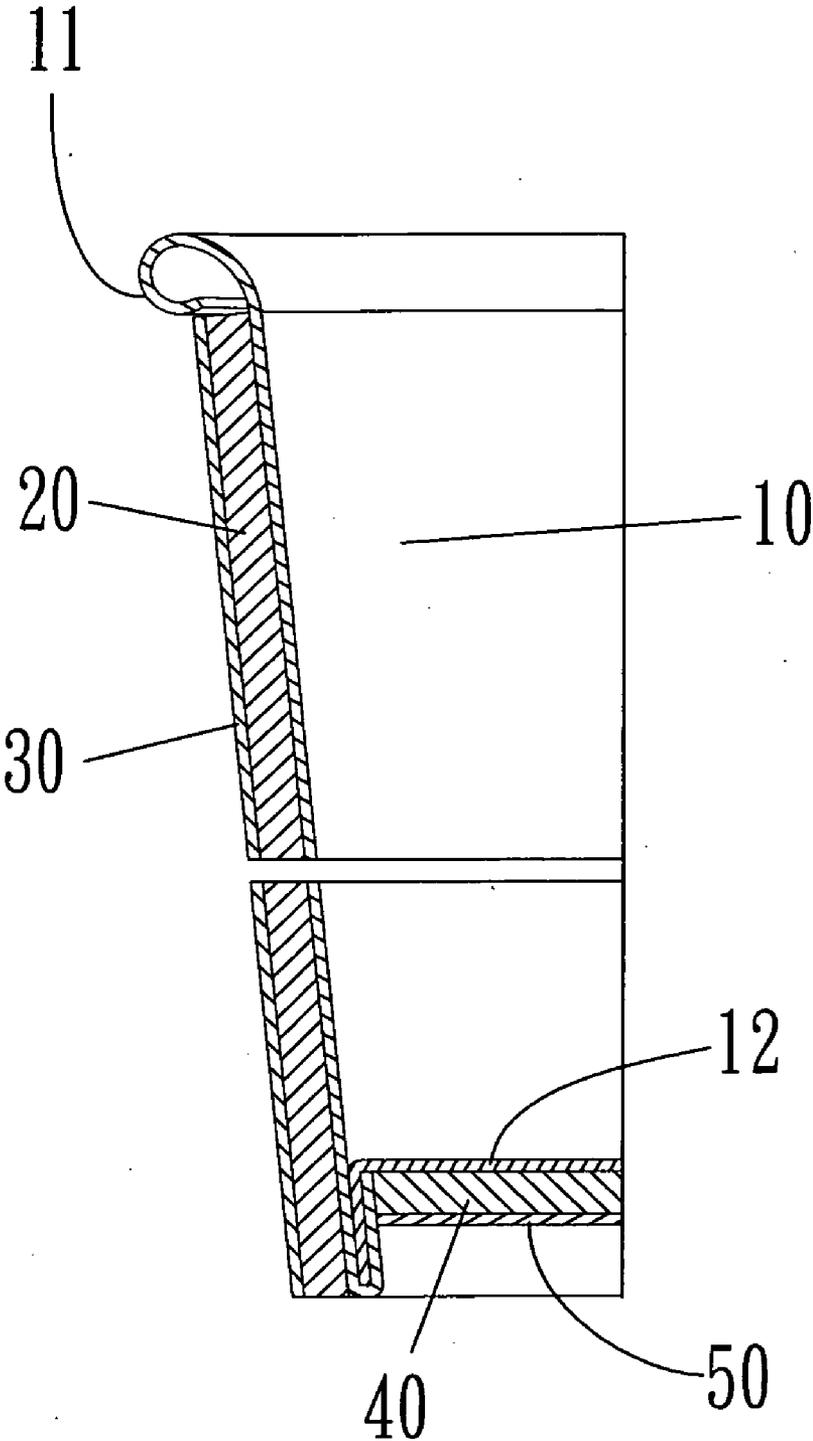


FIG 3

STRUCTURAL IMPROVEMENT FOR CUP CONTAINER

FIELD OF THE INVENTION

[0001] The present invention relates to a cup container, and more particularly to the structural improvement for the cup container that bonds the foam layer between the internal layer paper cup and the external layer paper cup.

BACKGROUND OF THE INVENTION

[0002] A conventional cup container has an internal layer paper cup and a foam layer, and can have an improvement structure of interchanging the relative positions of the foregoing internal and external layers.

[0003] The foregoing conventional structure has a drawback of complex manufacture procedure although the foregoing conventional structure can achieve functions of warm keeping, cold keeping, etc.

[0004] Accordingly, to overcome the foregoing shortcoming, the inventor(s) of the present invention based on years of experience in the related field to conduct extensive researches and experiments, and finally invented a structural improvement for a cup container.

SUMMARY OF THE INVENTION

[0005] A primary object of the present invention is to provide a structural improvement for a cup container that assembles three layer cups and three layer bottoms as a whole by using close bonding. The foregoing three layer cups include an internal layer paper cup, an external layer paper cup and a foam layer between the internal layer paper cup and the external layer paper cup. The foregoing three layer bottoms are sequentially composed of an internal paper cup bottom, a foam bottom and an external paper cup bottom.

[0006] The substantial benefit achieved by the foregoing structure includes:

[0007] 1. Since the three layer cups utilize the overall bonding, the structural strength is enhanced to reduce the thicknesses of the internal layer paper cup and the external layer paper cup. The paper price can be effectively cost down to reduce the manufacture cost when paper price keeps on rising.

[0008] 2. The internal layer paper cup containing liquid substance has the high temperature resistance that is better than the foam layer containing the liquid substance. The foregoing high temperature resistance can achieve 110 centigrade degree.

[0009] 3. When the external layer is wrapped by the external layer paper cup with fine structure density, exquisite printing then is carried on to beautify products and attract purchase intention of consumers, thereby improving efficiency.

[0010] Other features and advantages of the present invention and variations thereof will become apparent from the following description, drawings, and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a disassembled cross section perspective view illustrating a structure according to a preferred embodiment of the present invention;

[0012] FIG. 2 is an assembled cross section perspective view illustrating a structure according to a preferred embodiment of the present invention; and

[0013] FIG. 3 is a partial front cross section view illustrating a structure according to a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0014] Other features and advantages of the present invention will become apparent from the following description of the invention which refers to the accompanying drawings.

[0015] First, please refer to FIG. 1 to FIG. 3, a structural improvement for a cup container of the present invention is shown. The container is composed of an internal layer paper cup 10, a foam layer 20 and an external layer paper cup 30. The internal layer paper cup 10 is a conventional paper cup. An internal surface of the internal layer paper cup 10 is coated with a waterproof layer. An upper of the internal layer paper cup 10 faces toward outside firstly, and then is inwardly folded, thereby becoming a protruding lip 11. An internal paper cup bottom 12 is bonded to a bottom of the cup container. The foregoing waterproof layer is a necessary structure as a standard. Since the waterproof layer is a thin-film layer, it is merely written in the specification without specifically showing it in the figure. The structural characteristics of the present invention are further shown as the following.

[0016] A foam layer 20 is bonded to an exterior of the internal layer paper cup 10. An upper end of the foam layer 20 leans against a bottom edge of the protruding lip 11 of the internal layer paper cup 10. A bottom edge of the foam layer 20 is aligned the bottom of the internal layer paper cup 10.

[0017] An internal cup surface of the foam layer 20 is closely attached to an external cup surface of the internal layer paper cup 10 to enhance the structural strength. A foam material of the foam layer 20 shown in the embodiment can be a biodegradable material such as polylactic acid (PLA), other biodegradable material that is similar to polyethylene terephthalate (PET), including Biomax 4024 PET produced by Dupont, biodegradable copolyester FEPOL particles produced by Taiwan Far East Textile, or one of Ecoflex®/ Ecovio® biodegradable plastic produced by Baden Aniline and Soda Factory (BASF); or a non-biodegradable material such as polystyrene (PS), polypropylene (PP), or IXPE polyethylene adhesive foams. In addition, the foam ratio of the foam layer is not restricted. The thickness of the foam layer is not restricted either.

[0018] The external layer paper cup 30 is closely bonded to an exterior periphery of the foam layer 20. An upper edge and a lower edge of the external layer paper cup 30 are maintained at the same level together with the upper edge and the lower edge of the foam layer 20. The exterior periphery of the external layer paper cup 30 can be coated with an external waterproof layer after carrying exquisite printing. Alternatively, the exterior periphery can be printed after coating the external waterproof layer in advance, or merely carried with exquisite printing without coating the external waterproof layer.

[0019] The cup container composed of the foregoing components, including the internal layer paper cup 10 and external layer paper cup 30 having thinner thickness, can reduce material cost, has high temperature resistance as 110 centigrade degree, and multiple benefits of well warm keeping, cold keeping and heat insulation.

[0020] In addition, to enhance the structural strength of the bottom of the cup container, a foam bottom 40 and an external paper cup bottom 50 are bonded to an exterior bottom of the

internal layer paper cup **10** in order, so that entire thickness of the bottom of the cup container can be increased. The material of the foam bottom **40** is the same as the foam layer **20**.

[0021] Further, a way of sequentially bonding the foam layer **20** and the external layer paper cup **30** to an exterior of the internal layer paper cup **10** can be any one of ultrasonic thermal bonding, electric heat bonding, hot air bonding or radio-frequency bonding.

[0022] Although the features and advantages of the embodiments according to the preferred invention are disclosed, it is not limited to the embodiments described above, but encompasses any and all modifications and changes within the spirit and scope of the following claims.

What is claimed is:

1. A structural improvement for a cup container comprising: an internal layer paper cup having an internal paper cup bottom bonded to a bottom of the cup container; and a foam layer and an external layer paper cup bonded to an exterior of the internal layer paper cup in order.

2. The structural improvement for the cup container as claimed in claim **1**, wherein an interior of the internal layer paper cup and an upper of the internal paper cup bottom are coated with a waterproof layer respectively.

3. The structural improvement for the cup container as claimed in claim **1**, wherein a foam cup-bottom is bonded to an external bottom of the internal paper cup bottom.

4. The structural improvement for the cup container as claimed in claim **3**, wherein an external paper cup bottom is bonded to an external bottom of the foam cup-bottom.

5. The structural improvement for the cup container as claimed in claim **1**, wherein a foam material of the foam layer is a biodegradable material.

6. The structural improvement for the cup container as claimed in claim **5**, wherein the biodegradable material is polylactic acid (PLA), other biodegradable material that is similar to polyethylene terephthalate (PET), including Biomax **4024** PET produced by Dupont, biodegradable copolyester FEPOI particles produced by Taiwan Far East Textile, or one of Ecoflex/Ecovio biodegradable plastic produced by Baden Aniline and Soda Factory (BASF).

7. The structural improvement for the cup container as claimed in claim **1**, wherein a foam material of the foam layer is a non-biodegradable material.

8. The structural improvement for the cup container as claimed in claim **7**, wherein the non-biodegradable material is selected from one of polystyrene (PS), polypropylene (PP), or IXPE polyethylene adhesive foams.

9. The structural improvement for the cup container as claimed in claim **1**, wherein a way of bonding the foam layer and the external layer paper cup to the exterior of the internal layer paper cup is selected from one of ultrasonic thermal bonding, electric heat bonding, hot air bonding or radio-frequency bonding.

10. A structural improvement for a cup container comprising: an internal layer paper cup having an internal paper cup bottom bonded to a bottom of the cup container; a foam layer and an external layer paper cup bonded to an exterior of the internal layer paper cup in order; and a foam cup-bottom and an external paper cup bottom bonded to an external bottom of the internal paper cup bottom in order.

11. The structural improvement for the cup container as claimed in claim **10**, wherein a foam material of the foam cup-bottom and the foam layer is biodegradable material.

12. The structural improvement for the cup container as claimed in claim **11**, wherein the biodegradable material is polylactic acid (PLA), other biodegradable material that is similar to polyethylene terephthalate (PET), including Biomax **4024** PET produced by Dupont, biodegradable copolyester FEPOI particles produced by Taiwan Far East Textile, or one of Ecoflex/Ecovio biodegradable plastic produced by Baden Aniline and Soda Factory (BASF).

13. The structural improvement for the cup container as claimed in claim **10**, wherein a foam material of the foam layer and the foam cup-bottom is a non-biodegradable material.

14. The structural improvement for the cup container as claimed in claim **13**, wherein the non-biodegradable material is selected from one of polystyrene (PS), polypropylene (PP), or IXPE polyethylene adhesive foams.

15. The structural improvement for the cup container as claimed in claim **10**, wherein a way of bonding the foam layer and the external layer paper cup to the exterior of the internal layer paper cup is selected from one of ultrasonic thermal bonding, electric heat bonding, hot air bonding or radio-frequency bonding.

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