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(54) **Composite cup structures**

Verbundbecherstrukturen

Structures de gobelet composite

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Description

BACKGROUND OF INVENTION

1. Field of the Invention

[0001] The present invention relates generally to composite cup structures.

2. Description of Related Art

[0002] Disposable liquid containers may generally be made of plastics and paper materials. Plastics containers of a single-layer structure are not suited for heat insulation despite providing advantages such as: ease of manufacturing, lower cost and better leak-proofing. Paper containers are manufactured using more complex procedures and at higher cost, but their leak-proofing effect and structural strength are inferior to that of plastics containers. Thus, multi-layer or thicker designs are required for desired heat insulation, or foamed heat-insulating layers are added, potentially leading to extremely high cost.

[0003] DE202005014177U discloses a composite cup structure comprising: an inner plastics cup and an outer paper cup, wherein: the respective rims of the inner plastics cup and outer paper cup are provided with outwards curled edges; the curled edge of the inner plastics cup is larger than the curled edge of the outer paper cup and covers the curled edge of the outer paper cup; and an upwards facing flat surface is provided on the curled edge of the inner plastics cup.

[0004] DE202004005114U discloses a composite cup structure wherein the outer cup is separated from the inner cup with the help of an extension member at a vertical edge of the outer cup.

SUMMARY OF THE INVENTION

[0005] The invention provides a composite cup structure as specified in claim 1.

[0006] The composite cup structure allows the combining of a plastics inner layer, or cup, with an outer paper cup for detachable and recycleable applications by using the extension member provided on the curled edge of the rim of the plastics inner cup.

[0007] The composite cup structure may permit the accommodation of a foamed heat-insulating layer for desired heat insulation in a space defined between the inner and outer cups.

[0008] The composite cup structure may enable the provision of various kinds of opening(s) in the body of outer paper cup, which may be helpful for marketing, without affecting the air-tightness and integrity of the composite cup structure.

[0009] The composite cup structure may be manufactured from recycled paper and plastics in a ratio of 7:3 paper to plastics, thereby contributing to environmental protection and cost effectiveness.

[0010] Embodiments of the composite cup structure comprise: an inner plastic cup and an outer paper cup; the rims of both inner plastic cup and outer paper cup are provided with outwards curled edges, in particular: the curled edge of the inner plastic cup is slightly larger than that of the outer paper cup, and a flat surface is formed on the top; besides, an extension member of any shape is formed on the curled edge towards the cup bottom; when the inner and outer cups are overlapped, the curled edge of the inner plastic cup could cover the curled edge of the outer paper cup, thus forming a leakproofing composite cup of excellent strength; the extension member contributes to the separation of inner and outer cups for classification and recycling.

[0011] Embodiments of the invention include a method of forming a composite cup structure comprising:

housing an inner plastics cup in an outer paper cup, disposing an outwardly curling edge of the rim of the inner plastics cup about the outwardly curling edge of the rim of the outer paper cup; providing an upwards facing flat surface of the curling edge of the inner plastics cup; and providing an extension member on the outwardly curling edge of the inner plastics to facilitate separation of the inner and outer cups.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

FIG. 1 is an exploded view of a composite cup structure.

FIG. 2 is an assembly view of the composite cup structure.

FIG. 3 is a sectional view of the composite cup structure of FIG. 2.

FIG. 4 shows various shapes of extension members that may be provided on the curled edge of the inner cup of the composite cup structure.

FIG. 5 shows various shapes of opening(s) that may be provided in the body of the outer cup of the composite cup structure.

FIG. 6 is an assembly view of another composite cup structure.

FIG. 7 is a sectional view of the composite cup structure of FIG. 6.

FIG. 8 is a sectional view of yet another composite cup structure.

FIG. 9 is a sectional view of still another composite cup structure.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

[0013] Referring to FIGS. 1 to 3, a composite cup structure comprises: an inner plastics cup 1 and an outer paper cup 2, with a ratio of 7:3 of paper to plastics (ie weight

percentage 70%: 30%). The outer paper cup 2 provides greater structural strength and is convenient for printing and the incorporation, or application, of marketing features. Recycled paper may be adopted in consideration of environmental protection and cost effectiveness. The plastics inner cup, which will contact with the contents of the composite cup structure, may eliminate concerns on food sanitation or safety.

[0014] The rims of both the inner plastics cup 1 and the outer paper cup 2 are provided with outwards curled edges 11, 21. The curled edge 11 of the inner plastics cup 1 is slightly larger than the curled edge 21 of the outer paper cup 2. A flat surface F is provided on the top of the curled edge 11 so that packaging required for heat sealing may achieve higher levels of air-tightness to ensure that the contents sealed in the composite cup structure are fully isolated from the outside air to prevent oxidation. An extension sheet, or member, 12 of any geometric shape may be provided on the curled edge 11. The extension sheet 12 extends from the curled edge 11 towards the cup bottom, as shown in FIG. 2.

[0015] The inner plastics cup 1 may be made of PP (Polypropylene), PS (Polystyrene), PLA (Polylactide), PE (Polyethylene) or PET (Polyethylene Terephthalate).

[0016] During assembly of the composite cup structure, the curled edge 11 of the inner plastics cup 1 is spread, then the outer paper cup 2 is sleeved onto the inner plastic cup 1, such that the curled edge 11 of the inner plastic cup 1 can cover the curled edge 21 of the outer paper cup 2. After overlapping, the inner plastics cup 1 may eliminate possible leakage, thereby providing a composite cup structure with excellent heat-insulation, leak-proofing and strength and little or no condensation.

[0017] The outer paper cup 2 of the composite cup structure may be suitable for printing and marketing due to its excellent structural strength or the surface properties it provides.

[0018] When it is intended to separate the inner and outer cups 1, 2 of the composite cup, the extension member 12 on the curled edge 11 of the inner plastic cup 1 may be pulled up such that the inner plastics cup 1 and the outer paper cup 2 can be readily separated for independent use.

[0019] The composite cup structure may be manufactured by combining two containers of different materials, without the need of any glue or adhesive. Upon completion of assembly of the composite cup structure, the extension member 12 can be used to allow easy separation of the inner plastics cup 1 and outer paper cup 2 for subsequent classification and recycling.

[0020] Referring to FIG. 4, the extension member 12 on the curled edge 11 of the inner plastics cup 1, which may take the form of a tab, can be any desired shape, such as: tear drop, convex, round, polygonal and rectangular. Referring to FIG. 5, various forms of opening(s) 22 may be provided in the body of outer paper cup 2. The opening(s) 22 may, for example, be oval, banded, diamond-shaped, rectangular, round or straight. This may

allow the contents of the inner plastics cup 1 to be seen, to promote marketing, without affecting the air-tightness and integrity of the composite cup structure.

[0021] Referring to FIGS. 6 and 7, when the contents of the composite cup structure need to be sealed against exposure to the atmosphere, the curled edge 11 on the rim of the inner plastic cup 1 may be sealed with an adhesive film 13. The flat surface F is provided on the top of the curled edge 11 to facilitate sealing, such as heat-sealing, so that the sealed contents are fully isolated from the outside air to avoid oxidation.

[0022] Referring to FIG. 8, a heat-insulating layer 3 may be provided between the inner plastics cup 1 and outer paper cup 2. The heat-insulating layer 3 may be a plastics-foamed layer formed around the body of inner plastics cup 1 and may be made of the same plastics material. Once the inner and outer cups 1, 2 are overlapped, a heat-insulating, leak-proofed composite cup structure having excellent strength and little or no condensation on its external surface can be provided.

[0023] Referring to FIG. 9, when the contents of the composite cup structure need to be sealed from contact with the atmosphere, the curled edge 11 on the rim of the inner plastics cup 1 is sealed with a sealing layer, such as an adhesive film, so that the contents are fully isolated from contact with the air to prevent oxidation.

[0024] Although not shown in the illustrated embodiments, the inner plastics cup may be provided with more than one extension member, for example, two oppositely disposed extension members.

[0025] The illustrated embodiments described above may provide one or more of the following advantages:

1. The inner and outer cups are assembled without the need of any glue or adhesive.
2. The extension sheet of the composite cup structure can be used to easily separate the inner and outer cups for subsequent classification and recycling.
3. The outer paper cup provides greater structural strength or better surface properties for printing and marketing than a plastics cup.
4. The materials and moulding pattern of the inner plastic cup may eliminate leakage.
5. A flat surface is provided on the top of the curled edge of the inner cup facilitates sealing procedures so that the sealed-in contents of the composite cup structure can be fully isolated from the atmosphere to avoid oxidation.
6. The extension member of the inner plastics cup allows easy separation of the inner and outer cups without affecting the air-tightness and strength of the composite cup structure.
7. Various forms of opening(s) may be provided in the body, or side, of the outer paper cup, helping to promote marketing without affecting the air-tightness and integrity of the composite cup structure.
8. The composite cup may be manufactured from

paper and plastics with a ratio of 7:3 paper to plastics and recycled paper may be used in consideration of environmental protection and cost effectiveness. Because it is the plastics inner cup that contacts with the contents of the composite cup structure, good food sanitation or safety may be provided.

Claims

1. A composite cup structure comprising: an inner plastics cup (1) and an outer paper cup (2), wherein:

the respective rims of the inner plastics cup and outer paper cup are provided with outwards curled edges (11, 21);
the curled edge (11) of the inner plastics cup is larger than the curled edge (21) of the outer paper cup and covers the curled edge (21) of the outer paper cup; and
an upwards facing flat surface (F) is provided on the curled edge (11) of the inner plastics cup, **characterised in that** an extension member (12) is provided on the curled edge (11) of the inner cup (1) to facilitate separation of the inner and outer cups.

2. A composite cup structure as claimed in Claim 1, wherein the extension member (12) has one of the following shapes: tear drop, convex, round, polygonal and rectangular.
3. A composite cup structure as claimed in Claim 1 or 2, wherein at least one opening (22) is provided in the side of the outer paper cup (2) to permit viewing of the side of the inner plastics cup (1).
4. A composite cup structure as claimed in Claim 3, wherein the at least one opening (22) comprises an opening having one of the following shapes: oval, banded, diamond-shaped, rectangular, round and straight.
5. A composite cup structure as claimed in any one of the preceding Claims, wherein the inner plastics cup is made of PP (Polypropylene), PS (Polystyrene), PLA (Polylactide), PE (Polyethylene) or PET (Polyethylene Terephthalate).
6. A composite cup structure as claimed in any one of the preceding Claims, wherein the interior of the inner plastics cup (1) is sealed by a film (13) secured to the curled edge (11) of the rim thereof.
7. A composite cup structure as claimed in any one of the preceding Claims, wherein a heat-insulating layer (3) is provided between the inner plastics cup (1) and the outer paper cup (2).

8. A composite cup as claimed in Claim 7, wherein the heat-insulating layer (3) comprises a plastics-foamed layer formed around the body of inner plastics cup.

9. A composite cup structure as claimed in Claim 7 or 8, wherein the heat-insulating layer (3) and inner plastics cup (1) are made of the same materials.

10. A composite cup structure as claimed in any one of the preceding Claims, wherein the ratio of paper to plastics material is 7:3.

11. A composite cup structure as claimed in any one of the preceding Claims, wherein the outer paper cup (2) is made of recycled paper.

12. A composite cup structure as claimed in any one of the preceding Claims, wherein said inner plastics cup is semi-transparent or transparent.

13. A composite cup structure as claimed in any one of the preceding Claims, wherein said inner plastics cup is secured to said outer paper cup by fitting of the curled edge (11) of the inner plastics cup onto the curled edge (21) of the outer paper cup.

14. A composite cup structure as claimed in any one of the preceding Claims, wherein said curled edge (11) wraps around said inner plastics cup.

15. A composite cup structure as claimed in any one of the preceding Claims, wherein said extension member (12) depends from said curled edge (11) of the inner plastics cup.

Patentansprüche

1. Verbundbecherstruktur, die einen inneren Plastikbecher (1) und einem äußeren Pappbecher (2) umfasst, wobei die jeweiligen Ränder des inneren Plastikbeckers und des äußeren Pappbeckers nach außen gerollte Kanten (11, 21) aufweisen; die gerollte Kante (11) des inneren Plastikbeckers größer ist als die gerollte Kante (21) des äußeren Pappbeckers und die gerollte Kante (21) des äußeren Pappbeckers abdeckt; und eine nach oben gerichtete flache Oberfläche (F) auf der gerollten Kante (11) des inneren Plastikbeckers vorgesehen ist, **dadurch gekennzeichnet, dass** ein Erweiterungsteil (12) auf der gerollten Kante (11) des inneren Beckers (1) vorgesehen ist, um die Trennung der inneren und äußeren Becher zu erleichtern.
2. Verbundbecherstruktur gemäß Anspruch 1, wobei das Erweiterungsteil (12) eine der folgenden Formen

aufweist: tropfenförmig, konvex, rund, vieleckig und viereckig.

3. Verbundbecherstruktur gemäß Anspruch 1 oder 2, wobei mindestens eine Öffnung (22) in der Seitenfläche des äußeren Pappbechers (2) vorgesehen ist, um den Blick auf die Seitenfläche des inneren Plastikbechers (1) zu erlauben. 5
4. Verbundbecherstruktur gemäß Anspruch 3, wobei die mindestens eine Öffnung (22) eine Öffnung umfasst, die die folgenden Formen aufweist: oval, gebändert, rautenförmig, viereckig, rund und gerade. 10
5. Verbundbecherstruktur gemäß einem der vorhergehenden Ansprüche, wobei der innere Plastikbecher aus PP (Polypropylen), PS (Polystyren), PLA (Polylactide), PE (Polyethylen) oder PET (Polyethylen Terephthalat) hergestellt wird. 15
6. Verbundbecherstruktur gemäß einem der vorhergehenden Ansprüche, wobei das Innere des inneren Plastikbechers (1) durch einen Überzug (13) versiegelt ist, der an der gerollten Kante (11) des Randes befestigt ist. 20
7. Verbundbecherstruktur gemäß einem der vorhergehenden Ansprüche, wobei eine Wärmedämmschicht (3) zwischen dem inneren Plastikbecher (1) und dem äußeren Pappbecher (2) vorgesehen ist. 25
8. Verbundbecherstruktur gemäß Anspruch 7, wobei die Wärmedämmschicht (3) eine aufgeschäumte Plastikschiicht umfasst, die rund um den Körper des inneren Plastikbechers gebildet ist. 30
9. Verbundbecherstruktur gemäß Anspruch 7 oder 8, wobei die Wärmedämmschicht (3) und der innere Plastikbecher (1) aus denselben Materialien hergestellt sind. 35
10. Verbundbecherstruktur gemäß einem der vorhergehenden Ansprüche, wobei das Verhältnis von Papier- zu Plastikmaterial 7:3 beträgt. 40
11. Verbundbecherstruktur gemäß einem der vorhergehenden Ansprüche, wobei der äußere Pappbecher (2) aus recyceltem Papier hergestellt ist. 45
12. Verbundbecherstruktur gemäß einem der vorhergehenden Ansprüche, wobei der innere Plastikbecher halbdurchsichtig oder durchsichtig ist. 50
13. Verbundbecherstruktur gemäß einem der vorhergehenden Ansprüche, wobei der innere Plastikbecher am äußeren Pappbecher durch Einpassen der gerollten Kante (11) des inneren Plastikbechers in die gerollten Kante (21) des äußeren Pappbechers be-

festigt ist.

14. Verbundbecherstruktur gemäß einem der obigen Ansprüche, wobei die gerollte Kante (11) den inneren Plastikbecher umgibt. 5
15. Verbundbecherstruktur gemäß einem der vorhergehenden Ansprüche, wobei das Erweiterungsteil (12) von der gerollten Kante (11) des inneren Plastikbechers herunterhängt. 10

Revendications

1. Structure de gobelet composite comprenant : un gobelet en plastique intérieur (1) et un gobelet en papier extérieur (2), dans laquelle :

les bordures respectives du gobelet en plastique intérieur et du gobelet en papier extérieur sont pourvues d'arêtes (11, 21) formant une volute vers l'extérieur ;

l'arête (11) formant une volute du gobelet en plastique intérieur est plus grande que l'arête (21) formant une volute du gobelet en papier extérieur et recouvre l'arête (21) formant une volute du gobelet en papier extérieur ; et une surface plate (F) orientée vers le haut étant prévue sur l'arête (11) formant une volute du gobelet en plastique intérieur ;

caractérisée en ce qu'un élément de prolongement (12) est prévu sur l'arête (11) formant une volute du gobelet intérieur (1) pour faciliter la séparation des gobelets intérieur et extérieur.

2. Structure de gobelet composite selon la revendication 1, dans laquelle l'élément de prolongement (12) a une des formes suivantes : forme de larme, forme convexe, ronde, polygonale et rectangulaire. 40
3. Structure de gobelet composite selon la revendication 1 ou 2, dans laquelle au moins une ouverture (22) est prévue dans le côté du gobelet en papier extérieur (2) pour permettre de voir le côté du gobelet en plastique intérieur (1). 45
4. Structure de gobelet composite selon la revendication 3, dans laquelle l'au moins une ouverture (22) comprend une ouverture ayant une des formes suivantes : ovale, sanglée, en forme de diamant, rectangulaire, ronde et droite. 50
5. Structure de gobelet composite selon l'une quelconque des revendications précédentes, dans laquelle le gobelet en plastique intérieur est fabriqué à partir de PP (polypropylène), PS (polystyrène), PLA (acide polylactique), PE (polyéthylène) ou PET (polyéthylène téréphthalate). 55

6. Structure de gobelet composite selon l'une quelconque des revendications précédentes, dans laquelle l'intérieur du gobelet en plastique intérieur (1) est scellé de façon étanche par un film (13) fixé à l'arête (11) formant une volute de la bordure correspondante. 5
7. Structure de gobelet composite selon l'une quelconque des revendications précédentes, dans laquelle une couche thermo-isolante (3) est prévue entre le gobelet en plastique intérieur (1) et le gobelet en papier extérieur (2). 10
8. Gobelet composite selon la revendication 7, dans lequel la couche thermo-isolante (3) comprend une couche en mousse plastique formée autour du corps de gobelet en plastique intérieur. 15
9. Structure de gobelet composite selon la revendication 7 ou 8, dans laquelle la couche thermo-isolante (3) et le gobelet en plastique intérieur (1) sont fabriqués à partir des mêmes matériaux. 20
10. Structure de gobelet composite selon l'une quelconque des revendications précédentes, dans laquelle le rapport de papier sur matériau en plastique est de 7:3. 25
11. Structure de gobelet composite selon l'une quelconque des revendications précédentes, dans laquelle le gobelet en papier extérieur (2) est fabriqué à partir de papier recyclé. 30
12. Structure de gobelet composite selon l'une quelconque des revendications précédentes, dans laquelle ledit gobelet en plastique intérieur est semi-transparent ou transparent. 35
13. Structure de gobelet composite selon l'une quelconque des revendications précédentes, dans laquelle ledit gobelet en plastique intérieur est fixé audit gobelet en papier extérieur en ajustant l'arête (11) formant une volute du gobelet en plastique intérieur sur l'arête (21) formant une volute du gobelet en papier extérieur. 40
45
14. Structure de gobelet composite selon l'une quelconque des revendications précédentes, dans laquelle ladite arête (11) formant une volute s'enroule autour dudit gobelet en plastique intérieur. 50
15. Structure de gobelet composite selon l'une quelconque des revendications précédentes, dans laquelle ledit élément de prolongement (12) dépend de ladite arête (11) formant une volute du gobelet en plastique intérieur. 55

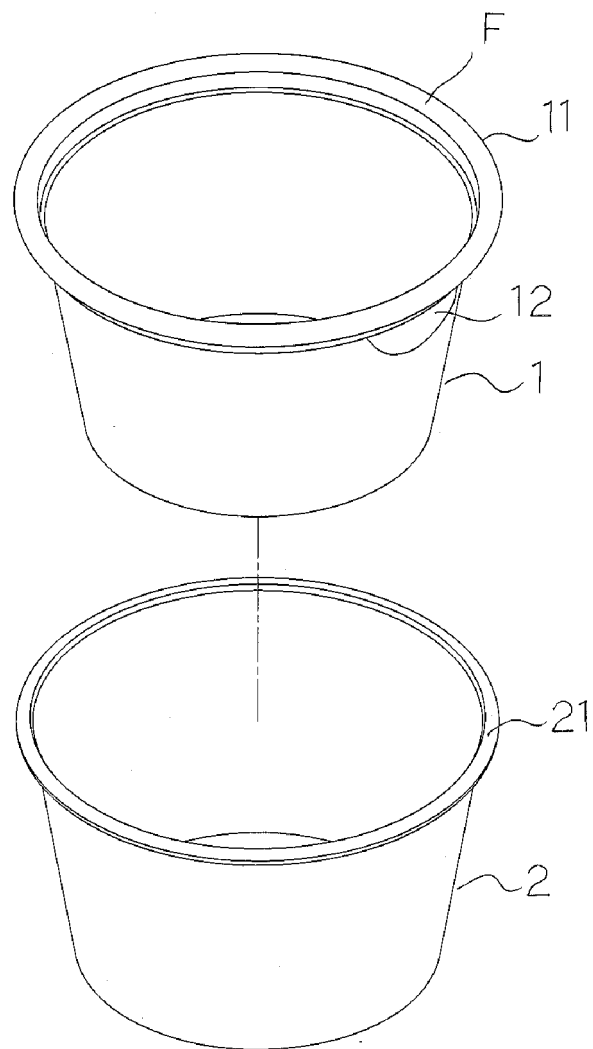


FIG. 1

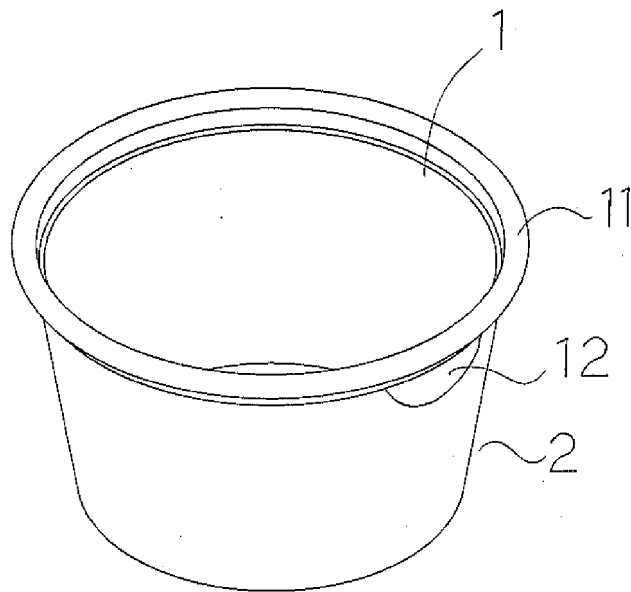


FIG. 2

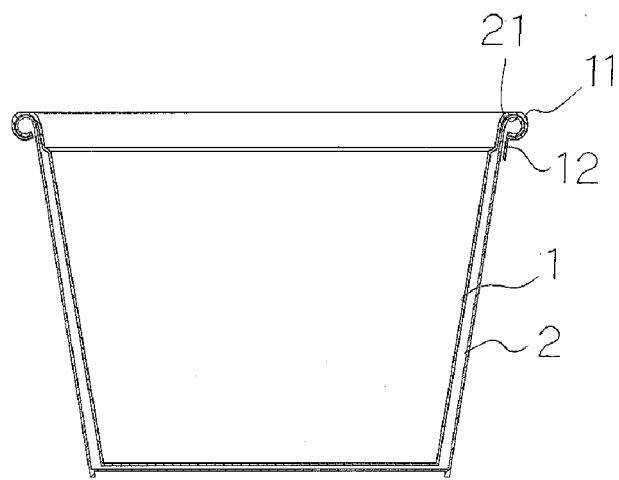


FIG. 3

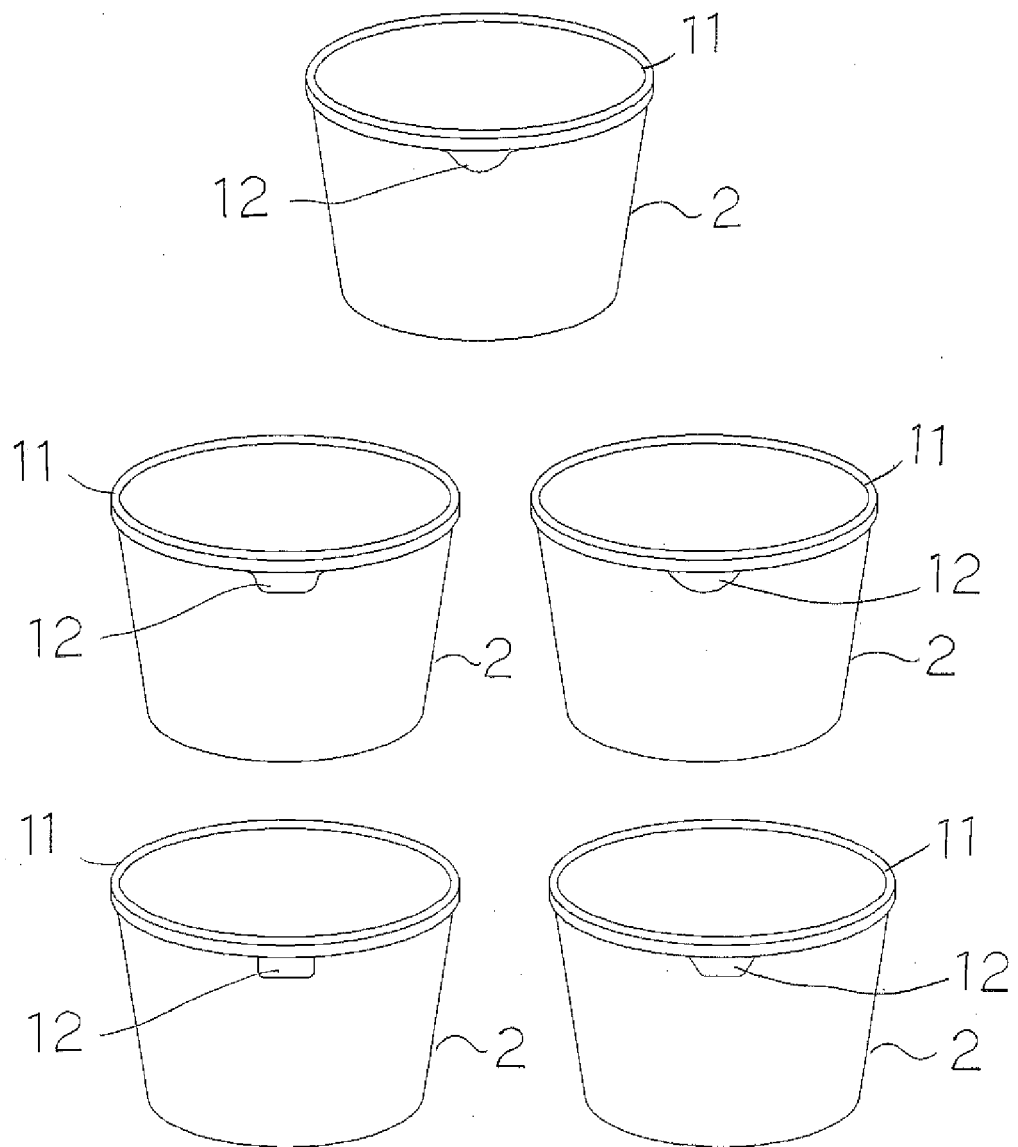


FIG. 4

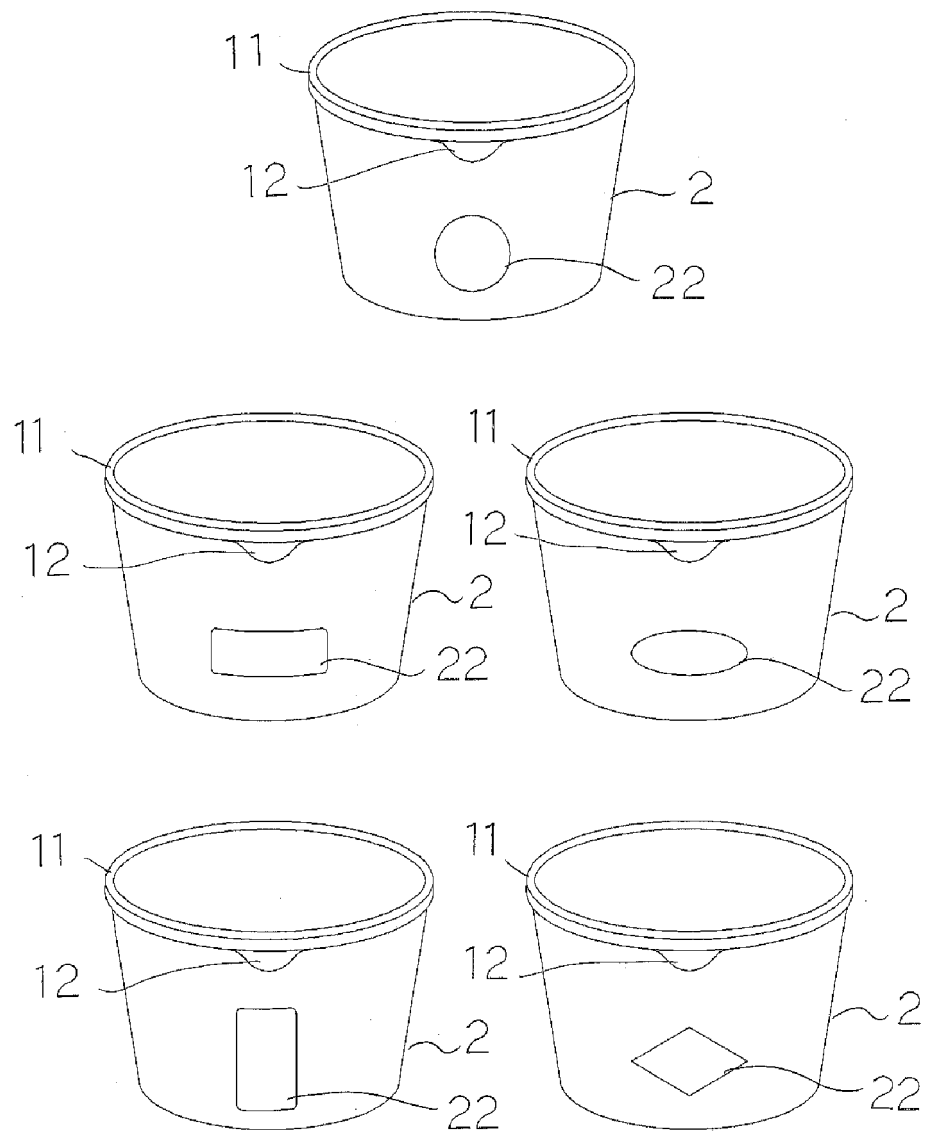


FIG. 5

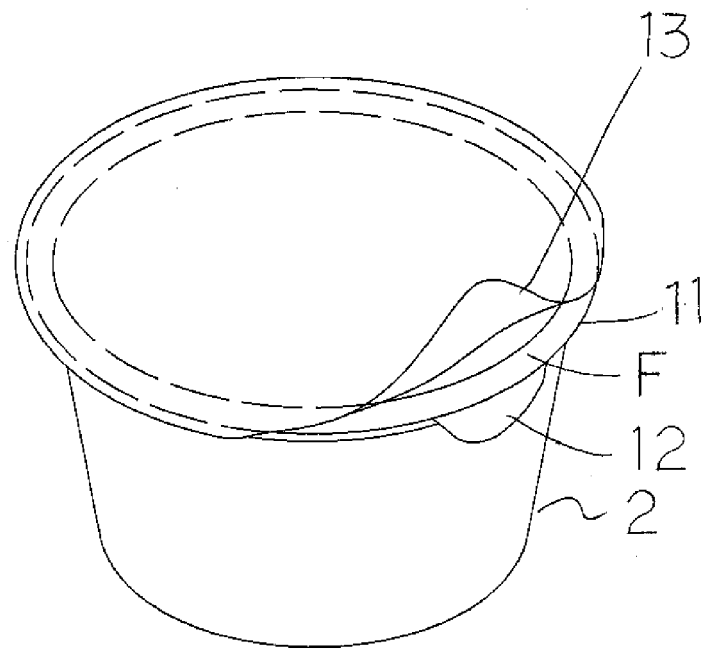


FIG. 6

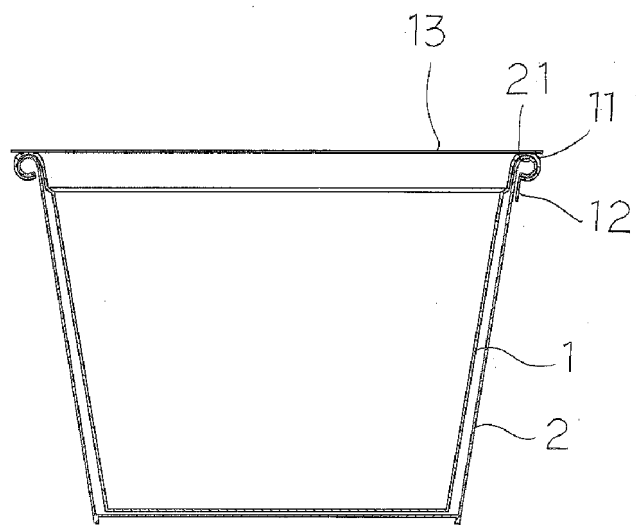


FIG. 7

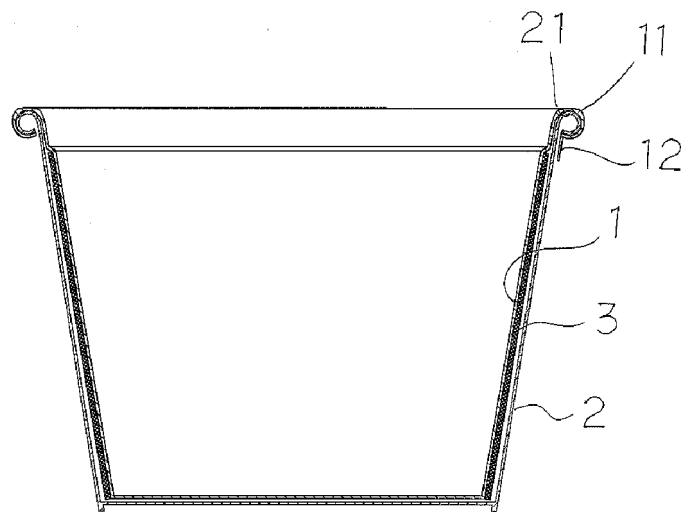


FIG. 8

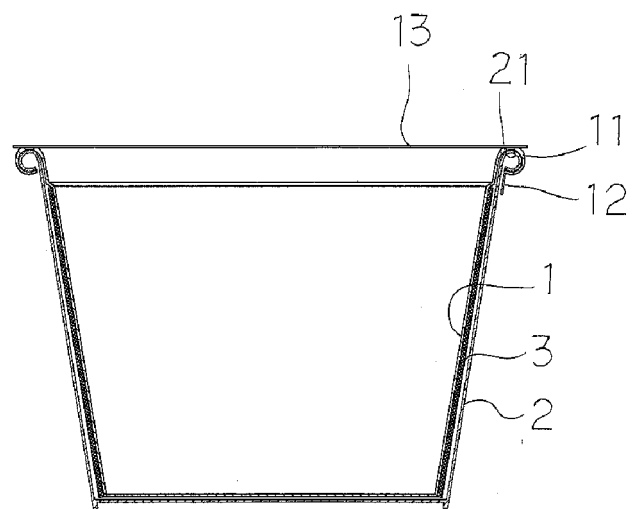


FIG. 9

REFERENCES CITED IN THE DESCRIPTION

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