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References cited:

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Description

Background

[0001] The present invention relates to a cup carrier.

[0002] Such carriers for cups are already disclosed in WO-2006/065132, EP-1489015 and US 6,076,876 in general. US-5,713,619 discloses a carrier according to the preamble of appended claim 1. It was suggested to make these carriers from moulded fibre material, but also from plastic material. These carriers have pockets or accommodations for receiving and holding cups, for instance beverage cups or beakers with ice-cream or milkshakes or hot and cold beverages. These carriers are mostly disposable and often used in fast food restaurants and convenience stores.

[0003] These cup carriers should be rigid, disposable, and easy to stack. Furthermore, they should be easy and cheap in production.

[0004] Known carriers can be improved.

Summary of the Invention

[0005] The invention aims to improve known carriers.

[0006] According to the invention this is realized with a carrier for cups, comprising at least two accommodations for cups and a circumferential wall surrounding and connecting said accommodations, wherein said carrier is made from moulded fibre, according to claim 1.

[0007] It was found that this allows a small footprint and a light weight cup carrier, for instance for a two-cup carrier of a four-cup carrier. And despite the small footprint and light weight, they still match user tests like the lift test.

[0008] In an embodiment, the cup carrier has a weight of less than 5.5 gr per accommodation at almost 0% moisture content.

[0009] In an embodiment, the downward extending walls of the gutter-shaped part extend at least 20 mm downward.

[0010] In an embodiment, the gutter-shaped part has a length of more than 30 mm.

[0011] In an embodiment, said gutter-shaped part connects said accommodations lengthwise.

[0012] In an embodiment, said holding parts are provided at positions at the circumference of the accommodations and shaped for providing a substantially round, tapered radiused lead into said accommodation.

[0013] In an embodiment, the accommodations have holding parts extending into the accommodations and provided with a T-shaped cutting and have an open gap between the bottom of the accommodation for providing lips for exerting a force on an inserted cup for holding it in the accommodation, said holding parts having a wall part providing a radiused lead or lead-in and which tapers into the accommodation.

[0014] The cup carrier has a weight of less than 7 gram per accommodation at almost 0% moisture content while providing a strength and rigidity to pass the lift test. Thus, for a two cup carrier the total weight would be less than about 2x7gr=14 gram, while still being able to pass used tests. For a four cup carrier, the total weight would thus be less than 4x7gr=28 gram. In this context, determining the weight at about 0% moisture content is done in the following way, which will reduce moisture content to very close to 0%. First, the cup carrier is placed in an oven, usually a hot air oven, and heated to about 150 degrees Celsius for at least 30 minutes. Next, the cup carrier is taken out of the oven and weighted on a scale at an accuracy of 0.1 gram.

[0015] In fact, it proved possible to make a cup carrier having a weight of less than about 6.5 gr per cup. The weight could even be further reduced in case of a four cup carrier to about 5.5 gram per accommodation, thus providing a cup carrier of less than 22 gr at almost 0% moisture content.

[0016] In this respect, the lift test is internationally recognised in this field and is defined in the following way.

LIFT TEST

[0017] This test is carried out on the 4-Cup drink carrier to ensure that it is strong enough to support four (4) 0.5 liter filled cups (total load weight of 2.4 kg)

Frequency of testing: Minimum once in 24 hrs.
Test equipment: Four 0.5 litre cups with inserts, each weigh 600 grams and total load weight of 2.4 kg.

Test method:

[0018]
1. Obtain one 4-Cup carrier sample from the production line and place on the table.
2. Place four 0.5 litre cups with insert firmly into the carrier pockets.
3. Hold the loaded 4-Cup carrier by the side support arm.
4. Lift the loaded 4-Cup carrier and hold steady in a horizontal position for 30 seconds.

[0019] The test sample has failed if the carrier collapses before 30 seconds.

ANGLE TEST

[0020] This test is carried out on the 4-Cup drink carrier to ensure that the specified size of cold drink cups remain secure in the 4-cup carrier when it is passed from a drive-in window to a seated car occupant. The angle of passage has been determined to be 30 degrees to the horizontal.


Test equipment:

[0022]
1. Angle test board with 30 degree angle and a rim with a height of about 2 cm.
2. Two 0.25 litre cups with insert, each weigh 300 grams +/- 5 g
3. Two 0.5 litre cups with insert, each weigh 600 grams +/- 5 g.

Test method:

[0023]
1. Obtain one 4-Cup carrier sample from the production line and place on the table next to the angle test board.
2. Place the cups with insert firmly into the carrier pockets with like sizes located diagonally.
3. Place the loaded carrier on the angle test board, against the rim.
4. Raise the board to 30 degree mark. Hold the loaded carrier in the raised position for 5 seconds and observe the security of the cups.

The test sample has failed:

[0024]
1. If a cup (s) falls out of its pocket.
2. If any of the upper cups dislodge enough to touch a lower one.

[0025] In an embodiment, the accommodations comprise a bottom wall for supporting the bottom of cups. In particular, the accommodations, also referred to as pockets, comprise several holding parts extending into the accommodations for in use exerting a resilient force to an inserted cup for holding it in place, said holding parts provided at positions at the circumference of the accommodations and shaped for providing a substantially round, tapered radius lead into said accommodation. An advantage of such a radius lead or lead-in or run-in into said accommodation is that cups are better supported. Furthermore, it is easier to place cups with different sizes, in particular cross section near the bottom, in the pockets or accommodations. In a particular embodiment, the accommodations have holding parts are provided with a T-shaped cutting and have an open gap between the bottom of an accommodation to a bottom wall of an accommodation. Thus, lips are provided which providing a resilient force on an inserted cup for holding it in the accommodation.

[0026] The cup carrier comprises at least one gutter-shaped part having two opposite, inwardly sloping, downward extending walls extending at least 12 mm downward and connecting to a bottom wall part with a width of at least 5 mm and a length of at least 10 mm. It was found that such a gutter-shaped part increases the strength and stiffness of the cup carrier. In a four cup carrier, such a gutter-shaped part connects two neighboring accommodations and has one inward sloping, downward extending wall connected to the circumferential wall. In fact, such a gutter-shaped part has downward extending walls extending at last 20 mm downward. In an embodiment, said pair of opposite, continuous, inwardly sloping, downward extending walls extend about 12-25 mm downward. In an other or further embodiment, said bottom wall part has a width of about 5-10 mm. In order to connect accommodations in a ridged way, the gutter-shaped parts can have a length of more than 30 mm. Thus, it was found that such a gutter-shaped part provides a very ridged
cup carrier, and allowing cups to be positioned closed together. For a two cup carrier, a gutter-shaped part is provided for connecting its two accommodations. Furthermore, smaller gutter-shaped parts are provided at the inner circumference of the circumferential wall connecting the accommodations. Thus, additional rigidity is provided which allows further weight reduction in the design. It was further found that providing straight walls which are as large as possible provide more rigidity and stiffness and strength than stepped wall as was the commonly accepted design choice.

In an embodiment, between two accommodations, said circumferential wall comprises a widened part.

The circumferential rim with the widened parts provide central grip parts at the sides which provide an improved grip. Furthermore, these grip part provides additional rigidity to the cup carrier, which proves to be an important product feature. The grip part does not influence the stackability of the carrier. Furthermore, it provides a space for adding a logo or trademark. The logo or trademark can be embossed.

In an embodiment notches are provided near each corner. These notches can extend to the same height as the circumferential wall. Between a notch and the circumferential wall, a connecting gutter-shaped part can be provided. In fact, the notches may be provided in the form of upward extending parts of holding parts extending into the accommodations and described above.

The carrier needs to be appealing to a consumer. In an embodiment, it is produced using a rotor mould with suction cups which are passed through a bath of pulp. In particular in an embodiment, production took place on a so called three rotor apparatus and proved to be able to produce beneficial products. In this method, a slurry of fiber pulp was produced. Next, using suction rotors, a layer of wet fiber material is collected on a wire mesh material of the suction rotors. This layer was transferred to a second mould or pressing mould on a second rotor, causing a pre-pressing of the wet moulded layer. Subsequently, the moulded layer was transferred to a third mould. After this, the moulded layer was transferred to an oven and dried in that oven. In particular the wet pre-pressing was found to result in an increase in smoothness of the back side. Thus, they de-stack or de-nest better. Carriers of the current invention allow better stacking. For instance, the carriers of the current invention can be stacked 7200 carriers on a Euro-pallet to a height of 2.5 m. Before, 6300 carriers could be stacked on a Euro-pallet to 2.5 m height.

Furthermore, the cup carriers need to be only about 26-29 gram to attain the required stiffness and strength. That used to be 30-35 gram. The current design reduces weight. Furthermore, the production method also allows a reduction in weight.

In an embodiment, a through hole is provided in the center of the carrier. This allows faster de-stacking of the cup carriers and saves weight. A user can reach through this hole with a finger and can thus de-stack a carrier from a stack when needed. This takes less time. For instance in a fast food restaurant, every second counts. If an employee can gain one second by easier denesting of the cup carrier, this would save many hundreds of seconds on a daily basis. In case of a fast food chain having hundreds of restaurants, it would save many hundreds of labour/working hours each year and can save money.

Advantages of these embodiments are also mentioned in the description of the drawings. Embodiments of the carrier are provided in the dependent claims and in the description of the drawings provided.

In an embodiment in which said cup carrier has a circumferential wall with a widened part, said circumferential wall has a width of about 0.5-1.0 cm, and said widened part has a width of about 1.5-2.5 cm.

In an embodiment, said widened part widens downward at a circumferential edge of the circumferential wall.

In an embodiment, said widened part widens upward at a carrier rim.

In an embodiment, said circumferential wall slopes toward the inside of the carrier.

In an embodiment, said widened part slopes at a smaller angle than the rest of the circumferential wall.

In an embodiment, the lower edge of the circumferential wall including said widened part is in one flat plane.

In an embodiment the upper part of the circumferential wall including said widened part is in one flat plane. In an embodiment thereof, the lower edge of the circumferential wall including said widened part is in one flat plane and the upper part of the circumferential wall including said widened part is in one flat plane, providing the upper part of the circumferential wall with a wave in the flat plane of the upper part.

In an embodiment, between two accommodations, said circumferential wall comprises a widened part.

In an embodiment said carrier is substantially square, said circumferential wall having four substantially identical sides.

In an embodiment said carrier is rotational symmetric for rotations over 90 degrees with respect to an axis of rotation normal to the plane of said accommodations and through the centre of said carrier.

In an embodiment said carrier is produced in a moulded fibre process comprising a step of pre-pressing a wet moulded fibre layer.

In an embodiment, wherein said cup carrier is made from moulded fibre, and has a weight of less than 7 gr per accommodation at almost 0% moisture content while providing a strength and rigidity to pass the lift test, it has a weight.
for a cup carrier having two accommodations of less than about 14 gr, while being able to pass the lift test.

In an embodiment, a weight for a cup carrier has four accommodations of less than 26 gr., in a particular embodiment it has a weight of less than about 22 gr at almost 0% moisture content.

In an embodiment of the cup carrier with a substantially round, tapered radiused lead into said accommodation, the accommodations have holding parts extending into the accommodations and provided with a T-shaped cutting and have an open gap between the bottom of the accommodation for providing lips for exerting a force on an inserted cup for holding it in the accommodation, said holding parts having a wall part providing said tapered radiused lead or lead-in for holding it in the accommodation, said holding parts having a wall part providing said tapered radiused lead or lead-in for holding it in the accommodation, said holding parts having a wall part providing said tapered radiused lead or lead-in.

In an embodiment of the cup carrier with at least one gutter-shaped part, the downward extending walls extend at last 20 mm downward.

In an embodiment thereof, the gutter-shaped parts have a length of more than 30 mm.

The invention further relates to a method comprising one or more of the characterising features described in this description and/or shown in the attached drawings.

The various aspects discussed in this patent can be combined in order to provide additional advantages. In fact, features which are mentioned in relation to one aspect of the invention are also combined with other aspects of the invention.

Description of the Drawings

The invention will be further elucidated referring to an embodiment of a carrier for cups shown in the attached drawings, showing in:

Figures 1-3 are a perspective view, a top view and a side view of another cup carrier.

Detailed Description of Embodiments

In the description of embodiments, the same reference numerals refer to the same or functionally the same or functionally similar features.

In figures 1-3, an embodiment of a cup carrier 1 is presented, respectively showing a perspective view, a top and a side view. This cup carrier 1 is a four-cup carrier and again has a circumferential wall 10 surrounding four accommodations 2. The pockets 2 have a bottom wall 4 for securely supporting cups. In this embodiment, the circumferential wall is slightly curved to flare out a little to further increase the strength. This embodiment again comprises the gutter-shaped parts 8 having a pair of opposite walls 11, 11’ connected via a bottom wall 12. In this embodiment, the widths of the slightly tapered side walls 11, 11’of the gutter-shaped parts 8 are about 12-25 mm. In this embodiment, the bottom wall 12 has a width of about 5-10 mm. In particular, in this embodiment the gutter-shaped part has a bottom wall 12 with a width of about 6.1 mm and a height of about 15 mm. Its length is about 5 cm. In the embodiments shown, the gutter-shaped parts 8 open substantially in the same direction as the accommodations 2. Furthermore, in this embodiment the inner surface of the bottom wall 12 is almost or substantially flat, as far as possible in moulded fibre technology.

The gutter shaped part 8, in particular the gutter-shaped parts 8 neighbouring and/or situated within the circumferential wall 10, provided rigidity to the cup carrier 1. Thus, the gutter-shaped parts 8 align with the circumferential wall 10. In fact, tests showed that the gutter-shaped part allowed a reduction in material and thus weight while still allowing a design which passes the lift test. In this embodiment, the central part 30 is dome-shaped to provide additional strength. Furthermore, the specific shape also allowed an aesthetic design.

In the embodiment of figures 1-3, the clamping means 20 only have openings 31 at their lower ends. Thus, the clamping parts 20 have sufficient flexibility in a direction transverse to the accommodations 2 in order to allow them to clamp a beaker or cup by allowing flexing in outward direction and exerting an inward directed pressing force to an inserted cup or beaker. It was found that in this design the T-slots were no longer required. The absence of the T-slots further provided additional strength to the cup carrier 1. Again, the clamping parts 20 have a curved wall part 15. This design allows a cup carrier which complies with all the requirements summed above and having a weight of about 22-23 gr.

A three-rotor method is used in production. In this method, first a wet fibre layer is produced on a suction rotor. Next, this layer is transferred to a second moulding rotor, also called pressing rotor. This transferrol provides an additional pre-pressing which was found to provide additional strength. This allowed a material and weight reduction. Furthermore, it provides a smoother product, in particular a smoother back, i.e. the non-wire side or non-gauze side. This all allowing more carriers 1 to be stacked on a unit height. In this method, via an additional rotor step the products are transferred to a drying oven in which the carriers are dried to a moisture content of about 5% by weight or less. In a conventional two-rotor process, a distance between the suction mould and a transfer mould will be about 2.5-3 mm. In the three-rotor process, it can be reduced to 1-1.5 mm. This allows the fibres in the pulp to get more aligned. It was found that this increases the strength of the moulded fibre material.

In another embodiment, a moulded fibre method is used in which the wet fibre layer is transferred onto a hot
mould on which a high pressure is applied to the fibre layer. In this production step, the carrier of carriers is or are dried to a moisture content of about 5 % by weight or less. This provides an even smoother product with a thinner wall. 

[0060] Using the processes described, it may be possible to produce several mutually attached carriers in each go. Subsequently, these can be cut into individual carriers.

[0061] It will also be clear that the above description and drawings are included to illustrate some embodiments of the invention, and not to limit the scope of protection. Starting from this disclosure, many more embodiments will be evident to a skilled person which are within the scope of the appended claims.

Claims

1. A cup carrier (1) made from moulded fibre and comprising;
   - at least two accommodations (2) for cups, the accommodations comprise a bottom wall for supporting the bottom of cups and several holding parts extending into the accommodations for in use exerting a resilient force to an inserted cup for holding it in place;
   - a circumferential wall (10) surrounding and connecting said accommodations;
   - gutter-shaped parts (8);
   - a dome-shaped central part (30), extending between said accommodations;
   characterized in, that
   the gutter-shaped parts (8) each have a pair of opposite, continuous, inwardly sloping, downward extending walls (11, 11') extending at least 12 mm downward and connecting to a bottom wall part (12) with a width of at least 5 mm and a length of at least 10 mm, said gutter-shaped parts each connecting two neighbouring accommodations and extending within and along the circumferential wall, and in that the dome-shaped central part (30), ends in the gutter-shaped parts transverse with respect to said dome-shaped part, and said cup carrier has a weight of less than 7 gr per accommodation at almost 0% moisture content.

2. The cup carrier (1) of claim 1, having a weight of less than 5.5 gr per accommodation (2) at almost 0% moisture content.

3. The carrier (1) according to any one of the preceding claims, wherein said circumferential wall (10) slopes toward the inside of the carrier.

4. The carrier (1) of any one of the preceding claims, wherein said circumferential wall (10) comprising an end flange extending outward from said carrier.

5. The carrier (1) of any one of the preceding claims, wherein said carrier is substantially square, said circumferential wall having four substantially identical sides.

6. The carrier (1) of any one of the preceding claims, wherein said carrier has four accommodations (2).

7. The carrier (1) of any one of the preceding claims, wherein said carrier is rotational symmetric for rotations over 90 degrees with respect to an axis of rotation normal to the plane of said accommodations and through the centre of said carrier.

8. The carrier (1) of any one of the preceding claims, wherein said carrier is produced in a moulded fibre process comprising a step of pre-pressing a wet moulded fibre layer.

9. The carrier (1) of any one of the preceding claims, wherein said pair of opposite, continuous, inwardly sloping, downward extending walls extend about 12-25 mm downward.

10. The carrier (1) of any one of the preceding claims, wherein said bottom wall part (12) has a width of about 5-10 mm.

11. The cup carrier (1) of any one of the preceding claims wherein said gutter-shaped part having a pair of opposite, continuous, inwardly sloping, downward extending walls extending at least 15 mm downward and connecting to a bottom wall part with a width of at least 7 mm and a length of at least 10 mm, said gutter-shaped parts connecting two neighbouring accommodations.
12. The cup carrier (1) of claim 11, wherein the downward extending walls extend at last 20 mm downward.

13. The cup carrier (1) of claim 11 or 12, wherein the gutter-shaped parts have a length of more than 30 mm.

14. The cup carrier (1) of claim 8, wherein the wet layer of fibre material is provided on suction moulds, said wet layer of fibre material is provided on intermediate moulds providing a pre-pressing step, said pre-pressed layer of fibre material is transferred to a drying oven in which the carrier is dried.

15. The cup carrier (1) of claim 14, wherein the wet layer of fibre material is provided on suction moulds, said wet layer of fibre material is subsequently provided on a hot mould in which said layer is pressed to a moisture contents of less than about 5 % by weight.

Patentansprüche

1. Aus geformten Fasern gefertiger Tassenträger (1), umfassend;
   - mindestens zwei Aufnahmen (2) für Tassen, wobei die Aufnahmen eine Bodenwand umfassen, um den Boden von Tassen zu halten, und mehrere Halteteile, die sich in die Aufnahmen erstrecken, um, in Gebrauch, eine eingesetzte Tasse durch Ausüben einer Spannkraft an ihrer Stelle zu halten;
   - eine Umfangswand (10), die die Aufnahmen umgibt und verbindet;
   - rinnenförmige Teile (8);
   - ein kuppelförmiges Mittelteil (30), das sich zwischen den Aufnahmen erstreckt;

dadurch gekennzeichnet, dass die rinnenförmige Teile (8) jedes ein Paar von gegenüberliegenden, kontinuierlichen, nach innen abfallenden, sich nach unten erstreckenden Wänden (11, 11') aufweist, die sich mindestens 12 mm nach unten erstrecken und die mit einem Bodenwandteil (12) mit einer Breite von mindestens 5 mm und einer Länge von mindestens 10 mm verbunden sind, wobei die rinnenförmigen Teile jedes zwei benachbarte Aufnahmen verbinden, und sich innerhalb und entlang der Umfangswand erstrecken, und dass das kuppelförmige Mittelteil (30) in den rinnenförmigen Teilen quer in Bezug auf den kuppelförmigen Teil endet, und wobei der Tassenträger ein Gewicht von weniger als 7 gr pro Aufnahme bei fast 0% Feuchtigkeitsgehalt aufweist.

2. Tassenträger (1) nach Anspruch 1, mit einem Gewicht von weniger als 5,5 gr pro Aufnahme (2) bei fast 0% Feuchtigkeitsgehalt.

3. Träger (1) nach einem der vorhergehenden Ansprüche, wobei sich die Umfangswand (10) gegen die Innenseite des Trägers neigt.

4. Träger (1) nach einem der vorhergehenden Ansprüche, wobei die Umfangswand (10) einen Endflansch umfasst, der sich nach außen von dem Träger erstreckt.

5. Träger (1) nach einem der vorhergehenden Ansprüche, wobei der Träger im Wesentlichen quadratisch ist, wobei die Umfangswand vier im Wesentlichen identische Seiten aufweist.

6. Träger (1) nach einem der vorhergehenden Ansprüche, wobei der Träger vier Aufnahmen (2) aufweist.

7. Träger (1) nach einem der vorhergehenden Ansprüche, wobei der Träger rotationssymmetrisch für Rotationen über 90 Grad in Bezug auf eine Rotationsachse normal zur Ebene der Aufnahmen und durch das Zentrum des Trägers ist.

8. Träger (1) nach einem der vorhergehenden Ansprüche, wobei der Träger mit einem Faserformverfahren hergestellt wird, das einen Schritt des Vorpressens einer nassen Faserformschicht umfasst.

9. Träger (1) nach einem der vorhergehenden Ansprüche, wobei das Paar von gegenüberliegenden, kontinuierlichen, nach innen abfallenden, nach unten verlängerten Wänden etwa 12-25 mm nach unten verlängert ist.

10. Träger (1) nach einem der vorhergehenden Ansprüche, wobei der Bodenwandteil (12) eine Breite von etwa 5-10 mm aufweist.
11. Tassenträger (1) nach einem der vorhergehenden Ansprüche, wobei das rinnenförmige Teil ein Paar von gegen- überliegenden, kontinuierlichen, nach innen abfallenden, sich nach unten erstreckenden Wänden aufweist, die sich mindestens 15 mm nach unten erstrecken und die mit einem Bodenwandteil mit einer Breite von mindestens 7 mm und einer Länge von mindestens 10 mm verbunden sind, wobei das rinnenförmige Teil zwei benachbarte Aufnahmen (2) verbindet.

12. Tassenträger (1) nach Anspruch 11, wobei die sich nach unten erstreckenden Wände sich mindestens 20 mm nach unten erstrecken.

13. Tassenträger (1) nach Anspruch 11 oder 12, wobei die rinnenförmigen Teile eine Länge von mehr als 30 mm aufweisen.

14. Tassenträger (1) nach Anspruch 8, wobei die nasse Schicht des Fasermaterials auf Saugformen bereitgestellt wird, wobei die nasse Schicht des Fasermaterials auf Intermediärformen mit einem Vorpressschritt bereitgestellt wird, wobei die vorgepresste Schicht des Fasermaterials einem Trockenofen übertragen wird, in welchem der Träger getrocknet wird.

15. Tassenträger (1) nach Anspruch 14, wobei die nasse Schicht des Fasermaterials auf Saugformen bereitgestellt wird, wobei die nasse Schicht des Fasermaterials auf einer heißen Form anschließend bereitgestellt wird, in welcher die Schicht zu einem Feuchtigkeitsgehalt von weniger als etwa 5 Gewichts-% gepresst wird.

Revendications

1. Support pour coupelle (1), fabriqué à partir d’une fibre moulée et comprenant :

- au moins deux logements (2) pour des coupelles, les logements comprennent une paroi inférieure pour soutenir le fond des coupelles et plusieurs parties de maintien s’étendant dans les logements pour, lors de l’utilisation, exercer une force résistante à une coupelle insérée pour la maintenir en place ;
- une paroi circonférentielle (10) entourant et reliant lesdits logements ;
- des parties en forme de gouttière (8)
- une partie centrale en forme de dôme (30), s’étendant entre lesdits logements ;
- caractérisé en ce que les parties en forme de gouttière (8) ont chacune une paire de parois opposées, continues, intérieurement inclinées, s’étendant vers le bas (11, 11’), s’étendant sur au moins 12 mm vers le bas et se reliant à une partie de la paroi inférieure (12) avec une largeur d’au moins 5 mm et une longueur d’au moins 10 mm, chacune desdites parties en forme de gouttière étant reliée à deux logements voisins et s’étendant à l’intérieur et le long de la paroi circonférentielle, et en ce que la partie centrale en forme de dôme (30) se termine dans les parties en forme de gouttière de façon transverse par rapport à ladite partie en forme de dôme, et ledit support pour coupelle a un poids inférieur à 7 gramme par logement à environ 0% de teneur en humidité.

2. Support pour coupelle (1) selon la revendication 1, ayant un poids inférieur à 5,5 grammes par logement (2) à environ 0% de teneur en humidité.

3. Support (1) selon l’une quelconque des revendications précédentes, dans lequel ladite paroi circonférentielle (10) est inclinée vers l’intérieur du support.

4. Support (1) selon l’une quelconque des revendications précédentes, dans lequel la paroi circonférentielle (10) comprend une collerette d’extrémité s’étendant à l’extérieur dudit support.

5. Support (1) selon l’une quelconque des revendications précédentes, dans lequel ledit support est substantiellement carré, ladite paroi circonférentielle ayant des côtés substantiellement identiques.

6. Support (1) selon l’une quelconque des revendications précédentes, dans lequel ledit support a quatre logements (2).

7. Support (1) selon l’une quelconque des revendications précédentes, dans lequel ledit support a une symétrie de rotation pour des rotations supérieures à 90 degrés par rapport à un axe de rotation perpendiculaire au plan desdits logements et par le centre dudit support.
8. Support (1) selon l’une quelconque des revendications précédentes, dans lequel ledit support est produit dans un procédé de fibre moulée comprenant une étape de pré-pressage d’une couche humide de fibre moulée.

9. Support (1) selon l’une quelconque des revendications précédentes, dans lequel ladite paire de parois opposées, continues, intérieurement inclinées, s’étendent vers le bas, sur environ 12-25 mm.

10. Support (1) selon l’une quelconque des revendications précédentes, dans lequel ladite partie de la paroi inférieure (12) a une largeur d’environ 5-10 mm.

11. Support de coupelle (1) selon l’une quelconque des revendications précédentes, dans lequel ladite partie en forme de gouttière ayant une paire de parois, continues, intérieurement inclinées, s’étendant vers le bas, s’étendant sur au moins 15 mm vers le bas et se reliant à une partie de la paroi inférieure avec une largeur d’au moins 7 mm et une longueur d’au moins 10 mm, lesdites parties en forme de gouttière reliant deux logements voisins.

12. Support de coupelle (1) selon la revendication 11, dans lequel les parois s’étendent vers le bas, s’étendent en fin à 20 mm vers le bas.

13. Support de coupelle (1) selon la revendication 11 ou la revendication 12, dans lequel les parties en forme de gouttière ont une longueur de plus de 30 mm.

14. Support de coupelle (1) selon la revendication 8, dans lequel la couche humide de matière fibreuse est disposée sur des moules aspirants, ladite couche humide de matière fibreuse est disposée sur des moules intermédiaires fournissant une étape de pré-pressage, ladite couche de matière fibreuse pré-pressée est transférée dans un four séchant dans lequel le support est séché.

15. Support de coupelle (1) selon la revendication 14, dans lequel la couche humide de matière fibreuse est disposée sur des moules aspirants, ladite couche humide de matière fibreuse est ensuite disposée sur un moule chaud dans lequel ladite couche est pressée jusqu’à une teneur en humidité inférieure à 5 % en poids.
REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2006065132 A [0002]
- US 6076876 A [0002]
- US 5713619 A [0002]