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(54) CAPSULE CONTAINING A PRODUCT TO BE EXTRACTED

(57) The container 1 consists of a cup 3 in the form of a truncated cone with an open top side which is closed by a wall part 7. The container is filled with a product to be extracted 5. The walls of the cup are made of rigid water impermeable material. The edge of the side wall bounding the open top side is provided with a flange protruding outwards in the radial direction to which the wall part is fastened.

The wall part 7 is built up of two layers of which an outer layer 13 is provided with openings provided by a laser, and of which the inner layer 15 is liquid impermeable. This inner layer has stronger laser light reflective properties than the outer layer, as a result of which the resistance to burning through of the wall part is increased. The modulus of elasticity of the outer layer 13 is greater than 1500 N / mm^2 and of the inner layer 15 less than 1000 N / mm^2.

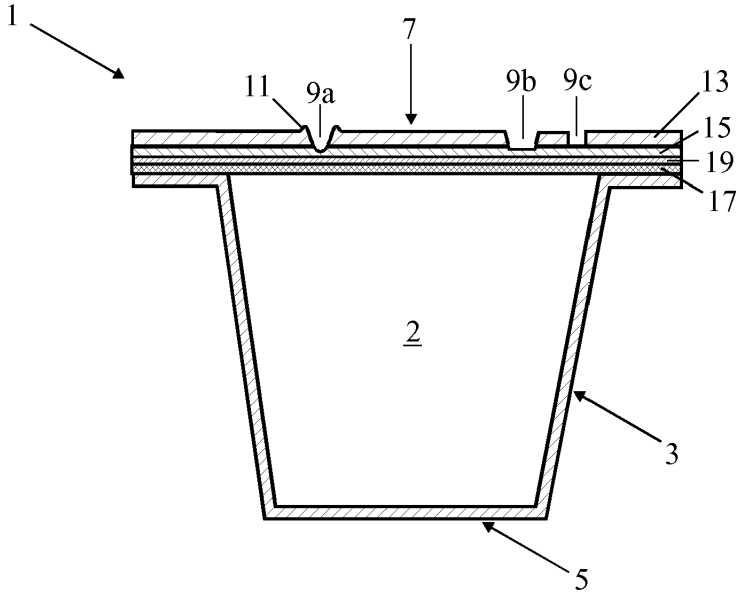

FIG. 1

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Description

Technical filed of the invention

[0001] The invention relates to a container containing a product to be extracted, in particular ground coffee beans or cut tea leaves, which container is provided with a number of walls of which at least one wall part comprises at least two layers of plastic materials with different properties of which layers a first layer is located on the outside of the container and is provided with a plurality of openings and a second layer is liquid impermeable, at least around the openings in the first layer the second layer being attached to the first layer.

Background of the invention

[0002] Such a container is known from WO2015 / 177591A. The openings are burned with a laser in the outer layer, ensuring that the second layer is not exposed to the laser light. During use of this container in a suitable apparatus, the container is pressed with the wall part against an apparatus wall provided with outflow holes, with for instance a wafer structure. During the preparation of coffee, a liquid is injected into the cup under high pressure and the said wall part is pressed against the wafer structure by the liquid pressure built up in the cup, the second layer of the wall part being teared open at a number of places so that a limited through-flow opening remains so that the pressure built up in the cup is maintained during the extraction and a foam layer is formed on the extract.

Summary of the invention

[0003] An object of the invention is to provide a container of the type described in the preamble, which preferably can be manufactured completely or almost completely from biodegradable material and which is simple to manufacture. To this end, the container according to the invention is characterized in that the second layer has stronger laser light reflective and / or stronger laser light scattering and / or less laser light absorbing properties than the first layer. The first layer should at least partly absorb the laser light used in order to be heated and burned away by the laser light. The second layer must be of a material that is less affected by the laser light in order to prevent a through hole in the wall part, for example a material transparent to the laser light used and / or a material with the laser light reflecting properties. Laser light reflective and / or scattering and / or absorbing properties are easier to influence than temperature sensitivity. Foils with laser light-reflecting or laser light-scattering properties are generally cheaper to manufacture than foils with low temperature sensitivity. This makes it easier to apply a layer with high resistance to burning through. Due to this improved barrier against burning through, the duration of the laser pulses can be longer to burn larger holes in one of the layers without the risk of burning through both layers.

[0004] During the preparation of an extract, liquid under pressure is introduced into the container. The second, more elastic layer will be pressed through the openings under the pressure of the liquid and will form projections on the outside of the first layer which projections will rupture / break at a certain pressure. The breaking of the stretchable layer is almost always effected within the openings of the first layer in the center of the preferably round opening. If the edges of the openings are not sharp but rounded, the second layer will tear / break less soon at a different location (for instance at the edge of the openings) and a higher pressure can therefore be built up before outlet openings appear in the second layer, which is favorable for the extraction process.

[0005] The layers may be separate sheets which are attached to each other, each sheet having specific properties. The layers may also be sub layers of one sheet. The second layer, for example, is formed by processing the sheet on one side, wherein the processed zone does not extend over the entire thickness of the sheet, but only in a surface zone.

[0006] The second layer may be vapor-deposited by means of plasma polymerization in a vacuum with, for example, silicon dioxide, zinc oxide, aluminum oxide or aluminum. This scatters and / or reflects the laser light. This second layer can be gas-tight to form an oxygen barrier and thus better preserve the product present in the container.

[0007] The layers are preferably connected to each other over the entire surface. The layers can also be present loosely on each other and attached to the edge (on the flange). The layers then have to be pressed tightly on each other during the laser process because the layers must be in contact with each other during the laser process.

[0008] It is noted that from WO2004 / 096659A a package is known with a foil of two layers, one of which is provided with openings provided in a line and arranged by means of a laser, which define a tear line. The other layer is of a material with stronger laser light reflective and / or stronger laser light scattering and less laser light absorptive properties than the first layer. However, this foil is not present on a cup of hard material.

[0009] The first layer should be more elastic at a given pressure than the second layer, so that the first layer can be stretched in the openings in the second layer before breaking or tearing.

[0010] The two layers can be present loosely on each other or be fixed to each other locally, for instance around the openings in the first layer. However, the two layers are preferably attached to each other over the entire surface. The second layer serves to prevent tearing of the first layer at the location of the openings, as a result of which too large openings would be formed and the liquid would flow too quickly through the container and too much pressure loss will occur so that less extraction will

take place whereby the taste of the extract will be less good. The openings are preferably round or oval and evenly distributed over the entire surface of the wall part, so that openings will be formed throughout the extraction surface during the preparation process and the liquid will flow more completely through all the product to be extracted. During use of the container in a suitable apparatus, the liquid pressure will tear open the foil to a minimum extend so that the pressure hardly decreases and just enough liquid flows through the foil. In the known container, local areas with openings are present and the liquid will flow not or less through the product to be extracted near the regions without local weakenings.

[0011] The first layer is preferably of a material with a modulus of elasticity greater than 2000 N / mm^2. Even more preferably, the first layer is of a material with a modulus of elasticity greater than 3000 N / mm^2.

[0012] Preferably, the first layer is of a hard crispy or rigid polylactide. Polylactide (PLA) has a modulus of elasticity of 3500 N / mm^2.

[0013] The openings in the first layer are small and are preferably provided with a laser.

[0014] The second layer is preferably of a material that can stretch at least up to one and a half times its length at room temperature before it ruptures. As a result, sufficient pressure will first be built up in the container in order to obtain a good extract and the tearing of the second layer will then be predictable. Still more preferably, the second layer is of a material that can stretch at least to twice its length at room temperature before it ruptures.

[0015] Preferably the second layer is of polyethylene. Polyethylene (PE) has a modulus of elasticity of between 100 and 900 N / mm^2. The second layer can also be mainly of starch or a layer based on natural oil, starch and PLA or be formed mainly of latex, rubber or an elastic polymer (TPE).

[0016] An embodiment of the container according to the invention is characterized in that the second layer is softened at a lower temperature than the first layer.

[0017] A further embodiment of the container according to the invention is characterized in that the second layer is thinner than the first layer. For example, the first layer is mainly formed from a biopolyester, PLA, cellulose or chitosan.

[0018] The second layer is preferably provided with a moisture and oxygen barrier, for example a barrier coating in order to better preserve the contents of the container so that its quality is retained for longer. Instead of or in addition to this, an additional moisture and / or oxygen barrier layer is preferably present between the first and second layers. Furthermore, instead of one or both of the foregoing measures or in addition to one or both of these measures, a silicon coating can preferably be applied to the first and / or second layer.

[0019] Yet another embodiment of the container according to the invention is characterized in that said wall part further comprises a third layer of filtering material. The elastic second layer can be located between the third layer of filtering material and the first apertured layer. The elastic second layer can also be located on both sides of the first layer. The filter material may be a woven as a non-woven filament material. The first layer can for instance be made of plastic, paper, cardboard or aluminum. Because the second layer is attached (for example, sealed) to filter material, a somewhat fiber-reinforced structure is obtained, so that the three layers together are so strong that they do not completely conform to the wafer structure of the wall, so that the liquid sees a chance of reaching various outlet holes during extraction while maintaining sufficient pressure so that a good extract with foam is prepared. The filter material also stops the small particles (eg coffee) that otherwise get in front of the holes and lead to clogging. The filter sheet may have a smaller diameter than the two other layers to facilitate a better sealing of the container, so that the filaments do not form openings in the seal or adhesive layer at the location of the flange.

[0020] A further embodiment of the container according to the invention is characterized in that the distance between the openings is between 1 and 3 mm. The first and second layer can be attached to each other, for instance by means of heat-sealing rollers or gluing. In the case of a liquid / gel-shaped adhesive, the adhesive is preferably applied very thinly. The foil layers are compressed / pressed after application of the adhesive layer. In that case during use of the container in a device intended for extracting the product in the container the foil formed by the two layers is stretched the most at the location of the side walls of the protrusions of the wafer structure on the recesses provided with outlet holes against which the container is pressed. By ensuring that the distance between the openings is not too great, a part of the first layer of the foil provided with an opening will be present at the location of all or at least most of these side walls. Because at this location the foil is stretched the most, the second layer will at this location thus be the most bulging out due to the liquid pressure and the first breaking open at this location, which is favorable for obtaining a good / optimum extraction process. With smaller distances, the foil gets too much heat to process during laser welding, which distorts it. In the case of greater distances, the throughput time of the water and the amount of coffee in the extract will vary more and coffee will be of less consistent quality.

[0021] Yet another embodiment of the container according to the invention is characterized in that the largest dimension of the openings is between 20 and 200 micrometers. The size of the openings depends on the thickness of the layers. These dimensions are also optimal for obtaining a good / optimal extraction process.

[0022] The container can be a pad formed from two solid walls which are fixed to each other along the circumference, at least one of the walls forming the said wall part. These two walls are preferably sealed together. Preferably, the walls are not provided with openings at the location of the seal in order to prevent holes from

being formed during the sealing, as a result of which no liquid-tightness and / or air-tightness is present anymore.

[0023] The container may also be in the form of a cylinder or a truncated cone with a circumferential side wall and two end walls, at least one of the end walls comprising the said wall part.

[0024] In this case, the remaining walls of the container may each also comprise a layer of filtering material. In this case, the container first has to be placed in an auxiliary container provided with a strong side wall and a radial outwardly projecting flange in order to prevent liquid from flowing too easily via the porous side wall along the outside of the container to the outflow holes, as a result of which insufficient pressure build-up takes place to obtain a good extract.

[0025] The remaining walls can also be made of rigid water impermeable material and form a cup open on an end side, wherein on the open end side bounding edge of the side wall is provided with a flange protruding outwards in the radial direction, on which flange the sheet of filtering material with the apertured foil is attached and closes the open end. Preferably, the side wall and this end wall are self-supporting. Also in this embodiment, the foil is preferably sealed on the flange, wherein the foil is preferably not provided with openings at the location of the seal. Again to prevent that holes are created during sealing, as a result of which liquid and / or air tightness are no longer present.

[0026] Preferably, the side wall and end wall of the container are of oxygen-impermeable material and the sheet of filtering material with the foil provided with local openings is provided with an oxygen impermeable barrier layer. This barrier layer may be present on the sheet of filtering material or on the foil or between the sheet of filtering material and the foil and may be a separate sheet or formed by a coating, for example polyvinyl alcohol, SiOx (silicon oxide), or ORMOCER®, the latter being a inorganic-organic hybrid polymer (brand name of Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung eV München). This barrier layer can also be a metallized biodegradable compostable foil or a wafer-thin biodegradable compostable foil with barrier properties. Due to this barrier layer the shelf life increases and this cup need not be packaged in an oxygen impermeable packaging. The container can be manufactured from a biodegradable compostable material, wherein the side wall and end wall are provided with an oxygen impermeable layer or coating, for example polyvinyl alcohol. An oxygen impermeable layer for a longer shelf life can also be formed by polymerization under vacuum in which the surface is compacted. Optionally, the container is an injection molded product or thermoform product.

[0027] Preferably, at the location of the flange the first layer is free of openings to prevent through holes being formed during sealing at the location of the openings in the first layer. It is possible to laser the said wall part of the container after it has been applied to the cup. This has the advantage that during production the foil does not have to be laser-coated over the whole surface and that the recesses can be provided with a high positional accuracy. An additional advantage is that near the center of the wall part the recesses can be made larger than near the circumference of the wall part, so that the passage in the middle is greater. One can also choose to laser more holes per cm^2 in the middle than near the circumference.

Brief description of the drawings

[0028] The invention will be further elucidated below on the basis of drawings. These drawings show an embodiment of the container according to the present invention. In the drawings:

Figure 1 is a first embodiment of the container according to the invention embodied as a cup;
Figure 2 shows the multi-layer wall part of the container;
Figure 3 is a second embodiment of the container according to the invention together with an auxiliary container in cross-section;
Figure 4 is a sectional view of an embodiment of the wall part of the container shown in Figure 1 composed of two layers with different modulus of elasticity;
Figure 5 is the wall part shown in Figure 4 during use in an apparatus;
Figure 6 is the embodiment shown in Figure 3 during use in a suitable apparatus;
Figure 7 is a waffle iron-shaped outflow plate of a known apparatus for extracting the product present in the container;
Fig. 8 is the outflow plate shown in Fig. 7 in sectional view with the foil of the container according to the invention above;
Figure 9 is the outflow plate and foil shown in Figure 8 during use;
Figure 10 is a third embodiment of the container according to the invention embodied as a pad with a rigid wall part; and
Figure 11 is a fourth embodiment of the container according to the invention in cross-section embodied as a pad with flexible walls.

Detailed description of the drawings

[0029] Figure 1 shows an embodiment of the container according to the invention in cross-section. The container 1 consists of a cup in the form of a truncated cone with a circumferential side wall 3, a bottom 5 and an open top side which is closed by a wall part 7. The container is filled with a product 2 to be extracted, for instance ground coffee beans. The walls of the cup are made of rigid water impermeable material. The open end side bounding edge of the side wall is provided with a flange protruding outwards in the radial direction to which the wall part is fas-

tened.

[0030] The wall part 7 is built up of various layers. In Figure 1, the layers are thicker in relation to the thickness of the walls of the cup than they actually are. In figure 2 the wall part consisting of several layers is shown enlarged in cross-section. Of these layers, a first layer 13 is of a laser light absorbing material and provided with a plurality of openings 9a, 9b, 9c. To illustrate, only three openings are shown, but in reality there are many more openings in the first layer. Furthermore, three openings with strongly different shapes are shown by way of illustration, while in reality all openings have a much more uniform shape. The second layer 15 is liquid impermeable and is attached to the first layer. The second layer 15 has stronger laser light-reflecting and / or stronger laser light-scattering and / or less laser-light absorbing properties than the first layer 13. Both layers are for example of polylactide, BOPP, PP or polyester with different properties.

[0031] A third layer 17 of the wall part 7 is formed by a filter material or is provided with small openings so that it forms a filter and is located on the inside of the second layer 15. This third layer 17 is preferably separate from the second layer 15 except at the location of the flange. The first layer 13 is located on the outside of the container.

[0032] The wall part with which the open upper side of a coffee cup is closed is locally weakened, because after / during a pressure build-up the wall part has to break open in various places within the formed openings. The first layer of this wall part is formed by a foil. The weakening of this foil is done by laser cutting recesses in the foil. It is difficult to laser a foil of, for example, 40 micrometers thick. The holes / short dashes just do not have to go through the foil. Because the coffee must not oxidize with respect to optimum freshness and aroma preservation, there should be no leak holes in the diaphragm. Various patterns and / or stripes can be applied with lasers, preferably points. The foil thickness and the duration and power of the pulses of the laser may vary slightly, but the composition of the foil (especially with biological foils) may also vary. Because it is produced at high speed, there is a chance that one or a few damages in the foil layer are just a little deeper than desired. This makes the cup more vulnerable during transport.

[0033] If the weakening in the foil is less deeply lasered, there is a chance that the foil will tear over a greater length during extraction with a too high a throughput resulting in a less constant coffee preparation process.

[0034] The wall part is made up of different layers which have favorable or unfavorable laser properties. This way you can actually slow down the laser pulse during the laser process. For example, if a laser light absorbing foil layer is combined with a transparent or metal layer, the laser light absorbing layer will absorb the laser beam, creating an opening in the layer. The transparent or reflecting layer will let the laser beam pass or reflect so that no through-holes are formed in this layer. As a result, a faster and less accurate laser process can be used without forming continuous holes in the wall part. The advantage is that with certain layers the second layer, at least as desired, is damaged on the surface only at the location of the openings and is thereby weakened. As a result, the second layer will more easily break / tear open / open within the opening formed in the first layer. This leads to a particularly constant extraction process. There is also now the advantage that the size of the recess in the first layer can be influenced and thus can be adjusted in relation to the number of holes / openings or the product to be extracted. The second layer absorbs no / less light energy while the laser-sensitive first layer continues to absorb energy, leading to a larger recess in the first layer.

[0035] A further layer 19 can still be located between the 2^{nd} and 3^{rd} layers. This can be an oxygen barrier layer, for example of polyvinyl alcohol.

[0036] It is possible to laser said wall part of the container after it has been applied to the cup. This has the advantage that during production the foil does not have to be laser-coated over the whole surface and that the recesses can be provided with a high positional accuracy. An additional advantage is that near the center of the wall part the recesses can be made larger than near the circumference of the wall part, so that the passage in the middle is greater. One can also choose to laser more holes per cm^2 in the middle than near the circumference.

[0037] Figure 3 shows a second embodiment of the container 21 according to the invention together with an auxiliary container 31 in section. The container 21 is filled with ground coffee 22 and has a shape of a truncated cone with a side wall 23 provided with a flange 24 and two end walls 25 and 26. The side wall with flange and the bottom end wall are formed from at least one sheet of filter material or filter paper. The sheet of filtering material can be both woven and non-woven. Non-woven is a category of textile materials that is neither woven nor knitted. In contrast to the conventional fabrication of a textile cloth, no yarn is used, but the material is deposited directly as fiber or filament in a non-woven fabric and then adhered to each other.

[0038] The upper end wall is made up of three layers of which the bottom layer 9 is also a sheet of filtering material. A thin sheet of elastic plastic material, preferably polyethylene, is provided on this sheet of filtering material. A thicker sheet of hard, less elastic plastic material, preferably polyactide, is applied to this polyethylene sheet. This layer of polyactide is provided with a relatively large number of openings. These openings are formed, for example, with the aid of a CO_2 laser.

[0039] Before this container can be used in an apparatus suitable for cooperating with cups, the container must first be placed in the auxiliary container 31. This auxiliary container is provided with a sturdy side wall 33, likewise provided with a flange 34, in order to prevent liquid from flowing easily into the apparatus via the porous side wall along the outside of the container to outlet holes. In the embodiment shown, the side wall 33 has a tapered shape. However, the sidewall may also have a cylindrical

or substantially cylindrical shape.

[0040] In figure 4 a part of the upper end wall 26 of the container shown in figure 3 is shown in cross-section. The sheet of filtering material 29 is sealed to the flange 24 of the side wall 23. The thin polyethylene sheet 28 is attached to the sheet of filter material 29 and the polyactide sheet 27 provided with apertures 30 is attached to this sheet, the openings being optionally provided after the application of the polyactide sheet. Figure 5 shows the wall part shown in Figure 4 during use in an apparatus. As a result of the pressure build-up on the inner sides of the foil, the elastic polyethylene layer 28 will deform at the location of the openings 30 in the polyactide layer 27. With further pressure build-up, at least at the location of a number of openings 30 the thin layer 28 will stretch and will form protrusions 28b on the other side of the first layer and then tear so that through-holes are formed in the end wall 26 through which the coffee can flow outwards. During pressure build-up there will be a moment that all or at least the most protrusion will break open / tear open at the same time.

[0041] In Fig. 6 the container 21 shown in Fig. 3 is shown during use in a suitable device 51. During the preparation of coffee, a liquid is injected into the cup under high pressure, indicated by arrow A. The end wall 26 is partially pressed through the wafer structure of the outflow plate 53 (indicated by broken lines) by the fluid pressure in the auxiliary container 31, where it deforms at a number of places within the formed openings and tear open at these locations. A number of the partly torn parts of the end face closes a number of outlet holes 55 in the wall, so that in the end a limited through-flow opening remains. As a result, the pressure built up in the auxiliary container 31 remains constant during the extraction and foam is formed.

[0042] By way of illustration, in figure 9 the waffle iron-shaped outflow plate 53 of a known apparatus for extracting the product present in the container is shown in plan view. The outflow plate 53 is provided with protrusions 57, the outflow openings 55 being present between the protrusions. The height of the protrusions 57 is 1.2 mm and the distance between the outflow openings 55 is 4 mm.

[0043] In figure 10 the outflow plate 53 is shown in cross section with above it a foil 61 of two layers, one layer of which is provided with openings. The lines 63 are the center lines of the openings present in the foil. During use of the container in the apparatus the foil 61 will form around the protrusions 57, see figure 11. The distance between the openings in this embodiment is 2 mm. At the position of the side walls 59 of the protrusions 57, the foil 61 is stretched the most. Due to the chosen distance between the openings, at these side walls there will always or at least at most of the side walls, be at most of the openings a part of the foil provided with an opening. Because the foil is stretched the most at this place, the second layer will thus break open at the location of the openings, which is favorable for obtaining a good / optimum extraction process.

[0044] The container can also be embodied as a pad 71, 71' which is formed of two walls 73 and 75 and 73' and 75', respectively, which are fixed to each other along the circumference, wherein at least one of the walls 73 and 73' respectively, forms the wall part. This pad can be made with one solid wall 75, see figure 12, or two flexible walls 73' and 75', see figure 13. The said wall part is then formed by one of the or both flexible walls.

[0045] Although the invention has been explained above with reference to the drawings, it should be noted that the invention is by no means limited to the embodiments shown in the drawings. The invention also extends to all embodiments deviating from the embodiments shown in the drawings within the framework defined by the claims. The second layer can thus be provided with a moisture and oxygen barrier in order to conserve the contents of the container a longer period. An extra moisture and / or oxygen barrier layer may also be present between the first and second layer.

Claims

1. A container (1; 21) containing a product to be extracted (2; 22), in particular ground coffee beans or cut tea leaves, the container is provided with a number of walls (3,5,7; 23,25,26) of which at least one wall part (7; 26) comprises at least two layers of plastic materials with different properties, of which layers a first layer (13; 27) is situated on the outside of the container and is provided with a plurality of openings (9a) 9b, 9c; 30) and a second layer (15; 28) is liquid impermeable, at least around the openings in the first layer the second layer being attached to the first layer, **characterized in that** the second layer (15; 28) has stronger laser light reflective and / or stronger laser light-scattering and / or less laser light absorptive properties than the first layer (13; 27), and the first layer (13; 27) is of a material with a modulus of elasticity greater than 1500 N / mm^2 and the second layer (15; 28) is of a material with a modulus of elasticity smaller than 1000 N / mm^2.

2. The container according to claim 1, **characterized in that** the first layer (13; 27) is of a material with a modulus of elasticity greater than 2000 N / mm^2.

3. The container according to claim 2, **characterized in that** the first layer (13; 27) is of a material with a modulus of elasticity greater than 3000 N / mm^2.

4. The container according to claim 2 or 3, **characterized in that** the first layer (13; 27) is of polylactide.

5. The container according to any one of the preceding claims, **characterized in that** the second layer (15; 28) is of a material which can stretch at least up to

one and a half times its length at room temperature before it ruptures.

6. The container according to claim 5, **characterized in that** the second layer (15; 28) is of a material that can stretch at least twice its length at room temperature before it ruptures.

7. The container according to claim 5 or 6, **characterized in that** the second layer (15; 28) is of polyethylene.

8. The container according to any one of the preceding claims, **characterized in that** the second layer (15; 28) becomes softened at a lower temperature than the first layer (13; 27).

9. The container according to any one of the preceding claims, **characterized in that** the second layer (15; 28) is thinner than the first layer (13; 27).

10. The container according to any one of the preceding claims, **characterized in that** the second layer is provided with a moisture and oxygen barrier.

11. The container according to any one of the preceding claims, **characterized in that** an additional moisture and / or oxygen barrier layer is present between the first and second layer.

12. The container der according to any one of the preceding claims, **characterized in that** a silicon coating is provided on the first and / or second layer.

13. The container according to any one of the preceding claims, **characterized in that** said wall part (7; 26) further comprises a third layer (17; 29) of filtering material.

14. The container according to any one of the preceding claims, **characterized in that** the distance between the openings (30) is between 1 and 3 mm.

15. The container according to any one of the preceding claims, **characterized in that** the largest size of the openings (30) is between 20 and 200 micrometers.

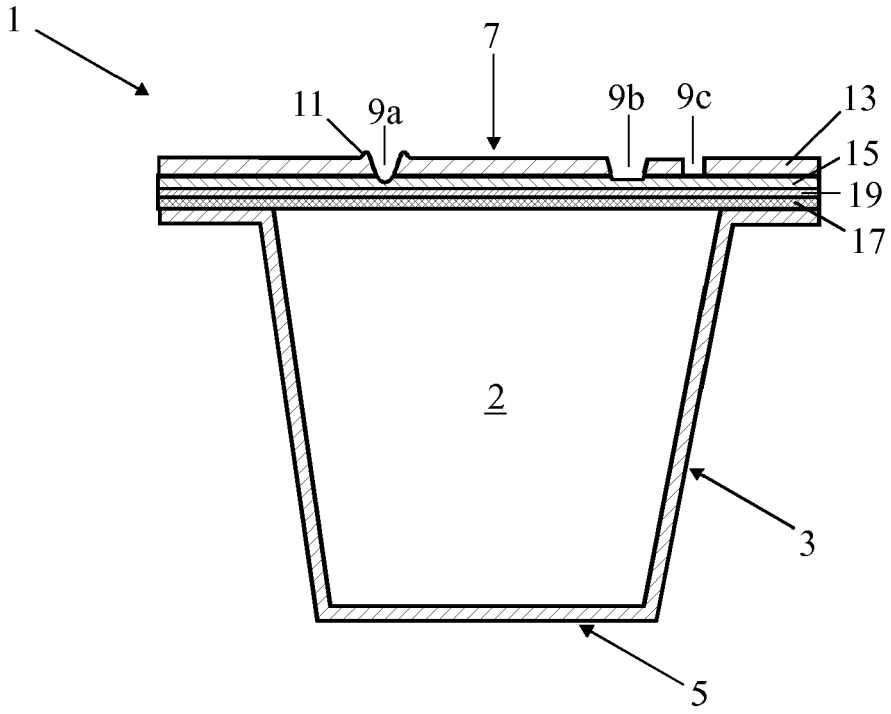

FIG. 1

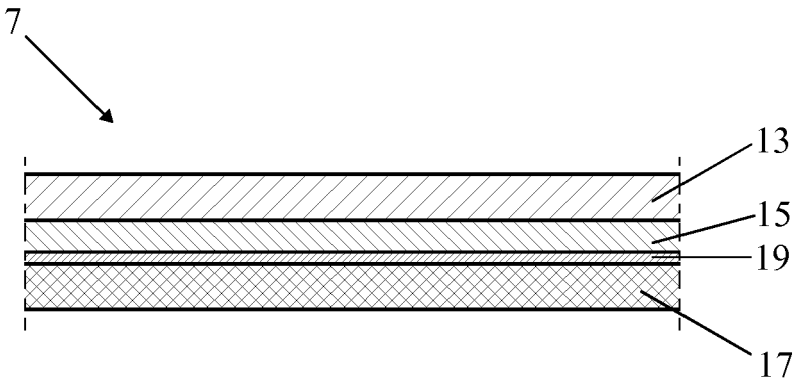

FIG. 2

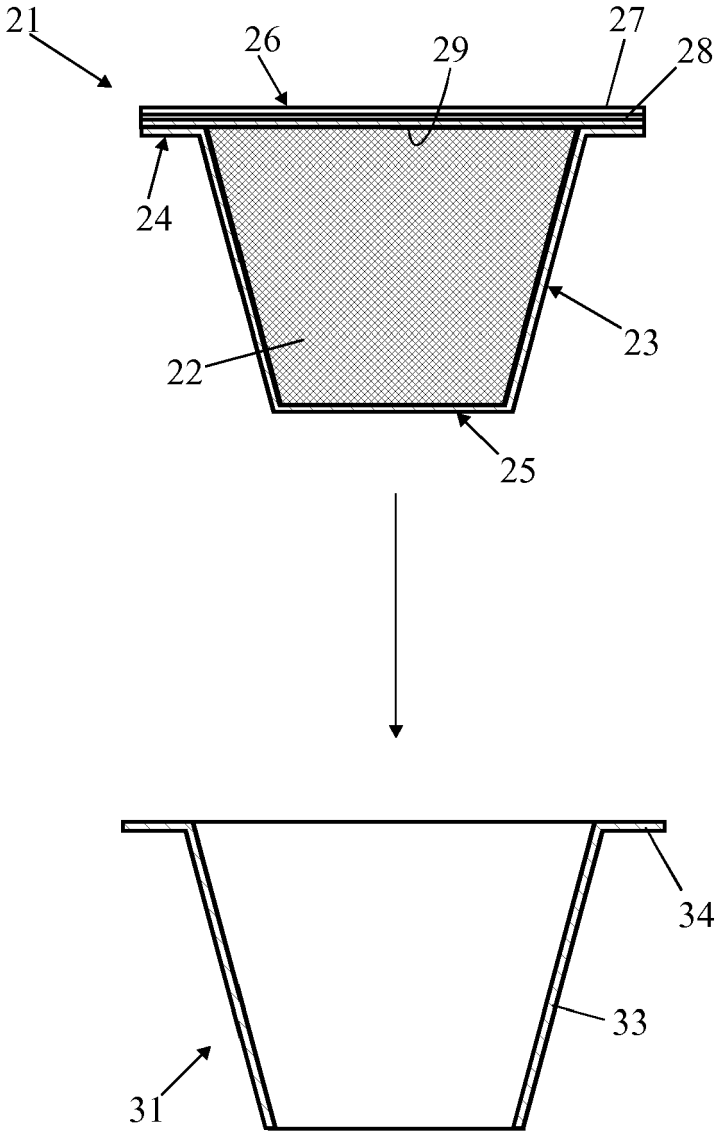

FIG. 3

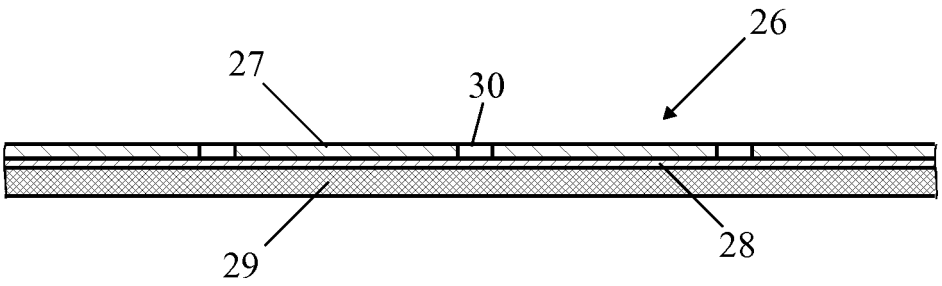

FIG. 4

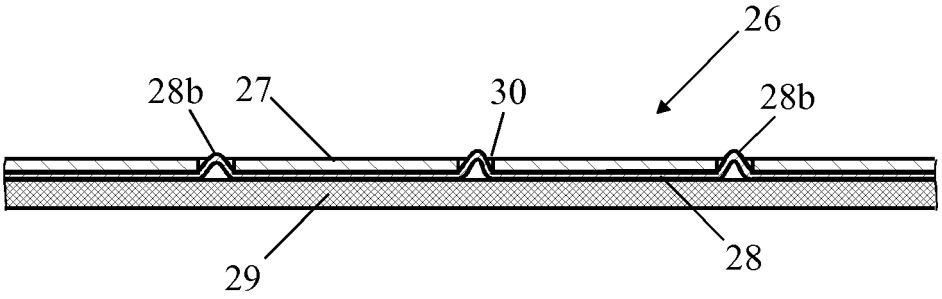

FIG. 5

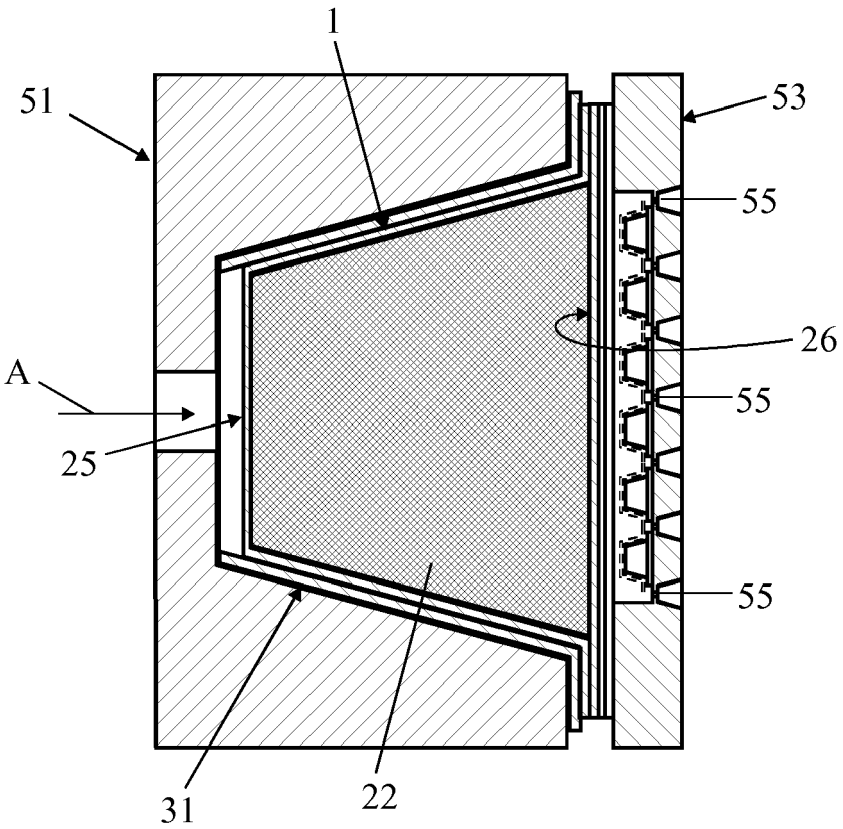

FIG. 6

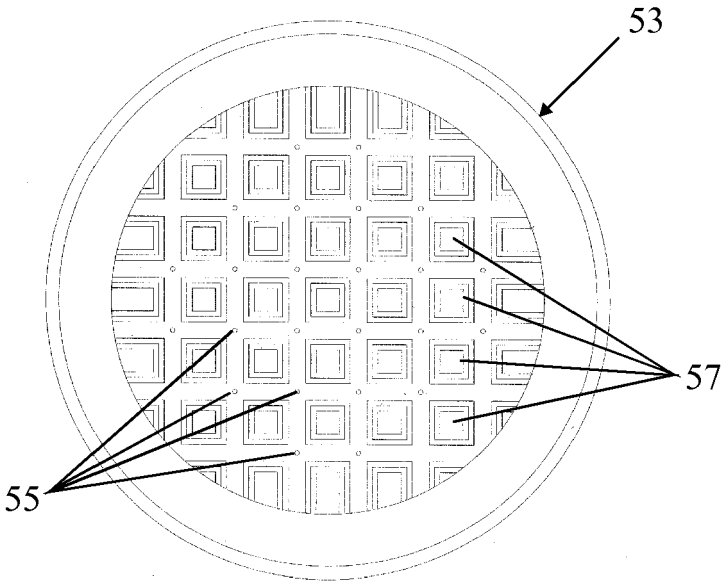

FIG. 7

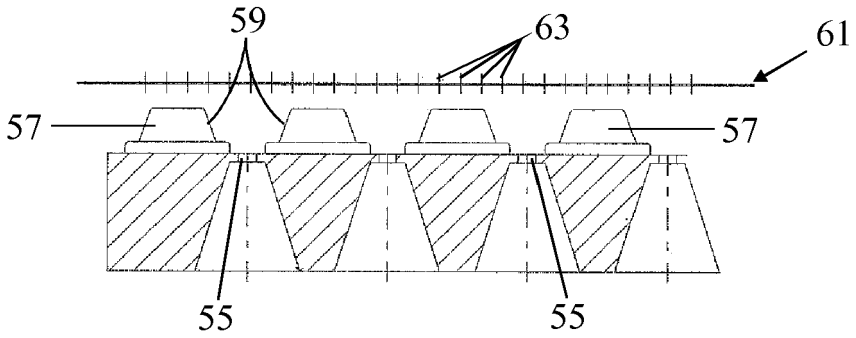

FIG. 8

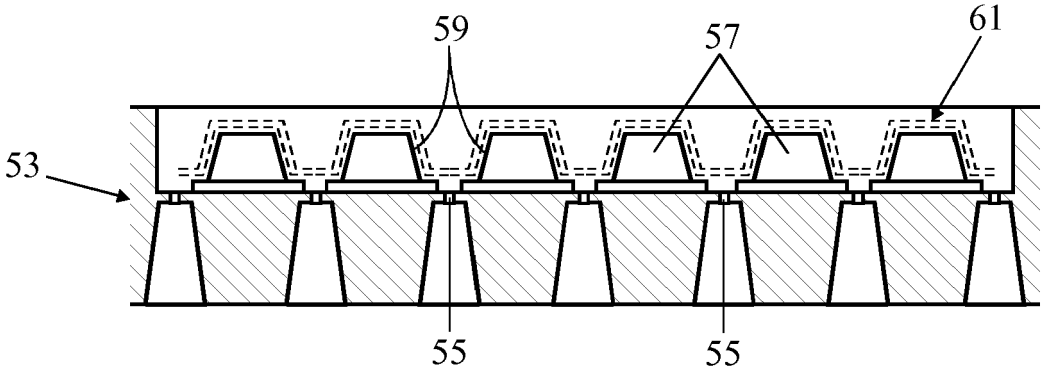

FIG. 9

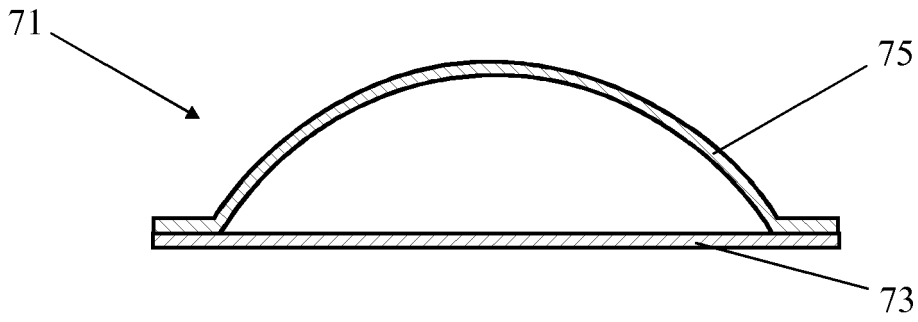

FIG. 10

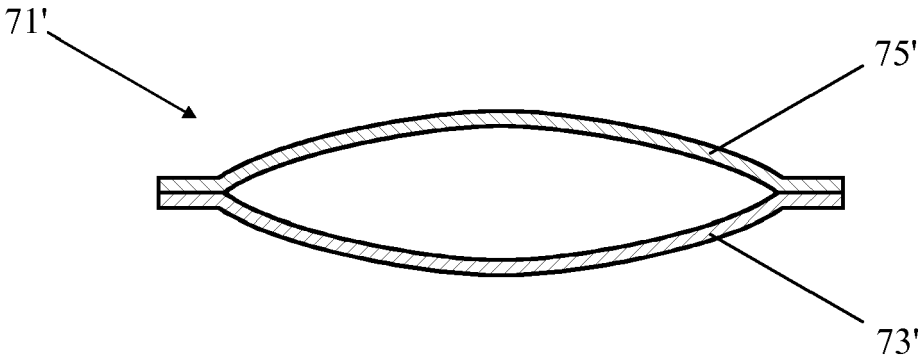

FIG. 11

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EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	28 June 2018	Brochado Garganta, M

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