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(54) **PACKAGING INSERT**

VERPACKUNGSEINSATZ

INSERT D'EMBALLAGE

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(73) Proprietor: **Koninklijke Douwe Egberts B.V.**
3532 AD Utrecht (NL)

(72) Inventors:
- **ANDREWS, Richard John**
  Utrecht 3532 AD (NL)
- **LANPHEN, Rudolf Gerardus**
  Utrecht 3532 AD (NL)
- **TANJA, Age Willem**
  Utrecht 3532 AD (NL)
- **VAN DER DOES, Cornelis Richardus**
  Utrecht 3532 AD (NL)
- **GEURTS, Marijn Andreas**
  Utrecht 3532 AD (NL)

(74) Representative: **Wilson Gunn**
Charles House
148/9 Great Charles Street
Birmingham B3 3HT (GB)

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Description

Technical Field of the Invention

[0001] The present invention relates to packaging. The invention relates in particular to an insert for a flow wrapped packaging assembly, to a flow wrapped packaging assembly comprising such an insert and to a process for the production of a flow wrapped packaging assembly comprising the insert.

Background to the Invention

[0002] It is well known to provide beverage ingredients in a container which is insertable in a compatible beverage preparation machine to make a beverage. Typically, a beverage container holds sufficient ingredients to produce a single-serving of the desired beverage, such as such as filter coffee, espresso coffee, americano, cappuccino, latte and the like. Such beverage ingredient containers are often referred to as a "pad" or "puck". For convenience, the term "beverage pad" will be used herein. However, the invention is applicable to packaging for many different types of such beverage ingredient containers and indeed can be used to package a variety of different products, especially where a number of products are to be packaged together.

[0003] One known type of beverage pad consists of a pre-dosed beverage ingredient portion enclosed between two disc-shaped layers of flexible material, such as filter paper. The layers are usually sealed together about their peripheries, creating an enclosed cake or dose of ingredients. Such beverage pads are suitable to be used in coffee machines which can operate under pressure and/or at atmospheric pressure. In use, the pad is placed in a holder which is then closed with a lid. Hot water is supplied to a top of the pad so that the hot water is passed through the pad to form the beverage, which leaves the holder through an outflow. In an alternative known arrangement, a beverage pad comprises rigid concave shell whose upper end is closed by a first sheet of flexible material. A second sheet of flexible material is located in the base of the shell and beverage ingredient is located between the first and second flexible sheets. The shell defines a fluid outlet and one or more fluid passages in its base. The flexible sheets are typically a filter material which allows water to pass through the pad and the beverage ingredient. This type of pad is used in a similar manner to the first type described above but is less prone to damage or incorrect insertion in a machine. The shell may be made of a polymeric material or a cardboard or cartonboard type material and the pad is typically disc-shaped.

[0004] Whilst coffee is the most common beverage ingredient used in beverage pads, other ingredients or a mixture of ingredients can be used such as milk powder and/or tea. For some beverages, two pads containing different ingredients can be used sequentially. For making a latte for example, it is known to use one pad containing the coffee ingredients and another containing powdered milk. In this case, each beverage pad only contains a proportion of the ingredients needed for a single serving.

[0005] Because the ingredients contained in beverage pads are perishable, it is usual to package a number of pads together in a hermetically sealed package made from a flexible, gas impervious film to keep the ingredients fresh for longer. In a known arrangement, beverage pads are packaged in a bag or pouch made using a vertical form fill seal process (VFFS). VFFS is a well-known method of packaging in which a packaging film is drawn from a roll and folded about a former into a vertically aligned tube. Opposite longitudinal edges of the film are sealed together to produce a longitudinal seal, often positioned at the back of the package. Opposing portions of the film tube are sealed together at the base of the package to form a first transverse seal and the pads are dropped by gravity from a hopper into the partially sealed package. The package is then closed by forming a second transverse seal at the top, above the contents, and the film is cut to separate the filled package. This process is repeated in a substantially continuous process to produce a number of filled packages at relatively high speed.

[0006] With the VFFS process, it is not possible to form the package tightly about the beverage pads as a certain amount of free space (non-product filled volume sometimes referred to as "headspace") is required to allow evacuation of gas and/or air from the package when filled and to avoid any of the pads becoming stuck between the opposing layers of the film material when the filled package is sealed. Because the package is larger than is strictly needed to contain the products, it is arguable that this method of packaging uses an excess of packaging film material. This affects the cost of the packaging and has environmental consequences, including a larger than necessary carbon footprint. The fairly loose filling also results in a package which may have stability issues when the package is stood upright on a shelf for display purposes.

[0007] Because beverage pads are not tightly packed in a VFFS package, they can move around in the package and may become damaged. Damaged pads have an inferior appearance which leads to low consumer acceptance and therefore to low customer satisfaction. There is also a risk that damaged pads could break and/or open into the package, releasing beverage ingredient which may be spilled when the package is opened. This negatively affects the consumer experience. Damage to the pads can also lead to brewing issues. For example, damage to a pad may lead to the formation of preferential pathways through the beverage ingredient cake/dose (so called 'by-pass'), which could result in a partial extraction of the ingredient and a consequentially poor in-cup quality of the extracted beverage.

[0008] Another known process for producing a package made from a flexible film is horizontal form fill seal

(HFFS) or flow wrapping. In the HFFS process, the product being packaged is passed through a wrapping area in a generally horizontal path. The packaging film is drawn from a roll on to a former which guides the film into a tubular shape about the product. Opposite longitudinal edges of the film are sealed together to produce a longitudinal seal, often positioned at the back of the package. Opposing portions of the film tube are sealed together to form transversee seals at either end of the product to close the wrapper. The end seals may be formed sequentially or simultaneously. The HFFS process is typically used to package solid products such as chocolate bars and blocks of cheese and the like and the film is drawn closely about the product minimising headspace.

[0009] Whilst HFFS is often used to package single, solid products, HFFS can be used to package multiple products by supporting the products in an insert in the form of a tray and forming a flow wrapped wrapper about the tray and products. For example, it is known to use HFFS processes to package a stack of biscuits by lying the stack on its side in a tray made from cartonboard or the like and then flow wrapping about the tray and the stack of the biscuits. The tray typically has an elongate base with opposed side walls and opposed end walls to define a volume in which the biscuits are placed. After opening, the biscuits are either removed from the tray and stored elsewhere, say in a biscuit tin, or dispensed from the tray which must be kept generally horizontal to prevent the biscuits from falling out. Whilst this works wells for some products, such as biscuits, it is not ideal for use in packaging beverage pads.

[0010] As used herein, the terms "flow wrapped, "flow wrap", "flow wrapping" and the like should be understood as referring to HFFS processes.

[0011] A further issue in packaging beverage pads in a hermetically seal package made from a gas impervious flexible film is the tendency for some ingredients to degas. In particular roasted coffee will continue to degas after roasting. If packaged in a hermetically sealed package before degassing is complete, this can lead to the package swelling or even bursting. To prevent this, it is known to degas roasted coffee before packaging. However, this means the coffee is less fresh when packaged and requires considerable investment in degassing silos.

[0012] There is a need then for an alternative arrangement for packaging products, especially beverage pads, which overcomes, or at least mitigates, some or all of the drawbacks of the known arrangements.

[0013] There is also a need for an alternative arrangement for packaging products, especially beverage pads, in a flexible film which would enable a reduction in the amount of packaging film material required for a given number of products when compared with the known VFFS process.

[0014] There is a further need for an alternative arrangement for packaging products, especially beverage pads, in a flexible film which would reduce the amount of headspace in the resulting package when compared with the known VFFS process.

[0015] It would be also advantageous to provide an alternative packaging solution which enables ingredients which have a tendency to degas, such as roasted coffee, to be packaged without having to be fully degassed prior to packaging. TWM268304U discloses a container according to the preamble of claim 1. NL2021868A discloses a container for cookies comprising a lid hinged to a rear wall, and a dispensing aperture in a front wall.

Summary of the Invention

[0016] Aspects of the invention relate to an insert for a flow-wrapped packaging assembly, to a flow-wrapped packaging assembly, a process for manufacturing a flow wrapped packaging assembly, a blank of foldable material to form the insert and to use of the insert in a process for manufacturing a flow wrapped packaging assembly.

[0017] According to a first aspect of the invention, there is provided an insert for a flow wrapped packaging assembly comprising a bottom wall and a peripheral wall extending from said bottom wall to define with the bottom wall an interior volume for containing product, wherein said insert comprises at least one tongue at a top end of the peripheral wall distal from the bottom wall, said at least one tongue being movable between at least one closed position in which it at least partially closes the interior volume at the top end of the insert and at least one open position in which it does not impede access to the interior volume through the open top end.

[0018] The insert may have a single tongue which only partially closes the interior volume at the top end of the insert. In an embodiment, a major surface area of the tongue is smaller than the cross-sectional area enclosed by the peripheral wall at its upper end distal from the bottom wall.

[0019] The bottom wall may be fixed relative to the peripheral wall.

[0020] The peripheral wall comprises opposed front and rear wall portions and opposed side wall portions extending between said front and rear wall portions. In an

[0021] The front and rear wall portions are substantially planar and said side wall portions are curved. The bottom wall may be sloped with respect to the plane of the rear wall portion of said peripheral wall. In an embodiment, the peripheral wall slopes downwardly towards the rear wall portion when the insert is in an upright, generally vertical orientation. The at least one tongue is connected to the distal upper end of the rear wall portion by a hinge or fold line.

[0022] The insert has a dispensing aperture defined in said front wall portion. In an embodiment, the dispensing aperture is open at the distal upper end of the front wall portion and extends over at least 50%, or at least 60%, or at least 70% or at least 80% of the length of the front wall portion from the distal upper end towards the bottom end. The dispensing aperture may extend across sub-

stantially the whole width of the front wall portion. Where the front wall portion is planar and the side wall portions are curved, the dispensing aperture may extend transversely over the whole of the planar extent of the front wall portion. The dispensing aperture could extend over 60% or more, or over 70% or more, or over 80% or more of the length of the front wall portion. The dispensing aperture may occupy a significant proportion of the surface area of the front wall portion and may occupy over 50%, or over 60%, or over 70%, or over 80% of the surface area of the front wall portion.

[0023] The tongue may have a shape selected from the group consisting of square, rectangular, semi-circular, oblong, triangular, trapezium, oval, semi-oval, boustrophedonic, butterfly-wing shaped, bone shaped, half-bone shaped, and/or any combination thereof.

[0024] The tongue is mounted to the planar rear wall portion and may comprise part circular lobes on either side, each lobe being directed towards a respective one of the curved side wall portions when the tongue is in its closed position.

[0025] The insert may be constructed from a single blank of foldable material, such as cardboard, cartonboard and the like. The insert may be made from a corrugated material such as corrugated cardboard or cartonboard or the like. The blank may have interlocking formations which are configured to hold sections of the blank in their erected configuration such that the blank is erected into the insert without the use of adhesive. The interlocking formations may comprise interlocking tabs.

[0026] The peripheral wall may extend below the bottom wall, at least in side wall regions of the peripheral wall.

[0027] The insert may be configured such that it can be stood upright on a horizontal surface when filled with product. The insert may be capable of being stood upright on the bottom wall or on a lower edge of the peripheral wall which extends below the bottom wall.

[0028] In accordance with a second aspect of the invention, there is provided a flow wrapped packaging assembly comprising an insert according to the first aspect of the invention as set out above containing product, the tongue of the insert being in the closed position, the insert being encased in a wrapper made from flexible film, the wrapper being closed by means of a longitudinal seal and a transverse seal at either end of the insert.

[0029] The wrapper is formed using a HFFS processes. The flexible film may be a laminated film having an inner sealing layer and an outer substantially gas impervious material. The outer lay may comprise one or more materials selected from the group comprising: polyethylene terephthalate (PET) and oriented polypropylene (OPP).

[0030] The product may comprise at least one stack of beverage pads. In an embodiment, the product comprises two stacks of beverage pads arranged side by side inside the insert. The beverage pads may be disc-shaped. In an embodiment, the insert has substantially planar front and rear wall portions and curved side wall portions, and the product comprises two stacks of disc-shaped beverage pads arranged side by side inside the insert, each curved side wall portion extending about an outer peripheral region of a respective one of the stacks.

[0031] The wrapper may have a degassing valve, which may be an external one-way sticker valve.

[0032] At least one of the seals may be a peelable seal and include a non-sealed tab region which can be grasped to initiate opening of the seal. At least one seal may be peelable and may have a cut out in one of the opposing regions of the film to assist a user in peeing the seal apart.

[0033] In accordance with a third aspect of the invention, there is provided a process for the production of a flow wrapped packaging assembly according to the second aspect of the invention as set out above, the process comprising the steps of:

a. filling said insert with product whilst the tongue is in an open position;
b. subsequently moving the tongue to the closed position;
c. forming the wrapper about the filled insert with the insert in a generally horizontal orientation using a HFFS process.

[0034] In an embodiment, step a. is carried out with the insert in an upright, generally vertical orientation, the method comprising carrying out step b. prior to step c.

[0035] The method may comprise moving the tongue to the closed position whilst the insert is still vertical after filling, or whilst the insert is moved to a horizontal orientation for step c., or after the insert has been placed in a horizontal orientation.

[0036] In an embodiment, step c. comprises conveying the filled insert in a horizontal orientation through a wrapping area of a HFFS apparatus in which a packaging film is formed into a tube about the insert, the method comprising holding the tongue in its closed position whilst the insert is conveyed in a horizontal orientation towards said wrapping area. The method may comprise holding the tongue in its closed position by means of a retaining or pushing lug forming part of the HFFS apparatus for conveying the inset into the wrapping area. The method may further comprise withdrawing the lug prior to the insert being fully encased in the film tube. The method may comprise holding the tongue in its closed position through the packaging film after the lug has been withdrawn. The method may comprise using abutment members (fingers) forming part of the HFFS apparatus to engage the tongue through the film at the sides of the insert to hold the tongue closed.

[0037] Where the insert is formed from a single blank of foldable material, the method may comprise erecting the blank to form the insert prior to step a.

[0038] Where the blank comprises interlocking formations configured to hold sections of the blank in their assembled conditions; the method may comprise engaging

the interlocking formations to hold the blank in its erected configuration.

[0039] Use of an insert according to the first aspect of the invention in a HFFS flow wrapped package is disclosed.

[0040] A blank of foldable material for forming an insert according to the first aspect of the invention as set out above is disclosed, the blank comprising:

a bottom wall panel which forms the bottom wall of the insert when erected, the bottom wall panel having curved edge regions at opposing sides and straight edge regions along front and rear portions which extend between the curved edge regions;

a first peripheral wall panel connected by a fold line to the bottom wall panel along the front straight edge region, the first peripheral wall panel configured to define the front wall portion and part of each of the side wall portions of the insert when erected, a dispensing aperture defined in first peripheral wall portion;

a second peripheral wall panel connected by a fold line to the bottom wall panel along the rear straight edge region, the second peripheral wall panel configured to define the rear wall portion and part of each of the side wall portions of the insert when erected;

the tongue being connected to an edge of the second peripheral wall panel distal from the bottom wall panel by a fold line.

[0041] The blank may be configured such that outer lateral edge regions of the first and second peripheral wall panels which are not connected with the bottom wall panel overlap to define side wall portions of the insert when erected. In an embodiment, the overlapping outer lateral edge regions of the first and second peripheral wall panels are provided with interlocking formations which are configured to be engaged to hold the blank erected. The interlocking formations may comprise corresponding pairs of tabs on the first and second peripheral wall panels. There may be two, or three, or four, or five interlocking pairs of tabs on either side.

Detailed Description of the Invention

[0042] In order that the invention may be more clearly understood, embodiments thereof will now be described, by way of example only, with reference to the accompanying drawings of which:

Figure 1 is a perspective view of an insert for a flow wrapped package according to an aspect of the invention, showing the insert filled with two stacks of beverage pads and with a movable tongue in an open position;

Figure 2 is a front view of a packaging assembly according to an aspect of the invention comprising the filled insert of Figure 1 encased in a flexible wrapper formed using a HFFS process;

Figure 3 is a view from the rear of the packaging assembly of Figure 2;

Figure 4 is a perspective, schematic drawing illustrating a typical HFFS apparatus for producing the packaging assembly of Figures 2 and 3;

Figure 5 is a plan view of a blank of foldable material for forming the insert of Figure 1;

Figures 6 to 9 are a series of perspective views illustrating alternative embodiments of the insert of Figure 1, showing the insert empty and with the movable tongue in a closed position; and

Figure 10 is a view of part of the flow wrapped packaging assembly of Figure 2, illustrating a degassing valve applied to the wrapper.

[0043] Embodiments of a packaging assembly 10 in accordance with an aspect of the invention have an insert 12 which is configured to hold a number of products 14 and which, after filling, is enclosed in an outer wrapper 16 using a HFFS process. The packaging assembly 10 according to the embodiments described herein is particularly suitable for packaging disc-shaped (e.g. round or circular in plan) beverage pads 14 of the type comprising a rigid shell closed at an upper end by a filter material. However, the invention in its various aspects can be adapted to package beverage pads of a variety of types and shapes and indeed to package a variety of other products.

[0044] The insert 12 has a bottom wall 18 and a peripheral wall 20 which extends upwardly about the bottom wall. The bottom wall 18 and the peripheral wall 20 together define an internal volume 21 for receiving the beverage pads 14. The insert 12 has a tongue (alternatively called a tab) 22 movably attached to an upper end 24 of the peripheral wall 18 distal from the peripheral wall. The tongue 22 is attached to the distal end of the peripheral wall by means of a hinge or fold line 26 and can be moved between a closed position as illustrated in Figures 6 to 9 and an open position as illustrated in Figure 1. In the closed position, the tongue extends across the insert opposite to the bottom wall so as to at least partially close the insert at the upper end of the internal volume. The tongue 22 may extend substantially parallel to the bottom wall in the closed position but this is not essential. In the open position, the tongue does not extend across the insert so that it does not impede access to the internal volume 21. The tongue 22 may extend generally co-planar with the portion of the peripheral wall to which it is attached in the open position so as to form an extension of the peripheral wall. However, the tongue 22 could be folded outwardly at least a little to ensure clear access to the interior volume. The tongue in the present embodiment is smaller than the cross-sectional area enclosed by the peripheral wall at its upper end distal from the bottom wall so that the tongue only partially closes the insert. That is to say that a major surface area of the tongue is smaller than the cross-sectional area enclosed

by the peripheral wall at its upper end distal from the bottom wall.

[0045] The insert 12 forms a container for holding a plurality of beverage pads 14 in a desired configuration and about which a packaging film can be flow wrapped. In the present embodiment, the beverage pads are arranged in two stacks 28 arranged side-by-side. The insert 12 is configured so that the peripheral wall conforms closely to the outer profile to the adjacent stacks in order to minimise the free volume within the insert when it is full. To this end, the peripheral wall 20 has a substantially planar rear wall portion 30 and an opposing substantially planar front wall portion 32. The front and rear wall portions are joined by curved side wall portions 34, 36 which each closely follow the outer peripheral shape of a respective one of the stacks of disc-shaped beverage pads. The stacks 28 each rest on the bottom wall when the insert is upright as shown in Figure 1, such that stacks are aligned generally vertically with a longitudinal axis of each stack extending generally perpendicular to the bottom wall 18. However, in an embodiment, the bottom wall 18 is arranged to slope downwardly towards the rear wall portion slightly (as considered when the insert is in an upright position). This encourages the stacks of beverage pads to fall backwards on to the rear wall portion when conveyed and reduces the risk of the pads falling out of the insert.

[0046] It will be appreciated that the shape of the insert can be adapted depending on the shape and arrangement of the products 14 but will generally be configured to minimise the free space inside the insert when filled. For example, the insert could be adapted to have a generally tubular shape for holding a single stack of disc-shaped beverage pads 14.

[0047] The insert defines a dispensing aperture 38 in the front wall portion 32. This provides easy access to the beverage pads in the insert so that after opening the packaging assembly 12 and removing the insert from the wrapper 16, a user is able to select and remove individual pads 14, either through the top of the insert or out through the dispensing aperture. The dispensing aperture 38 is open at the upper end of the front wall portion 32 so that the dispensing aperture is contiguous with the open upper end of the insert/internal volume and extends downwardly for 50% or more of the length of the front wall portion. The dispensing aperture could extend over 60% or more, or over 70% or more, or over 80% or more of the length of the front wall portion. The dispensing aperture 38 extends substantially over the full width of the planar front wall portion 32. The dispensing aperture occupies a significant proportion of the surface area of the front wall portion and could occupy over 50%, or over 60%, or over 70%, or over 80% of the surface area of the front wall portion. The dispensing aperture 38 is made as large as possible whilst ensuring the beverage pads are retained in the insert prior to being dispensed. To this end, the curved side wall regions of the insert extend beyond the widest part of the two stacks of beverage pads as measured in the transverse direction of the insert (e.g. perpendicular to a longitudinal axis X of the insert/packaging assembly). The side wall portions 34, 36 extend beyond a midline of the beverage pads at least partially around a forward portion of the pads. The provision of a large dispensing aperture 38 not only provides for easy access to the beverage pads but also reduces the amount of material used in the insert.

[0048] Typically, the insert 12 is filled whilst in an upright, generally vertical orientation with the tongue in its open position as shown in Figure 1. This is advantageous as it enables top filling of the insert 12 making use of gravity to feed the pads 14 into the insert from above. After filling, the tongue 22 is moved to the closed position, extending over the uppermost products in each stack. When the tongue is closed, it is operative to prevent the pads 14 from spilling out of the insert when in a horizontal orientation for flow wrapping. The tongue can be moved to the closed position whilst the insert is still upright or may be moved as the insert 12 is tilted from a vertical orientation into a horizontal orientation or even once the insert has reached the horizontal.

[0049] Once the insert 12 has been filled and with the tongue 20 moved to the closed position, it is flow wrapped using a largely conventional HFFS flow wrap process to fully enclose the insert and beverage pads 14 in the wrapper 16.

[0050] HFFS processes for flow wrapping are well known in the art and will not be described in detail. However, briefly with refence to Figure 4 which shows a typical HFFS flow wrapping arrangement, the filled insert 12 is conveyed in a horizontal orientation towards and through a wrapping area 40. The insert 12 is expected to be positioned so that it lies on the rear wall portion 30 of the peripheral wall with the bottom wall 18 at the leading or trailing end with reference to the machine direction M. A substantially continuous length of flexible packaging film 42 is drawn from a roll 44 down over a forming box 45 which guides the film into a tubular shape surrounding the filled insert 12. Opposite longitudinal edge regions of the film are bonded together to form a longitudinal seal 46. In the present embodiment, the longitudinal seal is a fin seal 46 in which the longitudinal edge regions of the film are bonded together inner face to inner face by a pair of fin seal rollers 48. In the completed packaging assembly, the fin seal 46 is folded over to one side or the other as is known in the art. However, the longitudinal seal could be a lap seal. After the film material has being wrapped around the insert 12, a pair of end seal bars 50 crimp opposing layers of the film tube together to form a transverse end seal 52 at either end of the insert 12. In the present embodiment, the end seals are formed sequentially but they could be formed simultaneously using two pairs of end seal bars. The end seals are also fin seals but the end seal adjacent the bottom wall of the insert is folded over to one side so that the packaging assembly 10 can be stood upright on its base as shown in Figures 2 and 3. The process is run on a substantially

continuous basis for a period of time with a number of filled inserts 12 being conveyed through the wrapping area 40 one after the other at a, usually, set spacing to be wrapped in the film 42.

[0051] At least the uppermost end seal 52a is a peelable seal and, as illustrated in Figure 2, can be formed in a header 53 which includes a tab arrangement to assist a user in opening the wrapper 16. The header 53 has a region 53a of increased depth (as measured in the longitudinal direction of the package assembly) at the centre in which there is a non-sealed area 53b outboard of the transverse end seal 52a. In the non-sealed area 53b, the opposing portions of the film material are not bonded together so that they form tabs which can be grasped by a user to peel the uppermost end seal 52a apart. Typically, the longitudinal seal 46 will also be a peelable seal so that the wrapper can be opened sufficiently to remove the insert 12. The outer/upper edge of the header 53 may be curved at the centre to provide the region of increased depth.

[0052] In an embodiment which is a modification to the general HFFS process and apparatus, the tongue 22 is held in its closed position as the insert 12 is conveyed towards and into the wrapping area. This may be effected by means of a retaining or pushing lug indicated schematically at 54 in Figure 4) which engages the outer surface of the tongue as the insert is conveyed and may be part of the infeed conveyor system. The lug is moved out the way when the insert is conveyed into the film tube so as not to foul the film. The HFFS apparatus may also be provided with finger's or other abutment means which (indirectly) engage the tongue at sides of the pack from outside the film at the time the lugs fall away to hold the tongue in the closed position. This prevents the beverage pads falling out until the film has been drawn around the end of the insert sufficiently to prevent the tongue opening.

[0053] It will be appreciated that the HFFS process for forming the wrapper 16 may vary from that shown in Figure 4.

[0054] Because the flexible packaging film 42 is wrapped around the insert, 12 and the insert is configured closely to the outer periphery of the stacked beverage pads, the free space within the packaging assembly is kept to a minimum. This reduces the amount of packaging film 42 required when compared to that required to package an equivalent number of beverage pads using the known VFFS process. The beverage pads 14 are also much more securely packaged and less prone to movement within the packaging assembly.

[0055] The packaging film 42 can be any suitable type of film known in the art and the seals can be formed in any desired manner known in the art which is compatible with the intended application. The packaging film 42 may be a laminate having a gas impervious outer layer and an inner seal layer. The inner seal layer may comprise a heat sealable medium but a cold seal or pressure seal could also be used. The sealing medium may provide a permanent seal or a peelable seal. In an embodiment at least one seal is a peelable seal. In an embodiment, at least one of the seals is peelable and is provided with a cut out in the film material on one side to make it easier for a user to imitate peeling the seal apart.

[0056] The outer layer of the film material may be any suitable material such as Polyethylene terephthalate (PET). However, PET is not currently recyclable. In an embodiment, the film material 42 is selected to maximise the possibility of recycling and the outer layer could be an oriented polypropylene (OPP) or any other suitable material.

[0057] The insert 12 can me made of any suitable material. In an embodiment, the insert is made of a material which can be recycled. In an embodiment, the insert is made of carboard, or cartonboard or other paper-based material. In an embodiment, the insert is made of corrugated (fluted) material in which the corrugations are provided on the outer surfaces of the insert. The use of a corrugated material helps to protect the beverage pads 14 during handling and transport. In an embodiment, the insert is made of a corrugated cardboard or cartonboard. In an embodiment, the insert is made from a single blank 60 of foldable material, such as carboard, or cartonboard or other paper-based material and which may be corrugated. In an embodiment, the insert is made from a single blank of foldable material which can be erected without the use of adhesives.

[0058] Figure 5 is a plan view of a blank 60 of foldable material for forming the insert of Figure 1.

[0059] The blank 60 has a bottom wall panel 62 which forms the bottom wall 18 of the insert 12 when erected. The bottom wall panel has curved edge regions 64, 66 at opposing sides and straight edge regions 68, 70 along front and rear portions which extend between the curved edge regions.

[0060] A first peripheral wall panel 72 is connected by a fold line 74 to the bottom wall panel 62 along the front straight edge region 68. The first peripheral wall panel defines the front wall portion and part of each of the side wall portions of the insert 12 when erected. The dispensing aperture 38 is defined in first peripheral wall portion.

[0061] A second peripheral wall panel 76 is connected by a fold line 78 to the bottom wall panel 62 along the rear straight edge region 70. The second peripheral wall panel defines the rear wall portion and part of each of the side wall portions of the insert when erected. The tongue 22 is connected to an edge of the second peripheral wall panel distal from the bottom wall panel 62 by the fold line 26.

[0062] To erect the blank 60 into the insert, the first and second peripheral wall panels 72, 76 are folded relative to the bottom wall panel 62 about their respective fold lines 74, 78 in the same direction until they extend generally perpendicular to the bottom wall panel. Outer lateral edge regions of the first and second peripheral wall panels which are not connected with the bottom wall panel 62 are folded inwardly about the curved side edge

regions of the bottom wall panel. On each side, the respective outer lateral edge regions of the first and second peripheral wall panels are overlapped to form the curved side wall regions of the insert and secured together where they overlap to hold the blank in its erected configuration. The overlapping outer lateral edge regions of the first and second peripheral wall panels may be bonded together using an adhesive or the like to hold them in position. However, in an embodiment, the overlapping outer lateral edge regions are provided with interlocking tabs which are engaged to hold the blank erected without the use of adhesive. In the embodiment shown, the interlocking tabs 82 comprises corresponding pairs of tabs 82a, 82b on the first and second peripheral wall panels. In the present embodiment there are three interlocking pairs of tabs 82a, 82b on either side but the number can be varied as required. The number and orientation of the interlocking tabs are selected to ensure that the overlapping outer lateral regions of the first and second peripheral wall panels remain firmly connected but without creating surfaces which may catch the packaging film or the beverage pads. Other arrangements for mechanically locking the overlapping outer lateral regions of the first and second peripheral wall panels can be adopted.

[0063] Following erection of the blank to form the insert 12, the insert can be filled as described above and the tongue folded about fold line 26 to extend from the rear wall portion 30 towards the front wall portion 32 across the open end of the interior volume above the uppermost beverage pads in the stacks. The size and shape of the tongue 22 can be varied. In an embodiment, the size and shape of the tongue 22 is selected to effectively hold the beverage pads 14 in position whilst using a minimum of material. As illustrated in Figures 1 and 5, the tongue may be substantially semi-circular in shape with a straight edge region at its edge distal from the fold line 26. However, as illustrated by broken lines 22a in Figure 5 and in the embodiments shown in Figures 6 to 9, the tongue may have an alternative shape which is configured to best fit the products and outer peripheral shape of the insert 12. In the present embodiment where the insert is configured to contain two stacks of disc like beverage pads, the tongue may have two part-circular lug regions which are directed towards the curved side wall portions 34, 36 such that each lug is located above a respective one of the stacks. Generally speaking, the tongue should be shaped and dimensioned to be effective in holding the product 14 in place when the insert is orientated horizontally for flow wrapping whilst keeping the amount of material in the tongue to a minimum.

[0064] During the flow wrapping procedure, the interior of the wrapper may be flushed with nitrogen in order to remove oxygen from the interior of the packaging assembly and help keep the ingredients, in particular coffee, fresh. In the present embodiment which comprises two side-by-side stacks 28 of beverage pads 14, there is potentially a dead space between the two stacks adjacent the rear wall portion 30 which may not be fully flushed. To alleviate this problem, a small hole or aperture 84 can be provided in the tongue at its centre adjacent to the rear wall and in a corresponding location in the bottom wall 18 to improve flushing and reduce oxygen levels in the pack.

[0065] As illustrated in Figure 10, the wrapper 16 may be provided with a one-way degassing seal 86 to enable gasses given off by the packaged ingredients to vent out of the wrapper 16. This may be an external sticker seal which is adhered to the outside of the wrapper over one or mor venting apertures in the film material.

[0066] In addition to protecting the beverage pads 14 and providing a suitable enclosure for flow wrapping, the insert 12 forms a convenient dispenser for holding the beverage pads after the packaging assembly has been opened and from which beverage pads can be removed by a user as required. Once the user has opened the wrapper 16, the filled insert can be removed from the wrapper and placed upright on a suitable surface resting on the bottom wall or the lower edges of the peripheral side wall. The tongue 22 can be moved to the open position to enable beverage pads to be selected and removed from the insert through the open upper end. In an alternative embodiment, a line of weakness may be provided between the tongue and the peripheral wall to enable the tongue to be easily removed on opening of the package assembly.

[0067] Whilst the packaging assembly 10 in accordance with the embodiment described above is particularly suited for packaging beverage pads 14, the teaching herein can be applied to packaging for a broad range of products. In particular, the teaching herein can be applied to packaging of other perishable products where a plurality of the products are to be packaged together, especially if the products can be arranged in stacks. The invention is particularly, but not exclusively, suitable for packaging a plurality of disc-shaped products. Such goods included as biscuits, cookies and other confectionery items. However, the invention in its broadest sense is not limited to use in packaging perishable or disc-shaped products can be adapted more widely for use in packaging any suitable product.

[0068] Relative positional terms such as "upper", "top", "lower" and "bottom" used herein (including the claims) in relation to the insert 12, the packaging assembly 10 and parts thereof should be understood as referring to the insert, packaging assembly, and part thereof when the insert or packaging assembly is in an upright generally vertical position with its bottom wall 18 below the tongue 22 and with its longitudinal axis X extending generally vertically, as illustrated in Figures 1 to 4, and 6 to 9. However, it will be appreciated that the insert and packaging assembly can be used in other orientations. For the avoidance of doubt, reference to the insert being in a horizontal orientation should be understood as meaning that the insert is held with its longitudinal axis X lying substantially horizontally. Generally, the insert 12 will be laid on its peripheral wall 20 when in a horizontal orien-

tation.

[0069] The above embodiments are described by way of example only. Many variations are possible without departing from the scope of the invention defined in the appended claims.

Claims

1. 1. An insert (12) for a flow wrapped packaging assembly (10) comprising a bottom wall (18) and a peripheral wall (20) extending from said bottom wall (18) to define with the bottom wall (18) an interior volume for containing product (14), said insert (12) comprising at least one tongue (22, 22a) at a top end of the peripheral wall (20) distal from the bottom wall (18), said at least one tongue (22, 22a) being movable between at least one closed position in which it at least partially closes the interior volume at the top end of the insert (12) and at least one open position in which it does not impede access to the interior volume through the open top end, said peripheral wall (20) comprising opposed front and rear wall portions (32, 30) and opposed side wall portions (34, 36) extending between said front and rear wall portions (32, 30), wherein the front and rear wall portions (32, 30) are substantially planar and said side wall portions (34, 36) are curved, said at least one tongue (22, 22a) is connected to the distal upper end of the rear wall portion (30) by a hinge or fold line (26), **characterised in that** a dispensing aperture (38) is defined in said front wall portion (32).

2. 2. An insert (12) according to claim 1 wherein said bottom wall (18) is sloped with respect to the plane of the rear wall portion (30) of said peripheral wall (20).

3. 3. An insert (12) as according to claim 1, wherein the dispensing aperture (38) is open at the distal upper end of the front wall portion (32) and extends over at least 50%, or at least 60%, or at least 70% or at least 80% of the length of the front wall portion (32) from the distal upper end towards the bottom end.

4. 4. An insert (12) according to any one of the preceding claims, wherein the dispensing aperture (38) extends across substantially the whole width of the front wall portion (32).

5. 5. An insert (12) according to any one of the preceding claims, wherein said insert (12) is constructed from a single blank (60) of foldable material, such as cardboard, cartonboard and the like.

6. 6. An insert (12) according to claim 5, where the blank (60) comprises interlocking tab portions (82a, 82b) configured to hold sections of the blank (60) in their erected configuration such that the blank (60) is erected into the insert (12) without the use of adhesive.

7. 7. An insert (12) according to any one of the preceding claims, wherein the insert (12) is made from a corrugated material.

8. 8. A flow wrapped packaging assembly (10) comprising an insert (12) according to any one of the preceding claims containing product (14), the tongue (22, 22a) of the insert (12) being in the closed position, the insert (12) being encased in a wrapper (16) made from flexible film (42), the wrapper (16) being closed by means of a longitudinal seal (46) and a transverse seal (52) at either end of the insert (12).

9. 9. A packaging assembly (10) according to claim 8 wherein the product (14) comprises at least one stack of beverage pads (14) inside the insert (12).

10. 10. A packaging assembly (10) according to claim 9, wherein the product (14) comprises two stacks of beverage pads (14) arranged side by side inside the insert (12).

11. 11. A packaging assembly (10) according to claim 10 wherein the beverage pads (14) are disc-shaped and the insert (12) is an insert (12) according to claim 1, each curved side wall portion (34, 36) extending about an outer peripheral region of a respective one of the stacks.

12. 12. A process for the production of a flow wrapped packaging assembly (10) according to any one of claims 8 to 11, the process comprising the steps of: a. filling said insert (12) with product (14) whilst the tongue (22, 22a) is in an open position; b. subsequently moving the tongue (22, 22a) to the closed position; c. forming the wrapper (16) about the filled insert (12) with the insert (12) in a generally horizontal orientation using a HFFS process.

13. 13. A process according to claim 12, wherein step a. is carried out with the insert (12) in an upright, generally vertical orientation, the method comprising carrying out step b. prior to step c.

14. 14. A process according to claim 12 or claim 13 wherein step c. comprises conveying the filled insert (12) in a horizontal orientation through a wrapping area (40) of a HFFS apparatus in which a packaging film (42) is formed into a tube about the insert (12), the method comprising holding the tongue (22, 22a) in its closed position whilst the insert (12) is conveyed in a horizontal orientation towards said wrapping area (40).

15. 15. A process according to claim 14, wherein the blank (60) comprises interlocking tab portions (82a, 82b) configured to hold sections of the blank (60) in their assembled conditions; the method comprising engaging the interlocking tab portions (82a, 82b) to hold the blank (60) in its erected configuration.

Patentansprüche

1. Einsatz (12) für eine schlauchgebeutelte Verpackungsanordnung (10), umfassend eine Bodenwand (18) und eine Umfangswand (20), die sich von der Bodenwand (18) erstreckt, um mit der Bodenwand (18) ein Innenvolumen zum Enthalten eines Produkts (14) zu definieren, der Einsatz (12) umfassend mindestens eine Zunge (22, 22a) an einem oberen Ende der Umfangswand (20) distal von der Bodenwand (18), wobei die mindestens eine Zunge (22, 22a) zwischen mindestens einer geschlossenen Position, in der sie das Innenvolumen an dem oberen Ende des Einsatzes (12) mindestens teilweise schließt, und mindestens einer geöffneten Position bewegbar ist, in der sie den Zugang zu dem Innenvolumen durch das geöffnete obere Ende nicht behindert, die Umfangswand (20) umfassend gegenüberliegende vordere und hintere Wandabschnitte (32, 30) und gegenüberliegende Seitenwandabschnitte (34, 36), die sich zwischen den vorderen und hinteren Wandabschnitten (32, 30) erstrecken, wobei die vorderen und hinteren Wandabschnitte (32, 30) im Wesentlichen eben sind und die Seitenwandabschnitte (34, 36) gekrümmt sind, wobei die mindestens eine Zunge (22, 22a) durch ein Scharnier oder eine Faltlinie (26) mit dem distalen oberen Ende des hinteren Wandabschnitts (30) verbunden ist,
dadurch gekennzeichnet, dass in dem vorderen Wandabschnitt (32) eine Ausgabeöffnung (38) definiert ist.

2. Einsatz nach Anspruch 1, wobei die Bodenwand (18) in Bezug auf die Ebene des hinteren Wandabschnitts (30) der Umfangswand (20) geneigt ist.

3. Einsatz (12) nach Anspruch 1, wobei die Ausgabeöffnung (38) an dem distalen oberen Ende des vorderen Wandabschnitts (32) geöffnet ist und sich über mindestens 50 % oder mindestens 60 % oder mindestens 70 % oder mindestens 80 % der Länge des vorderen Wandabschnitts (32) von dem distalen oberen Ende in Richtung des unteren Endes erstreckt.

4. Einsatz (12) nach einem der vorstehenden Ansprüche, wobei sich die Ausgabeöffnung (38) im Wesentlichen über die gesamte Breite des vorderen Wandabschnitts (32) erstreckt.

5. Einsatz (12) nach einem der vorstehenden Ansprüche, wobei der Einsatz (12) aus einem einzelnen Zuschnitt (60) aus faltbarem Material wie Pappe, Karton oder dergleichen besteht.

6. Einsatz (12) nach Anspruch 5, wobei der Zuschnitt (60) ineinandergreifende Laschenabschnitte (82a, 82b) aufweist, die konfiguriert sind, um Bereiche des Zuschnitts (60) in ihrer aufgerichteten Konfiguration derart zu halten, dass der Zuschnitt (60) ohne die Verwendung von Klebstoff in den Einsatz (12) aufgerichtet wird.

7. Einsatz (12) nach einem der vorstehenden Ansprüche, wobei der Einsatz (12) aus einem gewellten Material hergestellt ist.

8. Schlauchgebeutelte Verpackungsanordnung (10), umfassend einen Einsatz (12) nach einem der vorstehenden Ansprüche, der ein Produkt (14) enthält, wobei sich die Zunge (22, 22a) des Einsatzes (12) in der geschlossenen Position befindet und der Einsatz (12) in einer Hülle (16) eingeschlossen ist, die aus flexibler Folie (42) hergestellt ist, wobei die Hülle (16) mittels einer Längsversiegelung (46) und einer Querversiegelung (52) an beiden Enden des Einsatzes (12) geschlossen ist.

9. Verpackungsanordnung (10) nach Anspruch 8, wobei das Produkt (14) mindestens einen Stapel von Getränkepads (14) innerhalb des Einsatzes (12) umfasst.

10. Verpackungsanordnung (10) nach Anspruch 9, wobei das Produkt (14) zwei Stapel von Getränkepads (14) umfasst, die nebeneinander innerhalb des Einsatzes (12) eingerichtet sind.

11. Verpackungsanordnung (10) nach Anspruch 10, wobei die Getränkepads (14) scheibenförmig sind und der Einsatz (12) ein Einsatz (12) nach Anspruch 1 ist, wobei sich jeder gekrümmte Seitenwandabschnitt (34, 36) um eine äußere Randregion eines jeweiligen einen des Stapels erstreckt.

12. Verfahren für die Produktion einer schlauchgebeutelten Verpackungsanordnung (10) nach einem der Ansprüche 8 bis 11, das Verfahren umfassend die Schritte: a. Füllen des Einsatzes (12) mit Produkt (14), während sich die Zunge (22, 22a) in einer geöffneten Position befindet; b. anschließendes Bewegen der Zunge (22, 22a) in die geschlossene Position; c. Ausbilden der Hülle (16) um den gefüllten Einsatz (12) herum mit dem Einsatz (12) in einer im Allgemeinen horizontalen Ausrichtung unter Verwendung eines HFFS-Prozesses.

13. Verfahren nach Anspruch 12, wobei Schritt a mit

dem Einsatz (12) in einer aufrechten, im Allgemeinen vertikalen Ausrichtung ausgeführt wird, das Verfahren umfassend das Ausführen von Schritt b vor Schritt c.

14. Verfahren nach Anspruch 12 oder 13, wobei Schritt c. ein Fördern des gefüllten Einsatzes (12) in einer horizontalen Ausrichtung durch einen Umhüllungsraum (40) einer HFFS-Vorrichtung umfasst, in der eine Verpackungsfolie (42) zu einem Schlauch um den Einsatz (12) herum ausgebildet wird, das Verfahren umfassend ein Halten der Zunge (22, 22a) in ihrer geschlossenen Position, während der Einsatz (12) in einer horizontalen Ausrichtung in Richtung des Umhüllungsraums (40) gefördert wird.

15. Verfahren nach Anspruch 14, wobei der Zuschnitt (60) ineinandergreifende Laschenabschnitte (82a, 82b) umfasst, die konfiguriert sind, um Bereiche des Zuschnitts (60) in ihren angeordneten Zuständen halten; das Verfahren umfassend ein Eingreifen der ineinandergreifenden Laschenabschnitte (82a, 82b), um den Zuschnitt (60) in seiner aufgerichteten Konfiguration zu halten.

Revendications

1. Insert (12) pour un ensemble d'emballage (10) à enveloppe tubulaire comprenant une paroi de fond (18) et une paroi périphérique (20) s'étendant à partir de ladite paroi de fond (18) pour définir avec la paroi de fond (18) un volume intérieur destiné à contenir un produit (14), ledit insert (12) comprenant au moins une languette (22, 22a) au niveau d'une extrémité de sommet de la paroi périphérique (20) distale de la paroi de fond (18), ladite au moins une languette (22, 22a) étant mobile entre au moins une position fermée où elle ferme au moins partiellement le volume intérieur au niveau de l'extrémité de sommet de l'insert (12) et au moins une position ouverte où elle n'empêche pas l'accès au volume intérieur à travers l'extrémité de sommet ouverte, ladite paroi périphérique (20) comprenant des portions parois avant et arrière opposées (32, 30) et des portions parois latérales opposées (34, 36) s'étendant entre lesdites portions parois avant et arrière (32, 30), dans lequel les portions parois avant et arrière (32, 30) sont sensiblement planes et lesdites portions parois latérales (34, 36) sont incurvées, ladite au moins une languette (22, 22a) est reliée à l'extrémité supérieure distale de la portion paroi arrière (30) par une charnière ou une ligne de pliage (26), **caractérisé en ce qu'**une ouverture de distribution (38) est définie dans ladite portion paroi avant (32).

2. Insert (12) selon la revendication 1, dans lequel ladite paroi de fond (18) est inclinée par rapport au plan de la portion paroi arrière (30) de ladite paroi périphérique (20).

3. Insert (12) selon la revendication 1, dans lequel l'ouverture de distribution (38) est ouverte au niveau de l'extrémité supérieure distale de la portion paroi avant (32) et s'étend sur au moins 50 %, ou au moins 60 %, ou au moins 70 % ou au moins 80 % de la longueur de la portion paroi avant (32) à partir de l'extrémité supérieure distale vers l'extrémité de fond.

4. Insert (12) selon l'une quelconque des revendications précédentes, dans lequel l'ouverture de distribution (38) s'étend sur sensiblement toute la largeur de la portion paroi avant (32).

5. Insert (12) selon l'une quelconque des revendications précédentes, dans lequel ledit insert (12) est construit à partir d'une seule ébauche (60) de matériau pliable, tel que du carton, du cartonnage et similaires.

6. Insert (12) selon la revendication 5, dans lequel l'ébauche (60) comprend des portions languettes (82a, 82b) d'interverrouillage conçues pour maintenir des sections de l'ébauche (60) dans leur conception érigée de telle sorte que l'ébauche (60) est érigée dans l'insert (12) sans l'utilisation d'un adhésif.

7. Insert (12) selon l'une quelconque des revendications précédentes, dans lequel l'insert (12) est fabriqué à partir d'un matériau ondulé.

8. Ensemble d'emballage (10) à enveloppe tubulaire comprenant un insert (12) selon l'une quelconque des revendications précédentes contenant un produit (14), la languette (22, 22a) de l'insert (12) étant dans la position fermée, l'insert (12) étant enfermé dans un matériau d'enveloppement (16) fabriqué à partir de film souple (42), le matériau d'enveloppement (16) étant fermé au moyen d'un joint d'étanchéité longitudinal (46) et d'un joint d'étanchéité transversal (52) au niveau de l'une et l'autre des extrémités de l'insert (12).

9. Ensemble d'emballage (10) selon la revendication 8, dans lequel le produit (14) comprend au moins une pile de dosettes de boissons (14) à l'intérieur de l'insert (12).

10. Ensemble d'emballage (10) selon la revendication 9, dans lequel le produit (14) comprend deux piles de dosettes de boissons (14) agencées côte à côte à l'intérieur de l'insert (12).

11. Ensemble d'emballage (10) selon la revendication 10, dans lequel les dosettes de boissons (14) sont

en forme de disque et l'insert (12) est un insert (12) selon la revendication 1, chaque portion paroi latérale (34, 36) incurvée s'étendant autour d'une région périphérique externe d'une pile respective parmi les piles.

12. Procédé pour la production d'un ensemble d'emballage (10) à enveloppe tubulaire selon l'une quelconque des revendications 8 à 11, le procédé comprenant les étapes consistant à : a. remplir ledit insert (12) avec un produit (14) alors que la languette (22, 22a) est dans une position ouverte ; b. déplacer ensuite la languette (22, 22a) vers la position fermée ; c. former le matériau d'enveloppement (16) autour de l'insert (12) rempli avec l'insert (12) dans une orientation généralement horizontale à l'aide d'un procédé HFFS.

13. Procédé selon la revendication 12, dans lequel l'étape a. est réalisée avec l'insert (12) dans une orientation droite, généralement verticale, le procédé comprenant la réalisation de l'étape b. avant l'étape c.

14. Procédé selon la revendication 12 ou la revendication 13, dans lequel l'étape c. comprend le transport de l'insert (12) rempli dans une orientation horizontale à travers une zone d'enveloppement (40) d'un appareil HFFS où un film d'emballage (42) est formé en un tube autour de l'insert (12), le procédé comprenant le maintien de la languette (22, 22a) dans sa position fermée tandis que l'insert (12) est transporté dans une orientation horizontale vers ladite zone d'enveloppement (40).

15. Procédé selon la revendication 14, dans lequel l'ébauche (60) comprend des portions languettes d'interverrouillage (82a, 82b) conçues pour maintenir des sections de l'ébauche (60) dans leurs conditions assemblées ; le procédé comprenant la mise en prise des portions languettes d'interverrouillage (82a, 82b) pour maintenir l'ébauche (60) dans sa conception érigée.

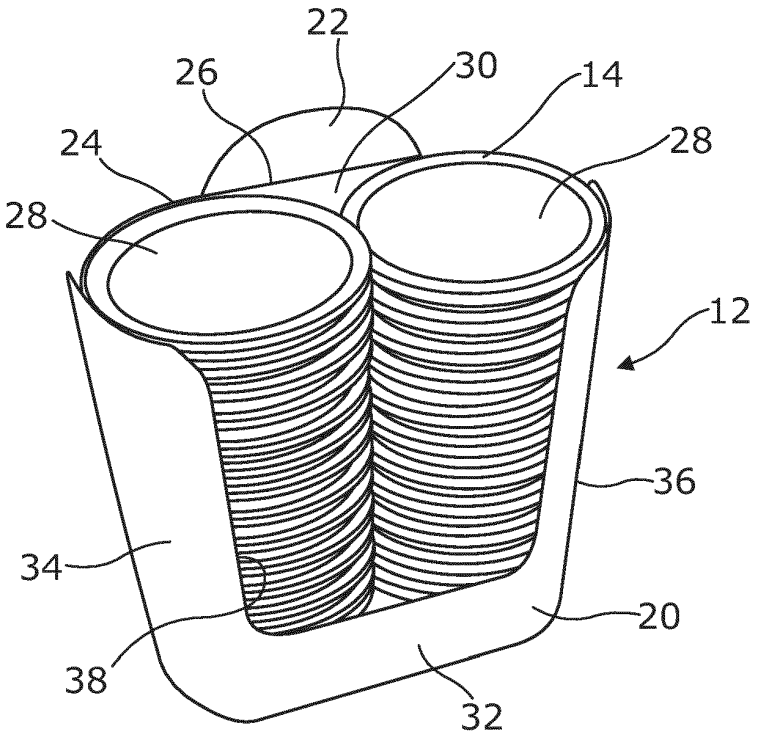

Fig. 1

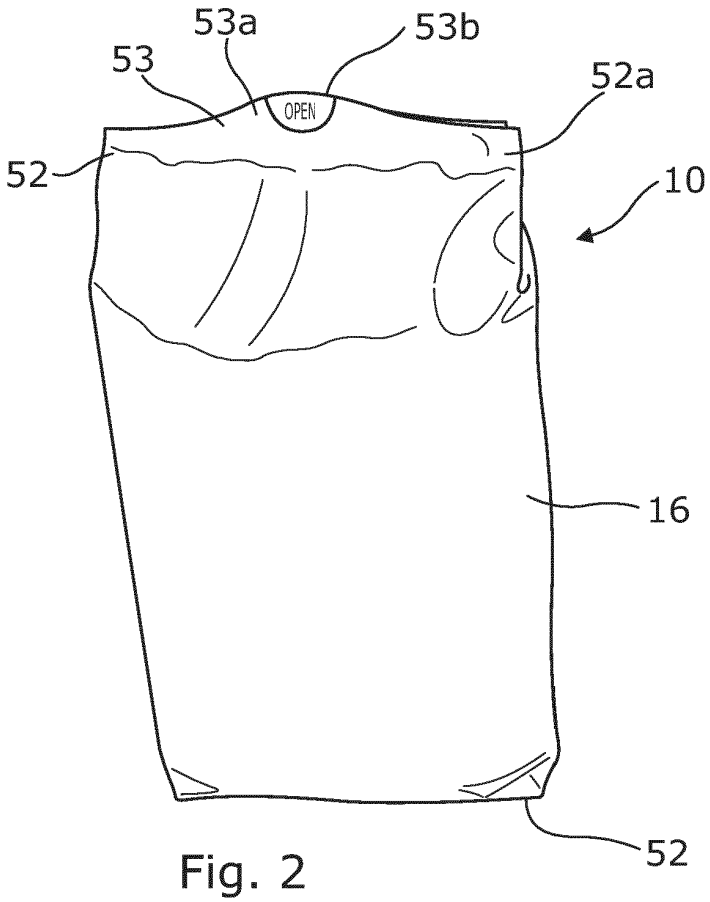

Fig. 2

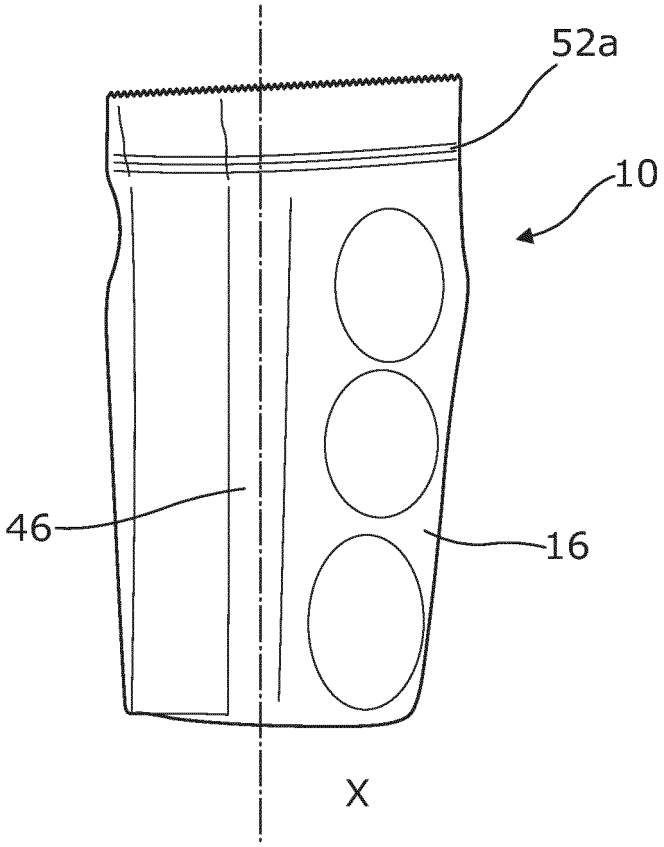

Fig. 3

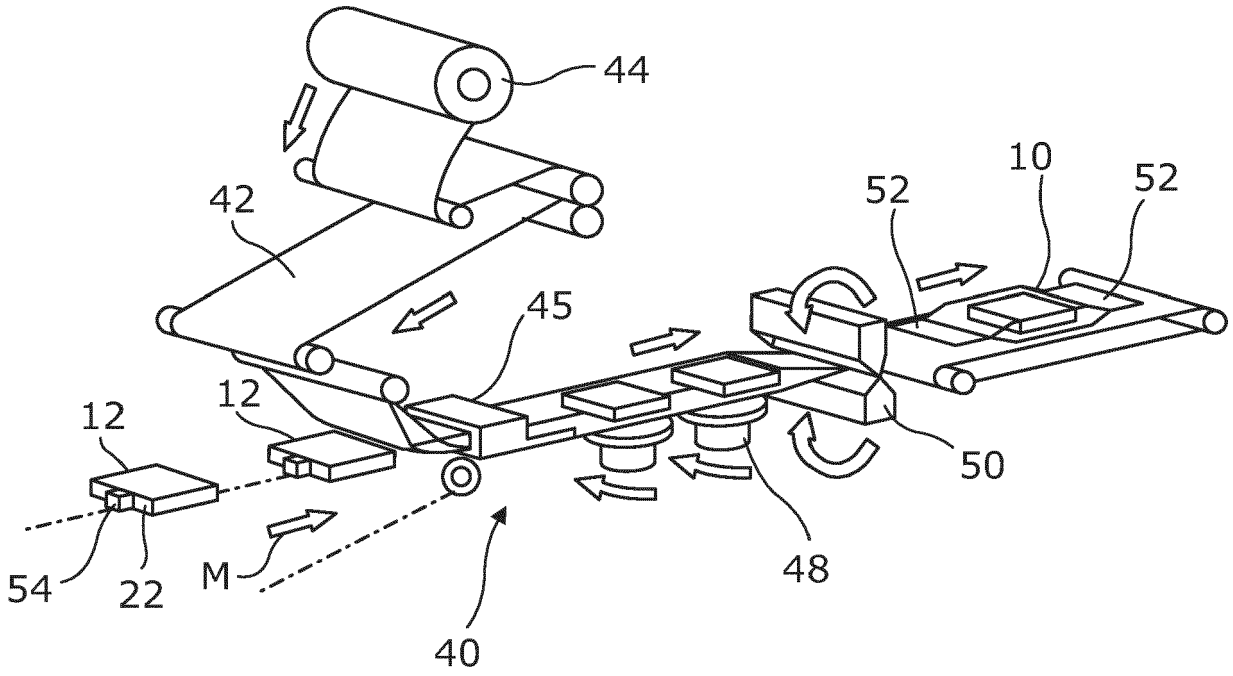

Fig. 4

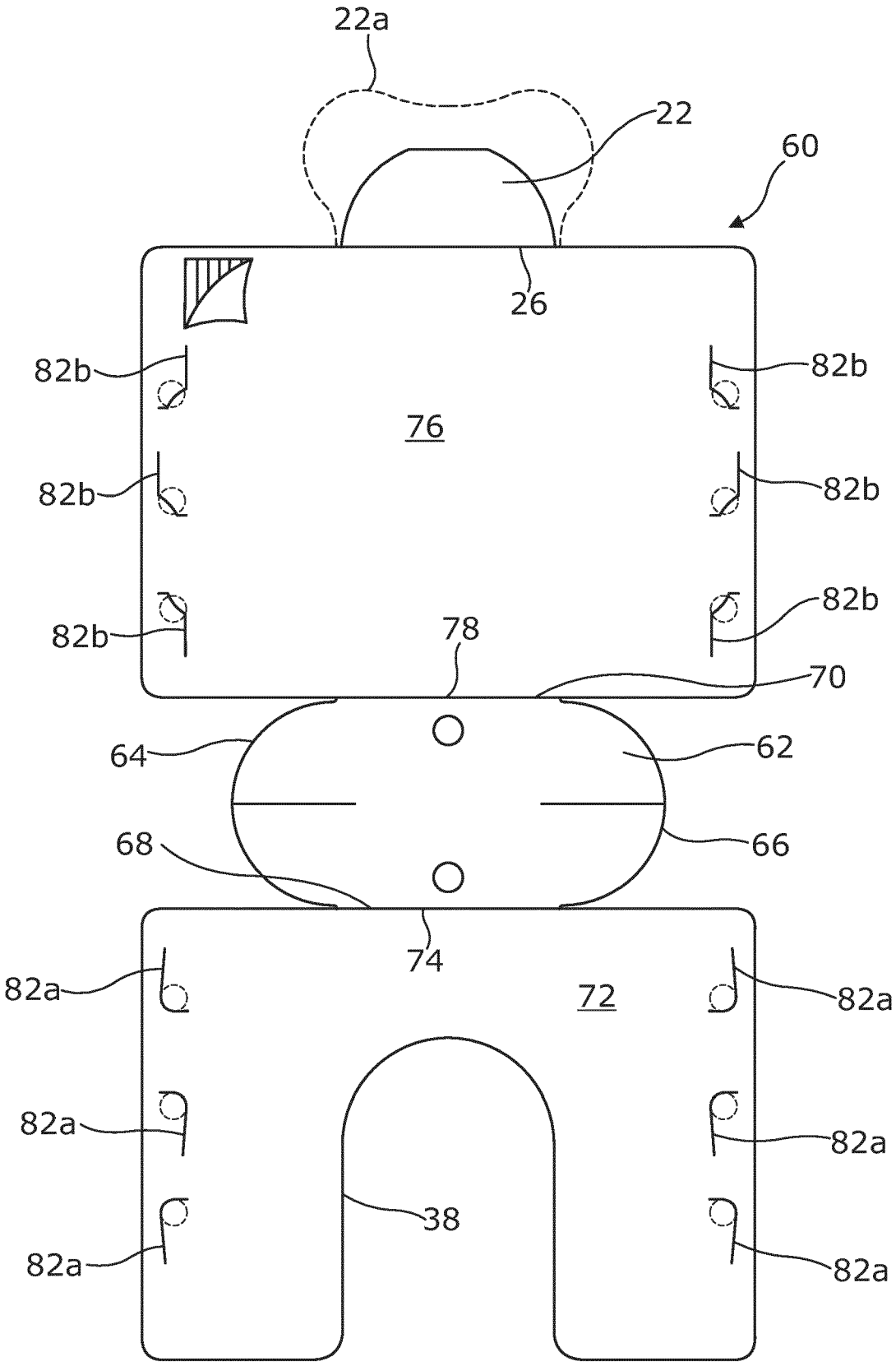
22a
22
60
26
82b
82b
76
82b
82b
82b
82b
78
70
64
62
68
66
74
82a
72
82a
82a
82a
38
82a
82a

Fig. 5

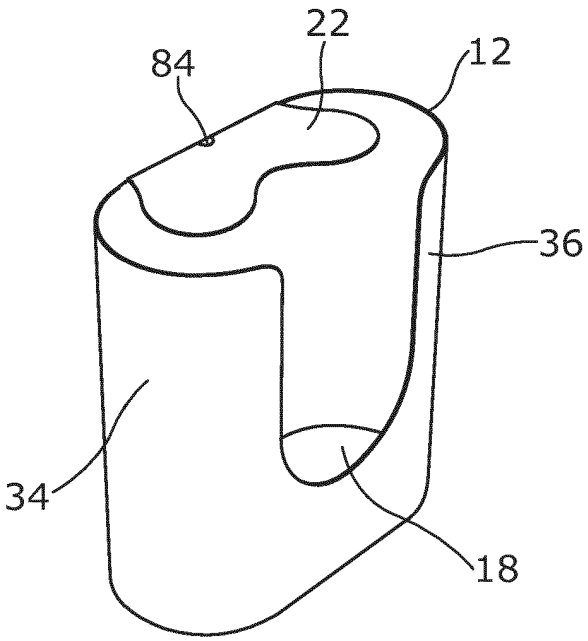

Fig. 6

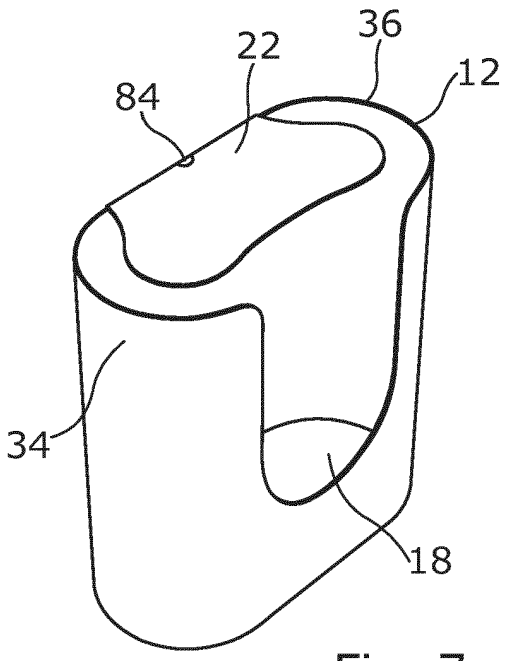

Fig. 7

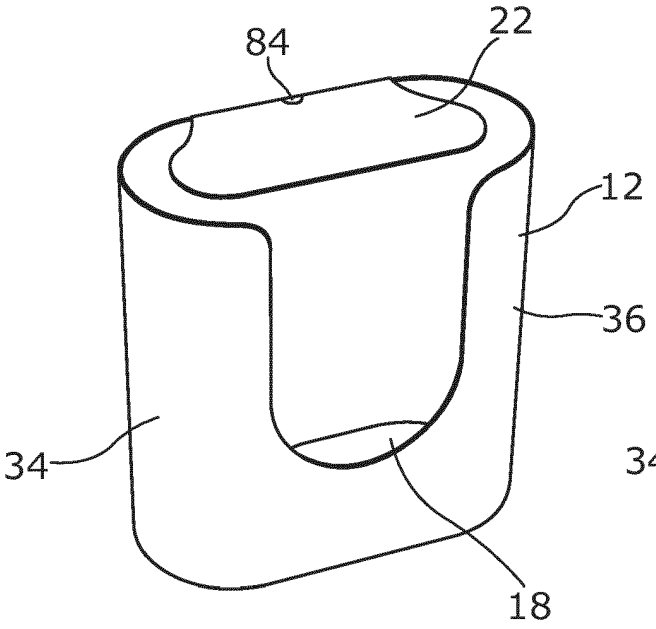

Fig. 8

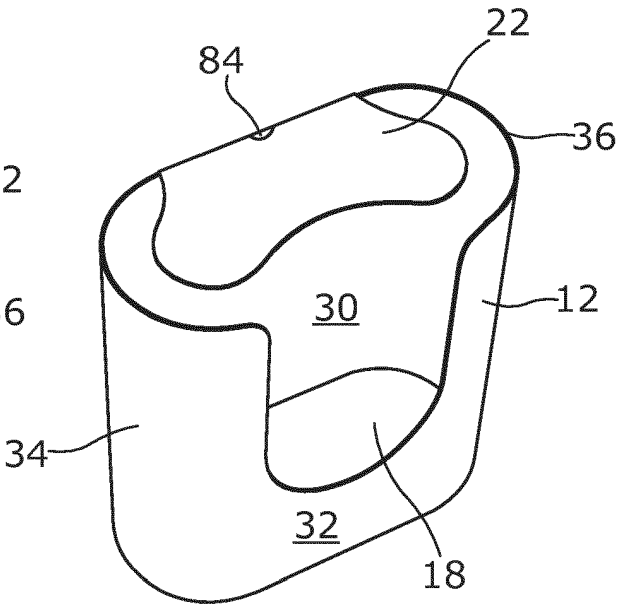

Fig. 9

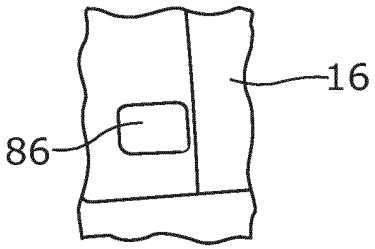

Fig. 10

REFERENCES CITED IN THE DESCRIPTION

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