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(54) **A POUCHED PRODUCT FOR ORAL USE COMPRISING A LIQUID PERMEABLE COVER MATERIAL AND A FILLING MATERIAL COMPRISING A FIRST TYPE OF PARTICLES**

BEUTELPRODUKT ZUR ORALEN VERWENDUNG MIT EINEM FLÜSSIGKEITSDURCHLÄSSIGEN ABDECKMATERIAL UND EINEM FÜLLMATERIAL MIT EINER ERSTEN PARTIKELART

PRODUIT À USAGE ORAL EN SACHETCOMPRENANT UN MATÉRIAU DE COUVERTURE PERMÉABLE AUX LIQUIDES ET MATÉRIAU DE REMPLISSAGECOMPRENANT UN PREMIER TYPE DE PARTICULES

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to a pouched product for oral use comprising a liquid permeable cover material and a portion sized amount of a filling material comprising a first type of particles, the filling material being enclosed by the liquid permeable cover material, the pouched product having a first main surface and a second main surface and a thickness between the first main surface and the second main surface.

BACKGROUND

[0002] An oral pouched product as disclosed herein, is intended for use in the oral cavity, such as by buccal placement e.g., by placing the pouched product between the upper or lower gum and the lip or cheek. A pouched smokeless tobacco product may also be referred to as a portion-packed smokeless tobacco product for oral use. The pouched product is normally sized and configured to fit comfortably and discreetly in a user's mouth between the upper or lower gum and the lip or cheek.

[0003] Traditionally, oral pouched products are used in the oral cavity of a consumer to provide a user with the benefits of an active substance such as nicotine, caffeine, and/or different flavors. A common type of nicotine containing oral pouched products is oral smokeless tobacco products. Such products generally comprise water, salt, pH adjuster(s) and additional components such as flavors and humectants. Commonly, these products are called snuff.

[0004] Oral pouched nicotine containing products comprising no tobacco, or only a small amount of tobacco are now becoming increasingly popular among consumers due to inter alia their appealing appearance, freshness and taste. Moreover, this kind of product allows a user to enjoy nicotine without being exposed to tobacco. The tobacco free or almost tobacco free oral pouched products are usually flavored compositions comprising a filling material which may e.g., comprise microcrystalline cellulose or fiber material derived from plants other than tobacco.

[0005] Further types of oral pouched products are those which only deliver a flavor into the oral cavity and those which are designed for delivering active substances other than nicotine.

[0006] Oral pouched products are typically used by a consumer by placing the pouch between the upper or lower gum and the lip and retaining it there for a limited period of time. The product is configured to fit comfortably and discreetly in the user's mouth. The pouch material holds the filling material in place allowing saliva to pass into the filling material and allowing flavors and active substances such as nicotine to diffuse from the filling material into the consumer's mouth.

[0007] US 2018/271139 A1 relates to the shape and maximum size of an oral poached product, disclosing a particulate material comprising polysaccharides and/or microcrystalline cellulose.

[0008] WO 2017/153718 A1 relates to an oral tobacco product comprising a particulate material.

[0009] WO 2017/093487 A1 relates to welding and cutting of packaging material for an oral pouched product, disclosing microcrystalline cellulose having a nominal particle size of 180 μm.

[0010] US 2008/308115 A1 and US 2010/300465 A1 relate to extruded tobacco beads.

[0011] WO 2014/096816 A1 relates to a product comprising tobacco and an insoluble foamed material.

[0012] WO 2007/037962 A1 relates to granular particles of tobacco.

[0013] WO 2010/104464 A1 relates to moisture-soluble alginate particles carrying nicotine.

[0014] US 2011/083680 A1 relates to flavor beads.

[0015] US 2010/218779 A1 relates to an oral pouch product comprising tobacco material and hydrocolloid particles.

[0016] An objective with the disclosure herein is to offer an oral pouched product containing a filling material having improved properties, in particular regarding mouthfeel and user satisfaction.

SUMMARY

[0017] One or more of the above objects may be achieved with an oral pouched product according to claim 1. The invention is defined as mentioned in the claims.

[0018] Variations of the disclosure are set out in the dependent claims and in the following description.

[0019] The pouched product for oral use as disclosed herein comprises a liquid permeable cover material and a portion sized amount of a filling material comprising a first type of particles, the filling material being enclosed by the liquid permeable cover material, the pouched product having a first main surface and a second main surface and a thickness between the first main surface and the second main surface. The particles of the first type of particles have an average particle size within the range of from 0.5 mm to 2.5 mm and the filling material has a pre-use moisture content of from 1% by weight of the filling material to 35% by weight of the filling material. The first type of particles are water insoluble particles and the filling material comprises one or more water soluble components. The pouched product has a pre-use thickness and a post-use thickness and a ratio between the post-use thickness and the pre-use thickness being in the range of from 1.0 to 1.25. A particularly preferred range of the ratio between the pre-use thickness and the post-use thickness may be from 1.0 to 1.2.

[0020] The bulk volume of the water insoluble first type of particles defines the bulk volume of the filling material, with any additional component of the filling material of the oral pouched product contributing only to a negligible or very small extent to the volume of the filling material.

By *"a very small extent"* as used herein, is implied a contribution to the bulk volume of the filling material by components other than the first type of particles of less than 5%, such as of less than 3%, of less than 2%, preferably of less than 1%.

[0021] The filling material in the oral pouched products of the present disclosure has a bulk volume after use which is in the same order as the bulk volume before use of the oral pouched product which is reflected by the ratio between the pre-use thickness and the post-use thickness of the oral pouched product. This means that the bulk volume of the oral pouched product remains largely unchanged during use of the oral pouched product, which is a property of the oral pouched product that has been found to be appreciated by many users. The thickness of the oral pouched product is the same or slightly greater during use of the oral pouched product in the oral cavity of a human being as compared to the pre-use thickness. An oral pouched product which does not loose thickness during use may be perceived as retaining the mouthfeel of a new fresh product and to be more malleable and satisfactory to keep in the mouth for a longer time of use.

[0022] An oral pouched product in which the thickness increases slightly during use may be beneficial, as it offers a product which may be made thin for packaging, but which will expand to an expected thickness when placed in the oral cavity of a user. Such products may be packed with a greater number of products in a user container of a conventional size or a predetermined number of products may be packed in a smaller and less conspicuous user container than a corresponding number of conventional, non-expanding oral pouched products.

[0023] In an oral pouched product as disclosed herein, the product thickness may increase by up to 50 % during use, such as by 10% to 40%, such as by 15% to 30%, such as by 15% to 25%, such as by 15% to 20%.

[0024] The filling material in the oral pouched products as disclosed herein may have a pre-use moisture content as determined by the method disclosed herein of from 1% by weight of the filling material to 30% by weight of the filling material, such as from 1% by weight of the filling material to 25% by weight of the filling material, such as from 1% by weight of the filling material to 15% by weight of the filling material, such as from 1% by weight of the filling material to 7% by weight of the filling material, such as from 5% by weight of the filling material to 30% by weight of the filling material, such as from 5% by weight of the filling material to 25% by weight of the filling material, such as from 5% by weight of the filling material to 15% by weight of the filling material, such as from 10% by weight of the filling material to 20% by weight of the filling material, such as from 10% by weight of the filling material to 15% by weight of the filling material.

[0025] A filling material in an oral pouched product as disclosed herein and having a relatively low pre-use moisture content as set out above, is perceived by users to be fresh and agreeable to handle when taking it out of a user container and tucking it in, e.g. between the upper or lower lip and the gum of the user. A relatively low pre-use moisture content also allows the first type of particles constituting the bulk volume of the filling material to move more freely in relation to each other, which makes the oral pouched product easier to shape and to be made to conform to the shape of the space where the oral pouched product is placed in the oral cavity of the user.

[0026] It may be preferred that the moisture content of the filling material in the oral pouched products as disclosed herein is less than 20% by weight.

[0027] The water insoluble particles of the first type of particles are particles of microcrystalline cellulose, water insoluble starch or a mixture thereof.

[0028] The first type of particles may constitute 75% by dry weight to 99% by dry weight of the filling material, such as 80% by dry weight to 98% by dry weight of the filling material or 85% by dry weight to 98% by dry weight of the filling material.

[0029] The particles of the first type of particles may be relatively large particles and may have an average particle size within the range of from 0.6 mm to 2.5 mm, such as from 0.7 mm to 2 mm, such as from 0.8 mm to 1.5 mm, such as from 0.85 mm to 1.2 mm.

[0030] The particles of the first type of particles may be of generally the same size, with a narrow particle size distribution profile. A particulate material having a narrow particle size distribution profile has a more predictable bulk volume than a particulate material comprising particles of differing sizes. Preferably, the first type of particles includes less than 0.5% of particles passing through a sieve having a mesh size of 250 μm.

[0031] The particles of the particulate material in the filling material may have a sphericity within the range of from 0.7 to 1.0, such as from 0.8 to 1.0 and a diameter of from 0.3 mm to 3 mm, such as from 0.7 mm to 3 mm. Sphericity and particle size may be determined with the aid of a QicPic image analysis Instrument from 2012, Sympatec GmbH, ID No. 290-D, with Rodos/L dispersion line ID NO 214D and Vibri/L sample feeding ID NO 273, or equivalent equipment. A well dispersed particle flow is led through the image plane of the instrument. The particles are separated from each other by a transportation fluid and overlapping particles are avoided. A high number of particle numbers per image frame may be captured.

[0032] The particles of the first type of particles may be relatively dense, non-porous particles having a particle density in the range of from 0.8 g/cm^3 to 1.7 g/cm^3, such as from 1.0 g/cm^3 to 1.5 g/cm^3, such as from 1.1 g/cm^3 to 1.4 g/cm^3.

[0033] The filling material of the oral pouched product as disclosed herein comprises nicotine.

[0034] The nicotine may be derived from a nicotine source being a nicotine base and/or being selected from the group consisting of nicotine hydrochloride, nicotine dihydrochloride, nicotine monotartrate, nicotine bitartrate, nicotine bitartrate dihydrate, nicotine sulphate, nicotine zinc chloride monohydrate and nicotine sali-

cylate, nicotine benzoate, nicotine polacrilex and any combination thereof.

[0035] The filling material of the oral pouched product as disclosed herein may comprise tobacco material in an amount within the range of from 0.05 wt% to 10 wt%, such as from 0.2 wt% to 1 wt%, based on the total weight of said filling material. In such case the tobacco material may be a nicotine source. The tobacco material may be the only nicotine source or may be a nicotine source in addition to one or more of the nicotine sourced disclosed herein.

[0036] The filling material of the oral pouched product as disclosed herein may comprise an additive selected from the group consisting of a flavouring agent, a sweetener, a humectant, and any mixture thereof.

[0037] The additive may comprise or consists of a flavouring agent, such as a flavour oil, such as a hydrophobic flavour oil, such as a synthetic flavour, such as a nature-identical flavour.

[0038] The filling material of the oral pouched product as disclosed herein may comprise may be free from tobacco material. A tobacco free filling material may contain material derived from other plant sources such as coffee, tea, herbs, etc., and/or any suitable flavouring agent, sweetener, etc., as known in the art.

[0039] The filling material of the oral pouched product as disclosed herein may comprise a second type of particles in addition to the first type of particles, the second type of particles having an average particle size which is less than the average particle size of the first type of particles.

[0040] It may be preferred that the particles of the second type of particles have a size which is sufficiently small to allow the second type of particles to be at least partly accommodated within the interstices between the particles of the first type of particles. A ratio between the average particle size of the first type of particles and the average particle size of the second type of particles may be within the range of from 2 to 10.

[0041] The second type of particles may be partially or completely water soluble particles.

[0042] In the pouched product disclosed herein, at least one of the one or more water soluble components may be present on an outer surface of at least some of the particles of the first type of particles, such as on 20% to 100% of the first type of particles, or 50% to 100% of the first type of particles, or 80% to 100% of the first type of particles.

[0043] In the pouched product disclosed herein, at least one of the one or more water soluble components may be present in interstices between the particles of the first type of particles.

[0044] At least one of the one or more water soluble components may be present both on an outer surface of at least some of the particles of the first type of particles and in interstices between the particles of the first type of particles.

[0045] The liquid permeable cover material of the oral pouched product may be a nonwoven material.

DEFINITIONS

[0046] The terms *"oral"* and *"oral use"* refer to a use of a product in contact with mucous membranes in the oral cavity of a human being, such as buccal placement of the product in the oral cavity. The products for oral use as disclosed herein are intended to be placed in their entirety in the oral cavity and are not intended to be swallowed.

[0047] As used herein the terms *"pouched product for oral use"* or *"oral pouched product"* refer to a portion of a smokeless composition containing saliva extractables and being packed in a saliva-permeable pouch material.

[0048] A *"particle"* as used herein is a three-dimensional piece of material having a maximum dimension of less than 5 mm and an aspect ratio of from 0.3 to 1. The *"aspect ratio"* A_R as used herein, is calculated as the width, w, of the particle divided by the length l, of the particle where the length is determined as the largest dimension of the particle and the width is determined as the largest dimension orthogonal to the length: $A_R = l / w$. A particle having an aspect ratio of 1 may e.g., be a perfect sphere or cube. The particles which are useful as the first type of particles in the filling material of the oral pouched products disclosed herein may have a regular shape such as a spherical shape, a cubic shape, a cylindrical shape, etc. or may have an irregular shape with regular or near-regular shapes being generally preferred. The particles may have generally smooth outer surfaces or may have small aberrations in the outer surfaces.

[0049] A *"water insoluble particle"* as referred to herein is a particle which does not dissolve when subjected to saliva in the oral cavity of a user and which retains or substantially retains its shape when incorporated in a pouched product for oral use. The water insolubility also means that the particle size of the water insoluble particles as referred to herein does not diminish or at least does not diminish by more than 1% during use of an oral pouched product incorporating the water insoluble particles. The shape and the size of the water insoluble particles may remain substantially unaffected during use. However, a certain amount of swelling of the water insoluble particles may be permitted or even desired. The swelling should preferably be less than 30 % of the pre-use bulk volume of the water insoluble particles and more preferably less than 20 % of the pre-use bulk volume of the water insoluble particles.

[0050] As used herein, the term *"moisture content"* refers to the percent by weight, wt%, of oven volatile substances, such as water and other oven volatiles (e.g. propylene glycol) which is present in a component material, a composition or a product and is determined according to the Loss on Drying (LOD) method disclosed herein.

[0051] The *"dry weight"* of a material, a composition, or a product is calculated by detracting the amount of

moisture from the total weight of the material, composition or product, the moisture content being determined by the method as disclosed herein.

[0052] As used herein, the term *"water content"* refers to the percent by weight, wt%, of water in a component material, a composition, or a product. The water content may be determined by using a standardized method for water analysis, such as Karl Fischer titration or gas chromatography, GC.

[0053] The term *"additional component"* refers to any component except water, which is provided in addition to the first type of particles in the filling material as disclosed herein, such as salts (e.g. sodium chloride, potassium chloride, magnesium chloride, calcium chloride and any combinations thereof), pH adjusters (e.g. sodium hydroxide, potassium hydroxide, potassium carbonate, sodium carbonate or sodium bicarbonate), flavouring agents, sweeteners, colorants, humectants (e.g. propylene glycol or glycerol), antioxidants, preservatives (e.g. potassium sorbate), binders, tobacco and non-tobacco plant material. The water-soluble component or water-soluble components which are part of the filling material in the oral pouched products as disclosed herein constitute one or more additional components.

[0054] The terms *"flavour" or "flavouring agent"* are used herein for substances used to influence the aroma and/or taste of the oral pouched product. The flavours may be any food-grade natural or synthetic flavour as known in the art and may include without limitation, essential oils, single flavour compounds, compounded flavourings, and extracts.

[0055] By *"tobacco"* or *"tobacco material"* is meant any part, e.g., leaves, stems, stalks, and flowers, of any member of the genus Nicotiana.

[0056] By a *"cover material"* as used herein is implied any suitable saliva permeable packaging material as known in the art. The cover material may also be referred to as *"pouch material"* and may be a nonwoven material, a material made by conventional textile production methods such as weaving or knitting or may be an apertured plastic film or netting. A nonwoven material suitable for use as cover material may be a nonwoven material comprising staple fibres, such as staple fibres of regenerated cellulose e.g., viscose rayon staple fibres and a binder, such as a polyacrylate binder. Alternatively, the nonwoven material may comprise fibres which are formed into a nonwoven web by spunbonding, hydroentangling, meltblowing, etc. The fibres used in such processes are generally thermoplastic fibres which are thermally bonded to form a coherent nonwoven web. The covering material may optionally comprise additional components such as flavouring agents and/or colorants.

[0057] Commonly used cover materials, such as the viscose nonwovens disclosed herein, are generally inelastic and non-stretchable materials which are relatively inexpensive to produce and easy to handle in a production process.

[0058] Pouched products for oral use are normally sized and configured to fit comfortably and discreetly in a user's mouth between the upper or lower gum and the lip. In general, pouched products for oral use have a generally rectangular shape. Some typical shapes (length x width) of commercially available pouched products for oral use are, for instance, 35 mm x 20 mm, 34/35 mm x 14 mm, 33/34 mm x 18 mm, 27/28 mm x 14 mm, 34 mm x 10 mm and 38 x 14 mm. Typical pouched products for oral use may have a maximum length within the range of from 25 mm to 40 mm along the longitudinal direction of the product and a maximum width within the range of from 5 mm to 20 mm along the transverse direction of the product. The pre-use thickness of the pouched product is normally within the range of from 2 mm to 8 mm. The total weight of commercially available pouched products for oral use is typically within the range from about 0.3 g to about 3.5 g, such as from about 0.5 g to 1.7 g, per pouched product. The volume of a portion of filling material in a pouch may be in the range of from 0.5 cm^3 to 1.5 cm^3, depending on the size of the pouch.

[0059] A *"user container" typically* contains in the range of 10-30 pouched products, such as in the range of 20-25 pouched products. The pouched products may be placed randomly in the user container or in a pattern, for instance as described in WO 2012/069505 A1. The user container as disclosed herein is a consumer package having a shape and a size adapted for conveniently carrying the consumer package in a pocket or in a handbag and may be used for packaging any known type of pouched product for oral use. The user container may include a disposal compartment for storage of used oral pouched products. The disposal compartment is separated from the compartment in the container where the fresh oral pouched products are stored up until use.

BRIEF DESCRIPTION OF THE DRAWINGS

[0060] The present invention will be further explained hereinafter by means of non-limiting examples and with reference to the appended drawings wherein:

Figure 1	shows a pouched product for oral use;
Figure 2	shows a cross-section along the line II-II through the pouched product of Fig. 1;
Figure 3	shows generally spherical particles suitable as a first type of particles;
Figures 4a-4d	show some alternative shapes for the first type of particles; and
Figures 5a-5b	show schematically how the thickness of a pouched product for oral use is determined.

DETAILED DESCRIPTION

[0061] It is to be understood that the drawings are schematic and that individual components are not necessarily drawn to scale.

[0062] The pouched product 1 for oral use which is shown in Figs. 1 and 2 comprises a liquid permeable cover material 2 and a portion sized amount of a filling material 3 comprising a first type of particles 4 enclosed by the liquid permeable cover material 2. The cover material 2 may be any suitable type of cover material as disclosed herein and is formed into a generally rectangular pouch into which the filling material 3 has been inserted.

[0063] A common way of making a pouched product having a generally rectangular pillow-like shape, such as the pouched product 1 shown in Figs. 1 and 2, is either to provide the cover material as a seamless and endless tube or to form a flat web of cover material into an endless tube which is provided with a continuous seal in the longitudinal direction of the endless tube. The endless tube is subsequently intermittently sealed in the transverse direction of the endless tube while filling the endless tube with filling material into pockets which are created between the transverse seals. Individual pouched products are severed from the filled and sealed tube of cover material and are usually packed in user containers. Sealing of the cover material may be made with any suitable method or combination of methods, such as by means of adhesive, heat sealing, ultrasonic welding, needling, etc. Heat sealing and ultrasonic welding require the cover material to contain at least a functional amount of thermoplastic material, such as thermoplastic fibres or thermoplastic binders.

[0064] The longitudinal seal created during manufacturing appears as a longitudinal seal 6 extending along the length l of the pouched product 1 shown in Figs. 1 and 2. No such seal will be present if the cover material is provided in the form of an endless seam-less tube. The transverse seals form end seals 7 which define the width w of the pouched product 1. The pouched product 1 has a first main surface 8 and a second main surface 9 and a thickness t being defined as the greatest perpendicular distance between the first main surface 8 and the second main surface 9. The first type of particles 4 are water insoluble particles and the filling material 3 has a pre-use moisture content of from 1% by weight of the filling material to 35% by weight of the filling material and comprises one or more water soluble components. The pouched product 1 has a pre-use thickness t1 and a post-use thickness t2 and a ratio t2/t1 between the post-use thickness t1 and the pre-use thickness t1 being in the range of from 0.9 to 1.3.

[0065] The first type of particles 4 do not dissolve when being subjected to saliva in the oral cavity of a user which means that they have a high shape stability and do not diminish in size during use.

[0066] The first type of particles 4 may constitute a very high proportion of the total dry weight of the filling material 3, such as 80% by dry weight to 99% by dry weight of the filling material.

[0067] The filling material 3 comprises nicotine and may further comprise one or more water soluble components 11, such as flavours, sweeteners, active ingredients, etc. as disclosed herein.

[0068] A part of a filling material 3 is shown in Fig. 3, the filling material 3 comprising a plurality of generally spherical water insoluble particles constituting the first type of particles 4 of an oral pouched product as disclosed herein.

[0069] The particles of the first type of particles 4 have a relatively large average particle size within the range of from 0.5 mm to 2.5 mm. By using large water insoluble particles for the first type of particles 4, a major part of the water soluble components 11 , i.e. components which are soluble in water and saliva, may to a large extent be present in the filling material on surfaces of the first type of particles 4 which face interstices 12 between the first type of particles 4. In that manner, any water soluble components 12 may be substantially "concealed" within the mass of the filling material 3 where they do not add to the volume of the filling material 3. Fig. 3 shows only a very small number of the first type of particles 4. In a full portion of filling material for an oral pouched product 1, the number of the first type of particles is considerably higher, such as in the order of 150 particles or more which means that a large majority of the particle surfaces will be facing into the filling material 3.

[0070] As disclosed herein, the first type of particles 4 may be dense, non-porous particles having a particle density in the range of from 0.8 g/cm^3 to 1.7 g/cm^3, such as from 1.0 g/cm^3 to 1.5 g/cm^3, such as from 1.1 g/cm^3 to 1.4 g/cm^3. In such dense non-porous particles, no, or substantially no water soluble components 11 are present within the first type of particles 4 themselves.

[0071] As set out herein, the filling material 3 may comprise a second type of particles (not shown) which may be water soluble particles and which have an average particle size which is less than the average particle size of the first type of particles 4. Preferably, the second type of particles are sufficiently small to be accommodated within interstices 12 between the first type of particles 4.

[0072] Figs. 4a, 4b, 4c and 4d illustrate some alternative shapes for the first type of particles 4 of the filling materials 3 as disclosed herein.

[0073] The particles 4 which are shown in Fig. 4a have a substantially cubic shape, the particles 4 which are shown in Fig. 4b are grain-shaped, the particles 4 which are shown in Fig. 4c have a substantially cylindrical shape and the particles 4 which are shown in Fig. 4d have an irregular shape. The particles 4 in Fig. 4a, has an aspect ratio w/l which is approximately 1, while the particles 4 shown in Figs. 4b-4d have a smaller aspect ratio.

EXAMPLES AND DESCRIPTION OF TEST METHODS

Method for determining moisture content, Loss on Drying (LOP)

[0074] The moisture content as referred to herein may be determined by using a method based on literature

references Federal Register/ vol.74, no. 4/712-719/Wednesday, January 7, 2009/Notices "Total moisture determination" and AOAC (Association of Official Analytical Chemics), Official Methods of Analysis 966.02: "Moisture in Tobacco" (1990), Fifth Edition, K. Helrich (ed). In this method, the moisture content is determined gravimetrically by taking 2.5±0.25 g sample and weighing the sample at ambient conditions, herein defined as being at a temperature of 22°C and a relative humidity of 60%, before evaporation of moisture and after completion of dehydration. Mettler Toledo's Moisture Analyzer HB43, a balance with halogen heating technology, is used (instead of an oven and a balance as in the mentioned literature references) in the experiments described herein. The sample is heated to 105°C (instead of 99.5±0.5°C as in the mentioned literature references). The measurement is stopped when the weight change is less than 1 mg during a 90 seconds time frame. The moisture content as weight percent of the sample is then calculated automatically by the Moisture Analyzer HB43.

Test method for determining thickness of a pouched product.

Apparatus

[0075] The thickness of a pouched product is determined using a rheometer having a stationary bottom plate 21 and a movable press plate 22 as shown in Figs. 5a and 5b.

Sample preparation

[0076] Each sample is tested before and after use. When handling the sample products, care should be taken not to squeeze the samples or otherwise disturb the filling material inside the product cover.

[0077] Used samples are prepared by a test person placing a non-used sample product under the upper lip and leaving the sample in place under the lip for a use period of 10 minutes. No food or drink should be ingested during the use period. If the used samples cannot be tested directly in connection with the use, each sample oral pouched product is placed in an individual container which is sealed and kept under refrigeration at 4°C. The thickness of the used samples should be measured within 24 hours after use.

Test procedure

[0078] The rheometer is started according to the start procedure.

[0079] An oral pouched product 1 is placed flat with one of the two main surfaces 8, 9 on the bottom plate 21 of the rheometer 20, as shown in Fig. 5a. The oral pouched product 1 is removed from the storage container by hand or by means of a pair of tweezers and care is taken to center the sample on the bottom plate to ascertain that the force is evenly distributed over the sample during the measurement.

[0080] The measuring sequence is started and the thickness of the sample at an applied pressure of 0.5 N is registered.

[0081] The pre-use thickness t1 or the post-use thickness t2 of the oral pouched product is determined as the maximum distance between the two main surfaces 8,9 of the oral pouched product 1 at a low applied pressure of 0.5 N as shown in Fig. 5b.

[0082] The thickness of a tested oral pouched product is determined as the average thickness of 10 tested product samples taken from the same batch of oral pouched products.

EXAMPLES

[0083] A liquid permeable nonwoven cover material was used for all sample products. The product format and the volume of the filling material in the non-used product were the same for the Reference and Example 1. The product format and the volume of the filling material in the non-used product in Example 2 was different from those of the Reference and Example 1.

Reference

[0084] The reference was a commercial product sold under the name ZYN Dry citrus 3 mg from Swedish Match North Europe AB.

[0085] Filling material: Total pre-use weight 0.34 g and total pre-use volume 0.72 cm^3. The filling material was constituted by approximately 84% by dry weight of a combination of granules of microcrystalline cellulose and maltitol and approximately 16% by dry weight of hydroxypropyl cellulose powder, flavour additives, pH regulators and nicotine bitartrate. The moisture content in the filling material was 3% of the total weight of the filling material. Product format: length 28 mm, width 14 mm.

Example 1

[0086]

Filling material: Total pre-use weight 0.58 g and total pre-use volume 0.75 cm^3. The filling material was constituted by approximately 78% by weight of the total weight of the filling material of particles of microcrystalline cellulose having an average particle size of 945μm, a particle density of 1.3 g/cm^3 and a bulk density of 0.78 g/cm^3, and approximately 9% by weight of additional components based on the total weight of the filling material. The moisture content in the filling material was 13% of the total weight of the filling material.

Product format: length 28 mm, width 14 mm.

Example 2

[0087]

Filling material: Total pre-use weight 0.73 g and total pre-use volume 1.1 cm^3.
The composition of the filling material was the same as in Example 1.
Product format: length 34 mm, width 14.5 mm

Table 1

	t1 (mm)	t2 (mm)	t2/t1
Reference	2.92	2.33	0.80
Example 1	3.78	4.46	1.18
Example 2	4.86	5.69	1.17

[0088] As can be seen in Table 1, the oral pouched products according to Examples 1 and 2 were found to increase in thickness to approximately the same degree during use i.e., by 18% for Example 1 and 17% for Example 2, while the thickness of the Reference product diminished by 20%.

Claims

1. A pouched product (1) for oral use comprising a liquid permeable cover material (2) and a portion sized amount of a filling material (3) comprising nicotine, the filling material (3) comprising a first type of particles (4), the first type of particles (4) being water insoluble particles of microcrystalline cellulose, water insoluble starch or a mixture thereof, the filling material (3) being enclosed by the liquid permeable cover material (2), the pouched product (1) having a generally rectangular shape defining a first main surface (8) and a second main surface (9) and having a thickness between the first main surface (8) and the second main surface (8), **characterized in that** the particles of the first type of particles (4) have an average particle size within the range of from 0.5 mm to 2.5 mm, that the filling material (3) has a pre-use moisture content of from 1% by weight of the filling material (3) to 35% by weight of the filling material (3) and that the filling material (3) comprises one or more water soluble components (11), the pouched product (1) having a pre-use thickness (t1) determined as the maximum distance between the two main surfaces (8, 9) at an applied pressure force of 0.5 N and a post-use thickness (t2) determined as the maximum distance between the two main surfaces (8, 9) at an applied pressure force of 0.5 N after a use period of 10 minutes according to the test procedure disclosed herein, and a ratio (t2/t1) between the post-use thickness (t2) and the pre-use thickness (t1) being in the range of from 1.0 to 1.25, wherein nicotine is present on an outer surface of at least some particles of the first type of particles (4).

2. A pouched product (1) according to claim 1, wherein the first type of particles (4) constitutes 75% by dry weight to 99% by dry weight of the filling material (3).

3. A pouched product (1) according to any one of the preceding claims, wherein the thickness of the product increases by up to 50 % during use, such as by 10% to 40%, such as by 15% to 30%, such as by 15% to 25%, such as by 15% to 20%.

4. A pouched product (1) according to any one of the preceding claims, wherein the particles of the first type of particles (4) have a particle density in the range of from 0.8 g/cm^3 to 1.7 g/cm^3.

5. A pouched product (1) according to any one of the preceding claims, wherein nicotine is derived from a nicotine source being a nicotine base and/or being selected from the group consisting of nicotine hydrochloride, nicotine dihydrochloride, nicotine monotartrate, nicotine bitartrate, nicotine bitartrate dihydrate, nicotine sulphate, nicotine zinc chloride monohydrate and nicotine salicylate, nicotine benzoate, nicotine polacrilex and any combination thereof.

6. A pouched product (1) according to any one of the preceding claims, wherein the filling material (3) comprises an additive selected from the group consisting of a flavouring agent, a sweetener, a humectant, and any mixture thereof.

7. A pouched product (1) according to claim 6, wherein the additive comprises or consists of a flavouring agent, such as a flavour oil, such as a hydrophobic flavour oil, such as a synthetic flavour, such as a nature-identical flavour.

8. A pouched product (1) according to any one of the preceding claims, wherein the filling material (3) is free from tobacco material.

9. A pouched product (1) according to any one of the preceding claims, wherein the filling material (3) comprises a second type of particles, the second type of particles having an average particle size which is less than the average particle size of the first type of particles.

10. A pouched product (1) according to claim 9 wherein the second type of particles are water soluble particles.

11. A pouched product (1) according to any one of the

preceding claims, wherein at least one of the one or more water soluble components (11) is present on an outer surface of at least some of the particles of the first type of particles (4), such as on 20% to 100% of the first type of particles (4), or 50% to 100% of the first type of particles (4), or 80% to 100% of the first type of particles (4).

12. A pouched product (1) according to any one of the preceding claims, wherein at least one of the one or more water soluble components (11) is present in interstices between the particles of the first type of particles (4).

13. A pouched product (1) according to any one of the preceding claims, wherein the liquid permeable cover material (2) is a nonwoven material.

Patentansprüche

1. Beutelprodukt (1) zur oralen Verwendung, umfassend ein flüssigkeitsdurchlässiges Abdeckmaterial (2) und eine portionierte Menge eines Füllmaterials (3), umfassend Nikotin, wobei das Füllmaterial (3) eine erste Partikelart (4) umfasst, wobei die erste Partikelart (4) wasserunlösliche Partikel aus mikrokristalliner Zellulose, wasserunlöslicher Stärke oder eine Mischung davon ist, wobei das Füllmaterial (3) von dem flüssigkeitsdurchlässigen Abdeckmaterial (2) umschlossen ist, wobei das Beutelprodukt (1) eine im Allgemeinen rechteckige Form aufweist, die eine erste Hauptoberfläche (8) und eine zweite Hauptoberfläche (9) definiert, und eine Dicke zwischen der ersten Hauptoberfläche (8) und der zweiten Hauptoberfläche (8) aufweist, **dadurch gekennzeichnet, dass** die Partikel der ersten Partikelart (4) eine durchschnittliche Partikelgröße im Bereich von 0,5 mm bis 2,5 mm aufweisen, dass das Füllmaterial (3) einen Feuchtigkeitsgehalt vor Verwendung von 1 Gewichtsprozent des Füllmaterials (3) bis 35 Gewichtsprozent des Füllmaterials (3) aufweist und dass das Füllmaterial (3) einen oder mehrere wasserlösliche Bestandteile (11) umfasst, wobei das Beutelprodukt (1) eine Dicke vor Verwendung (t1), die als der maximale Abstand zwischen den beiden Hauptoberflächen (8, 9) bei einer aufgebrachten Druckkraft von 0,5 N bestimmt wird, und eine Dicke nach Verwendung (t2), die als der maximale Abstand zwischen den beiden Hauptoberflächen (8, 9) bei einer aufgebrachten Druckkraft von 0,5 N nach einer Verwendungsdauer von 10 Minuten nach der hierin offenbarten Testprozedur bestimmt wird, aufweist, und wobei ein Verhältnis (t2/t1) zwischen der Dicke nach Verwendung (t2) und der Dicke vor Verwendung (t1) im Bereich von 1,0 bis 1,25 liegt, wobei Nikotin auf einer Außenfläche von mindestens einigen Partikeln der ersten Partikelart (4) vorhanden ist.

2. Beutelprodukt (1) nach Anspruch 1, wobei die erste Partikelart (4) 75 % des Trockengewichts bis 99 % des Trockengewichts des Füllmaterials (3) darstellt.

3. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei die Dicke des Produkts während Verwendung um bis zu 50 % zunimmt, wie beispielsweise um 10 % bis 40 %, wie beispielsweise um 15 % bis 30 %, wie beispielsweise um 15 % bis 25 %, wie beispielsweise um 15 % bis 20 %.

4. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei die Partikel der ersten Partikelart (4) eine Partikeldichte im Bereich von 0,8 g/cm^3 bis 1,7 g/cm^3 aufweisen.

5. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei Nikotin von einer Nikotinquelle stammt, die eine Nikotinbase ist und/oder ausgewählt ist aus der Gruppe bestehend aus Nikotinhydrochlorid, Nikotindihydrochlorid, Nikotinmonotartrat, Nikotinbitartrat, Nikotinbitartratdihydrat, Nikotinsulfat, Nikotinzinkchloridmonohydrat und Nikotinsalicylat, Nikotinbenzoat, Nikotinpolacrilex und einer beliebigen Kombination davon.

6. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei das Füllmaterial (3) einen Zusatzstoff umfasst, der ausgewählt ist aus der Gruppe bestehend aus einem Aromastoff, einem Süßstoff, einem Feuchthaltemittel und einer beliebigen Mischung davon.

7. Beutelprodukt (1) nach Anspruch 6, wobei der Zusatzstoff einen Aromastoff, wie beispielsweise ein Aromaöl, wie beispielsweise ein hydrophobes Aromaöl, wie beispielsweise ein synthetisches Aroma, wie beispielsweise ein naturidentisches Aroma, umfasst oder daraus besteht.

8. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei das Füllmaterial (3) frei von Tabakmaterial ist.

9. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei das Füllmaterial (3) eine zweite Partikelart umfasst, wobei die zweite Partikelart eine durchschnittliche Partikelgröße aufweist, die kleiner ist als die durchschnittliche Partikelgröße der ersten Partikelart.

10. Beutelprodukt (1) nach Anspruch 9, wobei die zweite Partikelart wasserlösliche Partikel sind.

11. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei mindestens einer des einen oder der mehreren wasserlöslichen Bestandteile (11) auf einer Außenfläche von mindestens einigen der Parti-

kel der ersten Partikelart (4) vorhanden ist, wie beispielsweise auf 20 % bis 100 % der ersten Partikelart (4) oder 50 % bis 100 % der ersten Partikelart (4) oder 80 % bis 100 % der ersten Partikelart (4).

12. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei mindestens einer des einen oder der mehreren wasserlöslichen Bestandteile (11) in Zwischenräumen zwischen den Partikeln der ersten Partikelart (4) vorhanden ist.

13. Beutelprodukt (1) nach einem der vorstehenden Ansprüche, wobei das flüssigkeitsdurchlässige Abdeckmaterial (2) ein Vliesmaterial ist.

Revendications

1. Produit en sachet (1) à usage oral comprenant un matériau de couverture perméable aux liquides (2) et une quantité dimensionnée en portions d'un matériau de remplissage (3) comprenant de la nicotine, le matériau de remplissage (3) comprenant un premier type de particules (4), le premier type de particules (4) étant des particules insolubles dans l'eau de cellulose microcristalline, de l'amidon insoluble dans l'eau, ou un mélange de ceux-ci, le matériau de remplissage (3) étant entouré par le matériau de couverture perméable liquide (2), le produit en sachet (1) présentant une forme généralement rectangulaire définissant une première surface principale (8) et une seconde surface principale (9) et présentant une épaisseur entre la première surface principale (8) et la seconde surface principale (8), **caractérisé en ce que** les particules du premier type de particules (4) présentent une taille moyenne de particules dans la plage de 0,5 mm à 2,5 mm, **en ce que** le matériau de remplissage (3) présente une teneur en humidité avant utilisation de 1 % en poids du matériau de remplissage (3) à 35 % en poids du matériau de remplissage (3) et **en ce que** le matériau de remplissage (3) comprend un ou plusieurs composants solubles dans l'eau (11), le produit en sachet (1) présentant une épaisseur avant utilisation (t1) déterminée comme la distance maximale entre les deux surfaces principales (8, 9) à une force de pression appliquée de 0,5 N et une épaisseur après utilisation (t2) déterminée comme la distance maximale entre les deux surfaces principales (8, 9) à une force de pression appliquée de 0,5 N après une période d'utilisation de 10 minutes selon la procédure de test divulguée ici, et un rapport (t2/t1) entre l'épaisseur après utilisation (t2) et l'épaisseur avant utilisation (t1) étant dans la plage de 1,0 à 1,25, dans lequel de la nicotine est présente sur une surface externe d'au moins certaines particules du premier type de particules (4).

2. Produit en sachet (1) selon la revendication 1, dans lequel le premier type de particules (4) constitue 75 % en poids sec à 99 % en poids sec du matériau de remplissage (3).

3. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel l'épaisseur du produit augmente jusqu'à 50 % pendant l'utilisation, par exemple de 10 % à 40 %, par exemple de 15 % à 30 %, par exemple de 15 % à 25 %, par exemple de 15 % à 20 %.

4. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel les particules du premier type de particules (4) présentent une densité de particules dans la plage de 0,8 g/cm^3 à 1,7 g/cm^3.

5. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel la nicotine est dérivée d'une source de nicotine qui est une base de nicotine et/ou est sélectionnée parmi le groupe consistant en chlorhydrate de nicotine, dichlorhydrate de nicotine, monotartrate de nicotine, bitartrate de nicotine, bitartrate de nicotine dihydraté, sulfate de nicotine, chlorure de zinc de nicotine monohydraté et salicylate de nicotine, benzoate de nicotine, polacrilex de nicotine et toute combinaison de ceux-ci.

6. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel le matériau de remplissage (3) comprend un additif sélectionné parmi le groupe consistant en un agent aromatique, un édulcorant, un humectant, et tout mélange de ceux-ci.

7. Produit en sachet (1) selon la revendication 6, dans lequel l'additif comprend ou consiste en un agent aromatisant, tel qu'une huile aromatique, tel qu'une huile aromatique hydrophobe, tel qu'un arôme synthétique, tel qu'un arôme identique à la nature.

8. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel le matériau de remplissage (3) est exempt de matériau de tabac.

9. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel le matériau de remplissage (3) comprend un second type de particules, le second type de particules présentant une taille moyenne de particules qui est inférieure à la taille moyenne de particules du premier type de particules.

10. Produit en sachet (1) selon la revendication 9 dans lequel le second type de particules sont des particules solubles dans l'eau.

11. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel au moins l'un des un ou plusieurs composants solubles dans l'eau (11) est présent sur une surface externe d'au moins certaines des particules du premier type de particules (4), par exemple sur 20 % à 100 % du premier type de particules (4), ou 50 % à 100 % du premier type de particules (4), ou 80 % à 100 % du premier type de particules (4).

12. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel au moins l'un des un ou plusieurs composants solubles dans l'eau (11) est présent dans des interstices entre les particules du premier type de particules (4).

13. Produit en sachet (1) selon l'une quelconque des revendications précédentes, dans lequel le matériau de couverture perméable liquide (2) est un matériau non tissé.

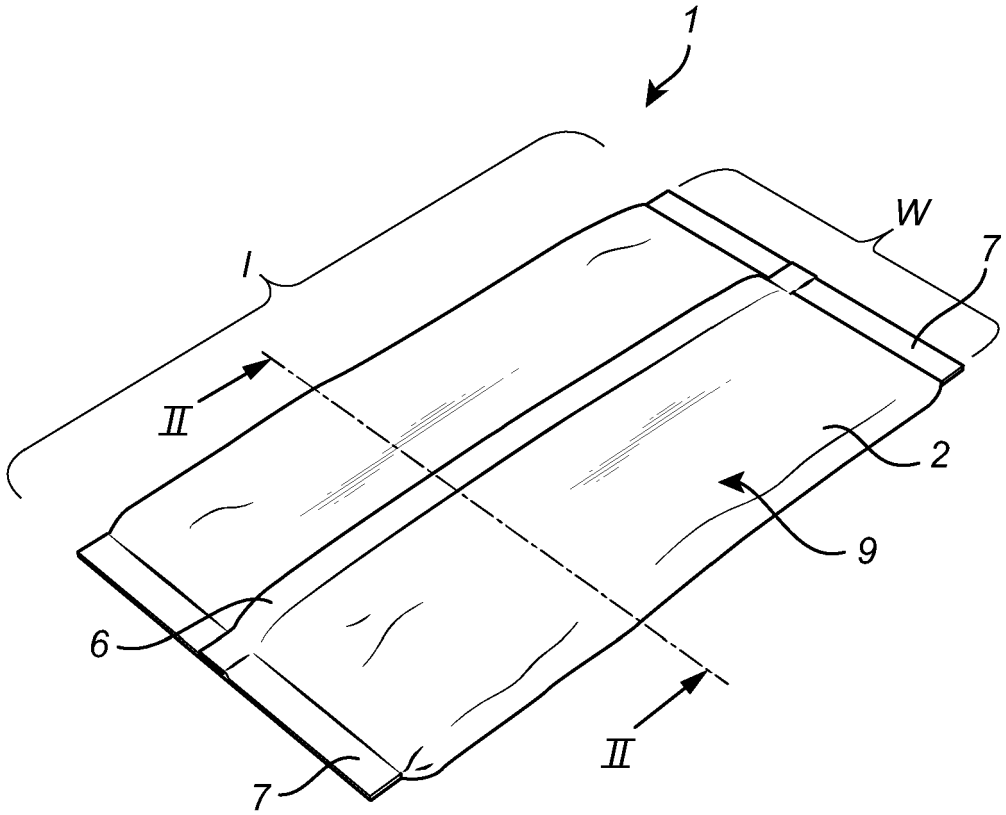

Fig. 1

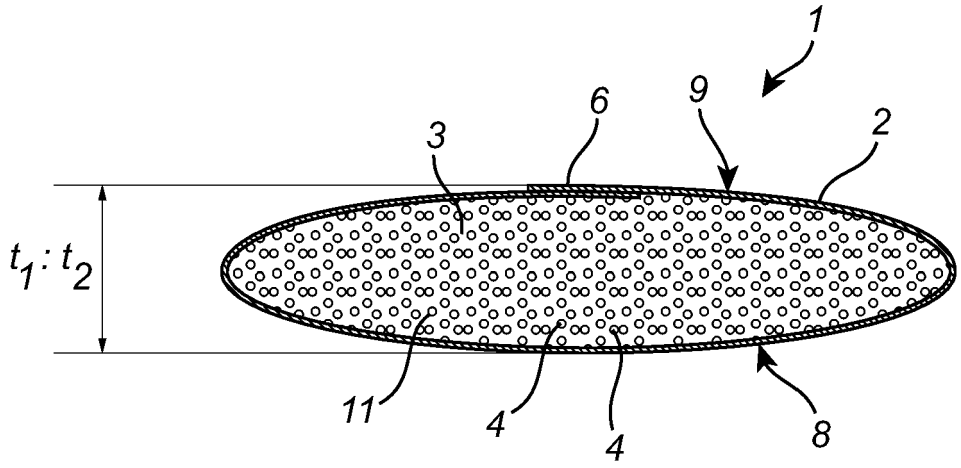

Fig. 2

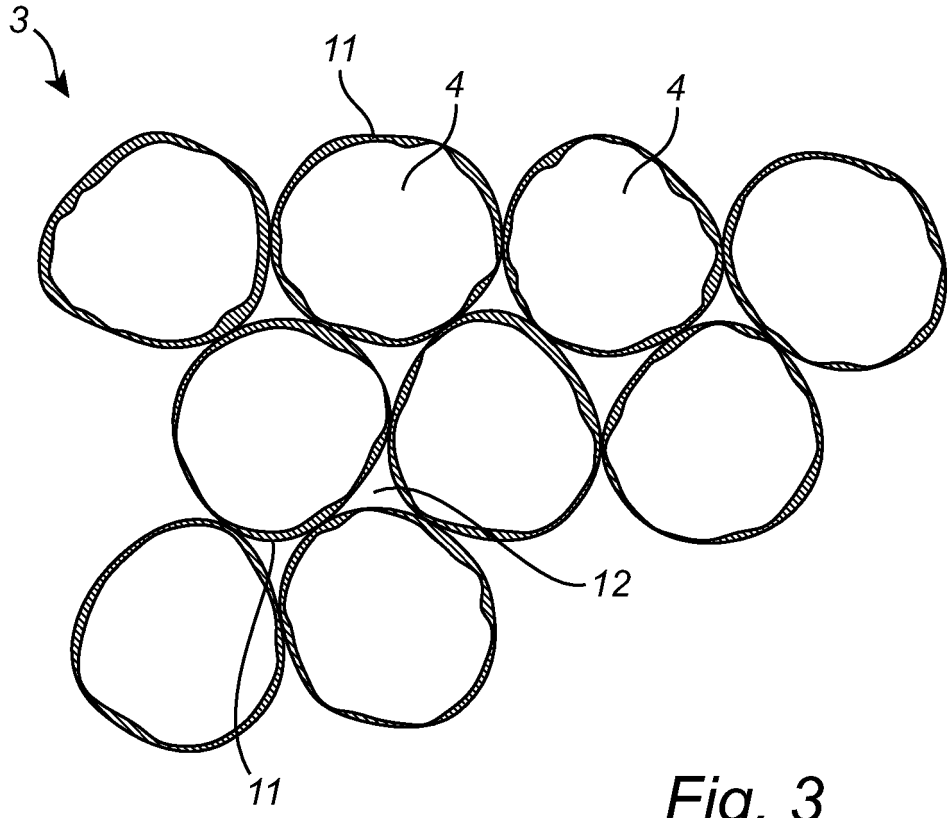

Fig. 3

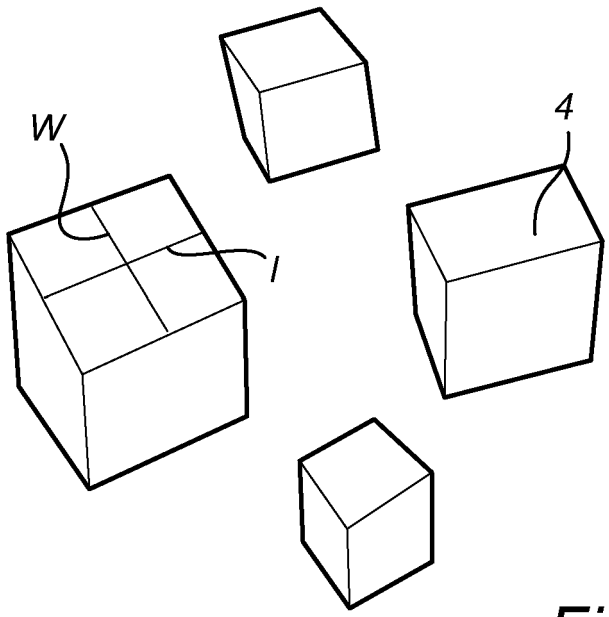

Fig. 4a

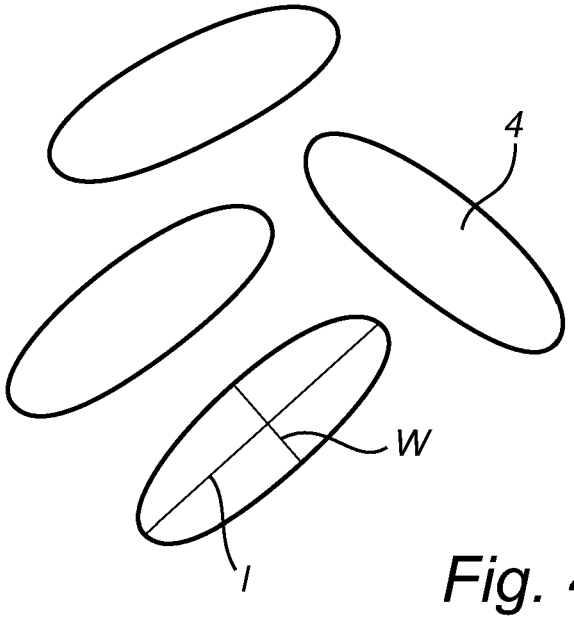

Fig. 4b

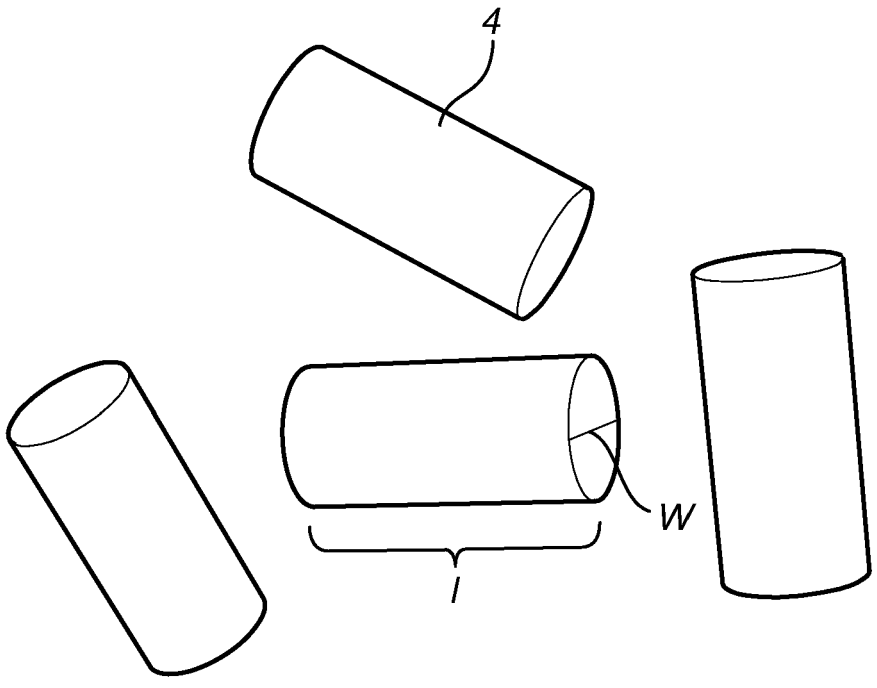

Fig. 4c

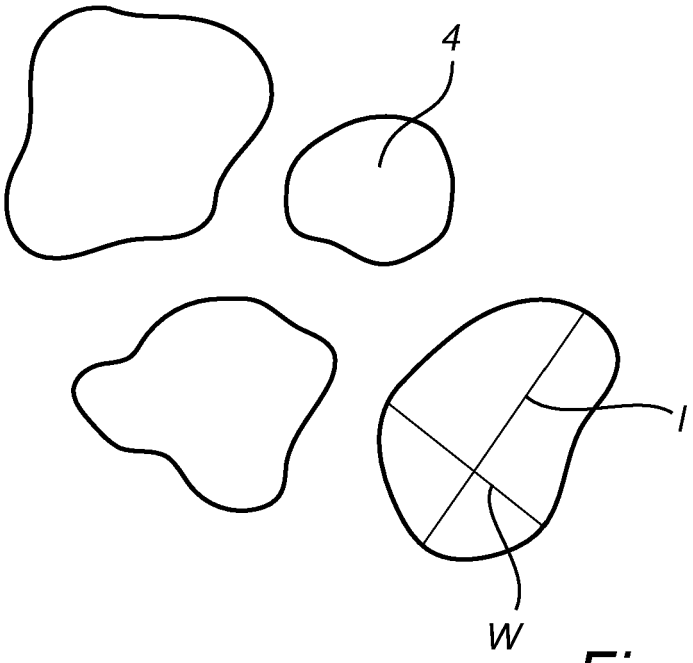

Fig. 4d

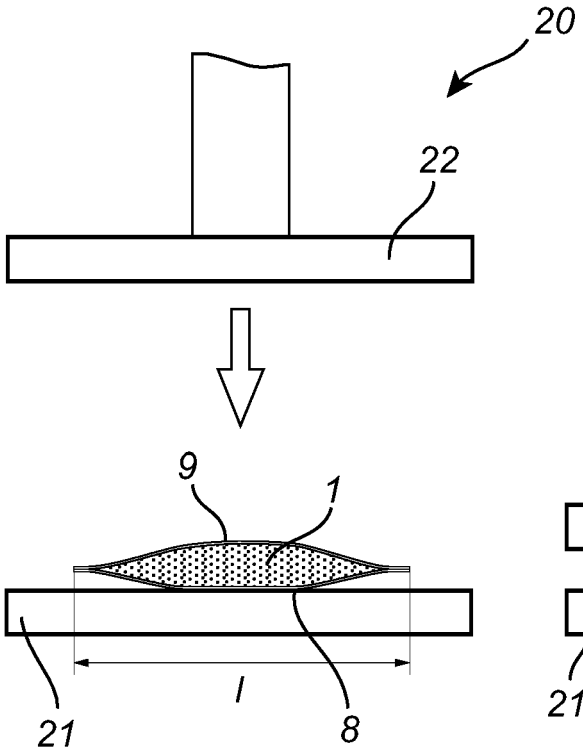

Fig. 5a

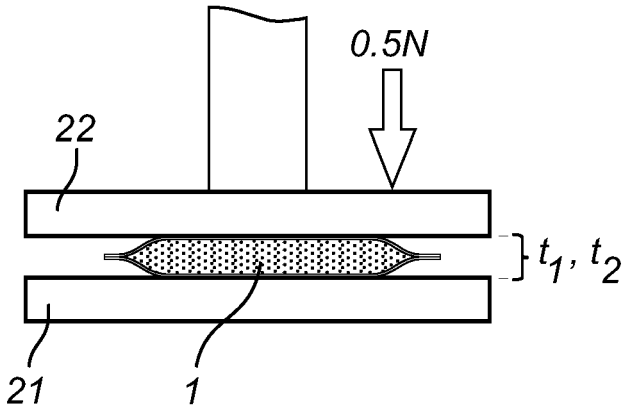

Fig. 5b

REFERENCES CITED IN THE DESCRIPTION

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