



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
29.03.2023 Bulletin 2023/13

(51) International Patent Classification (IPC):
A24B 13/00 ^(2006.01) **A24F 25/02** ^(2006.01)

(21) Application number: **21198473.7**

(52) Cooperative Patent Classification (CPC):
A24B 13/00; A24F 25/02

(22) Date of filing: **23.09.2021**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(54) **METHOD FOR MOISTURIZING A POUCHED PRODUCT FOR ORAL USE**

(57) Method for moisturizing a pouched product (103, 203) for oral use, comprising the steps of:
a) providing a plurality of pouched products (103, 203) for oral use, the pouched products (103, 203) having a first moisture content;
b) laying down the pouched products (103, 203) on a support surface (111, 211); and

c) applying water with a water application tool (105, 205) comprising a water dispensing arrangement (117, 217) to the pouched products (103, 203) in a confined water application area (106, 206) of the support surface (111, 211), to raise the moisture content to a second moisture content, the second moisture content being higher than the first moisture content.

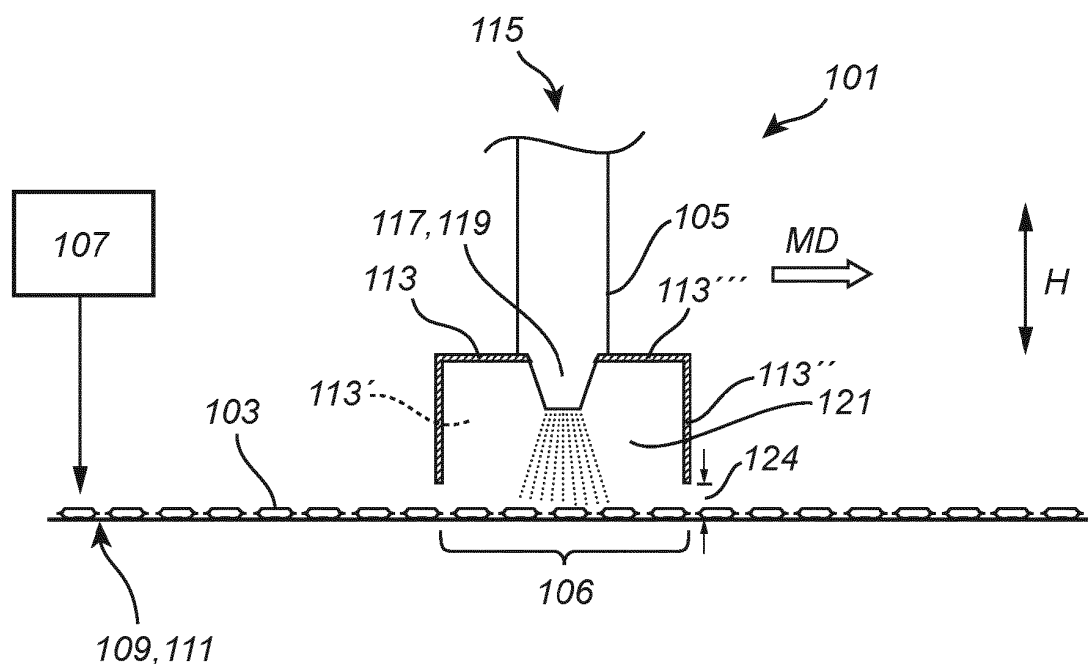


Fig. 1

Description

TECHNICAL FIELD

[0001] The disclosure pertains to a method for moisturizing an oral pouched product comprising a filling material and a saliva-permeable pouch of a packaging material enclosing the filling material. The oral pouched product may be a tobacco-free or substantially tobacco-free oral pouched product.

BACKGROUND

[0002] The present disclosure relates primarily to the field of moist tobacco-free or substantially tobacco-free oral pouched products. Tobacco-free or substantially tobacco-free oral pouched products are generally used in the same manner as oral pouched tobacco-containing products and are herein referred to as oral pouched products. The oral pouched products usually contain a filler material, such as carboxymethyl cellulose (CMC), non-tobacco fibres or particles, an active substance such as nicotine, caffeine, etc., and/or flavoring. The filler material may act as a carrier for the active substance or may be only a bulk material providing the oral pouched product with a desired volume.

[0003] Oral pouched products are typically used by the user by placing the pouch between the upper or lower gum and the lip or cheek and retaining it there for a limited period of time. The pouch material holds the filling material in place while allowing saliva to pass through the pouch so that flavors and active substance may dissolve in the saliva and diffuse from the filling material into the user's mouth.

[0004] Tobacco-free or substantially tobacco-free oral pouched products may be produced by measuring portions of the filling material and inserting the portions into a saliva-permeable porous wrapper forming a portion pack in the form of a pouch.

[0005] The tobacco-free or substantially tobacco-free oral pouched products may be of the moist type, meaning that when ready for use, they have a moisture content in the order of from 40 to 60 percent by weight based on the total weight of the pouched product. At such high moisture content, the filling material is sticky and viscous and may stick to equipment and to the porous wrapping material when introducing the moist filling material into a tube formed by the porous wrapping material. Filling material with a high moisture content has been found to end up in pouch seals, detracting from the quality of the pouch seals. The sticky, slow-flowing filling material may also make it difficult to produce pouched products of equal weight. For this reason, it has been suggested to portion-pack oral pouched products at a lower moisture level and raising the moisture level after the pouches containing the filling material have been formed. This is often referred to as "post-moisturizing" of the oral pouched product.

[0006] It has also been found to be difficult to achieve a controlled pre-determined final moisture content in the final pouched products as moisture may evaporate during handling of the pouches and packing them in user containers. Some moisture may also be lost in a post-moisturizing process carried out by spraying, as a part of the moisture may be sprayed into the air surrounding the pouched products and may even end up on packing equipment. Accordingly, previous attempts with post-moisturizing of oral pouched products by spraying water on the pouched product before packaging the pouched products in user containers, have shown that it is difficult to control the addition of water as some of the water never reaches the pouched product due to spillage and/or evaporation. Hence, it is difficult to ensure that the final pouched products which reach the consumer have the same, pre-determined moisture content.

[0007] One way of moisturizing oral pouched products in a controlled manner after formation of the pouches has been suggested in US10463071 B1 which describes a container for a consumable recipient product where the recipient product for example may be a smokeless tobacco product or non-tobacco products, such as inert materials supplied with nicotine, or plant matter other than tobacco and wherein said container contains a non-consumable donor product carrier which contains a donor product configured to emit a substance to impart a characteristic to the recipient product in the container. The document further discloses that the substance emitted by the donor product may be a moisturising substance to provide moisture to the recipient product in the container.

[0008] However, although the donor product in US10463071 B1 offers a way of controlled addition of moisture, it requires the production and handling of special donor products, which makes the moisturizing method in US10463071 B1 complicated and less efficient than desired. Furthermore, the use of donor products sets a limit to the amount of moisture which may be added to the other products in the container and thereby to the possibility of raising the moisture content to any desirable level.

[0009] Thus, there is a need for an efficient method which can provide improved post moisturizing with minimal water spillage, and which may offer a uniform and predetermined moisturizing of pouched products for oral use such that the moisture content in the final products is the same or substantially the same in all user containers.

[0010] The object of the present invention is to overcome or at least mitigate some of the problems associated with the prior art.

SUMMARY

[0011] According to the method of claim 1, oral pouched products having a uniform and pre-determined moisture content may be produced in an efficient manner.

Variations of the disclosure are set out in the dependent claims.

[0012] Disclosed herein is a method for moisturizing a pouched product for oral use, comprising the steps of:

- a) providing a plurality of pouched products for oral use, the pouched products having a first moisture content;
- b) laying down the pouched products on a support surface; and
- c) applying water with a water application tool comprising a water dispensing arrangement to the pouched products in a confined water application area of the support surface, to raise the moisture content to a second moisture content, the second moisture content being higher than the first moisture content.

[0013] The pouched product for oral use may be a tobacco-free or substantially tobacco-free product, such as nicotine containing smokeless non-tobacco product.

[0014] As set out herein, the first moisture content of the pouched products for oral use is normally determined by the water content of the filling material in the pouch during pouch formation.

[0015] A high level of control of the second moisture content in the pouched products is achieved as a uniform distribution of water and uniform second moisture content is ascertained by arranging the pouched products on a pre-determined, confined area.

[0016] As set out herein, the second moisture content of the pouched products for oral use is normally the final moisture content of the pouched products for oral use, i.e., no further moisturizing steps are performed on the pouched products for oral use before the pouched products for oral use reach a consumer.

[0017] Water application may be performed in any suitable manner. For instance, the water dispensing arrangement may comprise spray nozzles. Other water application means such as soaked sponges or moisture transfer rollers are also contemplated for the method as disclosed herein.

[0018] In the method as disclosed herein, the first moisture content may be within the range of from 2 % by weight to 30 % by weight based on the total weight of the pouched product, and the second moisture content may be in the range of from 20% by weight to 60% by weight based on the pouched product, the second moisture content being at least 25% higher than the first moisture content.

[0019] In the method as disclosed herein, the pouched products in step a) may have a first moisture content within the range of from 2 wt% to 30 wt% such as within the subrange of from 4 wt% to 28 wt%, such as within the subrange of from 6 wt% to 26 wt%, such as within the subrange of from 8 wt% to 24 wt%, such as within the subrange of from 10 wt% to 24 wt%, such as within the subrange of from 18 wt% to 24 wt%, such as within

the subrange of from 12 wt% to 20 wt%, such as within the subrange of from 14 wt% to 18 wt%, based on the total weight of the pouched product.

[0020] A very low first moisture content may, for example, be useful in particulate filling materials having a small amount of fines, as comparatively dry materials are free-flowing and easy to fill into a pouch material. However, for filling materials containing small particles and fines, a higher moisture content may be required in order to avoid dusting. Hence, the moisture content may suitably be adapted to the type of filling material. A particularly useful range for the first moisture content in the method as disclosed herein may be from 10 wt% to 30 wt%, preferably from 18 wt% to 24 wt%.

[0021] In the method as disclosed herein, the pouched products after step c) may have a second moisture content within the range of from 25 wt% to 60 wt%, such as within the subrange of from 25 wt% to 55 wt%, such as within the subrange of from 30 wt% to 50 wt%, such as within the subrange of from 35 wt% to 45 wt%, such as within the subrange of from 40 wt% to 45 wt%, based on the total weight of the pouched product. A preferred range for the second moisture content may be from 35 wt% to 55 wt%.

[0022] Within the ranges above, the moisture content of the final pouched product, i.e., the second moisture content of the pouched product as disclosed herein, will always be at least 20 wt% if the first moisture content is from 2 wt% to 16 wt%. In the interval where the first moisture content is from 16 wt% to 30 wt%, the second moisture content will always be at least 25% higher than the first moisture content. By way of example, a pouched product having a first moisture content of 30% by weight will have a second moisture content of at least 37.5 wt% based on the total weight of the pouched product.

[0023] In a method where the first moisture content is in the lower part of the range 2 wt% to 30 wt%, such as from 2 wt% to 15 wt% and the second moisture content is in the upper part of the range 20 wt% to 60 wt%, such as from 40 wt% to 60 wt%, the second moisture content may be up to 3000% (or 30 times) higher than the first moisture content, i.e., if combining the lowest value of 2 wt% for the first moisture content with the highest value of 60 wt% of the second moisture content.

[0024] In the method as disclosed herein, the pouched product may have a first moisture content of from 10 wt% to 30 wt% and a second moisture content of from 35 wt% to 55 wt% based on the total weight of the pouch. The pouched product, as disclosed herein, may further have a first moisture content of from 18 wt% to 24 wt% and a second moisture content of from 35 wt% to 55 wt%.

[0025] In the method as disclosed herein, at least one confinement wall may be arranged at a perimeter of the confined water application area.

[0026] The confinement wall or confinement walls prohibits/prohibit applied water mist and water drops from escaping outside the confined water application area.

[0027] In the method as disclosed herein, the water

application tool may comprise the at least one containment wall. The at least one containment wall may be a continuous wall extending around a full periphery of the confined water application area, such as a wall of a user container. Alternatively, the at least one containment wall may be a wall extending only a part of the periphery of the confined water application area, such as a containment wall on a moving conveyor.

[0028] In the method as disclosed herein, the support surface may be a bottom wall of a user container. The step b) may be carried out by laying down a set of pouched products on the bottom wall of the user container. The bottom wall which is surrounded by a side wall of the container constitutes a confined water application area which is identical to the support surface. Thus, the side wall of the container may be considered to form a continuation of the containment wall of the water application tool.

[0029] A set of pouched products is defined as a predetermined number of pouched products.

[0030] In the method as disclosed herein, the pouched products in the set of pouched products may be arranged in a predetermined configuration in the user container. Pouch products which are arranged in a predetermined configuration, may also be referred to as being "pattern packed".

[0031] The method as disclosed herein, may be particularly suitable for pouched products which are to be packed in a predetermined configuration or packing pattern in a user container. Placing the relatively dry pouched products on the bottom wall of the user container in a predetermined configuration and thereafter applying water to the pouched product as is done in step c) of the method as disclosed herein, has been found to greatly improve the possibility of forming of a neat and well-defined packing pattern in the user container. Handling of pouched products with a relatively low moisture content has been found to simplify the packing of pouched products in a user container and to make the packing more efficient. In previous packing methods, products with high moisture content may stick together and disrupt the formation of a desired pattern. The method as disclosed herein may offer benefits also for pouched products which are placed in a user container in a random manner, as the low moisture-content pouched products will fall into and fill the user container in a controlled way and will form a relatively uniform layer without products sticking to the container walls or to each other. Accordingly, deformation of the pouched products while being moved into the user container, as well as the risk of disrupting a desired packing pattern of the pouched products are also avoided.

[0032] In the method as disclosed herein, the user container may have a circular cross-section. The pouched products may be arranged in a sequence in the user container. The sequence of pouched products may form a full circle, a semi-circle or any other part of a circle. Fan-like packing configurations may also be used in a user

container having a circular or part-circular cross-section.

[0033] Alternatively, the user container may have a rectangular or generally rectangular cross-section. The pouched products may be arranged in a staggered brick pattern in the rectangular or generally rectangular user container.

[0034] A user container having a rectangular cross-section is defined as having a generally rectangular shape when seen from above. A user container having generally rectangular cross-section includes modified rectangular shapes. A generally rectangular user container may for example have rounded corners. Square is herein seen as a special case of rectangular, i.e., the term rectangular is intended to include square.

[0035] A user container may comprise in the range of from 10 to 30 pouched products for oral use, such as in the range of from 20 to 25 pouched products. Although generally less preferred, the pouched products may be placed randomly in the user container or in a pattern, for instance as described in WO 2012/069505. The user container as disclosed herein may be a consumer package having a shape and a size adapted for conveniently carrying the package in a pocket or in a handbag and may be used for packaging any known type of pouched product for oral use.

[0036] In the method as disclosed herein, the pouched products may be arranged partially overlapping, with an exposed area of each pouched product being the same or substantially the same for all pouched products. This has been found to provide a more uniform moisturization of the pouched products.

[0037] In the method as disclosed herein, step c) may further comprise:

i) forming a water application chamber by aligning the water confinement wall of the water application tool with a side wall of the user container.

A portion of the water confinement wall of the water application tool may be inserted into the user container, such that an overlap is created between the water confinement wall of the water application tool and the side wall of the user container. Hence, addition of water may be performed as aligning the confinement wall of the water application tool with a side wall of the user container aids in adding water in a uniform and controlled manner as the water application chamber forms a confined space which prohibits applied water mist and water drops from escaping outside the confined water application area.

In the method as disclosed herein, the water application tool may comprise a water permeable water distribution member, the water distribution member having a product contact area corresponding in size and shape to the confined water application area and wherein step c) comprises:

ii) bringing the water distribution member of the water application tool into contact with the pouched products; and

iii) applying water to the pouched products in the user container by supplying water into the water application chamber and onto the water distribution member, the water distribution member slowing down the water flow and causing the applied water to be distributed over the pouched products in the user container.

The method as disclosed herein, may further comprise:

iv) removing the water application tool from the user container.

[0038] The water application tool as disclosed herein, may alternatively be stationary, such that the user container is arranged on a movable conveyor belt, which merely moves a new user container into alignment with the water application tool. This alternative requires that the water confinement wall does not overlap with the user container wall.

[0039] The method of moisturizing pouched products in a user container may be a continuous or semicontinuous method wherein water is supplied to pouched products which are arranged in user containers placed on a movable conveyor. The method may also involve simultaneously moisturizing two or more user containers arranged across the width of a movable conveyor.

[0040] In the method as disclosed herein, the product contact area of the water distribution member may be a perforated plate with a plurality of openings or a net having an open area of from 5% to 50%, such as from 10% to 45%, such as from 15% to 40%, such as from 20% to 35%, such as from 25% to 30%, such as from 10% to 15% of the total area of the product contact area of the water distribution member.

[0041] The water distribution member slows down the water flow and hence causes a uniform distribution of the applied water over the pouched products.

[0042] In the method as disclosed herein, the water distribution member may be made from a durable and inert material, such as steel or other metal.

[0043] In the method as disclosed herein, the net may have a mesh size of from 0.05 millimeters to 0.5 millimeters, such as from 0.05 millimeters to 0.4 millimeters, such as from 0.05 millimeters to 0.3 millimeters, such as from 0.05 millimeters to 0.2 millimeters, such as from 0.05 millimeters to 0.1 millimeters.

[0044] In the method as disclosed herein, fluid distribution across the water distribution member may be even further enhanced by the water distribution member being constituted by two or more superimposed nets.

[0045] In the method as disclosed herein, the support surface may be a conveyor which moves in a machine direction and wherein the at least one water confinement wall comprises at least two water confinement walls extending in the machine direction and are arranged on each side of the confined area.

[0046] The confinement wall may be part of the water application tool and may have walls also in the cross-

machine direction to shield off a rectangular confined area on the conveyor belt. The dispensing arrangement (e.g., spray nozzles) may be arranged inside a water application chamber formed by the confinement walls. The conveyor belt may move continuously or discontinuously beneath the water dispensing arrangement so that new pouched products are continuously exposed to wetting by the water dispensing arrangement.

[0047] In the method as disclosed herein, the product for oral use may be a smokeless non-tobacco product, such as a nicotine containing smokeless non-tobacco product.

[0048] The nicotine source in a nicotine containing tobacco free or low tobacco content composition may be nicotine base or a nicotine salt such as nicotine hydrochloride, nicotine dihydrochloride, nicotine monotartrate, nicotine bitartrate, nicotine bitartrate dihydrate, nicotine sulphate, nicotine zinc chloride monohydrate, nicotine salicylate, nicotine benzoate or nicotine polacrilex.

[0049] In the method as disclosed herein, the water distribution member may have a thickness of from 0.05 millimetres to 0.4 millimetres.

[0050] In the method as disclosed herein, water may be applied in a water supply space arranged above a water distribution member by spraying or pouring or by any suitable manner such that the water may fall down onto the water distribution member. The water supply space may be at least partially delimited by the water confinement walls of the water application tool.

[0051] In the method as disclosed herein, the water application tool may comprise a piston. The water distribution member and the water confinement walls may be mounted on the piston. The piston with the water distribution member and the water confinement walls may be movable in a vertical direction into and out of the user container.

[0052] In the method as disclosed herein, the number of pouched products in the user container may be from 9 to 30.

[0053] In the method as disclosed herein, step c) may further comprise applying one or more additives.

[0054] In the method as disclosed herein, the one or more additives comprises or consist of a colouring agent.

[0055] In the method as disclosed herein, the supplied water may contain one or more additives such as surfactants, flavourings, colouring agents, nicotine and/or pH regulators.

[0056] In the method as disclosed herein, the supplied water may comprise a colouring agent.

[0057] By incorporating these additives in the supplied water, i.e., later in the overall process when the oral product already is pouched, it is avoided that these substances/additives affect the process at an early stage as these substances can be difficult to handle and can contaminate equipment or in another way negatively affect the production environment.

[0058] Addition of a colouring agent to the supplied water will generate a coloured pouched product for oral use.

The colour can for example be used to indicate a specific strength or flavour of the pouched product for oral use.

[0059] Further, disclosed herein is a water application tool for applying water to pouched products of a product for oral use in a user container.

[0060] The water application tool as disclosed herein, may comprise:

- a) a water permeable water distribution member comprising a product contact area;
- b) a water confinement member comprising a water confinement wall arranged at a periphery of the product contact area of the water distribution member, with a water supply space being defined by the water confinement wall and the water distribution member; and
- c) a water supply member.

[0061] The water application tool as disclosed herein may comprise a piston. The water distribution member and the water confinement wall may be mounted on the piston. The piston with the water distribution member and the water confinement wall may be arranged to be moved in a vertical direction.

[0062] Pouched products for oral use may be produced by measuring portions of a filling material, as disclosed herein, and inserting the portions into a nonwoven tube.

[0063] US 4,703,765 discloses a device for packaging precise amounts of finely divided tobacco products, such as snuff tobacco or the like, in a tubular packaging material into which snuff portions are injected via a fill tube, the tubular packing material thereby having a vertical orientation. Downstream from the tube, welding means are positioned for transverse sealing of the packaging material, as well as cutting means for severing the packaging material in the area of the transverse seal to thus form discrete or individual portion packages.

[0064] EP 2 428 450 B1 relates to a snus dosing method, wherein a portion of tobacco is filled into a dosing chamber of a dosing device and then blown out of the dosing chamber by means of blow-out air to which water vapor has been added.

[0065] Pouched products for oral use may alternatively be produced by placing portions of a filling material, such as moist snuff, on a nonwoven web using a pouch packer machine in accordance with the device disclosed in US 6,135,120. This device comprises feeding means for feeding the filling material into pockets formed in a rotary portioning wheel for portioning the material into portions, at least one compression means for compressing the filling material portions, a unit for advancing a packaging material, such as a nonwoven web, in synchrony with the compressed portions, at least one discharge means for discharging the portions from the pockets to the packaging material, and a forming unit for forming individual portion packages (i.e. pouched products for oral use) from the discharged portions and the packaging material. At the intended point of discharge of the portions to the pack-

aging material, said packaging material has the form of a tape, the compression means being arranged to compress the portions in a direction which differs from the discharging and the feeding directions. The compression is preferably performed in a direction perpendicular to the discharging and the feeding directions. The compression may be performed in the axial direction of the portioning wheel whereas the feeding and discharging may be performed in the radial direction of said wheel. This technique is herein referred to as the "NYPS" technique.

[0066] The individual portions are sealed and cut apart thereby forming rectangular "pillow shaped" (or any other desired form) pouched products. Generally, each final pouched product includes parallel transverse seams at opposite ends and a longitudinal seam orthogonal to the transverse seams. The seals must be of sufficient strength to preserve the integrity of the pouched product during use while not disturbing the consumer's experience.

[0067] The pouch material used in pouched products for oral use, also called the packaging material, can be a dry-laid bonded nonwoven comprising viscose rayon fibres, i.e., regenerated cellulose, and a polymer that acts as binder in the nonwoven material and contributes to sealing of the pouches during manufacturing thereof, although other types of nonwoven material may be utilized as well.

[0068] Nonwovens are fabrics that are neither woven nor knitted. Methods for the manufacturing of nonwoven materials are commonly known in the art. Further information on nonwovens is found in "Handbook of Nonwovens" by S. Russel, published by Woodhead Publ. Ltd., 2007.

[0069] Nonwoven properties depend, for instance, on the fibres used, the method used for web production and the method used for bonding of the web.

[0070] In view of the fibres used, nonwovens may be classified as staple fibre nonwoven or continuous filament nonwoven.

[0071] In view of the web production method used, nonwovens may be classified as wet-laid, dry-laid, spun laid or melt blown nonwoven.

[0072] Continuous filament nonwoven may comprise spun laid or melt blown webs.

[0073] Staple fibre nonwoven may comprise dry-laid or wet-laid webs. Dry-laid webs may be carded or airlaid. If carded, the manufacturing process may result in fibres substantially being oriented in the carding direction. Dry-laid nonwoven may comprise parallel laid web, cross laid webs or randomly laid webs. Parallel laid webs and cross laid webs normally include two or more superimposed web layers, which normally are carded, while randomly laid webs normally include a single web layer, which may be airlaid.

[0074] Several methods may be used to bond together the fibres in the web, also called web consolidation. The different types of bonding methods may be classified as mechanical bonding, e.g. needle punching, stitch bond-

ing, hydroentanglement, as chemical bonding, e.g. saturation bonding, spray bonding, foam bonding, powder bonding, print bonding and as thermal bonding, e.g. hot calendering, through-air thermal bonding, ultrasonic bonding, radiant-heat bonding. More than one bonding method may be used to consolidate the nonwoven.

[0075] In chemical bonding, a binder, also called bonding agent or adhesive, is combined with the fibres. This type of nonwoven is generally called chemically bonded or adhesive bonded nonwoven.

[0076] Regenerated fibres, which are also called semi-synthetic fibres, are normally cellulose regenerated fibres, also called reconstituted cellulosic fibres, such as rayon. The regenerated cellulose used in the manufacturing of rayon fibres is normally derived from wood pulp, but regenerated cellulose from other origins, such as bamboo, may also be used.

[0077] Viscose rayon staple fibres may be formed by extruding a viscose solution. i.e., a solution of cellulose xanthate, through a spinneret and as the viscose exits the spinneret, it lands in a bath of mineral acid, such as sulfuric acid, resulting in the formation of filaments. These filaments are then cut to a desired length, thereby forming staple fibres.

[0078] Lyocell is a form of rayon made from dissolving pulp, i.e. bleached wood pulp.

[0079] Sealing of the pouches of the pouched product for oral use may for example be performed by means of heat or by ultrasonic energy. It is in that case desirable that the pouch material comprises a component, e.g., a thermoplastic polymer, which is reactive to the heat or ultrasonic energy, such that this component contributes to the sealing of the pouch. This component may be a binder, as mentioned above, or may form a staple fibre or a continuous filament.

[0080] Alternatively, or in addition to using welding for sealing the pouches, sealing may be performed by means of glue or adhesive. As yet an alternative or a complement, sealing may be performed by mechanical edge embossing, with or without heat.

[0081] Pouched products for oral use are normally sized and configured to fit comfortably and discreetly in a user's mouth between the upper and lower gum and the lip.

[0082] The pouched non-tobacco or low-tobacco products for oral use as disclosed herein may comprise non-tobacco plant material and/or other types of filling material. Examples of non-tobacco plant material includes plant fibers selected from the group consisting of maize fibers, oat fibres, tomato fibers, barley fibers, rye fibers, apple fibres, sugar beet fibres, potato fibres, corn fibres, buckwheat fibres, cocoa fibres, bamboo fibers, citrus fibers and any combinations thereof. Also processed fibers such as Microcrystalline Cellulose (MCC) fibers, synthetic polymeric fibers, etc. may be used. The filling material, such as plant material, cellulose and starch may be present in the form of particles or as a combination of particles and fibers. For instance, the filling material may

comprise or consist of particles of microcrystalline cellulose.

[0083] Addition of a small amount of tobacco to the pouched non-tobacco products for oral use provides a pouched smokeless low tobacco snuff product for oral use. Thus, in addition to a small amount of tobacco, the product may comprise non-tobacco plant material as described herein and/or a filling material, such as MCC, as disclosed herein.

[0084] Examples of pouched nicotine-free products for oral use and the manufacture thereof are provided in WO 2007/126361 and WO 2008/133563.

[0085] The pouched non-tobacco products for oral use may contain nicotine, i.e., they are pouched nicotine-containing products for oral use. Alternatively, the pouched non-tobacco products for oral use may lack nicotine, i.e., they are pouched nicotine-free smokeless products for oral use.

[0086] Addition of a small amount of tobacco to a non-tobacco composition as described herein provides a low tobacco snuff composition. It will be appreciated that the low tobacco snuff composition may be identical to the non-tobacco composition except for the added small amount of tobacco. The small amount of tobacco may range from 0.1 wt% to 10 wt% based on the total dry weight of the low tobacco snuff composition.

[0087] The pouched smokeless low tobacco products for oral use may contain added nicotine, i.e., nicotine in addition to the nicotine of the tobacco. Alternatively, they contain no added nicotine, and the nicotine is only provided by the small amount of tobacco in the product. For pouched nicotine-containing products for oral use, or pouched nicotine-containing low tobacco products for oral use, which contain nicotine in addition to the nicotine provided by the tobacco in the product, the nicotine may be synthetic nicotine and/or nicotine extract from tobacco plants. Further, the nicotine may be present in the form of nicotine base and/or a nicotine salt. The nicotine salt may be free, i.e. it is mixed with the other components of the product without combining chemically with other components in the composition. Additionally, or alternatively, the nicotine salt may combine chemically with one or more components of the products. For instance, the nicotine salt may combine with alginate particles or cellulose.

[0088] The pouched non-tobacco product for oral use or the pouched low tobacco product may further comprise one or more of the following: water, salt (e.g. sodium chloride, potassium chloride, magnesium chloride, calcium chloride and any combinations thereof), pH adjuster (e.g. sodium hydroxide, potassium hydroxide, potassium carbonate, sodium carbonate, sodium bicarbonate or magnesium carbonate), flavouring agent, cooling agent, heating agent, sweetening agent, colorant, humectant (e.g. propylene glycol or glycerol), antioxidant, preservative (e.g. potassium sorbate), binder, disintegration aid. Flavours used are generally natural or nature identical compounds that comply with food regulations. Flavours

are usually dissolved in a solvent, such as ethanol, when added.

[0089] Pouched non-tobacco products for oral use or the pouched low tobacco product for oral use may be dry, semi-dry or moist. Generally, dry pouched non-tobacco products for oral use or dry pouched low tobacco product have a final moisture content of less than 10 wt%. Semi-dry pouched non-tobacco products for oral use or semi-dry pouched low tobacco products have a final moisture content between 10 wt% and 40 wt%. The moist pouched non-tobacco products for oral use or moist pouched low tobacco products as disclosed herein have a final moisture content of above 40 wt%, such as from 40wt% to 60wt%.

[0090] The pouched non-tobacco product for oral use or the pouched low tobacco product for oral use may be flavoured by mixing a flavour with the smokeless non-tobacco product components or the smokeless snuff product components during manufacturing. Additionally, or alternatively, the flavour may be added to the smokeless non-tobacco product for oral use or smokeless snuff product for oral use after forming portion packs of a non-tobacco or low tobacco composition. For instance, the flavour may be added to at least one inside surface of the container for the product. The flavour will then be imparted to the product when the container is closed. In a further example, the flavour may be sprayed directly onto the manufactured smokeless non-tobacco product or smokeless low tobacco snuff product.

DEFINITIONS

[0091] The terms "pouched product", "oral pouched product" or "portion pack" are used interchangeably herein and refer to a portion of smokeless non-tobacco composition packed in a saliva-permeable pouch material and being intended for oral use, such as by buccal placement in the oral cavity. The pouched product for oral use is not intended to be swallowed.

[0092] "Oral" and "oral use" is in all contexts used herein to designate products which are placed in their entirety in the oral cavity. The product may be placed e.g., between the gum and the upper or lower lip.

[0093] A "non-tobacco composition for oral use" is a composition which does not contain any tobacco material, and which may be used in a similar way or in the same way as a tobacco snuff composition. The non-tobacco composition may contain non-tobacco plant fibers and/or a bulk material.

[0094] As used herein, the term "moisture content" refers to the total amount of volatile ingredients, such as water and other oven volatiles (e.g., propylene glycol and ethanol) in the composition or product referred to. The moisture content is given herein as percent by weight (wt%). The moisture content (i.e., the oven volatile content) of the non-tobacco plant fibers is determined gravimetrically by taking 2.5 ± 0.25 g sample and weighing the sample before evaporation of moisture and after evapo-

ration of moisture. Mettler Toledo's Moisture Analyzer HB43 or HC-103 and a balance with halogen heating technology is used. The sample is heated to 105°C. The measurement is stopped when the weight change is less than 1 mg during a 90 seconds time period. The moisture content (i.e. oven volatile content) as weight percent of the original weight of the sample is then calculated automatically by the Moisture Analyzer HB43 or HC-103.

[0095] "Flavour" or "flavouring agent" is used herein for a substance used to influence the aroma and/or taste of the smokeless oral product, including, but not limited to, essential oils, single flavour compounds, compound-flavourings, and extracts.

[0096] "Colouring agent" is used herein for a substance used to influence the colour of the pouch of the smokeless oral product, including, but not limited to natural or artificial food colouring agents.

[0097] As used herein "% w/w" or "wt %" or "weight %" or "% by weight" means weight percent of the component referred to, based on the weight of the total composition, preparation or product referred to.

BRIEF DESCRIPTION OF THE DRAWINGS

[0098] The method as disclosed herein will be further explained hereinafter with reference to the appended drawings wherein:

- Figure 1 shows an overview of a water application system;
- Figure 2 shows a perspective view of a conveyor with pouched products and a water application tool having four confinement walls;
- Figures 3a-3b shows cross-sectional views taken along the line IIIa,b - IIIa,b in Fig. 2. In Fig. 3a the water application tool is equipped with a water distribution member and in Fig. 3b the water application tool has no water distribution member;
- Figure 4 shows a perspective view of a conveyor with pouched products and a water application tool having two confinement walls which form a tunnel;
- Figure 5 a shows a water application tool and a user container wherein pouched products are moisturized;
- Figure 5 b shows a water application tool equipped with a water distribution member and a user container wherein pouched product are moisturized;
- Figure 6 a shows a water application tool being partly inserted in a user container;
- Figure 6 b shows a water application tool equipped with a water distribution member being partly inserted in a user container; and

Figure 7 shows arranged patterns for pouched products in a user container.

DETAILED DESCRIPTION

[0099] Different aspects of the present disclosure will be described more fully hereinafter with reference to the enclosed drawings. The embodiments disclosed herein can, however, be realized in many different forms and should not be construed as being limited to the aspects set forth herein.

[0100] It is to be understood that the drawings are schematic and that individual features and components, are not necessarily drawn to scale.

[0101] A continuous as well as an intermittent or semi-intermittent method of producing moisturized pouched products as disclosed herein will be described with reference to Figs. 1-7.

[0102] With initial reference to Fig. 1, there is shown an overview of a water application system 101 where pouched products 103 for oral use having a first moisture content are further moisturized by means of a water application tool 105 within a confined water application area 106.

[0103] Formation of pouched products 103 having a first moisture content is performed in a pouch formation arrangement 107 prior to laying down the formed oral pouch products 103 having a first moisture content on a conveyor 109 which is movable in a machine direction MD.

[0104] The oral pouched products 103 with the first moisture content are produced in the pouch formation arrangement 107 by measuring portions of a filling material and enclosing the portions by a saliva-permeable porous wrapper, thus forming a plurality of individual portion packs which are subsequently laid down on the moving conveyor 109.

[0105] Fig. 1 shows a plurality of formed pouched products 103, the pouched products having a first moisture content and being transferred from the pouch formation arrangement 107 and being laid down in a predetermined pattern on a support surface 111 of the conveyor 109. The pouched products 103 may be arranged in any useful pattern on the movable conveyor 109, such as in one or more rows of pouched products 103, the rows extending in the machine direction MD and being arranged side by side in a cross machine direction CD, perpendicular to the machine direction MD. Other useful arrangements include patterns in which the pouched products 103 are grouped together in sets of pouched products 103.

[0106] Fig. 1 further shows a water application tool 105 which is applied above a portion of the conveyor 109. The water application tool 105 is equipped with confinement walls 113 which together with the support surface 111 of the conveyor 109 define a water application chamber 121. The confinement walls 113 are constituted by a first pair of side walls 113' extending in the machine direction MD, a second pair of side of walls 113" extending

in the cross-machine direction CD and a top wall 113". The four side walls 113', 113" in Fig. 1 together shield off a rectangular area on the conveyor 109 which constitutes a confined water application area 106.

[0107] The water application tool 105 is connected to a water supply 115 (not shown in the figure) and is further equipped with a water dispensing arrangement 117 which is placed inside the water application chamber 121 which is formed by the confinement walls 113 of the water application tool 105. In Fig. 1, the water dispensing arrangement 117 is represented by a row of spray nozzles 119 arranged in the cross-machine direction CD on the top wall 113" of the water application tool 105, inside the water application chamber 121. Accordingly, the water dispensing arrangement 117 is located in the water application chamber 121 and above the conveyor 109. Consequently, the area on the conveyor 109 beneath the water application tool 105 with its water dispensing arrangement 117 constitutes the confined water application area 106. The illustrated arrangement of a row of spray nozzles 119 in the top wall 113" of the water application tool 105, should not be considered limiting to the water application method as disclosed herein. The water dispensing arrangement 117 may be constituted by a single spray nozzle or a plurality of spray nozzles 119, distributed in any useful pattern for distributing water to the pouched products 103 which are located within the confined water application area 106 inside the water application chamber 121.

[0108] The conveyor 109 may move continuously or discontinuously beneath the water application tool 105 with its water dispensing arrangement 117 so that new pouched products 103 having the first moisture content are continuously exposed to wetting by the water dispensing arrangement 117 such that the pouched products 103 attain a second moisture content. The second moisture content may also be referred to as a final moisture content of the pouched products 103, as it corresponds to the moisture content which the pouched products are intended to have when presented to a consumer. It is an aim of the methods as disclosed herein to distribute water and any additives in the water as uniformly as possible over the confined water application area 106 in order that the pouched products 103 attain a pre-determined second moisture content.

[0109] The pouched products 103 having the first moisture content are advanced in the machine direction MD by the conveyor 109 and passes beneath the water application tool 105, i.e., within the confined water application area 106, whereby water is applied to the pouched products 103 located in the confined water application area 106 by the water dispensing arrangement 117 of the water application tool 105. As disclosed herein, water and any additive in the water is applied to the oral pouched products by the water application tool 105 to raise the moisture content of the oral pouched product from the first moisture content to the second moisture content, the second moisture content being higher than

the first moisture content.

[0110] In Fig. 1 the water application tool 105 may be stationary during water application and may be located above the conveyor belt 109 so that a gap 124 is formed between the conveyor 109 and the water application tool 105. The gap 124 is selected to allow the pouched products lying on the advancing conveyor 109 to pass freely beneath the water application tool 105. The speed of the conveyor 109 is set such that a desired amount of water is applied to the pouched products 103 during their dwell-time on the confined water application area 106 in the water application chamber 121.

[0111] Alternatively, or in addition to the water application tool 105 being stationary during water application, the water application tool 101 may be arranged to be moved in a height direction H, perpendicular to the plane defined by the cross machine direction CD and the machine direction MD, as disclosed herein.

[0112] The pouched products 103 are preferably arranged on the conveyor 109 in an organized pattern to allow control of the number of pouched products that are accommodated in the confined water application area 106 and exposed to moisturization by the water application tool 105. Thereby, a more even and equal distribution of water to each of the pouched products may be attained by the process. Thus, a high level of control of the moisture content in the pouched products 103 is achieved as a uniform distribution of water and a uniform final moisture content is ascertained by arranging the pouched products on the pre-determined, confined area 106.

[0113] When the oral pouched products 103 having the first moisture content have been further moisturized by passing under the water application tool 105 and hence reached the second moisture content, the oral pouched products 103 having the second moisture content are further transferred for packaging in containers, such as in user containers which is not shown in Fig. 1.

[0114] Fig. 2 shows a perspective view of a conveyor 109 with pouched products 103 being arranged thereon, and a movable water application tool 105. The water application tool 105 in Fig. 2 may be moved in the machine direction MD along with the conveyor and/or in the height direction H perpendicular to the surface of the conveyor 109, i.e., up from the conveyor 109 and down towards the conveyor 109.

[0115] Fig. 2 shows oral pouched products 103 having a first moisture content before passing the water application tool 105 and having a second moisture content after having passed beneath a water application tool 105.

[0116] Fig. 2 shows a plurality of formed pouched products 103 having the first moisture content in an arranged pattern on a support surface 111 of a movable conveyor 109 which may be advanced in a machine direction MD. The oral pouched products may be arranged one after the other in a single line on the conveyor 109 or may be arranged, as shown in Fig. 2 with several rows across the width of the conveyor 109.

[0117] Fig. 2 further shows a water application tool 105

arranged over a portion of the conveyor 109. The water application tool 105 in Fig. 2 extends over and covers all pouched products 103 across the width on the conveyor 109, i.e., in the cross machine direction CD and extends over and covers a selected number of pouched products 103 in the machine direction MD. The area covered by the water application tool 105 constitutes a confined water application area 106. As in the arrangement shown in Fig. 1, the water application tool 105 is equipped with confinement walls 113 arranged at the perimeter of the water application area 106. As in Fig. 1, the confinement walls 113 of the water application tool 105 in Fig. 2 consist of two side walls 113' extending in the machine direction MD, two side walls 113" extending in the cross-machine direction CD and a top wall 113''' opposite the conveyor 109. The four side walls 113', 113" in Figure 2 together shield off the rectangular confined water application area 106 on the conveyor 109. A water application chamber 121 is delimited by the confinement walls 113 of the water application tool 105 and the support surface 111 of the conveyor 109.

[0118] The water application tool 105 is equipped with a water dispensing arrangement (not seen in Fig. 2) inside the water application chamber 121 formed by the water application tool 105 and the support surface 111 of the conveyor 109. The water application tool 105 is further connected to a water supply 115 which is not seen in the figure.

[0119] The water dispensing arrangement 117 which is located inside the water application chamber 121 is not visible in Fig. 2 but is shown in Figs. 3a and 3b.

[0120] The conveyor 109 may move continuously or discontinuously beneath the water application tool 105 so that new pouched products 103 may be exposed to wetting by the water application tool 105. The speed of the conveyor 109 and a continuous or discontinuous operation of the conveyor may be used to control the dwell-time for the pouched products 103 on the confined water application area 106 in the water application chamber 121.

[0121] The pouched products 103 are advanced on the conveyor 109 and pass beneath the water application tool 105, i.e., within the confined water application area 106, whereby water and any additive in the water is applied by the water dispensing arrangement 117 of the water application tool 105 to the pouched products 103 in the confined water application area 106. The water which is applied to the pouched products 103 raises the moisture content of the oral pouched product 103 from the first moisture content to the second moisture content.

[0122] As in Fig. 1, the oral pouched products 103 on the conveyor 109 are preferably arranged in an organized way on the support surface 111 of the conveyor 109 to improve control of the amount of water applied to the pouched products 103 that are arranged in the confined water application area 106 beneath the water application tool 105, and which are thereby exposed to moisturization by the water application tool 105.

[0123] When the moisture content of the oral pouched products 103 has been increased from the first moisture content to the second moisture content by passing under the water application tool 105 the oral pouched products 103 with the second/final moisture content are further transferred for packaging in containers, such as in user containers, which is not shown in the figure.

[0124] Figs. 3a and 3b show two slightly different alternatives for the water application tool 105 in Fig. 2. In Fig. 3a the water application tool 105 is similar to the water application tool 105 in Fig. 1. However, the water application tool 105 in Fig. 3a is equipped with a water distribution member 125.

[0125] Fig. 3a shows a set of pouched products 103 while they are lying on the support surface 111 of the conveyor 109, beneath the water application tool 105.

[0126] The set of pouched products as seen in Fig. 3a are all located within the confined water application area 106 beneath the water application tool 105.

[0127] The application tool 105 in Fig. 3a is further equipped with a water distribution member 125 which is attached to the bottom of the confinement walls 113 of the water application tool 105 and forms a bottom wall of the water application chamber 121.

[0128] The water distribution member 125 has a product contact area 126 corresponding to the confined water application area 106.

[0129] By moving the water application tool 105 in the height direction H perpendicular to the plane of the conveyor 109, the water distribution member 125 is brought into contact with the pouched products 103. The water distribution member 125 preferably exerts a slight pressure on the pouched products 103 to ascertain a close contact between the water distribution member 125 and the pouched products. The water distribution member 125 acts to distribute the applied water across the plane of the water distribution member 125 and to transfer the water to the pouched products 103. Thereby, water which is supplied into the water application chamber 121 and onto the water distribution member 125 is applied to the pouched products 103 within the confined water application area 106. The direct contact between the water distribution member 125 and the pouched products 103 enables absorption of water from the water distribution member 125 into the pouched products 103. By means of the water distribution member 125, it is possible to achieve complete or almost complete transfer of the applied water to the pouched products 103 with no or only a negligible amount of moisture ending up on the support surface 111 of the conveyor 109. The water distribution member 125 acts to slow down the water flow from the water dispensing arrangement 117 and enhances an even distribution of the water and any additive in the water over the pouched products 103 within the confined water application area 106.

[0130] Prior to water application to the pouched products 103, the water application tool 105 moves down into contact with the pouched products. After sufficient mois-

turization has been achieved, the water application tool 105 moves up and out of contact with the pouched products 103.

[0131] The moisturizing method as is seen in Fig. 3a may be intermittent, with the conveyor 109 stopping during the time when the water distribution member 125 of the water application tool 105 is in contact with the pouched products 103 and water is transferred from the water distribution member 125 to the pouched products 103. Alternatively, the water application tool 105 may move in the machine direction, MD, together with the conveyor 109, during water transfer between the water distribution member 125 and the pouched products 103. After the pouched products have been sufficiently moisturized, the water application tool 105 may move back and be brought into contact with a new set of pouched products to be moisturized. The pouched products 103 absorb all or virtually all applied water from the water distribution member 125, whereby no, or virtually no water ends up on the conveyor 109.

[0132] Fig. 3b shows the water application tool 105 equipped with water dispensing arrangement 117 but without a water distribution member 125.

[0133] Fig. 3b shows a set of pouched products 103 while they are lying on the support surface 111 of the conveyor 109, beneath the water application tool 105.

[0134] As in Fig. 3a, the set of pouched products as is seen in Fig. 3b are all located within the confined water application area 106 beneath the water application tool 105.

[0135] In Fig. 3b the water application tool 105 is located above the conveyor 109 in the same manner as the water application tool 105 in Fig. 1, so that a gap 124 is formed between the conveyor 109 and the water application tool 105. This allows the pouched products 103 lying on the advancing conveyor 109 to pass unhindered beneath the water application tool 105.

[0136] Fig. 4 shows a perspective view of a movable conveyor 109 with pouched products 103 and a stationary water application tool 105 only having confinement walls 113 in the form of side walls 113' extending in the machine direction MD, the side walls 113' being arranged on each side of a confined water application area 106 and a top wall 113". The confinement walls 113 in Fig. 4 form a tunnel, extending in the machine direction, and being open at both ends.

[0137] Fig. 4 shows the pouched products 103 with a first moisture content at the inlet of the tunnel formed by the confinement walls 113 and with a second moisture content after having passed through the tunnel formed by the confinement walls 113.

[0138] In the same manner as for the arrangements shown in Figs. 1, 2, 3a and 3b, Fig. 4 shows a plurality of formed pouched products 103 which are arranged in an ordered pattern on a support surface 111 of the conveyor 109 which is arranged to be advanced in the machine direction MD.

[0139] The water application tool 105 which is shown

in Fig. 4, extends over a portion of the conveyor 109 corresponding to a confined water application area 106. The water application tool 105 differs from the water application tool 105 as shown in Fig. 1 by having a greater extension in the machine direction MD and by the tunnel formed by the confinement walls 113 defining a water application chamber 121 which is only partly closed, i.e., the water application chamber 121 being closed in the cross machine direction CD and being open in the machine direction MD at the ends of the tunnel. The confined water application area 106 is defined by the area of the conveyor 109 which is covered by the tunnel formed by the confinement walls 113.

[0140] The water application tool 105 is equipped with a water dispensing arrangement 117 not seen in Fig. 4 inside the water application chamber 121 formed by the water application tool 105. The water application tool 105 is further connected to a water supply 115 which is not seen in the figure. The water application tool 105 with its confinement walls 113 forms a tunnel over a portion of the conveyor 109. The space inside the tunnel thus constitutes a water application chamber 121 and the area on the conveyor 109 that is covered by the tunnel constitutes a confined water application area 106.

[0141] The water dispensing arrangement 117 is in Fig. 4 represented by spray nozzles 119 located at the top wall 113' of the water application tool 105, inside the water application chamber 121. Accordingly, the water dispensing arrangement 117 is within the water application chamber 121 and above the conveyor 109 and consequently also above the confined water application area 106. As set out herein, the water dispensing arrangement 117 may be constituted by several spray nozzles 119, distributed in any pattern, located within the water application chamber 121.

[0142] The conveyor 109 may move continuously or discontinuously beneath the water application tool 105 so that new pouched products 103 having the first moisture content are continuously moved into the tunnel where they are exposed to wetting by the water dispensing arrangement 117, to raise the moisture content to a desired second moisture content.

[0143] When the pouched products 103 have been moisturized to the desired degree, they are further transferred for packaging in containers, such as in consumer containers.

[0144] Fig. 5a shows a water application tool 205 and a user container 228 which is placed on a conveyor 209 which can be advanced in the machine direction MD, as indicated in the figure.

[0145] The water application tool 205 is equipped with a circular confinement wall 213. In Fig. 5a water application chamber 221 is formed between the water application tool 205 and the user container 228 by aligning the confinement wall 213 of the water application tool 205 with a side wall 230 of the user container 228. The confinement wall 213 on the water application tool 205 is configured to match the shape of the side wall 230 of the

user container 228 and to fit inside the side wall 230 of the user container 228. In the example shown in Fig. 5a, the user container 228 has a circular shape which is matched by a corresponding circular shape of the confinement wall 213 on the water application tool 205. However, the user container 228 may have any useful shape, such as triangular, rectangular, and other polygonal shapes as well as modified polygonal shapes, such as polygonal shapes with rounded corners.

[0146] A set of pouched products 203 having a first moisture content is placed on a bottom wall 229 of a user container 228, the bottom wall 229 of the user container 228 constituting a support surface 211 for the pouched products 203. The set of pouched products 203 may be arranged in a predetermined configuration in the user container, such as in a star-shaped configuration or any other useful configuration.

[0147] The water application tool 205 is movable in a direction perpendicular to the bottom wall 229 of the user container 228. Prior to application of water to the pouched products 203, the water application tool 205 is moved down so that the confinement wall 213 is partly located inside of the side wall 230 of the user container 228 whereafter water is applied to the pouched products 203 in the user container 228 by supplying water into the water application chamber 221 and onto the pouched products 203 in the user container 228.

[0148] After moisturization, the water application tool 205 is moved up and out from the user container 228.

[0149] The moisturizing method as is illustrated in Fig. 5a may be intermittent, with the conveyor 209 stopping during the time when the water application tool 205 is applying water to the pouched products 203 in the user container 228. Alternatively, the water application tool 205 may move in the machine direction, MD, together with the conveyor 209, during water application to the pouched products 203. After the pouched products 203 have been sufficiently moisturized, the water application tool 205 may move back and be brought into a new user container 228 with a new set of pouched products 203 being laid down on the bottom wall 229 of a user container.

[0150] The user container 228 may have a circular cross-section and the pouched products 203 may be arranged in a sequence, the sequence of pouched products forming a full circle, a semi-circle or any other part of a circle. Alternatively, the user container may have a rectangular or generally rectangular cross-section and the pouched products may be arranged in a staggered brick pattern. The pouched products may also be arranged partially overlapping, with an exposed area of each pouched product being the same or substantially the same for all pouched products, such that an equal amount can be applied to each pouched product.

[0151] Fig. 5b shows a water application tool 205 and a user container 228 placed on a conveyor 209 which can be advanced in a machine direction. The water application tool 205 in Fig. 5b is similar to the water appli-

cation tool 205 in Fig. 5a with the difference that the water application tool 205 in Fig. 5b is equipped with a water distribution member 225.

[0152] As in the Fig. 5a embodiment, the water application tool 205 is equipped with a confinement wall 213 which is arranged to be aligned with a side wall 230 of the user container 228 and to be at least partially inserted into the user container 228 to form a water application chamber 221 delimited by the water application tool 205 and the user container 228.

[0153] A set of pouched products 203 having a first moisture content is placed on the bottom wall 229 of a user container 228, the bottom wall 229 of the user container forming a support surface 211 for the pouched products 203. The set of pouched products 203 may be arranged in a predetermined configuration in the user container, as disclosed herein. The pouched products may further be arranged partially overlapping, with an exposed area of each pouched product being the same or substantially the same for all pouched products.

[0154] The water application tool 205 is movable in a direction perpendicular to the bottom wall of the user container 228. Prior to water application to the pouched products 203, the water application tool 205 equipped with the water distribution member 225 is moved down and brought into contact with the pouched products 203. After moisturization, the water application tool 205 equipped with the water distribution member 225 is moved up and out of contact with the pouched products 203.

[0155] The water distribution member 225 of the water application tool 205 is brought into contact with the pouched products 203 whereafter water is applied to the pouched products 203 in the user container 228 by supplying water into the water application chamber 221 and onto the water distribution member 225. The water distribution member slows down the water flow from the water application member 217 and causes the applied water to be distributed over the pouched products 203 in the user container 228. The pouched products directly absorb all or virtually all applied water from the water distribution member 225, whereby dripping of excess water from the water application tool 205 is avoided when the water application tool 205 is moved between different user containers 228.

[0156] The moisturizing method as is seen in Fig. 5b may be intermittent, with the conveyor 209 stopping during the time when the water distribution member 225 of the water application tool 205 is in contact with the pouched products lying on the bottom wall of a user container 228. Alternatively, the water application tool 205 may move in the machine direction, MD, together with the conveyor 209, during water transfer between the water distribution member 225 and the pouched products 203. After the pouched products have been sufficiently moisturized, the water application tool 205 may move back and be brought into contact with a new set of pouched products 203 being laid down on the bottom wall 229 of a user container 228 to be moisturized.

[0157] Fig. 6a shows the water application tool 205 of Fig. 5a and Fig 6b shows the water application tool 205 of Fig. 5b respectively, with the confinement wall 213 of the water application tool 205 partially inserted into the user container 228 to form a water application chamber 221 delimited by the confinement wall 213 of the water application tool 205 and the walls of the user container 228.

[0158] Fig. 7a-7c show examples of different arranged patterns for pouched products 203 in a user container 228. In Fig. 7a-7c, the user containers 228 filled with pouched products 203 are seen from above.

[0159] Although the method as disclosed herein has been illustrated with a single post moisturizing step, it is to be understood that the second moisture content may be attained by raising the moisture content in two or more steps. Accordingly, in the methods illustrated in Figs. 1-4, two or more water application tools may be arranged spaced apart along the moving conveyor, such that the moisture content in the oral pouched products travelling on the conveyor may be successively raised to the second moisture content. A multi-step moisturizing process may allow dispensed moisture to be absorbed by the products on the moving conveyor before further moisture is added, thereby further decreasing the risk of spillage.

Claims

1. Method for moisturizing a pouched product (103, 203) for oral use, comprising the steps of:
 - a) providing a plurality of pouched products (103, 203) for oral use, the pouched products (103, 203) having a first moisture content;
 - b) laying down the pouched products (103, 203) on a support surface (111, 211); and
 - c) applying water with a water application tool (105, 205) comprising a water dispensing arrangement (117, 217) to the pouched products (103, 203) in a confined water application area (106, 206) of the support surface (111, 211), to raise the moisture content to a second moisture content, the second moisture content being higher than the first moisture content.
2. Method according to claim 1, wherein the pouched product (103, 203) for oral use is a tobacco-free or substantially tobacco-free product, such as a nicotine containing smokeless non-tobacco product.
3. Method according to claim 1 or 2, wherein the first moisture content is within the range of from 2 % by weight to 30 % by weight based on the total weight of the pouched product (103, 203), and the second moisture content is in the range of from 20% by weight to 60% by weight based on the pouched product (103, 203), the second moisture content being

at least 25% higher than the first moisture content.

4. Method according to claim 1, 2 or 3, wherein at least one confinement wall (113, 213) is arranged at a perimeter of said confined water application area (106, 206). 5
5. Method according to claim 4, wherein the water application tool (105, 205) comprises the at least one confinement wall (113, 213). 10
6. Method according to claim 4 or 5, wherein the at least one confinement wall (113, 213) forms a wall of a water application chamber (121, 221). 15
7. Method according to claim 6, wherein the water application tool (105, 205) comprises a water permeable water distribution member (125, 225), the water distribution member (125, 225) having a product contact area (126, 226) corresponding to the confined water application area (106, 206) and wherein step c) comprises: 20
 - ii) bringing the water distribution member (117, 217) of the water application tool (105, 205) into contact with the pouched products (103, 203); and 25
 - iii) applying water to the pouched products (103, 203) in the confined water application area (106, 206) by supplying water into the water application chamber (121, 221) and onto the water distribution member (125, 225), the water distribution member (125, 225) acting to distribute the applied water and to transfer the water to the pouched products (103, 203). 30 35
8. Method according to claim 7, wherein the product contact area (126, 226) of the water distribution member (125, 225) is a perforated plate with a plurality of openings or a net having an open area of from 5% to 50% of the total area of the product contact area (126, 226) of the water distribution member (125, 225). 40
9. Method according to claim 8, wherein the water distribution member is a net having a mesh size of from 0.05 millimeters to 0.5 millimeters, such as from 0.05 millimeters to 0.4 millimeters, such as from 0.05 millimeters to 0.3 millimeters, such as from 0.05 millimeters to 0.2 millimeters, such as from 0.05 millimeters to 0.1 millimeters. 45 50
10. Method according to any one of the preceding claims, wherein the support surface (211, 221) is a bottom wall (229) of a user container (228) and step b) is carried out by laying down a set of pouched products (203) on the bottom wall (229) of the user container (228). 55

11. Method according to claim 10, wherein the pouched products (203) in the set of pouched products are arranged in a predetermined configuration in the user container (228), such as being arranged partially overlapping, with an exposed area of each pouched product (203) being the same or substantially the same for all pouched products (203).

12. Method according to any one of claims 10 to 11, wherein step c) further comprises:

i) forming a water application chamber (221) by aligning the confinement wall (213) of the water application tool (201) with a side wall of the user container (230).

13. Method according to claim 12, wherein the water application tool (205) comprises a water permeable water distribution member (225), the water distribution member (225) having a product contact area (226) adapted to the shape and size of the bottom wall (229) of the user container (228) and wherein step c) further comprises:

ii) bringing the water distribution member (217) of the water application tool (205) into contact with the pouched products (203) in the user container;

iii) applying water to the pouched products (203) in the user container (228) by supplying water into the water application chamber (221) and onto the water distribution member (225), the water distribution member (225) acting to distribute the applied water and to transfer the water to the pouched products (203) in the user container (228); and

iv) removing the water application tool (205) from the user container (228).

14. Method according to any one of claims 1 to 9, wherein the support surface (111, 211) is a surface on a conveyor (109, 209), the conveyor (109, 209) being arranged to move in a machine direction.

15. Method according to claim 14, wherein at least two confinement walls (113, 213) extend in the machine direction and being arranged on each side of the confined water application area (106, 206) of the support surface (111, 211) on the conveyor (109, 209).

16. Method according to any one of the preceding claims, wherein step c) further comprises applying one or more additives.

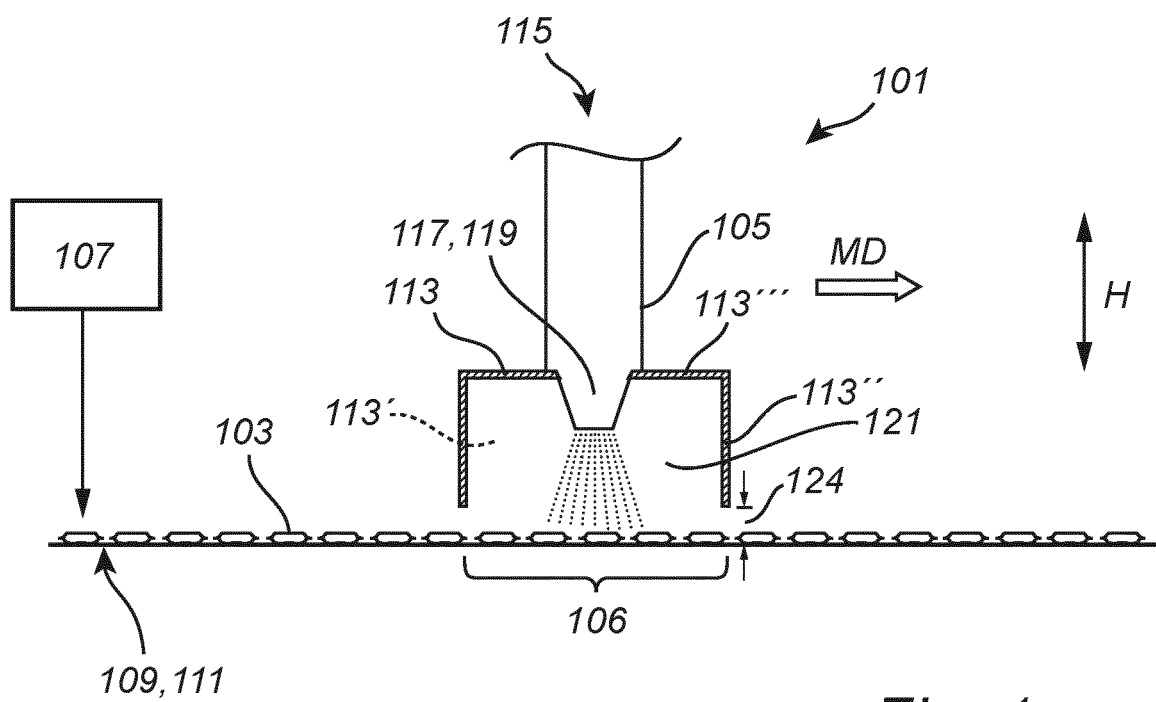


Fig. 1

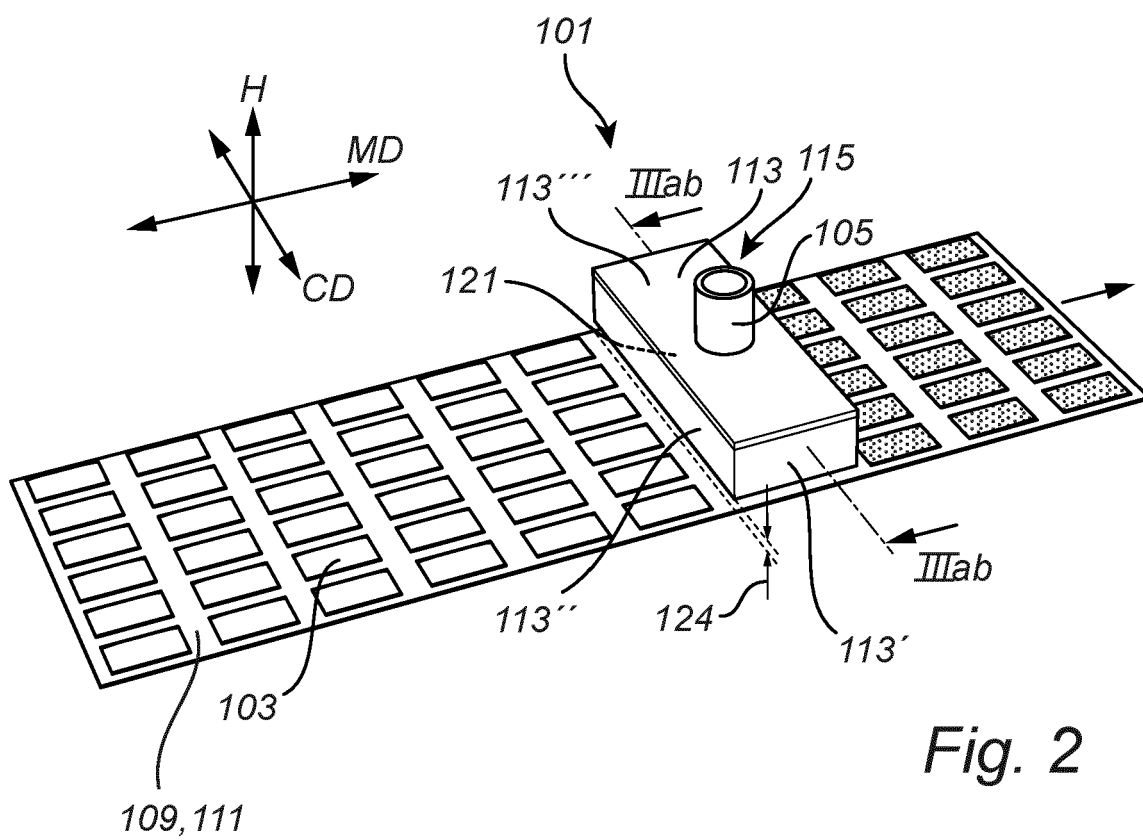


Fig. 2

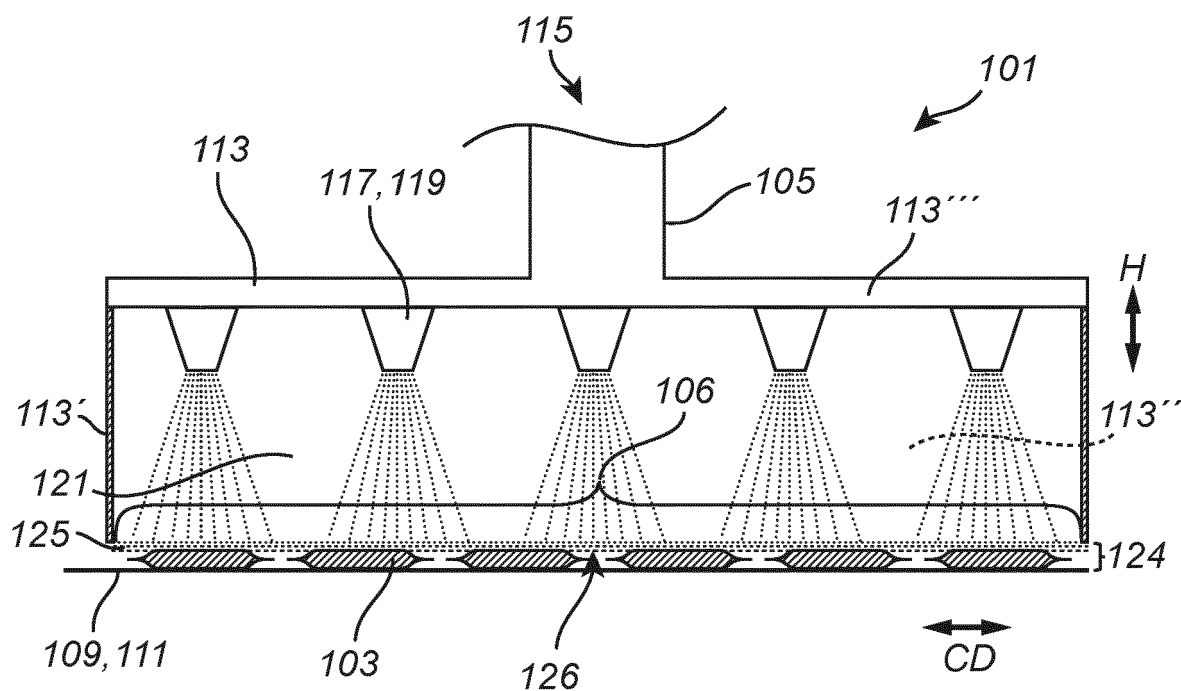


Fig. 3a

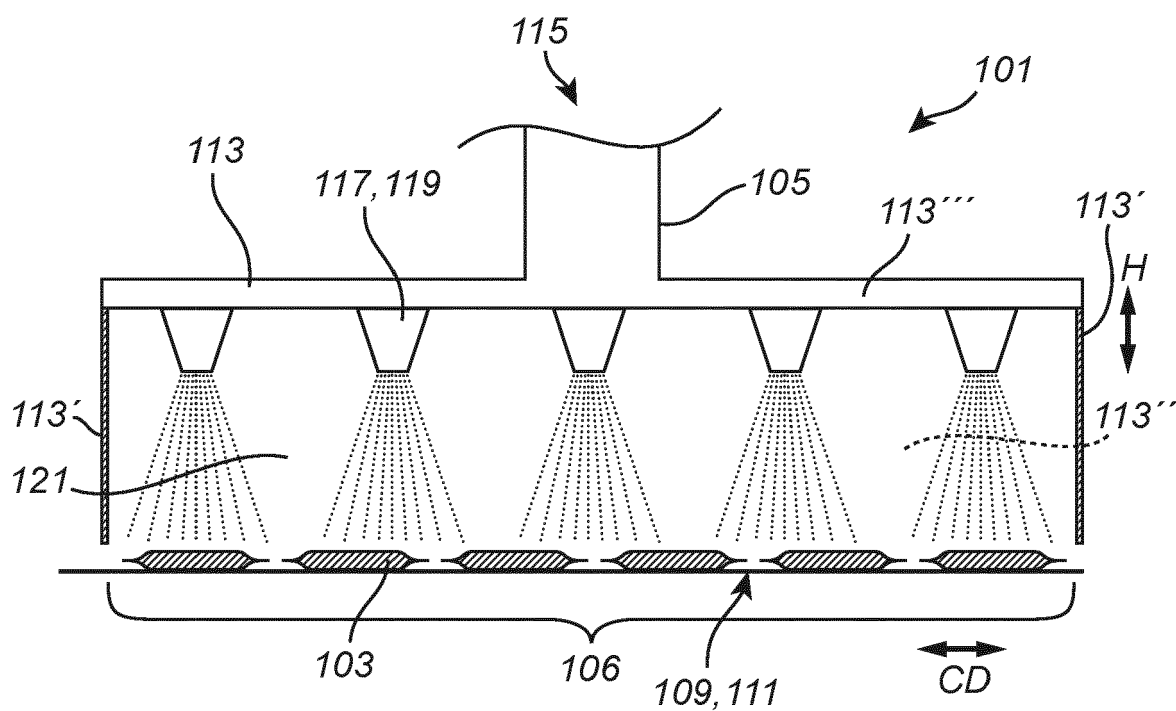


Fig. 3b

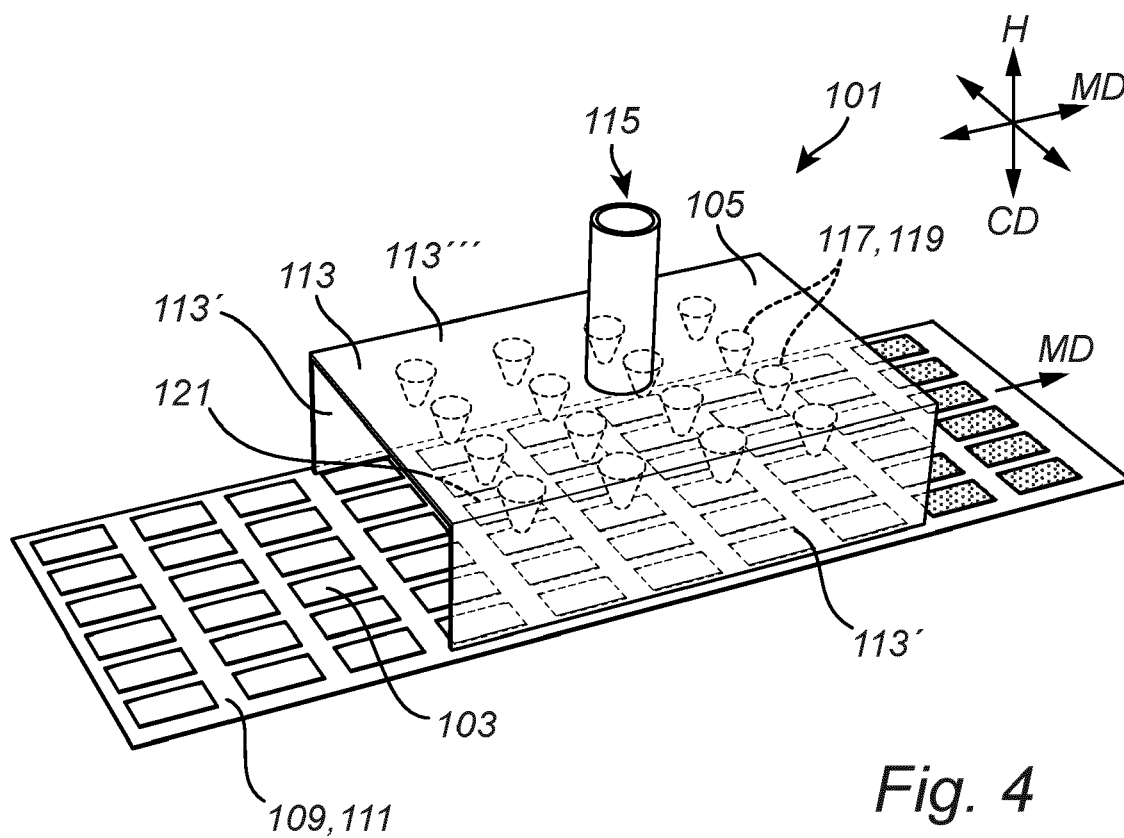
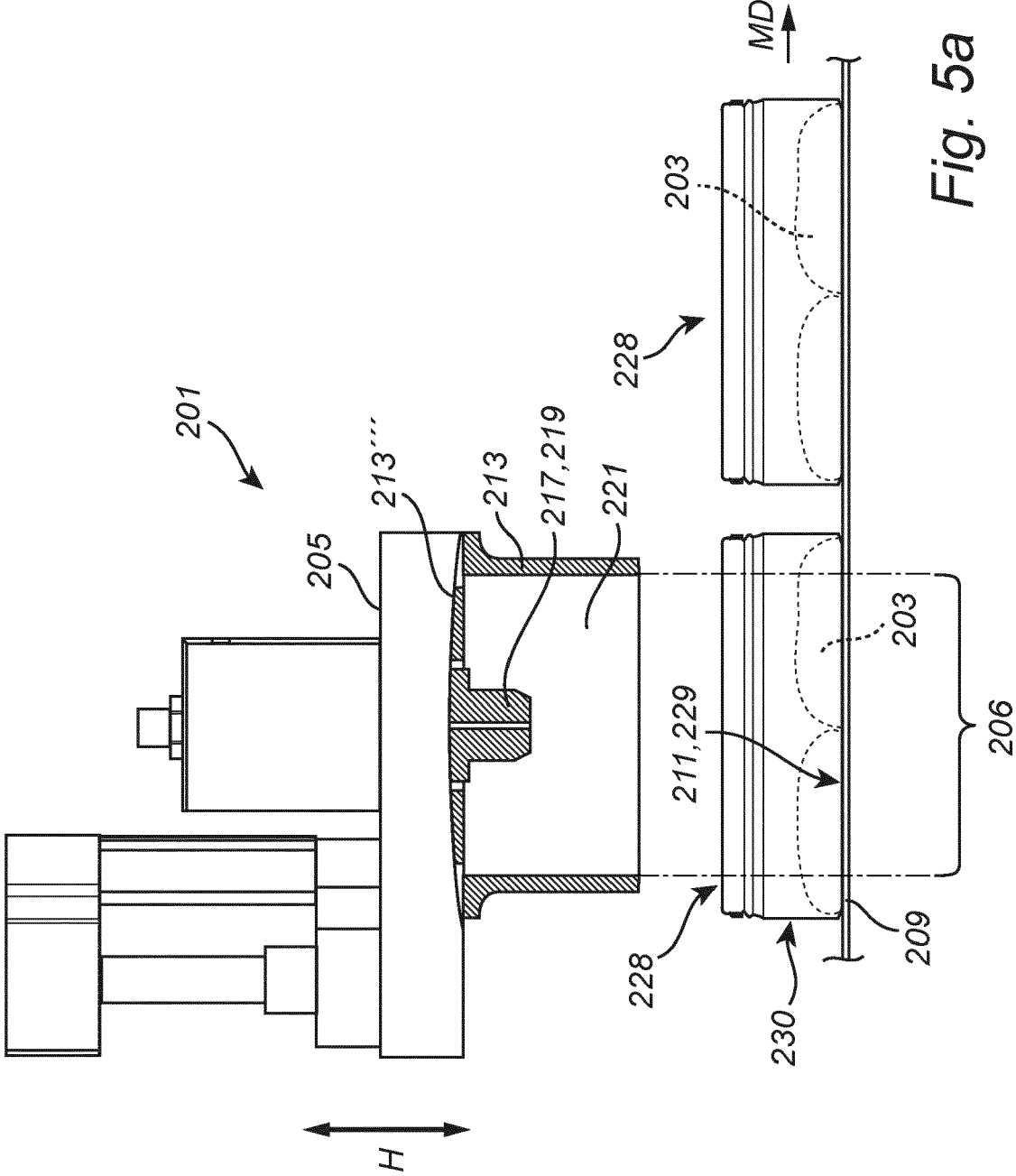


Fig. 4



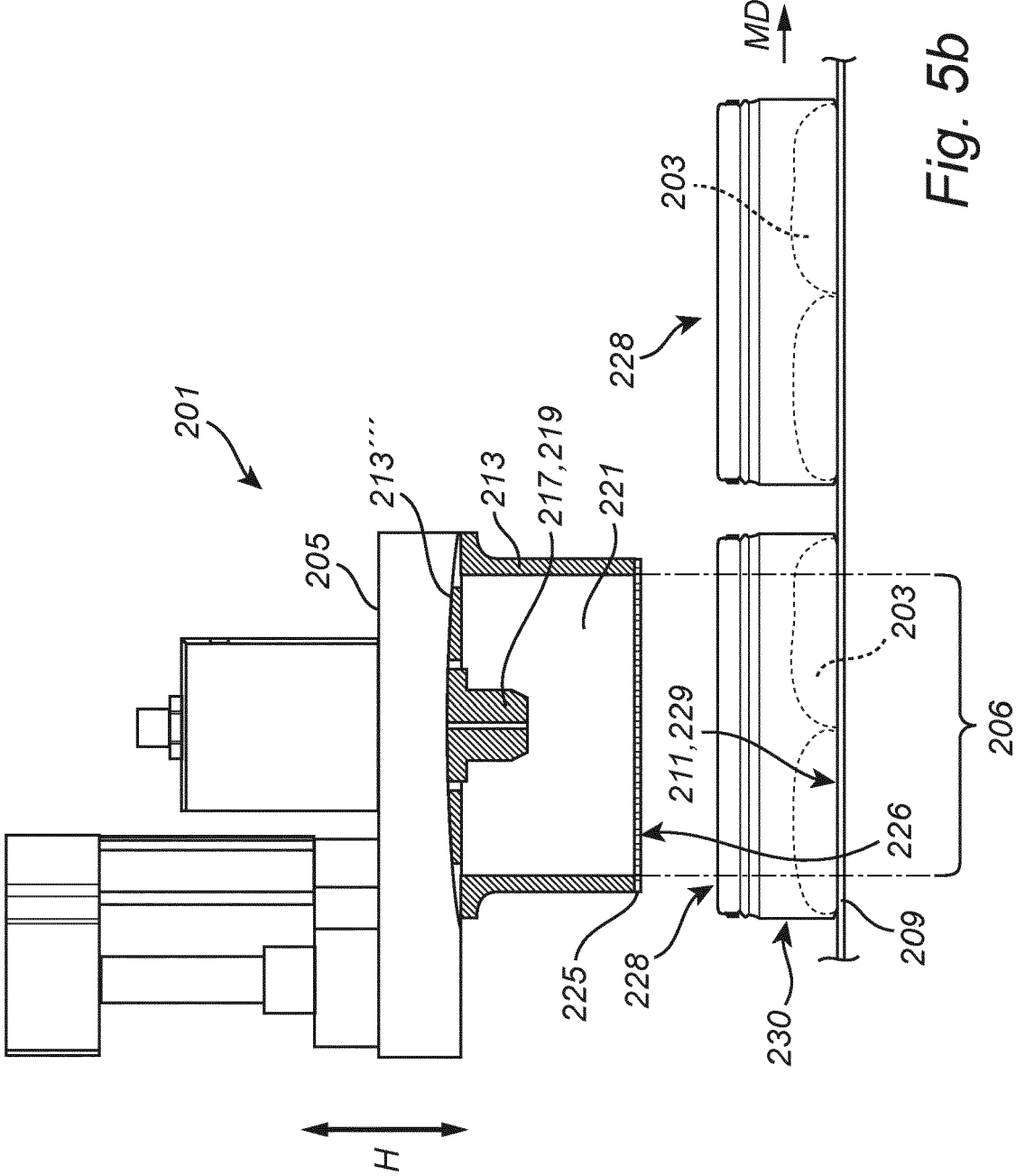


Fig. 5b

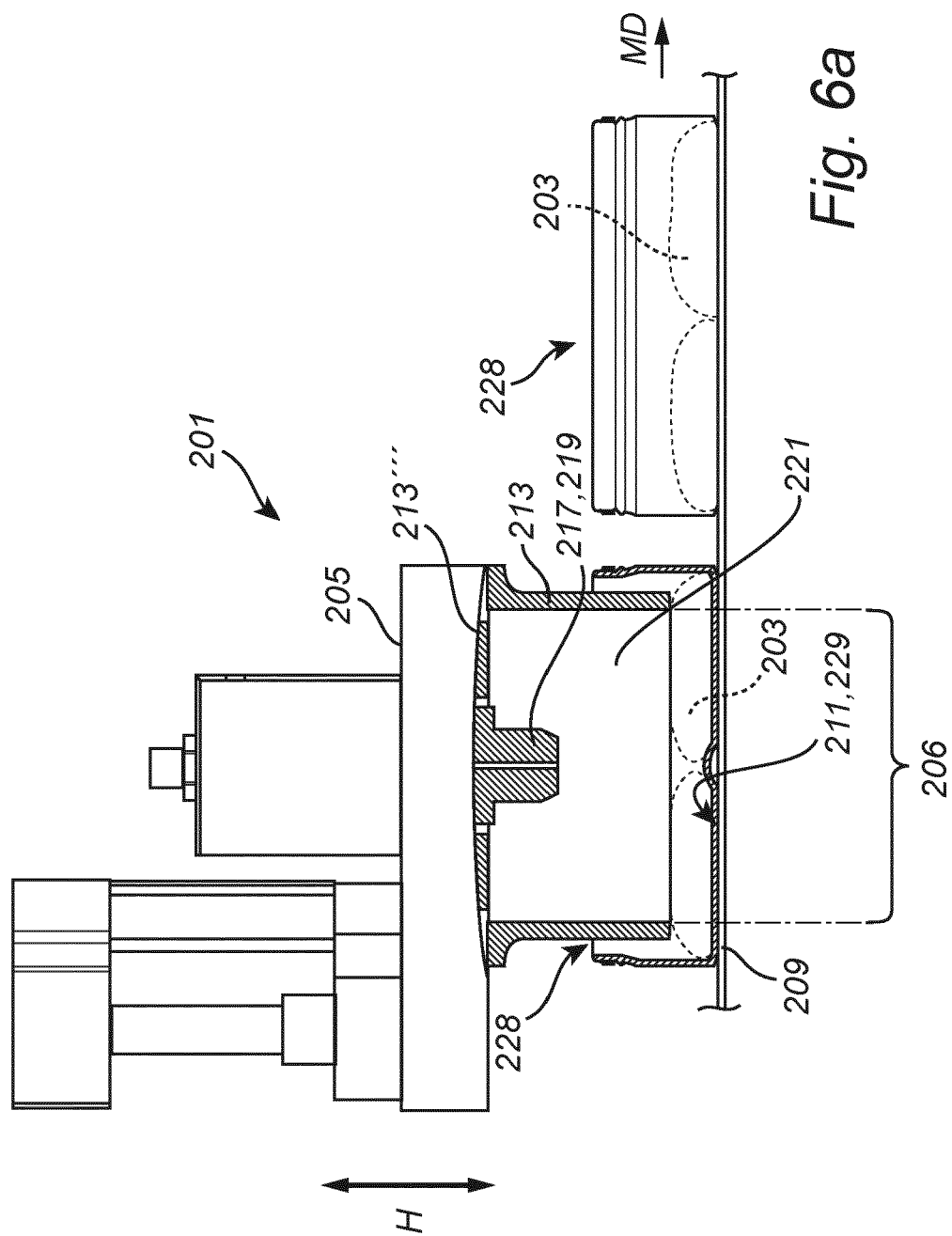


Fig. 6a

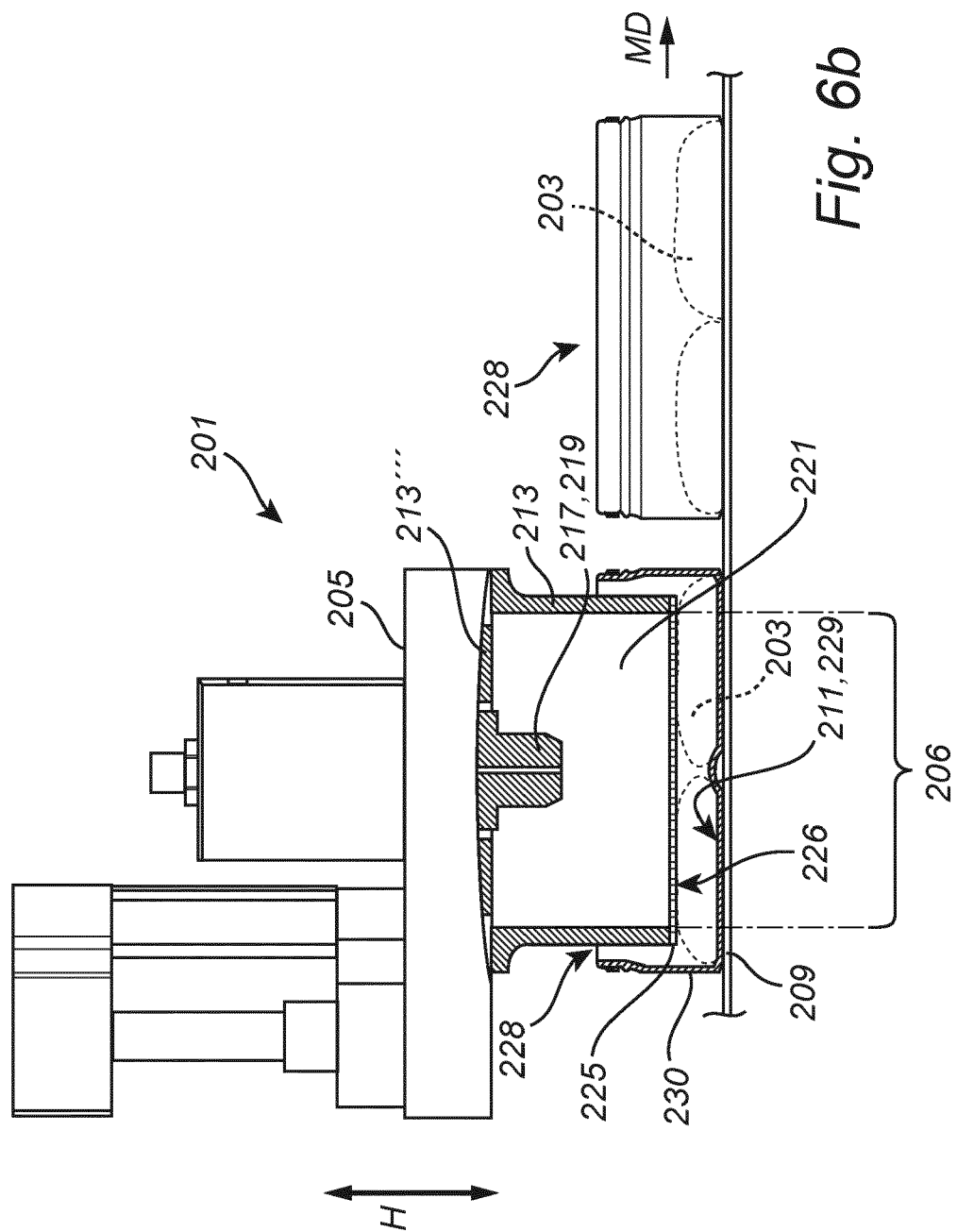


Fig. 6b

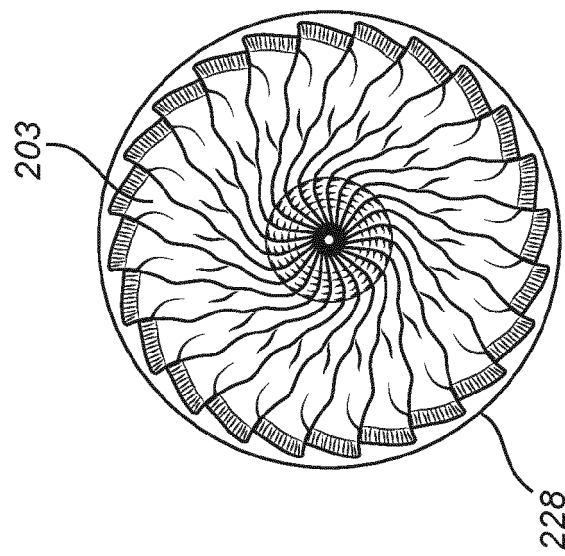


Fig. 7a

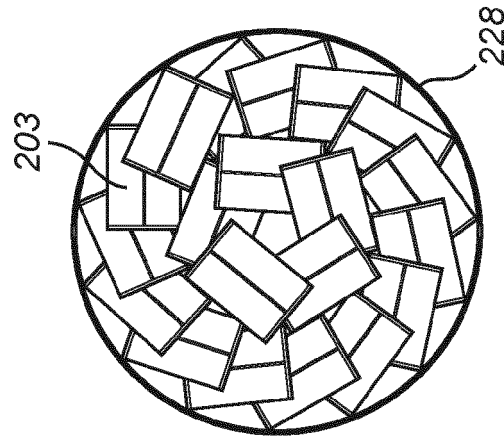


Fig. 7b

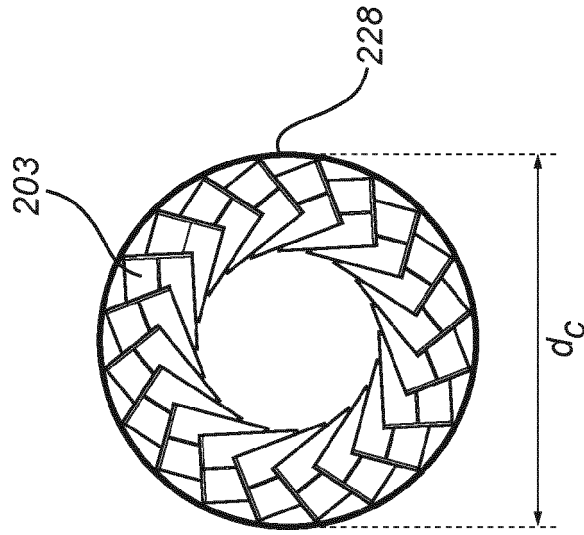


Fig. 7c



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Application Number

EP 21 19 8473

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Place of search	Date of completion of the search	Examiner
Munich	13 April 2022	Schwarzer, Bernd
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