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(54) **A SMOKING ARTICLE WITH A HEATED SEGMENT COMPRISING A TOBACCO PRODUCT**

(57) A smoking article (8) with a heated segment (1, 8) comprising a tobacco product. The invention relates to a smoking article (8) with a distal (22) and a mouth end (23), wherein the smoking article (8) has a cylindrical shape and is extending in a circumferential direction (24) and a longitudinal direction (25). Along the longitudinal direction (25) from the distal (22) to the mouth end (23) at least one heated segment (1, 8) comprising tobacco or reconstituted tobacco binder (RTB), at least one cooling segment (2) comprising a cylindrically shaped cooler material (9) and a filter segment (3) are arranged. The

three sections (15) create a flow path (10) from the distal (22) to the mouth end (23), wherein the heated segment (1, 8), the cooling segment (2) and the filter segment (3) are at least in part enclosed by a first wrapper (4). The heated segment (1, 8) comprises at least one second wrapper (13, 14, 6). A smoking article (8) is characterized in that the second wrapper (13, 14, 6) is coated (100, 15) with a tobacco product (100, 11) comprising tobacco particles (12) having an average particle size of 30  $\mu\text{m}$  and a dispersion medium for dispersing the tobacco particles.

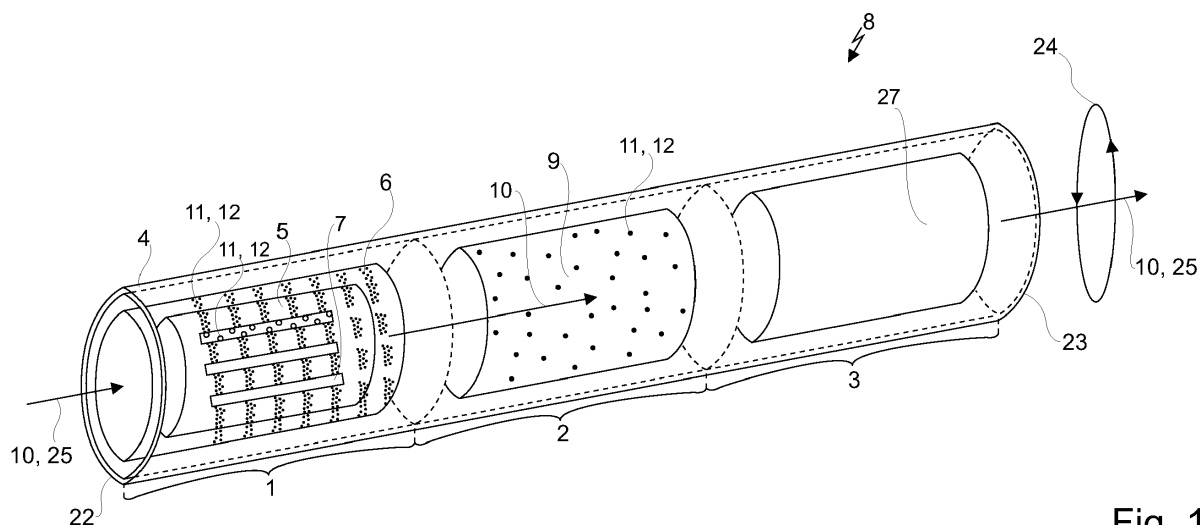


Fig. 1

## Description

**[0001]** The present invention relates to a smoking article out of the field of heat-not-burn products with a heated section comprising a tobacco product for an intensive smoking experience with full of a tobacco taste. The invention relates also to a method for manufacturing the mentioned smoking article.

**[0002]** There are various types of heat-not-burn products in the marketplace. The most of these use a battery-powered heating system for heating up the tobacco in a heating section. It heats tobacco leaves at a lower temperature than traditional cigarettes. As the tobacco starts to heat up, an aerosol that contains nicotine and other chemicals can be inhaled by the user.

**[0003]** Due to the low temperature during the smoking experience an incomplete taste results compared to the traditional cigarettes. As a result the user often criticize the incomplete taste of the heat-not-burn products. This problem is often masked with added flavors to the tobacco, wherein users often do not want to taste any other flavors except tobacco.

**[0004]** For example, US20040020504A1 discloses a sidestream smoke cigarette comprising a conventional tobacco rod and a combustible treatment paper having a sidestream smoke treatment composition. The paper is coated by the treatment composition, which is sprayed on the paper.

**[0005]** Furthermore, CN105002785A discloses a lining paper for cigarettes, wherein the surface of a base paper is coated with a coating liquid containing tobacco extract as a main solute. This document discloses also a packaging material for the cigarettes to prevent moisture, mildew and aroma loss.

**[0006]** It would be desirable to provide a smoking article for enabling the user to conveniently and effectively incorporate a desired tobacco flavor to the aerosol prior to inhalation. It would be particularly desirable if such a smoking article could be adapted to enable the user to select from a variety of different tobacco flavors and flavor intensities. Preferably, such a smoking article could be manufactured with common handling machines.

**[0007]** It is therefore the objective of the invention to provide a heat-not-burn smoking article full of tobacco taste and a method for manufacturing the mentioned smoking article. The smoking experience is therefore comparable with the traditional cigarettes.

**[0008]** The afore mentioned problems are solved by a smoking article with a distal and a mouth end. The smoking article has a cylindrical shape and is extending in a circumferential direction and a longitudinal direction. Along the longitudinal direction from the distal to the mouth end at least one heated segment comprising tobacco and/or reconstituted tobacco binder (RTB), at least one cooling segment comprising a cylindrically shaped cooler material and a filter segment are arranged, thereby creating a flow path from the distal to the mouth end. The heated segment, the cooling segment and the filter seg-

ment are at least in part enclosed by a first wrapper, wherein the heated segment comprises at least one second wrapper. The smoking article is characterized in that the second wrapper is coated with a tobacco product comprising tobacco particles having an average particle size of 30  $\mu\text{m}$  and a dispersion medium for dispersing the tobacco particles.

**[0009]** Applying tobacco product comprising tobacco particles to the second wrapper of the heated section enhances the tobacco taste experience of a customer. When the second wrapper is heated, the tobacco particles are inhaled together with the actual tobacco aerosol. This creates an additional strengthening of the tobacco taste. Preferably, the enhancement of the tobacco taste by adding the tobacco product is adjustable by the amount of the tobacco product.

**[0010]** Tobacco particles having such a small average particle size are providing a high surface area, which could be contacted by the passing aerosol. This allows transfer of the molecules from the particles into the aerosol stream. The particle size of  $\leq 30 \mu\text{m}$  has been found to allow transfer of a plurality of flavoring molecules, which contribute to a full tobacco flavor. The particle size allows migration of bigger and smaller molecules from an internal volume of the particles to their surface from which these molecules could pass over to the aerosol stream.

**[0011]** In the context of the present invention also the term "tobacco product" refers to a flavoring substance comprising tobacco particles having an average particle size (sD50 laser diffraction)  $\leq 30 \mu\text{m}$ .

**[0012]** Also nicotine could pass over from the tobacco particles to the aerosol in a similar way. Since nicotine has a flavor and is usually a constituent of tobacco, the term "flavoring molecules" also includes nicotine.

**[0013]** This characteristic of the particles could also be explained by quick heating of the small particles after being contacted by the hot aerosol stream, due to which the migration of the flavoring molecules within the tobacco particles starts. Furthermore, the flavoring molecules could reach the particle surface from which they could pass over to the aerosol stream quickly, independently from its position within the particle.

**[0014]** Preferably the average size of the tobacco particles (sD50 laser diffraction) is  $\geq 1 \mu\text{m}$ , preferably  $\geq 2.5 \mu\text{m}$ , more preferably  $\geq 5 \mu\text{m}$ , most preferably  $\geq 8 \mu\text{m}$ . It has been found, that grinding of the tobacco particles to a smaller particle size could affect the flavor. It is believed that some of the flavoring molecules of the leaf tobacco decompose due to the high shear energy. Furthermore, some flavoring molecules could exit very small tobacco particles during the grinding process or during a later handling process. This would result in a depletion of these flavoring molecules in the tobacco particles and a flavor composition different with respect to the full tobacco flavor.

**[0015]** To avoid decomposing of flavoring molecules during the grinding process, it has been found advanta-

geous, to reduce the viscosity of the grinding composition. This could be achieved by adding a solvent to this composition. Such a solvent (or "dispersion medium") is preferably selected from a group comprising water, monovalent alcohols, polyvalent alcohols, sugar alcohols, sugars and polyvalent alcohol esters. By using such a dispersion medium, the average particle size of the tobacco can be adjusted to the desired value, without significant changes of the flavor.

**[0016]** Beside the tobacco particles with an average particle size of 30 micrometer or less, the tobacco product preferably comprises a liquid medium like alcohol or water, in which the tobacco particles are dispersed.

**[0017]** In a preferred embodiment, the tobacco particles are dispersed in a liquid medium having a temperature of  $\leq 30^{\circ}\text{C}$ , preferably  $\leq 20^{\circ}\text{C}$ , more preferably  $\leq 15^{\circ}\text{C}$ , most preferably  $\leq 10^{\circ}\text{C}$ , to prevent decomposition and/or dissipation of the tobacco flavoring. Preferably the liquid medium of the dispersion has a temperature of  $\geq -20^{\circ}\text{C}$ , preferably  $\geq -10^{\circ}\text{C}$ , more preferably  $\geq -5^{\circ}\text{C}$ , most preferably  $\geq 0^{\circ}\text{C}$ , to facilitate its handling. It has been shown that a cold dispersion having temperatures in the above-mentioned range also prevents nicotine decomposition.

**[0018]** According to another embodiment, the smoking article is characterized by the tobacco product, which is arranged on an inner and/or outer surface of the second wrapper.

**[0019]** The tobacco product is mixed with carrier liquid, preferably water, propyleneglycol or glycerine, to be suitable for printing devices. The specific formulation is dependent on the printing technology used. The ink comprises an amount of ground tobacco, which is preferably between 1 and 50 weight %, also preferred more than 50 weight %. With such an amount of ground tobacco in the mixture a sufficient colour intensity is insured. A viscosity of the ink is comprised preferably between 30 and 60 dPas, also preferred 50 and 350 dPas, wherein the viscosity is measured with falling-rod viscometer at  $25^{\circ}\text{C}$ . A density of the ink is preferably comprised between  $0.5\text{ g/cm}^3$  and  $0.9\text{ g/cm}^3$ , also preferred  $0.8\text{ g/cm}^3$  and  $1.5\text{ g/cm}^3$ . The ink comprises preferably solvents, pigments, dyes, resins, lubricants, solubilizers, surfactants, particulate matter and/or flourescents. If the flourescents are used, they are all food safe.

**[0020]** When applying the tobacco product on the inner surface of the second wrapper, it is advantageous if the second wrapper of the smoking article preferably is blank. In this case, the tobacco product is invisible for the customer, wherein the tobacco taste is preferably enhanced. It is possible that the inner surface of the second wrapper is coated at least in part with the tobacco product. Preferably, the tobacco product is sprayed on the inner surface of the second wrapper. It is also conceivable that the tobacco product is printed on the inner surface of the second wrapper. Preferably, the ink for a printing device comprises the tobacco product and transparent substances.

**[0021]** Applying the tobacco product on the outer surface of the second wrapper is advantageous if the second wrapper of the smoking article preferably should be decorated. In this case, the tobacco product is visible for the customer, wherein the tobacco taste is preferably additionally enhanced. It is possible that the outer surface of the second wrapper is coated at least in part with tobacco product. Preferably, the tobacco product is sprayed on the outer surface of the second wrapper. It is also conceivable that the tobacco product is printed on the outer surface of the second wrapper. Preferably, the ink for a printing device comprises the tobacco product and a coloured substances. It is also conceivable that the applied tobacco product on the outer surface of the second wrapper is invisible. In this case the ink for the printing device is transparent.

**[0022]** It is also conceivable that the tobacco product is applied on the inner and outer surface of the second wrapper. Depending on requirements, the tobacco product is preferably with or without coloured substances. Preferably, the applied tobacco product on the surface is tangible when touched. More preferably, the surface of the second wrapper comprises letters written as a braille with the ink comprising tobacco product.

**[0023]** According to another embodiment, the smoking article is characterized in that the second wrapper comprises at least one uncoated section preferably several uncoated sections, wherein the coated and uncoated sections form a pattern.

**[0024]** In general the pattern refers to the visible surface drawings or surface structures. Preferably, the pattern comprises a minimum of repetitions (periodicity) and symmetries of coated and uncoated sections. The periodicity of coated and uncoated sections preferably vary depending on the desired enhancement of the tobacco taste. Preferably, the tobacco product is applied on the second wrapper of the smoking article and results in the coated sections. Preferably, the tobacco product comprising visible ink is applied on the coated sections of the second wrapper.

**[0025]** It is conceivable that a distance between the coated and uncoated sections is variable. In case of desired strong tobacco taste, the distance between the coated and uncoated sections is preferably in order of a magnitude of at least one coated section. It is also possible that the distance between the coated and uncoated sections is in order of the magnitude of at least one part of the coated section. In case of desired soft tobacco taste, the distance between the coated and uncoated sections is preferably in order of the magnitude of at least two coated sections. It is also possible that the distance between the coated and uncoated sections is in order of the magnitude of up to three coated sections, more preferred more than three coated sections.

**[0026]** It is also possible that a printing thickness of the coated sections is constant. In this case the pattern extends preferably constantly in the flow path direction and in the circumferential direction. It is conceivable that the

printing thickness of the coated sections is inconstant. In this case the pattern extends preferably from the finely to the strongly printed coated sections along the longitudinal direction. Preferably, a thickness of the with tobacco product printed second wrapper is inconstant. The pattern on the outer and/or inner surface of the second wrapper is preferably ribbed by coated and uncoated sections. The pattern on the outer and/or inner surface of the second wrapper is preferably palpable by a touch.

**[0027]** To improve a hiding power, the color intensity and the color itself, the ink preferably comprises dyes, resins and/or particulate matter. By adding solvents, resins, lubricants, solubilizers and/or surfactants a rheology of the ink is preferably optimized for the printing process. Such an optimization is special interest for adapting the ink to specific printing machinery. By adding the fluorescent, the print is preferably readable under irradiation with UV-light.

**[0028]** According to another embodiment, the smoking article is characterized in that the pattern comprises circumferential rings with an extent in the longitudinal direction, wherein the circumferential rings are distanced from each other along the longitudinal direction.

**[0029]** Preferably the distance between the circumferential rings with the extent in the longitudinal direction is constant. The pattern on the outer and / or the inner surface of the second wrapper comprises circumferential rings which are applied as lines. The lines are preferably adapted to the desired tobacco flavor enhancement. Preferably the lines have a thickness of 2 mm, also preferably a thickness of 3 mm, for a desired strong tobacco enhancement. It is conceivable that the pattern comprises double lines, triple lines or multiple lines. The circumferential rings are preferably applied as the singly closed rings or as a spiral with a starting point at the distal end and an end point at the mouth end.

**[0030]** It is also possible that the distance between the circumferential rings with the extent in the longitudinal direction is inconstant. The pattern on the outer and / or the inner surface of the second wrapper preferably begins with soft and thin lines at the distal end and becomes thicker and stronger towards the mouth end. It is conceivable that the lines have a constant thickness. The circumferential rings on the outer and / or the inner surface of the second wrapper have preferably a distance of at least 3 mm at the distal end. Due to the extent in the longitudinal direction the distance between the circumferential rings preferably decreases by 0.5 mm with every 1 mm that has advanced.

**[0031]** The circumferential rings comprised in the pattern preferably comprise curved lines, geometrical figures or letters. It is also conceivable that the pattern comprises a distinguishing feature. The distinguishing feature is preferably a logo, picture or a warning notice.

**[0032]** The color intensity of the ink is preferably adapted by selection of the tobacco type and concentration. The higher the concentration of the tobacco product in the ink, the darker the color of the ink. By using a darker

type of tobacco, it is preferably obtained a darker ink color. Such darker tobacco types preferably are Burley tobacco, dark fire-cured tobacco and dark air-cured tobacco. With such darker tobacco types a darker ink color and also higher contrast to a light-colored wrapper is preferably obtained.

**[0033]** According to another embodiment, the smoking article is characterized in that the second wrapper has at least in part a consistent thickness extending in the longitudinal and the circumferential direction.

**[0034]** The consistent thickness of the second wrapper in the longitudinal and the circumferential direction is advantageous for the simultaneous production of several second wrapper pieces. The tobacco product is preferably applied during the manufacturing process on the outer and / or inner surface of the second wrapper. A last process step is preferably cutting in the single second wrapper pieces. It is also conceivable that the tobacco product is applied after the cutting process.

**[0035]** According to another embodiment, the smoking article is characterized in that the heated segment comprises at least one carrier material portion comprising the tobacco product.

**[0036]** The carrier material portion is preferably printed with the ink comprising tobacco product. The heated segment comprising the carrier material portion allows preferably to intensive the tobacco taste during the smoking experience. The applying of the with tobacco product coated carrier material portion in the heated segment preferably increases the tobacco taste of the smoking article with second wrapper comprising the tobacco product. It is also conceivable that the applied tobacco taste of the tobacco product on the second wrapper differs to the tobacco taste of the tobacco product applied on the carrier material portion. Preferably the ink comprising tobacco product, which is used for printing on the carrier material portion is visible or invisible. Also preferably the ink comprising the tobacco product comprises the same components as the ink for printing on the second wrapper.

**[0037]** It is also conceivable that the tobacco product is sprayed on at least one of the surfaces of the carrier material portion. Preferably a thickness of the carrier material portion is constant. In this case the whole surface is coated with the ink comprising tobacco product. It is also possible that the thickness of the carrier material portion is inconstant. The ink comprising tobacco product on at least one surface of the carrier material portion is preferably applied on at least one section. The coated and uncoated sections form preferably a pattern.

**[0038]** According to another embodiment, the smoking article is characterized in that the cooling segment also comprises the tobacco product.

**[0039]** Applying the tobacco product in the cooling section enables the additional increase of the intensive tobacco taste. Preferably the tobacco product is applied in the cooling section, the second wrapper of the heating section and / or the carrier material portion. The combi-

nation of the different application options enables flexibility in the manufacture of smoking articles. A smoking article can contain tobacco product on the second wrapper of the heating section, on the carrier material portion in the heating section and in the cooling section. While another smoking article only contains the carrier material portions comprising tobacco product in the heating section. It is conceivable that the combination of the different tobacco products on the different surfaces lead to different tobacco tastes. It is also conceivable that the tobacco product is applied on the carrier material portion and in the cooling segment. It is possible that there are other combinations of different accommodation options of the tobacco product.

**[0040]** According to another embodiment, the smoking article is characterized in that the second wrapper comprises a carrier material, preferably comprising paper, more preferred heat resistant polymers, most preferred cellulose based materials, wherein the second wrapper is circumferentially enclosed by the first wrapper.

**[0041]** Preferably the second wrapper of the smoking article and the carrier material portion comprise the same carrier material. The carrier material comprises preferably a reconstituted tobacco (RTB) product. The RTB product is known as a "sheet", which consists of recycled tobacco stems, stalks, scraps, collected dust, and floor sweepings, to which are added glue, chemicals and fillers. Preferably the glue of the RTB product comprises tobacco product.

**[0042]** It is also conceivable that the carrier material comprises paper, heat resistant polymers and/or cellulose based materials. The heat resistant polymers used in the smoking articles preferably comprise polysulfones, polyetherimides or polyphenylsulfone. It is also possible that the heat resistant polymers comprise polyphenylene sulfide, liquid crystal polymer, polyetherether-ketone or polyphthalamide.

**[0043]** According to another embodiment, the smoking article is characterized in that the heated segment comprises at least one carrier material portion, preferably as strips or strings, wherein the tobacco product is applied at least on one surface of the carrier material portion.

**[0044]** Preferably the at least one carrier material portion is formed as a strip. The width of the strip is preferably less than the diameter in circumferential direction of a rod of the smoking article. The length of the strip is preferably less than or equal to the length in the longitudinal direction of the heating section of the smoking article. In another embodiment the at least one carrier material portion is formed as a string, preferably as a twisted rope. The diameter of the string is preferably less than the diameter in circumferential direction of the rod of the smoking article. The length of the string is preferably less than or equal to the length in the longitudinal direction of the heating section. It is conceivable that the carrier material portion is formed as a thin tube. The tube is preferably hollow in its circumferential center.

**[0045]** The carrier material portions are preferably in-

tegrated into a standard manufacturing process of the smoking article. If there is more than one material portion used in the smoking article, the tobacco taste is preferably fine-tuned by using different types of the tobacco product on the individual carrier material portions.

**[0046]** Applying the tobacco product to at least one surface of the carrier material portion offers a further possibility of dosing the tobacco taste. Depending on the number of carrier material portions added to the smoking article, the tobacco taste is increased or decreased. There is also the option of moistening the carrier material portion on one or both surfaces with tobacco product, wherein the moistening of one surface of the carrier material portion results in a milder tobacco taste.

**[0047]** According to another embodiment, the smoking article is characterized in that the carrier material portion is perforated to improve the flow path in the longitudinal direction.

The flow path of the smoke in the smoking article can be affected due to the inserted carrier material portions in the heating section. To solve this problem, the carrier material portions are preferably perforated. It is conceivable that the perforations are round or square shaped. The perforations have preferably a size in the range of 35  $\mu\text{m}$  - 1000  $\mu\text{m}$ , also preferably 900  $\mu\text{m}$  - 10 mm. Preferably the perforations are made before or after the coating process of the carrier material portion. It is also possible that the perforations are made during the printing process.

**[0048]** According to another embodiment, the smoking article is characterized in that the carrier material portion is arranged in the heated segment in the longitudinal direction or rolled in the circumferential direction.

**[0049]** It is conceivable that the carrier material portions are positioned in different ways within the heating section of the smoking article. If the carrier material portion is positioned in the longitudinal direction, then the portion extends from the distal to the mouth end. In another embodiments the carrier material portions are preferably arranged perpendicular to the longitudinal direction. In this case it is important that the carrier material portions are perforated to improve the flow path. It is also conceivable that the carrier material portion is rolled in the circumferential direction and is positioned in the heated segment. Preferably the rolled carrier material portion is positioned centric near to the distal end area of the heated section. It is also possible that the rolled carrier material portion is positioned centric near to the mouth end area of the heated section.

**[0050]** According to another embodiment, the smoking article is characterized in that the carrier material portion is soaked with the tobacco product.

**[0051]** In case of using carrier material portions comprising woven materials in the smoking article, the loose fibers are soaked with a liquid comprising tobacco product and integrated into the heated section of the smoking article. The soaked tobacco product is preferably soaked up by the structure through capillary action. For the ef-

fective soaking with the liquid comprising tobacco product, a bath submersion is preferably used in the manufacturing process.

**[0052]** The objective is also reached by a method for manufacturing a smoking article with a distal and mouth end having a cylindrical shape and extending in a circumferential direction and in longitudinal direction. Along the longitudinal direction from the distal to the mouth end at least one heated segment comprising tobacco and/or reconstituted tobacco binder (RTB), at least one cooling segment comprising a cylindrically shaped cooler material with a flow path from distal to mouth end and a filter segment are arranged. The heated segment, the cooling segment and the filter segment are at least in part enclosed by a first wrapper, wherein the heated segment comprises at least one second wrapper. The method for manufacturing the smoking article is characterized by coating the second wrapper with a tobacco product comprising tobacco particles having an average particle size of 30  $\mu\text{m}$  and a dispersion medium for dispersing the tobacco particles before arranging the heated segment in the smoking article.

**[0053]** It is conceivable that the second wrapper coated with the tobacco product is used in line. This means that the coating step takes place during a standard manufacturing process. Preferably the second wrapper is coated on the outer surface during the manufacturing process as a last manufacturing step. Due to the last step, the ink comprising tobacco product is preferably applied on the smoking article. This step is advantageous for the manufacturing, because the standard manufacturing process is preferably maintained, wherein only the last step is added.

**[0054]** It is also conceivable that the coated carrier material, which is used for manufacturing the second wrapper, is stored on spools or bobbins. In this case the coated carrier material is processed, preferably cut to size, separately and fed into the RTB forming process.

**[0055]** The objective is also reached by the method for manufacturing the smoking article characterized in that the tobacco product is applied to the second wrapper of the heated segment by spraying or printing.

**[0056]** For this manufacturing step, the tobacco product is mixed with carrier liquid, preferably water, propylene glycol or glycerin, to make it suitable for printing or spraying devices. The specific formulation is dependent on the printing or spraying technology in the manufacturing process used. The print process is preferably carried out with a conventional printing machinery for printing on continuous materials which are fed through the printing machinery. Preferably the printing machinery comprises a print roller, which is coated with the ink. The print roller rolls over the surface of the continuous material and forms pattern. It is also conceivable to use a screen printing machinery or inkjet printing machinery.

**[0057]** The objective is also reached by the method for manufacturing the smoking article characterized by applying the tobacco product to the second wrapper in sep-

arate processing step.

**[0058]** The applying process, preferably printing or spraying process, of the carrier material portion and/or second wrapper of the smoking article is a separate processing step. Such separate processing steps are known as offline, what means that the coating of the carrier material and/or second wrapper of the smoking article is done before the standard manufacturing process of the smoking article. In this way, there is no need to adapt the manufacturing machinery for the coating step. The smoking articles with second wrapper and/or carrier material portion comprising tobacco product can thus be made on the known production machines.

**[0059]** Further advantages, objectives and features of the present invention will be described, by way of example only, in the following description with reference to the appended figures. In the figures, like components in different embodiments can exhibit the same reference symbols.

**[0060]** The figures show:

- Fig. 1 a general view of a smoking article 8 with a tobacco product 11 on a second wrapper 6, the carrier material portions 7 and a cooling segment 2 ;
- Fig. 1a an embodiment of a smoking article 8 with a tobacco product 11 on a second wrapper 6 ;
- Fig. 1b an embodiment of a smoking article 8 with a tobacco product 11 on a second wrapper 6 and a cooling segment 2 ;
- Fig. 1c an embodiment of a smoking article 8 with a tobacco product 11 on the carrier material portions 7 and a cooling segment 2 ;
- Fig. 1d an embodiment of a smoking article 8 with a tobacco product 11 on a second wrapper 6 and the carrier material portions 7 ;
- Fig. 2 a detailed view of a second wrapper 6 ;
- Fig. 3a a schematic view of a rolled out second wrapper 6 or carrier material portion 7 ;
- Fig. 3b a schematic view of a convolute second wrapper 6 or carrier material portion 7 ;
- Fig. 3c a schematic view of a perforated carrier material portion 7 ;
- Fig. 4a a view of the embodiments of the different pattern 17 ;
- Fig. 4b a view of the embodiments of the different pattern 17 and color density 29 ;
- Fig. 5 a flow chart of the method for manufacturing a smoking article 8 ;

**[0061]** Fig. 1 shows a general view of a smoking article 8 with a heated segment 1, a cooling segment 2 and a filter segment 3. The mentioned three segments 1-3 are connected with each other and are enclosed at least in part with a first wrapper 4, wherein the segments 1-3 are arranged along a longitudinal direction 25 from the distal end 22 to the mouth end 23 of the smoking article 8. The segments 1-3 create a flow path 10, which has a start at

the distal end 22 and extends through the whole smoking article 8 along the longitudinal direction 25 to the mouth end 23. It is possible that there are further segments or components, which are comprised in the smoking article 8. It is therefore conceivable that the cooling segment 2, heated segment 1 and filter segment 3 comprise another wrapper. In the shown embodiment all segments 1-3 are cylindrically shaped. It is conceivable that the smoking article 8 is shaped with a different basic shape, for example square, hexagon, or oval.

**[0062]** The heated segment 1 comprises a second wrapper 6, the smokable material, preferably RTB 5, and the carrier material portions 7, which are coated at least in part with a tobacco product 11. The second wrapper 6 is wrapped around the RTB 5 in the circumferential direction 24. The cooling segment 2 is wrapped in the first wrapper 4 and comprises a cooler material 9, which is coated with tobacco product 11. It is possible that the cooling segment 2 comprises a cooling wrapper (not shown here). The filter segment 3 comprises a filter material 27 and is wrapped in the first wrapper 4. It is conceivable that the filter segment 3 comprises at least one further wrapper, which encloses the filter material 27 in circumferential direction 24.

**[0063]** The tobacco product 11 comprises tobacco particles 12, wherein the tobacco particles 12 in the cooling segment 2, the tobacco particles 12 on the outer surface of the second wrapper 6 and the tobacco particle on the carrier material portion 7 may differ from each other. The combination of the different tobacco products 11 comprising different tobacco particles 12 preferably results in a special tobacco taste. The tobacco product 11 on the outer surface of the second wrapper 13 is arranged in such a way that a pattern 17 is formed.

**[0064]** In the shown embodiment, the first wrapper 4 does not comprise the tobacco product 11 but it is very well conceivable to apply the tobacco product 11 on inner or outer surface of the first wrapper 4. It is also conceivable that the second wrapper 6 comprising the tobacco product 11 is visibly applied on the heated segment 1, wherein the heated segment 1 is wrapped with the first wrapper 4 only in part.

**[0065]** Fig. 1a shows an embodiment of a smoking article 8 with a tobacco product 11 on a second wrapper 6. The cooling segment 2 does not comprise the tobacco product 11. The heated segment 1 does not comprise the carrier material portions 7. Fig. 1b shows an embodiment of a smoking article 8 with a tobacco product 11 on a second wrapper 6 and a cooling segment 2. The heated segment 1 of the smoking article 8 does not comprise the carrier material portions 7. Fig. 1c shows an embodiment of a smoking article 8 with a tobacco product 11 on the carrier material portions 7 and a cooling segment 2. The second wrapper 6 of the heated segment 1 does not comprise the tobacco product 11. Fig. 1d shows an embodiment of a smoking article 8 with a tobacco product 11 on a second wrapper 6 and the carrier material portions 7. The cooling segment 2 does not comprise the

tobacco product 11.

**[0066]** Fig. 2 shows a detailed view of a second wrapper 6. The second wrapper 6 is coated in part with the tobacco product 11 comprising tobacco particles 12. The outer surface of the second wrapper 13 comprises coated 15 and uncoated 16 sections, which form a pattern 17. The pattern 17 on the outer surface of the second wrapper 13 is formed as circumferential rings 26, wherein the coated sections 15 comprise the tobacco product 11 and the uncoated sections 16 comprise a surface of the RTB 28. The circumferential rings 26 are preferably spaced to each other by a distance  $d$ . The distance  $d$  is preferably at least as thick as one circumferential ring 26. It is conceivable that the distance  $d$  between the circumferential rings 26 is variable. In this case the distance  $d$  is thinner or thicker as one circumferential ring 26. It is also conceivable that the distance  $d$  is inconstant. In this case the distance  $d$  expands or decreases between the circumferential rings 26 expending from the distal 22 to the mouth end 23 (not shown). It is possible that the inner surface of the second wrapper 14 is also coated with the tobacco product 11 at least in part.

**[0067]** The length  $l$  of the heated segment 1 is preferably 20 mm measured along the longitudinal direction 25. It is also conceivable that the length  $l$  of the heated segment 1 varies depending of the embodiment of the smoking article 8. It is conceivable that the length  $l$  of the heated segment 1 is adapted to the other segments of the smoking article 8. In such case it is possible that the length  $l$  of the heated segment 8 is identical to the cooling segment 2 or the filter segment 3.

**[0068]** Fig. 3a shows a schematic view of a rolled out second wrapper 6 or a carrier material portion 7. Fig. 3b shows a schematic view of a convolute second wrapper 6 or carrier material portion 7. The second wrapper 6 and the carrier material portion 7 comprise preferably the same carrier material 19 as a base. Preferably the carrier material 19 comprises the RTB 5. The tobacco product 11 is applied on the first surface of the carrier material 20 or the outer surface of the second wrapper 13.

**[0069]** The tobacco product 11 is preferably applied in sections 15, wherein the coated sections 15 are distanced to each other by the distance  $d$ . It is conceivable that the coated sections 15 differ in the thickness in such a way, that the thickness 18 of the whole second wrapper 6 or the whole carrier material 19 is inconstant. It is also possible that the thickness 18 of the whole second wrapper 6 or the whole carrier material 19 is constant. It is also possible that the inner surface of the second wrapper 14 or the second surface of the carrier material 21 are also coated with the tobacco product (not shown). Preferably the thickness of the coated section  $t$  is constant. Also preferably the thickness of one coated section  $t$  is in range 0.5-5 mm. It is conceivable that the thickness of the coated section  $t$  varies dependent on the desired tobacco taste enhancement. The carrier material portion 7 as shown in fig. 3a and 3b is arrangeable in the heated section 1. The convolute carrier material portion 7 is pref-

erably placed centrally in the heated section 1. It is also conceivable that the convolute carrier material portion 7 is placed non-centrally in the heated section 1, preferably in the area of the distal 22 or mouth 23 end of the heated section 1 measured along the longitudinal direction 25.

**[0070]** Figure 3c shows a schematic view of a perforated carrier material portion 7. The perforations 30 are arranged chaotically on the carrier material portion 7. The perforations 30 are through holes which connect the first 20 and second 21 surfaces. It is possible that the perforations 30 are sorted on the surface 20 according to a certain scheme. The perforations 30 depicted in the figure 3c are round. It is conceivable that the perforations 30 are oval, square or hexagonally shaped. The perforations 30 have preferably a size in the range of 35  $\mu\text{m}$  - 1000  $\mu\text{m}$ , also preferably 900  $\mu\text{m}$  - 10 mm. The carrier material portion 7 is preferably arranged perpendicular to the longitudinal direction 25. In this case the perforations 30 improve the flow path 10 in the heated segment 1.

**[0071]** Figure 4a shows further embodiments of patterns 17 in which the tobacco product 11 can be deposited on the inner 14 and outer 13 surfaces of the second wrapper 6 or on the first 20 or second 21 surface of the carrier material portion 7. In figure 4a the black lines represent the tobacco product 11, wherein the white underground represents the surfaces 13, 14, 20 and 21. The patterns may include hexagonal shapes, concentric squares, rectangles, or circles, zig-zagging or meandering lines and/or parallel straight or curved lines. In alternative or in addition to the different thickness 18 of the second wrapper 6 or the carrier material portion 7 depicted in figure 3a, it is also conceivable to increase or decrease the amount of tobacco product deposited per unit area of the surfaces 13, 14, 20, 21 by increasing or decreasing the density of the pattern 17. Figure 4a shows different patterns 17 each shown with different densities. In particular, the density of the patterns 17 increases from left to right in figure 4a. This results in more tobacco product 11 per area unit of the surfaces 13, 14, 20, 21 for higher pattern densities. Accordingly, this results in a lower amount of tobacco product 11 per area unit of the surfaces 13, 14, 20, 21 for lower pattern densities.

**[0072]** Figure 4b shows three different embodiments of further possible patterns 17. The topmost pattern 17 comprises a checkerboard pattern. The lowest pattern 17 shown in figure 4b also comprises a checkerboard pattern. The pattern 17 shown in the middle of figure 4b comprises a chaotic distribution of squares or pixels. Again, the black color represents the coated sections 15 with the tobacco product 11 wherein white color represents the uncoated sections 16. All three patterns 17 shown in figure 4b comprise a decreasing color density 29 of the tobacco product 11 per unit area of the surfaces 13, 14, 20, 21 from left to right. In contrast to figure 4a in which the patterns 17 from left to right show distinct grades of density, the patterns 17 in figure 4b show a gradual change of the tobacco product 11 density per unit area

of the surfaces 13, 14, 20, 21. This is carried out by gradually decreasing the size of the squares coated with a tobacco product 11 of the checkerboard pattern or by gradually decreasing the density of pixels which are coated with the tobacco product 11 in case of the chaotic arrangement of squares coated with the tobacco product 11. With these patterns 17 it is not only conceivable to realize a decreasing or increasing density of the pattern 17 along the flow path 10 but it is also conceivable to create an alternating density of the tobacco product 11 of the surfaces 13, 14, 20, 21 by decreasing the density with subsequently increasing the density and repeating this cycle as often as desired. In this way, the amount of tobacco product 11 deposited per unit area of the surfaces 13, 14, 20, 21 can be adapted very precisely to the desired tobacco enhancement of the heated segment 1.

**[0073]** Figure 5 shows a flow chart of the method for manufacturing a smoking article 8. The method may start with coating 100 the second wrapper with tobacco product 100. In particular, the tobacco product 11 is coated 100 onto an outer 13 and/or an inner 14 surface of the second wrapper 6. This can be done either by spraying or by printing 101. For the spraying 101, the tobacco product 11 is applied to the inner 14 and/or the outer 13 surface of the second wrapper 6 with a spraying nozzle. If the tobacco product 11 is arranged 100 on the surfaces 13 and /or 14 in a pattern 17, the pattern 17 is either achieved by placing a mask between the spraying nozzle and the surface 13 and/or 14 or by moving the spraying nozzle with respect to the surface 13 and/or 14, following the desired pattern 17. If the tobacco product 11 is coated 100 on the surface 13 and/or 14 by printing 101, the tobacco product 11 is applied to the surface 13 and/or 14 of the second wrapper 6 preferably with a print roller. The print roller may comprise recessed surface parts. Preferably, the recessed surface parts form a negative of the pattern 17 in which the tobacco product 11 is desired to be coated 100 onto the surface 13 and/or 14.

**[0074]** The method for coating 100 the carrier material portion 7 with tobacco product 11 is identical to the method for coating 100 the second wrapper 6 of the heated section 1. It is conceivable that the processing step with applying step 102 of the tobacco product 11 to the second wrapper 6 and/or carrier material portion 7 is a separate processing step. Preferably the applying step 102 takes place before the standard manufacturing process of the smoking article 8. It is also conceivable that the applying step 102 in the manufacturing process takes place after the standard manufacturing process of the smoking article 8.

**[0075]** The applicant reserves his right to claim all features disclosed in the application document as being an essential feature of the invention, as long as they are new, individually or in combination, in view of the prior art. Furthermore, it is noted that in the figures features are described, which can be advantageous individually. Someone skilled in the art will directly recognize that a specific feature being disclosed in a figure can be advan-

tageous also without the adoption of further features from this figure. Furthermore, someone skilled in the art will recognize that advantages can evolve from a combination of diverse features being disclosed in one or various figures.

### List of reference symbols

#### [0076]

|     |                                                                                |  |
|-----|--------------------------------------------------------------------------------|--|
| 1   | heated segment                                                                 |  |
| 2   | cooling segment                                                                |  |
| 3   | filter segment                                                                 |  |
| 4   | first wrapper                                                                  |  |
| 5   | RTB                                                                            |  |
| 6   | second wrapper                                                                 |  |
| 7   | carrier material portion                                                       |  |
| 8   | smoking article                                                                |  |
| 9   | cooler material                                                                |  |
| 10  | flow path                                                                      |  |
| 11  | tobacco product                                                                |  |
| 12  | tobacco particles                                                              |  |
| 13  | outer surface of the second wrapper                                            |  |
| 14  | inner surface of the second wrapper                                            |  |
| 15  | coated section                                                                 |  |
| 16  | uncoated section                                                               |  |
| 17  | pattern                                                                        |  |
| 18  | thickness of the second wrapper / the carrier material                         |  |
| 19  | carrier material                                                               |  |
| 20  | first surface of the carrier material                                          |  |
| 21  | second surface of the carrier material                                         |  |
| 22  | distal end                                                                     |  |
| 23  | mouth end                                                                      |  |
| 24  | circumferential direction                                                      |  |
| 25  | longitudinal direction                                                         |  |
| 26  | circumferential rings                                                          |  |
| 27  | filter material                                                                |  |
| 28  | surface of the RTB                                                             |  |
| 29  | color intensity                                                                |  |
| 30  | perforations                                                                   |  |
| d   | distance between the circumferential rings                                     |  |
| t   | thickness of one circumferential ring / coated section                         |  |
| l   | length of the heated segment                                                   |  |
| l1  | length of the carrier material portion                                         |  |
| w   | width of the carrier material portion                                          |  |
| 100 | coating the second wrapper with the tobacco product                            |  |
| 101 | applying the tobacco product to the second wrapper by spraying or printing     |  |
| 102 | applying the tobacco product to the second wrapper in separate processing step |  |

### Claims

1. A smoking article (8) with a distal (22) and a mouth

end (23), wherein the smoking article (8) has a cylindrical shape and is extending in a circumferential direction (24) and a longitudinal direction (25), along which from the distal (22) to the mouth end (23) at least one heated segment (1) comprising tobacco and/or reconstituted tobacco binder (RTB) (5), at least one cooling segment (2) comprising a cylindrically shaped cooler material (9) and a filter segment (3) are arranged, thereby creating a flow path (10) from the distal (22) to the mouth end (23), wherein the heated segment (1), the cooling segment (2) and the filter segment (3) are at least in part enclosed by a first wrapper (4), wherein the heated segment (1) comprises at least one second wrapper (6),

#### characterized in that

the second wrapper (6) is coated with a tobacco product (11) comprising tobacco particles (12) having an average particle size of 30  $\mu\text{m}$  and a dispersion medium for dispersing the tobacco particles (12).

2. The smoking article (8) according to claim 1, **characterized by** the tobacco product (11) is arranged on an inner (14) and/or outer surface (13) of the second wrapper (6).

3. The smoking article (8) according to any preceding claim, **characterized in that** the second wrapper (6) comprises at least one uncoated section (16) preferably several uncoated sections, wherein the coated (15) and uncoated sections (16) form a pattern (17).

4. The smoking article (8) according to any preceding claim, **characterized in that** the pattern (17) comprises circumferential rings (26) with an extent in the longitudinal direction (25), wherein the circumferential rings (26) are distanced (d) from each other along the longitudinal direction (25).

5. The smoking article (8) according to any preceding claim, **characterized in that** the second wrapper (6) has at least in part a consistent thickness (18) extending in the longitudinal (25) and the circumferential direction (24).

6. The smoking article (8) according to any preceding claim, **characterized in that** the heated segment (1) comprises at least one carrier material portion (7) comprising the tobacco product (11).

7. The smoking article (8) according to any preceding

claim,

**characterized in that**

the cooling segment (2) also comprises the tobacco product (11).

8. The smoking article (8) according to claim 1,  
**characterized in that**  
the second wrapper (6) comprises a carrier material (19), preferably comprising paper, more preferred heat resistant polymers, most preferred cellulose based materials, wherein the second wrapper (6) is circumferentially enclosed by the first wrapper (4). 5
9. The smoking article (8) according to claim 8,  
**characterized in that**  
the heated segment (1) comprises at least one carrier material portion (7), preferably as strips or strings, wherein the tobacco product (11) is applied at least on one surface (20) of the carrier material portion (7). 10
10. The smoking article (8) according to claims 8 - 9,  
**characterized in that**  
the carrier material portion (7) is perforated to improve the flow path (10) in the longitudinal direction (25). 15
11. The smoking article (8) according to claims 8 - 10,  
**characterized in that**  
the carrier material portion (7) is arranged in the heated segment (1) in the longitudinal direction (25) or rolled in the circumferential direction (24). 20
12. The smoking article (8) according to claims 8 - 11,  
**characterized in that**  
the carrier material portion (7) is soaked with the tobacco product (11). 25
13. A method for manufacturing a smoking article (8) with a distal (22) and mouth end (23) having a cylindrical shape and extending in a circumferential direction (24) and in longitudinal direction (25), along which from the distal (22) to the mouth end (23) at least one heated segment (1) comprising tobacco and/or reconstituted tobacco binder (RTB) (5), at least one cooling segment (2) comprising a cylindrically shaped cooler material (9) with a flow path (10) from distal (22) to mouth end (23) and a filter segment (3) are arranged, wherein the heated segment (1), the cooling segment (2) and the filter segment (3) are at least in part enclosed by a first wrapper (4), wherein the heated segment (1) comprises at least one second wrapper (6),  
**characterized by**  
coating the second wrapper (6) with a tobacco product (11) comprising tobacco particles (12) having an average particle size of 30  $\mu\text{m}$  and a dispersion medium for dispersing the tobacco particles (12) before 30

arranging the heated segment (1) in the smoking article (8).

14. The method for manufacturing a smoking article (8) according to claim 14,  
**characterized in that**  
the tobacco product (11) is applied to the second wrapper (6) of the heated segment (1) by spraying or printing. 35
15. The method for manufacturing a smoking article (8) according to claim 14 - 15,  
**characterized by**  
applying the tobacco product (11) to the second wrapper (6) in separate processing step. 40

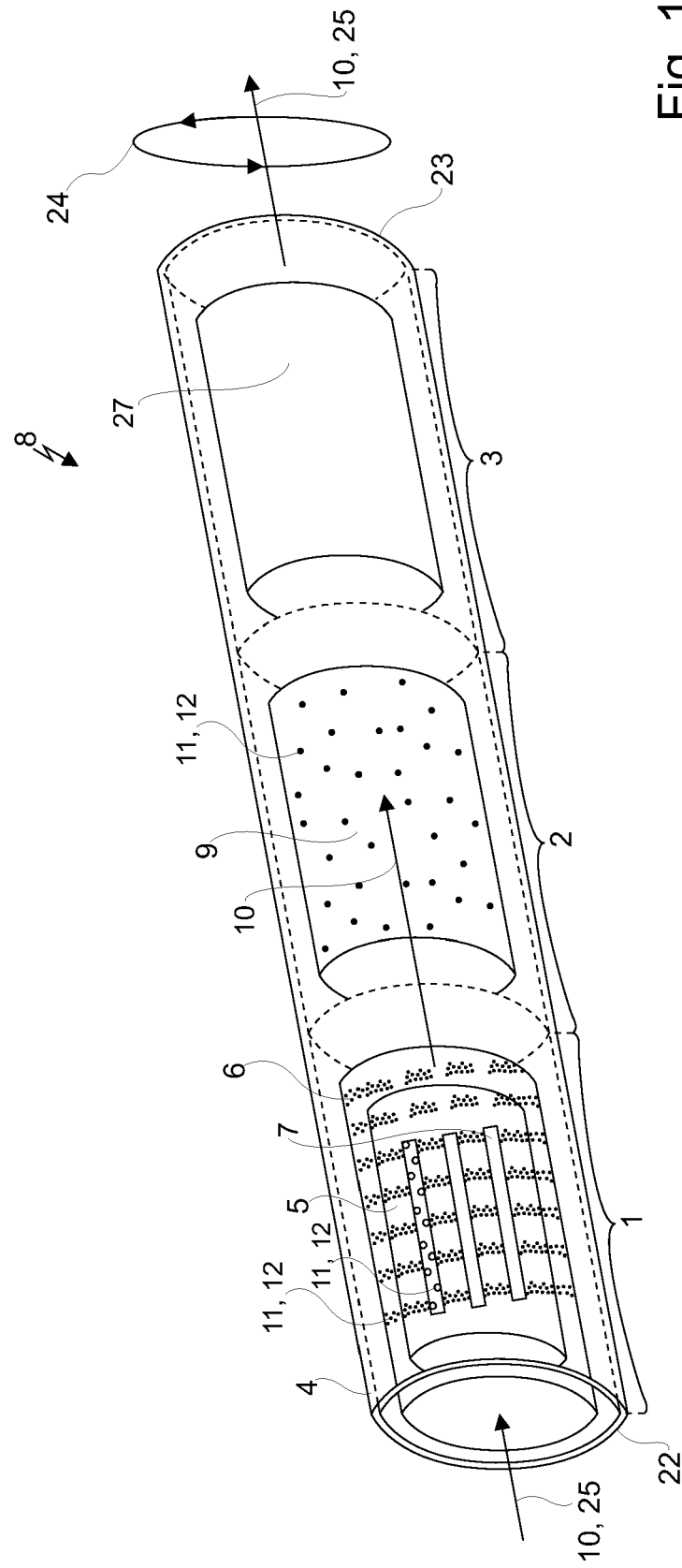


Fig. 1

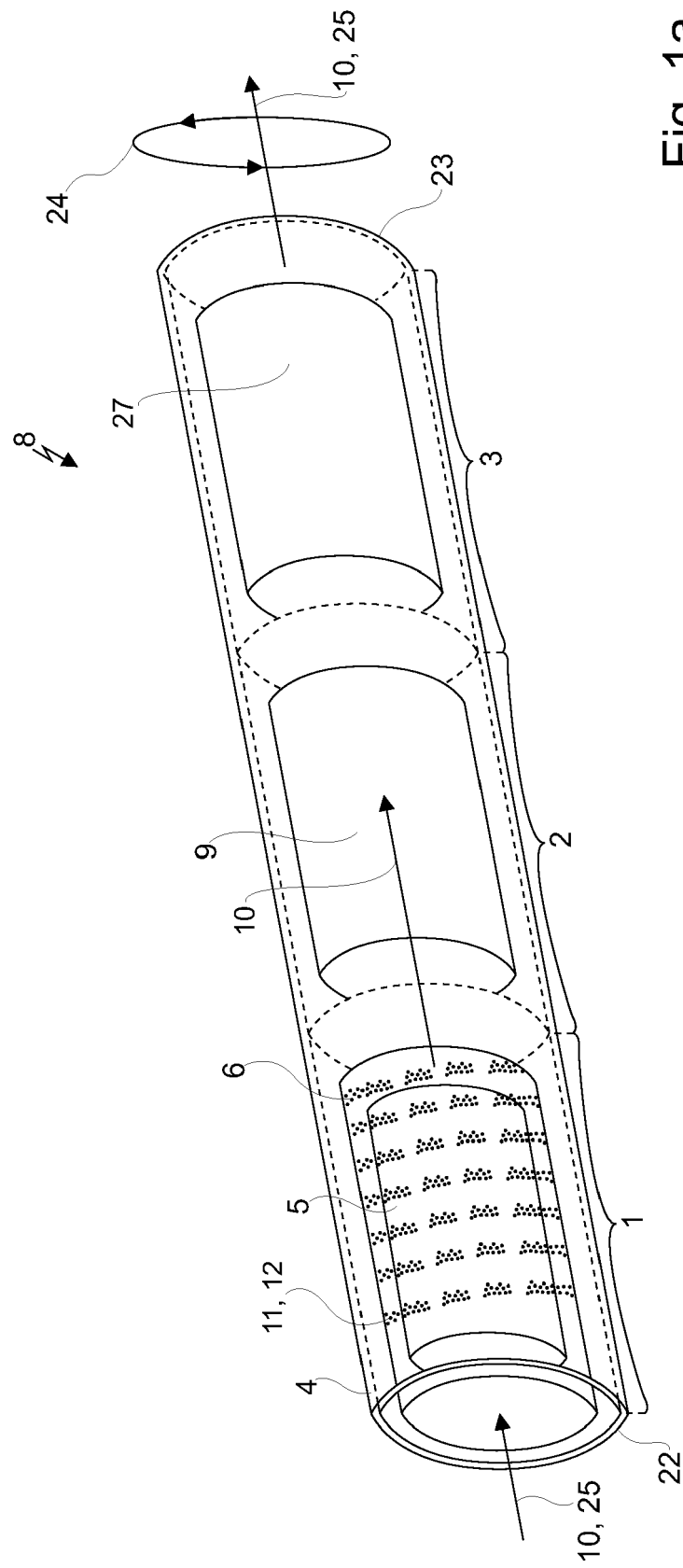


Fig. 1a

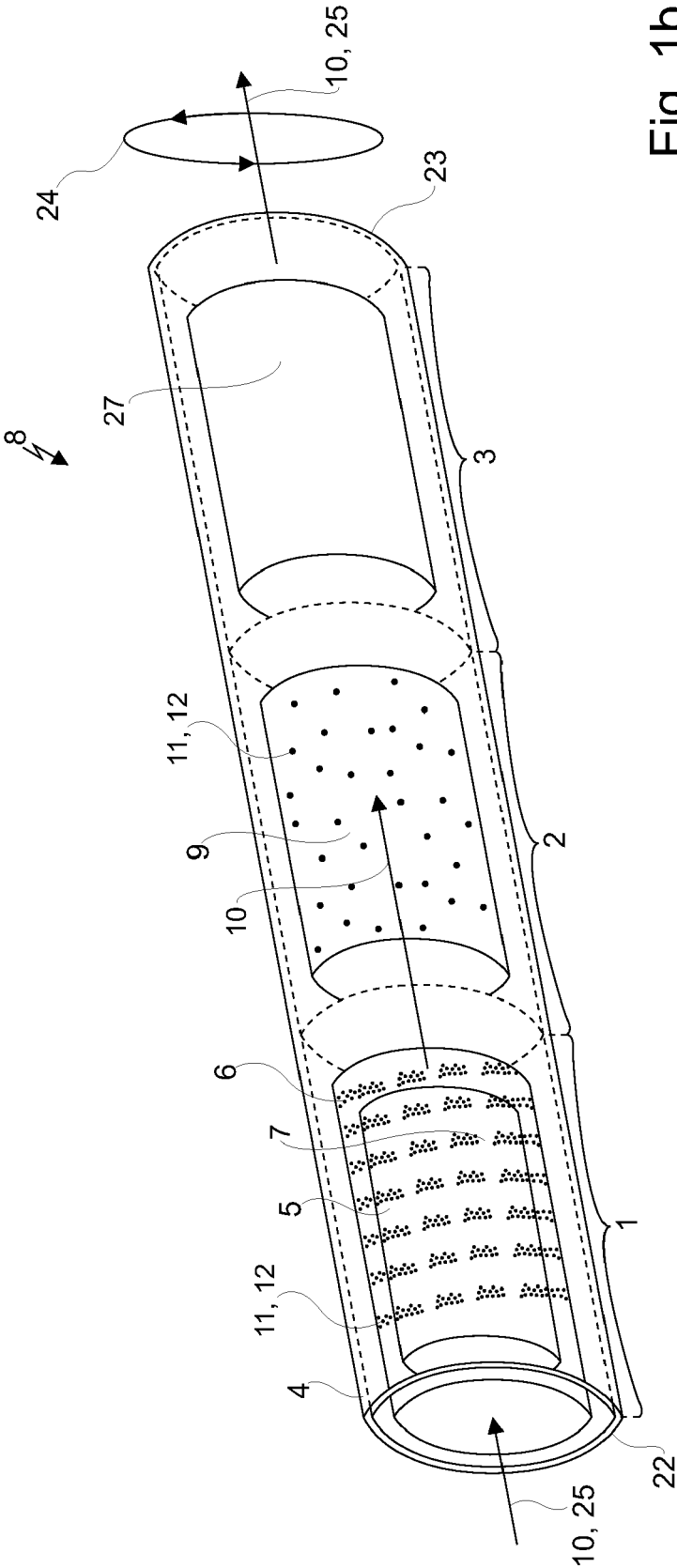


Fig. 1b

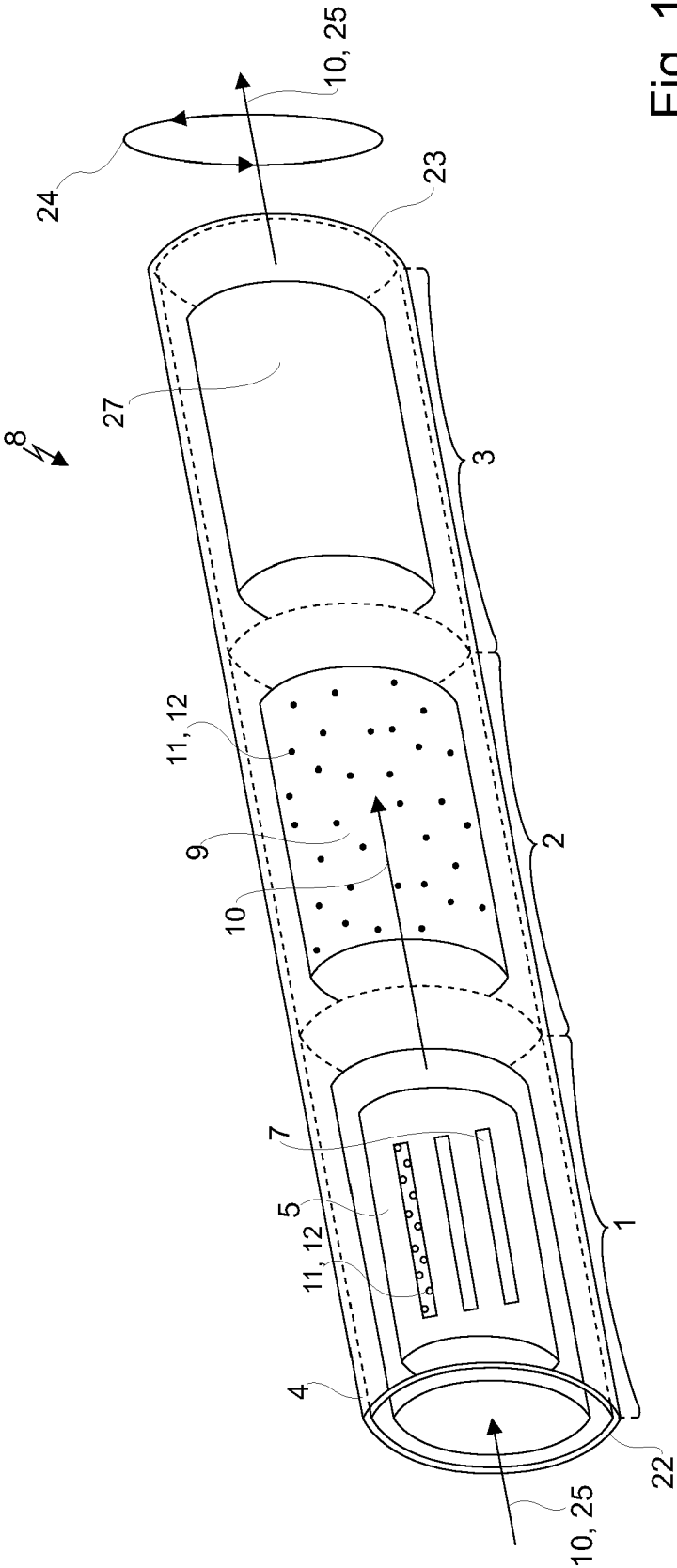


Fig. 1c

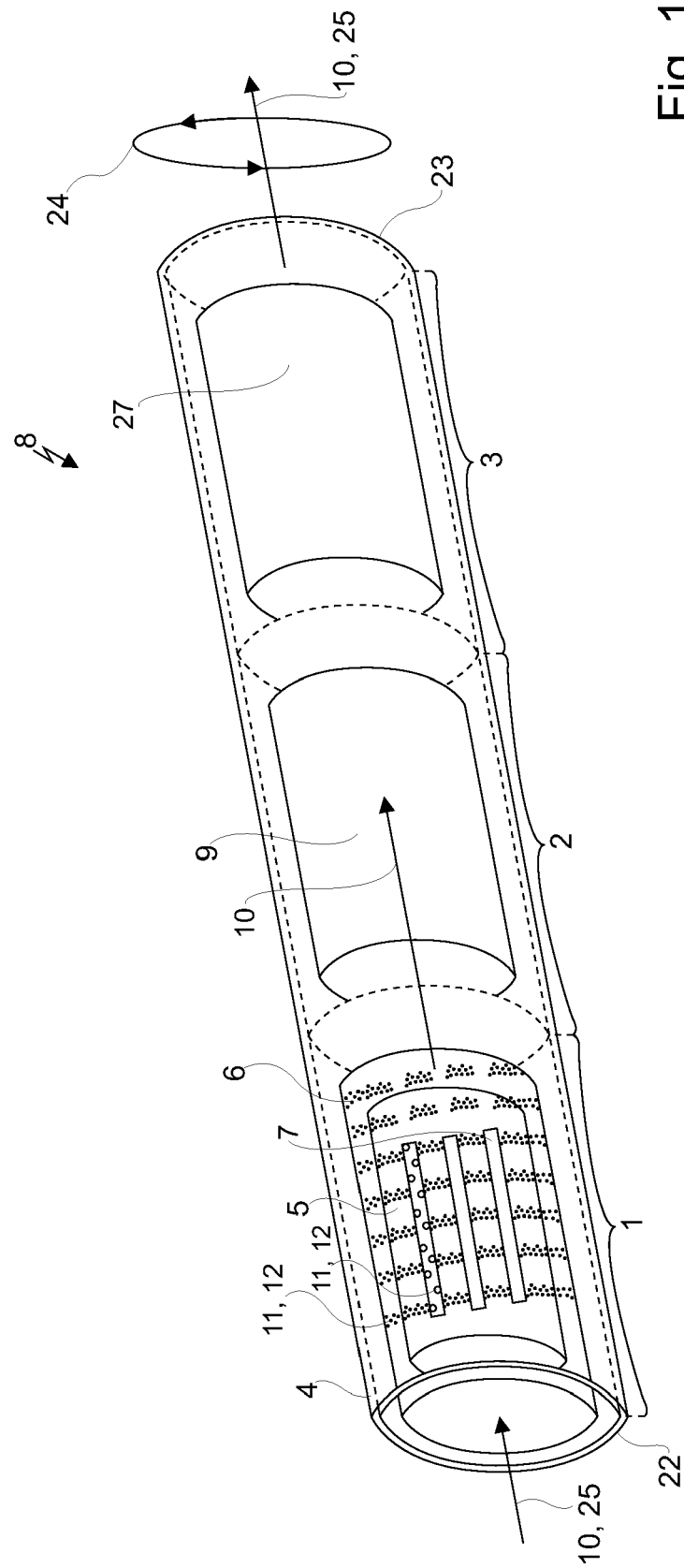
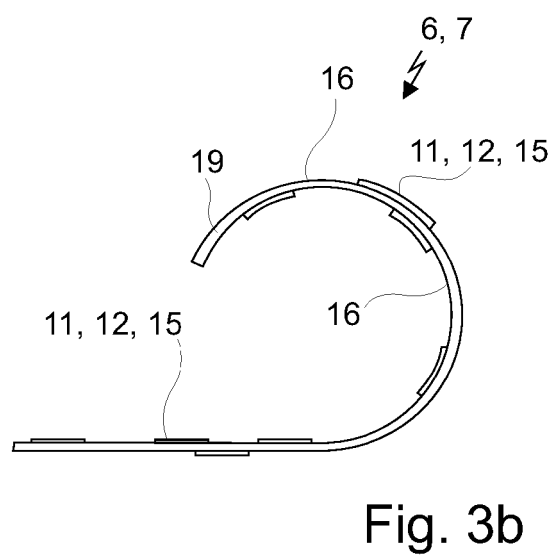
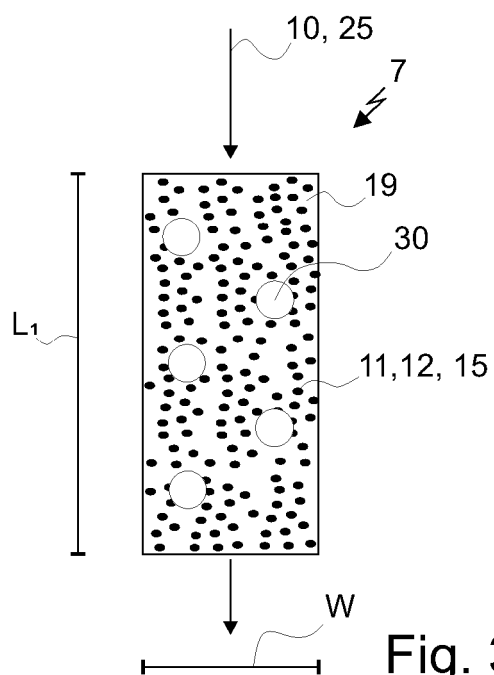
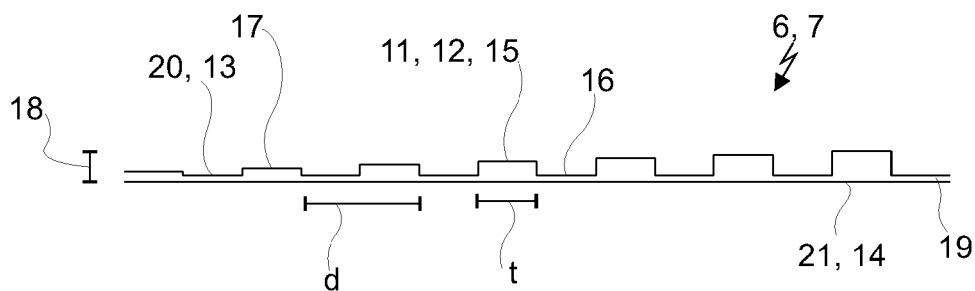
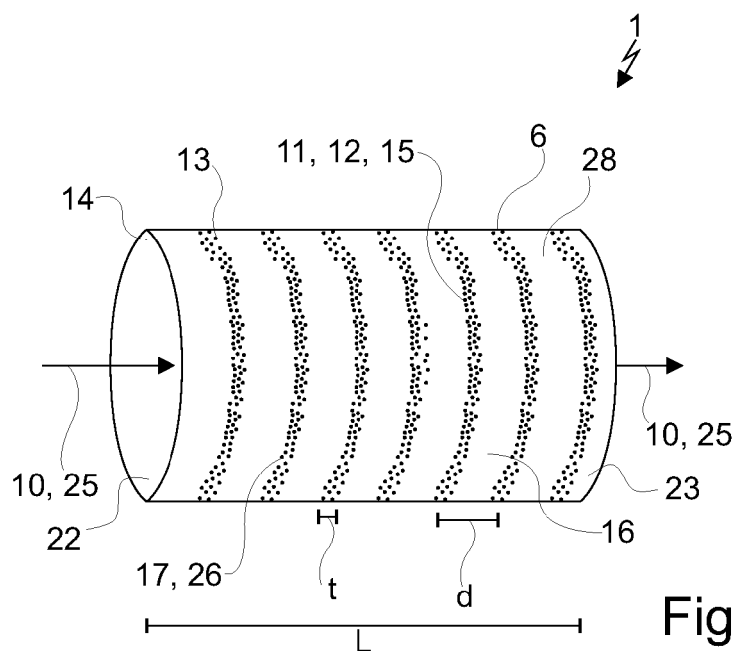


Fig. 1d



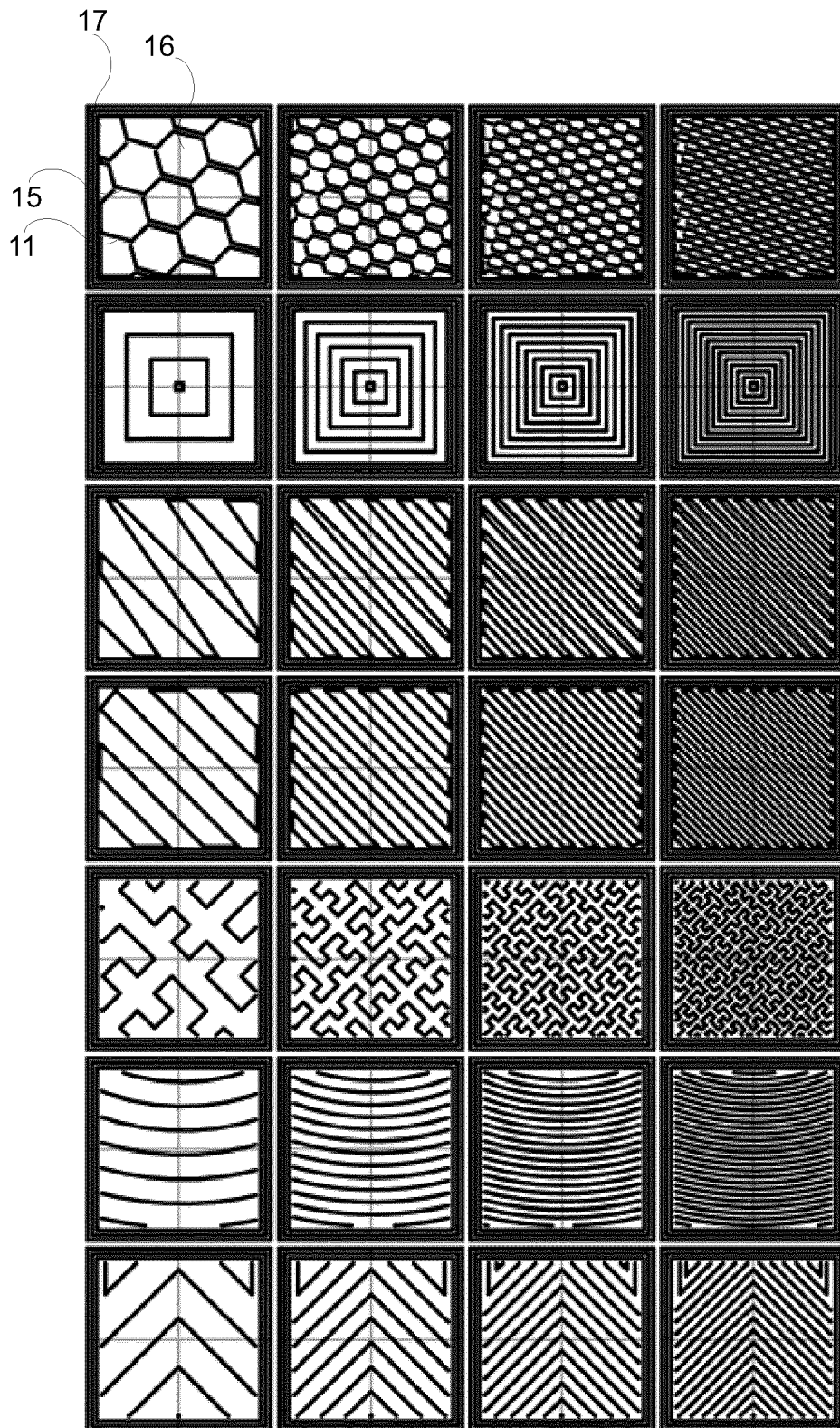


Fig. 4a

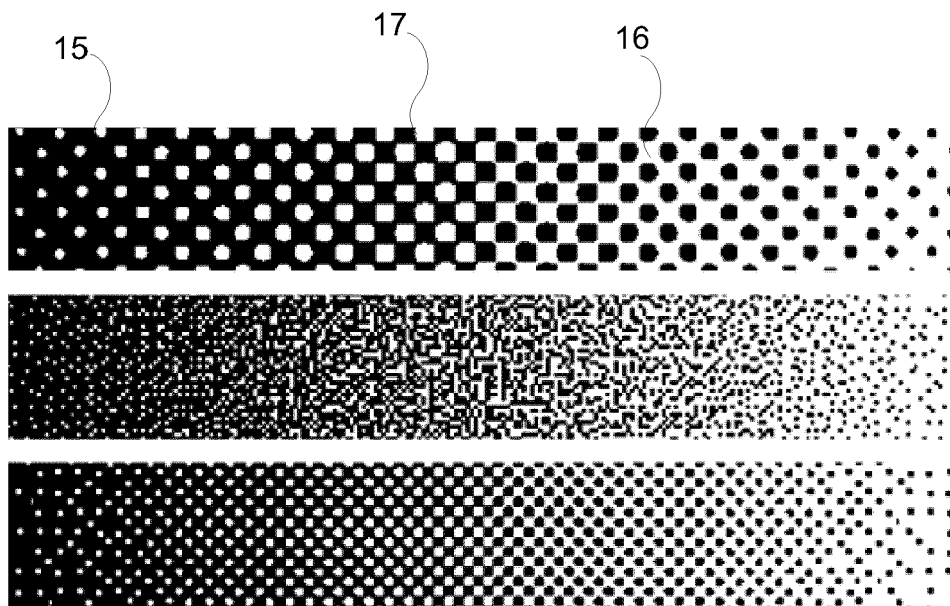


Fig. 4b

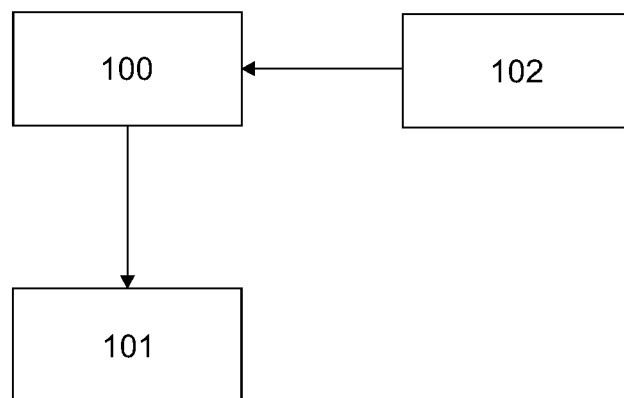


Fig. 5



## EUROPEAN SEARCH REPORT

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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                             |                                                       |                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-----------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                                                                                               | Relevant to claim                                     | CLASSIFICATION OF THE APPLICATION (IPC) |
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| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                             |                                                       |                                         |
| Place of search<br><b>Munich</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                             | Date of completion of the search<br><b>3 May 2021</b> | Examiner<br><b>Schwarzer, Bernd</b>     |
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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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