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(54) Process of manufacturing smokeless tobacco articles and smokeless tobacco article for oral consumption

(57) In a process of manufacturing smokeless tobacco articles on a rod-making device, an endless tobacco web (1a), the filler web, is shaped into an endless rod (1b), preferably by use of a funnel-like formatting device (4). Another endless web (5a), the wrapper web, is provided as a wrapper and wrapped around the endless rod (1b). The endless wrapped rod is cut into individual cylindrical portions (11).

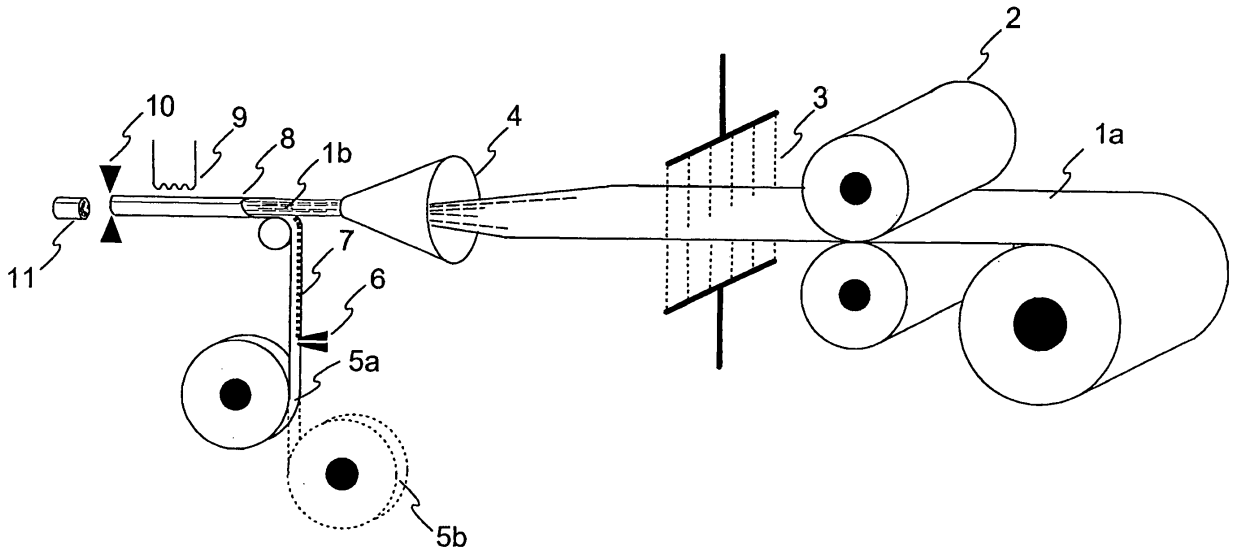

Fig. 1

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Description

[0001] The invention relates to a process of manufacturing smokeless tobacco articles and a corresponding smokeless tobacco article for oral consumption.

[0002] Manufactured smokeless tobacco is traditionally consumed in the United States and Northern Europe. Products like moist snuff or snus comprise ground tobacco which can be consumed as a moist powder or as a wrapped portion (pouch) suitable to be placed between gums and cheek.

[0003] Another form of smokeless tobacco is chewing tobacco. Typical forms used in America are Loose Leaf, Moist Plug or Twist Rolls. Plugs and Rolls are of a large size so that an appropriate portion has to be bitten off. Another type of products for chewing, so-called "Twists" or "Mini Rolls", is preportioned to the appropriate size and weight. This type is especially popular in the Scandinavian countries. It has a cylindrical shape, a diameter of approximately 5 mm and a length of about 10 mm. To manufacture such products, leaf tobacco is spun into an endless strand which is then cut into portions and treated with casings. The spinning process itself is performed manually, resulting in low production volumes and high costs. Furthermore, the use of single tobacco leaves makes the product prone to large variations as tobacco leaves can differ widely in their individual composition and taste characteristics.

[0004] The current process of producing chewing tobacco portions is described in "An old craft for a new era" by House of Oliver Twist A/S, Denmark, ISBN 87-990650-0-2, pp 37-38. Its core process step is the manual spinning of tobacco leaves into an endless strand. It is said that "Technology cannot replace the steady skill of a spinner" (ibid.).

[0005] EP 0 483 931 A1 describes a mechanical process of manufacturing chewing tobacco by winding at least one tobacco wrapper tightly and helically around a mandrel. It is neither disclosed, however, which kind of tobacco wrapper is to be used for this process nor is there any detailed description of the technical implementation of the process. Another disadvantage is that this process requires additional handling for cutting single rods into smaller pieces.

[0006] Manufacturing of paper filters for filter cigarettes on a rod maker like the Hauni® KDF-2 or the Decoufle® CU-20 rod-making device is state of the art in the tobacco industry (see, e.g., US 5 074 320 or US 5 709 227).

[0007] The object of the invention is to provide smokeless tobacco articles in a more economic way and in a more homogeneous quality, compared to the smokeless tobacco articles produced by the state-of-the-art methods indicated above.

[0008] This object is achieved by a process of manufacturing smokeless tobacco articles having the features of claim 1 and by a smokeless tobacco article for oral consumption having the features of claim 23. Claim 20 is directed to the use of a tobacco article manufactured according to the above process as a smokeless tobacco article. Advantageous versions of the invention follow from the dependent claims.

[0009] In the invention, it was found that a process similar to the process of manufacturing paper filters on a rod maker as mentioned above is perfectly suited to manufacture tobacco-containing portions as required for chewing tobacco or other smokeless tobacco products. By using a rod-making device, an endless tobacco web (filler web) is shaped into an endless strand or rod, which, after wrapping, is cut into pieces (in the following called "cylindrical portions", although their shape can be different from that of a cylinder, e.g., somewhat irregular). This process is fast and economic. Providing the filler tobacco material by means of an endless tobacco web results in a very homogeneous product, in particular when the tobacco web comprises reconstituted tobacco. Moreover, modern casing application methods can be used in order to apply additives for adjusting the properties of the filler material.

[0010] The wrapped tobacco portions obtained in this way can be further processed in several ways. For example, a second wrapper can be applied, e.g., after cutting the endless rod into cylindrical portions but also during the application of the first wrapper, and the second wrapper can be sealed. In this way, e.g. cushion-shaped tobacco portions which are wrapped in water-permeable materials and resemble pouched snus or moist snuff (as currently marketed, e.g. in Sweden or in U.S.A.) can be manufactured.

[0011] More details of the invention follow from the disclosure in the claims and from the examples and embodiments presented in the following detailed description. The drawings show in

Fig. 1 a schematic representation of an embodiment of the process of manufacturing smokeless tobacco articles according to the invention,

Fig. 2 a schematic representation of an embodiment for further processing single cylindrical portions, and

Fig. 3 a schematic representation of another embodiment for further processing single cylindrical portions.

[0012] In the process illustrated in Fig. 1, a tobacco web 1a (filler web) is fed from a bobbin through an optional embossing unit 2. A casing is applied to the web 1a by spraying an additive onto the web 1a in a spraying unit 3 or by any other suitable process, e.g. by sizing. The web 1a is then led through a funnel-shaped device 4 where it is stochastically folded into a round strand 1b. Wrapping material 5a is fed from a second bobbin and a glue track 7 can be applied onto the wrapping material 5a by means of a nozzle 6. An additional wrapping material 5b can be optionally applied together with the first

wrapping material 5a. Preferably, the second wrapping material 5b (forming the outer layer of the wrapped rod) has a larger width than the first wrapping material 5a. A suitable format unit 8 is used to wrap the wrapping material 5a (or 5a and 5b) around the tobacco material strand. A heating zone 9 can be used to facilitate the gluing of the seam of the wrapper material. The endless wrapped rod is then cut into cylindrical portions 11 by cutting means 10.

[0013] In one embodiment of the invention, the cylindrical portions 11 are ready to be packed and marketed.

[0014] Another embodiment of the invention is illustrated in Fig. 2, which shows how cylindrical portions 11 obtained by using the set-up of Figure 1 can be further processed. The cylindrical portions 11 are pressed between cylindrical stamps 20 having a diameter that is slightly smaller than that of the wrapper of the cylindrical portions. By doing so, void spaces 21 are formed on both sides of the cylindrical portions (steps i), ii), iii)). By applying a suitable glue, which might also be incorporated into the wrapping material, e.g., as a hot-melt glue like Polyethylene, and by pressing the end areas (at 22) of the wrapper in the region of the void spaces 21, a cushion-like product 23 is formed which is completely encapsulated in the wrapping material (step iv). If a flat shape is to be obtained, this can be achieved by pressing the product 23 as shown in step v).

[0015] A further embodiment of the invention is illustrated in Fig. 3. Cylindrical portions 11, as obtained, e.g. by using the set-up of Figure 1, are pressed by suitable means 30 to bring them into a cylindrical shape 31 having an elliptic cross-section (steps i), ii)). A second wrapper 32 is placed over a respective portion 31 in a way that it protrudes with respect to the portion 31 on both ends (step iii)). The protruding ends of the second wrapper 32 are then sealed at 33 (step iv) to provide a cushion-shaped product 34, which is completely encapsulated in the second wrapping material 32 (step v)). It is evident that the pressing of step i) might also be carried out at a different point of the process, e.g. in combination with step iv).

[0016] Tobacco webs that are suitable for the inventive process can be obtained by tobacco reconstitution processes which are familiar to those skilled in the art, e.g. the paper-type or slurry-type process. Usable for the process are also cellulose materials that are coated with a tobacco slurry. Typically, such webs have a thickness between 0.05 and 0.5 mm. Preferably, the width of the tobacco web is in a range of 100 to 1000 mm, depending on the thickness and the diameter of the rod to be formed.

[0017] As common in the process of manufacturing paper filters, the tobacco web might also be embossed or corrugated with a suitable set of rollers, e.g., as used in the commercially available CUB-400 device (Burghart Tabaktechnik, Hamburg, Germany).

[0018] To add specific taste characteristics, casing materials can be applied to the tobacco web prior to rod formation (see Figure 1, at 3). Conventional spraying nozzles might be used to apply a liquid casing onto the upper and/or lower side of the web. Other methods comprise the use of rotating discs (as used in the SUB-01 spraying unit of Burghart Tabaktechnik, Hamburg, Germany) or size press techniques.

[0019] To obtain the required moisture content of the finished product, the use of aqueous casings is preferred. These casings may contain tasteful components known to those skilled in the art as liquorice, cocoa or flavours. Polyoles and sugars can be applied to add sweetness but also to act as humectants.

[0020] Other possible constituents comprise sweeteners, preservatives, glues, dyes, emulsifiers or thickeners.

[0021] Usable wrapping materials comprise tobacco webs of the types described above, preferably if the cylindrical portions are not intended to be processed further. Another possibility is the use of a water permeable fleece made from cellulose or modified cellulose, e.g. viscose. This type of material is preferred as the outer material for cases in which the portions are completely encapsulated. A further possibility is the use of a water-soluble film as wrapping material, preferably as the first wrapper if the product is subject to a second wrapping process as described above.

[0022] For sticking the seam of the wrapper as well as for adhering the open ends in an optional follow-up process, different gluing methods can be used. Water-based starch or PVA glues might be applied, preferably followed by a subsequent heating of the seam. It is also possible to use a hot-melt glue which is usually applied through a heated nozzle. In case of a water-permeable cellulosic web to be used as the outer wrapper, thermoplastic fibres such as polyethylene or latex binders can be incorporated into the web during its manufacture, allowing to accomplish sealing by simply applying heat and pressing.

[0023] Thus, a manifold of different products can be obtained by the inventive process. Without limiting the scope of the invention, some of these are further described in the following examples:

Example 1

[0024] A paper-type reconstituted tobacco web with a width of 250 mm was fed from a bobbin through a spraying chamber where 40% wt/wt of an aqueous casing were applied to it. The sprayed web was then fed into a Hauni® KDF-1 rod-making machine equipped with a funnel-shaped entry zone and suitable format parts to obtain a rod diameter of 6.4 mm. The rod was wrapped with a second paper-type reconstituted tobacco web having a width of 22 mm. The seam was sealed by applying a water-based PVA glue and subsequent heating. The rod was cut into portions of 10 mm length.

[0025] The finished product was evaluated by an expert panel and was regarded to be acceptable with regard to taste and physical stability when used as chewing tobacco.

Example 2

[0026] The same material and equipment as for Example 1 were used. Before application of the casing, the tobacco web was treated in an embossing unit consisting of two rolls. No difference was found with regard to final product characteristics.

Example 3

[0027] A slurry-type reconstituted tobacco web with a width of 300 mm was fed from a bobbin through a spraying unit where 3% (by weight) of water was applied. A rod of 8.0 mm diameter was formed using the same equipment as in Example 1. The rod was simultaneously wrapped with two layers, an edible film of 25 mm width as the inner layer and a porous viscose web with incorporated polyethylene fibres having a width of 27 mm as the outer layer. The seam of the outer layer was sealed by applying sufficient heat for the polyethylene to melt. The rod was cut into cylindrical portions of 20 mm length. These portions were then fed into a press with stamps of 7.5 mm diameter, where the axial ends of the portions were pressed to obtain a void space of approx. 4 mm on each end of the portion. Heated bars were then used to press and seal the ends. In this way, a cushion-like smokeless tobacco product with a double-layer wrap was obtained.

Claims

1. Process of manufacturing smokeless tobacco articles on a rod-making device, comprising the steps of

   - shaping an endless tobacco web (1a), the filler web, into an endless rod (1b), preferably by use of a funnel-like formatting device (4),
   - providing another endless web (5a), the wrapper web, as a wrapper and wrapping the endless rod (1b) with that wrapper,
   - cutting (10) the endless wrapped rod into single cylindrical portions (11).

2. Process according to claim 1, **characterized in that** the filler web (1a) is provided in one of the following basic forms: paper-type reconstituted tobacco web, slurry-type reconstituted tobacco web, cellulosic web coated with a tobacco material.

3. Process according to claim 1 or 2, **characterized in that** the seam of the wrapper wrapped around the endless rod is glued (7, 9) before performing the cutting step (10).

4. Process according to anyone of claims 1 to 3, **characterized in that** additives are applied (3) to the filler web (1a) before performing the shaping step (4).

5. Process according to claim 4, **characterized in that** the additives are applied as an aqueous solution or emulsion by sizing or spraying (3).

6. Process according to claim 4 or 5, **characterized in that** the additives comprise at least one substance selected from the substances included in the following list: water, polyols, humectants, sugars, sweeteners, preservatives, salts, acids, taste enhancers, cocoa and cocoa products, liquorice and liquorice products, thickeners, starches, emulsifiers, fibres, artificial and natural flavours, colouring agents and dyes, whiteners, glues.

7. Process according to anyone of claims 1 to 6, **characterized in that** the filler web (1a) has a thickness in the range of from 0.05 mm to 0.5 mm and a width in the range of from 100 mm to 1000 mm.

8. Process according to anyone of claims 1 to 7, **characterized in that** the wrapper web (5a) has a thickness in the range of from 0.05 mm to 0.5 mm and a width in the range of from 15 mm to 50 mm.

9. Process according to anyone of claims 1 to 8, **characterized in that** a second wrapper web (5b) is provided which is applied before performing the cutting step (10), the second wrapper web (5b) preferably being wrapped simultaneously with the wrapper web (5a).

10. Process according to claim 9, **characterized in that** the second wrapper web (5b) has a larger width than the wrapper web (5a).

11. Process according to anyone of claims 1 to 8, **characterized in that,** after performing the cutting step (10), the respective cylindrical portions (11) are provided with an outer wrapper (32).

12. Process according to claim 11, **characterized in that** the outer wrapper (32) is supplied from an endless hose that is cut to length after accomodating a respective cylindrical portion (11), the outer wrapper (32) preferably having a larger length than the cylindrical portion (11).

13. Process according to claim 11, **characterized in that** the outer wrapper (32) is supplied from a web that is wrapped around a respective cylindrical portion (11) and cut to length, the outer wrapper (32) preferably having a larger length than the cylindrical portion (11).

14. Process according to anyone of claims 11 to 13, **characterized in that** the outer wrapper contains (32) a glue, preferably a hot-melt glue.

15. Process according to anyone of claims 11 to 14, **characterized in that** the outer wrapper (32) containing a respective cylindrical portion (11) is sealed to form a single portion, preferably the outer wrapper (32) having a larger length than the cylindrical portion (11) and being sealed (33) at both ends.

16. Process according to anyone of claims 1 to 10, **characterized in that,** after performing the cutting step (10), the tobacco in the respective cylindrical portions (11) is pressed (20) in axial direction from both ends to form void spaces (21) inside the wrapper in both end regions of a respective cylindrical portion (11).

17. Process according to claim 16, **characterized in that,** after formation of the void spaces (21), the wrapper in both end regions of a respective cylindrical portion (11) is pressed and sealed (22) to form an article (23) that is closed on both axial ends.

18. Process according to anyone of claims 1 to 17, **characterized in that** a respective generally cylindrical article formed so far is pressed into an elliptic cylindrical shape or a cushion-like shape.

19. Process according to anyone of claims 1 to 18, **characterized in that** a respective tobacco article (11, 23, 34) has a length in the range of from 5 mm to 40 mm, preferably in the range of from 8 mm to 20 mm.

20. Use of a tobacco article manufactured according to anyone of claims 1 to 19 as a smokeless tobacco article (11, 23, 34).

21. Use according to claim 20, **characterized in that** the tobacco article is a chewing tobacco article (11, 23, 34).

22. Use according to claim 21, **characterized in that** the chewing tobacco article is a single chewing tobacco portion (11, 23, 34).

23. Smokeless tobacco article for oral consumption, preferably chewing, manufactured by the process defined in anyone of claims 1 to 19, comprising

- an inner portion (1b) comprising a multiple-folded tobacco web material (1a) as filler material and
- one or more wrapping layers (5a, 5b, 32).

24. Smokeless tobacco article according to claim 23, **characterized in that** the filler material comprises one of the following materials: paper-type reconstituted tobacco, slurry-type reconstituted tobacco, cellulosic web material coated with a tobacco material.

25. Smokeless tobacco article according to claim 23 or 24, **characterized in that** the filler material contains additives comprising at least one substance selected from the substances included in the following list: water, polyols, humectants, sugars, sweeteners, preservatives, salts, acids, taste enhancers, cocoa and cocoa products, liquorice and liquorice products, thickeners, starches, emulsifiers, fibres, artificial and natural flavours, colouring agents and dyes, whiteners, and glues.

26. Smokeless tobacco article according to anyone of claims 23 to 25, **characterized in that** at least one of the wrapping layers (5a, 5b, 32) is made of one of the materials selected from the following list: paper-type reconstituted tobacco, slurry-type reconstituted tobacco, cellulosic web material coated with a tobacco material, water-permeable fleece material made of cellulose or modified cellulose, water-dissolvable film.

27. Smokeless tobacco article according to anyone of claims 23 to 26, **characterized by** a generally cylindrical shape (11) with both axial ends being left unwrapped.

28. Smokeless tobacco article according to claim 27, **characterized by** a diameter in the range of from 4 mm to 20 mm, preferentially of from 5 mm to 12 mm.

29. Smokeless tobacco article according to anyone of claims 23 to 26, **characterized by** a cushion-like shape (23, 34) and being completely enclosed by at least one of the wrapping layers.

30. Smokeless tobacco article according to claim 29, **characterized by** a width and a height in the range of from 3 mm to 25 mm, preferentially of from 5 mm to 15 mm.

31. Smokeless tobacco article according to anyone of claims 23 to 30, **characterized by** a length in the range of from 5 mm to 40 mm, preferably in the range of from 8 mm to 20 mm.

32. Smokeless tobacco article according to anyone of claims 23 to 31, **characterized in that** the tobacco content is higher than 50%, preferably higher than 75%, related to dry weight.

33. Smokeless tobacco article according to anyone of claims 23 to 32, **characterized by** a nicotine content of from 0.3% to 3.5%, preferably of from 0.5% to 2.0%, related to dry weight.

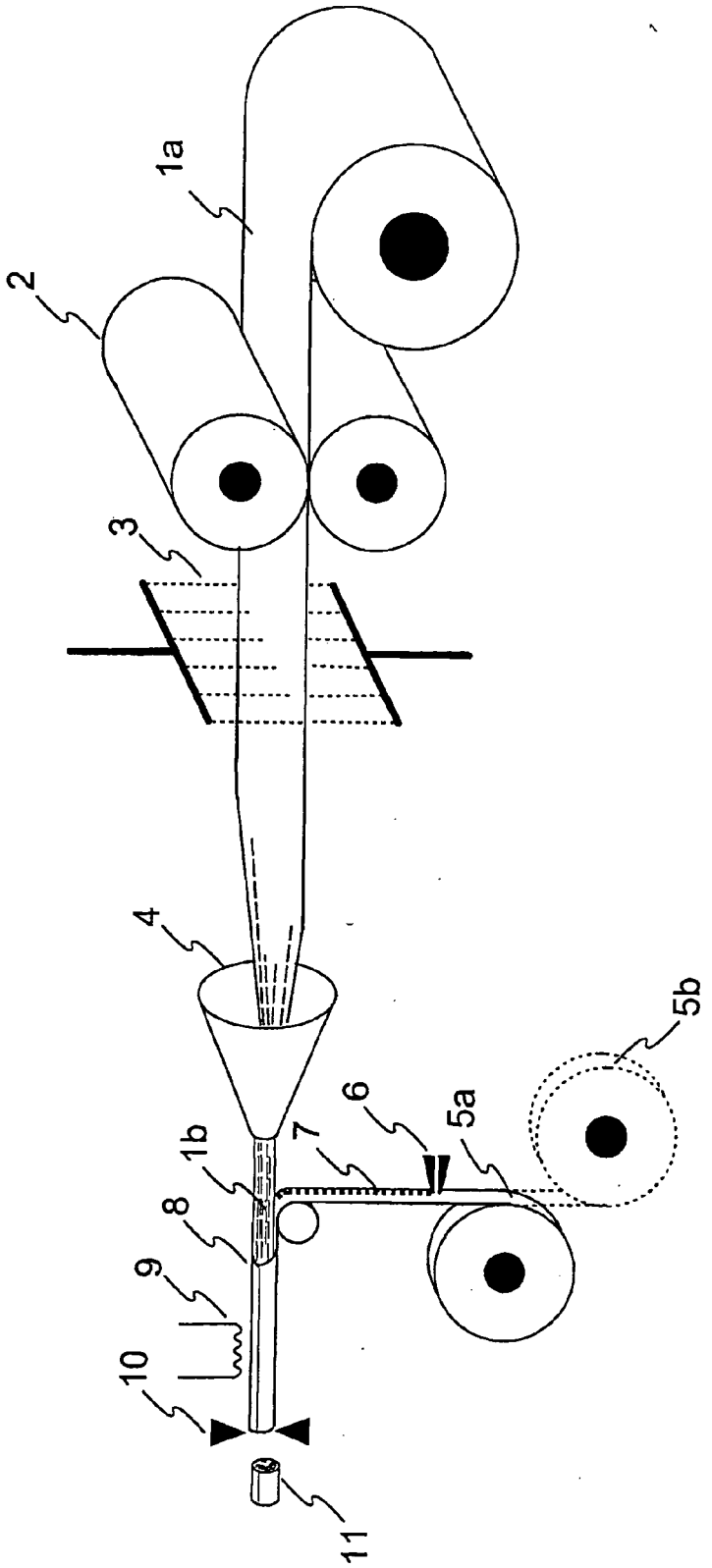

Fig. 1

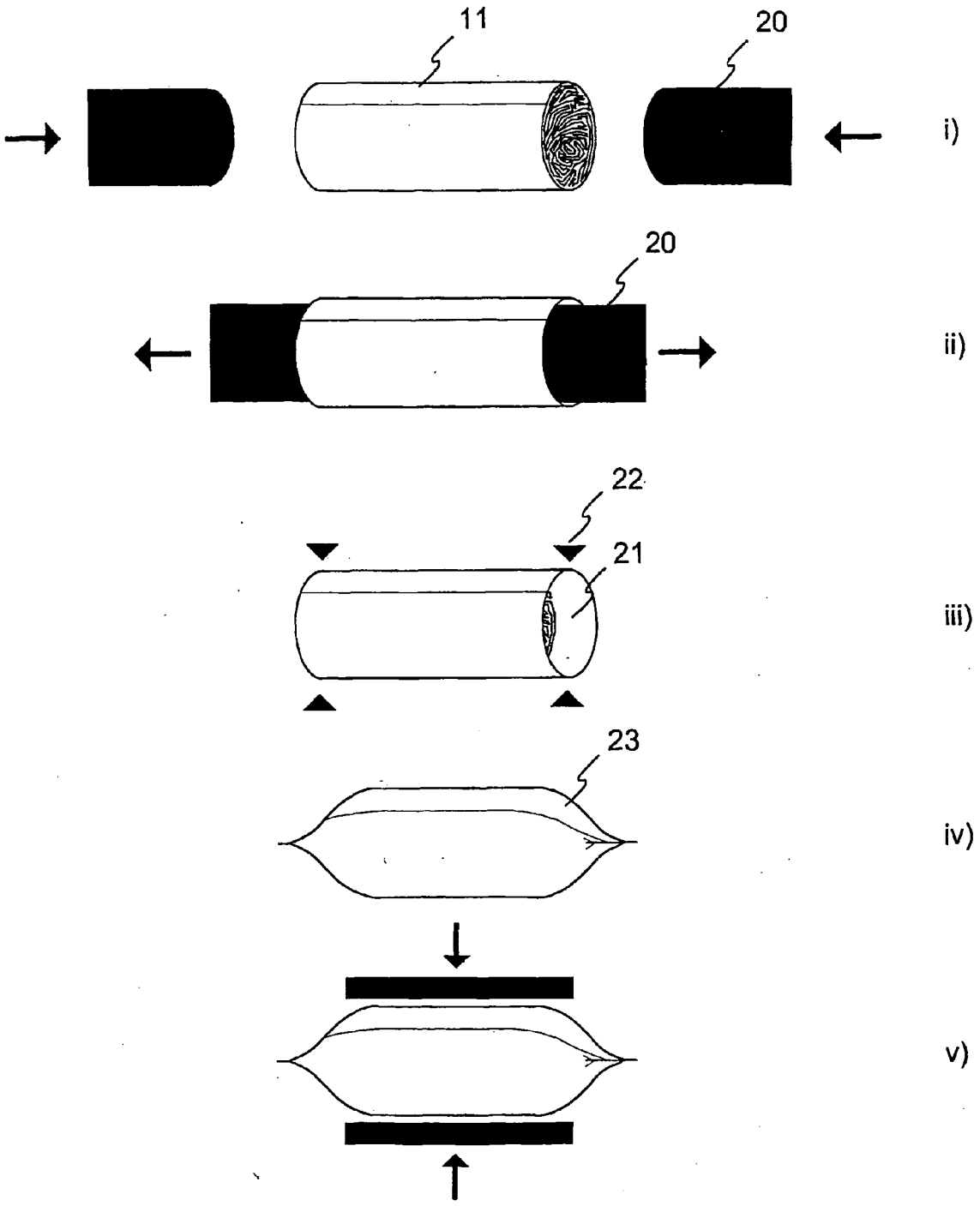

Fig. 2

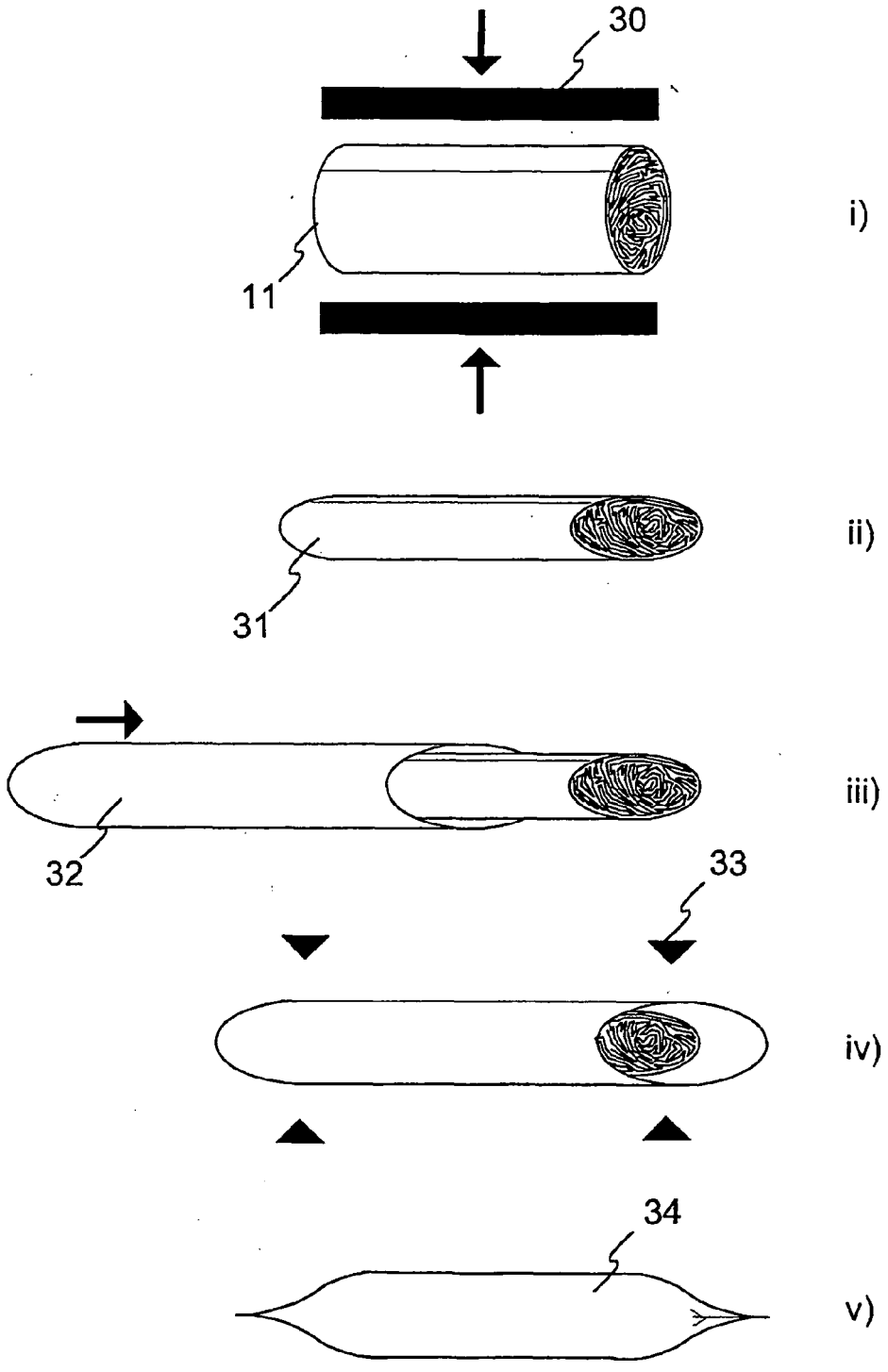

Fig. 3

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EUROPEAN SEARCH REPORT

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

Place of search	Date of completion of the search	Examiner
Munich	16 February 2009	Marzano Monterosso

CATEGORY OF CITED DOCUMENTS

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