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(54) **AEROSOL GENERATING ARTICLE
COMPRISING A HEAT-INSULATING
SLEEVE**

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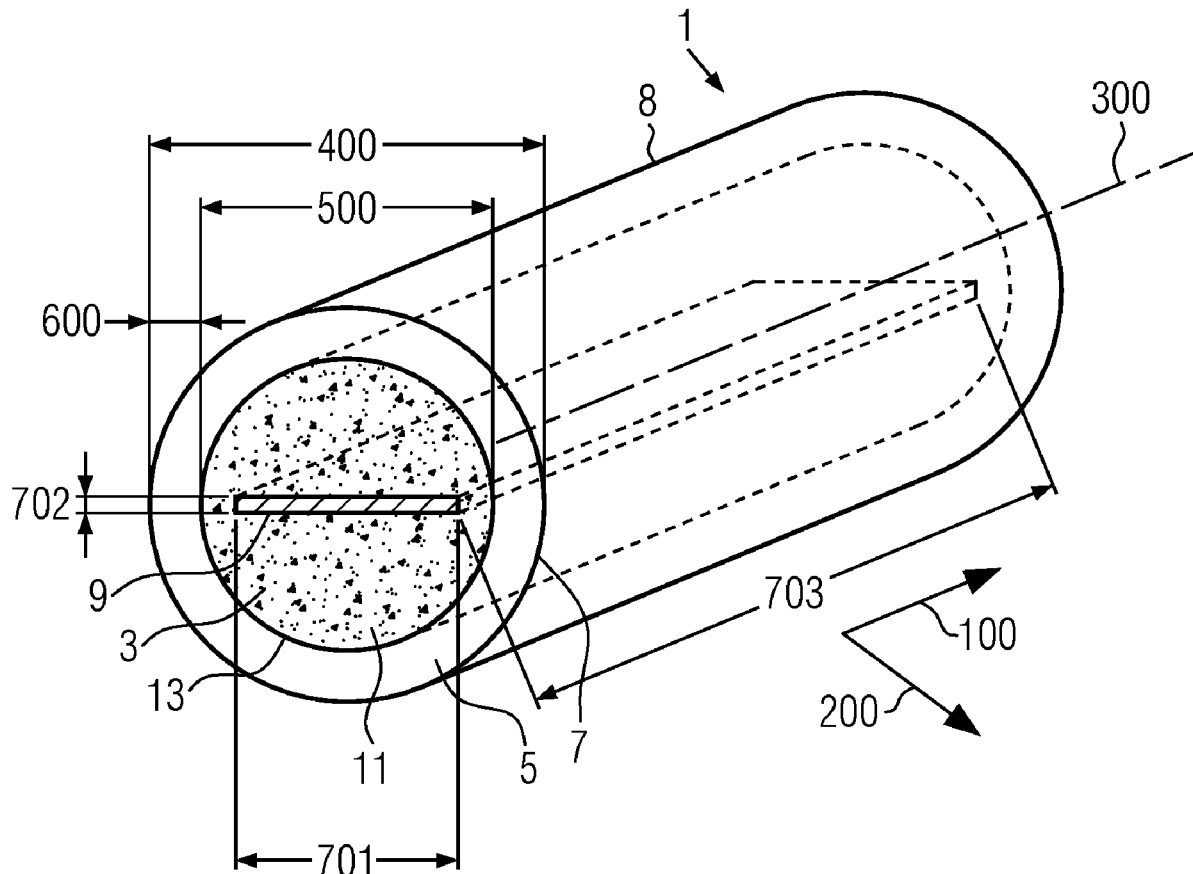
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(57) **ABSTRACT**

An aerosol-generating article is provided, configured to be electrically heated in an aerosol-generating device, the aerosol-generating article including: an inner substrate core including an aerosol-generating substrate; a heat-insulating sleeve surrounding the inner substrate core; and an outer wrapper surrounding the heat-insulating sleeve, a susceptor being arranged in the inner substrate core and the susceptor being in contact with the heat-insulating sleeve, and the susceptor being made of a sheet material. A method for manufacturing an aerosol-generating article and an apparatus for manufacturing an aerosol-generating article are also provided.



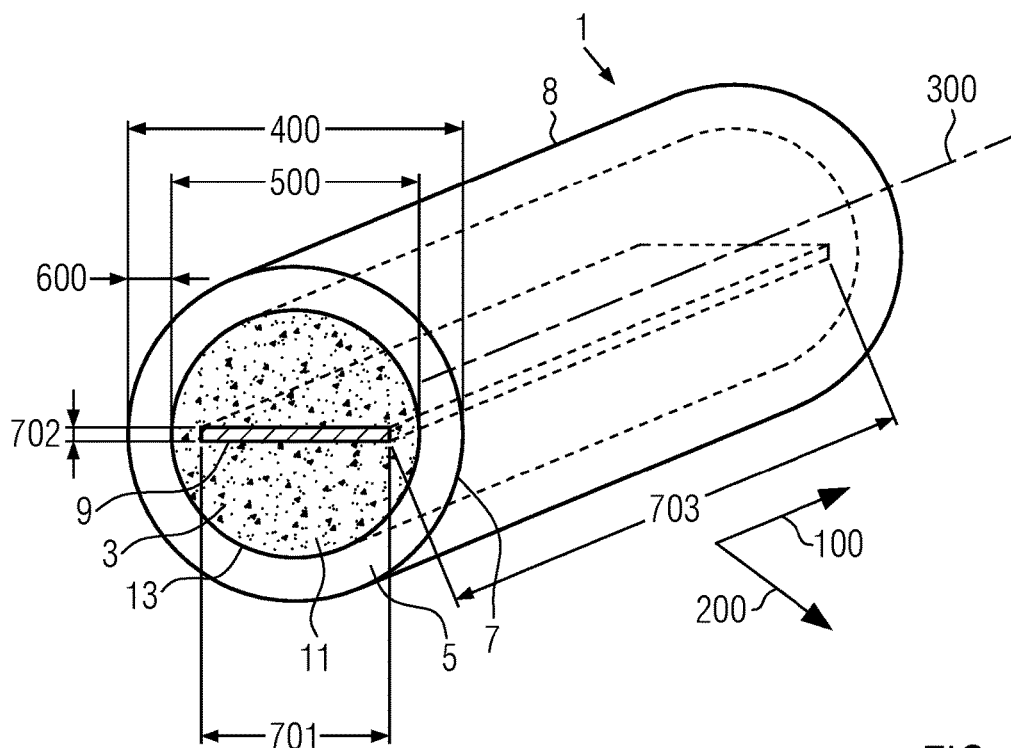


FIG. 1

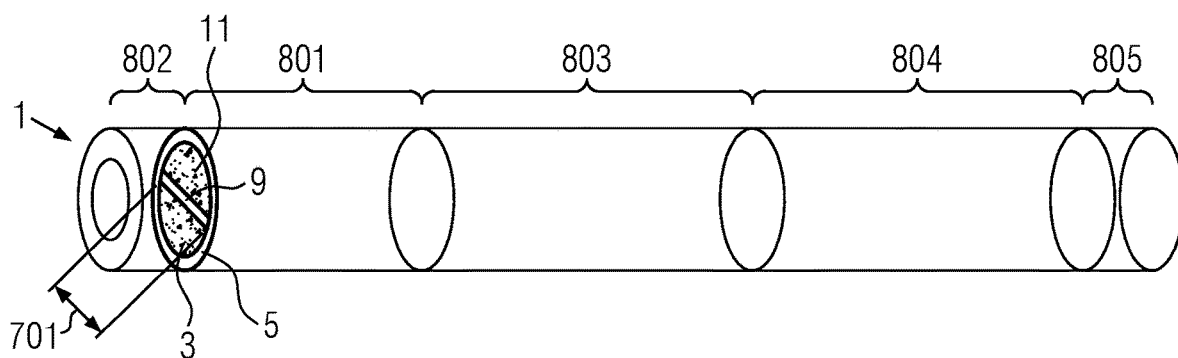


FIG. 2

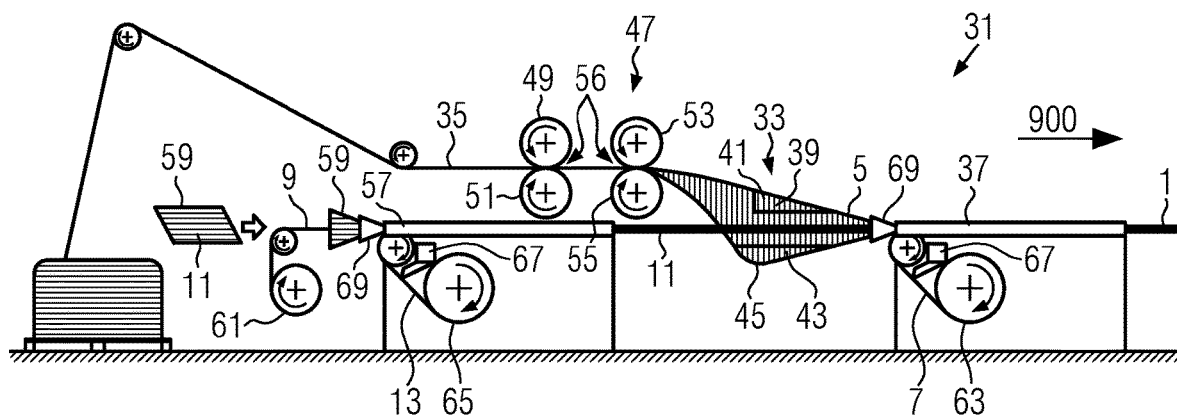


FIG. 3

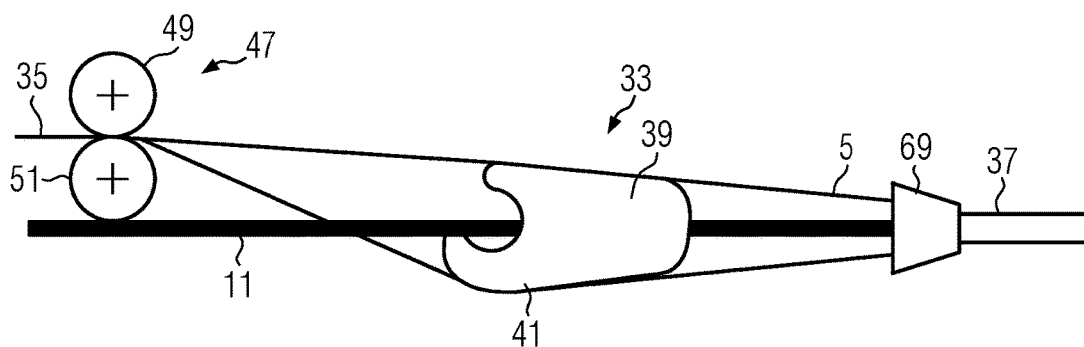


FIG. 4

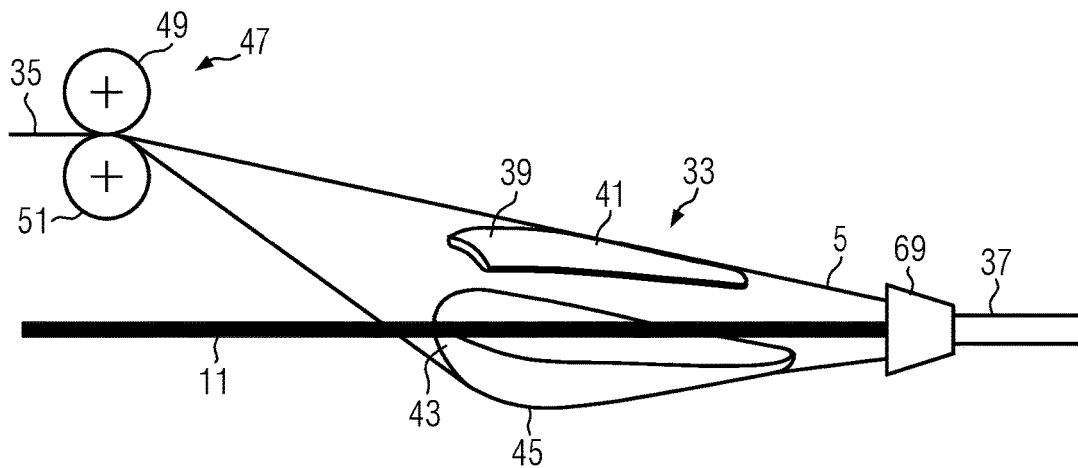


FIG. 5

**AEROSOL GENERATING ARTICLE
COMPRISING A HEAT-INSULATING
SLEEVE**

[0001] The present invention relates to an aerosol-generating article. The present invention also relates to a method for manufacturing an aerosol-generating article, an apparatus for manufacturing an aerosol-generating article and a use of acetate tow to envelope an aerosol-generating substrate of an aerosol-generating article.

[0002] WO 2018/206615 A2 discloses an aerosol-generating article comprising a substrate core having a non-circular outer cross section and a filler sleeve surrounding the substrate core.

[0003] According to a first aspect of the invention, there is provided an aerosol-generating article, adapted to be electrically heated in an aerosol-generating device. The aerosol-generating article comprises an inner substrate core. The inner substrate core comprises an aerosol-generating substrate. The aerosol-generating article comprises a heat-insulating sleeve surrounding the substrate core. The aerosol-generating article comprises an outer wrapper surrounding the heat-insulating sleeve.

[0004] In order to generate aerosol, the aerosol-generating substrate may be heated by a heating element disposed within the substrate core. The heat-insulating sleeve reduces the amount of heat dissipating from the heating element to the outer surface of the aerosol-generating article. Thus, a higher portion of the generated heat remains in the substrate core and is available for generating aerosol from the aerosol-generating substrate. Preferably, more than 90 percent of the otherwise radially dissipated thermal energy is kept inside the inner substrate core due to the heat-insulating sleeve. Accordingly, the amount of energy consumed by the heating element may be reduced due to a lower heating temperature or shorter heating cycles of the heating element. Preferably, the heating temperature of the heating element may be reduced by 20 percent, as compared to the heating temperature of a heating element of an aerosol-generating article without a heat-insulating sleeve or of an aerosol-generating article that is made entirely of aerosol-generating substrate. In particular, the heating temperature of the heating element may be set to the temperature preferred to release aerosol from the aerosol-generating substrate. Accordingly, an energy storage in an aerosol-generating device, for example an electrical battery, may be reduced in size or may be used for a longer time as compared to an aerosol-generating device adapted to be used with an aerosol-generating article without a heat-insulating sleeve or with an aerosol-generating article that is made entirely of aerosol-generating substrate. The surface of the aerosol-generating article may remain at a low temperature and possible overheating of adjacent surfaces or consumer interfaces may be prevented. In particular, the surface of the aerosol-generating article may remain at a lower temperature as compared to an aerosol-generating article without a heat-insulating sleeve. The aerosol-generating article may be at least partly inserted or connected with an aerosol-generating device and form together a "heat-not-burn" system in which aerosol-generating material is heated to release aerosol, but is not burned. In particular, a cavity or sidewalls of the aerosol-generating device in which the aerosol-generating article may be inserted are protected from elevated temperatures. The outer wrapper may cover the heat-insulating sleeve and provide a preferably haptic and optic impression of the aerosol-generating

article to the consumer. The outer wrapper may provide additional stability for the aerosol-generating article. Due to the heat-insulating sleeve, a wider range of materials for the outer wrapper may be possible, since also more heat sensitive materials may be used.

[0005] The heat-insulating sleeve may comprise porous material. Porous material may comprise a high number of open or closed pores, in particular cavities filled with ambient air. Porous material may provide an increased heat insulation compared to non-porous material due to the low thermal conductivity of air. Preferably, 50 percent of the volume of the heat-insulating sleeve may be pores. Porous material may comprise air channels, which may extend from an inner surface to an outer surface of the heat-insulating sleeve and therefore provide fluid exchange, in particular an air exchange, between a region surrounded by the heat-insulating sleeve, for example the inner substrate core, and a region outside of the heat-insulating sleeve. Further, air channels may extend from the inner of the heat-insulating sleeve to a surface without extending through the whole heat-insulating sleeve. Due to a reduced density, porous material may have a reduced weight and reduced material need compared to non-porous material with the same volume. Porous material may have an elasticity, which may allow deformation during the insertion of the aerosol-generating article into an aerosol-generating device for establishing an essentially airtight sealing along a circumferential region of the aerosol-generating article with a receptacle of the aerosol-generating device.

[0006] The heat-insulating sleeve may comprise fibrous material. Fibrous material may allow to adapt the elasticity of the heat-insulating sleeve to a preferred direction by arranging the fibers accordingly. The elasticity may be higher or lower in the direction of the fibers as compared to a perpendicular direction. Thus, the fibers may be arranged predominantly aligned in one direction. Alternatively, the fibers may be arranged without any preferred direction to retrieve an essentially constant elasticity in all directions. Fibrous material may comprise a higher number of air channels as compared to non-fibrous material and may therefore provide an accordingly higher air exchange between an inner and outer region of the heat-insulating sleeve. Accordingly, a longitudinal airflow through the inner substrate core may be supplemented with an airflow through the heat-insulating sleeve in an essentially transversal or radial direction from the outer side of the heat-insulating sleeve into the inner substrate core. This may be useful in order to mix a heated longitudinal airflow with ambient air. The longitudinal direction is defined as the direction along the longest extent of the aerosol-generating article. The radial or transversal direction is defined as the direction perpendicular to the longitudinal direction.

[0007] The fibrous material may comprise fibers predominantly extending in a longitudinal direction of the aerosol-generating article. With this arrangement of the fibers, the heat-insulating sleeve may be easily stretched in the longitudinal direction, which may be beneficial during the production process, but nevertheless provides stability in the circumferential direction. An airflow may be establishable within the heat-insulating sleeve in the longitudinal direction parallel to a heated airflow through the inner substrate core, wherein both airflows can be merged at a predefined position outside of the inner substrate core, for example in a cooling section or mouthpiece section. The heated aerosol contain-

ing airflow and an ambient airflow may be mixed downstream of the inner substrate core. Accordingly, a cooled airflow may be reached, for example at a mouthpiece, without adversely affecting the aerosol generation within the inner substrate core.

[0008] The heat-insulating sleeve may have the same or a higher elasticity than the inner substrate core. This may create a stable structure of the aerosol-generating article and at the same time an elasticity at the outer surface. An elasticity at the outer surface may be able to establish an airtight sealing with a receptacle of an aerosol-generating device and additionally a pleasant haptic for a consumer. Further, a tight enveloping of the inner substrate core by the heat-insulating sleeve during production is possible.

[0009] The heat-insulating sleeve may comprise acetate tow. Acetate tow is a porous and stretchable material, which may be processed to comprise a favored thickness and elasticity. Acetate tow is heat-insulating.

[0010] The acetate tow may be a multidirectional expanded acetate tow web. The acetate tow may be stored and delivered in a compressed form and be expanded during a manufacturing process. After expansion to a desired thickness and elasticity, the inner substrate core may be enveloped with the acetate tow.

[0011] The heat-insulating sleeve may have a radial layer thickness varying by less than 10 percent from its mean radial thickness, namely the radial layer thickness may be in a range of 90 percent to 110 percent of the mean radial thickness. Preferably, the radial layer thickness of the heat-insulating sleeve may vary by less than 5 percent from its mean radial thickness. The heat-insulating sleeve may have a substantially constant circumferential layer thickness. Preferably, the cross section of the heat-insulating sleeve may be a circular ring. Further, the cross section of the heat-insulating sleeve may be oval or rectangular. Preferably, where oval or rectangular, the heat-insulating sleeve may have a maximum variability of the layer thickness in the above-specified ranges. The layer of material that forms the heat-insulating sleeve may envelope the substrate core without any overlapping regions. The heat-insulating sleeve may provide a substantially equal heat insulation in all radial directions, namely in directions perpendicular to the longitudinal direction. Further, the mechanical stability, for example a stiffness or elasticity, may be substantially equal in all radial directions.

[0012] The heat-insulating sleeve may be tubular. In particular, the heat-insulating sleeve may be a hollow tube extending in the longitudinal direction of the aerosol-generating article. This may provide symmetric mechanical stability in all radial directions. The heat insulation may be substantially constant in all radial directions. Further, the aerosol-generating article may be formed as a rod, which can be inserted in a corresponding receptacle of an aerosol-generating device without the need for radial alignment or orientation.

[0013] The heat-insulating sleeve and the substrate core may be coaxially aligned. The aerosol-generating article may be symmetrical in all radial directions. Thus, the heat insulation may be constant in all radial directions. Further, a symmetrical mechanical stability may be provided to the substrate core.

[0014] The substrate core may have an outer cross-section, whose major diameter is less than 5 percent longer than its minor diameter, and the heat-insulating sleeve has an inner

cross-section corresponding to the outer cross-section of the substrate core. The substrate core may have a circular outer cross-section and the heat-insulating sleeve may have a circular inner cross-section corresponding to the circular outer cross-section of the substrate core.

[0015] The substrate core may have an elliptical cross-section, wherein the major axis of the ellipse is more than 5 percent, and preferably less than 30 percent, longer than the minor axis. The heat-insulating sleeve may have an elliptical inner cross-section corresponding to the outer elliptical cross-section of the substrate core.

[0016] The inner substrate core may be in contact with the heat-insulating sleeve around its circumference, which may provide mechanical stability to the aerosol-generating article. The heat insulation may be homogeneous in all radial directions. Further, an air exchange through a porous heat-insulating sleeve may be homogeneous in all radial directions.

[0017] The aerosol-generating article may have a diameter of between 4.5 millimeter to 9 millimeter, preferably of between 6 millimeter to 8 millimeter.

[0018] A susceptor may be arranged in the substrate core. The susceptor may be of any material in which a current, in particular an eddy current, can be induced by magnetic induction and therefore causes heating of the material. The material may be electrically conductive, in particular ferromagnetic material, in particular iron, aluminum or steel. An excitation coil and an energy source may be disposed in an aerosol-generating device in which the aerosol-generating article can be inserted during use. Thus, no external heating element has to be inserted into the substrate core. Further, the aerosol-generating article may be disposed including the susceptor after use. Accordingly, each susceptor is only used for one aerosol-generating article, which may prevent degradation of the susceptor, as compared to repeated use of external heating elements.

[0019] The susceptor may be made of a sheet material. Sheet material may be beneficial for inducing electrical currents by magnetic induction. Further, a large surface may be created. A large surface may be beneficial in order to distribute the heat into the substrate core due to the extended contact area of the susceptor with the aerosol-generating substrate. The susceptor formed as sheet material may be relatively rigid with respect to a bending force that can typically occur during manufacturing or handling for consumption of the aerosol-generating article.

[0020] The susceptor may have a width of between 2.5 millimeter to 6 millimeter, preferably of between 3.5 millimeter to 5.5 millimeter. The width of the susceptor may correspond to the diameter of the inner substrate core.

[0021] The susceptor may have a thickness of between 0.075 millimeter to 0.4 millimeter, preferably of between 0.1 millimeter to 0.3 millimeter.

[0022] The susceptor may be a plate, strip, sheet, band or foil. These shapes provide a flat and elongated surface, which may result in an expedient contact area with the aerosol-generating substrate. Further, these shapes are beneficial for material handling during the manufacturing process, especially for processing the susceptor material as a continuous strip or web. The susceptor may accordingly be flexible in a longitudinal direction, a transversal direction (or both a longitudinal direction and a transversal direction).

[0023] The susceptor may be in contact with the heat-insulating sleeve. This may stabilize the position of the

susceptor, in particular prevent a lateral movement of the susceptor. Accordingly, the susceptor remains fixed at a predefined position. When the aerosol-generating article is arranged in an aerosol-generating device, this may enable that the susceptor is reliably positioned at a location in the aerosol-generating device where the magnetic field of a magnetic induction coil is most dense or most homogenous or both. This may enable efficient heating of the susceptor or a homogenous temperature profile in the susceptor or both. Accordingly, spots of temperatures that exceed a target temperature value are avoided at the susceptor and the aerosol-generating material may be heated at the intended predefined temperatures. The susceptor may have a width, which corresponds essentially to the diameter of the inner substrate core or the circular inner cross-section of the heat-insulating sleeve, respectively. Due to the aerosol-generating substrate present in the inner substrate core, a rotation of the susceptor may be prevented. Accordingly, the susceptor may be positioned along the diameter of the inner substrate core respective of the heat-insulating sleeve and intersecting the central longitudinal axis of the aerosol-generating article.

[0024] The substrate core may have a diameter of between 3.5 millimeter to 7 millimeter, preferably of between 4.5 millimeter to 6 millimeter. The susceptor may have a corresponding width. This may stabilize the position of the susceptor, in particular prevent a lateral movement of the susceptor. Alternatively, the susceptor may have a width that is up to 20 percent less than the diameter of the substrate core. Accordingly, there may be a gap between the susceptor and the heat-insulating sleeve or a wrapper enveloping the substrate core.

[0025] The substrate core may comprise gathered tobacco material. The tobacco material may comprise one or more of: powder, granules, pellets, shreds, spaghettis, strips or sheets containing one or more of: tobacco leaf, fragments of tobacco ribs, reconstituted tobacco, homogenised tobacco, extruded tobacco and expanded tobacco. Optionally, the tobacco plug may contain additional tobacco or non-tobacco volatile flavour compounds to be released upon heating of the tobacco plug. Optionally, the tobacco plug may also contain capsules that, for example, include the additional tobacco or non-tobacco volatile flavour compounds. Such capsules may melt during heating of the tobacco plug. Alternatively, or in addition, such capsules may be crushed prior to, during, or after heating of the tobacco plug.

[0026] Where the tobacco plug comprises homogenised tobacco material, the homogenised tobacco material may be formed by agglomerating particulate tobacco. The homogenised tobacco material may be in the form of a sheet. The homogenised tobacco material may have an aerosol-former content of greater than 5 percent on a dry weight basis. The homogenised tobacco material may alternatively have an aerosol former content of between 5 percent and 30 percent by weight on a dry weight basis. Sheets of homogenised tobacco material may be formed by agglomerating particulate tobacco obtained by grinding or otherwise comminuting one or both of tobacco leaf lamina and tobacco leaf stems; alternatively, or in addition, sheets of homogenised tobacco material may comprise one or more of tobacco dust, tobacco fines and other particulate tobacco byproducts formed during, for example, the treating, handling and shipping of tobacco. Sheets of homogenised tobacco material may comprise one or more intrinsic binders, that is tobacco endog-

enous binders, one or more extrinsic binders, that is tobacco exogenous binders, or a combination thereof to help agglomerate the particulate tobacco. Alternatively, or in addition, sheets of homogenised tobacco material may comprise other additives including, but not limited to, tobacco and non-tobacco fibres, aerosol-formers, humectants, plasticisers, flavourants, fillers, aqueous and non-aqueous solvents and combinations thereof. Sheets of homogenised tobacco material are preferably formed by a casting process of the type generally comprising casting a slurry comprising particulate tobacco and one or more binders onto a conveyor belt or other support surface, drying the cast slurry to form a sheet of homogenised tobacco material and removing the sheet of homogenised tobacco material from the support surface.

[0027] The substrate core may comprise crimped and gathered tobacco material. The crimped tobacco material may be a crimped cast leaf sheet. The crimped tobacco material may provide additional stability to the aerosol-generating article. The susceptor may be stably positioned within the crimped tobacco material in the inner substrate core.

[0028] The substrate core may comprise shredded tobacco material. Thus, a susceptor may be included in the inner substrate core during the production process without the need to follow a certain orientation of the tobacco material. Same holds for the insertion of an external heating element directly before consumption of the aerosol-generating article by a consumer.

[0029] The substrate core may comprise fibrous sensorial media, preferably with fibers extending in longitudinal direction. This may beneficially influence an airflow, since air channels may be formed by the fibrous sensorial media. Air channels may be formed in the longitudinal direction by the fibers extending accordingly.

[0030] The outer wrapper may be formed by a pliable sheet material. This may facilitate to tightly envelope the heat-insulating sleeve. Accordingly, the outer wrapper may be prevented from moving with respect to the heat-insulating sleeve. In particular, the outer wrapper may be prevented from slipping of the heat-insulating sleeve. Preferably, the connection of the heat-insulating sleeve and the outer wrapper may be free of adhesive.

[0031] The outer wrapper may be formed of paper or metal foil or plastic foil or a combination thereof. Paper material is light weighted, easy to process and may be easily formed with imprints on the outer surface. Metal foil may reflect heat from the inner substrate core. Metal foil may prevent the aerosol-generating article from being accidentally lit by a match or a lighter. Plastic foil may comprise elasticity in order to be tightly wrapped around the heat-insulating sleeve. A combination of two or more materials and accordingly an outer wrapper comprising two or more layers may be beneficial to combine the respective advantages.

[0032] The outer wrapper may be made of a porous material. This may facilitate an air exchange from or into the heat-insulating sleeve. Accordingly, an airflow through the outer wrapper and through the heat-insulating sleeve may be established. Thereby, the airflow through the heat-insulating sleeve may be radial and into the inner substrate core or longitudinal in the direction to a cooling section or mouthpiece section. Accordingly, heated fluid or air in the inner

substrate core or a cooling section or a mouthpiece section may be mixed with ambient air.

[0033] The aerosol-generating article may comprise an inner wrapper arranged in between the substrate core and the heat-insulating sleeve and surrounding the substrate core. This may additionally stabilize the inner substrate core, in particular during the production process.

[0034] The inner wrapper may be formed of paper or metal foil or plastic foil or a combination thereof. The material may be chosen in order to further adjust the heat insulation or the air permeability or both. Paper material may provide an additional enclosure and therefore stabilization of the inner substrate core while preserving an air permeability. A metal foil may provide heat insulation. Metal foil may prevent air exchange from the inner substrate core through the heat-insulating sleeve, even if an open-porous material is used for the heat-insulating sleeve. A combination of two or more materials for an inner wrapper comprising two or more layers may combine the aforementioned properties.

[0035] The inner wrapper may be made of a porous material. This may render the inner wrapper air permeable and may provide an adjustability for the air permeability.

[0036] According to a second aspect of the present invention, there is provided a method for manufacturing an aerosol-generating article. The method comprises the steps of conveying an aerosol-generating substrate through a sleeve converging device in a conveying direction; supplying a heat-insulating material to the sleeve converging device, such that the heat-insulating material is arranged circumferentially around the aerosol-generating substrate in the sleeve converging device; and converging the heat-insulating material to form a heat-insulating sleeve around the aerosol-generating substrate. The method steps may be performed in this order. The method steps may be performed at least partially in parallel. The method may be performed in a continuous process, in particular producing an endless or continuous aerosol-generating article, which may be cut into single aerosol-generating articles of a desired length in a following method step. An aerosol-generating article comprising at least two coaxially aligned layers can thus be efficiently produced in continuous production process. Preferably, a tubular rod may be continuously produced.

[0037] The method may comprise the step of wrapping the heat-insulating sleeve with an outer wrapper. Thus, a three-layered aerosol-generating article with coaxial layers can be produced in a continuous way. This step may comprise applying adhesive in order to keep the outer wrapper fixedly wrapped around the heat-insulating sleeve. In particular, the outer wrapper may be wrapped around the heat-insulating sleeve and have an overlapping part at which the two overlapping ends of the outer wrapper are glued together. Alternatively, the outer wrapper may be glued directly on the heat-insulating sleeve, whereby overlapping parts of the outer wrapper can be omitted.

[0038] The heat-insulating material may comprise or consist of acetate tow. Acetate tow may comprise beneficial heat-insulating characteristics. Further, acetate tow is a flexible material and can be processed in a continuous production process.

[0039] The method may comprise the step of distributing the heat-insulating material equally circumferentially in the sleeve converging device to form a heat-insulating sleeve of substantially constant thickness. An equally shaped aerosol-

generating article, namely an aerosol-generating article which is symmetric in a radial direction, may be formed. Preferably, the aerosol-generating article may be formed as a tubular rod. Thus, the heat insulation characteristics may be constant along the circumference of the aerosol-generating article.

[0040] The heat-insulating material may be supplied in one single stream of heat-insulating material to the sleeve converging device. Thus, a continuous production of the aerosol-generating articles is possible. The single stream can be fanned out in order to be subsequently laid around the aerosol-generating substrate.

[0041] The heat-insulating material may be supplied in two or more separate streams of heat-insulating material to the sleeve converging device. Thus, the heat-insulating sleeve may be formed by putting together the separate streams in the converging device. Accordingly, it may be sufficient to fan out the single separate streams only to a minor extent. One stream can be laid over a first half of the aerosol-generating substrate and the other stream can be laid over a second half of the aerosol-generating substrate.

[0042] The step of supplying a heat-insulating material may comprise guiding the heat-insulating material along a guiding system. This may bring the heat-insulating material in a preferred form and position, in particular in a form of a truncated cone, a hollow tube, or the like. These forms may still be open along a side in a longitudinal direction, in particular in a conveying direction. This form can subsequently be laid around the aerosol-generating substrate in the sleeve converging device, where it completely encloses the aerosol-generating substrate, namely the inner substrate core.

[0043] The heat-insulating material may be guided along a guide surface of the guiding system, wherein the guide surface faces away from the aerosol-generating substrate. In particular, the normal vectors of the guide surface do not intersect with the aerosol-generating substrate. Accordingly, the guide surface provides a counter force against the heat-insulating material away from the aerosol-generating substrate. Thus, the heat-insulating material may be guided around the aerosol-generating substrate and envelope the aerosol-generating substrate subsequently. The heat-insulating material may be guided along the guide surface of the guiding system under tension. This guiding may comprise a stretching of the heat-insulating material. The tension in the heat-insulating material may be reduced in the sleeve converging device. This may lead to a gathering of the heat-insulating material such that same circumferentially encloses the substrate core. The gathered heat-insulating material may provide heat insulation.

[0044] The method may comprise the step of arranging a susceptor, in particular in the form of a continuous profile of a susceptor, in the aerosol-generating substrate. Thus, a continuous or endless aerosol-generating article may be produced that comprises the heating element for heating the aerosol-generating substrate. The endless aerosol-generating article may then be cut into aerosol-generating articles having the length as it is used by the consumer.

[0045] The method may comprise the step of arranging a susceptor, in particular in the form of individual susceptor segments, in the aerosol-generating substrate. Arranging a susceptor in the form of individual susceptor segments in the aerosol-generating substrate enables positioning of the susceptor laterally and longitudinally within the inner substrate

core. The susceptor segments may comprise a length, which is smaller than the longitudinal length of the inner substrate core. Accordingly, the susceptor segments may be arranged with a distance to each other in the continuous aerosol-generating substrate. The continuous aerosol-generating article may be cut into pieces of single aerosol-generating articles of which each comprises one susceptor segment. The susceptor segment may have a smaller longitudinal length than the inner substrate core.

[0046] The method may comprise the step of converging aerosol-generating material and a susceptor to form the aerosol-generating substrate with an embedded susceptor. The aerosol-generating substrate may be the inner substrate core of the aerosol-generating article. By arranging the susceptor in the aerosol-generating material and converging both susceptor and aerosol-generating material, the susceptor may be placed at a preferred position in the aerosol-generating material and this position may stably be kept. Since the susceptor does not have to be inserted in the aerosol-generating substrate in a subsequent production step or before use of the aerosol-generating article by a consumer, the aerosol-generating material is not negatively impacted, for example dislocated by the insertion step.

[0047] The method may comprise the step of wrapping the aerosol-generating material with an inner wrapper. This may support the structure and shape of the aerosol-generating material, which preferably includes the susceptor. This step may comprise applying adhesive in order to keep the inner wrapper fixedly wrapped around the aerosol-generating material. In particular, the inner wrapper may be wrapped around the aerosol-generating material and have an overlapping part at which the two overlapping ends of the inner wrapper are glued together. Alternatively, the inner wrapper may be glued directly onto the aerosol-generating material, whereby overlapping parts of the inner wrapper can be omitted.

[0048] According to a third aspect of the present invention, there is provided an apparatus for manufacturing an aerosol-generating article comprising a guiding system for forming a heat-insulating sleeve of heat-insulating material, and a sleeve converging device for enveloping an aerosol-generating substrate with the heat-insulating sleeve. Thus, an aerosol-generating article comprising an inner substrate core of aerosol-generating material, which is coaxially surrounded by a heat-insulating sleeve, may be produced. The guiding system may guide the heat-insulating material around the aerosol-generating substrate. The guiding system may comprise a section with an increasing diameter in a conveying or production direction with respect to a central longitudinal axis and a section with a decreasing diameter in the conveying or production direction. The apparatus may be adapted to manufacture the aerosol-generating article in a continuous process. Further, the apparatus may produce a continuous, in particular endless, rod. The continuous rod may subsequently be cut into aerosol-generating articles with a length for use by the consumer.

[0049] The apparatus may further comprise a wrapper supplying device for supplying an outer wrapper to be wrapped around the heat-insulating sleeve. Thus, an aerosol-generating article comprising an inner substrate core and two coaxial layers, namely the heat-insulating sleeve and the outer wrapper is obtained. The wrapper supplying device may feed the outer wrapper into the sleeve converging device, so that the enveloping of the substrate core with the

heat-insulating sleeve and the wrapping with the outer wrapper is both at least partially performed by the sleeve converging device.

[0050] The guiding system may comprise a guide element providing a guide surface along which the heat-insulating material for forming the heat-insulating sleeve is guided, wherein the guide surface extends around an angle of at least 180 degrees. Thus, the heat-insulating material may be positioned around at least of one half of a strand of aerosol-generating material. The subsequent device may then envelope the aerosol-generating material by converging the heat-insulating material. The guiding system may be formed convex with respect to a central longitudinal axis. The guiding system may be formed convex with respect to a strand of aerosol-generating material extending essentially along a central longitudinal axis.

[0051] The guiding system may comprise a first guide element and a second guide element, each providing a respective guide surface along which the heat-insulating material for forming the heat-insulating sleeve is guided. The two guide elements may be arranged, such that the heat-insulating sleeve is brought into a position essentially around a strand of aerosol-generating material. The two guide elements may be arranged at laterally opposite sides of a strand of aerosol-generating material. The strand of aerosol-generating material may be arranged in between the first and second guide element. The first and second guide element may be in a distance to each other. Either one or both of the first guide element and the second guide element may have the shape of a tear, pear, drop or shoulder.

[0052] The sleeve converging device may comprise a funnel. The funnel may guide the heat-insulating sleeve into the sleeve converging device.

[0053] The apparatus may comprise a substrate converging device for forming the aerosol-generating substrate in the form of a rod. The substrate converging device may be adapted to crimp a cast leave sheet of tobacco and form a rod. The substrate converging device may be adapted to form a rod of gathered tobacco. The substrate converging device may be adapted to form a rod of aerosol-generating substrate including a susceptor arranged within the substrate.

[0054] The substrate converging device may comprise a funnel. The funnel may guide the aerosol-generating substrate into the substrate converging device.

[0055] The apparatus may comprise an expansion device comprising a first pair of expansion rollers adapted to guide the heat-insulating material through the nip between the pair of first rollers. This may apply force from opposite sides to a web of heat-insulating material for expanding the heat-insulating material. Thus, the heat-insulating material may be expanded to an increased thickness. The heat-insulating material may be in a compressed state previous to the expansion device. The expansion device may further comprise a second pair of expansion rollers adapted to guide the heat-insulating material through the nip between the pair of second rollers, wherein the second pair of expansion rollers may be arranged consecutively to the first pair of expansion rollers for expanding the web of heat-insulating material. Thus, the expansion may be performed in a two-step process. Additionally, a tension may be applied between the first pair of expansion rollers and the second pair of expansion rollers, for example by different rotation speeds of the first pair of expansion rollers with respect to the second pair of

expansion rollers. Thus, a high grade of expansion of the heat-insulating material may be achieved.

[0056] The expansion rollers may be profiled rollers to form a profile into the web of heat-insulating material.

[0057] According to a fourth aspect of the present invention there is provided a use of acetate tow to envelope an aerosol-generating substrate of an aerosol-generating article, to reduce heat-dissipation from a heating element in the aerosol-generating substrate to the outer surface of the aerosol-generating article. Thus, energy consumption of the heating element may be reduced. Further, it may be prevented that the outer surface of the aerosol-generating article reaches a temperature that is unpleasant for a consumer or which is unfavorable for an adjacent material, for example of an aerosol-generating device, in which the aerosol-generating article is inserted during use.

[0058] The heating element may be a susceptor provided as part of the aerosol-generating article. Accordingly, no external heating element needs to be inserted before use and no aerosol-generating material is displaced.

[0059] The heating element may be a heating blade, provided as part of a separate heating device, wherein the heating blade is inserted in the aerosol-generating substrate for heating the aerosol-generating article. The inner substrate core may be free of a susceptor. This may simplify the production process of the aerosol-generating article, since no susceptor needs to be embedded into the inner substrate core.

[0060] The aerosol-generating article according to the first aspect of the invention may be manufactured by the method according to the second aspect of the invention. The apparatus for manufacturing an aerosol-generating article according to the third aspect of the invention may be used to manufacture an aerosol-generating article according to the first aspect of the invention. The apparatus for manufacturing an aerosol-generating article according to the third aspect of the invention may be used for a method according to the second aspect of the invention. The use of acetate tow according to the fourth aspect of the invention may be in an aerosol-generating article according to the first aspect of the invention.

[0061] The invention is defined in the claims. However, below there is provided a non-exhaustive list of non-limiting examples. Any one or more of the features of these examples may be combined with any one or more features of another example, embodiment, or aspect described herein.

[0062] Example Ex1: Aerosol-generating article, adapted to be electrically heated in an aerosol-generating device, wherein the aerosol-generating article comprises an inner substrate core comprising an aerosol-generating substrate, a heat-insulating sleeve surrounding the substrate core, and an outer wrapper surrounding the heat-insulating sleeve.

[0063] Example Ex2: Aerosol-generating article according to Example Ex1, wherein the heat-insulating sleeve comprises porous material.

[0064] Example Ex3: Aerosol-generating article according to any one of Examples Ex1 to Ex2, wherein the heat-insulating sleeve comprises fibrous material.

[0065] Example Ex4: Aerosol-generating article according to Example Ex3, wherein the fibrous material comprises fibers predominantly extending in a longitudinal direction of the aerosol-generating article.

[0066] Example Ex5: Aerosol-generating article according to any one of Examples Ex1 to Ex4, wherein the heat-insulating sleeve has the same or a higher elasticity than the inner substrate core.

[0067] Example Ex6: Aerosol-generating article according to any one of Examples Ex1 to Ex5, wherein the heat-insulating sleeve comprises acetate tow.

[0068] Example Ex7: Aerosol-generating article according to Example Ex6, wherein the acetate tow is a multidirectional expanded acetate tow web.

[0069] Example Ex8: Aerosol-generating article according to any one of Examples Ex1 to Ex7, wherein the heat-insulating sleeve has a radial layer thickness varying less than 10 percent.

[0070] Example Ex9: Aerosol-generating article according to any one of Examples Ex1 to Ex8, wherein the heat-insulating sleeve is tubular.

[0071] Example Ex10: Aerosol-generating article according to any one of Examples Ex1 to Ex9, wherein the heat-insulating sleeve and the substrate core are coaxially aligned.

[0072] Example Ex11: Aerosol-generating article according to any one of Examples Ex1 to Ex10, wherein the substrate core has an outer cross-section, whose major diameter is less than 5 percent longer than its minor diameter, and the heat-insulating sleeve has an inner cross-section corresponding to the outer cross-section of the substrate core.

[0073] Example Ex12: Aerosol-generating article according to any one of Examples Ex1 to Ex11, wherein the aerosol-generating article has a diameter of between 4.5 millimeter to 9 millimeter, preferably of between 6 millimeter to 8 millimeter.

[0074] Example Ex13: Aerosol-generating article according to any one of Examples Ex1 to Ex12, wherein a susceptor is arranged in the substrate core.

[0075] Example Ex14: Aerosol-generating article according to Example Ex13, wherein the susceptor is made of a sheet material.

[0076] Example Ex15: Aerosol-generating article according to any one of Examples Ex13 to Ex14, wherein the susceptor has a width of between 2.5 millimeter to 6 millimeter, preferably of between 3.5 millimeter to 5.5 millimeter.

[0077] Example Ex16: Aerosol-generating article according to any one of Examples Ex13 to Ex15, wherein the susceptor has a thickness of between 0.075 millimeter to 0.4 millimeter, preferably of between 0.1 millimeter to 0.3 millimeter.

[0078] Example Ex17: Aerosol-generating article according to any one of Examples Ex13 to Ex16, wherein the susceptor is a plate, strip, sheet, band or foil.

[0079] Example Ex18: Aerosol-generating article according to any one of Examples Ex13 to Ex17, wherein the susceptor is in contact with the heat-insulating sleeve.

[0080] Example Ex19: Aerosol-generating article according to any one of Examples Ex1 to Ex18, wherein the substrate core has a diameter of between 3.5 millimeter to 7 millimeter, preferably of between 4.5 millimeter to 6 millimeter.

[0081] Example Ex20: Aerosol-generating article according to any one of Examples Ex1 to Ex19, wherein the substrate core comprises gathered tobacco material, preferably crimped and gathered tobacco material.

[0082] Example Ex21: Aerosol-generating article according to any one of Examples Ex1 to Ex20, wherein the substrate core comprises shredded tobacco material.

[0083] Example Ex22: Aerosol-generating article according to any one of Examples Ex1 to Ex21, wherein the substrate core comprises fibrous sensorial media, preferably with fibers extending in longitudinal direction.

[0084] Example Ex23: Aerosol-generating article according to any one of Examples Ex1 to Ex22, wherein the outer wrapper is formed by a pliable sheet material.

[0085] Example Ex24: Aerosol-generating article according to any one of Examples Ex1 to Ex23, wherein the outer wrapper is formed of paper or metal foil or plastic foil or a combination thereof.

[0086] Example Ex25: Aerosol-generating article according to any one of Examples Ex1 to Ex24, wherein the outer wrapper is made of a porous material.

[0087] Example Ex26: Aerosol-generating article according to any one of Examples Ex1 to Ex25, further comprising an inner wrapper arranged in between the substrate core and the heat-insulating sleeve and surrounding the substrate core.

[0088] Example Ex27: Aerosol-generating article according to Example Ex26, wherein the inner wrapper is formed of paper or metal foil or plastic foil or a combination thereof.

[0089] Example Ex28: Aerosol-generating article according to any one of Examples Ex26 to Ex27, wherein the inner wrapper is made of a porous material.

[0090] Example Ex29: Method for manufacturing an aerosol-generating article, the method comprising the steps of:

[0091] conveying an aerosol-generating substrate through a sleeve converging device in a conveying direction;

[0092] supplying a heat-insulating material to the sleeve converging device, such that the heat-insulating material is arranged circumferentially around the aerosol-generating substrate in the sleeve converging device; and

[0093] converging the heat-insulating material to form a heat-insulating sleeve around the aerosol-generating substrate.

[0094] Example Ex30: Method according to example Ex29, comprising the step of wrapping the heat-insulating sleeve with an outer wrapper.

[0095] Example Ex31: Method according to any one of Examples Ex29 to Ex30, wherein the heat-insulating material comprises acetate tow.

[0096] Example Ex32: Method according to any one of Examples Ex29 to Ex31, comprising the step of distributing the heat-insulating material equally circumferentially in the sleeve converging device to form a heat-insulating sleeve of substantially constant thickness.

[0097] Example Ex33: Method according to any one of Examples Ex29 to Ex32, wherein the heat-insulating material is supplied in one single stream of heat-insulating material to the sleeve converging device.

[0098] Example Ex34: Method according to any one of Examples Ex29 to Ex33, wherein the heat-insulating material is supplied in two or more separate streams of heat-insulating material to the sleeve converging device.

[0099] Example Ex35: Method according to any one of Examples Ex29 to Ex34, wherein the step of supplying a heat-insulating material comprises guiding the heat-insulating material along a guiding system.

[0100] Example Ex36: Method according to Example Ex35, wherein the heat-insulating material is guided along a guide surface of the guiding system, wherein the guide surface faces away from the aerosol-generating substrate.

[0101] Example Ex37: Method according to any one of Examples Ex29 to Ex36, comprising the step of arranging a susceptor, in particular in the form of a continuous profile of a susceptor, in the aerosol-generating substrate.

[0102] Example Ex38: Method according to any one of Examples Ex29 to Ex36, comprising the step of arranging a susceptor, in particular in the form of individual susceptor segments, in the aerosol-generating substrate.

[0103] Example Ex39: Method according to any one of Examples Ex29 to Ex38, comprising the step of converging aerosol-generating material and a susceptor to form the aerosol-generating substrate with an embedded susceptor.

[0104] Example Ex40: Method according to any one of Examples Ex29 to Ex39, comprising the step of wrapping the aerosol-generating material with an inner wrapper.

[0105] Example Ex41: Apparatus for manufacturing an aerosol-generating article comprising

[0106] a guiding system for forming a heat-insulating sleeve of heat-insulating material, and

[0107] a sleeve converging device for enveloping an aerosol-generating substrate with the heat-insulating sleeve.

[0108] Example Ex42: Apparatus according to Example Ex41, further comprising a wrapper supplying device for supplying an outer wrapper to be wrapped around the heat-insulating sleeve.

[0109] Example Ex43: Apparatus according to any one of Examples Ex41 to Ex42, wherein the guiding system comprises a guide element providing a guide surface along which the heat-insulating material for forming the heat-insulating sleeve is guided, wherein the guide surface extends around an angle of at least 180 degrees.

[0110] Example Ex44: Apparatus according to any one of Examples Ex41 to Ex43, wherein the guiding system comprises a first guide element and a second guide element, each providing a respective guide surface along which the heat-insulating material for forming the heat-insulating sleeve is guided.

[0111] Example Ex45: Apparatus according to any one of Examples Ex41 to Ex44, wherein the sleeve converging device comprises a funnel.

[0112] Example Ex46: Apparatus according to any one of Examples Ex41 to Ex44, further comprising a substrate converging device for forming the aerosol-generating substrate in the form of a rod.

[0113] Example Ex47: Apparatus according to Example Ex46, wherein the substrate converging device comprises a funnel.

[0114] Example Ex48: Apparatus according to any one of Examples Ex41 to Ex47, further comprising an expansion device comprising a first pair of expansion rollers adapted to guide the heat-insulating material through a nip between the pair of first expansion rollers.

[0115] Example Ex49: Apparatus according to Example Ex48, wherein the expansion device further comprises a second pair of expansion rollers, arranged consecutively to the first pair of expansion rollers, for expanding the web of heat-insulating material.

[0116] Example Ex50: Apparatus according to any one of Examples Ex48 to Ex49, wherein the expansion rollers are profiled rollers to form a profile into the web of heat-insulating material.

[0117] Example Ex51: Use of acetate tow to envelope an aerosol-generating substrate of an aerosol-generating article, to reduce heat-dissipation from a heating element in the aerosol-generating substrate to the outer surface of the aerosol-generating article.

[0118] Example Ex52: Use according to Example Ex51, wherein the heating element is a susceptor provided as part of the aerosol-generating article.

[0119] Example Ex53: Use according to Example Ex51, wherein the heating element is a heating blade, provided as part of a separate heating device, wherein the heating blade is inserted in the aerosol-generating substrate for heating the aerosol-generating article.

[0120] Examples will now be further described with reference to the figures.

[0121] FIG. 1 shows a perspective view of an aerosol-generating article.

[0122] FIG. 2 shows a perspective view of an aerosol-generating article with additional longitudinal elements.

[0123] FIG. 3 shows an apparatus for manufacturing an aerosol-generating article.

[0124] FIG. 4 shows a schematic representation of a one-piece guiding system.

[0125] FIG. 5 shows a schematic representation of a two-piece guiding system.

[0126] FIG. 1 shows an aerosol-generating article 1 comprising an inner substrate core 3, a heat-insulating sleeve 5 surrounding the inner substrate core 3 and an outer wrapper 7 surrounding the heat-insulating sleeve 5. The aerosol-generating article 1 has an outer surface 8. A susceptor 9 is disposed in the inner substrate core 3 in order to heat an aerosol-generating substrate 11. Between the inner substrate core 3 and the heat-insulating sleeve 5 is an inner wrapper 13 disposed, which envelopes the inner substrate core 3. The aerosol-generating article 1 has a tubular rod shape and defines a longitudinal direction 100 along its longest extension and a radial direction 200 perpendicular to the longitudinal direction 100 and extending radially outside from a central axis 300. The aerosol-generating article 1 has a diameter 400 and the inner substrate core 3 has a diameter 500. Accordingly, the heat-insulating sleeve 5 has a circumferential layer thickness 600. The circular outer cross-section of the inner substrate core 3, defined by the diameter 500 of the inner substrate core 3, equals the circular inner cross-section of the heat-insulating sleeve 5. The susceptor 9 has a width 701, a thickness 702 and a longitudinal length 703. The susceptor is formed of a sheet material and its longitudinal length 703 is higher than its width 701. The width 701 of the susceptor is greater than its thickness 702. The inner wrapper 13 and the outer wrapper 7 are made of a relatively thin material, for example a paper material, as compared to the heat-insulating sleeve 5 or the inner substrate core 3. The heat-insulating sleeve 5 has an essentially constant circular layer thickness 600.

[0127] FIG. 2 shows a perspective view of an aerosol-generating article 1 with multiple longitudinal elements 801, 802, 803, 804, 805. The aerosol-generating article 1 comprises a longitudinal element 801 comprising an inner substrate core 3 enveloped with a heat-insulating sleeve 5 and comprising a susceptor 9 disposed within the inner substrate

core 3. In this example, the width 701 of the susceptor 9 equals the diameter 500 of the inner substrate core 3 and is accordingly in contact with the heat-insulating sleeve 5. A longitudinal element 802 is disposed on a left side of the element 801. The element 802 is formed as a hollow cylindrical tube and may serve as a spacer to a bottom surface of a receptacle of an aerosol-generating device in which the aerosol-generating article 1 is inserted. Further, element 802 may limit the airflow through the aerosol-generating article 1 depending on its inner diameter. An element 803 is disposed on a right side of element 801. Element 803 is another hollow tube element for example formed of an acetate tow. Element 803 serves as cooling element to cool the heated airflow coming from the aerosol-generating substrate 11 of element 801. Element 803 may comprise a porous structure and mix the heated airflow with ambient air. A mouthpiece element 804 and a filter element 805 adjoin right of element 803. The mouthpiece element 804 is preferably formed of a moisture resistant material. The filter element 805 is preferably formed of acetate tow and filters the airflow.

[0128] FIG. 3 shows an apparatus 31 for manufacturing an aerosol-generating article 1 comprising a guiding system 33 for forming a heat-insulating sleeve 5 of heat-insulating material 35, and a sleeve converging device 37 for enveloping an aerosol-generating substrate 11 with the heat-insulating sleeve 5. The guiding system 33 comprises a first guide element 39 with a first guide surface 41 and a second guide element 43 with a second guide surface 45. The heat-insulating material 35 is guided along the outer first and second guiding surfaces 41, 45 for forming the heat-insulating sleeve 5 around the aerosol-generating substrate 11. Therefore, the heat-insulating material 11 is continuously conveyed through an expansion device 47 in a conveying direction 900. The expansion device 47 comprises a first pair of expansion rollers 49, 51 and a second pair of expansion rollers 53, 55, arranged consecutively to the first pair of expansion rollers 49, 51, expanding the web of heat-insulating material 35. The heat-insulating material 35 is guided through nips 56 between the first pair of expansion rollers 49, 51 and between the second pair of expansion rollers 53, 55.

[0129] The apparatus 31 further comprises a substrate converging device 57 for forming the aerosol-generating substrate 11 in the form of a rod. The aerosol-generating substrate 11 may initially be existent as a cast leaf sheet 59 and is crimped together by the substrate converging device 57. A continuous profile of susceptor 9 is supplied by a susceptor supplying device 61 into the aerosol-generating substrate 11, respectively the cast leaf sheet 59. In the substrate converging device 57 the susceptor 9 is arranged in the aerosol-generating substrate 11, and accordingly in the inner substrate core 3 of the final aerosol-generating article 1. A first wrapper supplying device 63 supplies an outer wrapper 7 to be wrapped around the heat-insulating sleeve 5 in the sleeve converging device 37. A second wrapper supplying device 65 supplies an inner wrapper 13 to be wrapped around the aerosol-generating substrate 11, respectively the inner substrate core 3 in the substrate converging device 57. An adhesive supplying device 67 applies adhesive onto the inner wrapper 13 and the outer wrapper 7. Thus, the inner wrapper 13 is fixed to the aerosol-generating substrate 11 and the outer wrapper 7 is fixed to the heat-insulating sleeve 5.

[0130] The sleeve converging device 37 and the substrate converging device 57 comprise each a funnel 69 to guide the materials into the devices 37, 57.

[0131] FIG. 4 shows a schematic representation of a one-piece guiding system 33, which comprises only one first guide element 39. The first guide element 39 extends at an angle of 180 degrees or more around the aerosol-generating substrate 11 in order to guide the heat-insulating material 35 around the aerosol-generating substrate 11 and form a heat-insulating sleeve 5. The heat-insulating sleeve 5 will be further converged in the sleeve converging device 37 into which it is additionally guided by the funnel 69. The heat-insulating material 35 is expanded by the rollers 49, 51, 53, 55 of the expansion device 47 upstream of the guiding system 33.

[0132] FIG. 5 shows a schematic representation of a two-piece guiding system 33 comprising a first guide element 39 with a first guide surface 41 and a second guide element 43 with a second guide surface 45. The guide elements 39, 43 are arranged as an upper and lower guide element with a distance to each other and a distance to the aerosol-generating substrate 11. The cross-section of the guide element 43 first increases and then tapers towards the sleeve converging device 37, wherein the increase in cross section is higher than the decrease. Either one or both of the first guide element 39 and the second guide element 43 may have the shape of a tear, pear, drop or shoulder.

[0133] For the purpose of the present description and of the appended claims, except where otherwise indicated, all numbers expressing amounts, quantities, percentages, and so forth, are to be understood as being modified in all instances by the term “about”. Also, all ranges include the maximum and minimum points disclosed and include any intermediate ranges therein, which may or may not be specifically enumerated herein. In this context, therefore, a number A is understood as $A \pm 10\%$ of A. Within this context, a number A may be considered to include numerical values that are within general standard error for the measurement of the property that the number A modifies. The number A, in some instances as used in the appended claims, may deviate by the percentages enumerated above provided that the amount by which A deviates does not materially affect the basic and novel characteristic(s) of the claimed invention. Also, all ranges include the maximum and minimum points disclosed and include any intermediate ranges therein, which may or may not be specifically enumerated herein.

1.-16. (canceled)

17. An aerosol-generating article, configured to be electrically heated in an aerosol-generating device, the aerosol-generating article comprising:

- an inner substrate core comprising an aerosol-generating substrate;
- a heat-insulating sleeve surrounding the inner substrate core; and
- an outer wrapper surrounding the heat-insulating sleeve, wherein a susceptor is arranged in the inner substrate core and the susceptor is in contact with the heat-insulating sleeve, and
- wherein the susceptor is made of a sheet material.

18. The aerosol-generating article according to claim 17, wherein the heat-insulating sleeve comprises fibrous material.

19. The aerosol-generating article according to claim 17, wherein the heat-insulating sleeve has a radial layer thickness varying less than 10 percent.

20. The aerosol-generating article according to claim 17, wherein the inner substrate core has an outer cross-section, whose major diameter is less than 5 percent longer than its minor diameter, and the heat-insulating sleeve has an inner cross-section corresponding to the outer cross-section of the inner substrate core.

21. A method for manufacturing an aerosol-generating article, the method comprising the steps of:

- conveying an aerosol-generating substrate through a sleeve converging device in a conveying direction;
- supplying a heat-insulating material comprising fibrous material to the sleeve converging device, such that the heat-insulating material is arranged circumferentially around the aerosol-generating substrate in the sleeve converging device; and
- converging the heat-insulating material to form a heat-insulating sleeve around the aerosol-generating substrate.

22. The method according to claim 21, wherein the step of converging the heat-insulating material to form a heat-insulating sleeve around the aerosol-generating substrate takes place in parallel to the step of conveying the aerosol-generating substrate through the sleeve converging device in the conveying direction.

23. The method according to claim 21, further comprising the step of distributing the heat-insulating material equally circumferentially in the sleeve converging device to form a heat-insulating sleeve of substantially constant thickness.

24. The method according to claim 21, wherein the step of supplying the heat-insulating material comprises guiding the heat-insulating material along a guiding system.

25. The method according to claim 24,

- wherein the heat-insulating material is guided along a guide surface of the guiding system, and
- wherein the guide surface faces away from the aerosol-generating substrate.

26. The method according to claim 21, further comprising the step of converging aerosol-generating material and a susceptor to form the aerosol-generating substrate with an embedded susceptor.

27. An apparatus for manufacturing an aerosol-generating article, the apparatus comprising:

- a guiding system configured to form a heat-insulating sleeve of heat-insulating material; and
- a sleeve converging device for enveloping an aerosol-generating substrate with the heat-insulating sleeve.

28. The apparatus according to claim 27, wherein the sleeve converging device comprises a funnel.

29. The apparatus according to claim 27, further comprising a wrapper supplying device configured to supply an outer wrapper to be wrapped around the heat-insulating sleeve.

30. The apparatus according to claim 27, wherein the guiding system comprises a first guide element and a second guide element, each providing a respective guide surface along which the heat-insulating material for forming the heat-insulating sleeve is guided.

31. The apparatus according to claim 27, further comprising an expansion device comprising a first pair of

expansion rollers configured to guide the heat-insulating material through a nip between the first pair of expansion rollers.

32. An acetate tow configured to envelope an aerosol-generating substrate of an aerosol-generating article, the acetate tow being further configured to reduce heat dissipation from a heating element in the aerosol-generating substrate to an outer surface of the aerosol-generating article, wherein a susceptor is arranged in the aerosol-generating substrate and the susceptor is in contact with the acetate tow, wherein the susceptor is made of a sheet material.

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