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(54) METHOD FOR PRODUCING A SMOKABLE ARTICLE

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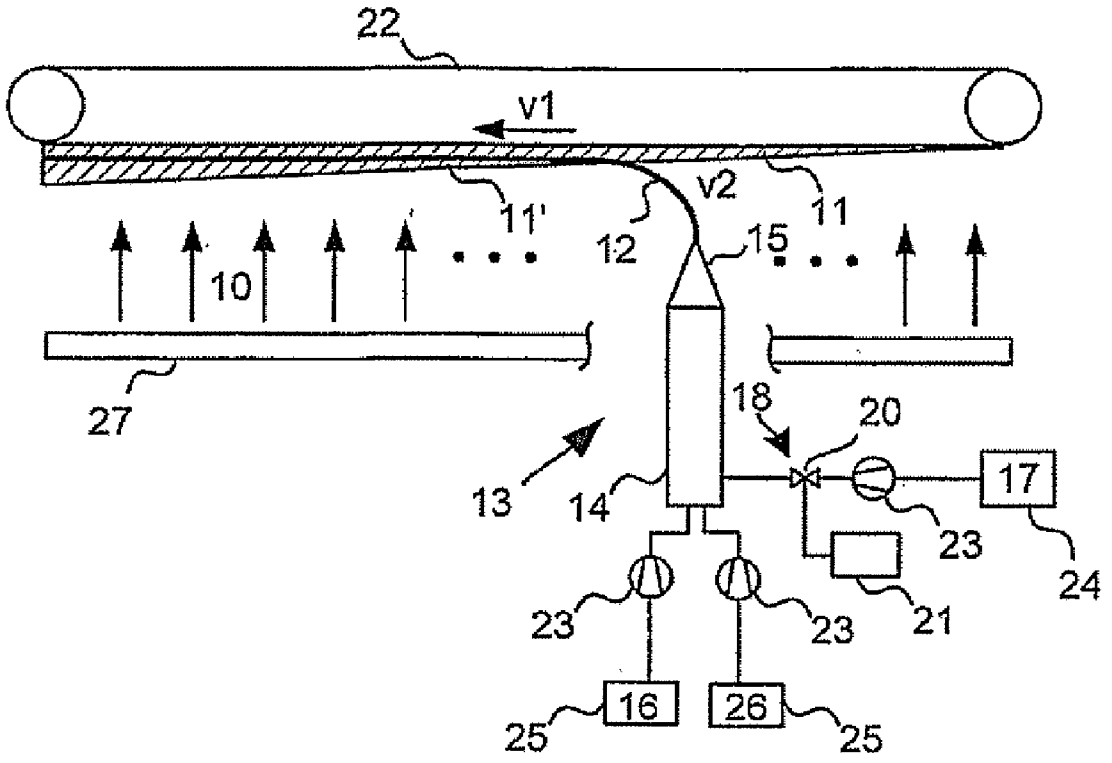
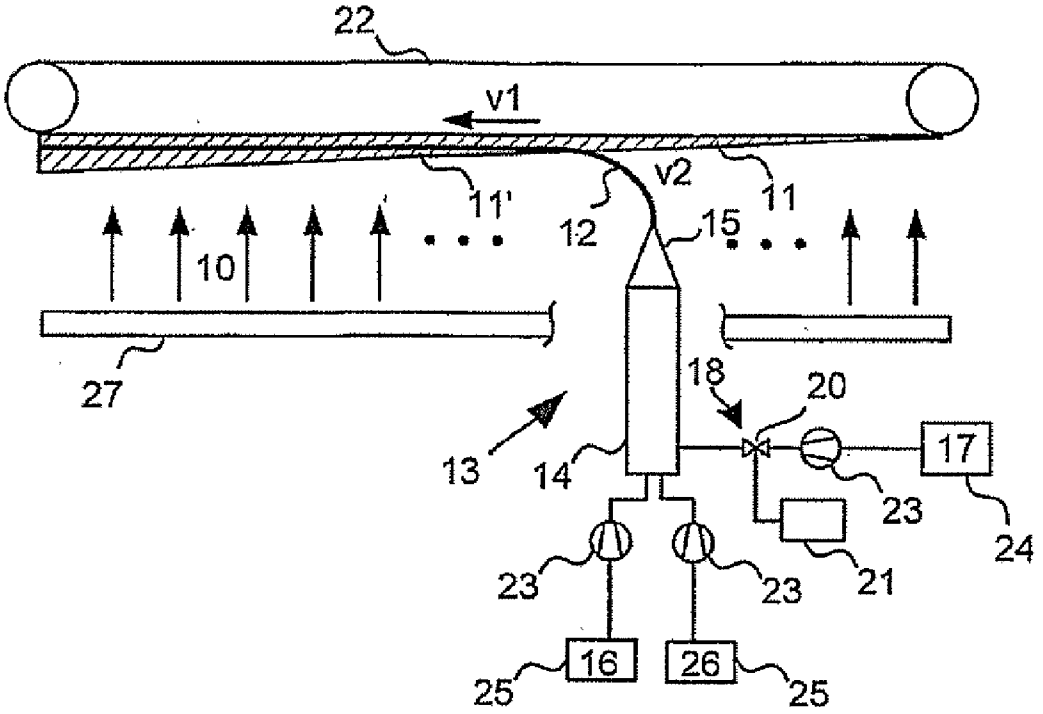
(57) **ABSTRACT**

Method for operating a rod maker of the tobacco-processing industry. In order to place additives, e.g., flavoring agents, in a cigarette in a location-dependent manner, a tobacco cake or tobacco web is formed from deposited tobacco. Furthermore, an extrudate is formed. The extrudate is applied to the deposited tobacco. The extrudate contains a basic component. An additive is fed to the basic component in a discontinuous manner. The invention also relates to a device for producing a tobacco rod that contains an extrudate.




22
v1
11'
12
v2
11
15
10
27
18
20
17
13
14
23
24
23
21
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25
16
26
25

FIG. 1

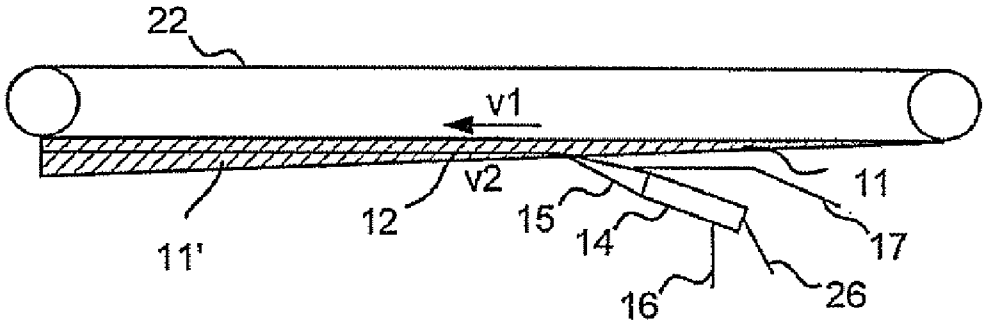
22
v1
v2
11
11'
12
15
14
17
16
26

FIG. 2

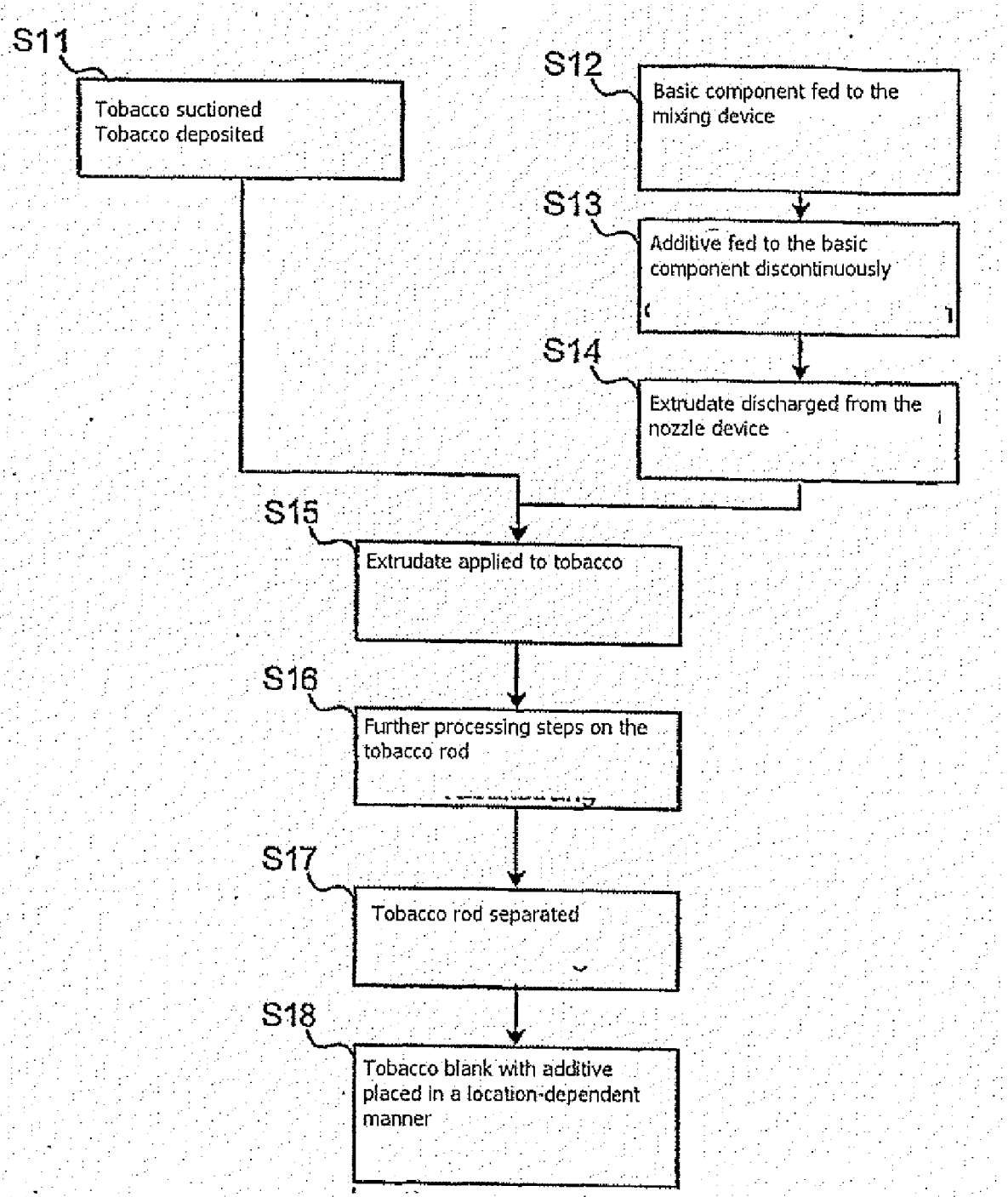
S11
Tobacco suctioned
Tobacco deposited
S12
Basic component fed to the mixing device
S13
Additive fed to the basic component discontinuously
S14
Extrudate discharged from the nozzle device
S15
Extrudate applied to tobacco
S16
Further processing steps on the tobacco rod
S17
Tobacco rod separated
S18
Tobacco blank with additive placed in a location-dependent manner

FIG. 3

METHOD FOR PRODUCING A SMOKABLE ARTICLE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a Continuation of International Patent Application No. PCT/EP2005/002355 filed Mar. 5, 2005, and claims priority under 35 U.S.C. §119 of German Patent Application No. 10 2004 017 618.3, filed on Apr. 7, 2004. Moreover, the disclosure of International Patent Application No. PCT/EP2005/002355 is expressly incorporated by reference herein in its entirety.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The invention relates to a method for producing a smokable article, in which tobacco is deposited and an extrudate is formed, the extrudate being applied onto the deposited tobacco.

[0004] The invention also relates to a device for producing a tobacco rod containing an extrudate, having a suction rod conveyor for suctioning tobacco, an extrusion device for forming the extrudate and for applying the extrudate onto the deposited tobacco.

[0005] 2. Discussion of Background Information

[0006] A method for producing a cigarette is known from DE 33 11 886 C2, in which a mixture of expanded tobacco paste is placed onto a tobacco layer. Furthermore, it is disclosed that the expanded tobacco paste can also be provided with a Savoring agent, for example, menthol.

[0007] A method for producing a cigarette is known from GB 2 070 409 A in which a filament, which can also comprise a tobacco sheet and which is loaded with flavoring agents, is drawn off from a bobbin and inserted into the tobacco rod before the garniture intake.

[0008] It is known to add flavoring agents to cigarettes. These flavoring agents are released during smoking. Since the burn-off temperature is higher when the cigarette is being lit than during smoking, it is desirable to not yet release the flavoring agents while the cigarette is being lit.

[0009] Moreover, it is important that the insertion of a flavoring agent into a cigarette does not perceptibly change the consistency of the tobacco in the cigarette or negatively impacts the burn-off properties of the cigarette and the ash formation.

SUMMARY OF THE INVENTION

[0010] The present invention is directed to a method for operating a rod maker (rod-making machine) which makes it possible to place an additive in a cigarette in a location-dependent manner. Further, the invention is directed to a device for producing a tobacco rod, with which an additive can be placed in a smokable article in a location-dependent manner.

[0011] The method for operating a rod maker of the tobacco-processing industry includes depositing tobacco; forming an extrudate, applying the extrudate to the deposited tobacco, whereby the extrudate contains a basic component, and feeding an additive to the basic component in a discontinuous manner.

[0012] Furthermore, the invention also provides for a device for producing a tobacco rod containing an extrudate. The device includes a suction rod conveyor for suctioning tobacco, and an extrusion device for forming the extrudate and applying the extrudate onto deposited tobacco. The extrusion device also includes a device for the discontinuous feeding of an additive to a basic component that can be inserted into the extrusion device.

[0013] A location-dependent positioning of an additive in a tobacco rod and also in the cigarette subsequently formed from the tobacco rod is possible using embodiments of the invention. The disadvantage of the prior art that, if an additive is mixed into an extrudate continuously, the additive is released as soon as the cigarette is lit, can thus be avoided. Since the speed at which the tobacco rod or tobacco is conveyed, as well as the speed at which the extrudate is applied onto the deposited tobacco are known in terms of process engineering, a precise positioning of the additive in the extrudate and thus later in the cigarette can be achieved by a discontinuous feeding of the additive to the basic substance. A location-dependent placing or positioning of the additive in the finished cigarette is thus achieved. This ensures that the time of the release or the burning off of the additive can be influenced by the discontinuously controllable adding of the additive to the basic component. For example, it can be necessary for an additive to be placed over the entire length of a cigarette, or it can be necessary to release another additive only upon lighting This additive should be placed only in a very short area at the beginning of the cigarette. These different requirements can be met with the method described herein.

[0014] Within the scope of the invention, tobacco can be used solely or contain other smokable material. In an advantageous embodiment of the invention, the additive is fed to the basic component via a switchable device. The ability to influence the discontinuous feed of the additive is thus made possible. Reconstituted tobacco in a pasty consistency, for example, is suitable as a basic component. Reconstituted tobacco usually comprises water, tobacco dust and a binder. The consistency of the mass is influenced via the water content. Methylcellulose, dextrin adhesive, starch, polyvinyl acetate adhesive, polyvinyl alcohol or modified starch are suitable as a binder. In another embodiment of the invention, it is possible for the extrudate to be made from several different basic components. These are then combined with one or optionally also several additives. If the extrudate is to be foamed, it is advantageous to mix it from two basic components. One of these can contain, e.g., calcium carbonate, and the other can contain citric acid.

[0015] In another advantageous embodiment of the invention, the additive is added to the basic compound in a mixing device. A steady addition of the additive to the basic component to form the extrudate mixture is thus rendered possible through the embodiment of the mixing device. Furthermore, it is advantageously provided that the extrudate of the basic component and additive is added to the deposited tobacco via a nozzle device. The nozzle device is preferably downstream of the mixing device or integrated

therein so that the finished extrudate can exit the nozzle device. In this way, the extrudate is applied onto the deposited tobacco.

[0016] In another embodiment of the invention, the additive is intermittently sprayed onto the extrudate.

[0017] In another embodiment of the invention, the deposited tobacco preferably contains short tobacco particles. Short tobacco particles, which are a term of art, would be understood as tobacco particles which are shorter than the normally used tobacco particles or fresh used tobacco particles to produce a tobacco rod. The tobacco particles have preferably a length being shorter than 5 mm.

[0018] The additive that is added to the basic component can be, in particular, a flavoring agent, e.g., sugar, menthol, licorice, amino acid, cocoa or another substance influencing the taste or the burn-off behavior.

[0019] In an advantageous embodiment of the invention, the extrudate is fed to the tobacco at a speed that corresponds approximately to the speed at which the tobacco is conveyed on the suction rod conveyor. The control of the position of the additive in the extrudate and later in the tobacco rod is carried out via suitable devices that are arranged downstream of the suction rod conveyor, e.g., via the cutting device of a rod maker.

[0020] The extrusion device preferably comprises a mixing device, whereby the additive can be inserted into the mixing device.

[0021] In a particular embodiment of the invention, the device for producing the tobacco rod with the extrudate includes a switchable valve with which the additive can be fed discontinuously to the basic component. This valve is embodied in particular as a rapid-action valve in order to carry out the positioning of the additive in the extrudate with precision. In particular, a piezoelectric element is suitable therefore. Such an element can be toggled by a control such that the feeding of the additive is carried out precisely for the section of the extrudate that is to contain the additive in the later cigarette. After the extrudate has been applied to the deposited tobacco, more tobacco can be deposited. The tobacco web thus formed is subsequently trimmed and wrapped with a wrapping material. It is then formed into a shaped tobacco rod in a rod-forming device.

[0022] Other exemplary embodiments and advantages of the present invention may be ascertained by reviewing the present disclosure and the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] The present invention is further described in the detailed description which follows, in reference to the noted plurality of drawings by way of non-limiting examples of exemplary embodiments of the present invention, in which like reference numerals represent similar parts throughout the several views of the drawings, and wherein:

[0024] FIG. **1** shows a diagrammatic representation of a device according to the invention;

[0025] FIG. **2** shows a diagrammatic representation of a part of another embodiment of a device according to the invention; and

[0026] FIG. **3** a process flow chart.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

[0027] The particulars shown herein are by way of example and for purposes of illustrative discussion of the embodiments of the present invention only and are presented in the cause of providing what is believed to be the most useful and readily understood description of the principles and conceptual aspects of the present invention. In this regard, no attempt is made to show structural details of the present invention in more detail than is necessary for the fundamental understanding of the present invention. The description taken with the drawings make apparent to those skilled in the art how the several forms of the present invention may be embodied in practice.

[0028] The diagrammatic representation shown in FIG. **1** of the device for producing a tobacco rod in which an extrudate is inserted, includes a suction rod conveyor **22** that continuously suctions tobacco **10** and thus forms a growing deposit of tobacco **11** over its length. The tobacco **10** is fed to the suction rod conveyor **22** via a feed device **27**. An extrusion device **13** is allocated and/or arranged adjacent to the suction rod conveyor **22** and is responsible for forming or producing the extrudate **12**. Furthermore, the extrudate **12** is applied to the deposited tobacco **11** via or from the extrusion device **13**. The extrusion device **13** includes a mixing device **14** to which a basic component **16** is fed. The basic component **16** is conveyed, e.g., via a pump **23**, from a storage container **25** to the mixing device **14**.

[0029] The extrusion device **13** also includes a storage container **24** in which the additive **17**, e.g., a flavoring agent, is stored. The additive **17** is fed via a pump **23** to a switchable device or valve **20**. The device **20** is regulated by a control **21** so that the additive **17** can be fed to the mixing device **14** in a discontinuous manner. The switchable device **20** is embodied preferably as a piezoelectric element. This allows an exact feed amount of the additive **17** to be properly regulated and/or controlled. Moreover, the arrangement of the invention allows another basic component **26** to be fed to the mixing device **14**. The basic component **26** is stored in another storage container **25**, and is likewise fed via a pump **23** to the mixing device **14**. The basic component **16** (and also component **26**) and the additive **17** are combined or mixed in the mixing device **14**.

[0030] In embodiments, the extrudate can be already formed in its basic consistency and the additive sprayed onto the extrudate in the mixing device **14**. The mixing device **14** is coupled to a nozzle device **15**. The nozzle device **15** ejects the finished extrudate **12** at a predetermined extrudate speed v**2**. The extrudate **12** is fed to the developing tobacco web **11** on the suction rod conveyor **22**. Furthermore, in embodiments, the additive is applied onto the extrudate **12** in the nozzle device **15**, or the additive **17** can be sprayed into the extrudate **12** after it has exited from the nozzle device **15**. After the extrudate **12** has been applied to the deposited tobacco **11**, additional tobacco **11'** is deposited onto the tobacco **11** and the extrudate **12**.

[0031] FIG. **2** shows a section of an embodiment of a device according to the invention in which, in particular, the application of the extrudate **12** onto the deposited tobacco **11** is shown. The tobacco **11**, which can also be embodied as a fiber cake or web, runs along a suction rod conveyor **22** at a tobacco conveyor speed of v**1**. The exiting extrudate **12** is

applied onto the deposited tobacco **11** at a suitable point at which the tobacco **11** has attained an adequate height. The position of the extrudate **12** on the tobacco **11** can, as a result, be influenced by the alignment of the nozzle device **15**. The diameter or the shape of the exiting extrudate **12** can be adjusted likewise through the corresponding characteristics of the nozzle device **15**. FIG. **2** also shows how the additive **17** is fed to the nozzle device.

[**0032**] FIG. **3** shows a process flow chart for operating a rod maker of the tobacco-processing industry. In step S**11** finished tobacco is suctioned and tobacco **11** is deposited by the suction rod conveyor **22**, so that a web is formed. The tobacco **11** is transported on the suction rod conveyor at a tobacco conveyor speed v**1**. Parallel thereto, in the extrusion device **13** in step S**12**, the basic component **16** or several basic components **16**, **26** are fed to the mixing device **14**. Depending on the desired placement of the additives **17** in the later cigarette, the rapid-action valve **20** is actuated by a control **21**, through which the additive **17** is added discontinuously to the basic component **16** (S**13**). In step S**14** the finished extrudate **12** is discharged from the nozzle device **15**. In step S**15** the extrudate **12** exiting the nozzle device **15** is applied onto the tobacco **11**. In step S**16** further processing steps are carried out with the tobacco rod including the tobacco **11** and **11'** and the extrudate **12**, which are downstream of the suction rod conveyor **22**. This includes, e.g., wrapping with a wrapping material. In step S**17** the tobacco rod **11** is cut according to the position of the additive **17** in the extrudate **12**, so that cut tobacco rods wrapped with wrapping material are formed (S**18**) in which the additive, in particular, a flavoring agent **17** is positioned in a location-dependent manner and thus not yet released, e.g., when a finished cigarette is fit, but only when the cigarette is smoked.

[**0033**] It is noted that the foregoing examples have been provided merely for the purpose of explanation and are in no way to be construed as limiting of the present invention. While the present invention has been described with reference to an exemplary embodiment, it is understood that the words which have been used herein are words of description and illustration, rather than words of limitation. Changes may be made, within the purview of the appended claims, as presently stated and as amended, without departing from the scope and spirit of the present invention in its aspects. Although the present invention has been described herein with reference to particular methods, materials and embodiments, the present invention is not intended to be limited to the particulars disclosed herein; rather, the present invention extends to all functionally equivalent structures, methods and uses, such as are within the scope of the appended claims.

List of Reference Numbers	
10	Tobacco
11	Deposited tobacco
11'	Deposited tobacco
12	Extrudate
13	Extrusion device
14	Mixing device
15	Nozzle device
16	Basic component
17	Additive

-continued

List of Reference Numbers	
20	Device/fast-acting valve
21	Control
22	Suction rod conveyor
23	Pump
24, 25	Storage container
26	Basic component
27	Feed device
v1	Tobacco conveyor speed
v2	Extrudate speed
S11	Tobacco suctioned, tobacco deposited
S12	Basic component fed to the mixing device
S13	Additive fed to the basic component in a discontinuous manner
S14	Extrudate ejected from nozzle device
S15	Extrudate applied to tobacco
S16	Further processing steps on tobacco rod
S17	Tobacco rod separated
S18	Cigarette blank with additive placed in a location-dependent manner

What is claimed:

1. A method for producing a smokable article comprising:

depositing tobacco;

forming an extrudate containing at least one basic component;

applying the extrudate onto the deposited tobacco; and

discontinuously feeding an additive to the at least one basic component.

2. The method according to claim 1, wherein the additive is discontinuously fed to the basic component via a switchable device.

3. The method according to claim 1, wherein the at least one basic component comprises several different basic components.

4. The method according claim 1, further comprising mixing the at least one basic component and the additive in a mixing device to form an extrudate mixture.

5. The method according to claim 1, wherein the extrudate is applied onto the deposited tobacco via a nozzle device.

6. The method according to claim 1, wherein the deposited tobacco contains short tobacco particles.

7. The method according to claim 1, wherein the additive is a flavoring agent.

8. The method according to claim 1, wherein the deposited tobacco is transported at a tobacco conveyor speed, and wherein the extrudate is applied onto the deposited tobacco at a speed essentially the same as the tobacco conveyor speed.

9. A device for producing a tobacco rod containing an extrudate, comprising:

a suction rod conveyor for suctioning tobacco;

an extrusion device for forming the extrudate and for applying the extrudate onto the tobacco; and

a device for discontinuously feeding an additive to a basic component insertable into the extrusion device.

10. The device according to claim 9, wherein the extrusion device comprises a mixing device and the additive is insertable into the mixing device.

11. The device according to claim 9, further comprising a nozzle device for feeding the extrudate to the tobacco.

12. The device according to claim 9, wherein the discontinuous feeding device comprises a switchable valve.

13. The device according to claim 12, wherein the switchable valve comprises a piezoelectric element.

14. The device according to claim 9, wherein the extrusion device includes the discontinuous feeding device.

* * * * *