

PLUG SPACE PLUG FILTER WITH FLAVOR BEAD

BACKGROUND

Smoking articles, particularly cigarettes, generally comprise a tobacco rod of shredded tobacco (usually, in cut filler form) surrounded by a paper wrapper, and a cylindrical filter aligned
5 in an end-to-end relationship with the tobacco rod. The tobacco rod is generally between about 6.0 millimeters and about 10.0 millimeters in diameter and between about 50 millimeters and about 125 millimeters in length.

Typically, the filter includes a plug of cellulose acetate tow attached to the tobacco rod by tipping paper. Ventilation of mainstream smoke can be achieved with a row or rows of
10 perforations about a location along the filter.

When flavorants such as menthol are applied to cigarette filter in the form of a solution, staining or spotting of the outer surface of the cigarette can occur, particularly at high loadings of menthol in large amounts of solvent. Further, such a direct application of flavorants such as menthol to the cigarette filter does not allow for the regulation of menthol release during
15 smoking and can lead to migration and loss of menthol during storage of the cigarette.

Accordingly, it would be desirable to provide a filter component for a smoking article, which provides added flavorant such as menthol to the mainstream smoke and can be easily manufactured and produced with existing filter forming equipment.

SUMMARY

In accordance with an exemplary embodiment, a filter component for a smoking article comprises: an upstream segment of filter material; a downstream segment of filter material in a spaced apart relation to the upstream segment of filter material so as to define a cavity therebetween; and a single flavor bead comprising tobacco particles and water disposed in the
25 cavity. The flavor bead preferably has an outer diameter, which is at least 75% of the spaced apart relation of the upstream segment of filter material and the downstream segment of filter material and wherein the outer diameter of the flavor bead does not exceed an outer diameter of either the upstream segment or downstream segment of filter material. The upstream segment of filter material has the lowest RTD (resistance to draw) of the segments of the filter component.
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By 'spaced-apart relation' is meant the longitudinal distance between the upstream segment of filter material and the downstream segment of filter material (*i.e.*, the length of the cavity).

The upstream segment and the downstream segment of filter material may each
35 comprise a plug of cellulose acetate tow.

In accordance with another exemplary embodiment, a smoking article comprises: a tobacco rod; and a filter component (or multi-component filter) comprising: an upstream segment of filter material; a downstream segment of filter material in a spaced apart relation to

the upstream segment of filter material so as to define a cavity therebetween; a single flavor bead comprising tobacco particles and water disposed in the cavity, and wherein the flavor bead has an outer diameter, which is at least 75% of the spaced apart relation of the upstream segment of filter material and the downstream segment of filter material and wherein the outer diameter of the flavor bead does not exceed an outer diameter of either the upstream or downstream segments of filter material. The upstream segment of filter material has the lowest RTD (resistance to draw) of the segments of the filter component.

The filter component may comprise a filter wrapper which circumscribes the upstream segment of filter material, the downstream segment of filter material and the flavor bead.

The smoking article may further comprise ventilation around an outer periphery of the filter component.

In accordance with a further exemplary embodiment, a method of manufacturing a filter component comprises the steps of: dispensing a firstdownstream filter segment having a firstdownstream length onto a filter rod forming portion of a filter rod forming apparatus; dispensing a secondupstream filter segment having a secondupstream length in a spaced apart relationship to the firstdownstream filter segment so as to define a cavity therebetween onto the filter rod forming portion; placing a single flavor bead comprising tobacco particles and water within the cavity; and wherein the flavor bead has an outer diameter, which is at least 75% of the spaced apart relation of the upstream segment of filter material and the downstream segment of filter material, wherein the outer diameter of the flavor bead does not exceed an outer diameter of the upstream and downstream segments of filter material and wherein the upstream segment of filter material has the lowest RTD (resistance to draw) of the segments of the filter component.

The method may further comprise circumscribing the firstdownstream filter segment, the secondupstream filter segment and the flavor bead with a filter wrapper.

The method may comprise forming a filter rod comprising at least two segments of the firstdownstream filter segment, at least two segments of the secondupstream filter segment, and at least two flavor beads in the cavities formed between the firstdownstream filter segments and the secondupstream filter segments. Preferably the method further comprises circumscribing the filter rod with a filter wrapper.

Preferably, the method further comprises cutting the filter rod into a plurality of individual filter components having at least one flavor bead therein.

Preferably, the method further comprises placing a tobacco rod adjacent to a tobacco end of an individual filter component such that the filter component and the tobacco rod are axially aligned in an end-to-end relationship and forms a smoking article.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a smoking article in accordance with an embodiment;

FIG. 2 is a cross-sectional view of a smoking article in accordance with one embodiment;

5 FIG. 3 is a cross-sectional view of a filter rod in accordance with an embodiment;

FIG. 4 is a cross-sectional view of a smoking article in accordance with a further embodiment;

470, a 10 mm downstream segment of filter material 440, a 5 millimeter cavity 450 having a flavor bead 460 disposed therein, and a 5 millimeter upstream segment of filter material 430.

5 In accordance with another exemplary embodiment, FIG. 6 shows a system 600 for manufacturing a filter (or filter component) 220, 420 and/or a continuous filter rod 300, 500 as shown in FIGS. 2-5. As shown in FIG. 6, the system 600 includes at least two hoppers 610, 620, which include filter segments preferably having a first length (*i.e.*, first filter segment) 612 and a second length (*i.e.*, second filter segment) 622, respectively, and a hopper 630 filled with flavor beads 632 of a desired diameter. The first and second filter segments 612, 622 are placed in a spaced apart relationship on a filter combiner 640 (or filter forming apparatus) so as
10 to define a cavity therebetween. A flavor bead 632 is then placed in the cavity, and the process is repeated until a continuous filter rod 650 is formed. The filter segments 612, 622, and the individual flavor beads 632 are then wrapped with a filter wrapper 652 to form the continuous filter rod 650, which is then cut into individual filter components 660.

15 It can be appreciated that the flavor beads 632 can be placed or positioned within the cavity by any known method including dispensing the flavor bead by gravitation force, vacuum assisted method, such as a vacuum wheel and/or other known methods of placing a spherical object or bead within a cavity.

The continuous filter rod 650 before cutting preferably includes at least two segments of the first filter segment 612, at least two segments of the second filter segment 622, and at least
20 two flavor beads 632 in the cavities formed between the first filter segments and the second filter segments. The filter segments 612, 622 are then wrapped in a filter paper or plug wrap 652 and cut into a plurality of filter components 660 having at least one flavor bead 630 therein. The individual filter components 660 are assembled with a tobacco rod to form a smoking article 670.

25 In accordance with another exemplary embodiment, an additional hopper 680 can include a recessed filter segment 682, which is placed adjacent to either the first filter segment and/or the second filter segment as described and shown in FIGS. 4 and 5. It will be appreciated that a recess adjacent to either the first filter segment and/or the second filter segment may also be formed in other ways, such as, for example, by placing neighboring pairs
30 of the first or second filter segments 612, 622 in a spaced apart relationship on the filter combiner 640.

35 ~~It should be understood that the foregoing description is of the preferred embodiments, and is merely representative of the article and methods of manufacturing the same. It can be appreciated that variations and modifications of the different embodiments in light of the above teachings will be readily apparent to those skilled in the art. Accordingly, exemplary~~

embodiments, as well as alternative embodiments, may be made without departing from the scope of the articles and methods set forth in the attached claims.

CLAIMS:

1. A filter component for a smoking article comprising:
an upstream segment of filter material;
5 a downstream segment of filter material in a spaced apart relation to the upstream segment of filter material so as to define a cavity therebetween; and
a single flavor bead disposed in the cavity, the flavor bead comprising tobacco particles and water, wherein the flavor bead has an outer diameter, which is at least 75% of the spaced apart relation of the upstream segment of filter material and the downstream segment of filter
10 material, and the outer diameter of the flavor bead does not exceed an outer diameter of either the upstream segment or the downstream segment of filter material, wherein the upstream segment of filter material has the lowest RTD (resistance to draw) of the segments of the filter component.
- 15 2. A filter component according to claim 1, further comprising a recess segment on a downstream end of the downstream segment of filter material.
3. A filter component according to claim 1, wherein the downstream segment of filter material has a length, which is at least twice a length of the upstream segment of filter material.
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4. A filter component according to claim 1, wherein the upstream segment of filter material is between about 5 millimeters and about 10 millimeters in length.
5. A filter component according to claim 1, wherein the downstream segment of filter
25 material is between about 5 millimeters and about 20 millimeters in length
6. A filter component according to claim 1, wherein the cavity is between about 5 millimeters and about 7 millimeters in length.
- 30 7. A filter component according to claim 1, wherein the flavor bead is in the form of a spheroid having a diameter of about 4.5 millimeters to about 5 millimeters.
8. A filter component according to claim 1, wherein the flavor bead is a polymer coated mentholated tobacco bead.

9. A filter component according to claim 1, wherein the upstream segment of filter material, the downstream segment of filter material and the flavor bead are circumscribed by a filter wrapper.

10. A smoking article comprising:
a tobacco rod; and
a filter component according to any one of claims 1 to 9:

11. A method of manufacturing a filter component comprising:

dispensing a first-downstream filter segment having a first length onto a filter rod forming portion of a filter rod forming apparatus;

dispensing an second-upstream filter segment having a second length in a spaced apart relationship to the first-downstream filter segment so as to define a cavity therebetween onto the filter rod forming portion; and

placing a single flavor bead comprising tobacco particles and water within the cavity, wherein the flavor bead has an outer diameter, which is at least 75% of the spaced apart relation of the upstream segment of filter material and the downstream segment of filter material, ~~and~~ wherein the outer diameter of the flavor bead does not exceed an outer diameter of the upstream and downstream segments of filter material and wherein the upstream segment of filter material has the lowest RTD (resistance to draw) of the segments of the filter component.

12. A method according to claim 11, further comprising circumscribing the first-downstream filter segment, the ~~second-upstream~~ filter segment and the flavor bead with a filter wrapper.

13. A method according to claim 11, comprising forming a filter rod comprising at least two segments of the first-downstream filter segment, at least two segments of the ~~second-upstream~~ filter segment, and at least two flavor beads in the cavities formed between the first-downstream filter segments and the ~~second-upstream~~ filter segments.

14. A method according to claim 13, further comprising circumscribing the filter rod with a filter wrapper.

15. A method according to claim 11, further comprising forming a recess segment adjacent to either the first-downstream filter segment or the ~~second-upstream~~ filter segment.