

SMOKING ARTICLE WITH CONTOURED FILTER PORTION

The present disclosure relates to a smoking articles having a contoured filter portion, for example to mate with fingers of a user.

5 Combustible smoking articles, such as cigarettes, have shredded tobacco surrounded by a paper wrapper forming a tobacco rod. A cigarette is employed by a smoker by lighting one end thereof and burning the shredded tobacco rod. The smoker then receives mainstream smoke into their mouth by drawing on the opposite end or filter end of the cigarette. The shredded tobacco can be a single type of tobacco or a blend of two or more types of tobacco
10 depending of the brand of cigarette.

A number of smoking articles in which an aerosol generating substrate, such as tobacco, is heated rather than combusted have also been proposed in the art. In heated smoking articles, the aerosol is generated by heating the aerosol generating substrate. Known heated smoking articles include, for example, smoking articles in which an aerosol is generated by
15 electrical heating or by the transfer of heat from a combustible fuel element or heat source to an aerosol generating substrate. During smoking, volatile compounds are released from the aerosol generating substrate by heat transfer from the heat source and entrained in air drawn through the smoking article. As the released compounds cool they condense to form an aerosol that is inhaled by the consumer. Also known are smoking articles in which a nicotine-containing
20 aerosol is generated from a tobacco material, tobacco extract, or other nicotine source, without combustion, and in some cases without heating, for example through a chemical reaction.

These smoking articles usually have a cylindrical shape. This cylindrical shape can be difficult or uncomfortable to hold by a user in some instances. The smooth cylindrical shape can also slip from a users grasp.

25 It would be desirable to provide a smoking article that is easily held by a user. It is desirable to provide a smoking article that has an ergonomic filter portion shape while retaining a cylindrical shaped mouth end portion.

According to the current disclosure there is provided a smoking article that includes a tobacco rod or aerosol generating substrate; and a contoured filter element axially aligned with
30 and fixed to the tobacco rod or aerosol generating substrate with a tipping paper, the contoured filter element having a cylindrical rod end portion and a cylindrical mouth end portion and a contoured portion with a rigid predetermined shape or form imposed between the cylindrical rod end portion and a cylindrical mouth end portion. The contoured portion defines an exterior surface of the smoking article and has a first cross-sectional area that is less than a cross-
35 sectional area of either the cylindrical rod end portion or the cylindrical mouth end portion, wherein the tipping paper is disposed about the cylindrical rod end portion of the contoured filter

element but not disposed about the contoured portion of the contoured filter element. The contoured filter element is configured to mate with fingers of a user of the smoking article.

Another aspect of the disclosure relates to a method of forming a smoking article comprising, forming a smoking article comprising: a tobacco rod or aerosol generating substrate; and a contoured filter element axially aligned with and fixed to the tobacco rod or aerosol generating substrate with a tipping paper, the contoured filter element having a cylindrical rod end portion and a cylindrical mouth end portion and a contoured portion with a rigid predetermined shape or form imposed between the cylindrical rod end portion and the cylindrical mouth end portion, the contoured portion defining an exterior surface of the smoking article and having a first cross-sectional area that is less than a cross-sectional area of either the cylindrical rod end portion or the cylindrical mouth end portion, wherein the tipping paper is disposed about the cylindrical rod end portion of the contoured filter element but not disposed about the contoured portion of the contoured filter element.

Another aspect-embodiment of the disclosure relates to a method of forming a smoking article comprising, forming a smoking article having a contoured filter element having a cylindrical rod end portion and a cylindrical mouth end portion and a contoured portion with a predetermined shape or form imposed between the cylindrical rod end portion and the cylindrical mouth end portion, the contoured portion defining an exterior surface of the smoking article and having a first cross-sectional area that is less than a cross-sectional area of either the cylindrical rod end portion or the cylindrical mouth end portion.

The smoking article with contoured filter portion and the methods according to the present disclosure provide an effective way to improve the comfort level of a user while employing the smoking article along with the ability to securely grasp the smoking article. In

generating substrate. In some embodiments, the tipping paper is disposed about the mouth end portion or segment and rod end portion or segment of the contoured filter element. In some of these embodiments, the tipping paper is not disposed about the contoured features of the contoured filter element. The tipping paper can be formed of conventional tipping paper material or the tipping paper can be formed of a polymeric film such as a shrink wrap film, similar to the plug wrap described above. In some embodiments, the tipping paper is a shrink wrap film and is disposed about the contoured features of the contoured filter element and conforms to the external surface topography of the contoured features.

The disclosure will be further described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 shows a schematic cross section view of a smoking article according to the present disclosure having a contoured filter element; and

Figure 2 shows a schematic cross section view of a smoking article according to the present disclosure having a three segment contoured filter element.

The finished smoking article **10** shown in Figure 1 includes a tobacco substrate or tobacco rod **12** (or aerosol generating substrate) attached to an axially aligned contoured filter element **20**. The contoured filter element **20** includes a filter material **16** that can include cellulose acetate wrapped in plug wrap **18**. Tipping paper **19** joins the tobacco rod **12** (or aerosol generating substrate) to the axially aligned contoured filter element **20**

The contoured filter element **20** has a cylindrical rod end portion **21** and a cylindrical mouth end portion **22** and a contoured portion **23** between the cylindrical rod end portion **21** and a cylindrical mouth end portion **22**. The contoured portion **23** illustrated in Figure 1 includes opposing planar surfaces **24**, **25** along a longitudinal cross-section of the contoured filter element **20** and forming a segment of a cylinder or a horizontal cylinder segment. Plug wrap **18** is in contact with and is disposed about the contoured filter element **20** and conforms to the exterior surface of the contoured portion **23**.

The finished smoking article **10** shown in Figure 2 includes a tobacco substrate or tobacco rod **12** attached to an axially aligned contoured filter element **20** with tipping paper **19**. The contoured filter element **20** includes three segments. A contoured filter segment **23** separates a mouth end segment **22** and a rod end segment **21**.

The contoured filter segment **23**, mouth end segment **22** and a rod end segment **21** can be abutted together in axial alignment to form the contoured filter element **20**. The contoured filter segment **23** illustrated includes opposing ends **28** and **29** that are cylindrical and register with the adjacent ends of the mouth end segment **22** and a rod end segment **21**.

CLAIMS:

1. A smoking article comprising:

a tobacco rod or aerosol generating substrate; and

a contoured filter element axially aligned with and fixed to the tobacco rod or aerosol generating substrate with a tipping paper,

the contoured filter element having a cylindrical rod end portion and a cylindrical mouth
end portion and a contoured portion with a rigid predetermined shape or form

imposed between the cylindrical rod end portion and the cylindrical mouth end

portion, the contoured portion defining an exterior surface of the smoking article and

having a first cross-sectional area that is less than a cross-sectional area of either
the cylindrical rod end portion or the cylindrical mouth end portion,

wherein the tipping paper is disposed about the cylindrical rod end portion of the
contoured filter element but not disposed about the contoured portion of the
contoured filter element.

2. A smoking article according to claim 1, wherein the exterior surface of the smoking article is contoured to conform to ~~match~~ the contour of the contoured filter element.

3. A smoking article according to claims 1 or 2, wherein the contoured filter element is configured to mate with fingers of a user of the smoking article.

4. A smoking article according to any of claims 1 to 3, wherein the contoured filter element exterior surface defines a planar surface along the contoured filter element.

5. A smoking article according to any of claims 1 to 3, wherein the contoured filter element exterior surface defines opposing planar surfaces along the contoured filter element.

6. A smoking article according to any of claims 1 to 3, wherein the contoured filter element exterior surface defines a curvilinear surface along a longitudinal cross-section of the contoured filter element.

7. A smoking article according to any of claims 1 to 3, wherein the contoured filter element exterior surface defines opposing curvilinear surfaces along a longitudinal cross-section of the contoured filter element.

8. A smoking article according to any of claims 6 to 7, wherein the curvilinear surface or curvilinear surfaces define an hourglass shape along a longitudinal cross-section of the contoured filter element.

9. A smoking article according to any of claims 1 to 8, wherein the contoured filter element comprises a contoured filter segment separating a mouth end segment and a rod end segment.

10. A smoking article according to claim 9, wherein a plug wrap is in contact with and is disposed about the contoured filter segment, mouth end segment and rod end segment and fixes the contoured filter segment, mouth end segment and a rod end segment together in axial alignment.

11. A smoking article according to claim 10, wherein the a-plug wrap is a shrink wrap film.

12. A smoking article according to any of claims 9 to 11, wherein the contoured filter element comprises opposing cylindrical ends.

13. A smoking article according to any of claims 1 to 12, wherein the contoured filter portion is hollow.

14. A method of forming a smoking article comprising,
forming a smoking article comprising:
a tobacco rod or aerosol generating substrate; and
a contoured filter element axially aligned with and fixed to the tobacco rod or aerosol
generating substrate with a tipping paper, the contoured filter element
having a cylindrical rod end portion and a cylindrical
mouth end portion and a contoured portion with a rigid predetermined shape or form
imposed between the cylindrical rod end portion and the cylindrical mouth end
portion, the contoured portion defining an exterior surface of the smoking article and
having a first cross-sectional area that is less than a cross-sectional area of either
the cylindrical rod end portion or the cylindrical mouth end portion, wherein the
tipping paper is disposed about the cylindrical rod end portion of the contoured filter
element but not disposed about the contoured portion of the contoured filter element.

15. A method according to claim 14 wherein the exterior surface of the smoking article is
contoured to conform to match the contour of the contoured filter element.