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(54) **EASY TO ROLL CURVED EDGE CIGARETTE ROLLING PAPER**

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(57) **ABSTRACT**

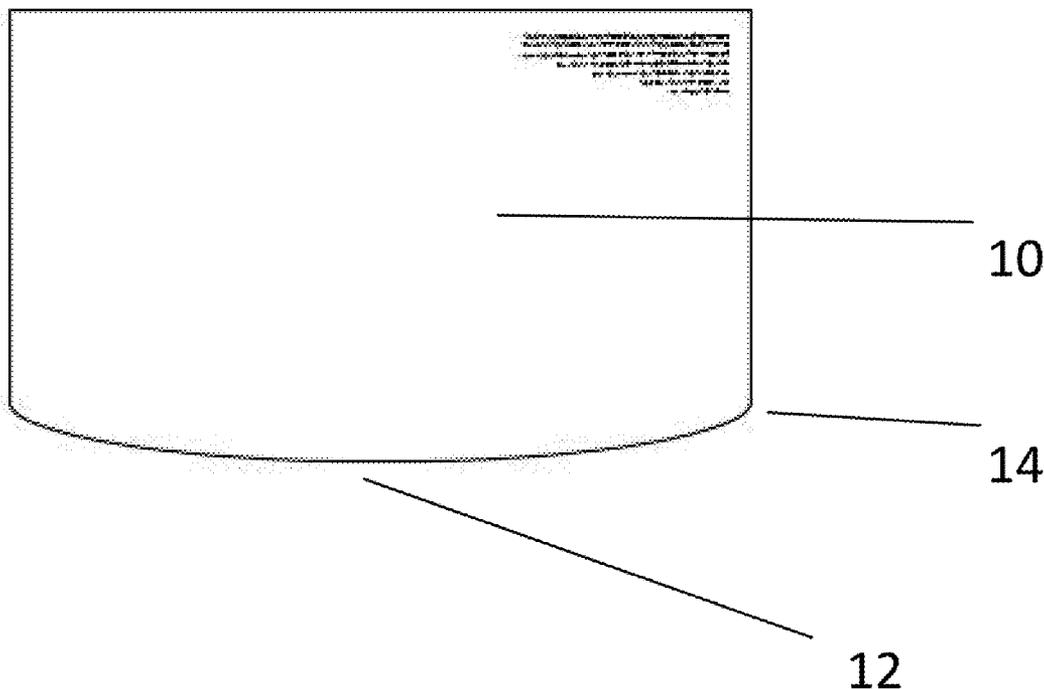
(21) Appl. No.: **14/278,030**

A cigarette rolling paper that has three straight edges and one edge curved so that the curved edge can easily be tucked in as the user starts to roll the cigarette, without catching on a corner, which is one of the problems when hand-rolling. With traditional rectangular papers, the top and bottom edge must remain parallel to each other or the leading corner gets caught up and doesn't tuck. This common challenge is somewhat hard to avoid. The curved edge provides increased tolerance for this inaccuracy, and facilitates an easy roll.

(22) Filed: **May 15, 2014**

Related U.S. Application Data

(60) Provisional application No. 61/976,036, filed on Apr. 7, 2014.



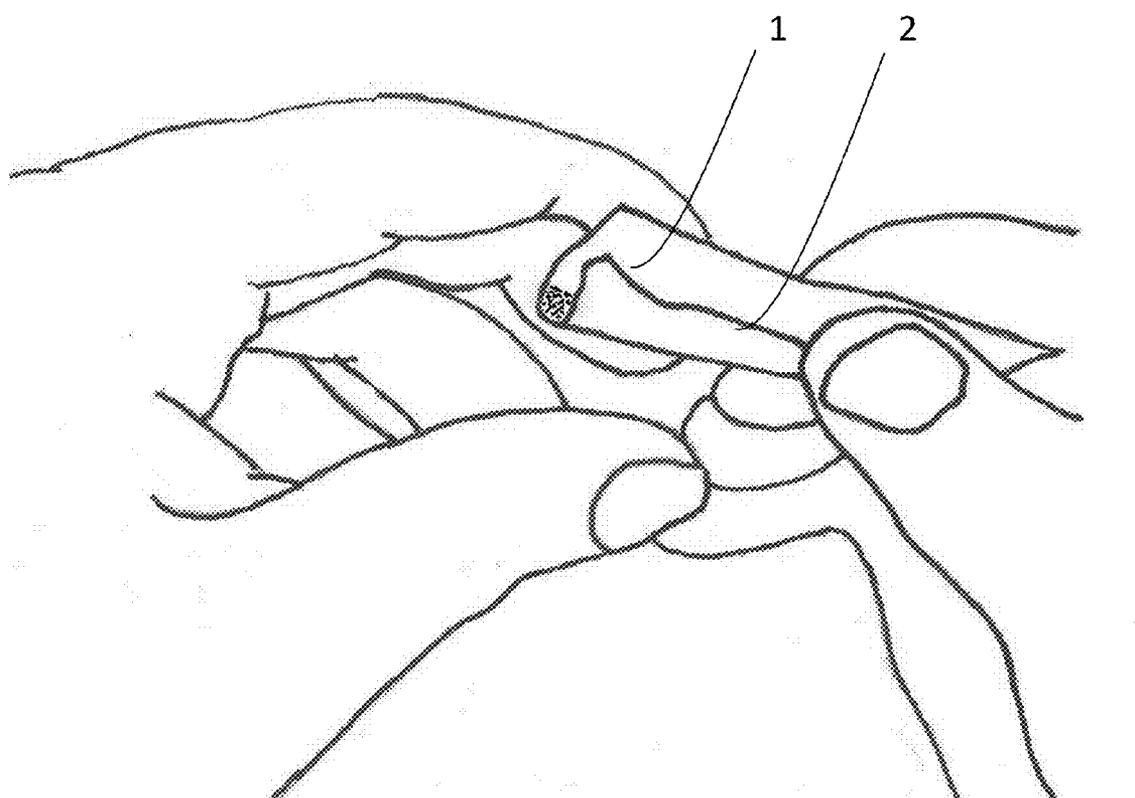


Fig. 1 - Prior Art

Fig. 2 -
Prior Art

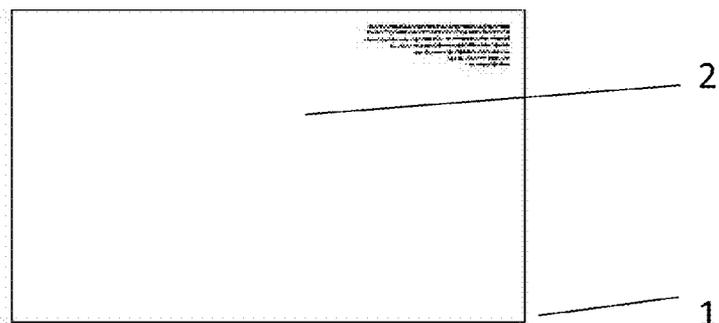


Fig. 3 -
Prior Art

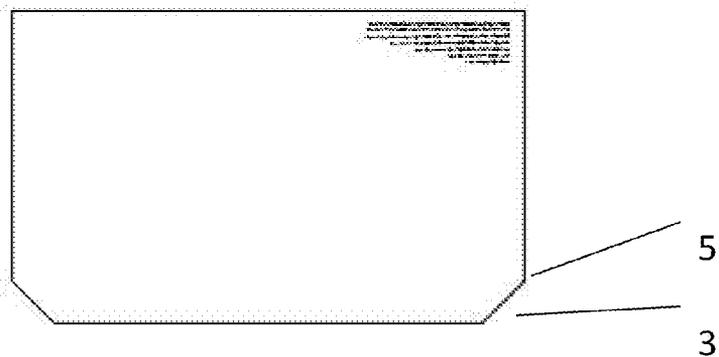
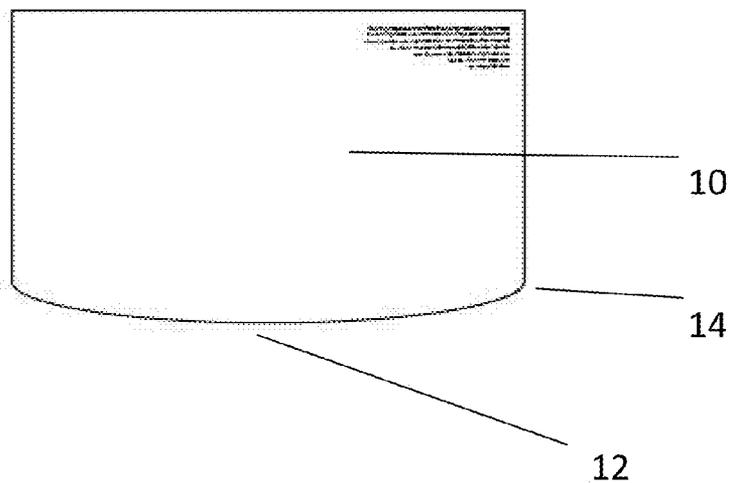


Fig. 4



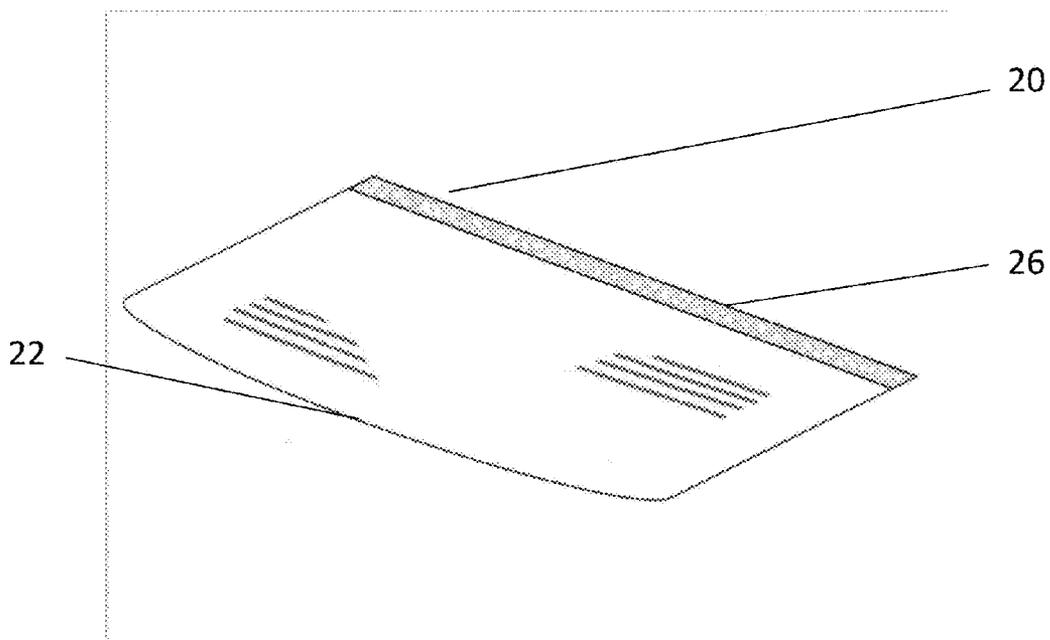


Fig. 5

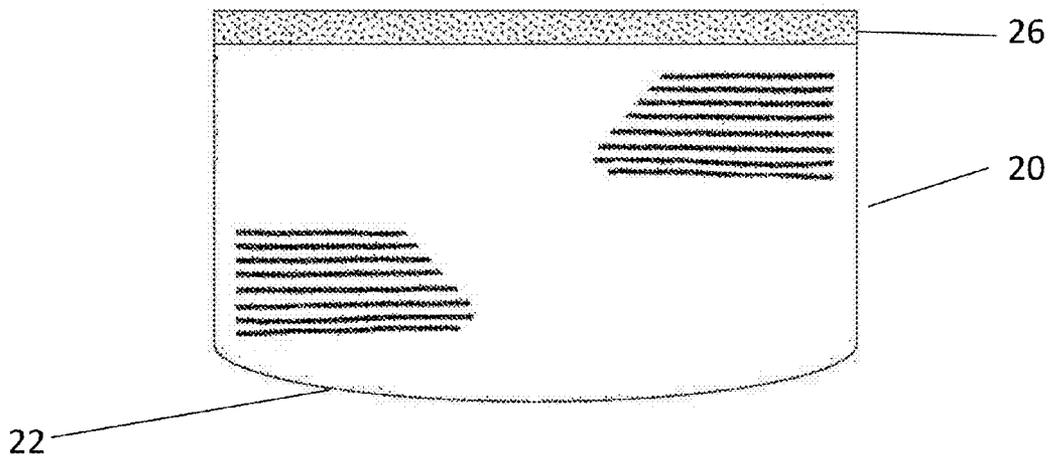


Fig. 6

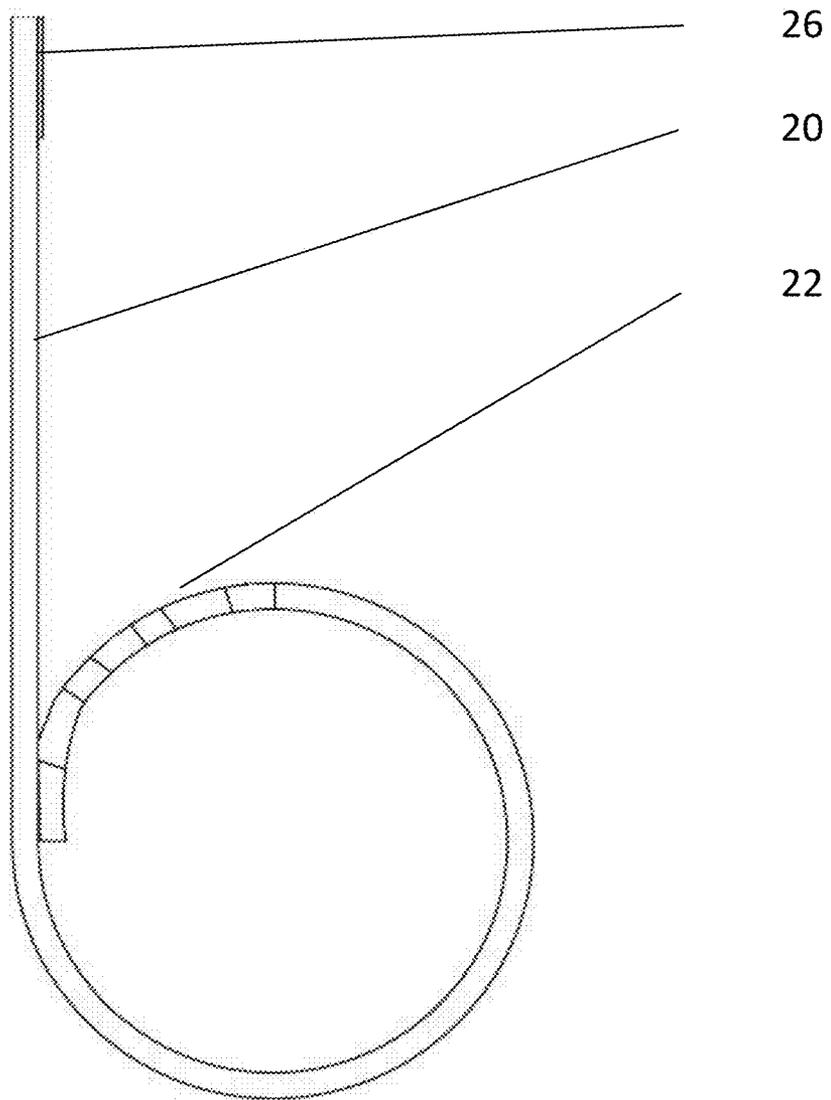


Fig. 7

Fig. 8

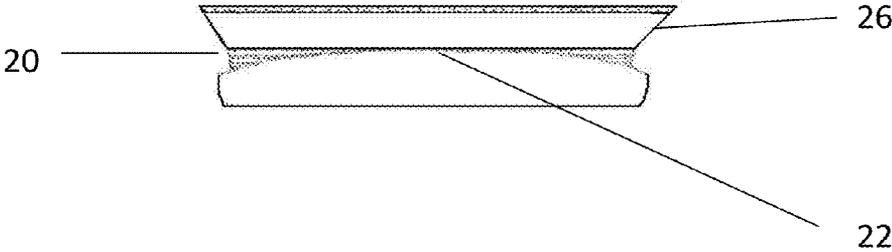


Fig. 9

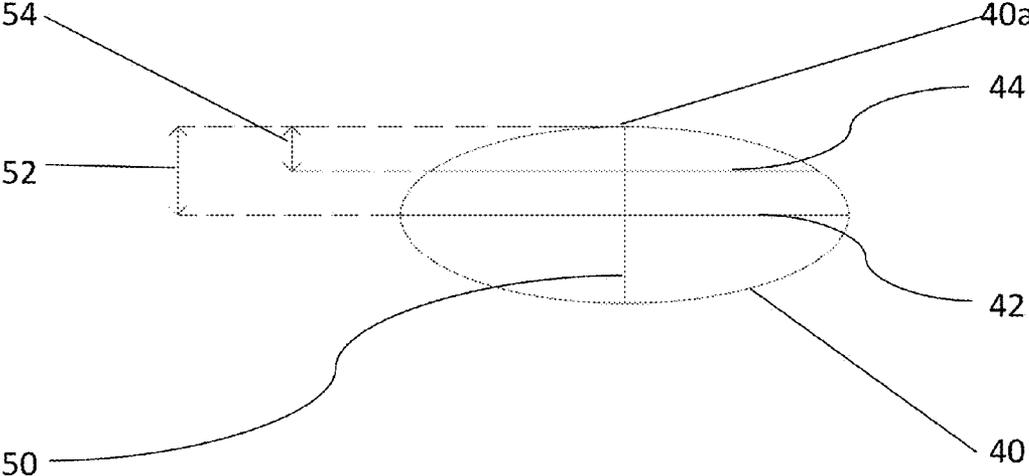
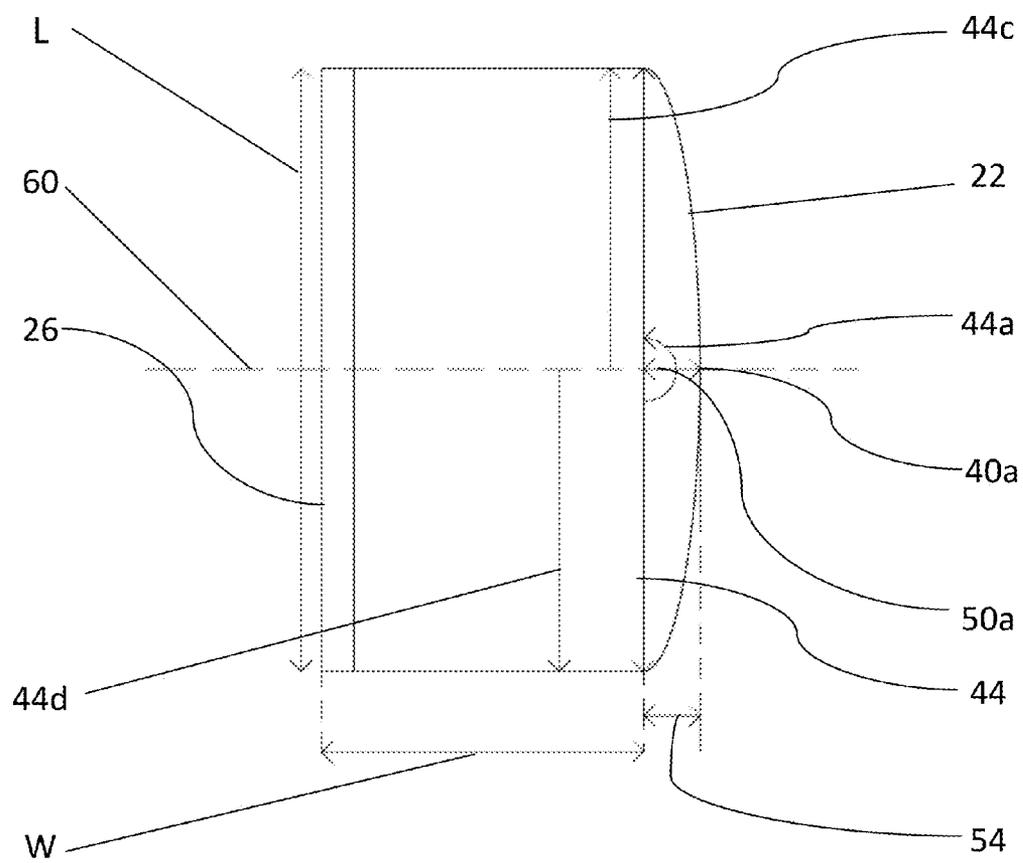


Fig. 10



EASY TO ROLL CURVED EDGE CIGARETTE ROLLING PAPER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit under 35 U.S.C. §119(e) from U.S. Provisional Patent Application No. 61/976,036 entitled EASY TO ROLL CURVED EDGE CIGARETTE ROLLING PAPER filed Apr. 7, 2014.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates generally to cigarette rolling papers and, more particularly, to a cigarette rolling paper which has a curved edge which serves to facilitate rolling a cigarette with the paper, as it eliminates the corners of the traditional rectangular rolling paper, which become an obstacle if the top and bottom edges of the paper are not kept parallel to each other as the cigarette is rolled, a common problem.

[0004] 2. The Prior Art

[0005] Conventionally cigarette rolling papers are rectangular thin tissue-like paper. The standard diameter of a cigarette is generally around 8 mm and the length also varies, but is on the order of 65 mm. Hand-rolling cigarettes is an ancient art, hundreds of years old, and requires some skill. There have been gadgets developed to make it easier. In both the cases of hand-rolling without any equipment, and with the common hand-rolling machines, which are built to feed common rectangular papers, there is a problem that the top and bottom edges of the paper have to be kept parallel, or the leading corner will bind up as you start to roll.

[0006] One rolling paper design is shown in U.S. Pat. No. 1,289,975 entitled Cigarette Wrapper. The main rectangular rolling paper has a closure tongue 12 and a holding strip 14 extending off a lower corner thereof. The holding strip helps keep the tobacco in place while the paper is rolled. The closure tongue then prevents tobacco from coming out into the mouth of the user. A further rolling paper design is shown in U.S. Pat. No. 4,114,629 entitled Cigarette Rolling Paper with Integral Pouch. A pouch is formed at the lower edge of the rolling paper to hold the tobacco during rolling. Tear strips at either end allow the edges of the pouch to be removed after rolling to expose the tobacco. Both of these patents utilize extra material which can increase costs and detract from the cigarette enjoyment.

[0007] When rolling a cigarette, the user takes the flat paper and folds it to form a pouch in a u- or v-shape to hold the smoking material. The near and far edges are referred to here as the bottom and top edges, respectively. The near edge is kept short, and has the edge that is tucked in to start the roll. The far edge, top, has the edge which seals the cigarette at the end when it is rolled up. The user rolls the near edge up into the far edge to form the final cylindrical cigarette shape. The top edge is often treated with glue to seal the cylinder, but that is sometimes omitted, on glueless papers, which self-seal when activated by moistening, typically with saliva.

[0008] Years ago, Zig-Zag, one of the venerable established cigarette rolling paper companies, came out with an innovation to address this problem, they produced papers with the corners cut off. People had done that for years, and it helped with this problem. It works well. The Zig-Zag KutKorners papers are still available. There have been no other successful

designs to address this problem, nor many other innovations at all in this stable mature market since the Zig-Zag KutKorners papers came out.

[0009] There are EZ-wider papers, which are just larger and heavier rectangular papers, which allow you to get out of parallel and catch a corner and still just keep rolling up because there is so much paper. But smoking more paper is not desirable.

[0010] The Zig-Zag KutKorners are good, but the total elimination of the problem catching the corner of the rolling paper is desirable, and dramatically extends the primitive advantage of the Zig-Zag KutKorners, and individual discoverers of coin coupe as a folkway, cut corners, as regards rolling papers.

[0011] Accordingly, it would be desirable to provide a simple rolling paper design that is relatively economical to produce and facilitates the rolling of cigarettes.

SUMMARY OF THE INVENTION

[0012] There is, therefore, provided in the practice of this invention, a cigarette rolling paper with a curved shape at the starting edge. The curved edge being opposite the glued edge or unglued straight sealing edge in the case of glueless papers. The start and end points of the curve are on opposite sides of the paper, at a dimension approximately one-quarter (1/4) of the target circumference of the cigarette being rolled from the cut edge. Constraining the region of the cut to the first quarter of the circumference minimizes waste paper while still the smoking material is well-supported by the full width of the paper as the curved edge is tucked into the far side of the pouch of smoking material. The curved edge 22 is then tucked into the bottom of the paper surface 20 on the opposite side of the packed cigarette and the roll-up is begun.

[0013] In a first embodiment of the invention, there is provided a cigarette rolling paper having one edge shaped as a convex curve and three straight edges. The curve is a generally smooth continuous arc with no significant corners or inflection points. The curve may be of various shapes for example a regular arc, an irregular arc, a circular arc, an oval arc and a complex arc.

[0014] The cigarette rolling paper is adapted to roll into a cigarette having a circumference, wherein said curve includes a deflection having a length approximately 1/4 of the circumference. The curve deflection is proportional to the size of the rolling paper. The curve includes a midpoint that is located in the middle of the cigarette rolling paper. The curve includes one deflection at each end of the cigarette rolling paper.

[0015] The paper further includes glue at one end of the cigarette rolling paper opposite the curve. The cigarette rolling paper is adapted to roll into a cigarette beginning at the curve and ending at the glue end. The cigarette rolling paper comprises cigarette papers of any size or material.

[0016] According to a second embodiment, there is provided an apparatus for hand rolling a cigarette including a cigarette rolling paper having a generally rectangular shape with three rectilinear sides and a one curved side. The three rectilinear sides form three sides of a regular rectangle including (i) a first rectilinear side oriented perpendicular to a second rectilinear side, (ii) a third rectilinear side oriented perpendicular to the second rectilinear side, and (iii) the first rectilinear side being parallel to the third rectilinear side. The curved side is an elliptical arc having an arch height and an arch width that contacts the end points of the first and third

rectilinear sides to form a closed figure. The cigarette rolling paper has reflective symmetry about a central axis that is collinear with the arc height.

[0017] The curved side is devoid of angular edges or sharp corners. The second rectilinear side has a width W , and the arc is part of an ellipse having a major axis, wherein the length of the major axis is between 1 and 10 times the width W . The first and third rectilinear sides have a length L minus deflection, and the arc is part of an ellipse having an arch height, wherein the length of the arch height is between $\frac{1}{5}$ and $\frac{1}{8}$ times the length L . The cigarette rolling paper is made from a material suitable for burning and human inhalation. Length L may also be considered the overall length of the paper from end-to-end.

[0018] The cigarette rolling paper has a thickness between about 0.25 mm and about 2.00 mm, a length L between about 60 mm and about 100 mm, and a width W between about 35 mm and about 45 mm. The elliptical arc is a geometric segment from an ellipse having a major axis that is between about 2 times and about 10 times the length of the minor axis. The region between the elliptical arc and the first and third rectilinear sides comprises a slope matched transition and includes a curvature different from the central portion of the elliptical arc. The cigarette rolling paper is made from a material selected from cellulose, plant fibers, rice, flax, hemp and tobacco.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The advantages, nature, and various additional features of the invention will appear more fully upon consideration of the illustrative embodiments now to be described in detail in connection with accompanying drawings. In the drawings wherein like reference numerals denote similar components throughout the views:

[0020] FIG. 1 is a perspective view of rolling a cigarette with a prior art rectangular rolling paper.

[0021] FIG. 2 is a top plan view of a prior art rolling paper having a rectangular shape.

[0022] FIG. 3 is a top plan view of a prior art rolling paper have cut corners.

[0023] FIG. 4 is a top plan view of an embodiment of a rolling paper with a curved edge according to the invention.

[0024] FIG. 5 is an isometric view of the rolling paper according to the invention with an adhesive strip opposite the curved edge.

[0025] FIG. 6 a top plan view of the rolling paper according to the invention with an adhesive strip opposite the curved edge.

[0026] FIG. 7 is a side elevational view of the rolling paper according to the invention with the first roll formed.

[0027] FIG. 8 is a front side elevational view of the rolling paper according to the invention with the first roll formed.

[0028] FIG. 9 is a diagram showing the geometry of the elliptical arc.

[0029] FIG. 10 is a schematic drawing showing the relationships between the elliptical arc and the paper.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0030] This invention relates to cigarette papers having a curved edge which makes that edge very easy to tuck in and roll up.

[0031] In a rolling process using a prior art rectangular paper 2 as shown in FIG. 1, the leading corner 1 of the bottom

edge of rectangular paper 2, has caught and is not tucking in. FIG. 2 shows this paper laid out flat with the conventional corner 1 having a right angle. FIG. 3 shows an improved paper design where a section has been cut from corner 5 thereby eliminating the corner at the tucking edge 3. However, corner 5 still has two angular edges or sharp corners on each side that can bind if the rolling paper is not perfectly aligned at the outset of the rolling process.

[0032] FIG. 4 shows a rolling paper or paper 10, having a curved edge 12 according to an embodiment of the invention. Note that in the corner region 14 there are no longer angular edges or sharp corners. Curved edge 12 is the starting edge or tucking edge, used to begin the rolling process. The curved tucking edge 12 is the most elegant solution to provide the optimal tolerance for the normal not quite straight hand roll-up.

[0033] FIGS. 5 and 6 show a further embodiment of the curved edge 22 of the invention formed on paper 20 having a strip of glue 26 at the sealing edge. The presence of glue is an optional feature. The curved edge works equally well on both plain and glued papers. The curved edge is designed to facilitate the beginning of the rolling process. The glue is used at the end of the rolling process.

[0034] FIG. 7 shows a side view of the initial roll, without tobacco for the sake of clarity. The roll forms a cylinder having a circumference. The curved edge 22 is shown as extending from the 9:00 position to the 12:00 position. Thus the curved edge 22 extends $\frac{1}{4}$ of the circumference of the cigarette. Any smooth curve in this region will assist to make rolling easier, but the $\frac{1}{4}$ dimension is optimal. The specific character and dimensions of the curve are determined by the overall dimensions of the paper, and this invention works for any size paper or material. FIG. 8 shows the middle point of the arc 22 has been tucked into the far edge of the paper 20 as the rolling begins. Since the paper curves away from the middle point toward the edge of the paper, there is less material present at the troublesome corners, and the likelihood of binding is greatly reduced or eliminated. The adhesive 26 will be contacted when the cylindrical roll has reached the top of paper 20.

[0035] The paper according to the invention includes a smooth curved edge on one side of an otherwise rectangular shape. The curved edge may have a variety of geometries contemplated by the invention, for example, circular, oval or arc shaped.

[0036] In one embodiment the curved edge has an elliptical shape. FIG. 9 shows an ellipse 40 having a major axis 42 across the widest section of the ellipse and a minor axis 50 across the narrowest section of the ellipse. The major axis 42 corresponds to a first arch height of 52 measured orthogonal from the major axis 42 to the top 40a of the ellipse. The arch width 44 corresponds to a second arch height 54 measured orthogonal from the arch width 44 to the top 40a of the ellipse. The curved edge of the invention may include any shape from the major axis 42 up to the top 40a of the ellipse.

[0037] FIG. 10 illustrates the section above arch width 44 to top 40a as comprising the curved edge 22 of paper 20. Curved edge 22 represents the bottom of the paper where the tobacco is placed and the rolling process begins. The left side of paper 20 optionally includes adhesive 26 to seal the cigarette once the rolling process is complete. A minor axis segment 50a, which represents the largest dimension of the curve is located in the center of paper 20. More particularly, minor axis segment 50a extends collinear to line 60 which represents an axis

of symmetry for paper **20**. In other words, if paper **20** is folded along line **60**, the two halves will have an identical shape. It is axiomatic that the central angle **44a** of the arch width **44** is **180** degrees. The first arch width segment **44c** extending orthogonal from line **60** to the right edge of paper is equal in length to the second arch width segment **44d** extending orthogonal from line **60** to the opposite left edge of paper **20**.

[0038] Paper **20** includes a width **W**. The curved edge is a section from an ellipse. The ellipse includes a major axis. The major axis **42** has a length that is between 1 and 10 time longer than width **W**. Note the relationship of width **W** is in comparison to the major axis, even when a narrower arch width is used on the actual paper. Ellipses may be selected from the group having a major axis that is between 2 and 10 time the length of the minor axis. The region between the elliptical arc **22** and the first and third rectilinear sides may have a smooth rounded transition which may be slope shaped or filleted. This rounded transition or fillet may have a curvature different than the central portion of the elliptical arc.

[0039] Paper **20** includes a length **L**. In general, the length **L** will be greater than the width **W**. At the shortest, assume **W** is five units in width, and the paper will be rolled one and one-quarter revolutions, with one revolution taking up four units. The resulting cigarette will have a circumference of 4 units, with a one unit overlap. Arch height **54**, following the formula of $\frac{1}{4}$ the circumference, would be 1 unit long, or $\frac{1}{5}$ of width **W**. At the longest, assume **W** is eight units in width, and the paper will be rolled two complete revolutions, with each revolution taking up four units. The resulting cigarette will have a double wall and a circumference of 4 units. Arch height **54**, following the formula of $\frac{1}{4}$ the circumference, would be 1 unit long. Accordingly, arch height **54** will be between $\frac{1}{5}$ and $\frac{1}{8}$ of width **W**. The arch height **54** is also referred to as the curve deflection.

[0040] This invention relates to the configuration of a rolling paper, and can be applied to rolling papers of any type. By way of example only, rolling papers are made from cellulose, plant fibers, rice, flax, hemp and tobacco. When made from cellulose, a synthetic or natural polymer may be selected. Several patents disclose the composition of rolling papers as follows: U.S. Pat. No. 5,060,675 and U.S. Pat. No. 5,450,862 and U.S. Pat. No. 5,878,754 and U.S. Pat. No. 6,138,684 and U.S. Pat. No. 8,701,681 the contents of which are incorporated herein by reference thereto. Rolling papers have a thickness on the order of several millimeters, or less than one millimeter, for example between 0.25 and 0.75 mm. The rolling papers may be manufactured in a sheet or web of indefinite length. The rolling papers may be cut from the web by die-cutting, stamping or any other suitable means. The length **L** can range between about 60 mm and about 100 mm, and the width **W** can range between about 35 mm and about 45 mm. The curved edge can be formed by trimming a rectangular paper.

[0041] Having described preferred embodiments for (which are intended to be illustrative and not limiting), it is noted that modifications and variations can be made by persons skilled in the art in light of the above teachings. The curved edge can be of various geometries as long as the central portion is longer than the end portions. Oval or elliptical shapes are ideally suited, but other regular, irregular or compound curves may be employed as long as the transition between the curved edge and the rectilinear side edges is smooth without sharp corners. The use of any rolling paper material, composition and manufacturing methods are

intended to be included within the scope of the invention. It is therefore to be understood that changes may be made in the particular embodiments of the invention disclosed which are within the scope and spirit of the invention as outlined by the appended claims. Having thus described the invention with the details and particularity required by the patent laws, what is claimed and desired protected by Letters Patent is set forth in the appended claims

What is claimed is:

1. A cigarette rolling paper comprising one edge shaped as a convex curve, and three straight edges.

2. The cigarette rolling paper of claim 1, wherein said curve is a generally smooth continuous arc with no significant corners or inflection points.

3. The cigarette rolling paper of claim 2, wherein said curve is selected from the group consisting of a regular arc, an irregular arc, a circular arc, an elliptical arc and a complex arc.

4. The cigarette rolling paper of claim 3, wherein the cigarette rolling paper is adapted to roll into a cigarette having a circumference, wherein said curve includes a deflection having a length approximately $\frac{1}{4}$ of the circumference.

5. The cigarette rolling paper of claim 4, wherein said curve deflection is proportional to the size of the rolling paper.

6. The cigarette rolling paper of claim 5, wherein said curve includes a midpoint that is located in the middle of curved edge of the cigarette rolling paper.

7. The cigarette rolling paper of claim 6, wherein said curve includes one deflection at each end of the cigarette rolling paper.

8. The cigarette rolling paper of claim 1, wherein the cigarette rolling paper comprises cigarette papers of any size or material.

9. The cigarette rolling paper of claim 1, further including glue at one end of the cigarette rolling paper opposite said curve.

10. The cigarette rolling paper of claim 9, wherein the cigarette rolling paper is adapted to roll into a cigarette beginning at said curve and ending at said glue end.

11. The cigarette rolling paper of claim 1, wherein the cigarette rolling paper has a thickness between about 0.25 mm and about 2.00 mm, a length **L** between about 60 mm and about 100 mm, and a width **W** between about 35 mm and about 45 mm, and wherein the cigarette rolling paper is made from a material suitable for burning and human inhalation.

12. An apparatus for hand rolling a cigarette comprising: a cigarette rolling paper having a generally rectangular shape with three rectilinear sides and a one curved side; said three rectilinear sides form three sides of a regular rectangle comprising (i) a first rectilinear side oriented perpendicular to a second rectilinear side, (ii) a third rectilinear side oriented perpendicular to said second rectilinear side, and (iii) said first rectilinear side being parallel to said third rectilinear side; and said curved side comprising an elliptical arc having an arch height and an arch width that contacts the end points of said first and third rectilinear sides to form a closed figure;

wherein said cigarette rolling paper has reflective symmetry about a central axis that is collinear with the arch height.

13. The apparatus of claim 12, wherein the cigarette rolling paper is made from a material suitable for burning and human inhalation.

14. The apparatus of claim **13**, where said curved side is devoid of angular edges or sharp corners.

15. The apparatus of claim **14**, wherein the second rectilinear side has a width W , and the arc is part of an ellipse having a major axis, wherein the length of the major axis is between 1 and 10 times the width W .

16. The apparatus of claim **15**, wherein the first and third rectilinear sides have a length L minus deflection, and the arc is part of an ellipse having an arch height, wherein the length of the arch height is between $\frac{1}{5}$ and $\frac{1}{8}$ times the length L .

17. The apparatus of claim **16**, wherein the cigarette rolling paper has a thickness between about 0.25 mm and about 2.00 mm, a length L between about 60 mm and about 100 mm, and a width W between about 35 mm and about 45 mm.

18. The apparatus of claim **17**, wherein the region between the elliptical arc and the first and third rectilinear sides comprises a slope matched transition and includes a curvature different from the central portion of the elliptical arc.

19. The apparatus of claim **18**, wherein the cigarette rolling paper is made from a material selected from cellulose, plant fibers, rice, flax, hemp and tobacco.

20. The apparatus of claim **19**, wherein the elliptical arc is a geometric segment from an ellipse having a major axis that is between about 2 times and about 10 times the length of the minor axis.

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