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G. M. WILSON

3,606,892

DELAYED VENTILATION CIGARETTE

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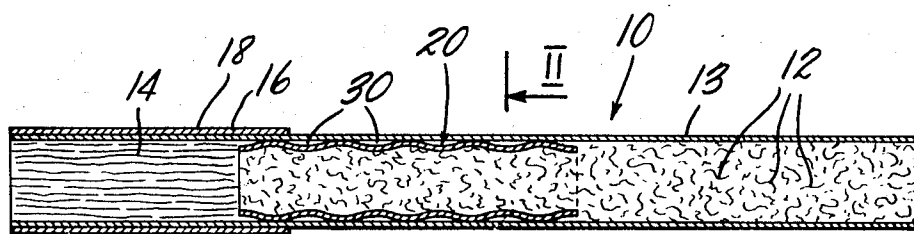


FIG. 1

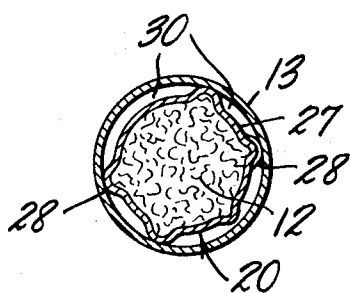


FIG. 2

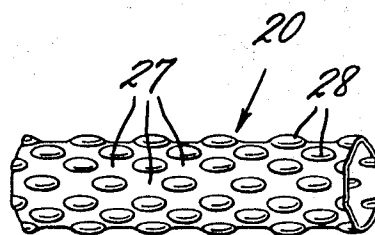


FIG. 3

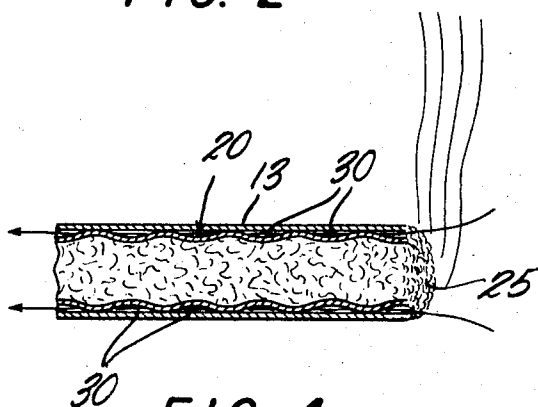


FIG. 4

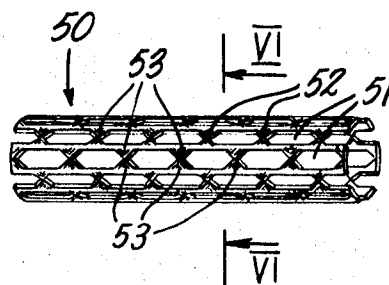


FIG. 5

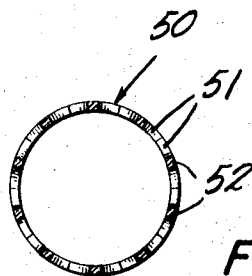


FIG. 6

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DELAYED VENTILATION CIGARETTE

Gerald M. Wilson, Howardsville, Va., assignor to Philip Morris Incorporated, New York, N.Y.
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8 Claims

ABSTRACT OF THE DISCLOSURE

A delayed dilution or ventilation type cigarette in which the cigarette has an inner sleeve of a suitable material enclosing the tobacco filler along a length thereof from the butt end a distance in the direction of the other end. The inner sleeve in turn is enclosed by the conventional or outer paper wrapper of the tobacco cylinder, such sleeve including projections or openings in the surface thereof which cooperate with the inside surface of the outer wrapper to form a series of cigarette ventilation passages within the cigarette structure, the ventilation passages being placed in communication with atmosphere only after about half the length of the tobacco cylinder length has been smoked.

BACKGROUND OF THE INVENTION

The present invention relates to a ventilation type cigarette and more particularly a cigarette which allows for delay in the onset of ventilation or dilution of the smoke puffs until sometime after the smoker has started smoking the cigarette.

Ventilation of smoking articles and more specifically the ventilation of cigarettes achieved by providing the cigarettes with means for admitting a flow of dilution or ventilation air to the smokestream or directly to the smoker's mouth along with the smoke puff are known in the art. For example, such means for ventilation can include ventilation openings in the tobacco cylinder outer wrapper which allow concurrent intake of ventilation air with smoke during the course of puffing, the ventilation air serving to dilute the smokestream thereby realizing a lesser delivery of smoke particulates and gas phase components to the smoker's mouth. It is also possible to provide cigarette ventilation or dilution by crimping or pleating the outer tobacco cylinder wrapper to provide it with air passages, as for example, in the manner shown in U.S. Pats. 2,667,170 and 3,228,402. However, there is a problem associated with cigarette ventilation in that most smokers find that smokestream dilution detracts from taste satisfaction, especially during the earlier puffs. On the other hand, smokestream dilution during the later puffs when there is a higher smoke delivery does not diminish taste satisfaction to any noticeable degree and in some instances enhances the same. It is also known to treat cigarettes in a manner which allows for delayed dilution by providing the outer wrapper with a series of openings which are filled with a vaporizable or meltable barrier material which becomes activated in the course of the smoking of the cigarette as by heat, or by moisture in the hot smokestream delivered from the burning coal. Thus, the Figge Pat. 2,992,647, discloses perforating the cigarette paper wrapper and filling the perforated openings with a barrier material which for a time precludes incursion of ventilation air to the tobacco cylinder but which becomes activated by heat from the burning coal a distance in advance of the latter to dissolve and thereby open the tobacco cylinder to atmosphere to admit entry of ventilation air. However, the incorporation of this mode of ventilation in cigarettes is not easily achieved, particularly with respect to the manufacturing of the cigarette on a high speed production basis.

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SUMMARY OF THE INVENTION

The present invention is concerned with a delayed dilution or ventilation type cigarette being applicable in its principles to both filter and non-filter type cigarettes. An important purpose of the invention is to provide a cigarette which gives the smoker a more satisfying all-smoke puff during the early stages of smoking but an air dilution of the cigarette which enhances the taste as well as dilutes the heavy smoke associated with the later stages of smoking. According to the present invention, the cigarette is provided with a special inner sleeve of a suitable combustible material, as for example, paper extending along and wrapped around a length of the tobacco filler extending from the butt end of the cigarette in the direction of the other end. The inner sleeve tightly wraps around the tobacco filler confining the filler along a portion of the length of the tobacco cylinder. The inner sleeve in turn, and the remaining length of the tobacco cylinder is wrapped in an outer wrapping of readily combusted paper conventionally employed as cigarette wrapping. The inner sleeve embodies means therein which cooperate with the outer paper wrapper to define a series of substantially continuous ventilation passages within the cigarette at the butt end. Such passages are not communicated with atmosphere during the early stages of smoking being placed in communication with atmosphere for intake of dilution air only after the cigarette has been smoked to some predetermined length, e.g., to a point at about mid-length of the tobacco cylinder.

The continuous ventilation passages can be provided by making the inner sleeve in the form of a corrugated structure such as corrugated paper having a generally smooth outer surface provided with a pattern of projections or protuberant structure which function to engage the inner surface of the outer paper wrapper and thereby space the main body of the sleeve sufficiently from said outer wrapper inner surface to allow substantial passage means within the cigarette through which dilution air can flow to the smoker's mouth. It is also possible that the sleeve be made as a structured paper having a series of longitudinally aligned and circularly spaced openings in the structure. When the cigarette has been smoked to a predetermined point and the sleeve starts to burn, the ventilation passages formed by the sleeve and outer wrapper are placed in communication with atmosphere to allow the intake of dilution air streams to the cigarette with the air entering the cigarette around the periphery of the burning coal.

If the cigarette is made as a filter type, one end of the sleeve abuts with an end face of the filter plug, and the filter plug in turn is secured to the outer paper wrapping with a tipping paper overlay. The invention accordingly comprises the features of construction, combination of elements and arrangement of parts, which will be exemplified in the construction hereinafter set forth and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWING

A fuller understanding of the nature and objects of the invention will be had from the following detailed description taken in conjunction with the accompanying drawing in which:

FIG. 1 is a longitudinal sectional view of a delayed dilution or ventilation type cigarette made in accordance with the principles of the present invention.

FIG. 2 is a transverse sectional view of the cigarette shown in FIG. 1 as taken along the line II—II in FIG. 1.

FIG. 3 is a perspective view of one form of inner paper sleeve as embodied in the cigarette shown in FIG. 1.

FIG. 4 is a fragmentary, longitudinal sectional view illustrating the manner in which the ventilation cigarette

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of the present invention functions to admit ventilation air. FIG. 5 is a perspective view of another form of inner paper sleeve which can be used in the cigarette of the present invention.

FIG. 6 is a transverse sectional view of the sleeve shown in FIG. 5 as taken along the line VI—VI in FIG. 5.

Throughout the description like reference numerals are used to denote like parts in the drawing.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The ventilation cigarette of the present invention is designed to be manufactured readily with existing manufacturing techniques and with the use of existing cigarette making machinery. In its construction, it is equally suited for use in both filter as well as non-filter type cigarettes. In connection with the use of the present invention with non-filter type cigarettes, it will be understood that the ensuing description of the preferred embodiment as described with respect to the filter cigarette shown in FIG. 1 is to be taken as being equally applicable to a non-filter type cigarette. Turning now to a consideration of the cigarette 10 shown in FIG. 1, the cigarette includes a tobacco cylinder comprised of the usual cylindrical-shaped mass of shredded tobacco 12 which can vary in length, e.g., from 65 mm. to 85 mm. and which is enclosed by a wrapping 13 of cigarette paper in conventional manner. In the case of a filter type cigarette, the thus formed tobacco cylinder can be joined to a cylindrical filter element 14 of known construction, e.g., a tow of cellulose acetate wrapped in a paper cylinder 16 in the form of a plug which in turn is joined to the tobacco cylinder with an overwrap of tipping paper 18 in the customary manner.

As was indicated above, the tobacco 12 is confined in cylindrical form along only part of its length by paper wrapper 13, the remaining portion actually being confined within inner sleeve 20. The inner sleeve 20 also is comprised of a wrapping of burnable paper which serves with the outer wrapping 13 to define within the body of the tobacco cylinder, ventilation passage means 30 to admit ventilation or dilution air streams to the smoker's mouth upon puffing but only after the cigarette has been smoked to a predetermined length. In general, the length of the inner wrapping or sleeve 20 will vary depending upon the point in the course of smoking at which dilution is to be initiated. A particularly suitable sleeve length is one wherein the sleeve is approximately one-half the length of the tobacco cylinder, the sleeve being positioned to extend from the butt end of the tobacco cylinder to about mid-length of the tobacco cylinder.

The inner wrapping or sleeve 20 can be formed in various ways to suit the purpose of providing cooperatively with outer wrapping 13, ventilation air passage means 30 at the inside of the cigarette. In one form, the sleeve 20 can be formed as a cylinder of embossed paper, the paper being readily combustible so as to burn in company with the outer wrapping 13 as the burning coal 25 reaches about mid-length of the tobacco cylinder in the course of smoking the cigarette. As can be seen in FIG. 3, the embossed paper cylinder 20 has a generally cylindrical shape with the main body part having a generally smooth surface along a substantial expanse of the sleeve, the areas of such surface being denoted generally at 27. The cylinder also includes a plurality of corrugated projections 28 arranged in a suitable manner about the body of the sleeve and having a suitable surface configuration, e.g., convex oval. The projections can be in the sleeve in a variety of patterns including the axially and circularly disposed row arrangement shown. The projections 28 also could be arranged in a random arrangement as long as the smooth surface areas 27 include at least one continuous unobstructed path from one end of the sleeve to the other.

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The projections 28 serve the function when they are encircled and tightly engaged by the outer wrapping 13, to hold the smooth areas 27 of the sleeve 20 spaced from the inner surface of the wrapping 13 thereby to form the ventilation passages 30. The manner in which the projections 28 function can be further understood with reference to FIG. 2 wherein certain of the projections 28 can be seen as being engaged tightly at their tips or peaks by wrapping 13, with the smooth surface areas of the sleeve 20 intervened by the respective projections being spaced some distance from the inner surface of the wrapping 10. The thus defined spaces provide the ventilation passages 30. The size of the flow channels constituted by passages 30 of course determine the degree of dilution which is achieved when the ventilation means becomes operative. The projection 28 preferably are of a low profile having a height outstanding from the smooth areas in the range ".020-.030."

In use, the sleeve 20 functions to admit ventilating or diluting streams of cool fresh air to the smoker's mouth when he takes a puff on the cigarette at some time after he has started smoking the cigarette. Such dilution air of course will commingle with the smoke in the filter 14 of the filter type cigarette shown. On the other hand, with a non-filter type cigarette the dilution air will be delivered to the smoker's mouth with little of any commingling. As was indicated earlier, dilution is delayed until some time after commencement of smoking, e.g., until about one-half the length of the tobacco cylinder has been smoked. At the latter point and as shown in FIG. 4, the paper sleeve 20 will start to burn in conjunction with the smoking of the cigarette and combustion of the shredded tobacco filler 12 and the outer wrapping 13. With this happening, the ventilation passages 30 which up to this point were isolated from atmosphere, become exposed to the atmosphere and entry of the cooling and diluting streams of air around the periphery of the burning coal is possible. The entry of the diluting or cooling air is along the flow paths denoted with arrows in FIG. 4. It will be understood that the burning coal 25 does not burn with the same intensity at the periphery thereof as at the center and hence the air entering into the passages 30 does not become heated to any appreciable extent.

FIG. 5 illustrates another form of sleeve 50 which instead of being provided with projections has an arrangement or network of openings 51 therein, the sleeve being formed in such a manner that the juncture of the each opening 51 with those adjacent is at or along a very thin web as shown at 52. The areas of the sheet adjacent the webs 52 can be formed with a depressed surface at 53 to insure communication between each hole and those adjacent thereto to provide an unobstructed air passage.

It will be seen from the foregoing that the ventilated cigarette of the present invention is readily adapted to utilization in existing cigarette making machines. For example, the outer wrapping material is supplied to the cigarette making machine from a roll of such material. It would be convenient then that the inner sleeve be formed by adhering a corresponding length of suitably embossed paper to the inner face of the outer wrapping material. In this manner the combined wrapping assembly can be fed into the cigarette making machine during the wrapping of the tobacco.

While there is above disclosed but some embodiments of ventilation type cigarette of the present invention, it is possible to produce still other embodiments without departing from the scope of the inventive concept herein disclosed, and accordingly it should be understood that all matter contained in the above description and accompanying drawing should be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A ventilation type of cigarette comprising an elongated cylinder of shredded tobacco,

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an inner sleeve of combustible material enclosing said tobacco cylinder along a portion of the length thereof from the butt end of said tobacco cylinder a distance in the direction of the smoking end thereof to a location intermediate the ends of said tobacco cylinder, and

an outer combustible wrapping enclosing said inner sleeve and the remaining length of said cylinder of tobacco, said outer wrapping having a smooth inner surface, said inner sleeve being characterized by embodiment therein of means cooperating with said smooth inner surface of said outer wrapping to define with the latter a plurality of substantially continuous ventilation passages within said cigarette, said ventilation passages being placed in communication with atmosphere when said tobacco cylinder has been smoked to said location whereby ventilation air is drawn through said ventilation passages concurrently with puffing of the cigarette during the final stages of smoking said cigarette.

2. A ventilation type cigarette in accordance with claim 1 wherein said inner sleeve is provided with areas of smooth surface and with projections outstanding from said smooth surface, said projections being tightly engaged by said outer wrapping and spacing said smooth surface from the inner surface of said outer wrapping thereby to define said ventilation passages.

3. A ventilation type cigarette in accordance with claim 2 wherein said projections are arranged in longitudinally and circularly disposed rows on said sleeve.

4. A ventilation type cigarette in accordance with claim 2 wherein said projections are convex oval in shape.

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5. A ventilation type cigarette in accordance with claim 1 further comprising a filter element joined, to the tobacco cylinder at the butt end of the latter.

6. A ventilation type cigarette in accordance with claim 1 wherein said inner sleeve and said outer wrapping are made of paper.

7. A ventilation type cigarette in accordance with claim 6 wherein said inner sleeve is made of a structured paper provided with a plurality of openings therein, each opening being joined with the openings adjacent thereto by a relatively thin web of paper.

8. A ventilation type cigarette in accordance with claim 7 wherein the thin web joining each opening with those adjacent thereto has areas of reduced thickness.

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ALDRICH F. MEDBERY, Primary Examiner

J. F. PITRELLI, Assistant Examiner

U.S. Cl. X.R.

131—9, 15B