

[54] **SMOKING ARTICLES**

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[58] **Field of Search** **131/4, 15, 10, 9**

[56] **References Cited**

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[57]

ABSTRACT

A smoking article is disclosed wherein a constant supplementary air supply is afforded to the rear of the burning coal and through the combustible wrapper. The wrapper is modified to effect this by being treated with sodium or potassium chlorate in two longitudinally extending areas 40mm long and 5mm wide disposed rearwardly of the end to be lit. The concentration of the chlorate salt in the treated areas is from 0.1 to 0.7 mg per square centimeter. During smoking, the treated areas in the vicinity of the burning coal open to provide external air ingress apertures for the stated purpose.

1 Claim, No Drawings

SMOKING ARTICLES

This application is a continuation of application Ser. No. 885,615, filed Dec. 16, 1969, now abandoned.

This invention concerns improvements relating to smoking articles, especially but not exclusively cigarettes.

It is well known to provide cigarettes with permeable or perforated wrappers to allow ingress of external air to the smoke formed by the burning tobacco and so produce a less concentrated smoke aerosol for inhalation by the smoker. These cigarettes produce, on burning, smoke of similar composition to that of conventional cigarettes, the effect of the increased porosity of the wrapper being the dilution of the smoke stream with a greater or lesser proportion of external air. It is a disadvantage in such cigarettes that the relationship between the burning coal and the position and volume of the entering air is variable and cannot readily be maintained at a substantially constant predetermined value.

The present invention seeks to provide, by a simple treatment of the wrapper enclosing the smoking material, a means for modifying the burning conditions, or the burning characteristics of the smoking material, during smoking.

According to the invention, a smoking article is provided with a wrapper which is treated, non-uniformly upon its surface, with a substance which can accelerate the rate of burning of the treated areas during smoking, thus establishing a differential burn rate for treated and untreated areas. By such treatment, it is possible to provide, in the immediate vicinity of the burning coal, sections of wrapper which burn in a predetermined region adjoining the said coal, so producing apertures which can admit air into the rod of smoking material not yet seriously affected by the burning coal, in a predetermined amount and at a predetermined distance from the said coal. Air drawn through these sections on puffing enters the combustion area of the rod immediately behind the burning coal. In this manner it can be arranged that a substantially constant volume of air enters the smoke stream at a predetermined distance from the burning coal. By such alteration of the burning conditions during smoking, the composition of the smoke produced by the combustion process can be appreciably modified.

Suitably, the treatment involves the application to the wrapper of a substance which can provide rapid charring under the influence of moderate heat. The said substance may be an oxidizing substance, for example an alkali metal salt or nitric or chloric acid, or potassium permanganate, preferably applied in solution in a convenient volatile solvent, such as water. Alternatively use may be made of a finely divided metallic material, as for instance aluminium powder or a nickel alloy, or a mixture thereof with an alkali-metal salt. Such material may be applied in suspension in a liquid vehicle such as water or alcohol.

The substance may be applied effectively by various procedures conventionally employed in the treatment of paper or in printing, for example by a printing or embossing operation, and the application may be incorporated into the process of manufacture of the smoking article as an additional stage during the feeding of the continuous wrapping strip into the rod-forming stations of a continuous rod-making machine. The application

may be combined with other printing of cigarette-wrapping paper during the manufacture of cigarettes. The treatment substance may then be mixed with dye, ink or bronze powder used in such printing.

Suitably the treatment substance is applied so as to form rows of overlapping short streaks or longitudinal streaks. Streaks may be of varying width or length. Other distributions may be used, for instance in the form of spots or random lattice patterns, provided that a continuous peripheral band of treatment occurs at no position along the length of the completed rod. The total area of such treated streaks, spots or other formations may amount to between 10 percent and 80 percent of the total area of the wrapper.

Oxidizing substance may be added to the wrapper material in amounts up to 10 mgm. per square centimetre, but preferably between 0.1 and 5.0 mgm.

The following examples illustrate the application of the invention to cigarettes:

EXAMPLE 1

An aqueous solution containing 80 g/100 ml of sodium chlorate was applied to the cigarette-wrapping to form two streaks of 40 mm length and 5 mm width. The streaks were arranged so that alternate areas of treated and non-treated paper were formed longitudinally along the cigarette, the tip of the cigarette, which is to be lit, being left untreated. The treated area of the paper contained 0.7 mg/sq.cm. of sodium chlorate.

EXAMPLE 2

The procedure was as in Example 1, except that potassium chlorate was used instead of sodium chlorate, the solution containing 7 g/100 ml of potassium chlorate. The treated area of the paper contained 0.1 mg/sq.cm. of potassium chlorate.

Results of smoking tests on both filter-tipped and plain cigarettes for which the paper was thus treated, are given in the following tables a and b:

(a) Filter-tipped Cigarettes

	Untreated control	Paper treated with sodium chlorate	Paper treated with potassium chlorate
	Yield	Yield	Reduction
Total Particulate Matter (TPM)	34.4 ml	23.1 mg	33%
Nicotine	2.09 mg	1.61 mg	23%
Alkaloids	16.5	14.3	—
Ratio TPM/Nicotine	5.7	6.0	—
Smoke pH			

(b) Plain Cigarettes

	Control	Paper with Sodium Chlorate	
	Yield	Yield	Reduction
Total particulate matter	28.9 mg	18.0 mg	38%
Nicotine alkaloids	2.02 mg	1.42 mg	30%
Phenols	159 µg	100 µg	37%
Ratio TPM/Nicotine	14.3	12.7	—

Cigarettes made with the treated paper thus produce smoke with appreciably lower proportions of total particulate matter, nicotine alkaloids and phenols.

The above results also show that the pH of the smoke can be increased by the treatment, thus increasing the

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smoke acceptability as measured by subjective smoke-test panels.

We claim:

1. A smoking article provided with an imperforate, uniform burnable wrapper which is treated, non-uniformly upon its surface, in a plurality of specific, separated areas in the form of two longitudinally extending streaks about 5 millimeters in width and about 40 millimeters in length, said streaks terminating to the rear of the burnable tip end with a substance selected

from the group consisting of sodium chlorate and potassium chlorate said treated areas containing amounts varying from about 0.1 milligrams per square centimeter to about 0.7 milligrams per square centimeter of chlorate salt, whereby, upon smoking of the cigarette, the pre-selected areas are burned in advance of the advancing cigarette coal, so as to allow air to enter during smoking in a manner essentially imperceptible to the smoker.

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