

1

2,902,998

METHOD AND MEANS FOR NEUTRALIZING OBNOXIOUS CIGARETTE COMBUSTION PRODUCTS

Jan Durandeaux, Neuilly-sur-Seine, France

No Drawing. Application October 17, 1955
Serial No. 541,048

Claims priority, application France October 27, 1954

5 Claims. (Cl. 131-9)

This invention relates to cigarette paper or the like and to tobacco smoking products comprising the same. More particularly, the invention relates to a method and means for neutralizing certain obnoxious gaseous substances resulting from the combustion of cigarettes or other smoking products having a paper wrapper.

It is well known that such substances have often deleterious or, at least, disagreeable psycho-physiological effects.

The main object of the invention is to incorporate in a cigarette, or other smoking product having a paper wrapper, salts capable of increasing the rate of combustion to thereby neutralize certain products generated by the natural combustion of the smoked product.

The applicant believes that the deleterious effects of the cigarette smoke are essentially attributable to the paper used in the manufacture of the cigarettes.

A further object of the invention is therefore to interpose between the paper wrapper and the tobacco roll of a smoking product, such as a cigarette, an intermediary layer of catalytic salts, so that the smoke is necessarily acted upon by said salts before coming into the mouth of the smoker through the tobacco roll.

Now, the applicant has found that the best salts to be used for that purpose are constituted by the salts of the metals of the platinum group optimum results being obtained with palladium chloride. By "metals of the platinum group" is meant a metal of the group consisting of platinum, iridium, palladium, rhodium and ruthenium.

It is therefore a further object of the invention to provide a tobacco smoking product of the type constituted by a tobacco roll supported in a paper wrapper, comprising an intermediary layer of a metal salt of the above defined platinum group, interposed between said wrapper and said tobacco roll and completely surrounding the latter to produce, during the smoking, a neutralizing effect on the products of combustion of said paper wrapper.

The "intermediary layer" of the salts of the metals above referred to is regarded as being constituted by the residue of the said salts remaining after the evaporation of the solution of said salts which is used to impregnate said paper wrapper.

It is to be understood that the substances to be catalyzed by the presence of a metal of the platinum group is any substance contained in the combustion products of a conventional cigarette paper, which may be subjected to oxidation.

It has already been proposed to include chlorophyll, particularly a water-soluble chlorophyll, within cigarette paper to contribute to a better and fuller burning thereof, and induce the oxidation of irritating vapors arising from the partial combustion of the paper during the course of the passage of said vapors over the chlorophyllized paper. But although cigarette paper may be made to undergo a further combustion when catalyzed by the presence of chlorophyll and related compounds in the paper, the chlorophyll is what may be termed a "pseudo-catalyst" since the molecules of chlorophyll will be de-

2

stroyed by the combustion heat. In contradistinction thereto, any metal of the above defined platinum group constitutes a true catalyst not affected by the combustion heat produced by a burning cigarette. Consequently, while chlorophyll induces the desired oxidation of irritating vapors only as long as the chlorophyll remains unaffected by the combustion heat, that is, during the course of the passage of said vapors over the unburnt part of the chlorophyllized cigarette paper, which course decreases as the length of the cigarette decreases during the combustion thereof, a metal of the platinum group as described induces the oxidation of irritating vapors at the very moment of combustion and at every combustion zone along the entire cigarette, independently of the unburnt length portion thereof.

Among the smoking products which may be treated according to the invention, independently of all kinds of cigarettes, I will mention a particular type of cigar, wherein the roll of tobacco is surrounded by a sheet of suitably designed cigarette paper, the same being sometimes surrounded in turn by a sheet of tobacco.

Independently of its neutralizing effect on the combustion products of the paper, the above mentioned metal salts offer the further essential advantage of considerably increasing the degree of combustibility of a smoking product, which permits, all other things being equal, using a paper having a far lower degree of porosity. Now it is known that the "efficiency" of the cigarette, i.e. the ratio of the amount of tobacco smoke actually inhaled by the smoker to the total amount of tobacco which is destroyed by the smoking operation, increases as the degree of porosity of the paper decreases. Thus the treatment according to the invention permits manufacturing cigarettes offering both a high efficiency and a good combustibility.

Moreover, with an ordinarily manufactured cigarette the tobacco proper acts as a filter for the smoke so that certain gaseous substances contained in the smoke are liable to be adsorbed on the surface of the tobacco shreds. This is why a conventional cigarette becomes stronger and stronger as it is consumed so that many delicate smokers and in particular those who smoke rarely, usually consume only about one half of their cigarettes.

On the contrary, a cigarette according to the invention, owing to the neutralization of unwanted gaseous substances, keeps its flavour and taste unaltered during its whole consumption.

In the treatment according to the invention, the above mentioned neutralizing intermediary layer is preferably obtained from a solution of palladium chloride concentrated at about 1/1000 in a suitable solvent, such as water.

This method permits obtaining the best results with a practically negligible increase of the cigarette cost.

In practice, for obtaining smoking products provided with a neutralizing layer of catalytic salts according to the invention, it is convenient to treat directly the paper wrapper, either during or after its manufacture.

It is, accordingly a further object of the invention to include, in a cigarette paper manufacturing process, an appropriate step to deposit on the paper, which is intended to surround the tobacco roll, the above mentioned neutralizing material, and,

It is a further object of the invention to provide a method of treating cigarette paper, comprising the steps of dissolving in a suitable solvent a salt of a metal of the platinum group such as palladium chloride, depositing the solution thus obtained on the cigarette paper and drying the paper to ensure evaporation of the solvent.

The deposition of the above mentioned solution may be effected either by coating the relevant face of the paper or by impregnating the same, this last alternative

ensuring a better adherence of the neutralizing layer. The paper is then dried to ensure evaporation of the solvent.

For impregnating cigarette paper on a commercial scale, it is possible to proceed directly on a paper manufacturing machine, before or during the drying step or, if preferred, on a surface coating machine, after the manufacture of the paper proper is completed, suitable care being taken to avoid any objectionable inter-reaction between any metal part and the salts used for the treatment.

As a specific example, it may be mentioned that for obtaining a cigarette according to the invention, having its paper impregnated with a palladium chloride catalyst substance, it is possible to proceed in the following manner.

Example.—10 cc. of an aqueous solution with a concentration of 1.3 gram of palladium chloride per litre are used. With a small brush, an ordinarily manufactured cigarette is coated with this solution so as to slightly wet its paper (about 1 cc. for 20 cigarettes), particular care being taken to suitably impregnate the overlapping seam of the cigarette to take into account the double-layer of paper existing along said seam. After drying, a cigarette thus treated, when normally smoked (i.e. substantially at the rate of inhalation of 15 cc. per minute at a frequency of one expiration per minute) offers a constant smoking pleasure during its whole consumption.

The presence of neutralizing salt such as palladium chloride, owing to its catalytic action on the combustion of the cigarette paper offers the advantage that the

eye and throat irritations resulting from smoking tobacco wrapped in conventional paper are considerably minimized.

What is claimed is:

1. A cigarette paper wrapper having applied to at least one surface thereof, a salt of a platinum group metal.
2. A cigarette having a paper wrapper enclosing a tobacco filler, said paper wrapper having applied at least to its inner surface a salt of a platinum group metal.
3. A cigarette paper impregnated with a platinum group metal salt.
4. A cigarette paper having applied to at least one surface palladium chloride.
5. The method of treating cigarette paper comprising applying to at least one surface a solution of palladium chloride in concentration of about 1 part per 1,000.

References Cited in the file of this patent

UNITED STATES PATENTS

186,157	Pearl	Jan. 9, 1877
254,929	D'Argy	Mar. 14, 1882
261,576	Allison	July 25, 1882
2,137,706	Ubben	Nov. 22, 1938
2,460,285	Hale	Feb. 1, 1949

FOREIGN PATENTS

5,432	Austria	Oct. 10, 1901
11,419	Great Britain	1902
70,276	Austria	Oct. 25, 1915
1,075,987	France	Apr. 14, 1954