

"Improvements Relating to Smoking Articles"

This invention relates to smoking articles, cigarettes for example.

It has long been a practice to incorporate in cigarettes and other smoking articles flavourant materials
5 for imparting a desired flavour to the mainstream smoke. Flavourant materials may be incorporated in the smoking material, in a wrapper of the smoking article, or in a mouthpiece or filter thereof. When a flavourant material is incorporated in a smoking article at a mouth-end
10 region thereof, the material or a flavour-active component thereof must be volatilised by the mainstream smoke. In passing from the combustion zone to the flavourant material at the mouth-end region of a smoking article comprising an orthodox rod of particulate smoking
15 material, the smoke must traverse the uncombusted length of the rod extending from the combustion zone. The uncombusted material of the smoking material rod acts as a heat sink, causing some smoke components to condense and the smoke to be cooled. Thus the thermal energy of
20 the smoke available for causing volatilisation into the smoke of a flavour-active agent is significantly less than the thermal energy of the smoke upon generation at the combustion zone. The thermal energy available for volatilisation at any stage in the smoking of a smoking
25 article determines the amount of flavour-active agent which will be volatilised into the smoke.

In United States Patent Specification No. 3,625,228 there is described a cigarette comprising a filter which houses capsules containing a fluid, the fluid preferably being an aqueous solution. Extending between the zone
5 occupied by the capsules and the inner end of the tobacco rod of the cigarette is a baffle of a truncated conical configuration, the minor opening of the baffle being adjacent the capsule zone. When the cigarette is smoked, the mainstream smoke leaving the inner end of the tobacco
10 rod is concentrated by the baffle into a jet which impinges on the capsules. The latter, being made of a waxlike or similar material, are caused to rupture by the warm smoke jet so that the fluid is released.

Numerous proposals have been made for providing
15 cigarettes or cigars with one or more bores or tubes extending longitudinally within the rod of tobacco. Such cigarettes or cigars are disclosed, for example, in United Kingdom Patent Specifications Nos. 19,694/12; 225,410; 880,950; 903,572 and 1,346,116, United States
20 Patent Specifications Nos. 346,025; 2,349,551 and 3,756,249 and Canadian Patent Specification No. 687,136. In these prior art specifications the reasons for the provision of the bores or tubes include support for the tobacco ash during smoking, the introduction of air
25 into the tobacco during smoking, satisfactory "draw" qualities, control of the amount of tobacco burnt per

puff, the making possible of the use of filters of higher pressure drop and filtration efficiency; a more uniform delivery of smoke components; better tasting smoke; a more even burning of the tobacco; and a reduction of
5 tar and nicotine levels in the smoke. Similarly constructed cigarettes and cigars are disclosed in United Kingdom Patent Specifications Nos. 232,819 and 1,086,443 and United States Patent Specification No. 3,674,036. In these specifications, the provision of a longitudinal
10 bore or tube in the tobacco rod is said to result in a lowering of the combustion-zone temperature and thus a cooler mainstream smoke.

In none of the above-mentioned prior-art specifications concerning bores or tubes extending within tobacco
15 rods is there a teaching that the temperature of the smoke which passes from the downstream end of the bore or tube is, in fact, much higher than that of smoke which passes from the downstream end of an orthodox tobacco rod not provided with such bore or tube. We
20 have, however, found in our studies that whereas the temperature of smoke passing from the end of an orthodox cigarette rod has a maximum value of about 60°C, the temperature of smoke passing from a tube of combustible material extending through a cigarette rod is typically
25 about 200°C. The temperature of the smoke may be such that when the smoke impinges on the fibres of a cellulose acetate filter, the fibres in the impingement zone would

thereby be caused to fuse. The above-mentioned prior art specifications are either silent as to the elevated smoke temperature to be obtained from the use of a bore or tube, or actually teach the contrary.

The provision of a longitudinal bore or tube is a feature of some proposed smoking articles other than orthodox cigarettes or cigars, namely cigarette-simulating inhaling devices, otherwise known as cigarette substitutes. When one of these inhaling devices is "smoked", there flows from the mouth end thereof a stream of hot air or other gas which has passed, within the device, in contact with a nicotine or flavour source material. Examples of such devices are disclosed in United Kingdom Patent Specification Nos. 1,033,674; 1,185,887 and 2 064 296A.

The present invention provides a smoking article comprising a smoking rod and mouthpiece, said rod comprising a wrapped body of particles of tobacco and/or particles of other smoking material, the packing density of said body of particles being in a range of from 100 to 400 mg cm⁻³, a passage comprising a discrete bore in the form of a tube of combustible material extending within said rod and being in gas-flow communication with said mouthpiece, and said smoking article comprising vapour-release material at said mouthpiece and/or at a mouthpiece-end zone of said passage, whereby when said smoking article is smoked, smoke of elevated temperature is conveyed through said passage to

to said mouthpiece so causing said vapour release material to be volatilised into the smoke.

A packing density range of from 150 to 400mg cm⁻³ is that employed in orthodox cigarettes. The mouthpiece may take the form of, or include, a filter. The passage within the smoking rod should extend to, or substantially to, the mouthpiece end of the rod. Suitably, the passage is closed at the other end of the rod. The tube formed of a combustible material may comprise reconstituted tobacco. Most suitably the portion of the cross-section of the mouthpiece end of the rod which is not occupied by the passage is also in gas-flow communication with the mouthpiece.

The vapour- release material may take the form, for example, of solid granules of a material which, or a component of which, is volatilised by contact of the hot smoke. Alternatively, the vapour-release material, alone or in an aqueous or other solution, may be encapsulated in capsules or in the fibres of a fibrous material. Another alternative is for a volatilisable material to be adsorbed on a granular or fibrous carrier material. The volatilisable material may be water alone.

A cigarette in accordance with the invention is diagrammatically illustrated in the accompanying drawing. The cigarette comprises a tobacco rod 1 and a filter which is generally designated by reference numeral 2.

The tobacco rod is 64mm long and comprises flue-

cured tobacco 3, the packing density of which is about 270mg cm⁻³. The tobacco 3 is wrapped in cigarette paper 4 of an air permeability of 46 CORESTA units. Extending axially of the rod 1 from the junction thereof with the filter 2, i.e. from the downstream end, is a passage 5 of a length of about 48mm. The passage 5 is of circular cross-section and, as is clearly shown in the drawing, it is of tapered form, the downstream end having a diameter of about 4mm and the upstream end a diameter of about 2mm. The walls of the passage 5 are formed by a lining of plugwrap paper.

The filter 2, which is attached to the rod 1 by a tipping overwrap 6, comprises two spaced-apart filter plugs 7, 8 of cellulose acetate fibres. The space bounded by the plugs 7, 8 and by a pluwrap 9 of the filter 2 provides a cavity 10 in which is disposed 122mg of magnesium silicate granules designated 11. The granules 11 are impregnated with about 7mg of menthol.

When the cigarette and a number of identical further cigarettes were machine smoked under standard smoking conditions of a 35cm³ puff of two second duration every minute down to a tobacco rod butt length of 8mm, it was found that the average delivery of menthol in the mainstream smoke was 0.80mg per cigarette. Control cigarettes were identical except that the tobacco rods thereof did not have a passage 5. When the control cigarettes

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were smoked under the above conditions, the average
menthol delivery in the mainstream smoke was found to be
only 0.44mg per cigarette. Thus the cigarettes according
to the invention gave an 82% greater menthol delivery
5 than did the control cigarettes.

When further samples of the cigarettes according to
the invention were smoked by a group of expert smokers,
it was noticed that the menthol taste in the mainstream
smoke increased throughout the smoking of each cigarette
10 and that there was no sensory perception of the smoke
getting hotter during the smoking. When, by contrast,
cigarettes of the same form, but from which the menthol-
impregnated granules had been omitted, were smoked, the
mainstream smoke was perceived to get continuously
15 hotter during the smoking of each such cigarette.

(12)

CLAIMS:

1. A smoking article comprising a smoking rod and a mouthpiece, said rod comprising a wrapped body of particles of tobacco and/or particles of other smoking material, the packing density of said body of particles being in a range of from 100 to 400mg cm⁻³, a passage comprising a discrete bore in the form of a tube of combustible material extending within said rod and being in gas-flow communication with said mouthpiece, and said smoking article comprising vapour-release material at said mouthpiece and/or at a mouthpiece-end zone of said passage, whereby when said smoking article is smoked, smoke of elevated temperature is conveyed through said passage to said mouthpiece so causing said vapour release material to be volatised into the smoke.
2. A smoking article as claimed in claim 1, in which said passage extends to, or substantially to, the mouthpiece end of said rod.
3. A smoking article as claimed in claim 2 in which the portion of the cross-section of the mouthpiece end of said rod not occupied by said passage is in gas-flow communication with said mouthpiece.
4. A smoking article as claimed in claim 1, 2 or 3, in which said passage is closed at the end thereof remote the mouthpiece end of said rod.



5. A smoking article as claimed in any one of the preceding claims, in which said mouthpiece comprises a filter.

6. A smoking article as claimed in any one of the preceding claims, in which said vapour-release material is capable of releasing menthol vapour.

7. A smoking article substantially as hereinbefore described with reference to the accompanying drawing.

