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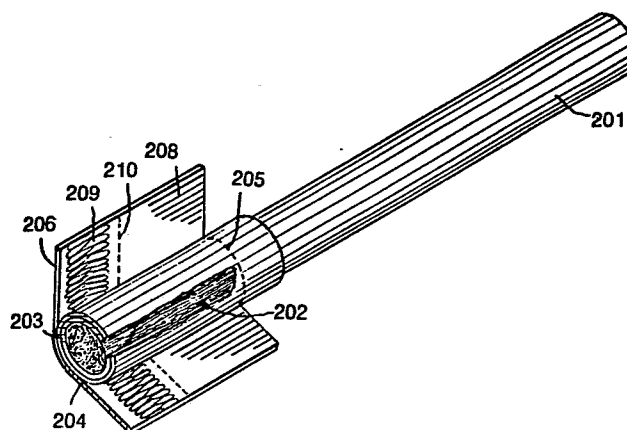
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⑤4 Cigarettes.

57 A cigarette is provided which comprises a wrapped filter plug 202,203 aligned in end-to-end abutting relationship with a substantially cylindrical tobacco rod 201. The filter plug and tobacco rod are circumscribed and joined by a substantially air permeable first layer of tipping paper 204. Circumscribing the first layer of tipping paper is a second layer of substantially air impermeable tipping paper 206. The second layer has a circumferentially extending row of closely spaced perforations 210 intermediate the two ends of the second layer which divides it into a mouth-end sleeve 207 attached to the first layer at the mouth end of the cigarette and a second rod-end sleeve 208 detachable from the mouth end sleeve by rotating the sleeve relative to the first sleeve so that it can move axially between the mouth-end sleeve and positions along the tobacco rod allowing air to enter the filter through the exposed portions of the air permeable layers.



7L25684ACIGARETTES

The present invention relates to cigarettes. More particularly, the present invention relates to cigarettes which are adjustable to provide a wide range of air dilution values.

Various mechanisms have been disclosed in heretofore issued patents which provide for adjustment of the air dilution value of a filter cigarette, but these mechanisms are not without certain disadvantages. While many complicated mechanisms have been disclosed, the simpler mechanisms generally involve making one or more openings through a substantially air impermeable filter plug wrap and the overlying, substantially air impermeable, tipping paper and one or more corresponding openings in a sleeve which is placed over the tipping paper and which is then either rotated or moved axially to select the degree to which the two sets of openings are in registry. In another embodiment found in the art, the filter is not glued to the tipping paper and thus may be moved axially within the cylinder formed by the tipping paper. Openings are made in the filter plug wrap and corresponding openings are made in the tipping paper. The air dilution value is adjusted by axially moving the filter plug within the tipping paper to adjust the degree to which the two sets of openings are in registry.

Among the problems associated with such mechanisms are that the sleeve or filter plug may be removed from the cigarette by the smoker and not readily replaced, and that when dilution is desired, thus requiring some degree of registry between the two sets of openings, this registry may be inadvertently destroyed by a slight axial movement of the sleeve or plug. Accordingly, the dilution, once set by the smoker, is not ensured of any degree of consistency. Yet another problem associated with a number of these prior devices is that they have not been readily adaptable to a high rate of production on cigarette making machinery of conventional design.

One solution to this problem is the subject of European Patent Application No. 83 304 257 (published no. EP-A-0 100 215), from which this application has been divided.

In accordance with the present invention there is provided a

smoking article comprising a column of combustible smoking material and a mouth end region open to permit the passage of air and smoke, characterised in that the mouth end region has a peripheral area thereof adapted for the passage of air therethrough, and is circumscribed by a substantially air impermeable sheet material comprising a first band fixed to the mouth end of the smoking article and a second band movable relative to the said peripheral area to admit varying amounts of air to the mouth end region to dilute the smoke therein.

In a preferred embodiment of the invention, the assembly comprises a tobacco rod, an integral, axially aligned, wrapped filter plug and two circumscribing layers of tipping paper. The filter is wrapped in an air permeable plug wrap. The tobacco rod and filter plug are joined together by a first circumscribing layer of air permeable tipping paper which extends from the mouth end of the filter plug to a position on the tobacco rod adjacent the rod end of the filter plug. The second layer of tipping paper is air impermeable, circumscribes the first layer of tipping paper, and extends from the mouth end of the filter to the rod end of the first layer of tipping paper. The second layer has a circumferentially extending row of closely spaced perforations intermediate its two ends. The mouth end portion of the second layer is attached to the underlying first layer of tipping paper. The rod end portion of the second layer is freed by rotating this portion about the axis of the cigarette to break the perforations, thus forming a sleeve which can move axially between the mouth end portion of the second layer and positions along the tobacco rod. The mouth end portion of the second layer prevents the sleeve from being removed from the mouth end of the cigarette.

The cigarettes of the present invention may be manufactured employing conventional equipment with only minor modifications and a method of manufacturing such cigarettes forms another aspect of the present invention. The invention will be further described, by way of example, with reference to the drawings, in which:

Fig. 1 is an enlarged partially fragmentary perspective view, taken from the mouth end, of a filter cigarette according to a preferred embodiment of the present invention;

Fig. 2 is an enlarged perspective view, taken from the mouth end, of the assembled cigarette of Fig. 1; and

Fig. 3 is a perspective view, also taken from the mouth end, of a filter cigarette of Figs. 1 and 2 showing the axially movable band detached from the mouth end band.

As shown in Figs. 1, 2 and 3, according to a preferred embodiment of the invention a cigarette comprises a tobacco rod 201 which is axially aligned with and joined in end-to-end abutting relation to a conventional, substantially cylindrical filter plug 202, which may be a cellulose acetate filter or the like. The filter plug is wrapped in an air permeable plug wrap 203. The wrapped filter plug is joined to the tobacco rod 201 by a circumscribing first layer of tipping paper 204 which extends from the mouth end of the filter plug to a position on the tobacco rod adjacent the rod end of the filter plug. Tipping paper 204 is air permeable and is attached, preferably by a circumferentially extending band of adhesive on its inner surface, to the outer surfaces of the tobacco rod and the filter plug wrap with the band centered on either side of their line of abutment 205.

A second layer of tipping paper 206 circumscribes the first layer of tipping paper and extends from the mouth end of the filter substantially to the rod end of the filter. This second layer is divided into a mouth end sleeve 207 and a rod end sleeve 208 by a circumferentially extending row of closely spaced perforations 210. The mouth end sleeve 207 is attached to the tipping paper 204 adjacent the mouth end, preferably by a band of adhesive 209 on its inner surface. The rod end sleeve 208 is not attached to the underlying layer of tipping paper 204.

The second layer of tipping paper 206 is substantially air impermeable and the rod end sleeve 208 is detachable along the line of perforations 210. In its attached form, the cigarette has a set of air dilution values which, if the smoker prefers, can be varied by rotating the rod end sleeve 208 to detach it from the mouth end sleeve 207 and then axially moving sleeve 208 towards the coal end of the tobacco rod, thereby exposing the underlying air permeable tipping paper 204. This axial movement permits varying degrees of air to enter the filter, thereby diluting the smoke and changing the

air dilution value of the cigarette. This axially slidable sleeve 208 is retained against removal from the mouth end of the cigarette by the attached mouth end sleeve 207.

In an alternative embodiment, the plug wrap and the first layer of tipping paper may also be substantially air impermeable and may contain a plurality of openings therethrough which are exposed when the sleeve 208 is detached and moved axially towards the coal end of the cigarette.

The filter cigarette of the present invention may be readily produced on conventional cigarette making equipment and apparatus with a minimum of modifications. Forming and cutting the cigarette rod and the filter plug to length are done conventionally. Also, bringing the filter plug into axial alignment with the cigarette rod and the overwrapping with the first layer of tipping paper is accomplished in the same manner as in conventional cigarettes except that the adhesive applicator is adapted to provide only a band of adhesive on the portion of the first layer of tipping paper which overlaps and joins the plug wrap to the tobacco rod. The same machine for applying the first layer of tipping paper with the glue applicator adapted to provide a band of glue corresponding to the mouth end sleeve portion of the second layer of tipping paper.

The row of perforations in the second layer of tipping paper may be made, preferably prior to application, by any conventional means such as laser perforation, electrostatic perforation, or mechanical perforation using points or knives. It is preferred to employ a laser perforation device in order to make the perforations extremely small. In practice, the tipping paper is fed through a perforating zone where it is exposed to a laser light beam focused laterally of the width of the travelling tipping paper so as to define the desired width of the detachable sleeve portion of the second layer of tipping paper. The power settings and focusing of the laser beam and the rate of feed of the tipping paper are selected so as to all but part of the paper along the "break away" line 210 shown in Figs. 1 and 2. The attachment which remains is selected to retain enough strength to hold the sleeves together during assembly but permits the detachable sleeve to be readily detached by the smoker without tearing the tipping paper other than

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between the perforations. Preferably, a laser system is employed to make about 40 perforations per centimetre (about 100 perforations per inch) in the paper along the line 210.

CLAIMS

1. A smoking article comprising a column of combustible smoking material (201) and a mouth end region open to permit the passage of air and smoke, characterised in that the mouth end region has a peripheral area thereof adapted for the passage of air therethrough, and is circumscribed by a substantially air impermeable sheet material (206) comprising a first band (207) fixed to the mouth end of the smoking article and a second band (208) movable relative to the said peripheral area to admit varying amounts of air to the mouth end region to dilute the smoke therein.

2. A smoking article according to claim 1, further characterised in that the mouth end region comprises a filter plug (202) abutting the said column (201), the filter plug being circumscribed by a substantially air permeable wrapping (203), a first, substantially air permeable tipping paper (204) and a second substantially air impermeable tipping paper (206), the first tipping paper extending from the mouth end of the filter plug to a position on the column adjacent the column end of the filter plug, and the second tipping paper extending substantially from the mouth end to the column end of the first tipping paper, the second tipping paper being divided into a mouth-end sleeve (207) fixed to the first tipping paper and a column-end sleeve (208) axially movable over the first tipping paper to expose a varying extent of the air permeable first tipping paper.

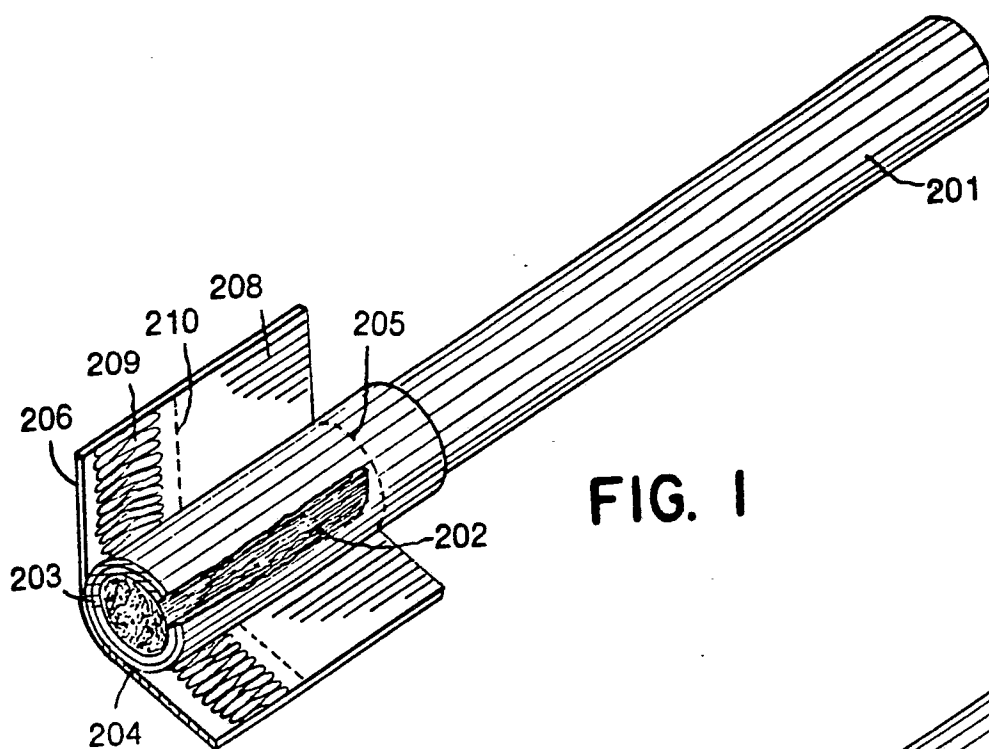


FIG. 1

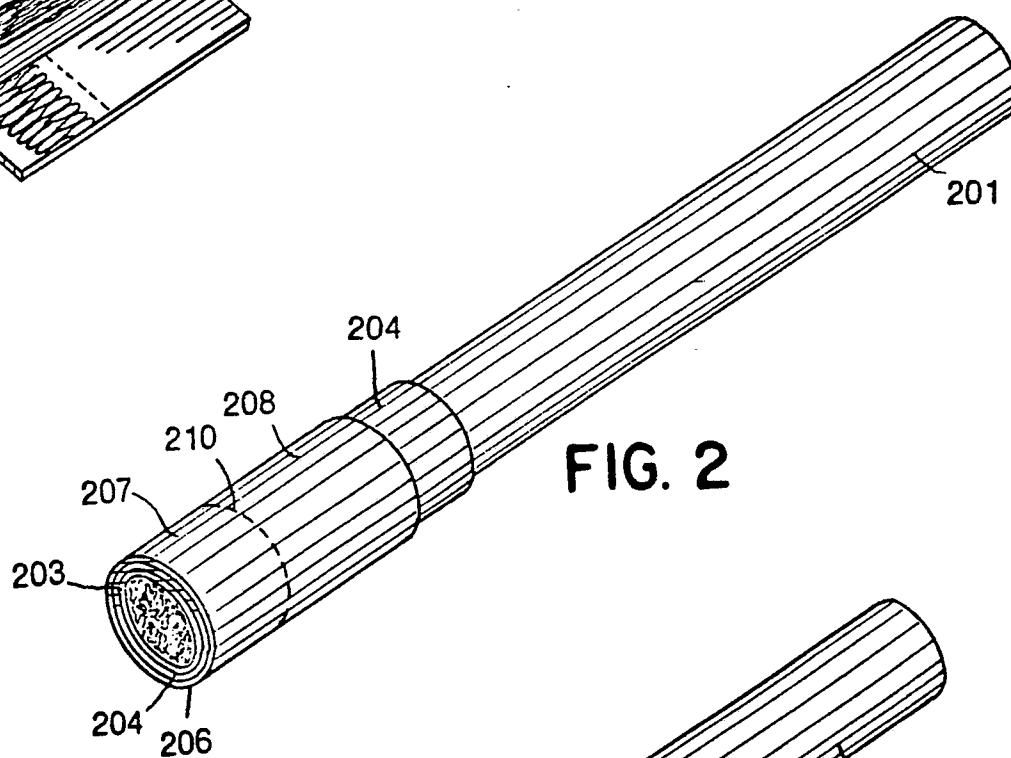


FIG. 2

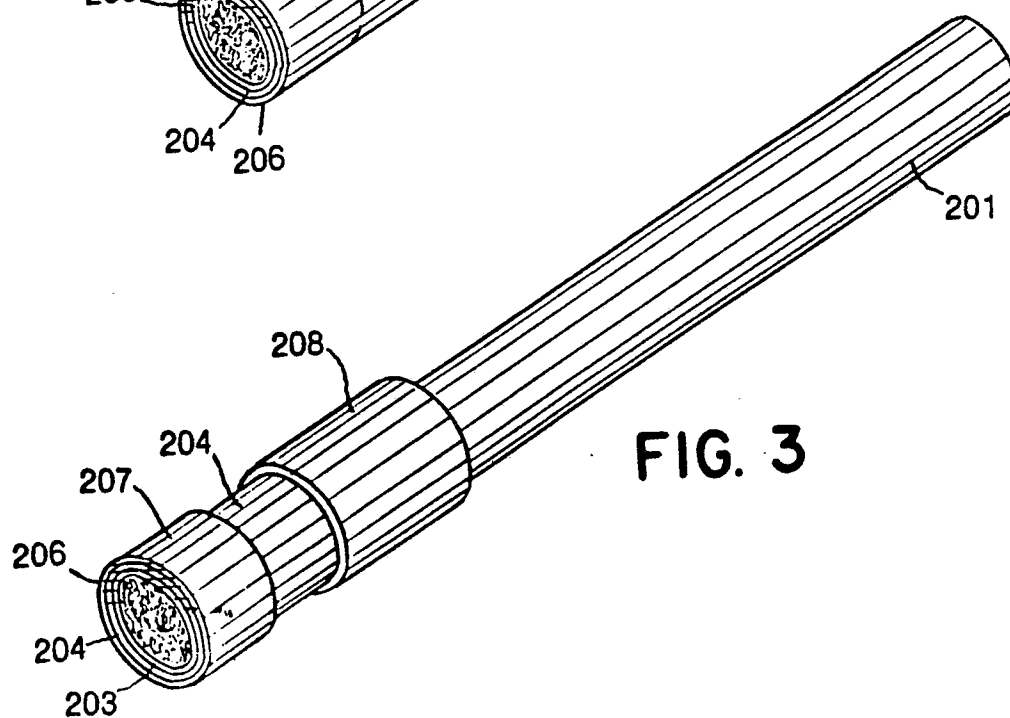


FIG. 3