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(12) # EUROPEAN PATENT SPECIFICATION

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(54) **Tipping assembly for an elongate smoking article.**

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**Description**

This invention relates to a tipping assembly for an elongate smoking article, such as a cigarette.

Traditional methods of achieving low tar yields from a cigarette in combination with high nicotine levels and low carbon monoxide levels use high levels of filtration and ventilation but have the disadvantages of a high pressure drop perceived by the smoker and a reduced subjective response compared with the pressure drop and subjective response associated with a non-filter cigarette.

It is an object of the present invention to provide a tipping assembly that substantially reduces the above disadvantages.

The present invention concerns a tipping assembly for an elongate smoking article, the assembly comprising an open-ended tube provided with a plurality of apertures spaced round the circumference of the tube, thereby defining two sections of the tube and providing communication between the inside and the outside of the tube, and a tipping wrapper surrounding the tube, a portion of the tipping wrapper overlying the apertures being adapted to permit gas flow both through the apertures and said portion and to offer greater resistance to the gas flow than is provided by the apertures alone. GB—A—2088191 discloses a tipping assembly of this general type in which the tube is formed of a sheet of non-porous wrapping material, and the apertures are small openings in the sheet.

The tipping assembly of the present invention is characterised in that the two sections of the tube are axially spaced apart from each other and there is provided a plurality of means to hold the sections fixed relative to each other each of the plurality of spacing means defining the separation between one of the plurality of apertures and its adjacent neighbour.

The invention will now be described by way of example only with reference to the accompanying non-scaled diagrammatic drawings in which:

Fig. 1 is a longitudinal section through a first embodiment of a tipping assembly according to the invention, in combination with a tobacco rod;

Fig. 2 is an exploded perspective view of the tipping assembly of Fig. 1;

Fig. 3 is a longitudinal section through a second embodiment of a tipping assembly according to the invention, in combination with a tobacco rod;

Fig. 4 is an exploded perspective view of the tipping assembly of Fig. 3;

Fig. 5 is a lateral section through the tipping assemblies of Figs. 1 and 3 taken at line IX—IX;

Fig. 6 is an exploded perspective view of a third embodiment of a tipping assembly according to the invention; and

Fig. 7 is an end view of the tipping assembly of Fig. 6 taken in the direction of arrow XI.

Referring to Figs. 1, 2 and 5 there is shown a first embodiment of the invention comprising a cylindrical tobacco rod 110 enwrapped in cigarette paper 115, and a tipping assembly indicated generally at 100. The tipping assembly comprises a cellulose acetate filter rod 200 of conventional construction and in abutment therewith an open-ended polyethylene tube 130 wrapped in tipping paper 120 by means of which the tube and filter rod are attached to the tobacco rod.

The tube 130 is divided into two tubular sections 131 and 132 by three apertures 160 extending round the circumference of the tube 130 and separated by three narrow integral webs 161 of the material of the tubing which hold the two sections 131, 132 in a fixed relationship apart from each other.

The tipping paper 120 is provided with a circumferential series of perforations 170 overlying the apertures 160. Typically, the perforations 170 are 0.8 mm diameter or less, considerably smaller than the width of the apertures 160, which is about 2 mm.

Referring to Figs. 3, 4 and 5 there is shown a second embodiment comprising a tobacco rod and tipping assembly similar to that of Figs. 3, 4 and 5, identical features retaining the same numbering, and further provided with a plug 140 of cellulose acetate filter material at the mouth end of the tube. In this embodiment the tube 130 is substantially shorter than the tube of Figs. 2 and 3.

Referring to Figs. 6 and 7 there is shown a third embodiment similar to that of Figs. 1 and 2 except that the separated sections 131, 132 of the tube 130 are held in a fixed relationship to each other not by integral webs but by rectangular vanes 180 of polyethylene extending longitudinally within the tube 130 from one section to the other and radially outwards from the longitudinal axis of the tube to a distance at least equal to the internal radius of the tube.

In further embodiments, not illustrated, any of the previously described embodiments may be modified by the incorporation of a sheet of porous plug wrap material (of typical porosity 200—1600 Filtrona K units) between the tube and the tipping paper.

The tube 130 may be divided into its sections 131, 132 by a number of apertures 160 other than three together with the respective number of webs 161 in order to suit specific smoking requirements. The tube may be filled partly or wholly with highly porous material such as cellulose acetate in the sections 131 or 132. For instance, the filter rod 200 may at least in part occupy section 131.

The tipping assembly of the invention shows that it is possible to achieve low tar yields with high nicotine, low carbon monoxide, and acceptable smoking panel ratings, compared with conventional filters which utilise high levels both of filtration and dilution.

Perforations in the tipping wrapper may be provided by a large number of small perforations or by a small number of relatively large perforations.

The tipping wrapper may alternatively be adapted to permit gas flow through the apertures in the tube by providing a tipping wrapper having

a very high porosity rather than by providing perforations.

The tube may be made of impervious material other than polyethylene, such as cardboard.

Other shapes, sizes, positions, and numbers of apertures in the tube may be contemplated in further embodiments of the invention.

For cigarettes embodying the invention, the smoke nicotine level can be high, and the carbon monoxide content and the CO/PM (carbon monoxide/particulate material) ratio of the smoke can be remarkably low.

**Claims**

1. A tipping assembly (100) for an elongate smoking article, the assembly comprising an open-ended tube (130) provided with a plurality of apertures (160) spaced round the circumference of the tube, thereby defining two sections (131, 132) of the tube and providing communication between the inside and the outside of the tube, and a tipping wrapper (120) surrounding the tube, a portion of the tipping wrapper (120) overlying the apertures (160) being adapted (170) to permit gas flow both through the apertures (160) and said portion and to offer greater resistance to the gas flow than is provided by the apertures (160) alone, characterised in that the two sections (131, 132) of the tube are axially spaced apart from each other and there is provided a plurality of spacing means (161; 180) to hold the sections fixed relative to each other, each of the plurality of spacing means defining the separation between one of the plurality of apertures (160) and its adjacent neighbour.

2. An assembly as claimed in claim 1 wherein the holding means is provided by a plurality of webs (161) of tube material integral with and oriented parallel to the axis of the tube, the width of each web (161) being substantially less than that of an adjacent aperture (160).

3. An assembly as claimed in claim 2 wherein the apertures (160) are provided by slots the major axes of which are parallel to the longitudinal axis of the tube (130).

4. An assembly as claimed in claim 1 wherein the holding means is provided by a plurality of rectangular vanes (180) extending longitudinally within the tube (130) from one section (131) to the other (132) and radially outwards from the longitudinal axis of the tube to a distance at least equal to the internal radius of the tube (130) thereby to define the apertures (160).

5. An assembly as claimed in any preceding claim wherein said portion of the tipping wrapper (120) is adapted to permit gas flow therethrough by means of perforations (170), the perforations being substantially smaller than the apertures (160).

6. An assembly as claimed in any preceding claim wherein there is provided a sheet of porous plug wrap material between the tube (130) and the tipping wrapper (120) at least in the region overlying said apertures (160).

**Patentansprüche**

1. Mundstück (100) für einen länglichen Rauchartikel, bestehend aus einem offenen Rohr (130) das mit mehreren Öffnungen (160) versehen ist, die um den Umfang des Rohres herum angeordnet sind und dadurch zwei Abschnitte (131, 132) des Rohres begrenzen und eine Verbindung zwischen der Innenseite und der Außenseite des Rohres bilden, und einer das Rohr umgebenden Mundstückumhüllung (120), wobei ein die Öffnungen (160) bedeckender Bereich (170) der Mundstückumhüllung (120) eine Gasströmung sowohl durch die Öffnungen (160) als auch durch diesen Bereich ermöglicht und der Gasströmung einen größeren Widerstand entgegensetzt als die Öffnungen (160) allein, dadurch gekennzeichnet, daß die beiden Abschnitte (131, 132) des Rohres axial im Abstand voneinander angeordnet sind und daß mehrere Abstandsmittel (161; 180) vorgesehen sind, um die Relativstellung der Abschnitte festzulegen, wobei jedes einzelne Abstandsmittel eine der Öffnungen (160) von der benachbarten Öffnung trennt.

2. Mundstück nach Anspruch 1, wobei die Haltemittel aus mehreren Stegen (161) des Rohrmaterials bestehen, die mit dem Rohr einstückig und zu dessen Achse parallel sind, wobei die Breite eines jeden Steges (161) wesentlich kleiner ist als die einer benachbarten Öffnung (160).

3. Mundstück nach Anspruch 2, wobei die Öffnungen (160) aus Schlitzen bestehen, deren Hauptachse zur Längsachse der Rohres (130) parallel ist.

4. Mundstück nach Anspruch 1, wobei die Haltemittel aus mehreren rechteckigen Flügeln (180) bestehen, die sich in Längsrichtung innerhalb des Rohres (130) von einem Abschnitt (131) zu dem anderen Abschnitt (132) und von der Längsachse des Rohres radial nach außen um eine Distanz erstrecken, die mindestens dem Innenradius des Rohres (130) entspricht, um dadurch die Öffnungen (160) zu begrenzen.

5. Mundstück nach einem der vorhergehenden Ansprüche, wobei der Bereich der Mundstückumhüllung (120) aus Perforationen (170) besteht, die eine Gasströmung hindurchlassen, wobei die Perforationen wesentlich kleiner sind als die Öffnungen (160).

6. Mundstück nach einem der vorhergehenden Ansprüche, wobei zwischen dem Rohr (130) und der Mundstückumhüllung (120) zumindest in dem die Öffnungen (160) bedeckenden Bereich ein Blatt aus einem porösen Umhüllungsmaterial angeordnet ist.

**Revendications**

1. Embout (100) pour un article allongé à fumer, l'embout comprenant un tube à extrémité ouverte (130) pourvu d'un certain nombre d'ouvertures (160) espacées sur la circonférence du tube, pour ainsi définir deux sections (131, 132) de tube et permettre la communication entre l'intérieur et

l'extérieur du tube et une bande de recouvrement d'embout (120) entourant le tube, une partie de la bande de recouvrement d'embout (120) recouvrant les ouvertures (160) étant adaptée (170) à permettre l'écoulement de gaz à la fois à travers les ouvertures (160) et ladite partie et à offrir une plus grande résistance à l'écoulement du gaz que celle offerte par les ouvertures (160) seules, caractérisé en ce que les deux sections (131, 132) du tube sont axialement espacées l'une de l'autre et en ce qu'un certain nombre de moyens d'espacement (161; 180) sont prévus pour maintenir les sections fixes l'une relativement à l'autre, chacun des moyens d'espacement définissant la séparation entre l'une des diverses ouvertures (160) et sa voisine adjacente.

2. Embout selon la revendication 1 où le moyen de maintien est formé d'un certain nombre de nervures (161) du matériau du tube faisant corps avec et orientées parallèlement à l'axe du tube, la largeur de chaque nervures (161) étant sensiblement plus petite que celle d'une ouverture adjacente (160).

3. Ensemble selon la revendication 2 où les ouvertures (160) sont formées de fentes dont les axes majeurs sont parallèles à l'axe longitudinale du tube (130).

4. Ensemble selon la revendication 1 où le moyen de maintien est formé d'un certain nombre d'ailettes rectangulaires (180) s'étendant longitudinalement dans le tube (130) d'une section (131) à l'autre (132) et radialement vers l'extérieur de l'axe longitudinal du tube sur une distance au moins égale au rayon interne du tube (130) pour ainsi définir les ouvertures (160).

5. Ensemble selon l'une quelconque des revendications précédentes où ladite portion de la bande de recouvrement d'embout (120) est adaptée à permettre l'écoulement de gaz à travers elle au moyen de perforations (170), les perforations étant sensiblement plus petites que les ouvertures (160).

6. Ensemble selon l'une quelconque des revendications précédentes où on prévoit une feuille d'un matériau d'enveloppement de tampon poreux entre le tube (130) et la bande d'enveloppement d'embout (120) au moins dans la région recouvrant lesdites ouvertures (160).

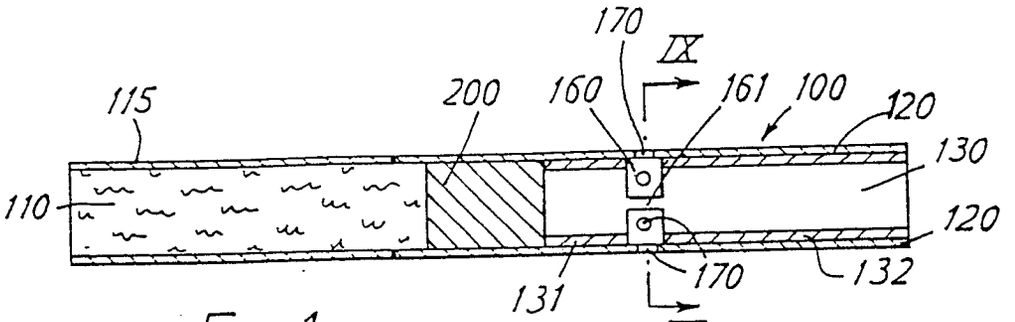


FIG. 1

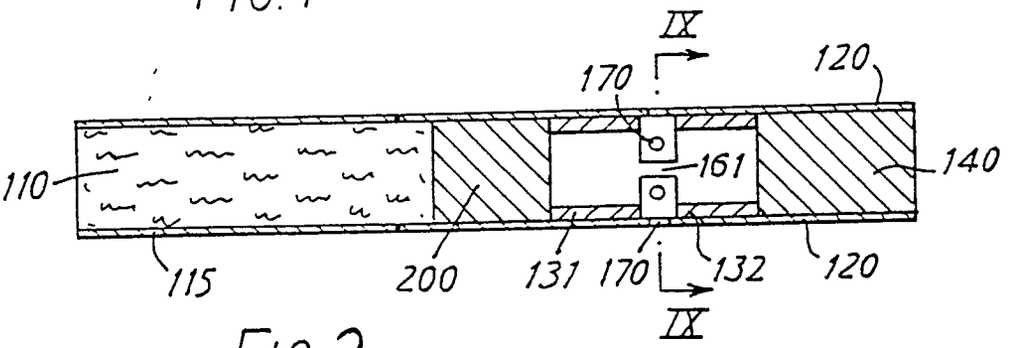


FIG 3

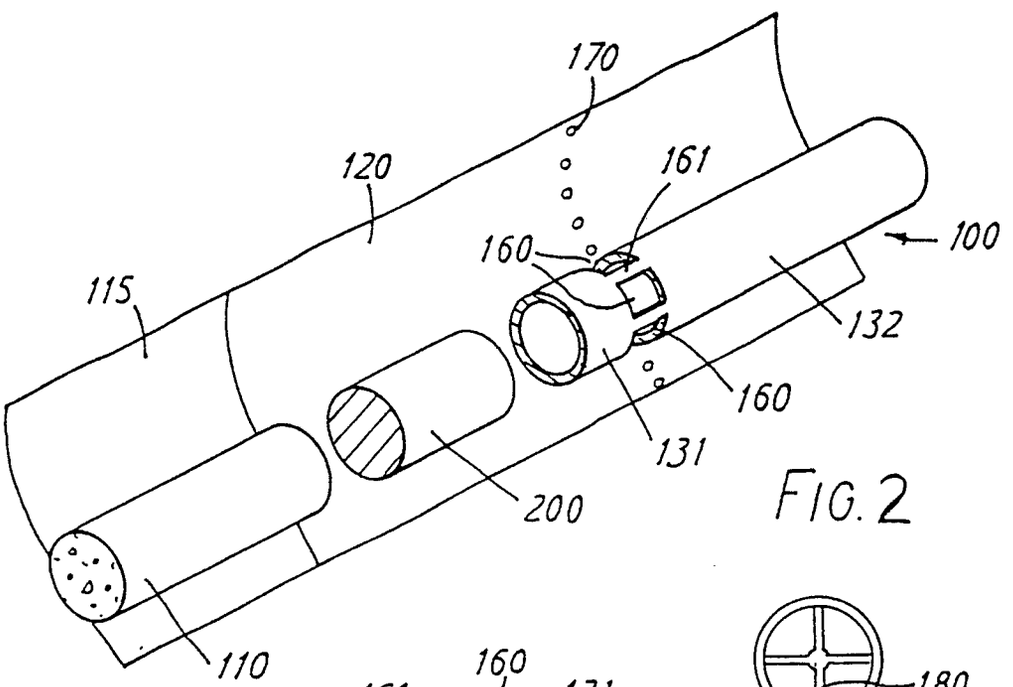


FIG. 2

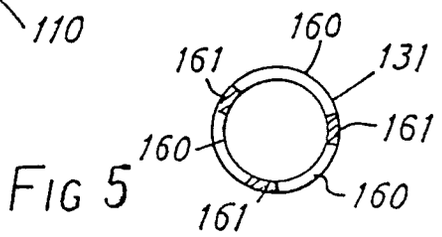


FIG 5




FIG. 7

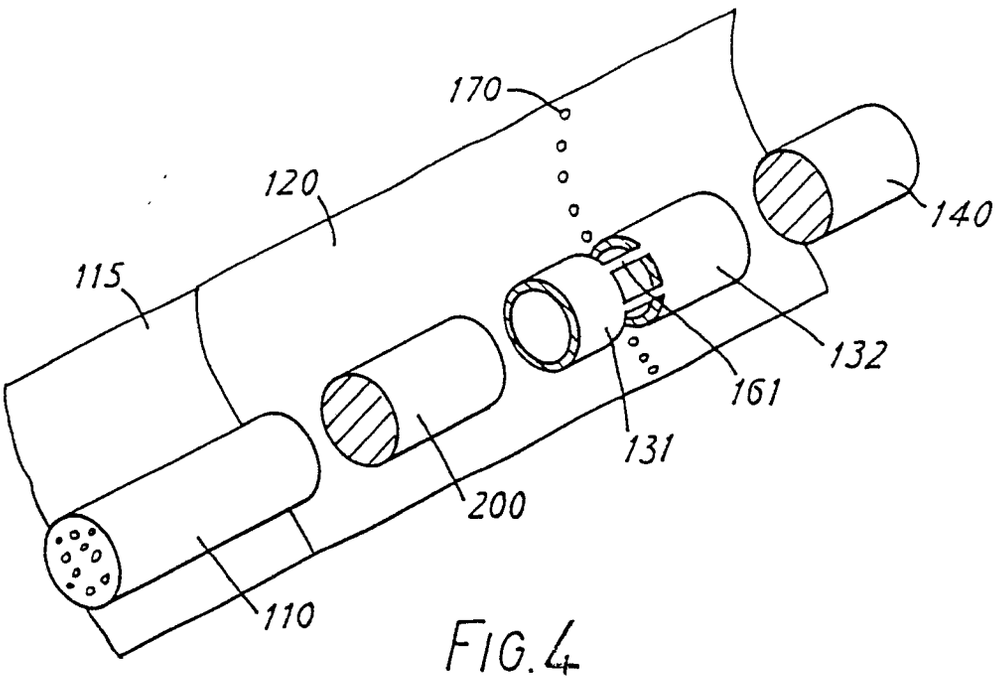


FIG. 4

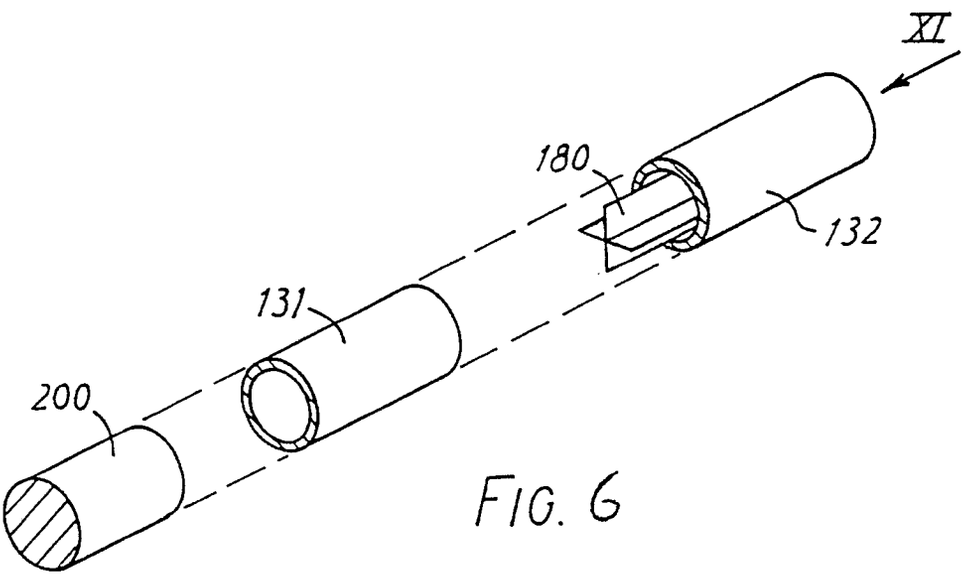


FIG. 6