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2,958,328

SMOKING ARTICLES

Filed May 27, 1957

FIG. 1

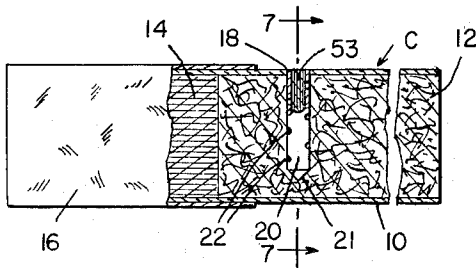


FIG. 2

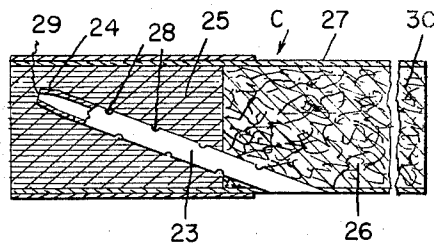


FIG. 3

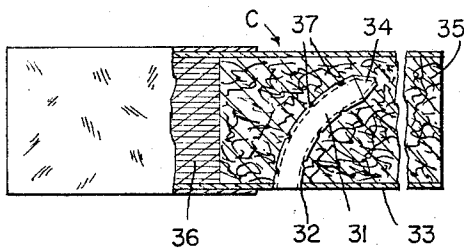


FIG. 4

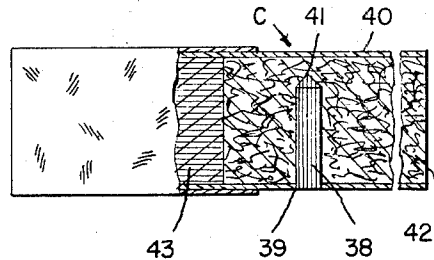


FIG. 5

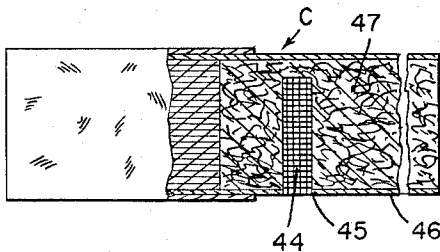


FIG. 6

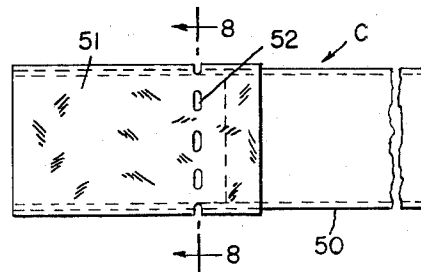


FIG. 7

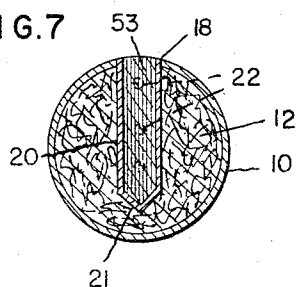
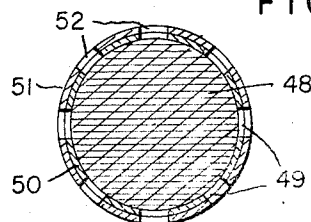


FIG. 8



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SMOKING ARTICLES

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1 Claim. (Cl. 131—9)

This invention relates broadly to the class of smoking articles and is directed particularly to improvements in articles of the nature of cigarettes, cigars, cheroots and the like, wherein tobacco is retained or forms a filler in a combustible wrapper or paper, tobacco leaf or the like.

As has been set forth in my prior applications, Serial No. 592,312, filed June 19, 1956, and Serial No. 599,843, filed July 24, 1956, there has developed a fairly general opinion that certain harmful effects result from the smoking of tobacco articles, particularly the smoking of cigarettes. The general opinion of many medical men seems to be that some harm may result from the smoking of tobacco due possibly to the fact that in the burning process the tobacco and the encasing wrapper form products of combustion carrying volatilized tars and resins which are introduced into the smoker's body, both through the lungs, as a result of inhaling the smoke, and by absorption by the tissues of the oral cavity.

It has also been fairly well established that in the smoking of cigarettes particularly, the harmful volatilization of tars and resins results from the extremely high degree of heat which is developed and that such volatilized products remain in the volatile state and pass into the mouth and lungs of the smoker because of the fact that the high temperature of the smoke is maintained entirely through the length of the cigarette.

Obviously, therefore, any means for reducing the temperature of the smoke before it reaches the mouth of the smoker would also result in the condensing of most, if not all, of the tars and resins and consequently prevent the passage of these harmful products into the smoker's mouth and lungs. As a result, there not only will be a benefit to the health of the smoker but also the pleasure of smoking will be increased because of the reduction in the heat of the smoke which will not irritate the smoker's mouth.

It is a particular object of the present invention, in the light of the foregoing, to provide a new and novel form of cigarette or similar smoking article constructed in such a manner as to prevent the volatilized irritating tars and resins and possibly other substances from passing into the oral cavity and lungs of the smoker.

It is another object of the present invention to provide a new and novel form of cigarette or like article wherein a definite reduction in the temperature of the smoke will be produced before it enters the mouth of the smoker to thereby not only decrease the irritation which the heat might produce but to also effect the congealing or condensing of the volatile tars and resins.

A still further object of the present invention is to provide a new cigarette construction wherein a means is provided for introducing air into the filler of the cigarette at the mouth end thereof and through openings in the filler enclosing wrapper wherein such air introducing means is of a novel character which will cause it to maintain a desired form and consequently perform its desired function even though the cigarette or like article prior to being lighted may have been subjected to some compression or distortion.

It is a further and more specific object of the present invention to provide in a cigarette or like article a means for introducing air through the wrapper into the filler material adjacent to the mouth end of the cigarette, which embodies an air and smoke permeable body or mass into which air is drawn through the wrapper and from which it passes into the filler of the cigarette or the like to perform the function of reducing the temperature of the smoke passing to the mouth of the smoker and at the same time preventing volatilized tars, resins and possibly other substances from entering the smoker's mouth by condensing such volatilized substances.

It is a further object of the invention to provide an improved cigarette or like smoking article wherein a body of air and smoke permeable material is embedded in the filler of the cigarette and exposed in part at least through the cigarette wrapper to permit air to be drawn into the cigarette filler and which body may be formed so as to be thrust or projected into the filler of the cigarette through the wrapper or may be incorporated in the filler and enclosed with the filler in the wrapper during the operation of making the cigarette.

Other objects and advantages of the invention will become apparent as the description of the same proceeds and the invention will be best understood from a consideration of the following detail description taken in connection with the accompanying drawing forming part of the specification, with the understanding, however, that the invention is not confined to a strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claim.

In the drawing:

Fig. 1 is a view partly in side elevation and partly in longitudinal section of a cigarette, in which the middle portion has been broken out and which is shown with one form of air and smoke permeable material embedded in the filler in accordance with the present invention to admit air into the filler for admixture with the smoke drawn through the filler in the burning of the cigarette;

Fig. 2 is a longitudinal section through a cigarette having a filter body in the butt or mouth end thereof, the central portion of the cigarette being broken out, and showing another embodiment of the invention wherein the air and smoke passing or permeable body is extended obliquely into the filter of the cigarette;

Fig. 3 is a view partially in side elevation and partly in longitudinal section, corresponding to Fig. 1, and showing the air and smoke passing and permeable body of another form embedded in the cigarette filler;

Fig. 4 is a partial elevation and longitudinal sectional view of the butt end of a cigarette showing another form of the air and smoke permeable body embedded in the filler;

Fig. 5 is a view corresponding to Fig. 4 and other preceding views showing still another form of permeable body embedded in the filler;

Fig. 6 is a view in side elevation of a cigarette with the middle portion broken out and showing reinforced air admission openings in the wrapper for passing air into the cigarette filter;

Fig. 7 is a transverse sectional view on a slightly enlarged scale taken approximately on the line 7—7 of Fig. 1; and

Fig. 8 is a transverse sectional view on a slightly enlarged scale taken substantially on the line 8—8 of Fig. 6.

Referring now more particularly to the drawing, there is shown in Fig. 1 a cigarette body generally designated C which is made up of the conventional wrapper 10, which may be of paper, tobacco leaf or the like, and

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the filler within the wrapper 10 is here illustrated as consisting predominantly of tobacco 12, with a conventional type of filter or air and smoke permeable substance 14 in the mouth or butt end of the cigarette wrapper. The numeral 16 designates a tip covering which may be of paper, cork or any other usual material employed for this purpose.

While in the illustration of the invention in its several embodiments the cigarettes shown have conventional filter bodies in the mouth or butt end, it is to be understood that the invention is not limited to the use of cigarettes with filter bodies therein as it is equally applicable to regular type cigarettes of the standard or king size, where the filler may consist of tobacco throughout.

In my prior applications hereinbefore referred to, there are disclosed cigarettes having air admission passages which are located entirely in the butt end of the cigarette body and which open at one end through the cigarette wrapper and extend into the cigarette filler toward the mouth end. Under certain conditions cigarettes so formed may have the air passages blocked or partially closed due to jarring or jolting of the cigarette, or due to some compression being applied thereto. In the present invention, however, a means is provided whereby the air admission is kept possible regardless of any manner in which the cigarette may have been handled or treated prior to its use and the objects of the invention are accordingly attained by providing a reinforcing means for the air admission opening or openings formed in the wrapper or for the air conducting passage or passages in the filler material.

Fig. 1 illustrates one embodiment of the invention for the attainment of the hereinbefore stated objects wherein the wrapper 10 has an aperture 18 formed therein adjacent to the filter body 14, or, if the invention is applied to a cigarette not carrying the filter body, this opening would be located in relatively close proximity to the end of the cigarette which the smoker places in his mouth. However, the opening would not be so close to the mouth end of the cigarette as to cause it to be covered by the lips of the smoker.

Extending into the filler of the cigarette is a short tubular body 20 which has one end open and this open end is located within the opening 18 of the wrapper. The tubular body 20 may be of any desired cross sectional contour, that is, it may be a circular tube or a tube of polygonal cross section, and the inner end is preferably tapered or pointed as indicated at 21 so that the tubular body may be inserted into the filler of the cigarette by the user, being forced through the wrapper for this purpose, and thereby making the opening 18 in so doing. Obviously, however, the tubular body 20 may be placed in the filler of the cigarette at the time of the manufacture of the latter and the opening 18 may be formed in any suitable manner as, for example, the wrapper may have the opening preformed so that it will be aligned with the open end of the tubular body 20 or the wrapper may be in one piece and placed over the open end of the tubular body and have the necessary portion thereof removed to expose the open end of the tubular body.

The tubular body 20 has the wall thereof provided with a multiplicity of small apertures 22 which are located longitudinally of the body and certain of these apertures are on the side of the body nearest to the forward end of the cigarette or the end which is lighted, and the other apertures are located on the opposite side of the tubular body or nearest to the mouth end. Also the apertures on one side of the tubular body are preferably in staggered relation with those on the opposite side so that when the cigarette is being smoked the smoke will be drawn into the apertures on one side and pass through a tortuous passage to reach the apertures on the other side of the tubular body before passing on to the mouth of the smoker. During the smoking operation, of course, some air will be drawn in through the open end of the tubular

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body to mix with the smoke passing therethrough so as to effect the desired reduction of temperature in the smoke and also to cause condensation of volatilized tars and resins.

In the form of the invention illustrated in Fig. 2 the air and smoke permeable body in the form of the tube 23 is disposed in the cigarette filler oblique to the longitudinal axis of the cigarette and the constricted or pointed end 24 of the tubular body 23 is directed toward the end of the cigarette which is placed in the smoker's mouth. This obliquely disposed tube is here shown as extending through a portion of the tobacco filler and into and through the major part of the length of the cigarette filter 25. The open end of the tube terminates in the opening 26 in the wrapper 27 and the wall of the tube 23 is, like the tubular body 20, provided with a plurality of apertures 28 longitudinally thereof and preferably divided into two groups one of which is nearer the forward end of the cigarette while the other group is nearer to the mouth end and the groups of apertures are also in staggered relation for the purpose previously set forth.

Also in the form of the invention shown in Fig. 2 the pointed end of the tube may be apertured as indicated at 29 so that air and smoke entering the tube may pass from this apertured end into the filter material.

If it is found desirable, the tube 23 may be made shorter and disposed obliquely in the filter body 25 entirely rather than having the open end lie partly in the tobacco 30 and open through the wrapper.

Fig. 3 illustrates another embodiment of the permeable body which here is shown as in the form of an arcuate tube 31. This tube is similar to the previously described tubes, having an open end located in an opening 32 in the wrapper 33 of the cigarette and having the opposite tapered end 34 terminating in the tobacco portion 35 of the cigarette filler. This tube is curved to extend from the opening 32 inwardly and forwardly or away from the filter body 36 and the wall thereof is provided with a number of apertures 37 grouped and located with respect to one another in the same manner as the apertures shown in the tubes 20 and 23.

Fig. 4 illustrates another embodiment wherein the permeable body which is here designated 38, is in the form of a pointed plug of a suitable filter material. As an example, this plug of permeable material which is generally designated 38 may be of any of the conventional cellulose substances used for filtering purposes and its outer end is fixed in the opening 39 in the wrapper 40 of the cigarette while the inner end is tapered to a point as indicated at 41 and the body is embedded entirely in and extends across the width of the tobacco portion of the filler which is designated 42. This plug 38 of filter material may be provided as a separate member from the cigarette itself like the pointed tubular bodies 20, 23 and 31, so that it may be forced through the wrapper and into the tobacco portion 42 of the filler or it may be combined with the tobacco portion of the filler initially in the operation of making the cigarette to have the wrapper 40 subsequently applied and provided either previous to its application with the opening 39 or suitably cut to remove the necessary material to form the opening 39.

Obviously in smoking the cigarette having the filter plug 38 therein, some air will be drawn into the outer end of the plug and through the plug into and through the tobacco filler to pass through the filter body 43 and at the same time smoke from the burning forward end of the cigarette will pass transversely through the plug to the filter and to have its temperature reduced by mixing with the air drawn in through the outer end of the plug.

Fig. 5 illustrates another form of the permeable body which functions to reduce the smoke temperature and condense the volatilized substances and also to maintain

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the wrapper opening in the desired condition for the free admission of air. In this form the permeable body, which is generally designated 44, is in the form of a woven fabric cylinder which may be fashioned from suitable wire, plastic or any other material suitable for the purpose. As illustrated, the permeable or foraminous cylinder 44 has one end located in the aperture 45 in the wrapper 46 and the body extends across the width of the cigarette and is embedded in the tobacco portion 47 of the filler.

Fig. 6 illustrates another embodiment where the air is admitted into the filter portion 48 of the cigarette filler by way of apertures 49 formed through the cigarette wrapper 50. The numeral 51 designates a reinforcing tip covering the outer side of the wrapper and the air admission apertures are retained in shape or prevented from becoming closed by distortion of the cigarette body by the reinforcement which the tip covering 51 provides and this reinforcing tip 51 is provided with apertures 52 which coincide with the apertures 49 of the wrapper.

While in the description of the invention as applied to Figs. 1 and 3 to 5 the opening reinforcing members have been illustrated as terminating at one end within the cigarette filler material, it is also contemplated as being within the purview of the invention to extend these air and smoke permeable members entirely across the width of the cigarette so as to open at both ends through the wrapper.

In addition to the foregoing, it is also contemplated to provide any of the tubular reinforcing members with a filler of filtering material as illustrated, for example, in Fig. 1, where such filtering material filler in the tubular body 20 is designated 53.

In the illustration of the opening or air passage reinforcing bodies these have been shown disproportionately large as compared to the cigarette in which they are shown. It is to be understood that the size of these inserts may be varied as found desirable.

Actual experiments with cigarettes provided with air admission and air and smoke permeable members such as those here illustrated, have demonstrated that the temperature of the smoke from the burning cigarette is reduced to a material degree in the vicinity of the permeable members so that it enters the mouth of the smoker much cooler than is the case in the smoking of conventional cigarettes not equipped with any means for introducing air into the smoke stream in close proximity to the mouth or butt end of the cigarette. Accordingly it follows naturally as a result of this extreme reduction of the temperature of the smoke that the volatilized tars and resins will be to a very considerable extent or

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substantially entirely condensed and thus prevented from entering the mouth and lungs of the smoker.

I claim:

A cigarette or like smoking article embodying a wrapper and a filler therein consisting predominantly of tobacco, said article having a mouth end portion adapted to be inserted in a smoker's mouth, a preformed separate tubular member within the filler and extending transversely of the article, said tubular member having a first open end portion extending through said wrapper at a point spaced a substantial distance from said mouth end portion such that the open end of the tubular member is in communication with the outer air for drawing cooling air into the interior of the smoking article and is spaced outwardly of the lips of a smoker when the article is in a smoker's mouth, the opposite end portion of said tubular member being closed and tapered to facilitate insertion of the tubular member into the article, said tubular member having a length such that the closed tapered end thereof extends to a point adjacent to but spaced from the article wrapper whereby the tubular member extends through the major cross-sectional dimension of the article and opens at only one side thereof, said tubular member having formed therein a plurality of apertures spaced longitudinally of the tubular member, a first plurality of said apertures being formed through the tubular member on the side nearest to the forward end of the article, a second plurality of said apertures being formed through the tubular member on the side nearest to the mouth end portion of the article, said first plurality of apertures being in staggered relation to said second plurality of apertures so that when the cigarette is being smoked, smoke will be drawn through the tubular member in a tortuous path and air will be drawn through the open end of the tubular member and thoroughly mixed with the smoke so as to effect a substantial reduction in temperature of the smoke within the tubular member.

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