

[54] **DEVICE FOR FILTERING TOBACCO SMOKE**

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[22] Filed: **Nov. 9, 1970**

[21] Appl. No.: **87,969**

[52] **U.S. Cl.**.....**131/261 B**, 131/10.7, 131/10.1,
131/173

[51] **Int. Cl.**.....**A24f 01/30**, A24f 01/04

[58] **Field of Search**.....131/10.1, 173, 15, 10.3, 10.5,
131/10.7, 10.9, 261

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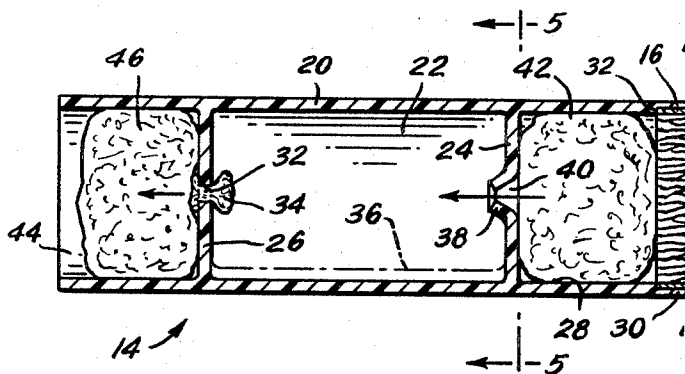
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[57] **ABSTRACT**

A device for filtering tobacco smoke, comprising a filter assembly that includes a chamber in which a measured quantity of liquid is contained, the front and the rear wall of the chamber each having an opening formed therein through which smoke is drawn and a plug of filter material located in and extending through the opening in the rear wall, the body of the article on which the device is secured being manipulated prior to the smoking thereof to saturate the material in the opening with the liquid as contained in the chamber, wherein smoke as drawn through the chamber and saturated material is filtered and cooled prior to being inhaled by the smoker. The compartments forward and rearwardly of the chamber may house filters, such as cotton pads, which function to remove additional impurities.

4 Claims, 5 Drawing Figures



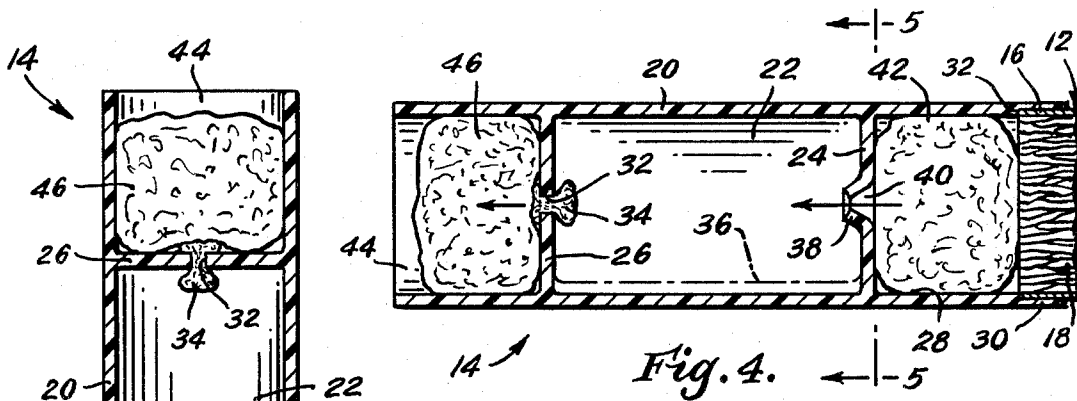
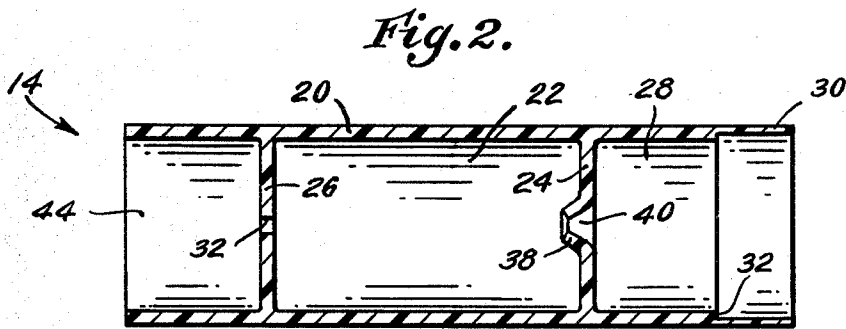
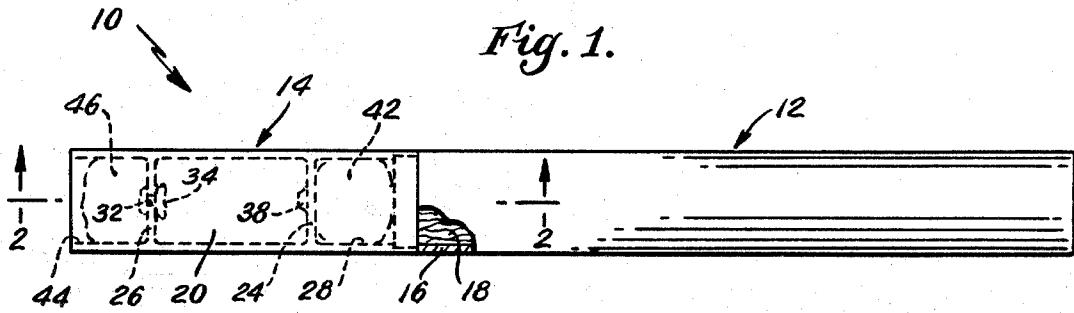
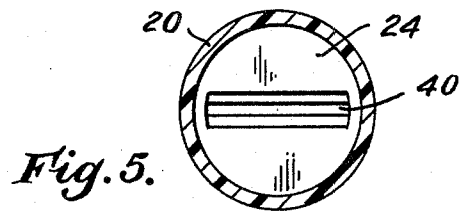


Fig. 3.



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DEVICE FOR FILTERING TOBACCO SMOKE

BACKGROUND OF THE INVENTION

The present invention relates to a filter for tobacco smoke and has particular application as a filter for cigars and cigarettes.

Prior to the instant invention, a great number of filters have been proposed for use with tobacco products, and most cigarettes sold commercially include some form of a filter that presumably filters impurities from the tobacco smoke prior to being inhaled by the smoker. Notwithstanding the intended purpose of the heretofore known filters, it has been proved statistically that these filters have not been successful in removing harmful ingredients from the tobacco smoke prior to being inhaled. Numerous proposals have been suggested for altering the commercial variations of the present-day filters for removing the harmful ingredients from the smoke, and these have included the concept of introducing water or other liquids into a tobacco smoke filter. Most of these heretofore known filters that have suggested the use of a liquid for trapping the harmful ingredients of tobacco smoke have included some form of a fibrous filter body and an enclosed water chamber of frangible construction that was penetrated by manual breaking or by the use of a rip cord or the like so as to free the liquid for saturation of the fibrous body. Such filter constructions have not been satisfactory in use since they have not properly saturated the filter body upon release of the liquid from the liquid chamber, and furthermore have been relatively complicated in construction that materially increased the overall cost of the tobacco article.

SUMMARY OF THE INVENTION

The present invention relates to a device for filtering tobacco smoke and comprises a filter assembly that is adapted to be attached to the smoking article from which the smoke is drawn by the smoker. In this connection it is contemplated that the filtering device can be used in the filtering of smoke from cigarettes, cigars, and may furthermore be used to filter pipe smoke, wherein the filter is inserted into the pipe stem. The filter assembly as embodied in the present invention includes an enclosed chamber in which a small amount of liquid is contained, a rear compartment being separated from the chamber by a wall in which an opening is formed. An absorbent material such as a cotton plug is located in the opening and is adapted to be saturated by the liquid just prior to the smoking of the article in which the filter is used. Since the saturated plug is located in the opening through which smoke is drawn, the smoke is filtered and cooled prior to being inhaled by the smoker. The invention as conceived also includes a forward compartment formed as part of the filter assembly, the forward and rear compartments having filter material located therein and cooperating with the saturated filter plug to prevent impurities as contained in the smoke from being inhaled by the smoker. It is also contemplated that the filter in the rear compartment will absorb some of the water from the saturated plug and will add to the cooling and filtering of the smoke. Accordingly, it is an object of the present invention to provide a filtering device for tobacco smoke that incorporates an absorbent material in the smoke channel, the absorbent material being saturated with a liquid for filtering and cooling the tobacco smoke prior to being inhaled by the smoker.

Another object is to provide a filter device for tobacco smoke, including a filter assembly that is attachable as a unit to a tobacco article the filter assembly including a chamber in which a liquid material is contained the liquid being adapted to saturate an absorbent filter material prior to use of the tobacco article.

Another object is to provide a filter assembly for use in a tobacco article that includes a central chamber in which a liquid is located, and forward and rear compartment in which a filter material is located, the liquid being used to saturate an absorbent filter and cooperating with the filter material in the

compartments to effectively filter the smoke from the tobacco article prior to being inhaled by the smoker.

Still another object is to provide a filter assembly for use with a tobacco article in which a cotton plug is located in the channel through which the smoke is drawn, the cotton plug being saturated with a liquid material prior to the smoking of the article for filtering and cooling the smoke prior to the inhaling thereof by the smoker.

Other objects, features and advantages of the invention shall become apparent as the description thereof proceeds when considered in connection with the accompanying illustrative drawings.

DESCRIPTION OF THE DRAWINGS

In the drawings which illustrate the best mode presently contemplated for carrying out the present invention:

FIG. 1 is an elevational view of a tobacco article such as a cigarette showing the filter device of the present invention as attached to the cigarette;

FIG. 2 is a vertical sectional view of the filtering device as embodied in the present invention;

FIG. 3 is an enlarged sectional view of the filter device as illustrated in FIG. 1 as attached to a cigarette and in the vertical position thereof such as when contained in a cigarette; and

FIG. 4 is a view similar to FIG. 3 showing the filter device located in the horizontal position thereof as attached to a cigarette and in that position that it is normally located during the smoking of the cigarette and after saturation of the filter plug with the liquid in the central chamber;

FIG. 5 is a sectional view taken along line 5—5 in FIG. 4.

DESCRIPTION OF THE INVENTION

Referring now to the drawing and particularly to FIG. 1, a tobacco article with which subject invention is utilized is illustrated and is shown in the form of a filter-tip cigarette generally indicated at 10. The body of the cigarette is generally indicated at 12 and the filter device embodied in the subject invention is generally indicated at 14 and is attached to the rear end of the cigarette 12 as will be described.

Although the filter device 14 is illustrated in the drawing as being utilized with a conventional style cigarette 12, it is understood that the concept of the invention as will be described hereinafter, may be incorporated in other tobacco articles such as cigars and pipes. In this connection, the filter device 14 may be attached to the rear end of a cigar or in a cigar holder, and it is further contemplated that the filter device 14 be inserted as a unit into a pipe stem and as such will constitute a filter for tobacco smoke drawn through the bowl of the pipe by the smoker. As illustrated in FIG. 1, the cigarette 12 is of conventional construction as formed by the usual automatic machinery and includes a tube of paper 16 in which tobacco 18 is packed, the paper tube 16 and tobacco 18 defining the body of the cigarette.

Referring now to FIG. 2, the filter device 14 embodied in the present invention is illustrated in detail and as shown includes an assembly defined by a tubular plastic body 20 that is preferably formed by molded half sections that are joined together. The plastic body 20 has a central chamber 22 formed therein that is defined by spaced walls 24 and 26. The wall 24 is spaced inwardly from the forwardmost end of the body 20 and defines a forward compartment 28, the outermost end of the annular wall that defines the compartment 28 being reduced at 30 to define an annular notch 32. The annular notch 32 provides for attachment of the end of the cigarette body to the filter device 14 wherein the annular reduced section 30 overlaps the rearmost end of the cigarette as illustrated in FIGS. 3 and 4. As further shown in FIG. 2 the rear wall 26 of the chamber 22 has a central opening 32 formed therein, a compartment 44 being located rearwardly of the wall 26, as will be described.

In the filtering of the smoke drawn through the cigarette 12, the present invention further provides for the cooling of the

smoke prior to inhaling by the smoker. In order to accomplish this purpose, the central chamber 22 as formed in the filter device 14 has a measured quantity of liquid such as water introduced therein through the opening 32 during the assembly of the device. As will be described, an absorbent plug 34 is located in the opening 32 and upon use of the cigarette is saturated by the water 36 located in the chamber 22. The water 36 located in the chamber 22 is normally maintained in an inactive position therein after the cigarette has been assembled and packaged. Since only a small quantity of the water is introduced into the chamber 22 it is prevented from draining therefrom and as will be described, it will not saturate the absorbent plug 34 until the smoker withdraws the cigarette from a package and purposely produces a tilting action of the cigarette that will cause the water to come in contact with the pad 34.

Since the cigarette is oftentimes disposed in a vertical position as illustrated in FIG. 3, it is desirable to form an opening in the wall 24 in such a manner that the water will be prevented from draining from the chamber 22. In this connection a transversely extending projection 38 is formed inwardly of the wall 24, a transversely extending slit or opening 40 extending through the projection 38 and providing for passage of the smoke from the cigarette into the chamber 22 during the use thereof. It is seen that the inwardly extending projection 38 is of sufficient dimension to prevent the liquid from reaching the opening 40 when the cigarette is located in a vertical position as illustrated in FIG. 3. Thus, the liquid will remain safely within the chamber 22 and will be utilized to saturate the plug 34 as required, after the cigarette has been withdrawn from its package.

In order to further produce a filtering of the smoke as drawn from the cigarette 12, the forward compartment 28 has a cotton filter 42 located therein, while the rear compartment 44 defined by the wall 26 and the rear end of the filter body 20 is also provided with a filter 46, that may also be of a cotton material or the like.

In the assembly of the filter device 14 to the cigarette 12, the water is introduced into the chamber 22 through the opening 32 prior to the insertion of the pad 34 into the opening 32. Thereafter the pad 34 which may be formed of a cotton material is inserted into the opening 32 following which the cotton filter 46 is placed in the compartment 44 to complete the assembly. The completed cigarette is then placed in a conventional package and the package is sealed with a cellophane material or the like as is known in the art. It is understood that upon sealing of the cigarette 10 in a package as indicated, evaporation of the liquid located in the chamber 22 will be effectively prevented.

When the smoker extracts a cigarette from the package after the opening thereof, the cigarette is tilted and moved in such a manner to cause the liquid in chamber 22 to come in contact with the cotton pad 34. The cotton pad 34 is saturated with the liquid material and since the pad is located in close

proximity to the filter 46 in the compartment 44, saturation of some or all of this filter will also occur. Upon smoking of the cigarette the smoke as drawn from the cigarette through the opening 40 and the opening 32 contacts the saturated cotton pad 34. The cotton pad 34 thus not only acts to cool the smoke as drawn therethrough but also filters the smoke in the well-known manner. As the smoke is drawn through the cotton pad 34, it passes through the additional cotton filter 46 prior to entering the smoker's mouth.

It is understood that impurities that are known to be present in cigarette or tobacco smoke, such as nicotine and tar will be trapped in the maze of filters as contained in the filter device 10 of the present invention. Thus the cotton filter 42 tends to filter out a portion of the impurities in the tobacco smoke. As the smoke passes through the opening 40 and into the chamber 22, additional impurities will be filtered from the smoke as it is swirled and circulated in the chamber. As the smoke is then drawn through the opening 32 and the saturated cotton pad 34, additional impurities will be removed, and the final cotton filter 46 then acts to finally remove residual impurities prior to the smoke being drawn into the mouth of the smoker. It is further understood that not only does the liquid as contained in the chamber 22 and used to saturate the pad 34 act as a filter for the smoke but it further cools the filter device which adds to the pleasure of smoking the cigarette.

What is claimed is:

1. A device for filtering tobacco smoke, comprising a filter assembly for attachment to a tobacco containing body from which the smoke is drawn by the smoker, said filter assembly including an enclosed chamber having front and rear apertured walls, said chamber containing a small amount of liquid, a rear compartment separated from said chamber by said rear wall an absorbent material inserted in and extending through said opening into said rear compartment and being saturated by said liquid by movement of said body, wherein smoke drawn through said chamber and absorbent material is filtered and cooled prior to being inhaled by the smoker.

2. A device for filtering tobacco smoke as set forth in claim 1, said filter assembly further including a forward compartment located in close proximity to the body from which the smoke is drawn, said front wall separating said forward compartment from said enclosed chamber and filter means located in said forward compartment and through which the smoke is drawn from said body.

3. A device for filtering tobacco smoke as set forth in claim 1, said absorbent material comprising a cotton plug that is located in said opening.

4. A device for filtering tobacco smoke as set forth in claim 2, the front wall of said enclosed chamber including a rearwardly extending projection that projects inwardly into said chamber, the opening in said front wall extending through said projection and said projection defining an overhang in said chamber and preventing escape of the water through the opening therein.

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