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A. P. MILLER

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SMOKING DEVICE

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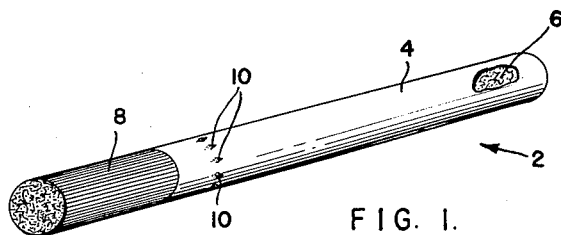


FIG. 1.

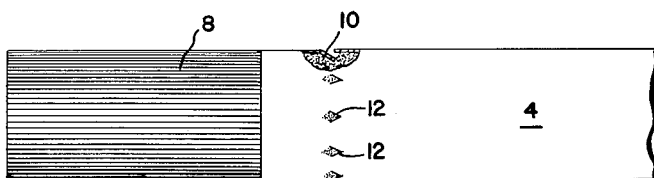


FIG. 2.

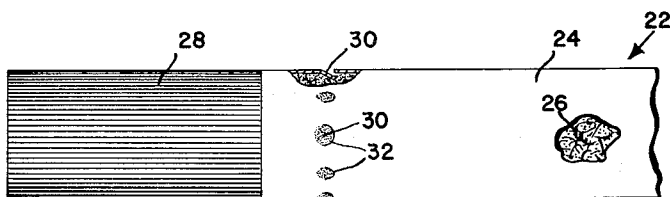


FIG. 3.

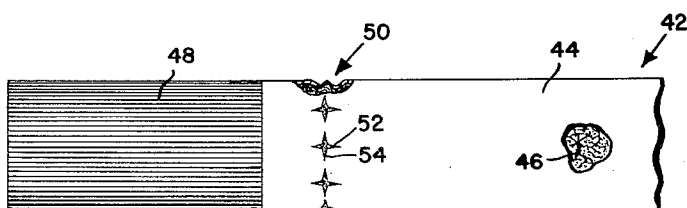


FIG. 4.

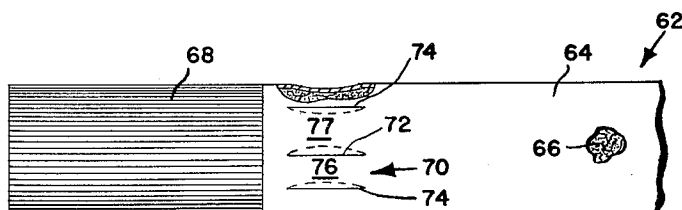


FIG. 5.

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3,020,915

SMOKING DEVICE

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6 Claims. (Cl. 131-9)

This invention relates to an improved cigarette construction and, more particularly, to improved construction of cigarettes, cigars and similar articles.

The use of smoking tobacco is today both well known and wide spread in spite of the fact that it is recognized by some authorities that smoking is injurious to the delicate membranes of the nose, throat and lungs of the smoker and is credited with inducing cancer of the lips, mouth, throat and lungs, and with inducing heat diseases.

The principal products of tobacco smoke are carbon dioxide, water vapor, carbon monoxide, acid fumes, nicotine vapors, and tars. The first two of these products are not generally regarded as harmful to the smoker. The remainder of these products are generally considered harmful and even though only a small proportion of these products resulting from the combustion of the entire cigarette actually enter the smoker's system, that quantity is sufficient to be considered by some authorities as being harmful to the smoker.

Various means are employed to reduce the harmful effects of these products of combustion. Various chemicals have been employed in admixture with the tobacco in an endeavor to nullify the harmful ingredients of the smoke. Some of these chemicals, while apparently nullifying the harmful smoke ingredients, release upon combustion equally toxic substances or destroy or impair the aroma that is delighted in by tobacco smokers. Certain other neutralizing agents are unstable and, by the time the cigarette is consumed, these agents have decomposed and fail to accomplish their purpose. Other agents cause unpleasant taste or are for other reasons undesirably employed. Numerous types of mechanical filters have been devised. These filters generally add materially to the cost of manufacture of the cigarette and many of them are of little value.

It is the object of my invention to provide a cigarette construction by means of which the harmful products of combustion of the tobacco drawn into the mouth of the smoker are minimized and the smoking of the cigarette is made less harmful and more satisfactory and pleasing to the smoker.

In accordance with this invention a cigarette is provided with valves in the wrapper for the admission of air between the burning end of the cigarette and the inhaling end. The valves are of flapper construction and provide for the introduction of a varying rate of flow of air which varies with the amount of suction exerted by the smoker.

The construction of this invention is of marked utility since it controls the cigarette's burning rate and hence causes the temperatures of burning to be lower than would occur when smoking an ordinary cigarette. This advantage results from the fact that as the smoker progressively increases his suction the valves open more and outside air is admitted at a progressively higher rate. This reduces the amount of air drawn through the burning end of the cigarette and hence keeps the burning temperature down. It is known that the reduction of the heat of burning reduces the production of the harmful products found in cigarette smoke, particularly the tars, containing cancer-causing agents and hence the cigarette of this invention provides a safer smoke.

One of the marked advantages of the flapper valves is that they control the heat of burning and yet provide

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an even smoke under all smoking conditions whether being puffed hard or easily. If an easy puffer is smoking the cigarette the valves admit very little air so that the smoker will not be simply inhaling air while with a hard puffer the valves admit a large amount of air and hence keep the heat of burning lowered due to the reduced amount of air being drawn through the burning area.

The admission of air is also desirable as it cools the smoke and tends to get rid of the objectionable combustion products in the smoke. In addition, it provides oxygen for the smoker.

The invention will be further clarified from the following description when read in conjunction with the accompanying drawings in which:

FIGURE 1 is a perspective view of a cigarette in accordance with this invention;

FIGURE 2 is a side elevation of the cigarette of FIGURE 1 partially broken away;

FIGURE 3 is a side elevation of an alternative embodiment of this invention partially broken away;

FIGURE 4 is a side elevation of an alternative embodiment of this invention partially broken away; and

FIGURE 5 is a side elevation of an alternative embodiment of this invention partially broken away.

As shown in FIGURES 1 and 2 a cigarette 2 in accordance with this invention has a paper wrapper 4 enclosing tobacco 6 and a filter tip 8. Adjacent the filter tip 8 wrapper 4 is provided with flapper valves 10.

Referring particularly to FIGURE 2 each valve 10 is formed by a V-shaped slit 12, the apex of the V-shaped slit extending forwardly. In FIGURE 2, valves 10 are shown in the position they occupy when a relatively strong puff is being taken on the cigarette 2. As is shown in the uppermost valve 10 which is partially broken away, the valve has been drawn inwardly towards the axis of the cigarette to permit the entry of a relatively large rate of flow of air. If a stronger puff is taken valve 10 will open even wider whereas with a lighter puff the valves 10 will open a lesser amount.

Referring to FIGURE 3, an alternative embodiment is disclosed. The cigarette 22 has a wrapper 24 enclosing tobacco 26 and a filter tip end 28. A plurality of flapper valves 30 are placed about the periphery of wrapper 24 adjacent filter tip 28. Valves 30 are formed by a semi-circular slit 32. The valve 30 in the broken away portion of wrapper 24 is shown in the position it would occupy during a relatively heavy puff on the cigarette.

A still further embodiment is shown in FIGURE 4. A cigarette 42 has a wrapper 44 encompassing tobacco 46 and has a filter tip 48. A plurality of valves 50 are formed in wrapper 44 adjacent filter tip 48 by right angled crossing slits 52 and 54. Valves 50 are shown in the position they occupy during a relatively heavy puff on cigarette 42. When a puff is taken on cigarette 42 the pressure difference on opposite sides of each valve 50 causes the V-shaped portions bordering slits 52 and 54 to be moved inwardly to effect an opening of each valve 50.

As shown in FIGURE 5 the cigarette 62 is provided with a wrapper 64 surrounding tobacco 66 and has a filter tip 68. A plurality of valves 70 are formed in wrapper 64. Each valve 70 is formed by a pair of longitudinal parallel slits 72 and 74 and the portions 76 of wrapper 64 lying between slits 72 and 74. A portion 77 having sufficient width to prevent inward collapse lies between valve 70. As illustrated in FIGURE 5, when a puff is taken on cigarette 62 the pressure difference on opposite sides of portion 76 of valve 70 causes portion 76 to be moved inwardly which in turn permits air to pass inwardly through the enlarged openings formed at the slits. Preferably the width of portions 76 between slits

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is in the range of from about $\frac{1}{16}$ " to about $\frac{1}{32}$ ". It is advantageous to have the width of the portion 77 between slits a minimum of $\frac{1}{8}$ " and a maximum of $\frac{1}{4}$ ". It has been found satisfactory to employ slits of a length of from about $\frac{1}{8}$ " to about $\frac{1}{4}$ ".

While the invention has been described in connection with a cigarette, it will be evident that the principle involved may be employed in conjunction with a cigar or other type of tobacco smoking article. The word "cigarette" as employed herein should be construed as encompassing within its meaning such smoking articles.

This is a continuation-in-part of my patent application, Serial No. 671,458, filed July 12, 1957 and now abandoned, which is a continuation-in-part of my patent application Serial No. 453,254, filed August 31, 1954, now abandoned.

What is claimed is:

1. A smoker's article comprising means providing a flexible wrapper for said article, a filler for said wrapper filling said wrapper for at least a portion of its length with tobacco, said wrapper being provided with an array of slits adjacent to one end of the tobacco filled portion of said wrapper providing flap portions of the wrapper forming vents variably operating in response to pressure differences on opposite sides of the flap portions to admit proportionally varying amounts of air.

2. A smoker's article comprising means providing a flexible wrapper for said article, a filler for said wrapper filling said wrapper for at least a portion of its length with tobacco, said wrapper being provided with an array of slits adjacent to one end of the tobacco filled portion of said wrapper providing flap portions of the wrapper forming self-valving vents through said wrapper through which air is drawn when the article is smoked and the displaceable flap portions being provided with printing accentuating the existence of the flaps.

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3. A smoker's article comprising a flexible wrapper, tobacco contained within said wrapper, said wrapper having a plurality of slits therein each defining a flap portion, said flap portion constituting a self-valving vent providing for a rate of flow of air to the interior of said wrapper which increases as the amount of suction applied by the smoker increases, and vice versa.

4. A smoker's article comprising a flexible wrapper, tobacco contained within said wrapper, said wrapper having at least one slit therein defining a flap portion, said flap portion constituting a self-valving vent controlling the amount of air drawn into the interior of the wrapper in response to the amount of suction applied thereto by the smoker.

5. A smoker's article comprising a flexible wrapper, tobacco contained within said wrapper and a plurality of flapper valves formed in said wrapper to provide for a rate of flow of air to the interior of said wrapper which varies directly with the amount of suction applied by the smoker.

6. A smoker's article comprising a flexible wrapper, tobacco contained within said wrapper and a plurality of flapper valves formed in said wrapper to provide for a rate of flow of air to the interior of said wrapper which varies directly with the amount of suction applied by the smoker, characterized in that each valve is formed by a V-shaped slit in the wrapper.

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