Aug. 10, 1954 P. SCHLUMBOHM 2,685,883

FILTERING SMOKING UTENSIL

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Fig. 1.

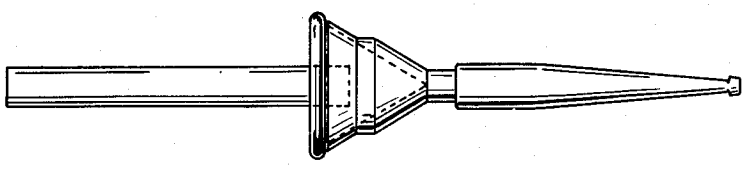


Fig. 2.

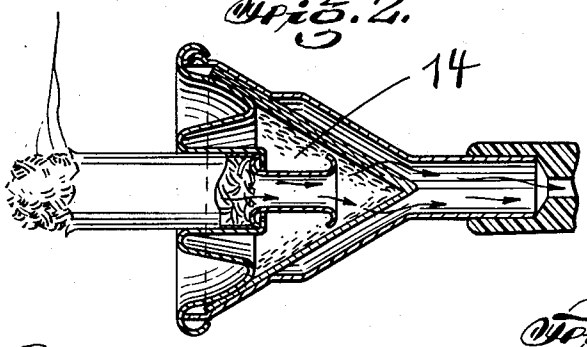


Fig. 3.

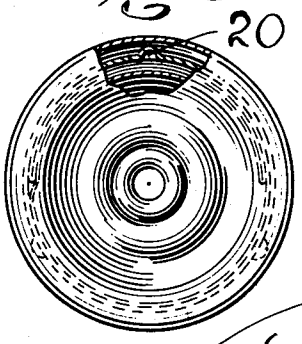


Fig. 6.

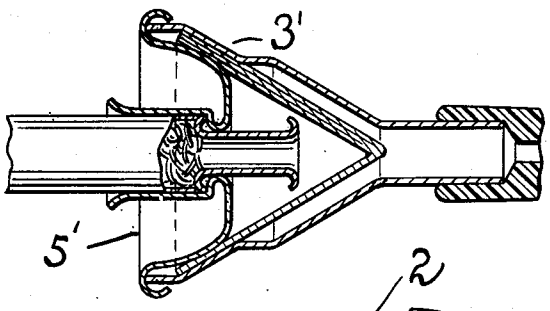
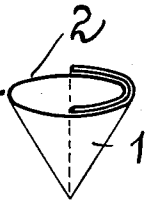


Fig. 5.



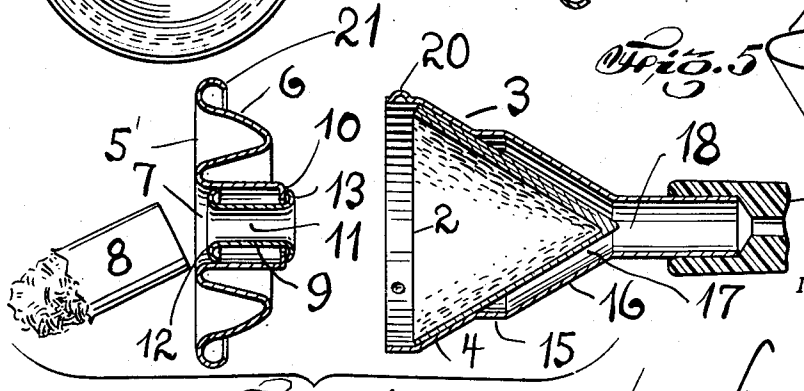


Fig. 4.

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Fig. 7.

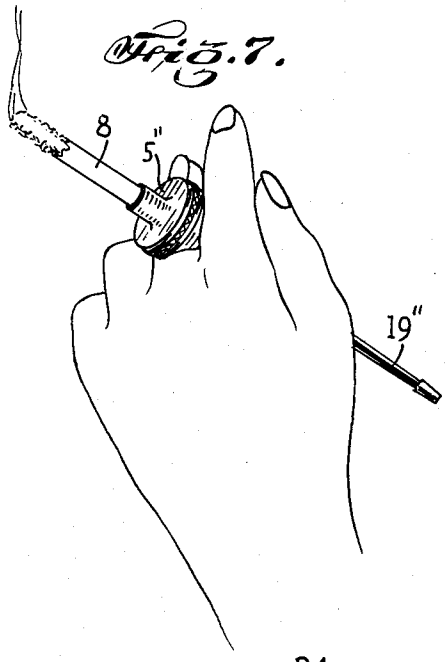


Fig. 10.

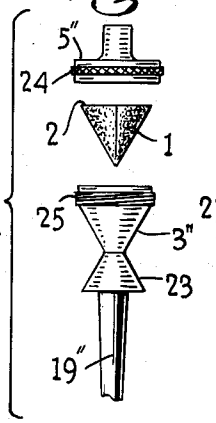


Fig. 8.

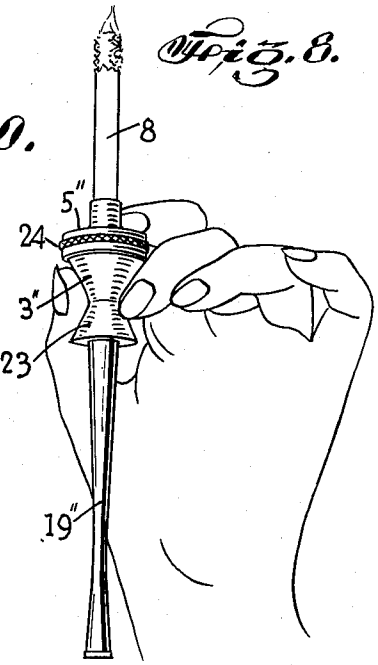


Fig. 9.

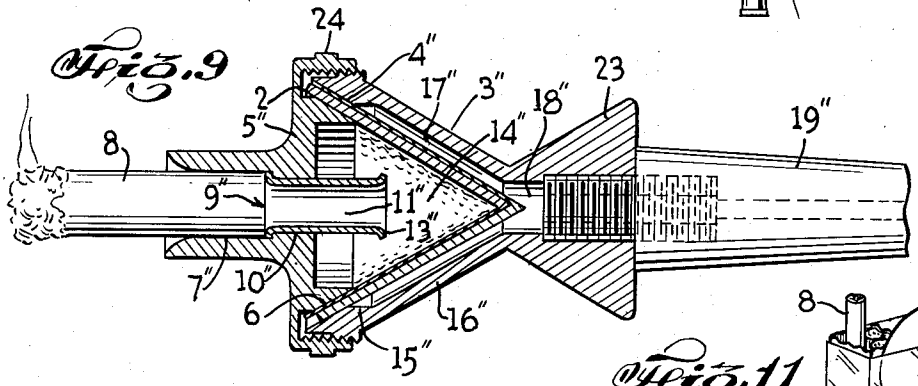
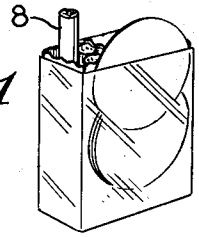


Fig. 11.



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FILTERING SMOKING UTENSIL

Peter Schlumbohm, New York, N. Y.

Application March 17, 1949, Serial No. 81,861

3 Claims. (Cl. 131—202)

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The invention relates to filtration of fluids and more specifically, refers to the filtration of tobacco smoke. The filtration of tobacco smoke is a difficult undertaking because three phases; namely, gas, liquid and solid are involved.

Burning tobacco in the form of a cigarette is a cracking process and not restricted to combustion. Total combustion of organic matter such as tobacco would lead to carbon dioxide and water as final results and they would be harmless and would not require filtration. Such a total combustion takes place at the burning end of the cigarette.

"Smoke" which is drawn into the mouth is chemically a complicated mixture. Under the influence of the approaching burning zone, tobacco is cracked chemically and very unstable chemicals, such as pyridine bases, are set free. Pyridine, with a boiling point slightly higher than that of water, will distill off as vapor and shortly afterwards form of tiny droplets which are, as such, carried away with the smoke stream. Tars, their boiling point being higher than that of pyridine, will form droplets more quickly but will also be partly caught in the draft, especially when more than half of the cigarette has been burned away.

Aromatic oils of high molecular weight will evolve from unburned tobacco and will be carried away especially by water vapor in the smoke stream, the water vapor coming from the fire zone or from the moisture of the tobacco. Solid particles like soot and ashes from the cigarette paper and nitrous gases from the decomposed nitrate of ammonia in the cigarette paper join the mixture; that is "smoke."

In accordance with the invention a filter paper having a high wet strength, in the form of a flat circular disc is provided. The filter is adapted to be folded twice to produce a 60° filterpaper cone which has three layers on one side and one layer on the other.

Providing the filterpaper in the form of a filterpaper disc has the advantage that several filterpaper discs can be tucked into the cellophane jacket of the pack of cigarettes.

It was found during the development of this cigarette holder that it is of greatest importance to avoid by-passing of the filter by the smoke. In the present invention the smoke necessarily passes through the filter itself. Therefore the filter must be sealed within the smoke conduit so that the filter effects a strict partition thereof. Another sealing problem is created when a cigarette holder into which a filter is to be

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inserted comprises two parts which are joined after the insertion of the filter.

In accordance with the invention, a filter is used which has a conical form formed by folding a filterpaper disc twice which results in a 60° paper funnel constituting an ideal sealing means.

In accordance with the invention, this funnel is used in a cigarette holder as a gasket between a 60° female element on the outside of the rim thereof and a male 60° element on the inside of said rim.

The nature and advantages of the present invention will be apparent from the following description taken in conjunction with the accompanying drawings, wherein:

Fig. 1 shows a cigarette holder in side elevational view with a cigarette inserted.

Fig. 2 shows in vertical section part of the cigarette holder of Fig. 1 and illustrates by arrows the flow of the smoke.

Fig. 3 is an end view of the cigarette holder of Fig. 2, certain parts being shown in section.

Fig. 4 is a partial exploded longitudinal sectional view of the holder of Fig. 3, showing a cigarette stub which has been ejected therefrom.

Fig. 5 is a perspective view illustrating a filterpaper cone.

Fig. 6 is a vertical sectional view illustrating a modified form of a cap and cigarette receiving socket.

Fig. 7 and Fig. 8 are perspective views of a modified holder illustrating the functional grip made possible by having a double-cone exterior.

Fig. 9 is a view partly in section and partly in elevation of the cigarette holder illustrated in Figs. 7 and 8;

Fig. 10 is an exploded elevational view showing the elements of the cigarette holder illustrated in Fig. 9; and

Fig. 11 is a perspective view showing the filterpaper discs in the cellophane jacket of a pack of cigarettes.

By describing the holder as shown in Figs. 1–5 and by applying the numerals as primed to corresponding parts of the other modifications, I describe my invention as follows:

The cigarette holder comprises three parts; the mouthpiece 19, the main body 3 and a cap 5 having a cigarette receiving socket at its outer end.

It was found necessary to apply pressure to compress the rim 2 of the filterpaper cone 1 to form a gasket between the female 60° flare 4 on the outside of rim 2 and the male 60° annular counterseat 6 on the inside of rim 2. A thread

25 as seen in Fig. 10 allows a coaxial fitting between these two 60° gripping elements 4 and 6.

An outstanding factor of the invention is that the filterpaper cone 1 is only fixed at its rim 2 and that the rest of the filter body protrudes freely into the space through which the smoke passes. This is made possible by a cylindrical section 15 adjacent to the 60° flare 4. Consequently, the wall 16 of part 3, while also retaining the design of a 60° funnel, do not contact nor support the filterpaper cone.

Figs. 2, 4 and 6 illustrate a cylindrical wall section at the outer end of the body 3, provided with gripping means 20 which engages gripping means 21 formed on the cap 5.

The ejector 11, referring to Fig. 4, may comprise a body 9, a turned end 13 acting as a stop with respect to the end portion 10 of the cap 5 and the ejector 11 is also provided with a turned end 12 which, in the smoking position, also cooperates with the turned end 10. The space 14 is ample to receive the ejector 11 in normal smoking position. After the smoke passes through the filter it reaches the mouthpiece 19 through passages 17 and 18.

The cap 5 is characterized by a tubular socket 7, flared at its open end, for receiving the cigarette 8. Fig. 6 illustrates a modified form of the cap 5 wherein the socket projects outwardly from the cap.

Referring specifically to Figs. 7–10, I have provided a counterweight constituted by part 23 to balance the weight of parts 3'' and 5'' and I designed a functional grip by creating a double wedge by a double-cone exterior contour of parts 3'' and 23 as shown particularly in Fig. 9. The holder is carried by wedging this double cone between two fingers. In effect, this double-cone contour comprises two coaxial frusto-conical sections arranged in opposed relation and pointing toward each other and in juxtaposition one with the other. The cap 5'' may be knurled at one part of its periphery as at 24.

As filterpaper I use high-grade laboratory wet strength filterpaper which is creped to form a crinkled surface. Such a paper has a certain compressibility and this allows the three-layer wall thickness of the rim 2 to be reduced to the thickness of the one layer of the opposite side of the rim when parts 3 and 5 are joined.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawings and described in the specification but only as indicated in the appended claims.

I claim as my invention:

1. A cigarette holder comprising a mouthpiece at one end thereof, a body member supported by the mouthpiece and extending axially therefrom, a filter element of compressible sheet material, and a cap member adapted to support the filter at an end portion of the body member and having socket means at said end to receive and support a cigarette to be smoked, said body member and said cap having complementary frusto-conical exterior and interior walls and said filter element having folds to provide a cone with a substantially similar frusto-conical wall portion, said cap member having an annular wall member connecting the cigarette receiving socket with the frusto-conical wall of said cap, one portion of said filter comprising a single layer and the remaining portion of said filter comprising plural layers, the frusto-conical walls of said body member and said cap member being adapted to receive the single and plural layers of said filter to grip and compress said plural and single layers to such an extent as to form a seal impervious to the passage of air, whereby when said cap is placed on said body member with the filter element therebetween and a cigarette is placed in the socket the only gaseous material reaching the smoker's mouth will be that drawn through the cigarette and the filter.

2. The combination of claim 1, wherein said body member comprises cylindrical as well as conical portions, one of said cylindrical portions maintaining a frusto-conical portion of the body spaced from the filter adjacent the seal, and another of said cylindrical portions having means thereon adapted to receive and retain said cap to press said filter between said cap and body member thereby providing said seal.

3. The combination of claim 1, wherein the body member has a second inner frusto-conical member having its small base in axial juxtaposition to the smaller base of the outer frusto-conical portion.

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