June 16, 1964 H. L. SHAW 3,137,303

FILTER TIP

Filed April 11, 1961

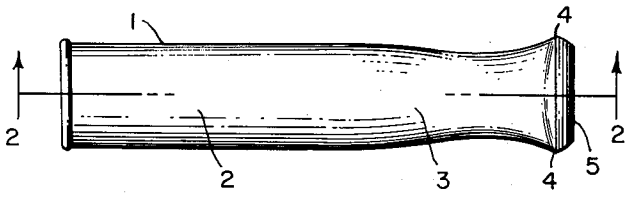

FIG. 1

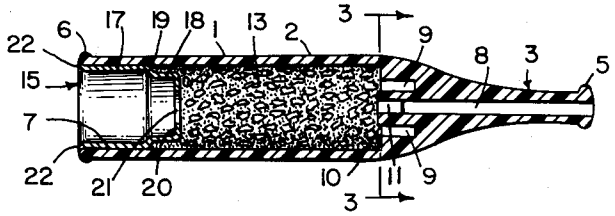

FIG. 2

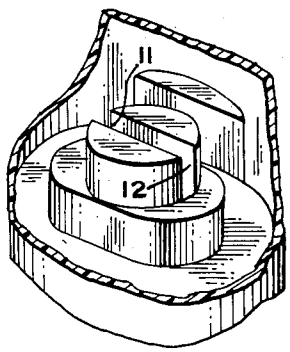

FIG. 4

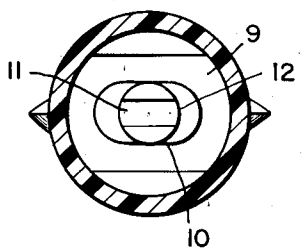

FIG. 3

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FILTER TIP

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1 Claim. (Cl. 131—187)

The present invention relates to a filter for cigarettes and the like and more particularly to a unitary disposable filter of inexpensive construction into which a cigarette or the like may be fitted. This application is also a continuation-in-part of application Serial No. 810,714, filed May 4, 1959, now Patent 3,048,180 for an invention in a filter tip.

With the accumulated evidence of the deleterious effect of nicotine and tars in tobacco smoke there is an increased desire on the part of the public to obtain a more effective filter for cigarettes. Recently, many cigarette firms have tried to solve this problem by incorporating a filter tip in the cigarette. These filter tips, however, are not as effective as hydroscopic filters such as disclosed in United States Letters Patent No. 2,911,-984, issued on November 10, 1959. Since filter tips integral with the cigarettes cannot of necessity be readily formed as hydroscopic filters, there is an increased demand for separable hydroscopic filters which are inexpensive to manufacture and which are certain of operation. It is therefore an object of the present invention to provide a filter for cigarettes which is simple and inexpensive in design. This construction of the present invention, while being inexpensive in nature, is nonetheless highly effective and provides a filter for cigarettes whch is much better in filtering harmful substances including tars and nicotine from the smoke than conventional filter tips embodied in the cigarettes themselves.

The present construction also provides a disposable filter element adapted to permit the free flow of smoke therethrough without requiring the smoker to exert an unnecessary draw to effect its passage. Further, the present invention effectively filters the entire amount of smoke passing therethrough.

In the present invention the filtering body is recessed from the end of the holder, thus providing a receptacle for the end of the cigarette. In addition, the filter of the present invention provides a liquid trap adjacent the other end of the filter material, adapted to receive condensate liquids as the smoke passes from the filter material, thereby effectively reducing the amount of distasteful fluids which might otherwise pass into the smoker's mouth. In the present invention, there is also provided means for cooling the smoke in order to reduce the biting sensation which is often caused by hot smoke.

The present invention is also designed to permit effective use of a single filter for twenty or more cigarettes; thus, considerably reducing the per cigarette cost of each filter.

The present invention also provides a metallic coaxial sleeve having a shoulder section press fitted into the open end of the housing. This sleeve functions to secure the filter material in position under a precise amount of compression. It also functions to retain moisture in the filter material. In addition, the shoulder section securely holds the sleeve in the housing without likelihood of it coming out and without likelihood of the sleeve cracking the plastic housing. Further, the shoulder section functions to adapt the holder for both filter and nonfilter cigarettes. Most important, however, is that the metallic sleeve eliminates the possibility of the plastic from melting or smouldering.

These and other objects and advantages of the present

invention will be more clearly understood from a consideration of the accompanying drawing in which:

FIG. 1 is a plan view of the cigarette filter;

FIG. 2 is a cross section taken along the line 2—2 of FIG. 1,

FIG. 3 is a cross section taken along the line 3—3 of FIG. 2; and

FIG. 4 is a perspective view of the view shown in FIG. 3.

As illustrated in the drawing, there is provided a housing **1** formed of injection moldable plastic material. The particular material of which the casing is made should be fire resistant and nonreactive with cigarette smoke, tars or nicotine, except insofar as minor surface discolorations may occur due to the action of the smoke, tars and nicotine. This housing **1** is substantially cylindrical at its forward end **2** and gradually tapers at its rear end into a mouthpiece section **3**. The mouthpiece section **3** is substantially oval in cross sectional shape, and is flared outwardly as illustrated at **4** at its rear edge. A ridge **5** is provided at the rear end of the filter for the purpose of providing an effective gripping area. Similarly at the forward end a ridge or bead **6** may be provided about the periphery of the housing **1**. The housing is formed with a cylindrical opening **7** at its forward end **2**, and a narrow passage **8** continuous with the opening **7** extending through the mouthpiece section **3**. A trap **9** is formed in the rear end of the cylindrical opening **7** adjacent and surrounding the passage **8**. This trap **9** is annular in shape, and defines the projecting wall **10** of the passage **8**. It will be noted that opposite sides of the projecting wall **10** are recessed at **11** and **12** so as to assure an open passage therethrough of the smoke from the trap **9** into the tube **8**. The filter material **13** is secured within the housing **1** under a preselected amount of compression by the metallic sleeve **15**. This sleeve **15** is formed with offset annular side wall sections **17** and **18** interconnected by a shoulder section **19**. The inner end of the sleeve **15** is formed with an inwardly flared flange portion **20** bordering the opening **21**. The outer edge of the sleeve section is formed with a lip **22** peened over the ridge or bead **6**. The section **17** presses closely against the inner surface of the housing wall. The diameter of the section **17** is such as to securely receive filter type cigarettes. The inwardly offset section **18** has a diameter such as to receive in a snug fit, nonfilter cigarettes. The sleeve is secured in a relatively firm relation to the housing by the frictional fit of the wall section **17** with the wall of the housing **1**. The inwardly extending flange **20** presses the filter material into a preselected degree of compression and holds it firmly in this position preventing it from being accidentally dislodged and also minimizing the likelihood of water evaporation from the filter material.

The filter material **13** may be formed of the same material as described in United States Letters Patent No. 2,911,984, sufficiently prewet with a fluid as described in that patent.

A cigarette fitted into the forward end of the filter may be smoked so that the smoke draws rearwardly through the filter material **13**. The filter material is of such a nature it expands outwardly when wet and presses against the wall of the housing **2**, thereby forcing all the smoke to pass through the filter material and not around it. The smoke passes into the trap where due to the cooling effect of the mass of plastic material, much of the tars and nicotine are condensed into a fluid in the trap **9**. The purified smoke then passes through the recessed portions **11** and **12** into the tube **8** and then into the smoker's mouth.

What is claimed is:

A cigarette holder of plastic material comprising an elongated tubular open ended casing having in series a forward end with a longitudinally extending cylindrical opening therethrough and a mouthpiece section formed of a solid mass of plastic with a narrow passage therethrough communicating with said opening, the external surface of said mouthpiece section tapering from said forward end, said passage opening into the base of said cylindrical opening, a projecting wall for a portion of said narrow passage adjacent said opening with said projecting wall and the outer portion of said casing at least in part defining an annular liquid trap, means forming passages at the end of said projecting wall interconnecting said narrow passage and said annular trap, a quantity of filter material positioned within said opening adjacent said trap, means forming shoulders projecting inwardly from said casing and having a surface aligned with the end of said projecting wall adjacent said opening with said shoulders adapted to engage said filter material to prevent said filter material from entering said annular liquid trap, a metallic sleeve positioned within said forward end and having a pair of annular offset wall sections

interconnected by a shoulder section with one of said wall sections in frictional engagement with the surface of said housing wall and the other of said sections spaced inwardly therefrom, said sleeve also having an inwardly extending annular flange adjacent and in pressing relation with said filter material thereby securing said filter material in pressing relation with said base and an annular lip formed at the other end of said sleeve with said lip peened over the forward end of said housing.

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