Nov. 12, 1968 I. W. TUCKER 3,410,275

CIGARETTE FILTER

Filed March 30, 1965

FIG. 1

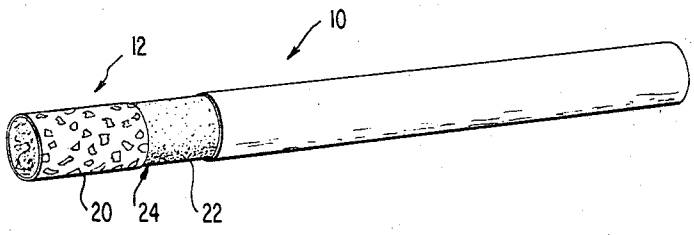


FIG. 2

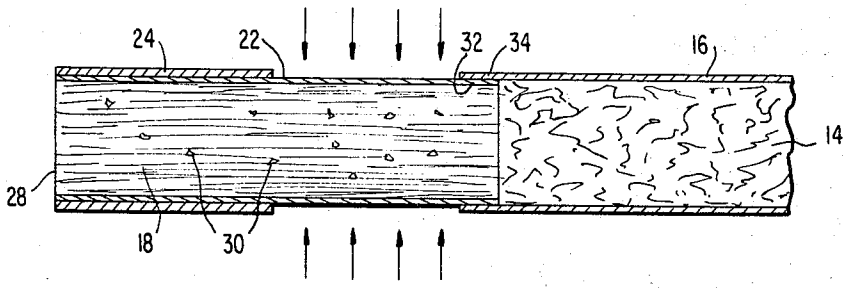
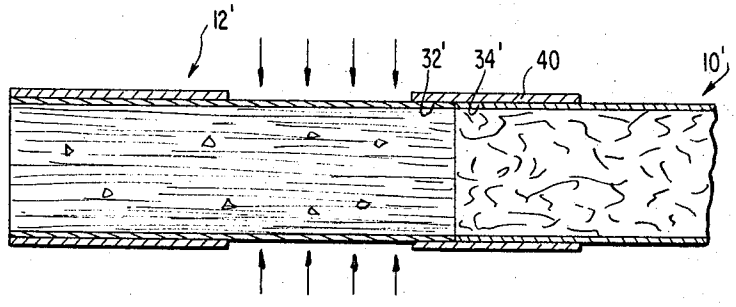


FIG. 3



INVENTOR
I. W. TUCKER

BY Browne, Schuyler & Beveridge

ATTORNEYS

United States Patent Office 3,410,275
Patented Nov. 12, 1968

3,410,275

CIGARETTE FILTER

Irwin W. Tucker, 215–04 33rd Ave.,
Bayside, N.Y. 11361

Filed Mar. 30, 1965, Ser. No. 444,006
9 Claims. (Cl. 131—10)

ABSTRACT OF THE DISCLOSURE

A cigarette filter having an exposed wrapper portion formed of inherently porous sheet material to permit air to be drawn into the filter material through said inherently porous material upon inhalation of the associated cigarette.

This invention relates to a new and improved cigarette filter which produces an aerated smoke.

One of the objects of the present invention is to provide a cigarette filter which will significantly reduce the harmful effects of smoking caused by tars, nicotine, acids, resins, etc., and yet will produce a smoke that is cool, mild and possessed of pleasant flavor.

A further object of the present invention is to provide a cigarette filter that will attain the above objects without sacrifice to the draw of the cigarette.

Another object of the present invention is to provide such a filter that may be economically manufactured and incorporated into a cigarette for retail at commercially competitive prices.

A still further object of the present invention is to provide a cigarette filter that may be made and marketed apart from a cigarette for subsequent attachment, as desired, to various filter or nonfilter cigarettes commonly sold on the market.

Other objects and advantages of the present invention will become apparent from the following description and the accompanying drawings in which:

FIG. 1 is a perspective view of a cigarette incorporating an embodiment of the present invention;

FIG. 2 is an enlarged longitudinal cross-sectional view illustrating the filter-end of the cigarette of FIG. 1; and

FIG. 3 is a view similar to FIG. 2 but illustrating a modified form of the invention.

Referring to the drawings in detail, FIG. 1 shows a cigarette generally designated **10** incorporating a filter, generally designated **12**, embodying the present invention. Cigarette **10** includes a column of tobacco **14** of standard length enclosed by a paper wrapper **16** of any conventional composition. In the illustrated form of the invention, filter **12** is generally of standard length and comprised of filter material **18** which may be any of the available filter materials appearing on the market.

Enclosing filter material **18** is a filter wrapper generally designated **20**, and in accordance with one aspect of the present invention, filter wrapper **20** includes a first layer of inherently porous sheet material **22**, shown as wrapped around filter material **18** throughout the full length of the latter. referably, layer **22** is paper having a porosity of approximately 10 to 30 seconds as measured by a Greiner porosity tester which is well known in the industry as a device which measures the porosity of a paper one inch in diameter in terms of the time in seconds it takes for 50 cc. of air to be drawn through the paper under the influence of a varying suction head equivalent to a column of water averaging about 4½ inches in height.

By inherently porous paper it is meant paper whose fibers are arranged, constructed or composed such that they provide the desired degree of porosity preferably

uniformly distributed throughout the paper. This is in contrast to known aeration methods in cigarettes wherein the wrapper around the tobacco is specially perforated; the wrapper, as manufactured being relatively impervious to air and having a porosity of 40 to 45 seconds as measured by the Greiner method.

Filter wrapper **20** further includes a second layer of sheet material **24** having a relatively impervious construction or quality such as cork or any of the other materials commonly employed in filter construction. Outer layer **24** is wrapped around inherently porous layer **22** and suitably attached thereto as by bonding to provide a relatively stiff mouthpiece for the smoker. However, according to the invention, outer layer **24** begins from the mouth end **28** of the filter and terminates approximately at the center of the filter to expose inherently porous layer **22** to atmosphere thereby permitting air to be drawn into filter material **18** through porous layer **22** upon inhalation of the cigarette.

In order to compensate for possible loss of the tobacco flavor such as often occurs with nonselective, mechanical filters, a flavoring agent schematically illustrated as particles **30** is introduced in filtering material **18**. Flavoring agent **30** may be provided by any suitable substance.

Referring to FIG. 2, attachment of filter **12** to the tobacco column in the embodiment of FIG. 1 may be accomplished in any suitable manner such as by overlapping the end portions **32** and **34** of the filter and tobacco wrappers respectively and bonding them together.

From the foregoing, it will be seen that when cigarette **10** is inhaled during smoking, air will be drawn through the exposed section of porous layer **22** into the filter material (as indicated by the arrows in FIG. 2), thereby bypassing the smoke traveling through the tobacco column. In this manner, not only is the smoke reaching the mouth, cool and mild but also harmful matter in the smoke is cooled by the incoming air and thus deposits in the filter material where it is not subject to recombustion as in cigarettes where perforations are provided in the tobacco wrapper. Moreover, the uniform introduction of air into the filter as provided by the inherent quality of layer **22** avoids "hot spots" in the filter known to adversely affect the quality and enjoyment of the smoke.

While aeration of a cigarette normally reduces the draw, in the present invention, filter material **18** compensates for this effect to provide a smooth and even draw. Finally, with the addition of flavoring substance **30** as desired in the filter material **18**, a highly improved smoke is achieved.

Referring to FIG. 3 there is illustrated another embodiment of the invention wherein a filter generally designated **12'** has the same construction as that described above, except that filter **12'** is manufactured separately from the cigarette **10'**.

In accordance with the invention a cylindrical sleeve **40** having open ends is provided for attaching filter **12'** to cigarette **10'**. Sleeve **40** is hollow and dimensioned to receive ends **32'** and **34'** of the filter and cigarette respectively, preferably with ends **32'** and **34'** in abutting engagement. Additionally, sleeve **40** is constructed so that filter **12'** and cigarette **10'** are received with a relatively tight fit so as to minimize reduction of the draw of the cigarette.

It will be appreciated that with sleeve **40** filter **12'** may be adapted to various nonfilter cigarettes now commonly sold on the market and moreover filter **12'** may be applied quickly and conveniently.

As will be apparent to persons skilled in the art, various modifications and adaptation of the structure above described will become readily apparent without departure from the spirit and scope of the invention covered by the appended claims.

What is claimed is:

1. A filter for a cigarette or the like comprising filter material, a wrapper enclosing the filter material and having a first end portion adapted to be placed in the mouth of the smoker and an opposite end portion adapted to lit adjacent the tobacco in a cigarette or the like, said opposite end portion extending entirely around and in engagement with the filter material and being formed from inherently porous sheet material having uniform porosity throughout its circumference such as to permit air to be uniformly drawn into the filter material through said sheet material upon inhalation of a cigarette to which the filter is attached.

2. A filter defined in claim 1 wherein said sheet material is paper.

3. A filter defined in claim 1 further including a flavoring substance in the filter material.

4. A filter defined in claim 1 wherein said sheet material extends throughout the length of the filter and said first end portion of the wrapper is formed from a sheet of relatively impervious material wrapped around and in engagement with said porous sheet material.

5. A filter for a cigarette or the like comprising filter material, a wrapper enclosing the filter material including a layer of inherently porous sheet paper engaged around the filter material and extending substantially throughout the filter between the ends thereof, said wrapper further including a layer of relatively impervious sheet material wrapped around and in engagement with said first layer at the end portion of the filter adapted to be placed in the mouth of a smoker, said second layer terminating short of the opposite end of the filter such as to permit air to be drawn into the filter material through said porous paper upon inhalation of a cigarette to which the filter is attached.

6. In combination with a cigarette or the like having a column of tobacco and a cigarette wrapper enclosing the column of tobacco; a filter comprising; filter material, a wrapper enclosing the filter material including a first layer of inherently porous sheet paper surrounding and engaging the filter material substantially throughout the full length thereof, a second layer formed of relatively impervious sheet material surrounding and engaging said porous sheet material at the end of the filter which is to be placed in the mouth of a smoker, said relatively impervious sheet material terminating short of the opposite end of the filter to permit air to be drawn into the filter material through said porous sheet material upon inhalation of the cigarette, and means attaching said filter in coaxial relation to the column of tobacco with the inherently porous sheet material at said opposite end of the filter lying adjacent to the tobacco and being substantially exposed.

7. The combination defined in claim 6 wherein said filter further includes a flavoring substance located in said filter material.

8. The combination defined in claim 6 wherein said means is a hollow open-ended sleeve having opposite ends receiving said opposite end of the filter and a portion of the cigarette wrapper.

9. A filter for a cigarette or the like comprising, filter material, a wrapper enclosing the filter material and having a first end portion adapted to be placed in the mouth and an opposite end portion adapted to lie adjacent the tobacco in a cigarette, said opposite end portion extending entirely around the filter material and being formed from inherently porous sheet material having a uniform porosity throughout its circumference in the range of ten to thirty seconds as measured by a Grenier tester whereby upon inhalation of a cigarette to which the filter is attached air will be drawn into the filter material through said inherently porous sheet material.

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LUCIE H. LAUDENSLAGER, *Primary Examiner.*