Nov. 29, 1960 A. ZSACSKO 2,962,411

FILTER FOR TOBACCO SMOKE

Filed Jan. 22, 1958

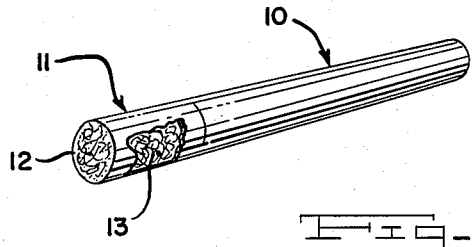



Fig. 1

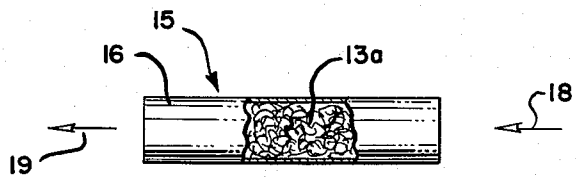



Fig. 2

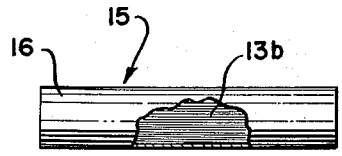



Fig. 3

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United States Patent Office 2,962,411 Patented Nov. 29, 1960



2,962,411

# FILTER FOR TOBACCO SMOKE

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Filed Jan. 22, 1958, Ser. No. 710,511

1 Claim. (Cl. 162—20)

This invention relates to a filter for tobacco smoke and more particularly to a filter material which may be used in conjunction with cigarettes, cigars, and pipes for filtering the smoke and removing various undesirable ingredients from the smoke before the smoke reaches the mouth of the smoker.

As is well-known, tobacco smoke contains quantities of tar, nicotin, and other ingredients which are considered to be injurious to the health of the person inhaling the smoke.

Thus, it is an object of this invention to form a filter for tobacco smoke, such as the smoke from cigarettes, cigars, and pipes, which removes a large amount of the tar, nicotin, etc., and yet leaves the taste of the smoke substantially unaffected.

A further object of this invention is to form a filter out of natural peat, which is formed into strands, and compacted into a filtering mass and which will remove a large amount of tar, nicotin, etc., from tobacco smoke and yet will not affect the taste of the smoke, and will remain odorless even when filled with the tobacco tar, nicotin, etc., which it collects.

These and other objects and advantages of this invention will become apparent upon reading the following description of which the attached drawings form a part.

With reference to the drawings in which:

Fig. 1 is a perspective view of a cigarette having a filter tip, with the filter tip being partially in cross-section.

Fig. 2 is a plan view, partially in cross-section, of a filter useful in cigarette holders, pipes, or cigar holders.

Fig. 3 is a view similar to Fig. 2 which shows a slightly different arrangement of the strands of filtering material.

Referring to Fig. 1, a conventional cigarette **10** is illustrated as having a filter tip **11** formed of a suitable heavy paper **12** surrounding a mass of filtering material **13**. The tip is of the conventional size, being about 5/16 of an inch in diameter and approximately ½ inch in length. The dimensions are not critical since the purpose of this illustration is simply to indicate the use of the filtering material forming the invention hereof.

Fig. 2 shows a conventional filter, insofar as size and shape is concerned, useful for insertion in a cigarette holder or in a pipe or in a cigar holder. The size and shape depends upon the use to which the filter is applied. This filter **15** is formed of a roll of heavy paper **16** or suitable plastic or the like and is packed with a mass of filtering strands **13***a*. The smoke passes through the filter as indicated by arrows **18** leading into the filter and arrow **19** leading out of the filter. Thus, the cigarette smoke or tobacco smoke is passed through this filter and upon leaving, leaves behind within the filter approximately 40 to 50% of its tar and nicotin content and other impurities. When leaving the filter, the smoke tastes substantially the same as when it entered. In this case, the strands **17** are irregularly packed such as the packing found in fluffy cotton.

In Fig. 3, the packing or filtering strands **13***b* are combed into an aligned position.



Other forms and shapes of filters will be readily apparent to anyone skilled in the art. The invention herein is concerned not with the form and shape of the filter, which is shown merely for the purposes of illustration, but rather with the packing material or strands contained within the filter.

Thus, the filtering material contemplated for use is that known as peat or more precisely peat moss. Peat or peat moss is a natural organic material, i.e., plants, which have not undergone complete carbonization and wherein the cellulose content has not been completely destroyed as a result of biological disintegration.

I have found that for this purpose, the most efficient species of peat or peat moss are *Eriophorum vaginatum* and also sphagnum moss. Both of these are fund in the peat producing areas of Ireland and Scotland.

This peat when treated as will be described below, and formed into filaments or strands, are suitable for use in forming highly efficient filters for tobacco smoke.

The method of treating the natural peat found in the ground, consists basically of removing the high moisture content from the peat, removing all impurities, carding the peat into fine filaments or strands, and then packing these strands or filaments together into the form of a filtering mass which may be packed into a filter tip of a cigarette or the cylindrically shaped filter of a cigarette holder or the like as illustrated above.

In greater detail, the method of treatment which I have found suitable for the above mentioned species of peat is as follows:

First, the natural peat is treated to remove between 80 and 90% of its moisture content. This may be done by spreading the peat out in the sun as is commonly done in the peat producing areas or more efficiently, by treating the peat in a centrifugal drying machine or in a mechanical press.

Once the water content of the peat has been reduced by about 80 to 90%, the peat is cleaned by immersion in water. This immersion washes out the impurities which being heavier than the peat, sink to the bottom and the peat rises. Thereafter, the peat is carded by a conventional carding machine to form it into fine fibers. The carding also removes those impurities that have not been removed by the water cleaning.

Following this, the peat is again subjected to a drying process either by mechanical pressing or preferably by centrifugal driers.

At this point, it is desirable for most uses of the filter to bleach the peat into a white, pure looking color, since the normal color of peat is dark and dirty looking. Thus, the peat may be bleached by any conventional bleaching compound such as the usual solutions containing chlorine and water. Once the peat is soaked in the chlorine and water for a sufficient period of time to bleach it as close to white as desired, the bleaching material may then be washed off the peat strands. It has been found, that the bleaching material tends to cause the strands to stick together which is undesirable for filtering purposes.

Thus, following the washing off of the bleach solution, the strands must again be dried in the same way as mentioned above. In addition, following mechanical drying, it is preferable to heat the strands to approximately 100 to 120° C. for a sufficient period of time to bring the moisture content of the strands down to approximate atmospheric moisture content.

Thereafter, the dried peat is again carded in the same conventional carding machine to form a light, cotton-wool-like substance. This cotton wool-like substance may then be packed into the usual filters or as shown in Fig. 3, may be combed out so that the strands are substantially parallel with one another and then inserted into a filter.

The peat fibers normally run about 3–8 mm. in length with all foreign matter removed, and free of all moisture except atmospheric moisture after the above processing. Its specific gravity is in the area of .05–.06. This is compared with its original specific gravity before treatment of approximately .85–.95.

The filter formed of the mass of peat strands which are compacted together loosely enough to pass tobacco smoke but tightly enough to form good contact on all its surfaces with the smoke, absorbs a higher degree of tar, nicotin and other impurities from the smoke than does an equal volume of any other filtering material. In addition, the filter formed of the above peat material does not materially affect the taste of the smoke taste. Also, it absorbs odors, and also does not give off any odor due to the tar, nicotin, etc., absorbed from the smoke.

This invention may be further developed within the scope of the following attached claim. Accordingly, it is requested that the foregoing description be read as being merely illustrative of an operative embodiment of my invention and not in a strictly limiting sense.



I now claim:

A method for forming tobacco smoke filters from peat, comprising essentially the steps of removing substantially all of the natural moisture content from natural peat, then removing impurities from the peat by washing the peat in water, thereafter forming the peat into fine fibers by carding it, next removing the humic acid and cleaning the capillaries of the peat by washing the peat in an aqueous solution of chlorine, removing said solution by washing with water, and then drying the peat fibers to remove substantially all of the moisture therefrom.

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