May 16, 1967 N. B. ORRMINS 3,319,630

TOBACCO SMOKE FILTER

Filed June 29, 1964

Fig. 1.

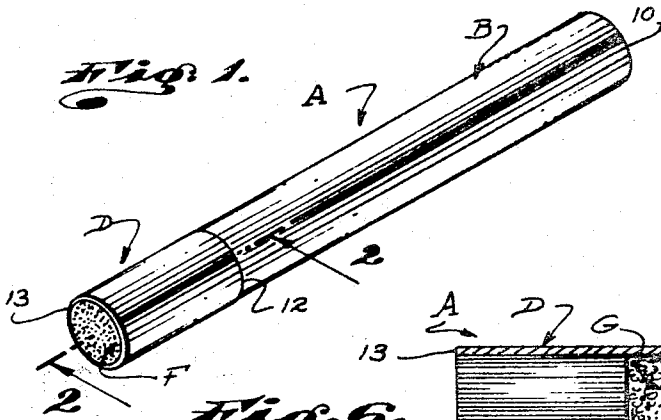


Fig. 9.



Fig. 2.

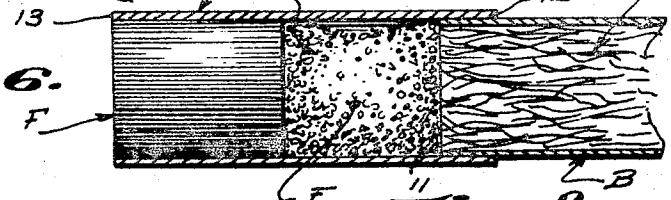


Fig. 6.



Fig. 3.



Fig. 2.

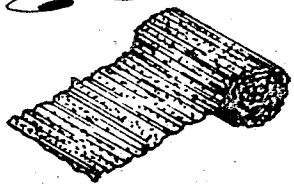


Fig. 4.

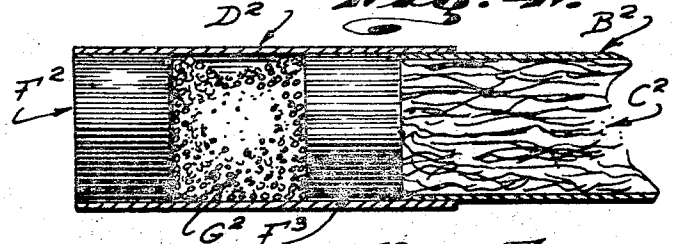


Fig. 8.

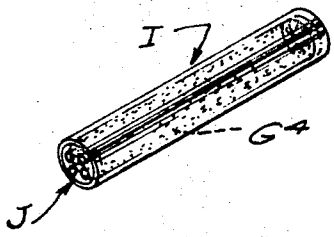
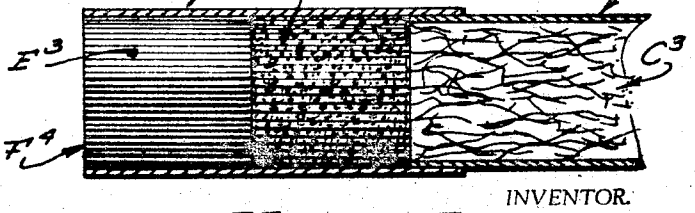


Fig. 5.



INVENTOR.

Norman B. Orrmins

BY

George A. Maxwell

Attorney

United States Patent Office

3,319,630
Patented May 16, 1967

3,319,630

TOBACCO SMOKE FILTER

Norman B. Orrmins, 2610 W. 78th Place,
Inglewood Calif. 90305

Filed June 29, 1964, Ser. No. 378,723
10 Claims. (Cl. 131—10.7)

This invention relates to a filter and is more particularly concerned with an improved filter construction for tobacco smoke, which construction includes means having chemical properties which serve to neutralize the nicotine carried in or by the smoke.

Nicotine is a rather unstable alkaloid or base material which is present in tobacco. This material is liberated when the tobacco is burned. While a substantial portion of the nicotine in tobacco is reduced or altered by the heat to which it is subjected when the tobacco is burned, a portion thereof is carried by the smoke and is drawn into the mouth and respiratory system of the smoker.

It has been established that nicotine is extremely toxic and is the major cause of cancer of the lungs and other parts of the respiratory system of persons who smoke tobacco and develop such diseases.

It has also been established that nicotine as a toxicant has serious and detrimental effects on the nervous system of smokers and is extremely detrimental to persons suffering with heart disease and the like. In point of fact, there are strong indications that many forms of heart disease and the like are the direct result of nicotine poisoning.

Nicotine, being an alkaloid or base material, and further, being a rather weak or unstable base material, can be easily and effectively neutralized by means of a suitable acid, such as tannic acid.

The prior art, as early as January 7, 1873, recognized all of the foregoing. On that date, Patent No. 134,713, teaching the use of tannic acid in the presence of tobacco smoke, to neutralize the nicotine therein, was issued. A subsequent patent, No. 253,296, issued February 7, 1882, following the same basic idea as the earlier patent, discloses tobacco smoke filters including, in addition to other alternative materials, ground up or powdered coffee beans, or tea leaves, which are rich in tannin or tannic acid, as nicotine neutralizing filter materials.

Applicant has found that the tobacco filter of ground or powdered coffee beans or similarly reduced tea leaves is not practical or effective for neutralizing the nicotine in tobacco smoke. It is believed that while these particular materials are rich in tannin, or tannic acid, the tannin is within the cellular structure of the beans or leaves, and is not readily available. Further, the beans or leaves, whichever the case may be, contain an abundance of other volatile oils which effectively seal in and prevent the tannin from coming into intimate contact with the nicotine carried by tobacco smoke.

Applicant has also found that while other acids, for example, pure or uncontaminated tannic acid, while extremely effective to neutralize nicotine, present unpleasant and/or unfamiliar odors and tastes which render them undesirable as nicotine neutralizing agents in tobacco smoke filters.

In recent years, in the beverage art, the tannin and other chemicals and aromatic oils and the like have been extracted from coffee beans and from tea leaves, as by brewing or the like, which extracts have been dehydrated to provide residues which are such that when mixed with water, produce or establish a fresh brew of the beverages coffee or tea. These dehydrated extracts or powders are commonly referred to as "instant coffee" or "instant tea," whichever the case may be.

It is understood and believed by applicant that the processes or methods employed to establish instant coffee and instant tea are such that the dehydrated residue or extracts, as a result of flash dehydration or the like, is cellular in form, establishing a multitude of thin walls and a maximum surface extent for the mass of material involved.

The purpose for so establishing instant coffee and instant tea is to assure rapid and complete dissolving of the dehydrated extract when mixed with water.

It is also understood that in the art of making instant coffee and instant tea, certain volatile, aromatic oils, which would otherwise be lost, are collected by means of condensers and the like and are returned to the residue, to assure a complete and satisfying flavor and bouquet. In practice, if these oils are not put back into the dehydrated extract, the brews subsequently established thereby are flat, that is, they lack certain aroma or bouquet. Nevertheless, the dominant and characteristic flavors and aroma are still present and a familiar and pleasant brew is established.

It will be apparent that instant coffee and instant tea are laden with tannin in liberated, concentrated form and are such that when tobacco smoke is brought into intimate contact with the instant coffee or tea, the nicotine in the smoke establishes direct and intimate contact with the tannin or tannic acid in said instant tea or coffee and is neutralized thereby. This is particularly true if the instant coffee or instant tea has not been reconstituted with aromatic oils, or if the aromatic oils have been driven off or allowed to dissipate.

Further, due to the cellular, thin walled structure of instant coffee and instant tea, a pack or loose mass thereof creates an exceptionally good filter pack, having a multitude of cracks, crevices, interstices and pockets. Further, the resulting pack establishes a very large or extensive effective area over or by which the tobacco smoke is moved.

Most persons who smoke tobacco are familiar with and have acquired a taste for coffee and/or tea. Accordingly, if a smoker, while smoking tobacco, should get the taste and/or aroma of tea or coffee, the response or reaction is extremely pleasant, if not desirable.

In recent years and as a result of the established fact that tobacco smoke has detrimental effects on the health and well being of persons who smoke tobacco, the tobacco art has developed a multitude of filter constructions for cigarettes, cigars, and pipes, all of which constructions are intended to remove as much of the tars, which carry the nicotine, from the tobacco smoke before it reaches the mouth of the smoker. The better these constructions work or function, the less tobacco taste, aroma and resulting satisfaction which is experienced by smokers, is attained. Accordingly, and in order to overcome these adverse effects, the tobacco industry has turned to the use of stronger and heavier tobaccos, which tobaccos overcome the effectiveness of the filters, or have intentionally reduced the effectiveness of the filters so that the smoker stills gets a smoke.

An object of my invention is to provide a filter construction for tobacco smoke, the primary purpose of which is to neutralize the nicotine carried by the smoke and to thereby render the smoke nontoxic or detrimental to the health and well-being of the smoker.

Another object of the present invention is to provide a filter construction of the character referred to which has limited filtering effects and is not such that the smoker is deprived of the smoke.

It is another object of the present invention to provide a filter of the general character referred to which utilizes tannic acid to neutralize the nicotine carried by the tobacco smoke.

A further object is to present the tannic acid for neutralizing the nicotine in tobacco smoke in combination with other chemicals and the like, as found in nature,

which combinations are familiar, pleasant and acceptable to the cultered tastes of the smokers.

More specifically, it is an object of the present invention to provide a filter construction of the character referred to which includes a body or mass of dehydrated coffee or tea extract, which dehydrated extract has a high percentage content of concentrated and free tannin or tannic acid.

It is an object of the present invention to provide suitable structure for carrying, supporting or retaining dehydrated coffee or tea extract for use in filtering and neutralizing the nicotine in tobacco smoke.

The various objects and features of my invention will be fully understood from the following detailed description of typical preferred forms and applications of my invention, throughout which description reference is made to the accompanying drawings, in which:

FIGURE 1 is an isometric view of a filter tip cigarette construction;

FIGURE 2 is an enlarged detailed sectional view taken substantially as indicated by line 2—2 on FIGURE 1 and showing one form of filter construction;

FIGURES 3, 4 and 5 are views similar to FIGURE 2 and showing other or modified forms of filter constructions;

FIGURE 6 is an enlarged view illustrating one form of cellular, dehydrated, tea or coffee extract;

FIGURE 7 is an isometric view showing another form of filter pack embodying the present invention;

FIGURE 8 is an isometric view of a filter cartridge embodying the present invention for use in pipes and/or cigarette holder; and,

FIGURE 9 is an isometric view of a bonded plug of dehydrated tea or coffee extract as provided by the present invention.

The cigarette A illustrated in FIGURE 1 of the drawings is a typical filter tip cigarette construction and includes an elongate cylindrical sleeve B of thin or light, readily combustible paper, having open, front and rear ends **10** and **11**. A loose pack of cigarette tobacco C is arranged in and retained by the sleeve B. An elongate filter tube D having open front and rear ends **12** and **13** is related to the rear end of the sleeve B, with the front end portion of the tube D engaged about the rear end portion of the sleeve B. The tube D is established of rather rigid or stiff paper and projects rearwardly from the rear end of the sleeve B and the tobacco pack C therein to establish a rearwardly opening filter pack receiving chamber E.

The filter tube D is sufficiently rigid to provide a structure that can be comfortably engaged between and held by the lips of a person smoking the cigarette.

In the form of the invention illustrated in FIGURE 2 of the drawings, a cylindrical filter plug F of crepe paper and of limited longitudinal extent is engaged in and closes the rear end portion of the tube D. The plug F occurs in spaced relationship from the rear end **11** of the sleeve B and the pack of tobacco C therein to define a chamber or space in the central forward portion of the tube. A filter pack G of dehydrated tea or coffee extract is deposited in the said space between the plug F and the rear end of the sleeve and tobacco pack.

In practice, the filter pack G can be in the form of loose, airy granules of dehydrated coffee or tea extract, as illustrated in FIGURE 6 of the drawings, or can, if desired, be in the nature of a slug, as illustrated in FIGURE 9 of the drawings and as will hereinafter be described.

With the structure illustrated in FIGURE 2 of the drawings and described in the preceding, it will be apparent that tobacco smoke drawn through the filter construction by the smoker, is drawn through the filter pack G and in intimate contact with the tannin, or tannic acid saturated, dehydrated coffee or tea extract.

It will be apparent from the foregoing that the nicotine in the tobacco smoke drawn through the filter pack is suitably neutralized.

In the form of the invention illustrated in FIGURE 3 of the drawings, the sleeve B′, tobacco pack C′ and the filter tube D′, defining the chamber E′ are the same or identical to the form of the invention illustrated in FIGURE 2 and described above.

In this second form of the invention, a loose, airy wadding H of loose, airy fibrous material, such as cotton, is urged into and positioned in the forward portion of the chamber E′. The wadding H, in one form of the invention, has deposited, throughout its volumetric extent, a multiplicity of granules of dehydrated coffee or tea extract. The fibers of the wadding serve to hold and maintain the granules captured.

In another modified form of the invention, the fibers of the wadding can be treated or coated with a suitable cementing agent, such as molasses, honey, or simple syrup, to hold and maintain the granules in place.

In yet another form of the invention, as illustrated in FIGURE 3 of the drawings, the several fibers or strands of the wadding H are suitably coated with liquid coffee or tea extract, as by immersion in such extract. The coated wadding is then subjected to suitable heat and a suitable atmosphere to dehydrate the extract and to drive off certain of the aromatic oils and the like.

When the wadding is thus coated with dry, dehydrated, substantially oil free extract, it is placed into the cigarette construction.

From the foregoing, it will be apparent that in the filter construction or constructions illustrated in FIGURE 3 of the drawings, the smoke drawn through the filter pack H is drawn and moved over and across the coated surfaces of the fibers in such a manner as to neutralize the nicotine in the tobacco smoke.

In the form of the invention illustrated in FIGURE 4 of the drawings, the sleeve B^2, tobacco pack C^2 and the filter tube D^2 are substantially the same or identical to the sleeve, tobacco pack and tube in the two preceding forms of the invention.

In this form of the invention, the filter plug F^2 at the rear end of the tube D^2 is of lesser longitudinal extent than the plug F in the form of the invention illustrated in FIGURE 2 of the drawings. In addition to the filter plug F^2, a primary filter plug F^3 is arranged in the forward portion of the tube D^2 and in spaced relationship from the plug F^2. A filter pack of dehydrated coffee or tea extract G^2 is arranged in the tube D^2 in the space defined by the tube and the two axially spaced filter pugs F^2 and F^3.

It will be apparent from the foregoing that the construction illustrated in FIGURE 4 is substantially the same as that illustrated in FIGURE 2, so far as the function of the construction is concerned. However, the secondary filter plug F^3 serves as a primary condenser for the smoke, before it enters the filter pack G^2 and therefore conditions the smoke for subsequent treatment by the filter pack G^2.

The construction shown in FIGURE 4 of the drawings may also greatly facilitate construction of the filter, particularly where loose granular dehydrated extract is employed to establish the pack G^2.

In the form of the invention illustrated in FIGURE 5 of the drawings, the sleeve B^3, tobacco C^3, tube D^3, the chamber E^3 defined thereby and the filter plug F^3 are substantially the same or identical with the sleeve B, tobacco pack C, tube D, chamber E and filter plug F in the first form of the invention.

In the form of the invention now under consideration, the filter pack G^3 arranged in the chamber E^3 between the filter pack F^3 and the inner end of the sleeve B^3 and tobacco pack C^3, is established by an elongate strip of corrugated paper or the like, gathered and/or rolled up into a plug. The surfaces of the strip of paper are treat-

ed or coated with a suitable bonding or cementing agent such as simple syrup, honey or molasses and are sprinkled or otherwise coated with granular dehydrated coffee or tea extract, as desired.

In another form of the invention illustrated in FIGURE 5 of the drawings, the paper strip is initially coated as by dipping or the like, in concentrated tea or coffee extract and is subsequently subjected to the proper atmosphere and heat to dehydrate the coating thereon and to dry off excessive and/or undesirable oils and the like. The dehydrating process can be performed before the strip is gathered into its plug form, or if desired, can be performed after the strip has been established in plug form, in which case the extract serves to bond and hold the plug in predetermined fixed relationship and defines a plurality of longitudinally extending flow passages or ducts, the walls of which are established by said dehydrated extract.

In the preceding I have restricted my disclosure to filter constructions adapted for use in connection with cigarettes and/or cigars. It will be apparent, however, that a filter construction employing dehydrated coffee or tea extract can be advantageously employed in pipe filter constructions and in filter constructions commonly employed in cigarette holders.

In FIGURE 8 of the drawings, I have illustrated a typical filter cartridge construction, such as is commonly employed in pipes and in cigarette holders. This filter construction includes an elongate tubular shell or cartridge I formed of paper or of plastic, perforated closures J engaged in and closing the ends of the cartridge and a filter pack G^4 within the cartridge, between and retained by the closures.

The filter cartridge construction shown in FIGURE 8 and described above is adapted to be engaged in a suitable chamber provided in the stem portion of a pipe or in the stem portion of a cigarette holder, in accordance with common practice.

In FIGURE 7 of the drawings, I have attempted to diagrammatically illustrate the manner in which the filter plugs F through F^2 and the filter pack or packs G^3 are, or can be established.

In FIGURE 9 of the drawings, I have illustrated a plug of dehydrated coffee or tea extract, which plug is established by pressing a plurality of extract granules, such as illustrated in FIGURE 6 of the drawings, together, or a plug wherein a plurality of granules such as is illustrated in FIGURE 6 of the drawings are bonded or cemented together by means of a suitable cement or bonding agent, such as molasses, honey or the like.

It will be apparent that a plug, such as is illustrated in FIGURE 9 of the drawings, can be established by simply urging the granules together in the presence of sufficient moisture, so as to cause the granules to fuse together and then dehydrating the plug to establish the desired fixed bond.

From the foregoing it will be apparent that I have invented a new and improved filter construction wherein the tobacco smoke is brought or moved into intimate contact with tannin or tannic acid and the nicotine therein is suitably neutralized so that the smoke issuing from the filter and into the mouth and respiratory system of the smoker is rendered nontoxic.

The by-product of the neutralized tannic acid and nicotine is tartrate and is a neutral substance which is in no way harmful or detrimental to one's health.

While it is a primary object of this invention to neutralize the nicotine in tobacco smoke, the filter construction that I provide has exceptionally high or great absorbing characteristics and effectively absorbs the greater portion of the empyreumatic oil, which oil is also poisonous and is detrimental to one's health, but to a lesser degree than nicotine.

It will be apparent that if the filter construction that I provide becomes moistened by the smoker's saliva, as it frequently the case, and the accumulated or collected tars and the like are conducted or carried by said moisture to the lips and tongue of the smoker, or should the filter pack become otherwise saturated with tars and residue from the tobacco smoke, the sharp, bitter and unpleasant taste and aroma of the tobacco smoke residue, is effectively overcome by the dominant, concentrated tea or coffee extract with which said tars or tobacco smoke residue are intimately mingled.

It will be apparent that the filter construction that I provide distinguishes from filter constructions provided by the prior art, where tannin or tannic acid is provided to neutralize the nicotine in the tobacco smoke, by providing said tannic acid in a usable and concentrated form and in combination with other chemicals and/or oils having flavors and aromas which are compatible with the aroma and taste of tannic acid and compatible with the cultivated tastes of smokers.

Having described only typical preferred forms and applications of my invention, I do not wish to be limited to the specific details herein set forth, but wish to reserve to myself any modifications and/or variations that may appear to those skilled in the art and which fall within the scope of the following claims.

Having described my invention, I claim:

1. In a tobacco filter, a filter pack of dehydrated coffee brew extract granules in cellular form and arranged in bridging contact with each other and formed as a tobacco smoke filter.

2. In a tobacco filter construction of the character referred to, a filter pack of dehydrated tea brew extract granules in cellular form and arranged in bridging contact with each other and formed as a tobacco smoke filter.

3. A cigarette of the character referred to including, an elongate sleeve of combustible paper having open front and rear ends, a pack of tobacco within said sleeve, an elongate filter tube fixed to and projecting from the rear end of the sleeve and opening rearwardly, a tobacco smoke filter pack within the tube, said filter pack including, a plug of compacted cellular granules of dehydrated coffee brew extract.

4. A cigarette of the character referred to including, an elongate sleeve of combustible paper having open front and rear ends, a pack of tobacco within said sleeve, an elongate filter tube fixed to and projecting from the rear end of the sleeve and opening rearwardly, a tobacco smoke filter pack within the tube, said filter pack including, a plug of compacted cellular granules of dehydrated tea brew extract.

5. A cigarette of the character referred to including, an elongate sleeve of combustible paper having open front and rear ends, a pack of tobacco within said sleeve, an elongate filter tube fixed to and projecting from the rear end of the sleeve and opening rearwardly, a tobacco smoke filter pack within the tube, said filter pack including, a cellulose fiber plug of limited longitudinal extent arranged in the rear end portion of the tube and spaced from the rear end of the tobacco pack, and a bridged deposit of dehydrated tea brew extract granules in cellular form in the tube between the plug and the tobacco pack.

6. A cigarette of the character referred to including, an elongate sleeve of combustible paper having open front and rear ends, a pack of tobacco within said sleeve, an elongate filter tube fixed to and projecting from the rear end of the sleeve and opening rearwardly, a tobacco smoke filter pack within the tube, said filter pack including, a cellulose fiber plug of limited longitudinal extent arranged in the rear end portion of the tube and spaced from the rear end of the tobacco pack, and a bridged deposit of dehydrated coffee brew extract granules in cellular form in the tube between the plug and the tobacco pack.

7. A cigarette of the character referred to including, an elongate sleeve of combustible paper having open front and rear ends, a pack of tobacco within said sleeve,

an elongate filter tube fixed to and projecting from the rear end of the sleeve and opening rearwardly, a tobacco smoke filter pack within the tube, said filter pack including, a cellulose fiber plug of limited longitudinal extent arranged in the rear end of the tube and spaced from the rear end of the tobacco pack, and a plug of cellular granules of dehydrated tea brew extract arranged in bridging contact with each other in the tube between the cellulose fiber plug and the tobacco pack.

8. A cigarrette of the character referred to including, an elongate sleeve of combustible paper having open front and rear ends, a pack of tobacco within said sleeve, an elongate filter tube fixed to and projecting from the rear end of the sleeve and opening rearwardly, a tobacco smoke filter pack within the tube, said filter pack including, a cellulose fiber plug of limited longitudinal extent arranged in the rear end of the tube and spaced from the rear end of the tobacco pack, and a plug of cellular granules of dehydrated coffee brew extract arranged in bridging contact with each other in the tube between the cellulose fiber plug and the tobacco pack.

9. A cigarette of the character referred to including, an elongate sleeve of combustible paper having open front and rear ends, a pack of tobacco within said sleeve, an elongate filter tube fixed to and projecting from the rear end of the sleeve and opening rearwardly, a tobacco smoke filter pack within the tube, said filter pack including, a primary filter plug of cellulose fiber in the forward end of the tube, a second filter plug of cellulose fiber in the rear end of the tube and spaced from said primary plug, and a deposit of cellular granules of dehydrated coffee brew extract between the plugs.

10. A cigarette of the character referred to including, an elongate sleeve of combustible paper having open front and rear ends, a pack of tobacco within said sleeve, an elongate filter tube fixed to and projecting from the rear end of the sleeve and opening rearwardly a tobacco smoke filter pack within the tube, said filter pack including, a primary filter plug of cellulose fiber in the forward end of the tube, a secondary filter plug of cellulose fiber in the rear end of the tube and spaced from said primary plug, and a deposit of cellular granules of dehydrated tea brew extract between the plugs.

References Cited by the Examiner

UNITED STATES PATENTS

253,296	2/1882	Kinney	131—10
1,325,060	12/1919	Toms	131—17
2,172,946	9/1939	Sutter	131—208
3,079,926	3/1963	Litchfield et al.	131—10

SAMUEL KOREN, *Primary Examiner.*

D. J. DONOHUE, *Assistant Examiner.*