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ABSORBENT FILTER FOR SMOKING APPLIANCES

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This invention relates to a novel removable absorbent filter cartridge for pipes, cigar and cigarette holders and similar tobacco smoking appliances.

5 This invention has for a general object to provide a novel construction of absorbent filter cartridge adapted to be removably disposed in the passage of a tobacco pipe stem, cigar or cigarette holder or the like to provide a means capable of separating moisture and oily suspensions from the smoke fumes drawn therethrough, while at the same time providing a cooling effect upon the latter, so that only cool, sweet smoke is delivered to the mouth of the smoker, thus eliminating objectionable tongue burning and biting effects so commonly attendant upon the use of such smoking appliances.

The invention has for a further object to provide an absorbent cartridge which is constructed and formed in such novel manner as not only to efficiently serve the purposes already mentioned, but so as to further provide a novel filter means or screen adapted to prevent the outward passage through a pipe stem or the like, and thence to the mouth of the smoker, of flakes or crumbs of tobacco leaf, particles of char, etc.; the filtering elements being of such form and arrangement as to, per se, be non-clogging, whereby easy suction of smoke therethrough is assured, and consequently a cool, sweet and free drawing smoking appliance is furnished.

35 A more specific object of this invention is to provide a cartridge of the general kind above mentioned, which is further provided with a moisture-proof or impervious outer jacket or covering adapted, when the cartridge occupies the passage of the smoking appliance, to protect the walls of said passage against accumulations and absorption of moisture, oily substances and tobacco tar, thus preventing the appliance from becoming rank and odorous; in addition to this advantage, the provision of the moisture impervious jacket or covering makes for other advantages, as will subsequently appear, among which is that of providing a protec-

tion to the fingers of the user against soiling when handling a used cartridge.

Another object of this invention is to provide a jacket or covering as above mentioned which comprises substantially transparent material, whereby the condition of the absorbent body of the cartridge consequent upon its use may be visually indicated.

Other objects of this invention, not at this time more particularly enumerated, will become apparent in the following detailed description of the same.

An illustrative embodiment of this invention is shown in the accompanying drawing, in which:—

Fig. 1 shows a smoking pipe in part section, with a novel absorbent filter cartridge of this invention operatively disposed in the passage of the stem thereof; Fig. 2 is an enlarged side elevation of the novel cartridge as provided with the moisture impervious jacket or external cover, this latter part being shown in section; Fig. 3 is a fragmentary longitudinal vertical section through the cartridge, drawn on a considerably enlarged scale; and Fig. 4 is a transverse section of the same, taken on line 4—4 in Fig. 3.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

Referring to the drawing, the reference character 5 indicates the tubular body of the novel filter cartridge. Preferably this body 5 comprises a plurality of strips of unsized cellulose material, such as paper, which are spirally wound in superimposed relation into the tubular form desired, whereby the walls of the body are composed of a plurality of plies overlying one another. The number of plies may be varied according to the thickness of body wall desired to be obtained. Unsized cellulose material, such as provided by unfilled soft paper, is a very satisfactory material for the filter cartridge body, since material of such character is readily pervious to moisture and the like, and consequently furnishes the absorbent characteristic desired in the finished product. I do not limit myself to the use of the ce-

lulose material or paper for the production of the absorbent tubular body 5, since the latter (within the scope of the broader aspects of my invention) may be made of any other material which is pervious to moisture so as to possess the absorbent character necessary to the functioning thereof in use. While I have suggested the use of a plurality of paper strips spirally wound in superimposed relation into the desired tubular body, such specific form and arrangement is not absolutely essential, but is recommended because of the facility and rapidity with which material of this form may be wrought, by suitable automatic machine processes, into the desired tubular body by a continuous operation, calculated to produce a continuous running length of body which may be easily cut up into cartridges of desired length. It will be obvious that the body 5 may be formed by rolling absorbent sheet material rectilinearly upon itself into tubular form, or the body 5 may be produced in any other way deemed practical.

Sewn through the cartridge body 5 in a longitudinally spiral course throughout the length thereof is a run of stitching 6 of textile thread. The individual stitches extend transversely or diametrically through the tubular body from one side to the opposite side thereof, thus diametrically crossing the interior bore 7 of said body. As the stitching is produced the body is moved longitudinally while being rotated about its longitudinal axis, and consequently the line of stitching follows a spiral or helical course, whereby the diametrically traversing stitch elements 8 cross the bore 7 of the body at progressively shifting angles following a spiral or helical plane lengthwise of this bore. It will thus be apparent that the aggregate of stitch elements will provide an interstitial screen or filter mass disposed across the area of the bore 7 (this being clearly illustrated in Fig. 4 of the drawing), while nevertheless an open or unobstructed tortuous passage of spiral or helical form will extend lengthwise of the bore 7. Such arrangement of stitching has many advantages, and affords an important novel feature of this invention. In the first place, the novel arrangement of stitching 6, provides a mechanical means for binding and maintaining the material of the body 5 in the desired tubular form to which it has been fabricated; in the second place, the diametrically disposed stitch elements 8 which traverse the bore 7 of the body at different angles, provide a filter or screen structure which is highly effective in arresting the movement of any flakes or crumbs of tobacco, particles of char or like foreign bodies through the bore 7, thereby preventing such substances from being drawn into the mouth of the smoker, and thus avoiding the

unpleasant effects consequent upon such occurrences, and notwithstanding such effective screening of the bore, the spiral or helical passage through the bore contiguous to the line of stitch elements 8 assures easy draft of smoke through the bore and to the mouth of the smoker; and finally, the stitching 6 and the stitch elements 8 thereof being composed of textile material or thread are per se absorbent and effectively add to the absorbent characteristics of the cartridge as a whole.

It will be obvious that the specific character of the stitching 6, and the stitch elements 8 thereof, may be varied as desired, according to the type of sewing mechanism utilized in the production thereof. For example, the stitching may comprise single or double chain stitch, lock stitch or other specific stitch form. The stitching may be run in single or plural lines; and any other variations of form and arrangement may be selectively employed, so long as the desired mechanical binding and screen forming effects are attained.

The novel absorbent filter cartridge, as above characterized, may be employed without external jacket or covering by insertion thereof in the smoke draft passage of a pipe, cigar or cigarette holder or other smoking appliance, as, for example, by insertion in the aligned cavities 9 and 10 respectively provided in the stem 11 and bit 12 of a smoking pipe 13 as illustrated in Fig. 1 of the drawing.

It is preferable, however, to provide the filter cartridge body with a jacket or covering of moisture impervious material, and the provision of such jacket or covering is a further novel feature of my invention. In the drawing, the reference character 14 indicates the external jacket or covering which is applied to and around the external cylindrical surface of the filter cartridge. This jacket or covering 14 is made of any suitable moisture proof material. Preferably the jacket or covering comprises substantially transparent cellulosic sheet material, such as is sold under the trade mark "Cellophane", the same providing the moisture impervious characteristics desired, as well as affording a sufficiently tough and durable material calculated to both protect the softer material of the cartridge body and to reenforce the same mechanically against separation, disintegration, crushing stresses or injury when handling the same; while also, by reason of its transparent character, enabling the user to inspect the condition of the absorbent body enclosed thereby consequent upon use thereof. The jacket or covering may be variously formed and applied to the cartridge. Preferably a strip of "Cellophane" is spirally wrapped about the cartridge, with its contiguous margins over-

lapped and secured or sealed together by a suitable adhesive or cementitious material.

When the filter cartridge is in place within the smoke draft passage of a smoking appliance, and the latter is in use, the smoke is caused to pass through the bore of the filter cartridge before admission into the mouth of the smoker. Any moisture, oily or tarry substances or the like suspended in the smoke fumes will, on contacting with the absorbent material of the filter cartridge body, be taken up or absorbed thereby and thus separated from the smoke, so that the latter will be thoroughly cleansed thereof before admission to the mouth of the smoker. In addition to the function of the filter cartridge in thus separating moisture, etc., from the smoke, and in addition to the screening effect of the screen forming stitch elements 8 whereby tobacco particles, etc., are arrested and prevented from gaining access to the smoker's mouth, the filter cartridge also functions to somewhat cool or lower the temperature of the smoke fumes. This cooling effect is due to a certain amount of moisture evaporation which occurs within the filter cartridge. Moisture collects upon the walls of the body 5 and is absorbed thereby, and at the same time considerable moisture is caught upon the stitch elements 8 which traverse the bore 7 of the filter cartridge. More or less of the moisture thus separated from the smoke fumes is therefore suspended in the presence of the smoke streams, which, as they move through the filter cartridge, tend to evaporate the moisture with the consequent cooling effects common to evaporative processes. Another factor in the cooling processes, is the effect of the angularly disposed stitch elements 8, which cross the bore 7, whereby the smoke stream is broken up into small streams which are caused to contact with the relatively cool surfaces of the cartridge body and the aggregate of stitch elements 8, thus facilitating the transfer of heat from the smoke to the cartridge body.

The provision of the moisture impervious jacket or covering 14 prevents the moisture, and oily or tarry substances accumulated by the cartridge body from gaining access to and soaking into the adjacent body of the smoking appliance, thus keeping the surfaces of the latter clean and dry, and preventing the formation of odorous accumulations and encrustations which otherwise would soon render the appliance rank and odorous. A further advantage of the moisture impervious jacket or covering 14 is to provide a clean external surface with respect to used cartridges, so that the same may be readily handled with the fingers of the user, when removing the same for replacement in an appliance, without risk of soiling the fingers. Another advantage of the jacket

or covering 14, when made of substantially transparent cellulosic material, such e. g. as that sold under the trade mark "Cellophane", is its function as a means to disclose the condition of the cartridge consequent upon its use.

The novel absorbent filter cartridge of this invention may be utilized as a carrier for flavoring or medicament material desired to be imparted to the smoke passed there-through. For example, menthol is now frequently used as a flavoring ingredient and for its medicament functions in connection with the tobacco. The novel cartridge of my invention may be charged or impregnated with menthol or other essences so as to impart the effects thereof to the smoke traversing the cartridge. In such case, the moisture proof jacket or covering 14 serves as a seal to prevent loss of the impregnating material by evaporation. The jacket or covering may be given distinctive coloring, especially when this is desirable to distinguish chemically treated cartridges from those which are not so treated. And, finally, it may be pointed out that the external jacket or covering affords a convenient medium for the display of advertising matter, trade-marks, etc. in connection with the cartridges.

From the above description it will be readily understood that the present invention provides a novel form of absorbent filter cartridge for smoking appliances which not only provides a maximum of absorbent effect, but by reason of its novel mechanical structure affords a highly efficient filter or screen adopted to efficiently separate solids as well as moisture, etc. from the smoke passing therethrough.

I am aware that many changes could be made in the above described constructions, and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended therefore, that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:—

1. An absorbent filter cartridge for smoking appliances, comprising a tubular body formed of absorbent sheet material wound upon itself, and stitching of textile thread extending in a longitudinally spiral plane through said body and across the bore thereof, whereby said stitching forms a spiral screen defining open spiral passages between opposite sides thereof and the walls of said bore and extending from end to end of the latter.

2. An absorbent filter cartridge for smoking appliances, comprising a tubular body formed of absorbent sheet material wound

upon itself, stitching of textile thread extending in a longitudinally spiral line through said body and across the bore thereof to provide an interstitial screen within said bore, and an external jacket of moisture impervious and relatively tough substantially transparent material enveloping said body and adhesive means securing said material to said body, whereby said body is reenforced against distortion, disintegration or collapse and the condition thereof consequent upon its use is discernible.

3. An absorbent filter cartridge for smoking appliances, comprising a tubular body formed of absorbent material, stitching sewn through said body and across the bore thereof, and an external jacket of moisture proof and relatively tough substantially transparent material enveloping said body and adhesive means securing said material to said body, whereby said body is reenforced against distortion, disintegration or collapse and the condition thereof consequent upon its use is discernible.

4. A filter cartridge for smoking appliances, comprising a plurality of strips of absorbent paper wound spirally into a tubular body, stitching of textile thread sewn spirally through said tubular body, said stitching providing a plurality of successive stitch elements each extending diametrically across the bore of said body, and said stitch elements being disposed in different angular positions in relation one to another, whereby the same form in the aggregate a spiral screen within the bore of said body defining open spiral passages between opposite sides of said screen and the walls of said bore and extending from end to end of the latter.

5. A filter cartridge for smoking appliances, comprising a plurality of strips of absorbent paper wound spirally into a tubular body, stitching of textile thread sewn spirally through said tubular body, said stitching providing a plurality of stitch elements extending diametrically across the bore of said body, said stitch elements being disposed in different angular positions in relation one to another whereby the same form in the aggregate an interstitial screen within the bore of said body, and an external covering of relatively tough substantially trans-

parent moisture impervious material enveloping said body and adhesive means securing said material to said body, whereby said body is reenforced against distortion, disintegration or collapse and the condition thereof consequent upon its use is discernible.

6. A filter cartridge for smoking appliances, comprising a plurality of strips of absorbent paper wound spirally into a tubular body, stitching of textile thread sewn spirally through said tubular body, said stitching providing a plurality of stitch elements extending diametrically across the bore of said body, said stitch elements being disposed in different angular positions in relation one to another whereby the same form in the aggregate an interstitial screen within the bore of said body, and an external covering enveloping said body, said covering comprising substantially transparent sheet and adhesive means securing said material to said body, all whereby said body is reenforced and the condition thereof consequent upon its use is discernible.

7. A filter cartridge for smoking appliances, comprising a plurality of strips of absorbent paper wound spirally into a tubular body, stitching of textile thread sewn spirally through said tubular body, said stitching providing a plurality of stitch elements extending diametrically across the bore of said body, said stitch elements being disposed in different angular positions in relation one to another whereby the same form in the aggregate an interstitial screen within the bore of said body, and an external moisture impervious covering enveloping said body, said covering comprising a strip of substantially transparent cellulosic material spirally wound upon and around and cemented to said body with marginal portions thereof overlapping and cementing one to another.

8. An absorbent filter cartridge for smoking appliances, comprising a body of absorbent material, and an external covering enveloping said body, said covering comprising substantially moisture proof and transparent cellulosic material, and means to secure said covering to said body, said covering being adapted to disclose the condition of the body consequent upon its use.

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DISCLAIMER

1,919,959.—*Paul H. Minton*, Chatham, N. J. ABSORBENT FILTER FOR SMOKING APPLIANCES. Patent dated July 25, 1933. Disclaimer filed January 8, 1938, by the assignee, *Minton Manufacturing Company*.

Hereby enters this disclaimer to claim 8 of the aforesaid Letters Patent.
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