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P. H. MINTON

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ABSORBENT FILTER CARTRIDGE FOR SMOKING APPLIANCES

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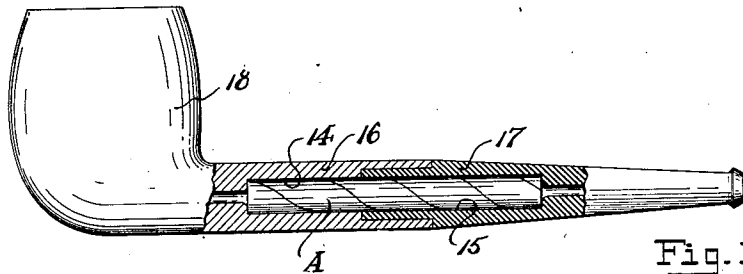


Fig. 1

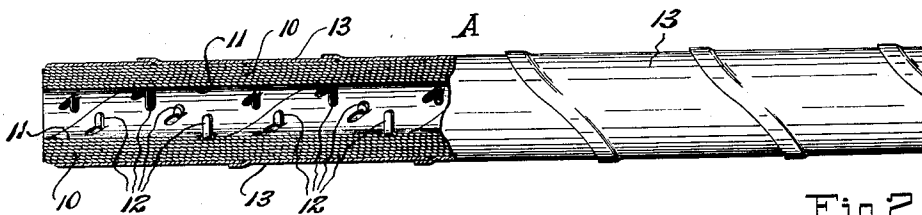


Fig. 2

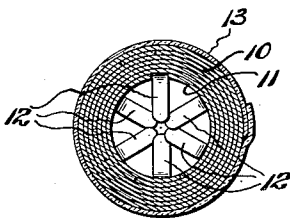


Fig. 3

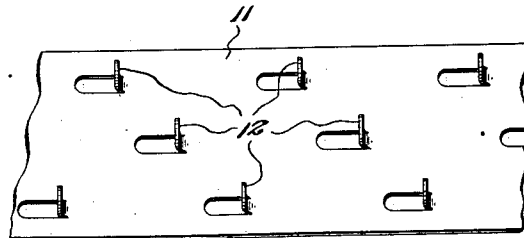


Fig. 4

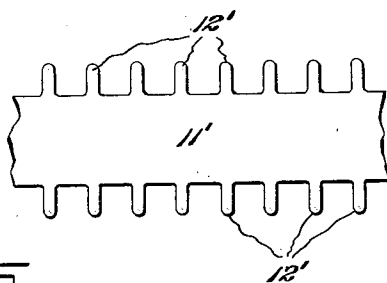


Fig. 5

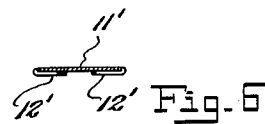


Fig. 6

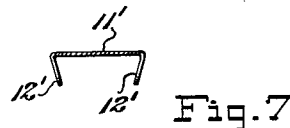


Fig. 7

INVENTOR
Paul H. Minton,
BY
George D. Richards
ATTORNEY

UNITED STATES PATENT OFFICE

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ABSORBENT FILTER CARTRIDGE FOR
SMOKING APPLIANCES

Paul H. Minton, Chatham, N. J.

Application April 12, 1933, Serial No. 665,673

11 Claims. (Cl. 131-12)

This invention relates to improvements in replaceable absorbent filter cartridges for pipes, cigar and cigarette holders and similar tobacco smoking appliances.

8 The present invention has for its principal object to provide a novel construction of absorbent filter cartridge adapted to be replaceably disposed in the draft passage of a tobacco pipe stem, cigar or cigarette holder or the like to furnish
10 means for removing from tobacco smoke the moisture and oily suspensions contained therein, and at the same time providing a filtering or screening means adapted to prevent the outward passage through a pipe stem or the like,
15 and thence to the mouth of the smoker, or flakes or crumbs of tobacco, particles of char or other foreign material, while nevertheless allowing the free and easy passage of smoke under the suction effects produced by the smoker in the use
20 of the pipe or the like.

Another object of the present invention is to provide a novel cartridge structure for the purposes mentioned in which the absorbent body thereof is produced by plies of sheet material,
25 such as paper, rolled into tubular cylindrical form, the inner most ply having a plurality of tongues or tabs projecting therefrom to extend into the bore of the tubular body, whereby the aggregate of such tongues or tabs provide a
30 screen adapted to arrest the passage of tobacco particles, char, oily or tarry matter, and the like through the bore of said tubular body, although not interfering with the free flow of the smoke fumes to the mouth of the smoker.

35 Other objects of the present invention, not at this time more particularly enumerated, will be obvious from the following detailed description of the same.

40 Illustrative embodiments of the features of this invention are shown in the accompanying drawing, in which:—

Fig. 1 shows a smoking pipe in part section, with a novel absorbent filter cartridge according to this invention operatively disposed in the
45 passage of the stem thereof; Fig. 2 is in part a side elevation and in part a vertical longitudinal section of the novel absorbent filter cartridge made according to the present invention, this view being drawn on a greatly enlarged scale; Fig.
50 3 is a transverse section through said filter cartridge, drawn on a still further enlarged scale; Fig. 4 shows, in plan, sheet material, to form the inner ply of the tubular absorbent cartridge body, provided with one arrangement of the
55 screen forming tongues or tabs; Fig. 5 shows, in

plan, sheet material having another arrangement of the screen forming tongues or tabs; Fig. 6 shows the tabs or tongues of the latter type of sheet material as initially infolded preparatory to rolling the material into tubular form; and
60 Fig. 7 shows the manner in which the said tongues or tabs spring outward for projection into the bore of the tubular body after the latter is formed.

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

Referring to the drawing, the reference character 10 indicates the tubular body of the novel filter cartridge A. Preferably this body 10 comprises a plurality of plies or strips of unsized
70 cellulose material, such as paper, which are spirally wound in superimposed relation into tubular form. 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
75 unfilled soft paper, is a very satisfactory material for the filter cartridge body, since such material is readily pervious to moisture and the like, and consequently furnishes highly efficient absorbent characteristics desired in the cartridge. I do not
80 limit myself to the use of the cellulose material or paper for the production of the absorbent tubular body 10, since the latter (within the scope of the broader aspects of my invention) may be made of
85 any other material which is pervious to moisture so as to possess the desired absorbent characteristics. 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
90 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
95 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 10 may be formed by rolling absorbent sheet material rectilinearly upon itself into tubular form, or
100 the body 10 may be produced in any other way deemed practical.

In order to provide means within the bore of the absorbent tubular body 10 adapted to arrest passage therethrough of tobacco particles, char, oily
105 or tarry matter and similar foreign substances, the inner ply or strip of sheet material 11 from which the body is formed is provided with a plurality of tongues or tabs 12, which in one arrangement and formation thereof (as shown in Figs. 2
110

to 4 inclusive), are struck or punched out of the body of said inner ply or strip 11 so as to project angularly from the inner surface thereof. Said tongues or tabs may be arranged in any desired relatively spaced relation, whereby when the ply or strip 11 is rolled into tubular form as part of the tubular body 10, and as disposed contiguous to the bore of the latter, said tongues or tabs will project into and across said bore in various angular directions, so that in the aggregate the plurality of tongues or tabs will provide an interstitial filter screen structure within the bore of the absorbent tubular body adapted to arrest the passage therethrough of undesired foreign substances, while nevertheless permitting free and easy flow of smoke through said bore and to the mouth of the smoker under the suction effects exercised by the latter upon the smoking appliance equipped with the novel absorbent filter cartridge.

When the tubular body 10 is formed by spirally winding a plurality of strips of sheet material in superimposed relation, the strip 11 is utilized as the leading or inner strip, so that as it passes over the winding mandrel, the tongues or tabs 12 will be folded or combed back against the inner face of the strip 11, but as the formed tube passes endwise off of the mandrel, these tongues or tabs 12 will spring back to angularly projecting relation to the strip so as to project therefrom and thus assume their operative positions in extension into and across the bore of the tubular body. The inner strip 11 having the tongues or tabs 12 may be made of somewhat stiffer or heavier paper than that utilized for the other plies or strips.

When the tubular body 10 is formed by spirally winding a plurality of strips of sheet material in superimposed relation, the last or outer strip is preferably so formed and arranged that the contiguous margins of its convolutions overlap; such overlapping margins being secured or sealed together by a suitable adhesive or cementitious material, all whereby the outer ply of the body serves as an enveloping and retaining jacket or wrapper 13 for the resultant filter cartridge. This wrapper or jacket may be otherwise formed and applied, as e. g. by a sheet of material rectilinearly rolled around the tubular formation. It will likewise be understood that the wrapper or jacket may be made of any suitable material which is substantially impervious to moisture, thus providing a clean external surface with respect to used cartridges, so that the latter may be readily handled by the fingers, when removing the same for replacement in an appliance, without risk of soiling the user's fingers. It will also be understood that the wrapper or jacket 13 may be made of substantially transparent cellulosic sheet material, such as is sold under the trade-mark "Cellophane", this material providing the substantially moisture impervious characteristics desired, as well as affording a sufficiently tough and durable material calculated to both protect the softer material of the main cartridge body and to reinforce the same mechanically against separation, disintegration, crushing or other injury when handling the same both before and after use; and in addition, by reason of the transparent character of this material, the user is enabled to inspect the condition of the absorbent body enclosed thereby consequent upon use thereof, in the manner and with the advantages pointed out in connection with another type of filter

cartridge disclosed in my United States Letters Patent No. 1,919,959, dated July 25th, 1933.

Instead of striking or punching out the tongues or tabs 12 from the strip 11, other arrangements thereof may be utilized. For example, I have shown in Figs. 5 to 7 inclusive of the drawing a modified arrangement wherein the strip 11' is provided along one or both margins with laterally projecting tongues or tabs 12'. These tongues or tabs 12' are initially underfolded beneath the inner face of the strip 11' (as shown in Fig. 6), whereupon the strip is fed over the winding mandrel and wrought into tubular shape. As the tubular formed strip 11', with other strips or plies making up the tubular formation, moves off the mandrel, the tongues or tabs 12' will spring back to angularly projecting relation to the strip so as to project therefrom (see Fig. 7) in operative extension into and across the bore of the tubular body. The row of tongues or tabs 12', as thus projected into the bore of the tubular body, will follow a spiral or helical course, whereby the same will be disposed at progressively shifting angles following a spiral or helical plane lengthwise of the bore, thus forming an interstitial screen or partition within said bore, while leaving unobstructed spiral passages for the smoke to follow as it flows through the bore.

It will be understood that the length of the tongues or tabs, however formed or arranged, may be varied; for example, the same may be of a length to terminate substantially adjacent to the axis of the bore, or the same may be long enough to extend across the bore substantially from one to the opposite side thereof.

The novel absorbent filter cartridge A in use is removably inserted in the draft passage of a pipe, cigar or cigarette holder or other smoking appliance, as, for example, by insertion in aligned cavities 14 and 15 respectively provided in the stem 16 and bit 17 of a smoking pipe 18 as illustrated in Fig. 1 of the drawing.

When the filter cartridge is in place within the smoke draft passage of a smoking appliance, and the latter is in use, the smoke, under suction exercised by the smoker, 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 will, on contacting with the absorbent material of the filter cartridge body, be taken up by the latter and separated from the smoke, while any foreign material, tobacco crumbs, char, etc., will be caught by the tongues or tabs projecting into the cartridge bore, so that movement thereof to the mouth of the smoker is arrested.

I claim:—

1. An absorbent filter cartridge for smoking appliances, comprising a tubular body formed of absorbent material, and means lining the interior surface of the bore of said body having a multiplicity of spaced projections extending in various directions therefrom into said bore.

2. An absorbent filter cartridge for smoking appliances, comprising a tubular body formed of absorbent material, and means lining the bore of said body having a multiplicity of tongues extending therefrom into said bore, said tongues being spaced along and around the sides of the bore for angular extension thereinto in various directions.

3. An absorbent filter cartridge for smoking appliances, comprising a tubular body formed of absorbent sheet material wound upon itself to provide a plurality of superimposed plies, the in-

ner ply which lines the bore of said body having a plurality of tongues formed therewith, said tongues being spaced along and around the sides of the bore for angular extension thereinto in various directions.

4. An absorbent filter cartridge for smoking appliances, comprising a tubular body formed of absorbent material, means lining the bore of said body having a multiplicity of tongues spaced along and around the sides of the bore for angular extension thereinto in various directions, and an external jacket of moisture impervious substantially transparent material secured in enveloping and holding relation to said body so as to reinforce the same against distortion, disintegration or collapse while at the same time disclosing the condition of said body consequent upon its use.

5. An absorbent filter cartridge for smoking appliances, comprising a tubular body formed of absorbent sheet material wound upon itself to provide a plurality of superimposed plies, the inner ply which lines the bore of said body having a plurality of tongues formed therewith, said tongues being spaced along and around the sides of the bore for angular extension thereinto in various directions, and an external jacket secured in enveloping and holding relation to said body.

6. An absorbent filter cartridge for smoking appliances, comprising a tubular body formed of absorbent sheet material wound upon itself to provide a plurality of superimposed plies, the inner ply which lines the bore of said body having a plurality of tongues formed therewith, said tongues being spaced along and around the sides of the bore for angular extension thereinto in various directions, and an external jacket of moisture impervious substantially transparent material secured in enveloping and holding relation to said body so as to reinforce the same against distortion, disintegration or collapse while at the same time disclosing the condition of said body consequent upon its use.

7. A filter cartridge for smoking appliances, comprising a plurality of strips of absorbent paper wound spirally into a tubular body, the inner strip which lines the bore of said body having a plurality of angularly projecting tongues integral therewith, said tongues being spaced along and

around the sides of the bore to extend into and across the same to provide in the aggregate an interstitial screen.

8. A filter cartridge for smoking appliances, comprising a plurality of strips of absorbent paper wound spirally into a tubular body, the inner strip which lines the bore of said body having a plurality of angularly projecting tongues integral therewith, said tongues being spaced along and around the sides of the bore to extend into and across the same to provide in the aggregate an interstitial screen, and an external jacket secured in enveloping and holding relation to said body.

9. A filter cartridge for smoking appliances, comprising a plurality of strips of absorbent paper wound spirally into a tubular body, the inner strip which lines the bore of said body having a plurality of angularly projecting tongues integral therewith, said tongues being spaced along and around the sides of the bore to extend into and across the same to provide in the aggregate an interstitial screen, and an external jacket of moisture impervious substantially transparent material secured in enveloping and holding relation to said body so as to reinforce the same against distortion, disintegration or collapse while at the same time disclosing the condition of said body consequent upon its use.

10. A filter cartridge for smoking appliances, comprising a plurality of strips of absorbent paper wound spirally in superimposed relation one upon another to form a tubular body, the innermost strip which lines the bore of said body having punched therefrom a plurality of tongues, said tongues being spaced along and around the sides of the bore to extend into and across the same to provide in the aggregate an interstitial screen.

11. A filter cartridge for smoking appliances, comprising a plurality of strips of absorbent paper wound spirally in superimposed relation one upon another to form a tubular body, the innermost strip which lines the bore of said body having punched therefrom a plurality of tongues, said tongues being spaced along and around the sides of the bore to extend into and across the same to provide in the aggregate an interstitial screen, and an external jacket secured in enveloping and holding relation to said body.

PAUL H. MINTON.

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