

[54] **CIGARETTE HOLDER CONTAINING
ACTUATED CARBON AND FRANGIBLE
CAPSULE**

[72] Inventor: **Mortimer Russell Dock**, Arlington,
Va.

[73] Assignee: **The H-2-O Filter Corporation**, New
York, N.Y.

[22] Filed: **June 16, 1970**

[21] Appl. No.: **46,749**

[52] U.S. Cl.**131/187, 131/207, 131/210,**
131/10.1

[51] Int. Cl.**A24f 07/04, A24f 25/02, A24d 01/04**

[58] Field of Search.....131/9, 10, 10.1-10.9,
131/201, 210, 187, 207, 261-269

[56] **References Cited**

UNITED STATES PATENTS

3,390,686 7/1968 Irby, Jr. et al.131/266
3,334,636 8/1967 Zuber131/10.5 X

3,366,121 1/1968 Carty.....131/10.1
3,313,309 4/1967 Wang.....131/10.7 X

FOREIGN PATENTS OR APPLICATIONS

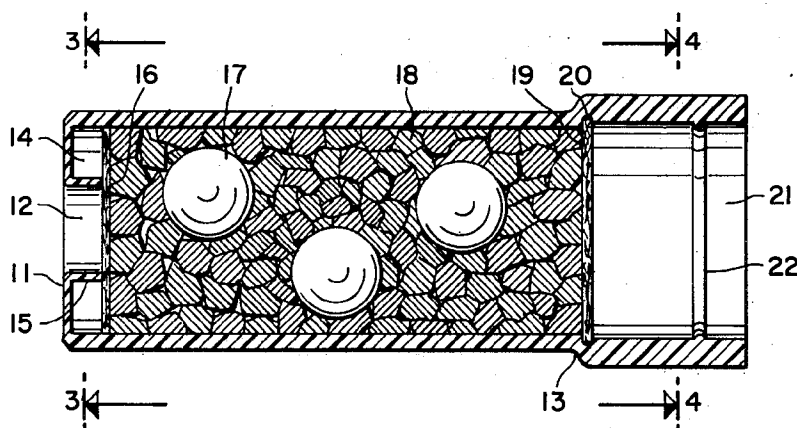
1,023,918 3/1966 Great Britain.....131/10.7
607,422 12/1934 Germany131/261 R

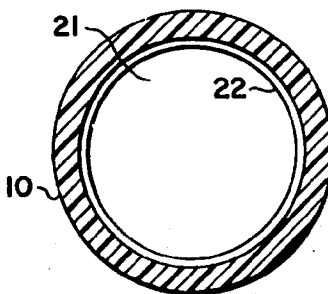
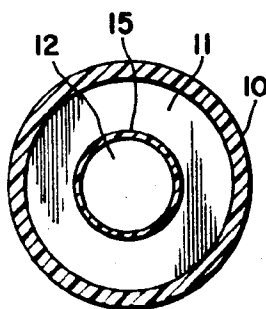
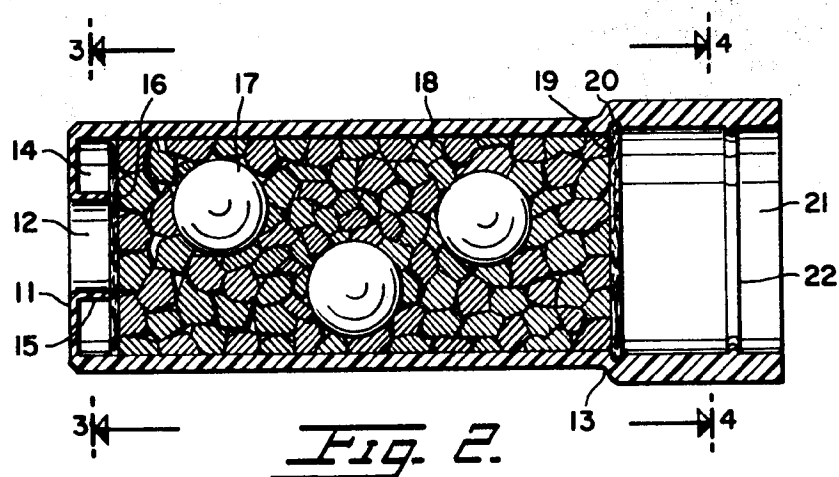
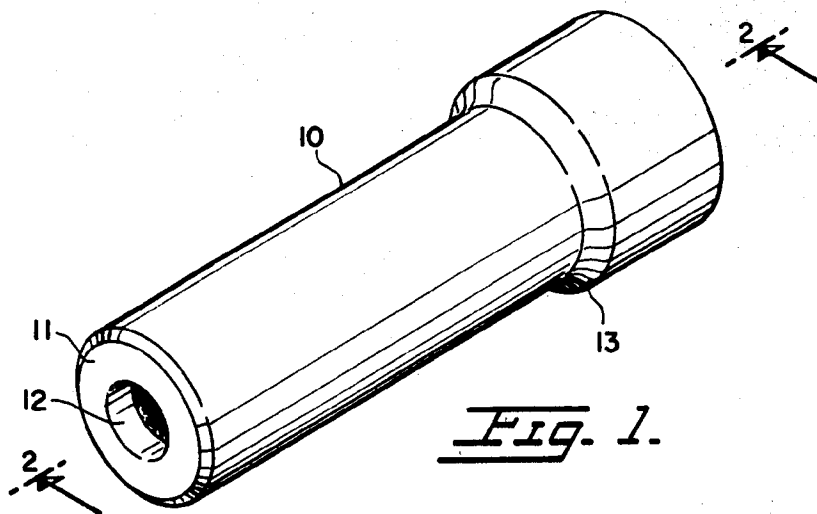
Primary Examiner—Melvin D. Rein

[57] **ABSTRACT**

The invention relates to a cigarette holder which employs essentially a charge of activated carbon and at least one frangible water filled capsule which is ruptured prior to use. The holder is made of resilient waterproof material and is provided at one end with a socket or recess designed to accommodate a cigarette. Downstream from the socket and before the mouth end there is disposed in the holder two discs of permeable carbon web which define a chamber in which the activated carbon charge and the rupturable capsule or capsules are contained.

1 Claim, 5 Drawing Figures





MORTIMER RUSSELL DOCK

CIGARETTE HOLDER CONTAINING ACTUATED CARBON AND FRANGIBLE CAPSULE

DETAILED DESCRIPTION

The use of activated carbon for effective filtration is a commonly accepted practice, and activated carbon has been included in various cigarette filters for the cleansing of smoke from burning tobacco.

Water as a cleansing and cooling agent has been known and used since prehistoric times. The use of water for cleansing tobacco smoke by drawing the smoke through disposable moist filters is a recent development; however, the effectiveness of water for this purpose is now a proven and accepted fact.

This patent constitutes an improvement over U.S. Pat. No. 3,366,121.

In the present invention, it is proposed to use activated carbon in granular form, together with water encapsulated in rupturable hollow wax shells, for a new and effective cigarette filter. Upon rupture of the wax shells, the water content is released and is promptly adsorbed upon the surface of the adjacent granular particles of activated carbon. The absorptive qualities of activated carbon are not great; however, activated carbon possesses adsorptive powers superior to those of most other materials, and such adsorption cleanses the tobacco smoke as the same is drawn past the granules of carbon in this filter.

For a better understanding of this invention, reference is made to the accompanying drawings, in which

FIG. 1 is a perspective view of the filter device of the present invention;

FIG. 2 is a cross-section taken on line 2—2 of FIG. 1;

FIG. 3 is an end view taken on line 3—3 of FIG. 2; and

FIG. 4 is an end view taken on line 4—4 of FIG. 2.

In FIG. 5 there is shown one of the discs of activated carbon web which form a part of the filter.

Referring more particularly to the drawings:

In FIG. 1, the filter housing 10 is shown with the mouth end being enclosed by plate 11, said plate having therein an opening 12 for the passage therethrough of filtered smoke. At shoulder 13 the housing diameter is increased to accommodate the end of a cigarette.

The cross-section of FIG. 2 shows the annular chamber 14 formed by the wall of housing 10, end plate 11, and collar 15 around opening 12 in said plate. Said collar ensures firmness of said end plate and of opening 12 therein, and additionally, recesses all elements of the filtering material so that no part thereof comes into contact with the smoker's tongue. A disc of activated carbon web 16 is emplaced in abutment with said collar, and adjacent to said disc, rupturable hollow bodies 17 having a water content are disposed contiguous to and intermixed with discrete particles of activated carbon or charcoal 18. A second disc of activated carbon web 19 for the containment of the granules and wax capsules within the housing, is retained in position at shoulder 13 by an annular groove 20 in the wall of the housing. The open end chamber 21 in the end of the housing is provided to receive and accommodate the tip of a conventional cigarette, which may be filter-tipped or plain. An internal ring 22 is provided to ensure gripping of the cigarette tip by the walls of the housing and to secure the cigarette against accidental disengagement from the housing.

The opening 12 in end plate 11 of the housing, as shown in FIG. 3, is of sufficient diameter to permit facile passage of smoke therethrough, and the annular plate 11 which is integral with the housing and forms the end thereof, together with collar 15, provides a firm end for the filter, thus permitting its easy retention between the smoker's lips. The nature of the material forming the resilient waterproof housing, such as polypropylene, provides a pleasing softness to the filter as it is held between the smoker's lips.

The open-end chamber 21 shown in FIG. 4 has a diameter and a depth sufficient to receive and retain the tip of a conventional cigarette for the ignition and smoking thereof, and ring 22 serves as a gripping member for the retention of the cigarette tip in the housing.

FIG. 5 shows a disc of the activated carbon web used for members 16 and 19.

As has been said, the filter of the present invention may be used with any cigarette, whether filter-tipped or plain. The cleansing properties of the water released from the ruptured capsules causes a major portion of the soluble part of the combustion products to be dissolved and adsorbed upon the carbon granules. The insoluble part of the particulate matter carried in the smokestream is also subject to adsorption upon the carbon granules. Since water is a poor conductor of heat, the moisture serves also to cool the smoke as it travels through the filter.

The discs of activated carbon web at opposite ends of the filter also adsorb upon the carbon particles thereof a part of the particulate matter carried in the smoke. The web contemplated for use in this filter is marketed by C. H. Dexter & Sons Company under the trade name DEXSAN.

The water-bearing capsules proposed for use with the present invention are those produced by 3M Company, having a petroleum wax shell with approximately 87 percent water fill. This amount of water fill provides space for expansion of the water without rupture of the shell, in the event the capsules are subjected to freezing temperatures.

The filter may be made in two ways, in one of which it is optionally attachable to cigarettes by insertion of the latter into the open-end chamber 21 described above. Alternatively, for integral attachment to a tobacco rod during the manufacture of cigarettes, the housing is foreshortened to eliminate the open-end chamber and terminate the housing at a point sufficient to provide firmness for the wall of groove 20. Since this would be an obvious step for integral attachment, the foreshortening of the housing has not been shown in the drawings. The composition and arrangement of the filtering elements is the same for both forms.

Taking the optionally attachable filter as an example, upon insertion of the cigarette into the chamber provided therefor, the filter is squeezed laterally to rupture the water-bearing capsule and release the contents into contact with the adjacent carbon granules. Preferably, an additional rolling or twirling action is used on the filter, to make certain the shell of the capsule is broken into pieces, thus preventing any large segment of the shell from blocking passage of the smoke through the filter. Some smokers prefer to bite lightly on the housing to rupture the capsule.

The water thus released moistens the surface of the carbon granules, and upon passage of smoke through the filter the adsorptive properties of the carbon are combined with the solvent action of water, to remove from the smoke a considerable part of the impurities which are the products of combustion of tobacco. Inasmuch as many of the most harmful of these impurities are soluble in water, there is a substantial cleansing action achieved by adsorption upon the carbon of the water thus laden with impurities.

The use of discs of activated carbon web at both ends still further cleanses the smoke, by their adsorption of combustion products and the particulate matter comprising such products.

Having thus described the invention, what is claimed is:

1. A substantially cylindrical cigarette holder of

resilient waterproof material, said holder at one end being of a size such as to form a socket designed to accommodate a cigarette and at the other end being formed with integral inwardly directed extensions which define a restricted in size centrally located smoke exit port, two spaced smoke permeable discs of carbon web disposed within the holder and oriented perpendicular to the axis of the holder, one of the discs abutting the inwardly directed extensions and covering the exit port and the other being disposed within an annular recess in the holder at the downstream end of the cigarette accommodating socket, the chamber formed between the two discs being filled with a charge consisting of activated charcoal in which is disposed at least one frangible, water filled capsule which is rupturable on squeezing pressure.

* * * * *

20

25

30

35

40

45

50

55

60

65