Sept. 24, 1968 L. L. BLOUNT ET AL 3,402,724

APPARATUS FOR WITHDRAWAL FROM TOBACCO HABIT

Filed Oct. 21, 1965

FIG. 1.

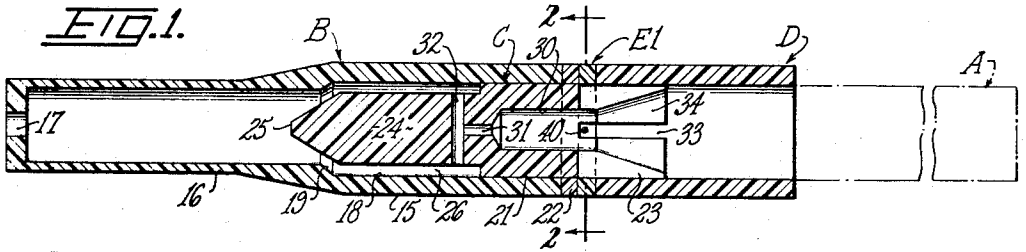


FIG. 2.

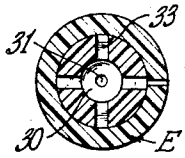


FIG. 3.

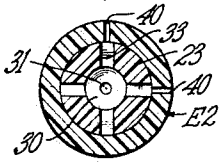


FIG. 4.

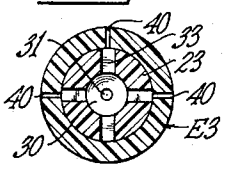


FIG. 5.

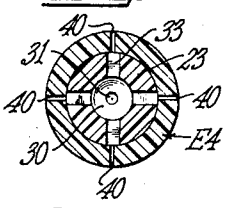


FIG. 6.

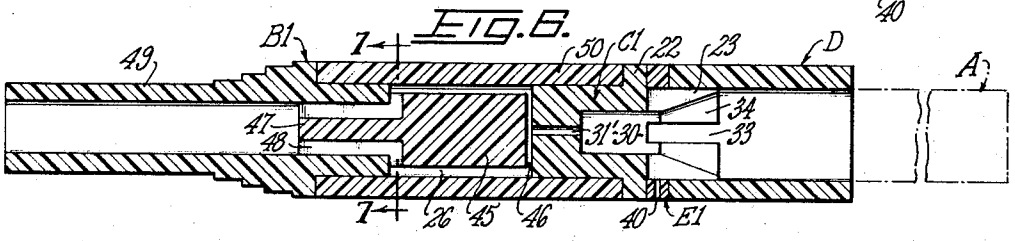


FIG. 7.

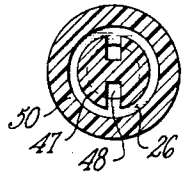


FIG. 8.

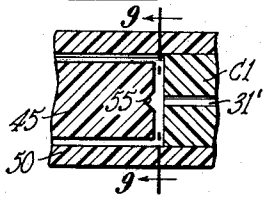


FIG. 9.

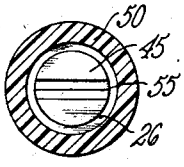


FIG. 10.

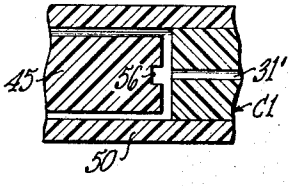
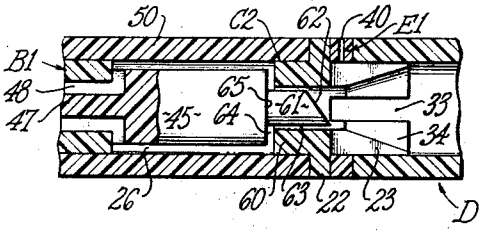


FIG. 11.



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United States Patent Office 3,402,724
Patented Sept. 24, 1968

3,402,724

APPARATUS FOR WITHDRAWAL FROM TOBACCO HABIT

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Filed Oct. 21, 1965, Ser. No. 499,266
3 Claims. (Cl. 131—198)

ABSTRACT OF THE DISCLOSURE

Disclosed herein is a smoking device (cigarette or cigar holder or pipe stem) embodying a receptacle for drawing smoke from a body of burning tobacco at one end thereof; a mouth-piece at its opposite end; an intermediate tubular barrel; an air inlet ring between the opposed ends of the barrel and receptacle; and core means including a body of plug form mounted in the barrel and having an axial smoke speed-up passage, and a plurality of circumferentially-spaced prongs projecting through the air inlet ring and into the receptacle and supporting the ring and the receptacle from the barrel, and including a barrier head axially opposed and adjacent to the downstream end of the smoke speed-up passage, for collecting tar from smoke drawn through the passage.

This invention relates to the treatment of the tobacco smoking habit by smokers who desire to discontinue the habit. The general object of the invention is to provide means whereby a smoker, in a series of successive stages of continued smoking, can gradually withdraw from the habit-sustaining influence of the smoke being inhaled from a cigarette, cigar or pipe. A corrollary object is to provide a kit consisting of a cigarette or cigar holder or pipe stem and a series of replacement parts for sequentially adjusting the device for successively increased percentage of removal of tars from the smoke. We have found that a smoker can endure the gradual reduction in the tar-content of the smoke being inhaled by him, provided that the adjustment is spread over a period of several weeks, and we have also discovered that by thus gradually adjusting the tar content to successively lower percentages, the overpowering desire for continued smoking, which normally sustains the habit, is eventually dissipated, and finally the smoker can quit his smoking without any resulting feeling of discomfort or uneasiness or desire for continued smoking.

With the foregoing in view, the invention provides apparatus for use by a smoker wherein:

(1) In successive stages, the smoke being inhaled is diluted by small quantities of air in a successively increasing ratio of air to smoke;

(2) In the successive stages, an increasing percentage of tar is removed from the smoke being inhaled;

(3) A smoking implement is provided, having means for admitting a small quantity of air into the smoke stream being drawn through the implement;

(4) A succession of air-admission parts are provided, for successive replacement installation in the smoking implement;

(5) The replacement parts and the remainder of the smoking implement are so constructed and correlated that replacement can be easily and quickly effected.

These and other objects will become apparent in the ensuing specifications and appended drawings, wherein:

FIG. 1 is an axial sectional view of a cigarette holder embodying the invention in one form;

FIG. 2 is a cross-sectional view taken on the line 2—2 of FIG. 1; showing a first-stage air-admission collar;

FIG. 3 is a cross-sectional view taken in the same plane as FIG. 2, showing a subsequent-stage air-admission collar replacing the one shown in FIG. 1;

FIG. 4 is a cross-sectional view showing a later-stage replacement air-admission collar;

FIG. 5 is a cross-sectional view showing a final-stage air-admission collar;

FIG. 6 is an axial sectional view of a modified form of the smoking implement;

FIG. 7 is a cross-sectional view of the implement of FIG. 6 taken on the line 7—7 thereof;

FIG. 8 is a fragmentary axial sectional view of a modified portion of the implement of FIG. 7;

FIG. 9 is a cross-sectional view of the implement shown in FIG. 8, taken on the line 9—9 of FIG. 8;

FIG. 10 is a fragmentary axial sectional view of a variation of the modified portion shown in FIG. 8; and

FIG. 11 is a fragmentary axial sectional view of another variation of the modified portion shown in FIG. 8.

Referring now to FIGS. 1–5 of the drawing, I have shown therein, as an example of one form in which the invention may be embodied, a holder for a cigarette A, comprising a barrel B substantially enclosing and supporting a core C, a receptacle sleeve D releasably supported on the forward end of core C, and a control collar E encircling said forward end of core C and interposed snugly between the forward end of barrel B and the rear end of holder sleeve D.

Barrel B comprises a cylindrical body **15** and a stem **16** having a draft aperture **17** at one end. Body **15** has a counterbore **18** terminating at an annular shoulder **19**, from which a reduced diameter smoke passage extends rearwardly through stem **16**.

Core C has a body **21** of plug form with a cylindrical periphery fitted snugly but removably in barrel bore **18**, an integral annular radial flange **22** abutting the forward end of barrel body **15** to position the core C within the barrel, a quartered segmental forward end portion constituting four prongs **23** extending into and releasably supporting the holder sleeve D, and a tail **24** extending rearwardly to shoulder **19** and terminating in a conical end **25**. Tail **25** is radially spaced from the wall of counterbore **18**, defining an annular cylindrical tar-collection chamber **26** terminating at shoulder **19**, which is spaced from tail end **25** so as to define an annular passage between chamber **26** and the smoke passage in stem **16**.

Core body **21** has an axial conduit **30** terminating at its rear end in a restricted smoke speed-up passage **31** which communicates with the center of a diametral cross-bore **32** the ends of which communicate with tar-collection chamber **26**. The forward end of conduit **30** communicates with the space within and between the four segmental fingers **23**. Fingers **23** are tapered to define a conical bell-mouth **34** communicating substantially full-diameter with the rear end of a cigarette A inserted into holder sleeve D, so as to direct smoke into conduit **30**.

Restricted passage **31** is in a range embracing about .028 inch in diameter. Cross bore **32** may be of the same or somewhat larger diameter, providing (in its two portions branching in opposite directions from restricted passage **31**) it has an aggregate flow area at least twice that of passage **31**. Passage **31** thus acts as restricted throat to accelerate the flow rate of the smoke to high speed such that tars are precipitated against the wall of cross bore **32** as the flow rate drops therein. Precipitated tars will drip into chamber **26** and will collect there.

Precipitation of tar is increased by cooling the smoke as it enters the conduit **30**, and is controlled by varying the cooling effect. This is accomplished by use of the series of control collars E, E1, E2, E3 and E4 shown in FIGS. 1–5 respectively. Collar E1 (FIGS. 1 and 2) has a

single air inlet port **40** extending radially therethrough and arranged to communicate with conduit **30** through one of the slots **33**. Collar E2 (FIG. 3) is provided with two inlet ports **40**, positioned (e.g., 90° apart) to communicate respectively with two of the slots **33**. Conduits E3 and E4 (FIGS. 4 and 5 respectively) are provided with three and four inlet ports respectively, positioned to communicate with three and four slots **33** respectively, all as illustrated in FIGS. 1–5 respectively.

In using the holder, the smoker starts with a first control collar which provides no cooling effect, and the smoke passes through the holder at a relatively high temperature. The smoking experience derived from the use of the holder in the closed condition provided by this collar, is comparable to that of conventional smoking.

After using the holder for a few days, the smoker removes holder sleeve D and the first collar from support fingers **23**, and upon reassembly, he substitutes collar E1 for the first collar. Collar E1 admits a small quantity of air through its port **40** and through the registering slot **33** into conduit **30**, thus slightly cooling the smoke entering restricted passage **31**. A somewhat greater percentage of tar is precipitated from such cooler smoke, and the smoke entering the smoker's lungs produces a correspondingly milder sensation. A stage of smoking under this adjusted condition is continued for a period of from three days to a week, until the smoking sensation being derived from this stage is completely satisfying. Then the smoker removes the collar E1 and substitutes collar E2. Twice as much air is then admitted and the cooling effect is correspondingly increased. Tar removal is again increased, and additional mildness is imparted to the smoke. Again the smoker uses the holder under the adjusted conditions for a period of from several days to a week, until all craving for the more sharply sensational smoking of former stages has disappeared. The smoker then again adjusts the holder for use of the three-port collar E3, uses the holder as thus adjusted, for a period of time such as to again develop a satisfied reaction to the sensation of further mildness derived during this period. He then goes on to use the holder with the final control collar E4, which causes the holder to deliver smoke which is substantially bland. After a further period of use of the holder as thus adjusted, he may be physiologically conditioned for quitting the smoking habit with as little effort as was involved in adjusting the holder from one control collar to the next in the series.

In order that the tar removal may be controlled while maintaining a satisfactory concentration of smoke without excessive dilution by the admitted air, the ratio between the air inlet port diameter and the diameter of restricted passage **31** must be substantially a 2:3 ratio. For example, where the diameter of passage **31** is .028" as stated previously, the diameter of each air inlet port **40** is .018", the ratio being approximately .643. This establishes the ratio of cooling air to smoke in the mixture passing through the restricted passage **31** in the use of the holder with the collar E1 installed therein. The ratio of admitted air to smoke passing through the passage in the subsequent use of the holder with the succeeding collars E2, E3, E4 is increased successively as each successive collar is used, but each succeeding ratio bears a relationship to the initial ratio (in the use of collar E1) which is such that in the final stage, using collar E4, the smoker still derives the sensation of smoking although with such a nearly complete absence of tars that the habit-sustaining element of the smoke is in that stage so attenuated that its control over the smoker is eliminated.

It is important that the cooling air is admitted to the smoke stream before the latter is accelerated in the passage **31**, whereby precipitation of tar will occur as it is discharged from the restricted passage **31** as a high speed jet into cross bore **32**. The cooling effect of the admitted air will bring the smoke to a temperature, when discharged from the passage **31**, such that tar is condensed and will be precipated as the velocity of the air stream drops subsequent to leaving passage **31**.

While the relationship between air inlets **40** and passage **31** is important, the specific design and arrangement of the passage and the surface on which the tar is deposited, may be varied without departing from the principles of the invention. For example, as shown in FIG. 6, the passage **31'** may discharge its jet against a flat circular forward end surface of a barrier head **45**, the end surface being in closely-spaced, axially-opposed relation to a flat rear end surface of a core C1 so as to define therewith a thin disc-shaped passage **46** extending radially in all directions from the rear end of the passage **31**. Passage **46** has an axial spacing from core C1 of about 1/32". Head **45**, instead of being an integral part of the core, is a separate part having a tail **47** which is longitudinally grooved to provide a series of circumferentially spaced smoke passages **48** (FIG. 7) connecting the tar collection chamber **26** to the passage within a stem **49**. Barrel B1 comprises a plain cylindrical sleeve **50** in which is snugly fitted the forward end of stem **49**, which in turn snugly receives the tail **47** so as to support the head **45**. Other parts in FIG. 6 are the same as in FIG. 1 as indicated by the use of corresponding numerals.

FIGS. 8 and 9 illustrate a variation of the structure shown in FIG. 6 wherein the forward end of head **45** is provided with a diametral V-groove **55** in opposed relation to passage **31'**, the remainder of the apparatus being the same as in FIG. 6. Substantially the same structure is shown in FIG. 10, the only difference being in the groove **56** (in lieu of groove **55**) which is of rectangular instead of V section.

FIG. 11 discloses another modified form of the invention, wherein the core C2, instead of being cup-shaped, comprises a collar **60** into which is projected a cylindrical tip **61**. The forward end of tip **61** is bevelled at **62**, and is disposed just to the rear of the plane of control collars E, etc. An annular cylindrical passage **63** is defined between the lateral wall of tip **61** and the internal wall of collar **60**, the spacing between these walls being about .0035". A flat annular space **64** is defined between axially-opposed end faces of collar **60** and of head **45**, the latter end face being an annular radial shoulder **65**. The remainder of the apparatus of FIG. 11 is the same as in FIG. 6, as indicated by the same numerals. Space **64** has an axial depth in the range of 1/32" to 1/16". Smoke striking the bevelled forward end face **62** of tip **61** is deflected radially against the internal wall of collar **60**, causing some tar precipitation. It then passes through the thin annular passage **63** and impinges against shoulder **65**, where additional tar is precipitated, draining into collection chamber **26**.

We claim:

1. In a kit for use by a smoker for withdrawal from the smoking habit, a tubular draft device including at one end a receptacle through which smoke may be drawn from a body of burning tobacco; a barrel having a mouthpiece stem at the other end of the device; a core mounted in said barrel and having at one end means projecting into said receptacle and releasably supporting the same, said core embodying tar-removal means; and a plurality of control collars replaceably insertable between said receptacle and said barrel, said collars having radial air inlet orifices for the admission of cooling air into the smoke stream travelling from said receptacle into said tar-removal means, for condensing the tar in the smoke screen, the orifices in each successive control collar being greater in number than in the previous collar, whereby to effect successive increase of tar condensation with the use of each successive collar, said releasable receptacle-supporting means comprising a plurality of circumferentially-spaced fingers defining between them slots with which said orifices are registered when the collars are installed.

2. A withdrawal kit as defined in claim 1, wherein said core has a radial flange interposed between the installed collar and the adjacent end of said barrel.

3. A withdrawal kit as defined in claim 2, wherein said fingers extend through the installed control collar and are fitted snugly therewithin to support the collar in concentric and peripherally flush relation to the receptacle and barrel.

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