

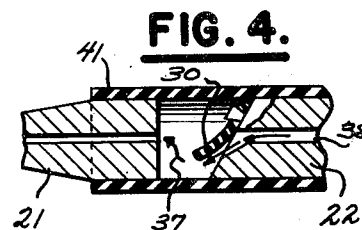
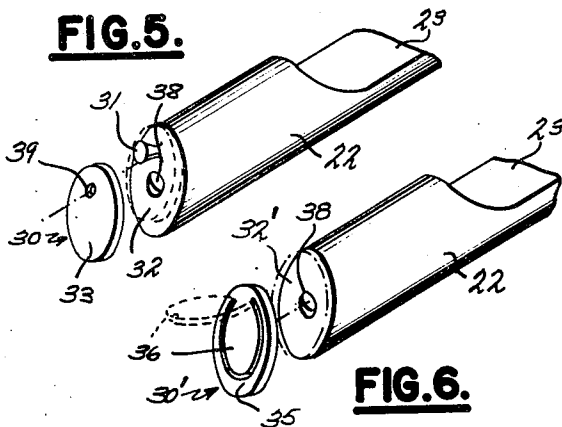
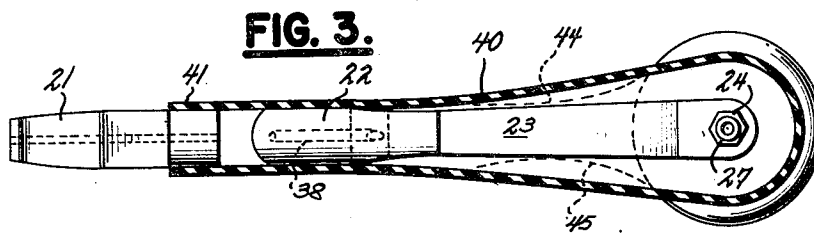
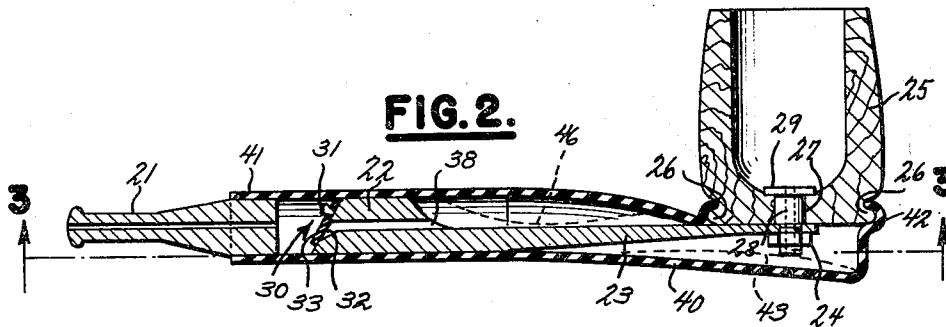
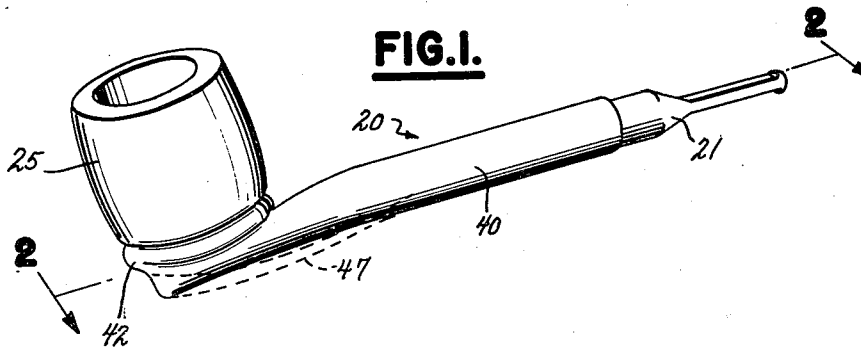
May 31, 1955

A. V. MOTSINGER
PRE-INHALATION PIPE

2,709,441

Filed Feb. 20, 1950

2 Sheets-Sheet 1



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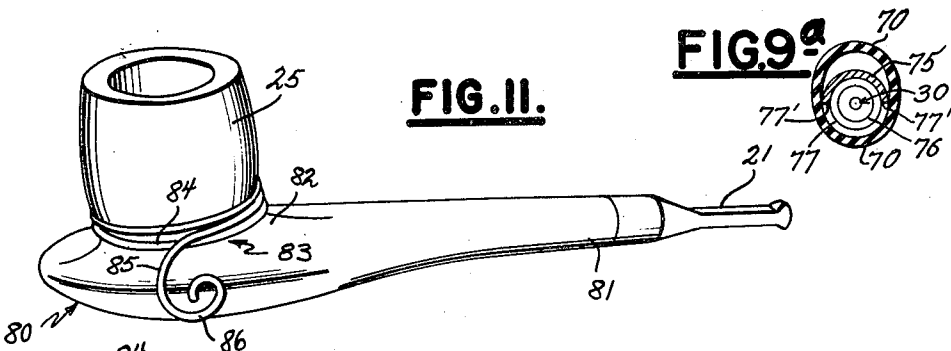
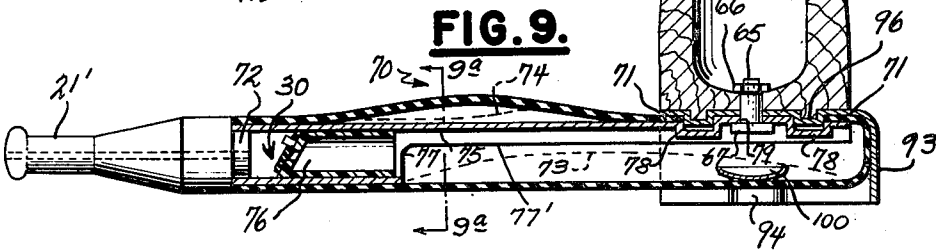
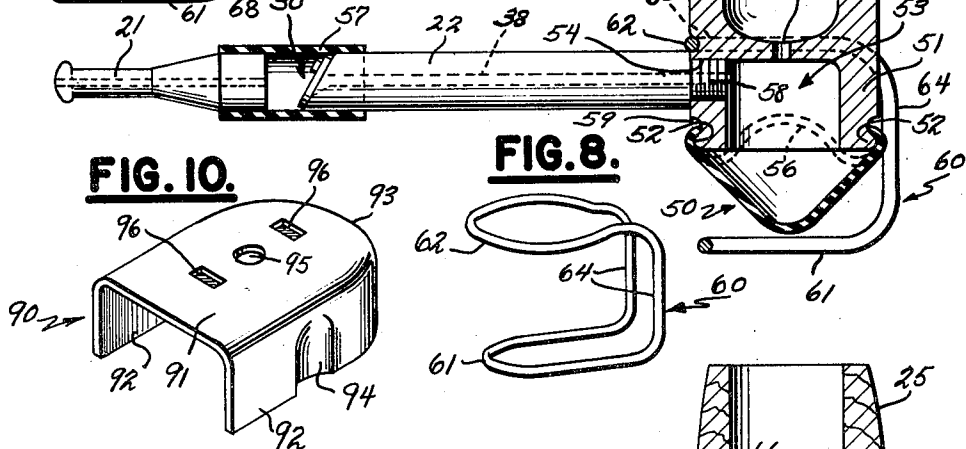
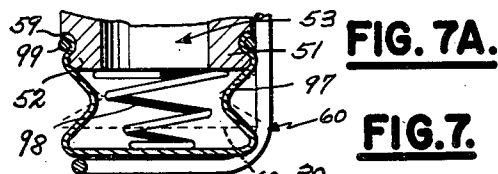
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PRE-INHALATION PIPE

Armard V. Motsinger, Aberdeen, Md.

Application February 20, 1950, Serial No. 145,170

3 Claims. (Cl. 131-186)

The present invention relates to smokers' pipes and more particularly to a novel means which provides for the automatic breathing of such a device during its operation.

My invention reveals an entirely new principle in smoking perhaps best described as automatic pre-inhalation. Furthermore this invention operates upon that principle by novel and simple means, for example by incorporating as a new element in the pipe, a simple and automatic bellows or lung apparatus made preferably of polyvinyl alcohol plastic, rubber latex, or synthetic rubber.

A principal object of the present invention is to provide a smoker's pipe with independent breathing means activated by the operator and thereafter automatically and intermittently functioning throughout the entire smoking operation.

Another important object is to provide a pipe having means for causing the automatic pre-inhalation of such a pipe prior to final inhalation of smoke by the operator.

A further object is to provide an easy drawing pipe by providing novel means for automatically maintaining a slow rate of passage of the smoke through the bowl of the pipe.

An additional object is to provide the aforementioned novel breathing means with combined support and grip means for maintaining and assuring the operation of said breathing means during the normal handling given to a pipe.

Another object is to provide novel automatic means for removing the liquid condensate from the smoke and thereby maintain a pipe that seldom needs cleaning.

Other equally important objects and advantages will more plainly appear from the accompanying detailed specification and drawings, wherein like reference characters represent like parts illustrating preferred examples of the present invention, and which diagrammatically represent in

Figure 1: A perspective view of a preferred embodiment of my novel pipe showing the bellows applied to the stem and bowl of the pipe, and in its collapsed position shown in full lines.

Figure 2: A vertical cross-section taken on the line 2-2 of Figure 1.

Figure 3: A horizontal cross section taken on the line 3-3 of Figure 2.

Figure 4: A fragment of the stem portion of Figure 2 showing the valve in its open position.

Figure 5: A perspective view of the valve shown in Figure 4 with the flap disassembled from the stem portion.

Figure 6: A modification of the valve shown in Figure 5 with the flap disassembled from the stem portion.

Figure 7: A longitudinal vertical cross-sectional view of a preferred modification of the pipe shown in Figure 1 wherein the bellows or lung is applied to the bottom of the pipe bowl.

Figure 7A: A modification of the bellows of Figure 7.

Figure 8: A perspective view of the bellows support means shown in Figure 7.

Figure 9: A longitudinal vertical cross-sectional view

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of a further modification of the pipe shown in Figure 1 wherein combined support and grip means is provided for the bellows portion.

Figure 9A: A sectional view along line 9a-9a of Figure 9.

Figure 10: A perspective view of the combined grip and support shown on the pipe in Figure 9.

Figure 11: An alternate form of the bellows or lung shown in Figures 1 and 9.

Figure 12: A perspective view of the integral bellows support and grip shown on the pipe in Figure 11.

In the preferred embodiment illustrated in Figures 1 to 5 inclusive, the pipe 20 comprises bowl 25, bit 21, latex bellows 40, frame 23, and stem portion 22. Bowl 25 is provided with opening 27 carrying threaded tube 28 held in position on frame 23 by nut 24 and flange 29. Frame 23 has a stem portion 22 provided with channel 38, valve seat 32, and valve 30. Valve 30 comprises flap 33, hinge hole 39 and hinge pin 31. An alternate valve structure 30' is illustrated in Figure 6 wherein valve 35 comprises a flap 36 and is adapted to be cemented or otherwise affixed to seat 32'.

Frame 23 is preferably made of light plastic, or ductile deformable, metal and is dimensioned to provide ample space for the collapse of bellows 40, so that bellows 40 may assume its collapsed position as indicated by the dotted lines at 44 and 45 in Figure 3, and at 43 and 46 in Figure 2.

Bowl 25 is provided with an external circular ridge 26 which serves as a bowl grip for the bowl-end 42 of bellows 40. The bowl-end 42 and the bit-end portion 41 of bellows 40 are both formed small enough in diameter to be stretched and forced over ridge 26 and bit 21 respectively. Bellows 40 is preferably made of thin dipped rubber latex formed by the well known anode process, and has approximately the same thickness (from 10 to 15 one-thousandths of an inch) and resiliency as the finished dipped rubber latex well known in surgical gloves. The rubber latex used herein is of a type that is smooth to the touch, it can be easily cleaned, its thinness readily transmits heat and cools the smoke, and furthermore it is permeable to a certain extent to moisture, tars and nicotine condensing from the tobacco, and thus provides drier smoke. Rubber latex or synthetic rubber provides a bellows with sufficient rigidity to hold its shape, with the preferred degree of elasticity to readily collapse under suction, and finally with sufficient resiliency to readily regain its normal position when suction is removed.

Figure 4 shows the valve 30 in its open position during suction or inhalation by the smoker, and the passage of smoke through channel 38 in stem portion 22, through stem grip portion 41, and through bit 21 is shown by the path of arrows indicated at 37. While the use of valves in the preferred embodiments of the present invention confers certain advantages, the elimination of valves in the present invention also confers other advantages which will be later described.

A preferred embodiment illustrated in Fig. 7 shows the bellows element 50 arranged to operate at the bowl portion instead of at both the stem and bowl portions as shown in Figures 2, 9 and 11. The pipe of Figure 7 comprises: the bit 21, the bit coupling 57, the valve 30, the stem 22, stem channel 38, and stem threads 53 engaging threaded hole 54 in bowl 25'. Bowl 25' comprises channel 55 leading from the tobacco chamber in bowl 25' to bellows chamber 53 formed in the downwardly projecting base portion 51. Base portion 51 is provided with exterior circular ridge 52 adapted to receive the bowl grip portion of bellows 50. Bellows 50 is preferably formed of the same latex material described previously herein in connection with bellows 40 of Figure 2. Bel-

lows 50 is shown in Fig. 7 in heavy lines in its distended position, its collapsed position being illustrated by the dotted lines indicated at 56.

Bowl 25' is provided with a peripheral groove 63 adapted to receive the clamp portion 62 of support 60. Support 60 as illustrated in Figure 8 comprises clamp portion 62, legs 64, and base portion 61. Support 60 is preferably made of resilient metal wire, dimensioned and formed so that the legs 64 serve as a thumb grip and also as a guard for bellows 50. Bellows 50 is formed small enough so that its grip portion may be stretched to provide a forced fit over the ridge 52, and thereby provide an air tight seal between bellows 50 and bowl base 51.

In Figure 7A is illustrated a modification of the bowl bellows 50 shown in Figure 7, wherein the bellows 97 is formed preferably of a non-resilient disposable material such as paper, or close woven or coated fabric. Bellows 97 is preferably held in bellows groove 59 in base 51 by bellows-gripping ring 99, but may be attached by any suitable means. The lower portion of bellows 97 is retained by the leg portions 64 and base portion 61 of support 60, as illustrated in Figure 7A. Bellows spring 98 is preferably formed to have only sufficient force to urge the bellows into its outward inflated position as shown by the heavy lines in Figure 7A, after it has been collapsed by the suction of the smoker when drawing on the pipe, into its collapsed position, as indicated by the dotted line at 68 in Figure 7A.

Figure 9 shows a modification of the embodiment of Figure 2, comprising bit 21', bit grip portion 72, valve 30, bellows 70, stem frame 75, bowl grip portion 71 and tubular stem portion 77 extending from frame 75. Frame 75 is provided at its bowl end with detents 78 and aperture 79, and the stem frame 75 is cut away along line 77' to provide an opening that exposes the bore of the frame, stem portion 77 and support member 76 (mentioned below), said opening extending underneath the bowl. Valve 30 is carried by inner tubular support member 76 positioned within the tubular stem portion 77.

Bowl support 90 illustrated in Figure 10 comprises upper face 91, leg portions 92, thumb grip indentations 94, and end portion 93. The face 91 is provided with detents 96 adapted to engage the recessed portions of detents 78, and with aperture 95 arranged to register with aperture 79 and bowl tube 65. Frame 75 and support 90 are both held in position on bowl 25 by fastening means comprising tube 65, nut 66 and flange 67. Frame 75 may be made of ductile metal so that its shape may be manually deformed, modified or straightened if accidentally bent. A drip pan 100 made of metal or preferably of vinylidene-chloride plastic is preferably cemented to the inner surface of the bellows 70 directly beneath tube 65 to catch liquid residue and solids falling from bowl 25 through tube 65.

Bellows 70 is shown in its inflated position between draws by the smoker by the solid lines in Figure 9, and in its deflated position at the end of a draw, by the dotted lines 73 and 74 in Figure 9. Bellows 40 in Figure 1 is shown in its deflated position by the solid lines and in its inflated position by the dotted lines at 47.

A further modification of the bellows and the support is shown in Figures 11 and 12 wherein the bellows 80 is formed in a streamlined shape and is held on bowl 25 by the coiled wire grip and support 83. The bit 21 may be supported by a frame such as shown at 23 in Figure 2 or by a frame such as illustrated at 75 in Figure 9. The latex bellows or lung 80 comprises the bit grip portion 81, and the bowl grip portion 82. The diameters of the openings in portions 81 and 82 are formed undersized so the latex will have to be stretched and forced over bit 21 and bowl 25 respectively to form an air tight fit therewith.

Bowl 25 in Figure 11 is also provided with the exterior circular groove corresponding to groove 63 as illustrated in Figure 7. Coil portion 84 of support 83 is adapted to

grip this groove and the latex bellows bowl-grip portion 82. Support 83 is provided with leg portions 85 integral with coil portion 84, and grip portions 86 integral with leg portions 85.

The bellows 40, 50, 70 and 80 herein described may also be made of a polyvinyl alcohol plastic material of the type which is insoluble in water, such material being approximately .0010" in thickness. This material is water permeable and permits the slow escape of condensed moisture in the bellows while at the same time being substantially airtight. Bellows made of this plastic or similar plastic material, or of rubber latex, synthetic rubbers or the like, may be easily removed and turned inside out and cleaned. The paper or fabric bellows 97 may superficially be cleaned, but in that embodiment of my invention, it is preferred to use cheap disposable paper-like or cloth-like material that can be replaced whenever desired.

In operation the first draw on a pipe embodying the present invention, which causes the smoke to travel from bowl 25 to the bellows hereindescribed to bit 21, also creates sufficient suction to collapse the bellows shown in each of the embodiments hereindescribed. At the end of the first draw, while the smoker is exhaling, the resiliency inherent in bellows 40, 50, 70, and 80, and the spring 98 in bellows 97, cause these bellows to return to their normal position. During this return from the collapsed position the valves 30 are closed which causes the bellows to draw smoke from the bowl 25 into the bellows as they expand into their normal expanded position. This smoke is thus pre-inhaled by the bellows and held therein until the next draw by the smoker. This cools the smoke due to the relatively great area presented by the bellows to the smoke and due to the relatively thin walls of the bellows. This pre-inhalation also dries the smoke by condensation of moisture from the smoke on the inner surface of the bellows and its subsequent permeation therethrough. Thus the novel pre-inhalation of the present invention provides a charge of pleasant, easily drawn smoke for all subsequent draws after the first in the sequence just described. Furthermore as a great portion or all of the water vapor transfers through the polyvinyl alcohol plastic bellows and quickly evaporates, the pipe of the present invention tends to remain dry inside, the only retained liquids being the tars, etc.

While only preferred examples of the present invention have been illustrated herein, it is obvious that various modifications thereof are contemplated and may be resorted to by those skilled in the art, without departing from the spirit and scope of the appended claims.

I claim:

1. A smoker's pipe comprising a smoke generating bowl; a hollow outlet bit for inhalation of smoke by the smoker; a stem having a bore therethrough joining the bowl with the bit, a part of the wall of the stem having an opening to expose the bore, said opening being underneath the bowl; a bellows of resilient material fixed to the stem and overlying the opening of the wall to form a collapsible smoke-receiving chamber; and a check-valve in said bore between the bellows and the bit, the resilient material of said bellows being partially collapsed by the outside atmospheric pressure when a puff of smoke is withdrawn from said chamber through said check-valve but resuming a dilated position by drawing smoke from the bowl between puffs.

2. In a pipe as set forth in claim 1, said bellows being formed of material permeable to water but insoluble therein.

3. The combination of a pipe as set forth in claim 1, having at least a portion of said bellows underlying the bowl and on the exposed side of the stem, and protection and support means comprising a frame fixed to said pipe and extending outwardly beyond the above-mentioned portion of the bellows opposite the bowl.

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