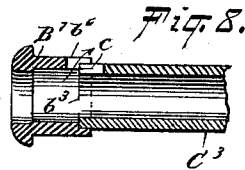


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# UNITED STATES PATENT OFFICE.

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## SMOKING-TUBE.

SPECIFICATION forming part of Letters Patent No. 561,288, dated June 2, 1896.

Application filed March 1, 1895. Serial No. 540,191. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS H. SONDEHEIM, of New York, in the county and State of New York, have invented new and useful Improvements in Smoking Tubes and Pipes, of which the following is a full, clear, and exact description.

The invention relates to that class of smoking-tubes in which the tobacco is fed to the front of the tube as fast as it is consumed; and the object of the invention is to improve smoking devices of this character in several particulars, as will be explained hereinafter.

The invention consists in the novel features hereinafter particularly described, and defined in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal sectional view of a smoking-tube constructed in accordance with my invention. Fig. 2 is a similar view, but representing the piston or follower in a more forward position. Fig. 3 is a cross-section on the line 3 3 in Fig. 2. Fig. 4 is a cross-section on the line 4 4 in Fig. 2. Fig. 5 is a perspective view of the cartridge-shell of the smoking-tube. Fig. 6 is a broken perspective view of the combined piston and stem of the smoking-tube. Fig. 7 is a longitudinal sectional view of a modified form of cartridge-shell. Fig. 8 is a broken longitudinal section showing a further modification of the cartridge-shell.

The smoking-tube A, of wood or other material, is provided at its front end with a bushing B, of incombustible material, the bushing having a flange b, that overlaps and protects the front edge of the tube A, and the bore of the bushing further is preferably contracted at its forward end, as at b'.

Within the tube A is a cartridge-shell C, to be hereinafter more particularly referred to, the shell serving to receive the tobacco a. In connection with the cartridge a piston D is employed having a head or follower D' and a pusher-stem D<sup>2</sup>. Said stem extends to the outside of the tube A, through the plug or cork E, and it has an axial bore d, through which the smoke is finally drawn, as explained below, the outer end d' of the stem being the

mouthpiece of the tube and finished in practice in any approved manner.

The shell C is of sufficiently less external diameter than the bore of tube A to provide a chamber or passage a', and the stem D<sup>2</sup> is of sufficiently less diameter than the bore of the shell C to provide a chamber or passage a<sup>2</sup> between the two when the stem is partly within said shell, as in Fig. 2.

A suitable opening b<sup>2</sup> is formed in the bushing B to connect the combustion-chamber formed by such bushing with the forward end of the outer chamber a', and the inner and outer chambers a' a<sup>2</sup> communicate by reason of openings a<sup>3</sup> in the rear end of the shell C, and the inner chamber a<sup>2</sup> communicates with the axial bore d of the stem D by transverse openings or branch passages d<sup>2</sup> in said stem. In connection with the head D' there is provided at a point between the head D' and the openings d<sup>2</sup> a packing-ring d<sup>3</sup>, which is somewhat larger in diameter than the bore of the shell C and is flexible to incline rearwardly, as in full lines, or forwardly, as in dotted lines, Fig. 2, according to the direction of movement of the piston, and it effectively prevents smoke working forwardly past the same or the drawing of smoke rearwardly through the bulk of the tobacco and past the packing. Thereby the bulk of the tobacco is preserved from contamination.

The rear plug or cork E is reduced at its forward end to provide a shoulder e, which abuts the rear end of the tube A, the reduced projecting end e' fitting tightly within said tube, and in the bore of the cork a packing-ring e<sup>2</sup> is held to tightly fit on the stem D<sup>2</sup> and prevent ingress of air, the packing-ring e<sup>2</sup> being held in place by the two bushing-rings e<sup>3</sup>, one at each side of said packing-ring or in any other suitable manner.

The shell C is shown in Figs. 1, 2, and 5 as of a form to abut against the rear edge of the bushing B, and in one piece. In Fig. 8 the forward end of the shell C<sup>3</sup> enters slightly within the bushing B', forming the combustion-chamber, the said bushing having its bore enlarged at the rear to receive the shell and has an internal shoulder b<sup>3</sup>, against which the shell abuts.

In Fig. 7 the forward end of the shell C<sup>2</sup> is received within a cap-piece C', which is of

glass, metal, or other incombustible material, the forward end of said cap being contracted to provide a bore corresponding to that of the shell proper; but whether the shell fits within the cap-piece or the reverse is of no moment. The cap-piece C' may abut the bushing B or may be reduced, as shown at  $b^4$ , to fit the enlarged rear end of a bushing B', Fig. 8, and abut the shoulder  $b^3$ , an orifice  $c'$  being preferably formed in the cap-piece or end piece C' for the smoke, the said orifice being a substitute for or additional to the opening  $b^2$ . In Fig. 8 also the shell is shown with an opening  $c$  at its forward end for the outward passage of the smoke to the chamber  $a'$ . Thus it will be seen such outlet may be in the shell or in the bushing B or B' or in both the shell and bushing.

The shell may be made of metal, glass, wood, paper, or paper or wood pulp; but my preferred form is paper, paper-board, or like fibrous material, and such fibrous shell is glazed internally and also, preferably, externally. The interior glazing provides a smooth surface which facilitates the forward movement of the tobacco, and the exterior glazing lends an attractive appearance to the cartridge. Further, the shell is given stiffness sufficient to withstand endwise strain without being crumpled or crushed.

In practice the cartridge-shells are designed to be sold filled ready for insertion in the tube, and in use the plug E or E' is removed, the cartridge is inserted in the tube A, the piston-head D' is pushed into the rear end of the cartridge, and the plug E or E', with the stem D<sup>2</sup> passing therethrough, is replaced in the tube. The entering of the piston-head D' will have filled the combustion-chamber and the tobacco is ready to be lighted. As fast as the tobacco is consumed at the forward end of the tube the remainder is successively advanced by pushing the piston forward. The smoke is drawn from the combustion-chamber into the chamber  $a'$ , along the latter to the rear end of the shell, thence through the apertures  $a^3$  to the inner chamber or passage  $a^2$ , forwardly in the passage  $a^2$  to the lateral openings  $d^3$  of stem D<sup>2</sup>, and, finally, rearwardly through said stem.

It will be observed that the cartridge has a bore without inwardly-projecting shoulders, and that the tobacco is not consumed therein, but is gradually ejected, to be consumed therebeyond, and this feature, as well as the endwise stiffness of the shell and also the glazing of the shell, are distinguishing characteristics of my invention, the cartridges thus formed and filled with tobacco being designed for sale as an article of commerce, to be purchased by those possessing my improved smoking-tube, the shell to be removed and discarded after the tobacco is consumed. The shell may, however, be refilled.

By "glazed paper" I refer to the papers which are sufficiently coated or sized and finished to provide a pronounced smooth surface,

this usually being effected by manufacturers by applying a sizing or clayey coating to the surface and finishing by calendering, and I wish to be understood as employing the term "glazed paper" in its broader meaning and including what is technically known as "coated papers," as well as that technically known as "glazed."

The packing-washer or the like, it will be understood, is actually a coating part of the follower, the two being on the manually-operated stem and serving to push forward the tobacco from the outside, while preventing entrance of smoke in either direction to the unconsumed body of the tobacco.

The extreme end of the head D' has a tip D<sup>3</sup> of refractory material.

It is preferred to make the head of the piston-stem imperforate and so tight as to prevent of itself the passage of the smoke; but it will be apparent that as the smoke may pass very freely from the combustion-chamber through the exterior passages to the stem, it will not be drawn in any material amount through the mass of the tobacco, which is packed more or less tightly initially and by the pressure of the piston-head, even should the said head be constructed so as not of itself to form a positive bar to the passage of the smoke. My invention is therefore not limited to an imperforate or tightly-fitting head.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A smoking device having a central chamber for receiving the tobacco, the forward end of the smoking device forming a combustion-chamber, said device further having a smoke-passage exterior of the tobacco-chamber, and a longitudinally-movable stem adapted to be manually operated and fitting into the tobacco-chamber, and having an axial bore in communication with said exterior smoke-passage, substantially as described.

2. A smoking device having a combustion-chamber at its front end, and having a space rearward of the combustion-chamber adapted to receive tobacco, and a follower-stem adapted to be manually operated and movable longitudinally in said tobacco-space toward and from the combustion-chamber, the stem having an axial bore and a branch opening or passage extending outward from said axial bore, the smoking device further having a passage or chamber establishing communication between the branch opening in the stem and the combustion-chamber, substantially as described.

3. A smoking-tube having a combustion-chamber at the forward end, a cartridge-shell fitting therein and abutting by its forward end against the rear end of the combustion-chamber, a piston-stem within the shell and rendered air-tight therein at its front end, a passage leading from the combustion-chamber to the rear of the shell and a passage through the stem and in communication with

the first-mentioned passage, substantially as described.

4. A smoking-tube having a removable plug at its rear end, and a stem fitting within the tube and spaced therefrom to accommodate a cartridge and having a head to press forward the tobacco, and passages leading from the front end of the tube rearwardly and a passage extending through the stem and communicating with the first-named passage, the stem extending rearwardly through the removable plug, substantially as described.

5. A smoking-tube provided with a removable plug at its rear end and a combustion-chamber at its forward end, a cartridge-shell extending from said chamber to said plug, there being a smoke-passage between the inner surface of the tube and said shell, extending from the combustion-chamber to the rear end of the shell and to the interior of the latter, and a piston-stem having a passage communicating with the first-named passage and extending rearwardly through the removable plug, substantially as described.

6. A smoking-tube having a plug at its rear end and a combustion-chamber at its forward end, said tube being adapted to contain a cartridge-shell and to permit the passage of smoke rearwardly exterior of said shell and a stem extending into the tube through said plug, and having an axial bore and a lateral opening near its front end extending to said bore, the stem having an enlargement in front of the said opening, the enlargement being of less diameter than the bore of the tube, for accommodating said cartridge-shell, substantially as described.

7. A cartridge-shell for smoking-tubes, having a body and a separate end piece of incombustible material at its front end, said end piece having lateral openings for the passage of smoke, one of said parts having a shoulder against which the other part abuts, substantially as described.

8. A smoking-tube having a separate attachment of incombustible material at its front end forming a combustion-chamber, said end piece having lateral openings for the passage of smoke, a cartridge-shell rigid endwise and abutting the rear end of the said attachment, the shell having a through-bore, and a longitudinally-movable stem extending into the rear of said shell to push the tobacco therefrom, substantially as described.

9. A pipe or smoking-tube adapted to contain a cartridge-shell, spaced from the inner wall of the tube to permit the passage of smoke rearwardly exterior of said shell, a stem for operation in said cartridge having an enlarged head at its front end, the stem having an axial bore and lateral openings leading to the bore behind the said head, substantially as described.

10. A smoking-tube comprising an outer

tube having a combustion-chamber at its front end, an inner shell, there being a longitudinal passage between said shell and tube, a removable closure for the rear end of the said tube, a piston-stem extending through said closure and slidable therein, and adapted to force forward the tobacco, the stem being of less diameter than the shell to form a chamber within the shell in the rear of the head of the stem, said stem further having an axial bore and having lateral openings establishing communication between the said bore and the interior of the shell, the smoking device being provided with openings establishing communication between the interior of the shell and the passage that is exterior of the shell and with openings leading from the combustion-chamber to said exterior passage, substantially as described.

11. As a new article of manufacture, a cartridge for smoking devices comprising an open-ended shell, rigid endwise and having a glazed interior providing a smooth surface for facilitating the sliding of the tobacco there-through, the shell also being provided with a lateral opening or openings for the passage of smoke to the interior of said shell in the rear of the tobacco, substantially as described.

12. As a new article of manufacture, an open-ended shell for smoking-tubes, rigid endwise and adapted to receive tobacco, and composed of surface-coated paper, the shell also being provided with a lateral opening or openings for the passage of smoke to the interior of said shell in the rear of the tobacco, substantially as described.

13. As a new article of manufacture, a cartridge for smoking - tubes comprising a shell having a through - bore and filled with tobacco, the said shell being rigid endwise to resist endwise pressure without being crushed, and the tobacco being movable longitudinally in and through the shell, the shell also being provided with a lateral opening or openings for the passage of smoke to the interior of said shell in the rear of the tobacco, substantially as described.

14. As a new article of manufacture, a cartridge for smoking - tubes comprising a shell having a through-bore and filled with tobacco, the said shell being rigid endwise to resist endwise pressure without being crushed and composed of surface-coated paper, the tobacco being movable longitudinally in and through the shell, the shell also being provided with a lateral opening or openings for the passage of smoke to the interior of said shell in the rear of the tobacco, substantially as described.

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Witnesses:

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