Dec. 19, 1933. E. CALDWELL 1,940,075

SMOKING PIPE

Filed Feb. 20, 1930

Fig. 1.

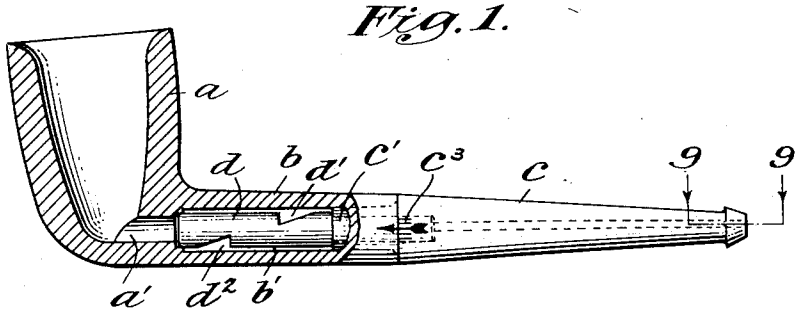


Fig. 2.

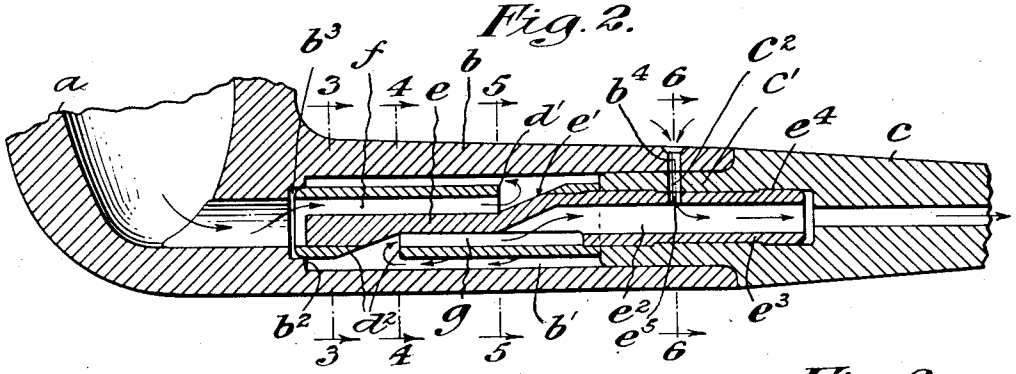


Fig. 3.

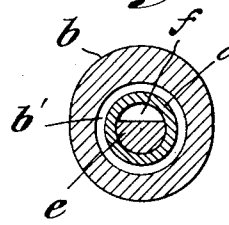


Fig. 4.

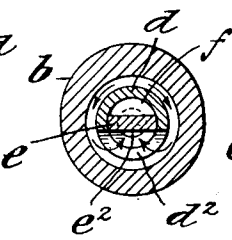


Fig. 5.

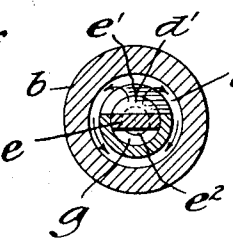


Fig. 6.

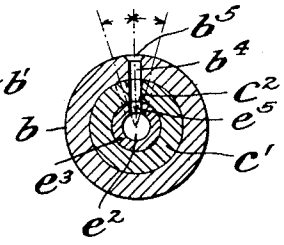


Fig. 7.

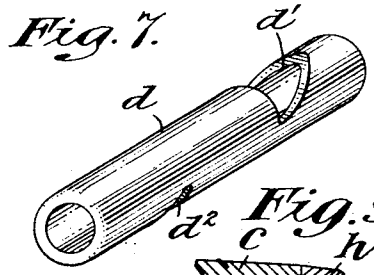


Fig. 8.

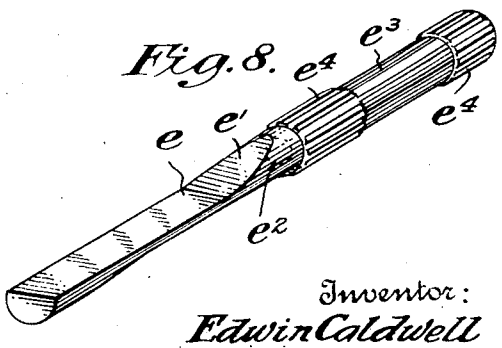
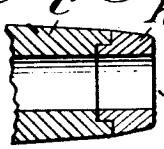


Fig. 9.



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UNITED STATES PATENT OFFICE

1,940,075

SMOKING PIPE

Edwin Caldwell, New York, N. Y.

Application February 20, 1930. Serial No. 429,874

4 Claims. (Cl. 131—12)

This invention relates to an improved smoking pipe and has for its principal object to provide a pipe of such construction as will insure the delivery of smoke having properties insuring a better taste than has heretofore been obtainable. The physical characteristics of smoke which are desirable are cleanness, dryness and coolness. Cleanness and dryness are obtained in the improved pipe by separating out to the greatest possible extent the noxious distillates present in both solid and liquid form. Coolness of the smoke is obtained in the improved construction in two ways, namely, by permitting radiation of heat units from the smoke during its travel and by adding to the smoke stream a controlled amount of air.

In accordance with the invention there is provided a tube of improved construction by which the smoke is necessarily purified in its travel from the bowl to the mouth piece. This tube is disposed in the bore of the pipe and is so designed in relation thereto as to insure the desired interaction. The travel of the smoke through this tube is along a path not provided heretofore in pipe structure in that the smoke received directly from the bowl emerges from the tube at a point relatively remote from the bowl and after passing through the chamber within the bore of the pipe reenters the tube at a point relatively near the bowl for a travel rearwardly into the mouth piece. It is largely by means of the relationship of passages and ports in the improved tube that the removal of objectionable constituents of the smoke is brought about before it is delivered to the mouth piece.

A further object of the invention is to provide in a pipe structure an opening by which air may be directly introduced into the smoke stream for cooling and diluting it. In the preferred embodiment of this feature the air port is controllable in size so that the quantity of air thus admitted can be conveniently regulated using relatively movable parts of the pipe to constitute a valve. In accomplishing this purpose it is preferred that the air opening shall extend through the pipe stem and the mouth piece so that relative angular movement of the mouth piece with respect to the stem will enable the air port to be opened more or less as desired.

A further object of the invention is to locate such an air port at a point in the pipe where it may conveniently be closed by the finger momentarily, if desired, its visibility and location inviting this in order that taste variations in the smoke can be accomplished by the smoker to suit his whim.

A further object of the invention is to provide an improved tube for the purposes set forth which shall be simple and inexpensive in structure and lend itself conveniently to assembly and attachment within the mouth piece, its free end being of a character to cooperate with the inner end of the pipe bore to seal the chamber within the bore against direct admission of smoke thereinto.

Still another object of the invention is to construct the improved tube in such form that baffles will be provided at such points as insure most effective action in accomplishing the objects and yet shall be of such a nature as not to interfere with the most convenient cleaning of the tube passages and the mouth piece.

Still another object of the invention is to provide indicia on the pipe by means of which the smoker can determine the relative extent of opening of the air valve, such indicia in one form, for instance, appearing as a vernier scale on the mouth piece adjacent to the tenon.

Another object of the invention is to improve the construction of the mouth piece at its tip by making it sectional and of metal or moulded composition for engagement with the mouth piece.

These and other objects of the invention will appear at greater length hereinafter in connection with the detailed description of the preferred embodiment shown in the accompanying drawing, in which:

Figure 1 is a view in side elevation of the improved pipe, parts being broken away to show the improved tube and its relation to the bowl and bore of the pipe stem in normal condition.

Figure 2 is a view on a somewhat larger scale and in vertical section through the parts illustrated in Figure 1, the pipe bowl and mouth piece being broken off.

Figures 3–6 are views in transverse section taken at the places indicated by the lines bearing the respective numbers in Figure 2 and looking in the direction of the arrows.

Figures 7 and 8 illustrate, respectively, and in perspective the improved tube and the core therefor which is introduced into the tube and associated therewith permanently.

Figure 9 is a sectional view of the tip of the mouth piece taken on the plane indicated by the line 9—9 of Figure 1 and looking in the direction of the arrows.

The improved pipe comprises a bowl a having

a stem b and a mouth piece c joined detachably with the stem through the tenon c' in accordance with usual practice. The smoke from the burning tobacco within the bowl a is drawn through the opening a' provided in the usual relation. Within the pipe stem b is the usual smoke chamber b' which in the present instance receives the improved tube indicated generally at d and to be later described, this tube being of lesser diameter than the chamber b' and adapted to engage the end wall b^2 of the chamber to prevent smoke from the passage a' entering directly into the chamber. A convenient and effective relationship to accomplish this purpose is illustrated in Figure 2 wherein the end of the chamber b' is shown as countersunk as at b^3 to receive snugly the end of the tube d, the dimensions of the parts being such as to insure contact sufficient to prevent smoke in any appreciable quantity passing from the passage a' directly into the chamber b'. As a matter of fact the tarry distillates from the burning smoke will assist in creating an effective smoke seal at this point.

Having now described the general relationship of parts emphasis will be placed on the details of the improved tube by which the noxious liquids and solids within the smoke are extracted therefrom to the greatest possible extent when it emerges through the opening a' and before it enters the mouth piece c. The tube d is the medium by which this purification of the smoke is attained. It will be understood as the description of the tube is given that the desired result might be obtained by tubes of other constructions but nevertheless the form of tube illustrated is believed to possess many advantages from the standpoint of manufacture and assembly. Whatever construction the tube may take it is desired in accordance with the invention that the smoke shall emerge from the tube at a point relatively remote from the pipe bowl and be discharged into the chamber b' in suchwise as to bring about the greatest possible separation out of noxious matter from the smoke and then necessitate a re-entry of the smoke stream into the tube at a point relatively nearer to the pipe bowl and contrariwise, relatively more remote from the mouth piece. A tube which provides such a path of travel for the smoke stream is by no means a simple one to manufacture and assemble considering that not only must baffles be incorporated therein but easy cleaning must be assured. It may be doubted whether a satisfactory tube answering the requirements could be formed commercially from a single piece of metal and for that reason the provision of a sectional tube is thought to have considerable merit and novelty.

Referring to Figures 7 and 8 it will be seen that the tube d is provided with openings d' and d^2 in its wall, these openings being 180° apart and spaced unequal distances from the ends of the tube. It is desired to bring about the passage of smoke so that it will emerge from the opening d' and re-enter the tube through the opening d^2. This means, of course, that the interior of the tube may be of such construction that no communication between these two openings is afforded interiorly. A core piece e is illustrated in Figure 8 which is of such construction that it may be introduced into the tube d and be permanently united therewith so that distinct and separate passages within the tube d are constituted in the desired relationship. The core e which is solid is of the same diameter as the interior of the tube b so as to fit snugly therewithin and yet considered as a solid rod it has sections cut out to constitute, with the interior wall of the tube d the necessary channels. For instance, on one side of the core e there is provided a flat wall forming with the upper portion of the wall of the tube d a channel f which terminates in the opening d'. An angular face e' on this part of the core e constitutes a baffle terminating in and coinciding with the edge of the opening d' as appears clearly from Figure 2. The underside of the core e, but at a point remote from its end, is formed somewhat the converse of the part described above so that when the core is introduced snugly into the tube d a second channel g will be provided communicating with the other opening d^2. This channel g terminates in an extended central bore e^2 within a tubular extension e^3 of the core e, as appears clearly from Figures 2 and 8. This tubular extension e^3 is preferably serrated as at e^4 and of such diameter as to permit it to be driven into the counterbore of the mouth piece c and thereby permanently united therewith. In the same manner it has been sought to make clear the core e is permanently united with the tube d through a drive fit. Thus the tube d considered as a unit with its interior channels f and g formed as described is permanently united with the mouth piece and adapted for introduction into the chamber b' and removal therefrom with the mouth piece as its tenon c' is engaged or disengaged from the stem b.

Thus far considerable emphasis has been placed on the structure of the tube d as viewed from the standpoint of simplicity and ease in manufacture and assembly. A description will now be given of its mode of functioning in bringing out the separation out of the noxious matter in the smoke. As explained before, the end of the tube b brings about a seal at the inner end of the chamber b' so that the smoke cannot enter the chamber directly from the port a'.

Accordingly, the smoke must first pass through the channel f until it escapes into the chamber b' through the opening d' in the tube, the baffle e' serving to assist in deflection of the smoke from a straight path radially outward and against the wall of the chamber b' as appears clearly from Figures 2 and 5. This abrupt change in direction of the smoke coupled with its deflection radially and engagement with the wall of the chamber b' brings about an immediate deposition of liquid and solid noxious matter from the smoke. The smoke expands into the larger chamber b' and creeps along its superficially extended and relatively cool wall with the result that the greatest possible separation out of noxious material is accomplished. In order to get to the mouth piece smoke has to re-enter the tube through the opening d^2. This opening, as pointed out before, being relatively nearer to the bowl of the pipe than the opening d', the smoke must completely reverse its direction of travel after emerging into the chamber b' and move along the walls of the chamber and traverse the distance of 180° circumferentially of the tube and chamber before it can enter the opening d^2. This is brought out clearly by Figure 4 where the opening d^2 is shown as displaced 180° from the opening d'. From the opening d^2 the smoke passes through the channel g and bore e^2 into the mouth piece c. All of the noxious distillates are collected in the chamber b' from which they may be readily removed from time to time in the usual manner. They cannot, by

reason of the improved tube construction, enter the mouth piece *c* since their relation to the channel *g* within the tube precludes this. They are thrown downwardly effectively from the smoke by reason of its path of travel as explained. Thus at this point purification of the smoke is accomplished and great improvement in its taste assured since the taste is largely dependent on the purity of the smoke. In accomplishing this purification it will be understood that cooling of the smoke by conduction is also a necessary incident, the extended wall of the chamber *b'* and the extended surfaces of the channels along which the smoke must pass insuring this amount of cooling before the smoke goes into the mouth piece. However, the present invention contemplates an additional and direct cooling of the smoke and its dilution of oxygenation by the introduction of air into the smoke stream at a point after its cleansing. Such cooling will also contribute to a pleasant taste since the cooler the smoke is the more agreeable the taste although, of course, there is a point beyond which dilution of the smoke should not be carried. To suit the taste of the individual, therefore, it is preferred that the air added may be admitted in a quantity within the control of the smoker. In the illustrated embodiment this is done by simple means taking advantage of the normal relationship between the mouth piece and the pipe steam. As shown in Figures 2 and 6 an opening b^4 is provided at some point in the pipe stem overlying the tenon *c'*. It is believed that the top of the pipe stem will prove to be a desirable place to locate the opening b^4 since in this location the pipe "juice" within the chamber *b'* cannot accidentally leak through the opening b^4 and also this location enables the finger of the smoker to be most conveniently placed over the hole, if desired, for taste experiments to suit his whim. The tenon *c'* is provided with an opening c^2 which is preferably the same dimension and cross sectional form as the opening b^4 and forms a continuation thereof and the tube e^3 has a similar opening e^5 so that air may enter from the outside into the smoke stream flowing through the bore e^2. For the convenience of the smoker as shown in Figure 1 parts of an arrow may be placed on the stem *b* and the mouth piece *c* so that when the parts are in alignment the openings c^2 and b^4 will be in complete registry for the admission of the maximum quantity of air. Graduations indicated at c^3 may be formed on the mouth piece *c* at opposite sides of the median line shown as part of the arrow so that by rotating the mouth piece *c* to one side or the other of the median position the opening c^2 can be offset from the opening b^4 to a desired extent to restrict the inflow of air. The smoker will, of course, determine the quantity of air which creates a blend of smoke most agreeable to his taste and he may, indeed, find that his taste is served at different times of the day or on different days by a change in the quantity of air with a resulting change in the blend. The point is that taste can be catered to in this fashion by means wholly within the control of the smoker. In the same manner it will be evident that the smoker's finger may be placed over the opening b^4 if he desires momentarily to restrict the inflow of air. To facilitate this the opening b^4 may be countersunk as indicated at b^5 to assist in locating the opening.

The passages *f* and *g* within the tube *d*, it will be observed, are so related to the openings that the greatest convenience is afforded in cleaning them as by the introduction of a pipe cleaner. Thus, a pipe cleaner may be run through the bore of the mouth piece *c* and guided without restriction through the channel *g* emerging at the opening d^2. Similarly, a pipe cleaner may be inserted through the passage *f* without hindrance by introducing either through the opening *d'* or at the inlet end.

The result of the provisions herein described is that a dry smoke exceedingly clean may be further cooled and diluted or blended or oxygenated to any desired extent by the direct addition of air thereinto in its travel through the mouth piece.

A further feature of construction resides, as a detail, in the inclusion in the mouth piece of a tip *h* of metal or moulded composition united with the mouth piece *c* by any convenient means facilitating this. This tip may be of such material as to resist injury from the teeth or may permit replacement when and if injured.

The invention is not to be limited to details of construction except insofar as recited in the appended claims.

What I claim is:

1. A tube of the character specified comprising a cylinder having openings through its walls and a core secured within said cylinder and so formed as to constitute independent smoke passages interiorly of the cylinder communicating with the respective openings therein.

2. A tube of the character specified comprising a cylinder having openings through its walls and a core secured within said cylinder and so formed as to constitute independent smoke passages interiorly of the cylinder communicating with the respective openings therein, said core having inclined surfaces along said passageways to constitute baffles for the smoke.

3. A tube of the character specified comprising a cylinder having openings through its walls and a core secured within said cylinder and so formed as to constitute independent smoke passages interiorly of the cylinder communicating with the respective openings therein, said core terminating in a tubular extension secured within the mouth piece.

4. In a pipe having a stem and a mouth piece engageable therewith registering openings through the stem and mouth piece to admit air into the smoke stream, said openings being relatively displaceable by angular movement of the mouth piece in the stem, indicia carried on the stem and mouth piece to indicate visually the extent of the relative angular displacement therebetween.

EDWIN CALDWELL.